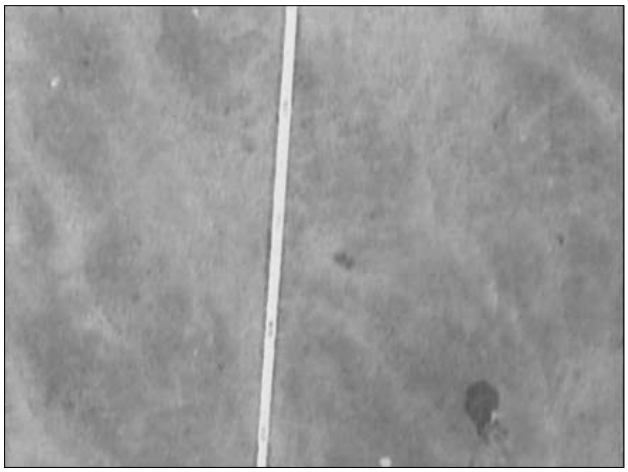
Appendix 1

SEAGRASS COVER CLASSES

Images of seagrass (*Zostera capricorni*) from transects at Slipper Island representing the range of cover classes identified.



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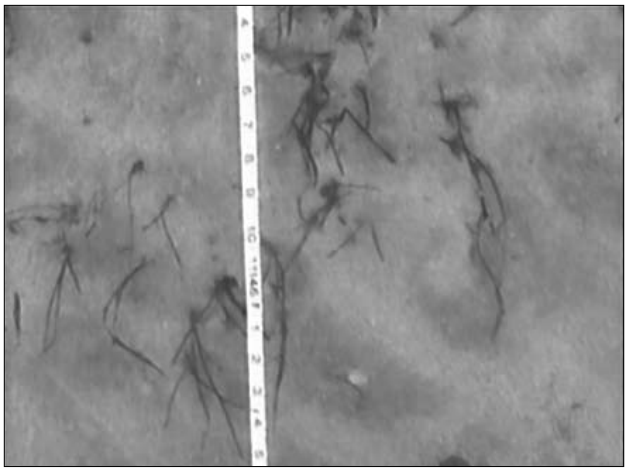
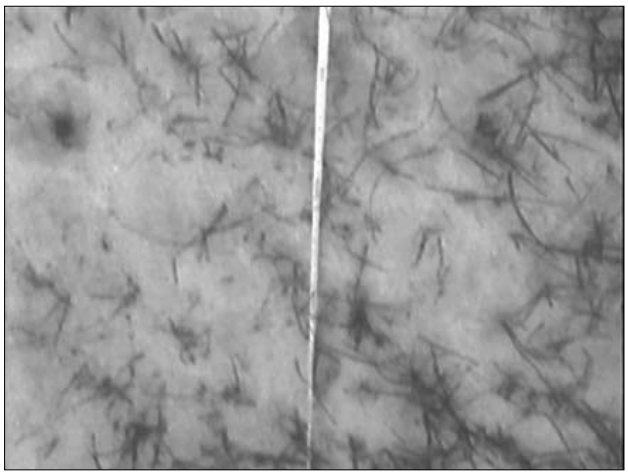
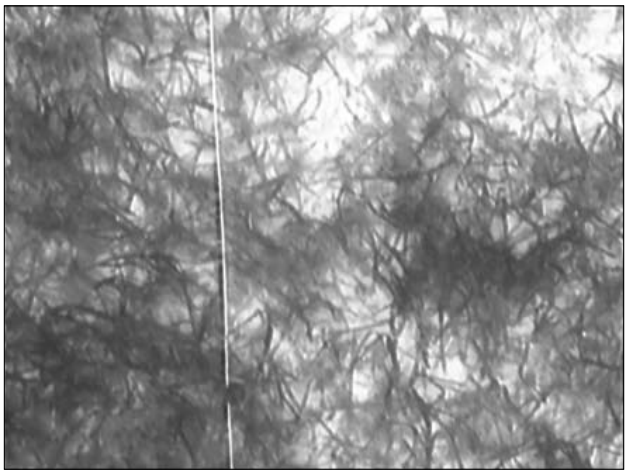


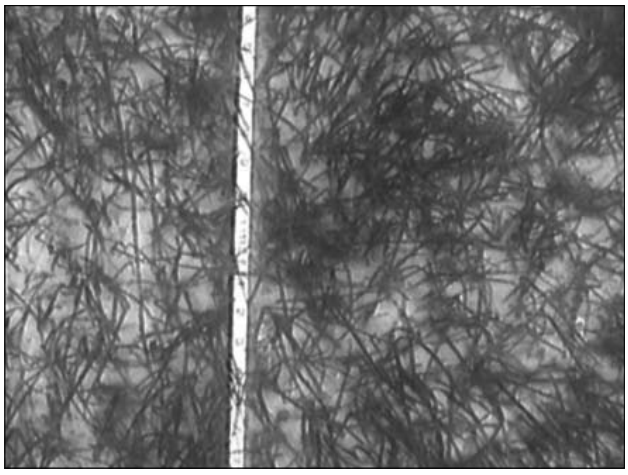
Cover class 1



Cover class 2



Cover class 3



Cover class 4

Cover class 5

Appendix 2

EPIFAUNAL INVERTEBRATE OBSERVATIONS IN SEAGRASS (*Zostera capricorni*) BEDS AROUND SLIPPER AND GREAT MERCURY ISLANDS

Observations were made during May 2004. Data courtesy of C. Duffy (Department of Conservation).

Slipper Island

Cnidaria:

?*Edwardsia* sp. (relatively large, translucent, white anemone, with an outer ring of large tentacles and a ring of smaller tentacles around the mouth)—feeding on mysids amongst seagrass.

Mollusca:

Semicassis pyrum (common helmet shell)—seagrass.

Cymatium parthenopeum (hairy triton, hairy trumpet)—seagrass; recorded as 'Monoplex'.

Charonia lampus rubicunda (trumpet, red trumpet)—one dead, one alive.

Cominella adspersa (speckled whelk)—seagrass and open sand; very high densities on *Tawera spissa* beds at night.

Bulla quoyi (brown bubble shell)—live animal in seagrass at night.

Atrina pectinata zelandica (horse mussel)—seagrass and sand; appeared to be more common in seagrass.

Pecten novaezelandiae (scallop)—seagrass and open sand; juveniles and adults; juveniles appeared more common in the seagrass beds.

Tawera spissa (morning star clam)—dense beds in open sand at 5–6.4-m depth outside the bay.

Paphies subtriangulata (tuatua)—juveniles in intertidal sand.

Aplysia keraudreni (sea hare)—seagrass; prevously identified as *A. dactylomela* but it does not have the conspicuous black rosettes and black anastomosing lines characteristic of that species; it does have pale areas and spots typical of *A. keraudreni*.

Bursatella leachii (sea hare)—seagrass; out in-force in the seagrass canopy at night.

Sepioteuthis bilineata (broad squid)—adults and juveniles in seagrass and open sand; seen on all-night dives.

Polychaeta:

Branchiomma serratibranchis (fan worm)—seagrass and open sand.

Chaetopterus sp. (parchment tubeworm)—empty tubes seen *in situ* around edges of 'anchor scars' in seagrass.

Lanice conchilega (sand mason worm)—sea grass.

Various errant species swimming at night.

Crustacea:

Mysidacea (mysids)—small, white, semi-pelagic species swarming above seagrass, and at least one larger camouflaged benthic species; common over open sand.

Isopoda (sea lice)—one carnivorous species abundant in intertidal sands.

?*Cerapus/Notopoma* sp. (tubiculous amphipods)—mats of tubes completely covering open sandy bottoms away from *Tawera* beds.

Caprellid amphipods—seagrass.

Hippolyte multicolorata (shrimp)—seagrass.

?*Squilla armata* (mantis shrimp)—seen in the open in seagrass at night.

Diacanthurus spinulimanus (hermit crab)—seagrass and open sand; recorded as '*Pagurus' spinulimanus*.

Pagurus novizelandiae (common hermit crab)—seagrass and open sand.

Blue hermit crab—open sand.

Notomithrax ?*peroni* (camouflage crab)—seagrass; recorded as '*Leptomithrax* sp.'.

Nectocarcinus antarcticus (red swimming crab)—abundant in seagrass; males and females copulating.

Echinoderms:

Astropecten polyacanthus (comb star)—sand patches in seagrass and open sand.

Luidia varia (sea star)—large individual in sand patch amongst seagrass.

Apatopyrgus recens (irregular urchin)—empty tests in open sand areas outside the bay.

Great Mercury Island

B. leachii (sea hares)—common.

Pleurobranchia maculata (sea slug)—abundant.

B. quayi (brown bubble shell)—abundant.

Philinopsis taronga (sea slug)—abundant.

Nucula sp. (nut shell)—abundant.

C. adspersa (speckled whelk)—common.

Pontophilus australis (shrimp)—abundant.

Palaemon affinis (shrimp)—common.

Hippolyte sp. (shrimp)—common.

Alpheus sp. (pistol shrimp)—abundant.

Halicarcinus varius (pillbox crab)—abundant.

Pagrus novizelandiae (common hermit crab)—common.

Hemigrapsus crenulatus (crab)—common.

Macropthalumus hirtipes (crab)—common.

?*Notomithrax* sp. (decorator crabs)—common; juvenile.

Two adventive species—the Asian date mussel (*Musculista senhousia*) and the unusual brown alga *Hydroclathrus clathratus*—were common in the upper parts of the harbour. Small, live Asian date mussels were taken in beach-seine tows over seagrass, but no mats were observed.

Appendix 3

SEAGRASS (*Zostera capricorni*)-BED CHARACTERISTICS AT EACH OF THE MACROINVERTEBRATE SAMPLING LOCATIONS AT SLIPPER AND GREAT MERCURY ISLANDS

Cover is expressed as Braun-Blanquet cover classes: 1 = 1%–5%; 2 = 6%–25%; 3 = 26%–50%; 4 = 51%–75%; and 5 = > 75% (see Appendix 1).

SLIPPER TRANSECT	COVER CLASS	LEAF LENGTH (cm)	GREAT MERCURY TRANSECT	% COVER	LEAF LENGTH (cm)
T1 1	3	22.0	T1 1	3	8.3
T1 2	5	18.0	T1 2	3	8.2
T1 3	0	0.0	T1 3	3	11.6
T1 4	0	20.0	T1 4	3	8.2
T1 5	5	20.0	T1 5	0	0.0
T2 1	5	25.0	T2 1	2	6.9
T2 2	0	0.0	T2 2	0	0.0
T2 3	5	11.0	T2 3	4	6.4
T2 4	5	32.0	T2 4	3	7.0
T2 5	5	33.0	T2 5	3	7.4
T3 1	5	47.0	T3 1	4	9.1
T3 2	5	0.0	T3 2	4	7.0
T3 3	5	39.0	T3 3	2	6.3
T3 4	5	44.0	T3 4	0	0.0
T3 5	5	18.0	T3 5	2	7.5

Appendix 4

MACROINVERTEBRATE TAXA AND THEIR ABUNDANCE AT SLIPPER AND GREAT MERCURY ISLANDS

Three transects were sampled at each site; along each transect, cores were taken from areas with (+SG) and without (–SG) seagrass (*Zostera capricorni*).

ORDER	FAMILY	TAXON	SLIPPER							GREAT MERCURY					
			1		2			3		1		2		3	
			-SG	+SG	-SG	+SG	+SG	-SG	+SG	-SG	+SG	-SG	+SG	-SG	+SG
Amphipoda		Amphipod sp. 1		2			1								
Amphipoda		Amphipod sp. 2							1	1		4			
Amphipoda	Corophiidae	Corophid sp.1				44	20	4	24			1			
Amphipoda	Cyproideidae	Cyproideidae													
Amphipoda	Dediciderotidae	Dediciderotidae		2											
Amphipoda	Dexaminidae	Dexaminid sp. 1	1	8	1	26	6		13	7		0	10		1
Amphipoda	Dexaminidae	Dexaminid sp. 2										7			2
Amphipoda	Gammaridae	Gammarid sp. 1	1	39	3		78		39	20	4	2	27	3	6
Amphipoda	Gammaridae	Gammarid sp. 2								10				2	16
Amphipoda	Lyssianasidae	Lyssanasidae				9	8		2						
Amphipoda	Melitidae	?Melita sp.		7		19	3								
Amphipoda	Oedicerotidae	Oedicerotidae			4		1								
Amphipoda	Phoxocephalidae	Phoxocephalid		8	3	18	35	3	31	3	8	6	8	15	6
Amphipoda	Caprellidae	Caprellid sp.				1	5		1						
Bivalvia	Galeommatidae	?Scintillona sp.		1											
Bivalvia	Lucinidae	*Divaricella huttoniana*		1											
Bivalvia	Mactridae	*Mactra ovata*		8	3	2	5		2				1		
Bivalvia	Mesodesmatidae	*Paphies* sp.		4		1									
Bivalvia	Nuculidae	*Nucula hartvigiana*				1	1			14	3	14	4	5	5
Bivalvia	Rissoidae	?*Estea* sp.		1											
Bivalvia	Tellinidae	*Macomona liliana*					1			1		5		1	
Bivalvia	Veneridae	*Austrovenus stutchburyi*		1											
Cnidaria		Cnidaria							2						
Cumacea	Bodotriidae	*Cyclapsis* sp.			13	1	4	2	4			1	1		
Cumacea	Lampropidae	*Colorostylis lemurum*		1	5		1	7	1						
Decapoda	Alpheidae	*Alpheus* sp.				1							2		
Decapoda	Paguridae	*Paguristes* sp.		1		1									
Decapoda	Palaemonidae	*Palaemon affinis*				2									
Decapoda	Hymenosomatidae	*Elamena producta*				1									
Decapoda	Hymenosomatidae	*Halicarcinus cooki*		2		3									2
Decapoda	Hymenosomatidae	*Halicarcinus whitei*								1	4				

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Appendix 4—continued

ORDER	FAMILY	TAXON	SLIPPER							GREAT MERCURY					
			1		2			3		1		2		3	
			-SG	+SG	-SG	+SG	+SG	-SG	+SG	-SG	+SG	-SG	+SG	-SG	+SG
Decapoda	Majidae	*Notomithrax* sp.		1											
Decapoda	Portunidae	*Liocarcinus corrugatus*				1									
Echinodermata	Holothuroidea	Holothurian sp.		1		1				1			1		
Echinodermata	Ophiuroidea	Ophiuroid sp.				2				1	2				1
Isopoda	Anthuridae	Anthuridae		3	1	5	7	2	1	2				2	1
Malacostracea	Mysidacea	Mysidacea		1				1					1		3
Nebaliaceae		Nebaliacea			1	26	5		1						
Neogastropoda	Buccinidae	*Cominella adspersa*		1											
Nemertea (Phylum)		Nemertea		1	3	1	1		1						
Nudibranchia		Nudibranch sp.				1									
Oligochaeta		Oligochaete	5					15		1		5	3		
Ostracoda		Ostracoda spp.	1	13	27	14	35	3	7	11	4	2	1	1	
Phoronida	Phoronidae	Phoronid sp.			1		1								1
Polychaeta	Capitellidae	*Heteromastus* sp.				2	8		1	1				1	1
Polychaeta	Capitellidae	*Notomastus* sp.	1	16		2			3					3	
Polychaeta	Cirratulidae	Cirratulid sp.										2			
Polychaeta	Eunicidae	*Eunice* sp.		56	1	29	32	5	26		3	8	23	2	19
Polychaeta	Glyceridae	*Glycera* sp.		2				2							
Polychaeta	Goniadidae	*Goniada* sp.	2	1											
Polychaeta	Hesionidae	Hesionid sp.	2			2	2			1		1	1	2	
Polychaeta	Magelonidae	*Magelona* sp.	1	0				1							
Polychaeta	Maldanidae	*Macroclymenella* sp.	1				4	2	2	4	1	1		1	4
Polychaeta	Maldanidae	Maldanid sp.													
Polychaeta	Nereididae	Neathes sp.	5	46	2	14	3		13	4		1	2		
Polychaeta	Nereididae	Nereididae													
Polychaeta	Opheliidae	*Armandia* sp.		7		17	4								
Polychaeta	Orbiniidae	*Scoloplos cylindrifer*							2						
Polychaeta	Oweniidae	*Owenia fusiformis*					1								
Polychaeta	Paraonidae	*Aricidea* sp.										2			

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Appendix 4—continued

ORDER	FAMILY	TAXON	SLIPPER							GREAT MERCURY					
			1		2			3		1		2		3	
			-SG	+SG	-SG	+SG	+SG	-SG	+SG	-SG	+SG	-SG	+SG	-SG	+SG
Polychaeta	Paraonidae	Paraonid spp. (not *Aricidea*)										1			
Polychaeta	Phyllodocidae	*Anaitides* sp.		13	10	5	13	1	1					3	
Polychaeta	Polynoidae	Polynoid sp.													
Polychaeta	Sabellidae	*Euchone* sp.	2	1										2	1
Polychaeta	Sabellidae	Sabellid sp. (not *Euchone*)					1								
Polychaeta	Spionidae	*Aquilaspio* sp.	7	33	20	25	6	15	5	12	2	3	6	2	3
Polychaeta	Spionidae	*Boccardia* sp.		1	2			1						16	1
Polychaeta	Onuphidae	Onuphid sp.							2						
Polychaeta	Spionidae	*Scolecolepides* sp.			4			9	2						
Polychaeta	Syllidae	Exogonid sp. 1	12	18	3	2		6		2		3	3	3	3
Polychaeta	Syllidae	Exogonid sp. 2			2				1					13	11
Polychaeta	Syllidae	Syllid sp. 1	3	19	1		1	1	6	1	2		1		
Polychaeta	Syllidae	Syllid sp. 2	0	2											
Polychaeta	Terebellidae	Polycirrinae													
Polychaeta	Terebellidae	Terebellid sp.					1		1			1	1	2	
Priapulida		Priapulida		1					1						
Tanaidacea		Tanaid sp.		1	3	8	44		27						