Figure 6-4 Mangrove root assemblages at site C1

Figure 6-5 Mangrove root assemblages at site C2

Figure 6-6 Mangrove root assemblages at site C3

6.3 Benthic faunal analysis

Summary

Benthic infaunal analysis found no prolific and diverse communities with obvious signs of existing impacts on macrobenthic communities at Channel Island and the adjacent Little West Arm. Analysis of faunal similarities amongst samples from these inlets detected habitat-related variation, with intertidal communities distinct from the majority of the subtidal communities. Within the intertidal and subtidal groupings, some differentiation was also observed between Channel Island and Little West Arm, although overlap was observed between these localities, particularly in the case of subtidal samples. Diversity indices and K-dominance curves revealed no consistent trends in biodiversity or dominance on the basis of habitat or inlet. Communities were in general diverse and exhibited low levels of faunal dominance. The benthic infaunal data gathered in this survey will provide a useful baseline against which future biological change can be assessed.

Methods

Sampling methods

Macroinvertebrates were collected using a Van Veen grab which sampled a 0.07 m^2 area of seabed. A total of three replicate samples were collected at each monitoring site (F1 to F6) and each control site (C1 to C6). The samples were sieved in the field using a 1 mm mesh sieve, and animal and sediment material retained on the sieve placed into vials diluted with 5% buffered formalin. In the laboratory, collected material was washed through a stacked series of sieves (1, 1.4, 2, 2.8 and 4 mm) using the methods described by Edgar (1990). Material retained on each sieve was sorted under a dissecting microscope with animals separated into species groups, counted and placed in labelled vials for long term storage.

Analytical methods

Benthic infauna data were analysed using univariate and multivariate statistical methods to assess patterns of spatial variation in the baseline data.

Benthic infauna data were analysed using multidimensional scaling (MDS), as run by SYSTAT (Wilkinson 1989) and PRIMER (Carr 1996) programs, in order to produce the best graphical depiction of faunal similarities among samples. For this analysis, the data matrix showing total abundance of species in each sample was double square root transformed and converted to a symmetric matrix of biotic similarity between pairs of samples using the Bray-Curtis similarity index. These procedures follow the recommendations of Faith *et al*. (1987) and Clarke (1993) for data matrices with numerous zero records. The usefulness of the two dimensional MDS display of relationships among samples is indicated by the stress statistic, which if <0.1 indicates that the depiction of relationships is good, and if >0.2 that the depiction is poor (Clarke 1993).

Several indices were calculated to provide information on macrobenthic diversity at sites sampled:

Species number, S
Where S equals the number of species or equivalent taxonomic unit collected in a sample.
Individuals, N
Where N equals then number of individuals of all species collected in a sample.
Diversity (Shannon-Wiener), $H' = -\sum_i \rho_i(\log \rho_i)$
Where ρ_i is the proportion of the total count arising from the $_i$th species.
Evenness (Pielou's), $J' = H'(observed)/H'_{max}$
Where H'_{max} is the maximum possible Shannon diversity which could be achieved if all species contained the same number of individuals (=log S).
Richness (Margalef's), d = (S-1)/log N
Where d is a measure of the number of species present for a given number of individuals.

In addition, K-dominance curves were calculated for each site sampled, based on pooled replicate data. K-dominance curves rank the families collected at each site from most abundant to least abundant and allow easy determination of levels of faunal dominance. K-dominance curves provide a useful indicator of benthic infauna community health, with large y-intercept values and steep curves indicative of high levels of faunal dominance and hence low levels of community health.

Results and interpretation

Macrobenthic species collected during the survey are shown in Table 8.7.1 and Table 8.7.2 and consisted of 176 species represented by a total of 2084 individuals. Samples from the six farm sites at Channel Island included 138 species and 1179 individuals, whilst the remaining 905 individuals, representing 123 species, were identified in samples from the Little West Arm control sites. The samples were dominated by polychaete worms (63 species, 949 individuals), crustaceans (58 species, 650 individuals) and molluscs (42 species, 314 individuals), while echinoderms, nemerteans and a range of less common taxa were also identified. The most common species were the polychaete worms *Scyphoproctus* sp. (130 individuals), *Terebellides* sp. (97 individuals) and *Maldane* sp. (92 individuals), the bivalve mollusc *Ungulinid* sp. (102 individuals) and the crustacean amphipod *Apseudes* sp. (100 individuals). These species were distributed across both farm and control sites, with the exception of *Maldane* sp. that was only detected at two farm sites.

The results of MDS analysis using all macrobenthic samples are displayed in Figure 6-7. The MDS plot reveals differences between intertidal and subtidal samples, since the former are grouped on the left side of the plot, with the latter on the right side. One sample, C4 3 from a shallow subtidal control site, was an exception and grouped with the intertidal samples. There was a high level of within-site similarity, as reflected by tight groupings of samples collected from the same site, although there were several exceptions, such as C4 3 mentioned above and several of the farm samples. Within the intertidal and subtidal groupings, there were also sub-groupings based on the inlet from which samples were collected. In the case of intertidal samples, the control samples grouped in the top half of the plot, and the farm samples in the lower half. In the case of the subtidal samples, the farm sites formed a grouping

in the centre of the plot, while samples from the two control sites C5 and C6 were located to the right. Site C4, the shallowest control site surveyed, did not group with other subtidal control groups and instead showed a high level of similarity with the intertidal site C1. This could be due to its location in a small channel branching off from the main channel that contained the other subtidal sites.

The stress statistic for the MDS plot in Figure 6-7 exceeds 0.2 and therefore reflects a relatively poor depiction of patterns of similarity among samples. The data were therefore re-analysed on the basis of pooled replicate samples for each site, with the results provided in Figure 6-8. In this case, the stress statistic of 0.13 reflects an accurate depiction of relationships among sites. The separate groupings of intertidal and subtidal sites were again distinct, with intertidal sites grouped on the left and subtidal sites on the right, with the exception of C4. Within the broad subtidal grouping, the two deep sites F6 and C6 exhibited a high level of similarity, while greater variation was observed between farm-control site pairs for moderate and shallow depths. Within the broad intertidal grouping, the farm sites were grouped closer to the centre of the plot, however there was overlap between farm and control sites due to the high similarity between C1 and F2.

Patterns of similarity amongst macrobenthic samples therefore reflected a mixture of habitat/depth variation and geographical separation of the two inlets surveyed. The taxa that accounted most for differences in assemblages between intertidal and subtidal sites were the tanaid crustacean *Apseudes* sp., bivalve mollusc *Ungulinid* sp., and polychaete worms *Scyphoproctus* sp. and *Terebellides* sp. *Apseudes* sp. was present in significantly higher numbers at subtidal sites, while the remaining of the above species were more abundant at intertidal sites. At the subtidal sites, *Apseudes* sp., the crustacean isopod *Cirolana* sp. and the crustacean amphipod *Aorid* sp. were less common at the deep sites, whilst *Scyphoproctus* sp. was more abundant at the latter sites. At intertidal sites, *Ungulinid* sp. was more common at control sites in Little West Arm, while the polychaete worm *Maldane* sp. was absent at the control sites but relatively common at the farm sites. Differences between control and farm sites were less distinct at subtidal sites, although the average abundance of *Apseudes* sp. was higher at the farm sites, while the reverse was true of *Aorid* sp.

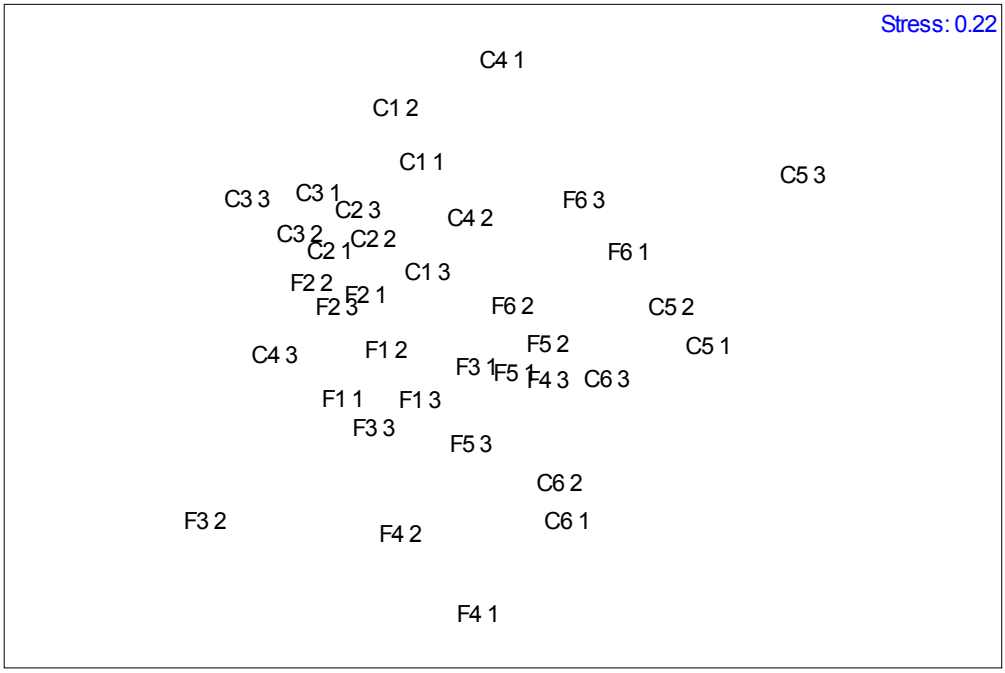


Figure 6-7 Results of MDS analysis using macrobenthic data from triplicate samples at each site.

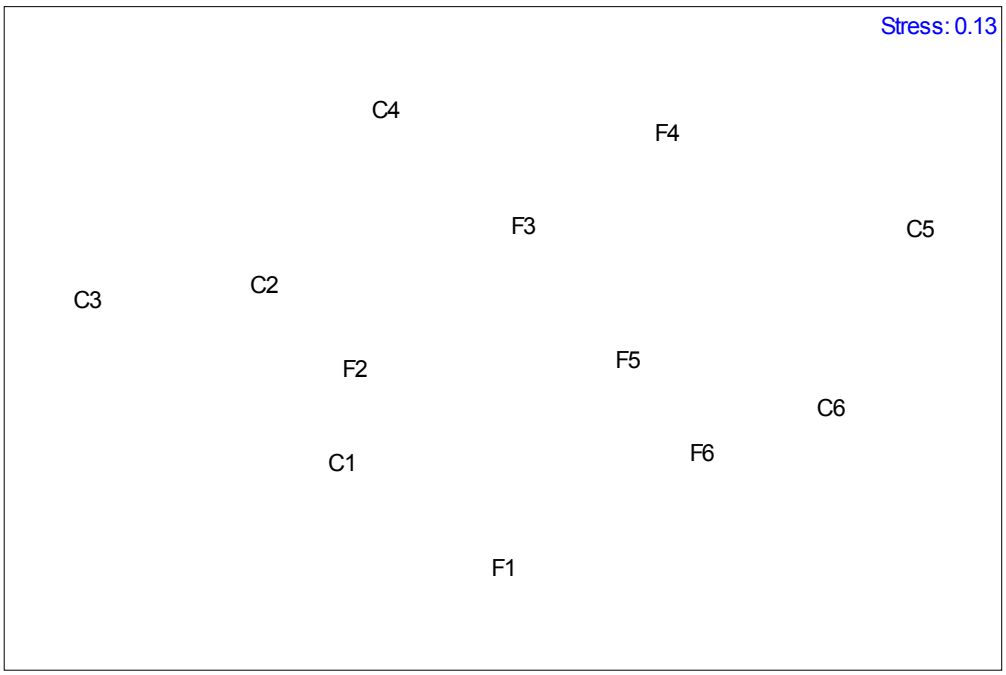
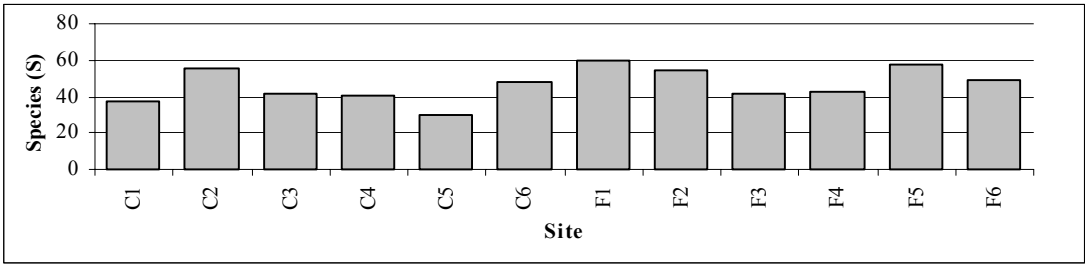
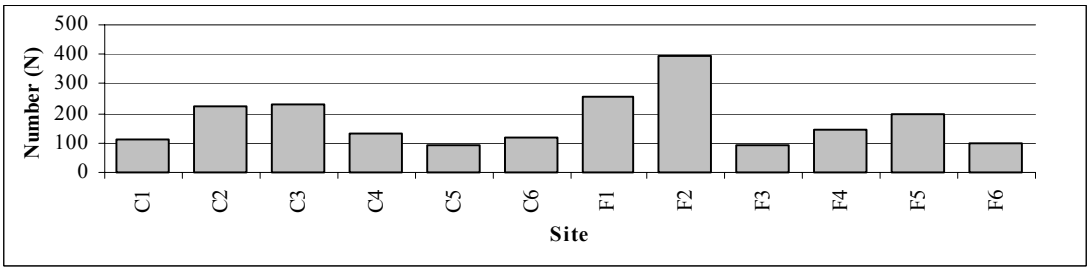


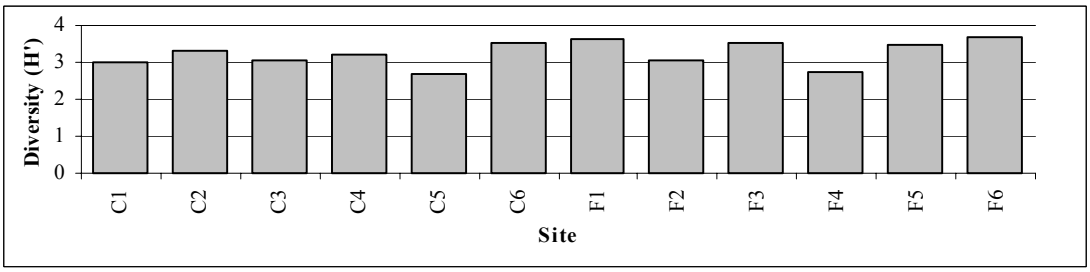
Figure 6-8 Results of MDS analysis using pooled replicate macrobenthic data from each site.

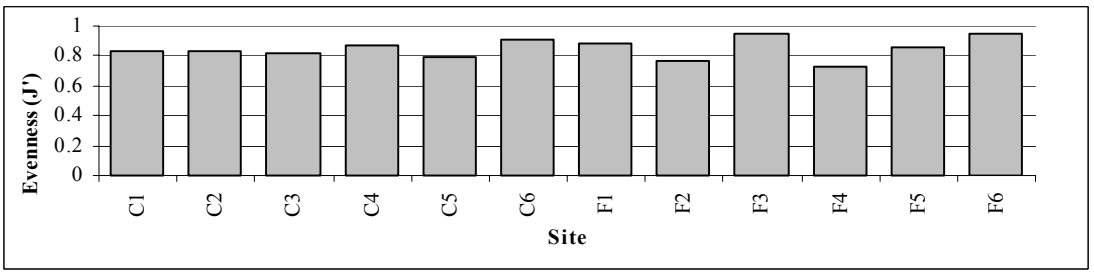
The results of diversity indices calculations are provided in Figure 6-9 and provide baseline data that can be readily compared with future data to assess temporal variation in biodiversity. Species and individual numbers peaked at intertidal sites F1

and F2, while comparable species numbers, but not animal numbers, were recorded at the intertidal site C2 and subtidal site F5. Species and animal numbers were consistently low at the subtidal site C5, however the deepest sites F6 and C6 recorded moderate species richness values. These differences were also evident in the Shannon–Wiener diversity index (H') and Margalef's richness index (d) values, with consistently low values at F5 but not at the deepest subtidal sites. For these indices, there was no clear relationship between diversity and habitat/depth or inlet, since highest values were spread across intertidal and subtidal sites at both Little West Arm and Channel Island. Pielou's evenness index (J'), which reflects how evenly the numbers of individuals are distributed amongst species, recorded similar values at all sites, with the exception of slightly reduced evenness values at sites F2 and F4.









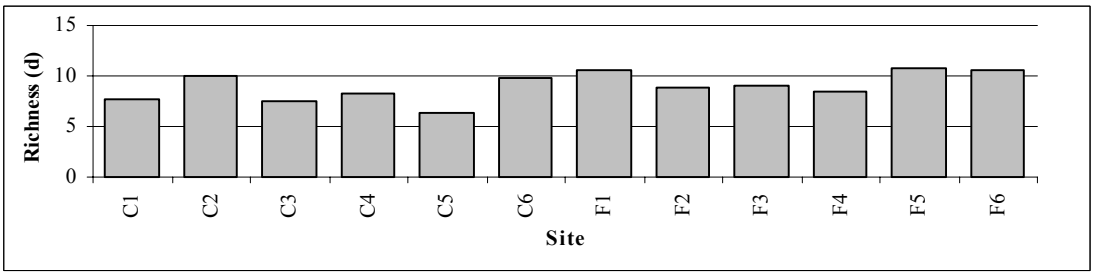


Figure 6-9 Macrobenthic diversity indices for farm and control sites; S = number of species, N = number of individuals, H' = Shannon-Wiener diversity index, J' = Pielou's evenness index, d = Margalef's richness index.

K-dominance curves for pooled replicate samples at each site are presented in Figure 6-10. At the majority of the sites the y-intercept values reflected low levels of faunal dominance, with the most dominant species comprising 20% or less of animal numbers. At a smaller number of sites, the most dominant species comprised 23-33% of animals collected, reflecting a slightly higher level of dominance. However, remaining components of the assemblages consisted of a large number of low abundance species, reflecting low levels of dominance overall. While this was true of all sites, the second most abundant species at site F4 contributed a significant portion of individuals observed, resulting in a steeper curve at that site. There was no clear relationship between habitat/depth or inlet and dominance levels, an unsurprising result given the relatively low variation observed in dominance. None of the K-dominance curves depicted in Figure 6-10 are indicative of high levels of pollution or other forms of environmental degradation.

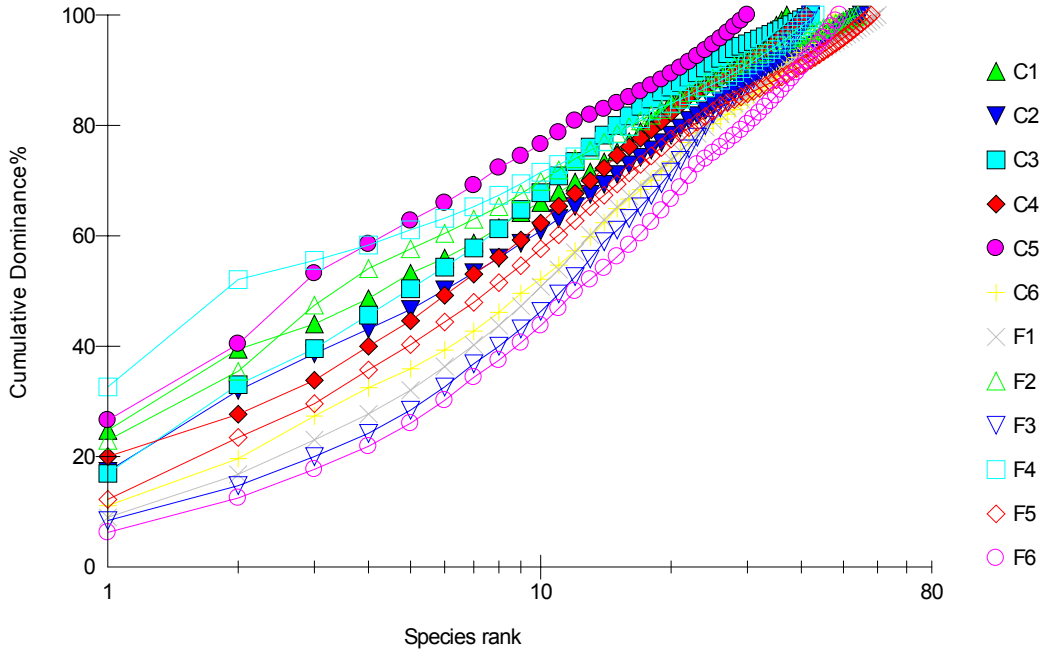


Figure 6-10 K-dominance curves for pooled replicate macrobenthic

Summary

Benthic infaunal analysis found no obvious signs of existing impacts on macrobenthic communities at Channel Island or the adjacent Little West Arm. Analysis of faunal similarities amongst samples from these inlets detected habitat-related variation, with intertidal communities distinct from the majority of the subtidal communities. Within the intertidal and subtidal groupings, some differentiation was also observed between Channel Island and Little West Arm, although overlap was observed between these localities, particularly in the case of subtidal samples. Diversity indices and K-dominance curves revealed no consistent trends in biodiversity or dominance on the basis of habitat or inlet. Communities were in general diverse and exhibited low levels of faunal dominance. The benthic infaunal data gathered in this survey will provide a useful baseline against which future biological change can be assessed.

7 References

ANZECC (1999) Draft Australian and New Zealand guidelines for fresh and marine water quality, Volume 1. The guidelines. National Water Quality Management Strategy.

Brocklehurst, P. & Edmeades, B. (1995) The *Mangrove Communities of Darwin Harbour Northern Territory*. Technical Memorandum No. 96/9. Department of Lands Planning and Environment, Palmerston, Northern Territory

Brocklehurst, P. & Edmeades, B. (2003) *Mangrove Survey of Bynoe Harbour Northern Territory*. Technical Report No. 01/2003D. Department of Infrastructure Planning and Environment, Palmerston, Northern Territory

Carr, M.R., 1996. PRIMER User Manual. Plymouth Routines in Multivariate Ecological Research. Plymouth Marine Laboratory, Plymouth, UK.

Clarke, K.R., 1993. Non-parametric multivariate analyses of changes in community structure. *Australian Journal of Ecology* 18: 117-143.

Edgar, G.J., 1990. The use of the size-structure of benthic macrofaunal communities to estimate faunal biomass and production. *Journal of Experimental Marine Biology and Ecology* 137: 195-214.

Eyre, B.D., 2000. Regional evaluation of nutrient transformation and phytoplankton growth in nine river-dominated sub-tropical east Australian estuaries. *Marine Ecology Progress Series* 205:61-83

Faith, D.P., Minchin, P.R. & Belbin, L., 1987. Compositional dissimilarity as a robust measure of ecological distance. *Vegetatio* 69: 57-68.

Harris, G. P. (1994). "Nutrient loadings and algal blooms in Australian waters - a discussion paper," Rep. No. 12/94. LWRRDC.

Jones, D.,S. and Morgan, G.J., 2002, A Field Guide to the Crustaceans of Australian Waters. Reed New Holland, Sydney

Millero, F.J. (1996). Chemical Oceanography, 2nd Edition, CRC Press LLC.

Moritz-Zimmermann, A., Comley, B. and Lewis, D (2002). Darwin Harbour Mangrove Monitoring Methodology Technical manual. Land Monitoring Series No. 3, Report No. 25/2002. Department of Infrastructure Planning and Environment, Darwin, Northern Territory.

Pardovan, A.V. (1997). The water quality of Darwin Harbour: October 1990 – November 1991. Water Quality Branch, Water resources Division, Department of Lands, Planning and Environment, NT Government Report No. 34/1997D December 1997.

Pardovan, A.V. (2002). Darwin Harbour Water Quality Monitoring 2001/02 Report. Resourc Management Division, Conservation and Natural Resources Group, Department of Infrastructure, Planning and Environment, NT Government Report No. 23/2002.

Parry, D.L. and Munksgaard, N.C. (1999). Environmental monitoring of effluent disposal systems: Darwin Harbour and Buffalo Creek, Wet and Dry Season 1998. report by Northern Territory University for Power and Water Authority, March 1999.

Pearson, T.H. and Stanley, S.O., 1979. Comparative measurement of the Redox potential of marine sediments as a rapid means of assessing the effect of organic pollution. *Marine Biology* 53, 371-379.

Sly, S.G., Marshall, A.J. and Williams, T.N. (2002). Integrated monitoring of water quality and biological diversity in Darwin Harbour and its marinas. Technical Report No. 4, Northern Territory Department of Business, Industry and Resource Development, Darwin.

Ward, T. Butler, E. and Hill, B., 1998 Environmental Indicators for National Sate of the Environment Reporting - Estuaries and the Sea, Australia: State of the Environment (Environmental Indicator Report), Department of the Environment, Canberra.

Wrigley, T.J., Cumberland, D.A. and Townsend, S.A (1990). Ambient water quality of Darwin Harbour. Report No. 71/90, Water Resources Division, Power and Water Authority, Darwin.

8 Appendices – Data tables

8.1 Survey coordinates

Table 8.1.1 Sample site coordinates UTM Australian Geod ’84.

Site No.	Grid	Easting	Northing	Location
F1	52L	703398	8611901	Channel Island
F2	52L	705096	8611618	Channel Island
F3	52L	704724	8611291	Channel Island
F4	52L	705097	8611541	Channel Island
F5	52L	704639	8611614	Channel Island
F6	52L	702936	8613358	Channel Island
C1	52L	697519	8609933	Little West Arm
C2	52L	698587	8608284	Little West Arm
C3	52L	697863	8609928	Little West Arm
C4	52L	697810	8609881	Little West Arm
C5	52L	697520	8609794	Little West Arm
C6	52L	697128	8611045	Little West Arm

8.2 Redox potential

Table 8.2.1 Uncorrected redox potential readings in millivolts at specified depths in sediment cores.

	Depth (cm)			
Site No.	0	1	4	Comments
F1-1	56	-61	-159	
F1-2	-12	-100	-183	
F1-3	3	-38	-106	
F2-1	-8	-32	-85	
F2-2	41	-145	-182	
F2-3	-91	-149	-159	
F3-1	-78	-101	-93	
F3-2	-39	-78	-78	
F3-3	-35	-66	-63	
F4-1	-121	-145	-193	
F4-2	-148	-169	-188	
F4-3	-132	-148	-164	
F5-1	-148	-151	-170	
F5-2	-92	-106	-110	
F5-3	26	24	-2	
F6-1	-141	-180	-204	
F6-2	-7	-113	-163	
F6-3	-159	-176	-195	
C1-1	-4	-41	-72	
C1-2	-90	-120	-121	
C1-3	196	58	-9	
C2-1	206	202	198	
C2-2	205	199	193	
C2-3	189	138	133	
C3-1	125	-75	-78	
C3-2	245	231	180	
C3-3	196	45	45	
C4-1	-101	-145	-180	stopped at 3cm in hard clay
C4-2	-92	-137	-215	
C4-3	-28	-97	-185	
C5-1	-15	-125	-181	
C5-2	89	-63	-100	
C5-3	-135	-166	-169	
C6-1	86	41	-127	
C6-2	180	92	-129	
C6-3	51	76	-1	

8.3 Particle size analysis

Table 8.3.1 Particle size analysis in percent of top 100 mm of sediment cores from the intertidal farm and control sites.

	Sieve mesh size (mm)							
Sample No	4.0 %	2.0 %	1.0 %	0.5 %	0.250 %	0.125 %	0.063 %	<.063 %
F1-1	1.3	2.6	3.9	6.5	7.8	7.8	20.8	49.4
F1-2	1.3	0.0	1.3	5.2	9.1	6.5	16.9	59.7
F1-3	0.0	0.0	1.3	3.9	6.5	7.8	15.6	64.9
Mean	0.9	0.9	2.2	5.2	7.8	7.4	17.7	58.0
Std Dev	0.7	1.5	1.5	1.3	1.3	0.7	2.7	7.9
Cum %	0.9	1.7	3.9	9.1	16.9	24.2	42.0	100.0
F2-1	0.0	0.0	1.3	4.5	5.8	6.5	7.8	74.0
F2-2	0.0	0.6	1.9	5.2	8.4	5.8	9.1	68.8
F2-3	0.0	0.0	1.3	4.5	7.1	5.2	9.1	72.7
Mean	0.0	0.2	1.5	4.8	7.1	5.8	8.7	71.9
Std Dev	0.0	0.4	0.4	0.4	1.3	0.6	0.7	2.7
Cum %	0.0	0.2	1.7	6.5	13.6	19.5	28.1	100.0
F3-1	1.3	1.3	2.6	3.9	7.8	6.5	13.0	63.6
F3-2	0.0	2.6	1.3	3.2	5.8	5.2	19.5	62.3
F3-3	0.0	2.6	0.6	3.2	5.8	5.8	17.5	64.3
Mean	0.4	2.2	1.5	3.5	6.5	5.8	16.7	63.4
Std Dev	0.7	0.7	1.0	0.4	1.1	0.6	3.3	1.0
Cum %	0.4	2.6	4.1	7.6	14.1	19.9	36.6	100.0
C1-1	3.2	1.3	4.5	7	8	9	5	61
C1-2	1.3	2.6	4.5	6	14	4	5	62
C1-3	1.3	1.3	1.3	4	5	6	7	75
Mean	1.9	1.7	3.5	6	9	6	6	66
Std Dev	1.1	0.7	1.9	1.7	4.6	2.6	1.1	7.5
Cum %	1.9	3.7	7.1	13	22	28	34	100
C2-1	0.0	0.0	0.0	1	3	6	4	86
C2-2	0.0	0.0	0.0	1	4	6	5	84
C2-3	0.0	0.0	0.0	2	5	5	5	83
Mean	0.0	0.0	0.0	2	4	6	5	84
Std Dev	0.0	0.0	0.0	0.4	0.6	0.4	0.6	1.3
Cum %	0.0	0.0	0.0	2	5	11	16	100
C3-1	0.0	0.0	0.0	1	5	6	8	79
C3-2	0.6	0.0	0.0	1	3	5	6	84
C3-3	0.0	0.0	0.0	1	3	6	6	83
Mean	0.2	0.0	0.0	1	4	6	7	82
Std Dev	0.4	0.0	0.0	0.4	1.1	1.0	0.7	2.7
Cum %	0.2	0.2	0.2	1	5	11	18	100

Table 8.3.2 Particle size analysis in percent of top 100 mm of sediment cores from the intertidal farm and control sites.

	Sieve mesh size (mm)							
Sample No	4.0 %	2.0 %	1.0 %	0.5 %	0.250 %	0.125 %	0.063 %	<.063 %
F4-1	1.3	2.6	3.9	5.8	5.8	7.8	5.2	67.5
F4-2	1.9	2.6	1.9	2.6	6.5	6.5	2.6	75.3
F4-3	18.2	11.0	5.8	3.9	2.6	3.9	2.6	51.9
Mean	7.1	5.4	3.9	4.1	5.0	6.1	3.5	64.9
Std Dev	9.6	4.9	1.9	1.6	2.1	2.0	1.5	11.9
Cum %	7.1	12.6	16.5	20.6	25.5	31.6	35.1	100.0
F5-1	11.0	8.4	10.4	9.1	9.1	14.3	7.8	29.9
F5-2	13.6	19.5	9.7	7.1	9.1	4.5	5.2	31.2
F5-3	11.7	11.0	8.4	9.1	9.1	6.5	3.9	40.3
Mean	12.1	13.0	9.5	8.4	9.1	8.4	5.6	33.8
Std Dev	1.4	5.8	1.0	1.1	0.0	5.2	2.0	5.7
Cum %	12.1	25.1	34.6	43.1	52.2	60.6	66.2	100.0
F6-1	15.6	10.4	9.1	16.9	11.7	7.8	5.2	23.4
F6-2	27.3	11.7	6.5	7.8	9.1	3.2	7.1	27.3
F6-3	11.7	5.2	3.9	3.9	5.2	1.3	2.6	66.2
Mean	18.2	9.1	6.5	9.5	8.7	4.1	5.0	39.0
Std Dev	8.1	3.4	2.6	6.7	3.3	3.3	2.3	23.7
Cum %	18.2	27.3	33.8	43.3	51.9	56.1	61.0	100.0
C4-1	7.8	0.0	1.3	1	6	6	5	71
C4-2	0.6	0.6	3.2	5	7	5	3	75
C4-3	0.0	0.6	1.9	2	5	9	6	75
Mean	2.8	0.4	2.2	3	6	7	5	74
Std Dev	4.3	0.4	1.0	2.1	1.4	2.0	2.0	2.2
Cum %	2.8	3.2	5.4	8	14	21	26	100
C5-1	22.1	9.1	6.5	4	6	1	4	47
C5-2	24.0	11.0	6.5	6	5	1	3	43
C5-3	14.3	5.8	3.2	4	4	5	4	60
Mean	20.1	8.7	5.4	5	5	3	3	50
Std Dev	5.2	2.6	1.9	1.5	1.3	2.2	0.7	8.8
Cum %	20.1	28.8	34.2	39	44	47	50	100
C6-1	8.4	7.1	10.4	8	9	9	5	43
C6-2	7.8	6.5	7.8	8	8	9	4	49
C6-3	19.5	9.1	9.1	6	6	5	3	42
Mean	11.9	7.6	9.1	7	8	8	4	45
Std Dev	6.6	1.4	1.3	0.7	1.3	2.2	1.3	4.2
Cum %	11.9	19.5	28.6	36	44	52	55	100

8.4 Water quality measurement

Table 8.4.1 Physico-chemical parameters measured at ebb tide at control and farm sites

Site	Depth m	Temperature °C	Salinity ppt	DO % sat	DO mg/l	pH
F1	0.1	26.8	34.8	83.6	5.6	6.4
F1	0.1	26.9	34.8	83.5	5.5	6.4
F1	0.2	26.8	34.8	83.5	5.5	6.4
F2	0.3	26.6	35.2	80.0	5.3	6.4
F2	0.3	26.5	35.1	78.4	5.2	6.4
F2	0.3	26.6	35.1	77.0	5.1	6.4
F3	0.2	26.5	35.2	81.3	5.4	6.4
F3	0.2	26.5	35.2	80.9	5.4	6.5
F3	0.2	26.5	35.2	80.8	5.4	6.5
F4	1.1	26.5	35.9	83.8	5.6	5.8
F4	1.1	26.6	35.9	82.0	5.4	6.0
F4	1.2	26.6	36.0	78.2	5.2	6.2
F5	0.5	26.7	35.2	84.6	5.6	5.9
F5	0.5	26.6	35.2	84.2	5.6	6.0
F5	0.5	26.6	35.2	84.3	5.6	6.0
F6	6.7	26.5	34.8	81.8	5.5	6.3
F6	6.7	26.5	34.8	81.8	5.5	6.3
F6	6.7	26.5	34.8	81.7	5.5	6.3
C1	0.3	27.1	35.6	85.9	5.7	6.0
C1	0.3	26.9	35.4	82.8	5.5	6.2
C1	0.3	26.8	35.4	81.2	5.4	6.4
C2	0.3	27.0	36.3	78.7	5.2	7.3
C2	0.3	27.0	36.1	80.1	5.3	7.4
C2	0.3	26.9	36.1	80.0	5.3	7.4
C3	0.3	26.9	35.7	75.9	5.0	7.5
C3	0.3	27.0	35.6	83.1	5.5	7.5
C3	0.3	27.0	35.6	83.5	5.5	7.5
C4	4.1	26.7	35.5	69.6	4.6	7.6
C4	3.5	26.8	35.4	73.5	4.9	7.7
C4	3.8	26.7	35.4	69.8	4.6	7.7
C5	6.3	26.9	35.6	67.9	4.5	7.6
C5	6.8	26.9	35.5	67.4	4.5	7.6
C5	6.8	26.9	35.5	67.6	4.5	7.6
C6	10.6	27.0	35.1	78.3	5.2	7.8
C6	10.2	27.0	35.1	78.4	5.2	7.8
C6	9.8	27.0	35.2	78.7	5.2	7.8

8.5 Nutrient and Chlorophyll analysis

Table 8.5.1 Nutrient and Chlorophyll analysis results from Northern Territory Environmental Analysis Laboratories. Chlorophyll analysis was outsourced to Northern Territory Berrimah Farm Water Laboratories

IDENT	Job number	Project code	NH3_N	NO2_N	NO3_N	ChlorophyllA	PheophytinA
UNITS			mg/L	mg/L	mg/L	mg/L	mg/m3
SCHEME			FIA	FIA	FIA	10200H	10200H
CI C1-1 23/08/2005	EL04900	CHANNEL ISLAND	<0.005	<0.005	0.005	2	<1
CI C1-2 23/08/2005	EL04900	CHANNEL ISLAND	0.02	<0.005	0.005	2	<1
CI C2-1 23/08/2005	EL04900	CHANNEL ISLAND	0.035	<0.005	0.005	2	<1
CI C2-2 23/08/2005	EL04900	CHANNEL ISLAND	0.005	<0.005	0.005	2	<1
CI C3-1 23/08/2005	EL04900	CHANNEL ISLAND	0.015	<0.005	0.01	2	<1
CI C3-2 23/08/2005	EL04900	CHANNEL ISLAND	0.015	<0.005	0.005	2	2
CI F1 22/08/2005	EL04900	CHANNEL ISLAND	0.015	<0.005	0.01	N.A.	N.A.
CI F1-1 23/08/2005	EL04900	CHANNEL ISLAND	N.A.	N.A.	N.A.	<1	2
CI F1-2 23/08/2005	EL04900	CHANNEL ISLAND	0.035	<0.005	0.015	1	1
CI F2 22/08/2005	EL04900	CHANNEL ISLAND	0.02	<0.005	0.01	N.A.	N.A.
CI F2-1 23/08/2005	EL04900	CHANNEL ISLAND	N.A.	N.A.	N.A.	2	1
CI F2-2 23/08/2005	EL04900	CHANNEL ISLAND	0.005	<0.005	0.01	1	<1
CI F3 22/08/2005	EL04900	CHANNEL ISLAND	0.005	<0.005	0.01	N.A.	N.A.
CI F3-1 23/08/2005	EL04900	CHANNEL ISLAND	N.A.	N.A.	N.A.	1	<1
CI F3-2 23/08/2005	EL04900	CHANNEL ISLAND	0.015	<0.005	0.01	2	<1
CI F4 22/08/2005	EL04900	CHANNEL ISLAND	0.01	<0.005	0.01	N.A.	N.A.
CI F4-1 23/08/2005	EL04900	CHANNEL ISLAND	N.A.	N.A.	N.A.	1	<1
CI F4-2 23/08/2005	EL04900	CHANNEL ISLAND	0.005	<0.005	0.01	1	<1
CI F5 22/08/2005	EL04900	CHANNEL ISLAND	0.005	<0.005	0.01	N.A.	N.A.
CI F5-1 23/08/2005	EL04900	CHANNEL ISLAND	N.A.	N.A.	N.A.	2	1
CI F5-2 23/08/2005	EL04900	CHANNEL ISLAND	0.005	<0.005	0.01	1	<1
CI F6 22/08/2005	EL04900	CHANNEL ISLAND	0.005	<0.005	0.01	N.A.	N.A.
C1 F6-1 23/08/2005	EL04900	CHANNEL ISLAND	N.A.	N.A.	N.A.	1	<1
CI F6-2 23/08/2005	EL04900	CHANNEL ISLAND	0.01	<0.005	0.01	1	1

IDENT	Job number	Project code	NH3_N	NO2_N	NO3_N
UNITS			mg/L	mg/L	mg/L
SCHEME			FIA	FIA	FIA
CI C4-1 30/08/05	EL04926	CHANNEL ISLAND	0.005	<0.005	0.005
CI C4-5 30/08/05	EL04926	CHANNEL ISLAND	0.005	<0.005	0.005
CI C5-1 30/08/05	EL04926	CHANNEL ISLAND	0.035	<0.005	0.015
CI C5-2 30/08/05	EL04926	CHANNEL ISLAND	0.025	<0.005	0.01
CI C6-1 30/08/05	EL04926	CHANNEL ISLAND	0.005	<0.005	0.005
CI C6-2 30/08/05	EL04926	CHANNEL ISLAND	0.01	<0.005	0.01

IDENT	Job number	Project code	ChlorophyllA	PheophytinA
UNITS			mg/m3	mg/m3
SCHEME			10200H	10200H
CI C4-1 30/08/05	EL04926C	CHANNEL ISLAND	<1	<1
CI C4-5 30/08/05	EL04926C	CHANNEL ISLAND	<1	<1
CI C5-1 30/08/05	EL04926C	CHANNEL ISLAND	<1	<1
CI C5-2 30/08/05	EL04926C	CHANNEL ISLAND	<1	<1
CI C6-1 30/08/05	EL04926C	CHANNEL ISLAND	<1	<1
CI C6-2 30/08/05	EL04926C	CHANNEL ISLAND	<1	<1

8.6 Mangrove stand structure and composition

Table 8.6.1 Mangrove structure and composition at site C1-1

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	C1-1	Rhizophora sp.	8.4	10	1	1	180
2	C1-2	Rhizophora sp.	2.6	5	1	1.3	1883
3	C1-3	Rhizophora sp.	8.4	10	1	1	180
4	C1-4	Rhizophora sp.	6.2	9	1	1	331
5	C1-5	Rhizophora sp.	4.5	9	1	1	629
6		Rhizophora sp.	4.1	6	1	1	757
7		Rhizophora sp.	3.9	6	1	1	837
8		Rhizophora sp.	6.6	12	1	1	292
9		Rhizophora sp.	4.0	10	1	1	796
10		Rhizophora sp.	6.7	11	1	1	284
11		Rhizophora sp.	3.3	8	1	1	1169
12		Rhizophora sp.	5.2	7	1	1	471
13		Rhizophora sp.	7.5	10	1	1	226
14		Rhizophora sp.	18.0	14	1	1	39
15		Rhizophora sp.	7.5	8	1	1.7	226
16		Rhizophora sp.	19.5	14	1	2.3.4	33
17		Rhizophora sp.	8.4	12	1	1	180
18		Rhizophora sp.	7.4	10	1	1.3	233
19		Rhizophora sp.	14.9	10	1	2.3.4	57
20		Rhizophora sp.	6.2	8	1	1	331
21		Rhizophora sp.	10.7	12	1	1	111
22		Rhizophora sp.	30.7	12	1	2.3.4	14
23		Rhizophora sp.	15.0	13	1	1	57
24		Rhizophora sp.	7.9	12	1	1	204
25		Rhizophora sp.	8.0	10	1	1.3	199
26		Rhizophora sp.	23.0	12	1	2.3.4	24
27		Rhizophora sp.	6.0	8	1	1.7	354
28		Rhizophora sp.	21.0	11	1	1.7	29
29		Rhizophora sp.	26.5	11	1	1.7	18
30		Rhizophora sp.	38.0	20	1	1	9
31		Rhizophora sp.	15.5	15	1	1	53
32		Rhizophora sp.	18.5	15	1	1.7	37
33		Rhizophora sp.	18.0	15	1	1.7	39
34		Rhizophora sp.	14.0	16	1	1	65
35		Rhizophora sp.	11.0	15	1	1	105
36		Rhizophora sp.	26.3	15	1	1.3.7	18

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.2 Mangrove structure and composition at site C1-2

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	C1-6	Ceriops sp.	4.9	5	1	1.7	265
2	C1-7	Bruguiera gymnorrhiza	5.0	5	1	1	255
3	C1-8	Bruguiera gymnorrhiza	2.6	4	1	1	942
4	C1-9	Rhizophora sp.	3.5	4	1	1	520
5	C1-10	Bruguiera gymnorrhiza	1.3	3	1	1	3767
6		Ceriops sp.	3.1	4	1	1	662
7		Rhizophora sp.	1.5	2	1	1	2829
8		Ceriops sp.	4.8	5	1	1.3	276
9		Ceriops sp.	4.9	5	1	1	265
10		Ceriops sp.	5.0	5	1	1	255
11		Rhizophora sp.	5.3	5	1	1	227
12		Ceriops sp.	5.2	4	1	1	235
13		Ceriops sp.	4.3	4	1	1	344
14		Ceriops sp.	4.0	3.5	1	1.7	398
15		Bruguiera gymnorrhiza	10.4	6	1	1	59
16		Rhizophora sp.	6.1	5	1	1.7	171
17		Ceriops sp.	5.4	4	1	1	218
18		Rhizophora sp.	7.5	5	1	1	113
19		Rhizophora sp.	5.2	5	1	1	235
20		Ceriops sp.	4.8	3	1	1.7	276
21		Rhizophora sp.	3.7	3	0		465
22		Rhizophora sp.	3.8	5	1	1	441
23		Ceriops sp.	4.7	3.5	1	1.3	288
24		Rhizophora sp.	7.4	5	0	7	116
25		Ceriops sp.	6.1	5	1	1.3	171
26		Ceriops sp.	4.9	4	1	1.2	265
27		Ceriops sp.	4.4	3.5	1	1	329
28		Ceriops sp.	6.2	5	1	1	166
29		Ceriops sp.	6.6	5	1	1.7	146
30		Ceriops sp.	3.4	3.5	1	1.3	551
31		Ceriops sp.	5.0	5	1	1.3	255
32		Ceriops sp.	6.6	5	1	1.3	146
33		Rhizophora sp.	17.5	6	1	1.7.3	21
34		Rhizophora sp.	13.0	6	0	7	38
35		Rhizophora sp.	14.5	7	1	1.7	30
36		Rhizophora sp.	10.8	6	1	1.7	55

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.3 Mangrove structure and composition at site C1-3

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	C1-11	Bruguiera gymnorrhiza	3.3	3	1	1	877
2	C1-12	Ceriops sp.	4.3	7	1	1	516
3	C1-13	Ceriops sp.	4.0	5	1	1	597
4	C1-14	Ceriops sp.	5.0	6	1	1	382
5		Ceriops sp.	5.9	6	1	1	274
6		Ceriops sp.	2.6	4	1	1	1413
7		Ceriops sp.	3.3	6	1	1	877
8		Ceriops sp.	3.7	6	1	1	698
9		Ceriops sp.	2.4	4	1	1	1658
10		Ceriops sp.	2.5	4	1	1	1528
11		Ceriops sp.	3.3	5	1	1	877
12		Ceriops sp.	4.4	5	1	1	493
13		Ceriops sp.	4.7	6	1	1	432
14		Ceriops sp.	4.6	6	1	1	451
15		Ceriops sp.	2.7	4	1	1.7	1310
16		Ceriops sp.	3.3	6	1	1	877
17		Ceriops sp.	3.8	6	1	1	661
18		Ceriops sp.	2.4	4	0		1658
19	C1-15	Ceriops sp.	3.5	4	1	1.3	780
20		Ceriops sp.	3.9	6	1	1	628
21		Ceriops sp.	3.7	6	1	1	698
22		Ceriops sp.	4.9	6	1	1	398
23		Ceriops sp.	3.1	4	0		994
24		Ceriops sp.	5.0	6	1	1	382
25		Ceriops sp.	5.2	6	1	1	353
26		Ceriops sp.	6.2	6	1	1	248
27		Ceriops sp.	5.6	6	1	1	305
28		Ceriops sp.	4.9	6	1	1	398
29		Ceriops sp.	4.6	6	1	1	451
30		Ceriops sp.	3.0	3	0	7	1061
31		Ceriops sp.	4.0	5	1	1	597
32		Ceriops sp.	4.7	6	1	1	432
33		Ceriops sp.	3.1	6	1	1	994
34		Ceriops sp.	3.4	5	1	1	826
35		Ceriops sp.	4.4	6	1	1	493
36		Ceriops sp.	1.3	5	1	1	5650
37		Bruguiera gymnorrhiza	5.2	6	1	1.3	353

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.4 Mangrove structure and composition at site C1-4

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	C1-16	Ceriops sp.	3.1	6	1	1	331
2	C1-18	Ceriops sp.	4.6	6	1	1	150
3	C1-19	Ceriops sp.	4.2	7	1	1	180
4	C1-20	Ceriops sp.	2.6	4.5	1	1	471
5	C1-17	Ceriops sp.	4.0	5	1	1.2.7	199
6		Ceriops sp.	2.8	5	1	1	406
7		Ceriops sp.	3.3	5	1	1	292
8		Ceriops sp.	5.1	6	1	1	122
9		Ceriops sp.	4.1	7	1	1	189
10		Ceriops sp.	4.5	6	1	1	157
11		Ceriops sp.	2.9	6	1	1	378
12		Ceriops sp.	3.9	7	1	1	209
13		Ceriops sp.	2.5	5	1	1	509
14		Ceriops sp.	5.1	7	1	1	122
15		Ceriops sp.	2.2	5	1	1	658
16		Ceriops sp.	4.3	6	1	1	172
17		Ceriops sp.	2.3	5	1	1	602
18		Ceriops sp.	2.8	6	1	1	406
19		Ceriops sp.	4.5	8	1	1	157
20		Ceriops sp.	4.8	8	1	1	138
21		Ceriops sp.	4.0	8	1	1	199
22		Ceriops sp.	4.6	7	1	1	150
23		Ceriops sp.	4.0	7	1	1	199
24		Ceriops sp.	4.4	7	1	1.3	164
25		Ceriops sp.	1.4	2	0		1624
26		Ceriops sp.	3.5	6	1	1	260
27		Ceriops sp.	2.2	2	0		658
28		Ceriops sp.	4.0	7	1	1	199
29		Ceriops sp.	3.2	7	1	1	311
30		Ceriops sp.	4.2	8	1	1	180
31		Ceriops sp.	3.4	7	1	1	275
32		Ceriops sp.	3.1	4	1	1	331
33		Ceriops sp.	5.0	8	1	1	127
34		Ceriops sp.	4.5	8	1	1	157
35		Ceriops sp.	4.1	6	1	1	189

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.5 Mangrove structure and composition at site C2-1

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	C2-1	Bruguiera exaristata	4.7	7	1	1	432
2	C2-2	Rhizophora sp.	9.0	11	1	1.3	118
3	C2-3	Rhizophora sp.	19.0	12	1	1	26
4	C2-4	Avacennia marina	14.0	12	1	1	49
5	C2-5	Bruguiera exaristata	9.0	11	1	1.3.6	118
6		Rhizophora sp.	7.0	7	1	1	195
7		Rhizophora sp.	8.0	8	1	1	149
8		Rhizophora sp.	8.0	6	1	1.3.6	149
9		Rhizophora sp.	9.5	10	1	1.3	106
10		Rhizophora sp.	11.0	10	1	1	79
11		Rhizophora sp.	12.0	10	1	1	66
12		Avacennia marina	21.0	14	1	1.3	22
13		Rhizophora sp.	90.0	9	1	1	1
14		Rhizophora sp.	8.5	8	0		132
15		Avacennia marina	38.0	13	1	1	7
16		Rhizophora sp.	12.5	11	1	1	61
17		Rhizophora sp.	14.0	11	1	1	49
18		Rhizophora sp.	7.0	8	1	1.6	195
19		Bruguiera exaristata	6.0	7	1	1	265
20		Rhizophora sp.	5.0	8	1	1	382
21		Rhizophora sp.	17.0	7	0		33
22		Rhizophora sp.	17.0	11	1	1	33
23		Rhizophora sp.	6.0	8	1	1.3	265
24		Rhizophora sp.	9.5	9	1	1	106
25		Rhizophora sp.	22.0	10	1	1.2.7	20
26		Rhizophora sp.	14.0	8	1	1.7	49
27		Rhizophora sp.	14.0	11	1	1	49
28		Rhizophora sp.	10.0	8	1	1	95
29		Bruguiera exaristata	7.5	6	0	3	170
30		Bruguiera exaristata	5.0	7	1	1	382
31		Bruguiera exaristata	3.9	6	1	1	628
32		Rhizophora sp.	24.0	7	1	1.6.7	17
33		Bruguiera exaristata	12.0	11	0		66
34		Bruguiera exaristata	13.0	9	0		57
35		Avacennia marina	21.0	13	1	1.6	22
36		Rhizophora sp.	12.0	13	1	1.7	66
37		Rhizophora sp.	5.0	8	1	1	382
38		Bruguiera exaristata	3.3	3	1	1	877
39		Rhizophora sp.	8.0	10	1	1	149
40		Bruguiera exaristata	6.0	8	1	1	265
41		Rhizophora sp.	9.0	8	1	1.3	118
42		Bruguiera exaristata	9.0	10	0		118
43		Avacennia marina	12.0	10	1	1	66

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.6 Mangrove structure and composition at site C2-2

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	C2-6	Ceriops sp.	6.0	5	1	1.6	177
2	C2-7	Avacennia marina	10.0	8	1	1	64
3	C2-8	Bruguiera exaristata	4.0	4.5	1	1	398
4	C2-9	Ceriops sp.	3.0	5	1	1	707
5	C2-10	Rhizophora sp.	7.0	8	1	1	130
6		Avacennia marina	14.0	10	1	1.6	32
7		Rhizophora sp.	11.5	10	1	1.7.6	48
8		Ceriops sp.	4.0	6	1	1	398
9		Avacennia marina	6.0	7	1	1.7.6	177
10		Ceriops sp.	4.0	5.5	1	1	398
11		Ceriops sp.	3.5	5	1	1	520
12		Ceriops sp.	5.0	6	1	1	255
13		Ceriops sp.	4.5	6	1	1	314
14		Ceriops sp.	6.0	6	1	1	177
15		Bruguiera exaristata	5.5	7	0		210
16		Ceriops sp.	5.0	6	1	1	255
17		Ceriops sp.	4.0	6	1	1	398
18		Bruguiera exaristata	5.0	5.5	1	1	255
19		Ceriops sp.	2.7	5	1	1	873
20		Bruguiera exaristata	1.7	2.5	1	1	2203
21		Rhizophora sp.	7.0	7	1	1.3.6	130
22		Ceriops sp.	1.8	3	1	1	1965
23		Bruguiera exaristata	2.6	3	1	1	942
24		Bruguiera exaristata	2.5	3	1	1	1019
25		Bruguiera exaristata	5.0	5	1	1.6	255
26		Bruguiera exaristata	3.7	4	1	1	465
27		Rhizophora sp.	6.8	5	0		138
28		Ceriops sp.	4.9	6	1	1	265
29		Rhizophora sp.	5.0	5	1	1	255
30		Rhizophora sp.	10.0	7	1	1	64
31		Bruguiera exaristata	6.8	7	1	1	138
32		Ceriops sp.	5.7	7	1	1.6	196
33		Rhizophora sp.	11.0	8	1	1	53
34		Rhizophora sp.	8.0	7	1	1	99
35		Bruguiera exaristata	16.5	6	1	1.2.6	23
36		Bruguiera exaristata	3.3	4	1	1	585
37		Rhizophora sp.	6.0	7	1	1	177
38		Rhizophora sp.	9.5	8	1	1.3	71
39		Rhizophora sp.	9.0	8	1	1	79
40		Rhizophora sp.	9.0	8	1	1	79
41		Ceriops sp.	2.6	4	1	1	942
42		Rhizophora sp.	8.5	8	1	1	88
43		Avacennia marina	13.0	10	1	1.6	38
44		Rhizophora sp.	9.0	7	1	1	79
45		Avacennia marina	13.0	9	1	1	38
46		Rhizophora sp.	12.0	8	1	1	44
47		Rhizophora sp.	7.0	6	1	1.3	130
48		Rhizophora sp.	6.5	8	1	1.3	151
49		Ceriops sp.	2.6	4.5	1	1	942
50		Ceriops sp.	2.8	4	1	1	812

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.7 Mangrove structure and composition at site C2-3

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	C2-11	Ceriops sp.	5.2	6	1	1	353
2	C2-12	Ceriops sp.	2.7	3.5	1	1	1310
3	C2-13	Ceriops sp.	3.3	5	1	1	877
4	C2-14	Ceriops sp.	2.1	5	1	1	2165
5	C2-15	Ceriops sp.	4.9	6	1	1	398
6		Ceriops sp.	3.6	5.5	1	1	737
7		Ceriops sp.	4.3	5.5	1	1	516
8		Ceriops sp.	3.5	3.5	0	0	780
9		Ceriops sp.	5.9	5.5	1	1.3	274
10		Ceriops sp.	5.7	5.5	1	1.3	294
11		Ceriops sp.	3.5	4.5	1	1	780
12		Ceriops sp.	2.3	5.5	1	1	1805
13		Ceriops sp.	3.5	5	1	1.6	780
14		Ceriops sp.	2.7	4	1	1	1310
15		Ceriops sp.	3.9	5.5	1	1	628
16		Ceriops sp.	1.8	2	0		2947
17		Ceriops sp.	2.5	4.5	1	1	1528
18		Ceriops sp.	3.4	5	1	1	826
19		Ceriops sp.	4.3	5	1	1	516
20		Ceriops sp.	4.9	4	1	1.3	398
21		Ceriops sp.	3.7	5	1	1	698
22		Ceriops sp.	4.5	3	0		472
23		Ceriops sp.	5.0	5	1	1	382
24		Ceriops sp.	4.6	4.5	1	1.3	451
25		Ceriops sp.	4.6	5.5	1	1	451
26		Ceriops sp.	3.1	3.5	1	1	994
27		Ceriops sp.	4.2	5.5	1	1	541
28		Ceriops sp.	3.9	4.5	1	1	628
29		Ceriops sp.	6.1	5.5	1	1.3	257
30		Ceriops sp.	4.4	6	1	1.3	493
31		Ceriops sp.	5.5	5	1	1	316
32		Ceriops sp.	2.5	5	1	1	1528
33		Ceriops sp.	5.4	5	1	1	327
34		Ceriops sp.	6.6	5.5	1	1.6	219
35		Ceriops sp.	5.6	7	1	1.6	305
36		Ceriops sp.	6.6	6	1	1	219
37		Ceriops sp.	3.9	6	1	1	628
38		Ceriops sp.	4.1	5	1	1	568
39		Ceriops sp.	4.5	5.5	1	1	472
40		Ceriops sp.	5.2	6	1	1.6	353
41		Bruguiera exaristata	14.0	4	0		49

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.8 Mangrove structure and composition at site C2-4

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	C2-16	Ceriops sp.	5.7	4	1	1.3	392
2	C2-17	Ceriops sp.	2.6	4	1	1	1883
3	C2-18	Ceriops sp.	3.5	4	1	1	1039
4	C2-19	Ceriops sp.	2.9	4	1	1	1514
5	C2-20	Ceriops sp.	3.0	4	1	1	1415
6		Ceriops sp.	3.5	3.5	1	1.6	1039
7		Ceriops sp.	3.1	3.5	1	1	1325
8		Ceriops sp.	4.5	5	0		629
9		Ceriops sp.	3.3	3.5	0		1169
10		Ceriops sp.	3.1	3.5	1	1	1325
11		Ceriops sp.	3.9	3	1	1	837
12		Ceriops sp.	4.2	3.5	1	1.3	722
13		Ceriops sp.	4.0	4	1	1	796
14		Ceriops sp.	2.9	4	1	1	1514
15		Ceriops sp.	4.5	4.5	1	1	629
16		Ceriops sp.	5.4	4.5	1	1.3	437
17		Ceriops sp.	6.0	4.5	1	1.3	354
18		Ceriops sp.	4.3	4.5	0		689
19		Ceriops sp.	2.6	4	1	1	1883
20		Ceriops sp.	2.4	4.5	1	1	2210
21		Ceriops sp.	1.8	2.5	1	1	3930
22		Ceriops sp.	3.3	5	1	1	1169
23		Ceriops sp.	5.2	4.5	1	1	471
24		Ceriops sp.	5.9	4	0		366
25		Ceriops sp.	1.7	2.5	1	1	4406
26		Ceriops sp.	4.4	4	0		658
27		Ceriops sp.	3.1	5	1	1	1325
28		Ceriops sp.	3.9	2	0		837
29		Ceriops sp.	5.5	6	1	1	421
30		Ceriops sp.	5.5	4.5	1	1.6	421
31		Ceriops sp.	5.5	6	1	1	421
32		Ceriops sp.	5.1	4.5	1	1.6	490
33		Ceriops sp.	2.8	5	1	1	1624
34		Ceriops sp.	5.6	4.5	1	1	406
35		Ceriops sp.	5.2	4.5	1	1	471
36		Ceriops sp.	2.3	3.5	1	1	2407
37		Ceriops sp.	3.8	4	1	1	882

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.9 Mangrove structure and composition at site F1-1

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F1-1	Rhizophora sp.	15.5	8	1	1	40
2	F1-2	Rhizophora sp.	8.5	8	1	1	132
3	F1-3	Rhizophora sp.	13.0	8	1	1.3	57
4	F1-4	Rhizophora sp.	7.0	8	1	1.3	195
5	F1-5	Rhizophora sp.	12.1	7	1	1.3	65
6		Rhizophora sp.	12.4	8	1	1	62
7		Rhizophora sp.	7.3	8	1	1	179
8		Rhizophora sp.	8.5	8	1	3	132
9		Rhizophora sp.	12.4	8	1	1.7	62
10		Rhizophora sp.	12.5	8	1	1	61
11		Rhizophora sp.	22.0	7	1	2.4.7	20
12		Rhizophora sp.	16.0	8	1	1	37
13		Rhizophora sp.	12.2	7	1	1.3	64
14		Rhizophora sp.	12.4	8	1	1	62
15		Rhizophora sp.	14.1	7	1	1	48
16		Rhizophora sp.	15.0	7	1	1	42
17		Rhizophora sp.	22.0	8	1	1	20
18		Rhizophora sp.	12.0	8	1	1.7	66
19		Rhizophora sp.	9.0	6.5	1	1.7	118
20		Rhizophora sp.	14.4	8	1	1	46
21		Rhizophora sp.	12.0	7	1	1	66
22		Rhizophora sp.	13.2	8	1	1	55
23		Rhizophora sp.	10.0	8	1	1	95
24		Rhizophora sp.	14.5	8	1	1	45
25		Rhizophora sp.	18.0	8.5	1	1	29
26		Rhizophora sp.	14.5	8	1	1	45
27		Rhizophora sp.	12.2	8	1	1	64
28		Rhizophora sp.	10.0	7	1	1.7	95
29		Rhizophora sp.	12.0	8	1	1	66
30		Rhizophora sp.	12.1	7	1	1	65

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.10 Mangrove structure and composition at site F1-2

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F1-6	Ceriops sp.	2.0	4	1	1	1592
2		Rhizophora sp.	3.3	5	1	1	585
3		Rhizophora sp.	8.0	4	1	1	99
4		Rhizophora sp.	4.0	3	1	1.3	398
5	F1-7	Rhizophora sp.	3.5	4.5	1	1	520
6		Rhizophora sp.	4.0	4.5	1	1	398
7		Rhizophora sp.	6.5	4	1	1	151
8		Rhizophora sp.	8.0	4	1	1	99
9		Rhizophora sp.	10.0	4	1	1.3	64
10	F1-8	Rhizophora sp.	10.5	5.5	1	1	58
11		Rhizophora sp.	10.5	4	1	1	58
12		Rhizophora sp.	8.5	4	1	1.3	88
13		Rhizophora sp.	7.0	5.5	1	1	130
14		Rhizophora sp.	3.0	5	1	1.7	707
15		Rhizophora sp.	13.0	5	1	1	38
16		Rhizophora sp.	3.8	5	1	1	441
17		Rhizophora sp.	4.0	5	1	1	398
18		Rhizophora sp.	1.3	3	1	1	3767
19		Rhizophora sp.	0.7	2.5	1	1	12992
20		Rhizophora sp.	7.0	6	1	1.7	130
21		Rhizophora sp.	7.0	6	1	1	130
22	F1-9	Rhizophora sp.	4.2	5	1	1	361
23		Rhizophora sp.	7.0	6	1	1.7	130
24		Rhizophora sp.	7.0	6	1	1.7	130
25		Rhizophora sp.	3.5	3	1	1.7.3	520
26		Rhizophora sp.	7.2	6.5	1	1	123
27		Rhizophora sp.	17.5	8	1	1	21
28		Rhizophora sp.	4.0	5	1	1.7	398
29		Rhizophora sp.	13.0	8	1	1	38
30		Rhizophora sp.	5.5	6.5	1	1	210
31		Rhizophora sp.	9.0	8	1	1	79
32		Rhizophora sp.	9.5	8	1	1	71
33		Rhizophora sp.	9.0	8	1	1	79
34		Rhizophora sp.	8.0	7	1	1.7	99
35		Rhizophora sp.	15.5	8	1	1.7	26
36		Rhizophora sp.	12.0	8	1	1	44
37	F1-10	Rhizophora sp.	9.5	8	1	1	71
38		Rhizophora sp.	12.0	6	1	1.3	44
39		Rhizophora sp.	10.0	6	1	1.3	64
40		Rhizophora sp.	9.5	7	1	1	71
41		Rhizophora sp.	9.5	6	1	1.7	71
42		Rhizophora sp.	9.0	7	1	1.3	79
43		Rhizophora sp.	6.5	6	1	1.7	151
44		Rhizophora sp.	4.0	4.5	1	1.7	398
45		Rhizophora sp.	5.0	5	1	1.7.3	255
46		Rhizophora sp.	8.5	6	1	1.3	88
47		Rhizophora sp.	7.0	5	1	1	130
48		Rhizophora sp.	5.5	6	1	1	210
49		Rhizophora sp.	1.5	3	1	1	2829
50		Rhizophora sp.	1.5	3	1	1	2829
51		Rhizophora sp.	8.3	5	1	1.3	92
52		Rhizophora sp.	8.3	5	1	1.3	92
53		Rhizophora sp.	8.2	5	1	1.3	95
54		Rhizophora sp.	6.3	5.5	1	1.7	160
55		Rhizophora sp.	1.2	2.5	1	1	4421

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.11 Mangrove structure and composition at site F1-3

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F1-11	Rhizophora sp.	10.0	6	1	1.3	95
2		Rhizophora sp.	9.0	6	1	1.7	118
3		Rhizophora sp.	11.0	7	1	1.7	79
4		Rhizophora sp.	6.5	5	1	1.7	226
5		Rhizophora sp.	6.5	5.5	1	1.7	226
6		Rhizophora sp.	13.0	7	1	1.3	57
7		Rhizophora sp.	20.2	6.5	1	1.2	23
8		Rhizophora sp.	16.0	5	1	3.2.7	37
9		Rhizophora sp.	10.0	5.5	1	1	95
10		Rhizophora sp.	12.0	5.5	1	3.7	66
11		Rhizophora sp.	12.0	5.5	0	7	66
12		Rhizophora sp.	11.0	6	1	1.3	79
13		Rhizophora sp.	9.0	6	1	1.7	118
14		Rhizophora sp.	7.2	5	1	1.7	184
15		Rhizophora sp.	11.7	6	1	3	70
16		Rhizophora sp.	12.0	5.5	1	1.7	66
17		Rhizophora sp.	8.0	5	1	1.7	149
18		Rhizophora sp.	1.5	1.5	1	1	4244
19		Rhizophora sp.	7.5	5	1	1.3	170
20	F1-12	Rhizophora sp.	1.3	2.5	1	1	5650
21	F1-13	Rhizophora sp.	4.0	4	1	1.7	597
22		Rhizophora sp.	15.0	4.5	1	1.3	42
23		Rhizophora sp.	6.5	4	1	1	226
24		Rhizophora sp.	3.0	4	1	1	1061
25		Rhizophora sp.	8.0	4	1	1	149
26		Rhizophora sp.	4.5	4	1	1.7	472
27		Rhizophora sp.	5.0	3.5	1	1.7	382
28		Rhizophora sp.	17.7	4	1	1.3	30
29	F1-14	Ceriop sp.	1.2	2.5	1	1.3	6631
30		Rhizophora sp.	5.5	4	1	1.7	316
31		Rhizophora sp.	5.5	4	1	1.7	316
32		Rhizophora sp.	11.0	6	1	1	79
33		Rhizophora sp.	1.5	3	1	1.3	4244
34		Rhizophora sp.	4.0	4	1	1.7	597
35		Rhizophora sp.	12.5	5	1	1.3	61
36		Rhizophora sp.	3.5	3.5	1	1.7	780

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.12 Mangrove structure and composition at site F1-4

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F1-16	Rhizophora sp.	8.5	5	1	1.3	132
2	F1-17	Rhizophora sp.	9.0	5.5	1	1.7	118
3	F1-18	Rhizophora sp.	6.5	4	1	1.7	226
4		Rhizophora sp.	9.2	5.5	1	1	113
5	F1-19	Rhizophora sp.	16.0	7	1	1	37
6		Rhizophora sp.	9.5	6.5	1	1.7	106
7		Rhizophora sp.	10.0	6	0	7	95
8		Rhizophora sp.	6.3	5	1	1.7.3	241
9		Rhizophora sp.	15.0	6	1	1.3	42
10		Rhizophora sp.	14.0	7	1	1.3	49
11		Rhizophora sp.	7.2	7	1	1	184
12		Rhizophora sp.	12.5	6	1	1.3	61
13		Rhizophora sp.	12.5	6	1	1.3	61
14		Rhizophora sp.	7.5	5.5	1	1.3	170
15		Rhizophora sp.	12.0	5	1	1.7	66
16		Rhizophora sp.	8.5	6	1	1	132
17		Rhizophora sp.	9.0	6	1	1.7	118
18		Rhizophora sp.	8.4	5.5	1	1	135
19		Rhizophora sp.	12.7	6	1	1.3	59
20		Rhizophora sp.	9.0	5	1	1.3	118
21		Rhizophora sp.	9.3	5	1	1.7.3	110
22		Rhizophora sp.	9.0	6	1	1	118
23		Rhizophora sp.	7.5	4.5	1	1.7.3	170
24		Rhizophora sp.	7.0	6	1	1.7	195
25		Rhizophora sp.	9.0	6	1	1	118
26		Rhizophora sp.	10.0	4	1	1	95
27		Rhizophora sp.	9.0	5	1	1.7.3	118
28		Rhizophora sp.	9.0	5	1	1.7.3	118
29		Rhizophora sp.	9.0	6	1	1	118
30	F1-20	Rhizophora sp.	6.0	4	1	1.7	265
31		Rhizophora sp.	8.0	3	1	1.7	149
32		Rhizophora sp.	7.0	4	1	1	195
33		Rhizophora sp.	10.0	4.5	1	1.7	95
	F1-15	Rhizophora sp.					

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.13 Mangrove structure and composition at site F1-5

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F1-21	Rhizophora sp.	2.5	4	1	1	509
2		Rhizophora sp.	3.7	3.5	1	1	233
3	F1-22	Cir Tag	1.3	2	1	1	1883
4		Rhizophora sp.	8.5	4	1	1.3	44
5		Rhizophora sp.	4.7	3.5	1	1	144
6		Ceriops sp.	1.2	2	1	1	2210
7		Rhizophora sp.	8.0	2	1	1.3	50
8		Rhizophora sp.	9.0	2	1	1.3	39
9		Rhizophora sp.	6.5	3.5	1	1	75
10		Rhizophora sp.	6.6	3	1	1.3	73
11		Ceriops sp.	2.3	2.5	1	1	602
12		Rhizophora sp.	15.0	5	1	1	14
13		Rhizophora sp.	4.5	3.5	1	1	157
14		Rhizophora sp.	8.0	4	1	1.3	50
15		Rhizophora sp.	14.5	6	1	1	15
16		Rhizophora sp.	10.5	5.5	1	1	29
17	F1-23	Ceriops sp.	3.2	3.5	1	1	311
18		Rhizophora sp.	11.0	3	1	1.7	26
19		Rhizophora sp.	5.0	4	0		127
20		Rhizophora sp.	4.0	4	1	1	199
21		Ceriops sp.	2.4	2.5	1	1	553
22		Rhizophora sp.	7.0	2.5	0		65
23		Rhizophora sp.	3.2	3.5	1	1	311
24		Rhizophora sp.	2.8	2	1	1	406
25	F1-24	Ceriops sp.	3.4	2	1	1	275
26	F1-25	Rhizophora sp.	3.1	3.5	1	1	331
27		Rhizophora sp.	4.5	3.5	1	1	157
28		Ceriops sp.	2.6	2.5	1	1	471
29		Rhizophora sp.	2.8	3.5	1	1	406
30		Rhizophora sp.	4.7	3	1		144
31		Rhizophora sp.	3.6	3	1	1	246
32		Rhizophora sp.	2.8	2	1	1	406
33		Rhizophora sp.	2.3	2.5	1	1	602
34		Rhizophora sp.	2.8	2.5	1	1	406

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.14 Mangrove structure and composition at site F2-1

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F2-1	Avacennia marina	5.2	6	1	1	353
2	F2-2	Avacennia marina	2.4	2	1	1	1658
3	F2-3	Avacennia marina	4.4	5.5	1	1	493
4		Avacennia marina	2.3	2.5	1	1	1805
5		Avacennia marina	2.7	2.5	0		1310
6		Avacennia marina	4.2	4	1	1	541
7		Avacennia marina	2.6	3.5	1	1.3	1413
8	F2-4	Avacennia marina	6.2	7	1	1	248
9		Avacennia marina	6.4	8	1	1	233
10		Rhizophora sp.	18.0	11	1	1	29
11		Avacennia marina	7.5	6	1	1	170
12		Rhizophora sp.	15.5	11	1	1.7	40
13		Avacennia marina	5.4	5.5	1	1.7.3	327
14		Avacennia marina	6.8	6	1	1.7	207
15		Avacennia marina	5.9	6.5	1	1.7	274
16		Avacennia marina	7.1	8	1	1.7	189
17		Avacennia marina	7.0	2	1	1.3	195
18		Avacennia marina	8.2	8	1	1.7	142
19		Avacennia marina	7.5	9	1	1	170
20		Avacennia marina	7.7	8	1	1.7	161
21		Avacennia marina	8.5	10	1	1.7	132
22		Avacennia marina	10.3	7	1	1.7.3	90
23		Avacennia marina	8.5	9	1	1	132
24		Avacennia marina	7.9	8	1	1.2	153
25		Avacennia marina	10.0	10	1	1	95
26	F2-5	Avacennia marina	8.8	8	1	1	123
27		Avacennia marina	10.0	8	1	1.7.3	95
28		Avacennia marina	3.0	3	1	1	1061
29		Avacennia marina	10.5	5	0	7	87
30		Avacennia marina	4.3	6	1	5	516
31		Avacennia marina	0.8	2	1	1	14921
32		Avacennia marina	4.5	6	1	1	472
33		Avacennia marina	5.4	6	1	1	327
34		Avacennia marina	1.9	3	1	1	2645
35		Rhizophora sp.	14.5	10	1	1	45
36		Rhizophora sp.	15.0	10	1	1	42
37		Rhizophora sp.	20.5	11	1	1	23
39		Rhizophora sp.	11.5	6	1	1.7	72

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.15 Mangrove structure and composition at site F2-2

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F2-6	Avacennia marina	18.3	11	1	1 (2)	29
2	F2-7	Ceriops sp.	4.3	6	1	1	516
3		Ceriops sp.	1.2	3	0		6631
4		Avacennia marina	14.4	9	1	1.7 (2)	46
5		Avacennia marina	26.0	12	1	1.3	14
6		Ceriops sp.	4.3	5	1	1	516
7		Ceriops sp.	4.2	6	1	1	541
8		Ceriops sp.	4.3	2.5	0		516
9		Ceriops sp.	4.2	4	1	1.3	541
10		Avacennia marina	16.0	4	0	7	37
11		Rhizophora sp.	1.1	2	1	1.3	7892
12		Ceriops sp.	1.8	4	1	1	2947
13		Ceriops sp.	1.9	3	1	1	2645
14		Rhizophora sp.	9.0	6	1	1.7	118
15		Rhizophora sp.	10.0	6	1	1.7	95
16		Avacennia marina	17.0	6	1	1.2.3	33
17		Rhizophora sp.	15.0	7	1	1.7	42
18		Avacennia marina	17.5	10	1	1	31
19		Avacennia marina	20.0	9	1	1	24
20		Ceriops sp.	2.4	3	1	1	1658
21	F2-8	Ceriops sp.	2.0	3.5	1	1	2387
22		Rhizophora sp.	12.0	6	1	1.3	66
23		Rhizophora sp.	6.1	4	1	1.3	257
24		Rhizophora sp.	8.7	8	1	1	126
25		Avacennia marina	18.0	7	1	1.2.3.7	29
26	F2-9	Ceriops sp.	0.8	2.5	1	1	14921
27		Avacennia marina	15.5	9	1		40
28		Avacennia marina	18.5	10	1	1.7	28
29	F2-10	Ceriops sp.	2.5	3.5	1	1	1528
30		Avacennia marina	13.0	8	1	1	57
31		Avacennia marina	8.8	10	1	1	123

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.16 Mangrove structure and composition at site F2-3

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F2-11	Avacennia marina	21.0	9	1	1.3	14
2		Avacennia marina	18.5	9	1	1.2.3	19
3		Ceriops sp.	5.2	4	1	1.3	235
4		Ceriops sp.	7.5	6	1	1.3	113
5	F2-12	Ceriops sp.	1.2	2.5	1	1.3	4421
6	F2-13	Ceriops sp.	4.0	4	1	1	398
7		Ceriops sp.	7.5	6	1	1	113
8		Ceriops sp.	4.5	5	1	1	314
9		Ceriops sp.	5.4	6	1	1	218
10	F2-14	Ceriops sp.	5.6	5	1	1	203
11	F2-15	Ceriops sp.	1.3	2.6	1	1	3767
12		Avacennia marina	24.0	12	1	1.3	11
13		Avacennia marina	24.0	4.5	0	3	11
14		Ceriops sp.	3.4	4.5	1	1	551
15		Ceriops sp.	3.7	4.5	1	1	465
16		Ceriops sp.	3.0	4	1	1	707
17		Ceriops sp.	5.0	5.5	1	1	255
18		Ceriops sp.	5.4	6	1	1	218
19		Ceriops sp.	6.2	7	1	1	166
20		Ceriops sp.	4.9	6	1	1	265
21		Ceriops sp.	4.0	5	1	1	398
22		Ceriops sp.	5.8	7	1	1	189
23		Ceriops sp.	3.0	5	1	1	707
24		Ceriops sp.	3.4	4	1	1	551
25		Ceriops sp.	2.9	5	1	1	757
26		Ceriops sp.	5.3	6	1	1.3	227
27	F2-6	Avacennia marina	18.3	11	1	1 (2)	19
28		Ceriops sp.	5.5	6	1	1	210
29		Ceriops sp.	6.2	7	1	1	166
30		Avacennia marina	14.0	9	1	1.2	32
31		Avacennia marina	26.0	12	1	1.3	9
32		Ceriops sp.	3.6	4	1	1	491
33		Ceriops sp.	6.0	6	1	1	177
34		Ceriops sp.	5.6	6	1	1.3	203

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.17 Mangrove structure and composition at site F2-4

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F2-16	Ceriops sp.	2.9	5	1	1	1135
2		Ceriops sp.	4.2	5	1	1	541
3		Ceriops sp.	3.9	5	1	1	628
4		Ceriops sp.	3.2	5	1	1	933
5		Ceriops sp.	2.9	5	1	1	1135
6		Ceriops sp.	2.8	5	1	1	1218
7		Ceriops sp.	4.6	5	1	1.3	451
8	F2-17	Ceriops sp.	2.5	4	1	1	1528
9		Ceriops sp.	4.3	5	1	1	516
10		Ceriops sp.	4.6	5	1	1	451
11		Ceriops sp.	3.6	5	1	1	737
12		Ceriops sp.	3.8	5	1	1	661
13	F2-18	Ceriops sp.	5.5	5	1	1.2.3	316
14		Ceriops sp.	3.3	5	1	1.3	877
15		Ceriops sp.	3.2	3	0	3	933
16	F2-19	Ceriops sp.	1.0	2	1	1	9549
17		Ceriops sp.	3.0	5	1	1	1061
18		Ceriops sp.	1.4	2.5	1	1	4872
19	F2-20	Ceriops sp.	4.5	5	1	1	472
20		Ceriops sp.	4.8	5	1	1.3	414
21		Ceriops sp.	2.7	5	1	1	1310
22		Ceriops sp.	4.0	5	1	1.3	597
23		Ceriops sp.	2.1	3	1	1	2165
24		Ceriops sp.	4.7	5	1	1	432
25		Ceriops sp.	2.7	3	1	1	1310
26		Ceriops sp.	2.8	4	1	1	1218
27		Ceriops sp.	3.1	5	1	1	994
28		Ceriops sp.	3.0	1.5	0		1061
29		Ceriops sp.	3.6	5	1	1	737
30		Ceriops sp.	3.5	5	1	1	780
31		Ceriops sp.	1.1	3	1	1	7892
32		Ceriops sp.	4.7	5	0		432
33		Ceriops sp.	3.5	5	1	1	780
34		Ceriops sp.	1.6	3	1	1	3730
35		Ceriops sp.	4.4	5	1	1	493
36		Ceriops sp.	3.3	5	1	1	877
37		Ceriops sp.	2.9	5	1	1	1135
38		Ceriops sp.	4.1	5	1	1	568
39		Ceriops sp.	2.2	4	1	1.3	1973
40		Ceriops sp.	4.3	5	1	1	516
41		Ceriops sp.	3.7	5	1	1	698
42		Ceriops sp.	2.0	4	1	1	2387
43		Ceriops sp.	4.8	5	1	1	414
44		Ceriops sp.	2.2	3	1	1	1973
45		Ceriops sp.	4.1	5	1	1	568
46		Ceriops sp.	4.6	5	1	1	451
47		Ceriops sp.	16.0	3	0	2	37

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.18 Mangrove structure and composition at site F3-1

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F3-1	Ceriops sp.	4.1	5	1	1	568
2		Ceriops sp.	2.0	3	1	1	2387
3		Ceriops sp.	1.6	2.5	1	1	3730
4	F3-2	Rhizophora sp.	10.5	9.5	1	1	87
5		Rhizophora sp.	7.0	8	1	1	195
6		Rhizophora sp.	6.1	6	1	1	257
7		Rhizophora sp.	6.9	7	1	1	201
8		Rhizophora sp.	6.2	6	1	1.7	248
9		Rhizophora sp.	13.9	7	1	1	49
10		Rhizophora sp.	5.8	5	1	1	284
11		Rhizophora sp.	12.0	9	1	1	66
12		Rhizophora sp.	11.0	8	1	1	79
13		Rhizophora sp.	11.0	10	1	1	79
14		Ceriops sp.	3.8	4.5	1	1	661
15		Rhizophora sp.	5.5	5	1	1.7	316
16		Ceriops sp.	3.6	5	1	1	737
17		Rhizophora sp.	11.9	7	1	1	67
18		Rhizophora sp.	3.6	5	1	1	737
19		Rhizophora sp.	10.6	6	1	1.7	85
20		Rhizophora sp.	21.2	10	1	1	21
21		Rhizophora sp.	7.6	7	1	1.7	165
22	F3-3	Ceriops sp.	5.0	5.5	1	1.2	382
23		Rhizophora sp.	16.0	10	1	1	37
24		Rhizophora sp.	8.0	7	1	1	149
25		Rhizophora sp.	9.0	8	1	1	118
26		Rhizophora sp.	21.5	9	1	1.3	21
27		Rhizophora sp.	8.3	8	1	1	139
28	F3-4	Bruguiera exaristata	5.0	8	1	1	382
29		Rhizophora sp.	20.5	10	1	1	23
30		Rhizophora sp.	12.0	9	1	1.3	66
31		Rhizophora sp.	8.0	7	1	1.7	149
32		Rhizophora sp.	11.0	6	1	1.7	79
33		Rhizophora sp.	6.0	6	1	1.3	265
34		Ceriops sp.	4.7	6	1	1	432
35		Rhizophora sp.	22.0	8	1	1.7	20

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.19 Mangrove structure and composition at site F3-2

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F3-6	Ceriops sp.	2.8	4	1	1	1624
2	F3-7	Ceriops sp.	1.9	4	1	1	3527
3	F3-8	Ceriops sp.	2.4	4	1	1	2210
4	F3-9	Ceriops sp.	3.8	4	1	1	882
5	F3-10	Ceriops sp.	2.1	3.5	1	1	2887
6		Ceriops sp.	2.1	4	1	1	2887
7		Ceriops sp.	1.2	2	1	1	8842
8		Ceriops sp.	1.6	4	1	1	4974
9		Ceriops sp.	2.6	4	1	1	1883
10		Ceriops sp.	1.2	4	1	1	8842
11		Ceriops sp.	2.1	4	1	1	2887
12		Ceriops sp.	1.6	4	1	1	4974
13		Ceriops sp.	1.5	4	1	1	5659
14		Ceriops sp.	2.0	3.5	1	1.3	3183
15		Ceriops sp.	1.1	2.5	1	1	10523
16		Ceriops sp.	2.8	4	1	1	1624
17		Ceriops sp.	2.5	4	1	1	2037
18		Ceriops sp.	2.8	5	1	1.3	1624
19		Ceriops sp.	2.0	3	1	1	3183
20		Ceriops sp.	2.4	5	1	1	2210
21		Ceriops sp.	2.1	4	1	1	2887
22		Ceriops sp.	2.5	5	1	1	2037
23		Ceriops sp.	2.7	5	1	1	1747
24		Ceriops sp.	2.3	4	1	1	2407
25		Ceriops sp.	2.6	4	1	1	1883
26		Ceriops sp.	2.1	5	1	1	2887
27		Ceriops sp.	2.3	4	1	1	2407
28		Ceriops sp.	2.2	5	1	1	2631
29		Ceriops sp.	2.0	4.5	1	1	3183
30		Ceriops sp.	2.3	5	1	1	2407
31		Ceriops sp.	2.0	4.5	1	1	3183

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.20 Mangrove structure and composition at site F3-3

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F3-11	Rhizophora sp.	7.8	7	1	1	209
2	F3-12	Ceriops sp.	2.9	5	1	1	1514
3	F3-13	Ceriops sp.	1.5	2	1	1	5659
4	F3-14	Ceriops sp.	4.7	5	1	1	576
5	F3-15	Ceriops sp.	3.4	5	1	1	1101
6		Ceriops sp.	2.8	4.5	1	1	1624
7		Ceriops sp.	2.6	4.5	1	1	1883
8		Ceriops sp.	1.5	2	0		5659
9		Ceriops sp.	2.4	4.5	1	1	2210
10		Ceriops sp.	2.4	5	1	1	2210
11		Rhizophora sp.	4.8	5	1	1	553
12		Ceriops sp.	3.0	4	1	1.7	1415
13		Ceriops sp.	2.2	4	1	1.3	2631
14		Ceriops sp.	1.7	4	1	1	4406
15		Ceriops sp.	2.5	4	1	1	2037
16		Ceriops sp.	1.7	5	1	1	4406
17		Ceriops sp.	1.4	5	1	1	6496
18		Ceriops sp.	2.0	3	1	1	3183
19		Ceriops sp.	2.3	5	1	1.3	2407
20		Ceriops sp.	3.0	4.5	1	1.3	1415
21		Ceriops sp.	1.4	2.5	1	1.3	6496
22		Ceriops sp.	2.2	3.5	1	1.3	2631
23		Ceriops sp.	2.6	5	1	1.3	1883
24		Ceriops sp.	2.7	4	1	1.3	1747
25		Ceriops sp.	1.3	3	1	1.3	7534
26		Ceriops sp.	2.8	4	1	1.7	1624
27		Ceriops sp.	3.1	5	1	1.3	1325
28		Rhizophora sp.	5.6	5	1	1.7	406
29		Ceriops sp.	4.0	4	0		796
30		Ceriops sp.	2.0	5	1	1.3	3183
31		Ceriops sp.	2.7	5	1	1.3	1747
32		Ceriops sp.	2.0	4	1	1	3183
33		Ceriops sp.	2.3	4	1	1	2407
34		Ceriops sp.	3.0	5	1	1.7	1415
35		Ceriops sp.	2.5	5	1	1.3	2037

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

Table 8.6.21 Mangrove structure and composition at site F3-4

No.	Tag No.	Species	Diam at Breast Height (cm)	Height (m)	Status	Condition	Stem Density
1	F3-16	Rhizophora sp.	18.0	12	1	1.3	29
2		Rhizophora sp.	9.0	11	1	1.3	118
3		Rhizophora sp.	9.5	11	1	1.3	106
4		Rhizophora sp.	14.0	12	1	1.7	49
5		Rhizophora sp.	21.7	12	1	1.7	20
6		Rhizophora sp.	14.0	12	1	1.7	49
7	F3-17	Bruguiera exaristata	1.5	2	1	1	4244
8		Rhizophora sp.	11.9	10	1	1.3	67
9	F3-18	Ceriops sp.	2.9	2.5	1	1	1135
10	F3-19	Bruguiera exaristata	2.4	2.5	1	1	1658
11		Rhizophora sp.	21.5	13	1	1.3	21
12	F3-20	Rhizophora sp.	8.8	6	1	1	123
13		Rhizophora sp.	24.0	12	1	1.3	17
14		Rhizophora sp.	12.0	10	1	1	66
15		Rhizophora sp.	13.0	11	1	1	57
16		Rhizophora sp.	7.0	4	0		195
17		Rhizophora sp.	8.7	8	1	1	126
18		Rhizophora sp.	5.8	6	1	1.3	284
19		Rhizophora sp.	4.6	4	0		451
20		Ceriops sp.	3.9	5	1	1.3	628
21		Rhizophora sp.	17.5	10	1	1	31
22		Ceriops sp.	4.4	7	1	1.3	493
23		Bruguiera exaristata	2.0	3.5	1	1	2387
24		Bruguiera exaristata	1.5	2.5	1	1	4244
25		Bruguiera exaristata	1.3	3.5	1	1	5650
26		Bruguiera exaristata	1.9	3.5	1	1.3	2645
27		Rhizophora sp.	11.0	10	1	1	79
28		Ceriops sp.	4.5	8	1	1.3	472
29		Bruguiera exaristata	4.4	7	1	1	493
30		Bruguiera exaristata	7.5	7	1	1	170
31		Rhizophora sp.	18.0	12	1	1	29
32		Rhizophora sp.	16.5	10	1	1.3	35
33		Bruguiera exaristata	1.4	3	1	1	4872
34		Bruguiera exaristata	1.3	2.5	1	1	5650
35		Bruguiera exaristata	1.3	2.5	1	1	5650
36		Rhizophora sp.	17.5	12	1	1.3	31
37		Bruguiera exaristata	1.2	2.5	1	1	6631
38		Rhizophora sp.	17.3	12	1	1.3	32
39		Rhizophora sp.	14.0	12	1	1	49

Status: 0 = dead, 1 = alive

Condition: 1 = healthy, 2 = trunk rot, 3 = crown damage, 4 = overmature, 5 = senescent, 6 = dead branches, 7 = leaning

8.7 Benthic faunal analysis

Table 8.7.1 Number of macrofaunal taxa collected in replicate samples at farm sites.

Species	F1 1	F1 2	F1 3	F2 1	F2 2	F2 3	F3 1	F3 2	F3 3	F4 1	F4 2	F4 3	F5 1	F5 2	F5 3	F6 1	F6 2	F6 3	Total
Ampelisca sp.	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
Byblis sp.	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Corophium sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Isaeid sp.1	0	1	8	0	0	0	0	0	0	0	1	1	0	0	0	3	0	0	14
Isaeid sp.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Melitid sp.1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	3
Melitid sp.2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Melitid sp.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	2	5
Oedicerotid sp.	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
Aorid sp.	0	0	0	0	0	0	2	0	0	0	0	0	5	3	0	6	0	0	16
Leucothoe sp.	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	3
Oedicerotid sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Grapsid sp.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Grapsid sp.2	0	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Grapsid sp.3	2	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Hymenosomatid sp.	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Goneplacid sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Macrophthalmus sp.1	3	1	2	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	14
Macrophthalmus sp.2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Ocypodid sp.	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Pilumnus sp.	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
Paracaprella sp.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Paraproto sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Alpheid sp.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Alpheid sp.2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Axius sp.	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	6
Ogyrides sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Processa sp.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Squilloides sp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Thalassinid sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Cirolana sp.1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	3
Cirolana sp.2	0	0	0	0	0	0	0	0	0	0	0	28	0	1	0	0	0	0	29
Anthurid sp.1	2	1	5	0	3	1	2	1	1	4	1	0	14	2	6	1	3	0	47
Anthurid sp.2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Sphaeromatid sp.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Paranebalia sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Ostracod sp.1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2
Ostracod sp.2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Ostracod sp.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Ostracod sp.4	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	3
Ostracod sp.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Pagurid sp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apseudes sp.1	0	3	5	3	1	6	2	0	1	0	0	4	1	0	1	0	1	0	28
Apseudes sp.2	13	3	4	0	0	0	3	0	1	1	22	24	6	2	4	0	1	0	84
Apseudes sp.3	0	0	0	0	0	0	1	0	0	0	0	3	4	1	0	2	1	0	12
Apseudes sp.4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Kalliapseudes sp.	0	1	2	0	0	2	5	0	3	0	0	0	2	3	1	2	3	1	25
Leptochelia sp.	0	1	0	1	2	1	0	0	0	0	0	0	0	1	0	0	0	0	6
Cyclaspis sp.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Holothurian sp.	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Ophiactis sp.	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	4
Ophiocentrus sp.	6	16	1	10	26	11	0	0	1	0	2	0	0	0	0	0	0	0	73
Marginellid sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1

Species	F1 1	F1 2	F1 3	F2 1	F2 2	F2 3	F3 1	F3 2	F3 3	F4 1	F4 2	F4 3	F5 1	F5 2	F5 3	F6 1	F6 2	F6 3	Total
Cymatiid sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Amathinid sp.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Litiopid sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Nassarius sp.	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
Pyramidellid sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Retusid sp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Philine sp.	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3
Natica sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Batillaria sp.	0	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Mytilid sp.1	0	0	0	6	1	2	0	0	0	0	0	0	0	0	0	0	0	0	9
Mytilid sp.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Nuculana sp.	2	1	0	2	0	0	2	0	2	0	0	1	0	0	0	0	0	1	11
Leionucula sp.	1	0	1	0	2	2	0	0	2	0	0	0	2	0	1	0	0	0	11
Gari sp.1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
Gari sp.2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Tellina sp.1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
Tellina sp.2	5	2	0	4	2	3	0	0	0	0	0	0	0	0	0	0	0	1	17
Linga sp.	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4
Mactra sp.	0	1	0	1	0	0	0	1	2	1	0	1	0	0	1	0	0	0	8
Galeommatid sp.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Tellinid sp.	0	0	2	1	0	0	0	0	0	0	1	3	0	0	0	0	2	0	9
Venerid sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Carditid sp.	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	4
Theora sp.	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5
Corbula sp.1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	3
Corbula sp.2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	3
Thracia sp.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Ungulinid sp.	0	1	0	7	5	2	0	0	2	0	0	0	0	0	0	0	2	0	19
Dentaliid sp.	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Phoronid sp.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Platyhelminth sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Sipunculan sp.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
Gobid sp.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Nemertean sp.1	2	1	2	1	1	2	2	1	0	1	0	2	2	1	0	0	1	0	19
Nemertean sp.2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
Armandia sp.	0	0	2	2	1	0	1	0	0	1	0	0	3	1	1	0	0	0	12
Phyllodoce sp.1	3	0	0	1	1	1	0	0	1	0	0	0	0	1	0	0	0	0	8
Phyllodoce sp.2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Phyllodoce sp.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2
Capitellid sp.	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	4
Scyphoproctus sp.	0	1	3	9	12	5	3	1	2	0	1	1	5	7	12	1	2	1	66
Nephtys sp.	2	3	4	2	1	2	0	0	2	0	0	0	1	3	0	0	1	1	22
Bradiella sp.	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
Goniadid sp.	3	6	3	1	1	0	1	0	0	0	1	1	0	0	1	0	0	0	18
Glycera cinnamomea	0	1	0	2	1	1	1	2	0	0	0	1	2	0	0	0	0	0	11
Leocrates sp.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Sabellid sp.	0	0	0	0	0	0	1	2	1	0	0	0	2	1	1	0	0	0	8
Bispira sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Eunice sp.	2	0	2	1	0	0	0	0	0	0	0	1	1	2	2	0	0	1	12
Diopatra sp.	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	4
Marphysa sp.	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
Lysidice sp.	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2

Species	F1 1	F1 2	F1 3	F2 1	F2 2	F2 3	F3 1	F3 2	F3 3	F4 1	F4 2	F4 3	F5 1	F5 2	F5 3	F6 1	F6 2	F6 3	Total
Lumbrinereis sp.1	1	1	0	2	1	1	2	0	0	0	0	0	0	1	0	0	2	0	11
Lumbrinereis sp.2	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	5
Maldanid sp.1	2	2	0	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	8
Maldanid sp.2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	1	1	1	6
Maldane sp.	2	0	0	33	17	40	0	0	0	0	0	0	0	0	0	0	0	0	92
Nereid sp.1	0	0	0	0	0	0	0	0	0	1	1	1	3	2	2	1	0	1	12
Nereid sp.2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Orbiniid sp.1	1	2	5	1	5	5	0	0	0	1	0	0	0	0	3	0	0	0	23
Orbiniid sp.2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Prionospio fallax	6	1	4	1	0	1	2	0	1	0	1	0	4	4	4	2	1	2	34
Paraonella sp.	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
Allia sp.1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
Allia sp.2	0	1	3	1	0	0	1	0	0	0	0	1	1	2	1	2	2	0	15
Timarete sp.	0	1	0	25	21	3	0	0	0	0	0	0	0	0	1	0	0	0	51
Cirratulus sp.	0	0	0	1	0	1	1	0	0	0	0	1	1	3	2	0	2	0	12
Typosyllis sp.	0	0	1	0	0	0	0	0	0	1	0	0	4	0	5	0	1	0	12
Syllid sp.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Lysilla sp.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2
Artacamella sp.	0	0	0	0	0	0	0	0	0	0	0	1	1	5	1	0	0	0	8
Terebellides sp.	8	5	3	8	1	0	0	0	0	0	0	2	1	0	0	1	1	1	31
Isolda sp.	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Sosanides sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
Ampharetid sp.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Disconatis sp.	0	0	0	0	1	0	2	1	0	0	0	0	1	0	0	0	0	0	5
Polynoid sp.	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
Loandalia sp.	0	0	1	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	5
Magelona sp.1	0	0	0	3	2	3	2	0	1	0	0	0	0	0	0	0	0	0	11
Magelona sp.2	1	0	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	6
Paleaequor sp.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Sternaspis sp.	4	4	1	2	0	0	0	0	1	2	1	0	0	0	1	0	0	0	16
Linopherus sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Oweniid sp.	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Scalibregmatid sp.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total species	32	36	33	43	30	31	25	13	25	19	11	26	34	28	30	23	31	16	138
Total individuals	87	88	81	156	126	110	42	15	38	24	33	87	79	55	62	35	43	18	1179

Table 8.7.2 Number of macrofaunal taxa collected in replicate samples at control sites

Species	C1 1	C1 2	C1 3	C2 1	C2 2	C2 3	C3 1	C3 2	C3 3	C4 1	C4 2	C4 3	C5 1	C5 2	C5 3	C6 1	C6 2	C6 3	Total
Pycnogonid sp	0	0	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Byblis sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Corophium sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Isaeid sp.	0	1	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	5
Melitid sp.1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	4
Melitid sp.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Melitid sp.3	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Aorid sp.1	0	0	0	1	0	0	0	0	0	0	0	0	10	14	1	2	0	0	28
Aorid sp.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Leucothoe sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Amphipod sp.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grapsid sp.1	0	0	0	0	0	1	7	16	16	0	0	0	0	0	0	0	0	0	40
Grapsid sp.2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Hymenosomatid sp.1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Hymenosomatid sp.2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Hymenosomatid sp.3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Macrophthalmus sp.1	0	0	0	1	0	0	5	4	5	0	0	0	0	0	0	0	0	0	15
Macrophthalmus sp.2	0	0	0	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	5
Ocypodid sp.	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Porcellanid sp.	0	0	0	0	0	0	1	1	3	0	0	0	0	0	0	0	0	0	5
Caprellid sp.	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Alpheid sp.	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
Axius sp.	0	2	0	3	5	0	2	0	2	0	0	0	0	0	0	2	0	0	16
Palaemonid sp.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Cirolana sp.	0	0	0	0	0	0	0	0	0	0	4	0	8	4	0	0	0	0	16
Anthurid sp.	0	0	0	1	0	0	0	0	0	1	23	2	0	0	0	0	1	0	28
Ostracod sp.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Ostracod sp.2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
Ostracod sp.3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Ostracod sp.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
Apseudes sp.1	0	0	0	3	5	2	0	6	2	0	2	6	0	0	0	1	6	3	36
Apseudes sp.2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	6	1	6	16
Apseudes sp.3	0	0	0	0	0	0	0	0	0	0	10	0	10	3	0	0	0	3	26
Apseudes sp.4	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
Kalliapseudes sp.	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4	1	4	11
Holothurian sp.	0	0	0	1	0	1	0	1	2	4	1	0	0	0	0	0	0	0	10
Ophiactis sp.	0	1	2	0	1	0	1	0	0	0	0	2	2	2	1	0	2	1	15
Ophiocentrus sp.	0	0	0	0	0	0	1	4	2	0	0	3	0	0	0	2	2	0	14
Idosepius pygmaeus	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Marginellid sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Nassarius sp.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Pyramidellid sp.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Natica sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Ellobium aurismidae	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Mytilid sp.	0	0	0	0	3	0	0	1	1	0	0	0	0	0	0	0	0	0	5
Nuculana sp.1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Nuculana sp.2	0	0	0	0	1	0	2	0	0	0	0	1	1	1	0	1	1	2	10
Leionucula sp.	2	1	2	0	2	0	0	7	1	0	0	0	2	0	0	0	0	0	17
Gari sp.1	0	0	1	2	4	1	0	0	0	0	0	3	0	0	0	0	0	0	11
Gari sp.2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Tellina sp.1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	3
Tellina sp.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Bassina sp.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1

Species	C1 1	C1 2	C1 3	C2 1	C2 2	C2 3	C3 1	C3 2	C3 3	C4 1	C4 2	C4 3	C5 1	C5 2	C5 3	C6 1	C6 2	C6 3	Total
Linga sp.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Venerid sp.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Mactra sp.	0	0	0	1	5	2	2	1	0	0	0	0	0	0	0	0	0	0	11
Glauconome sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Galeommatid sp.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Galeommatid sp.2	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
Barbatia sp.	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
Laternulid sp.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Anadara sp.	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	3
Cultellus attenuatus	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Dosinia sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Carditid sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4
Theora sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Corbula sp.1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	3
Corbula sp.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Ungulinid sp.	8	11	8	8	5	2	15	17	5	0	1	3	0	0	0	0	0	0	83
Phoronid sp.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Edwardsia sp.	0	0	0	0	0	0	2	3	4	0	0	0	0	0	0	0	0	0	9
Anthozoan sp.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Gobid sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Nemertean sp.	0	0	1	1	1	1	0	0	0	0	0	2	1	0	0	0	1	0	8
Nematode sp.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Armandia sp.	1	0	2	2	0	2	3	1	0	0	0	0	0	0	0	2	3	1	17
Phyllodoce sp.1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
Phyllodoce sp.2	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3
Capitellid sp.	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0	0	0	4
Scyphoproctus sp.	5	3	8	13	13	7	2	4	1	0	3	0	1	0	0	3	0	1	64
Nephtys sp.	1	0	2	1	2	0	0	1	1	0	1	0	0	0	0	0	0	2	11
Goniadid sp.	0	0	0	0	0	4	0	0	1	0	0	0	0	0	1	0	0	0	6
Glycera cinnamomea	0	0	2	4	1	0	1	4	1	0	1	3	0	0	0	0	0	0	17
Sabellid sp.1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	4
Sabellid sp.2	1	0	1	2	1	2	1	0	0	1	0	0	0	0	0	0	0	0	9
Sabellid sp.3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
Branchiomma sp.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Hydroides sp.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Eunice sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	4
Marphysa sp.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lumbrinereis sp.1	1	2	0	0	3	2	3	3	0	3	3	0	2	1	0	0	1	2	26
Lumbrinereis sp.2	1	0	0	1	1	0	0	1	0	0	1	1	0	0	0	0	0	0	6
Maldanid sp.1	1	0	1	0	3	1	0	0	0	0	0	0	0	1	0	0	2	1	10
Maldanid sp.2	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2
Nereid sp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Paraleonnates sp.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Orbiniid sp.1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Orbiniid sp.2	0	0	0	3	1	2	0	0	0	1	0	0	0	0	0	0	0	0	7
Prionospio fallax	0	3	2	1	3	1	1	1	0	3	2	1	0	1	0	0	0	0	19
Paraonella sp.	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
Levinsenia sp.	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Timarete sp.	0	0	0	3	2	1	0	7	8	0	0	0	0	0	0	0	0	0	21
Cirratulus sp.	0	0	1	0	1	0	0	0	0	2	1	0	0	1	1	0	0	2	9
Typosyllis sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	4
Lysilla sp.	0	0	0	3	0	0	2	0	0	0	1	0	0	0	0	0	0	0	6
Nicolea sp.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2

Species	C1 1	C1 2	C1 3	C2 1	C2 2	C2 3	C3 1	C3 2	C3 3	C4 1	C4 2	C4 3	C5 1	C5 2	C5 3	C6 1	C6 2	C6 3	Total
Artacamella sp.	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	3
Terebellides sp.	2	1	2	5	4	30	1	5	5	3	2	3	0	3	0	0	0	0	66
Isolda sp.	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
Sosanides sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Ampharetid sp.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Disconatis sp.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Loandalia sp.	0	1	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	0	5
Chloeia sp.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Magelona sp.1	1	0	1	1	2	0	1	7	0	0	0	2	0	0	0	0	0	0	15
Magelona sp.2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Paleaequor sp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Phyllochaetopterus sp	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Poecilochaetus sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Horstileanira sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Sternaspis sp.	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Linopherus sp.	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	3
Scalibregmatid sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	4
Total species	17	15	23	31	36	23	25	26	23	11	20	23	17	19	6	15	26	27	123
Total individuals	31	31	47	72	84	69	59	104	67	22	61	47	45	43	6	32	37	48	905