DOI: 10.18195/issn.0313-122x.66.2004.343-398
Records of the Western Australian Museum Supplement No. 66: 343–398 (2004).

Fishes of the Dampier Archipelago, Western Australia

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Abstract – The shallow-water fish fauna of the Dampier Archipelago (to a depth of 30 m), which now totals 650 species, consists of a rich coral reef fauna (465 species), a moderate mangrove one (116 species), smaller numbers of soft bottom inhabitants (106 species) and a relatively low number of pelagic species (67). The outer islands are inhabited predominantly by coral reef fishes whereas inner areas close to the mainland are occupied by mangrove and silty-bottom dwellers. The inter-island passages have a relatively rich soft bottom fauna. Species diversity is at its highest in areas of high topographic diversity, the area with the highest diversities lying along the exposed northern perimeter of the archipelago. These more off-shore areas are apparently under the direct influence of the off-shore flowing, warm Leeuwin Current, where water clarity is high and propagules from upstream locations, such as the Rowley Shoals, are deposited. The more in-shore areas are affected by high turbidity resulting from mangrove communities and high freshwater runoff during cyclonic events. The fish fauna of the archipelago is closely related to that occurring at the more off-shore Monte Bello Islands, but is noticeably less diverse than the islands of the West Pilbara region to the south. Some elements of the Kimberley fish fauna also inhabit the archipelago.

INTRODUCTION

Since the early 1970's when the Western Australian Museum first conducted marine surveys in the Dampier Archipelago, considerable work has been done on the fish fauna of the area but little has been published. The first major study (Hutchins and Allen, 1974 [unpublished]) involved a checklist of fishes inhabiting the western portion of the archipelago during the years 1971–1974. This was conducted as part of the museum's investigation of the Crown-of-thorns starfish at Kendrew Island (Wilson and Marsh, 1975). It was followed in 1978 by a survey of fishes along the western side of Burrup Peninsula, which also included a brief visit to Kendrew and Malus Islands (Hutchins, 1978 [unpublished]). Also in that year, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) commenced trawling operations in nearby waters of the North West Shelf, but few collections were made in the archipelago (see Sainsbury *et al.*, 1985). However, the CSIRO carried out other survey work in 1983–1984, investigating the fish fauna of near-shore mangrove creeks and open shores of the Dampier area, mostly using gill and seine nets (Blaber *et al.*, 1985). Following the release of a report on the a proposed marine reserve system for Western Australia (Wilson, 1994) which recommended that the Dampier Archipelago be considered for reservation, it seemed appropriate to bring this knowledge of the fishes together in the form of a complete checklist for the area. Fortunately, support for this project was forthcoming from one of the major commercial enterprises in the Dampier region, Woodside Energy Ltd (see Jones, 2004 this volume). This assistance also made it possible to expand the fish survey to include many of the areas previously un-worked and to assess the inter-relationships of the major assemblages present.

The current study was commenced in 1998 and completed in 2000. It included three separate trips by the author to the archipelago. The first two trips involved intensive survey work to sample particular areas of the archipelago (eastern islands in 1998, western islands in 1999), while the third was part of an international workshop that was more wide ranging. The methodology, which is described more fully below, was based mainly on a visual survey assessment, but also entailed sporadic sampling of the intertidal and subtidal fauna. It was biased towards reef fishes because of their dominance in the area, but additional records of species that inhabit soft bottoms, mangroves and the pelagic environment were also made. Furthermore, the data from the 1998–1999 surveys were subjected to a hierarchical classification analysis to explore relationships of the major fish assemblages. Finally, a complete checklist of species for the Dampier Archipelago (Appendix 1) was prepared from all of the sources mentioned above.

A version of this list, which also includes species trawled and dredged to a depth of 45 m, appeared in a separate publication (Hutchins, 2003).

MATERIALS AND METHODS

Two methodologies were used for this investigation: 1, rapid assessment using visual survey and 2, collections made with rotenone powder to force cryptic species from crevices and other hiding places. During 1998 and 1999, rotenone studies were conducted at low tide in rock pools and other shallow reefs along the shoreline. Deeper collections were made during the 2000 workshop on more exposed reefs at depths to 22 m. Further details of these methodologies are as follows:

1. Rapid visual surveys. The survey method was based on the visual survey technique described in Wilson and Marsh (1979) but subsequently modified after Williams (1982). Fish were counted during a 60 minute swim in which the SCUBA-equipped observer swam in a zigzag course around each survey location. Records were noted on underwater sheets that had previously been filled out with the names of species most likely to be found and scored in a $\log_5$ scale of abundance (1=1 fish; 2=2-5; 3=6-25; 4=26-125; 5=126-625; 6=626-3125; 7=3126+). All identifiable species were recorded, but species of questionable identification were subsequently deleted from the list; however, some that appear to be undescribed were retained. A few collections of the difficult-to-identify species were made with spears. Most survey activity occurred in the depth range 0–20 m, but depths to 30 m were worked occasionally.
2. Rotenone collections. Shallow rock pools were sampled at low tide by dissolving rotenone powder (derris dust) in seawater and spreading it throughout each pool. In a few areas, exposed reef and mud flats were also sampled by allowing the dissolved rotenone to be carried by the water washing across these areas. Collections involving deeper subtidal reefs were made after the rotenone solution was placed in caves and under crevices in the reefs by a SCUBA-equipped diver. However, only limited success was achieved using this technique as strong tidal currents often carried away the rotenone solution before it had time to affect the fish.

Analysis

Sites were classified into groups by a hierarchical classification analysis employing the computer program NTSYSPC 2.0. Bray-Curtis similarity coefficients were used and matrices clustered utilising the UPGMA clustering method. $\log_5$ abundances were determined for all species recorded during each individual visual survey, but only presence-absence data were used for collecting sites. The program produces clusters on the basis of each site's full complement of species. This is further weighted by the relative abundance of the species within each site when those data are available. The analyses in the Results section below, therefore, are presented under two categories, visual surveys (which includes abundance data) and collecting sites (presence-absence data only). There was no analysis performed on either the visual surveys or the material collected during the 2000 workshop. Some of the latter visual surveys were conducted at sites visited during the previous two trips i.e. repeat surveys, while others were incorporated with collecting activities that negated a consistency of effort. In addition, strong tides and poor weather conditions made subtidal sampling with rotenone difficult, limiting the diversity of material obtained.

Terminology

The following terms are used throughout this report. Brief descriptions are provided here as some readers may interpret them differently.

Hard bottoms. These refer to substrata composed of igneous and/or limestone rocks. Corals grow on these structures forming reefs whereas those with little or no coral are termed rocky reefs. Some hard bottoms of low relief support mainly soft invertebrate growths that are referred to as sponge gardens (see also below). Accumulations of sand and gravel derived from the breakdown of rocks and corals form shallow shoals in some areas. These may also attract corals which form reefs.

Soft bottoms. These refer to sandy and silty bottoms, either bare or covered with marine plants. These soft bottoms may be only a thin veneer of sand over a hard bottom and as such may support soft invertebrate growths which are anchored to the hard substratum below, e.g. sponge gardens.

Mangroves. These are waterways and their bottoms which are adjacent to mangrove vegetation. Soft substrata here usually have high mud contents, whereas adjacent hard bottoms support either oyster colonies, stunted invertebrate growths or nothing.

Trawling grounds. These are soft bottoms that are suitable for operating commercial prawn and scallop trawl nets. Isolated reefs are sometimes located on these grounds, thus contributing reef species to the catches.

Pelagics. These are free swimming and drifting fishes which are not associated with the benthic substratum. Planktonic fishes that have yet to settle are included here and, for the purposes of this study, the latter were sampled from amongst floating rafts of *Sargassum* and drifting jellyfishes.

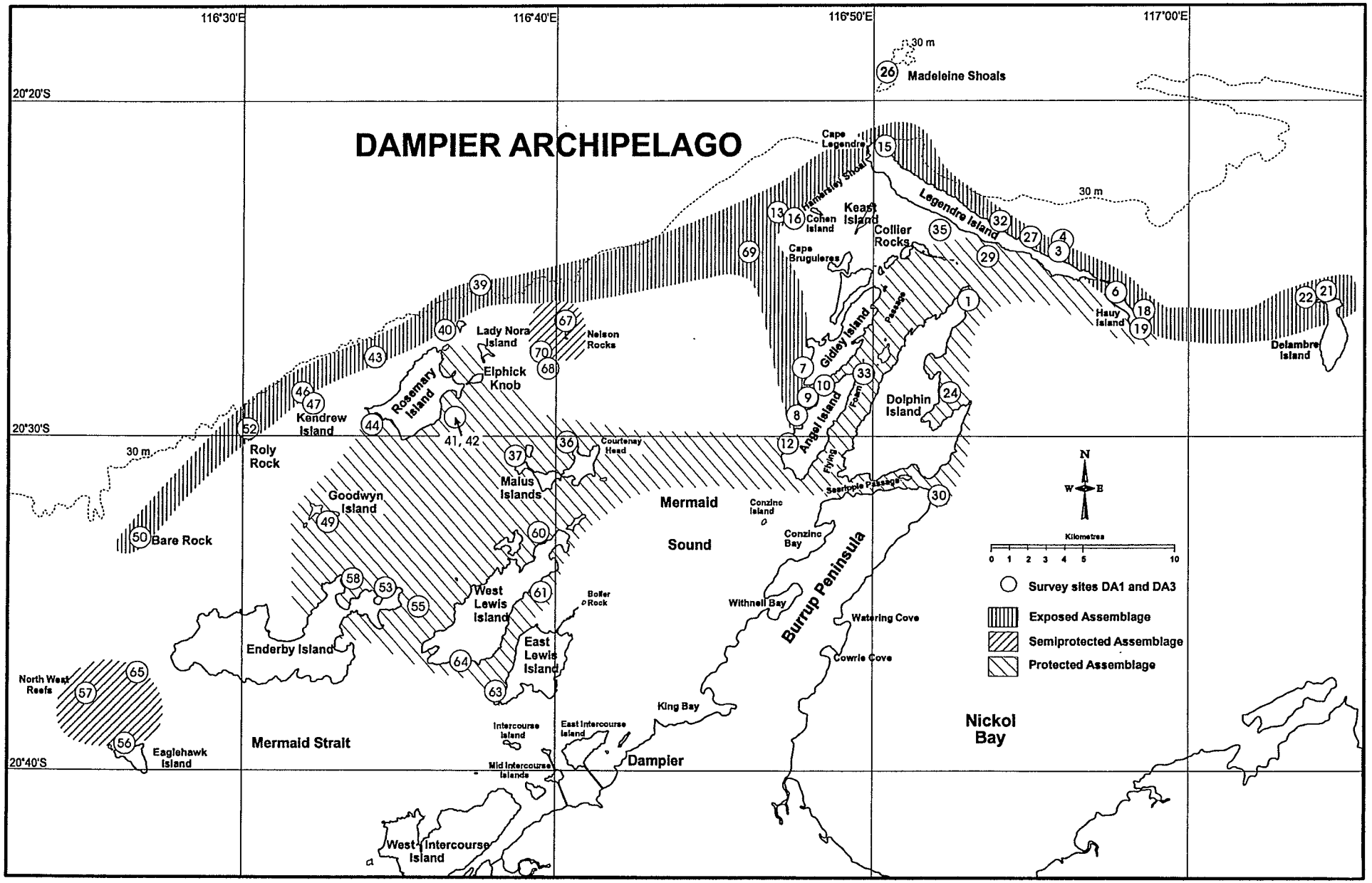

Figure 1 Map of the Dampier Archipelago showing visual survey sites for 1998–1999 grouped into three main assemblages.

Sites

Table 1 lists the fish sampling sites for 1998 (DA1/01 to 35), 1999 (DA3/36 to 70) and 2000 (DA4/01 to 44). Unless otherwise stated, sites were sampled using the visual survey technique described above. Other collections involved rotenone and spear, but limited visual assessments were also made at these sites. Figures 1, 3 and 5 show the position of all sites on a map of the area. For clarity, site prefixes are only used in the legend on each map.

RESULTS

Hutchins and Allen (1974) reported 287 species of predominantly reef fishes for the Dampier Archipelago, whereas Hutchins (1978) increased this total to 335 (see Hutchins, 1994). Blaber *et al.* (1985) working mostly in the more turbid waters along the mainland coast recorded 164 species, taking the total for the archipelago to >400 species. The three surveys that make up the present study produced 466 species. The complete list for the archipelago now stands at 650 species (Appendix 1). The majority of these (465) were found on hard bottoms, but significant numbers were recorded from soft bottoms (106) and mangrove areas (116). Free-swimming and larval forms totalled 67. Even though a number of trawl-caught species are listed here (51), only those collected to the south of the 30 m contour level (Figure 1) are included.

Diversity

All of the species recorded during the 1998, 1999 and 2000 surveys are listed in Tables 2 to 6 (the number of species are included at the bottom of each column). Species totals for the visual survey sites ranged from 114 (site DA4/14 at Legendre Island) to 13 (site DA3/68 near Nelson Rocks) (lower figures were obtained during the 2000 workshop, but those surveys were incomplete). Intertidal collecting sites ranged from totals of 41 species (site DA1/25 at Keast Island) to 9 (site DA1/28 in Flying Foam Passage). Subtidal collecting with rotenone produced a high of 34 species at West Lewis Island (site DA4/4) and a low of 8 at Enderby Island (site DA4/41).

The site with the highest fish diversity was DA1/15 at the north-western corner of Legendre Island. It was located adjacent to moderately deep water where the reef edge falls away steeply to 30 m. It was first surveyed in 1998 for a total of 109 species and then resurveyed (as DA4/14) during the 2000 workshop for a new total of 114. Interestingly, 43 of the latter total had not been recorded on the first visit. Site DA4/15 was located close by (50 m to the east) where a further 27 unrecorded species were found. Thus, 179 species have now been observed in this area. Pelagic and free swimming species often congregate along the drop-off, thus contributing to this unusually high but fluctuating diversity.

Other survey sites with high diversities were DA1/32 (98 species), also on Legendre Island, and DA3/40 on the north side of Rosemary Island (94 species). During the 2000 workshop, a site at the western end of Enderby Island (DA4/43) produced 98 species, but none of the workshop sites are included in the following analysis (see Materials and Methods section above).

Relationships between sites surveyed in 1998–1999

Analysis of the dataset (Tables 2, 3 and 5) is presented below. Dissimilarity dendrograms showing site assemblages are illustrated in Figures 2 and 4. The prefixes DA1 and DA3 for sites 1 to 70 included here are omitted for clarity.

1. Visual surveys (Figure 2)

At a level of dissimilarity of ~0.57, two main clusters are apparent (those sites that cluster at higher levels of dissimilarity are ignored here because little can be gained from examining such dissimilar relationships). Sites 1 to 16 form one group of mostly protected locations and sites 3 to 52 form a separate group of mostly exposed sites. Within the first cluster, two additional groups are apparent, sites 1–30 (protected sites) and sites 4–16 (semi-protected sites). In the exposed grouping, two additional clusters are also present, sites 3–69 and 39–52. The following analyses look at each of these sub-groupings in turn.

Protected sites 1–30

Site 30 clusters separately from the other sites. It was located at the eastern entrance to Searipple Passage with an igneous boulder habitat fronted by a flat sandy bottom. Little hard coral was found here and fish diversity was also low. For the remaining 17 sites, two clusters are apparent, 1–63 and 10–61. Within the first grouping, sites 1, 24 and 29 form a separate cluster, being located adjacent to each other at the northeastern end of Dolphin Island (site 29 was just across the passage from site 1). They form a separate grouping from the remaining 11 sites (12–63). The latter range from a protected bay on Haüy Island, a coral site in Flying Foam Passage, to numerous protected bays on Dolphin, Malus, West and East Lewis, and Enderby Islands. Of these, sites 33, 60 and 63 form a separate cluster from the remaining eight. No two sites in this group of 14 could be described as having a very similar fauna (sites 44 and 58 were the most similar with a level of dissimilarity of approximately 0.34). All 14 sites in this category had moderately diverse coral faunas. In the second grouping (sites 10–61), the coral fauna was

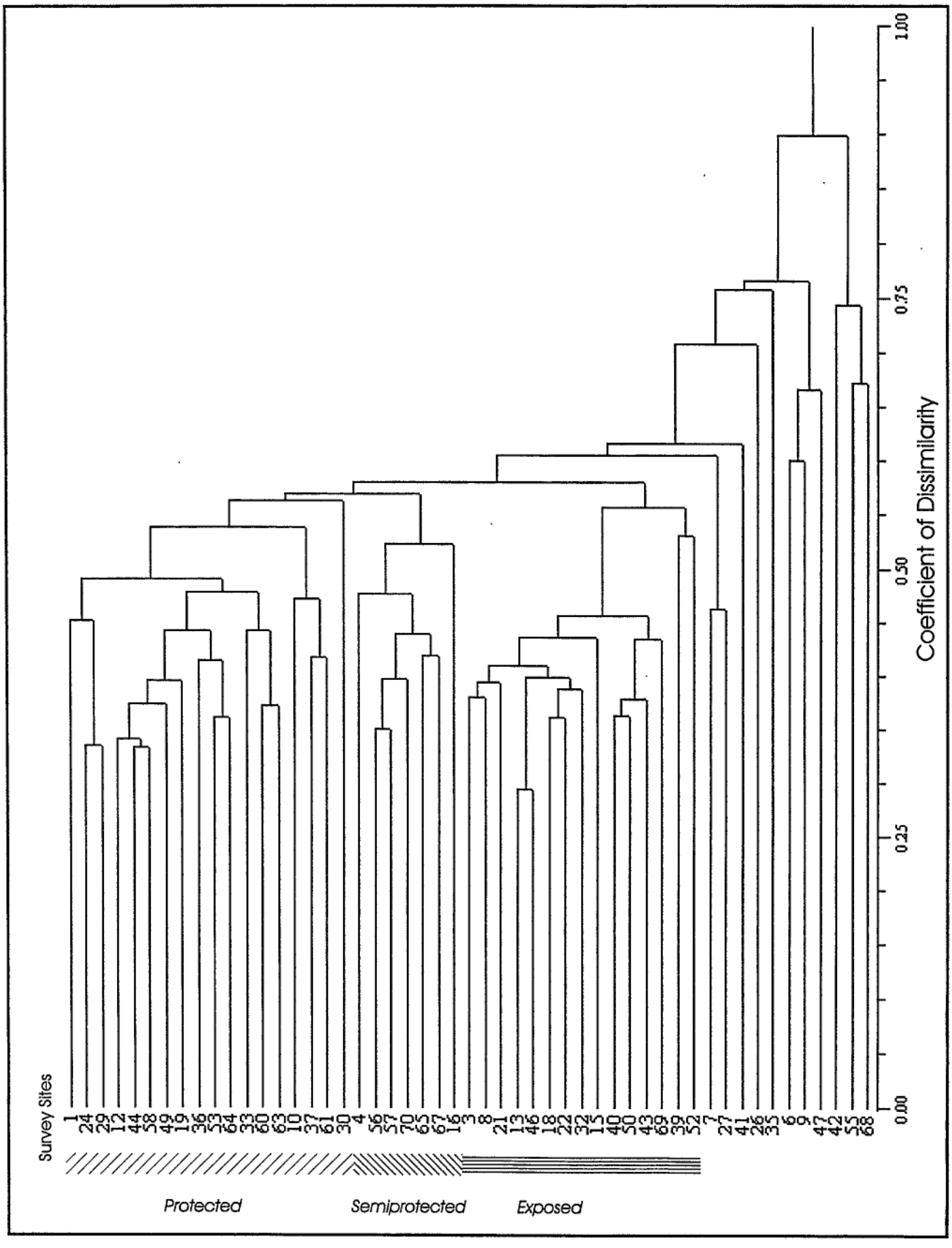

Figure 2 Analysis of visual survey data for 1998–1999 grouped into three main assemblages (see Figure 1).

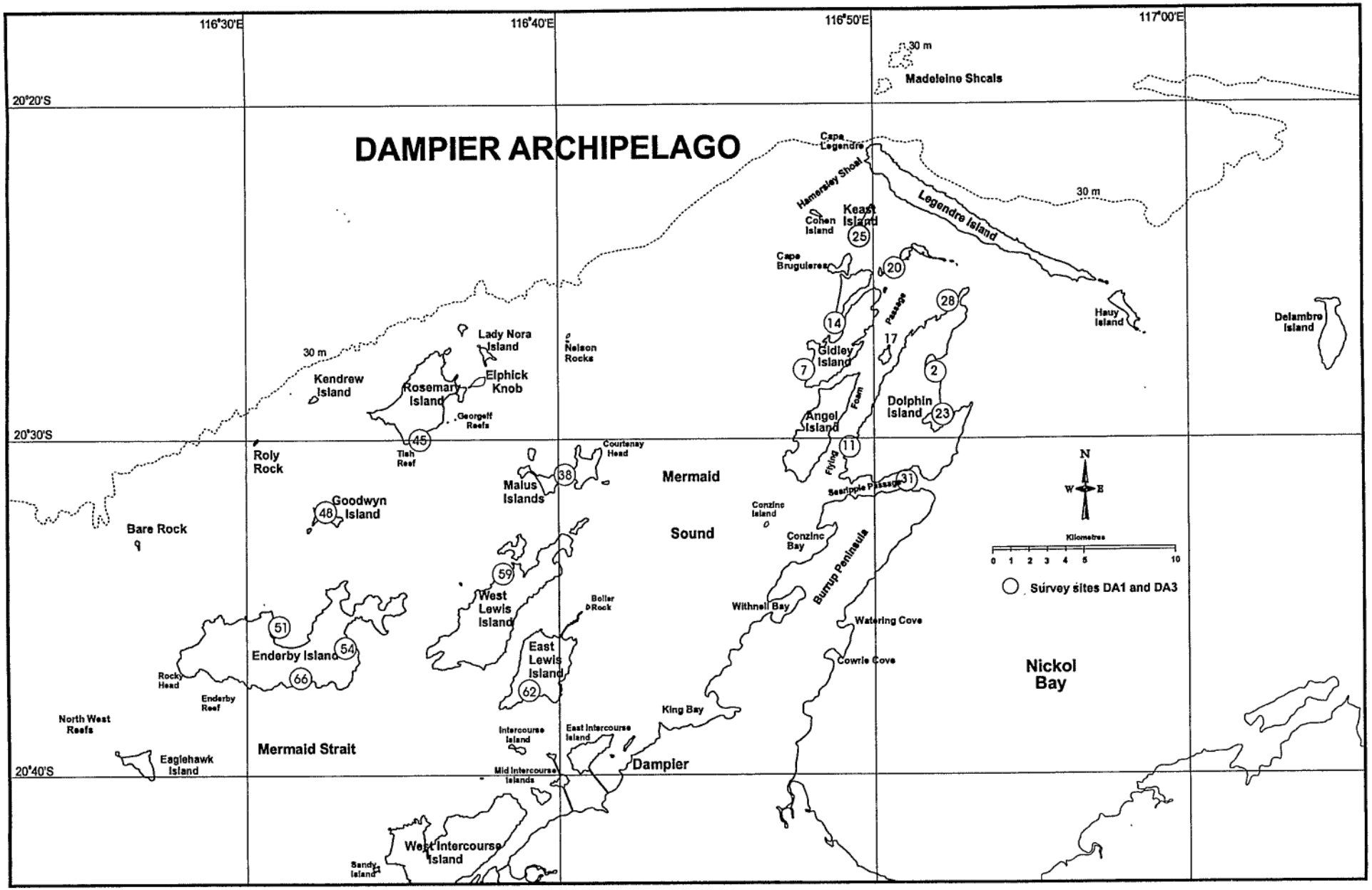

Figure 3 Map of the Dampier Archipelago showing shore collecting sites for 1998–1999.

relatively poor, with a higher proportion of algae present.

Semi-protected sites 4–16

These sites are scattered across the archipelago in more exposed locations than the above cluster of protected sites. Site 16 clusters separately from the others and was located at the rear edge of Hamersley Shoal. The predominant habitats here were coral rubble and algae, but little evidence as to why it should be grouped with the other sites is apparent. Site 4 clusters separately from the remaining five (56–67) and was located in deeper water off-shore from the reef front at Legendre Island on a sloping bottom with sparse invertebrate growth. The other sites form a cluster that involves three to the southwest of Enderby Island and two east of Rosemary Island. Sponge gardens were prominent at some of these sites, but most included sparse growths of hard corals.

Exposed sites 3–69

Except for site 8 on the western side of Angel Island, all of these sites were located along the exposed northern edge of the archipelago. They include areas where coral growth dominated and were generally located on a sloping bottom dropping off into waters of about 20 m deep (a notable exception was site 69 which was positioned in an area of flat sandy bottom covered with moderate to large, igneous boulders that overlay a gas pipeline). Two additional clusters are apparent, sites 3–15 forming one and sites 40–69 the other. Most of the sites in the first cluster were located in the eastern half of the archipelago, whereas the second cluster consists of those situated mainly in the western half. Surprisingly the two sites with the most similar faunas (at a level of dissimilarity of about 0.3) were 13 (Hamersley Shoal) in the east and 46 (Kendrew Island) in the west.

Exposed sites 39–52

Both sites were located on the exposed northern section of the western archipelago. The habitats here differed from those of the cluster above in lacking a diverse cover of hard corals.

The most abundant species in each of the three main clusters are listed in Table 7.

2. Shore-based collections (Figure 4)

The shore-based collections, unlike many of the visual survey sites, cluster at relatively high levels of dissimilarity. This is most likely due to the rather low numbers of species in each collection, whereas the visual surveys involved much higher numbers. The former fall into two main clusters at the 0.85 level of dissimilarity; the first consisting of sites 2–48 which are essentially rock pool faunas, and the second comprising mangrove and muddy bottom faunas (sites 11–62). The rock pool sites form three additional groupings at a level of ~0.75, the first consisting of 2–23 at the north and northeastern end of Dolphin Island, the second comprising 7–59 which had rather depauperate faunas on mainly igneous substrata, and the third consisting of 17–48 which were mainly in limestone areas with more diverse invertebrate faunas occupying each one. In the latter grouping, the nine sites are scattered throughout the central region of the archipelago, and at a dissimilarity level of ~0.65 form three additional clusters (sites 17–66, 20–51 and 25–48), but there are no apparent habitat differences to account for this separation. The most common species of the collection sites are listed in Table 8.

Topographic complexity

Those sites with the greatest topographic complexity had the most diverse fish faunas. Site 15 (109 species) at the northeastern end of Legendre Island possessed a complex system of spur and groove reefs. The tops of the spurs were covered with a diverse array of hard and soft corals. At the seaward end of the spurs, the bottom dropped away abruptly through a series of ledges to almost 30 m. A large variety of reef fishes inhabited the shallow reefs while pelagic species patrolled the reef drop-off. At the base of the drop-off, the sandy bottom was home to an array of soft-bottom dwellers which also included species which prefer the sponge-garden habitat that is formed on scattered emergent limestone rocks. Numerous species were found here that have not been recorded elsewhere in the archipelago. Many of these species prefer waters of good clarity and are more at home at the far off-shore Rowley Shoals and Ningaloo Reef to the south than in the more turbid waters of the Dampier Archipelago.

Site 32 had the second highest fish diversity (98 species) and was also located along the northern edge of Legendre Island. It possessed a complex reef structure similar to the above site but lacked a steep drop off and, thus, had fewer pelagic species in the area during the survey. Other similar sites along the front edge of Legendre Island also possessed relatively rich fish faunas (sites 3 and 18 with 87 and 86 species, respectively), but suffered from less complex reef structures. Site 13 near the southern end of Hamersley Shoal had no prominent spur and groove reef system but, nevertheless, its reefs possessed a relatively complex topography which was reflected in the 89 fish species recorded there. Site 4 was a deeper water station adjacent to site 3 but possessed only 54 species. It lacked topographic complexity, being comprised mostly of a bare limestone slope with a few hard and soft corals, merging with a sandy bottom at 18 m.

At Delambre Island to the east, the two sites surveyed had remarkably different reef habitats. Site 21 was more exposed with a prominent spur

and groove system dropping slowly into depths of 19 m; however, its coral diversity was noticeably lower than at Legendre Island and it supported only 82 fish species. The slightly more protected but shallower site 22 had large areas of staghorn *Acropora* and many large *Porites* bommies, producing a fish total of 84 species (after the 2000 cyclone, much of the staghorn coral was reduced to rubble and fish diversity was considerably lower).

A deep (to 30 m) off-shore location was surveyed at Madeleine Shoals (site 26) to the north of Legendre Island. The bottom consisted of a large igneous monolith, with limited invertebrate cover, producing a low topographic complexity. A total of 48 species was recorded here.

In the western portion of the archipelago, most the sites along the front edge of the reefs and islands from Nelson Rocks west to Bare Rock had complex reef systems, some including extensive spur and groove structures. The sites with the highest topographic complexities (sites 40, 43, 46 and 50) had relatively diverse fish faunas (species totals of 94, 87, 85 and 86, respectively), the deepest of these being site 50 (to 20 m). A deeper location (26 m) was surveyed at site 67 (Nelson Rocks) but this had a higher proportion of soft corals than hard, although the reef had a relatively complex topography. This latter survey produced 83 species.

Two deep locations were also surveyed on the outer edge of the western reefs, sites 39 (off Brigadier Island) ranging from 15 to 27 m and 52 (Roly Rock) to 26 m, but both had faunas of relatively low diversity (53 and 74 species respectively). Both sites lacked complex reef structures.

Three of the protected sites in the western archipelago had relatively diverse fish faunas. Sites 44 (Rosemary Island), 58 (Enderby Island) and 49 (Goodwyn Island) were all relatively shallow areas (deepest was 9 m) but produced 87, 87 and 82 species, respectively All three sites possessed only a moderately complex topography, but hard coral cover here was extensive, especially in the latter two sites. A more exposed and slightly deeper (13 m) site at the northwestern corner of Enderby Island (DA4/43) was surveyed in 2000 producing 98 species. It also had a high topographic complexity but as it was not included in the analysis, little can be accurately concluded about its relationships with the other sites.

Most of the remaining sites in the middle region of the western archipelago had low topographic complexity and possessed fish faunas of low to moderate diversity.

DISCUSSION

Before this study, the fish diversity of the Dampier Archipelago was often reported as relatively low in comparison with other tropical areas of Western Australia (Hutchins, 1978, 1994, 1996). The species list presented here is one of high diversity, totalling 650 species from a range of habitats including coral and rocky reefs, algal beds, sponge gardens, sand and silty bottoms, and mangrove areas. A small representation of the trawl-caught fauna that characterises the North West Shelf is also incorporated. The depth limit set for this study was 30 m and covers all the waters to the south of this contour, but Madeleine Shoals to the north of Legendre Island is also included as it rises to within 15 m of the surface. Many areas, however, still remain to be surveyed and additional species will doubtless be discovered.

Based on the visual surveys, the fish fauna of subtidal reefs and adjacent habitats of the archipelago can be assembled into three categories: exposed, protected and semi-protected. The exposed reefs tend to have the greatest topographic complexity and generally experience better water clarity than reefs of the other two categories. All but one of the exposed sites was located along the northern rim of the archipelago, from Delambre Island to Bare Rock. The exception was DA1/08 on the western side of Angel Island, which is unusual in that the reefs in this region are relatively complex and, therefore, support a fish fauna more similar to the northern sites. Judging by the coral reef development visible in aerial photographs, there are possibly other sites between site DA1/08 and site DA1/13 at the southern end of Hamersley Shoal that might also fall into this habitat type, thus justifying the southward extension of the exposed habitat categorisation (Figure 1). However, additional surveys need to be done in this area to provide evidence either supporting or disproving this hypothesis. Although not analysed during this study, site DA4/43 at the western end of Enderby Island could also be expected to be grouped here because of its exposed location to the northwest, the lower turbidity of the surrounding water, its high topographic complexity and its high species diversity.

Although a western and an eastern grouping generally predominate in the exposed category, the two sites with the most similar faunas (DA1/13 and DA3/46, see Figure 2) are from opposing sides of the archipelago. It would, therefore, seem that the fish fauna of this northern belt is reasonably consistent in structure.

Sites in the protected category are located throughout the central region of the archipelago. They are characterised by a lower topographic complexity and, generally, lower species diversity than the exposed sites. There are no eastern and western components, although three sites at the northeastern end of Dolphin Island (DA1/01, DA1/24 and DA1/29) form a separate cluster that is

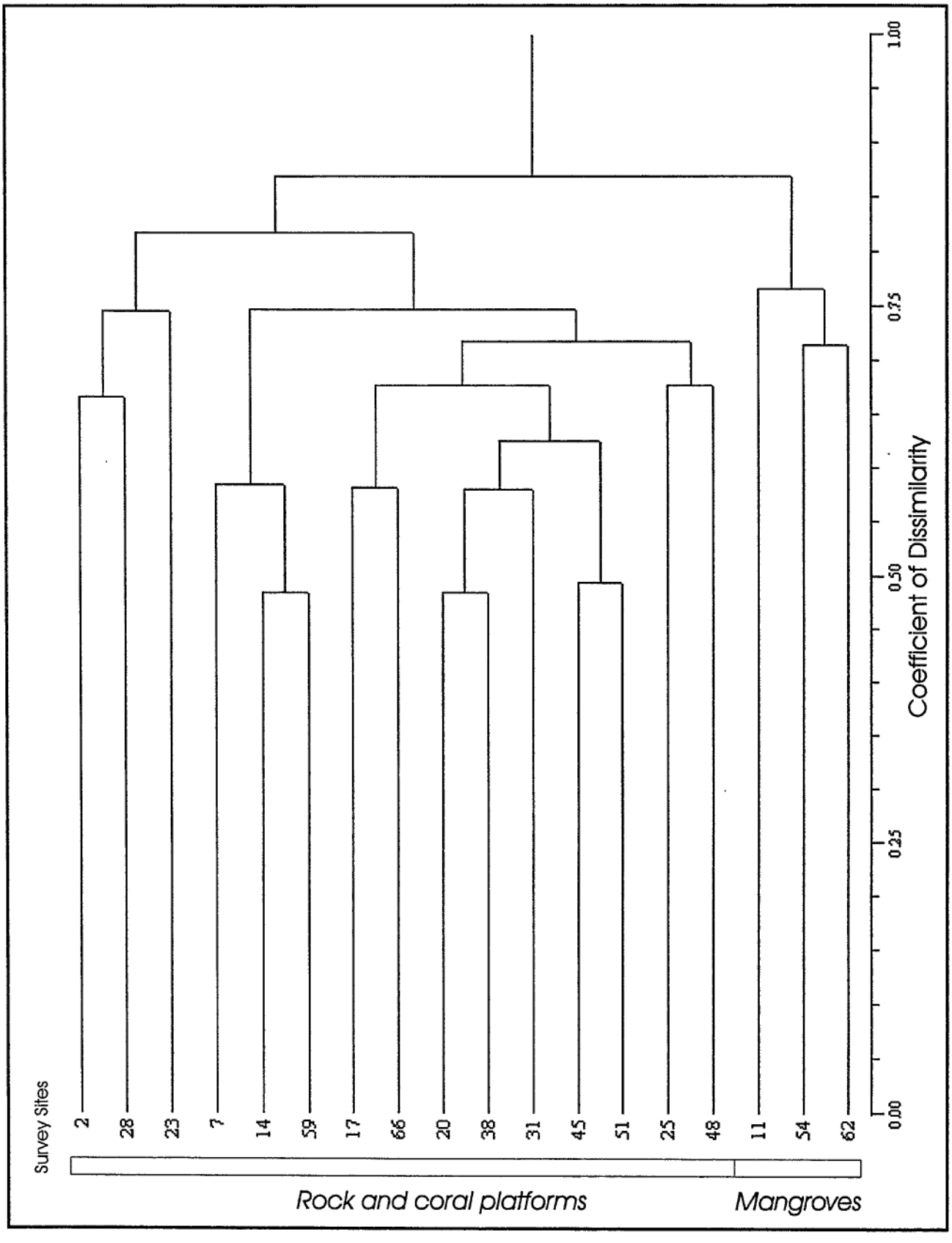

Figure 4 Analysis of shore collecting sites for 1998–1999.

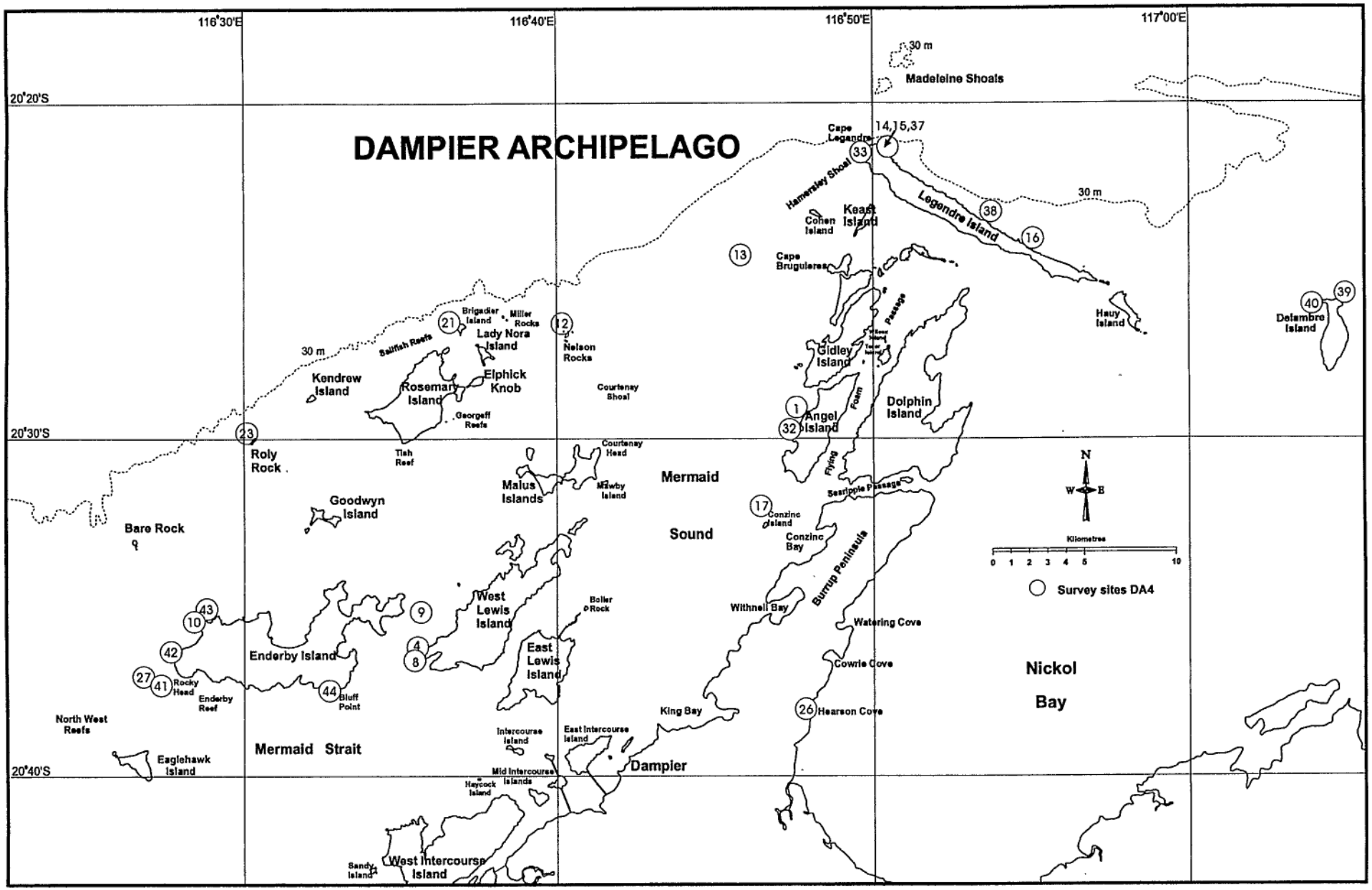

Figure 5 Map of the Dampier Archipelago showing visual survey and subtidal collecting sites for 2000.

repeated in the shore collecting stations (sites DA1/02, DA1/23 and DA1/28) (see below). This suggests that these six sites are affected by different environmental factors than most of the other protected ones due to their location on the margin of Nickol Bay, which apparently has a high sediment load due to the wide expanse of mud flats at its head (Semeniuk *et al.*, 1982). Another Nickol Bay location (DA1/30) also clusters separately from all other protected sites investigated visually.

The semi-protected sites are scattered along a peripheral region that is positioned roughly between each band of exposed and protected sites. Two distinct concentrations occur, one in the southwest and one just inside the entrance to Mermaid Sound. Most of these sites are associated with or near areas supporting soft bottom faunas. Such a category is probably more abundant in the archipelago than this analysis suggests and additional surveys are needed to confirm this.

Turning to the collections made in intertidal areas, only protected sites were worked due to the difficulty of accessing the exposed areas of the archipelago at low tide. Two major groupings are apparent (Figure 4), rocky and coral reef platforms on the one hand and mangrove localities on the other. Within the former cluster, the sites located on the margin of Nickol Bay, as referred to above, form a separate grouping.

One major region not investigated during this study is the in-shore area along the mainland coast between West Intercourse Island in the southwest and Searipple Passage at the northern end of the Burrup Peninsula. Some parts of this area are probably unsuitable for using a visual survey methodology because of a particularly high turbidity. However, the western side of Burrup Peninsula was successfully surveyed in the 1970's (Hutchins, 1978). Those results indicated a decreasing diversity from north to south, with figures ranging from 42 species in Withnell Bay to 19 in the southern portion of King Bay. The fish composition was similar to other protected sites throughout the archipelago, although the number of species was much reduced. One obvious difference was the presence of the sparid *Acanthopagrus latus*. This species was only collected from mangrove areas during the present investigation, but was often recorded from shallow waters of the peninsula by Hutchins (1978). Blaber *et al.* (1986) recorded *A. latus* (as *Mylio latus*) in moderate numbers from mangrove areas, but in smaller numbers along exposed shores.

The investigation by Blaber *et al.* (1986), which included the western side of the peninsula as well as the West Intercourse Island area, used a different methodology incorporating net collections, so that its results cannot be compared with the present data. Nevertheless, its findings throw considerable light on the mangrove fish fauna of the archipelago. Although Blaber *et al.* (1986) stated that there is little freshwater inflow through the in-shore region of the archipelago, the area has in the past been susceptible to catastrophic floods during cyclones that greatly affected water turbidity. Combined with a large tidal range (mean range 5.6 m), high sedimentation and planktonic blooms (Semeniuk *et al.*, 1986), the in-shore waters are usually far more turbid than the waters surrounding the more off-shore islands. This has resulted in a considerable differentiation in the fish fauna between the two areas. Of the 113 species recorded from mangrove areas (Blaber *et al.*, 1986), few were recorded during the current investigation, e.g. mugilids and ariids. Of those that were recorded, many were free-swimming species such as carangids and sphyraenids that also visit the main channels fronting mangrove areas. There is little doubt that a distinctive fish fauna inhabits the archipelago's mangrove areas and any future analysis will probably show that it should be considered a distinct assemblage.

Effect of the Leeuwin Current

Hutchins (1994, 1999, 2001) referred to the difference between the fish faunas of the Dampier Archipelago and Ningaloo Reef. He attributed this difference to both water quality and ocean current discrepancies. The Dampier Archipelago is influenced by freshwater run-off and a large tidal range and the resulting turbidity can vary from high to moderately low. Ningaloo Reef experiences a generally low freshwater discharge and a small tidal range and, therefore, has a far lower turbidity. Furthermore, the Leeuwin Current is thought to flow adjacent to the edge of the continental shelf (Pearce *et al.*, 1997), originating in the Timor Sea area and following the Western Australian coastline southwards. It provides a means to transport larval fishes from breeding populations at the offshore Rowley Shoals to mainland Australia (Hutchins, 2001). However, the continental shelf is wide in the region of Dampier and very narrow off Ningaloo Reef. Thus, recruitment of atoll species *via* the Leeuwin Current would be more successful at Ningaloo than at the Dampier Archipelago. This is evident in that many coral reef fishes and in fact whole families which are present at Ningaloo Reef are missing from the Dampier Archipelago.

Allen (2000) and Hutchins (2001) refer to the similarities in the fish faunas between the Dampier Archipelago and the more off-shore Monte Bello Islands. Both attribute this to the higher turbidity and less oceanic conditions at these locations when compared with Ningaloo Reef. Hutchins (2001) furthermore showed that the islands off the West Pilbara coast to the south of Barrow Island (often referred to as the Mackerel Islands) also experience

less turbidity than the two more northern areas. The outer islands such as Rosily Cay, Bessieres Island, Serrurier Island, Flat Island and the Muiron Islands lie adjacent to the shelf edge and support fish faunas more similar to Ningaloo Reef than the Dampier Archipelago and Monte Bello Islands (visual survey totals of 130–150 species/dive were made at the former islands and 100 or less at the latter).

The Leeuwin Current may also transport the propagules of Kimberley fishes south to the Dampier area. Several species recorded here for the first time are typical Kimberley inhabitants, e.g. the pomacentrid *Amblyglyphidodon batunae*, the blenny *Cirripectes alleni* and an undescribed goby *Gnatholepis* species. In addition, the pomacentrid *Pomacentrus littoralis* was recently reported for the first time at the Monte Bello Islands (Allen, 2001). None of these species is in prominent numbers so each is probably relying on the current to maintain its presence in the region.

The present investigation has shown that the areas of the Dampier Archipelago furthest away from the mainland coast have the highest fish diversity. Habitat complexity is greatest at these locations, water turbidity is lowest and species that normally favour areas well off-shore like the Rowley Shoals are more likely to be encountered there. The fish assemblages at these locations also appear to fluctuate more in numbers than in-shore. Survey site DA1/15 at the northwestern end of Legendre Island had 109 species when surveyed visually in 1998, but this was increased to 179 during two subsequent visual surveys of the area in 2000. Pelagic species contribute to this variability, but sporadic recruitment of transient individuals of reef fishes would also play a part. Obviously, the higher diversity of these offshore areas makes them more attractive to visitors and, as such, should warrant a higher degree of protection through management and conservation measures. On the other hand, the turbid in-shore waters also support a distinctive fauna which, although much lower in diversity, adds significantly to the overall faunal makeup of the Dampier Archipelago. These areas must also be incorporated into any management plan for the archipelago.

ACKNOWLEDGEMENTS

I am grateful to the following specialists for help with identification of material: G.R. Allen (Apogonidae), R.H. Kuiter (Apogonidae, Syngnathidae), H. Larson (Gobiidae), P.R. Last (Dasyatidae) and J.E. Randall (Acanthuridae). Members of the Australian Institute of Marine Science provided helpful advice on the fishes of the area, particularly A. Heywood, A.R. Halford and M.G. Meekan. Help with curation of the material collected was provided by S.M. Morrison. Additional specimens were generously collected by M. Berrgren, P. Castro, S.M. Morrison, P.B. Berry, C.W. Bryce and M. Hewitt. Finally I would like to thank Woodside Energy for providing the opportunity to return to this study which commenced almost 30 years ago. The increase in knowledge of the fishes of the archipelago has taken a significant leap forwards.

REFERENCES

Allen, G.R. (2000). Fishes of the Montebello Islands. *In* Berry, P.F. and Wells, F.E. (eds), Survey of the marine fauna and habitats of the Montebello Islands, Western Australia. *Records of the Western Australian Museum,* Supplement **59**: 47–57.

Blaber, S.J.M., Young, J.W. and Dunning, M.C. (1986). Community structure and zoogeographic affinities of the coastal fishes of the Dampier region of north-western Australia. *Australian Journal of Marine and Freshwater Research* **36**: 247–266.

Hutchins, J.B. (1978). The report of a reef fish survey conducted in the Dampier Archipelago during August, 1978. *In*: Hutchins, J.B., Slack-Smith, S.M. & Marsh, L.M. (eds) *Report on the Marine Fauna and Flora of the Dampier Archipelago*: 1–51. Western Australian Museum, Perth. Unpublished reports submitted to Meagher & LeProvost, Consultant Biologists, December, 1978.

Hutchins, J.B. (1994). A survey of the near-shore reef fish fauna of Western Australia's west and south coasts – the Leeuwin Province. *Records of the Western Australian Museum,* Supplement **46**: 1–66.

Hutchins, J.B. (1996). Part 8. Fishes. *In* Hutchins, J.B., Slack Smith, S.M., Bryce, C.W., Morrison, S.M. and Hewitt, M.A. (eds), *Marine Biological Survey of the Muiron Islands and the eastern shore of Exmouth Gulf, Western Australia*: 112–135. Western Australian Museum, Perth. Unpublished report for the Ocean Rescue 2000 Program.

Hutchins, J.B. (1999). Biogeography of the near-shore marine fish fauna of the Kimberley, Western Australia. *In* Séret, B. and Sire, J.-Y. (eds), *Proceedings of the Fifth Indo-Pacific Fish Conference, Noumea, 1997*: 99–108. Society of French Ichthyology, Paris.

Hutchins, J.B. (2001). Biodiversity of shallow reef fish assemblages in Western Australia using a rapid censusing technique. *Records of the Western Australian Museum* **20**: 247–270.

Hutchins, J.B. (2003). Checklist of marine fishes of the Dampier Archipelago, Western Australia. *In* Wells, F.E., Walker, D.I. and Jones, D.S. (eds), *The marine flora and fauna of Dampier, Western Australia*: 453–478. Western Australian Museum, Perth.

Hutchins, J.B. and Allen, G.R. (1974). *Provisional checklist of the fishes of the Dampier Archipelago*: 1–10. Western Australian Museum (unpublished list).

Pearce, A.F., Caputi, N. and Way, A. (1997). Not another El Nino?! *Western Fisheries,* **Summer 1997**: 36–37.

Sainsbury, K.J., Kailola, P.J. and Leyland, G.G. (1985). *Continental shelf fishes of northern and north-western*

Australia. An illustrated guide. CSIRO, Australia. John Wiley and Sons, London. 375 pp.

Semeniuk, V., Chalmer, P. N. and Le Provost, I. (1982). The marine environments of the Dampier Archipelago. *Journal of the Royal Society of Western Australia* **65**: 97–114.

Williams, D. McB. (1982). Patterns in the distribution of fish communities across the central Great Barrier Reef. *Coral Reefs* **1**: 35–43.

Wilson, B.R. (ed) (1994). *A Representative Marine Reserve System for Western Australia.* Report of the Marine Parks and Reserves Selection Working Group. Department of Conservation and Land Management, Perth. 222 pp.

Wilson, B.R. and Marsh, L.M. (1975). Seasonal behaviour of a 'normal' population of *Acanthaster* in Western Australia. *In, Crown-of-Thorns Starfish Seminar Proceedings,* Brisbane, 6 September 1974: 167–179. Australian Government Publishing Service, Canberra.

Table 1 Sampling sites for the Dampier Archipelago fish survey of 1998–2000 (see Figures 1, 3 and 5). Abbreviation: rot. = rotenone collection

Site	Location	Lat. and Long.	Method	Depth (m)	Habitat	Date
DA1/98/01	Dolphin Island	20°25.852'S, 116°52.953'E	Dive	3.0–6.5	Shallow coral reef, fronted by limestone pavement with thin veneer of silty sand; brown algae present, cover increasing shorewards.	17.10.98
DA1/98/02	Dolphin Island	20°28.090'S, 116°51.910'E	Shore (rot.)	Intertidal	Large mudflat fronting mangroves, with igneous boulders along foreshore of headland; oyster zone on rocks.	17.10.98
DA1/98/03	Legendre Island	20°24.320'S, 116°56.108'E	Dive	2.0–15.0	Spur and groove reef front, dissected reef flat behind; moderately diverse coral fauna on top of and in front of spurs; limestone bottom at 15 m mostly bare with few invertebrates, gently sloping seawards.	18.10.98
DA1/98/04	Legendre Island	20°24.320'S, 116°56.108'E	Dive	12.0–18.0	Limestone bottom sloping seawards with scattered corals; more sandy at 18 m with numerous algae on emergent limestone rocks, some sea whips.	18.10.98
DA1/98/06	Haüy Island	20°25.725'S, 116°57.580'E	Snorkel	0.5–2.0	Flat limestone pavement criss-crossed by shallow channels and occasional depressions; some stunted corals and algae; oyster zone on vertical limestone shore-line, forming stacks at southern end.	19.10.98
DA1/98/07	Gidley Island	20°28.010'S, 116°47.720'E	Shore (rot.); snorkel	Intertidal; 1.0–2.0	Low headlands of igneous boulders separated by sandy beaches; pools with algae and stunted corals; subtidal coral reef.	19.10.98
DA1/98/08	Angel Island	20°29.180'S, 116°47.711'E	Dive	2.0–8.0	Spur and groove reef slope, tops of spurs with corals; igneous boulders shorewards; limestone pavement and sand in deeper areas.	20.10.98
DA1/98/09	Angel Island	20°28.692'S, 116°47.950'E	Dive	2.0–3.0	Fragmented limestone pavement surrounded by sand; rocks colonised with brown algae, including *Sargassum*; few sponges, but numerous holothurians.	20.10.98
DA1/98/10	Angel Island	20°28.410'S, 116°48.480'E	Snorkel	0.0–2.0	Narrow passage between islands with extensive sand spit to south; stunted corals and algae on bottom; hard and soft corals better developed in shallows behind mouth; side of passage with limestone pavement and fringing mangroves.	20.10.98
DA1/98/11	Dolphin Island	20°30.249'S, 116°49.335'E	Shore (rot.)	Intertidal	Reef flat lined with igneous boulders fronting mangal; stunted corals, sponges and ascidians; flowing creek exiting mangroves, with several pools in muddy bottom.	21.10.98
DA1/98/12	Angel Island	20°30.200'S, 116°47.250'E	Dive	2.0–7.0	Limestone reef with corals, extending well into shallow bay; no spur and groove system; some large areas of dead coral.	21.10.98
DA1/98/13	Hamersley Shoal	20°23.203'S, 116°46.691'E	Dive	1.0–16.0	Limestone reef with low spur and groove system, sloping gently into deeper water; reef crest with dense concentrations of corals, but becoming sparser with increasing depth.	21.10.98
DA1/98/14	Unnamed Island	20°26.581'S, 116°48.790'E	Shore (rot.)	Intertidal	Passage between Gidley Island and southern end of unnamed island; large pool separating islands with extensive sand bar at southern end; foreshore of unnamed island a combination of limestone pavement and eroded vertical walls with igneous boulders; small rock pools near southwest point; fringing mangroves on eastern side of island.	22.10.98

DA1/98/15	Legendre Island	20°21.142'S, 116°50.579'E	Dive	5.0–29.0	Massive limestone reefs with vertical drop-offs, tops covered mostly with soft corals and some hard corals; numerous ledges and caves; bottom at 29 m mostly barren and silty; nearshore rocky channels with smooth sides and bottoms, latter often with large elliptical to circular depressions.	22.10.98
DA1/98/16	Hamersley Shoal	20°23.240'S, 116°47.080'E	Dive	2.0–4.0	Coral rubble, with scattered live coral and algae; algae more concentrated towards reef crest to the west.	22.10.98
DA1/98/17	Wilcox Island	20°27.090'S, 116°50.438'E	Shore (rot.)	Intertidal	Channel between Wilcox Island and Tozer Island; sides of island with igneous boulders; bottom limestone pavement with patches of silty sand; numerous colonies of the coral *Lobophyllia hemprichii* on north side of island.	23.10.98
DA1/98/18	Haüy Island	20°26.400'S, 116°58.634'E	Dive	3.0–10.0	Limestone reef, sloping gently seawards; no obvious spur and groove system but shallow surge channels near shoreline. Area of diverse corals at 5 m, becoming more scattered with sandy interspaces as depth increased; numerous *Porites* bommies.	23.10.98
DA1/98/19	Haüy Island	20°26.620'S, 116°58.390'E	Dive	1.5–2.5	Bay with sandy beach; algae prominent near shoreline, but changing to mixture of tabulate and staghorn *Acropora* corals in centre of bay; numerous sandy interspaces.	23.10.98
DA1/98/20	Collier Rocks	20°24.812'S, 116°50.678'E	Shore (rot.)	Intertidal	Foreshore of second island; wide reef flat covered with close-packed corals, mostly *Fungia* near seaward side, and various taxa inshore, including *Porites*, *Acropora*, and *Pavona*; shoreline with silt-covered igneous boulders, and a sandy beach behind.	24.10.98
DA1/98/21	Delambre Island	20°25.700'S, 117°04.220'E	Dive	2.0–19.0	Massive limestone reefs, with prominent spurs and deep narrow channels; tops of spurs covered with *Acropora*, mostly tabulate; coral rubble and boulders in channels; to seaward of spurs some large *Porites* bommies and large colonies of soft corals; bottom near shoreline smooth rock, with prominent oyster zone; large smooth-walled caves under headland.	24.10.98
DA1/98/22	Delambre Island	20°25.915'S, 117°03.655'E	Dive	2.0–4.0	Dominated by tabulate and staghorn *Acropora*; numerous large *Porites* bommies; many areas of coral rubble and some sandy interspaces.	24.10.98
DA1/98/23	Dolphin Island	20°29.100'S, 116°52.220'E	Shore (rot.)	Intertidal	Silty intertidal flat, with scattered live and dead corals; rocks covered with filamentous brown algae; edge of bay to north with extensive colonies of live coral.	25.10.98
DA1/98/24	Dolphin Island	20°28.870'S, 116°52.380'E	Dive	2.0–7.0	Extensive coral cover, colonies closely packed in many areas, most covered with fine silt; some large *Porites* bommies; bottom gently sloping seawards, reef replaced by limestone pavement covered with silty sand in deeper areas.	25.10.98
DA1/98/25	Keast Island	20°23.975'S, 116°49.520'E	Shore (rot.)	Intertidal	Flat coral rubble zone adjacent to sand spit, abruptly changing to extensive area of live corals, mainly low tabulate *Acropora*; rocks with brown algae on edge of channel.	26.10.98
DA1/98/26	Madeleine Shoals	20°19.343'S, 116°50.455'E	Dive	15.0–30.0	Massive igneous monolith, sloping steeply on all sides; shallower areas with some hard coral, but mostly soft corals and gorgonians; in deeper areas, bottom siltier with many sea whips.	26.10.98

Table 1 (cont.)

Site	Location	Lat. and Long.	Method	Depth (m)	Habitat	Date
DA1/98/27	Legendre Island	20°24.044'S, 116°55.042'E	Snorkel	1.0–8.0	Extensive dissected reef flat, with many channels and deep pools, latter with good coral cover; several small areas of seagrass on sandy bottom; offshore from edge of reef flat, bottom consisting of gently sloping limestone pavement covered with silty sand, supporting numerous gorgonians, sponges, and a few scattered hard corals.	26.10.98
DA1/98/28	Dolphin Island	20°25.771'S, 116°52.680'E	Shore (rot.); snorkel	Intertidal; 1.0–2.0	Shoreline ranging from sandy beach over limestone platform to igneous boulders, with thin mangrove fringe; nearshore bottom silty sand with small scattered sponges, corals, and algae, number and size of latter two increasing further offshore.	27.10.98
DA1/98/29	Legendre Island	20°24.566'S, 116°53.714'E	Dive	2.0–7.0	Extensive coral cover, some parts dead, mainly staghorn *Acropora* and *Pavona*, but also numerous massives; sandy interspaces.	27.10.98
DA1/98/30	Burrup Peninsula	20°31.586'S, 116°51.088'E	Dive	1.0–10.0	Flat silty bottom with widely scattered soft corals and sponges; very large igneous boulders on shoreline (fallen from cliff above), with sparse cover of hard and soft corals; an oyster zone in intertidal region.	27.10.98
DA1/98/31	Searipple Passage	20°31.230'S, 116°51.182'E	Shore (rot.)	Intertidal	Island surrounded by reef and silt flats, dominated by algae, with some small sponges and corals; extensive mangrove area to the west; foreshore with igneous boulders covered with oysters.	28.10.98
DA1/98/32	Legendre Island	20°23.520'S, 116°54.110'E	Dive	5.0–17.0	Limestone reef with prominent spur and groove system, and large bommies seawards; tops of spurs with small *Acropora* heads; deeper bommies with soft corals and gorgonians; bottom in deeper areas sandy, very granular, with sea whips on emergent limestone pavement.	28.10.98
DA1/98/33	Angel Island	20°27.965'S, 116°49.692'E	Dive	1.0–8.0	Bottom of channel silty with numerous soft corals, gorgonians, sea whips and sponges; side of channel consists of a limestone slope with numerous corals rising to flat rocky pavement covered with reddish brown algae; closer to shore, another area of diverse corals forming a deep coral pool.	29.10.98
DA1/98/35	Legendre Island	20°23.620'S, 116°51.960'E	Snorkel	0.0–1.0	Flat silty area of shallow corals, mostly live rounded heads of brain corals (flattened on top), but also some *Porites* coral; algae growing on dead corals; many sandy interspaces, often occupied by coral rubble.	29.10.98
DA3/99/36	Malus Islands	20°30.050'S, 116°40.594'E	Dive	6.0–14.0	Branching and tabular *Acropora* and *Turbinaria* corals with occasional *Porites* colonies on low limestone ridges interspersed with fine sandy bottom.	27.08.99
DA3/99/37	Malus Islands	20°30.632'S, 116°38.788'E	Dive	2.0–3.5	Flat sand/coral-rubble bottom covered with brown macroalgae, predominantly *Sargassum*. Scattered small coral heads and occasional large colonies of *Turbinaria*.	27.08.99
DA3/99/38	Malus Islands	20°30.632'S, 116°38.788'E	Shore (rot.)	Intertidal	Extensive intertidal flat composed of course sand with scattered coral rubble and slabs. Becoming progressively more rocky (limestone boulders) towards shoreline. Algal turf-covered platform reef with channels and pools to west.	27.08.99

DA3/99/39	Brigadier Island	20°25.411'S, 116°37.578'E	Dive	15.0–27.0	Rock spur projecting across 30 m depth contour. Comprised of high, smooth, angular igneous boulders with very few encrusting organisms. Few hard corals, encrusting scattered soft corals and abundant stinging hydroids. Fish abundant mid-water but diversity low.	28.08.99
DA3/99/40	Brigadier Island	20°26.657'S, 116°36.507'E	Dive	6.0–14.0	Limestone reef dissected by deep gullies with sandy floors. Flat reef top predominantly covered by large soft coral colonies interspersed with hard corals. *Turbinaria* and other hard corals dominant on walls of gullies.	28.08.99
DA3/99/41	Georgeff Reefs	20°29.339'S, 116°36.798'E	Snorkel	1.0–4.0	Gently sloping bottom of coarse coralline sand with occasional limestone slabs and dead coral supporting small live coral colonies. Inshore reefs consist of large *Porites* bommies and *Acropora* heads.	28–29.08.99
DA3/99/42	Georgeff Reef	20°29.339'S, 116°36.798'E	Dive (spear)	3.0–6.0	Extension of station 41; sandy bottom with scattered limestone slabs with invertebrates attached.	28.08.99
DA3/99/43	Sailfish Reef	20°27.757'S, 116°34.193'E	Dive	10.0–16.0	Gently sloping limestone pavement with occasional scattered boulders and small colonies of *Porites* and robust tabular corals; occasional scattered soft corals; at 13 m, area of shallow to moderate gutters with larger coral bommies and many fish; subject to very high wave/current energy.	29.08.99
DA3/99/44	Rosemary Island	20°29.629'S, 116°34.425'E	Dive	2.5–6.0	Dominated by large *Porites* bommies with extensive caves and undercuts and interspersed with sand and rubble. Tabular and plate *Acropora* progressively more abundant inshore.	29.08.99
DA3/99/45	Rosemary Island	20°29.671'S, 116°35.894'E	Shore (rot.)	Intertidal	Mainly flat, loose, igneous rocks overlaying calcareous sand. Rocks covered by brown macroalgae. *Syringodium* and *Halophila* in some pools.	30.08.99
DA3/99/46	Kendrew Island	20°29.671'S, 116°35.894'E	Dive	3.0–11.0	Spur and groove in limestone reef, grading into series of deep parallel gullies. Mainly robust branching *Acropora, Pocillopora* and encrusting corals; occasional scattered soft corals; areas of cyclone damage.	30.08.99
DA3/99/47	Kendrew Island	20°28.936'S, 116°32.519'E	Dive	4.0–5.0	Macroalgae (mainly browns but also *Caulerpa* spp) on limestone pavement with a thin veneer of coral sand. Some sand-filled depressions. Scattered coral colonies, *Turbinaria, Pocillopora* and robust *Acropora* predominant.	30.08.99
DA3/99/48	Goodwyn Island	20°32.000'S, 116°32.420'E	Shore (rot.)	Intertidal	Gently sloping limestone pavement with scattered loose limestone slabs and occasional water-retaining depressions with numerous *Tridacna maxima*. Covering of short algal turf (mainly *Bornitella* spp) and *Caulerpa* spp. Large depressions 30 cm deep adjacent to beach with remnants of large 'relict' *Porites* colonies – alive at margins, tops dead and planed flat.	31.08.99
DA3/99/49	Goodwyn Island	20°32.397'S, 116°32.606'E	Dive	3.0–9.0	Sheltered reef with *Porites* bommies interspersed with extensive and diverse coral cover, mainly staghorn and digitate *Acropora* spp and foliaceous corals; some sandy interspaces and adjacent to silty channel at 9 m. Evidence of past storm damage.	31.08.99

Table 1 (cont.)

Site	Location	Lat. and Long.	Method	Depth (m)	Habitat	Date
DA3/99/50	Bare Rock	20°32.841'S, 116°26.733'E	Dive	10.0–20.0	Steeply sloping bottom from 15–20 m with scattered branching and encrusting corals on silty dissected limestone reef. At 20 m, sandy bottom gently sloping out to sea. Between 10 and 15 m, bottom dominated by small termitarium-like *Porites* colonies with some very large colonies closer to shore undercut with crevices and caves.	31.08.99
DA3/99/51	Enderby Island	20°35.196'S, 116°30.914'E	Shore (rot.)	Intertidal	Extensive, very bare, silty sand flats in front of mangroves (*Avicennia*). West side of bay has algae-encrusted limestone boulders along shore. Area of limestone platform with numerous pools, bottoms covered with algae and flat rocks.	01.09.99
DA3/99/52	Roly Rock	20°29.696'S, 116°30.166'E	Dive	09.0–26.0	Rocky bottom rising steeply from 25–15 m, then gradually towards shore. Steep slope with abundant soft corals and gorgonians; mainly scattered tabular and encrusting hard corals on gradual slope. Fronted by gently sloping sandy bottom with some gorgonian-covered emergent rocks.	01.09.99
DA3/99/53	Enderby Island	20°34.528'S, 116°34.575'E	Dive	3.0–7.0	Moderately protected situation at entrance to bay. Gently sloping silty/rubble bottom with large *Porites* bommies with caves and crevices. Good diversity of *Acropora* spp and other encrusting and foliaceous hard corals. Many *Diadema*. Area of macroalgae inshore.	01.09.99
DA3/99/54	Enderby Island	20°36.222'S, 116°33.063'E	Shore (rot.)	Intertidal	Enclosed bay with extensive tidal mud flat flanked by (igneous) rocky shore backed by mangroves. Flat largely devoid of any rocks/slabs to shelter animals, although some shallow holes present in NW portion close to shore; only whelks and holothurians conspicuous.	02.09.99
DA3/99/55	Enderby Island	20°35.152'S, 116°35.631'E	Dive	17.0	Flat sandy/silty bottom of channel between islands, subject to strong currents. High diversity and abundance of sponges with scattered nephtheids and gorgonians. Feather stars conspicuous in elevated situations. Few fishes, but numerous burrows of jawfish (*Opistognathus*) in bottom.	02.09.99
DA3/99/56	Eaglehawk Island	20°38.985'S, 116°26.210'E	Dive	2.0–11.0	Gently sloping course sand bottom, interspersed with limestone pavement with abundant and diverse sponges and sparse, scattered soft and hard corals. Sand with fair degree of bioturbation; bivalves, holothurians and gobies abundant. Coral growth most obvious at 7 m and shallower, mostly stunted *Acropora*.	03.09.99
DA3/99/57	North West Reefs	20°37.702'S, 116°25.089'E	Dive	11.0–13.0	Igneous outcrops with deep jointing and smooth, angular surfaces. Most animals in crevices. A few scattered colonies of encrusting hard corals and occasional soft corals. Coarse mobile sandy bottom between outcrops.	03.09.99
DA3/99/58	Enderby Island	20°34.398'S, 116°33.443'E	Dive	2.5–4.0	Protected bay situation with sand/rubble bottom sloping gently towards rich and diverse coral reef, reaching best development (100% cover) in 2.5 m (at low tide).	03.09.99

DA3/99/59	West Lewis Island	20°33.947'S, 116°38.334'E	Shore (rot.)	Intertidal	Bay bordered by narrow band of mangroves (predominantly *Avicennia*). Substrate at head of bay comprised of small, angular, igneous rubble embedded in silty sand, becoming sandier with scattered rocks towards the entrance of the bay. Numerous shallow pools with little invertebrate or plant life.	04.09.99
DA3/99/60	West Lewis Island	20°32.878'S, 116°39.518'E	Dive	1.5–7.0	Rich and diverse coral reef spanning mouth of large bay with a shallow sandy lagoon between it and shore. Dominated by *Pavona*, but with faviids and fungiids conspicuous; branching *Acropora* predominating towards lagoon. Lagoon with large areas of recently dead staghorn coral.	04.09.99
DA3/99/61	West Lewis Island	20°34.693'S, 116°39.698'E	Dive	3.0–5.0	Flat, sand/rubble bottom with dense covering of brown macroalgae. Small colonies of massive and encrusting corals, and also sponges growing on scattered coral slabs. One large area of interconnected *Porites* colonies, forming tunnels and caves.	04.09.99
DA3/99/62	East Lewis Island	20°37.499'S, 116°39.182'E	Shore (rot.)	Intertidal	Bay fringed by mangroves (4 spp) with rocky (igneous) foreshore. Extensive sandy/muddy flat, consolidated by *Halophila.*	05.09.99
DA3/99/63	East Lewis Island	20°37.469'S, 116°38.246'E	Dive	0.0–5.0	Fringing reef in bay rising steeply from silty bottom and dominated by massive corals, including some very large *Porites* colonies; encrusting corals and fungiids conspicuous. Inshore, algal covered igneous rocks.	05.09.99
DA3/99/64	West Lewis Island	20°36.658'S, 116°36.956'E	Dive	2.0–5.0	Outside bay containing extensive mangroves. Flat, sandy bottom with scattered, but diverse hard corals (branching, foliose, encrusting and massive) as well as sparse soft corals and sponges. Inshore, more algal covered rocks and little coral.	06.09.99
DA3/99/65	Enderby Island	20°37.111'S, 116°26.780'E	Dive	13.0–15.0	Gently sloping limestone pavement, with only a thin veneer of sand and accumulations of sand in depressions. Dominated by sponges, including very large, fan-like species, gorgonians (particularly whips) and scattered hard and soft corals.	06.09.99
DA3/99/66	Enderby Island	20°36.700'S, 116°31.293'E	Shore (rot.)	Intertidal	This narrow mangrove-lined creek (4 spp) cuts through limestone for several hundred metres and probably once completely dissected Enderby Island in a north/south direction. There are extensive middens of *Terebralia* shells along its west side. The bottom is mainly mud and rubble, supporting a depauperate benthic reef flat fauna with small coral colonies e.g. *Galaxia* and molluscs e.g. *Tridacna maxima*. Because of its depth there is movement of marine organisms (skates, sharks, turtles, etc.) in and out with the tides.	06.09.99
DA3/99/67	Nelson Rocks	20°26.511'S, 116°40.256'E	Dive	6.0–24.0	Gently sloping limestone pavement with undulations and ridges topped with *Acropora* and soft corals. Scattered large *Porites* bommies and small encrusting coral colonies.	07.09.99
DA3/99/68	Nelson Rocks	20°27.998'S, 116°39.707'E	Dive	6.5	Flat bottom of course sand with scattered rubble and chunks of dead coral providing attachment for brown macroalgae and occasional small coral colonies and sponges. *Caulerpa* growing on sand.	07.09.99

Table 1 (cont.)

Site	Location	Lat. and Long.	Method	Depth (m)	Habitat	Date
DA3/99/69	Pipe-line	20°24.484'S, 116°46.310'E	Dive	15.0–18.0	Pile of igneous rocks to 4 m high covering pipe-line, thus forming a linear artificial reef across a flat sandy bottom. Little benthic growth on reef, comprised mainly of encrusting coral colonies and small isolated colonies of *Turbinaria* and robust *Acropora*. Fish life conspicuously concentrated on side of the reef exposed to the current; some very large schools of lutjanids and pomacentrids.	08.09.99
DA3/99/70	Nelson Rocks	20°27.441'S, 116°39.588'E	Dive	5.0–7.0	Limestone pavement with veneer of sand covered by brown macroalgae (mainly *Dictyopteris*), but also *Caulerpa* spp. Scattered hard and soft coral colonies.	08.09.99
DA4/00/01	Angel Island	20°29.050'S, 116°47.830'E	Dive (rot.)	2.0–7.0	Spur and groove reef system with sandy interspaces; sponge and soft corals evident.	25.07.00
DA4/00/04	West Lewis Island	20°36.167'S, 116°35.741'S	Dive (rot.)	5.0–6.0	Porites bommies near shoreline, surrounded by sand.	26.07.00
DA4/00/08	West Lewis Island	20°36.310'S, 116°35.696'E	Dive	1.0–10.0	Sandy rubble bottom with feathery type hydroids; nearshore corals.	27.07.00
DA4/00/09	Between Enderby and W. Lewis Islands	20°35.115'S, 116°35.629'E	Dive (spear)	16.0–17.0	Sponge garden on silty bottom.	28.07.00
DA4/00/10	Enderby Island	20°35.385'S, 116°28.572'E	Dive	5.0–12.0	Rugged dissected limestone reef; some soft and hard corals, sandy in deeper areas.	28.07.00
DA4/00/12	Nelson Rocks	20°26.506'S, 116°40.261'E	Dive (rot.)	19.0–20.0	Limestone reef with ledges and crevices; some hard and soft corals.	29.07.00
DA4/00/13	Pipe-line	20°24.448'S, 116°46.298'E	Dive (rot.)	14.0–17.0	Pile of igneous rocks covering pipe-line (see DA3/69).	29.07.00
DA4/00/14	Legendre Island	20°21.206'S, 116°50.439'E	Dive (spear)	8.0–30.0	Massive limestone reefs with vertical drop-offs (see DA1/15).	30.07.00
DA4/00/15	Legendre Island	20°21.206'S, 116°50.439'E	Dive (spear)	4.0–18.0	Same location as DA4/14.	30.07.00
DA4/00/16	Legendre Island	20°24.025'S, 116°55.079'E	Dive (rot.)	10.0–16.0	Sloping limestone pavement with long sandy channels running inshore, fading into low reef covered with soft corals.	31.07.00
DA4/00/17	Conzinc Island	20°31.902'S, 116°46.486'E	Dive (spear)	6.0–11.0	Sandy bottom, sloping shorewards with areas of emergent limestone; numerous patches of sponge garden bottom.	31.07.00
DA4/00/21	Brigadier Island	20°26.657'S, 116°36.507'E	Dive (spear)	7.0–20.0	Limestone reef dissected by deep gullies (see DA3/40).	01.08.00
DA4/00/23	Roly Rock	20°29.880'S, 116°30.050'E	Dive	10.0	Coral reef with low spur and groove sections.	02.08.00
DA4/00/27	Enderby Island	20°37.096'S, 116°26.721'E	Dive	15.0	Sponge garden bottom (see DA3/65).	03.08.00
DA4/00/32	Angel Island	20°29.765'S, 116°47.480'E	Dive	5.0–8.0	Spur and groove reef system (see DA4/1).	04.08.00
DA4/00/33	Legendre Island	20°21.401'S, 116°49.779'E	Dive (rot.)	5.0–15.0	Flat limestone reef dropping steeply to 15 m; some moderate smooth-sided channels running shorewards; top of reef covered in areas with soft corals and some scattered encrusting hard corals.	04.08.00
DA4/00/37	Legendre Island	20°21.270'S, 116°50.557'E	Dive (rot.)	15.0–20.0	Massive limestone reefs with vertical drop-offs (same location as DA4/14).	06.08.00

DA4/00/38	Legendre Island	20°23.354'S, 116°53.802'E	Dive (spear)	8.0–15.0	Moderate limestone reef with long spurs extending seawards, interspaces sandy; some spurs with moderate cover of hard and soft corals. Sandy bottom seawards with concentrations of coral rubble, obviously affected by wave action.	06.08.00
DA4/00/39	Delambre Island	20°25.705'S, 116°05.109'E	Dive (rot.)	11.0–14.0	Low limestone reef with sandy interspaces, with patches of hard and soft corals; some shallow channels.	07.08.00
DA4/00/40	Delambre Island	20°25.936'S, 116°04.017'E	Dive (rot.)	5.0–6.0	Sandy bottom with lots of emergent limestone pavement; some large *Porites* bommies; large area of coral rubble inshore.	07.08.00
DA4/00/41	Enderby Island	20°37.301'S, 116°27.381'E	Dive (rot.)	10.0	Sponge gardens with some areas of low emergent reef (see DA3/65).	08.08.00
DA4/00/42	Enderby Island	20°36.349'S, 116°27.788'E	Snorkel	5.0–8 0	Moderately rugged limestone reef just off shoreline, prominent spur and groove; top of reef covered with hard and soft corals.	08.08.00
DA4/00/43	Enderby Island	20°35.119'S, 116°28.908'E	Dive (rot.)	5.0–13.0	Sandy bottom with scattered bommies inshore, becoming more rugged offshore (without spur and groove); large *Porites* bommies; coral cover in some areas poor, but more diverse along western edge.	09.08.00
DA4/00/44	Enderby Island	20°37.370'S, 116°32.623'E	Dive (rot.)	3.0–4.0	Sandy bottom with dense patches of coral, especially staghorns; corals covered with silt.	09.08.00

Table 2 Log_5 abundances for species recorded at visual survey sites in 1998 (see Figure 1 and Table 1 for site details).

Sites DA1-	1	3	4	6	7	8	9	10	12	13	15	16	18	19	21	22	24	26	27	29	30	32	33	35
Dasyatis kuhlii														1										
Pastinachus sephen									1															
Taeniura lymma		1						1																
Chiloscyllium punctatum																								
Hemiscyllium trispeculare																								
Carcharhinus amblyrhynchos																								
Carcharhinus melanopterus																								1
Triaenodon obesus											2													
Stegastoma fasciatum																								
Eucrossorhimus dasypogon											1													
Orectolobus wardi																								
Nebrius ferrugineus		1						1		1														
Gymnothorax flavimarginatus		1				1									1									
Siderea thrysoideus						1	1	3	1			1												
Spratelloides delicatulus				4																	3			
Synodus sageneus																								
Paraplotosus butleri			1						1	1	2													
Plotosus lineatus																								
Diademichthys lineatus		2	3								3		1				2					2	1	
Discotrema lineata																								
Hyporhamphus quoyi								1																
Myripristis kuntee											1		1											
Myripristis murdjan										1	2		2		2	3								
Myriprisis violacea		2								2	3											2		
Sargocentron rubrum	1	3				3			3	3	3			3		3					1	2	1	
Sargocentron spiniferum										1														
Fistularia commersonii																		1						
Corythoichthys amplexus																						2		
Hippocampus sp.																								
Dendrochirus zebra																								
Pterois antennata																				1				
Pterois volitans											1	1									1			
Onigocia pedimacula																								
Papilloculiceps nematophthalmus							2																	
Psammoperca waigiensis						1		1					2										3	
Cephalopholis boenak		2				2		2	2	2	2		2		2	2	2			2	1	2		
Cephalopholis cyanostigma	1	2				2				1	2		3		3	3	2					2		
Chromileptes altivelis								1	1											2				
Epinephelus bilobatus	2	1	1			1		3	4	2	1	3	2	2	1		1	2			2	2	1	
Epinephelus coioides																							1	1
Epinephelus corallicola										2	1				1							1	1	
Epinephelus fasciatus	1	4	3			4		3	2	4	3	3	3	2	3	3		1	2			3		
Epinephelus fuscoguttatus																1						1		
Epinephelus lanceolatus													2											
Epinephelus malabaricus						1		1																
Epinephelus multinotatus															3									
Epinephelus polyphekadion						1					3				1		1					1		
Epinephelus quoyanus				1			3	4	3			2												2
Epinephelus rivulatus	1			2								3		2										
Epinephelus tukula		1																						
Plectropomus leopardus											1													
Plectropomus maculatus	2	3	3			3		1	3	3	3	2	1	3	3	2	3	1	1	3	2	2	2	
Diploprion bifasciatum	2	1				1			1	2			2							2				
Labracinus lineatus								2	2			1	2	1								1		
Pseudochromis fuscus	3										1		1	3			2		2	1			2	2
Pseudochromis wilsoni		1				1			2				1			2	1						1	
Glaucosoma magnificum		3									3				2			2						
Heteropriacanthus cruentatus															2									
Apogon aureus											3											2		
Apogon cavitiensis			1															2						
Apogon cookii	4	3	2	3			2	2	2					3					3	1			1	

Sites DA1-	1	3	4	6	7	8	9	10	12	13	15	16	18	19	21	22	24	26	27	29	30	32	33	35
Apogon doederleini	4					3				2	2		2			1								
Apogon moluccensis																								
Apogon properupta										2	2											1		
Apogon rueppellii																								
Apogon taeniophorus																								
Archamia fucata										3					2									
Archamia melasma						2								3	2	1								
Cheilodipterus intermedius																								
Cheilodipterus macrodon		3												1		2						2		
Cheilodipterus quinquelineatus											1												1	
Quinca mirifica																								
Rhabdamia gracilis																								
Malacanthus brevirostris																						2		
Echeneis naucrates																								
Carangoides ferdau				3																				
Carangoides fulvoguttatus		1							1									4				2		
Carangoides gymnostethus																								
Caranx ignobilis				1											3									
Caranx melampygus		2																				1		
Caranx sem					2																			
Caranx sexfasciatus																								
Gnathanodon speciosus																			1		1			
Seriolina nigrofasciata				1																				
Trachinotus blochii				1																				
Lutjanus argentimaculatus															2									
Lutjanus bohar											1													
Lutjanus carponotatus	2	2	2		3	3		3	4	5	2		3	3	2	4	3		3	3	4	1	4	4
Lutjanus fulviflamma						2				2	5			2	1	3			3					2
Lutjanus lemniscatus		3	2			3			3	3	3		3	3	2	2	2		1	2		2		
Lutjanus lutjanus									4						5							4		
Lutjanus monostigma																2								
Lutjanus quinquelineatus		5									4		4		1						2	2		
Lutjanus russelli				2	2	2			1		4		3		3				2	2	3	3	2	3
Lutjanus sebae			2																					
Lutjanus vitta											3				1							4		
Symphorus nematophorus		1	2						2						1		1	2		1		2		
Caesio caerulaurea		3							3	4	2				3			2						
Caesio cuning	3	3	4		3	4			5	5	4	4	3	3	3	5	4	4		4	3	4	2	
Pterocaesio digramma	3	3	4							5	4		3	4	3	5	3	4		3		3		
Pentapodus emeryii														1										
Pentapodus porosus																								
Scaevius milii				2				2			1			2										3
Scolopsis bilineatus		2				1			2	2	3			2	1	3			2			3		
Scolopsis monogramma	1	2	3	2		2	2		2	2		2					1	2	2		2	1		
Gerres subfasciatus								3																
Diagramma labiosum	1		2			2																		
Plectorhinchus chaetodonoides											2						1							
Plectorhinchus flavomaculatus						1					2													
Plectorhinchus gibbosus											2				2						2		1	
Plectorhinchus multivittatus		1				2			1		2		2		3	2			2		2		3	
Plectorhinchus polytaenia									1	2	2		2			1		1				1		
Plectorhinchus unicolor		1	1	1		1			2		2		2	2	1	1	2		2	2	1	3	2	
Lethrinus atkinsoni										1	2					2						1		
Lethrinus laticaudis								1	2					3			2							1
Lethrinus lentjan								1																
Lethrinus nebulosus																		1	3					
Lethrinus olivaceus																		2						
Lethrinus sp. 1																								
Lethrinus sp. 2								2											2		3			
Mulloidichthys flavolineatus																								
Mulloidichthys vanicolensis											2													
Parupeneus barberinoides																								

Table 2 (cont.)

Sites DA1-	1	3	4	6	7	8	9	10	12	13	15	16	18	19	21	22	24	26	27	29	30	32	33	35
Parupeneus heptacanthus																								
Parupeneus indicus	3		3	3	3	2	2	2	2	1		2		2		2	2	1	3			1		
Parupeneus multifasciatus											1													
Parupeneus spilurus																								
Upeneus tragula																								
Pempheris ypsilychnus		3				2				3					2	2						3		
Pempheris schwenkii		3								3	3					4								
Pempheris sp.											4		3			2								
Kyphosus bigibbus		3		2		3													1					
Kyphosus vaigiensis																								
Platax batavianus						3												2			1	1		
Platax orbicularis				2									1											
Platax pinnatus						1																		
Platax teira															1									
Chaetodon adiergastos																								
Chaetodon aureofasciatus	3	3			2	3		3	5	4	3	1	3	4	3	5	4	1	3	4	1	4	4	3
Chaetodon auriga									2		1			2					2					
Chaetodon ephippium																								
Chaetodon lineolatus		3							1	1	2			1		1	2			2		2	1	2
Chaetodon lunula		2				1				2	1		2	2		2			1			1		
Chaetodon lunulatus										2				2										
Chaetodon melannotus																								
Chaetodon meyeri																								
Chaetodon plebeius											2													
Chaetodon speculum																								
Chaetodon trifascialis										2			1	2		3								
Chelmon marginalis	2	3			2	2		3	1	3	2		2		2	2	2	2	1	1	3	2	3	2
Coradion chrysozonus																		1						
Heniochus acuminatus		1							3		2		2		2		2				1		2	
Heniochus singularius		2											1									1		
Parachaetodon ocellatus																								2
Chaetodontoplus duboulayi		3	2							2	2		2		1		1	2		2	3			
Chaetodontoplus personifer		2									2							2						
Pomacanthus semicirculatus		2				1			1	1	2				1	1						2		
Pomacanthus sexstriatus	2	2				2			2	2	2		2		2	2	3			2	2	1		
Abudefduf bengalensis	4	3	3	4	5	5	1	3	4	3	4	5	4	4	3	2	3		3	3	4	4	4	4
Abudefduf sexfasciatus		5		2	2	2			4	5	4		4	4	3	5			4	1		5		
Abudefduf sordidus				3		2									3				3					
Abudefduf vaigiensis										6	4				2							1		
Amblyglyphidodon batunae																				4			3	
Amphiprion clarkii								2													1			
Amphiprion perideraion		2																						
Amphiprion rubrocinctus	2							2						3						3	2		2	
Cheiloprion labiatus									3					3		2								
Chromis atripectoralis									4					4		3								
Chromis cinerascens		6				4				3	4		3		4	2		3				4		
Chromis fumea			4	3						4	2	4	2					4		1		3		
Chromis margaritifer		1									2													
Chromis viridis														4										
Chromis weberi																								
Dascyllus reticulatus																						2		
Dascyllus trimaculatus											3			1										
Dischistodus darwiniensis																							4	5
Dischistodus prosopotaenia																				2				
Neoglyphidodon melas		2							3				1	3	3	2	2		1	2		2	2	
Neoglyphidodon nigroris						2							2	2						1			1	
Neopomacentrus azysron		7				7			4	7	5		5	2	6	7	3			3		5		
Neopomacentrus cyanomos		6	3			5				4	6		4		5	5		5				5		
Neopomacentrus filamentosus	6	5	2			5	1	3	6			2	5	4	4	3	5			6	4		5	
Plectroglyphidodon dickii																2						1		
Plectroglyphidodon leucozonus											2													

Sites DA1-	1	3	4	6	7	8	9	10	12	13	15	16	18	19	21	22	24	26	27	29	30	32	33	35
Pomacentrus coelestis		3								4	3	3	3	3		2		2				3		
Pomacentrus milleri	5	4			4	6		3	6	5	2	4	5	5	2	5	4		4	5	4	3	5	
Pomacentrus moluccensis		1							2				3	4	4	3				2				
Pomacentrus nagasakiensis		5	4			3			2	4	4		3			3				3		4		
Pomacentrus nigromanus						2				2										1		3	2	
Stegastes fasciolatus																								
Stegastes obreptus	1	3			3	5			3	4	2	4	4	4	3	4			3			4		
Sphyraena barracuda																								
Sphyraena jello																		1				2		
Sphyraena obtusata																								
Anampses caeruleopunctatus				2					3	2	2	1	2					1				1		
Anampses geographicus										2														
Anampses lennardi					2	2			2			2			2	2		2				2		
Bodianus axillaris																						2		
Bodianus bilunulatus																								
Bodianus diana			1																					
Cheilinus chlorurus	1	3	2					2	1	2	1	2	2		2	3	2	1			1	1		
Cheilinus trilobatus	1																							
Cheilio inermis																								1
Choerodon cauteroma	2		3				3	3	3	2	1	3		1		2					1	2	1	
Choerodon cyanodus	3	3	4	3	4	3	3	5	4	4	2	4	3	4	1	3	3		2	1	3	3	3	4
Choerodon schoenleinii		2	1					2			2	2	1	2		2	3			2			2	
Choerodon vitta	1																							
Coris aygula														1										
Coris caudimacula	2																							
Coris gaimard												1												
Coris pictoides			3										1					2					2	
Gomphosus varius						1				2	2		2		1	1						1		
Halichoeres marginatus		2				2				3	3	1	2	3	2		2	1	2	1	1	2	2	
Halichoeres melanochir	4	3	3		2	4		3	4	3	2	1	3	3	2	3	2		3	1		2	2	2
Halichoeres nebulosus				3	3	4	4	3	2	4	2	6	4	4	1	4			2			4		
Halichoeres nigrescens		4	3	3	4	5	4	4	5	4	2		2		1	1			1		1	1	4	3
Halichoeres scapularis			2																					
Halichoeres trimaculatus																			2					
Hemigymnus fasciatus													2		2	2								
Hemigymnus melapterus	1	1			2	2	2	2	3	3			2	2	3	4			1			1	3	2
Hologymnosus annulatus																								
Labroides bicolor											1				1									
Labroides dimidiatus	1	3	3	1		3			3	3	2	3	3	3	3	4	3	2	3	2	1	3		
Leptojulis cyanopleura			3							3		3	3					4				3		
Leptojulis sp.																								
Macropharyngodon ornatus										1														
Pseudocheilinus hexataenia													1											
Pseudojuloides elongatus																								
Pteragogus enneacanthus							2																	
Stethojulis bandanensis						1				1		1	1			2			2					
Stethojulis interrupta	5		3	5	3		4	4	3	2	3	4	3	5		2	2		3		3	2	3	
Thalassoma amblycephalum		2							1	1			3	1		2		2				3		
Thalassoma hardwicke						2				1	1	1	1			1			1					
Thalassoma lunare	4	7	3	3	3	6		3	5	5	5	4	5	4	5	5	4	2	5	4	2	6	2	
Thalassoma lutescens																								
Thalassoma purpureum						1				1	2				1							2		
Xyrichtys sp.																								
Chlorurus rhakoura		1								2	1			1	2	3								
Scarus chameleon																								
Scarus ghobban	2	2			4	4		4	3	3	3	2		2	3	2	2	2	3	1	2	2	1	3
Scarus rivulatus		4			4	4			3	4	4	3	3	3	4	3			4	2	2	3	2	
Scarus rubroviolaceus		1									2													
Scarus schlegeli																								
Scarus sordidus						1																		
Scarus sp.	3	3	3		1	4		2	5	4	3	5	2	2	4	2	2	2	3	3	2	3	3	2
Parapercis clathrata			3																					

Table 2 (cont.)

Sites DA1-	1	3	4	6	7	8	9	10	12	13	15	16	18	19	21	22	24	26	27	29	30	32	33	35
Parapercis xanthozona										2								2						
Parapercis sp.																							1	
Opistognathus darwiniensis								2																
Atrosalarius fuscus holomelas														2										1
Cirripectes alleni																								
Cirripectes filamentosus		4			3	4			4	5	2	3	4	4	4	4	2		4	2		4		
Cirripectes hutchinsi													3			3						2	2	
Ecsenius bicolor		4								4	3	3	3		1							3		
Ecsenius lineatus			4															3				2		
Ecsenius stictus	2	4	2			5		2	4	4		3	2	3	2	3	3			2		4	3	
Istiblennius edentulus				1																				
Istiblennius meleagris				2	2																			
Meiacanthus grammistes	2		1						1					1			1			1	2	1	2	1
Meiacanthus luteus																								
Petroscirtes mitratus																			1					
Plagiotremus rhinorhynchos																								
Plagiotremus tapeinosoma			1										1											
Salarias fasciatus												2							1					
Salarias spaldingi																								3
Helcogramma striata	2	5	3			4				3	2		3		2	4		3				3		
Callionymus enneactis								1																
Amblyeleotris gymnocephala			2																					
Amblyeleotris periophthalma			2																			1		
Amblygobius bynoensis									1															
Amblygobius phalaena									1															3
Asterropteryx semipunctatus									3														1	3
Bryaninops loki			3																					
Cryptocentrus cinctus									1															
Cryptocentrus strigilliceps									2															3
Ctenogobiops pomastictus																								
Gobiodon quinquestrigatus		1																						
Istigobius nigroocellatus							2							3		2			1					
Istigobius ornatus	2	1	2		2						2		3		1				1					
Istigobius perspicillatus																								3
Pleurosicya plicata																								
Valenciennea alleni			2										3							2	3			
Valenciennea muralis	2	2	2											2										3
Valenciennea puellaris			3										3					3				3		
Valenciennea strigata																						2		
Ptereleotris evides										2														
Ptereleotris hanae			3																					
Ptereleotris monoptera																						3		
Acanthurus dussumieri											3								3					
Acanthurus grammoptilus	3	4	3	2	4	4	1	3	4	4	3	2	3	3	3	2	3	3	3	4	3	3	3	2
Acanthurus lineatus											2													
Acanthurus mata																		1						
Acanthurus nigricans						1					2		1											
Acanthurus triostegus						1				2	2				3				3					
Ctenochaetus striatus		1				1				2			1		1									
Naso annulatus														2										
Nasi lituratus																								
Naso unicornis		3			1	1				3	4		2	2	2	3			2	3		3		
Zanclus cornutus		2											1		2	2								
Siganus fuscescens			2	1		2		4	3	3						2		2				2		
Siganus doliatus	3	3				2		2	2	2	2	2		3			1		2	3		3	2	
Siganus lineatus						2		3			2		2		2				4				3	
Siganus punctatus		3								2	2				2	2				1		2		
Siganus trispilos																								
Euthynnus affinis		3																						
Grammatorcynus bicarinatus				1																				
Rastrelliger kanagurta			1																					

Sites DA1-	1	3	4	6	7	8	9	10	12	13	15	16	18	19	21	22	24	26	27	29	30	32	33	35
Scomberomorus commerson		1																1						
Scomberomorus queenslandicus																								
Abalistes stellaris																								
Balistoides viridescens																2								
Sufflamen chrysopterus											2							1						
Sufflamen fraenatus																		2						
Cantherhines pardalis										1	2					1								
Eubalichthys caeruleoguttatus																								
Monacanthus chinensis								2																
Oxymonacanthus longirostris														1										
Pervagor janthinosoma											1													
Ostracion cubicus			1	1					1	1			1		1	1						1		
Ostracion nasus																					1			
Arothron hispidus																								
Arothron reticularis																								
Arothron stellatus									1													1		
Diodon liturosus																								
Diodon hystrix						1	1																	
Torquigener pallimaculatus																								
Tragulichthys jaculiferus												1												
TOTALS	44	87	54	32	28	77	18	48	76	89	109	44	86	71	82	84	44	48	53	50	41	98	51	31

Table 3 Log_5 abundances for species recorded at visual survey sites in 1999 (see Figure 1 and Table 1 for site details).

Sites DA3-	36	37	39	40	41	42	43	44	46	47	49	50	52	53	55	56	57	58	60	61	63	64	65	67	68	69	70
Dasyatis kuhlii																						1		1			
Pastinachus sephen																											
Taeniura lymma				2			1											1									
Chiloscyllium punctatum																							1				
Hemiscyllium trispeculare	1							1					1					1									
Carcharhinus amblyrhynchos			1																								
Carcharhinus melanopterus																											
Triaenodon obesus			1																								
Stegastoma fasciatum										1																	
Eucrossorhimus dasypogon																											
Orectolobus wardi							1		1																		
Nebrius ferrugineus								1																1			
Gymnothorax flavimarginatus	1												1														
Siderea thrysoideus		2												2	2	1		1				2					1
Spratelloides delicatulus					4																						
Synodus sageneus						1																					
Paraplotosus butleri	2			2			2	1				2		2									3	2		2	
Plotosus lineatus										4																	
Diademichthys lineatus	1							1			2		1				1									1	
Discotrema lineata																									1		
Hyporhamphus quoyi																											
Myripristis kuntee																											
Myripristis murdjan													1														
Myriprisis violacea			3	3			3		2			3	3											1		4	
Sargocentron rubrum			3	3			3		2		1	1	3				1	3		3		4	3				
Sargocentron spiniferum												1															
Fistularia commersonii																											
Corythoichthys amplexus																											
Hippocampus sp.																									1		
Dendrochirus zebra																1		1								1	1
Pterois antennata																											
Pterois volitans	2				1									1													
Onigocia pedimacula																									1		
Papilloculiceps nematophthalmus	1																										
Psammoperca waigiensis		1						2						3				3		3							
Cephalopholis boenak	2		2					2			2	2	2	1	1	2	1	1	3	2			3	2		3	
Cephalopholis cyanostigma	2		2		1		2	2	2		1	2		1				1	2			1				3	
Chromileptes altivelis																		2		1		1	1	1			
Epinephelus bilobatus		2		2		2	2	2			2			3	1	2	1			2		2	2				
Epinephelus coioides							1															1		1		1	
Epinephelus corallicola			1				1	1				2									1						
Epinephelus fasciatus	2		2	3	2		3	3	4	2	2	3	4	2		2	3	4	3		1	2	4	3		4	3
Epinephelus fuscoguttatus				1																							
Epinephelus lanceolatus																											
Epinephelus malabaricus																											
Epinephelus multinotatus																											
Epinephelus polyphekadion														1													
Epinephelus quoyanus	1	1								3				1						2		2					
Epinephelus rivulatus										3																	4
Epinephelus tukula																											
Plectropomus leopardus																											
Plectropomus maculatus	3		1	2	2		2	2	1		2	2	2	2		2		1	2	3	1	3	3	2		4	
Diploprion bifasciatum			1	2	1		2	2	2			2		2				1				2	3	2		2	
Labracinus lineatus				1				2			2		1					2	2	1							
Pseudochromis fuscus											2	2						3	1			1					
Pseudochromis wilsoni												1		1		2				2		1					
Glaucosoma magnificum											1												2	1			
Heteropriacanthus cruentatus																											
Apogon aureus				3			2																	2		2	
Apogon cavitiensis	3	3			1	2		1		1		2	3	2	3	4	5	2		4	2	3	4	3	3	2	3
Apogon cookii		2								2	2			1				2		2		1					1
Apogon doederleini		1		1			2	3			2		2				3	3	1	3		3				2	1
Apogon moluccensis		4											3			3							3	2	3		
Apogon properupta	1			2	1				1			2															
Apogon rueppellii		3																		1							

Sites DA3-	36	37	39	40	41	42	43	44	46	47	49	50	52	53	55	56	57	58	60	61	63	64	65	67	68	69	70
Apogon taeniophorus										2																	
Archamia fucata							4		4			4												2		6	
Archamia melasma	2				1			3			2							2	2		2	4					
Cheilodipterus intermedius												1															
Cheilodipterus macrodon	1		1	3	3		3		1		2	3		1			1	2						2		3	
Cheilodipterus quinquelineatus	1							2			1	1	2	2			4	2			1	2					
Quinca mirifica										1								1									
Rhabdamia gracilis							4																				
Malacanthus brevirostris																											
Echeneis naucrates						1																				1	
Carangoides ferdau																											
Carangoides fulvoguttatus				1			2		2				1							2				2			
Carangoides gymnostethus																								4			
Caranx ignobilis																											
Caranx melampygus																											
Caranx sem																											
Caranx sexfasciatus			3																								
Gnathanodon speciosus				2		2																		2			
Seriolina nigrofasciata																											
Trachinotus blochii																											
Lutjanus argentimaculatus					1																	1					
Lutjanus bohar																											
Lutjanus carponotatus	4	2	4	4	2		1	3	2		3	3		4		2	2	4	4	4	3	3	4	3		3	2
Lutjanus fulviflamma				2	2		2	2	3									2									
Lutjanus lemniscatus	3		2	1	2		2	3	2		3	2	3	1		2	1	2	2	1				2		3	
Lutjanus lutjanus																										5	
Lutjanus monostigma				1	1							2															
Lutjanus quinquelineatus	3		3	3	5							3									3					4	
Lutjanus russelli											4										3					3	
Lutjanus sebae																							1	2		3	
Lutjanus vitta												2				2										5	
Symphorus nematophorus	1			2		1	1	2					2			1	1			1		1	1	1		1	
Caesio caerulaurea			4	4	3		6	4	5		2			3			4		4			3		4		5	
Caesio cuning	5		5	4	2		6	4	4		4	4	4	3			4	4	4	3	4	3		5		4	
Pterocaesio digramma	4			4	3		6	4	5		4							2	4	4				4		5	
Pentapodus emeryii				1																							
Pentapodus porosus		4								3				2	4	4		2		3		2	3	3			2
Scaevius milii	3				1									2													
Scolopsis bilineatus	1		2	3	3		3	3	4		2	3	2	2			2	2						1			
Scolopsis monogramma	2	3	1	2	1		2		2	2		2	2	2	2		2	2	3	1		2	2	1		3	1
Gerres subfasciatus																											
Diagramma labiosum	2					1							1										3			3	
Plectorhinchus chaetodonoides				1			2		1			1						1	1							3	
Plectorhinchus flavomaculatus				1				1	1																		
Plectorhinchus gibbosus				2	1				2																	3	
Plectorhinchus multivittatus				1							1			2				2		1	1	1					
Plectorhinchus polytaenia				1			2	2	2			1												1			
Plectorhinchus unicolor		1		1				3			2	1						2	2	2	2	3	1			1	1
Lethrinus atkinsoni												1															
Lethrinus laticaudis																		1	1	2							
Lethrinus lentjan								2																			
Lethrinus nebulosus	2							2						2				2									
Lethrinus olivaceus			1				2																				
Lethrinus sp. 1										3																	
Lethrinus sp. 2		2						3		1			1	3				3		3				5			
Mulloidichthys flavolineatus	2																										
Mulloidichthys vanicolensis																											
Parupeneus barberinoides							1																				
Parupeneus heptacanthus																2							2				
Parupeneus indicus	3	4		3	3	2	3	3	2	1	2	2	2	4		3	1	3	3	3	2	3	3	3		2	
Parupeneus multifasciatus																											
Parupeneus spilurus										2														1			
Upeneus tragula										1					3	3				2			2				
Pempheris ypsilychnus				2			2		1		2	2	3					1								2	
Pempheris schwenkii												2															
Pempheris sp.							2																				
Kyphosus bigibbus			2						2				1														
Kyphosus vaigiensis			1																								

Table 3 (cont.)

Sites DA3-	36	37	39	40	41	42	43	44	46	47	49	50	52	53	55	56	57	58	60	61	63	64	65	67	68	69	70
Platax batavianus	1		1																	1	1					1	
Platax orbicularis			3										1	1													
Platax pinnatus			1										1														
Platax teira			2	2								2														1	
Chaetodon adiergastos					1			1										2									
Chaetodon aureofasciatus	4	2	2	3	3		3	5	4		4	4	3	4		4	1	4	5	3	4	5	1	2		2	3
Chaetodon auriga	2				2			2			2			2				1									
Chaetodon ephippium							2												1								
Chaetodon lineolatus							2	2						1				1	1			1					
Chaetodon lunula							1	1				3															
Chaetodon lunulatus					3		1																				
Chaetodon melannotus																			1								
Chaetodon meyeri								1																			
Chaetodon plebeius									1																		
Chaetodon speculum											1																
Chaetodon trifascialis									2									1									
Chelmon marginalis	2	2		1	2		2	1	1		1		2	3		3		3	4	3	2	3		3		2	2
Coradion chrysozonus			1						2			1											1				
Heniochus acuminatus		1	1	3	2		2	2	2		1	2	1	2		1	1			1	1	2		1			
Heniochus singularius							1					1															
Parachaetodon ocellatus				1								1															1
Chaetodontoplus duboulayi	3	2	3	2			2	1	1	1		2	2	1	2	3	2						3	3		1	2
Chaetodontoplus personifer			2										2														
Pomacanthus semicirculatus			1				1				1		2														
Pomacanthus sexstriatus	2		2	2			2	1	2			2	2	1			2	1	1			2	2	2		2	
Abudefduf bengalensis	4	2	3	3	5			3	2	2	4	3		4		3	3	4	4	4	4	4	3	4		4	1
Abudefduf sexfasciatus				3	4			3	5		4							4	2		2	2					
Abudefduf sordidus																											
Abudefduf vaigiensis			4		3				4									2									
Amblyglyphidodon batunae																			5			4					
Amphiprion clarkii		2				3				2	2												2				
Amphiprion perideraion				2							2		2														
Amphiprion rubrocinctus											2									3							
Cheiloprion labiatus					1			2			2							2									
Chromis atripectoralis					4			6			5							4	4								
Chromis cinerascens			4	4	2			3	4			5	5				3									6	
Chromis fumea			1	1					2	2			3		2	4	3						5	5			4
Chromis margaritifer																											
Chromis viridis								3			3								1								
Chromis weberi				1																							
Dascyllus reticulatus								1					3														
Dascyllus trimaculatus													2														
Dischistodus darwiniensis									1										3		2	3					
Dischistodus prosopotaenia																			3								
Neoglyphidodon melas				2				2				1	2	2				3	1		2	3		1			
Neoglyphidodon nigroris	2																	2	5		5	4					
Neopomacentrus azysron	6			7	3		5	6	7		6	5	2	4				4	5		3	1		3		5	
Neopomacentrus cyanomos							4		4		6	5	5	3					1				2	5		7	3
Neopomacentrus filamentosus	7	5	5	7	1	3	2	5		2	5	3	3	4	4	4	5	6	7	5	5	5	3	2	3	2	3
Plectroglyphidodon dickii									1																		
Plectroglyphidodon leucozonus																											
Pomacentrus coelestis	1			2			2	1	4	3	2	3	3			3	3						2	3			2
Pomacentrus milleri	6	5		2	3		1	5	5	2	5	3		5		5	4	5	5	4	5	5					4
Pomacentrus moluccensis	2				2			4			4							3	3	1		1		2			
Pomacentrus nagasakiensis	5		4	4			4	3	5	2	4	5	5			5	5		2		1		4	5		2	1
Pomacentrus nigromanus	4			1			3	2			1	4	1	2					5		3	3					
Stegastes fasciolatus				2																							
Stegastes obreptus	3	1		3			2	4	5	1	2	2	2			2	3	3				2		2		2	2
Sphyraena barracuda																								2			
Sphyraena jello																											
Sphyraena obtusata											4																
Anampses caeruleopunctatus	1	2		1			1	1	1																		
Anampses geographicus																											
Anampses lennardi	2	1	2	1			2	2				1	3		2	2	3	2		3		1	2	1	2		2
Bodianus axillaris				1																							
Bodianus bilunulatus									1																		

35 Sites DA3-	36	37	39	40	41	42	43	44	46	47	49	50	52	53	55	56	57	58	60	61	63	64	65	67	68	69	70
Bodianus diana																											
Cheilinus chlorurus	2	1		2	2		2	2	1	1	2	2	2				1	3	2			1				2	2
Cheilinus trilobatus																											
Cheilio inermis		1								2				1													2
Choerodon cauteroma	2	3	3	2			3	2	1	3	2	2	3	4	2	4	3		1	4		3	3	4		3	3
Choerodon cyanodus	2	3		2	2		1	3			2	1		4		3	1	3	4	3	1	4	2	2		2	2
Choerodon schoenleinii	2	2	2	2				1				1		2		1	2	3	3	3	1	2	2	2		3	2
Choerodon vitta														1	3								4	3			
Coris aygula							1																				
Coris caudimacula							3			3		1															2
Coris gaimard																											
Coris pictoides	2	2		1		3				3			1		2	3	3						3	3	1		4
Gomphosus varius									3																		
Halichoeres marginatus									4			2	2														
Halichoeres melanochir	4	2		2	1		3	3	3		3	3		2		3	2	4	3	3	2	3		2		2	2
Halichoeres nebulosus		5		2			3	5	4	5	1	2	2	2		4	2	3		1			2	2			4
Halichoeres nigrescens	5	5		3				5		2	4	3	2	5		5	5	5	5	4	5	5	4	3		2	4
Halichoeres scapularis																											
Halichoeres trimaculatus																											
Hemigymnus fasciatus									1			1															
Hemigymnus melapterus	1			1	3		1	2	2		2	1						3	2		2			2			
Hologymnosus annulatus				1																							
Labroides bicolor																											
Labroides dimidiatus	4		3	4	3		4	3	3	2	3	3	2	3		3	3	3		1	1		3	3		3	3
Leptojulis cyanopleura	1			2			3		3			3					3						4	3		2	
Leptojulis sp.													3														
Macropharyngodon ornatus				1			1		2			1															
Pseudocheilinus hexataenia																											
Pseudojuloides elongatus																											3
Pteragogus enneacanthus										3													1				
Stethojulis bandanensis								2	4																		
Stethojulis interrupta		3					2	3		3	3	2		2	1	2	3	2		2			3	2		3	3
Thalassoma amblycephalum																											
Thalassoma hardwicke					2				2		1							2	1		2						
Thalassoma lunare	5	2	4	6	2		6	6	6	5	5	5	6	3		5	4	5	3		3	1	3	4		3	4
Thalassoma lutescens									1				1														
Thalassoma purpureum									1																		
Xyrichtys sp.																									3		
Chlorurus rhakoura							1		1			2	2											1			
Scarus chameleon							2						2											1			
Scarus ghobban	2	1	2	2	1		3	3	3		2	1	2	3		3	2	3	2			2	2	3		2	1
Scarus rivulatus	2			1	3		4		5		3	3		2				3	4		3	2		2		2	
Scarus rubroviolaceus																											
Scarus schlegeli							1																				
Scarus sordidus												1	3								1						
Scarus sp.	4	4	4	3	1		3	4		3	4	3	4	4		4	4	3	4	2	2	4	3	4		3	4
Parapercis clathrata																							1				
Parapercis xanthozona	2											1												3			
Parapercis sp.																								2			
Opistognathus darwiniensis																											
Atrosalarius fuscus holomelas																			2		1						
Cirripectes alleni								2			2						2										
Cirripectes filamentosus	2	1					2	2	3		2	2	1			2		2	4		3	2		1			2
Cirripectes hutchinsi									2										2		2						
Ecsenius bicolor			2	3			3		2		1	2					3							2		1	1
Ecsenius lineatus							2									2	1						2				2
Ecsenius stictus	3	3		1	1		3	3	2	2	4			2		3	3	3	3	2	3	3	2	2			2
Istiblennius edentulus																											
Istiblennius meleagris																											
Meiacanthus grammistes	1				2						1			1		3		1		1		2					
Meiacanthus luteus		2													3	2							2				
Petroscirtes mitratus																											
Plagiotremus rhinorhynchos				1																							
Plagiotremus tapeinosoma											1																
Salarias fasciatus							1		1									1			2						
Salarias spaldingi																											
Helcogramma striata			1	3			3	3	3	2	2	2				2	4						2	2		1	5
Callionymus enneactis																											

Table 3 (cont.)

Sites DA3-	36	37	39	40	41	42	43	44	46	47	49	50	52	53	55	56	57	58	60	61	63	64	65	67	68	69	70
Amblyeleotris gymnocephala	1				2	4							2	2					1			1	2				
Amblyeleotris periophthalma																								1			
Amblygobius bynoensis																			2		2						
Amblygobius phalaena																		1			2						
Asterropteryx semipunctatus																					2	2					
Bryaninops loki													3		3								4		2		2
Cryptocentrus cinctus	2	2				3					3			2		2	2			1		2	1		2		
Cryptocentrus strigilliceps																											
Ctenogobiops pomastictus	1										1																
Gobiodon quinquestrigatus																											
Istigobius nigroocellatus	1	1			1		1				3					2	2	1	1	3	2	3	2				2
Istigobius ornatus												1		2			2					2		1		1	
Istigobius perspicillatus																											
Pleurosicya plicata																							2		2		1
Valenciennea alleni	2	2		2		3		3			1				2	3	3			2		2	2	2			2
Valenciennea muralis		3									3						1	2	2	2	2	3					
Valenciennea puellaris						2			2				2			2											
Valenciennea strigata																											
Ptereleotris evides									3														2				
Ptereleotris hanae	2	2				3					3		2				2			2		3		2			
Ptereleotris monoptera			2	5			3						3			3	3						4	4			
Acanthurus dussumieri				1								2															
Acanthurus grammoptilus	4	2	3	4			4	4	4			3	3	4		4	4	3	3	3	3	4	3	3		3	2
Acanthurus lineatus																											
Acanthurus mata																											
Acanthurus nigricans				1									1														
Acanthurus triostegus									4																		
Ctenochaetus striatus							2		2																		
Naso annulatus																											
Nasi lituratus				2					1																		
Naso unicornis				3	2		1	1	2			2				2											
Zanclus cornutus	2			2	1			1				1		1		1	1	1									
Siganus fuscescens		1						3		3						1	1	2		3				3			
Siganus doliatus	1	2		3	3		2	2	3		2	3		2		2	2	1	2			2		2		2	
Siganus lineatus								2			1										1						
Siganus punctatus			2	2				1				1						1				1					
Siganus trispilos									2																		
Euthynnus affinis																											
Grammatorcynus bicarinatus							2		1		1		1														
Rastrelliger kanagurta																											
Scomberomorus commerson			3														1										
Scomberomorus queenslandicus		1																								2	
Abalistes stellaris				1		1				2	1															2	
Balistoides viridescens																											
Sufflamen chrysopterus													1											2			
Sufflamen fraenatus																											
Cantherhines pardalis													1														
Eubalichthys caeruleoguttatus																	1										
Monacanthus chinensis																											
Oxymonacanthus longirostris																											
Pervagor janthinosoma																											
Ostracion cubicus			1	2				1			2			2				1								1	
Ostracion nasus																											
Arothron hispidus																		1									
Arothron reticularis																							1				
Arothron stellatus																											
Diodon liturosus																		1									
Diodon hystrix									1					1													
Torquigener pallimaculatus																									1		
Tragulichthys jaculiferus																		1									
TOTALS	**74**	**51**	**53**	**94**	**57**	**17**	**87**	**87**	**85**	**41**	**82**	**86**	**74**	**68**	**18**	**57**	**62**	**87**	**62**	**55**	**50**	**70**	**63**	**83**	**13**	**67**	**50**

Table 4 Log_5 abundances for species recorded at visual survey sites in 2000 (see Figure 5 and Table 1 for site details).

Sites DA4-	8	9	10	14	15	17	21	38	42	43
Dasyatis kuhlii						1				1
Taeniura lymma					1					
Manta birostris				2						
Carcharhinus amblyrhynchos					1					
Carcharhinus melanopterus							1			
Triaenodon obesus				1			1			
Gymnothorax flavimarginatus					2					
Siderea thrysoideus	1	1								
Paraplotosus butleri			2	2						
Plotosus lineatus										3
Diademichthys lineatus			3	2			2	2		
Hyporhamphus affinis									3	
Myripristis adusta				3						
Myripristis berndti				2						
Myripristis hexagonatus							3			
Myripristis murdjan				3						
Myriprisis violacea				3						
Sargocentron caudimaculatum				2	3					
Sargocentron rubrum				3						
Fistularia commersonii				1						
Haliichthys taeniophorus						1				
Cottapistus praepositus		1								
Pterois volitans			1	1						
Cephalopholis boenak		2		2						
Cephalopholis cyanostigma			2	3						3
Chromileptes altivelis										
Epinephelus bilobatus	3	2	3			2				2
Epinephelus coioides				2						
Epinephelus corallicola			1	2						1
Epinephelus fasciatus			3	4						3
Epinephelus fuscoguttatus				1						
Epinephelus lanceolatus								1		
Epinephelus malabaricus			2		1					
Epinephelus polyphekadion				3						
Epinephelus quoyanus	1									
Plectropomus maculatus			2	3						2
Diploprion bifasciatum			2		1		1			2
Labracinus lineatus			2							2
Pseudochromis wilsoni			2		1					2
Glaucosoma magnificum					3		2			
Heteropriacanthus cruentatus										2
Apogon aureus					2					
Apogon cavitiensis	4	4				4				2
Apogon doederleini			3							4
Apogon moluccensis						3				
Apogon properupta			1				3			
Apogon quadrifasciatus						3				
Archamia fucata			4							6
Archamia melasma	2		2							4
Cheilodipterus macrodon			1	2					2	2
Rhabdamia gracilis			5							
Echneis naucrates				3						
Rachycentron canadum				2						
Alepes vari				5						
Atule mate						1				
Carangoides fulvoguttatus					4					1
Caranx ignobilis					3					
Caranx sexfasciatus					2					
Gnathanodon speciosus					3					
Selaroides leptolepis						3				
Scomberoides commersonnianus								1		
Trachinotus blochii				1						
Lutjanus argentimaculatus			2		3					2

Table 4 (cont.)

Sites DA4-	8	9	10	14	15	17	21	38	42	43
Lutjanus carponotatus		1	3			2				2
Lutjanus fulviflamma			3	3						
Lutjanus lemniscatus			2						3	2
Lutjanus lutjanus			5		4					5
Lutjanus monostigma			2		2					
Lutjanus quinquelineatus					3					3
Lutjanus russelli			2	3						2
Lutjanus vitta		3			4		4		2	4
Symphorus nematophorus			2				2			2
Caesio caerulaurea			2	4						3
Caesio cuning			4	4						4
Pterocaesio digramma			3	4						4
Pentapodus porosus	3	4				3				
Scolopsis bilineatus			2	3						3
Scolopsis monogramma	1	3	3		3	2				3
Diagramma labiosum			1							
Plectorhinchus chaetodonoides				2						2
Plectorhinchus gibbosus					1					
Plectorhinchus multivittatus			1	3						
Plectorhinchus polytaenia				3						1
Plectorhinchus unicolor				3						2
Lethrinus atkinsoni			1	2					1	
Lethrinus lentjan					4		4			2
Lethrinus nebulosus			1							
Lethrinus olivaceus										1
Lethrinus sp.	3	2					3		2	
Mulloidichthys vanicolensis					2					
Parupeneus cyclostomus					1					
Parupeneus heptacanthus										1
Parupeneus indicus			4							3
Upeneus tragula		3				2				
Parapriacanthus ransonneti			4							
Pempheris ypsilychnus				2						3
Pempheris schwenkii			3	3					3	3
Pempheris sp.			3						3	2
Kyphosus bigibbus				1					2	
Platax batavianus				3						
Platax orbicularis				2			4			
Platax pinnatus				1	1					1
Platax teira				2			3			
Chaetodon adiergastos				2						
Chaetodon aureofasciatus			3	4					3	3
Chaetodon auriga				2						
Chaetodon ephippium				1						
Chaetodon lineolatus					2					1
Chaetodon lunula				3						
Chaetodon lunulatus				3						
Chaetodon plebeius					3					
Chaetodon semeion					1					
Chelmon marginalis			2			1				3
Coradion chrysozonus				1						
Heniochus acuminatus			2	2						3
Heniochus singularius				1						2
Chaetodontoplus duboulayi		2	1	1		2				2
Chaetodontoplus personifer					1					1
Pomacanthus semicirculatus				1						2
Pomacanthus sexstriatus				2					1	2
Abudefduf bengalensis			2	5					5	
Abudefduf sexfasciatus			4	5					4	
Abudefduf vaigiensis				4					2	
Amphiprion clarkii	1									
Amphiprion perideraion										2
Chromis atripectoralis									3	

Sites DA4-	8	9	10	14	15	17	21	38	42	43
Chromis cinerascens			4	5			5			
Chromis fumea							4			
Chromis margaritifer							1			
Neoglyphidodon melas										2
Neoglyphidodon nigroris										2
Neopomacentrus azysron			7	6					6	6
Neopomacentrus cyanomos			7	6						5
Neopomacentrus filamentosus	4	4	3	4						3
Plectroglyphidodon dickii				2						
Pomacentrus coelestis			1		3					3
Pomacentrus milleri			5	2					4	5
Pomacentrus moluccensis				2			4			
Pomacentrus nagasakiensis			4	5			6			5
Pomacentrus nigromanus			4		2					5
Stegastes obreptus			2	4			4		3	3
Sphyraena jello					3					
Sphyraena qenie					4					
Paracirrhites forsteri				1						
Anampses lennardi	1	1	1				3			2
Bodianus axillaris					2					
Cheilinus chlorurus			2	3						1
Choerodon cauteroma	2	3	2	2						3
Choerodon cephalotes	2									
Choerodon cyanodus			2	3						2
Choerodon schoenleinii			1	1						2
Choerodon vitta	2	4								
Coris aygula					1					
Coris gaimard				1						
Coris pictoides	2	3	2							2
Gomphosus varius				3						
Halichoeres marginatus			1	3						
Halichoeres melanochir			4	4						4
Halichoeres nebulosus			3	3					4	3
Halichoeres nigrescens	3	2	4	4						4
Hemigymnus fasciatus				2	2					1
Hemigymnus melapterus			2	3					2	2
Labroides dimidiatus			2	4						4
Leptojulis cyanopleura			2	3			3			2
Leptojulis sp.							4			
Macropharyngodon ornatus							1			
Stethojulis interrupta			2				3			2
Thalassoma amblycephalum										
Thalassoma hardwicke				2					1	
Thalassoma lunare			5	5					5	6
Thalassoma lutescens					1					
Thalassoma purpureum				2						
Xyrichtys sp.						1				
Chlorurus rhakoura			1	1				2		
Scarus ghobban			3	3					3	2
Scarus rivulatus			4	5						3
Scarus rubroviolaceus					2					
Scarus sordidus					1			1		
Scarus sp.			4	3	3		4			4
Parapercis xanthozona	2	1	1	1			2			
Cirripectes alleni										2
Cirripectes filamentosus			2	4					4	3
Ecsenius bicolor			2	4						3
Ecsenius lineatus										1
Ecsenius yaeyamaensis			4	3						5
Meiacanthus grammistes										2
Meiacanthus luteus		2				2				
Plagiotremus rhinorhynchos				1						
Helcogramma striata			3							4
Amblyeleotris gymnocephala	4									
Amblyeleotris periophthalma										1

Table 4 (cont.)

Sites DA4-	8	9	10	14	15	17	21	38	42	43
Cryptocentrus cinctus	3									
Cryptocentrus fasciatus						3				2
Eviota sebreei										3
Istigobius decoratus										3
Istigobius nigroocellatus										2
Istigobius ornatus			3	3						
Valenciennea alleni	3		4	3			3	3		2
Valenciennea muralis	2		2							2
Valenciennea puellaris							1			
Ptereleotris hanae	2							2		2
Ptereleotris monoptera				3			3			
Acanthurus dussumieri				1						
Acanthurus grammoptilus			4	4						4
Acanthurus lineatus				2						
Acanthurus nigricans					2					
Acanthurus triostegus									2	
Ctenochaetus striatus							2			
Naso annulatus					1					
Nasi fageni					3					
Nasi lituratus				2						
Naso unicornis			1	4						2
Zanclus cornutus			1	2	3					2
Siganus fuscescens			2	2						
Siganus doliatus			3	2						3
Siganus lineatus				2						
Siganus punctatus				3						
Euthynnus affinis				2						
Grammatorcynus bicarinatus				1						
Scomberomorus commerson				2						
Balistapus undulatus								1		
Rhinecanthus aculeatus				1						
Sufflamen chrysopterus				3						
Cantherhines pardalis				3						
Aluterus scriptus					1					
Monacanthus chinensis	1									
Paramonacanthus choirocephalus		2								
Ostracion cubicus					1				1	
TOTALS	**23**	**21**	**86**	**114**	**45**	**17**	**30**	**8**	**26**	**98**

Table 5 Species collected from shore sites in 1998-99 (see Figure 3 and Table 1 for site details).

	Sites DA1										Sites DA3							
	2	7	11	14	17	20	23	25	28	31	38	45	48	51	54	59	62	66
Muraenichthys gymnotus															X			
Muraenichthys macropterus								X									X	X
Phyllophichthus xenodontus												X						
Gymnothorax undulatus	X				X		X						X	X				X
Siderea thrysoidea		X		X				X					X	X				
Conger cinereus				X				X		X			X					
Spratelloides delicatulus	X				X		X											X
Saurida gracilis															X			
Paraplotosus albilabris				X				X			X	X		X				
Paraplotosus muelleri						X	X	X										
Plotosus lineatus							X											
Batrachomoeus dahli												X						
Halophryne diemensis				X										X		X		
Dinematichthys sp.	X									X								
Hyporhamphus quoyi									X									
Atherinomorus endrachtensis	X								X									
Atherinomorus ogilbyi																		X
Craterocephalus capreoli															X			
Craterocephalus mugiloides												X						
Craterocephalus pauciradiatus						X									X			X
Sargocentron rubrum						X	X											
Micrognathus micronotopterus																	X	
Nannocampus sp.												X						
Pterois volitans											X							
Scorpaena picta				X				X				X	X					
Scorpaenopsis diabolus								X										
Synanceia horrida																	X	
Papilloculiceps bosschei				X		X		X		X	X	X		X				
Papilloculiceps nematophthalmus							X			X								
Platycephalus endrachtensis			X												X			
Psammoperca waigiensis	X													X				
Ambassis vachellii			X														X	X
Chromileptes altivelis											X							
Epinephelus coioides	X		X								X						X	
Epinephelus corallicola		X																
Epinephelus fasciatus		X					X											
Epinephelus malabaricus			X															
Epinephelus quoyanus				X	X	X		X		X	X	X	X	X				X
Plectropomus maculatus						X												
Blennodesmus scapularis					X			X		X					X			
Congrogadus subducens				X		X		X			X			X				
Labracinus lineatus						X		X		X								
Pseudochromis fuscus						X												
Notograptus guttatus														X				
Notograptus sp.										X								
Amniataba caudavittata			X												X			
Pelates quadrilineatus															X			
Terapon jarbua			X			X												
Apogon cookii		X					X				X	X	X	X				
Apogon pallidofasciatus					X		X											
Apogon rueppellii					X	X					X	X		X	X			
Apogon timorensis												X	X					
Foa brachygramma							X											
Fowleria aurita					X	X	X	X			X							X
Quinca mirifica					X	X					X							
Sillago lutea			X															
Sillago maculata						X				X								
Sillago vittata												X			X			
Leiognathus moretoniensis						X				X								
Lutjanus argentimaculatus			X															
Lutjanus carponotatus					X	X		X			X							
Lutjanus fulviflamma		X												X				X

Table 5 (cont.)

	Sites DA1										Sites DA3							
	2	7	11	14	17	20	23	25	28	31	38	45	48	51	54	59	62	66
Lutjanus russelli	X	X	X		X	X	X		X	X				X				X
Pentapodus vitta					X					X								
Scaevius milii						X		X		X				X				X
Gerres filamentosus			X						X									
Gerres oyena														X				X
Gerres subfasciatus						X												
Pomadasys kaakan			X															
Lethrinus sp.												X						
Acanthopagrus latus			X												X			
Parupeneus indicus												X		X				
Pempheris sp.														X				
Chaetodon aureofasciatus								X										
Chelmon marginalis											X			X				
Chelmon muelleri							X											
Abudefduf bengalensis				X				X		X	X	X	X	X		X		X
Abudefduf sexfasciatus								X										
Abudefduf sordidus		X																
Cheiloprion labiatus								X										
Dischistodus darwiniensis					X	X		X			X							X
Neopomacentrus filamentosus							X	X						X				
Pomacentrus milleri	X					X	X	X	X				X	X				X
Pomacentrus moluccensis								X										
Stegastes obreptus								X										
Liza alata			X															
Valamugil buchanani			X															
Anampses caeruleopunctatus													X					
Cheilinus chlorurus								X										
Choerodon cyanodus				X		X	X	X	X	X	X	X		X	X			
Choerodon schoenleinii						X												
Coris pictoides								X										
Halichoeres melanochir							X	X										
Halichoeres nebulosus								X					X	X				X
Halichoeres nigrescens	X	X		X	X	X		X	X	X	X	X	X	X		X		X
Hemigymnus melapterus								X										
Labroides dimidiatus								X										
Stethojulis interrupta				X		X		X			X	X	X	X				
Thalassoma lunare								X										
Xenojulis margaritaceous													X					
Scarus ghobban					X									X				X
Scarus sp.						X		X										
Opistognathus darwiniensis	X						X					X					X	
Trichonotus sp.						X												
Cirripectes filamentosus								X										
Istiblennius meleagris	X	X		X									X			X		
Mimoblennius atrocinctus													X					X
Omobranchus germaini												X		X				
Omobranchus punctatus	X		X													X		
Omobranchus rotundiceps	X	X	X							X						X	X	
Petroscirtes breviceps															X			
Petroscirtes mitratus											X	X		X	X			X
Salarias fasciatus												X	X					
Salarias spaldingi						X				X	X							
Enneapterygius larsonae		X												X				
Enneapterygius gracilis				X												X		
Enneapterygius philippinus		X		X												X		
Callionymus enneactis										X		X		X	X			X
Amblygobius bynoensis					X	X				X	X			X	X	X	X	X
Amblygobius phalaena									X									
Asterropteryx semipunctatus				X		X				X	X			X				X
Bathygobius cocosensis		X		X														
Bathygobius fuscus		X		X		X				X		X		X	X	X	X	
Bathygobius laddi													X	X			X	

	Sites DA1										Sites DA3							
	2	7	11	14	17	20	23	25	28	31	38	45	48	51	54	59	62	66
Callogobius sp.										X								
Favonigobius melanobranchus			X												X		X	X
Favonigobius sp.										X								
Gnatholepis sp.						X			X	X			X		X	X	X	X
Gobiodon quinquestrigatus								X										
Gobiodon sp.								X										
Istigobius nigroocellatus										X	X							
Istigobius ornatus		X		X		X					X	X		X		X		
Priolepis nuchifasciatus						X								X				X
Valenciennea muralis		X			X	X			X	X	X			X	X	X	X	X
Yongeichthys nebulosus																	X	
Acanthurus grammoptilus								X					X					X
Siganus doliatus											X							
Arnoglossus sp.															X			
Pardachirus pavoninus												X		X				
Soleichthys heterorhinos							X	X			X							
Chaetodermis penicilligerus												X						
Ostracion cubicus								X										
Arothron hispidus										X		X	X	X				
Chelonodon patoca	X																	
Totals	14	15	17	20	16	35	19	41	9	28	28	27	21	39	21	13	14	28

Table 6 Species collected from subtidal sites in 2000 (see Figure 5 and Table 1 for site details).

Sites DA4-	1	4	9	12	13	14	15	16	17	23	27	32	33	37	38	39	40	41	43	44
Muraenichthys sp.																				X
Gymnothorax melatremus														X						
Paraplotosus butleri	X							X												
Batrachomoeus dahli		X														X				
Diademichthys lineatus		X		X				X							X					
Lepadichthys sandaracatus		X														X				
Dinematichthys sp.		X			X				X								X			X
Myripristis berndti		X																		
Myripristis hexagona		X		X	X			X					X	X					X	
Myripristis violacea														X						
Sargocentron rubrum	X							X												X
Choeroichthys suillus																	X			
Corythoichthys amplexus														X						
Doryrhamphus janssi														X						
Haliichthys taeniophorus									X											
Cottapistus praepositus			X																	
Platycephalus sp.																		X		
Cephalopholis boenak	X										X								X	
Cephalopholis cyanostigma				X				X						X						
Epinephelus bilobatus									X											
Epinephelus fasciatus																	X			
Epinephelus polyphekadion				X																
Rainfordia opercularis				X				X												
Blennodesmus scapularis																		X		X
Labracinus lineatus																				X
Pseudochromis fuscus																				X
Pseudochromis wilsoni	X	X						X						X		X			X	X
Apogon aureus				X																
Apogon cavitiensis					X													X		
Apogon cookii																	X			
Apogon crassiceps		X		X	X								X	X						
Apogon doederleini				X	X			X								X			X	
Apogon fuscus								X												
Apogon quadrifasciatus									X											
Apogon talboti		X																		
Apogon trimaculatus	X	X											X						X	
Archamia fucata				X	X			X											X	
Cheilodipterus macrodon								X												
Fowleria aurita		X																		X
Siphamia majimai												X								
Atule mate									X											
Selaroides leptolepis									X											
Pempheris ypsilychnus		X			X			X								X				
Chaetodon aureofasciatus		X																	X	X
Chelmon marginalis													X							
Pomacanthus sexstriatus		X																		
Neoglyphidodon nigroris		X																		X
Neopomacentrus azysron	X	X		X													X		X	
Neopomacentrus cyanomos		X		X	X			X					X	X					X	
Neopomacentrus filamentosus	X	X			X			X						X			X	X		X
Pomacentrus milleri	X	X															X		X	X
Pomacentrus moluccensis																				X
Pomacentrus nagasakiensis													X	X				X	X	
Pomacentus nigromanus				X															X	X
Stegastes obreptus								X												
Cheilinus chlorurus																			X	
Halichoeres melanochir		X																		X
Halichoeres nigrescens																				X
Halichoeres trimaculatus																			X	
Labroides dimidiatus	X												X						X	
Thalassoma lunare													X							
Cirripectes filamentosus		X															X		X	
Ecsenius bicolor				X									X	X						
Ecsenius yaeyamaensis	X	X		X	X														X	
Laiphognathus multimaculatus	X	X						X										X	X	
Enneapterygius larsonae	X	X															X			

Sites DA4-	1	4	9	12	13	14	15	16	17	23	27	32	33	37	38	39	40	41	43	44
Enneapterygius tutuilae	X				X														X	
Helcogramma striata	X	X		X				X					X	X			X		X	
Norfolkia brachylepis	X															X	X		X	
Norfolkia thomasi					X			X											X	
Amblygobius phalaena																				X
Bathygobius laddi								X									X		X	X
Bathygobius sp.		X															X			
Bryaninops loki							X									X				
Callogobius maculipinnis														X						
Coryphopterus duospilus				X																
Coryphopterus sp. 1														X						
Coryphopterus sp. 2														X		X			X	
Eviota inutilus								X					X	X						
Eviota nebulosa																	X			
Eviota queenslandica		X																		
Eviota sebreei														X					X	
Eviota storthynx																				X
Eviota zebrina	X	X												X			X	X	X	
Gnatholepis scapulostigma																			X	
Gobiodon axillaris										X										
Gobiodon histrio												X					X			
Gobiodon quinquestrigatus	X	X					X					X								
Gobiodon rivulatus											X	X								
Paragobiodon lacunicolus										X										
Istigobius decoratus					X			X						X				X	X	
Istigobius nigroocellatus	X	X						X								X			X	X
Istigobius ornatus		X																		
Pleurosicya plicata											X									
Priolepis nuchifasciata	X	X			X			X											X	X
Trimma okinawae				X	X			X					X	X		X				
Valenciennea alleni																			X	
Ptereleotris monoptera						X														
Siganus fuscescens														X						
Soleichthys heterorhinos																				X
Monacanthus chinensis									X											
Totals	19	34	1	17	15	1	2	24	7	2	3	4	12	22	1	10	16	8	31	23

Table 7 Most abundant species recorded visually and their preferred degree of exposure (listed in phylogenetic order).

	Protected sites	Semi-protected Sites	Exposed sites
Caesio caerulaureus	X	X	X
Caesio cuning	X	X	X
Pterocaesio digramma	X	X	X
Lutjanus carponotatus	X	X	X
Chaetodon aureofasciatus	X	X	X
Abudefduf bengalensis	X		
Abudefduf sexfasciatus	X		X
Chromis atripectoralis	X		
Chromis cinerascens			X
Chromis fumea		X	
Neopomacentrus azysron	X		X
Neopomacentrus cyanomos			X
Neopomacentrus filamentosus	X	X	X
Pomacentus milleri	X	X	X
Stegastes obreptus			X
Choerodon cyanodus	X		
Halichoeres nebulosus	X	X	
Halichoeres nigrescens	X	X	
Thalassoma lunare	X	X	X
Scarus rivulatus			X
Scarus sp.	X	X	X
Cirripectes filamentosus			X
Acanthurus grammoptilus		X	X

Table 8 Most abundant species taken from shore collecting sites with their preferred habitats (arranged in phylogenetic order).

	Mangroves	Igneous Rocks	Limestone, Corals
Congrogadus subducens			X
Fowleria aurita			X
Abudefduf bengalensis			X
Pomacentrus milleri			X
Choerodon cyanodus			X
Halichoeres nigrescens		X	X
Stethojulis interrupta			X
Istiblennius meleagris		X	
Omobranchus rotundiceps		X	
Amblygobius bynoensis			X
Bathygobius fuscus	X	X	X
Istigobius ornatus		X	
Valenciennea muralis			X

Appendix 1 Checklist of near-shore fishes from the Dampier Archipelago (species taken to the north of the 30 m depth contour not included). Habitat Abbreviations: R = Reef; S = Soft bottom; M = Mangrove; T = Trawling ground; P = Pelagic or free swimming.

	Main Habitat				
	R	**S**	**M**	**T**	**P**
Family Dasyatididae					
Dasyatis kuhlii Müller and Henle, 1841		X			
Himantura granulata (Macleay, 1883)			X		
Himantura uarnak (Forskål, 1775)		X	X		
Pastinachus sephen (Forskål, 1775)	X	X			
Taeniura lymma (Forskål, 1775)	X		X		
Family Myliobatididae					
Aetobatus narinari (Euphrasen, 1790)					X
Family Mobulidae					
Manta birostris (Donndorff, 1798)					X
Family Hypnidae					
Hypnos monopterygium (Shaw and Nodder, 1795)		X			
Family Rhynchobatidae					
Rhynchobatus djiddensis (Forskål, 1775)		X		X	
Family Hemiscylliidae					
Chiloscyllium punctatum Müller and Henle, 1838	X				
Hemiscyllium trispeculare Richardson, 1843	X				
Family Carcharhinidae					
Carcharhinus amblyrhynchos (Bleeker, 1856)	X				
Carcharhinus brevipinna (Müller and Henle, 1839)			X		X
Carcharhinus cautus (Whitley, 1945)			X		
Carcharhinus leucas (Valenciennes, 1839)			X		X
Carcharhinus limbatus (Valenciennes, 1839)			X		X
Carcharhinus melanopterus (Quoy and Gaimard, 1824)	X		X		
Carcharhinus sorrah (Valenciennes, 1839)			X		X
Negaprion acutidens (Rüppell, 1837)	X				
Galeocerdo cuvier (Péron and Lesueur, 1822)	X				X
Rhizoprionodon acutus (Rüppell, 1837)				X	
Triaenodon obesus (Rüppell, 1837)	X				
Family Sphyrnidae					
Sphyrna lewini (Griffith and Smith, 1834)					X
Sphyrna mokarran (Rüppell, 1837)					X
Family Stegastomatidae					
Stegostoma fasciatum (Hermann, 1783)	X	X			
Family Orectolobidae					
Eucrossorhimus dasypogon (Bleeker, 1857)	X				
Orectolobus wardi Whitley, 1939	X				
Family Hemigaleidae					
Hemigaleus microstoma Bleeker, 1852				X	
Hemipristis elongata (Klunzinger, 1871)			X	X	
Family Gynglymostomatidae					
Nebrius ferrugineus (Lesson, 1830)	X				
Family Elopidae					
Elops hawaiensis Regan, 1909			X		X
Family Megalopidae					
Megalops cyprinoides (Broussonet, 1782)			X		X

	Main Habitat				
	R	S	M	T	P
Family Ophichthidae					
Muraenichthys gymnotus Bleeker, 1857		X			
Muraenichthys macropterus Bleeker, 1857		X			
Phyllophichthus xenodontus Gosline, 1951		X			
Pisodonophis cancrivorus (Richardson, 1848)		X			
Yirrkala lumbricoides (Bleeker, 1864)		X			
Family Muraenidae					
Echidna nebulosa (Ahl, 1789)	X				
Gymnothorax eurostus (Abbott, 1861)	X				
Gymnothorax fimbriatus (Bennett, 1832)	X				
Gymnothorax flavimarginatus (Rüppell, 1830)	X				
Gymnothorax melatremus Schultz, 1953	X				
Gymnothorax undulatus (Lacepède, 1803)	X				
Siderea thrysoideus (Richardson, 1845)	X				
Uropterygius concolor Rüppell, 1838	X				
Family Congridae					
Conger cinereus Rüppell, 1830	X		X		
Family Clupeidae					
Herklotsichthys koningsbergeri (Weber and De Beaufort, 1912)			X		X
Nematalosa vlaminghi (Munro, 1957)			X		X
Pellona ditchela Valenciennes, 1847				X	X
Sardinella gibbosa (Bleeker, 1849)				X	X
Spratelloides delicatulus (Bennett, 1832)	X				X
Family Engraulididae					
Stolephorus commersonii Lacepède, 1803			X		X
Thryssa hamiltonii (Gray, 1835)			X		X
Family Chirocentridae					
Chirocentrus dorab (Forskål, 1775)			X		X
Family Bathysauridae					
Saurida gracilis (Quoy and Gaimard, 1824)	X	X			
Saurida undosquamis (Richardson, 1848)		X		X	
Family Synondontidae					
Synodus sageneus Waite, 1905		X		X	
Synodus variegatus (Lacepède, 1803)	X	X			
Family Chanidae					
Chanos chanos (Forskål, 1775)			X		X
Family Ariidae					
Arius argyropleuron Valenciennes, 1840			X	X	
Arius graeffei Kner and Steindachner, 1866			X		
Arius leptaspis (Bleeker, 1862)			X		
Arius mastersi Ogilby, 1898			X		
Arius proximus Ogilby, 1898			X		
Arius sp.			X		
Family Plotosidae					
Euristhmus microceps (Richardson, 1845)		X			
Paraplotosus albilabris (Valenciennes, 1840)	X	X			
Paraplotosus butleri Allen, 1998	X				
Paraplotosus muelleri (Klunzinger, 1880)	X	X			
Plotosus lineatus (Thunberg, 1791)	X				
Family Batrachoididae					
Batrachomoeus dahli (Rendahl, 1922)	X			X	
Halophryne diemensis (Lesueur, 1824)	X			X	

	Main Habitat				
	R	S	M	T	P
Family Gobiesocidae					
Diademichthys lineatus (Sauvage, 1883)	X	X			
Discotrema lineata (Briggs, 1966)	X		X		
Lepadichthys sandaracatus Whitley, 1943	X				
Family Antennariidae					
Lophiocharon trisignatus (Richardson, 1844)	X	X			
Tetrabrachium ocellatum Günther, 1880				X	
Family Bythitidae					
Bythitid sp.	X				
Dinematichthys sp.	X				
Family Exocoetidae					
Cheilopogon arcticeps (Gunther, 1866)					X
Cheilopogon heterurus (Rafinesque, 1810)					X
Family Hemiramphidae					
Arrhamphus sclerolepis Günther, 1866			X		X
Hemiramphus far (Forskål, 1775)					X
Hemiramphus robustus Günther, 1866			X		X
Hyporhamphus affinis (Günther, 1866)			X		X
Hyporhamphus quoyi (Valenciennes, 1847)			X		X
Zenarchopterus rasori (Popta, 1912)			X		X
Family Belonidae					
Ablennes hians (Valenciennes, 1846)					X
Strongylura strongylura (van Hasselt, 1823)			X		X
Tylosurus crocodilus (Péron and Lesueur, 1821)	X		X		X
Tylosurus gavialoides (Castelnau, 1873)	X		X		X
Family Atherinidae					
Atherinomorus endrachtensis (Quoy and Gaimard, 1824)			X		
Atherinomorus ogilbyi (Whitley, 1930)	X				
Craterocephalus capreoli Rendahl, 1922	X		X		
Craterocephalus mugiloides (McCulloch, 1912)	X		X		
Craterocephalus pauciradiatus (Günther, 1861)			X		
Hypoatherina temminckii (Bleeker, 1853)			X		
Family Holocentridae					
Myripristis adusta Bleeker, 1853	X				
Myripristis berndti Jordan and Evermann, 1903	X				
Myripristis hexagona (Lacepède, 1802)	X				
Myripristis kuntee Cuvier, 1831	X				
Myripristis murdjan (Forskål, 1775)	X				
Myriprisis violacea Bleeker, 1851	X				
Neoniphon sammara (Forskål, 1775)	X				
Sargocentron caudimaculatum (Rüppell, 1838)	X				
Sargocentron rubrum (Forskål, 1775)	X				
Sargocentron spiniferum (Forskål, 1775)	X				
Family Veliferidae					
Metavelifer multiradiatus (Regan, 1907)				X	
Family Fistulariidae					
Fistularia commersonii Rüppell, 1838	X				
Fistularia petimba Lacepède, 1803				X	
Family Centriscidae					
Centriscus scutatus Linnaeus, 1758		X		X	
Family Syngnathidae					
Choeroichthys brachysoma (Bleeker, 1855)	X		X		
Choeroichthys suillus Whitley, 1951	X				

	Main Habitat				
	R	S	M	T	P
Corythoichthys amplexus Dawson and Randall, 1975	X	X			
Corythoichthys haematopterus (Bleeker, 1851)			X		
Doryrhamphus janssi (Herald and Randall, 1972)	X				
Halicampus grayi Kaup, 1856				X	
Haliichthys taeniophorus Gray, 1859		X			
Hippichthys penicillus (Cantor, 1849)	X				
Hippocampus angustus Günther, 1870	X	X			
Micrognathus micronotopterus (Fowler, 1938)	X				
Nannocampus sp.	X				
Trachyrhamphus bicoarctatus (Bleeker, 1857)				X	
Family Scorpaenidae					
Apistus carinatus (Bloch and Schneider, 1801)		X			
Cottapistus cottoides (Cuvier, 1829)		X			
Cottapistus praepositus (Ogilby, 1903)		X		X	
Dampierosa daruma Whitley, 1932	X				
Dendrochirus zebra (Cuvier, 1829)	X				
Inimicus sinensis (Valenciennes, 1833)		X		X	
Minous versicolor Ogilby, 1910		X			
Pterois antennata (Bloch, 1787)	X				
Pterois volitans (Linnaeus, 1758)	X				
Scorpaena picta (Kuhl and Van Hasselt, 1829)	X				
Scorpaenodes guamensis (Quoy and Gaimard, 1824)	X				
Scorpaenodes littoralis (Tanaka, 1917)	X	X			
Scorpaenopsis diabolus (Cuvier, 1829)	X				
Scorpaenopsis venosa (Cuvier, 1829)	X				
Synanceia horrida (Linnaeus, 1766)	X		X		
Family Aploactinidae					
Paraploactis pulvinus Poss and Eschmeyer, 1978		X			
Family Platycephalidae					
Inegocia japonica (Tilesius, 1812)		X		X	
Onigocia pedimacula (Regan, 1908)		X		X	
Cymbacephalus bosschei (Bleeker, 1860)	X	X			
Cymbacephalus nematophthalmus (Günther, 1860)	X	X	X		
Platycephalus endrachtensis Quoy and Gaimard, 1825		X	X		
Platycephalus indicus (Linnaeus, 1758)			X		
Family Pegasidae					
Pegasus volitans Linnaeus, 1758		X			
Family Centropomiidae					
Hypopterus macropterus (Günther, 1859)				X	
Psammoperca waigiensis (Cuvier, 1828)	X		X		
Family Chandidae					
Ambassis vachellii Richardson, 1846			X		
Family Serranidae					
Anyperodon leucogrammicus (Valenciennes, 1828)	X				
Centrogenys vaigiensis (Quoy and Gaimard, 1824)		X		X	
Cephalopholis boenak (Bloch, 1790)	X				
Cephalopholis cyanostigma (Valenciennes, 1828)	X				
Cephalopholis miniata (Forskål, 1775)	X				
Cephalopholis urodeta (Forster, 1801)	X				
Chromileptes altivelis (Valenciennes, 1828)	X				
Epinephelus bilobatus Randall and Allen, 1987	X				
Epinephelus coioides (Hamilton, 1822)	X		X		
Epinephelus corallicola (Valenciennes, 1828)	X				
Epinephelus fasciatus (Forskål, 1775)				X	
Epinephelus fuscoguttatus (Forskål, 1775)	X				

	Main Habitat				
	R	S	M	T	P
Epinephelus lanceolatus (Bloch, 1790)	X				
Epinephelus malabaricus (Bloch and Schneider, 1801)	X				
Epinephelus multinotatus (Peters, 1876)	X				
Epinephelus polyphekadion (Bleeker, 1849)	X				
Epinephelus quoyanus (Valenciennes, 1830)	X		X		
Epinephelus rivulatus (Valenciennes, 1830)	X				
Epinephelus tukula Morgans, 1959	X				
Plectropomus leopardus (Lacepède, 1802)	X				
Plectropomus maculatus (Bloch, 1790)	X				
Rainfordia opercularis McCulloch, 1923	X				
Family Grammistidae					
Diploprion bifasciatum Cuvier, 1828	X				
Family Pseudochromidae					
Blennodesmus scapularis Günther, 1872	X				
Congrogadus subducens (Richardson, 1842)	X	X			
Labracinus lineatus (Castelnau, 1875)	X				
Pseudochromis fuscus Müller and Troschel, 1849	X				
Pseudochromis wilsoni (Whitley, 1929)	X				
Family Pseudogrammatidae					
Pseudogramma polyacantha (Bleeker, 1856)	X				
Family Plesiopidae					
Plesiops verecundus Mooi, 1995	X				
Family Terapontidae					
Amniataba caudavittata (Richardson, 1845)	X		X		
Pelates quadrilineatus (Bloch, 1790)		X		X	
Terapon jarbua (Forskål, 1775)		X	X	X	
Terapon theraps (Cuvier, 1829)		X		X	
Family Glaucosomatidae					
Glaucosoma magnificum (Ogilby, 1915)	X				
Family Priacanthidae					
Heteropriacanthus cruentatus (Lacepede, 1801)	X				
Priacanthus hamrur (Forskål, 1775)	X				
Priacanthus tayenus Richardson, 1846	X				
Family Apogonidae					
Apogon aureus (Lacepède, 1802)	X				
Apogon cavitiensis (Jordan and Seale, 1907)	X				
Apogon cookii Macleay, 1881	X				
Apogon crassiceps Garman, 1903	X				
Apogon doederleini Jordan and Snyder, 1901	X				
Apogon fuscus Quoy and Gaimard, 1825	X				
Apogon moluccensis Valenciennes, 1832	X				
Apogon nigripinnis Cuvier, 1828				X	
Apogon pallidofasciatus Allen, 1987	X				
Apogon properupta (Whitley, 1964)	X				
Apogon quadrifasciatus Cuvier, 1828	X				
Apogon rueppellii Günther, 1859	X	X			
Apogon taeniophorus Regan, 1908	X				
Apogon talboti Smith, 1961	X				
Apogon timorensis Bleeker, 1854	X				
Apogon trimaculatus Cuvier, 1828	X				
Apogon cf. *unicolor* Doderlein, 1884	X				
Archamia fucata (Cantor, 1850)	X				
Archamia melasma Lachner and Taylor, 1960	X				
Cheilodipterus intermedius Gon, 1993	X				
Cheilodipterus macrodon (Lacepède, 1802)	X				

	Main Habitat				
	R	S	M	T	P
Cheilodipterus quinquelineatus Cuvier, 1828	X				
Foa brachygramma (Jenkins, 1903)	X				
Fowleria aurita (Valenciennes, 1831)	X				
Fowleria variegata (Valenciennes, 1832)	X				
Quinca mirifica Mees, 1966	X				
Rhabdamia gracilis (Bleeker, 1856)	X				
Siphamia majimae Matsubara and Iwai, 1958	X				
Family Sillaginidae					
Sillago analis Whitley, 1943		X	X		
Sillago burrus Richardson, 1842		X	X		
Sillago lutea McKay, 1985		X	X		
Sillago sihama (Forskål, 1775)			X		
Sillago vittata McKay, 1985	X				
Family Malacanthidae					
Malacanthus brevirostris Guichenot, 1848	X				
Family Echeneidae					
Echeneis naucrates Linnaeus, 1758	X		X		X
Family Rachycentridae					
Rachycentron canadum (Linnaeus, 1766)	X		X		X
Family Carangidae					
Alepes vari (Cuvier, 1833)	X	X			X
Atule mate (Cuvier, 1833)		X			
Carangoides chrysophrys (Cuvier, 1833)				X	
Carangoides ferdau (Forskål, 1775)	X				X
Carangoides fulvoguttatus (Forskål, 1775)	X				X
Carangoides gymnostethus (Cuvier, 1833)	X				
Carangoides hedlandensis (Whitley, 1934)			X	X	
Carangoides malabaricus (Bloch and Schneider, 1801)				X	
Caranx bucculentus Alleyne and Macleay, 1877				X	
Caranx ignobilis (Forskål, 1775)	X		X		X
Caranx melampygus Cuvier, 1833	X				
Caranx sem Cuvier, 1833	X				
Caranx sexfasciatus Quoy and Gaimard, 1825	X		X		
Decapterus macrosoma Bleeker, 1851				X	
Gnathanodon speciosus (Forskål, 1775)	X		X		X
Megalaspis cordyla (Linnaeus, 1758)					X
Pantolabus radiatus (Macleay, 1881)			X		
Scomberoides commersonnianus Lacepède, 1801	X		X		X
Scomberoides lysan (Forskål, 1775)	X		X		X
Scomberoides tol (Cuvier, 1832)	X				X
Selar boops (Cuvier, 1833)				X	
Selaroides leptolepis (Kuhl and Van Hasselt, 1833)		X		X	
Seriolina nigrofasciata (Rüppell, 1829)				X	X
Trachinotus baillonii (Lacepède, 1801)	X				
Trachinotus blochii (Lacepède, 1801)	X		X		
Family Leiognathidae					
Gazza minuta (Bloch, 1797)			X		
Leiognathus decorus (De Vis, 1884)			X		
Leiognathus elongatus (Günther, 1874)			X		
Leiognathus equulus (Forskål, 1775)			X		
Leiognathus moretoniensis Ogilby, 1912	X				
Secutor insidiator (Bloch, 1787)			X		
Family Lutjanidae					
Lutjanus argentimaculatus (Forskål, 1775)	X		X		
Lutjanus bohar (Forskål, 1775)	X				
Lutjanus carponotatus (Richardson, 1842)	X				

	Main Habitat				
	R	S	M	T	P
Lutjanus decussatus (Cuvier, 1828)	X				
Lutjanus fulviflamma (Forskål, 1775)	X				
Lutjanus lemniscatus (Valenciennes, 1828)	X				
Lutjanus lutjanus Bloch, 1790	X				
Lutjanus monostigma (Cuvier, 1828)	X				
Lutjanus quinquelineatus (Bloch, 1790)	X				
Lutjanus russelli (Bleeker, 1849)	X		X		
Lutjanus sebae (Cuvier, 1828)	X				
Lutjanus vitta (Quoy and Gaimard, 1824)	X				
Symphorus nematophorus (Bleeker, 1860)	X				
Family Caesionidae					
Caesio caerulaurea Lacepède, 1801	X				
Caesio cuning (Bloch, 1790)	X				
Pterocaesio digramma (Bleeker, 1865)	X				
Family Nemipteridae					
Pentapodus emeryii (Richardson, 1843)	X	X			
Pentapodus porosus (Valenciennes, 1830)	X	X			
Pentapodus vitta Quoy and Gaimard, 1824		X			
Scaevius milii (Bory de Saint-Vincent, 1823)	X				
Scolopsis bilineatus (Bloch, 1793)	X				
Scolopsis monogramma (Cuvier, 1830)	X				
Family Gerreidae					
Gerres abbreviatus Bleeker, 1850			X		
Gerres filamentosus Cuvier, 1829			X		
Gerres oyena (Forskål, 1775)			X		
Gerres subfasciatus Cuvier, 1830		X	X		
Family Haemulidae					
Diagramma labiosum Macleay, 1883	X		X		
Plectorhinchus chaetodonoides Lacepède, 1800	X				
Plectorhinchus flavomaculatus (Ehrenberg, 1830)	X		X		
Plectorhinchus gibbosus (Lacepède, 1802)	X		X		
Plectorhinchus multivittatus (Macleay, 1878)	X				
Plectorhinchus polytaenia (Bleeker, 1852	X				
Plectorhinchus unicolor (Macleay, 1883)	X				
Pomadasys kaakan (Cuvier, 1830)			X		
Pomadasys maculatus (Bloch, 1797)			X		
Family Lethrinidae					
Lethrinus atkinsoni Seale, 1909	X				
Lethrinus genivittatus Valenciennes, 1830	X				
Lethrinus laticaudis Alleyne and Macleay, 1877	X				
Lethrinus lentjan (Lacepède, 1802)	X				
Lethrinus nebulosus (Forskål, 1775)	X				
Lethrinus olivaceus Valenciennes, 1830	X				
Lethrinus variegatus Valenciennes, 1830	X	X			
Lethrinus sp. 1	X	X			
Family Sparidae					
Acanthopagrus latus (Houttuyn, 1782)	X		X		
Acanthopagrus palmaris (Whitley, 1935)	X		X		
Family Mullidae					
Mulloidichthys flavolineatus (Lacepede, 1801)	X				
Mulloidichthys vanicolensis (Valenciennes, 1831)	X				
Parupeneus barberinoides (Bleeker, 1852)	X				
Parupeneus cyclostomus (Lacepede, 1801)	X				
Parupeneus heptacanthus (Lacepede, 1801)	X	X			
Parupeneus indicus (Shaw, 1803)	X				
Parupeneus multifasciatus (Quoy and Gaimard, 1825)	X				

	Main Habitat				
	R	S	M	T	P
Parupeneus spilurus (Bleeker, 1854)	X				
Upeneus tragula Richardson, 1846		X		X	
Family Monodactylidae					
Monodactylus argenteus (Linnaeus, 1758)			X		
Family Pempheridídae					
Parapriacanthus ransonneti Steindachner, 1870	X				
Pempheris analis Waite, 1910	X				
Pempheris ypsilychnus Mooi and Judd, 1996	X				
Pempheris schwenkii Bleeker, 1855	X				
Pempheris sp.	X				
Family Kyphosidae					
Kyphosus bigibbus (Lacepede, 1801)	X				
Kyphosus vaigiensis (Quoy and Gaimard, 1825)	X				
Family Ephippididae					
Platax batavianus Cuvier, 1831	X				
Platax orbicularis (Forskål, 1775)	X				
Platax pinnatus (Linnaeus, 1758)	X				
Platax teira (Forskål, 1775)	X				
Family Scatophagidae					
Scatophagus argus (Linnaeus, 1766)			X		
Scatophagus multifasciatus Richardson, 1846			X		
Family Chaetodontidae					
Chaetodon adiergastos Seale, 1910	X				
Chaetodon aureofasciatus Macleay, 1878	X			X	
Chaetodon auriga Forskål, 1775	X				
Chaetodon citrinellus Cuvier, 1831	X				
Chaetodon ephippium Cuvier, 1831	X				
Chaetodon lineolatus Cuvier, 1831	X				
Chaetodon lunula (Lacepède, 1803)	X				
Chaetodon lunulatus Quoy and Gaimard, 1824	X				
Chaetodon melannotus Schneider, 1801	X				
Chaetodon meyeri Bloch and Sneider, 1801	X				
Chaetodon plebeius Cuvier, 1831	X				
Chaetodon semeion Bleeker, 1855	X				
Chaetodon speculum Cuvier, 1831	X				
Chaetodon trifascialis Quoy and Gaimard, 1824	X				
Chaetodon ulietensis Cuvier, 1831	X				
Chelmon marginalis Richardson, 1842	X			X	
Chelmon muelleri (Klunzinger, 1880)	X				
Coradion chrysozonus (Cuvier, 1831)	X	X			
Heniochus acuminatus (Linnaeus, 1758)	X				
Heniochus chrysostomus Cuvier, 1831	X				
Heniochus singularius Smith and Radcliffe, 1911	X				
Parachaetodon ocellatus (Cuvier, 1831)	X	X			
Family Pomacanthidae					
Chaetodontoplus duboulayi (Günther, 1867)	X	X			
Chaetodontoplus personifer (McCulloch, 1914)	X				
Pomacanthus imperator (Bloch, 1787)	X				
Pomacanthus semicirculatus (Cuvier, 1831)	X				
Pomacanthus sexstriatus (Cuvier, 1831)	X				
Family Pomacentridae					
Abudefduf bengalensis (Bloch, 1787)	X				
Abudefduf sexfasciatus (Lacepède, 1802)	X				
Abudefduf sordidus (Forskål, 1775)	X				
Abudefduf vaigiensis (Quoy and Gaimard, 1825)	X				

	Main Habitat				
	R	S	M	T	P
Amblyglyphidodon batunae Allen, 1995	X				
Amblyglyphidodon curacao (Bloch, 1787)	X				
Amphiprion clarkii (Bennett, 1830)	X	X			
Amphiprion perideraion Bleeker, 1855	X				
Amphiprion rubrocinctus Richardson, 1842	X				
Cheiloprion labiatus (Day, 1877)	X				
Chromis atripectoralis Welander and Schultz, 1951	X				
Chromis cinerascens (Cuvier, 1830)	X				
Chromis fumea (Tanaka, 1917)	X				
Chromis margaritifer Fowler, 1946	X				
Chromis viridis (Cuvier, 1830)	X				
Chromis weberi Fowler and Bean, 1928	X				
Dascyllus reticulatus (Richardson, 1846)	X				
Dascyllus trimaculatus (Rüppell, 1828)	X				
Dischistodus darwiniensis (Whitley, 1928)	X				
Dischistodus prosopotaenia (Bleeker, 1852)	X				
Neoglyphidodon melas (Cuvier, 1830)	X				
Neoglyphidodon nigroris (Cuvier, 1830)	X				
Neopomacentrus azysron (Bleeker, 1877)	X				
Neopomacentrus cyanomos (Bleeker, 1856)	X				
Neopomacentrus filamentosus (Macleay, 1883)	X				
Plectroglyphidodon dickii (Liénard, 1839)	X				
Plectroglyphidodon leucozonus (Bleeker, 1859)	X				
Pomacentrus coelestis Jordan and Starks, 1901	X				
Pomacentrus milleri Taylor, 1964	X				
Pomacentrus moluccensis Bleeker, 1853	X				
Pomacentrus nagasakiensis Tanaka, 1917	X				
Pomacentrus nigromanus Weber, 1913	X				
Stegastes fasciolatus (Ogilby, 1889)	X				
Stegastes lividus (Bloch and Schneider, 1801)	X				
Stegastes nigricans (Lacepède, 1801)	X				
Stegastes obreptus (Whitley, 1948)	X				
Family Mugilidae					
Liza alata (Steindachner, 1892)			X		
Liza subviridis (Valenciennes, 1836)			X		X
Liza vaigiensis (Quoy and Gaimard, 1824)	X		X		X
Mugil cephalus Linnaeus, 1758			X		X
Rhinomugil nasutus (De Vis, 1883)			X		
Valamugil buchanani (Bleeker, 1853)	X		X		X
Valamugil seheli (Forskål, 1775)			X		
Family Sphyraenidae					
Sphyraena barracuda (Walbaum, 1792)	X		X		X
Sphyraena flavicauda Rüppell, 1835			X		X
Sphyraena forsteri Cuvier, 1829	X				X
Sphyraena jello Cuvier, 1829	X				X
Sphyraena obtusata Cuvier, 1829	X				
Sphyraena qenie Klunzinger, 1870	X				X
Family Polynemidae					
Eleutheronema tetradactylum (Shaw, 1804)			X		
Polydactylus multiradiatus (Günther, 1860)					X
Polydactylus plebius (Broussonet, 1782)					X
Polydactylus sheridani (Macleay, 1884)			X		
Family Cirrhitidae					
Paracirrhites forsteri (Schneider, 1801)	X				
Family Labridae					
Anampses caeruleopunctatus Rüppell, 1829	X				
Anampses geographicus Valenciennes, 1840	X				

	Main Habitat				
	R	S	M	T	P
Anampses lennardi Scott, 1959	X	X			
Anampses meleagrides Valenciennes, 1840	X				
Bodianus axillaris (Bennett, 1831)	X				
Bodianus bilunulatus (Lacepède, 1801)	X				
Bodianus diana (Lacepède, 1801)	X				
Cheilinus chlorurus (Bloch, 1791)	X				
Cheilinus trilobatus Lacepède, 1801	X				
Cheilio inermis (Forskål, 1775)	X				
Choerodon cauteroma Gomon and Allen, 1987	X	X			
Choerodon cyanodus (Richardson, 1843)	X		X		
Choerodon schoenleinii (Valenciennes, 1839)	X		X		
Choerodon vitta Ogilby, 1910		X			
Coris aygula Lacepède, 1801	X				
Coris caudimacula (Quoy and Gaimard, 1834)	X	X			
Coris gaimard (Quoy and Gaimard, 1824)	X				
Coris pictoides Randall and Kuiter, 1982	X				
Gomphosus varius Lacepède, 1801	X				
Halichoeres marginatus Rüppell, 1835	X				
Halichoeres melanochir Fowler and Bean, 1928	X				
Halichoeres nebulosus (Valenciennes, 1839)	X				
Halichoeres nigrescens Bleeker, 1862	X				
Halichoeres scapularis (Bennett, 1831)	X				
Halichoeres trimaculatus (Quoy and Gaimard, 1834)	X				
Hemigymnus fasciatus (Bloch, 1792)	X				
Hemigymnus melapterus (Bloch, 1791)	X				
Hologymnosus annulatus (Lacepède, 1801)	X				
Hologymnosus doliatus (Lacepède, 1801)	X				
Labroides bicolor Fowler and Bean, 1928	X				
Labroides dimidiatus (Valenciennes, 1839)	X				
Leptojulis cyanopleura (Bleeker, 1853)	X				
Leptojulis sp.	X				
Macropharyngodon ornatus Randall, 1978	X				
Novaculichthys taeniourus (Lacepède, 1801)		X			
Pseudocheilinus hexataenia (Bleeker, 1857)	X				
Pseudojuloides elongatus Ayling and Russell, 1977		X			
Pteragogus enneacanthus (Bleeker, 1853)	X				
Stethojulis bandanensis (Bleeker, 1851)	X				
Stethojulis interrupta (Bleeker, 1851)	X				
Stethojulis strigiventer (Bennett, 1832)	X				
Thalassoma amblycephalum (Bleeker, 1856)	X				
Thalassoma hardwicke (Bennett, 1828)	X				
Thalassoma lunare (Linnaeus, 1758)	X				
Thalassoma lutescens (Lay and Bennett, 1839)	X				
Thalassoma purpureum (Forskål, 1775)	X				
Xenojulis margaritaceous (Macleay, 1884)	X				
Xyrichtys sp.		X			
Family Scaridae					
Chlorurus microrhinos (Bleeker, 1854)	X				
Chlorurus rhakoura Randall and Anderson, 1997	X				
Chlorurus sordidus (Forskål, 1775)	X				
Leptoscarus vaigiensis (Quoy and Gaimard, 1824)		X			
Scarus chameleon Choat and Randall, 1986	X				
Scarus ghobban Forskål, 1775	X				
Scarus psittacus Forskål, 1775	X				
Scarus rivulatus Valenciennes, 1840	X				
Scarus rubroviolaceus Bleeker, 1847	X				
Scarus schlegeli (Bleeker, 1861)	X				
Scarus sp.	X				
Family Pinguipedidae					
Parapercis clathrata Ogilby, 1911	X				

	Main Habitat				
	R	S	M	T	P
Parapercis nebulosa (Quoy and Gaimard, 1825)		X			
Parapercis cf. *xanthozona* (Bleeker, 1849)	X				
Parapercis sp.	X				
Family Opistognathidae					
Opistognathus darwiniensis Macleay, 1878	X				
Opistognathus inornatus Ramsay and Ogilby, 1878			X		
Family Trichonotidae					
Trichonotus setiger (Bloch and Schneider, 1801)		X			
Family Creediidae					
Limnichthys faciatus Waite, 1904		X			
Family Uranoscopidae					
Uranoscopus cognatus Cantor, 1850				X	
Family Blenniidae					
Atrosalarius fuscus holomelas (Günther, 1872)	X				
Bleniella chrysospilos (Bleeker, 1857)	X				
Bleniella periophthalmus (Valenciennes, 1836)	X				
Cirripectes filamentosus (Alleyne and Macleay, 1877)	X				
Cirripectes alleni Williams, 1993	X				
Cirripectes hutchinsi Williams, 1993	X				
Ecsenius bicolor (Day, 1888)	X				
Ecsenius lineatus Klausewitz, 1962	X				
Ecsenius yaeyamaensis (Aoyagi, 1954)	X				
Entomacrodus decussatus (Bleeker, 1858)	X				
Entomacrodus striatus (Quoy and Gaimard, 1836)	X				
Entomacrodus thalassinus (Jordan and Seale, 1906)	X				
Istiblennius edentulus (Forster, 1801)	X				
Istiblennius lineatus (Valenciennes, 1836)	X				
Istiblennius meleagris (Valenciennes, 1836)	X				
Laiphognathus multimaculatus Smith, 1955	X				
Meiacanthus grammistes (Valenciennes, 1836)	X				
Meiacanthus luteus Smith-Vaniz, 1987		X			
Mimoblennius atrocinctus (Regan, 1909)	X				
Omobranchus germaini (Sauvage, 1883)	X				
Omobranchus punctatus (Valenciennes, 1836)	X				
Omobranchus rotundiceps (Macleay, 1881)	X				
Parablennius postoculomaculatus Bath and Hutchins, 1986	X				
Petroscirtes breviceps (Valenciennes, 1836)	X				
Petroscirtes mitratus Rüppell, 1830	X				
Plagiotremus rhinorhynchos (Bleeker, 1852)	X				
Plagiotremus tapeinosoma (Bleeker, 1857)	X				
Salarias fasciatus (Bloch, 1786)	X				
Salarias spaldingi Macleay, 1878	X				
Family Notograptidae					
Notograptus guttatus Günther, 1867	X				
Notograptus sp.	X				
Family Tripterygiidae					
Enneapterygius larsonae Fricke, 1994	X				
Enneapterygius gracilis Fricke, 1994	X				
Enneapterygius minutus (Günther, 1877)	X				
Enneapterygius tutuilae Jordan and Seale, 1906	X				
Enneapterygius philippinus (Peters, 1869)	X				
Helcogramma striata Hansen, 1986	X	X			
Norfolkia brachylepis (Schultz, 1960)	X				
Norfolkia thomasi Whitley, 1964	X				

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Family Callionymidae					
Callionymus enneactis Bleeker, 1879	X				
Dactylopus dactylopus (Valenciennes, 1837)		X			
Diplogrammus xenicus (Jordan and Thompson, 1914)		X			
Synchiropus occidentalis Fricke, 1983	X				
Family Gobiidae					
Acentrogobius caninus (Valenciennes, 1837)			X		
Acentrogobius gracilis (Bleeker, 1875)			X		
Acentrogobius janthinopterus (Bleeker, 1852)			X		
Acentrogobius viridipunctatus (Valenciennes, 1837)			X		
Amblyeleotris gymnocephala (Bleeker, 1853)		X			
Amblyeleotris periophthalma (Bleeker, 1853)		X			
Amblyeleotris guttata (Fowler, 1938)		X			
Amblygobius bynoensis (Richardson, 1844)	X				
Amblygobius decussatus (Bleeker, 1855)	X				
Amblygobius phalaena (Valenciennes, 1837)	X				
Apocryptodon madurensis Bleeker, 1849			X		
Asterropteryx semipunctatus Rüppell, 1828	X				
Bathygobius cocosensis (Bleeker, 1854)	X				
Bathygobius fuscus (Rüppell, 1830)	X				
Bathygobius laddi (Fowler, 1931)	X				
Bryaninops amplus Larson, 1985		X			
Bryaninops loki Larson, 1985		X			
Bryaninops yongei (Davis and Cohen, 1969)		X			
Callogobius sclateri (Steindachner, 1879)	X				
Callogobius maculipinnis (Fowler, 1918)	X				
Callogobius sp.	X				
Coryphopterus duospilus (Hoese and Reader, 1985)	X	X			
Coryphopterus sp. 1	X	X			
Coryphopterus sp. 2	X				
Cryptocentrus caeruleomaculatus (Herre, 1933)		X			
Cryptocentrus cinctus (Herre, 1936)		X			
Cryptocentrus fasciatus (Playfair and Günther, 1867)		X			
Cryptocentrus leptocephalus (Bleeker, 1876)		X			
Cryptocentrus strigilliceps (Jordan and Seale, 1906)		X			
Cryptocentrus sp.		X			
Ctenogobiops pomastictus Lubbock and Polunin, 1977		X			
Drombus triangularis (Weber, 1911)		X	X		
Drombus sp.	X		X		
Eviota distigma Jordan and Seale, 1906	X				
Eviota inutilis Whitley, 1943	X				
Eviota nebulosa Smith, 1958	X				
Eviota prasina (Klunzinger, 1871)	X				
Eviota queenslandica Whitley, 1932	X				
Eviota sebreei Jordan and Seale, 1906	X				
Eviota storthynx (Rofen, 1959)	X				
Eviota zebrina Lachner and Karnella, 1978	X				
Favonigobius melanobranchus (Fowler, 1934)	X				
Favonigobius sp.	X				
Glossogobius circumspectus (Macleay, 1883)			X		
Gnatholepis scapulostigma Herre, 1953	X				
Gnatholepis sp.	X				
Gobiodon axillaris De Vis, 1884	X				
Gobiodon citrinus (Rüppell, 1838)	X				
Gobiodon histrio (Valenciennes, 1837)	X				
Gobiodon quinquestrigatus (Valenciennes, 1837)	X				
Gobiodon cf. *rivulatus* (Rüppell, 1830)	X				
Gobiopsis angustifrons Lachner and McKinney, 1978	X				
Istigobius decoratus (Herre, 1927)	X				
Istigobius nigroocellatus (Günther, 1873)	X				

	Main Habitat				
	R	S	M	T	P
Istigobius ornatus (Rüppell, 1830)	X				
Istigobius perspicillatus (Herre, 1945)	X				
Mugilogobius sp.			X		
Paragobiodon echinocephalus (Rüppell, 1830)	X				
Paragobiodon lacunicolus (Kendall and Goldsborough, 1911)	X				
Periophthalmus argentilineatus Valenciennes, 1837			X		
Pleurosicya plicata Larson, 1990		X			
Priolepis nuchifasciatus (Günther, 1874)	X				
Trimma okinawae (Aoyagi, 1949)	X				
Valenciennea alleni Hoese and Larson, 1994		X			
Valenciennea longipinnis (Lay and Bennett, 1839)		X			
Valenciennea muralis (Valenciennes, 1837)		X			
Valenciennea puellaris (Tomiyama, 1956)		X			
Valenciennea strigata (Broussonet, 1782)		X			
Yongeichthys nebulosus (Forskål, 1775)			X		
Family Eleotrididae					
Bostrychus sinensis Lacepède, 1801			X		
Butis butis (Hamilton-Buchanan, 1822)			X		
Family Microdesmidae					
Parioglossus formosus (Smith, 1931)	X				
Ptereleotris evides (Jordan and Hubbs, 1925)	X				
Ptereleotris hanae (Jordan and Snyder, 1901)	X				
Ptereleotris monoptera Randall and Hoese, 1985	X	X			
Family Acanthuridae					
Acanthurus dussumieri Valenciennes, 1835	X				
Acanthurus grammoptilus Richardson, 1843	X				
Acanthurus lineatus (Linnaeus, 1758)	X				
Acanthurus mata (Cuvier, 1829)	X				
Acanthurus nigricans (Linnaeus, 1758)	X				
Acanthurus nigrofuscus (Forskål, 1775)	X				
Acanthurus olivaceus Forster, 1801	X				
Acanthurus triostegus (Linnaeus, 1758)	X				
Ctenochaetus cyanocheilus Randall and Clements, 2001	X				
Ctenochaetus striatus (Quoy and Gaimard, 1824)	X				
Naso annulatus (Quoy and Gaimard, 1825)	X				
Naso fageni Morrow, 1954	X				X
Naso lituratus (Forster, 1801)	X				
Naso unicornis (Forskål, 1775)	X				
Family Zanclidae					
Zanclus cornutus (Linnaeus, 1758)	X				
Family Siganidae					
Siganus doliatus Cuvier, 1830	X				
Siganus fuscescens (Houttuyn, 1782)	X				
Siganus lineatus (Valenciennes, 1835)	X				
Siganus punctatus (Forster, 1801)	X				
Siganus trispilos Woodland and Allen, 1977	X				
Family Scombridae					
Acanthocybium solandri (Cuvier, 1831)					X
Euthynnus affinis (Cantor, 1850)					X
Grammatorcynus bicarinatus (Quoy and Gaimard, 1824)					X
Rastrelliger kanagurta (Cuvier, 1816)					X
Scomberomorus commerson (Lacepède, 1800)			X		X
Scomberomorus queenslandicus Munro, 1943					X
Scomberomorus semifasciatus (Macleay, 1884)			X		X
Family Psettodidae					
Psettodes erumei (Bloch and Schneider, 1801)		X			

	Main Habitat				
	R	S	M	T	P
Family Paralichthyidae					
Pseudorhombus arsius (Hamilton, 1822)		X	X		
Pseudorhombus elevatus Ogilby, 1912		X	X		
Pseudorhombus quinquocellatus Weber and de Beaufort, 1929			X		
Family Soleidae					
Pardachirus pavoninus (Lacepède, 1802)	X				
Soleichthys heterorhinos (Bleeker, 1856)	X				
Zebrias quagga (Kaup, 1858)				X	
Family Cynoglossidae					
Cynoglossus sp.				X	
Family Balistidae					
Abalistes stellaris (Bloch and Schneider, 1801)		X			
Balistapus undulatus (Park, 1797)	X				
Balistoides viridescens (Bloch and Schneider, 1801)	X				
Rhinecanthus aculeatus (Linnaeus, 1758)	X				
Sufflamen chrysopterus (Bloch and Schneider, 1801)	X				
Sufflamen fraenatus Latreille, 1804	X				
Family Monacanthidae					
Aluterus scriptus (Osbeck, 1765)	X				X
Anacanthus barbatus Gray, 1831		X			
Cantherhines pardalis (Rüppell, 1837)	X				
Chaetodermis penicilligera (Cuvier, 1817)		X			
Colurodontis paxmani Hutchins, 1977					X
Eubalichthys caeruleoguttatus Hutchins, 1977					X
Monacanthus chinensis (Osbeck, 1765)		X		X	
Oxymonacanthus longirostris (Bloch and Schneider, 1801)	X				
Paramonacanthus choirocephalus (Bleeker, 1852)				X	
Pervagor janthinosoma (Bleeker, 1854)	X				
Pseudomonacanthus elongatus Fraser-Brunner, 1940				X	
Pseudomonacanthus peroni (Hollard, 1854)				X	
Family Ostraciidae					
Lactoria cornuta (Linnaeus, 1758)				X	
Ostracion cubicus Linnaeus, 1758	X				
Ostracion nasus Bloch, 1785				X	
Tetrosomus reipublicae (Ogilby, 1913)					
Family Tetrodontidae					
Arothron hispidus (Linnaeus, 1758)	X				
Arothron immaculatus (Bloch and Schneider, 1801)	X				
Arothron reticularis (Bloch and Schneider, 1801)	X				
Arothron stellatus (Bloch and Schneider, 1801)	X				
Canthigaster coronata (Vaillant and Sauvage, 1875)	X				
Chelonodon patoca (Hamilton-Buchanan, 1822)	X				
Lagocephalus sceleratus (Gmelin, 1789)					X
Marilyna darwinii (Castelnau, 1873)				X	
Torquigener pallimaculatus Hardy, 1983				X	
Family Diodontidae					
Diodon holocanthus Linnaeus, 1758	X				
Diodon hystrix Linnaeus, 1758	X				
Diodon liturosus Shaw, 1804	X				
Tragulichthys jaculiferus (Cuvier, 1818)	X				