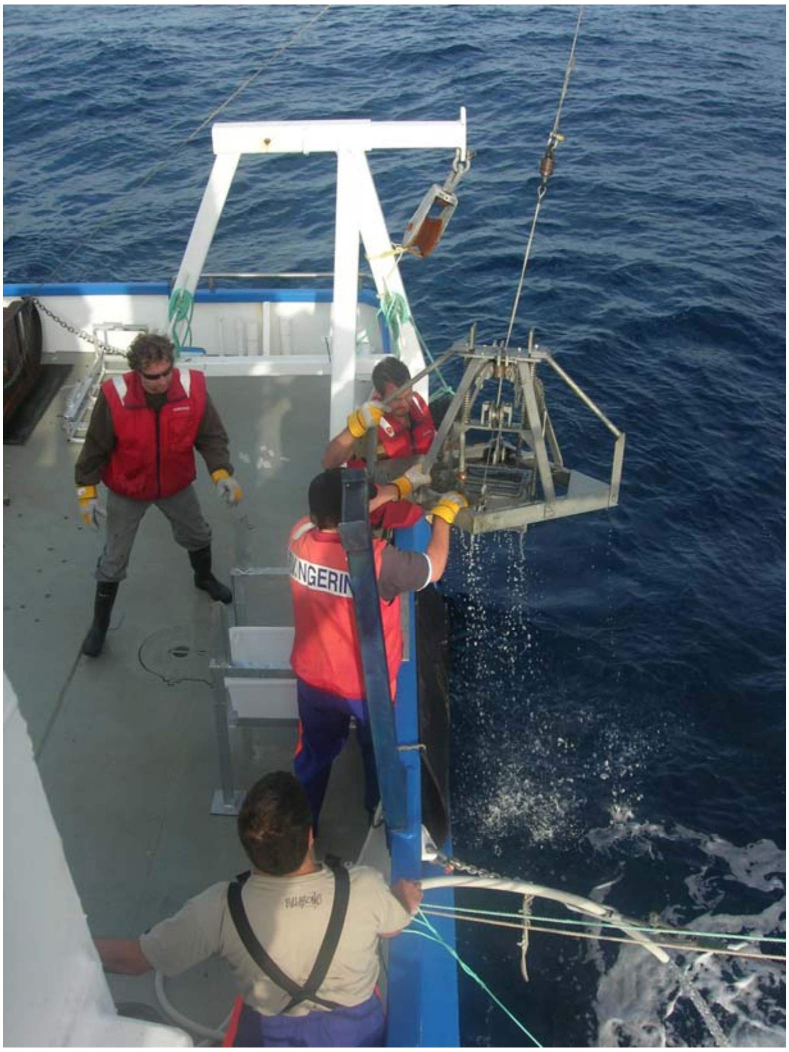
Infaunal assemblages of the eastern Great Australian Bight: Effectiveness of a Benthic Protection Zone in representing regional biodiversity



Final report to the South Australian Department for Environment and Heritage and the Commonwealth Department of the Environment, Water, Heritage and the Arts

David R. Currie, Shirley J. Sorokin and Timothy M. Ward

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EXECUTIVE SUMMARY

1. This report describes the infaunal, macro-invertebrate assemblages of the continental shelf of the Great Australian Bight (GAB) in relation to environmental factors, including water chemistry, hydrography and sediment type.

2. Patterns of species composition are examined to assess the effectiveness of the Benthic Protection Zone (BPZ) in representing the region's benthic biodiversity.

3. A total of 240 species from 11 phyla were collected from 65 x 0.1 m^2 Smith-McIntyre grabs.

4. Less than half of the taxa collected during this survey (99/240) could be confidently identified to the level of species, and it appears that a large proportion of the GAB infauna is undescribed.

5. Motile, deposit-feeding organisms (primarily annelids and crustaceans) dominated samples, and comprised over 25% of the abundance and 35% of the species collected.

6. Most infaunal organisms collected were relatively uncommon, and 86% of species individually represented less than 2% of the total abundance.

7. Correlation analyses revealed a strong and significant positive relationship between species richness and abundance, and highlighted a general decline in both parameters with increasing latitude.

8. Numbers of species and total abundance were typically highest near the Head of the Bight, where water temperatures are elevated, and in inner-shelf waters off the western Eyre Peninsula, which support high levels of plankton productivity.

9. The infaunal distribution pattern corresponds closely with spatial patterns in epibenthic standing-stock, and reinforces the notion that Head of the Bight and western Eyre Peninsula are 'hotspots' of benthic biodiversity.

10. Cluster analysis of species abundance data identified three community groupings, closely related to depth. As all three communities were represented within the BPZ, it appears that this zone is well placed to represent and preserve the infaunal biodiversity of the eastern GAB.

1 INTRODUCTION

1.1 General Background

Due to the remote and generally inaccessible nature of the coastline, the marine ecosystems of the Great Australian Bight (GAB) have received considerably less research attention than other areas of temperate Australia. Despite this, a growing body of research suggests that the waters spanning the GAB support a rich diversity of organisms, which in some instances is unparalleled both in Australia and overseas (Edyvane, 1999; Ward et al., 2006).

The waters of the GAB are located at the centre of the Flindersian Biogeographic Province first described by Knox (1963). This region extends across the entire southern coast of the continent and is characterised by a marine benthic flora and fauna with warm to cool-temperate affinities. Within this Flindersian Province over 1,000 species of macroalgae, 22 species of seagrass, 600 species of fish, 110 species of echinoderm and 189 species of ascidian have been recorded (Wilson and Allen, 1987; Womersley, 1990; Shepherd, 1991: cited in Edyvane, 1999). Much of this fauna has not been recorded outside the region, and approximately 85% of fish species, 95% of molluscs and 90% of echinoderms are thought to be endemic (Poore, 1995). The relatively high levels of biodiversity and apparent endemism for southern Australian waters have been attributed to a range of physical factors. These factors include the continent's long period of geological isolation (> 65 million years), the unusually large width of the continental shelf, and the characteristically low nutrient status of Australia's southern coastal waters (Poore, 1995).

Studies of the regional marine flora and fauna have largely concentrated on shallow nearshore environments, and in particular have considered the taxonomy and general distribution of invertebrates (Shepherd and Thomas, 1982, 1989; Shepherd and Davies, 1997) algae (Womersley, 1984, 1987, 1994, 1996, 1998, 2003) and seagrasses (Shepherd and Womersley, 1971, 1976, 1981). By comparison, very little is known about the organisms that inhabit the seafloor offshore. Few systematic surveys of benthic infauna and epifauna have been undertaken in shelf and slope waters anywhere in Australia (Poore, 1995). Moreover, there is currently no comprehensive information base for the abundance and distribution of benthic biota in Australia's Exclusive Economic Zone (EEZ) (Heap et al., 2005).

The crescent-shaped continental shelf of the GAB extends some 1300 km from Cape Pasley (Western Australia) to the Cape Catastrophe (South Australia), and covers an area of almost 200,000 km^2. Near the Head of the Bight, the shelf is about 260 km wide, but the shelf becomes progressively narrower with increasing distance to the east and west, and is approximately 80 km wide at either end (James et al., 2001). The inland portion of the GAB is characterised by very low annual rainfall, there are no major rivers in the region, and the supply of terrigenous sediments to the marine realm is low. As a consequence, the shelf bedforms of the GAB are largely biogenic and form part of the world's largest expanses of temperate carbonate sediments (Conolly and Von Der Borch, 1967; Wass, et al., 1969).

1.2 The Great Australian Bight Marine Park

The Benthic Protection Zone (BPZ) of the Great Australian Bight Marine Park (GABMP) was proclaimed in 1998 to preserve a representative sample of benthic flora and fauna and sediments (DEH, 2005). The BPZ consists of a 20 nautical-mile-wide strip orientated north to south and extending from three nautical miles from the coast to the edge of Australia's EEZ, 200 nautical miles offshore (Fig. 1). Within this zone, the benthic assemblages are protected from demersal trawling and other potentially destructive human activities. Before the BPZ was proclaimed, vessels of the GAB Trawl Fishery conducted demersal trawls in depths of 120 to 160 m (Caton, 2002).

The location of the BPZ was not determined on the basis of quantitative ecological data. In the absence of such information, the BPZ was located with the goal of preserving a cross-shelf (and slope) transect near the widest part of the continental margin. Despite the GAB's international significance as part of the world's only northern boundary current system (Middleton and Cirano, 2002), and a known region of high diversity and endemism, few data are available on the benthic ecology of the GAB. No preliminary descriptions are available on the species composition of the shelf infaunal assemblages or the environmental factors that affect their patterns of distribution and abundance. Hence, the suitability of the BPZ for representing the infaunal biota of the GAB is unknown. The most informative data on the region's benthic ecology are the sedimentary data of James et al. (2001), who suggested that the sedimentary facies reflect the spatial distribution of benthic assemblages in the GAB.

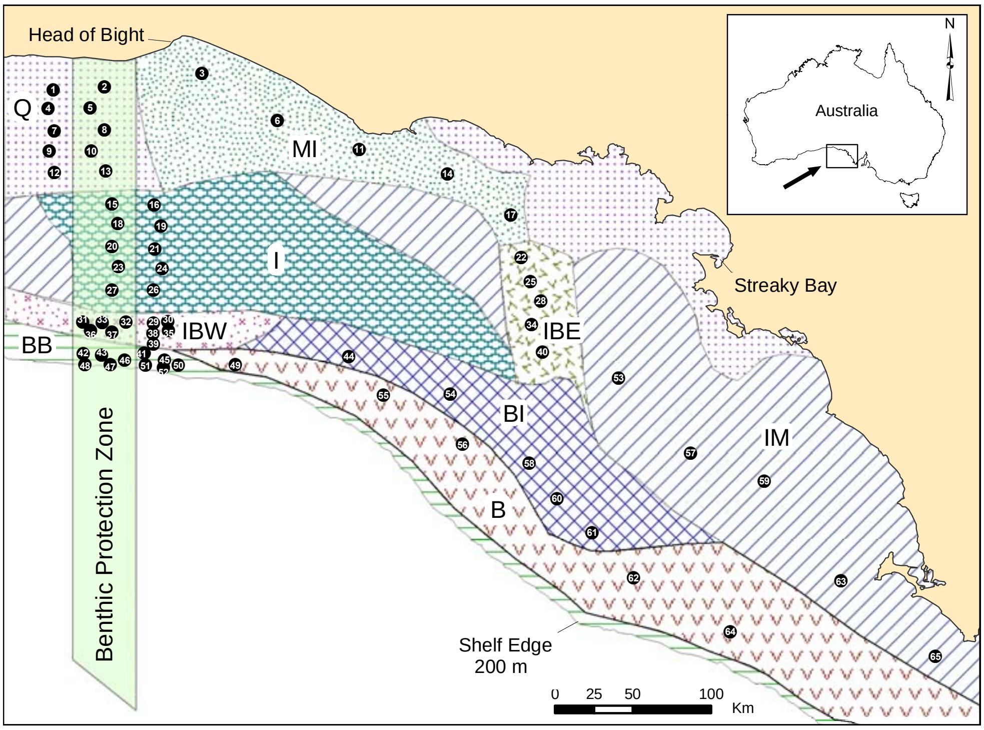

Figure 1. Location of study area, sedimentary facies (adapted from James et al., 2001) and Benthic Protection Zone of the Great Australian Bight Marine Park. Closed circles indicate locations of sites sampled by Smith-McIntyre grab. Numeric codes denoting nine sedimentary facies are as follows: B, Bryozoan; BB, Branching Bryozoan; BI, Bryozoan Intraclast; I, Intraclast; IBE, Intraclast Bryozoan East; IBW, Intraclast Bryozoan West; IM, Intraclast Mollusc; MI, Mollusc Intraclast; Q, Quartzose Skeletal.

1.3 Rationale and Objectives

This report presents the results of the first quantitative survey of the infaunal assemblages of the continental shelf in the eastern GAB. The objectives of the study were to: (1) identify the infaunal macro-invertebrates of the eastern GAB; (2) determine environmental factors (e.g. depth and sediment composition) that might be associated with the distribution patterns of the infaunal assemblages; and (3) assess the suitability of the BPZ for representing the infaunal assemblages of the GAB.

2 METHODS

2.1 Infauna

Samples of infauna were collected from 65 sites in the GAB during October 2006 (Appendix 1). To provide a basis for assessing the utility of sediments as a predictor for biological communities, sampling sites were stratified according to the locations of nine sedimentary facies recognised for the region (Fig. 1). Five sites, separated by less than 125 km, were sampled within each of the nine sedimentary facies. A further five sites were sampled in each of four sedimentary facies traversed by the BPZ.

Benthic invertebrates were collected at each site using a 0.1 m^2 Smith McIntyre grab. All grabs collected were sieved through a 1 mm mesh screen and the fauna retained was preserved in 5% formaldehyde solution. This fauna was later sorted in the laboratory to the lowest taxonomic level (generally species) before being counted. Voucher specimens and a database were subsequently lodged at the South Australian Museum, Adelaide.

2.2 Sediment

A single sediment sub-sample (70 ml) was retained from each grab prior to sieving. This fraction was collected from the surface layer by scraping an open vial across the top of each sample. These sediments were snap-frozen and stored at -20ºC, before being examined for size structure and composition. Sediment samples were sieved through an agitated stack of Endecott sieves (apertures of 2 mm, 1 mm, 500 µm, 250 µm, 125 µm and 63 µm) and the amount of mud present (<63 µm) determined as a percentage of the total sample mass. This parameter, together with the mean grain-size and sorting coefficient, were subsequently used to investigate relationships between faunal composition and sediment structure.

2.3 Water chemistry

A comprehensive water quality survey was undertaken at the same time as the grab sampling study. Measures of water temperature, salinity, oxygen saturation, turbidity and total chlorophyll were collected using a Sea-Bird SBE19 SEACAT conductivity-temperature-depth (CTD) profiler fitted with modular sensors for dissolved oxygen, turbidity and fluorescence. This instrument was preset to acquire data at 1-second intervals, and was lowered to within 5 m of the seafloor at each station immediately prior to grabbing. As water quality data adjacent to the seafloor was considered most biologically relevant to this study of infauna, all analyses use data extracted from the deepest part of each vertical profile.

2.4 Hydro-acoustics

Geo-referenced hydro-acoustic data were collected using a Biosonics DT-X scientific echosounder interfaced with a differential-GPS unit. The echosounder comprised two spilt-beam transducers (200 kHz and 70 kHz), and was towed from a stabilizer bar for most of the voyage. Measures of depth recorded along the voyage track were subsequently used to enhance the accuracy and resolution of existing bathymetric data for the GAB. Echo return indices for bottom hardness and roughness were also examined in relation to sediment structure, in an effort to assess their predictive abilities for habitat mapping and their potential in predicting biological diversity.

2.5 Underwater video

A submersible video recorder was used to collect real-time imagery of the seafloor in order to ground truth variations in the echosounder signature (i.e. characteristics of the substrate), and provide qualitative information relating to habitat types and dominant biota. The camera was mounted in a heavy steel frame that enabled the equipment to be deployed directly beneath the survey vessel, even in strong currents. An independent lighting source (2 x 250w High Intensity Discharge lamps) was attached to the frame to provide illumination at depth, and to enable video deployments at night. Two laser lights were also mounted on the frame to calibrate the field of view. Video imagery of the seafloor was collected from 11 sampling stations situated inside the BPZ at depths between 49 m and 156 m.

2.6 Data analysis

A geographical information system (GIS) was employed to characterise and display spatial trends in environmental data. Physical, chemical and biological attributes for each sampling station were interpolated using a kriging algorithm (Cressie, 1993), and a series of predictive maps was constructed. These maps were used to visualise discontinuities between homogeneous regions and highlight patterns of similarity between variables. Relationships between each environmental variable were subsequently tested using Pearson correlation coefficients.

Variations in benthic community structure between the 65 sampling stations were examined using Bray-Curtis (B-C) dissimilarity measures (Bray and Curtis, 1957). This dissimilarity measure was chosen because it is not affected by joint absences, and it has consistently performed well in preserving 'ecological distance' in a variety of simulations on different types of data (Field et al., 1982; Faith et al., 1987). Single square root transformations were applied to the data before calculating the B-C dissimilarity measures. These transformations were made to prevent abundant species from influencing the B-C dissimilarity measures excessively (Clarke and Green, 1988; Clarke, 1993).

The computer package PRIMER (Clarke and Gorley, 2001) was employed for all multivariate analyses in this study. A combination of hierarchical agglomerative clustering and non-metric multidimensional scaling (MDS) was used to group sites according to their infaunal community composition. A similarity percentage test (SIMPER) was then conducted to determine those species contributing most to within and between site groupings. The extent to which measured environmental variables (depth, latitude, longitude, temperature, salinity, oxygen saturation, chlorophyll concentration, turbidity, mud content, sediment size and sediment sorting) could account for observed community groupings was further tested using the BIOENV routine of Clarke and Ainsworth (1993).

As most taxa were found at low and variable densities, it was not generally possible to test for spatial differences in the abundance of individual species. Species were therefore aggregated by phylum and feeding type to examine any influences on taxonomic affinity and trophic structure. Taxa were placed into six feeding guilds (suspension, deposit, predator, scavenger, grazer, parasite) following the classification of Fauchauld and Jumars (1979) for annelids, Short and Potter (1987) for molluscs, Jones and Morgan (2002) for crustaceans, and Barnes (1974) for the remaining phyla.

3 RESULTS

3.1 Physical characteristics

3.1.1 Bathymetry

The bathymetric data show that the seafloor of the continental shelf is sharply inclined throughout much of the eastern GAB, dropping to a depth of 40 m within a few kilometres of the coast (Fig. 2a). Offshore, and south from the Head of the Bight, the seafloor is relatively flat and slopes gently for about 260 km before reaching the shelf edge at 200 m depth. Towards the east, the shelf topography is more variable, particularly through the inner-shelf waters (<100 m depth). Many small islands of the Nuyts Archipelago and Investigator Group are scattered through this area, and contribute to the complex bathymetry of the region. Further offshore, the outer-shelf slopes gently between 100 m and the shelf edge.

Marked depth-related differences in bottom topography were evident from video inspections inside the BPZ (Appendix 2). The seafloor of the inner-shelf (40-60 m depth) was typically composed of hard-packed winnowed sand, swept into irregular, sharp-crested, ripples (wavelength = 0-20 cm; amplitude = 0-50 cm). These sands were mainly bare, but dense patches of epifauna (chiefly sponges and ascidians) were sporadically encountered here stretching for more than 10 m. By comparison, high-relief sand dunes (wavelength = 60-100 cm; amplitude = 20-30 cm) characterised the bedforms further offshore (70-120 m depth). These dunes were evidently reworked by prevailing south-westerly swells, and were characteristically sinuous-crested; with peaks composed of fine sediments and troughs comprising mainly of coarse abraded shell fragments. Epibenthic growth was sparse in this

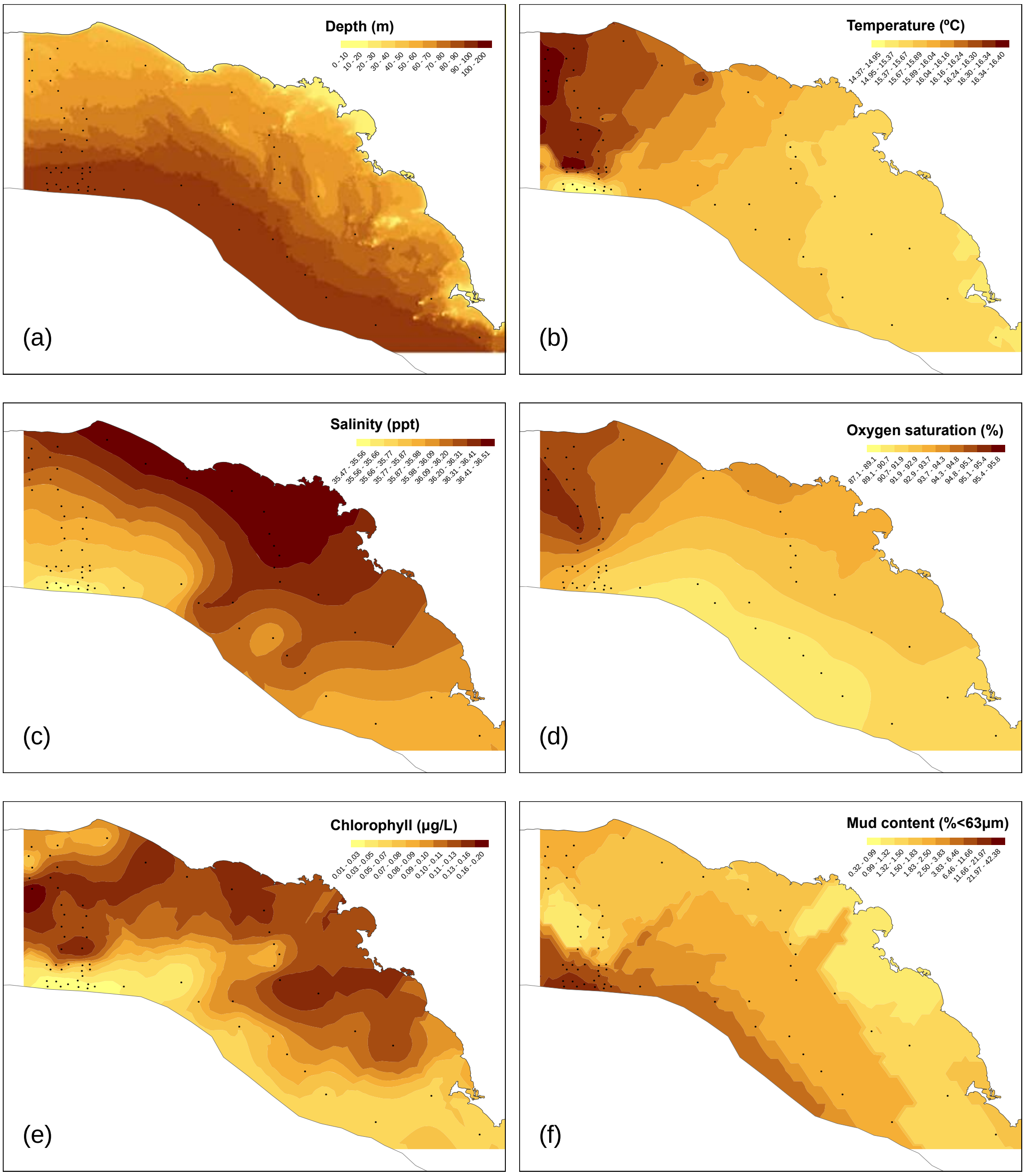

Figure 2. Predictive maps of the seafloor in the eastern Great Australian Bight showing variations in: (a) bottom topography, (b) water temperature, (c) salinity, (d) dissolved oxygen content, (e) total chlorophyll concentration, and (f) sedimentary mud content. Bathymetric predictions are based on high-resolution (250 m) hydrographic survey data. All other estimates are derived from un-replicated CTD/grab samples collected at 65 separate sampling stations (small filled circles).

area of the shelf, with small isolated clusters of sponges, ascidians and hydroids observed almost exclusively in the dune troughs. The seafloor in the outer-shelf (> 150 m depth) of the BPZ was flat and muddy and clearly outwith the direct influence of ground swell waves. The sediment surface here is peppered with small pits and depressions (presumably formed by burrowing organisms), and is covered by a thin but uniform growth of small (< 5 cm) filter-feeding organisms (mainly hydroids and bryozoans).

3.1.2 Temperature
Large differences in near-bottom seawater temperatures were observed across the eastern GAB during October 2006 (Fig. 2b). A large pool of warm water (> 16ºC) characterised much of the inner-shelf south of the Head of the Bight, and was consistent with a feature known as the GAB Plume; an easterly intrusion of heated water that develops due to strong summer heating in the shallow areas of the northwestern Bight (Herzfeld, 1997). Water temperatures gradually declined along the inner-shelf to the east of the warm pool, and reach their lowest values (~15ºC) at the foot of the Eyre Peninsula. A decline in temperature was also observed at the shelf break to the south of the warm pool, however this change in temperature was much more pronounced (Δ > 2ºC) and almost certainly a feature of the abrupt change in depth at this location.

3.1.3 Salinity
Cool, high-salinity water (> 36‰) dominates the inner-shelf waters, east of the Head of the Bight (Fig. 2c). This feature is consistent with evaporative forcing and winter cooling of the eastwardly drifting GAB Plume. Further cooling and winter downwelling of this dense saline water is evidenced in this study by the presence of a wide tongue of high-salinity water extending down the slope of the shelf to the southwest of Streaky Bay. This downwelling appears to be countered in the central GAB by an on-shelf flow of less saline water (< 35.5‰) from the open ocean to the south.

3.1.4 Dissolved oxygen
Distributional patterns in dissolved oxygen saturation (Fig. 2d) broadly reflect areal differences in temperature (Fig. 2b). Oxygen saturation was highest in the warm inshore waters near the Head of the Bight (> 95%) but tended to decline both inshore toward the foot of the Eyre Peninsula and offshore toward the edge of the shelf. Notably, an area of oxygen-depleted water (< 90%) characterised the deep outer-shelf stations to the southwest of Streaky Bay, and was consistent with observations of downwelling at this location.

3.1.5 Chlorophyll
Near-bottom chlorophyll concentrations were highest (> 0.1 μg/L) in the inner-shelf waters of the GAB, and it appears that this region is a major site for primary production (Fig. 2e). By comparison, most outer-shelf stations were located in depths beyond the photic zone (> 130 m) and consequently supported very low concentrations of chlorophyll. In particular, elevated levels of chlorophyll to the south of the Head of the Bight, coupled with peaks in oxygen saturation, suggest active photosynthesis here. Primary production in this area is presumably enhanced by localised upwelling of nutrient rich water across the adjacent shelf-break.

3.1.6 Sediment
Sediments in the eastern GAB were variable in structure and ranged from mud, through fine and coarse sand, to gravel. Because water depth plays an important role in determining the textural composition of sediments, spatial patterns in grain-size were broadly consistent with patterns in shelf bathymetry (Fig. 2f). Sediments were typically coarsest in shallow inshore waters, and became progressively finer with increasing depth and distance offshore (Appendix 3). These sediments were found to be composed almost entirely of biogenic material, including fragments of bryozoans, molluscs, coralline algae and forams (Appendix 4).

3.2 Faunal characteristics

3.2.1 Faunal composition

In total, 2288 individuals from 240 species were found in the 65 grab samples collected during this study (Appendices 5-7). Crustaceans and annelids together accounted for more than 87% of the individuals and 74% of all species collected (Figs. 3a-b). Other less common taxa encountered included molluscs, echinoderms, chordates, arachnids, sarcodinids, sipunculids, nematodes, nemerteans and brachiopods. Crustaceans and annelids were also the most widely distributed taxa and occurred at 100% (65) and 97% (63) of the sampling sites, respectively (Fig. 3c). A further five taxa (molluscs, chordates, echinoderms, nematodes and nemerteans) were relatively well distributed and found at more than 18% (12) of the sampling sites. The sarcodinids, arachnids, sipunculids and brachiopods had much more restricted distributions and were encountered at less then 7% (4) of all sites sampled.

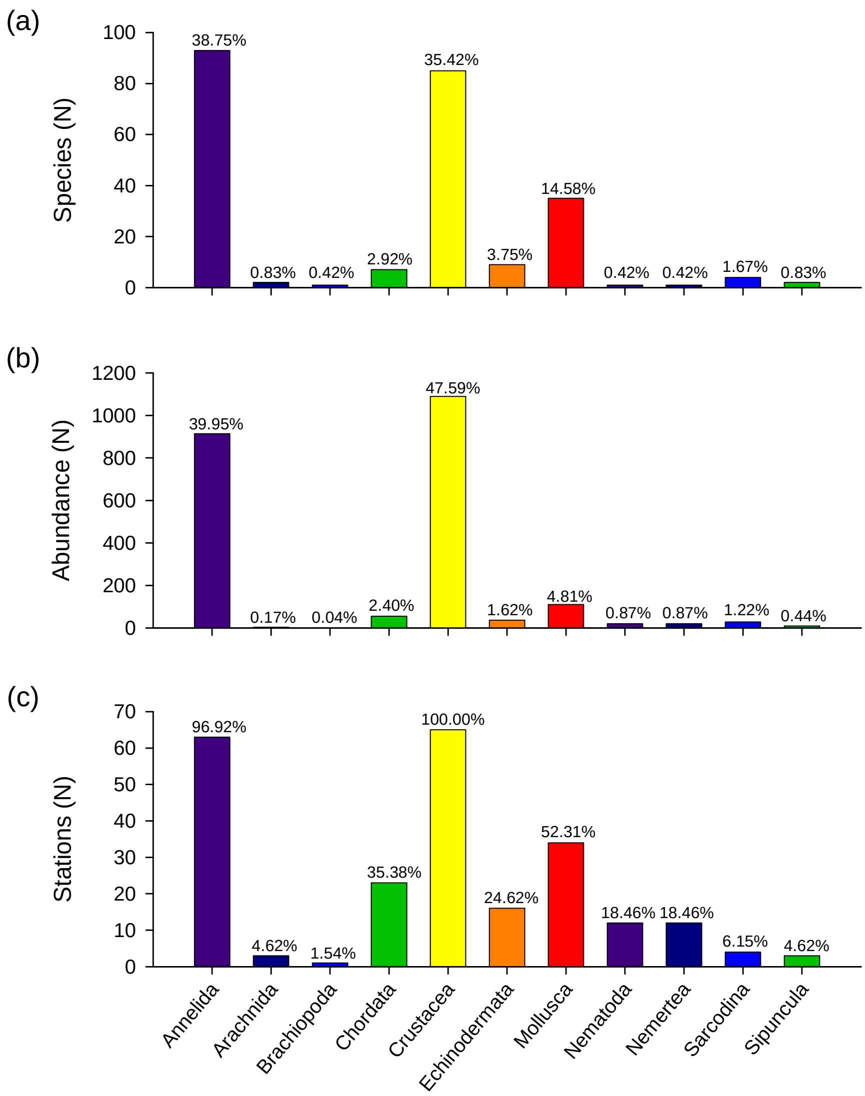

Figure 3. Total (a) number of species and (b) individuals of each major phyla collected during the survey, and (c) the total number of sites (out of 65) at which specimens belonging to each major phyla were collected. Values for each variable are shown as percentages above each bar.

Deposit-feeding organisms (primarily annelids and crustaceans) dominated the infaunal communities sampled, and accounted for more than 35% of the total species richness and 25% of the total abundance. Scavengers, predators and suspension-feeders were also common, and comprised 23%, 21% and 18% of the total species diversity, and 31%, 14% and 27% of the total abundance, respectively. Other feeding guilds, including grazers and parasites, were rare by comparison and individually comprised less than 3% of the total species richness and 1% of the total abundance.

The tube-building serpulid polychaete *Filograna implexa* was the most abundant species found during the study. This small (0.5 cm), suspension feeding organism represented more than 13% of the total infaunal abundance, but was present at less that 3% of the sampling stations. The melitid amphipod *Ceradocus rubromaculatus* was the next most common species overall, and accounted for 8% of the total abundance. This organism was more widely distributed and was collected at more than 12% of the sampling stations. A further seven species (including the polychaete *Syllis gracilis*, the amphipods *Xenocheira fasciata*, *Dulichiella australis* and *Eurystheus persetosus*, the nebaliacean *Paranebalia longipes*, the tanaid *Kalliapseudes obtusifrons*, and the mysid *Paranchialina angusta*) accounted for 2-4% of the total. All other organisms (96% of species) were collected infrequently, and individually contributed less than 2% to the total abundance.

3.2.2 Spatial patterns in infaunal richness and abundance

Species richness and abundance were highly correlated (Table 1), and distribution patterns for richness and abundance were therefore broadly similar (Figs. 4a-b). The highest abundances (> 50/0.1 m^2) were found in inner-shelf waters of the Eyre Peninsula, and in waters near the Head of the Bight. Abundances gradually declined between these two regions, and additionally decreased in an offshore direction. Similarly, species richness was high (> 20/0.1 m^2) at the Head of the Bight and in near-shore waters off the Eyre Peninsula. A low-diversity area extended across the shelf between these two regions, and included most of the central part of the study area.

Table 1. Pearson correlation coefficients between depth, latitude, longitude, temperature, salinity, oxygen saturation, total chlorophyll concentration, turbidity, percentage mud, mean sediment grain size, sediment sorting and benthic species richness and abundance. Significant correlations are denoted at the **1% level and *5% level.

	Depth	Latitude	Longitude	Temperature	Salinity	Oxygen	Chlorophyll	Turbidity	% Mud	Sediment size	Sediment sorting	Richness
Depth	.	.	.	.	.	.	.	.	.	.	.	.
Latitude	-0.54**	.	.	.	.	.	.	.	.	.	.	.
Longitude	-0.11	0.66**	.	.	.	.	.	.	.	.	.	.
Temperature	-0.72**	-0.56**	-0.34**	.	.	.	.	.	.	.	.	.
Salinity	-0.80**	-0.34**	0.42**	0.36**	.	.	.	.	.	.	.	.
Oxygen	-0.55**	-0.72**	-0.49**	0.53**	0.22	.	.	.	.	.	.	.
Chlorophyll	-0.77**	-0.41**	0.07	0.60**	0.61**	0.55**	.	.	.	.	.	.
Turbidity	0.66**	0.60**	0.16	-0.53**	-0.58**	-0.60**	-0.54**	.	.	.	.	.
% Mud	0.66**	0.12	-0.22	-0.66**	-0.49**	-0.17	-0.55**	0.28*	.	.	.	.
Sediment size	-0.23	0.08	0.24	0.23	0.24*	-0.19	0.14	-0.16	-0.58**	.	.	.
Sediment sorting	0.72**	0.15	-0.22	-0.70**	-0.53**	-0.22	-0.62**	0.32**	0.93**	-0.50**	.	.
Richness	-0.04	-0.30*	-0.26*	-0.03	-0.01	0.29*	-0.10	-0.06	0.17	-0.03	0.21	.
Abundance	-0.13	-0.34**	-0.24*	0.01	0.06	0.32**	-0.06	-0.14	0.15	-0.04	0.19	0.89**

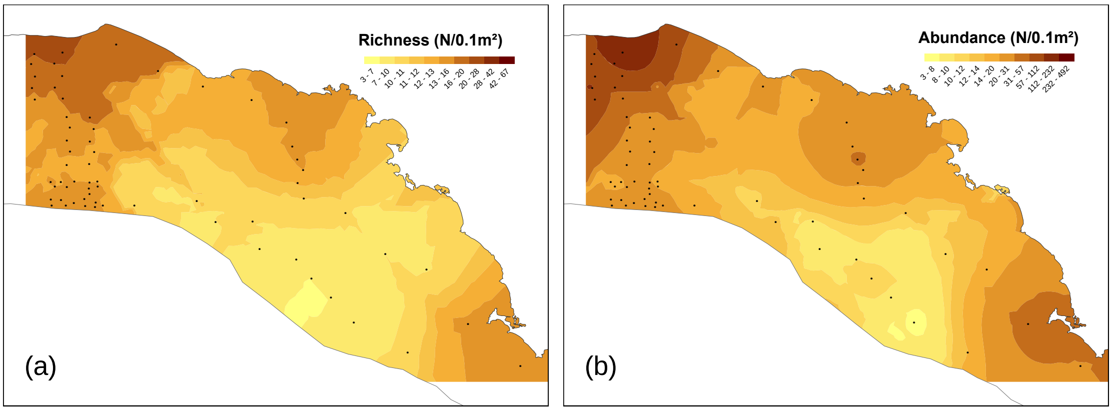

Figure 4. Predictive maps of (a) total infaunal richness (number species/0.1 m^2), and (b) total infaunal abundance (number individuals/0.1 m^2) in the eastern Great Australian Bight. Note that estimates presented are derived from un-replicated 0.1 m^2 Smith-McIntyre grab samples at 65 separate sampling stations (small filled circles).

Species richness and abundance declined significantly with oxygen saturation, and increased significantly with latitude and longitude (Table 1). There were also significant correlations between oxygen saturation, latitude and longitude. To evaluate the effects of these interrelationships on faunal richness and abundance, partial correlations were necessary. These indicted that the abundance of chordates (principally ascidians and lancelets), increased with increasing oxygen saturation (Table 2). Furthermore, there was a significant latitudinal increase in echinoderm abundance, with the highest densities being recorded in the most northerly part of the shelf.

Table 2. Partial correlation analysis of infaunal richness (spp./0.1 m^2), total abundance (N/0.1 m^2) and phyla abundance (N/0.1 m^2) with environmental variables, oxygen saturation (%), latitude and longitude. Factors partialled out: (a) latitude, longitude, (b) oxygen saturation. Significant correlations are denoted at the *5% level.

	Oxygen a	Latitude b	Longitude b
Species Richness	0.10	-0.15	-0.14
Total Abundance	0.12	-0.16	-0.10
Abundance			
Anellida	0.07	-0.12	-0.13
Arachnida	0.05	0.03	-0.03
Brachiopoda	0.11	0.25	0.29
Chordata	0.23*	0.13	0.01
Crustacea	0.16	-0.10	0.01
Echinodermata	0.06	-0.26*	-0.14
Mollusca	0.07	-0.21	-0.09
Nematoda	-0.09	-0.23	-0.06
Nemertea	-0.16	-0.23	-0.04
Sarcodina	-0.12	-0.04	-0.20
Sipuncula	-0.09	-0.24	-0.02

3.2.3 Infaunal community structure

Analysis of similarity tests conducted on the nine sedimentary facies defined *a priori* resulted in a small but significant global R statistic (Table 3). This indicated that there were differences in community structure between facies. Pair-wise comparisons, however, showed that while many of the facies sampled support quite distinct infaunal communities, there was considerable overlap in the faunal composition between facies. This was particularly evident for facies represented in the inner-shelf, where no significant differences in community structure were detected between the Intraclast, Mollusc Intraclast, Intraclast Bryozoan East and Quartzose Skeletal facies (Table 3, Fig. 1).

Table 3. Results of analysis of similarity (ANOSIM) test for differences in epibenthic community structure between 9 sedimentary facies on the Great Australian Bight. Global R statistic = 0.234 (P = 0.001). Significance for pairwise tests are denoted at the **1% level and *5% level.

	B	BB	BI	IBE	IBW	IM	I	MI
Bryozoan (B)	-	-	-	-	-	-	-	-
Branching Bryozoan (BB)	0.529**	-	-	-	-	-	-	-
Bryozoan Intraclast (BI)	0.112	0.391**	-	-	-	-	-	-
Intraclast Bryozoan East (IBE)	0.260*	0.135	0.272	-	-	-	-	-
Intraclast Bryozoan West (IBW)	0.087	0.344**	0.031	0.236*	-	-	-	-
Intraclast Mollusc (IM)	0.132	0.519**	0.068	0.068	0.099	-	-	-
Intraclast (I)	0.412**	0.514**	0.270*	0.108	0.258**	0.303*	-	-
Mollusc Intraclast (MI)	0.001	0.447**	0.248	0.024	0.256*	0.208	0.289	-
Quartzose Skeletal (Q)	0.361**	0.326**	0.380**	0.148	0.302**	0.200*	0.006	0.053

As the ANOSIM analysis showed variable levels of correspondence between sites and facies, site groupings were re-classified using a combination of MDS and cluster analyses. Three discrete station groupings were separated at the 12% Bray-Curtis similarity level from the resultant ordination (Fig. 5), and their corresponding distributions plotted (Fig. 6). Group I comprised 8 stations characterised by moderately diverse, silty sediments (occurring exclusively on the deep outer-margin of the continental shelf). Group II consisted of 19, low-diversity, sandy stations (principally located in deep outer-self waters), while Group III contained 39 stations with moderately diverse, gravely-sands (primarily located in the inner-shelf).

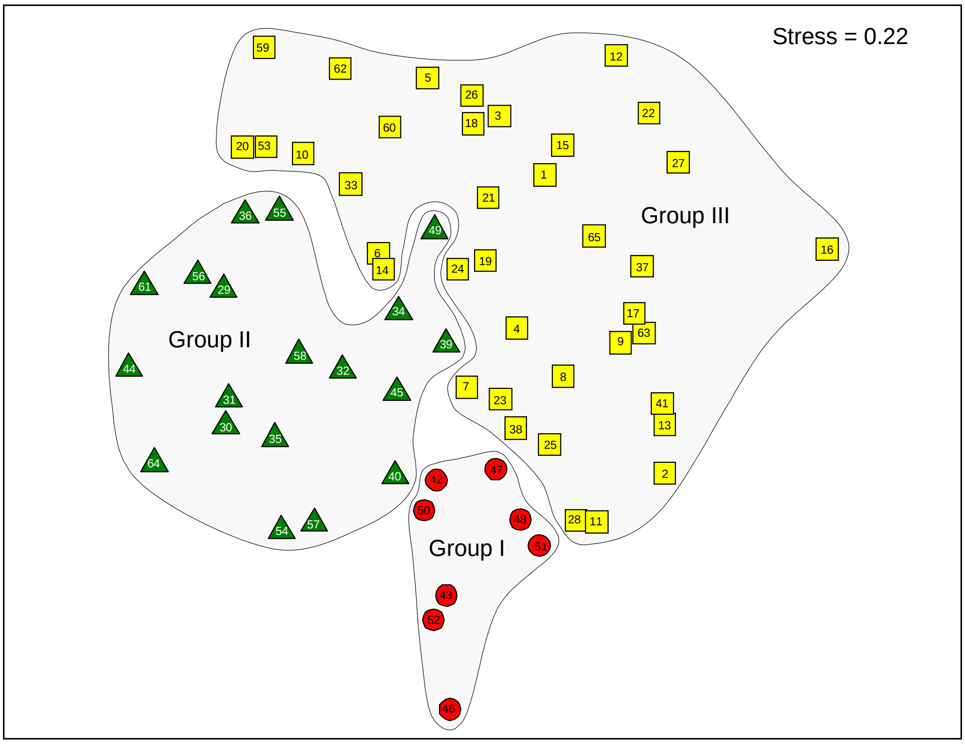

Figure 5. Non-metric MDS ordination of infaunal community structure at 65 sampling stations (numerals) in the eastern Great Australian Bight. Three station grouping are identified at the 12% Bray-Curtis similarity level: Group I (red circles) = shelf edge, Group II (green triangles) ≈ outer shelf, Group III (yellow squares) ≈ inner shelf.

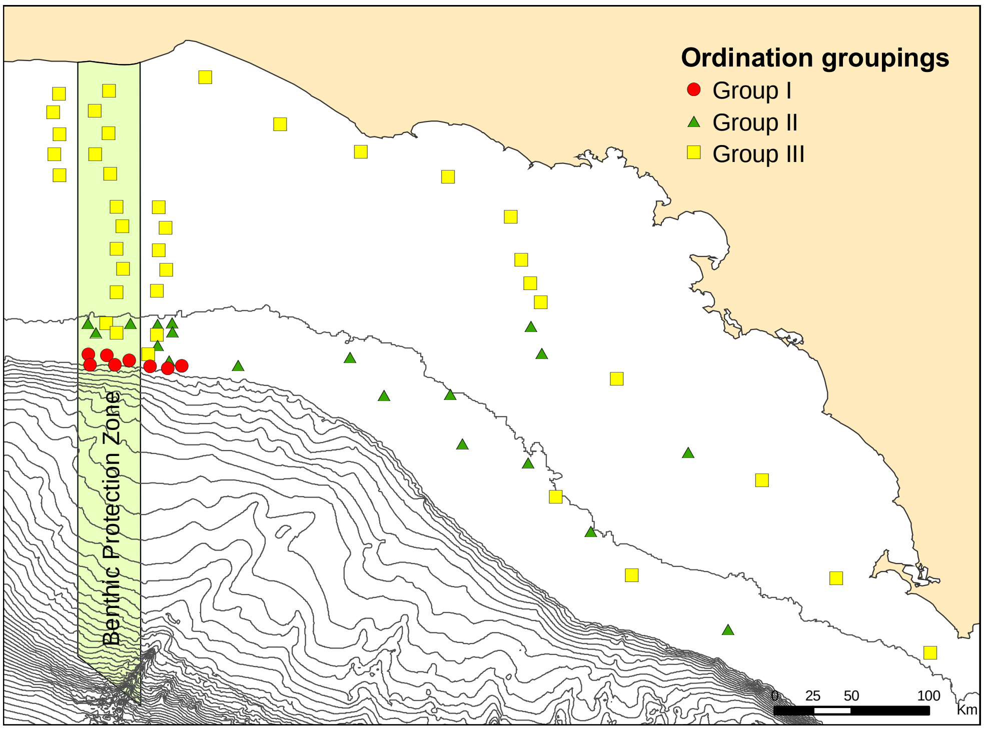

Figure 6. Map showing the locations of 65 infaunal sampling stations and their classification into three groups following MDS ordination of species abundance data. Contour lines presented follow 100 m depth intervals.

Crustaceans and annelids accounted for most of the faunal abundance (> 79%) at all station groupings, however marked differences in trophic composition between stations groups were apparent (Table 4). Deposit-feeding organisms were most abundant and nearly twice as prevalent at stations comprising the deep, outer-shelf, stations (Group I) when compared with those from the shallow inner shelf (Group III). Conversely, filter-feeding organisms were most abundant at stations comprising Group III, and least abundant at stations comprising Group I. Of the remaining phyla recognised in this study, only sarcodina (forams) and molluscs contributed more than 5% to the total abundance of any station grouping. Deposit-feeding forams were proportionally best represented in the silty, well-sorted sediments characterising stations in Group I. Suspension-feeding molluscs, by comparison, were proportionally best represented in coarse, poorly sorted, sediments characterising the shallow, inner-shelf stations of Group III.

Table 4. Physical and biological characteristics (± s.e.) of three stations groupings identified from MDS classification of infaunal species abundances. Measures of taxonomic affinity and feeding mode are percentages of total abundance.

	Group I	Group II	Group III
Stations (*N*)	8	19	38
Depth (m)	171.13 ± 5.23	107.37 ± 3.75	74.50 ± 3.52
Sediment (% mud)	25.24 ± 5.40	2.54 ± 0.57	1.57 ± 0.13
Sediment Diameter (mean, μm)	233.84 ± 83.15	494 ± 35.96	458.39 ± 29.51
Sediment Sorting (σg)	4.25 ± 0.39	2.07 ± 0.08	1.92 ± 0.03
Abundance (*N*/0.1 m^2)	29.38 ± 3.72	14.32 ± 3.12	46.87 ± 15.01
Richness (species/0.1 m^2)	16.00 ± 1.30	9.84 ± 1.45	16.08 ± 1.80
Taxonomic affinity (%)			
Crustacea	39.15	49.63	48.40
Annelida	40.43	41.91	39.58
Sarcodina	11.49	0.00	0.06
Mollusca	2.13	4.04	5.28
Chordata	0.43	2.57	2.64
Echinodermata	2.13	0.74	1.68
Nemertea	2.13	0.74	0.73
Nematoda	2.13	0.37	0.79
Sipuncula	0.00	0.00	0.56
Arachnida	0.00	0.00	0.22
Brachiopoda	0.00	0.00	0.06
Feeding mode (%)			
Deposit	40.85	38.97	21.90
Scavenger	27.23	31.99	31.78
Suspension	9.36	11.40	32.29
Predator	22.55	17.28	12.91
Grazer	0.00	0.37	1.07
Parasite	0.00	0.00	0.06

SIMPER analysis was undertaken to determine which species contributed most to similarities within and differences between the three station groupings. Abundances of the 14 species contributing ≥ 5% to within-group similarity or between-group dissimilarity for at least one of the three groupings are given in Table 5. Results from the SIMPER analysis indicate that all station groups are characterised by relatively small subsets of species with restricted distributions.

Group I consisted of 78 species, 24 of which were found only at stations comprising the outer-margin of the shelf. Five species representing three phyla typified this group, and contributed more than 5% to the within-group similarity (Table 5). These included the fire worm *Eurythoe complanata*, the tanaid *Paratanais ignotus*, and the foram *Spirillina* sp.1; all of which were unique to the regional grouping. Other species characterising the Group I included the syllid worm *Syllis gracilis*, and the sea flea *Paranebalia longipes*. These two species had much wider distributions, but were generally present in the highest abundance at stations comprising Group I.

Table 5. Mean abundance (N/0.1 m^2) of infaunal species in three station groups identified from MDS classification. Species listed were identified from SIMPER analyses as contributing ≥ 5% to the similarity within and dissimilarity between regional groupings. Those species indicative of each regional grouping (contributing ≥ 5% to the total similarity within a group) are highlighted in bold. Species are ranked in order of decreasing abundance across all station groupings.

Phylum	Species	Group I	Group II	Group III
Annelida	*Syllis gracilis*	**2.38**	1.16	1.45
Crustacea	*Paranebalia longipes*	**3.75**	0.32	0.58
Crustacea	*Kalliapseudes obtusifrons*	0.13	0.53	1.00
Crustacea	*Paranchialina angusta*			**1.24**
Chordata	*Epigonichthys australis*		0.26	**1.03**
Crustacea	*Urohaustorius halei*	0.13	0.26	0.74
Crustacea	*Birubius drummondae*	0.13	0.53	0.63
Annelida	*Lumbrineris tetraura*		**1.26**	0.16
Crustacea	*Natatolana longispina*		0.37	**0.61**
Crustacea	*Anarthruridae 1*	0.13	**0.74**	0.37
Crustacea	*Paratanais ignotus*	**1.13**		0.39
Annelida	*Eurythoe complanata*	**1.00**		0.39
Sarcodina	*Spirillina sp. 1*	**1.75**		
Crustacea	*Amaryllis cf. macrophthalmus*		**0.42**	0.08

Group II was composed of 84 species that were generally widespread on the shelf. Of these only 13 were unique to the regional grouping and were not recorded elsewhere. These included the pill bug *Chitonopsis* sp. 3 and the tube-building worm Onuphidae 4. Like most species comprising this group, these organisms were poorly represented and never present in densities greater than 0.36/0.1 m^2. Three species (the thread worm *Lumbrineris tetraura*, the tanaid Anarthruridae 1, and the amphipod *Amaryllis* cf. *macrophthalmus*) were relatively more abundant in Group II (> 0.4/0.1 m^2) and consequently characterised this outer shelf grouping.

Group III comprised the most diverse collection of species (198), and also displayed the highest level of local endemism. More than 56% (111) of the species collected from the 38 stations in this group had restricted distributions and were not sampled from stations deeper than 135 m. Most organisms exclusive to this group were either annelids (34%, 38/111) or crustaceans (32%, 35/111), however few of these could be considered locally common and were rarely present in densities greater than 1.0/0.1 m^2. By exception, one relatively abundant crustacean, the fairy shrimp *Paranchialina angusta*, occurred at densities of up to 10/0.1 m^2 at 32% (12/38) of stations, and was therefore recognised as a primary discriminator for this inner-shelf group. Two further species, the lancelet *Epigonichthys australis* and the sea louse *Natatolana longispina*, typified this group on account of their disproportionately high abundances (up to 5/0.1 m^2 and 9/0.1 m^2, respectively) at a relatively large proportion of stations (37% (14/38) and 32% (12/38), respectively).

The PRIMER routine BIOENV was used to assess the correspondence and significance of environmental data to the three station groupings. The best fit was with depth ($\rho w = 0.22$), which in combination with percentage oxygen saturation, chlorophyll concentration and latitude gave a best fit of $\rho w = 0.27$. The remaining variables (temperature, turbidity, % mud, mean sediment grain size, sediment sorting and longitude) were apparently unrelated to any pattern in station groupings ($\rho w < 0.10$).

4 DISCUSSION

4.1 Infaunal community patterns

Because most infauna live between sand grains in the top few centimetres of the seafloor, sediment structure has an important influence on the distribution, abundance and community composition of benthic infauna. Strong correlations between sediment grain size and biotic composition have been previously demonstrated in many estuarine and shallow coastal environments (Sanders, 1958; Dayton, 1984; Snelgrove, 1999), although grain size may be positively or negatively correlated with species diversity. In part, this may reflect differences in the range and diversity of sediments examined, but may also reflect the effects of other factors, in particular hydrodynamic processes, which affect the distribution of both sediments and fauna (Snelgrove and Butman, 1994).

Results from this study are consistent with previous geological research (Conolly and Von Der Borch, 1967; Wass, et al., 1969; Gostin et al., 1988), and confirm that the sediments of the eastern GAB shelf are largely biogenic. Sediment samples were composed of fragments of bryozoan, mollusc, foraminifera, coralline algae, sponge, crustacean and echinoderm. There were, however, marked differences in the relative proportions of each taxa between stations. Large differences in sediment size-structure were also evident, and sediments were typically coarse-grained and gravelly inshore, but were finer and muddier offshore at increasing depth. The collective product of these variations in sediment composition and size-structure is a complex patchwork of sedimentary facies through the eastern GAB shelf.

Living emergent fauna (epifauna) are the primary source of the sediments on the shelf, and the composition and distribution of the epifauna are closely linked to patterns of sedimentation (Ward et al., 2006). Links between the interstitial fauna (infauna) and the sedimentary facies are not as well defined. Results from the current study show that there is considerable overlap in infaunal composition between different sediments, particularly through the inner shelf, and it appears that elements of the infauna of the inner-shelf are relatively more tolerant of variations in sediment composition and granulometry than the neighbouring epifauna.

Infaunal species richness and abundance were individually uncorrelated with depth. However, marked depth-related shifts in species representation were observed on the eastern GAB shelf. As a result, water depth was recognised as one of the most important factors in determining infaunal community structure on the shelf. Our analyses revealed a strong depth-related ecological gradient characterised by three discrete infaunal communities with contrasting trophic structures. The shallow inner-shelf supported a relatively dense and species-rich community dominated by suspension feeders. The deeper outer-shelf supported a sparse and species-poor community with proportionally fewer suspension feeders, while the deepest sediment on the shelf-edge supported a moderately dense and species-rich community dominated by deposit feeders. Although the significance of water depth for benthos is widely recognised (Gray, 1981), depth *per se* is not usually a causal factor in their distribution. Many other environmental factors co-vary with depth (e.g. temperature, salinity) and these directly influence the distribution and community composition of benthic species.

A range of other environmental factors considered in this study (including turbidity, mean sediment grain-size and longitude) had no apparent direct influence on infaunal community structure of the GAB shelf. As only a quarter of the variation in community structure was explained by depth, oxygen saturation, chlorophyll concentration and latitude, it is clear that other unmeasured factors are important in determining the distribution and composition of infauna on the shelf.

Water circulation patterns can influence benthic communities in several ways. Most importantly, they modify other water column processes such as near-bottom flow, that bring food and new recruits to the community (e.g. Snelgrove and Butman, 1994). Circulation is closely linked to wind as well as topographic features such as islands, banks and canyons which can create enhanced larval retention through eddies (Lobel and Robinson, 1986; Tremblay et al., 1994), and also produce highly productive areas associated with upwelling that may influence larval transport and survival (e.g. Shanks, 1995). All of these processes act in concert with post-settlement processes such as disturbance (Barry and Dayton, 1991), predation (Thrush, 1999) and competition (Peterson, 1977), to influence benthic patterns in distribution and abundance. Unfortunately, in the absence of any supportive experimental studies it is unclear just what the contributions of such factors are for the benthos of the GAB shelf.

4.2 Comparisons with other infaunal assemblages

Infauna are thought to form one of the richest species pools in the oceans, and perhaps on earth. However, accurate estimates of species numbers are difficult because few sedimentary habitats have been well sampled (Snelgrove, 1999). Presently the number of described macrofauna is about 87,000, but it has been estimated that the total global number of species is approximately 725,000 (Snelgrove et al., 1997). In this study, 240 species were found in a combined sampling area of 6.5 m^2. Unfortunately, few published data are available with which to assess if this measure of diversity is unusual. The richness is broadly consistent with previous studies off the western Victorian coast (196 species from 7.2 m^2, Currie and Isaacs, 2005), but is much lower than the measure reported for shallow inshore waters on the eastern Victorian coast (803 species 10.4 m^2, Coleman et al., 1997). On the basis of these comparisons it appears that the infaunal communities of the GAB shelf are not exceptionally diverse. However, the eastern Victorian study employed a finer sieve mesh size (0.5 mm) than that employed in the present study (1 mm), and would therefore have retained relatively higher numbers of both individuals and species. Furthermore, both Victorian studies targeted generally shallower waters (< 60 m depth) than those sampled in the GAB, and would arguably have sampled quite different habitat types. What is clear from these comparisons is that evaluations of biodiversity must be interpreted with caution, as differences in habitat type, sampling effort and methodology make direct comparisons between surveys difficult.

4.3 Conservation significance

It is difficult to assess the conservation status of marine infaunal species because only a small proportion of the global fauna has been described, and very little is known about their distributions. Less than half (99/240) of the taxa collected during this survey could be confidently identified to the level of species, and it appears that a large proportion of the GAB infauna is undescribed. Presently, no infaunal species are listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) as threatened, endangered or rare. In addition, none are listed by the Convention on International Trade in Endangered Species (CITES) as threatened by international trade. All benthic fauna, including infauna, are protected from human impacts within the BPZ, but these organisms have no level of protection elsewhere in the GAB.

4.4 Biodiversity and endemism

Many of the marine species that inhabit the temperate waters of southern Australia are characterised by short larval periods and localised dispersal. For these reasons, it has been suggested that there is a high tendency for local and regional rarity and endemism in temperate waters, with species distributions characterised by small isolated, localised populations (Edyvane, 1999). We found little evidence to support this hypothesis in our survey of the GAB infauna. Most taxa that could be reliably identified to species (and for which there were distributional data available) were found to be widespread in southern Australian waters. Indeed, 97% (56/58) of these species had minimum ranges that extended from the southwest of Western Australia to Victoria and beyond (DEWR, 2007). It seems, therefore, that the infauna of the GAB is not particularly unusual, but rather ubiquitous components of the Flindersian biogeographical province first described by Knox (1963). Unfortunately, we cannot comment on the relative rarity and distributions of many (75%)

infauna collected, because their identities have either yet to be verified, or because no data have been published on their distribution. Voucher material for each taxa collected in this study has been lodged in the South Australian Museum, and should prove useful in future bio-regionalisation assessments once the identities are accurately verified.

4.5 Status and threats

Infaunal organisms play an important functional role in many marine ecosystem processes. They contribute to the biochemical cycling of nutrients (Rosenberg, 2001; Levin et al., 2001), provide habitat structures for other organisms (Thrush et al., 2001; Reise, 2002) and serve as an important food source for demersal fish (Parry et al., 1995; Bulman et al., 2001) and other tertiary consumers including seabirds (Ambrose, 1985; Skagen and Oman, 1996), whales (Oliver and Slattery, 1985) and seals (Pauly et al., 1998). Ecosystem changes resulting from shifts in the composition and distribution of sedimentary infauna are therefore predicted, but are rarely reported in the literature (Pinnegar et al., 2000).

A relatively low level of mobility make infauna particularly vulnerable to direct physical disturbances, such as those from trawls and dredges, that alter sedimentary structure (Hall, 1994). Typically, trawls and dredges dislodge attached epifauna and flatten existing topographical features (Jennings and Kaiser, 1998). This action disrupts sediment stratification, destroys burrows and other structures and reduces the amount of suitable niches for infauna (Ponder et al. 2002). Significant mortalities of infaunal species and modifications to the benthic community structure are widely reported direct results of trawling and dredging impacts (Currie and Parry, 1996; Jennings and Kaiser, 1998). Such changes may, in turn, have important cascade effects on ecosystem function (Thrush and Dayton, 2002).

The Great Australian Bight Trawl Fishery (GABTF) targets deepwater flathead (*Neoplatycephalus conatus*), Bight redfish (*Centroberyx gerrardi*) and orange roughy (*Hoplostethus atlanticus*) on and around the shelf break of the GAB (100-1000 m depth) using demersal otter-trawl gear (McLeay et al., 2003). In 2004/05, the 10 vessels operating in the fishery landed a total catch of 5,730 tonnes worth an estimated $17 million (Larcombe and McLoughlin, 2007). Independent observers working in this fishery have reported the collection of significant amounts of benthos in some exploratory shots, and the discarding of large volumes of non-commercial fishes (Caton, 2002). The direct and indirect effects of trawl fishing in the GAB have yet to be investigated. As there is some anecdotal reports of illegal fishing occurring within the BPZ, and because no quantitative data on the benthic habitats targeted exist, it is increasingly apparent that the environmental impacts of this trawl fishery need to be assessed.

Although bottom trawling represents a significant direct threat to the sedimentary biodiversity and ecological integrity of GAB, many other factors have the potential to affect the composition and distribution of the region’s infauna. For example, agricultural runoff, sewage and industrial waste are widely understood to affect benthic infauna, and can lead to reduced biodiversity in the impacted area (Pearson and Rosenberg, 1978). Changes in ocean circulation patterns mediated by climate change have the capacity to affect productivity, larval transport, and the community structure of infauna over large geographical areas (Hall, 2002). Impacts for petroleum exploration and production represent another rapidly growing threat to the regions infauna. Previous studies on the southern Australian shelf have shown that exploratory drilling operations can reduce infaunal abundance by over 80%, and can result in persistent changes in community structure (Currie and Isaacs, 2005). The GAB has a history of petroleum exploration and further exploration of the area is anticipated in the near future (McLeay et al., 2003). Although the BPZ is protected from bottom trawling, mining and petroleum exploration may be approved here on a case-by-case basis by the Governor General (DEH, 2005).

4.6 Suitability of BPZ for representing regional biodiversity

The results of this study suggest that the BPZ is relatively well placed to represent the infaunal biodiversity of the eastern and central GAB, with all three infaunal assemblages and nearly three-quarters (i.e. 172 or 72%) of the 240 species obtained during this study collected from the BPZ. However, this study was confined to shelf assemblages of the eastern GAB, and it is not known whether the BPZ effectively represents and preserves the benthic habitats and infaunal assemblages of the western GAB and the continental slope.

4.7 Information gaps

Large gaps in the knowledge of infauna worldwide arguably reflect preferential marine research interests in fish, a shortage of taxonomic expertise and a lack of funding. Regardless of cause, it is clear that the state of knowledge is poor for much of the south-western region of Australia (Currie and Kendrick, 2006). A recent review of marine invertebrates by Ponder et al. (2002) highlights this fact, and notes that most of our taxonomic understanding stems from shallow coastal waters near the large population centres of south-eastern Australia. In contrast, most other parts of the Australian marine environment are poorly sampled for infauna, especially the deep-sea.

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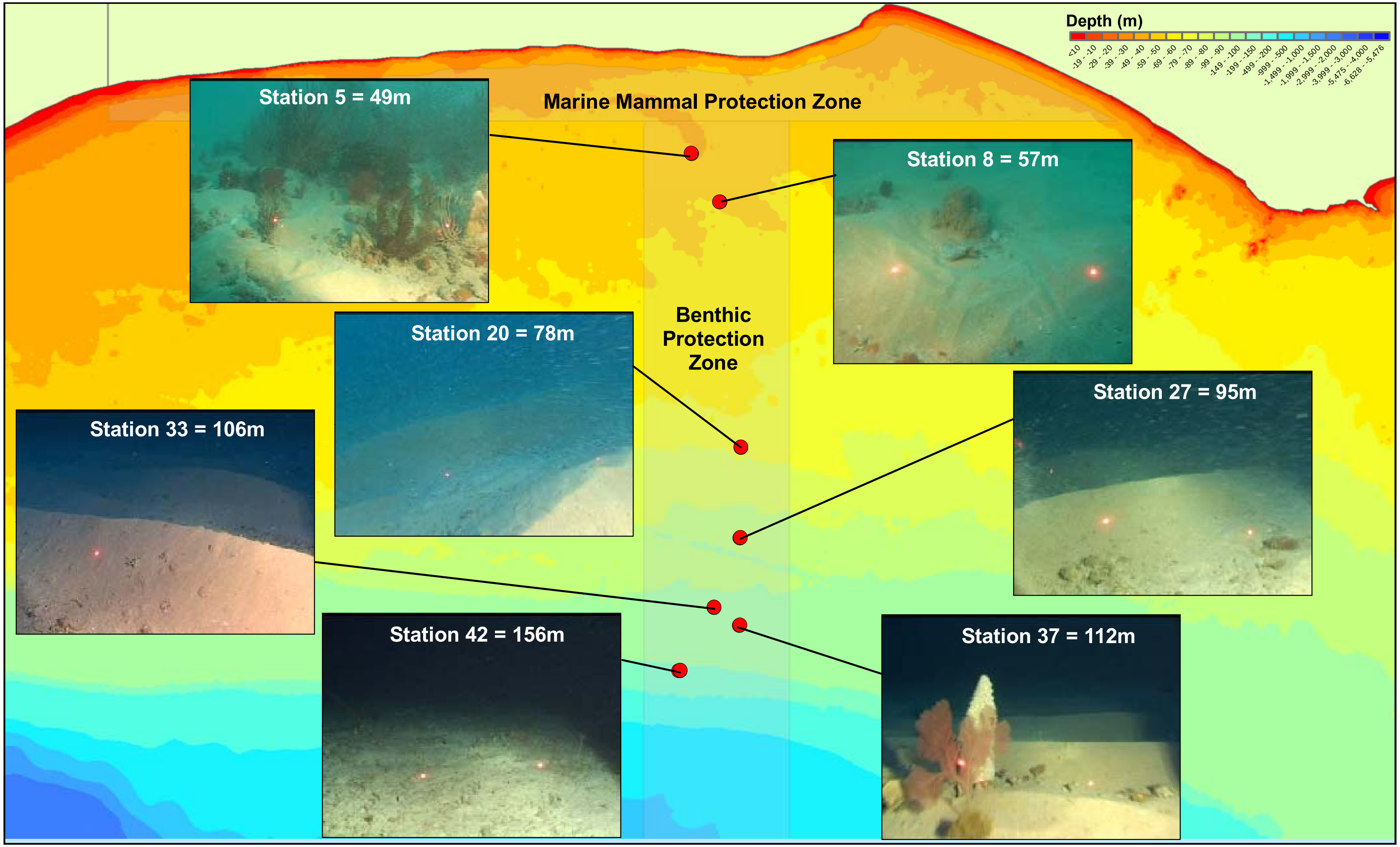
Appendix 1. Location, date, depth, and grab weight of 65 benthic samples collected from the eastern Great Australian Bight during 2006. Note that the WGS 84 datum was employed for all position fixes.

Station	Date	Latitude	Longitude	Depth (m)	Weight (kg)
1	14-Oct-06	-31.77565	130.38871	51	3.0
2	14-Oct-06	-31.75831	130.68308	53	3.0
3	14-Oct-06	-31.67786	131.24283	49	4.0
4	14-Oct-06	-31.88333	130.35611	51	16.0
5	14-Oct-06	-31.87738	130.59870	49	5.0
6	14-Oct-06	-31.95235	131.67888	58	3.5
7	15-Oct-06	-32.01030	130.39476	55	21.0
8	15-Oct-06	-32.00640	130.67956	57	10.0
9	15-Oct-06	-32.12943	130.36406	58	9.0
10	15-Oct-06	-32.12861	130.60286	58	6.0
11	13-Oct-06	-32.11481	132.14685	37	7.5
12	15-Oct-06	-32.25050	130.39321	59	7.0
13	15-Oct-06	-32.24245	130.68686	63	7.0
14	13-Oct-06	-32.25863	132.65448	61	3.5
15	15-Oct-06	-32.43215	130.72536	68	5.0
16	16-Oct-06	-32.43806	130.96861	71	10.0
17	13-Oct-06	-32.49353	133.01813	64	19.0
18	15-Oct-06	-32.54596	130.75860	70	11.0
19	16-Oct-06	-32.55858	131.00923	75	16.0
20	18-Oct-06	-32.67750	130.72686	78	14.0
21	18-Oct-06	-32.68868	130.96918	75	17.0
22	13-Oct-06	-32.74146	133.08025	72	10.0
23	18-Oct-06	-32.79483	130.76100	84	7.5
24	18-Oct-06	-32.80241	131.01380	83	12.0
25	13-Oct-06	-32.87885	133.13290	77	8.0
26	18-Oct-06	-32.92421	130.96096	94	14.0
27	18-Oct-06	-32.93300	130.72595	95	8.0
28	13-Oct-06	-32.98913	133.19345	76	4.0
29	19-Oct-06	-33.11730	130.96443	105	9.5
30	18-Oct-06	-33.10568	131.04735	104	7.0
31	19-Oct-06	-33.10971	130.55880	102	12.0
32	19-Oct-06	-33.10940	130.80650	104	12.5
33	19-Oct-06	-33.11258	130.66638	106	11.5
34	13-Oct-06	-33.12603	133.13656	81	13.0
35	18-Oct-06	-33.16153	131.05118	109	4.5
36	19-Oct-06	-33.16246	130.60333	112	12.5
37	19-Oct-06	-33.16821	130.72623	112	8.0
38	19-Oct-06	-33.17883	130.95905	111	4.5
39	19-Oct-06	-33.23781	130.96495	117	13.0
40	13-Oct-06	-33.28310	133.20053	77	13.0
41	20-Oct-06	-33.29076	130.91131	133	5.0
42	19-Oct-06	-33.29241	130.56056	156	6.0
43	19-Oct-06	-33.29925	130.66793	162	3.5
44	20-Oct-06	-33.30913	132.08308	108	10.0
45	20-Oct-06	-33.32840	131.03086	137	3.0
46	19-Oct-06	-33.33000	130.80035	165	1.0
47	19-Oct-06	-33.35550	130.71631	188	2.0
48	19-Oct-06	-33.35585	130.57131	187	3.5
49	20-Oct-06	-33.35568	131.43250	138	10.0
50	20-Oct-06	-33.35820	131.10496	150	1.0
51	20-Oct-06	-33.36225	130.91920	184	5.0
52	20-Oct-06	-33.37496	131.02283	177	2.0
53	13-Oct-06	-33.43403	133.63578	64	20.0
54	20-Oct-06	-33.52258	132.66666	103	12.0
55	20-Oct-06	-33.52788	132.27958	120	7.0
56	20-Oct-06	-33.81173	132.73840	116	4.0
57	12-Oct-06	-33.86135	134.05098	80	12.0
58	21-Oct-06	-33.92240	133.12068	106	8.0
59	12-Oct-06	-34.02483	134.48098	79	15.4
60	21-Oct-06	-34.12298	133.28080	101	12.0
61	21-Oct-06	-34.31996	133.48401	101	4.0
62	21-Oct-06	-34.57973	133.72263	114	15.0
63	12-Oct-06	-34.59710	134.91433	78	5.0
64	21-Oct-06	-34.89210	134.28380	120	6.0
65	12-Oct-06	-35.03125	135.46005	92	6.0

Appendix 2. Still-images of the seafloor taken from video recordings at seven sampling stations inside the Benthic Protection Zone of the Great Australian Bight Marine Park.



Appendix 3. Relative proportions (%) of seven sedimentary size classes in grab samples collected from 65 stations in the eastern Great Australian Bight during 2006.

Station	<63µm	63 µm	125 µm	250 µm	500 µm	1mm	2mm
1	3.600	27.900	56.520	8.600	2.460	0.680	0.240
2	3.198	5.399	18.019	25.413	14.752	8.356	24.862
3	1.951	16.228	53.670	23.306	4.404	0.362	0.080
4	1.894	1.309	15.109	35.737	28.405	13.296	4.251
5	1.671	1.044	18.009	32.769	27.477	9.979	9.051
6	3.103	11.732	34.942	42.444	7.056	0.595	0.128
7	1.600	0.240	8.160	35.380	40.780	12.000	1.840
8	2.056	0.596	6.477	19.947	22.414	18.548	29.961
9	2.837	3.438	41.023	40.298	7.952	2.236	2.216
10	1.738	5.052	44.961	32.745	11.708	2.593	1.203
11	1.513	0.334	3.360	24.588	38.184	21.340	10.681
12	1.140	4.180	44.960	38.120	9.240	1.560	0.800
13	1.280	0.700	10.240	37.420	24.460	6.960	18.940
14	1.665	29.747	41.677	20.099	4.840	1.726	0.247
15	1.348	7.722	65.475	20.919	3.207	0.858	0.470
16	1.440	2.800	32.760	41.200	17.520	3.380	0.900
17	1.060	0.240	2.100	17.900	50.140	21.540	7.020
18	0.880	0.960	30.640	53.540	12.160	1.560	0.260
19	0.700	0.280	5.940	35.880	34.400	13.740	9.060
20	0.680	0.520	14.040	59.820	21.440	2.440	1.060
21	0.760	0.200	9.260	64.420	22.080	2.480	0.800
22	2.081	6.196	23.756	50.909	15.670	1.268	0.120
23	0.321	0.700	13.073	44.645	31.077	5.953	4.231
24	1.540	0.120	6.100	43.520	38.140	7.600	2.980
25	0.700	1.480	4.580	24.760	32.280	20.680	15.520
26	0.860	0.180	6.080	45.160	42.800	4.220	0.700
27	0.780	0.380	7.360	35.040	39.940	9.320	7.180
28	1.176	2.122	2.736	15.188	49.195	19.662	9.921
29	1.800	1.080	21.100	48.460	19.820	5.300	2.440
30	4.614	6.195	41.056	37.769	8.091	1.264	1.011
31	1.440	0.740	10.960	43.860	23.940	5.240	13.820
32	1.437	0.609	9.012	46.996	27.949	9.208	4.789
33	0.940	0.280	7.320	62.480	26.040	1.720	1.220
34	0.780	0.780	2.760	38.000	51.580	4.500	1.600
35	0.960	0.280	6.900	61.900	23.400	2.500	4.060
36	1.578	0.457	3.696	22.737	47.799	20.972	2.762
37	1.976	0.807	9.377	34.864	35.448	10.184	7.346
38	1.700	1.180	16.160	55.680	17.820	2.640	4.820
39	1.660	0.400	5.260	28.720	40.300	18.840	4.820
40	0.960	0.400	4.640	42.640	35.440	10.700	5.220
41	3.434	1.891	9.541	30.689	41.252	11.019	2.173
42	38.169	29.711	12.527	9.823	6.692	2.436	0.642
43	42.387	29.330	11.712	8.647	5.383	2.018	0.523
44	2.020	1.520	8.720	30.980	21.800	23.720	11.240
45	7.083	6.932	26.341	27.366	20.313	9.735	2.230
46	19.257	14.936	25.777	21.835	12.244	5.042	0.910
47	6.134	3.472	8.160	22.338	32.755	19.387	7.755
48	27.997	18.392	22.199	16.329	10.032	4.233	0.818
49	1.800	0.440	2.920	14.880	50.680	26.420	2.860
50	3.426	2.073	8.955	23.409	34.495	19.522	8.120
51	42.052	22.452	12.389	11.734	7.997	2.720	0.656
52	22.462	12.221	12.381	23.350	18.707	8.352	2.526
53	0.460	0.200	7.300	58.780	29.500	3.400	0.360
54	2.440	2.260	5.260	44.340	35.980	5.540	4.180
55	1.840	1.340	4.600	47.000	32.180	8.460	4.580
56	10.806	24.995	31.518	21.788	7.907	2.460	0.527
57	0.940	0.640	6.160	25.320	32.380	11.520	23.040
58	2.800	3.960	20.800	46.340	19.480	5.060	1.560
59	1.651	2.036	9.274	44.153	31.418	7.939	3.529
60	1.000	0.360	2.240	16.280	59.100	11.400	9.620
61	1.460	1.000	7.040	41.900	33.700	11.100	3.800
62	1.300	1.220	4.220	28.580	48.580	13.100	3.000
63	1.960	0.940	13.800	59.340	16.400	3.420	4.140
64	1.760	1.300	12.400	54.540	20.760	6.280	2.960
65	1.528	2.865	21.604	40.893	25.018	3.223	4.870

Appendix 4. Photographic images of surficial sediment collected at 65 sampling stations in eastern Great Australian Bight.

Station 1

Station 2

Station 3

Station 4

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Station 18

Station 19

Station 20

Station 21

Station 22

Station 23

Station 24

Station 25

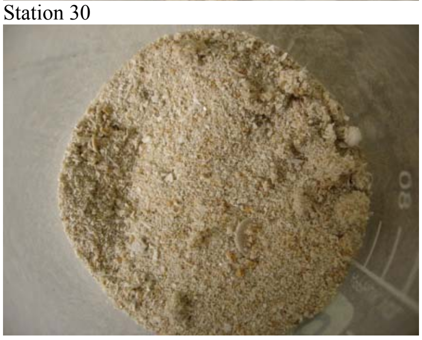
Station 26

Station 27

Station 28

Station 29

Station 30



Station 31


Station 32


Station 33


Station 34


Station 35


Station 36


Station 37


Station 38


Station 39

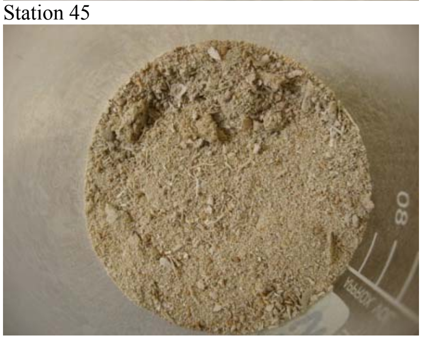

Station 40


Station 41


Station 42


Station 43


Station 44


Station 45


Station 46

Station 47

Station 48

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Station 62

Station 63

Station 64

Station 65

Appendix 5. Taxonomic and functional classification of 240 species collected during a benthic sampling survey of 65 stations in the eastern Great Australian Bight during 2006. All species codes given here refer to type material lodged in the South Australian Museum, Adelaide.

Phylum	Class	Family	Species	Common Name	Diet	Code
Sarcodina	Foraminifera	Miliolidae	*Pyrgo* sp. 1	Foram	Deposit	U2
Sarcodina	Foraminifera	Miliolidae	*Sigmoilina australis*	Foram	Deposit	U3
Sarcodina	Foraminifera	Miliolidae	*Pyrgo* sp. 2	Foram	Deposit	U4
Sarcodina	Foraminifera	Spirillinidae	*Spirillina* sp. 1	Foram	Deposit	U1
Nemertea	Anopla	Cephalothricidae	Cephalothricidae spp.	Ribbon Worm	Deposit	N1
Nematoda	Chromadorea	Chromadoroidae	Chromadoroidae spp.	Roundworm	Deposit	R1
Mollusca	Aplacophora	Chaetodermatidae	*Falcidens* cf. *poias*	Aplacophoran	Deposit	G10
Mollusca	Bivalvia	Carditidae	*Cyclocardia (Vimentum) delicatum*	Cardita	Suspension	B17
Mollusca	Bivalvia	Carditidae	*Carditella (Carditella) valida*	Cardita	Suspension	B20
Mollusca	Bivalvia	Condylocardiidae	*Cuna solida*	Little Cardita	Suspension	B12
Mollusca	Bivalvia	Donacidae	*Donax francisensis*	Wedge Shell	Suspension	B23
Mollusca	Bivalvia	Glycymerididae	*Glycymeris (Glycymeris) striatularis*	Dog Cockle	Suspension	B16
Mollusca	Bivalvia	Hiatellidae	*Hiatella australis*	Crypt Dweller	Suspension	B5
Mollusca	Bivalvia	Mactridae	*Mactra jacksonensis*	Trough Shell	Suspension	B14
Mollusca	Bivalvia	Montacutidae	*Montacuta meridionalis*	Montacutas	Suspension	B4
Mollusca	Bivalvia	Mytilidae	*Modiolus cottoni*	Mussel	Suspension	B10
Mollusca	Bivalvia	Mytilidae	*Solamen recens*	Mussel	Suspension	B18
Mollusca	Bivalvia	Mytilidae	*Modiolus lineas*	Mussel	Suspension	B2
Mollusca	Bivalvia	Mytilidae	*Musculus nanus*	Mussel	Suspension	B3
Mollusca	Bivalvia	Pectinidae	*Mimachlamys asperrima*	Scallop	Suspension	B6
Mollusca	Bivalvia	Pholadidae	*Pholas australasiae*	Borer	Suspension	B9
Mollusca	Bivalvia	Poromyidae	*Questimya granifera*	Poromyas	Suspension	B24
Mollusca	Bivalvia	Propeamussiidae	*Cyclochlamys favus*	Scallop	Suspension	B13
Mollusca	Bivalvia	Psammobiidae	*Gari alba*	Sunset Shell	Suspension	B11
Mollusca	Bivalvia	Tellinidae	*Tellina tenuilirata*	Tellin	Suspension	B7
Mollusca	Bivalvia	Trigoniidae	*Neotrigonia bednalli*	Trigonia	Suspension	B21
Mollusca	Bivalvia	Trigoniidae	*Neotrigonia horia*	Trigonia	Suspension	B8
Mollusca	Bivalvia	Veneridae	*Sunetta vaginalis*	Venus Shell	Suspension	B1
Mollusca	Bivalvia	Veneridae	*Callista (Notocallista) kingii*	Venus Shell	Suspension	B15
Mollusca	Bivalvia	Veneridae	*Tawera lagopus*	Venus Shell	Suspension	B19
Mollusca	Cephalopoda	Octopodidae	*Grimpella thaumastocheir*	Octopus	Predator	Q1
Mollusca	Gastropoda	Dorididae	*Neodoris chrysoderma*	Nudibranch	Grazer	G5
Mollusca	Gastropoda	Haliotidae	*Haliotis* sp. 1	Gastropod	Grazer	G11
Mollusca	Gastropoda	Naticidae	*Sinum zonale*	Moon Shell	Predator	G6
Mollusca	Gastropoda	Olividae	*Oliva* sp. 1	Olive Shell	Scavenger	G1
Mollusca	Gastropoda	Olividae	*Oliva* sp. 2	Olive Shell	Scavenger	G2
Mollusca	Gastropoda	Olividae	*Oliva* sp. 3	Olive Shell	Scavenger	G3
Mollusca	Gastropoda	Olividae	*Alocospira edithae*	Olive Shell	Scavenger	G9
Mollusca	Gastropoda	Retusidae	*Retusa pygmaea*	Bubble Shell	Grazer	G4
Mollusca	Polyplacophora	Lepidopleuridae	*Parachiton collusor*	Chiton	Grazer	K1
Mollusca	Scaphopoda	Dentaliidae	*Dentalium (Dentalium) francisense*	Tusk Shell	Deposit	G7
Sipuncula	Sipuncula	Phascolosomatidae	*Phascolosoma (Phascolosoma) annulatum*	Peanut Worm	Deposit	S1
Sipuncula	Sipuncula	Themistidae	*Themiste* sp. 1	Peanut Worm	Deposit	S2
Annelida	Polychaeta	Ampharetidae	*Ampharete* sp. 1	Ampharetid	Deposit	P42
Annelida	Polychaeta	Amphinomidae	Amphinomidae 1	Fire Worm	Predator	P21
Annelida	Polychaeta	Amphinomidae	*Eurythoe complanata*	Fire Worm	Predator	P64
Annelida	Polychaeta	Amphinomidae	Amphinomidae 3	Fire Worm	Predator	P69
Annelida	Polychaeta	Amphinomidae	Amphinomidae 4	Fire Worm	Predator	P71
Annelida	Polychaeta	Amphinomidae	Amphinomidae 6	Fire Worm	Predator	P92
Annelida	Polychaeta	Amphinomidae	Amphinomidae 7	Fire Worm	Predator	P94
Annelida	Polychaeta	Capitellidae	*Leiocapitella* sp. 1	Capitellid	Deposit	P14
Annelida	Polychaeta	Capitellidae	*Notomastus* sp. 1	Capitellid	Deposit	P15
Annelida	Polychaeta	Capitellidae	*Notomastus* sp. 2	Capitellid	Deposit	P43
Annelida	Polychaeta	Capitellidae	Capitellidae 1	Capitellid	Deposit	P74
Annelida	Polychaeta	Chrysopetalidae	Chrysopetalidae 1	Chrysopetalid	Scavenger	P50
Annelida	Polychaeta	Cirratulidae	Cirratulidae 1	Cirratulid	Deposit	P39
Annelida	Polychaeta	Cirratulidae	Cirratulidae 2	Cirratulid	Deposit	P46
Annelida	Polychaeta	Cirratulidae	Cirratulidae 3	Cirratulid	Deposit	P83
Annelida	Polychaeta	Cirratulidae	*Dodecaceria* sp. 1	Cirratulid	Deposit	P95
Annelida	Polychaeta	Dorvilleidae	Dorvilleidae 1	Dorvilleid	Predator	P19
Annelida	Polychaeta	Dorvilleidae	Dorvilleidae 2	Dorvilleid	Predator	P48
Annelida	Polychaeta	Eunicidae	*Lysidice* sp. 1	Eunicid	Predator	P16
Annelida	Polychaeta	Eunicidae	*Nematonereis* sp. 1	Eunicid	Predator	P17

Phylum	Class	Family	Species	Common Name	Diet	Code
Annelida	Polychaeta	Eunicidae	*Eunice* sp. 1	Eunicid	Predator	P18
Annelida	Polychaeta	Eunicidae	*Palolo* sp. 1	Eunicid	Predator	P75
Annelida	Polychaeta	Flabelligeridae	*Flabelligera* sp. 1	Bristle-cage Worm	Deposit	P22
Annelida	Polychaeta	Flabelligeridae	Flabelligerdiae 1	Bristle-cage Worm	Deposit	P84
Annelida	Polychaeta	Glyceridae	Glyceridae 1	Glycerid	Predator	P4
Annelida	Polychaeta	Glyceridae	Glyceridae 2	Glycerid	Predator	P96
Annelida	Polychaeta	Goniadidae	Goniadidae 1	Goniadid	Predator	P57
Annelida	Polychaeta	Goniadidae	Goniadidae 2	Goniadid	Predator	P70
Annelida	Polychaeta	Hartmaniellidae	*Pseudonince* sp. 1	Hartmaniellid	Predator	P82
Annelida	Polychaeta	Hesionidae	Hesionidae 1	Hesioniod	Predator	P10
Annelida	Polychaeta	Lumbrineridae	*Lumbrineris tetraura*	Lumbrinerid	Deposit	P11
Annelida	Polychaeta	Lumbrineridae	Lumbrineridae 2	Lumbrinerid	Deposit	P20
Annelida	Polychaeta	Lumbrineridae	Lumbrineridae 3	Lumbrinerid	Deposit	P37
Annelida	Polychaeta	Lumbrineridae	Lumbrineridae 4	Lumbrinerid	Deposit	P53
Annelida	Polychaeta	Lumbrineridae	Lumbrineridae 5	Lumbrinerid	Deposit	P89
Annelida	Polychaeta	Magelonidae	Magelonidae 1	Magelonid	Deposit	P78
Annelida	Polychaeta	Nephtyidae	*Micronephtys* sp. 1	Nephtyid	Predator	P1
Annelida	Polychaeta	Nereididae	Nereididae 1	Nereid	Deposit	P13
Annelida	Polychaeta	Nereididae	Nereididae 3	Nereid	Deposit	P59
Annelida	Polychaeta	Nereididae	Nereididae 4	Nereid	Deposit	P68
Annelida	Polychaeta	Onuphidae	Onuphidae 2	Onuphid	Scavenger	P44
Annelida	Polychaeta	Onuphidae	Onuphidae 3	Onuphid	Scavenger	P49
Annelida	Polychaeta	Onuphidae	Onuphidae 1	Onuphid	Scavenger	P8
Annelida	Polychaeta	Onuphidae	Onuphidae 4	Onuphid	Scavenger	P81
Annelida	Polychaeta	Onuphidae	Onuphidae 5	Onuphid	Scavenger	P91
Annelida	Polychaeta	Onuphidae	Onuphidae 6	Onuphid	Scavenger	P93
Annelida	Polychaeta	Opheliidae	*Armandia* sp. 1	Opheliid	Deposit	P35
Annelida	Polychaeta	Opheliidae	*Ophelia* sp. 1	Opheliid	Deposit	P40
Annelida	Polychaeta	Orbiniidae	Orbiniidae 1	Orbiniid	Deposit	P61
Annelida	Polychaeta	Orbiniidae	Orbiniidae 2	Orbiniid	Deposit	P85
Annelida	Polychaeta	Orbiniidae	Orbiniidae 3	Orbiniid	Deposit	P90
Annelida	Polychaeta	Paraonidae	*Paraonella* sp. 1	Paraonid	Deposit	P12
Annelida	Polychaeta	Paraonidae	Paraonidae 1	Paraonid	Deposit	P60
Annelida	Polychaeta	Paraonidae	*Acmira lopezi*	Paraonid	Deposit	P73
Annelida	Polychaeta	Phyllodocidae	Phyllodocidae 1	Phyllodocid	Predator	P23
Annelida	Polychaeta	Phyllodocidae	Phyllodocidae 2	Phyllodocid	Predator	P24
Annelida	Polychaeta	Phyllodocidae	Phyllodocidae Juvenile	Phyllodocid	Predator	P36
Annelida	Polychaeta	Phyllodocidae	Phyllodocidae 3	Phyllodocid	Predator	P58
Annelida	Polychaeta	Phyllodocidae	Phyllodocidae 4	Phyllodocid	Predator	P77
Annelida	Polychaeta	Pilargidae	*Litocorsa* sp. 1	Pilargid	Scavenger	P54
Annelida	Polychaeta	Pisionidae	*Pisione* sp. 1	Pisionid	Predator	P52
Annelida	Polychaeta	Polygordiidae	Polygordiidae 1	Polygordiid	Deposit	P5
Annelida	Polychaeta	Polynoidae	Polynoidae 1	Polynoid	Predator	P25
Annelida	Polychaeta	Polynoidae	Polynoidae 2	Polynoid	Predator	P26
Annelida	Polychaeta	Polynoidae	Polynoidae 3	Polynoid	Predator	P27
Annelida	Polychaeta	Sabellidae	Sabellidae 1	Sabellid	Suspension	P33
Annelida	Polychaeta	Sabellidae	Sabellidae 3	Sabellid	Suspension	P65
Annelida	Polychaeta	Serpulidae	Serpulidae 1	Serpulid	Suspension	P28
Annelida	Polychaeta	Serpulidae	*Filograna implexa*	Serpulid	Suspension	P41
Annelida	Polychaeta	Serpulidae	Serpulidae 2	Serpulid	Suspension	P63
Annelida	Polychaeta	Sigalionidae	Sigalionidae 1	Sigalionid	Predator	P66
Annelida	Polychaeta	Sigalionidae	Sigalionidae 2	Sigalionid	Predator	P72
Annelida	Polychaeta	Sigalionidae	Sigalionidae 3	Sigalionid	Predator	P88
Annelida	Polychaeta	Spionidae	Spionidae 1	Spionid	Deposit	P2
Annelida	Polychaeta	Spionidae	Spionidae 2	Spionid	Deposit	P3
Annelida	Polychaeta	Spionidae	Spionidae 3	Spionid	Deposit	P32
Annelida	Polychaeta	Spionidae	Spionidae 4	Spionid	Deposit	P45
Annelida	Polychaeta	Spionidae	Spionidae 5	Spionid	Deposit	P47
Annelida	Polychaeta	Spionidae	Spionidae 6	Spionid	Deposit	P76
Annelida	Polychaeta	Spionidae	Spionidae 7	Spionid	Deposit	P86
Annelida	Polychaeta	Spionidae	Spionidae 8	Spionid	Deposit	P87
Annelida	Polychaeta	Syllidae	*Syllis gracilis*	Syllid	Predator	P29
Annelida	Polychaeta	Syllidae	Syllidae 3	Syllid	Predator	P30
Annelida	Polychaeta	Syllidae	*Exogone* sp. 1	Syllid	Predator	P31
Annelida	Polychaeta	Syllidae	Syllidae 4	Syllid	Predator	P38
Annelida	Polychaeta	Syllidae	Syllidae 5	Syllid	Predator	P51
Annelida	Polychaeta	Syllidae	Syllidae 6	Syllid	Predator	P55

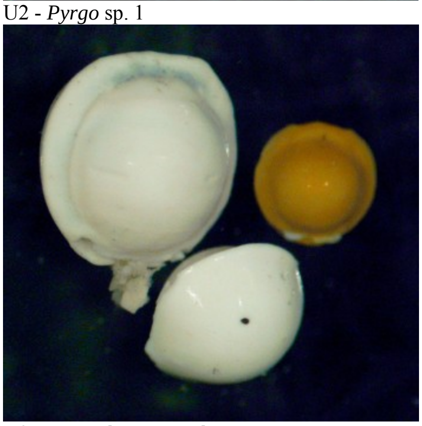
Phylum	Class	Family	Species	Common Name	Diet	Code
Annelida	Polychaeta	Syllidae	Syllidae 7	Syllid	Predator	P62
Annelida	Polychaeta	Syllidae	Syllidae 8	Syllid	Predator	P67
Annelida	Polychaeta	Syllidae	Syllidae 9	Syllid	Predator	P79
Annelida	Polychaeta	Syllidae	Syllidae 10	Syllid	Predator	P80
Annelida	Polychaeta	Terebellidae	Terebellidae 1	Terebellid	Deposit	P34
Annelida	Polychaeta	Terebellidae	*Pista* sp. 1	Terebellid	Deposit	P7
Arachnida	Pycnogonida	Ammotheidae	Ammotheidae 1	Sea Spider	Predator	H1
Arachnida	Pycnogonida	Pallenidae	Pallenidae 1	Sea Spider	Predator	H2
Crustacea	Cirripedia	Scalpellidae	*Smilium peronii*	Gooseneck Barnacle	Suspension	C42
Crustacea	Malacostraca	Alpheidae	*Alpheus villosus*	Shrimp	Scavenger	C20
Crustacea	Malacostraca	Alpheidae	*Synalpheus fossor*	Shrimp	Scavenger	C21
Crustacea	Malacostraca	Amaryllididae	*Amaryllis* cf. *macrophthalmus*	Amphipod	Scavenger	C70
Crustacea	Malacostraca	Anarthruridae	*Haliophasma* sp. 1	Tanaid	Deposit	C43
Crustacea	Malacostraca	Anarthruridae	Anarthruridae 1	Tanaid	Deposit	C7
Crustacea	Malacostraca	Aoridae	*Xenocheira fasciata*	Amphipod	Scavenger	C33
Crustacea	Malacostraca	Apseudidae	*Apseudes* sp. 1	Tanaid	Deposit	C76
Crustacea	Malacostraca	Bodotriidae	*Leptocuma pulleini*	Cumacean	Deposit	C1
Crustacea	Malacostraca	Bodotriidae	Bodotriidae 1	Cumacean	Deposit	C44
Crustacea	Malacostraca	Bodotriidae	*Cyclaspis tribulis*	Cumacean	Deposit	C50
Crustacea	Malacostraca	Bodotriidae	*Cyclaspis* sp. 1	Cumacean	Deposit	C60
Crustacea	Malacostraca	Bodotriidae	Bodotriidae 2	Cumacean	Deposit	C81
Crustacea	Malacostraca	Caprellidae	*Caprella scaura*	Skeleton Shrimp	Predator	C17
Crustacea	Malacostraca	Chaetiliidae	*Austrochaetilia capeli*	Southern Chaetiliid	Deposit	C82
Crustacea	Malacostraca	Cirolanidae	*Eurydice binda*	Sea Lice	Scavenger	C15
Crustacea	Malacostraca	Cirolanidae	*Natatolana longispina*	Sea Lice	Scavenger	C55
Crustacea	Malacostraca	Cirolanidae	*Natatolana woodjonesi*	Sea Lice	Scavenger	C65
Crustacea	Malacostraca	Corophiidae	Corophiidae 1	Amphipod	Suspension	C41
Crustacea	Malacostraca	Corophiidae	Corophiidae 2	Amphipod	Suspension	C47
Crustacea	Malacostraca	Corophiidae	Corophiidae 3	Amphipod	Suspension	C73
Crustacea	Malacostraca	Crangonidae	*Philocheras intermedius*	Shrimp	Scavenger	C22
Crustacea	Malacostraca	Cyproideidae	*Cyproidea* sp. 1	Amphipod	Grazer	C37
Crustacea	Malacostraca	Cyproideidae	*Cyproidea ornata*	Amphipod	Grazer	C68
Crustacea	Malacostraca	Dexaminidae	*Paradexamine echuca*	Amphipod	Scavenger	C79
Crustacea	Malacostraca	Diastylidae	*Gynodiastylis truncatifrons*	Cumacean	Deposit	C26
Crustacea	Malacostraca	Diastylidae	*Gynodiastylis* sp. 1	Cumacean	Deposit	C51
Crustacea	Malacostraca	Diastylidae	*Dimorphostylis inauspicata*	Cumacean	Deposit	C84
Crustacea	Malacostraca	Diogenidae	*Paguristes brevirostris*	Hermit Crab	Scavenger	C66
Crustacea	Malacostraca	Galatheidae	*Galathea australiensis*	Craylet	Scavenger	C27
Crustacea	Malacostraca	Galatheidae	*Munida haswelli*	Craylet	Scavenger	C72
Crustacea	Malacostraca	Gnathiidae	*Gnathia mulieraria*	Gnathiid	Parasite	C57
Crustacea	Malacostraca	Hymenosomatidae	*Halicarcinus rostratus*	Spider Crab	Scavenger	C24
Crustacea	Malacostraca	Idoteidae	*Euidotea* sp. 2	Sea Centipede	Deposit	C63
Crustacea	Malacostraca	Isaeidae	*Eurystheus persetosus*	Amphipod	Suspension	C32
Crustacea	Malacostraca	Isaeidae	*Cheiriphotis australiae*	Amphipod	Suspension	C6
Crustacea	Malacostraca	Ischyroceridae	*Cerapus abditus*	Amphipod	Suspension	C75
Crustacea	Malacostraca	Kalliapseudidae	*Kalliapseudes obtusifrons*	Tanaid	Deposit	C8
Crustacea	Malacostraca	Leptocheliidae	*Paratanais ignotus*	Tanaid	Deposit	C29
Crustacea	Malacostraca	Leptocheliidae	*Paratanais* sp. 1	Tanaid	Deposit	C30
Crustacea	Malacostraca	Leucosiidae	*Ebalia tuberculosa*	Pebble Crab	Scavenger	C53
Crustacea	Malacostraca	Leucothoidae	*Leucothoe spinicarpa*	Amphipod	Scavenger	C34
Crustacea	Malacostraca	Leucothoidae	*Leucothoe* sp. 1	Amphipod	Scavenger	C35
Crustacea	Malacostraca	Lysianassidae	*Waldeckia* sp. 2	Amphipod	Scavenger	C12
Crustacea	Malacostraca	Lysianassidae	*Waldeckia kroyeri*	Amphipod	Scavenger	C25
Crustacea	Malacostraca	Lysianassidae	*Waldeckia* sp. 3	Amphipod	Scavenger	C67
Crustacea	Malacostraca	Majidae	*Dorhynchus ramusculus*	Spider Crab	Scavenger	C77
Crustacea	Malacostraca	Melitidae	*Ceradocus serratus*	Amphipod	Scavenger	C10
Crustacea	Malacostraca	Melitidae	*Mallacoota* sp. 1	Amphipod	Scavenger	C14
Crustacea	Malacostraca	Melitidae	*Dulichiella australis*	Amphipod	Scavenger	C18
Crustacea	Malacostraca	Melitidae	*Ceradocus rubromaculatus*	Amphipod	Scavenger	C19
Crustacea	Malacostraca	Mysidae	*Paranchialina angusta*	Fairy Shrimp	Suspension	C5
Crustacea	Malacostraca	Oedicerotidae	*Halicreion* sp. 3	Amphipod	Deposit	C40
Crustacea	Malacostraca	Oedicerotidae	*Halicreion* sp. 4	Amphipod	Deposit	C83
Crustacea	Malacostraca	Ogyrididae	*Ogyrides delli*	Shrimp	Scavenger	C48
Crustacea	Malacostraca	Paranebaliidae	*Paranebalia longipes*	Sea Flea	Scavenger	C31
Crustacea	Malacostraca	Pasiphaeidae	*Leptochela sydniensis*	Shrimp	Scavenger	C59
Crustacea	Malacostraca	Phoxocephalidae	*Birubius drummondae*	Amphipod	Scavenger	C11
Crustacea	Malacostraca	Phoxocephalidae	*Metaphoxus yaranellus*	Amphipod	Scavenger	C2

Phylum	Class	Family	Species	Common Name	Diet	Code
Crustacea	Malacostraca	Phoxocephalidae	*Birubius* sp. 2	Amphipod	Scavenger	C4
Crustacea	Malacostraca	Phoxocephalidae	*Platyischnopus mam*	Amphipod	Scavenger	C74
Crustacea	Malacostraca	Plioplateiidae	*Plioplateia* sp. 1	Amphipod	Scavenger	C78
Crustacea	Malacostraca	Porcellanidae	*Porcellana dispar*	Porcelain Crab	Suspension	C28
Crustacea	Malacostraca	Serolidae	*Serolis longicaudata*	Sand Louse	Deposit	C38
Crustacea	Malacostraca	Serolidae	*Serolis australiensis*	Sand Louse	Deposit	C52
Crustacea	Malacostraca	Serolidae	*Serolis tuberculata*	Sand Louse	Deposit	C71
Crustacea	Malacostraca	Sphaeromatidae	*Chitonopsis* sp. 1	Pill Bug	Scavenger	C39
Crustacea	Malacostraca	Sphaeromatidae	*Paracilicaea* sp. 1	Pill Bug	Scavenger	C45
Crustacea	Malacostraca	Sphaeromatidae	*Cerceis* sp. 1	Pill Bug	Scavenger	C46
Crustacea	Malacostraca	Sphaeromatidae	*Chitonopsis* sp. 2	Pill Bug	Scavenger	C49
Crustacea	Malacostraca	Sphaeromatidae	*Cilicaea* sp. 1	Pill Bug	Scavenger	C62
Crustacea	Malacostraca	Sphaeromatidae	*Chitonopsis* sp. 3	Pill Bug	Scavenger	C64
Crustacea	Malacostraca	Sphaeromatidae	*Cilicaea* sp. 2	Pill Bug	Scavenger	C69
Crustacea	Malacostraca	Stenetriidae	*Stenetrium armatum*	Stenetriid	Deposit	C36
Crustacea	Malacostraca	Stenetriidae	*Stenetrium* sp. 1	Stenetriid	Deposit	C85
Crustacea	Malacostraca	Urohaustoriidae	*Urohaustorius halei*	Amphipod	Suspension	C3
Crustacea	Malacostraca	Xanthidae	*Actaea peronii*	Spiky Stone Crab	Scavenger	C23
Crustacea	Ostracoda	Candonidae	Candonidae 1	Seed Shrimp	Deposit	C16
Crustacea	Ostracoda	Cylindroleberididae	Cylindroleberididae 1	Seed Shrimp	Deposit	C86
Crustacea	Ostracoda	Cypridinidae	Cypridinidae 1	Seed Shrimp	Deposit	C54
Crustacea	Ostracoda	Cypridinidae	Cypridinidae 2	Seed Shrimp	Deposit	C61
Crustacea	Ostracoda	Philomedidae	Philomedidae 1	Seed Shrimp	Deposit	C9
Crustacea	Ostracoda	Pontocyprididae	Pontocyprididae 1	Seed Shrimp	Deposit	C56
Crustacea	Ostracoda	Rutidermatidae	Rutidermatidae 1	Seed Shrimp	Deposit	C80
Crustacea	Ostracoda	Sarsiellidae	Sarsiellidae 1	Seed Shrimp	Deposit	C58
Brachipoda	Rhynchonellata	Cancellothyrididae	*Terebratulina cavata*	Lamp Shell	Suspension	L1
Echinodermata	Asteroidea	Astropectinidae	*Bollonaster pectinatus*	Starfish	Scavenger	E8
Echinodermata	Echinoidea	Cidaridae	*Goniocidaris tubaria*	Sea Urchin	Scavenger	E4
Echinodermata	Echinoidea	Fibulariidae	*Fibularia acuta*	Sand Dollar	Deposit	E2
Echinodermata	Echinoidea	Fibulariidae	*Fibularia nutriens*	Sand Dollar	Deposit	E5
Echinodermata	Echinoidea	Temnopleuridae	*Microcyphus annulatus*	Sea Urchin	Scavenger	E6
Echinodermata	Holothuroidea	Chiridotidae	Chiridotidae 1	Sea Cucumber	Deposit	E7
Echinodermata	Ophiuroidea	Ophiotrichidae	*Ophiothrix (Ophiothrix) caespitosa*	Brittle Star	Deposit	E3
Echinodermata	Ophiuroidea	Ophiuridae	*Ophiura kinbergi*	Brittle Star	Deposit	E1
Echinodermata	Ophiuroidea	Ophiuridae	Ophiuridae 1	Brittle Star	Deposit	E9
Chordata	Ascidiacea	Ascidiidae	Ascidiidae 1	Sea Squirt	Suspension	A1
Chordata	Ascidiacea	Pyuridae	Pyuridae 1	Sea Squirt	Suspension	A2
Chordata	Cephalochordata	Branchiostomidae	*Epigonichthys australis*	Lancelet	Suspension	F2
Chordata	Osteichthyes	Callionymidae	*Foetorepus phasis*	Bight Stinkfish	Predator	F1
Chordata	Osteichthyes	Creediidae	*Creedia haswelli*	Slender Sand-diver	Predator	F4
Chordata	Osteichthyes	Ophichthidae	*Muraenichthys breviceps*	Shorthead Worm Eel	Predator	F3
Chordata	Osteichthyes	Scorpaenidae	*Maxillicosta whitleyi*	Whitley's scorpionfish	Predator	F5

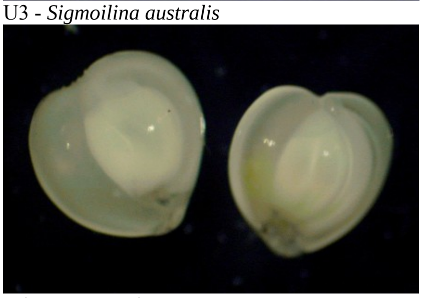
Appendix 6. Photographic plates depicting 240 organisms collected in benthic grab samples from 65 sampling station in eastern Great Australian Bight.

U1 - *Spirillina* sp. 1

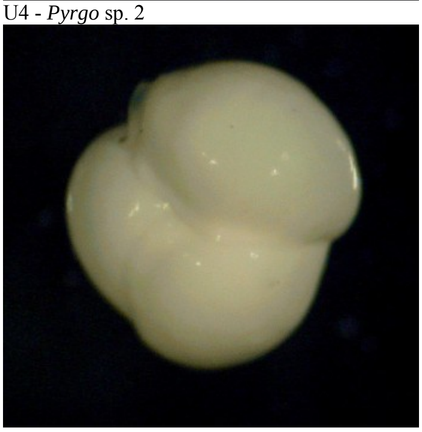
U2 - *Pyrgo* sp. 1



U3 - *Sigmoilina australis*

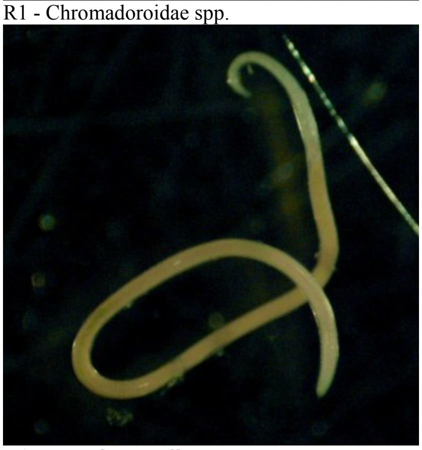


U4 - *Pyrgo* sp. 2



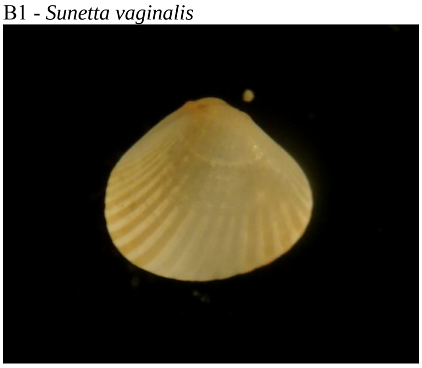
N1 - Cephalothricidae spp.

R1 - Chromadoroidae spp.

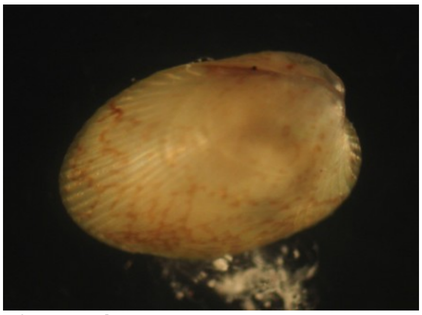


K1 - *Parachiton collusor*

B1 - *Sunetta vaginalis*

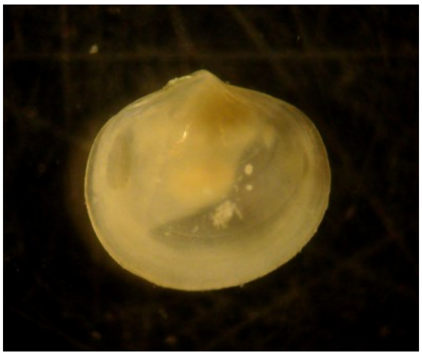


B2 - *Modiolus lineas*



B3 - *Musculus nanus*

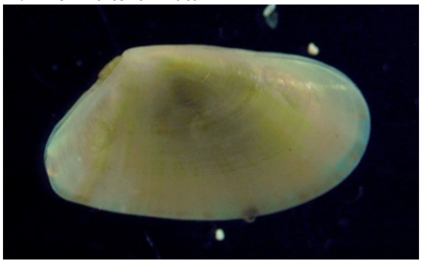
B4 - *Montacuta meridionalis*



B5 - *Hiatella australis*

B6 - *Mimachlamys asperrima*

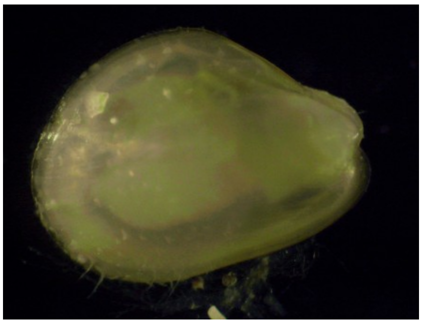
B7 - *Tellina tenuilirata*



B8 - *Neotrigonia horia*

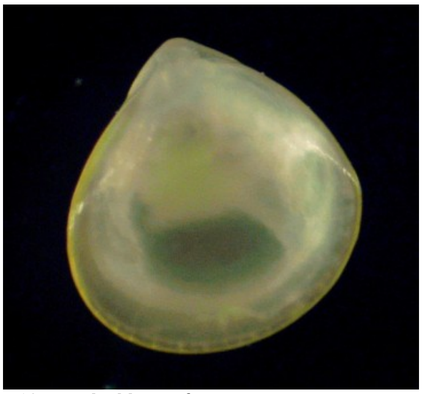
B9 - *Pholas australasiae*

B10 - *Modiolus cottoni*



B11 - *Gari alba*

B12 - *Cuna solida*

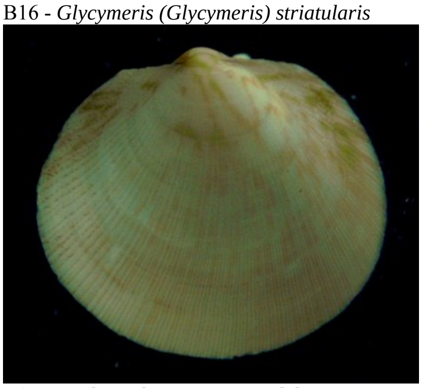


B13 - *Cyclochlamys favus*

B14 - *Mactra jacksonensis*

B15 - *Callista (Notocallista) kingii*

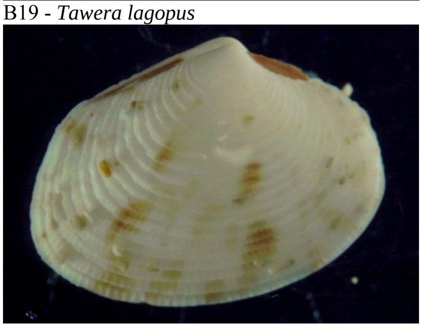
B16 - *Glycymeris (Glycymeris) striatularis*



B17 - *Cyclocardia (Vimentum) delicatum*

B18 - *Solamen recens*

B19 - *Tawera lagopus*



B20 - *Carditella (Carditella) valida*

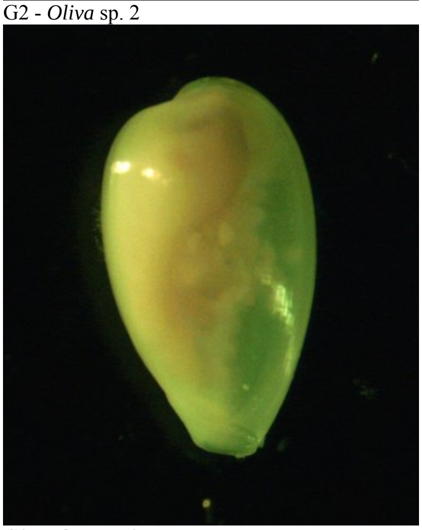
B21 - *Neotrigonia bednalli*

B23 - *Donax francisensis*

B24 - *Questimya granifera*

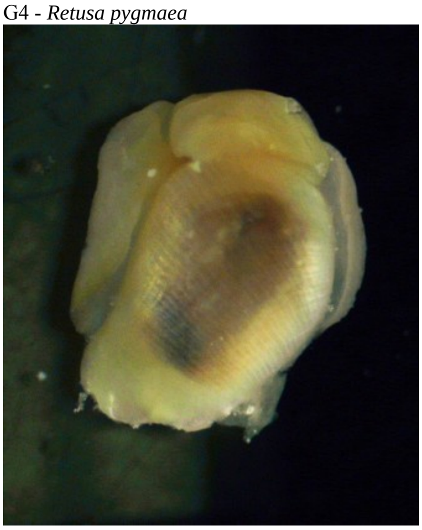
G1 - *Oliva* sp. 1

G2 - *Oliva* sp. 2

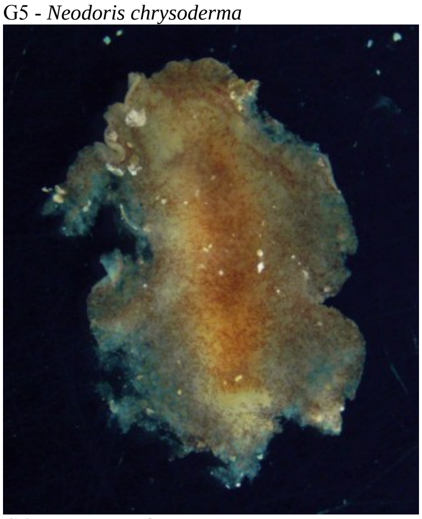


G3 - *Oliva* sp. 3

G4 - *Retusa pygmaea*



G5 - *Neodoris chrysoderma*

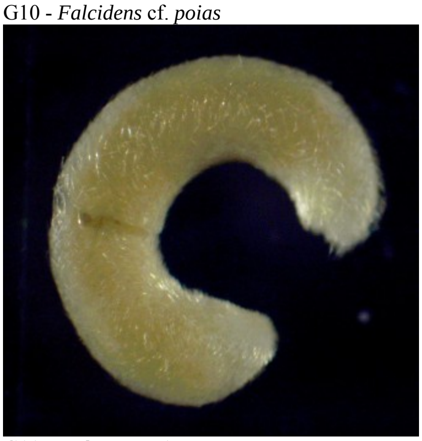


G6 - *Sinum zonale*

G7 - *Dentalium (Dentalium) francisense*

G9 - *Alocospira edithae*

G10 - *Falcidens* cf. *poias*



G11 - *Haliotis* sp. 1

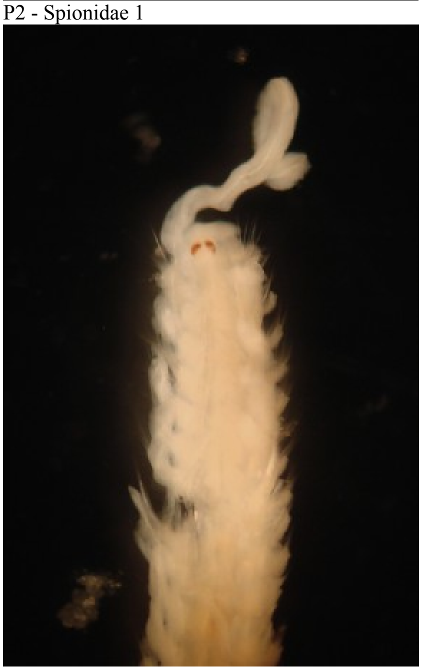
Q1 - *Grimpella thaumastocheir*

S1 - *Phascolosoma (Phascolosoma) annulatum*

S2 - *Themiste* sp. 1

P1 - *Micronephtys* sp. 1

P2 - Spionidae 1



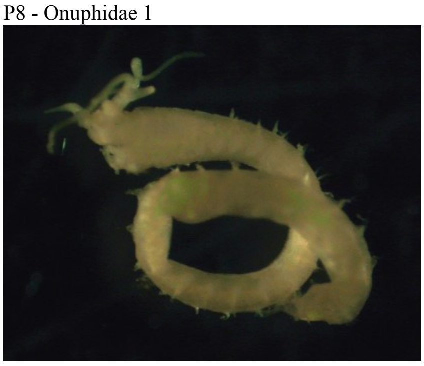
P3 - Spionidae 2

P4 - Glyceridae 1

P5 - Polygordiidae 1

P7 - *Pista* sp. 1

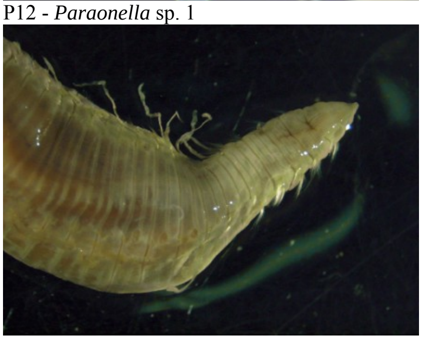
P8 - Onuphidae 1



P10 - Hesionidae 1

P11 - *Lumbrineris tetraura*

P12 - *Paraonella* sp. 1



P13 - Nereididae 1

P14 - *Leiocapitella* sp. 1

P15 - *Notomastus* sp. 1

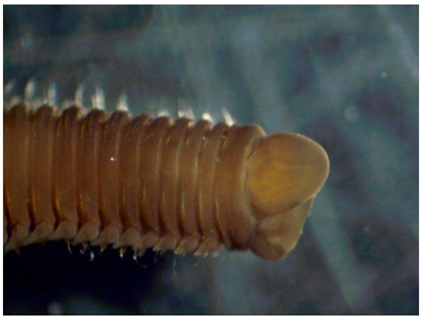
P16 - *Lysidice* sp. 1

P17 - *Nematonereis* sp. 1

P18 - *Eunice* sp. 1

P19 - Dorvilleidae 1

P20 - Lumbrineridae 2



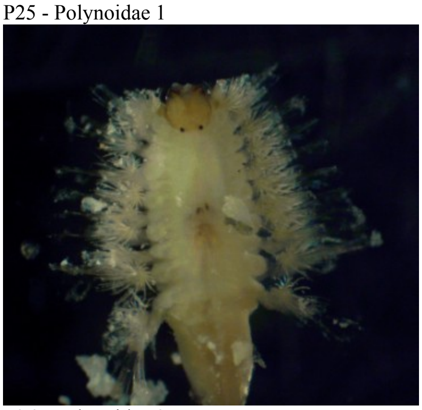
P21 - Amphinomidae 1

P22 - *Flabelligera* sp. 1

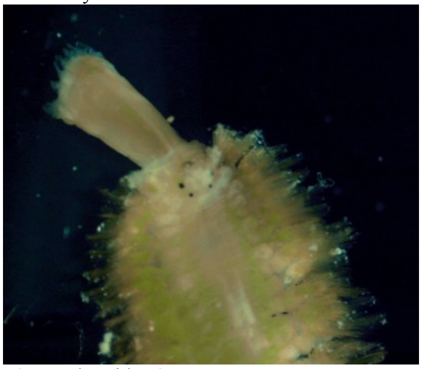
P23 - Phyllodocidae 1

P24 - Phyllodocidae 2

P25 - Polynoidae 1



P26 - Polynoidae 2



P27 - Polynoidae 3

P28 - Serpulidae 1

P29 - *Syllis gracilis*

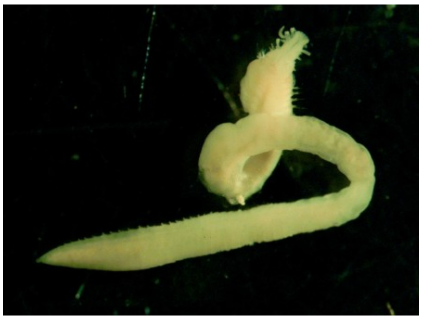
P30 - Syllidae 3

P31 - *Exogone* sp. 1

P32 - Spionidae 3

P33 - Sabellidae 1

P34 - Terebellidae 1



P35 - *Armandia* sp. 1

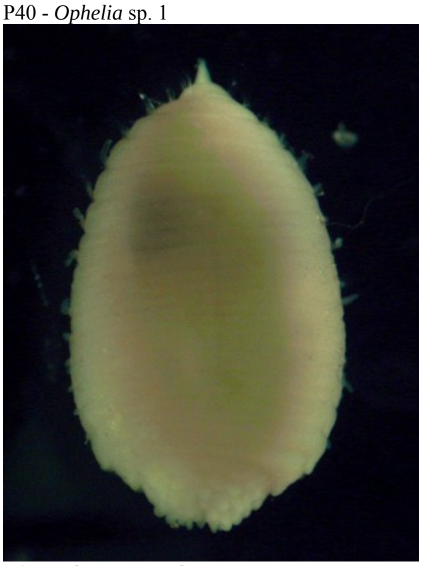
P36 - Phyllodocidae Juvenile

P37 - Lumbrineridae 3

P38 - Syllidae 4

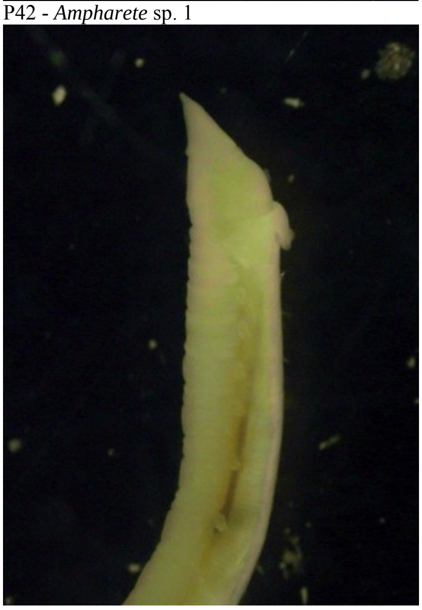
P39 - Cirratulidae 1

P40 - *Ophelia* sp. 1



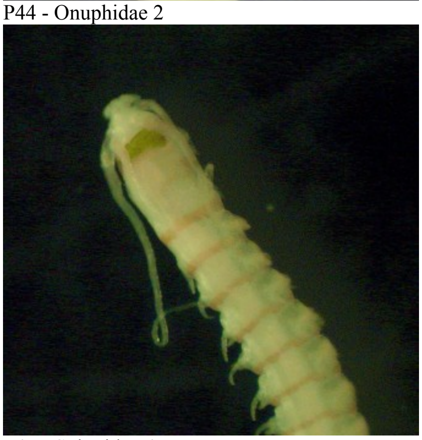
P41 - *Filograna implexa*

P42 - *Ampharete* sp. 1



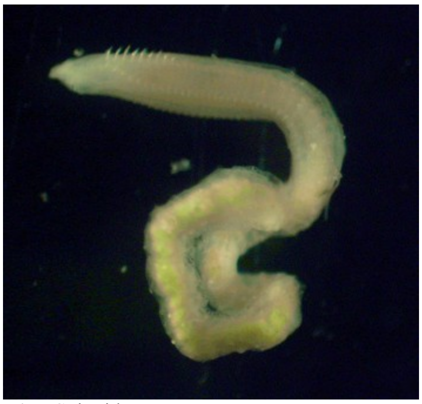
P43 - *Notomastus* sp. 2

P44 - Onuphidae 2



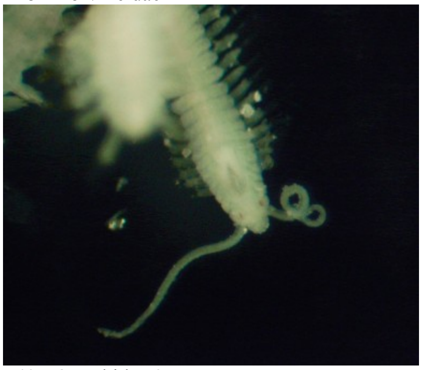
P45 - Spionidae 4

P46 - Cirratulidae 2



P47 - Spionidae 5

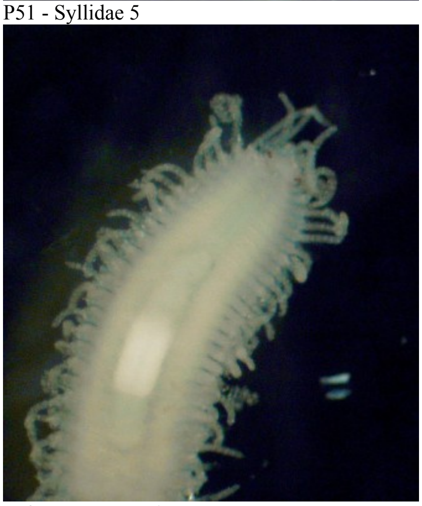
P48 - Dorvilleidae 2



P49 - Onuphidae 3

P50 - Chrysopetalidae 1

P51 - Syllidae 5

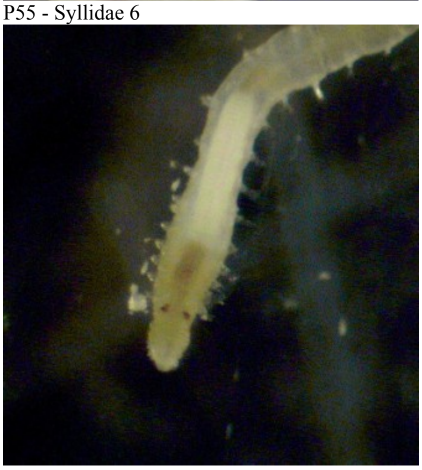


P52 - *Pisione* sp. 1

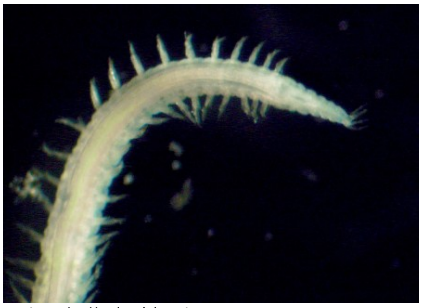
P53 - Lumbrineridae 4

P54 - *Litocorsa* sp. 1

P55 - Syllidae 6

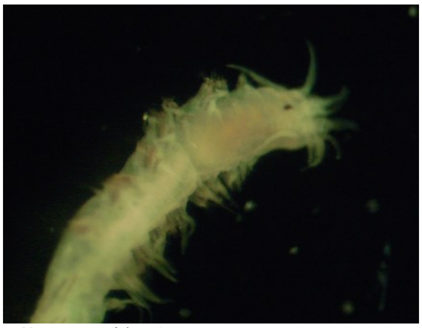


P57 - Goniadidae 1



P58 - Phyllodocidae 3

P59 - Nereididae 3



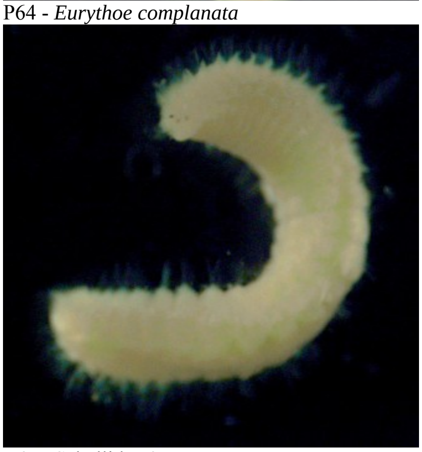
P60 - Paraonidae 1

P61 - Orbiniidae 1

P62 - Syllidae 7

P63 - Serpulidae 2

P64 - *Eurythoe complanata*



P65 - Sabellidae 3

P66 - Sigalionidae 1

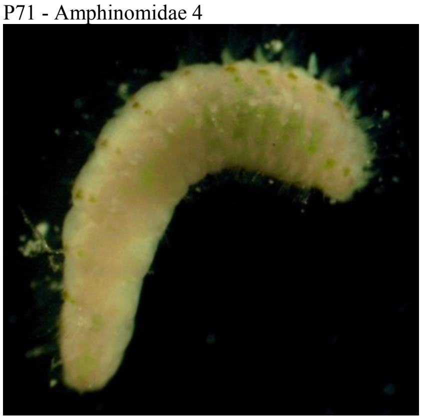
P67 - Syllidae 8

P68 - Nereididae 4

P69 - Amphinomidae 3

P70 - Goniadidae 2

P71 - Amphinomidae 4



P72 - Sigalionidae 2

P73 - *Acmira lopezi*

P74 - Capitellidae 1

P75 - *Palolo* sp. 1

P76 - Spionidae 6

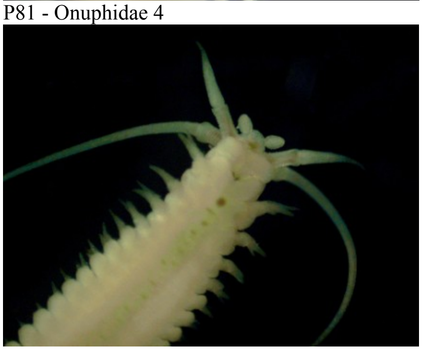
P77 - Phyllodocidae 4

P78 - Magelonidae 1

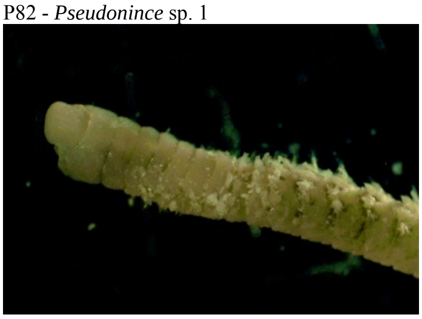
P79 - Syllidae 9

P80 - Syllidae 10

P81 - Onuphidae 4



P82 - *Pseudonince* sp. 1

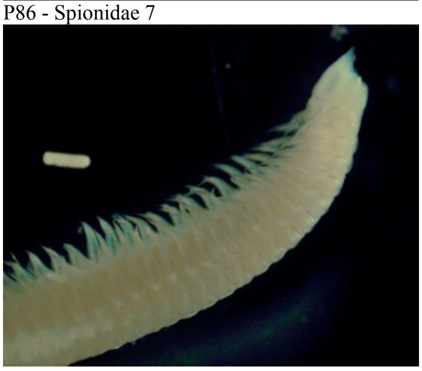


P83 - Cirratulidae 3

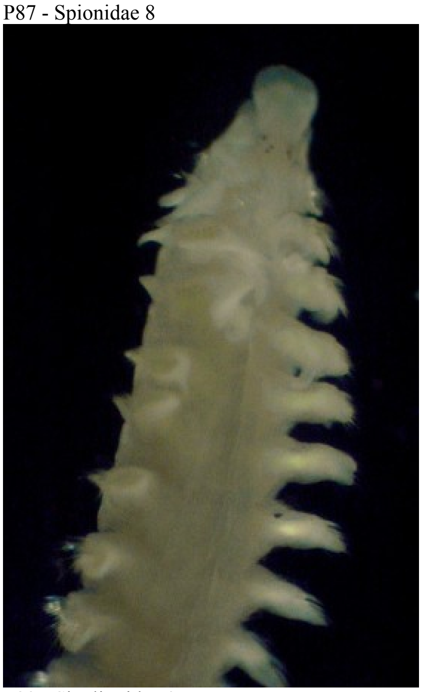
P84 - Flabelligerdiae 1

P85 - Orbiniidae 2

P86 - Spionidae 7



P87 - Spionidae 8



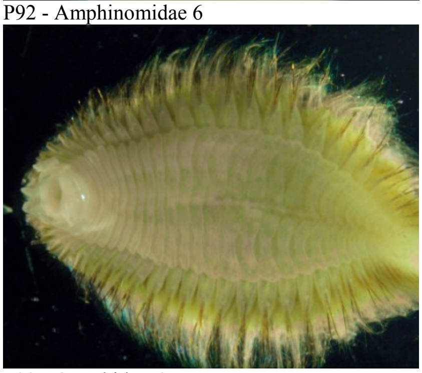
P88 - Sigalionidae 3

P89 - Lumbrineridae 5

P90 - Orbiniidae 3

P91 - Onuphidae 5

P92 - Amphinomidae 6



P93 - Onuphidae 6

P94 - Amphinomidae 7

P95 - *Dodecaceria* sp. 1

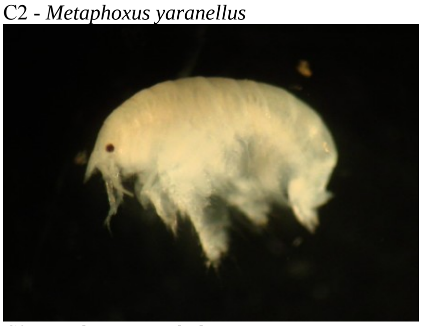
P96 - Glyceridae 2

H1 - Ammotheidae 1

H2 - Pallenidae 1

C1 - *Leptocuma pulleini*

C2 - *Metaphoxus yaranellus*



C3 - *Urohaustorius halei*

C4 - *Birubius* sp. 2

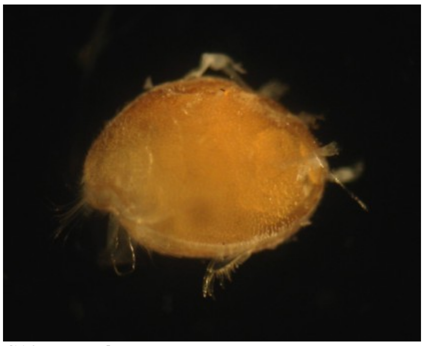
C5 - *Paranchialina angusta*

C6 - *Cheiriphotis australiae*

C7 - Anarthruridae 1

C8 - *Kalliapseudes obtusifrons*

C9 - Philomedidae 1



C10 - *Ceradocus serratus*

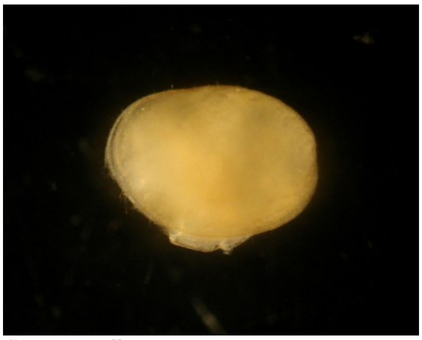
C11 - *Birubius drummondae*

C12 - *Waldeckia* sp. 2

C14 - *Mallacoota* sp. 1

C15 - *Eurydice binda*

C16 - Candonidae 1

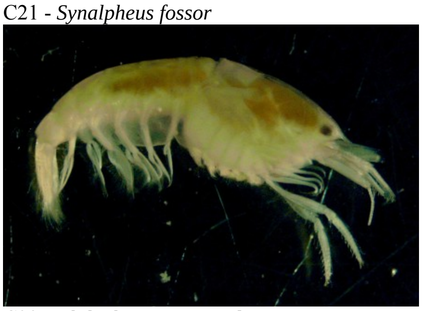


C17 - *Caprella scaura*

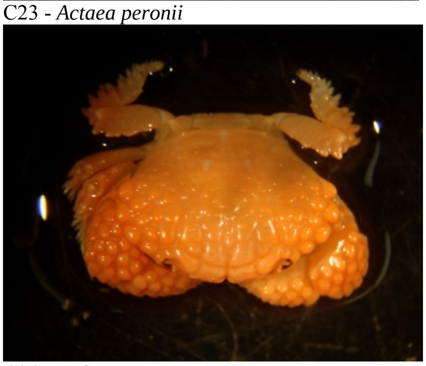
C18 - *Dulichiella australis*

C19 - *Ceradocus rubromaculatus*

C20 - *Alpheus villosus*

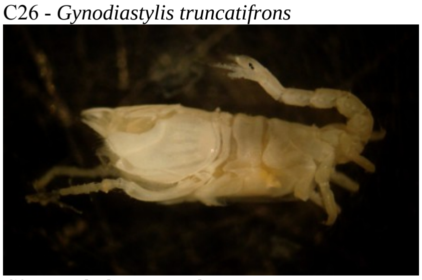

C21 - *Synalpheus fossor*


C22 - *Philocheras intermedius*


C23 - *Actaea peronii*


C24 - *Halicarcinus rostratus*


C25 - *Waldeckia kroyeri*


C26 - *Gynodiastylis truncatifrons*


C27 - *Galathea australiensis*


C28 - *Porcellana dispar*

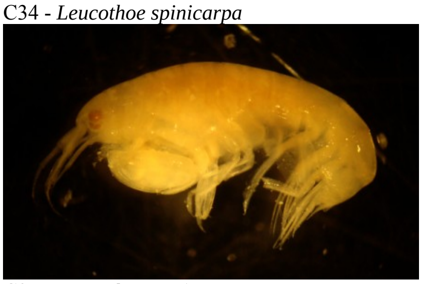

C29 - *Paratanais ignotus*


C30 - *Paratanais* sp. 1

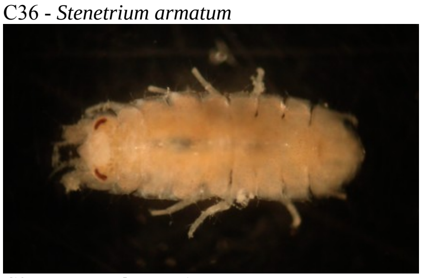

C31 - *Paranebalia longipes*

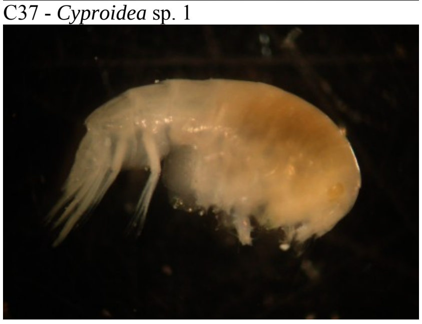

C32 - *Eurystheus persetosus*


C33 - *Xenocheira fasciata*


C34 - *Leucothoe spinicarpa*


C35 - *Leucothoe* sp. 1


C36 - *Stenetrium armatum*


C37 - *Cyproidea* sp. 1


C38 - *Serolis longicaudata*

C39 - *Chitonopsis* sp. 1

C40 - *Halicreion* sp. 3

C41 - Corophiidae 1

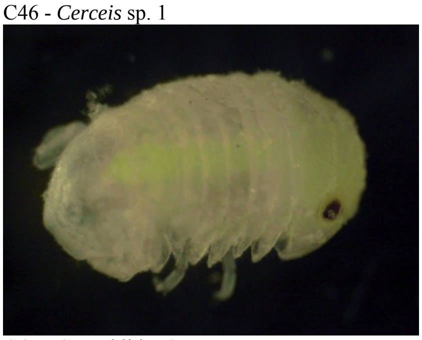
C42 - *Smilium peronii*

C43 - *Haliophasma* sp. 1

C44 - Bodotriidae 1

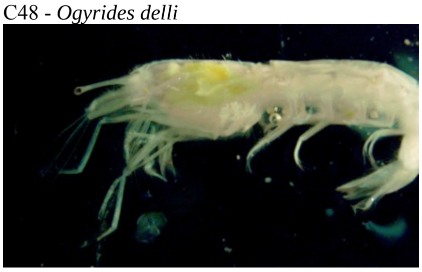
C45 - *Paracilicaea* sp. 1

C46 - *Cerceis* sp. 1



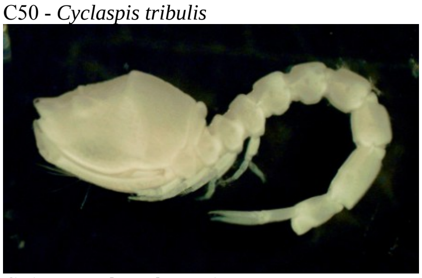
C47 - Corophiidae 2

C48 - *Ogyrides delli*



C49 - *Chitonopsis* sp. 2

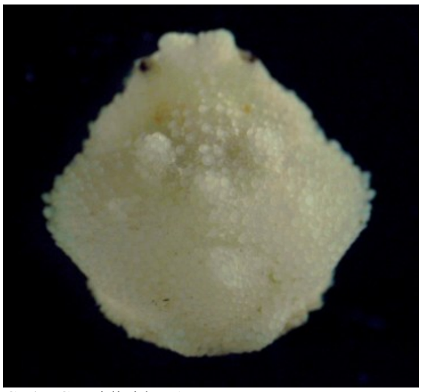
C50 - *Cyclaspis tribulis*



C51 - *Gynodiastylis* sp. 1

C52 - *Serolis australiensis*

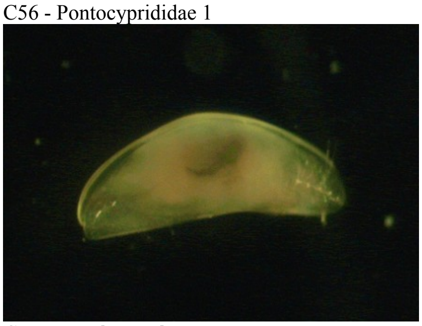
C53 - *Ebalia tuberculosa*



C54 - Cypridinidae 1

C55 - *Natatolana longispina*

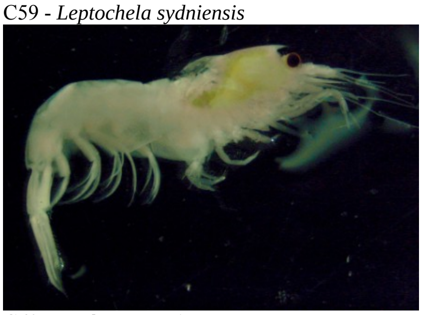
C56 - Pontocyprididae 1



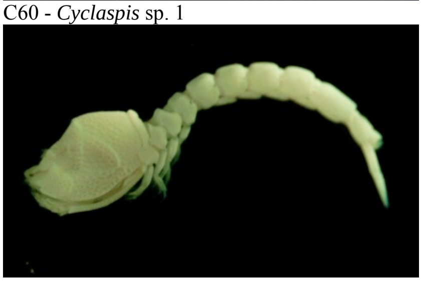
C57 - *Gnathia mulieraria*

C58 - Sarsiellidae 1

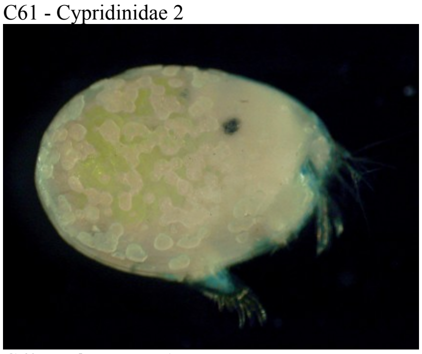
C59 - *Leptochela sydniensis*



C60 - *Cyclaspis* sp. 1



C61 - Cypridinidae 2



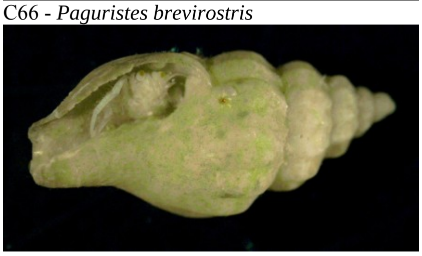
C62 - *Cilicaea* sp. 1

C63 - *Euidotea* sp. 2

C64 - *Chitonopsis* sp. 3

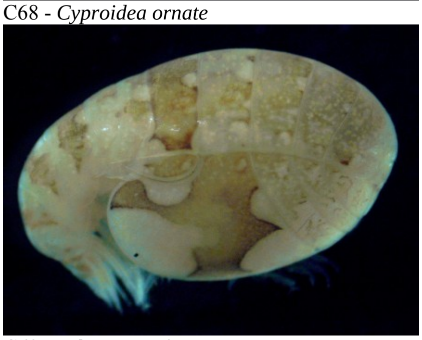
C65 - *Natatolana woodjonesi*

C66 - *Paguristes brevirostris*



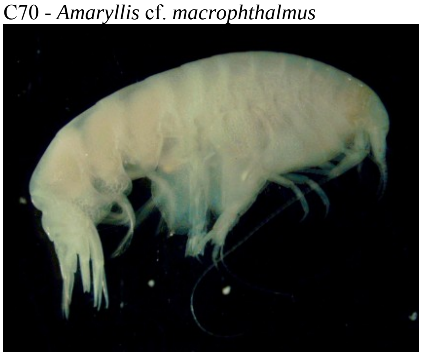
C67 - *Waldeckia* sp. 3

C68 - *Cyproidea ornate*



C69 - *Cilicaea* sp. 2

C70 - *Amaryllis* cf. *macrophthalmus*

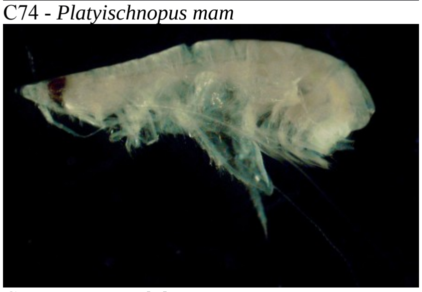


C71 - *Serolis tuberculate*

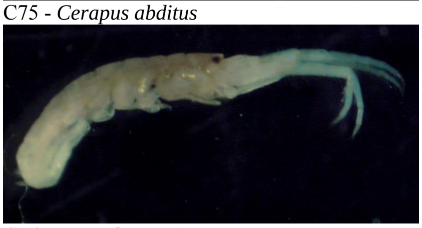
C72 - *Munida haswelli*

C73 - Corophiidae 3

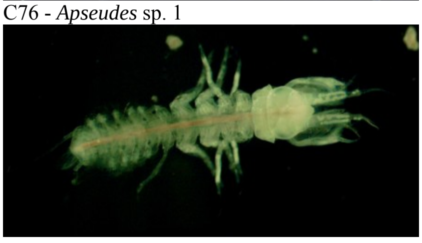
C74 - *Platyischnopus mam*



C75 - *Cerapus abditus*

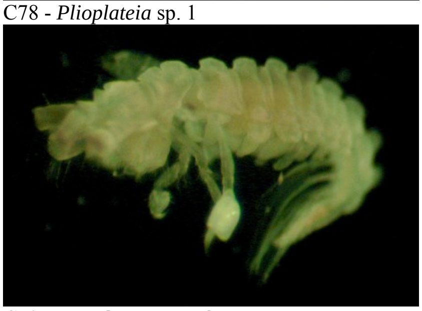


C76 - *Apseudes* sp. 1



C77 - *Dorhynchus ramusculus*

C78 - *Plioplateia* sp. 1



C79 - *Paradexamine echuca*

C80 - Rutidermatidae 1

C81 - Bodotriidae 2

C82 - *Austrochaetilia capeli*

C83 - *Halicreion* sp. 4

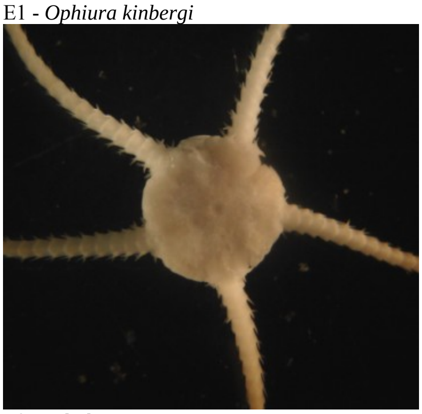
C84 - *Dimorphostylis inauspicata*

C85 - *Stenetrium* sp. 1

C86 - Cylindroleberididae 1

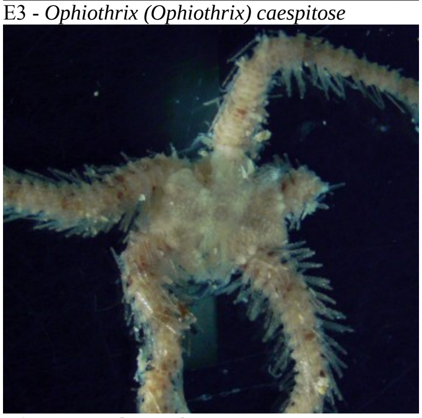
L1 - *Terebratulina cavata*

E1 - *Ophiura kinbergi*



E2 - *Fibularia acuta*

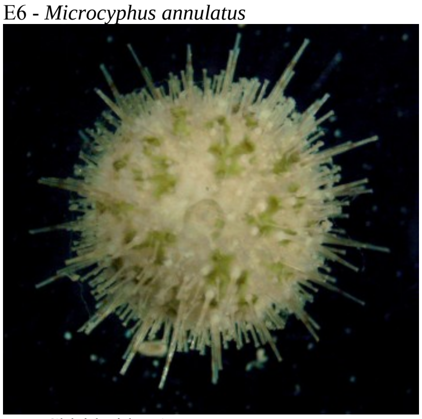
E3 - *Ophiothrix (Ophiothrix) caespitose*



E4 - *Goniocidaris tubaria*

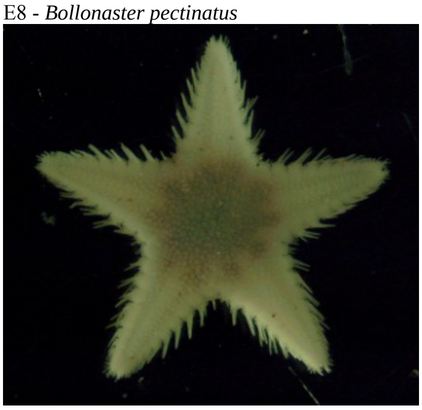
E5 - *Fibularia nutriens*

E6 - *Microcyphus annulatus*

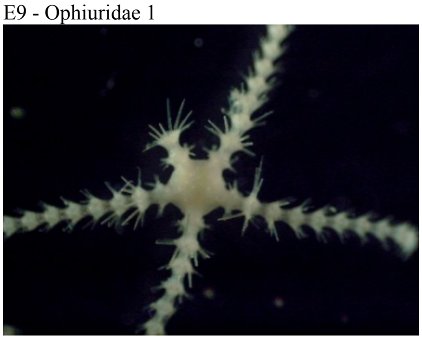


E7 - Chiridotidae 1

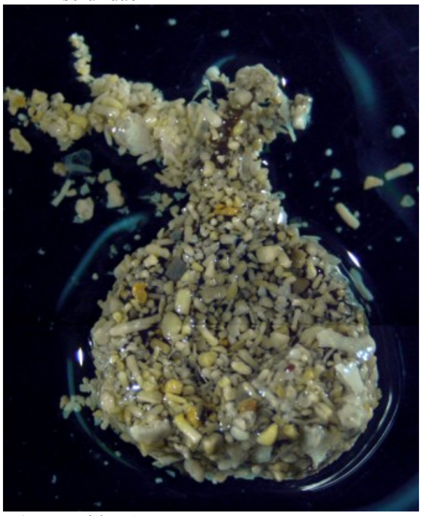
E8 - *Bollonaster pectinatus*



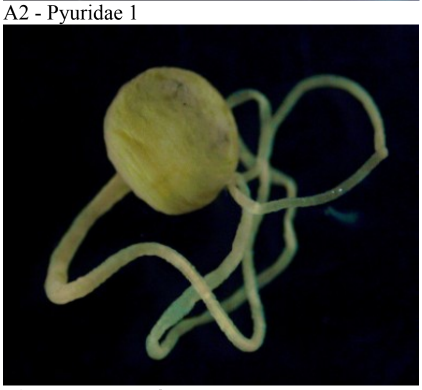
E9 - Ophiuridae 1



A1 - Ascidiidae 1

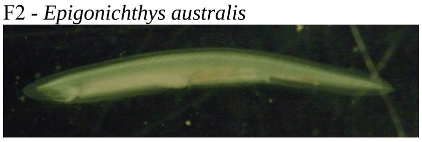


A2 - Pyuridae 1



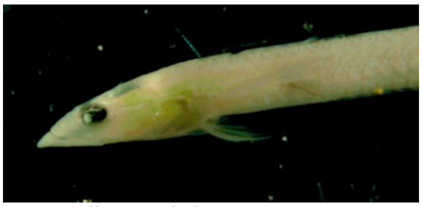
F1 - *Foetorepus phasis*

F2 - *Epigonichthys australis*



F3 - *Muraenichthys breviceps*

F4 - *Creedia haswelli*



F5 - *Maxillicosta whitleyi*

Appendix 7. Summary list of species abundances (N) collected from 65 sampling stations in the eastern Great Australian Bight during 2006. All species codes given here refer to type material lodged in the South Australian Museum, Adelaide.

Station	Species	Code	N
1	*Leptocuma pulleini*	C1	1
1	*Metaphoxus yaranellus*	C2	1
1	*Urohaustorius halei*	C3	4
1	*Birubius* sp. 2	C4	1
1	*Paranchialina angusta*	C5	4
1	*Cheiriphotis australiae*	C6	1
1	Anarthruridae 1	C7	3
1	*Kalliapseudes obtusifrons*	C8	8
1	*Kalliapseudes obtusifrons*	C8	1
1	Philomedidae 1	C9	1
1	*Ophiura kinbergi*	E1	4
1	*Fibularia acuta*	E2	1
1	*Micronephtys* sp. 1	P1	1
1	Spionidae 1	P2	2
1	Spionidae 2	P3	3
1	Glyceridae 1	P4	1
1	Polygordiidae 1	P5	1
2	*Modiolus lineas*	B2	1
2	*Musculus nanus*	B3	10
2	*Montacuta meridionalis*	B4	1
2	*Hiatella australis*	B5	1
2	*Mimachlamys asperrima*	B6	1
2	*Birubius drummondae*	C11	3
2	*Caprella scaura*	C17	25
2	*Dulichiella australis*	C18	27
2	*Ceradocus rubromaculatus*	C19	126
2	*Alpheus villosus*	C20	1
2	*Synalpheus fossor*	C21	3
2	*Philocheras intermedius*	C22	1
2	*Actaea peronii*	C23	1
2	*Halicarcinus rostratus*	C24	2
2	*Waldeckia kroyeri*	C25	1
2	*Gynodiastylis truncatifrons*	C26	1
2	*Galathea australiensis*	C27	1
2	*Porcellana dispar*	C28	2
2	*Paratanais ignotus*	C29	11
2	*Paratanais* sp. 1	C30	1
2	*Paranebalia longipes*	C31	21
2	*Eurystheus persetosus*	C32	58
2	*Xenocheira fasciata*	C33	81
2	*Leucothoe spinicarpa*	C34	16
2	*Leucothoe* sp. 1	C35	1
2	*Stenetrium armatum*	C36	4
2	*Cyproidea* sp. 1	C37	1
2	*Serolis longicaudata*	C38	1
2	*Chitonopsis* sp. 1	C39	1
2	*Halicreion* sp. 3	C40	1
2	Corophiidae 1	C41	2
2	*Smilium peronii*	C42	5
2	*Haliophasma* sp. 1	C43	1
2	*Paranchialina angusta*	C5	1
2	*Kalliapseudes obtusifrons*	C8	7
2	*Ophiura kinbergi*	E1	2
2	*Ophiothrix (Ophiothrix) caespitosa*	E3	3
2	*Goniocidaris tubaria*	E4	1
2	*Oliva* sp. 2	G2	1
2	*Oliva* sp. 3	G3	1
2	*Retusa pygmaea*	G4	1
2	*Neodoris chrysoderma*	G5	1
2	*Parachiton collusor*	K1	1
2	Cephalothricidae spp.	N1	5
2	Nereididae 1	P13	2
2	*Leiocapitella* sp. 1	P14	2
2	*Notomastus* sp. 1	P15	4
2	*Lysidice* sp. 1	P16	2

Station	Species	Code	N
2	*Nematonereis* sp. 1	P17	1
2	*Eunice* sp. 1	P18	1
2	Dorvilleidae 1	P19	1
2	Lumbrineridae 2	P20	6
2	Amphinomidae 1	P21	1
2	*Flabelligera* sp. 1	P22	1
2	Phyllodocidae 1	P23	3
2	Phyllodocidae 2	P24	1
2	Polynoidae 1	P25	1
2	Polynoidae 2	P26	2
2	Polynoidae 3	P27	1
2	Serpulidae 1	P28	1
2	*Syllis gracilis*	P29	4
2	Syllidae 3	P30	2
2	*Exogone* sp. 1	P31	1
2	Spionidae 3	P32	6
2	Sabellidae 1	P33	3
2	Chromadoroidae spp.	R1	1
2	*Phascolosoma (Phascolosoma) annulatum*	S1	8
3	*Urohaustorius halei*	C3	1
3	*Paranchialina angusta*	C5	5
3	*Leptochela sydniensis*	C59	1
3	Anarthruridae 1	C7	1
3	Cephalothricidae spp.	N1	1
3	*Micronephtys* sp. 1	P1	2
3	*Ampharete* sp. 1	P42	1
3	Spionidae 7	P86	1
3	Chromadoroidae spp.	R1	4
4	*Cuna solida*	B12	1
4	*Glycymeris (Glycymeris) striatularis*	B16	1
4	*Carditella (Carditella) valida*	B20	1
4	*Neotrigonia bednalli*	B21	1
4	*Donax francisensis*	B23	1
4	Candonidae 1	C16	2
4	*Dulichiella australis*	C18	1
4	*Metaphoxus yaranellus*	C2	1
4	*Gynodiastylis truncatifrons*	C26	2
4	*Urohaustorius halei*	C3	3
4	*Halicreion* sp. 3	C40	1
4	*Cerceis* sp. 1	C46	1
4	*Natatolana longispina*	C55	1
4	*Waldeckia* sp. 3	C67	1
4	*Paradexamine echuca*	C79	1
4	*Fibularia acuta*	E2	2
4	Dorvilleidae 1	P19	1
4	*Syllis gracilis*	P29	2
4	*Ophelia* sp. 1	P40	1
4	Polygordiidae 1	P5	1
4	Orbiniidae 1	P61	1
4	Syllidae 7	P62	1
4	*Eurythoe complanata*	P64	1
4	Spionidae 6	P76	2
4	Orbiniidae 3	P90	1
4	Amphinomidae 6	P92	1
4	Onuphidae 6	P93	1
5	*Sunetta vaginalis*	B1	2
5	*Ceradocus serratus*	C10	1
5	*Birubius drummondae*	C11	1
5	*Waldeckia* sp. 2	C12	1
5	*Mallacoota* sp. 1	C14	1
5	*Eurydice binda*	C15	2
5	Candonidae 1	C16	1
5	*Caprella scaura*	C17	1
5	*Ceradocus rubromaculatus*	C19	1
5	*Urohaustorius halei*	C3	1

Station	Species	Code	N
5	*Foetorepus phasis*	F1	1
5	*Epigonichthys australis*	F2	1
5	*Micronephtys* sp. 1	P1	4
5	Spionidae 2	P3	1
5	*Pista* sp. 1	P7	1
5	Onuphidae 1	P8	1
6	*Tellina tenuilirata*	B7	1
6	*Halicreion* sp. 3	C40	1
6	Anarthruridae 1	C7	1
6	*Amaryllis* cf. *macrophthalmus*	C70	1
6	*Kalliapseudes obtusifrons*	C8	3
6	*Ophiothrix (Ophiothrix) caespitosa*	E3	1
6	*Bollonaster pectinatus*	E8	1
6	Glyceridae 1	P4	1
6	Spionidae 6	P76	1
6	Spionidae 8	P87	1
6	Sigalionidae 3	P88	1
7	*Paranchialina angusta*	C5	8
7	*Cyclaspis tribulis*	C50	1
7	*Syllis gracilis*	P29	1
7	Orbiniidae 1	P61	1
7	*Themiste* sp. 1	S2	1
8	*Dulichiella australis*	C18	20
8	*Metaphoxus yaranellus*	C2	4
8	*Leucothoe spinicarpa*	C34	1
8	*Cyproidea* sp. 1	C37	1
8	*Natatolana longispina*	C55	1
8	*Euidotea* sp. 2	C63	1
8	*Waldeckia* sp. 3	C67	2
8	*Kalliapseudes obtusifrons*	C8	2
8	Rutidermatidae 1	C80	2
8	*Haliotis* sp. 1	G11	8
8	*Micronephtys* sp. 1	P1	2
8	*Eunice* sp. 1	P18	2
8	Dorvilleidae 1	P19	3
8	*Syllis gracilis*	P29	3
8	Spionidae 5	P47	1
8	Syllidae 5	P51	3
8	*Pisione* sp. 1	P52	2
8	Serpulidae 2	P63	1
8	*Eurythoe complanata*	P64	8
8	Nereididae 4	P68	1
8	Spionidae 6	P76	2
8	Onuphidae 5	P91	1
9	*Modiolus cottoni*	B10	2
9	*Tellina tenuilirata*	B7	2
9	*Pholas australasiae*	B9	1
9	*Leptocuma pulleini*	C1	2
9	*Eurydice binda*	C15	2
9	*Urohaustorius halei*	C3	2
9	*Eurystheus persetosus*	C32	1
9	*Stenetrium armatum*	C36	2
9	*Serolis longicaudata*	C38	1
9	*Birubius* sp. 2	C4	1
9	*Haliophasma* sp. 1	C43	1
9	*Cerceis* sp. 1	C46	2
9	Corophiidae 2	C47	5
9	*Paranchialina angusta*	C5	2
9	*Fibularia acuta*	E2	5
9	*Muraenichthys breviceps*	F3	1
9	Ammotheidae 1	H1	1
9	Cephalothricidae spp.	N1	2
9	Nereididae 1	P13	2
9	Phyllodocidae 1	P23	1
9	*Syllis gracilis*	P29	1
9	*Ophelia* sp. 1	P40	1
9	*Filograna implexa*	P41	300
9	*Ampharete* sp. 1	P42	2
9	*Notomastus* sp. 2	P43	1
9	Chromadoroidae spp.	R1	1
10	*Modiolus cottoni*	B10	3
10	*Birubius drummondae*	C11	2
10	*Paranchialina angusta*	C5	2
10	*Epigonichthys australis*	F2	1
10	*Ampharete* sp. 1	P42	2
10	Cirratulidae 2	P46	1
11	*Gari alba*	B11	2
11	*Tawera lagopus*	B19	1
11	*Birubius drummondae*	C11	2
11	*Ceradocus rubromaculatus*	C19	3
11	*Paratanais ignotus*	C29	1
11	*Platyischnopus mam*	C74	1
11	*Maxillicosta whitleyi*	F5	1
11	Cephalothricidae spp.	N1	1
11	*Haliotis* sp. 1	P10	2
11	Dorvilleidae 1	P19	1
11	*Syllis gracilis*	P29	6
11	Polygordiidae 1	P5	1
11	Orbiniidae 1	P61	2
11	Syllidae 7	P62	1
11	Onuphidae 5	P91	1
12	*Waldeckia* sp. 2	C12	2
12	*Xenocheira fasciata*	C33	1
12	*Halicreion* sp. 3	C40	1
12	*Ogyrides delli*	C48	1
12	*Chitonopsis* sp. 2	C49	1
12	*Paranchialina angusta*	C5	1
12	*Kalliapseudes obtusifrons*	C8	1
12	*Micronephtys* sp. 1	P1	2
12	*Ampharete* sp. 1	P42	1
12	Onuphidae 2	P44	1
12	Spionidae 4	P45	1
13	*Gari alba*	B11	1
13	*Leptocuma pulleini*	C1	2
13	*Dulichiella australis*	C18	7
13	*Waldeckia kroyeri*	C25	1
13	*Stenetrium armatum*	C36	1
13	*Cerceis* sp. 1	C46	1
13	*Cheiriphotis australiae*	C6	1
13	*Fibularia acuta*	E2	1
13	*Haliotis* sp. 1	G11	4
13	*Syllis gracilis*	P29	3
13	*Armandia* sp. 1	P35	1
13	Glyceridae 1	P4	1
13	Spionidae 5	P47	1
13	Polygordiidae 1	P5	3
13	Syllidae 6	P55	2
13	Syllidae 7	P62	1
13	*Acmira lopezi*	P73	1
13	Spionidae 6	P76	1
14	*Tellina tenuilirata*	B7	1
14	*Birubius drummondae*	C11	2
14	*Paranchialina angusta*	C5	1
14	*Natatolana longispina*	C55	1
14	Sarsiellidae 1	C58	1
14	*Kalliapseudes obtusifrons*	C8	6
14	*Bollonaster pectinatus*	E8	1
14	*Notomastus* sp. 1	P15	1
14	Spionidae 2	P3	1
14	*Armandia* sp. 1	P35	1
14	Chromadoroidae spp.	R1	1
15	*Sunetta vaginalis*	B1	1
15	*Cuna solida*	B12	1
15	*Metaphoxus yaranellus*	C2	1
15	*Gynodiastylis truncatifrons*	C26	1
15	*Urohaustorius halei*	C3	4

Station	Species	Code	N
15	Corophiidae 2	C47	1
15	*Amaryllis* cf. *macrophthalmus*	C70	1
15	*Serolis tuberculata*	C71	1
15	Corophiidae 3	C73	1
15	*Kalliapseudes obtusifrons*	C8	2
15	*Fibularia acuta*	E2	4
15	*Micronephtys* sp. 1	P1	2
15	*Ampharete* sp. 1	P42	1
15	Spionidae 4	P45	1
15	*Acmira lopezi*	P73	1
15	Spionidae 6	P76	2
15	Onuphidae 1	P8	1
16	*Sunetta vaginalis*	B1	1
16	*Tellina tenuilirata*	B7	1
16	*Leptocuma pulleini*	C1	2
16	*Waldeckia* sp. 2	C12	1
16	*Waldeckia kroyeri*	C25	1
16	*Xenocheira fasciata*	C33	2
16	*Sinum zonale*	G6	1
16	*Eunice* sp. 1	P18	1
16	Terebellidae 1	P34	1
16	*Armandia* sp. 1	P35	1
16	Chromadoroidae spp.	R1	1
17	*Birubius drummondae*	C11	4
17	*Ceradocus rubromaculatus*	C19	1
17	*Cerceis* sp. 1	C46	1
17	Anarthruridae 1	C7	1
17	*Kalliapseudes obtusifrons*	C8	1
17	Onuphidae 2	P44	1
17	Polygordiidae 1	P5	4
17	*Pisione* sp. 1	P52	1
17	Lumbrineridae 4	P53	1
17	Syllidae 6	P55	2
17	Spionidae 6	P76	1
17	*Sigmoilina australis*	U3	1
18	*Sunetta vaginalis*	B1	1
18	*Gari alba*	B11	1
18	*Leptocuma pulleini*	C1	2
18	*Urohaustorius halei*	C3	2
18	*Chitonopsis* sp. 2	C49	1
18	*Paranchialina angusta*	C5	2
18	*Natatolana longispina*	C55	2
18	Cypridinidae 2	C61	1
18	Anarthruridae 1	C7	3
18	*Platyischnopus mam*	C74	1
18	*Cerapus abditus*	C75	1
18	*Fibularia acuta*	E2	2
18	*Epigonichthys australis*	F2	1
18	Phyllodocidae 1	P23	1
18	*Ophelia* sp. 1	P40	1
18	Onuphidae 2	P44	1
18	Orbiniidae 1	P61	2
18	Spionidae 6	P76	1
19	*Mactra jacksonensis*	B14	4
19	*Paranchialina angusta*	C5	8
19	*Cyclaspis* sp. 1	C60	1
19	*Epigonichthys australis*	F2	5
19	*Micronephtys* sp. 1	P1	1
19	*Syllis gracilis*	P29	2
19	Spionidae 2	P3	2
19	Glyceridae 1	P4	1
19	*Notomastus* sp. 2	P43	1
19	Syllidae 7	P62	2
19	Serpulidae 2	P63	1
19	Chromadoroidae spp.	R1	1
20	*Birubius drummondae*	C11	1
20	*Cyproidea* sp. 1	C37	1
20	Anarthruridae 1	C7	1

Station	Species	Code	N
20	*Epigonichthys australis*	F2	5
20	*Lumbrineris tetraura*	P11	1
20	*Ophelia* sp. 1	P40	1
21	*Gari alba*	B11	1
21	*Cuna solida*	B12	2
21	*Neotrigonia bednalli*	B21	1
21	*Leptocuma pulleini*	C1	2
21	*Metaphoxus yaranellus*	C2	1
21	*Urohaustorius halei*	C3	1
21	*Natatolana longispina*	C55	2
21	*Waldeckia* sp. 3	C67	1
21	*Platyischnopus mam*	C74	1
21	Philomedidae 1	C9	1
21	*Epigonichthys australis*	F2	4
21	*Creedia haswelli*	F4	1
21	*Oliva* sp. 2	G2	1
21	*Paraonella* sp. 1	P12	1
21	*Syllis gracilis*	P29	2
21	Terebellidae 1	P34	1
21	Onuphidae 1	P8	2
22	*Waldeckia kroyeri*	C25	1
22	*Urohaustorius halei*	C3	1
22	*Paranchialina angusta*	C5	3
22	*Cyclaspis tribulis*	C50	2
22	Cypridinidae 2	C61	1
22	*Waldeckia* sp. 3	C67	2
22	*Platyischnopus mam*	C74	1
22	*Austrochaetilia capeli*	C82	1
22	*Ophiothrix (Ophiothrix) caespitosa*	E3	1
22	*Micronephtys* sp. 1	P1	1
22	Terebellidae 1	P34	1
22	Glyceridae 1	P4	2
22	Onuphidae 2	P44	1
23	Pyuridae 1	A2	1
23	*Callista (Notocallista) kingii*	B15	1
23	*Glycymeris (Glycymeris) striatularis*	B16	1
23	*Cyclocardia (Vimentum) delicatum*	B17	1
23	*Ceradocus rubromaculatus*	C19	45
23	*Metaphoxus yaranellus*	C2	4
23	*Halicarcinus rostratus*	C24	1
23	*Waldeckia kroyeri*	C25	1
23	*Urohaustorius halei*	C3	6
23	Bodotriidae 1	C44	2
23	*Leptochela sydniensis*	C59	1
23	*Cilicaea* sp. 1	C62	8
23	Anarthruridae 1	C7	1
23	*Kalliapseudes obtusifrons*	C8	1
23	*Epigonichthys australis*	F2	3
23	*Oliva* sp. 2	G2	5
23	Pallenidae 1	H2	2
23	*Lysidice* sp. 1	P16	1
23	*Eunice* sp. 1	P18	1
23	*Syllis gracilis*	P29	3
23	Spionidae 2	P3	1
23	*Armandia* sp. 1	P35	2
23	Cirratulidae 2	P46	2
23	Polygordiidae 1	P5	4
23	Nereididae 3	P59	1
23	Orbiniidae 1	P61	3
23	*Eurythoe complanata*	P64	3
23	Syllidae 8	P67	1
23	Chromadoroidae spp.	R1	1
24	*Gari alba*	B11	2
24	*Waldeckia* sp. 2	C12	1
24	*Eurydice binda*	C15	1
24	*Birubius* sp. 2	C4	1
24	Corophiidae 2	C47	1
24	*Paranchialina angusta*	C5	10

Station	Species	Code	N
24	*Cyclaspis tribulis*	C50	1
24	*Serolis australiensis*	C52	1
24	*Kalliapseudes obtusifrons*	C8	1
24	*Fibularia acuta*	E2	1
24	*Epigonichthys australis*	F2	4
24	*Lumbrineris tetraura*	P11	1
24	*Syllis gracilis*	P29	1
24	Spionidae 2	P3	2
24	Spionidae 3	P32	3
24	Syllidae 4	P38	1
24	Glyceridae 1	P4	1
24	Cirratulidae 2	P46	1
24	*Pista* sp. 1	P7	1
25	*Gari alba*	B11	1
25	*Birubius drummondae*	C11	1
25	*Waldeckia* sp. 2	C12	2
25	Candonidae 1	C16	1
25	*Dulichiella australis*	C18	3
25	*Ceradocus rubromaculatus*	C19	2
25	*Paratanais ignotus*	C29	1
25	*Leucothoe* sp. 1	C35	1
25	*Serolis longicaudata*	C38	1
25	*Halicreion* sp. 3	C40	1
25	*Gynodiastylis* sp. 1	C51	1
25	*Kalliapseudes obtusifrons*	C8	3
25	*Epigonichthys australis*	F2	1
25	Cephalothricidae spp.	N1	1
25	*Haliotis* sp. 1	P10	1
25	*Syllis gracilis*	P29	10
25	*Exogone* sp. 1	P31	17
25	Spionidae 3	P32	1
25	*Armandia* sp. 1	P35	4
25	Cirratulidae 2	P46	2
25	Spionidae 5	P47	2
25	Onuphidae 3	P49	1
25	Polygordiidae 1	P5	1
25	Syllidae 6	P55	1
25	Goniadidae 1	P57	1
25	Phyllodocidae 3	P58	1
25	Nereididae 3	P59	2
25	Paraonidae 1	P60	1
25	Orbiniidae 1	P61	1
25	Chromadoroidae spp.	R1	4
25	*Themiste* sp. 1	S2	1
26	*Modiolus cottoni*	B10	1
26	*Metaphoxus yaranellus*	C2	1
26	*Waldeckia kroyeri*	C25	1
26	*Birubius* sp. 2	C4	2
26	*Natatolana longispina*	C55	1
26	Cypridinidae 2	C61	1
26	*Cilicaea* sp. 1	C62	2
26	Philomedidae 1	C9	1
26	*Epigonichthys australis*	F2	2
26	*Creedia haswelli*	F4	1
26	Spionidae 3	P32	1
26	Lumbrineridae 3	P37	2
26	*Ophelia* sp. 1	P40	1
26	Syllidae 6	P55	1
27	*Leptocuma pulleini*	C1	1
27	*Birubius* sp. 2	C4	1
27	Bodotriidae 1	C44	1
27	*Cyclaspis tribulis*	C50	1
27	*Gynodiastylis* sp. 1	C51	1
27	*Kalliapseudes obtusifrons*	C8	2
27	*Creedia haswelli*	F4	1
27	*Micronephtys* sp. 1	P1	1
27	Terebellidae 1	P34	1
27	*Pista* sp. 1	P7	1

Station	Species	Code	N
28	*Montacuta meridionalis*	B4	2
28	*Tellina tenuilirata*	B7	1
28	*Caprella scaura*	C17	1
28	*Ceradocus rubromaculatus*	C19	4
28	*Metaphoxus yaranellus*	C2	1
28	*Paranebalia longipes*	C31	1
28	*Chitonopsis* sp. 1	C39	2
28	*Cyclaspis tribulis*	C50	1
28	*Paguristes brevirostris*	C66	1
28	*Syllis gracilis*	P29	5
28	*Ophelia* sp. 1	P40	1
28	*Filograna implexa*	P41	1
28	*Eurythoe complanata*	P64	1
28	*Acmira lopezi*	P73	2
28	Spionidae 6	P76	2
29	*Paranebalia longipes*	C31	1
29	Bodotriidae 1	C44	1
29	Anarthruridae 1	C7	2
29	*Amaryllis* cf. *macrophthalmus*	C70	1
29	*Platyischnopus mam*	C74	1
29	Cylindroleberididae 1	C86	1
29	Philomedidae 1	C9	2
29	*Lumbrineris tetraura*	P11	2
29	Onuphidae 1	P8	1
29	Glyceridae 2	P96	1
30	Bodotriidae 1	C44	1
30	Cypridinidae 2	C61	1
30	Anarthruridae 1	C7	1
30	*Syllis gracilis*	P29	1
31	*Eurystheus persetosus*	C32	1
31	*Amaryllis* cf. *macrophthalmus*	C70	1
31	*Kalliapseudes obtusifrons*	C8	1
31	*Lumbrineris tetraura*	P11	1
31	*Syllis gracilis*	P29	1
31	Onuphidae 4	P81	1
32	*Cyclocardia (Vimentum) delicatum*	B17	1
32	*Metaphoxus yaranellus*	C2	1
32	*Urohaustorius halei*	C3	2
32	*Paranebalia longipes*	C31	2
32	*Eurystheus persetosus*	C32	1
32	*Halicreion* sp. 3	C40	1
32	*Amaryllis* cf. *macrophthalmus*	C70	2
32	*Kalliapseudes obtusifrons*	C8	1
32	Chiridotidae 1	E7	1
32	*Lumbrineris tetraura*	P11	7
32	*Syllis gracilis*	P29	1
32	Sabellidae 1	P33	1
32	Onuphidae 3	P49	1
32	Serpulidae 2	P63	1
32	Sigalionidae 1	P66	1
32	*Acmira lopezi*	P73	1
32	Onuphidae 4	P81	2
33	*Dulichiella australis*	C18	1
33	*Urohaustorius halei*	C3	1
33	*Serolis longicaudata*	C38	1
33	*Halicreion* sp. 3	C40	1
33	*Natatolana longispina*	C55	2
33	Philomedidae 1	C9	2
33	*Epigonichthys australis*	F2	2
33	*Micronephtys* sp. 1	P1	1
33	*Lumbrineris tetraura*	P11	2
33	Cirratulidae 2	P46	1
33	Orbiniidae 1	P61	2
34	*Metaphoxus yaranellus*	C2	1
34	*Urohaustorius halei*	C3	1
34	*Cyclaspis tribulis*	C50	1
34	*Gynodiastylis* sp. 1	C51	1
34	*Euidotea* sp. 2	C63	1

Station	Species	Code	N
34	*Chitonopsis* sp. 3	C64	1
34	Anarthruridae 1	C7	1
34	*Syllis gracilis*	P29	1
34	Lumbrineridae 4	P53	1
34	Orbiniidae 1	P61	1
34	Nereididae 4	P68	1
34	Amphinomidae 3	P69	1
35	*Birubius drummondae*	C11	2
35	Bodotriidae 1	C44	1
35	*Syllis gracilis*	P29	1
35	Spionidae 2	P3	1
36	*Birubius drummondae*	C11	1
36	Anarthruridae 1	C7	2
36	*Kalliapseudes obtusifrons*	C8	1
36	*Epigonichthys australis*	F2	1
36	*Oliva* sp. 1	G1	1
36	*Haliotis* sp. 1	P10	1
36	*Lumbrineris tetraura*	P11	2
36	*Paraonella* sp. 1	P12	1
37	*Waldeckia kroyeri*	C25	1
37	*Haliophasma* sp. 1	C43	1
37	*Dentalium (Dentalium) francisense*	G7	1
37	Cephalothricidae spp.	N1	1
37	Onuphidae 3	P49	1
37	Syllidae 6	P55	1
37	Nereididae 4	P68	1
37	Amphinomidae 3	P69	1
37	Onuphidae 1	P8	1
38	Ascidiidae 1	A1	1
38	*Modiolus cottoni*	B10	1
38	*Callista (Notocallista) kingii*	B15	1
38	*Natatolana longispina*	C55	1
38	Sarsiellidae 1	C58	1
38	Anarthruridae 1	C7	1
38	*Sinum zonale*	G6	1
38	*Syllis gracilis*	P29	3
38	Spionidae 5	P47	1
38	Onuphidae 3	P49	1
38	Syllidae 6	P55	2
38	*Eurythoe complanata*	P64	2
38	Sabellidae 3	P65	1
38	Sigalionidae 1	P66	1
38	Onuphidae 1	P8	3
39	*Birubius drummondae*	C11	2
39	*Dulichiella australis*	C18	5
39	*Paranebalia longipes*	C31	1
39	*Cyproidea* sp. 1	C37	1
39	*Birubius* sp. 2	C4	4
39	*Halicreion* sp. 3	C40	1
39	*Gynodiastylis* sp. 1	C51	1
39	*Ebalia tuberculosa*	C53	1
39	Cypridinidae 1	C54	1
39	*Natatolana longispina*	C55	1
39	Pontocyprididae 1	C56	1
39	Anarthruridae 1	C7	2
39	*Kalliapseudes obtusifrons*	C8	2
39	*Epigonichthys australis*	F2	3
39	*Creedia haswelli*	F4	1
39	*Lumbrineris tetraura*	P11	8
39	*Eunice* sp. 1	P18	1
39	Phyllodocidae 1	P23	1
39	*Syllis gracilis*	P29	12
39	Spionidae 2	P3	1
39	Glyceridae 1	P4	3
39	Onuphidae 2	P44	1
39	Spionidae 5	P47	1
39	Dorvilleidae 2	P48	2
39	Onuphidae 3	P49	1
39	Chrysopetalidae 1	P50	2
39	Syllidae 5	P51	2
39	*Pisione* sp. 1	P52	1
39	Lumbrineridae 4	P53	1
39	*Litocorsa* sp. 1	P54	1
40	*Mactra jacksonensis*	B14	1
40	*Glycymeris (Glycymeris) striatularis*	B16	1
40	*Eurydice binda*	C15	1
40	*Dulichiella australis*	C18	1
40	*Metaphoxus yaranellus*	C2	2
40	*Birubius* sp. 2	C4	1
40	*Kalliapseudes obtusifrons*	C8	2
40	Cephalothricidae spp.	N1	1
40	Lumbrineridae 2	P20	1
40	*Syllis gracilis*	P29	1
40	*Armandia* sp. 1	P35	1
40	Nereididae 3	P59	1
41	*Cuna solida*	B12	1
41	*Cyclochlamys favus*	B13	1
41	*Birubius drummondae*	C11	2
41	*Gynodiastylis truncatifrons*	C26	1
41	*Leucothoe spinicarpa*	C34	2
41	Corophiidae 2	C47	1
41	*Gnathia mulieraria*	C57	1
41	Sarsiellidae 1	C58	1
41	*Haliotis* sp. 1	P10	1
41	Amphinomidae 1	P21	1
41	*Syllis gracilis*	P29	1
41	Spionidae 3	P32	1
41	Sabellidae 1	P33	6
41	Terebellidae 1	P34	1
41	Lumbrineridae 3	P37	5
41	Glyceridae 1	P4	1
41	Onuphidae 2	P44	2
41	Spionidae 5	P47	1
41	Onuphidae 3	P49	1
41	Syllidae 6	P55	2
41	Onuphidae 1	P8	1
42	Pyuridae 1	A2	1
42	*Eurydice binda*	C15	1
42	*Synalpheus fossor*	C21	1
42	*Waldeckia kroyeri*	C25	1
42	*Urohaustorius halei*	C3	8
42	Corophiidae 2	C47	3
42	Cypridinidae 1	C54	1
42	Anarthruridae 1	C7	1
42	*Munida haswelli*	C72	1
42	*Oliva* sp. 2	G2	1
42	*Syllis gracilis*	P29	3
42	Lumbrineridae 3	P37	1
42	Cirratulidae 1	P39	1
42	Glyceridae 1	P4	2
42	Cirratulidae 2	P46	1
42	*Pseudonince* sp. 1	P82	1
42	Cirratulidae 3	P83	1
42	Flabelligerdiae 1	P84	1
42	Orbiniidae 2	P85	1
42	Chromadoroidae spp.	R1	1
43	*Ceradocus rubromaculatus*	C19	3
43	*Waldeckia kroyeri*	C25	2
43	*Paratanais ignotus*	C29	3
43	*Urohaustorius halei*	C3	1
43	*Paranebalia longipes*	C31	5
43	*Leucothoe spinicarpa*	C34	1
43	*Cyclaspis tribulis*	C50	1
43	*Ebalia tuberculosa*	C53	1
43	*Munida haswelli*	C72	1
43	*Dimorphostylis inauspicata*	C84	1

Station	Species	Code	N
43	*Stenetrium* sp. 1	C85	1
43	Sabellidae 1	P33	1
43	Cirratulidae 2	P46	3
43	Syllidae 5	P51	1
43	Onuphidae 1	P8	1
43	Flabelligerdiae 1	P84	1
43	*Dodecaceria* sp. 1	P95	2
44	*Paranebalia longipes*	C31	1
44	Anarthruridae 1	C7	1
44	Onuphidae 4	P81	3
44	Chromadoroidae spp.	R1	1
45	*Montacuta meridionalis*	B4	2
45	*Caprella scaura*	C17	2
45	*Dulichiella australis*	C18	1
45	*Metaphoxus yaranellus*	C2	1
45	*Eurystheus persetosus*	C32	5
45	*Halicreion* sp. 3	C40	1
45	Cypridinidae 1	C54	1
45	*Natatolana longispina*	C55	2
45	*Plioplateia* sp. 1	C78	1
45	*Kalliapseudes obtusifrons*	C8	1
45	*Syllis gracilis*	P29	1
45	Sabellidae 3	P65	1
45	*Pista* sp. 1	P7	1
45	Flabelligerdiae 1	P84	1
45	Sigalionidae 3	P88	1
46	*Paratanais ignotus*	C29	1
46	*Paranebalia longipes*	C31	15
46	*Eurystheus persetosus*	C32	1
46	*Ebalia tuberculosa*	C53	3
46	*Natatolana woodjonesi*	C65	1
46	*Paguristes brevirostris*	C66	1
46	*Ophiura kinbergi*	E1	2
46	*Microcyphus annulatus*	E6	1
46	*Syllis gracilis*	P29	2
46	Syllidae 3	P30	1
46	Syllidae 4	P38	1
46	Cirratulidae 1	P39	1
46	Amphinomidae 4	P71	1
46	*Spirillina* sp. 1	U1	5
46	*Pyrgo* sp. 1	U2	10
46	*Sigmoilina australis*	U3	2
46	*Pyrgo* sp. 2	U4	1
47	*Dulichiella australis*	C18	1
47	*Philocheras intermedius*	C22	1
47	*Stenetrium armatum*	C36	1
47	*Halicreion* sp. 3	C40	1
47	*Cerceis* sp. 1	C46	1
47	Corophiidae 2	C47	1
47	*Haliotis* sp. 1	P10	1
47	*Eurythoe complanata*	P64	1
47	*Spirillina* sp. 1	U1	2
48	*Questimya granifera*	B24	1
48	*Dulichiella australis*	C18	1
48	*Paratanais ignotus*	C29	4
48	*Paratanais* sp. 1	C30	1
48	*Paranebalia longipes*	C31	1
48	Ophiuridae 1	E9	1
48	*Oliva* sp. 1	G1	1
48	Cephalothricidae spp.	N1	1
48	*Syllis gracilis*	P29	4
48	Spionidae 3	P32	1
48	Terebellidae 1	P34	4
48	*Armandia* sp. 1	P35	1
48	Glyceridae 1	P4	1
48	Cirratulidae 2	P46	1
48	Onuphidae 3	P49	1
48	Lumbrineridae 4	P53	1
48	Syllidae 6	P55	1
48	Orbiniidae 1	P61	1
48	*Eurythoe complanata*	P64	1
48	Chromadoroidae spp.	R1	2
49	*Metaphoxus yaranellus*	C2	4
49	*Urohaustorius halei*	C3	2
49	*Eurystheus persetosus*	C32	1
49	*Natatolana longispina*	C55	2
49	Cypridinidae 2	C61	1
49	*Kalliapseudes obtusifrons*	C8	1
49	*Haliotis* sp. 1	P10	1
49	Phyllodocidae 1	P23	1
49	Glyceridae 1	P4	1
49	*Pisione* sp. 1	P52	1
49	Orbiniidae 3	P90	1
50	*Paranebalia longipes*	C31	8
50	*Eurystheus persetosus*	C32	2
50	*Halicreion* sp. 3	C40	1
50	*Apseudes* sp. 1	C76	1
50	*Dorhynchus ramusculus*	C77	1
50	*Kalliapseudes obtusifrons*	C8	1
50	Phyllodocidae 1	P23	1
50	*Syllis gracilis*	P29	2
50	Glyceridae 1	P4	2
50	*Litocorsa* sp. 1	P54	1
50	Orbiniidae 1	P61	1
50	*Eurythoe complanata*	P64	3
50	Sabellidae 3	P65	2
50	Syllidae 8	P67	1
50	Lumbrineridae 5	P89	1
51	*Neotrigonia horia*	B8	1
51	*Birubius drummondae*	C11	1
51	*Waldeckia kroyeri*	C25	1
51	*Paratanais ignotus*	C29	1
51	*Paracilicaea* sp. 1	C45	1
51	*Fibularia nutriens*	E5	1
51	*Oliva* sp. 2	G2	1
51	Cephalothricidae spp.	N1	1
51	*Syllis gracilis*	P29	2
51	Spionidae 3	P32	1
51	*Armandia* sp. 1	P35	1
51	Phyllodocidae Juvenile	P36	6
51	Lumbrineridae 3	P37	1
51	Syllidae 4	P38	1
51	Cirratulidae 1	P39	1
51	Chromadoroidae spp.	R1	2
51	*Spirillina* sp. 1	U1	7
52	*Eurydice binda*	C15	1
52	*Paranebalia longipes*	C31	1
52	Cephalothricidae spp.	N1	3
52	*Haliotis* sp. 1	P10	1
52	*Notomastus* sp. 1	P15	1
52	*Syllis gracilis*	P29	6
52	Syllidae 3	P30	1
52	Syllidae 5	P51	1
52	*Litocorsa* sp. 1	P54	1
52	*Eurythoe complanata*	P64	3
52	Flabelligerdiae 1	P84	2
52	Lumbrineridae 5	P89	4
52	Amphinomidae 7	P94	2
53	*Urohaustorius halei*	C3	1
53	Anarthruridae 1	C7	1
53	*Amaryllis* cf. *macrophthalmus*	C70	1
53	*Epigonichthys australis*	F2	3
53	Cephalothricidae spp.	N1	2
54	*Eurydice binda*	C15	1
54	*Kalliapseudes obtusifrons*	C8	1
54	Bodotriidae 2	C81	1

Station	Species	Code	N
54	*Creedia haswelli*	F4	1
54	*Syllis gracilis*	P29	1
54	Lumbrineridae 3	P37	1
54	Cirratulidae 2	P46	1
55	*Sunetta vaginalis*	B1	1
55	*Solamen recens*	B18	1
55	*Montacuta meridionalis*	B4	1
55	*Birubius drummondae*	C11	2
55	*Eurydice binda*	C15	1
55	*Ebalia tuberculosa*	C53	1
55	*Natatolana longispina*	C55	1
55	Anarthruridae 1	C7	1
55	*Serolis tuberculata*	C71	1
55	Chiridotidae 1	E7	1
55	*Epigonichthys australis*	F2	1
55	*Oliva* sp. 2	G2	2
55	Cephalothricidae spp.	N1	1
55	Lumbrineridae 4	P53	1
55	Onuphidae 4	P81	1
56	*Birubius drummondae*	C11	1
56	*Dulichiella australis*	C18	1
56	Anarthruridae 1	C7	3
56	*Lumbrineris tetraura*	P11	1
56	Nereididae 4	P68	1
57	*Dulichiella australis*	C18	3
57	Anarthruridae 1	C7	1
57	*Syllis gracilis*	P29	2
57	Cirratulidae 2	P46	1
57	Spionidae 5	P47	1
57	Nereididae 3	P59	2
57	Amphinomidae 3	P69	1
57	Goniadidae 2	P70	1
58	*Dulichiella australis*	C18	1
58	*Paranebalia longipes*	C31	1
58	*Halicreion* sp. 3	C40	1
58	Bodotriidae 1	C44	1
58	*Natatolana longispina*	C55	1
58	*Amaryllis* cf. *macrophthalmus*	C70	2
58	Lumbrineridae 3	P37	3
59	*Natatolana longispina*	C55	9
59	*Epigonichthys australis*	F2	2
59	*Lumbrineris tetraura*	P11	1
60	*Leptocuma pulleini*	C1	1
60	*Waldeckia* sp. 2	C12	2
60	*Metaphoxus yaranellus*	C2	1
60	*Paratanais ignotus*	C29	1
60	*Urohaustorius halei*	C3	1
60	*Natatolana longispina*	C55	1
60	*Epigonichthys australis*	F2	5
60	Ammotheidae 1	H1	1
60	*Haliotis* sp. 1	P10	1
60	*Lumbrineris tetraura*	P11	1
60	*Exogone* sp. 1	P31	2
61	Corophiidae 2	C47	1
61	*Leptochela sydniensis*	C59	4
61	*Amaryllis* cf. *macrophthalmus*	C70	1
61	*Lumbrineris tetraura*	P11	3
61	Cirratulidae 2	P46	1
62	*Natatolana longispina*	C55	1
62	*Leptochela sydniensis*	C59	1
62	*Dentalium (Dentalium) francisense*	G7	1
63	*Glycymeris (Glycymeris) striatularis*	B16	1
63	*Birubius drummondae*	C11	5
63	*Synalpheus fossor*	C21	1
63	*Galathea australiensis*	C27	4
63	*Xenocheira fasciata*	C33	3
63	*Leucothoe spinicarpa*	C34	3
63	*Stenetrium armatum*	C36	2

Station	Species	Code	N
63	*Natatolana longispina*	C55	1
63	*Paguristes brevirostris*	C66	1
63	*Waldeckia* sp. 3	C67	1
63	*Cyproidea ornata*	C68	1
63	Anarthruridae 1	C7	1
63	*Alocospira edithae*	G9	1
63	*Terebratulina cavata*	L1	1
63	Phyllodocidae 2	P24	1
63	Polynoidae 2	P26	1
63	*Syllis gracilis*	P29	8
63	Terebellidae 1	P34	1
63	Onuphidae 2	P44	1
63	Spionidae 5	P47	1
63	Syllidae 8	P67	2
63	Nereididae 4	P68	7
63	Sigalionidae 2	P72	1
63	*Acmira lopezi*	P73	1
63	Capitellidae 1	P74	1
63	*Palolo* sp. 1	P75	1
63	*Grimpella thaumastocheir*	Q1	1
64	*Birubius drummondae*	C11	2
64	*Eurystheus persetosus*	C32	1
64	*Ebalia tuberculosa*	C53	1
64	*Amaryllis* cf. *macrophthalmus*	C70	1
64	*Halicreion* sp. 4	C83	1
64	Cirratulidae 2	P46	1
64	Orbiniidae 1	P61	2
65	*Birubius drummondae*	C11	1
65	*Dulichiella australis*	C18	1
65	*Galathea australiensis*	C27	1
65	*Paratanais ignotus*	C29	1
65	*Stenetrium armatum*	C36	1
65	*Serolis longicaudata*	C38	2
65	*Leptochela sydniensis*	C59	6
65	Cypridinidae 2	C61	1
65	*Cilicaea* sp. 2	C69	1
65	*Falcidens* cf. *poias*	G10	1
65	*Eunice* sp. 1	P18	1
65	Lumbrineridae 2	P20	2
65	Polynoidae 2	P26	1
65	*Ophelia* sp. 1	P40	2
65	Spionidae 5	P47	2
65	Orbiniidae 1	P61	1
65	Spionidae 6	P76	2
65	Phyllodocidae 4	P77	1
65	Magelonidae 1	P78	1
65	Syllidae 9	P79	1
65	Onuphidae 1	P8	1
65	Syllidae 10	P80	1