

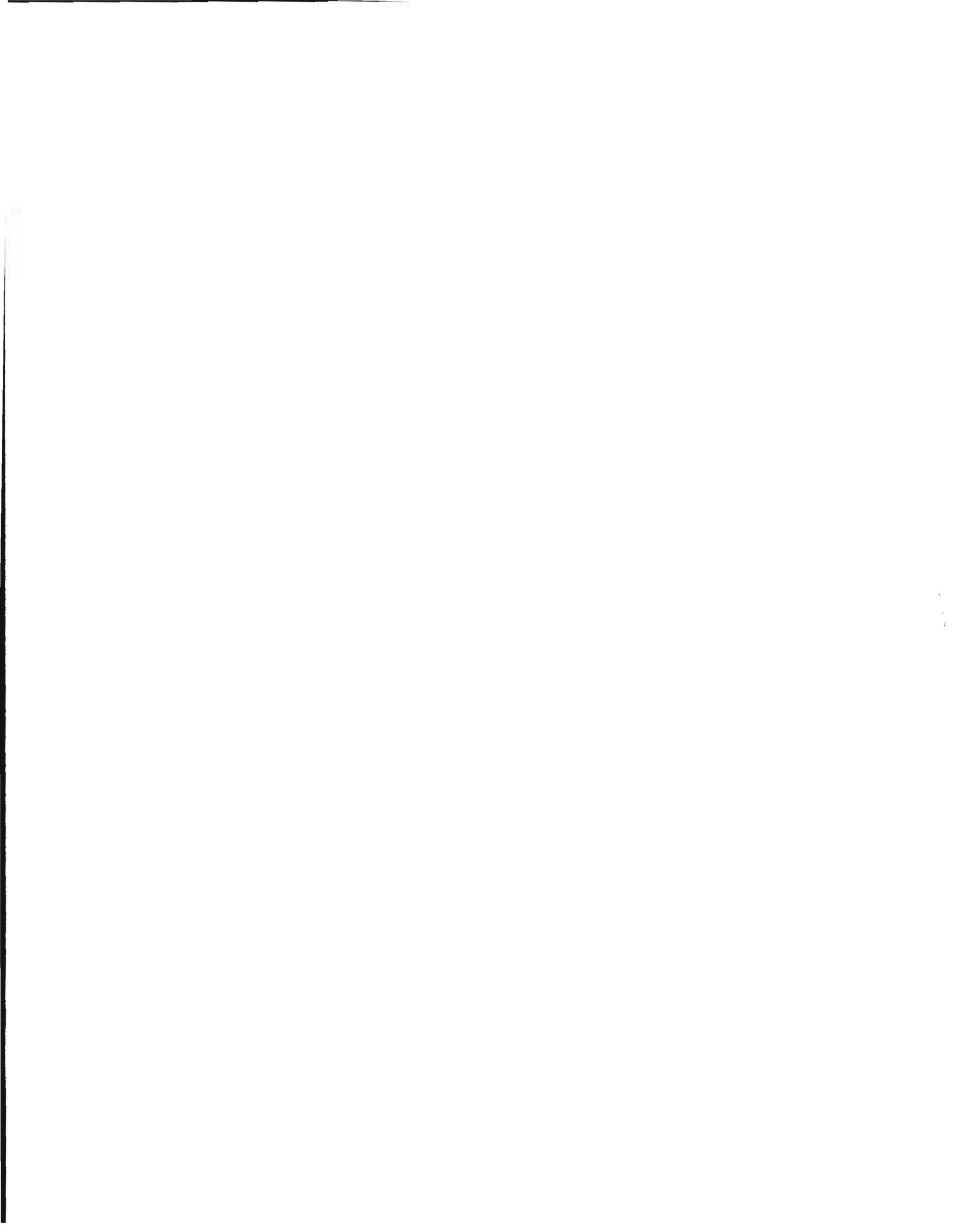
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The Benthic and Epibenthic Fauna
in the Nearshore Atlantic Ocean Waters
Off Northern New Jersey:
Sea Bright to Ocean Township
Biological Monitoring Program
June 1989 Sampling

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and
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INTRODUCTION

This report describes the results of a June 1989 benthic and epibenthic survey of portions of the nearshore Atlantic Ocean waters off northern New Jersey. Sampling was carried out by the Environmental Analysis Branch of the New York District, Army Corps of Engineers. The goal of this study was to provide baseline information on the distribution and abundance of the benthic and epibenthic organisms at a potential borrow area and a reference site.

METHODS

1. Sampling Procedures

Samples for this study were collected from 5-13 June 1989.

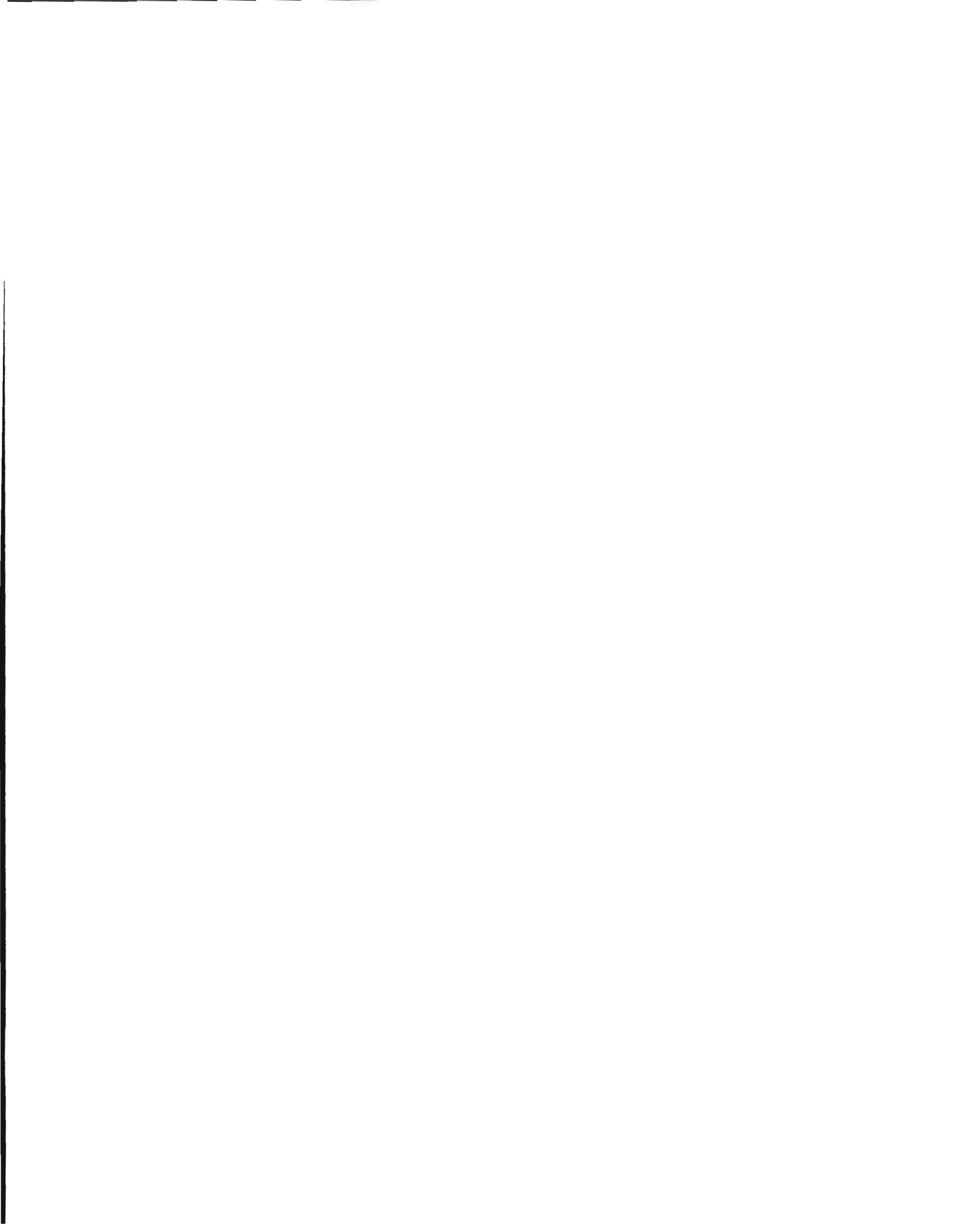
Quantitative benthic samples were obtained using a 0.1 square meter Smith-McIntyre grab. A random sample consisting of sixteen replicate grabs was taken at each of the two locations. Grab samples were wet-sieved onboard immediately after collection. Sieves consisted of 0.5 mm mesh screening. After washing, all material retained on the screen (e.g., animals, detritus, sand, gravel, shell fragments, etc.) was transferred to labeled sample jars. Samples were preserved in 10% buffered formalin and stained with rose bengal.

Qualitative epifaunal samples were collected using a 1.5 m long epibenthic sled. The sled was identical in design but somewhat smaller than the device described by Hessler and Sanders (1966). The mouth of the sled used in this study was 50 cm wide by about 25 cm high. The collecting net was constructed of 6.3 mm mesh stretch nylon. A random sample of four replicate sled tows was taken at each location.

2. Laboratory Procedures

In the laboratory, grab samples were rewashed using a 0.5 mm sieve, transferred to 70% ethyl alcohol, and logged to verify receipt of the sample. Samples were partitioned into five size-fractions by wet-sieving through 6.35, 3.35, 2.0, 1.0, and 0.5 mm mesh screens. Each size-fraction was then analyzed using a two stage process. In the first stage, animals were picked from the sediments, detritus, etc. under an illuminated magnifier (6.3, 3.35, and 2.0 mm fractions) or dissecting microscope (1.0 and 0.5 mm fractions) and sorted to major taxonomic categories. In the second stage, individual organisms were identified to species level whenever possible, and the total for each taxa enumerated. Each taxonomic category was wet-weighed to the nearest 0.001 g. All data were initially entered on log sheets and later transferred to a computer.

Epibenthic samples were rewashed in the laboratory using a 6.35 mm sieve, transferred to 70% ethyl alcohol, and logged to verify receipt of the sample. Samples were then analyzed using a



two stage process. In the first stage, animals were picked from the sediments, detritus, etc. under an illuminated magnifier and sorted to major taxonomic categories. In the second stage, individual organisms were identified to species level whenever possible, and the total for each taxa enumerated. All data were initially entered on log sheets and later transferred to a computer.

RESULTS

A total of 32 Smith-McIntyre grabs and 8 epibenthic sled tow samples were obtained during the June 1989 cruise. The results are listed in tabular form in the remainder of this report. For the Smith-McIntyre grab samples, the lower case letter in the sample identification code indicates the sieve size-fraction. The following scheme was used:

Code	Sieve Size
a	6.35 mm
b	3.35 mm
c	2.00 mm
d	1.00 mm
e	0.50 mm

Grab samples B1-B16, located within the potential borrow area, yielded a total of 75 taxa. Abundances averaged 5,001 individuals per m². Average wet-weight biomass was 17.42 grams per m².

Grab samples B17-B32 were located within the reference area. A total of 86 taxa were collected in these samples. Abundances averaged 18,068 individuals per m², and the average wet-weight biomass was 62.06 grams per m².

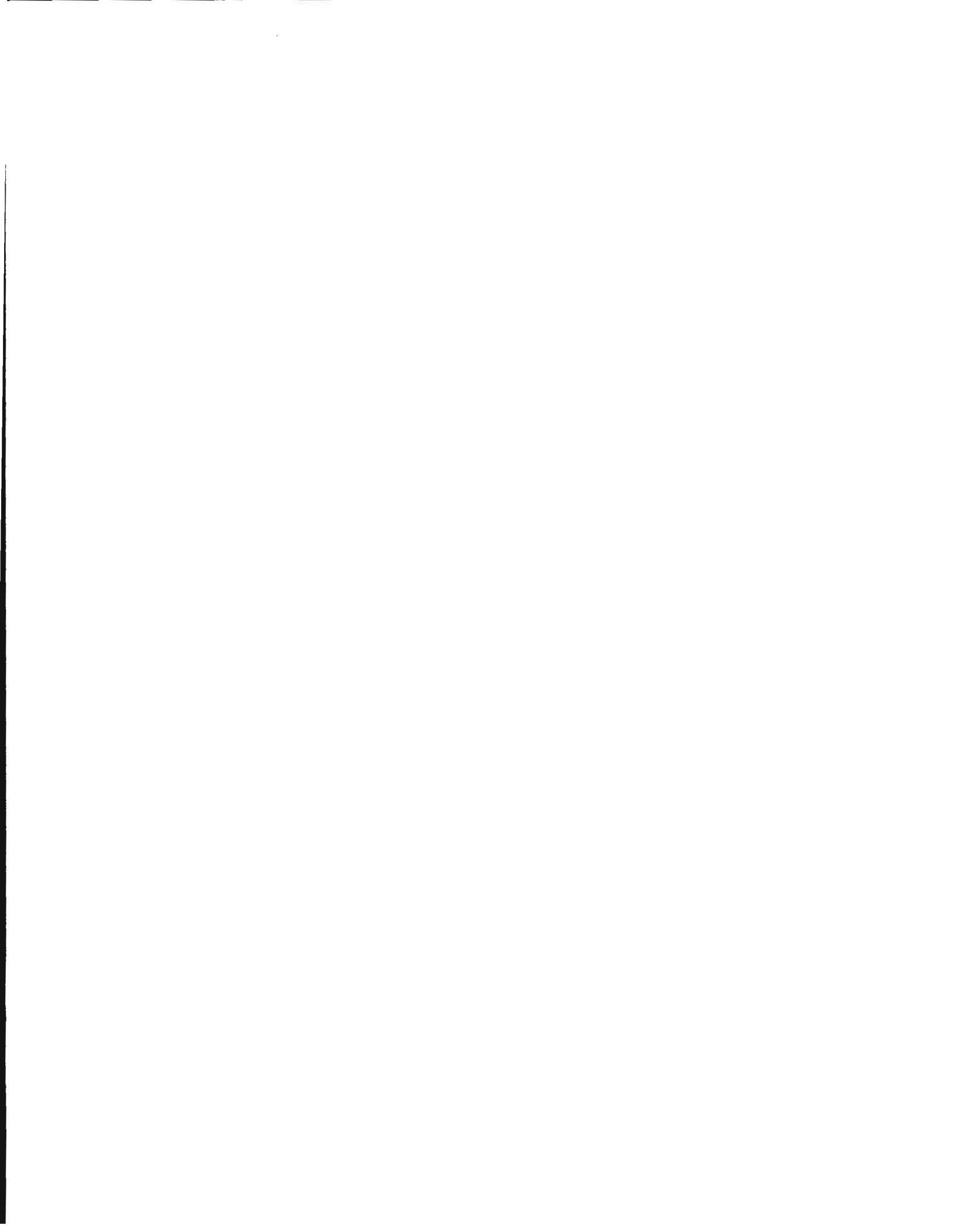
Epibenthic sled tow samples E1-E4 and E5-E8 were located within the potential borrow area and the reference area, respectively. The taxa recovered from these two localities were quite similar.

REFERENCES

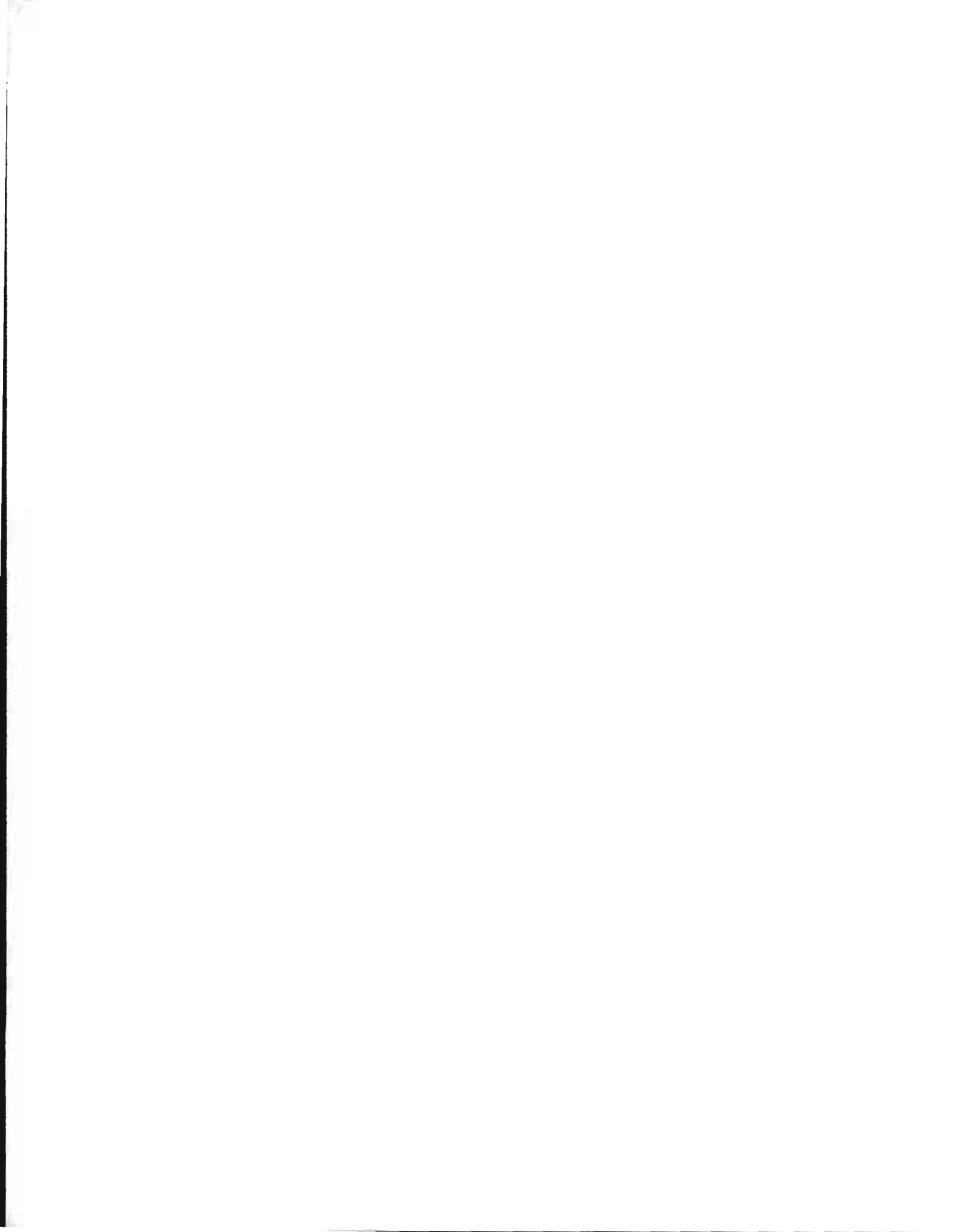
Hessler, R.R and H.L. Sanders. 1966. Faunal diversity in the deep-sea. Deep-Sea Res. 14: 65-78.



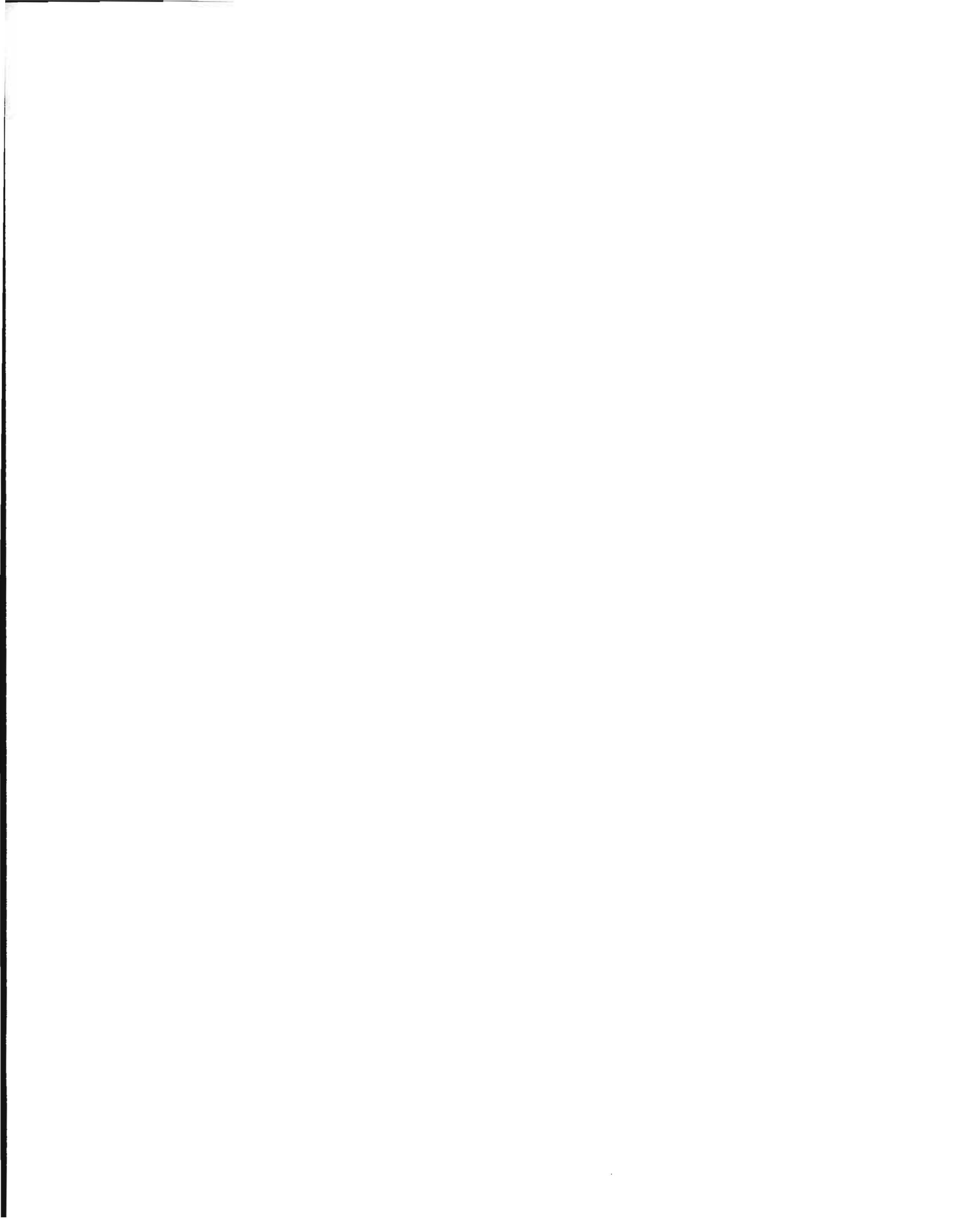
Epibenthic sled 6/89	Column No.	1	2	3	4	5	6	7	8
Sample ID No.	E1	E2	E3	E4	E5	E6	E7	E8	
Porifera									
Unidentified sponge	*						*		
Rhynchozoa									
Unidentified nemertean				1		1			
Aschelminthes									
Unidentified nematoda	1								
Annelida									
Polychaeta									
Asabellides oculata		1		2					
Pherusa affinis						1			
Glycera americana							1		
Glycera capitata			1						
Glycera dibranchiata	1								
Lumbrineris fragilis	3	5		6	2	1	2	1	
Nephtys picta			1	2		1		1	
Diopatra cuprea							1		
Ophelia denticulata		1	1						
Sigalion arenicola		2	5	6		2		2	
Mollusca									
Gastropoda									
Crepidula plana		25	1						
Nassarius trivittata	1	20	6	9		9	55	23	
Lunatia heros		1							
Bivalvia									
Astarte castanea			4	5			2		
Spisula solidissima		3	13	11	6	8	15	10	
Pandora gouldiana		3	6	8	42	24	49	19	
Ensis directus			1		1				
Siliqua costata					2		1		
Tellina agilis			1	3		1	1		
Arthropoda									
Amphipoda									
Unciola irrorata		2		2					
Protohaustorius wigleyi		1							
Decapoda									
Cancer borealis			1						
Cancer irroratus		3		1	15	7	114	2	
Cancer sp.	3			1				1	
Crangon septemspinosa		5	3	7	3		8	2	
Ovalipes ocellatus							1		
Pagurus longicarpus	2	4	13	10	2	1	4	1	
Pagurus pollicaris			1						
Isopoda									
Chirdotea tuftsi				1	3		2	1	
Echinodermata									
Asterias forbesii	1								
Echinarachnius parma	1	56	2	2	169	352	437	442	
Chordata									
Vertebrata									
Merluccius bilinearis						1			



Smith-McIntyre 6/89	Column No.	1	2	3	4	5	6	7	8	9	10
Number of Individ.	Sample ID No.	B1a	B1b	B1c	B1d	B1e	B2a	B2b	B2c	B2d	B2e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela											
Unidentified nemertean								1			
Aschelminthes											
Unidentified nematoda					1	1		1	1	13	153
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.										3	10
Polychaeta											
Tharyx acutus						3		2	8	36	17
Glycera capitata					1				3	9	4
Podarke obscura						1					
Nephtys incisa					1						
Nephtys picta							1		1		
Ophelia denticulata		1									
Aricidea jeffreysii									3	4	9
Paranaitis speciosa										1	
Sthenelais boa			2								
Scolelepidis viridis			1		1						
Spiophanes bombyx										2	8
Streblospio benedicti											2
Exogone hebes						2					
Exogone dispar										3	13
Parapionosyllis longicirrata										2	3
Mollusca											
Gastropoda											
Bivalvia											
Spisula solidissima				1	1			2	4	6	2
Mytilus edulis											1
Pandora gouldiana											1
Tellina agilis			2			1					1
Arthropoda											
Amphipoda											
Unciola irrorata									1	1	31
Parahaustorius attenuatus					1	4					
Protohaustorius wigleyi			4	5	5			1	3	6	1
Ostrocooda											
Copepoda											
Harpacticoid copepod											2
Cirripedia											
Mysidacea											
Cumacea											
Leptocuma minor				2					2	2	1
Tanaidacea											
Leptognatha caeca					2	9				2	2
Decapoda											
Isopoda											
Chirdotea tuftsi			1								1
Chirdotea arenicola									1		
Cirolana polita				1	1						
Acarina											
Chaetognatha											
Echinodermata											
Chordata											
Molgula manhattensis									3	19	43



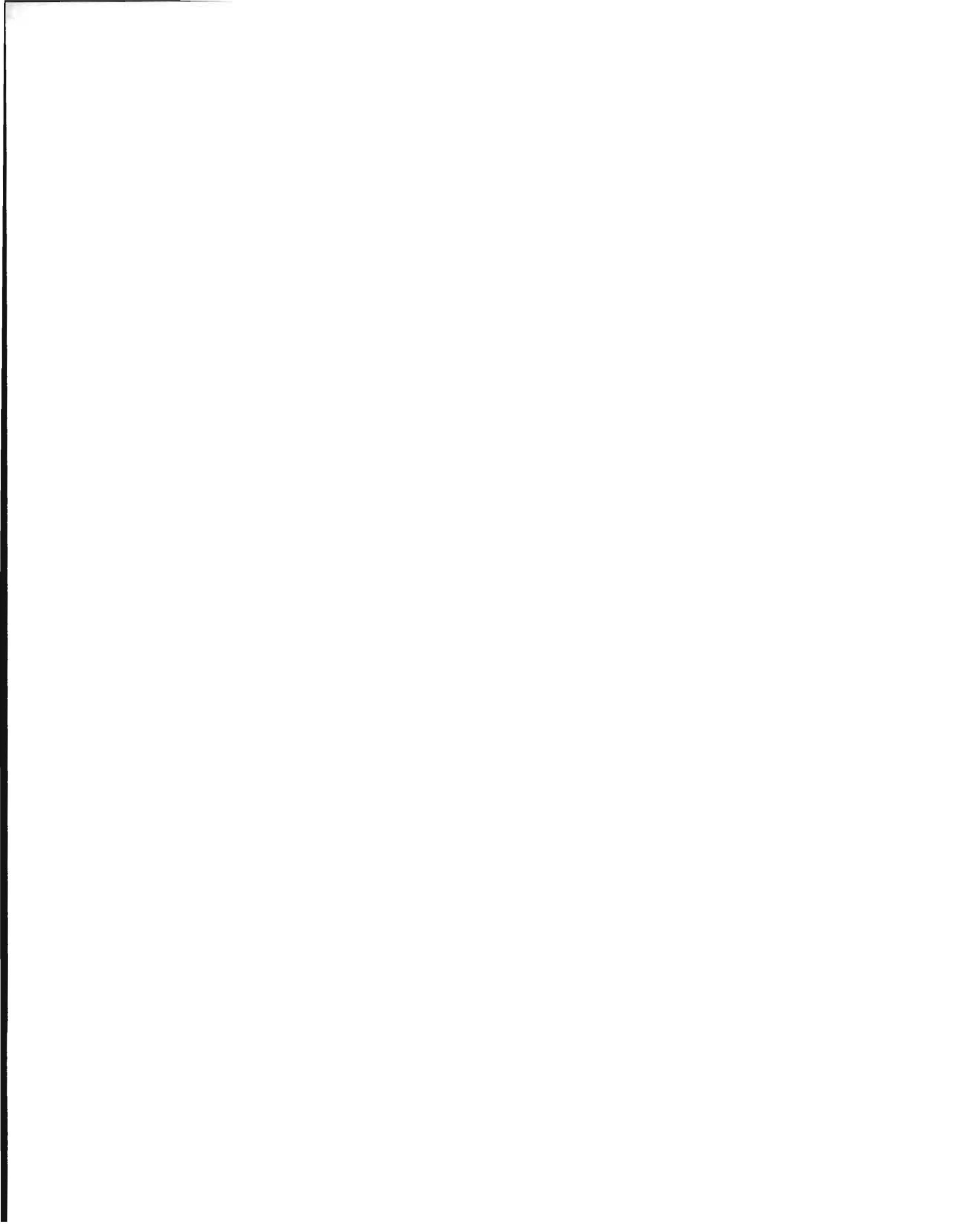
Smith-McIntyre 6/89	Column No.	11	12	13	14	15	16	17	18	19	20
Number of Individ.	Sample ID No.	B3a	B3b	B3c	B3d	B3e	B4a	B4b	B4c	B4d	B4e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchozoela											
Unidentified nemertean					4		1	*	*	*	*
Aschelminthes											
Unidentified nematoda			1	6	77	41		2	6	89	110
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.						6			6	15	21
Polychaeta											
Tharyx acutus			19	51	130	14			3	10	2
Glycera capitata			9	61	107	10	1	6	12	11	1
Lumbrineris fragilis			1								
Nephtys picta							2		1	1	2
Orbinia swani							1				
Aricidea jeffreysii			1	7	21	6		5	9	65	85
Paraonis lyra							2		19	39	30
Spiophanes wigelyi				1	3					1	
Streblospio benedicti										1	
Parapionosyllis longicirrata						1					1
Unidentified species A							1		1	9	13
Mollusca											
Gastropoda											
Bivalvia											
Astarte castanea										1	
Spisula solidissima			1		2	1	1			1	1
Mytilus edulis										1	
Nucula proxima											1
Arthropoda											
Amphipoda											
Unciola irrorata										1	
Protohaustorius wigleyi									1		
Ostrocooda											
Copepoda											
Harpacticoid copepod						1					3
Cirripedia											
Mysidacea											
Cumacea											
Tanaidacea											
Leptognatha caeca					3	1				1	2
Decapoda											
Pagurus longicarpus								1			
Isopoda											
Chirdotea arenicola				1					1		
Acarina											
Chaetognatha											
Echinodermata											
Arbacia punctulata						1					
Chordata											
Molgula manhattensis				3	13	8		4	76	11	66



Smith-McIntyre 6/89 Number of Individ.	Column No. Sample ID No.	21 B5a	22 B5b	23 B5c	24 B5d	25 B5e	26 B6a	27 B6b	28 B6c	29 B6d	30 B6e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchozoela											
Unidentified nemertean								*	*		
Aschelminthes											
Unidentified nematoda						1			1	8	33
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.											2
Polychaeta											
Asabellides oculata											1
Tharyx acutus			1		1			5	8	19	3
Glycera capitata								3	13	36	5
Nephtys picta									1		
Orbinia swani								1			
Aricidea jeffreysii									2	3	3
Paraonis lyra						1			2	4	10
Sigalion arenicola		1									
Scolelepidis squamata						1					
Spiophanes bombyx								1	1		3
Spiophanes wigelyi									1		
Exogone hebes						1					
Parapionosyllis longicirrata											1
Unidentified species A					1						
Mollusca											
Gastropoda											
Lunatia heros				1							
Bivalvia											
Astarte castanea										2	2
Spisula solidissima			2	2				3	2	2	
Mytilus edulis										1	
Tellina agilis									1	1	
Arthropoda											
Amphipoda											
Parahaustorius attenuatus		2	1								
Protohaustorius wigleyi			1	8	7	3					
Rhepoxynuis epistomus					2						
Ostrocooda											
Copepoda											
Harpacticoid copepod						2					
Cirripedia											
Mysidacea											
Cumacea											
Tanaidacea											
Leptognatha caeca					2					2	3
Decapoda											
Pagurus longicarpus							1				
Isopoda											
Cirolana polita									1		
Acarina											
Chaetognatha											
Echinodermata											
Chordata											
Molgula manhattensis						4			7	39	42



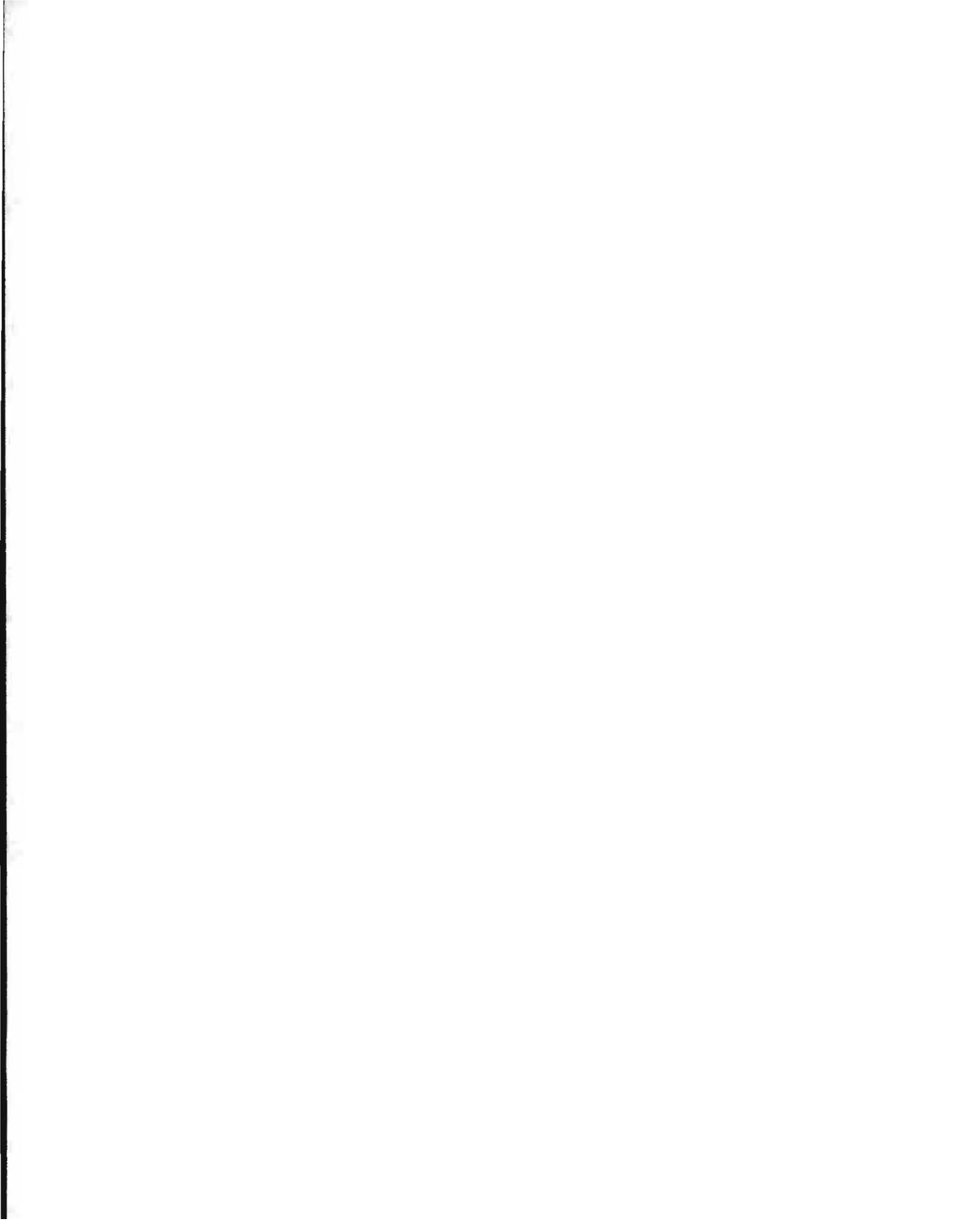
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Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela											
Unidentified nemertean			*	*		*				*	*
Aschelminthes											
Unidentified nematoda			1		1	7			2	20	166
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.						2					4
Polychaeta											
Asabellides oculata											1
Tharyx acutus					4	1		1	1	8	1
Glycera capitata			1						4	7	4
Lumbrineris fragilis							1				
Magelona rioja				2							
Nephtys picta	1	2	4	1	1	1				2	
Travisia carnea		1	1	3							
Orbinia swani				2							
Aricidea jeffreysii				1	7	5				1	4
Paraonis lyra				2	2					1	
Sigalion arenicola							1				
Spiophanes bombyx		3	18	25	78					1	5
Exogone hebes						1				5	10
Parapionosyllis longicirrata						1				1	13
Mollusca											
Gastropoda											
Bivalvia											
Astarte castanea										5	
Lyonsia hyalina										1	
Spisula solidissima				2	5				2	1	
Mytilus edulis											1
Nucula proxima					1						
Tellina agilis		1		1	3				1	2	2
Arthropoda											
Amphipoda											
Pseudounciola obliqua				3	42	69				2	7
Acanthohaustorius similis				1	1	1					
Parahaustorius attenuatus								2			
Protohaustorius wigleyi					6	1			5	4	
Rhepoxynuis epistomus				1	1				1	2	
Ostrocooda											
Copepoda											
Harpacticoid copepod						2					1
Cirripedia											
Mysidacea											
Cumacea											
Leptocuma minor						1					
Tanaidacea											
Leptognatha caeca					1	7				17	14
Decapoda											
Isopoda											
Chirdotea tuftsi				2							
Chirdotea arenicola						4					
Edotea montosa						1					
Acarina											
Chaetognatha											
Echinodermata											
Chordata											
Molgula manhattensis						5				5	5



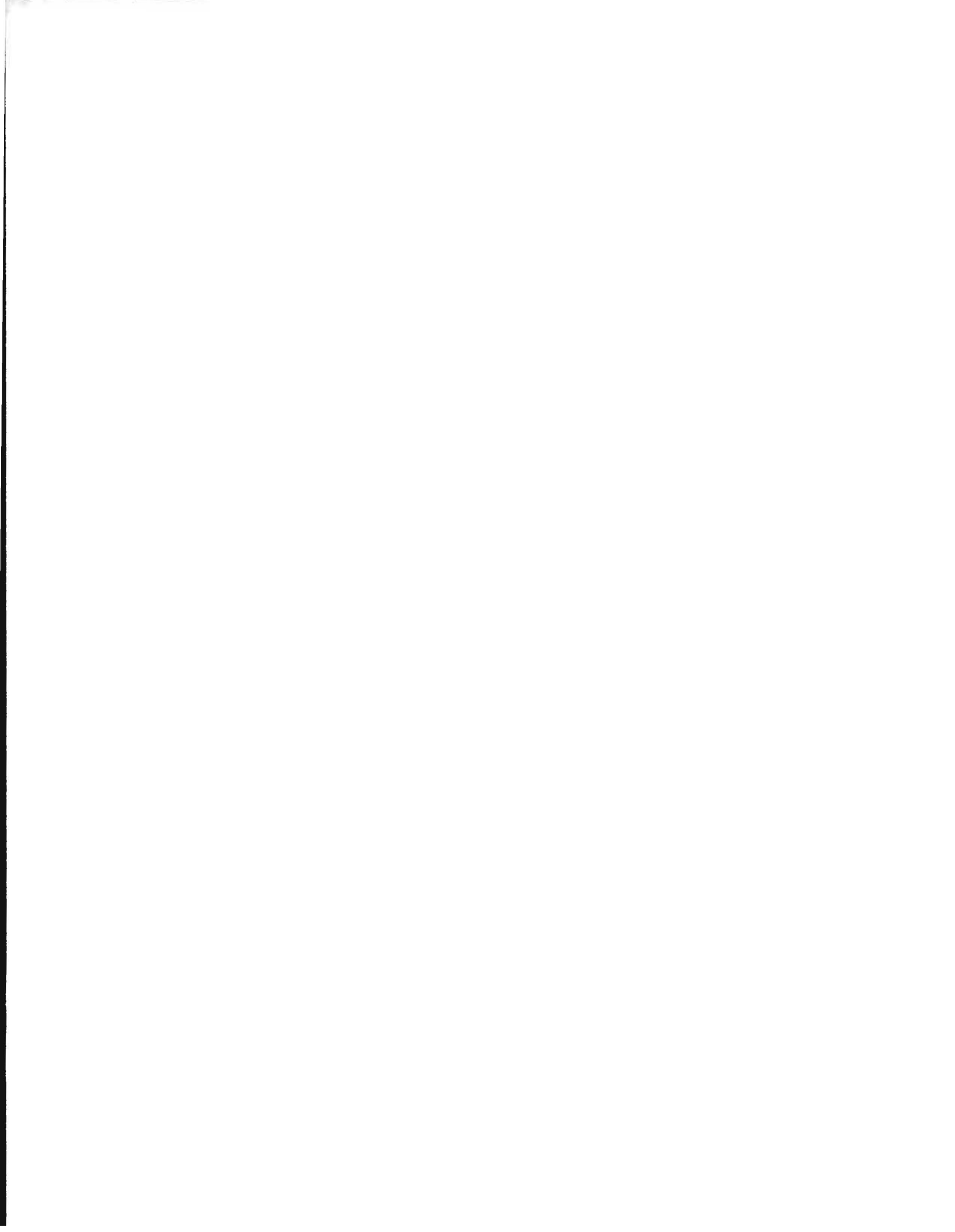
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Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Unidentified flatworm										1	
Rhynchocoela											
Unidentified nemertean			*	*	2	*	*	*	*	*	*
Aschelminthes											
Unidentified nematoda					53	104	*	1	1	24	591
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.				1	7	4					4
Polychaeta											
Asabellides oculata						1			2		2
Tharyx acutus			2	19	93	22	3	18	73	97	139
Glycera capitata			16	25	78	10	1	9	35	63	46
Lumbrineris fragilis	1						1				
Nephtys ciliata									1		
Nephtys picta			1								
Orbinia swani								1			
Aricidea jeffreysii				2	33	17			1	1	12
Paraonis lyra			2	4	28	15	1		8	20	58
Spiophanes bombyx						1			1		3
Spiophanes wigelyi					5						
Exogone hebes											1
Parapionosyllis longicirrata											9
Unidentified species A						1					
Mollusca											
Gastropoda											
Bivalvia											
Astarte castanea			1	2						3	
Lyonsia hyalina										3	2
Spisula solidissima					2		1		2	4	1
Mytilus edulis					2					1	2
Pandora gouldiana										1	
Tellina agilis					1	2					2
Arthropoda											
Amphipoda											
Unciola irrorata									1		5
Pseudounciola obliqua						1					
Ostrocooda											
Unidentified ostrocooda											10
Copepoda											
Harpacticoid copepod						1					4
Cirripedia											
Mysidacea											
Cumacea										2	
Leptocuma minor											
Tanaidacea											
Leptognatha caeca						3				3	11
Decapoda											
Isopoda											
Unidentified Isopod											1
Acarina											
Unidentified mites											29
Chaetognatha											
Echinodermata											
Chordata											
Molgula manhattensis					8	13	1	2	7	55	224



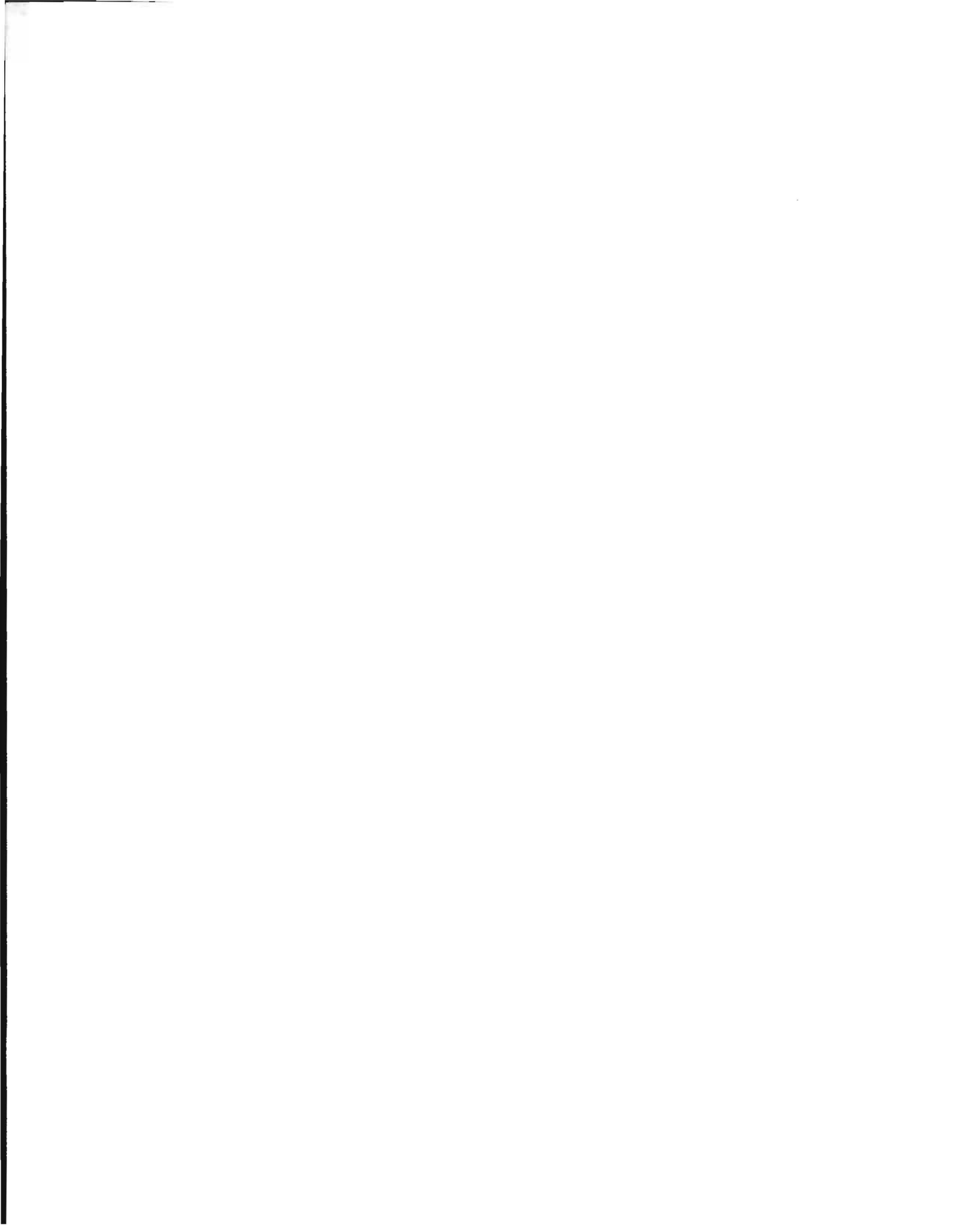
Smith-McIntyre 6/89	Column No.	51	52	53	54	55	56	57	58	59	60
Number of Individ.	Sample ID No.	B11a	B11b	B11c	B11d	B11e	B12a	B12b	B12c	B12d	B12e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela											
Unidentified nemertean		*	*	*	*	*	*	*	*	*	*
Aschelminthes											
Unidentified nematoda		1		2	128	589		*	3	26	218
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.								2	7	19	43
Polychaeta											
Asabellides oculata									1		
Drilonereis longa		1									
Tharyx acutus		6	42	85	337	25		2	4	7	5
Glycera capitata		6	21	58	114	7	1	11	10	16	19
Stauronereis caecus										1	2
Lumbrineris acuta									1	1	
Lumbrineris fragilis		1									
Nephtys bucera							1				
Travisia carnea											2
Orbinia swani		1	1								
Aricidea jeffreysii			1	6	21	12		4	16	25	16
Paraonis lyra			2		13	7		1	3	23	44
Sigalion arenicola			1								
Spiophanes bombyx					1	1					2
Spiophanes wigleyi					2				1	2	
Parapionosyllis longicirrata											1
Unidentified syllid											3
Unidentified species A					2					4	
Mollusca											
Gastropoda											
Bivalvia											
Astarte castanea									1	4	
Spisula solidissima					2	2		1	1	6	3
Mya arenaria							1				
Mytilus edulis						1					
Pandora gouldiana						1					
Ensis directus		1									
Tellina agilis										1	
Arthropoda											
Amphipoda											
Unciola irrorata									4	2	
Pseudounciola obliqua				1		1					
Protohaustorius wigleyi						1					
Ostrococha											
Copepoda											
Harpacticoid copepod						13					4
Cirripedia											
Mysidacea											
Cumacea											
Leptocuma minor										2	
Tanaidacea											
Leptognatha caeca						1				1	1
Decapoda											
Isopoda											
Chirdotea arenicola					1			1	1		
Acarina											
Chaetognatha											
Echinodermata											
Chordata											
Molgula manhattensis					21	38		6	13	24	19



Smith-McIntyre 6/89	Column No.	61	62	63	64	65	66	67	68	69	70
Number of Individ.	Sample ID No.	B13a	B13b	B13c	B13d	B13e	B14a	B14b	B14c	B14d	B14e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela											
Unidentified nemertean		*	*	*	*	*					
Aschelminthes											
Unidentified nematoda		3				3					3
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.		4									
Polychaeta											
Capitellid sp.		8	1		4	14					
Tharyx acutus					1						1
Glycera capitata		1				1					
Lumbrineris fragilis				1							
Nephtys bucera		4	1								
Nephtys picta					5	10					
Travisia carnea										2	
Aricidea jeffreysii					2	4				2	1
Sigalion arenicola			1	1				1	1	1	1
Spiophanes bombyx		60	5		29	45			1		1
Exogone hebes											1
Mollusca											
Gastropoda											
Bivalvia											
Spisula solidissima		1			7	13				2	
Mytilus edulis					3	4					
Nucula proxima						13					
Pandora gouldiana					1						
Tellina agilis						6		1	1		
Unidentified bivalve											1
Arthropoda											
Unidentified Protozoa						1					
Amphipoda											
Pseudounciola obliqua						1				8	7
Acanthohaustorius similis									21	17	
Parahaustorius attenuatus									3	3	
Protohaustorius wigleyi						2			3	14	1
Rhepoxynuis epistomus										2	1
Ostrocooda											
Unidentified ostrocooda						31					1
Copepoda											
Harpacticoid copepod						1					9
Cirripedia											
Mysidacea											
Cumacea											
Leptocuma minor				1	1	4			1		
Oxyurostylis smithi		1									
Tanaidacea											
Leptognatha caeca											6
Decapoda											
Isopoda											
Chirdotea tuftsi									2		
Chirdotea arenicola						1					5
Cirolana polita										1	
Acarina											
Chaetognatha											
Echinodermata											
Echinarachnius parma							6	3		3	1
Chordata											
Molgula manhattensis						5				4	4



Smith-McIntyre 6/89	Column No.	71	72	73	74	75	76	77	78	79	80
Number of Individ.	Sample ID No.	B15a	B15b	B15c	B15d	B15e	B16a	B16b	B16c	B16d	B16e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela											
Unidentified nemertean						*			*	*	
Aschelminthes											
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.										1	2
Polychaeta											
Asabellides oculata										3	3
Capitellid sp.							1			4	45
Tharyx acutus										3	1
Glycera americana							1				
Glycera capitata				2	4	1					
Lumbrineris fragilis	1						1	1			
Nephtys bucera							1		1		
Nephtys picta			1	1	1			1	3	8	4
Travisia carnea			1								
Haploscleroplos robustus									1	1	
Orbinia swani											1
Aricidea jeffreysii				1	4		1			2	4
Paraonis lyra										1	
Paranaitis speciosa										1	
Sigalion arenicola	1			1							
Scolelepidis squamata					1	1					
Spiophanes bombyx									1	4	1
Exogone hebes					1	1					
Mollusca											
Gastropoda											
Acteocina canalicula										1	
Bivalvia											
Spisula solidissima						3			3	8	4
Nucula proxima										5	8
Ensis directus											1
Siliqua costata									1	7	
Tellina agilis			1								3
Arthropoda											
Amphipoda											
Unciola serrata											1
Parahaustorius attenuatus				1							
Protohaustorius wigleyi				6	2						
Photis macrocoxa								1			
Rhepoxynuis epistomus				1							
Ostrocooda											
Unidentified ostrocooda											24
Copepoda											
Harpacticoid copepod						1					4
Cirripedia											
Mysidacea											
Cumacea											
Leptocuma minor											1
Tanaidacea											
Leptognatha caeca					3	4					
Decapoda											
Isopoda											
Cirolana polita				8	4						
Acarina											
Chaetognatha											
Echinodermata											
Echinarachnius parma			2			1					
Chordata											
Molgula manhattensis				6	4	7			2		2



Smith-McIntyre 6/89	Column No.	81	82	83	84	85	86	87	88	89	90
Number of Individ.	Sample ID No.	B17a	B17b	B17c	B17d	B17e	B18a	B18b	B18c	B18d	B18e
Porifera											
Cnidaria											
Anthozoa											
Ceriantheopsis americanus						1					
Hydrozoa											
Platyhelminthes											
Rhynchozoela											
Unidentified nemertean				*							
Aschelminthes											
Unidentified nematoda						1					6
Phoronida											
Sipuncula											
Unidentified sipunculid										2	2
Annelida											
Oligochaeta											
Unidentified sp.						2					
Polychaeta											
Asabellides oculata				1							
Tharyx acutus				1	6	1				4	1
Stauronereis caecus											1
Nephtys picta		1	4	8	2				3	7	
Travisia carnea				2	4					1	
Orbinia swani									1		
Aricidea jeffreysii				1	8	4			1	7	2
Paraonis lyra					1						
Phyllodoce arenae										2	3
Sigalion arenicola		1		1							
Spiophanes bombyx				4	7	6				6	48
Exogone hebes					1	3					1
Mollusca											
Gastropoda											
Bivalvia											
Lyonsia hyalina					2	2					
Spisula solidissima			1	1	2	3			1	1	
Mytilus edulis											1
Ensis directus										1	1
Tellina agilis			2	4	2					1	
Arthropoda											
Unidentified Zoea					1						
Amphipoda											
Pseudounciola obliquua				9	120	116			4	394	1803
Acanthohaustorius similis									16	9	
Protohaustorius wigleyi				2	5	2				11	
Rhepoxynuis epistomus					3						
Ostrocooda											
Unidentified ostrocooda											1
Copepoda											
Harpacticoid copepod						2					5
Cirripedia											
Mysidacea											
Cumacea											
Leptocuma minor			1	2		2			1	3	4
Oxyurostylis smithi					3					1	1
Tanaidacea											
Leptognatha caeca						2					3
Decapoda											
Isopoda											
Chirdotea arenicola					1	3				1	3
Edotea montosa					1			1	2	1	
Cirolana polita										1	
Acarina											
Chaetognatha											
Echinodermata											
Echinarachnius parma		1	1	3	4		1		1	6	1
Chordata											
Molgula manhattensis				16	57					1	1

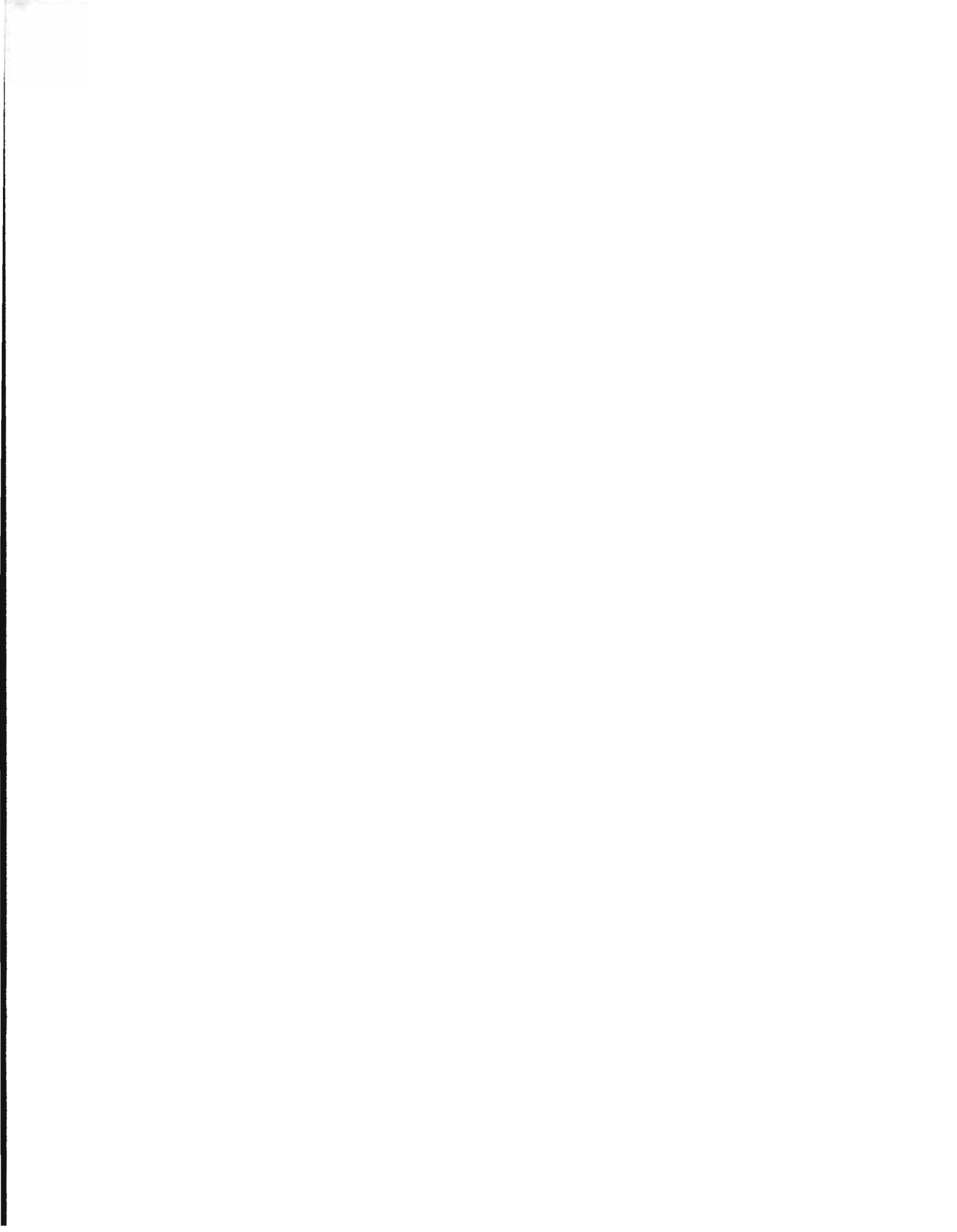




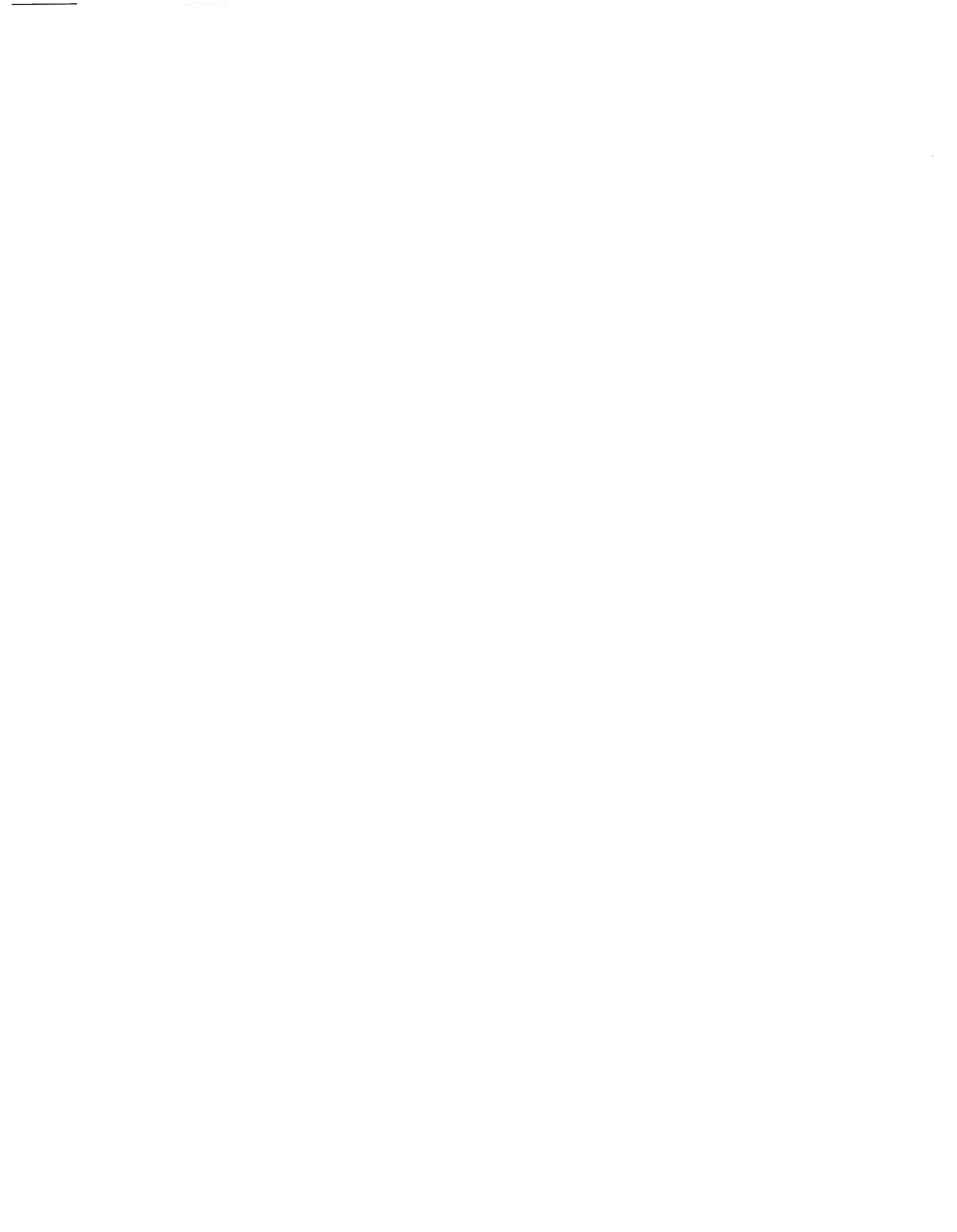


Molgula manhattensis

B21a B21b B21c B21d B21e B22a B22b B22c B22d B22e
33 24



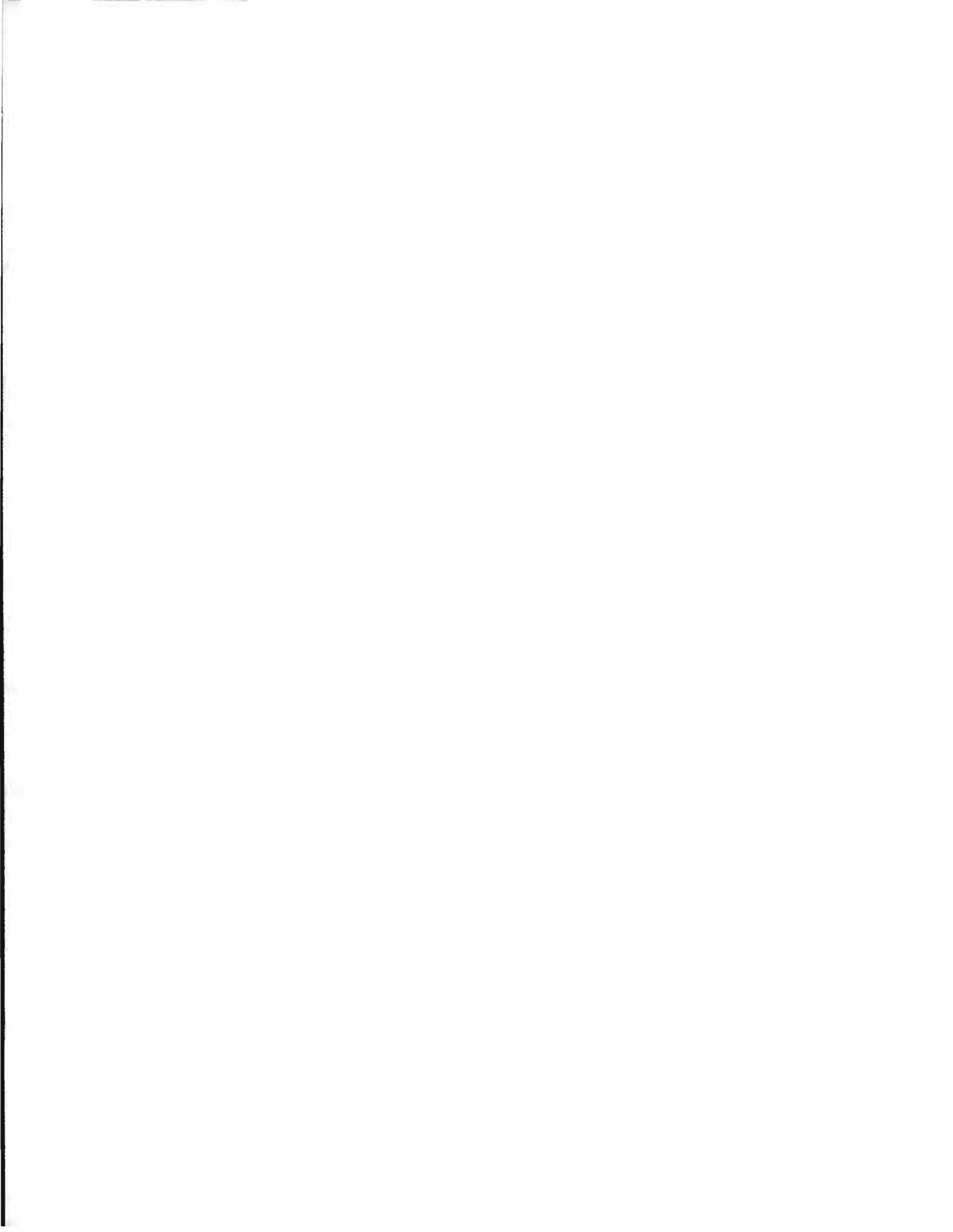
Smith-McIntyre 6/89	Column No.	111	112	113	114	115	116	117	118	119	120
Number of Individ.	Sample ID No.	B23a	B23b	B23c	B23d	B23e	B24a	B24b	B24c	B24d	B24e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela											
Unidentified nemertean		*	*								*
Aschelminthes											
Unidentified nematoda					9	221					
Phoronida											
Phoronis architecta										1	1
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.						14				1	
Polychaeta											
Asabellides oculata						2				2	2
Capitellid sp.										7	14
Tharyx acutus				1	7	9				13	6
Glycera capitata				1	8	3			1		
Lumbrineris fragilis		1					1				
Maldane sarsi				1							
Nephtys picta			3	4		1			3	4	13
Travisia carnea						2					
Aricidea jeffreysii				1	4	11					
Paraonis lyra					2						1
Paraonis gracilis					2	6					
Sigalion arenicola									1	2	
Spiophanes bombyx						1			1	13	9
Spiophanes wigelyi						2					
Parapionosyllis longicirrata						2					
Mollusca											
Gastropoda											
Bivalvia											
Lyonsia hyalina					1	1			1	1	1
Spisula solidissima			1	4	10	3			1	4	1
Mytilus edulis					1						1
Yoldia limatula									1	2	
Nucula proxima				5	1	1		5	403	456	450
Tellina agilis			5	2		2			2	19	68
Arthropoda											
Amphipoda											
Unciola irrorata				1	4	2					2
Pseudounciola obliquua				1	5	44				1	1
Hippomedon serratus					2						
Photis macrocoxa						2				1	1
Ostrocooda											
Unidentified ostrocooda										9	42
Copepoda											
Harpacticoid copepod						1					
Cirripedia											
Mysidacea											
Neomysis americana									1		
Cumacea											
Leptocuma minor						1					
Diastylis polita				1	1					8	
Tanaidacea											
Leptognatha caeca					1	2					
Decapoda											
Crangon septemspinosa										1	
Isopoda											
Edotea montosa				3	1	1				3	2
Acarina											
Chaetognatha											
Echinodermata											
Echinarachnius parma										1	
Chordata											
Molgula manhattensis				17	35	17					



Smith-McIntyre 6/89	Column No.	121	122	123	124	125	126	127	128	129	130
Number of Individ.	Sample ID No.	B25a	B25b	B25c	B25d	B25e	B26a	B26b	B26c	B26d	B26e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchozoela											
Aschelminthes											
Unidentified nematoda					1	8					37
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Polychaeta											
Asabellides oculata						2					
Capitellid sp.						1					
Tharyx acutus		1	1	8	2		1	1	3	2	
Glycera capitata					2		1	1	4		
Nephtys picta		1	4	9	1				1		
Ophelia bicornis		1	1								
Travisia carnea			3	3							
Orbinia swani		1									
Aricidea jeffreysii				1	3						2
Paraonis lyra				1	1						1
Paraonis gracilis										1	1
Scolelepidides squamata										1	1
Spiophanes bombyx			3	15	1					1	2
Exogone dispar						4					1
Parapionosyllis longicirrata											1
Mollusca											
Gastropoda											
Bivalvia											
Astarte castanea						1				1	
Lyonsia hyalina				2	1						
Spisula solidissima			3		2					1	
Nucula proxima			1	3							
Tellina agilis		2	3								
Arthropoda											
Amphipoda											
Unciola irrorata			6	6	2						
Pseudounciola obliqua			28	137	88					3	28
Parahaustorius attenuatus							1				
Protohaustorius wigleyi			4	5					2		
Rhepoxynuis epistomus			1								
Stenopleustes gracilis				1							
Ostrocooda											
Copepoda											
Harpacticoid copepod						8					
Cirripedia											
Mysidacea											
Cumacea											
Leptocuma minor										1	1
Diastylis polita					1						
Tanaidacea											
Leptognatha caeca				1	1						1
Decapoda											
Isopoda											
Chirdotea tuftsi			2	2							
Chirdotea arenicola						6					
Edotea montosa			3	2							
Acarina											
Chaetognatha											
Echinodermata											
Echinarachnius parma					1						
Chordata											
Molgula manhattensis				4	16	17				2	



Smith-McIntyre 6/89	Column No.	131	132	133	134	135	136	137	138	139	140
Number of Individ.	Sample ID No.	B27a	B27b	B27c	B27d	B27e	B28a	B28b	B28c	B28d	B28e
Porifera											
Cnidaria											
Anthozoa											
Unidentified anemone					2						
Hydrozoa											
Platyhelminthes											
Unidentified flatworm										1	
Rhynchocoela											
Aschelminthes											
Unidentified nematoda					4	4					1
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Polychaeta											
Tharyx acutus					11	4	1		1	5	1
Glycera capitata					2						
Lumbrineris coccinea					1						
Lumbrineris fragilis								1			
Nephtys incisa										1	
Nephtys picta		1		10	7	1		1	1	2	
Travisia carnea				4	3					1	
Orbinia swani					1						
Aricidea jeffreysii				1	24	4				3	
Paraonis gracilis					3	1					
Sigalion arenicola							1	1			
Spiophanes bombyx				1	9	4				7	3
Exogone dispar						1					
Unidentified species A											1
Mollusca											
Gastropoda											
Bivalvia											
Lyonsia hyalina			1		1						
Spisula solidissima				6	5					3	
Mytilus edulis					2						
Nucula proxima					46	3					1
Tellina agilis			1	4							
Arthropoda											
Amphipoda											
Unciola irrorata				1	4						
Pseudounciola obliquua					3	18			77	489	1137
Acanthohaustorius similis									9	4	
Protohaustorius wigleyi									4	8	
Photis macrocoxa					4						
Rhepoxynuis epistomus									1		
Ostrocooda											
Unidentified ostrocooda						1					
Copepoda											
Cirripedia											
Mysidacea											
Neomysis americana					1						
Cumacea											
Leptocuma minor				1	2	1			2	1	1
Diastylis polita					1				1	3	
Tanaidacea											
Leptognatha caeca										1	6
Decapoda											
Isopoda											
Chirdotea arenicola					2					4	1
Cirolana polita										2	
Acarina											
Chaetognatha											
Echinodermata											
Echinarachnius parma				1	1		1	1		1	
Chordata											
Molgula manhattensis					19	2					



	B29a	B29b	B29c	B29d	B29e	B30a	B30b	B30c	B30d	B30e
Echinarachnius parma	3	1	1	27	3					
Chordata										
Molgula manhattensis			16	24	4			1		



Smith-McIntyre 6/89	Column No.	151	152	153	154	155	156	157	157	159	160
Number of Individ.	Sample ID No.	B31a	B31b	B31c	B31d	B31e	B32a	B32b	B32c	B32d	B32e
Porifera											
Cnidaria											
Anthozoa											
Unidentified anemone										2	1
Hydrozoa											
Platyhelminthes											
Rhynchozoela											
Unidentified nemertean			*	*						*	*
Aschelminthes											
Unidentified nematoda					1					1	10
Phoronida											
Phoronis architecta										1	
Sipuncula											
Annelida											
Oligochaeta											
Unidentified sp.					5	1					
Polychaeta											
Asabellides oculata					1					4	2
Drilonereis longa			1								
Capitellid sp.					37	115				1	2
Tharyx acutus					3	4			1	1	3
Pherusa affinis			1								
Glycera capitata				1	1					1	
Lumbrineris fragilis				1					1		
Lumbrineris latreilli					1						
Nephtys picta	1	7	8	21	7				6	1	
Travisia carnea			1								
Aricidea jeffreysii					3					3	3
Paraonis lyra										1	
Phyllodoce arenae						2				11	14
Sigalion arenicola							1				
Spiophanes bombyx					55	67	3	4	5	111	248
Spiophanes wigelyi										1	
Mollusca											
Gastropoda											
Nassarius trivittata			1								
Bivalvia											
Spisula solidissima		1	2	11	1		1	5	13	1	
Mytilus edulis				1							
Nucula proxima				7	29	78				1	
Ensis directus					1					2	1
Siliqua costata		1	1	2			1		2	1	
Tellina agilis		1	4		2		1	1	2		10
Gemma gemma					1						
Arthropoda											
Amphipoda											
Unciola irrorata									1	4	1
Pseudounciola obliqua						34			47	663	5299
Gammarius lawrencianus										1	
Acanthohaustorius similis									1	1	
Protohaustorius wigleyi										13	1
Photis macrocoxa										2	3
Rhepoxynuis epistomus										16	1
Ostrocooda											
Unidentified ostrocooda					4	26				5	10
Copepoda											
Harpacticoid copepod							1				
Cirripedia											
Mysidacea											
Neomysis americana					1						
Cumacea											
Leptocuma minor					4					4	10
Diastylis polita				4	15	1			5	13	1
Tanaidacea											
Leptognatha caeca											1
Decapoda											
Crangon septemspinosa										1	
Isopoda											
Edotea montosa				2	1	1				2	
Acarina											
Chaetognatha											

Smith-Mcintyre 6/89	Column No.	1	2	3	4	5	6	7	8	9	10
Weight in mg.	Sample ID No.	B1a	B1b	B1c	B1d	B1e	B2a	B2b	B2c	B2d	B2e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchozoela								19			
Aschelminthes					0	0		0	0	1	1
Phoronida											
Sipuncula											
Annelida											
Oligochaeta										0	0
Polychaeta	3160	81			5	5	25	8	44	78	43
Mollusca											
Gastropoda											
Bivalvia		103	20	1	0			145	66	11	2
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda			29	29	17	0		4	12	17	2
Ostrocooda											
Copepoda											0
Mysidacea											
Cumacea				4					7	4	0
Tanaidacea					0	1				0	0
Decapoda											
Isopoda			5	6	2				12		0
Acarina											
Chaetognatha											
Echinodermata											
Chordata									34	26	8

Smith-Mcintyre 6/89	Column No.	11	12	13	14	15	16	17	18	19	20
Weight in mg.	Sample ID No.	B3a	B3b	B3c	B3d	B3e	B4a	B4b	B4c	B4d	B4e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchozoela					2		301	4	10	27	6
Aschelminthes			0	0	14	5		0	0	5	10
Phoronida											
Sipuncula											
Annelida											
Oligochaeta						0			1	2	2
Polychaeta		407	354	456	36	806	133	59	112		64
Mollusca											
Gastropoda											
Bivalvia			54		6	1	967			3	1
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda									0	0	
Ostrocooda											
Copepoda						0					0
Mysidacea											
Cumacea											
Tanaidacea					0	0				0	0
Decapoda								4			
Isopoda				4					4		
Acarina											
Chaetognatha											
Echinodermata					0						
Chordata				11	12	1		11	90	14	24

Smith-Mcintyre 6/89 Weight in mg.	Column No. Sample ID No.	21 B5a	22 B5b	23 B5c	24 B5d	25 B5e	26 B6a	27 B6b	28 B6c	29 B6d	30 B6e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchozoela								51	10		
Aschelminthes						0			0	1	5
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											0
Polychaeta		12	3		2	0		283	122	87	15
Mollusca											
Gastropoda				10							
Bivalvia			105	31				194	24	25	6
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda		232	32	52	18	0					
Ostrozoela											
Copepoda						0					
Mysidacea											
Cumacea											
Tanaidacea					0					0	0
Decapoda							527				
Isopoda									5		
Acarina											
Chaetognatha											
Echinodermata											
Chordata						0			315	74	25

Smith-Mcintyre 6/89 Weight in mg.	Column No. Sample ID No.	31 B7a	32 B7b	33 B7c	34 B7d	35 B7e	36 B8a	37 B8b	38 B8c	39 B8d	40 B8e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchozoela			10	4		1				1	3
Aschelminthes			2		0	0			0	8	4
Phoronida											
Sipuncula											
Annelida											
Oligochaeta						0					0
Polychaeta		505	212	281	135	73	552	93	5	28	8
Mollusca											
Gastropoda											
Bivalvia			50	27	11	0			57	23	0
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda				10	83	12		118	41	21	0
Ostrozoela											
Copepoda						0					0
Mysidacea											
Cumacea						0					
Tanaidacea					0	0				4	2
Decapoda											
Isopoda				15		1					
Acarina											
Chaetognatha											
Echinodermata											
Chordata						0				4	0

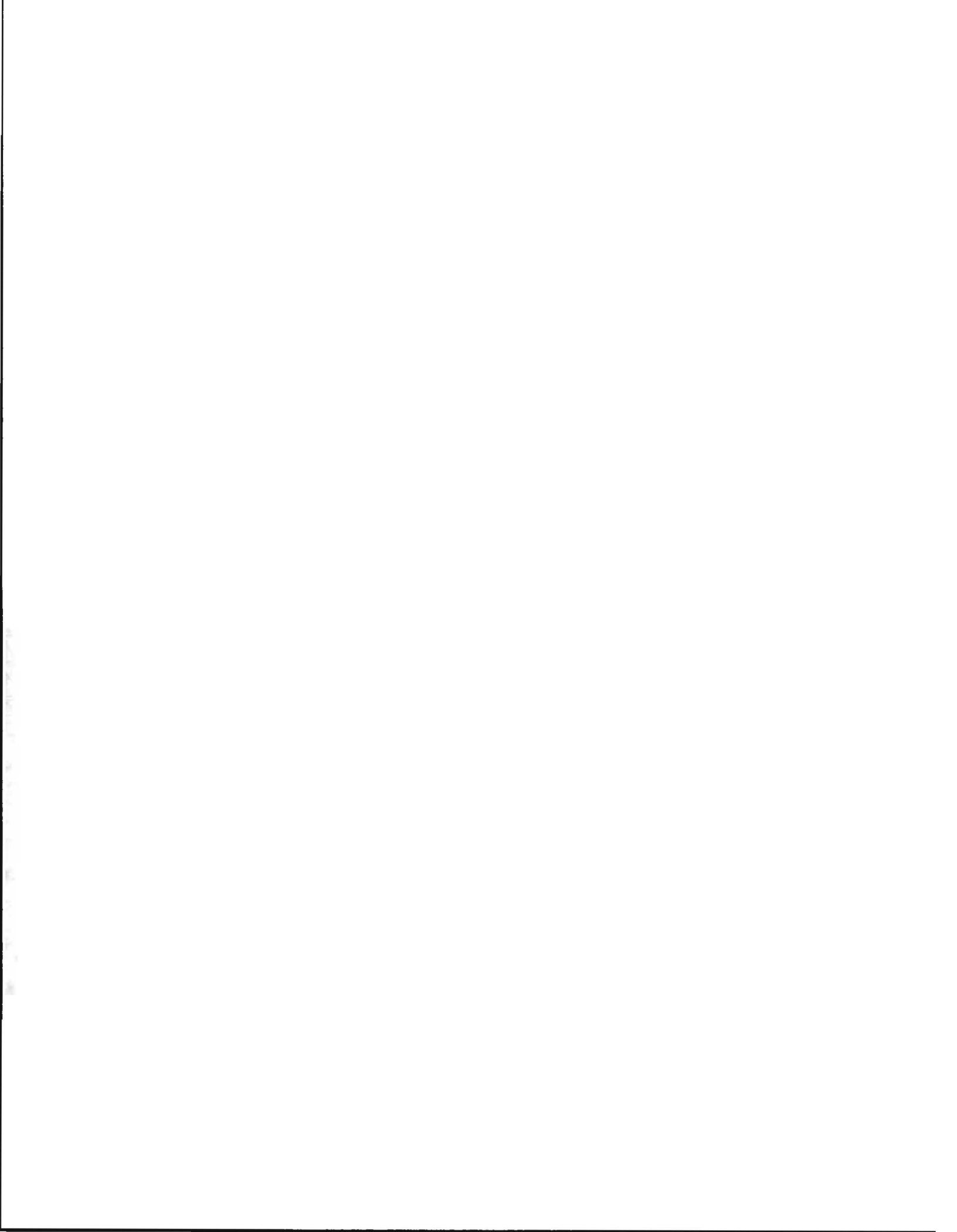
Smith-Mcintyre 6/89	Column No.	41	42	43	44	45	46	47	48	49	50
Weight in mg.	Sample ID No.	B9a	B9b	B9c	B9d	B9e	B10a	B10b	B10c	B10d	B10e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes										0	
Rhynchozoela			26	17	0	0	241	86	2	0	10
Aschelminthes					19	15	0	0	0	8	33
Phoronida											
Sipuncula											
Annelida											
Oligochaeta				0	1	0					0
Polychaeta		452	497	186	344	64	38	277	368	366	477
Mollusca											
Gastropoda											
Bivalvia			92	66	5	0	65		45	22	2
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda						0			1		0
Ostrocooda											0
Copepoda						0					0
Mysidacea											
Cumacea									10		
Tanaidacea						0				0	1
Decapoda											
Isopoda											0
Acarina											0
Chaetognatha											
Echinodermata											
Chordata					5	4	28	27	28	92	51

Smith-Mcintyre 6/89	Column No.	51	52	53	54	55	56	57	58	59	60
Weight in mg.	Sample ID No.	B11a	B11b	B11c	B11d	B11e	B12a	B12b	B12c	B12d	B12e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchozoela		1	14	11	23	24	0	0	4	7	8
Aschelminthes		0		1	21	22		1	4	8	7
Phoronida											
Sipuncula											
Annelida											
Oligochaeta								1	2	7	6
Polychaeta		708	840	578	1074	141	71	72	73	87	33
Mollusca											
Gastropoda											
Bivalvia		1031			3	1	99	26	19	24	1
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda				0		0			8	0	
Ostrocooda											
Copepoda						0					0
Mysidacea											
Cumacea										0	
Tanaidacea						0				0	0
Decapoda											
Isopoda					2			5	13		
Acarina											
Chaetognatha											
Echinodermata											
Chordata					27	16		138	153	38	4

Smith-Mcintyre 6/89 Weight in mg.	Column No. Sample ID No.	61 B13a	62 B13b	63 B13c	64 B13d	65 B13e	66 B14a	67 B14b	68 B14c	69 B14d	70 B14e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela		52	69	6	8	1					
Aschelminthes		0				0					0
Phoronida											
Sipuncula											
Annelida											
Oligochaeta		0									
Polychaeta		587	136	13	53	29		488	27	16	0
Mollusca											
Gastropoda											
Bivalvia		201			21	14			21	4	0
Arthropoda											
Unidentified Protozoa						0					
Unidentified Zoa											
Amphipoda						0			252	146	0
Ostrocooda						16					0
Copepoda						0					0
Mysidacea											
Cumacea		0		3	2	1			4		
Tanaidacea											0
Decapoda											
Isopoda						0			8	4	0
Acarina											
Chaetognatha											
Echinodermata							1126	116		4	0
Chordata						1				9	0

Smith-Mcintyre 6/89 Weight in mg.	Column No. Sample ID No.	71 B15a	72 B15b	73 B15c	74 B15d	75 B15e	76 B16a	77 B16b	78 B16c	79 B16d	80 B16e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela						0			12	3	
Aschelminthes											
Phoronida											
Sipuncula											
Annelida											
Oligochaeta										0	0
Polychaeta		839	116	82	6	1	406	56	175	58	14
Mollusca											
Gastropoda										1	
Bivalvia			43			1			32	50	7
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda				33	8		0				0
Ostrocooda											9
Copepoda						0					0
Mysidacea											
Cumacea										3	
Tanaidacea					0	0					
Decapoda											
Isopoda				40	21						
Acarina											
Chaetognatha											
Echinodermata			101			0					
Chordata				45	9	2			1		0





Smith-Mcintyre 6/89 Weight in mg.	Column No. Sample ID No.	101 B21a	102 B21b	103 B21c	104 B21d	105 B21e	106 B22a	107 B22b	108 B22c	109 B22d	110 B22e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela				2					2		
Aschelminthes					0	0				0	1
Phoronida											
Sipuncula					10						
Annelida											
Oligochaeta											0
Polychaeta		882	112	83	130	15	225	670	270	75	24
Mollusca											
Gastropoda											
Bivalvia		107	107	45	6	2		252	177	15	0
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda				282	2148	422			3	18	48
Ostrocooda						0					
Copepoda					0	0					
Mysidacea											
Cumacea				7	7	1				5	
Tanaidacea						0				0	2
Decapoda				4						2	
Isopoda				2	5				29	2	2
Acarina											
Chaetognatha											
Echinodermata		1768	65		47	5			14	10	
Chordata										64	3

Smith-Mcintyre 6/89 Weight in mg.	Column No. Sample ID No.	111 B23a	112 B23b	113 B23c	114 B23d	115 B23e	116 B24a	117 B24b	118 B24c	119 B24d	120 B24e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela		352	184								0
Aschelminthes					0	6					
Phoronida										0	0
Sipuncula											
Annelida											
Oligochaeta						0				0	
Polychaeta		414	25	66	30	14	182		80	35	18
Mollusca											
Gastropoda											
Bivalvia			352	233	30	3		183	7718	1771	240
Arthropoda											
Unidentified Protozoa											
Unidentified Zoa											
Amphipoda				5	12	5				1	0
Ostrocooda										3	12
Copepoda						0					
Mysidacea									4		
Cumacea				1	5					9	
Tanaidacea					0	0					
Decapoda										2	
Isopoda				9	0	0				1	0
Acarina											
Chaetognatha											
Echinodermata										1	
Chordata				181	103	6					

Smith-Mcintyre 6/89	Column No.	121	122	123	124	125	126	127	128	129	130
Weight in mg.	Sample ID No.	B25a	B25b	B25c	B25d	B25e	B26a	B26b	B26c	B26d	B26e
Porifera											
Cnidaria											
Anthozoa											
Hydrozoa											
Platyhelminthes											
Rhynchocoela											
Aschelminthes					0	0					1
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Polychaeta			29	74	77	13		3	2	12	2
Mollusca											
Gastropoda											
Bivalvia			186	102	14	3				3	
Arthropoda											
Unidentified Protozoa											
Unidentified Zoea											
Amphipoda				87	206	11	148		6	1	2
Ostrocooda											
Copepoda						0					
Mysidacea											
Cumacea					1					0	0
Tanaidacea					0	0					0
Decapoda											
Isopoda			15	28	2	1					
Acarina											
Chaetognatha											
Echinodermata					4						
Chordata				51	31	4				2	

Smith-Mcintyre 6/89	Column No.	131	132	133	134	135	136	137	138	139	140
Weight in mg.	Sample ID No.	B27a	B27b	B27c	B27d	B27e	B28a	B28b	B28c	B28d	B28e
Porifera											
Cnidaria											
Anthozoa					1						
Hydrozoa											
Platyhelminthes										0	
Rhynchocoela											
Aschelminthes					0	0					0
Phoronida											
Sipuncula											
Annelida											
Oligochaeta											
Polychaeta		107		168	100	4	900	278	24	36	1
Mollusca											
Gastropoda											
Bivalvia			120	872	80	1				5	0
Arthropoda											
Unidentified Protozoa											
Unidentified Zoea											
Amphipoda				2	10	3			227	968	238
Ostrocooda						0					
Copepoda											
Mysidacea					0						
Cumacea				5	1	0			5	3	0
Tanaidacea										0	0
Decapoda											
Isopoda					0					5	0
Acarina											
Chaetognatha											
Echinodermata				4	1		76	69		0	
Chordata					29	0					

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