C H E
OF 4

APPENDIX I

COMPLETE DATA SETS

APPENDIX I

COMPLETE DATA SETS

Chlorophyta								
Chaetomorpha sp.	0.0 +0.1	0	0	0	<0.1	0	0	[illegible]
Cladophoraceae spp.	<0.1	0	0	0	0	0	0	0
Cladophora sp.	<0.1	0	0	0	0	0	0	0
Enteromorpha sp.	<0.1	0	0	0	0	0	0	0
Enteromorpha intestinalis	<0.1	0	0	0	0	0	0	0
Enteromorpha linza		0	0	0	0	0	<0.1	0
Monostroma sp.	0	0	<0.1	0	0	0	<0.1	0
Rhizoclonium riparium	<0.1	0	<0.1	0	<0.1	0	<0.1	0
Spongomorpha coalita	<0.1	0	0	0	0	0	<0.1	0
Spongomorpha sp.	<0.1	0	0	0	0	0	<0.1	0
Ulva sp.	0.5 +0.4	1.4 +5.0	0.0 +0.1	0.1 +0.2	<0.1	0.1 +0.1	0.0 +0.0	0
Ulvaria sp.	0	0	<0.1	0	0	0	<0.1	0
Bacillariophyta								
Pennales sp.	<0.1	0	<0.1	0	0	0	0	0
Phaeophyta								
Alaria sp.	0.1 +0.2	1.4 +6.8	0	0	0	0	<0.1	0

Tongue Point #6

	Spring '77		Summer '77		Fall '77		Winter '78	
	$\bar{x}$ 0.01 m^2 / wt	$\bar{x}$ 0.2 m^2 / wt	$\bar{x}$ 0.01 m^2 / wt	$\bar{x}$ 0.2 m^2 / wt	$\bar{x}$ 0.01 m^2 / wt	$\bar{x}$ 0.2 m^2 / wt	$\bar{x}$ 0.01 m^2 / wt	$\bar{x}$ 0.2 m^2 / wt
Analipus japonicus	0.4 +1.3	0	0.2 +0.5	0.1 +0.1	0.0 +0.1	0	0.0 0.0	0
Costaria costatus	0	0	0	0	0.1 +0.3	0	0	0
Fucus distichus	0.1 +0.6	0	0.3 +1.2	6.7 +7.4	0	1.5 +2.8	0.6 +1.0	0
Laminariales spp.	0	0	0	0	0	0	<0.1	
Petalonia fascia	0	0	0	0	0	0	0.0 +0.0	0.0 +0.1
Pylaiella sp.	0	0	[illegible]	0	0	0	0	0
Ralfsiaceae spp.	<0.1	0	0	0	0	0	0	0
Ralfsia pacifica	0	0	0	0	0	0	<0.1	0
Rhodophyta								
Acrochaetium sp.	<0.1	0	<0.1	0	0	0	0	0
Bossiella plumosa	<0.1	0	0.6 +0.1	0	0	0	0	0
Callithamnion pikeanum	4.1 +8.0	0	0.0 +0.1	0	0	0	<0.1	0
Corallina vancouveriensis	0	0	0.6 +2.0	0	<0.1	0	0	0
Corallinaceae spp.	0	[illegible]	[illegible]	0	0	0	0	0
Cryptosiphonia woodii	0.2 +0.9	0	0.0 +0.1	0	0	0	0	0
Endocladia muricata	1.1 +19.1	0	0.6 +0.7	5.2 +10.4	0.1 +0.2	0	0.1 +0.1	0

costata				[illegible]	[illegible]	0	[illegible]	[illegible]
Fucus	0.1	0	0.1	6.7	[illegible]	1.5	[illegible]	[illegible]
distichus	+0.6		+1.2	+7.4		+2.8	+1.0	
Laminariales	0	0	0	0	0	0	0.1	
spp.								
Petalonia	0	0	0	0	0	0	0.0	0.0
fascia							0.0	+0.1
Pylaiella	0	0	[illegible]	0	0	0	0	[illegible]
sp.								
Ralfsiaceae	+0.1	0	0	0	0	0	0	0
spp								
Ralfsia	0	0	0	0	0	0	+0.1	0
pacifica								
Rhodophyta								
Acrochaetium	+0.1	0	+0.1	0	0	0	0	0
sp.								
Bossiella	0.1	0	0.0	0	0	0	0	0
plumosa			+0.1					
Callithamnion	4.1	0	0.0	0	0	0	0.1	0
pikeanum	+8.0		+0.1					
Corallina	0	0	0.6	0	+0.1	0	0	0
vancouveriensis			+2.0					
Corallinaceae	0	0	[illegible]	0	0	0	0	0
spp.								
Cryptosiphonia	0.2	0	0.0	0	0	0	0	0
woodii	+0.9		+0.1					
Endocladia	1.3	0	0.6	5.2	0.1	0	0.1	0
muricata	+19.1		+0.3	+10.4	+0.2		+0.1	

Tongue Point #6

	Spring '77		Summer '77		Fall '77		Winter '78	
	$\bar{x}$ 0.01 m^2 / wt	$\bar{x}$ 0.2 m^2 / wt	$\bar{x}$ 0.01 m^2 / wt	$\bar{x}$ 0.2 m^2 / wt	$\bar{x}$ 0.01 m^2 / wt	$\bar{x}$ 0.2 m^2 / wt	$\bar{x}$ 0.01 m^2 / wt	$\bar{x}$ 0.2 m^2 / wt
Gigartinaceae	0	0	0.1	2.1	0.0	0	0	0
spp.			+0.1	+4.3	+0.1			
Gigartina	3.6	53.5	2.0	19.3	1.1	4.7	0.1	0.3
papillata (compl)	+3.2	+39.2	+5.1	+26.2	+1.3	+6.4	+0.2	+0.4
Halosaccion	0.7	4.7	7.4	36.9	0.0	0.9	+0.1	0.1
glandiforme	+0.9	+4.2	+9.8	+42.9	+0.0	+0.8		+0.2
Hymenena	0.0	+0.1	+0.1	0	0	0	+0.1	0
sp.	0.1		[illegible]					
Hildenbrandia	0	0		0	0	[illegible]	0	0
sp.								
Irides	0	0	1.1	0	0	0.6	0	0
cordata			+1.7			+0.8		
Irides	0	0	2.5	5.6	1.8	11.7	0	0
cornucopiae			+5.1	+11.1	+5.1	+13.8		
Irides	0	0	0.6	8.9	0.1	0.3	0	0.4
heterocarpa			+2.8	+14.8	0.5	0.5		0.6
Irides	0	3.5	1.2	0	0.0	0	0.0	0
spp.		+4.7	+3.9		+0.0		+0.0	
Mesophyllum	+0.1	0	0	0	0	0	0	0
conchatum								
Microcladia	1.1	0	0.0	0	+0.1	0	0	0
borealis	+1.8		+0.0					
Odonthalia	+0.1	0	0	0	0	0	0	0
floccosa								
Petrocelis	[illegible]	0	[illegible]	0	[illegible]	0	[illegible]	[illegible]
middendorfii	+0.1							
Plocamium	+0.1	0	0	0	0	0	+0.1	0
tenue								
Polysiphonia	0.1	0	+0.1	0	+0.1	0	+0.1	0
hendryi	+0.1							
Polysiphonia	+0.1	0	0	0	0	0	0	0
pacifica								

Gigartinaceae	0	0	0.1	2.1	0.0	0	0	0
spp.			+0.1	+4.3	+0.1			
Gigartina	3.6	43.5	2.0	19.1	1.1	4.7	0.1	0.1
papillata (compl)	±7.2	+39.7	+5.1	+26.2	+1.3	+6.4	+0.2	+0.4
Halosaccion	0.7	4.7	7.4	36.9	0.0	0.9	+0.1	+0.1
glandiforme	±0.9	+4.2	+9.8	+42.9	+0.0	+0.8		
Hymenena	0.0	+0.1	+0.1	0	0	0	0	0
sp.	0.1						+0.1	
Hildenbrandia	0	0		0	0		1	0
sp.								
Iridea	0	0	1.1	0	0	0.6	0	0
cordata			+3.7			+0.8		
Iridea	0	0	2.5	5.6	1.8	11.7	0	0
cornucopiae			+5.3	+11.1	+5.3	+13.8		
Iridea	0	0	0.6	8.9	0.1	0.3	0	0.4
heterocarpa			+2.8	+14.8	0.5	0.5		0.6
Iridea	0	3.5	1.2	0	0.0	0	0.0	0
spp.		+4.7	+1.9		+0.0		+0.0	
Mesophyllum	+0.1	0	0	0	0	0	0	0
conchatum								
Microcladia	1.1	0	0.0	0	+0.1	0	0	0
borealis	+1.8		+0.0					
Odonthalia	+0.1	0	0	0	0	0	0	0
floccosa								
Petrocelis	0.1	0		0	/	0	/	
middendorfii	+0.1							
Plocamium	+0.1	0	0	0	0	0	+0.1	0
tenuo								
Polysiphonia	0.1	0	+0.1	0	+0.1	0	0.1	0
hendryi	+0.1							
Polysiphonia	+0.1	0	0	0	0	0	0	0
pacifica								

Tongue Point 46

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Porphyra		0		0		0		0		0		0		0.0		0.6
pseudolanceolata														+0.0		+0.9
Porphyra		0		0		0.2		0.7		0		0		0		0
smithii						+0.5		+1.3								
Porphyra		+0.1		+0.1		/		0		0		0		0		0
spp.																
Pterosiphonia		0.0		0		+0.1		0		0		0		0		0
bipinnata		+0.1														
Pterosiphonia		+0.1		0		0		0		0		0		0		0
gardneri																
Porifera																
Halichondria		0		/		0		0		0		0		0		0
panicea																
Cnidaria																
Anthozoa																
Anthozoa	0.1	0.0	1.5	0.5	0		0		0.1	0.0	0		0		0	
spp.	±0.4	±0.0	±3.0	±0.9					+0.2	+0.0						
Platyhelmintes																
Turbellaria	0.5	+0.1	0.3	+0.1	3.4	+0.1	0.3	+0.1	9.1	0.0	0		2.5	+0.1	0	
spp.	±1.6		+0.5		±5.6		+0.5		±20.7	+0.1			+6.4			
Nemertea	0.9	+0.1	0		0.6	+0.1	0		0.1	+0.1	0		0.1	+0.1	0	
spp.	±2.1				±1.1				+0.3				+0.2			
Amphiporus	0.4	+0.1	0.3	0.1	0.2	+0.1	0		0.3	+0.1	0		0.2	+0.1	0	
gracile	±0.6		+0.5		+0.4				+0.9				+0.4			
Nematoda																
spp.	8.0	+0.1	0		0.1	+0.1			0.2	+0.1	0		0		0	
	±19.1				+0.2				+0.4							

Pteroclphoxia bipinnata		0.0 ±0.1		0		<0.1		0		0		0		0		0		0
Pteroclphonia gardneri		<0.1		0		0		0		0		0		0		0		0
Porifera																		
Halichondria panicea		0		✓		0		0		0		0		0		0		0
Cnidaria																		
Anthozoa																		
Actiniaria																		
Anthozoa spp.	0.1 ±0.4	5.0 ±0.0	1.5 ±1.0	0.5 ±0.9	0		0		0.1 ±0.2	0.0 ±0.0	0		0		0			
Platyhelminthes																		
Turbellaria spp.	0.5 ±1.6	<0.1	0.3 ±0.5	<0.1	3.4 ±5.6	<0.1	0.3 ±0.5	<0.1	9.1 ±20.7	0.0 ±0.1	0		2.5 ±6.4	<0.1	0			
Nemertea																		
Nemertea spp.	0.9 ±2.1	<0.1	0		0.6 ±1.1	<0.1	0		0.1 ±0.1	<0.1	0		0.1 ±0.2	<0.1	0			
Baplectonemus gracilis	0.4 ±0.6	<0.1	0.3 ±0.5	0.3	0.2 ±0.4	<0.1	0		0.3 ±0.9	<0.1	0		0.2 ±0.4	<0.1	0			
Nematoda																		
spp.	8.0 ±18.2	<0.1	0		0.1 ±0.2	<0.1			0.2 ±0.4	<0.1	0		0		0			

Tongue Point *6

	Spring '77				Summer '77				Fall '77				Winter '78			
	$\bar{x}$ 0.01 m^2	wt	$\bar{x}$ 0.2 m^2	wt	$\bar{x}$ 0.01 m^2	wt	$\bar{x}$ 0.2 m^2	wt	$\bar{x}$ 0.01 m^2	wt	$\bar{x}$ 0.2 m^2	wt	$\bar{x}$ 0.01 m^2	wt	$\bar{x}$ 0.2 m^2	wt
Mollusca																
Amphineura	4.1	0.1	0		1.0	0.0	0		0.4	<0.1	0		0		0	
spp. (juv.)	±7.0	±0.1			±2.3	±0.1			±1.2							
Cyanoplax dentiens	0.5 ±1.1	0.0 ±0.1	0		0		0		0.2 ±0.7	<0.1	0.1 ±0.5	0.1 ±0.1	0		0	
Mopalia hindsii	0		0		0.1 ±0.2	0.1 ±0.0	0		0		0		0		0	
Gastropoda																
Acmaeidae	0.9	0.0	0		0.5	<0.1	0		0.2	0.0	0		0.1	<0.1	0	
spp.	±2.0	±0.0			±1.2				±0.5	±0.1			±0.2			
Barleeia haliotiphila	1.4 ±3.6	<0.1	0		<0.1 ±0.2	0.1	0		0		0		0		0	
Cerithiopsis sp.	0.1 ±0.2	<0.1	0		0		0		0		0		0		0	
Colliselle digitalis	2.6 ±3.1	0.6 ±0.9	21.8 ±20.4	9.2 ±9.3	3.7 ±1.0	1.0 ±1.1	22.0 ±16.8	9.0 ±8.1	2.9 ±2.3	0.8 ±0.8	19.0 ±9.6	8.9 ±5.2	2.9 ±4.4	0.3 ±0.8	14.3 ±9.6	5.9 ±4.2
Collisella pelta	0.3 ±0.7	0.1 ±0.2	3.0 ±3.6	2.2 ±2.6	0.1 ±0.1	0.1 ±0.2	0.5 ±0.6	0.4 ±0.5	0		0		0		0	
Collisella strigatella	1.5 ±3.9	0.4 ±1.3	0		2.1 ±2.1	0.3 ±0.5	4.5 ±4.7	1.0 ±1.0	1.8 ±4.4	0.2 ±0.6	2.3 ±2.6	0.7 ±0.8	0.7 ±2.0	0.1 ±0.2	0.8 ±1.5	0.1 ±0.3
Lacuna variegata	0		0		0		0		0.1 ±0.3	±0.1	0		0.2 ±0.5	<0.1	0	
Littorina scutulata	0.1 ±0.2	0.0 ±0.0	0		0		0		0.1 ±0.2	±0.1	0		0		0	
Littorina sitkana	5.2 ±9.6	0.1 ±0.1	0		26.5 ±34.2	0.5 ±0.2	0		3.5 ±7.2	0.1 ±0.2	0		9.9 ±9.1	0.0 ±0.0	0	
Notoacmea fenestrata	0		0		0		0		0.2 ±0.7	0.0 ±0.0	0		0		0	
Notoacmea persona	0.1 ±0.2	0.0 ±0.1	0		0		0		0.1 ±0.2	0.0 ±0.1	0.8 ±1.0	0.2 ±0.3	0		0	
Onchidella borealis	1.1 ±2.0	<0.1	0		1.0 ±2.4	0.0 ±0.1	0		0.9 ±2.7	0.0 ±0.0	0.1 ±0.2	±0.1	0		0	

	$\bar{x}$ 0.01 m²		$\bar{x}$ 0.2 m²		$\bar{x}$ 0.01 m²		$\bar{x}$ 0.2 m²		$\bar{x}$ 0.01 m²		$\bar{x}$ 0.2 m²		$\bar{x}$ 0.01 m²		$\bar{x}$ 0.2 m²	
		wt		wt		wt		wt		wt		wt		wt		wt
Mollusca																
Amphineura	4.1	0.1	0		1.0	0.0	0		0.4	±0.1	0		0		0	
spp. (juv.)	±7.0	±0.1			±2.3	±0.1			±1.2							
Cyanoplax	0.5	0.0	0		0		0		0.2	±0.1	0.1	0.1	0		0	
dentiens	±1.1	±0.1							±0.5		±0.5	±0.1				
Nepalia	0		0		0.1	0.1	0		0		0		0		0	
kinoshi					±0.2	±0.0										
Gastropoda																
Acmaeidae	0.9	0.0	0		0.5	±0.1	0		0.2	0.0	0		0.1	±0.1	0	
spp.	±2.0	±0.0			±1.2				±0.5	±0.1			±0.2			
Barleeia	1.4	±0.1	0		±0.1	0.1	0		0		0		0		0	
haliotiphila	±3.6				±0.2											
Cerithiopsis	0.1	±0.1	0		0		0		0		0		0		0	
sp.	±0.2															
Collisella	2.6	0.6	21.8	9.7	3.7	1.0	22.0	9.0	2.9	0.8	19.0	8.9	2.9	0.3	14.3	5.9
digitalis	±3.1	±0.9	±20.4	±9.3	±3.0	±1.1	±16.8	±8.7	±2.3	±0.8	±9.6	±5.2	±4.4	±0.8	±9.6	±4.2
Collisella	0.3	0.1	3.0	2.2	0.1	0.1	0.5	0.4	0		0		0		0	
pelta	±0.7	±0.2	±3.6	±2.6	±0.3	±0.2	±0.6	±0.5								
Collisella	1.3	0.4	0		2.1	0.3	4.5	1.0	1.8	0.2	2.3	0.3	0.7	0.1	0.8	0.1
strigatella	±1.9	±1.1			±2.1	±0.5	±4.7	±1.9	±4.4	±0.6	±2.6	±0.8	±2.0	±0.2	±1.5	±0.3
Lacuna	0		0		0		0		0.1	±0.1	0		0.2	±0.1	0	
variegata									±0.3				±0.5			
Littorina	0.1	0.0	0		0		0		0.1	±0.1	0		0		0	
scutulata	±0.2	±0.0							±0.2							
Littorina	5.2	0.1	0		26.5	0.5	0		3.5	0.1	0		9.9	0.0	0	
sitkana	±9.6	±0.1			±34.2	±0.7			±7.2	±0.2			±9.1	±0.0		
Notoacmea	0		0		0		0		0.2	0.0	0		0		0	
fenestrata									±0.7	±0.0						
Notoacmea	0.1	0.0	0		0		0		0.1	0.0	0.8	0.2	0		0	
persona	±0.2	±0.1							±0.2	±0.1	±1.0	±0.3				
Onchidella	1.1	±0.1	0		1.0	0.0	0		0.9	0.0	0.1	±0.1	0		0	
borealis	±2.0				±2.6	±0.1			±2.2	±0.0	±0.2					

	Spring '77				Summer '77				Fall '77				Winter '78			
	$\bar{x}$ 0.01 m²	wt	$\bar{x}$ 0.2 m²	wt	$\bar{x}$ 0.01 m²	wt	$\bar{x}$ 0.2 m²	wt	$\bar{x}$ 0.01 m²	wt	$\bar{x}$ 0.2 m²	wt	# 0.01 m²	wt	# 0.2 m²	wt
Siphonaria	4.4	0.5	0.8	0.1	0.1	0.2	0		0.2	0.0	0					
thersites	±7.0	±1.2	±1.0	±0.2	±0.4	±0.4			±1.4	±0.1			0		0	
Thais	0.2	±0.1	0		0		0		0.2	0.1	1.8	0.7				
canaliculata	±0.5								±0.4	±0.1	±1.3	±0.5	0		0	
Thais	0.2	0.0	0.8	0.2	0.2	0.0	0.5	0.5	0		0					
emarginata	±0.7	±0.1	±1.0	±0.2	±0.5	±0.0	±0.6	±0.6					0		0	
Bivalvia																
Lasaea	8.1	±0.1	0		0		0		0		0					
ciatula	±19.5												0		0	
Musculus	682.7	2.3	0		20.4	0.1	0		1.2	0.0	0					
pygmaeus	±1311.4	±4.3			±47.0	±0.1			±0.5	±0.1			0.1	±0.1	0	
Mytilus	0		0.8	2.2	0		0		0		0		±0.1			
californianus			±1.5	±4.1									0		0	
Mytilus	0		0		0.2	0.2	0.5	0.4	0.2	0.0	0					
edulis					±0.7	±0.2	±1.0	±0.8	±0.5	±0.1			0		0	
Mytilus	3.0	0.1	0		0.6	±0.1	0		0		0					
spp. (juv.)	±5.6	±0.1			±1.1								0.2	±0.1	0	
Annelida													±0.4			
Oligochaeta	5.8	±0.1	0													
spp.	±9.9				1.2	±0.1	0		0.2	±0.1	0		0		0	
Polychaeta					±3.6				±0.5							
Nereidae																
Nereis	0		0													
sp.					0.1	±0.1	0		0.1	±0.1	0		0		0	
Sabellidae	1	±0.1	0		±0.2				±0.2							
spp.	±0.2				0		0		0		0		0		0	
Sigalionidae	3.1	±0.1	0													
spp.	±0.2				0		0		0		0		0		0	
Syllidae																
Syllis	1.1	±0.1	0													
spp.	±4.6				0.3	±0.1	0		1.6	±0.1	0		0		0	
					±0.7				±5.8							

cancellata	±0.5															
Thais emarginata	0.2 ±0.7	0.0 ±0.1	0.8 ±1.0	0.2 ±0.2	0.2 ±0.5	0.0 ±0.0	0.5 ±0.6	0.4 ±0.6	0.2 ±0.4	0.1 ±0.1	1.8 ±1.3	0.7 ±0.5	0		0	
Bivalvia									0		0		0		0	
Lasaea cistula	8.1 ±19.5	±0.1	0		0		0		0		0		0		0	
Musculus pygmaeus	687.7 ±1311.6	2.3 ±4.3	0		20.4 ±47.0	0.1 ±0.1	0		1.2 ±9.5	0.0 ±0.1	0		0.1 ±0.1	±0.1	0	
Mytilus californianus	0		0.8 ±1.5	2.2 ±4.1	0		0		0		0		0		0	
Mytilus edulis	0		0		0.2 ±0.3	0.1 ±0.2	0.5 ±1.0	0.4 ±0.8	0.2 ±0.5	0.0 ±0.1	0		0		0	
Mytilus spp. (juv.)	3.0 ±5.6	0.1 ±0.1	0		0.4 ±1.1	±0.1	0		0		0		0.2 ±0.4	±0.1	0	
Annelida																
Oligochaeta spp.	3.8 ±9.9	±0.1	0		1.2 ±1.8	±0.1	0		0.2 ±0.5	±0.1	0		0		0	
Polychaeta																
Nereidae Nereis spp.	0		0		0.1 ±0.2	±0.1	0		0.1 ±0.2	±0.1	0		0		0	
Sabellidae spp.	.1 ±0.2	±0.	0		0		0		0		0		0		0	
Hesionidae spp.	0.1 ±0.2	±0.1	0		0		0		0		0		0		0	
Syllidae Syllis spp.	1 ±4.8	±0.1	0		0.1 ±0.2	±0.1	0		1.4 ±5.8	±0.1	0		0		0	

Tongue Point +6

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.02 m²	
	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt
Syllis edentata	0.4 ±0.9	±0.1	0		1.1 ±1.9	±0.1	0		0.4 ±1.4	±0.1	0		0		0	
Crustacea																
Ostracoda spp.	0.2 ±0.5	±0.1	0		0		0		0		0		0		0	
Cirripedia																
Balanus cariosum	2.1 ±4.5	1.0 ±2.1	7.8 ±5.8	14.1 ±13.7	22.7 ±66.2	6.3 ±13.8	40.8 ±71.0	110.3 ±195.0	30.8 ±36.4	1.8 ±2.4	8.0 ±14.7	18.8 ±36.7	3.5 ±4.9	0.3 ±0.6	9.0 ±16.1	26.5 ±51.0
Balanus glandula	1.3 ±1.9	0.1 ±0.1	0		6.0 ±19.8	0.5 ±1.4	0.9 ±1.5	0.4 ±1.7	11.5 ±8.6	0.5 ±0.5	2.0 ±2.5	0.8 ±1.0	22.1 ±35.3	0.9 ±1.2	1.8 ±3.5	1.2 ±2.5
Balanus spp. (juv.)	0		0		116.3 ±22.8	0.4 ±0.3	0		3.9 ±6.2	±0.1	0		0		0	
Chthamalus dalli	39.8 ±53.6	0.2 ±0.0	0		43.1 ±32.4	0.2 ±0.2	3		22.7 ±18.2	0.5 ±0.5	0		36.2 ±25.8	0.1 ±0.6	0	
Cirripedia spp. (juv.)	24.6 ±52.0	±0.1	1.3 ±2.5	±0.1	22.9 ±39.5	±0.1	0		0		0		29.2 ±35.9	±0.1	0	
Policipes Polymerus	0.1 ±0.2	±0.1	0		0		0		0.1 ±0.2	0.1 ±0.3	0		0		0	
Tanaidacea																
Anatanais normani	1.3 ±2.5	±0.1	0		0		0		0.9 ±2.7	±0.1	0		0		0	
Pancolus californiensis	20.9 ±31.7	±0.1	0		4.2 ±7.1	±0.1	0		5.1 ±8.5	0.0 ±0.0	0		2.5 ±2.7	±0.1	0	
Isopoda																
Dynamenella shoemeri	36.8 ±41.6	0.1 ±0.1	0		6.7 ±9.6	±0.1	0		35.9 ±40.0	0.4 ±0.7	0		19.9 ±31.4	±0.1	0	
Idotea spp. (juv.)	0		0		0		0		0		0		0.1 ±0.2	±0.1	0	
Ligia pelagis	0		0.3 ±0.5	0.1 ±0.2	0		0		0		0		0		0	
Pleusymtes chromatocephala	0.2 ±0.5	±0.1	0		0		0		0		0		0		0	

Tongue Point #6

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Nunna																
spp.	0.1 ±0.2	<0.1	0		0		0		0		0		0		0	
Amphipoda																
Amphithoe simulans	-		-		0.1 ±0.2	<0.1	0		-		-		-		-	
Hyale anceps	-		-		1.4 ±2.7	<0.1	0.8 ±1.5	<0.1	-		-		-		-	
Hyale grandicornis californica	-		-		0.8 ±1.6	<0.1	0		-		-		-		-	
Hyale spp.	-		-		0.1 ±0.5	<0.1	0		-		-		-		-	
Oligochiaus light	-		-		0.9 ±2.0	<0.1	0.5 ±1.0	<0.1	-		-		-		-	
Gammaridea spp.	3.7 ±6.3	0.1 ±0.1	7.3 ±10.9	0.2 ±0.3	-		-		3.7 ±5.1	0.1 ±0.1	4.0 ±7.4	0.0 ±0.1	0.2 ±0.8	<0.1	0	
Insecta																
Chironomidae	0		0		0		0		0.3 ±0.9	<0.1	0		0		0	
Coleoptera	0.4 ±1.3	0.1	0		0		0		0.1 ±0.5	<0.1	0		0		0	
Diptera larvae	3.5 ±7.2	<0.1	0		3.1 ±5.0	<0.1	0		2.3 ±3.6	<0.1	0		1.5 ±2.5	<0.1	0	
Ephydridae	0		0		0		0		0.9 ±2.2	<0.1	0		0		0	
Echinodermata																
Holothuroidea																
Cucumaria pseudocrata	0		0		0.1 ±0.5	<0.1	0		0		0		0		0	

Tongue Point #6

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Species Richness	79				66				56				44			
Diversity - H^1	1.50				2.79				2.75				2.56			
Total Number	21,853.9				7,450.0				3,720.0				3,805.0			
Total Biomass	866.5				404.8				111.4				93.6			

Tongue Point #6

	Spring '77		Summer '77		Fall '77		Winter '78	
	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2
	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt
Species Richness	79		66		56		44	
Diversity - H^1	1.50		2.79		2.73		2.54	
Total Number	21,853.9		7,450.0		1,720.0		1,845.0	
Total Biomass	866.5		404.8		111.6		93.8	

Table 1b. Tongue Point (rock) benthic organisms from the mid (+)') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.01 (N=20) and 0.2 (N=4) m^2 ± standard deviation.

	Spring '77		Summer '77		Fall '77		Winter '78	
	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2
	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt
Chlorophyta								
Blidingia sp.	0	0	0	0	0	0	<0.1	0
Chaetomorpha sp.	0	0	0	0	<0.1	0	0	0
Cladophora sp.	0	0	<0.1	0	0	0	<0.1	0
Cladophoraceae sp.	<0.1	0	<0.1	0	0	0	0	0
Enteromorpha intestinalis	0	0	<0.1	0	0	0	0	0
Enteromorpha linza	0	0	<0.1	0	0	0	0	0
Enteromorpha sp.	<0.1	0	0	0	0	0	0	0
Monostroma fuscum	0	0	0	0	<0.1	0	0	0

Table 1b. Tongue Point (rock) benthic organisms from the mid (+3') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.01 ($N=20$) and 0.2 ($N=4$) m^2 ± standard deviation.

	Spring '77		Summer '77		Fall '77		Winter '78	
	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2
	# wt	# wt	# wt	# wt	# wt	# wt	# wt	# wt
Chlorophyta								
Blidingia sp.	0	0	0	0	0	0	<0.1	0
Chaetomorpha sp.	0	0	0	0	<0.1	0	0	0
Cladophora sp.	0	0	<0.1	0	0	0	<0.1	1
Cladophoraceae sp.	<0.1	0	<0.1	0	0	0	0	0
Enteromorpha intestinalis	0	0	<0.1	0	0	1	0	0
Enteromorpha linza	0	0	<0.1	0	0	0	0	0
Enteromorpha sp.	<0.1	0	0	0	0	0	0	0
Monostroma fuscum	0	0	0	0	<0.1	0	0	0
Monostroma sp.	0.0 ±0.0	0	0	0	0	0	0	0
Rhizoclonium riparium	<0.1	0	<0.1	0	<0.1	0	<0.1	0
Rhizoclonium sp.	<0.1	0	0	0	0	0	0	0
Spongomorpha coalita	0.4 ±1.4	0	1.1 ±3.5	3.8 ±7.2	0.0 ±0.1	0	0	0
Spongomorpha spinescens	0	0	<0.1	0	0	0	0	0
Spongomorpha sp.	0.8 ±3.1	0	<0.1	0	<0.1	0	0	0
Ulva sp.	1.3 ±3.3	0	0.1 ±0.2	0.3 ±0.5	0.2 ±0.8	0.3 ±0.5	<0.1	0
Ulvaria sp.	0	0	<0.1	0	<0.1	0	<0.1	0

Tongue Point +1

	Spring '77		Summer '77		Fall '77		Winter '78	
	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2	0.01 m^2	0.2 m^2
	# wt	# wt	# wt	# wt	# wt	# wt	# wt	# wt
Urospora sp.	0	0	<0.1	0	0	0	0	0
Bacillariophyta								
Pennales sp.	<0.1	0		0	0	0	0	0
Phaeophyta								
Alaria sp.	23.9 ±65.2	234.7 ±179.6	18.2 ±51.1	1.9.9 ±359.8	0.1 25.6	261.6 ±362.7	6.2 ±22.4	123.5 ±109.0
Analipus japonica	0.1 ±0.2	0	<0.1	0	0	0	0	0
Desmarestia sp.	<0.1	0	0	0	0	0	0	0
Ectocarpaceae sp.	<0.1	0	0	0	0	0	0	0
Ectocarpus sp.	0	0	0	0	0	0	<0.1	0

Tongue Point #1

	Spring '77		Summer '77		Fall '77		Winter '78	
	0.01 m²	0.2 m²	0.01 m²	0.2 m²	0.01 m²	0.2 m²	0.01 m²	0.2 m²
	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt	# / wt
Urospora sp.	0	0	<0.1	0	0	0	0	0
Bacillariophyta								
Pennales sp.	<0.1	0		0	0	3		
Phaeophyta								
Alaria sp.	23.9 ±65.2	234.7 ±179.6	18.2 ±53.3	179.9 ±359.8	6.1 ±25.6	241.6 ±362.7	6.2 ±21.6	123.5 ±109.6
Analipus japonica	0.1 ±0.2	0	<0.1	0	0	0	0	0
Desmarestia sp.	<0.1	0	0	0	0	0	0	0
Ectocarpaceae sp.	<0.1	0	0	0	0	0	0	0
Ectocarpus sp.	0	0	0	0	0	0	<0.1	0
Fucus distichus	0	0	0	0	0	<0.1	0	0
Hedophyllum sessile	0	15.2 ±28.3	0	0	<0.1	0.1 ±0.2	0.1 ±0.0	3.7 ±7.1
Laminaria groenlandica	0.4 ±1.7	0	0	0	2.5 ±6.8	49.6 ±88.5	0	0
Laminariales sp.	0.0 ±0.0	0	0.5 ±1.9	0	0.1 ±0.2	0.1 ±0.2	0.0 ±0.0	0
Leathesia difformis	<0.1	0	0	0	0	0	0	0
Petalonia fascia	0.0 ±0.0	0	0	0	0	0	<0.1	0
Pleosstrophon irregulare	<0.1	0	0	0	0	0	0	0

Tongue Point +1

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Ralfsia sp.	0		0		0		0		0		0		*		0	
Ralfsiaceae sp.	/		0		0		0		0		0		0		0	
Rhodophyta																
Acrochaetium sp.	<0.1		0		<0.1		0		<0.1		0		0		0	
Antithamnion defectum	<0.1		0		<0.1		0		0		0		0		0	
Antithamnion kylinii	<0.1		0		0		0		0		0		0		0	
Antithamnionella pacifica var. *pacifica*	<0.1		0		0		0		0		0		0		0	
Bonnemaisonia hamifera	1.4		0		1.2		0		2.2		0		0.9		0	
Callithamnion pikeanum	±1.2 0.1		0		±1.4 1.0		0		±2.7 3.0		0		±1.7 0.1		0	
Callithamnion/ Pleonosporium	±0.1 0.0		0		±1.1 <0.1		0		±5.5 <0.1		0		<0.1 <0.1		0	
Ceramium californicum	0		0		0		0		<0.1		0		<0.1		0	
Ceramium washingtoniense	0		0		0		0		0		0		<0.1		0	
Ceramium sp.	0		0		0		0		<0.1		0		0		0	
Corallina vancouveriensis	9.7 ±8.7		0		10.5 ±9.8		0		10.6 ±9.3		0		2.5 ±4.6		0	
Corallinaceae sp.	0		0		<0.1		0		/		0		<0.1		0	
Cryptopleura woodii	<0.1		0		0.9 ±2.7		0		<0.1		0		0.0 <0.1		0	

Ralfsia sp.	0	0	0	0	0	0	0	0
Ralfsiaceae sp.	✓	0	0	0	0	0	✓	0
Rhodophyta								
Acrochaetium sp.	<0.1	0	<0.1	0	<0.1	0	0	0
Antithamnion defectum	<0.1	0	<0.1	0	0	0	0	0
Antithamnion kylinii	<0.1	0	0	0	0	0	0	0
Antithamnionella pacifica var. pacifica	<0.1	0	0	0	0	0	0	0
Bossiella plumosa	1.4 ±1.2	0	1.2 +1.4	0	2.2 +2.7	0	0.9 +1.7	0
Callithamnion pikeanum	0.1 ±0.1	0	1.0 +1.1	0	3.0 +5.5	0	<0.1	0
Callithamnion/ Pleonosporium	0.0 ±0.1	0	<0.1	0	<0.1	0	<0.1	0
Ceramium californicum	0	0	0	0	<0.1	0	<0.1	0
Ceramium washingtoniense	0	0	0	0	0	0	<0.1	0
Ceramium sp.	0	0	0	0	<0.1	0	0	0
Corallina vancouveriensis	9.2 ±8.7	0	10.1 +9.8	0	10.6 +9.1	0	2.5 +4.4	0
Corallinaceae sp.	0	0	<0.1	0	✓	0	<0.1	0
Cryptosiphonia woodii	<0.1	0	0.9 +2.7	0	<0.1	0	0.0 +0.1	0

Tongue Point #1

	Spring '77		Summer '77		Fall '77		Winter '78	
	0.01 m² wt	0.2 m² wt	0.01 m² wt	0.2 m² wt	0.01 m² wt	0.2 m² wt	0.01 m² wt	0.2 m² wt
Delesseriaceae sp.	<0.1	0	<0.1	0	0	0	0	0
Endocladia muricata	<0.1	0	<0.1	0	<0.1	0	0.0	0
Gigartina papillata complex	0.1 ±0.4	0.1 ±0.1	0.2 +0.6	0.5 +0.5	0.2 +1.1	2.3 +3.0	2.0 +4.8	0.2 +1.1
Gonimophyllum skottsbergii	<0.1	0	0	0	0	0	0	0
Halosaccion glandiforme	0.6 ±0.7	1.2 +1.2	2.6 +6.5	11.0 +14.1	6.4 +8.1	191.9 +82.6	3.3 +5.1	45.5 +14.6
Rhynchocystis sp.	0.8 ±1.2	0.1 +0.3	1.6 +2.5	0	0.5 +0.8	1.1 +2.1	<0.1	<0.1 +1.0
Iridaea cordata	0	1.0 +2.0	0	0	0.2 +0.4	0.1 +0.2	0	0
Iridaea heterocarpa	0	0	0	0	0.0 +0.1	0	0	0
Iridaea sp.	0.1 ±0.2	0.5 +1.0	0.2 +0.7	0	0.0 +0.1	0	<0.1	0
Mesophyllum conchatum	✓	0	0	0	✓	0	✓	0
Microcladia borealis	0.1 ±0.6	0	6.7 +12.2	0	0.5 +0.7	0	0.0 +0.1	0
Odonthalia floccosa	<0.1	0	<0.1	0	0	0	✓	0
Petrocelis middendorffii	✓	0	✓	0		0	0	0
Plocamium coccineum	0	0	0	0	0.1	0	0	0
Plocamium tenue	<0.1	0	0.1 +0.3	0	0.1 +0.5	0	0.1 +0.7	0
Polysiphonia hendryi	0.7 ±0.5	0	0.0 +0.0	0	0.1 +0.2	0	<0.1	0

Delesseriaceae sp.	<0.1	0	<0.1	0	0	0	[illegible]	0
Endocladia muricata	<0.1	0	<0.1	0	<0.1	0	1.0	0
Gigartina papillata complex	0.1 +0.4	0.1 +0.1	0.2 +0.5	0.5 +0.5	0.7 +1.1	2.3 +1.0	2.0 +4.8	0.7 +1.1
Gonimophyllum skottsbergii	<0.1	0	0	0	0	0	0	0
Palosaccion glandiferum	0.6 +0.7	1.2 +1.2	2.6 +4.5	11.0 +16.1	6.4 +5.1	193.9 +82.4	1.3 +5.1	65.5 +36.6
Rhynchozoa sp.	0.8 +1.2	0.1 +0.1	1.6 +2.5	0	0.5 +0.8	1.1 +2.1	<0.1	0.1 +1.0
Iridaea cordata	0	1.0 +2.0	0	0	0.2 +0.4	0.1 +0.2	0	0
Iridaea heterocarpa	0	0	0	0	0.0 +0.1	0	0	0
Iridaea sp.	0.1 +0.2	0.5 +1.0	0.2 +0.7	0	0.0 +0.1	0	<0.1	0
Mesophyllum conchatum	✓	0	0	0	✓	0	✓	0
Microcladia borealis	0.3 +0.4	0	6.7 +12.2	0	0.4 +0.7	0	0.0 +0.1	0
Odonthalia fluccosa	<0.1	0	<0.1	0	0	0	<0.1	0
Petrocelis middendorfii	✓	0	✓	0	[illegible]	0	✓	0
Plocamium coccineum	0	0	0	0	<0.1	0	0	0
Plocamium tenue	<0.1	0	0.1 +0.3	0	0.1 +0.3	0	0.1 +0.7	0
Polysiphonia hendryi	0.2 +0.5	0	0.0 +0.0	0	0.1 +0.2	0	<0.1	0

Tongue Point #1

	Spring '77				Summer '77				Fall '77				Winter 78			
	$\bar{\theta}$	0.01 m^2 wt	$\bar{\theta}$	0.2 m^2 wt	$\bar{\theta}$	0.01 m^2 wt	$\bar{\theta}$	0.2 m^2 wt	$\bar{\theta}$	0.01 m^2 wt	$\bar{\theta}$	0.2 m^2 wt	$\bar{\theta}$	0.01 m^2 wt	$\bar{\theta}$	0.2 m^2 wt
Polysiphonia pacifica		<0.1		0		<0.1		0		0		0		0		0
Porphyra sp.		0.1 +0.1		0		0.6 +2.5		0.4 +0.7		<0.1		0		<0.1		0
Prionitis sp.		0		0		0.0 +0.0		0		0		0		0		0
Pterosiphonia bipinnata		0.2 +0.5		0		<0.1		0		0.1 +0.2		0		<0.1		0
Pondera sp.		✓		0		✓		0		✓		0		✓		0
Ralichondria panicea		0		✓		✓		0		✓		0		0		0
Ralicloma permollis		0		✓		0		0		✓		0		0		0
Cnidaria																
Anthozoa sp.	0.1 +0.3	0.0 +0.1	0		0.1 +0.2	0.0	0		2.7 +6.7	0.4 +1.0	0.8 +1.5	1.3 +2.7	1.4 +4.1	0.4 +1.6	0	
Anthopleura elegantissima	0.2 +0.4	0.0 +0.1	0		0.1 +0.2	0.0 +0.0	0		0		0		3.4 +7.7	0.5 +1.4	6.3 +11.2	1.7 +2.6
Tealia sp.	0		0		+0.2	+0.0										
Hydrozoa sp.		✓		0		0		0		0		0		0		0
Platyhelminthes																
Turbellaria spp.	12.0 +25.5	<0.1	0		5.1 +8.5	<0.1	0		9.4 +11.7	<0.1	0		8.5 +15.7	<0.1	0	
Nemertea spp.	3.6 +3.5	<0.1	0		6.0 +5.1	✓	0		11.2 +13.1	<0.1	0		2.1 +2.6	<0.1	0	

Polysiphonia pacifica		+0.1		0		<0.1		0		0		0		0				
Porphyra sp.		0.1 +0.1		0		0.4 +2.5		0.4 +0.7		<0.1		0		<0.1				
Prionitis sp.		0		0		0.0 +0.0		0		0		0		0				
Pterosiphonia bipinnata		0.2 +0.5		0		<0.1		0		0.1 +0.2		0		<0.1				
Porifera																		
sp.		✓		0		✓		0		✓		0		✓				
Halichondria panicea		0		✓				0		✓		0		0				
Halichoma permollis		0		✓		0		0		✓		0		0				
Cnidaria																		
Anthopleura	0.1	0.0	0		0.1	0.0	0		2.7	0.4	0.8	1.1	1.4	0.4	0			
A.	0.3	+0.1			+0.2				+4.7	+1.0	+1.5	+2.7	+4.1	+1.4	0			
Anthopleura elegantissima	0.2	0.0	0		0.1	0.0	0		0		0		3.4	0.5	6.3	1.2		
	3.6	+0.1			+0.2	+0.0							+7.7	+1.4	+11.2	+2.4		
Tealia sp.	0		0		+0.2	+0.0												
Hydrozoa																		
sp.		✓		0		0		0		0		0		0				
Platyhelminthes																		
Turbellaria	12.0	<0.1	0		5.1	<0.1	0		8.4	<0.1	0		8.5	<0.1	0			
spp.	±25.6				±8.5				±11.7				±15.7					
Nemertea																		
spp.	3.6	<0.1	0		6.0	✓	0		11.2	<0.1	0		2.1	<0.1	0			
	±3.1				±5.1				±13.2				±2.6					

Tongue Point #3

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Nematoda																
spp.	14.6 ±12.6	<0.1	0		37.2 ±50.2	<0.1	0		13.0 ±13.3	<0.1	0		2.7 ±4.6	<0.1	0	
Mollusca																
Amphineura																
sp. (juv.)	0.2	<0.1	0		1.3	0.0	0		0.8	0.0	0		0.2	<0.1	0	
Cyanoplax dentiens	0.3	0.0	0		0.5	0.0	0.8	0.1	1.6	0.1	0.3	<0.1	0.5	0.0	0.8	0.1
	+0.7	+0.1			+0.8	<0.1	+1.5	+0.2	+3.6	+0.1	+0.5		+1.1	+0.1	+1.0	+0.1
Katharina tunicata	0.2	0.0	1.8	4.8	0.4	<0.1	1.1	1.3	1.3	0.6	2.0	14.5	0.2	0.1	1.0	1.7
	+0.4	±0.0	+3.5	+9.2	+0.8		+1.5	+1.7	+3.8	+1.2	+2.2	+21.5	+0.5	+0.1	+0.8	+1.8
Mopalia sp.	0		0		0.1 +0.3	<0.1	0		0.1 +0.2	<0.1	0		0		0	
Tonicella lineata	0		0		0.1 +0.3	<0.1	0		0		0		0		0	
Gastropoda																
Acmaeidae sp. (juv.)	1.7 ±2.9	<0.1	0		3.0 ±4.8	<0.1	0		0.4 +1.6	<0.1	0.3 +0.5	<0.1	1.6 +3.1	<0.1	0	
Berlesia hallotiphila	15.0 ±23.4	<0.1	0		0		0		42.5 +45.1	0.0 <0.1	0		43.6 ±71.8	0.0 ±0.0	0	
Bittium eschrichtii	0.1 ±0.2	<0.1	0		12.6 ±10.3	<0.1	0		0		0		0		0	
Corithiopsis sp.	6.1 ±5.5	<0.1	0		2.0 +5.0	0.0 ±0.0	0		1.3 +1.8	<0.1	0		0.3 +0.2	<0.1	0	
Collisella digitalis	0		0		0		0		0		0		0.3 +0.9	<0.1	2.0 +6.0	0.1 +0.5
Collisella pelta	2.3 +5.7	1.0 +3.6	0.5 +1.0	0.3 +0.7	0.1 +0.3	0.1 +0.5	0.1 +0.5	0.6 +1.1	0.2 +0.7	<0.1	2.5 +6.4	1.7 +2.2	0.4 +0.8	0.3 +0.8	1.0 +2.0	1.1 +2.2
Collisella strigatella	0.7 +1.2	0.7 +0.1	0		0.1 +0.6	0.0 +0.8	0		0.9 +1.8	0.1 +0.3	0.3 +0.5	0.0 +0.7	1.2 +2.0	0.1 +0.2	0	
Crepidula sp.	0		0		0.2 +0.5	<0.1	0		0.1 +0.3	<0.1	0		0		0	

Wallusco																
Amphineura																
sp. (juv.)	0.2 ±0.4	0		1.3 ±0.2	0.0	0		0.8 ±0.4	0.0	0		0.2 ±0.4	0			
Cymopleia dentiens	0.1 ±0.2	0.0 ±0.1	0	0.5 ±0.8	0.0 ±0.1	0.8 ±1.5	0.1 ±0.2	1.6 ±3.4	0.1 ±0.1	0.1 ±0.5	<0.1	0.5 ±1.1	0.0 ±0.1	0.8 ±1.0	0.1 ±0.3	
Katharina tunicata	0.2 ±0.4	0.0 ±0.0	1.8 ±3.5	4.6 ±9.2	0.4 ±0.8	<0.1 ±1.1	1.3 ±1.7	1.1 ±3.8	0.6 ±1.2	2.0 ±2.2	14.5 ±23.5	0.2 ±0.5	0.1 ±0.1	1.0 ±0.8	1.3 ±1.8	
Mopalia sp.	0		0		0.2 ±0.3	<0.1 ±0.1	0	<0.1 ±0.2	<0.1	0		0	0			
Tonicella lineata	0		0		0.1 ±0.1	<0.1	0	0		0		0		0		
Gastropoda																
Acmaeidae pp. (juv.)	1.7 ±2.9	<0.1	0		3.0 ±4.8	<0.1	0	0.4 ±1.6	<0.1	0.3 ±0.5	<0.1	1.6 ±3.1	<0.1	0		
Barleeia haliotiphila	15.0 ±23.6	<0.1	0		0		0	42.5 ±45.1	0.0 ±0.1	0		±3.6	0.0	0		
Bittium eschrichtii	0.1 ±0.2	<0.1	0		12.6 ±10.3	<0.1	0	0		0		±21.8	±0.0	0		
Cerithiopsis sp.	4.1 ±5.5	<0.1	0		2.0 ±5.0	0.0 ±0.0	0	1.3 ±1.8	<0.1	0		0.3 ±0.7	<0.1	0		
Collisella digitalis	0		0		0		0	0		0		0.1 ±0.9	<0.1	2.0 ±6.0	0.1 ±0.5	
Collisella pelta	2.1 ±5.7	1.0 ±3.6	0.5 ±1.0	0.3 ±0.7	0.1 ±0.3	0.1 ±0.3	0.1 ±0.5	0.6 ±1.1	0.2 ±0.7	<0.1	7.5 ±6.4	1.7 ±2.2	0.4 ±0.8	0.3 ±0.8	1.0 ±2.0	1.1 ±2.2
Collisella strigatella	0.7 ±1.2	0.1 ±0.1	0		0.3 ±0.6	0.0 ±0.0	0	0.9 ±1.8	0.1 ±0.3	0.1 ±0.5	0.0 ±0.1	1.2 ±2.0	0.1 ±0.7	0		
Crepidula sp.	0		0		0.2 ±0.5	<0.1	0	0.1 ±0.1	<0.1	0		0		0		

Tongue Point #1

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt.	#	wt.	#	wt.	#	wt.	#	wt.	#	wt.	#	wt.	#	wt.
Cylichna sp.	0		0		0.1 ±0.2	<0.1	0		0		0		0		0	
Hemalopoma baculum	0.1 ±0.2	<0.1	0		1.7 ±3.6	0.2 ±0.1	0		0		0		0		0	
Lacuna variegata	1.0 ±1.8	<0.1	0		0.7 ±0.9	<0.1	0		1.8 ±4.1	<0.1	0		1.5 ±2.1	<0.1	0	
Littorina scutulata	0		0		0		0		0.5 ±1.1	<0.1	0		0.2 ±0.7	<0.1	0	
Littorina sitkana	0.3 ±0.6	<0.1	0		0.3 ±0.4	<0.1	0		0.5 ±1.1	<0.1	0		0.3 ±0.9	<0.1	0	
Margarites pupillus	0		0		0		0		0		0		0.1 ±0.2	<0.1	0	
Notoacmea fenestrata	0		0		0		0		0.2 ±0.7	0.0 ±0.1	0.5 ±1.0	0.2 ±0.4	0.2 ±0.7	<0.1	0	
Notoacmea persona	0		0		0		0		0.1 ±0.2	<0.1	0		0		0	
Notoacmea scutum	0		0		0.1 ±0.5	0.0 ±0.1	0		0		0		0.7 ±1.2	0.0 ±0.1	2.5 ±2.5	0.7 ±0.7
Onchidella borealis	0		0		0		0		3.7 ±5.8	1.9 ±4.7	0		2.2 ±3.8	<0.1	0	
Searlesia dira	0		0		4.3 ±6.3	0.1 ±0.2	0		0		0		0		0	
Siphonaria thersites	0		0		0		0		0.2 ±0.9	<0.1	0		0		0	
Thais canaliculata	0		0		0		0		0		0		0.3 ±0.7	0.1 ±0.4	0	
Thais emarginata	0		0		0.1 ±0.2	0.0 ±0.1	2.0 ±2.2	1.0 ±1.1	0.1 ±0.2	<0.1	0		0		0	
Thais sp. (juv.)	0		0		0.4 ±0.7	0.0 ±0.0	0		0.1 ±0.2	<0.1	0		0.2 ±0.5	<0.1	0	

Nemaleponma boreale	0.1 ±0.2	<0.1	0	1.7 ±3.6	0.1 <0.1	0	0		0	0		0						
Lacuna variegata	1.0 ±3.8	<0.1	0	0.2 ±0.9	<0.1	0	1.8 ±4.1	<0.1	0	1.5 ±2.1	<0.1	0						
Lirularia succincta	0		0	0		0	0.5 ±1.1	<0.1	0	0.2 ±0.7	<0.1	0						
Littorina sitkana	0.3 ±0.6	<0.1	0	0.3 ±0.4	<0.1	0	0.5 ±1.1	<0.1	0	0.3 ±0.9	<0.1	0						
Littorina scutulata	0		0	0		0	0		0	0.1 ±0.2	<0.1	0						
Margarites pupillus	0		0	0		0	0		0	0.2 ±0.5	<0.1	0						
Notoacmea fenestrata	0		0	0		0	0.2 ±0.7	0.6 ±0.7	0.5 ±1.0	0.2 ±0.4	0.2 ±0.7	<0.1	0					
Notoacmea persona	0		0	0		0	0.1 ±0.2	<0.1	0		0		0					
Notoacmea scutum	0		0	0.1 ±0.5	0.0 ±0.1	0	0		0		0.7 ±1.2	0.0 <0.1	2.5 ±2.5	0.7 ±0.7				
Onchidella borealis	0		0	0		0	1.7 ±5.8	1.9 ±4.7	0		2.2 ±3.8	<0.1	0					
Searlesia dira	0		0	4.3 ±4.1	0.1 ±0.2	0	0		0		0		0					
Siphonaria thersites	3		0	0		0	0.2 ±0.9	<0.1	0		0		0					
Thais canaliculata	0		0	0		0	0		0		0.3 ±0.7	0.2 ±0.4	0					
Thais emarginata	0		0	0.1 ±0.2	0.0 <0.1	2.0 ±2.2	1.0 ±1.c	0.1 ±0.2	<0.1	0	0		0					
Thais sp. (juv.)	0		0	0.4 ±0.7	0.0 ±0.0	0		0.1 ±0.2	<0.1	0	0.2 ±0.5	<0.1	0					

Tongue Point +3

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	$\bar{x}$	wt	$\bar{x}$	wt	$\bar{x}$	wt	$\bar{x}$	wt	$\bar{x}$	wt	$\bar{x}$	wt	$\bar{x}$	wt	$\bar{x}$	wt
Tricolia sp.	0		0		0		0		0.1 ±0.2	<0.1	0		0.1 ±0.2	<0.1	0	
Bivalvia																
Adula californiensis	0		0		0.2 ±0.5	<0.1	0		0.1 ±0.2	<0.1	0		0		0	
Rinetella arctica	0		0		0.5 ±0.8	0.0 ±0.0	0		0.3 ±0.6	<0.1	0		0		0	
Lasaea cistula	0.6 ±1.2	<0.1	0		0		0		0.1 ±0.2	<0.1	0		0.2 ±0.5	<0.1	0	
Modiolus rectus	0		0		0.8 ±2.0	<0.1	0		0.1 ±0.2	<0.1	0		0		0.3 ±0.5	0.3 ±0.7
Mucculus pygmaeus	18.1 ±22.2	<0.1	0		483.8 ±944.5	1.6 ±3.0	0		30.0 ±25.1	0.1 ±0.2	0		10.8 ±18.3	0.0 <0.1	0	
Mytilus californianus	0		0		0		0		0.1 ±0.3	1.0 ±4.0	0.5 ±0.6	8.2 ±14.8	0.1 ±0.2	0.2 ±0.7	0	
Mytilus edulis	0.3 ±1.2	<0.1	0.3 ±0.5	0.6 ±1.2	0		3.0 ±6.0	1.2 ±2.1	1.5 ±2.8	0.2 ±0.5	0.3 ±0.5	0.2 ±0.4	0		0.5 ±0.6	0.2 ±0.2
Mytilus sp. (juv.)	2.4 ±2.3	0.0 <0.1	0		7.9 ±8.5	0.1 <0.1	0		0.4 ±0.8	<0.1	0		0.7 ±1.0	0.0 <0.1	0	
Transennella tantilla	0.1 ±0.2	<0.1	0		0		0		0.5 ±0.8	<0.1	0		0.1 ±0.2	<0.1	0	
Annelida																
Oligochaeta spp.	14.8 ±14.8	<0.1	0		61.1 ±58.5	<0.1	0		22.0 ±24.0	<0.1	0		5.9 ±8.5	<0.1	0	
Polychaeta																
Arenicolidae																
Branchiomaldane vincenti	0.1 ±0.2	<0.1	0		0		0		0		0		0		0	
Capitellidae																
Capitella capitata	0		0		0.2 ±0.5	<0.1	0		0		0		0		0	

Tricolia sp.	0		0		0		0		0.1 ±0.2	<0.1	0		0.1 ±0.2	<0.1	0			
Bivalvia																		
Adula californiensis	0		0		0.2 ±0.5	<0.1	0		0.1 ±0.2	<0.1	0		0		0			
Macoma balthica	0		0		0.5 ±0.8	0.0 ±0.0	0		0.3 ±0.6	<0.1	0		0		0			
Lasaea rubra	0.6 ±1.2	<0.1	0		0		0		0.1 ±0.2	<0.1	0		0.2 ±0.5	<0.1	0			
Modiolus rectus	0		0		0.8 ±2.0	<0.1	0		0.1 ±0.2	<0.1	0		0		0.1 ±0.5	0.3 ±0.5		
Mya arenaria	18.1 ±22.2	<0.1	0		483.8 ±934.5	1.6 ±3.0	0		30.0 ±25.1	0.1 ±0.2	0		10.8 ±18.1	0.0 ±0.1	0			
Mytilus californianus	0		0		0		0		0.1 ±0.3	1.0 ±4.0	0.5 ±0.6	8.2 ±14.8	0.1 ±0.2	0.2 ±0.3	0			
Mytilus edulis	0.1 ±1.1	<0.1	0.3 ±0.5	0.6 ±1.2	0		1.0 ±6.0	1.2 ±2.3	1.5 ±2.8	0.2 ±0.5	0.3 ±0.5	0.2 ±0.4	0		0.5 ±0.6	0.2 ±0.2		
Mytilus sp. (juv.)	2.4 ±2.3	0.0 <0.1	0		2.9 ±8.5	0.1 ±0.1	0		0.4 ±0.8	<0.1	0		0.2 ±1.0	0.0 ±0.0	0			
Transennella tantilla	0.1 ±0.2	<0.1	0		0		0		0.5 ±0.8	<0.1	0		0.1 ±0.2	<0.1	0			
Annelida																		
Oligochaeta spp.	14.8 ±14.8	<0.1	0		63.1 ±36.5	<0.1	0		22.0 ±24.0	<0.1	0		5.9 ±9.5	<0.1	0			
Polychaeta																		
Arenicolidae																		
Branchiomaldane vincenti	0.1 ±0.2	<0.1	0		0		0		0		0		0		0			
Capitellidae																		
Capitella capitata	0		0		0.2 ±0.5	<0.1	0		0		0		0		0			

Tongue Point +3

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.02 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Chrysopetalidae																
Paleonotus bellis	0		0		0.1 ±0.3	<0.1	0		0		0		0		0	
Cirratulidae																
sp.	0.1 ±0.2	<0.1	0		0.1 ±0.2	<0.1	0		0.3 ±0.6	<0.1	0		0		0	
Cirratulus cirratus	0		0		0.1 ±0.2	<0.1	0		0		0		0		0	
Lumbrineridae																
Lumbrineris inflata	0.1 ±0.2	<0.1	0		0.1 ±0.3	<0.1	0		0.1 ±0.5	<0.1	0		0		0	
Nereidae sp.	0.2 ±0.7	<0.1	0		1.5 ±4.0	<0.1	0		0.8 ±1.2	<0.1	0		0.2 ±0.4	<0.1	0	
Nereis vexillosa	0		0		0.1 ±0.2		0		0.1 ±0.3		0		0		0	
Nereis sp.	0.1 ±0.3		0		0.1 ±0.2	<0.1	0		0.8 ±1.7	<0.1	0		0		0	
Platynereis bicanaliculata	0		0		2.2 ±4.4	<0.1	0		0		0		0		0	
Onuphidae																
Onuphis stimatus	0		0		0		0		0.1 ±0.3	<0.1	0		0		0	
Onuphis sp. (juv.)	0		0		0		0		0.8 ±2.5	<0.1	0		0.1 ±0.2	<0.1	0	
Orbiniidae																
Naineris sp.	0		0		0		0		0.2 ±0.5	<0.1	0		0		0	
Protoariciella oligobranchia	0.1 ±0.2	<0.1	0		0		0		0		0		0		0	
Phyllodocidae																
Eulalia quadrioculata	0		0		0.1 ±0.3	<0.1	0		0.1 ±0.2	<0.1	0		0		0	

Paleonotus bellis	0		0	0.1 ±0.3	<0.1	0	0		0	0		0
Cirratulidae sp.	0.1 ±0.2	<0.1	0	0.1 ±0.2	<0.1	0	0.3 ±0.6	<0.1	0	0		0
Cirratulus cirratus	0		0	0.1 ±0.2	<0.1	0	0		0	0		0
Lumbrineridae												
Lumbrineris inflata	0.1 ±0.2	<0.1	0	0.1 ±0.3	<0.1	0	0.1 ±0.5	<0.1	0	0		0
Nereidae sp.	0.2 ±0.7	<0.1	0	1.5 ±4.0	<0.1	0	0.8 ±1.2	<0.1	0	0.2 ±0.6	<0.1	0
Nereis vexillosa	0		0	0.1 ±0.2	✓	0	0.1 ±0.3	✓	0	0		0
Nereis sp.	0.1 ±0.1		0	0.1 ±0.2	<0.1	0	0.8 ±1.7	<0.1	0	0		0
Platynereis bicanaliculata	0		0	2.2 ±4.4	<0.1	0	0		0	0		0
Onuphidae												
Onuphis stimatus	0		0	0		0	0.1 ±0.3	<0.1	0	0		0
Onuphis sp. (juv.)	0		0	0		0	0.8 ±2.5	<0.1	0	0.1 ±0.2	<0.1	0
Dybinidae												
Reineru sp.	0		0	0		0	0.2 ±0.5	<0.1	0	0		0
Pretoarticella oligobranchia	0.1 ±0.2	<0.1	0	0		0	0		0	0		0
Phyllodocidae												
Eulalia quadriculata	0		0	0.1 ±0.3	<0.1	0	0.1 ±0.2	<0.1	0	0		0

Tongue Point #3

	Spring '77			Summer '77			Fall '77			Winter '78		
	$\bar{x}$	0.01 m^2 wt	0.2 m^2 wt	$\bar{x}$	0.01 m^2 wt	0.2 m^2 wt	$\bar{x}$	0.01 m^2 wt	0.2 m^2 wt	$\bar{x}$	0.01 m^2 wt	0.2 m^2 wt
Eulalia sanguinea	0.1 ±0.2	<0.1	0	0		0	0		0	0		0
Eulalia sp.	0		0	0.2 ±0.5	<0.1	0	0		0	0		0
Sabellidae sp.	0		0	0.5 ±1.3	<0.1	0	2.3 ±6.6	<0.1	0	0		0
Fabricia oregonica	0.. ±0.7	<0.1	0	4.2 ±7.9	<0.1	0	0.9 ±1.9	<0.1	0	0.2 ±0.4	<0.1	0
Oriopsis aimuta	0		0	1.7 ±2.6	<0.1	0	0		0	0		0
Schizobranchia insignis	0		0	0.2 ±0.5	<0.1	0	0.1 ±0.2	<0.1	0	0		0
Serpulidae sp.	0		0	0		0	0		0	0.1 ±0.2	<0.1	0
Spirorbis sp.												
Sigalionidae Pholoe aimuta	2.6 ±3.3	<0.1	0	3.5 ±5.4	<0.1	0	1.4 ±6.7	<0.1	0	0.6 ±1.4	<0.1	0
Spionidae Polydora columbiana	0		0	0		0	0.2 ±0.5	<0.1	0	0.2 ±0.7	<0.1	0
Polydora sp.	0		0	0		0	0.2 ±0.5	<0.1	0	<0.1 ±0.2	0.1	0
Syllidae Exogone gemmifera	0		0	0.1 ±0.2	<0.1	0	0.2 ±0.7	<0.1	0	0		0
Exogone lourei	0.1 ±0.2	<0.1	0	0		0	0.2 ±0.5	<0.1	0	0		0
Sphaerosyllis pirifera	0.1 ±0.5	<0.1	0	0.2 ±0.5	<0.1	0	0		0	0		0

sp.	±0.1			±18.3		0										
Terebellidae							88.0	<0.1	0				14.8	<0.1	0	
spp.	0.3	<0.1	0				±70.9						±23.9			
	±0.4			0.1	<0.1	0				0.1	<0.1	0				
Amphitrite	0		0	±0.2						±0.1			0.1	<0.1	0	
cirrata				0.6	/	0				0		0	±0.2			
Nicolea	0		0	±1.7									0			0
zostericola				0.3	<0.1	0				0		0				
				±0.6									0			0
Sipuncula																
Phascolosoma	0		0													
agassizii				0.1	<0.1	0				0		0	0			0
				±0.2												
Pycnogonida																
Balcomma	0.3	<0.1	0													
compactum	±0.6			1.1	<0.1	0				0.1	<0.1	0				
Balcomma	0.2	<0.1	0	±1.5						±2.1			0.2	<0.1	0	
viridio-				0.1	<0.1	0				1.0	<0.1	0	±0.5			
testimale	±0.7												0			0
Balcomma	0		0	±0.2						±3.6						
sp				0		0				0		0				
Phoxichilidium	0.1	<0.1	0										0.1	<0.1		
femoratum	±0.5			0		0				0		0	±0.2			
Pycnogonum	0		0										0			0
stearnsi				0.1	<0.1	0				0		0				
				±0.3									0			0
Crustacea																
Ostracoda																
spp.	0.4	<0.1	0													
	±1.6			9.1		0				14.3	<0.1	0				
				±15.6						±37.8			7.5	<0.1	0	
													±12.8			

Tongue Point #3

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Cirripedia																
Balanus	0.3	0.3	0		1.6	0.1	0		4.7	0.3	0.3	0.1	7.8	5.9	4.5	54.2
crenatus	±0.9	±1.1			±4.7	±0.2			±12.2	±1.1	±0.5	±0.1	±17.1	±15.3	±8.4	±95.3
Balanus	0		0		0		0		0.1	±0.1	0		0.3	±0.1	0	
glandula									±0.2				±0.6			
Balanus	4.1	<0.1	0		22.4	0.1	0		0		0		0		0	
sp.	±9.5				±44.9	±0.2										
Chthamalus	0.4	0.1	0		0		0		0.4	<0.1	0		0.6	0.0	0	
dalli	±1.1	<0.0							±0.9				±2.1	<0.0		
Pollicipes	0		0		0		0		0		0.3	0.6	0		0	
polymerus											±0.5	±1.3				
Tanaidacea																
Anatanais	2.7	<0.1	0		33.2	<0.1	0		24.9	<0.1	0		0.3	<0.1	0	
normani	±3.0				±43.2				±57.3				±1.7			
Leptochelia	2.3	<0.1	0		3.8	<0.1	0		1.5	<0.1	0		0		0	
dubia	±5.2				±5.2				±4.4							
Pancolus	6.4	<0.1	0		10.9	<0.1	0		22.6	<0.1	0		7.7	<0.1	0	
californiensis	±7.1				±20.6				±42.5				±8.2			
Isopoda																
Cirolana	3.9	0.1	0		1.2	0.1	4.8	0.4	1.0	0.0	0		0		0	
harfordi	±8.3	±0.2			±3.8	<0.1	±6.2	<0.5	±3.1	<0.1						
Dynamenella	49.7	0.1	0		40.5	0.1	0		8.8	0.0	0		20.0	<0.1	0	
shoemeri	±59.7	±0.2			±57.1	<0.1			±18.4	<0.0			±29.9			
Exosphaeroma	0.3	<0.1	0		0		0		0		0		0		0	
amplicauda	±1.3															
Gnorimosphaeroma	0.1		0		0.1	<0.1	0		C		0		0		0	
oregonense	±0.2				±0.5											
Ianiropsis	1.7	<0.2	0		0.3	<0.1	0		1.8	<0.1	0		0		0	
kincaidi	±3.3				±1.1				±5.1							
Ianiropsis	0.1	<0.1	0		0		0		0		0		0.3	0.1	0	
sp. (juv.)	±0.3												±0.9			
Idotea	0.1	<0.1	5.5	0.2	1.8	0.1	4.0	1.3	0.6	0.1	10.8	1.6	0.8	0.1	3.8	0.4
wosnesenskii	±0.2		±11.0	±0.4	±6.3	±0.5	±4.7	±1.7	±1.1	±0.2	±15.7	±1.5	±2.1	±0.2	±3.5	±0.5

Table 1c. Tongue Point (rock) benthic organisms from the low (+0') intertidal zone collected spring and summer 1977, expressed as number and/or biomass (g) per 0.01 (N=20) and 0.2 (N=4) m^2 ± standard deviation.

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Monostroma sp.	<0.1		0		0		0	
Rhizoclonium riparium	<0.1		0		0		0	
Spongomorpha coalita	<0.1		0		0		0	
Spongomorpha spinescens	<0.1		0		0		0	
Ulva sp.	0.0 ±0.1		0		<0.1		0	
Bacillariophyta								
Pennales spp.	<0.1		0		<0.1		0	
Phaeophyta								
Alaria sp.	57.6 ±110.9		754.7 ±521.5		65.0 ±118.6		620.8 ±752.8	
Costaria costata	0.1 ±0.2		0.7 ±0.8		0		0	
Desmarestia ligulata	0		2.2 ±4.5		0		0	
Hedophyllum sessile	55.9 ±59.9		68.7 ±30.2		0		12.0 ±16.7	
Laminaria saccharina	0		0.4 ±0.7		0		4.9 ±8.0	
Laminariales sp.	0.2 ±1.0		0		0		0.0 ±0.1	

Tongue Point (+)

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Bryozoa sp.																
Echinodermata																
Asteroidea sp.	0		0		0.1 ±0.3	<0.1	0		0		0		0		0	
Leptasterias hexactis	0.1 ±0.2		0		0.5 ±0.8	<0.1	0.5 ±1.0	0.2 ±0.4	0.2 ±0.4	0.0 ±0.1	0		0		0	
Holothuroidea sp.	0		0		0.1 ±0.2	<0.1	0		0.1 ±0.3	<0.1	0		0.1 ±0.3	<0.1	0	
Cucumaria miniata	0		0		0		0		0.6 ±2.7	0.0 ±0.1	0		0		0	
Cucumaria pseudocurata	71.2 ±86.1	1.5 ±1.5	1.0 ±1.4	0.5 ±0.8	65.2 ±89.4	1.7 ±1.7	0		31.5 ±34.9	1.4 ±1.4	0.3 ±0.5	0.1 ±0.2	12.5 ±21.7	0.5 ±0.9	0	
Leptosynapta clarki	0		0		0.1 ±0.3	<0.1	0		0				0.1 ±0.2	0.0 ±0.1	0	
Species Richness	114				138				126				97			
Diversity, $\bar{d}$	3.15				2.75				3.08				3.14			
Total Number	7,799.8				24,363.1				11,556.4				4,991.0			
Total Biomass	799.4				983.2				1,216.9				569.9			

154

Table 1c. Tongue Point (rock) benthic organisms from the low (+0') intertidal zone collected spring and summer 1977, expressed as number and/or biomass (g) per 0.01 (N=20) and 0.2 (N=4) m^2 ± standard deviation.

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Monostroma sp.		<0.1		0		0		0
Rhizoclonium riparium		<0.1		0		0		0
Spongomorpha coalita		<0.1		0		0		0
Spongomorpha spinescens		<0.1		0		0		0
Ulva sp.		0.0 ±0.1		0		<0.1		0
Bacillariophyta								
Pennales spp.		<0.1		0		<0.1		

Tongue Point +)

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt
Nyale grandicornis californica	-		-		0.1 ±0.2	0.0 ±0.1	0		-		-		-		-	
Nyale sp.	-		-		0.2 ±0.7	<0.1	0		-		-		-		-	
Jassa falcata	-		-		2.6 ±5.0	<0.1	0		-		-		-		-	
Oligochinus lighti	-		-		9.4 ±6.1	<0.1	0.5 ±1.0	<0.1	-		-		-		-	
Parapleustes aeutilus	-		-		3.9 ±4.8	<0.1	0		-		-		-		-	
Dyscheliidium rectipalmum	-		-		0.1 ±0.2	<0.1	0		-		-		-		-	
Decapoda																
Crangon sp.	0		0		0.1 ±0.2	<0.1	0		0		0		0		0	
Pagurus hirsutiusculus	0.1 ±0.2	<0.1	0.3 ±0.5	0.2 ±0.4	0		0		0.1 ±0.2	0.0 ±0.0	0.5 ±1.0	0.2 ±0.3	0		0	
Paguridae sp.	0.1 ±0.2	<0.1	0		0.1 ±0.3	<0.1	0		0.3 ±1.0	<0.1	0		0		0	
Pugettia gracilis	0		0.3 ±0.5	0.0 ±0.1	0.3 ±0.6	0.0 ±0.0	0.5 ±1.1	0.1 ±0.1	0		0		0		0	
Insecta																
Chironomidae sp.	0		0		0		0		0.1 ±0.5	<0.1	0		0.6 ±2.5	<0.1	0	
Coleoptera sp.	0		0		0.1 ±0.5		0		0		0		0		0	
Dipteran larvae	12.6 ±22.7	0.0 ±0.1	0		54.0 ±132.3	<0.1	0		3.3 ±2.9	<0.1	0		1.9 ±2.5	<0.1	0	
Dolichopodidae sp.	0		0		0		0		0.8 ±2.5		0		0		0	
Ephydridae	0		0		0		0		0		0		0.1 ±0.2	<0.1	0	

151

Tongue Point +)

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt	f	wt
Bryozoa sp.		/		0		/		0		/		0		0		0
Echinodermata																
Asteroidea sp.	0		0		0.1 ±0.3	<0.1	0		0		0		0		0	
Leptasterias hexactis	0.1 ±0.2		0		0.5 ±0.8	<0.1	0.5 ±1.0	0.2 ±0.6	0.2 ±0.4	0.0 ±0.1	0		0		0	
Holothuroides sp.	0		0		0.1 ±0.2	<0.1	0		0.1 ±0.3	<0.1	0		0.1 ±0.3	<0.1	0	
Cucumaria miniata	0		0		0		0		0.6 ±2.7	0.0 ±0.1	0		0		0	
Cucumaria pseudocurata	71.2 ±86.1	1.5 ±1.5	1.0 ±1.4	0.5 ±0.8	65.2 ±69.4	1.7 ±1.7	0		31.5 ±34.9	1.4 ±1.4	0.3 ±0.5	0.1 ±0.2	12.5 ±21.7	0.5 ±0.8	0	
Leptosynapta clarki	0		0		0.1	<0.1	0									

Tongue Point #1

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Idotea sp. (juv.)	1.4 ±4.9	<0.1	0		0.9 ±3.4	<0.1	0		0.1 ±0.2	<0.1	0		0		0	
Jaeropsis sp. (juv.)	0		0		0		0		0.3 ±2.9	<0.1	0		0		0	
Lizarria algarva	0		0		0.1 ±0.2	<0.1	0		0.1 ±0.5	<0.1	0		0		0	
Munna chromato-cephala	1.1 ±1.6	<0.1	0		1.2 ±2.0	<0.1	0		0.5 ±1.5	<0.1	0		0.1 ±0.5	<0.1	0	
Munna stephensen	0		0		0		0		0.1 ±0.5	<0.1	0		0		0	
Amphipoda																
Gammaridae sp.	23.9 ±15.2	0.1 ±0.1	18.3 ±35.2	0.6 ±1.1	-		-		112.5 ±104.1	0.7 ±0.8	41.8 ±68.7	1.1 ±1.7	27.8 ±32.8	0.1 ±0.3	3.0 ±4.7	0.2 ±0.1
Ampithoidae sp.	-		-		0.1 ±0.2		3.0 ±6.0	0.1 ±0.2	-		-		-		-	
Ampithoe simulans	-		-		23.1 ±29.2	0.1 ±0.1	6.1 ±6.1	0.3 ±0.4	-		-		-		-	
Ampithoe sp.	-		-		0.3 ±0.7	<0.1	0		-		-		-		-	
Aoroides columbiae	-		-		0.2 ±1.4	<0.1	0		-		-		-		-	
Caprella grevalyi	0.1 ±0.3		0		3.0 ±8.6	<0.1	0		0.1 ±0.2	<0.1	0		0		0	
Corcops compactus	0.2 ±0.7		0		0		0		0		0		0		0	
Corophium sp.	0		0		0		0		0.1 ±0.2	<0.1	0		0.1 ±0.2	<0.1	0	
Hyale anceps	-		-		11.5 ±11.3	<0.1	0.3 ±0.5	<0.1	-		-		-		-	
Hyale frequens	-		-		0.1 ±0.2	<0.1	0		-		-		-		-	

Tongue Point #1

	Spring '77				Summer '77				Fall '77				Winter '78			
	0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²		0.01 m²		0.2 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Hyale grandicornis californica	-		-		0.1 ±0.5	0.0 ±0.3	0		-		-		-		-	
Hyale sp.	-		-		0.2 ±0.7	<0.1	0		-		-		-		-	
Jassa falcata	-		-		2.6 ±5.0	<0.1	0		-		-		-		-	
Oligochinus lighti	-		-		9.4 ±6.3	<0.1	0.5 ±1.0	<0.1	-		-		-		-	
Paraphoxus mauritius	-		-		3.9 ±4.8	<0.1	0		-		-		-		-	
Synchelidium rectipalmum	-		-		0.1 ±0.2	<0.1	0		-		-		-		-	
Decapods																
Caridea	-															

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Rhodophyta								
Acrochaetium sp	<0.1		0		0		0	
Antithamnion defectum	<0.1		0		0		0	
Antithamnion kylinii	0		0		0		<0.1	
Antithamnionella pacifica var. pacifica	<0.1		0		0		0	
Bossiella plumosa	5.8	±8.5	0		0		0.1	±0.2
Calliarthron tuberculosum	0.0	±0.2	0		0		0	
Callithamnion pikeanum	0.0	±0.1	0		0		0	
Callithamnion/ Pleonosporium	<0.1		0		0		0	
Callophyllis sp.	0		0		0		<0.1	
Constantinea simplex	<0.1		0		0		0	
Corallina vancouveriensis	0.5	±1.1	0		0.1	±0.1	✓	
Corallinaceae sp.	✓		0		0		0	
Cryptonemia ovalifolia	0		0.1	±0.1	0		0	
Cryptonemia sp.	<0.1		0		0		0	

Antithamnion kylinii	0	0	0	<0.1
Antithamnionella pacifica var. pacifica	<0.1	0	0	0
Bossiella plumosa	5.8 ±8.5	0	0	0.1 ±0.2
Calliarthron tuberculosum	0.0 ±0.2	0	0	0
Callithamnion pikeanum	0.0 ±0.1	0	0	0
Callithamnion/ Pleonosporium	<0.1	0	0	0
Callophyllis sp.	0	0	0	<0.1
Constantinea simplex	<0.1	0	0	0
Corallina vancouveriensis	0.5 ±1.1	0	0.1 ±0.1	✓
Corallinaceae sp.	✓	0	0	0
Cryptonemia ovalifolia	0	0.1 ±0.1	0	0
Cryptonemia sp.	<0.1	0	0	0

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Cryptosiphonia woodii	<0.1		0		0		0	
Delesseriaceae sp.	<0.1		0		0		0	
Endocladia muricata	<0.1		0		0		0	
Gigartina papillata	0.0 ±0.2		0		0		0	
Gracilaria sp.	0		<0.1		0		0	
Halosaccion glandiforme	<0.1		0		0		0	
Halymenia coccinea	0		1.3 ± 2.7		0		0	
Heterosiphonia sp.	<0.1		0		0		0	
Hildenbrandia occidentale	✓		0		0		0	
Hymenena flabelligera	0.3 ±0.9		3.7 ±4.4		0		0	
Hymenena sp.	0.2 ±0.3		0.8 ±1.0		0.7 ±0.3		0	
Iridaea cordata	1.5 ±2.9		40.8 ±79.1		2.1 ±4.2		5.2 ±10.5	
Iridaea sp.	0.0 ±0.1		0.0 ± 0.1		0		0	
Laurencia spectabilis	0.0 ±0.1		0		0		0	
Melobesia mediocris	0		<0.1		<0.1		0	

Gracilaria sp.	0	<0.1	0	0
Halosaccion glandiforme	<0.1	0	0	0
Halymenia coccinea	0	1.3 ± 2.7	0	0
Heterosiphonia sp.	<0.1	0	0	0
Hildenbrandia occidentale	✓	0	0	0
Hymenena flabelligera	0.3 ±0.9	3.7 ±4.4	0	0
Hymenena sp.	0.2 ±0.3	0.8 ±1.0	0.7 ±0.3	0
Iridaea cordata	1.5 ±2.9	40.8 ±79.1	2.1 ±4.2	5.2 ±10.5
Iridaea sp.	0.0 ±0.1	0.0 ± 0.1	0	0
Laurencia spectabilis	0.0 ±0.1	0	0	0
Melobesia mediocris	0	<0.1	<0.1	0

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Membranoptera sp.	<0.1		0		0		0	
Mesophyllum conchatum	0		✓		✓		0	
Mesophyllum sp.	✓		0		0		0	
Microcladia borealis	0.0 ±0.0		0		<0.1		0	
Neoptilota hypnoides	0.0 ±0.0		0		0		0	
Neoptilota sp. (juv.)	<0.1		0		0		0	
Odonthalia floccosa	0.5 ±1.0		0.1 ±0.3		0.3 ±1.0		0	
Odonthalia kamtschatica	<0.1		0		0		0	
Odonthalia sp.	<0.1		0		0		0	
Petrocelis middendorfii	✓		0		0		0	
Peyssonelia sp.	<0.1		0		0		0	
Plocamium tenue	<0.1		0		<0.1		0	
Polysiphonia hendryi	<0.1		0		<0.1		0	
Polysiphonia pacifica	<0.1		0		0.1 ±0.2		0	
Porphyra sp.	<0.1		0		0		0	

borealis	±0.0			0
Neoptilota hypnoides	0.0 ±0.0	0	0	0
Neoptilota sp. (juv.)	<0.1	0	0	0
Odonthalia floccosa	0.5 ±1.0	0.1 ±0.3	0.3 ±1.0	0
Odonthalia kamtschatica	<0.1	0	0	0
Odonthalia sp.	<0.1	0	0	0
Petrocelis middendorfii	✓	0	0	0
Peyssonelia sp.	<0.1	0	0	0
Plocamium tenue	<0.1	0	<0.1	0
Polysiphonia hendryi	<0.1	0	<0.1	0
Polysiphonia pacifica	<0.1	0	0.1 ±0.2	0
Porphyra sp.	<0.1	0	C	0

159

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Pterosiphonia bipinnata		<0.1		0		<0.1		0
Pterosiphonia dendroidea		<0.1		0		0		0
Ptilothamniopsis lejolisea		<0.1		0		0		0
Rhodochorton sp.		0		0		<0.1		0
Rhodymenia palmata		0.2 ±0.5		0.6 ±1.2		0		0
Rhodymenia sp.		<0.1		0		0		0
Spermatophyta								
Phyllospadix scouleri		0.9 ±3.4		185.4 ±370.9		34.6 ±58.9		871.9 ±1030.6
Porifera								
spp.		✓		0		0		✓
Halichondria pacifica		✓		0		0		0
Ophlitaspongia pennata		0		0		0		✓
Cnidaria								
Anthozoa spp	0.1 ± 0.5	<0.1	0		0.7 ± 1.2	0.1 ± 0.3	0.8 ± 1.5	<0.1
Anthopleura elegantissima	0		0		0.1 ± 0.2	0.0 ± 0.1		
Hydrozoa spp.		✓		✓		0		0

159

lejolisea						0		0
Rhodochorton sp.		0		0		<0.1		0
Rhodymenia palmata		0.2 ±0.5		0.6 ±1.2		0		0
Rhodymenia sp.		<0.1		0		0		0
Spermatophyta								
Phyllospadix scouleri		0.9 ±3.4		185.4 ±370.9		34.6 ±58.9		871.9 ±1030.6
Porifera								
spp.		✓		0		0		✓
Halichondria pacifica		✓		0		0		0
Ophlitaspongia pennata		0		0		0		✓
Cnidaria								
Anthozoa spp	0.1 ± 0.5	<0.1	0		0.7 ± 1.2	0.1 ± 0.3	0.8 ± 1.5	<0.1
Anthopleura elegantissima	0		0		0.1 ± 0.2	0.0 ± 0.1		
Hydrozoa spp.		✓		✓		0		0

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Bittium eschrichtii	0.0 ±0.0	<0.1	0.0 ±0.1	<0.1	0.3 ±1.0	0.0 ±0.1	0	
Calliostoma ligatum	0		0		0.3 ±0.7	0.1 ±0.4	1.0 ±2.0	0.9 ±1.7
Cerithiopsis sp.	0.1 ±0.3	<0.1	0		0.2 ±0.4	<0.1	0	
Crepidula sp. (juv)	0.2 ±0.4	<0.1	0		0.1 ±0.3	<0.1	0	
Homalopoma baculum	0		0		0.1 ±0.2	<0.1	0	
Lacuna variegata	0.2 ±0.5	<0.1	0		0.9 ±1.0	<0.1	0	
Littorina sitkana	0.1 ±0.2	<0.1	0		0		0	
Margarites pupillus	0.3 ±0.8	0.0 ±0.2	1.5 ±3.0	0.6 ±1.3	0.2 ±0.4	<0.1	0.1 ±0.2	<0.1
Margarites/ Lirularia	0.1 ±0.2	<0.1	0		0		0	
Mitrella carinata	2.1 ±4.9	0.2 ±0.5	0.3 ±0.7	0.1 ±0.1	0.7 ±1.8	0.1 ±0.2	0	
Mitrella gouldi	0		0		0.8 ±1.5	0.1 ±0.1	0	
Notoacmaea scutum	0.2 ±0.4	0.0 ±0.1	0		0		0	
Ocenebra lurida	0.1 ±0.2	0.0 ±0.0	0		0.1 ±0.3	<0.1	0.1 ±0.2	<0.1
Onchidella borealis	0.1 ±0.4	0.0 ±0.0	0		0		0	

Crepidula sp. (juv)	0.2 ±0.4	<0.1	0		0.1 ±0.3	<0.1	0	
Homalopoma baculum	0		0		0.1 ±0.2	<0.1	0	
Lacuna variegata	0.2 ±0.5	<0.1	0		0.9 ±1.0	<0.1	0	
Littorina sitkana	0.1 ±0.2	<0.1	0		0		0	
Margarites pupillus	0.3 ±0.8	0.0 ±0.2	1.5 ±3.0	0.6 ±1.3	0.2 ±0.4	<0.1	0.1 ±0.2	<0.1
Margarites/ Lirularia	0.1 ±0.2	<0.1	0		0		0	
Mitrella carinata	2.1 ±4.9	0.2 ±0.5	0.3 ±0.7	0.1 ±0.1	0.7 ±1.8	0.1 ±0.2	0	
Mitrella gouldi	0		0		0.8 ±1.5	0.1 ±0.1	0	
Notoacmaea scutum	0.2 ±0.4	0.0 ±0.1	0		0		0	
Ocenebra lurida	0.1 ±0.2	0.0 ±0.0	0		0.1 ±0.3	<0.1	0.1 ±0.2	<0.1
Onchidella borealis	0.1 ±0.4	0.0 ±0.0	0		0		0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Nemertea spp.	1.4 ±1.5	✓	0		2.2 ±4.0	<0..	0	
Nematoda spp.	7.0 ± 9.9	<0.1	0		20.3 ± 34.4	<0.1	0	
Mollusca								
Amphineura								
Cyanoplax dentiens	0.2 ±0.4	0.0 ±0.0	0.5 ±0.6	0.1 ±0.1	0.1 ±0.2	0.0 ±0.1	0	
Katharina tunicata	0		1.3 ±1.3	<0.1	0.2 ±0.4	1.4 ±4.3	0	
Mopalia sp. K	0		0		0		0.3 ±0.5	1.2 ±2.3
Tonicella lineata	0.1 ±0.3	0.0 ±0.1	1.5 ±0.6	4.5 ±4.5	0.3 ±0.6	0.0 ±0.1	1.3 ±1.5	0.8 ±1.6
Gastropoda								
Acmaea mitra	0		0		0.1 ±0.2	0.5 ±2.1	0	
Acmaeidae sp. (juv)	0		0		0.1 ±0.2	<0.1	0	
Acteocina sp.	0		0		0.3 ±0.9	<0.1	0	
Alvinia sp.	0.2 ±0.6	<0.1	0		2.4 ±9.8	<0.1	0	
Barleeia haliotiphila	0.3 ±0.4	<0.1	0		0.7 ±0.6	<0.1	0	

Amphineura								
Cyanoplax dentiens	0.2 ±0.4	0.0 ±0.0	0.5 ±0.6	0.1 ±0.1	0.1 ±0.2	0.0 ±0.1	0	
Katharina tunicata	0		1.3 ±1.3	<0.1	0.2 ±0.4	1.4 ±4.3	0	
Mopalia sp. K	0		0		0		0.3 ±0.5	1.2 ±2.3
Tonicella lineata	0.1 ±0.3	0.0 ±0.1	1.5 ±0.6	4.5 ±4.5	0.3 ±0.6	0.0 ±0.1	1.3 ±1.5	0.8 ±1.6
Gastropoda								
Acmaea mitra	0		0		0.1 ±0.2	0.5 ±2.1	0	
Acmaeidae sp. (juv)	0		0		0.1 ±0.2	<0.1	0	
Acteocina sp.	0		0		0.3 ±0.9	<0.1	0	
Alvinia sp.	0.2 ±0.6	<0.1	0		2.4 ±9.8	<0.1	0	
Barleeia haliotiphila	0.3 ±0.4	<0.1	0		0.7 ±0.6	<0.1	0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Thais canaliculata	0		0		0.1 ±0.2	<0.1	0	
Thais emarginata	0		0		0.2 ±0.7	<0.1	0	
Thais sp. (juv.)	0		0		0.1 ±0.2	<0.1	0	
Trichotropis cancellata	0.1 ±0.2	<0.1	0		0		0	
Velutina laevigata	0		0		0.3 ±0.7	<0.1	0	
Bivalvia								
Hiatella arctica	0.5 ±1.2	0.1 ±0.4	0.8 ±1.5	0.4 ±0.8	0.2 ±0.4	<0.1	0	
Lasaea cistula	0.2 ±0.7	<0.1	0		0		0	
Lyonsia californica	0		0		0		0	
Modiolus rectus	0		0		0		0.1 ±0.2	0.0 ±0.1
Musculus pygmaeus	0.7 ±1.6	<0.1	0		0.2 ±3.8	<0.1	0.1 ±0.2	0.1 ±0.2
Mysella tumida	0		0		0.1 ±0.2	<0.1	0	
Mytilus californianus	0		0		0.1 ±0.2	<0.1	0	
Mytilus edulis	0		0		0.1 ±0.2	<0.1	0	
Mytilus sp. (juv.)	0.7 ±0.9	<0.1	0		0.1 ±0.2	<0.1	0	
Protothaca staminea	0.0 ±0.0	<0.1	0		0.2 ±0.5	<0.1	0	

laevigata					±0.7			
Bivalvia								
Hiatella arctica	0.5 ±1.2	0.1 ±0.4	0.8 ±1.5	0.4 ±0.8	0.2 ±0.4	<0.1	0	
Lasaea cistula	0.2 ±0.7	<0.1	0		0		0	
Lyonsia californica	0		0		0		0	
Modiolus rectus	0		0		0		0.1 ±0.2	0.0 ±0.1
Musculus pygmaeus	0.7 ±1.6	<0.1	0		0.2 ±3.6	<0.1	0.1 ±0.2	0.1 ±0.2
Myselle tumida	0		0		0.1 ±0.2	<0.1	0	
Mytilus californianus	0		0		0.1 ±0.2	<0.1	0	
Mytilus edulis	0		0		0.1 ±0.2	<0.1	0	
Mytilus sp. (juv.)	0.7 ±0.9	<0.1	0		0.1 ±0.2	<0.1	0	
Protothaca staminea	0.0 ±0.0	<0.1	0		0.2 ±0.5	<0.1	0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Transennella tantilla	0		0		0.7 ±1.5	0.0 ±0.1	0	
Zirfaea pilabryi	0.1 ±0.5	0.0 ±0.0	0		0		0	
Annelida								
Oligochaeta spp.	1.9 ±4.5	<0.1	0		28.3 ±68.0	<0.1	0	
Polychaeta								
Arenicolidae spp.	0.1 ±0.2	<0.1	0		0		0	
Branchiomaldane vincenti	0.1 ±0.4	<0.1	0		3.5 ±7.6	<0.1	0	
Capitellidae								
Capitella capitata	0.5 ±1.1	<0.1	0		11.1 ±24.8	<0.1	0	
Chrysopetalidae								
Paleonotus bellis	0.2 ±0.4	<0.1	0		0.5 ±0.9	<0.1	0	
Cirratulidae spp.	0.1 ±0.2	<0.1	0		1.7 ±3.1	<0.1	0	
Cirratulus cirratus	2.8 ±6.3	✓	0		0.4 ±1.3	<0.1	0	
Eunicoidea spp.	0.4 ±0.9	<0.1	0		0.2 ±0.5	<0.1	0	
Eunicidae								
Eunice valens	0.2 ±0.4	✓	0		0		0	
Lumbrineridae								
Lumbrineris inflata	0.1 ±0.2	<0.1	0		0		0	

Arenicolidae spp.	0.1 ±0.2	<0.1	0	0		0
Branchiomaldane vincenti	0.1 ±0.4	<0.1	0	3.5 ±7.6	<0.1	0
Capitellidae						
Capitella capitata	0.5 ±1.1	<0.1	0	11.1 ±24.8	<0.1	0
Chrysopetalidae						
Paleonotus bellis	0.2 ±0.4	<0.1	0	0.5 ±0.9	<0.1	0
Cirratulidae	0.1 ±0.2	<0.1	0	1.7 ±3.1	<0.1	0
spp.						
Cirratulus cirratus	2.8 ±6.3	✓	0	0.4 ±1.3	<0.1	0
Eunicoidea spp.	0.4 ±0.9	<0.1	0	0.2 ±0.5	<0.1	0
Eunicidae						
Eunice valens	0.2 ±0.4	✓	0	0		0
Lumbrineridae						
Lumbrineris inflata	0.1 ±0.2	<0.1	0	0		0

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Lumbrineris sp.	1.2 ±2.0	<0.1	0		3.2 ±6.4	<0.1	0	
Maldanidae sp. (juv.)	0		0		0.1 ±0.2	<0.1	0	
Nereidae								
sp. (juv.)	0		0		4.5	<0.1	0	
Nereis sp.	4.2 ±4.9	<0.1	0		1.3 ±1.7	<0.1	0	
Nereis pelagica	0		0		0.1 ±0.2	<0.1	0	
Platynereis bicanaliculata	1.1 ±3.0	<0.1	0		1.2 ±2.6	<0.1	0	
Onuphidae								
Onuphis stigmatis	0.4 ±1.3	<0.1	0		11.7 ±24.9	<0.1	0	
Onuphis sp.	1.1 ±3.0	<0.1	0		0		0	
Orbiniidae								
Naineris dendritica	0.2 ±0.4	<0.1	0		7.0 ±14.9	<0.1	0	
Naineris quadriocuspida	0.1 ±0.4	<0.1	0		0		0	
Naineris sp.	0.4 ±1.6	<0.1	0		2.2 ±5.5	<0.1	0	
Scoloplos sp.	0.1 ±0.4	<0.1	0		0		0	
Phyllodocidae								
Eulalis bilineata	0		0		0.1 ±0.2	<0.1	0	
Eulalia quadrioculata	0.2 ±0.5	<0.1	0		0.6 ±1.2	<0.1	0	

pelagica				±0.2	<0.1	0
Platyneresis bicenaliculata	1.1 ±3.0	<0.1	0	1.2 ±2.6	<0.1	0
Onuphidae						
Onuphis stigmatis	0.4 ±1.3	<0.1	0	11.7 ±24.9	<0.1	0
Onuphis sp.	1.1 ±3.0	<0.1	0	0		0
Orbiniidae						
Naineris dendritica	C ±0.2	<0.1	0	7.0 ±14.9	<0.1	0
Naineris quadriocuspida	0.1 ±0.4	<0.1	0	0		0
Naineris sp.	0.4 ±1.6	<0.1	0	2.2 ±5.5	<0.1	0
Scoloplos sp.	0.1 ±0.4	<0.1	0	0		0
Phyllodocidae						
Eulalia bilineata	0		0	0.1 ±0.2	<0.1	0
Eulalia quadrioculata	0.2 ±0.5	<0.1	0	0.6 ±1.2	<0.1	0

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Eulalia sp.	0.1 ±0.2	<0.1	0		0.1 ±0.2	<0.1	0	
Polynoidae sp.	0		0		0.3 ±0.7	<0.1	0	
Halosydna brevisetosa	0.1 ±0.2	<0.1	0		0		0	
Sabellidae spp.	3.2 ±5.4	<0.1	0		2.4 ±2.9	<0.1	0	
Chone ecaudata	0	0			0.8 ±1.0	<0.1	0	
Euchone vancouveri	0.1 ±0.2	<0.1	0		0		0	
Fabricia oregonica	0.1 ±0.2	<0.1	0		0		0	
Fabricinae sp.	1.1 ±4.5	<0.1	0		0		0	
Oriopsis sp.	1.1 ±4.7	<0.1	0		12.6 ±27.1	<0.1	0	
Sabella media	0.2 ±0.4	<0.1	0		0.6 ± 1.2	<0.1	0	
Sabellastarte sp.	0.2 ±0.5	<0.1	0		0.2 ±0.7	<0.1	0	
Schizobranchia insignis	0.2 ±0.7	<0.1	0		0		0	
Sabellariidae								
Idanthyrsus armatus	C		0		0.1 ±0.3	<0.1	0	
Serpulidae								
Spirorbis sp.	1.5 ±2.8	<0.1	0		2.7 ±6.6	<0.1	0	
Sphaerodoridae								
Sphaerodoropis minuta	0.3 ±0.8	<0.1	0		0.2 ±0.9	<0.1	0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Spionidae								
Polydora columbiana	0.1 ±0.3	<0.1	0		0.2 ±0.4	<0.1	0	
Polydora pygidialis	0.3 ±0.8	<0.1	0		2.3 ±7.5	<0.1	0	
Polydora spongicola	0		0		0.2 ±0.5	<0.1	0	
Polydora sp.	0.4 ±1.4	<0.1	0		0.9 ±1.5	<0.1	0	
Syllidae								
Brania brevipharyngea	0.4 ±0.8	<0.1	0		0.2 ±0.5	<0.1	0	
Exogone gemmifera	1.4 ±2.1	<0.1	0		0.7 ±1.0	<0.1	0	
Exogone lourei	0.5 ±1.2	<0.1	0		2.2 ±5.5	<0.1	0	
Exogone sp.	01 ±0.	<0.1	0		0		0	
Odontosyllis sp.	0.6 ±1.9	<0.1	0		0.9 ±2.1	<0.1	0	
Sphaerosyllis brandhorsti	0.4 ±1.3	<0.10			0		0	
Sphaerosyllis pirifera	0.4 ±0.8	<0.10	0		0.6 ±1.0	<0.1	0	
Sphaerosyllis sp.	0		0		0.7 ±2.0	<0.1	0	
Syllis sp.	11.1 ±25.2	✓	0		19.7 ±29.1	<0.1	0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Terebellidae spp.	4.1 ±8.7	✓	0		0.1 ±0.2	<0.1	0	
Nicolea zostericola	6.5 ±28.1	<0.1	0		12.7 ±20.4	<0.1	0	
Polycirrus sp.	0		0		3.2 ±8.7	<0.1	0	
Sipunculida								
Phascolosoma agassizii	0.1 ±0.2	<0.1	0		0.2 ±0.5	<0.1	0.1 ±0.2	0.0 ±0.1
Pycnogonida								
Halosoma compactum	0.1 ±0.2	<0.1	0		0.1 ±0.2	<0.1	0	
Crustacea								
Ostracoda spp.	0.4 ± 1.0	<0.1	0		3.4 + 6.4	<0.1	0	
Cirripedia								

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Terebellidae	4.1	✓	0		0.1	<0.1	0	
spp.	±8.7				±0.2			
Nicolea	6.5	<0.1	0		12.7	<0.1	0	
zostericola	±28.1				±20.4			
Polycirrus	0		0		3.2	<0.1	0	
sp.					±8.7			
Sipunculida								
Phascolosoma	0.1	<0.1	0		0.2	<0.1	0.1	0.0
agassizii	±0.2				±0.5		±0.2	±0.1
Pycnogonida								
Halosoma	0.1	<0.1	0		0.1	<0.1	0	
compactum	±0.2				±0.2			
Crustacea								
Ostracoda								
spp.	0.4	<0.1	0		3.4	<0.1	0	
Cirripedia	± 1.0				± 6.4			
Balanus	0.8	<0.1	7.3	40.6	2.1	2.0	2.0	31.9
cariosus	±1.3		±14.5	±81.2	±8.0	±8.4	±2.3	±42.7
Balanus	0.1	<0.1	0		0		0	
glandula	±0.2							
Balanus	0.4	17.2	1.5	26.1	0		0	
nubilis	±1.1	±58.8	±1.9	±41.0				
Balanus	0.7	0.0	0		2.6	0.0	0	
sp. (juv.)	±3.1	±0.1			±6.5	±0.1		
Chthamalus	0		0		0.1	<0.1	0	
dalli					±0.2			
Cumacea								
Cumella	0		0		0.4	<0.1	0	
vulgaris					±1.4			

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Tanaidacea								
Anatanais	3.0	<0.1	0		7.8	<0.1	0	
normani	±5.1				±12.8			
Leptochelia	4.9	<0.1	0		2.2	<0.1	0	
dubia	±13.0				±5.6			
Pancolus	0.1	<0.1	0		1.0	<0.1	0	
californiensis	±0.2				±4.3			
Isopoda								
Cirolana	0.1	<0.1	0		0		0	
harfordi	±0.2							
Dynamenella	0.8	<0.1	0		0.8	<0.1	0	
glabra	±1.5				±1.3			
Dynamenella	1.5	<0.1	0.1	<0.1	0.5	<0.1	0	
shearerí	±3.2		±0.4		±1.2			
Dynamenella	0.1	<0.1	0		0		0	
sp. (juv.)	±0.3							

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Tanaidacea								
Anatanais normani	3.0 ±5.1	<0.1	0		7.8 ±12.8	<0.1	0	
Leptochelia dubia	4.9 ±13.0	<0.1	0		2.2 ±5.6	<0.1	0	
Pancolus californiensis	0.1 ±0.2	<0.1	0		1.0 ±4.3	<0.1	0	
Isopoda								
Cirolana harfordi	0.1 ±0.2	<0.1	0		0		0	
Dynamenella glabra	0.8 ±1.5	<0.1	0		0.8 ±1.3	<0.1	0	
Dynamenella sheareri	1.5 ±3.2	<0.1	0.1 ±0.4	<0.1	0.5 ±1.2	<0.1	0	
Dynamenella sp. (juv.)	0.1 ±0.3	<0.1	0		0		0	
Exosphaeroma media	0		0		0.1 ±0.2	<0.1	0	
Exosphaeroma rhomburum	5.7 ±14.7	0.0 ±0.1	0		2.6 ±4.3	<0.1	0	
Exosphaeroma sp. (juv.)	0.4 ±1.6	<0.1	0		0		0	
Ianiropsis kincaidi	0.2 ±0.5	<0.1	0		1.4 ±3.2	<0.1	0	
Ianiropsis tridens	0		0		0.1 ±0.3	<0.1	0	
Ianiropsis sp.	0		0		1.9 ±5.0	<0.1	0	
Idotea montereyensis	0		0.1 ±0.4	0.0 ±0.1	0		0	
Idotea stenops	0		0.1 ±0.2	0.0 ±0.1	0		0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Idotea wosnesenskii	0.2 ±0.5	0.1 ±0.2	0		0		0.5 ±0.6	0.0 ±0.1
Idotea sp. (juv.)	0.5 ±0.9	<0.1			0.1 ±0.2	<0.1		
Jaeropsis dubia	0.1 ±0.2	<0.1	0		0		0	
Jaeropsis lobata	0		0		0.8 ±2.2	<0.1	0	
Jaeropsis sp.	0		0		0.1 ±0.2	<0.1	0	
Limnoria algarum	0.9 ±2.5	<0.1	0		0.8 ±2.0	<0.1	0	
Limnoria lignorum	0.4 ±1.3	<0.1	0		0		0	
Munna chromatocephala	0.4 ±0.8	<0.1	0		0.1 ±0.2	<0.1	0	
Munna stephenseni	0		0		0.3 ±0.8	<0.1	0	
Munna	0		0					

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Idotea wosnesenskii	0.2 ±0.5	0.1 ±0.2	0		0		0.5 ±0.6	0.0 ±0.1
Idotea sp. (juv.)	0.3 ±0.9	<0.1			0.1 ±0.2	<0.1		
Jaeropsis dubia	0.1 ±0.2	<0.1	0		0		0	
Jaeropsis lobata	0		0		0.8 ±2.2	<0.1	0	
Jaeropsis sp.	0		0		0.1 ±0.2	<0.1	0	
Limnoria algarum	0.9 ±2.5	<0.1	0		0.8 ±2.0	<0.1	0	
Limnoria lignorum	0.4 ±1.3	<0.1	0		0		0	
Munna chromatocephala	0.4 ±0.8	<0.1	0		0.1 ±0.2	<0.1	0	
Munna stephenseni	0		0		0.3 ±0.8	<0.1	0	
Munna ubiquita	0		0		0.2 ±0.7	<0.1	0	
Paramithura elegans	0		0		0.2 ±0.4	<0.1	0	
Synidotea pettiboneae	0		0		0.2 ±0.7	<0.1	0	
Synidotea sp. A.	0		0		1.1 ±3.9	<0.1	0	
Amphipoda								
Ampithoe sp. C.	-		-		1.6 ±4.6	<0.1	0	
Ampithoidae spp.	-		-		2.5 ±4.9	<0.1	0.8 ±1.5	0.1 ±0.2

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Aorodes columbiae	-		-		5.8 ±6.7	<0.1	0	
Atylus levidensis	-		-		0.5 ±0.9	<0.1	0.3 ±0.5	<0.1
Caprella greenleyi	0.1 ±0.4	<0.1	0		0		0	
Caprella verrucosa	0.2 ±0.7	<0.1	0		0		0	
Ceropa compactus	0.2 ±0.7	<0.1	0		0.1 ±0.	<0.1	0	
Cymadusa uncinata	-		-		0.4 ±1.1	0.0 ±0.1	7.5 ±15.0	0.5 ±1.1
Gammaridea spp.	13.2 ±9.6	<0.1	1.0 ±1.2	0.0 ±0.1				
Gammaropsis thompsoni	-		-		0.3 ±0.8	<0.1	0	
Hyale frequens	-		-		1.1 ±2.4	<0.1	0	
Iachyrocerus anguipes	-		-		1.0 ±1.9	<0.1	0	
Jassa falcata	-		-		0.2 ±0.5	<0.1	0	
Lepidepecreum (gurjanovae)	-		-		0.1 ±0.5	<0.1	0	
Lepidepecreum sp. A	-		-		0.5 ±2.0	<0.1	0	
Melita californica	-		-		1.7 ±3.5	<0.1	0.3 ±0.5	<0.1
Metopa cistella	-		-		0.1 ±0.2	<0.1	0	
Najna consiliorum	-		-		0.2 ±0.7	<0.1	0	

Cerops compactus	0.2 ±0.7	<0.1	0		0.1 ±0.	<0.1	0	
Cymadusa uncinata	-		-		0.4 ±1.1	0.0 ±0.1	7.5 ±15.0	0.5 ±1.1
Gammaridea spp.	13.2 ±9.6	<0.1	1.0 ±1.2	0.0 ±0.1				
Gammaropsis thompsoni	-		-		0.3 ±0.8	<0.1	0	
Hyale frequens	-		-		1.1 ±2.4	<0.1	0	
Ischyrocerus anguipes	-		-		1.0 ±1.9	<0.1	0	
Jassa falcata	-		-		0.2 ±0.5	<0.1	0	
Lepidepecreum (gurjanovae)	-		-		0.1 ±0.5	<0.1	0	
Lepidepecreum sp. A	-		-		0.5 ±2.0	<0.1	0	
Melita californica	-		-		1.7 ±3.5	<0.1	0.3 ±0.5	<0.1
Metopa cistella	-		-		0.1 ±0.2	<0.1	0	
Najna consiliorum	-		-		0.2 ±0.7	<0.1	0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Najna sp.	-		-		1.3 ±4.3	<0.1	2.8 ±3.8	<0.1
Oligochinus lighti	-		-		0.1 ±0.2	<0.1	0	
Parapleustes nautilus	-		-		1.4 ±2.0	<0.1	0.5 ±1.0	<0.1
Parapleustes pugettensis	-		-		1.0 ±2.5	<0.1	0	
Photis bifurcata	-		-		0.4 ±0.9	<0.1	0	
Photis brevipes	-		-		0.2 ±0.9	<0.1	0	
Photis sp. A	-		-		5.4 ±9.4	<0. 1	2.0 ±4.0	<0.1
Photis spp.	-		-		5.2 ±8.9	<0.1	0	
Polycheria osborni	-		-		0.1 ±0.2	<0.1	0	
Pontogeneia intermedia	-		-		0.4 ±0.8	<0.1	0	
Tritella pilimana	0.1 ±0.2	<0.1	0		0.3 ±0.6	<0.1	0	
Decapoda								
Cancer oregonensis	0.1 ±0.3	0.1 ±0.4	0.1 ±0.3	0.2 ±0.2	0.1 ±0.3	0.4 ±1.6	0.5 ±0.6	0.0 ±0.1
Cancer sp. (juv.)	0.1 ±0.3	0.0 ±0.1	0		0		0	
Cryptolithodes sitchensis	0		0					
Oedignathus inermis	0.2 ±0.4	0.4 ±1.4	0.1 ±0.3	0.6 ±0.6	0.5 ±1.0 0	0.4 ±0.8	0.3 ±0.5 0	0.0 ±0.1

Brevipes					0.1 ±0.9	<0.1	0	
Photis sp. A	-		-		5.4 ±9.4	<0. 1	2.0 ±4.0	<0.1
Photis spp.	-		-		5.2 ±8.9	<0.1	0	
Polycheria osborni	-		-		0.1 ±0.2	<0.1	0	
Pontogeneia intermedia	-		-		0.4 ±0.8	<0.1	0	
Tritella pilimana	0.1 ±0.2	<0.1	0		0.3 ±0.6	<0.1	0	
Decapoda								
Cancer oregonensis	0.1 ±0.3	0.1 ±0.4	0.1 ±0.3	0.2 ±0.2	0.1 ±0.3	0.4 ±1.6	0.5 ±0.6	0.0 ±0.1
Cancer sp. (juv.)	0.1 ±0.3	0.0 ±0.1	0		0		0	
Cryptolithodes sitchensis	0		0		0.5 ±1.0	0.4 ±0.8	0.3 ±0.5	0.0 ±0.1
Oedignathus inermis	0.2 ±0.4	0.4 ±1.4	0.1 ±0.3	0.6 ±0.6	0		0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Pagurus hirsutiusculus	0		0		0.1 ±0.2	<0.1	0	
Pagurus sp. (juv.)	0.7 ±3.1	0.2 ±0.7	0.8 ±1.5	0.1 ±0.2	0.1 ±0.2	<0.1	0	
Pinnotheres pugettensis	0		0		0.1 ±0.2	0.0 ±0.1	0	
Pinnotheridae spp.	0.1 ±0.2	<0.1	0		0		0	
Pugettia gracilis	1.7 ±3.5	0.1 ±0.4	0.5 ±1.0	0.3 ±0.6	6.7 ±8.1	0.2 ±0.4	4.0 ±5.5	1.8 ±2.3
Insecta								
Coleoptera spp.	0.1 ±0.2	<0.1	0		0		0	
Diptera spp.	0.3 ±0.7	<0.1	0		0.1 ±0.2	<0.1	0	
Bryozoa								
spp.		✓		0		0		0
Echinodermata								
Ophiuroidea sp. (juv.)	0.1 ±0.3	<0.1	0		0.1 ±0.2	<0.1	0	
Asteroidea								
Henricia leviuscula	0.1 ±0.3	0.0 ±0.1	0.1 ±0.3	0.0 ±0.1	0.2 ±0.7	0.2 ±1.0	0	
Leptasterias hexactis	0.1 ±0.4	<0.1	0		0.1 ±0.3	<0.1	0	
Holothuroidea								
Cucumaria pseudocurata	0.1 ±0.2	<0.1	0		0.2 ±0.5	0.0 ±0.1	0	

Pinnotheridae spp.	0.1 ±0.2	<0.1	0		0		0	
Pugettia gracilis	1.7 ±3.5	0.1 ±0.4	0.5 ±1.0	0.3 ±0.6	6.7 ±8.1	0.2 ±0.4	4.0 ±5.5	1.8 ±2.3
Insecta								
Coleoptera spp.	0.1 ±0.2	<0.1	0		0		0	
Diptera spp.	0.2 ±0.7	<0.1	0		0.1 ±0.2	<0.1	0	
Bryozoa								
spp.		✓		0		0		0
Echinodermata								
Ophiuroidea sp. (juv.)	0.1 ±0.3	<0.1	0		0.1 ±0.2	<0.1	0	
Asteroidea								
Henricia leviuscula	0.1 ±0.3	0.0 ±0.1	0.1 ±0.3	0.0 ±0.1	0.2 ±0.7	0.2 ±1.0	0	
Leptasterias hexactis	0.1 ±0.4	<0.1	0		0.1 ±0.3	<0.1	0	
Holothuroidea								
Cucumaria pseudocurata	0.1 ±0.2	<0.1	0		0.2 ±0.5	0.0 ±0.1	0	

Tongue Point +0

	Spr 77				Sum 77			
	0.01 m^2		0.2 m^2		0.01 m^2		0.2 m^2	
	#	wt	#	wt	#	wt	#	wt
Chordata								
Ascidacea sp.	0		0		✓		0	
Species Richness	178				170			
Diversity - H^1	2.33				2.17			
Total Number	2617.5				6183.8			
Total Biomass (g)	1626.5				2057.5			

Diversity - H^1	2.33	2.17
Total Number	2617.5	6183.8
Total Biomass (g)	1626.5	2057.5

Table 1d. Tongue Point (rock) benthic organisms from the subtidal collected 17 June 1977, expressed as number and/or biomass (g) per 0.25 m^2 ± standard deviation (N=4).

	-5 m		-10 m	
	#	wt	#	wt
Chlorophyta				
Chaetomorpha sp.	0.0 ±0.1		0	
Derbesia marina	0.1 ±0.1		0.0 ±0.1	
Monostroma sp.	0.0 ±0.1		0.0 ±0.1	
Rhizoclonium riparium	0.0 ±0.1		0	
Spongomorpha coalita	0.0 ±0.1		0	
Spongomorpha spinescens	0		0.0 ±0.1	
Ulvaria sp.	0.0 ±0.1		0	
Bacillariophyta				
Pennales spp.	0.0 ±0.1		0.0 ±0.1	
Phaeophyta				
Costaria costata	0		3.6 ±7.3	
Desmarestia ligulata	0.0 ±0.1		0.8 ±1.7	
Desmarestia viridis	2.7 ±2.1		4.3 ±8.5	
Desmarestia sp. (juv.)	0.0 ±0.1		0	
Ectocarpaceae	0.0 ±0.1		0	

Monostroma sp.	0.0 ±0.1	±0.1 0.0
Rhizoclonium riparium	0.0 ±0.1	±0.1 0
Spongomorpha coalita	0.0 ±0.1	0
Spongomorpha spinescens	0	0.0 ±0.1
Ulvaria sp.	0.0 ±0.1	0
Bacillariophyta		
Pennales spp.	0.0 ±0.1	0.0 ±0.1
Phaeophyta		
Costaria costata	0	3.6 ±7.3
Desmarestia ligulata	0.0 ±0.1	0.8 ±1.7
Desmarestia viridis	2.7 ±2.1	4.3 ±8.5
Desmarestia sp. (juv.)	0.0 ±0.1	0
Ectocarpaceae	0.0 ±0.1	0

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Giffordia ovata	0.0 ±0.1		0	
Laminariales sp.	2.3 ±3.9		0	
Pterogophora californica	0		2.7 ±5.3	
Pylaiella tenella	0.0 ±0.1		0	
Syringoderma abyssicola	0.0 ±0.1		0.0 ±0.1	
Rhodophyta				
Acrochaetium sp.	0.0 ±0.1		0	
Amplisiphonia pacifica	0.0 ±0.1		0	
Antithamnion defectum	0.1 ±0.0		0.0 ±0.1	
Antithamnion kylinii	0.0 ±0.1		0.0 ±0.1	
Bossiella plumosa	0.4 ±0.4		0	
Bonnemaisonia nootkana	0		0.9 ±1.9	
Calliarthron tuberculosum	1121.8 ±688.5		1.7 ±3.4	
Callithamnion biseriatum	0.0 ±0.1		0	
Callithamnion pikeanum	0.0 ±0.1		0	

abyssicola	0.0	0.0
Rhodophyta	±0.1	±0.1
Acrochaetium sp.	0.0 ±0.1	0
Amplisiphonia pacifica	0.0 ±0.1	0
Antithamnion defectum	0.1 ±0.0	0.0 ±0.1
Antithamnion kylinii	0.0 ±0.1	0.0 ±0.1
Bossiella plumosa	0.4 ±0.4	0
Bonnemaisonia nootkana	0	0.9 ±1.9
Calliarthron tuberculosum	1121.8 ±688.5	1.7 ±3.4
Callithamnion biseriatum	0.0 ±0.1	0
Callithamnion pikeanum	0.0 ±0.1	0

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Callithamnion/ Pleonosporium	0.1 ±0.1		0.0 ±0.1	
Callophyllis flabellulata	0		0.2 ±0.2	
Callophyllis haenophylla	0		0.0 ±0.1	
Ceramium californicum	0.0 ±0.1		0.1 ±0.1	
Ceramium sp.	0.0 ±0.1		0	
Choreocolax polysiphoniae	0.1 ±0.0		0.0 ±0.1	
Corallinaceae	0.0 ±0.1		0.0 ±0.1	
Cruoria profunda	0.1 ±0.1		0	
Cryptonemia ovalifolia	0		0.1 ±0.2	
Delesseriaceae	0.0 ±0.1		0	
Fauchea lacinulata	2.9 ±2.6		0.0 ±0.1	
Griffithsia pacifica	0		0.3 ±0.5	
Herposiphonia plumula	33.5 ±27.7		0.1 ±0.2	
Herposiphonia plumula var. plumula	0.0 ±0.1		0	
Hollenbergia subulata	0.0 ±0.1		0.0 ±0.1	

sp.	0.0 ±0.1	0
Choreocolax polysiphoniae	0.1 ±0.0	0.0 ±0.1
Corallinaceae	0.0 ±0.1	0.0 ±0.1
Cruoria profunda	0.1 ±0.1	0
Cryptonemia ovalifolia	0	0.1 ±0.2
Delesseriaceae	0.0 ±0.1	0
Fauchea laciniata	2.9 ±2.6	0.0 ±0.1
Griffithsia pacifica	0	0.3 ±0.5
Herposiphonia plumula	33.5 ±27.7	0.1 ±0.2
Herposiphonia plumula var. plumula	0.0 ±0.1	0
Hollenbergia subulata	0.0 ±0.1	0.0 ±0.1

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Hymenena sp.	4.3 ±4.2		0	
Iridaea sp.	0.0 ±0.1		0	
Mesophyllum conchatum	0.0 ±0.1		0	
Mesophyllum sp.	0.0 ±0.1		0	
Microcladia borealis	0.1 ±0.1		0	
Microcladia sp.	0.0 ±0.1		0	
Opuntiella californica	0		0.0 ±0.1	
Peyssonelia pacifica	0.0 ±0.1		0	
Peyssonelia sp.	0.0 ±0.1		0	
Platythamnion pectinatum	0.0 ±0.1		0.2 ±0.2	
Platythamnion villosum	0		0.0 ±0.1	
Pleonosporium vancouverianum	0.0 ±0.1		0	
Polysiphonia hendryi	0.1 ±0.1		0	
Polysiphonia pacifica	0.1 ±0.1		0.0 ±0.1	
Polysiphonia paniculata	0.1 ±0.0		0.0 ±0.1	

conchatum	0.0 ±0.1	0
Mesophyllum sp.	0.0 ±0.1	0
Microcladia borealis	0.1 ±0.1	0
Microcladia sp.	0.0 ±0.1	0
Opuntiella californica	0	0.0 ±0.1
Peyssonelia pacifica	0.0 ±0.1	0
Peyssonelia sp.	0.0 ±0.1	0
Platythamnion pectinatum	0.0 ±0.1	0.2 ±0.2
Platythamnion villosum	0	0.0 ±0.1
Pleonosporium vancouverianum	0.0 ±0.1	0
Polysiphonia hendryi	0.1 ±0.1	0
Polysiphonia pacifica	0.1 ±0.1	0.0 ±0.1
Polysiphonia paniculata	0.1 ±0.0	0.0 ±0.1

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Polysiphonia sp.	0.0 ±0.1		0	
Polysiphonia scopulorum villosum	0.0 ±0.1		0.0 ±0.1	
Pterosiphonia bipinnata	0.1 ±0.1		0.0 ±0.1	
Pterosiphonia dendroidea	0.1 ±0.1		0.0 ±0.1	
Pterosiphonia gardneri	0.1 ±0.1		0.1 ±0.1	
Pterosiphonia gracilis	0.0 ±0.1		0.0 ±0.1	
Ptilothamniopsis lejolisea	0.1 ±0.0		0.0 ±0.1	
Rhodoptilum plumosum	0		0.0 ±0.1	
Rhodymenia sp.	0.1 ±0.1		0	
Porifera spp.	0.0 ±0.1		0	
Cnidaria				
Hydrozoa				
Aglaophenia	✓		✓	
	0		0.1 ±0.2	
Plumularia sp.	0		2.3 ±4.6	

Pterosiphonia dendroidea	±0.1 0.1 ±0.1	±0.1 0.0 ±0.1
Pterosiphonia gardneri	0.1 ±0.1	0.1 ±0.1
Pterosiphonia gracilis	0.0 ±0.1	0.0 ±0.1
Ptilothamniopsis lejolisea	0.1 ±0.0	0.0 ±0.1
Rhodoptilum plumosum	0	0.0 ±0.1
Rhodymenia sp.	0.1 ±0.1	0
Porifera spp.	0.0 ±0.1	0
Cnidaria		
Hydrozoa		
Aglaophenia	✓ 0	✓ 0.1 ±0.2
Plumularia sp.	0	2.3 ±4.6

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Anthozoa				
Actiniaria spp.	0.6	<0.1	0	
Platyhelminthes spp.	4.7 ±8.1	<0.1	0	
Nemertea spp.	15.3 ±9.9	<0.1	0.5 ±0.6	<0.1
Nematoda spp.	31.0 ±43.3	<0.1	0.3 ±0.5	<0.1
Mollusca				
Amphineura				
sp. (juv.)	6.0 ±4.4	0.0 ±0.1	0	
Cyanoplax dentiens	0		0.3 ±0.1	<0.1
Mopalia sp.	0.7 ±0.6	0.1 ±0.2	0	
Tonicella lineata	38.7 ±31.9	14.8 ±10.9	12.3 ±13.7	8.4 ±10.8
Gastropoda				
Acmaea mitra	1.8 ±2.4	0.5 ±0.7	1.3 ±2.5	0.4 ±0.8
Acmaeidae	0.3 ±0.5	<0.1	0	
Acolididae sp.	0.5 ±1.0	<0.1	2.5 ±3.8	<0.1

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Alvinia sp.	23.0 ±22.3	0.1 ±0.1	0.5 ±0.6	<0.1
Amphissa columbiana	78.8 ±54.3	3.4 ±3.1	1.8 ±2.2	0.3 ±0.3
Balcis montereyensis	0.3 ±0.5	<0.1	0	
Bittium eschrichtii	2.0 ±2.8	0.7 ±0.9	0	
Bittium spp.	21.3 ±19.8	0.9 ±0.9	0.3 ±0.5	0.0 ±0.1
Calliostoma ligatum	131.0 ±149.9	29.3 ±29.5	0.5 ±0.6	0.0 ±0.1
Calyptraea fastigiata	0		0.5 ±1.0	<0.1
Ceratostoma foliatum	0		0.8 ±1.0	3.4 ±4.5
Cerithiopsis sp.	13.5 ±15.3	0.4 ±0.5	0.3 ±0.5	<0.1
Collisella ochracea	0		0.8 ±1.5	0.1 ±0.1
Crepidula sp.	6.3 ±5.7	0.3 ±0.4	0.3 ±0.5	<0.1
Crepipatella lingulata	0.3 ±0.5	0.1 ±0.1	0	
Cryptobranchia concentrica	0.5 ±1.0	<0.1	0	
Fusitriton oregonensis	0		0.3 ±0.5	21.6 ±43.2
Granulina margaritula	135.3 ±186.9	1.0 ±1.4	0	
	180			

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Lacuna variegata	24.3 ±31.3	0.0 ±0.1	0.5 ±1.0	<0.1
Lirularia lirulata	39.8 ±41.3	0.3 ±0.4	0	
Margarites pupillus	57.0 ±50.9	5.0 ±4.8	0	
Margarites/ *Lirularia*	2.0 ±4.0	0.0 ±0.1	0.3 ±0.5	<0.1
Mitrella carinata	9.3 ±9.1	1.4 ±1.5	0	
Moelleria quadre	0.3 ±0.5	<0.1	0	
Nassarius mendicus	0.5 ±0.6	0.2 ±0.2	0	
Ocenebra lurida	13.3 ±12.0	1.9 ±2.4	0	
Odostomia sp.	0.3 ±0.5	<0.1	0	
Oenopota	0.3	<0.1	0	

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Lacuna variegata	24.3 ±31.3	0.0 ±0.1	0.5 ±1.0	<0.1
Lirularia lirulata	39.8 ±41.3	0.3 ±0.4	0	
Margarites pupillus	57.0 ±50.9	5.0 ±4.8	0	
Margarites/ Lirularia	2.0 ±4.0	0.0 ±0.1	0.3 ±0.5	<0.1
Mitrella carinata	9.3 ±9.1	1.4 ±1.5	0	
Moelleria quadre	0.3 ±0.5	<0.1	0	
Nassarius mendicus	0.5 ±0.6	0.2 ±0.2	0	
Ocenebra lurida	13.3 ±12.0	1.9 ±2.4	0	
Odostomia sp.	0.3 ±0.5	<0.1	0	
Oenopota tabulata	0.3 ±0.5	<0.1	0	
Retusa sp.	0.3 ±0.5	<0.1	0	
Searlesia dira	0.3 ±0.5	0.5 ±1.0	0	
Tegula sp. (juv.)	0.3 ±0.5	<0.1	0	
Trichotropis cancellata	0.5 ±1.0	0.1 ±0.2	0.3 ±0.5	0.0 ±0.1
Turridae	0.3 ±0.5	<0.1	0	

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Velutina laevigata	0.5 ±1.0	<0.1	0	
Bivalvia				
Clamys hastata	0		0.3 ±0.5	0.0 ±0.1
Entodesma saxicola	0.3 ±0.6	<0.1	0	
Hiatella arctica	0		0.3 ±0.5	<0.1
Annelida				
Oligochaeta spp.	0.8 ±1.5	<0.1	0	
Polychaeta				
Ampharetidae spp.	0.3 ±0.5	<0.1	0	
Cirratulidae spp.	13.0 ±11.2	<0.1	0.5 ±1.0	<0.1
Dodecaceria concharum	5.8 ±4.8	<0.1	0	
Eunicidae				

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Velutina laevigata	0.5 ±1.0	<0.1	0	
Bivalvia				
Clamys hastata	0		0.3 ±0.5	0.0 ±0.1
Entodesma saxicola	0.3 ±0.6	<0.1	0	
Hiatella arctica	0		0.3 ±0.5	<0.1
Annelida				
Oligochaeta spp.	0.8 ±1.5	<0.1	0	
Polychaeta				
Ampharetidae spp.	0.3 ±0.5	<0.1	0	
Cirratulidae spp.	13.0 ±11.2	<0.1	0.5 ±1.0	<0.1
Dodecaceria concharum	5.8 ±4.8	<0.1	0	
Eunicidae				
Eunice valens	0.3 ±0.5	<0.1	0	
Hesionidae				
Micropodarke dubia	0.3 ±0.5	<0.1	0	
Ophiodromus pugettensis	0.3 ±0.5	<0.1	0	
Lumbrineridae				
Lumbrineris spp.	13.0 ±15.0	<0.1	0	

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Nereidae				
sp.	22.3 ±19.7	<0.1	0	
Nereis spp.	17.9 ±15.9	<0.1	1.8 ±2.4	<0.1
Platynereis bicanaliculata	538.3 ±387.8	<0.1	15.5 ±19.4	<0.1
Onuphidae				
Onuphis spp.	0.8 ±1.5	<0.1	0	
Opheliidae				
Armandia brevis	2.5 ±5.0	<0.1	0	
Phyllodocidae				
Eulalia quadrioculata	0		0.3 ±0.5	<0.1
	5.3 ±7.4	<0.1	0.3 ±0.5	<0.1

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Nereidae				
sp.	22.3 ±19.7	<0.1	0	
Nereis				
spp.	17.9 ±15.9	<0.1	1.8 ±2.4	<0.1
Platynereis				
bicanaliculata	538.3 ±387.8	<0.1	15.5 ±19.4	<0.1
Onuphidae				
Onuphis				
spp.	0.8 ±1.5	<0.1	0	
Opheliidae				
Armandia				
brevis	2.5 ±5.0	<0.1	0	
Phyllodocidae				
	0		0.3 ±0.5	<0.1
Eulalia				
quadrioculata	5.3 ±7.4	<0.1	0.3 ±0.5	<0.1
Phyllodoce				
sp.	1.5 ±2.4	<0.1	0.3 ±0.5	<0.1
Pilargidae				
Sigambra				
tentaculata	0.3 ±0.5	<0.1	0	
Polynoidae				
spp.	5.5 ±5.6	<0.1	0.8 ±1.0	<0.1
Arctone				
vittata	0		0.3 ±0.5	<0.1
Harmothoe				
imbricata	1.8 ±3.5	<0.1	0	
Polyodontidae				
Peisidice				
aspera	0.3 ±0.5	<0.1	0	
	183			

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Sabellariidae				
Idanthyrsus armatus	2.3 ±3.0	<0.1	0	
Sabellaria cementarium			0.8 ±1.0	<0.1
Sabellidae spp.	3.0 ±5.4	<0.1	0.5 ±1.0	<0.1
Chone ecaudata	4.3 ±6.1	<0.1	0	
Oriopsis minuta	0.3 ±0.5	<0.1	0	
Serpulidae spp.	1.8 ±2.1	<0.1	0	
Spirorbis spp.	15.8 ±31.5	<0.1	0.5 ±1.0	<0.1
Sigalionidae spp.	0.3 ±0.5	<0.1	0	
Sphaerodoridae				
Sphaerodoropsis minuta	8.8 ±13.1	<0.1	0	
Spionidae				
Malococeros glutaeus	2.5 ±3.3	<0.1	0	
Polydora sp.	8.5 ±8.7	<0.1	0	
Prionospio steenstrupi	2.0 ±4.0	<0.1	0	
Prionospio sp.	1.3 ±1.9	<0.1	0	

Clione ecaudata	4.3 ±6.1	<0.1	±1.0 0	
Oriopsis minuta	0.3 ±0.5	<0.1	0	
Serpulidae spp.	1.8 ±2.1	<0.1	0	
Spirorbis spp.	15.8 ±31.5	<0.1	0.5 ±1.0	<0.1
Sigalionidae spp.	0.3 ±0.5	<0.1	0	
Sphaerodoridae				
Sphaerodoropsis minuta	8.8 ±13.1	<0.1	0	
Spionidae				
Malococeros glutaeus	2.5 ±3.3	<0.1	0	
Polydora sp.	8.5 ±8.7	<0.1	0	
Prionospio steenstrupi	2.0 ±4.0	<0.1	0	
Prionospio sp.	1.3 ±1.9	<0.1	0	

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Spio filicornis	1.3 ±1.5	<0.1	0	
Syllidae spp.	7.5 ±12.5	<0.1	0	
Brania brevipharyngea	4.5 ±7.7	<0.1	0	
Exogone gemmifera	38.3 ±64.2	<0.1	0	
Exogone lourei	23.5 ±27.3	<0.1	0	
Odontosyllis sp.	9.5 ±15.1	<0.1	0	
Sphaerosyllis pirifera	1.3 ±1.9	<0.1	0	
Syllis spp.	31.0 ±26.4	<0.1	0	
Terebellidae spp.	5.0 ±8.7	<0.1	0	
Nicolea zostericola	4.8 ±5.6	<0.1	0.3 ±0.5	<0.1
Pista brevibranchiata	2.0 ±4.0	<0.1	0	
Polycirrus spp.	4.5 ±6.1	<0.1	0	
Archiannelida				
Polygordiidae spp.	0.3 ±0.5	<0.1	0	

Exogone gemmifera	38.3 ±64.2	<0.1	0	
Exogone lourei	23.5 ±27.3	<0.1	0	
Odontosyllis sp.	9.5 ±15.1	<0.1	0	
Sphaerosyllis pirifera	1.3 ±1.9	<0.1	0	
Syllis spp.	31.0 ±26.4	<0.1	0	
Terebellidae spp.	5.0 ±8.7	<0.1	0	
Nicolea zostericola	4.8 ±5.6	<0.1	0.3 ±0.5	<0.1
Pista brevibranchiata	2.0 ±4.0	<0.1	0	
Polycirrus spp.	4.5 ±6.1	<0.1	0	
Archiannelida Polygordiidae spp.	0.3 ±0.5	<0.1	0	
	185			

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Sipunculida				
Phascolosoma agassizii	2.8 ±4.3	<0.1	0	
Pycnogonida				
Achelia chelata	0.3 ±0.5	<0.1	0	
Crustacea				
Ostracoda spp.	12.0 ±16.6	<0.1	0	
Cumacea				
Cumella vulgaris	5.3 ±10.5	<0.1	0	
Cumella sp.	3.5 ±2.9	<0.1	0	
Diastylopsis sp.	0.3 ±0.5	<0.1	0	
Lampropidae sp.	0.3 ±0.5	<0.1	0	
Leptocuma sp.	2.8 ±4.9	<0.1	0	
Tanaidacea				
Anatanais normani	1.5 ±2.4	<0.1	0	
Leptochelia dubia	3.8 ±3.3	<0.1	0.5 1.0	<0.1
Isopoda				
Anthuridae sp.	0.3 ±0.5	<0.1	0	

Achelia chelata	0.3 ±0.5	<0.1	0	
Crustacea				
Ostracoda spp.	12.0 ±16.6	<0.1	0	
Cumacea				
Cumella vulgaris	5.3 ±10.5	<0.1	0	
Cumella sp.	3.5 ±2.9	<0.1	0	
Diastylopsis sp.	0.3 ±0.5	<0.1	0	
Lampropidae sp.	0.3 ±0.5	<0.1	0	
Leptocuma sp.	2.8 ±4.9	<0.1	0	
Tanaidacea				
Anatanais normani	1.5 ±2.4	<0.1	0	
Leptochelia dubia	3.8 ±3.3	<0.1	0.5 1.0	<0.1
Isopoda				
Anthuridae sp.	0.3 ±0.5	<0.1	0	

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Colanthura squamosissima	25.3 ±30.5	<0.1	0	
Dynamenella dilitata	0.3 ±0.5	<0.1	0	
Dynamenella glabra	0.5 ±1.0	<0.1	0	
Epicaridea sp.	0.3 ±0.5	<0.1	0	
Exosphaeroma rhomburum	0.3 ±0.5	<0.1	0	
Ianiropsis analoga	75.5 ±57.1	0.0 ±0.1	0	
Ianiropsis kincaidi	11.8 ±12.9	<0.1	0	
Ianiropsis tridens	1.5 ±3.0	<0.1	0	
Ianiropsis sp.	5.5 ±7.6	<0.1	0	
Idotea sp. (juv.)	1.5 ±1.7	<0.1	3.8 ±7.5	0.1
Jaeropsis dubia	4.0 ±3.9	<0.1	0.3 ±0.5	0.1
Jaeropsis lobata	0		0.3 ±0.5	0.1
Munna chromatocephala	1.5 ±1.9	<0.1	0	
Munna ubiquita	26.5 ±31.7	<0.1	1.8 ±2.1	0.1
Munna sp.	38.3 ±46.2	0.0 ±0.1	0	

Dynamenella glabra	0.5 ±1.0	<0.1	0	
Epicaridea sp.	0.3 ±0.5	<0.1	0	
Exosphaeroma rhomburum	0.3 ±0.5	<0.1	0	
Ianiropsis analoga	75.5 ±57.1	0.0 ±0.1	0	
Ianiropsis kincaidi	11.8 ±12.9	<0.1	0	
Ianiropsis tridens	1.5 ±3.0	<0.1	0	
Ianiropsis sp.	5.5 ±7.6	<0.1	0	
Idotea sp. (juv.)	1.5 ±1.7	<0.1	3.8 ±7.5	0.1
Jaeropsis dubia	4.0 ±3.9	<0.1	0.3 ±0.5	0.1
Jaeropsis lobata	0		0.3 ±0.5	0.1
Munna chromatocephala	1.5 ±1.9	<0.1	0	
Munna ubiquita	26.5 ±31.7	<0.1	1.8 ±2.1	0.1
Munna sp.	38.3 ±46.2	0.0 ±0.1	0	

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Parathura elegans	1.5 ±1.9	<0.1	0.3 ± 0.5	<0.1
Amphipoda				
Caprella californica	2.0 ±4.0	<0.1	0	
Caprella mendax	0.8 ±1.5	<0.1	0	
Caprella sp.	0		0.3 ±0.5	<0.1
Caprellidea sp. (juv.)	0.8 ±1.5	<0.1	93.5 ±183.0	<0.1
Gammaridea spp.	2337.0 ±1991.4	3.2 3.7	30.0 ±36.2	0.3 0.6
Metacaprella anomala	0.8 ±1.5	<0.1	0	
Metacaprella kennerlyi	1.5 ±3.0	<0.1	19.5 ±37.7	<0.1 ±0.1
Metacaprella sp.	0.5 ±1.0	<0.1	0	
Decapoda				
Cancer oregonensis	7.0 ±5.7	4.6 ±4.9	0	
Cancer sp. (juv.)	0.3 ±0.5	<0.1	0	
Caridea sp. (juv.)	29.8 ±31.5	<0.1	0	
Cryptolithodes sitchensis	1.3 ±2.5	0.5 ±0.9	0	
Cryptolithodes typicus	1.3 ±1.9	0.2 ±0.3	0	

Caprella sp.	0		0.3 ±0.5	<0.1
Caprellidea sp. (juv.)	0.8 ±1.5	<0.1	93.5 ±183.0	<0.1
Gammaridea spp.	2337.0 ±1991.4	3.2 3.7	30.0 ±36.2	0.3 0.6
Metacaprella anomala	0.8 ±1.5	<0.1	0	
Metacaprella kennerlyi	1.5 ±3.0	<0.1	19.5 ±37.7	<0.1 ±0.1
Metacaprella sp.	0.5 ±1.0	<0.1	0	
Decapoda				
Cancer oregonensis	7.0 ±5.7	4.6 ±4.9	0	
Cancer sp. (juv.)	0.3 ±0.5	<0.1	0	
Caridea sp. (juv.)	29.8 ±31.5	<0.1	0	
Cryptolithodes sitchensis	1.3 ±2.5	0.5 ±0.9	0	
Cryptolithodes typicus	1.3 ±1.9	0.2 ±0.3	0	

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Cryptolithodes sp. (juv.)	10.8 ±9.5	0.1 ±0.1	0	
Discorsopagurus schmitti	3.0 ±3.2	0.1 ±0.1	0	
Elassochirus tenuimanus	0		0.3 ±0.5	0.1 ±0.2
Hippolytidae sp. (juv.)	2.5 ±5.0	<0.1	0	
Lebbeus sp. (juv.)	0.8 ±1.5	<0.1	0	
Majidae sp. (juv.)	92.5 ±70.1	0.2 ±0.2	0	
Mimulus foliatus	1.8 ±2.1	0.6 ±0.7	0	
Oregonia gracilis	0.5 ±0.6	0.2 ±0.2	0	
Pagurus beringanus	6.5 ±11.7	1.1 ±2.0	0	
Pagurus dalli	13.5 ±19.8	0.9 ±1.1	0	
Pagurus kennerlyi	4.3 ±7.9	0.5 ±0.8	0.3 ±0.5	0.2 ±0.3
Paguridae sp. (juv.)	83.0 ±61.6	1.4 ±1.6	2.0 ±2.7	0.1 ±0.1
Petrolisthes eriomerus	5.0 ±6.0	0.1 ±0.2	0	
Phyllolithodes papillosus	2.3 ±3.3	<0.1	0	
Pugettia gracilis	240.0 ±235.5	9.5 ±10.1	1.0 ±1.4	<0.1

tenuimanus	0		0.3 ±0.5	0.1 ±0.2
Hippolytidae sp. (juv.)	2.5 ±5.0	<0.1	0	
Lebbeus sp. (juv.)	0.8 ±1.5	<0.1	0	
Majidae sp. (juv.)	92.5 ±70.1	0.2 ±0.2	0	
Mimulus foliatus	1.8 ±2.1	0.6 ±0.7	0	
Oregonia gracilis	0.5 ±0.6	0.2 ±0.2	0	
Pagurus beringanus	6.5 ±11.7	1.1 ±2.0	0	
Pagurus dalli	13.5 ±19.8	0.9 ±1.1	0	
Pagurus kennerlyi	4.3 ±7.9	0.5 ±0.8	0.3 ±0.5	0.2 ±0.3
Paguridae sp. (juv.)	83.0 ±61.6	1.4 ±1.6	2.0 ±2.7	0.1 ±0.1
Petrolisthes eriomerus	5.0 ±6.0	0.1 ±0.2	0	
Phyllolithodes papillosus	2.3 ±3.3	<0.1	0	
Pugettia gracilis	240.0 ±235.5	9.5 ±10.1	1.0 ±1.4	<0.1

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Spi.ontocaris prionota	1.3 ±2.5	0.1 ±0.2	0	
Spirontocaris sp.	64.8 ±79.5	0.3 ±0.4	0	
Insecta				
Diptera larvae spp.	3.0 ±3.8	<0.1	0	
Bryozoa				
spp.		19.9 ±39.8		0
Heteropora sp.		0		2.8 ±5.6
Echinodermata				
Ophiuroidea (juv.)	11.8 ±12.2	0.0 ±0.1	1.3 ±1.9	<0.1
Amphipholis squamata	4.0 ±8.0	<0.1	0.8 ±1.5	<0.1
Asteroidea sp.	0.3 ±0.5	<0.1	0	
Echinoidea				
Strongylocentrotus droebachiensis	6.3 ±4.8	279.0 ±206.5	4.0 ±6.2	175.3 ±319.2
Strongylocentrotus franciscanus	2.3 ±2.6	696.6 ±804.6	1.3 ±1.0	430.8 ±391.3
Strongylocentrotus purpuratus	0.3 ±0.5	32.4 ±64.8	0	
Strongylocentrotus sp. (juv.)	2.5 ±2.9	4.7 ±7.4	0	

larvae spp.	±3.8	<0.1	0	
Bryozoa				
spp.		19.9 ±39.8		0
Heteropora sp.		0		2.8 ±5.6
Echinodermata				
Ophiuroidea (juv.)	11.8 ±12.2	0.0 ±0.1	1.3 ±1.9	<0.1
Amphipholis squamata	4.0 ±8.0	<0.1	0.8 ±1.5	<0.1
Asteroidea sp.	0.3 ±0.5	<0.1	0	
Echinoidea				
Strongylocentrotus droebachiensis	6.3 ±4.8	279.0 ±206.5	4.0 ±6.2	175.3 ±319.2
Strongylocentrotus franciscanus	2.3 ±2.6	696.6 ±804.6	1.3 ±1.0	430.8 ±391.3
Strongylocentrotus purpuratus	0.3 ±0.5	32.4 ±64.8	0	
Strongylocentrotus sp. (juv.)	2.5 ±2.9	4.7 ±7.4	0	

Table 2a. Pillar Point (rock) benthic organisms from the high (+6') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.01 (N=20) and 0.2 (N=4) m^2 ± standard deviation.

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Chlorophyta				
Cladophoraceae sp.		<0.1		0
Rhizoclonium riparium		<0.1		0
Ulva sp.		<0.1		0
Urospora sp.		<0.1		0
Bacillariophyta				
Pennales spp.		<0.1		0
Phaeophyta				
Analipus japonicus		0.2 ±0.5		0
Fucus distichus		0.3 ±1.1		2.2 ±4.4
Rhodophyta				
Antithamnion dendroideum		<0.1		0
Endocladia muricata		0.1 ±0.2		0
Grigartina papillata		0.1 ±0.2		0.7 ±0.9
Halosaccion glandiforme		±0.2		±0.2
Hildenbrandia sp.		✓		0
Iridea heterocarpa		0.1 ±0.0		0.0 ±0.2

sp.	<0.1	0
Bacillariophyta		
Pennales		
spp.	<0.1	0
Phaeophyta		
Analipus		
japonicus	0.2 ±0.5	0
Fucus		
distichus	0.3 ±1.1	2.2 ±4.4
Rhodophyta		
Antithamnion		
dendroideum	<0.1	0
Endocladia		
muricata	0.1 ±0.2	0
Grigartina		
papillata	0.1 ±0.2	0.7 ±0.9
Halosaccion		
glandiforme	±0.2	±0.2
Hildenbrandia		
sp.	✓	0
Iridea		
heterocarpa	0.1 ±0.0	0.0 ±0.2

Tongue Point
Subtidal

	-5 m		-10 m	
	#	wt	#	wt
Holothuroidea				
sp.	6.0 ±9.4	2.9 ±4.8	0.3 ±0.5	<0.1
Eupentacta				
sp.	0.3 ±0.5	<0.1	0	
Parastichopus				
californiensis	0		0.3 ±0.5	85.3 ±170.6
Chorodata/				
Ascidiacea	2.0 ±4.0	0.4 ±0.8	0	
Species Richness	209		94	
Diversity - H'	1.45		3.00	
Total Number	4,658.7		208.5	
Algal Biomass	1,169.4		15.0	
Animal Biomass	1,120.5		731.9	
Total biomass	2,289.9		746.9	

			±0.5	±170.6
Chorodata/ Ascidiacea	2.0 ±4.0	0.4 ±0.8	0	
Species Richness	209		94	
Diversity - H'	1.45		3.00	
Total Number	4,658.7		208.5	
Algal Biomass	1,169.4		15.0	
Animal Biomass	1,120.5		731.9	
Total biomass	2,289.9		746.9	

Pillar Point +6

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Petrocelis		✓		0
sp.				
Porphyra		0.0		0
sp.		±0.0		0
Pterosiphonia		0.1		0
Spermatophyta				
Phyllospadix scouleri		0		1.1
		0		±2.2
Nematoda				
sp.	0.1	<0.1		0
Mollusca				
Gastropoda				
Acmaeidae				
sp. (juv.)	0.5 ±1.4	<0.1		0
Collisella				
digitalis	1.2	0.7	11.3	8.2
C.	±1.9	±1.2	±5.1	±4.0
pelta	0.9	2.1	2.4	2.4
C.	0.1	<0.1	2.3	0.5
strigatella	±0.2		±4.5	±1.0
Littorina	2.1	0.0	0.3	0.1
scutulata	±1.8	±0.1	±0.5	±0.1
L.	10.9	0.2	0	
sitkana	±9.2	±0.3		
Notoacmaea		0	0.5	0.4
persona			±0.6	±0.6
N.				
scutum				
Thais	±0.7	±0.5	±1.4	±1.1
emarginata	0.1	0.1	0.5	0.4
	±0.2	±0.3	±1.0	±1.2

Pillar Point +6

	0.01m²		0.2m²	
	#	wt	#	wt
Bivalvia				
Mytilus californianus	0		3.3 ±6.5	1.6 ±3.2
M. edulis	0.1 ±0.2	0.0 ±0.1	0	
M. (spp. (juv.)	4.0 ±6.5	0.1 ±0.3	0 0	
Annelida				
Oligochaeta sp.	0.3 ±0.8	<0.1	0	
Polychaeta				
Syllidae				
Syllis adamantea	0.2 ±0.4	<0.1		
S. spp.	±0.4			
Crustacea				
Cirripedia				
Balanus cariosus	0.7	0.0	2.3	12.8
B. glandula	1.7 ±8.7	0.2 ±0.6	±3.9 0	±18.3
B. sp. (juv.)	17.7 0.4 ±0.9	0.7 <0.1	0	
Chthamalus dalli	74.6 ±47.1	1.9 ±24	0	
Tanaidacea				
Pancolus californiensis	0.1 ±0.2	<0.1	0	

Pillar Point +6

	0.01m²		0.2m²	
	#	wt	#	wt
Isopoda				
Cryptothir balani	0.1 ±0.4	<0.1	0	
Idotea montereyensis	0		6.3 ±12.5	0.4 ±0.7
Amphipoda				
Gammaridea sp.	0.7 ±1.5	<0.1	1.8 ±3.5	<0.1
Insecta				
Diptera larvae	1.7 ±2.1	<0.1	0	

Pillar Point +6

	0.01m²		0.2m²	
	#	wt	#	wt
Isopoda				
Cryptothir balani	0.1 ±0.4	<0.1	0	
Idotea montereyensis	0		6.3 ±12.5	0.4 ±0.7
Amphipoda				
Gammaridea sp.	0.7 ±1.5	<0.1	1.8 ±3.5	<0.1
Insecta				
Diptera larvae	1.7 ±2.1	<0.1	0	

Species richness	42
Diversity - H'	1.85
Total number	2905.0
Total biomass	120.0

Table 2b. Pillar Point (rock) benthic organisms from the mid (+3') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.01 (N=20) and 0.2 (N=4) m^2 ± standard deviation.

	0.01m²		0.2m²	
	#	wt	#	wt
Chlorophyta				
Chaetomorpha sp.		<0.1		0
Cladophoraceae sp.		<0.1		0
Enteromorpha linza		<0.1		0
Rhizoclonium riparium		<0.1		0
Spongomorpha coalita		0.0 ±0.1		0
S. sp.		<0.1		0

Table 2b. Pillar Point (rock) benthic organisms from the mid (+3') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.01 (N=20) and 0.2 (N=4) m^2 ± standard deviation.

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Chlorophyta				
Chaetomorpha sp.		<0.1		0
Cladophoraceae sp.		<0.1		0
Enteromorpha linza		<0.1		0
Rhizoclonium riparium		<0.1		0
Spongomorpha coalita		0.0 ±0.1		0
S. sp.		<0.1		0
Ulva sp.		0.1 ±0.2		0.5 ±0.6
Bacillariophyta				
Pennales spp.		±0.1 0.1		0 0
Phaeophyta				
Alaria sp.		17.5 ±37.6		426.2 ±772.1
Ectocarpales sp.		0.0 ±0.0		0
Ectocarpus sp.		0.0 ±0.1		0
Egregia menziesii		0.2 ±0.7		0
Hedophyllum sessile		9.1 ±37.7		286.4 ±365.7
Laminariales sp. (juv.)		0.0 ±0.1		0.0 ±0.1

Pillar Point +3

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Ralfsiaceae sp.		✓		0
Sphacelaria racemosa		0.0		0
S. sp.		0.1 ±0.1		0
		<0.1		0
Rhodophyta				
Acrochaetium sp.		<0.1		0
Ahnfeltia plicata		0.0		0
Antithamnion defectum		<0.1 <0.1		0

Pillar Point +3

	0.01m²		0.2m²	
	#	wt	#	wt
Ralfsiaceae sp.		✓		0
Sphacelaria racemosa		0.0		0
S. sp.		0.1 ±0.1		0
		<0.1		0
Rhodophyta				
Acrochaetium sp.		<0.1		0
Ahnfeltia plicata		0.0		0
Antithamnion defectum		<0.1 <0.1		0
Antithamnionella pacifica var. pacifica		<0.1		0
A. glandulifera				
Bossiella plumosa		0.0 ±0.1		0
Callithamnion /pleonosporium		<0.1		0
C. pikeanum		<0.1		
Ceramiales sp.		<0.1		0
Choreocolax polysiphoniae		<0.1		0
Corallina vancouveriensis		0.2 ±0.3		0
Corallinaceae sp.		✓		J
Cryptosiphonia woodii		1.0 ±2.3		0

Pillar Point +3

	0.01m²		0.2m²	
	#	wt	#	wt
Delessariaceae sp.		✓		0
Delessaria decipiens		0.0 ±0.0		0
Gigartinaceae sp.		0.2 ±0.3		0
Gigartina papillata		0.3 ±0.7		6.6 ±6.1
Halosaccion glandiforme		0.1 ±0.1		0.2 ±0.4
Iridaea cordata		7.1 ±10.9		156.8 ±161.5
I. sp.		0.1 ±0.2		0.1 ±0.2
Membranoptera multiramosa		0.0 ±0.1		0
M. sp.		<0.1		0
Microcladia borealis		0.9 ±1.0		0
Neoptilota asplenioides		0.8 ±2.6		0
Odonthalia floccosa		2.2 ±4.9		0
Petrocelis middendorfii		0		✓
Phycodrys isabellae		<0.1		0
Platythamnion heteromorphum		<0.1		0
P. villosum		<0.1		0
P. sp.		<0.1		0

glandiformis	0.1	0.2
	±0.1	±0.4
Iridaea cordata	7.1	156.8
	±10.9	±161.5
I. sp.	0.1	0.1
	±0.2	±0.2
Membranoptera multiramosa	0.0	0
	±0.1	
M. sp.	<0.1	0
Microcladia borealis	0.9	0
	±1.0	
Neoptilota asplenioides	0.8	0
	±2.6	
Odonthalia floccosa	2.2	0
	±4.9	
Petrocelis middendorffii	0	✓
Phycodrys isabellae	<0.1	0
Platythamnion heteromorphum	<0.1	0
P. villosum	<0.1	0
P. sp.	<0.1	0

Pillar Point +3

	0.01m²		0.2m²	
	#	wt	#	wt
Plocamium tenue		0.5 ±2.2		0
Polysiphonia hendryi		<0.1		0
P. pacifica		0.1 ±0.1		0
Porphyra sp.		0.1 ±0.1		0.5 ±0.6
Pterosiphonia bipinnata		<0.1		0
Ptilota filicina		0.8 ±2.0		0
Ptilothamnionopsis lejolisea		<0.1		0
Rhodymenia palmata		0.0 ±0.1		0.1 ±0.3
Scagelia occidentale		<0.1		0
Porifera spp.		✓		0
Platyhelminthes				
Turbellaria spp.	0.1 0.2	<0.1		0
Nemertea spp.	1.5 ±2.5	<0.1	0	
Nematoda spp.	9.8 ±19.6	<0.1	0	
Mollusca				
Amphinera Cyanoplax dentiens	0		0.3	<0.1
Katharina tunicata	0.1 ±0.4	1.3 ±5.8	3.8 ±5.0	0.5 59.6 ±62.9

sp.		0.1 ±0.1		0.5 ±0.6
Pterosiphonia bipinnata		<0.1		0
Ptilota filicina		0.8 ±2.0		0
Ptilothamnionopsis lejolisea		<0.1		0
Rhodymenia palmata		0.0 ±0.1		0.1 ±0.3
Scagelia occidentale		<0.1		0
Porifera				
spp.		✓		0
Platyhelminthes				
Turbellaria spp.	0.1 0.2	<0.1		0
Nemertea spp.	1.5 ±2.5	<0.1	0	
Nematoda spp.	9.8 ±19.6	<0.1	0	
Mollusca				
Amphinera Cyanoplax dentiens	0		0.3	<0.1
Katharina tunicata	0.1 ±0.4	1.3 ±5.8	3.8 ±5.0	0.5 59.6 ±62.9

Pillar Point +3

	0.01m²		0.2m²	
	#	wt	#	wt
Mopalia sp.	0		0.3	2.2
Gastropoda	0		±0.5	±4.4
Acmaeidae sp. (juv.)	0.3 ±0.4	<0.1	0	
Barleeia haliotiphila	0.5 ±2.0	<0.1	0	
Thais canaliculata	0.1 ±0.4	<0.1	0	
T. sp.	±0.3			
Bivalvia				
Adula californiensis	0.8 ±2.3	0	0.3 ±0.5	0.1 ±0.1
Hiatella artica	0.4 ±0.8	0.0 ±0.1	1.0 ±2.0	0.4 ±0.7
Musculus pygmaeus	0.2 ±0.2	<0.1	0	
Mytilus edulis	0		0.5	0.1
M. sp. (juv.)	0 10.0	0.0	±1.0 0	±0.2
Prothaca staminea	±23.8 0.1	±0.1 <0.1	0	
Tresus capax	±0.2 0.1 ±0 4	<0.1	0	
Annelida				
Oligochaeta spp.	1.4 ±2.4	<0.1	0	
Polychaeta Arenicolidae sp.	1.0 ±2.6	<0.1	0	

Bivalvia				
Adula californiensis	0.8 ±2.3	0	0.3 ±0.5	0.1 ±0.1
Hiatella artica	0.4 ±0.8	0.0 ±0.1	1.0 ±2.0	0.4 ±0.7
Musculus pygmaeus	0.2 ±0.2	<0.1	0	
Mytilus edulis	0		0.5 ±1.0	0.1 ±0.2
M. sp. (juv.)	0		0	
Prothaca staminea	10.0 ±23.8	0.0 ±0.1		
Tresus capax	0.1 ±0.2	<0.1	0	
	0.1 ±0.4	<0.1	0	
Annelida				
Oligochaeta spp.	1.4 ±2.4	<0.1	0	
Polychaeta				
Arenicolidae sp.	1.0 ±2.6	<0.1	0	

Pillar Point +3

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Capitellidae				
Capitella capitata	0.2 ±0.7	<0.1	0	
Eunicoidea sp.	0.2 ±0.4	<0.1	0	
Lumbrineridae				
Lumbrineris sp.	0.2 ±0.5	<0.1	0	
Nereidae sp.	0.6 ±1.3	<0.1	0	
Nereis sp.	0.1 ±0.4	<0.1	0	
Orbiniidae sp.	0.1 ±0.2	<0.1	0	
Naineris dendritica	0.1 ±0.4	<0.1	0	
Phyllodocidae				
Eulalia quadrioculata	0.8 ±2.0	<0.1	0	
E. sp.	0.1 ±0.2	<0.1	0	
Polynoidae				
Halosydna brevisetosa	0.2 ±0.4	<0.1	0	
Sabellidae spp.	1.8	<0.1	0	
Fabricia oregonica	2.5 ±4.6	<0.1	0	

spp.	±0.4		
Orbiniidae			
sp.	0.1 ±0.2	<0.1	0
Naineris dendritica	0.1 ±0.4	<0.1	0
Phyllodocidae			
Eulalia quadrioculata	0.8 ±2.0	<0.1	0
E. sp.	0.1 ±0.2	<0.1	0
Polynoidae			
Halosydna brevisetosa	0.2 ±0.4	<0.1	0
Sabellidae			
spp.	1.8	<0.1	0
Fabricia oregonica	2.5 ±4.6	<0.1	0

Pillar Point +3

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Schizobranchia insignis	0.3 ±1.1	<0.1	0	
Oriopsis minuta	0.7 ±1.3	<0.1	0	
Serpulidae spp.	0.1 ±0.2	<0.1	0	
Sigalionidae				
Pholoe minuta	0.9 ±2.4	<0.1	0	
Spionidae				
spp.	0.1 ±0.2	<0.1	0	
Polydora columbiana	0.1 ±0.2	<0.1	0	
P. sp.	0.7 ±1.4	<0.1	0	
Syllidae				
Exogone gemmifera	0.1 ±0.3	<0.1	0	
E. sp.	0.1 ±0.2	<0.1	0	
Odontosyllis sp.	0.3 ±1.1	<0.1	0	
Syllis spp.	3.2 ±5.7	<0.1	0	
Pycnogonida				
Achelia gracilipes	0.2 ±0.7	<0.1	0	
A. nudiuscula	±0.2			
Halosoma compactum	0.1 ±0.2	<0.1	0	

spp.	0.1 ±0.2	<0.1	0
Polydora columbiana	0.1 ±0.2	<0.1	0
P. sp.	0.7 ±1.4	<0.1	0
Syllidae			
Exogone gemmifera	0.1 ±0.3	<0.1	0
E. sp.	0.1 ±0.2	<0.1	0
Odontosyllis sp.	0.3 ±1.1	<0.1	0
Syllis spp.	3.2 ±5.7	<0.1	0
Pycnogonida			
Achelia gracilipes	0.2 ±0.7	<0.1	0
A. nudiuscula	±0.2		
Halosoma compactum	0.1 ±0.2	<0.1	0

Pillar Point +3

	0.01m²		0.2m²	
	#	wt	#	wt
H. viridintestinale	0.2 ±0.7	0.1	0	
Nymphon pixellae	0.1 ±0.2	<0.1	0	
Crustacea				
Ostracoda spp.	0.2 ±0.5	<0.1	0	
Cirripedia				
Balanus cariosus	2.1 ±4.0	14.6 ±33.6	13.3 ±21.5	130.4 ±211.1
B. nubilis	0		0.8 ±1.5	42.3 ±84.6
B. sp. (juv)	0.5 ±1.1	<0.1	0	
Cumacea				
Cumella vulgaris	0.2 ±0.5	<0.1		
C. sp.	0.1 ±0.3	<0.1	0	
Tanaidacea				
Leptochelia dubia	21.6 ±82.2	<0.1	0	
Pancolus californiensis	0.9 ±2.0	<0.1	0	
Isopoda				
Cirolana harfordi	0.2 ±0.5	<0.1	0.8 ±1.5	0.1 ±0.2
Dynamenella sheari	5.5 ±9.5	<0.1	0	
Exosphaeroma amplicauda	0.4 ±1.1	<0.1	0	
E. media	0.3 ±0.6	<0.1	0	

	0.2 ±0.5	<0.1	0	
Cirripedia				
Balanus				
cariosus	2.1 ±4.0	14.6 ±33.6	13.3 ±21.5	130.4 ±211.1
B.				
nubilis	0		0.8 ±1.5	42.3 ±84.6
B.				
sp.(juv)	0.5 ±1.1	<0.1	0	
Cumacea				
Cumella				
vulgaris	0.2 ±0.5	<0.1		
C.				
sp.	0.1 ±0.3	<0.1	0	
Tanaidacea				
Leptochelia				
dubia	21.6 ±82.2	<0.1	0	
Pancolus				
californiensis	0.9 ±2.0	<0.1	0	
Isopoda				
Cirolana				
harfordi	0.2 ±0.5	<0.1	0.8 ±1.5	0.1 ±0.2
Dynamenella				
sheari	5.5 ±9.5	<0.1	0	
Exosphaeroma				
amplicauda	0.4 ±1.1	<0.1	0	
E.				
media	0.3 ±0.6	<0.1	0	

Pillar Point +3

	$0.01m_2$		$0.2m^2$	
	#	wt	#	wt
Ianiropsis				
kincaidi	1.1	<0.1	0	
Idotea	0.2			
wosnesenski	0.1 ±0.2	<0.1	0	
I.				
sp. (juv.)	2.9 ±5.8	<0.1	0	
Munna				
chromatocephala	7.9 ±30.0	<0.1	0	
Amphipoda				
Cercops				
compactus	2.9 ±4.8	<0.1	0	
Gammaridea				
spp.	1.0 ±2.2	<0.1	0	
Insecta				
Diptera larvae				
spp.	1.3 ±1.8	<0.1	0	
Bryozoa				
spp.		✓	0	
Echinodermata				
Eupentacta				
quinquesemita	0.5 ±2.0	<0.1		
Leptasterias				
hexactis	0		0.3 ±0.5	0.2 ±0.3
Ophiuroidea				
sp.	0.1 ±0.2	<0.1	0	
Chordata				
Ascidacea		✓		
				0

Species richness	131
Diversity - H'	2.50
Total Number	2243.4
Total biomass	1579.3

Amphipoda				
Cercops compactus	2.9 ±4.8	<0.1	0	
Gammaridea spp.	1.0 ±2.2	<0.1	0	
Insecta				
Diptera larvae spp.	1.3 ±1.8	<0.1	0	
Bryozoa				
spp.		✓	0	
Echinodermata				
Eupentacta quinquesemita	0.5 ±2.0	<0.1		
Leptasterias hexactis	0		0.3 ±0.5	0.2 ±0.3
Ophiuroidea sp.	0.1 ±0.2	<0.1	0	
Chordata				
Ascidacea		✓		0

Species richness	131
Diversity - H'	2.50
Total Number	2243.4
Total biomass	1579.3

Table 2c. Pillar Point (rock) benthic organisms from the low (+0') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.01 (N=20) and 0.2 (N=4) m^2 ± standard deviation.

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Chlorophyta				
Chaetomorpha sp.		<0.1		0
Cladophoraceae sp.		<0.1		0
Enteromorpha linza		<0.1		0
E. sp.		<0.1		0
Rhizoclonium riparium		<0.1		0
Spongomorpha coalita		+0.0 −0.0		0
Ulothrix sp.		<0.1		0
Ulva sp		<0.1		+0.4 −0.9
Bacillariophyta				
Pennales spp.		<0.1		0
Phaeophyta				
Alaria spp.		+24.0 −78.8		+518.7 −430.2
Ectocarpus sp.		<0.1		0
Egregia menziesii		+5.3 −23.7		+324.3 −648.5
Feldmannia simplex		<0.1		0
Hedophyllum sessile		0		+15.5 −30.9

Spongomorpha coalita	$^{+0.0}_{-0.0}$	0
Ulothrix sp.	<0.1	0
Ulva sp	<0.1	$^{+0.4}_{-0.9}$
Bacillariophyta		
Pennales spp.	<0.1	0
Phaeophyta		
Alaria spp.	$^{+24.0}_{-78.8}$	$^{+518.7}_{-430.2}$
Ectocarpus sp.	<0.1	0
Egregia menziesii	$^{+5.3}_{-23.7}$	$^{+324.3}_{-648.5}$
Feldmannia simplex	<0.1	0
Hedophyllum sessile	0	$^{+15.5}_{-30.9}$

Pillar Point + 0

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Lamimaria setchellii		$^{+1.6}_{-7.0}$		0
Laminariales sp.		$^{+3.8}_{-16.1}$		0
Phaestrophion irregulare		<0.1		0
Sphacelaria racemosa		<0.1		0
S. sp.		<0.1		0
Stictyosiphon tortilis		<0.1		0
Rhodophyta				
Acrochaetium spp.		<0.1		0
Antithamnion defectum		<0.1		0
A. dendroideum		$^{+0.1}_{-0.1}$		0
Bossiella plumosa		$^{+0.0}_{-0.0}$		0
Callithamnion pikeanum		<0.1		0
Callithamnion Pleonosporium		<0.1		0
Ceramium eatonianum		<0.1		0
Choreocolax polysiphoniae		<0.1		0
Corallina vancouveriensis		$^{+0.0}_{-0.0}$		0
Corallinaceae sp.		✓		0

racemosa		
S.	<0.1	0
sp.		
Stictyosiphon	<0.1	0
tetilis		
Rhodophyta		
Acrochaetium	<0.1	0
spp.		
Aetithamnion	<0.1	0
defectum		
A.	±0.1	0
dendroideum	±0.1	
Bossiella	±0.0	0
plumosa	±0.0	
Callithamnion	<0.1	0
pikeanum		
Callithamnion	<0.1	0
Pleonosporium		
Ceramium	<0.1	0
estonianum		
Chaetomolax	<0.1	0
polysiphoniae		
Corallina	±0.0	0
vancouveriensis	±0.0	
Coralliaceae	✓	0
sp.		

Pillar Point [illegible]

	0.01m²		0.2m²	
	#	wt	#	wt
Cryptosiphonia		<0.1		0
woodii				
Delesseriaceae		<0.1		0
sp.				
Endocladia		±0.0		0
muricata		±0.0		
Gigartina		±0.1		0
papillata		±0.2		
Gigartinaceae		±0.1		0
sp. (juv.)		±0.1		
Gracilaria		±0.0		0
andersonii		±0.1		
Gracilariophila		<0.1		0
oryzoides				
Gymnogongrus		±0.2		0
leptophyllus		±0.5		
Halosaccion		<0.1		0
glandiforme				
Iridaea		±5.1		±52.2
cordata		±7.9		±44.6
Iridaea		±0.1		<0.1
sp.		±0.3		
Membranoptera		<0.1		0
multiramosa				
M.		<0.1		0
sp. (juv.)				
Microcladia		<0.1		0
borealis				
Odonthalia		±0.0		0
floccosa		±0.1		
Platythamnion		<0.1		0
sp.				
Plocamium		<0.1		0
sp. (juv.)				

Pillar Point + 0

	0.01m²		0.2m²	
	#	wt	#	wt
Polysiphonia hendryi		<0.1		0
P. pacifica		<0.1		0
P. sp.		<0.1		0
Porphyra sp.		<0.1		0
Pterosiphonia bipinnata		<0.1		0
Pterosiphonia sp. (juv.)		<0.1		0
Ptilota filicina		+0.7 −0.6		0
Rhodymenia sp.		<0.1		0
Spermatophyta				
Phyllospadix scouleri		+24.1 −57.3		+1223.9 −1685.2
Porifera				
spp.		✓		0
Cnidaria				
Hydrozoa				
spp.		✓		0
Nemertea				
spp.	2.1 ± 5.4	<0.1	0	

Pillar Point + 0

	0.01m²		0.2m²	
	#	wt	#	wt
Nematoda				
spp.	82.0 ±203.6	<0.1	0	
Mollusca				
Amphineura				
Tonicella lineata	0		0.5 ±0.1	
Gastropoda				
Acmaeidae sp. (juv.)	0.1	<0.1	0	
Lacuna variegata	0.2 <0.4	<0.1	0	
Thais lamellosa	0.1	0.2	0	

Pillar Point + 0

	0.01m²		0.2m²	
	#	wt	#	wt
Nematoda				
spp.	87.0 ±203.6	<0.1	0	
Mollusca				
Amphineura				
Tonicella lineata	0		0.5 ±0.1	
Gastropoda				
Acmaeidae sp. (juv.)	0.1	<0.1	0	
Lacuna variegata	0.2 <0.4	<0.1	0	
Thais lamellosa	0.1 ±0.2	0.2 ±1.0	0	
Bivalvia				
Adula californiensis	0.5 ±1.2	<0.1	0	
Musculus pygmaeus	0.1 ±0.4	<0.1	0	
Mysella tumida	0.3 ±0.9	<0.1	0	
Mytilus sp. (juv.)	0.2 ±0.4	<0.1	0	
Annelida				
Oligochaeta spp.	16.3 ±42.0	<0.1	0	

Pillar Point + 0

	0.01m²		0.2m²	
	#	wt	#	wt
Polychaeta				
spp.	0.2 ±0.4	<0.1	0	
Arenicolidae sp.	20.4 ±47.5	<0.1	0	
Branchiomaldane vincenti	0.1 ±0.3	<0.1	0	
Capitellidae				
Capitella capitata	0.4 ±0.8	<0.1	0	
Mediomastus sp.	0.2 ±0.7	<0.1	0	
Cirratulidae				
Cirratulus cirratus	0.2 ±0.5	<0.1	0	
Eunicoidea	0.1			

Pillar Point + 0

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Polychaeta spp.	3.2 ±0.4	<0.1	0	
Arenicolidae sp.	20.4 ±47.5	<0.1	0	
Branchiomaldane vincenti	0.1 ±0.3	<0.1	0	
Capitellidae Capitella capitata	0.4 ±0.8	<0.1	0	
Mediomastus sp.	0.2 ±0.7	<0.1	0	
Cirratulidae Cirratulus cirratus	0.2 ±0.5	<0.1	0	
Eunicoidea sp.	0.1 ±0.2	<0.1	0	
Lumbrineridae Lumbrineris sp.	4.8 ±8.6	<0.1	0	
Nereidae Nereis pelagica	0.1 ±0.2	<0.1	0	
N. sp.	0.2 ±0.5	<0.1	0	
Orbiniidae sp.	0.2 ±0.5	<0.1	0	
Naineris dendritica	1.6 ±3.9	<0.1	0	
Phyllodocidae Eteone longa	0.1 ±0.3	<0.1	0	

Pillar Point + 0

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Eulalia quadrioculata	1.2 ±3.1	<0.1	0	
Phyllodoce maculata	0.2 ±0.7	<0.1	0	
Polynoidae Halosydna brevisetosa	0.1 ±0.2	<0.1	0	
Sabellariidae sp.	0.1 ±0.2	<0.1	0	
Sabellidae sp.	0.1 ±0.2	<0.1	0	
Schizobranchia insignis	0.1 ±0.3	<0.1	0	
Spionidae Malacoceros glutaeus	0.1	<0.1	0	

Pillar Point + 0

	0.01m²		0.2m²	
	#	wt	#	wt
Eulalia quadrioculata	1 2 ±3.1	<0.1	0	
Phyllodoce maculata	0.2 ±0.7	<0.1	0	
Polynoidae				
Halosydna brevisetosa	0.1 ±0.2	<0.1	0	
Sabellariidae sp.	0.1 ±0.2	<0.1	0	
Sabellidae sp.	0.1 ±0.2	<0.1	0	
Schizobranchia innignis	0.1 ±0.3	<0.1	0	
Spionidae				
Malacocerus gluteus	0.1 ±0.2	<0.1	0	
Polydora columbiana	1.7 ±5.1	<0.1	0	
P. limicola	1.3 ±4.1	<0.1	0	
P. sp.	5.4 ±15.1	<0.1	0	
Pygospio elegans	0.8 ±2.1	<0.1	0	
Syllidae				
Brania brevipharyngea	0.1 ±0.2	<0.1	0	
Exogone lourei	0.1 ±0.3	<0.1	0	
E. sp.	0.1 ±0.2	<0.1	0	
Syllis spp.	2.5 ±4.7	<0.1	0	

Pillar Point + 0

	0.01m²		0.2m²	
	#	wt	#	wt
Terebellidae				
sp.	0.1 ±0.4	<0.1	0	
Thelepus crispus	0.2 ±0.6	<0.1	0	
Pycnogonida				
Halosoma compactum	0.2 ±0.7	<0.1	0	
Crustacea				
Ostracoda				
spp.	0.2 ±0.6	<0.1	0	
Cirripedia				
Balanus sp. (juv.)	0.1 ±0.2	<0.1	0	
Cumacea				
Cumella vulgaris	0.7 ±2.2	<0.1	0	
Tanaidacea				
Anatanais normani	0.4 ±1.6	<0.1	0	
Leptochelia dubia	0.2 ±0.5	<0.1	0	
Pancolus californiensis	0.2 ±0.5	<0.1	0	
Isopoda				
Exosphaeroma amplicauda	0.2 ±0.4	<0.1	0	
E. media	0.1 ±0.2	<0.1	0	
E. rhomburum	0.1 ±0.3	<0.1	0	

Ostracoda			
spp.	0.2 ±0.6	<0.1	0
Cirripedia			
Balanus			
sp. (juv.)	0.1 ±0.2	<0.1	0
Cumacea			
Cumella			
vulgaris	0.7 ±2.2	<0.1	0
Tanaidacea			
Anatanais			
normani	0.4 ±1.6	<0.1	0
Leptochelia			
dubia	0.2 ±0.5	<0.1	0
Pancolus			
californiensis	0.2 ±0.5	<0.1	0
Isopoda			
Exosphaeroma			
amplicauda	0.2 ±0.4	<0.1	0
E.			
media	0.1 ±0.2	<0.1	0
E.			
rhomburum	0.1 ±0.3	<0.1	0

Pillar Point + 0

	$0.01m^2$		$0.2m^2$	
	#	wt	#	wt
Gnorimosphaeroma				
oregonense	0.4 ±1.0	<0.1	0	
Ianiropsis				
kincaidi	0.3 ±0.6	<0.1	0	
Idotea				
montereyensis	1.0 ±2.2	0.1 ±0.1	33.5 ±53.2	2.3 ±3.5
I.				
sp. (juv.)	1.3 ±2.8	±0.1	0	
Munna				
stephensenii	0.1 ±0.2	<0.1	0	
Amphipoda				
Cercops				
compactus	0.1 ±0.2	<0.1	0	
Gammaridea				
spp.	5.1 ±5.6	<0.1	8.0 ±14.7	0.4 ±0.7
Decapoda				
Cancer				
oregonensis	0		0.5 ±0.6	0.3 ±0.2
Cryptolithodes				
sitchensis	0.1 ±0.2	<0.1	0	
Pagurus				
hirsutiusculus	0.1 ±0.2	0.0 ±0.0	0.3 ±0.5	0.4 ±0.8
Pugettia				
gracilis	0.1 ±0.3	0.1 ±0.3	1.3 ±1.0	2.6 ±2.2
Insecta				
Diptera				
spp. (juv.)	0.2 ±0.4	<0.1	0	
Bryozoa				
spp.		✓		0

stephensenii	±0.2			
Amphipoda				
Cercops				
compactus	0.1 ±0.2	<0.1	0	
Gammaridea				
spp.	5.1 ±5.6	<0.1	8.0 ±14.7	0.4 ±0.7
Decapoda				
Cancer				
oregonensis	0		0.5 ±0.6	0.3 ±0.2
Cryptolithodes				
sitchensis	0.1 ±0.2	<0.1	0	
Pagurus				
hirsutiusculus	0.1 ±0.2	0.0 ±0.0	0.3 ±0.5	0.4 ±0.8
Pugettia				
gracilis	0.1 ±0.3	0.2 ±0.3	1.3 ±1.0	2.6 ±2.2
Insecta				
Diptera				
spp. (juv.)	0.2 ±0.4	<0.1	0	
Bryozoa				
spp.		✓		0

Pillar Point + 0

Species richness	124
Diversity - H'	2.04
Total number	3910.6
Total biomass	2843.8

Table 2d. Pillar Point (fine-med. sand) benthic organisms from the subtidal zone collected 22 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5m		-10m	
	#	wt	#	wt
Cnidaria				
Anthozoa				
spp.	1.8 ±1.7	0.1 ±0.1	0	
Platyhelminthes				
spp.	0.3 ±0.5	<0.1	0	
Nemertea				
spp.	12.0 ±4.3	<0.1	6.0 ±2.7	<0.1
Nematoda				
spp.	19.3 ±10.1	<0.1	4.8 ±2.1	<0.1
Mollusca				
Gastropoda				
Opisthobranchia				
Aeolidídae	0		0.3 ±0.5	<0.1
Odostomia sp.	0.5 ±1.0	<0.1	0	
Prosobranchia				
Alvinia				
sp.	0.3 ±0.5	<0.1	0	
Amphissa				
columbiana	0		0.3 ±0.5	0.0 ±0.1
Calyptraea				
fastigiata	0		1.0 ±0.8	0.1
Lacuna				
variegata	7.8 ±6.2	0.1 ±0.2	1.5 ±2.4	0.1

Nematoda				
spp.	19.3 ±10.1	<0.1	4.8 ±2.1	<0.1
Mollusca				
Gastropoda				
Opisthobranchia				
Aeolididae	0		0.3 ±0.5	<0.1
Odostomia sp.	0.5 ±1.0	<0.1	0	
Prosobranchia				
Alvinia				
sp.	0.3 ±0.5	<0.1	0	
Amphissa				
columbiana	0		0.3 ±0.5	0.0 ±0.1
Calyptraea				
fastigiata	0		1.0 ±0.8	0.1
Lacuna				
variegata	7.8 ±6.2	0.1 ±0.2	1.5 ±2.4	0.1

Pillar Point Subtidal

	-5m		-10m	
	#	wt	#	wt
Margarites				
pupillus	0.3 ±0.5	<0.1	2.3 ±1.7	0.0 <0.1
Thais				
lamellosa	0		0.3 ±0.5	<0.1
Bivalvia				
Clinocardium				
nuttallii	0.5 ±0.6	0.3 ±0.7	0	
Lucinoma				
tenuisculpta	0	0.5	<0.1 ±1.0	
Macoma				
nasuta	0.3 ±0.5	<0.1	0.3 ±0.5	0.1 ±0.1
M.				
sp. (juv.)	2.8 ±3.4	<0.1	0.3 ±0.5	<0.1
Mya				
arenaria	0.5 ±1.0	0.1 ±0.2	0.8 ±1.0	0.0 ±0.1
Mysella				
tumida	20.0 ±8.0	<0.1	4.8 ±6.2	<0.1
Solen				
sicarius	0		0.3 ±0.5	<0.1
Tellina				
spp.	2.3	<0.1	2.6	0.1 ±0.1
Transennella				
tantilla	23.8	0.1 ±0.2	10.8	0.1 ±0.1
Tresus				
capax	3.5 ±3.3	<0.1	1.8 ±1.5	0.1 ±0.1
Annelida				
Oligochaeta				
spp.	5.5 ±2.4	<0.1	1.5 ±1.3	<0.1

			±1.0	
Macoma nasuta	0.3 ±0.5	<0.1	0.3 ±0.5	0.1 ±0.1
M. sp. (juv.)	2.8 ±3.4	<0.1	0.3 ±0.5	<0.1
Mya arenaria	0.5 ±1.0	0.1 ±0.2	0.8 ±1.0	0.0 ±0.1
Mysella tumida	20.0 ±8.0	<0.1	4.8 ±6.2	<0.1
Solen sicarius	0		0.3 ±0.5	<0.1
Tellina spp.	2.3	<0.1	2.6	0.1 ±0.1
Transennella tantilla	23.8	0.1 ±0.2	10.8	0.1 ±0.1
Tresus capax	3.5 ±3.3	<0.1	1.8 ±1.5	0.1 ±0.1
Annelida				
Oligochaeta spp.	5.5 ±2.4	<0.1	1.5 ±1.3	<0.1

Pillar Point Subtidal

	-5m		-10m	
	#	wt	#	wt
Polychaeta				
Arabellidae				
Arabella iricolor	0		0.3 ±0.5	<0.1
Capitellidae				
Capitella capitata	43.5 ±8.7	<0.1	3.3 ±3.8	<0.1
Mediomastus sp.	91.5 ±57.3	<0.1	19.0 ±10.6	<0.1
Notomastus lineatus	0		0.3 ±0.5	<0.1
N. tenuis	0		0.3 ±0.5	<0.1
Chaetopteridae				
Spiochaetopterus costarum	0		0.3 ±0.5	<0.1
Cirratulidae				
sp.	14.5 ±5.5	0.1	4.5 ±1.7	<0.1
Cirratulus cirratus	0		0.3 ±0.5	<0.1
Chaetozone setosa	1.5 ±1.7	<0.1	9.8 ±5.7	<0.1
Dorvilleidae				
Protodorvillea gracilis	0.8 ±1.0	<0.1	3.3 ±2.1	<0.1
Glyceridae				
Glycera americana	0		0.3 ±0.5	<0.1
Goniadidae				
Glycinde armigera	1.0 ±1.4	<0.1	1.8 ±1.5	<0.1

Notomastus lineatus	0		0.3 ±0.5	<0.1
N. tenuis	0		0.3 ±0.5	<0.1
Chaetopteridae				
Spiochaetopterus costarum	0		0.3 ±0.5	<0.1
Cirratulidae sp.	14.5 ±5.5	0.1	4.5 ±1.7	<0.1
Cirratulus cirratus	0		0.3 ±0.5	<0.1
Chaetozone setosa	1.5 ±1.7	<0.1	9.8 ±5.7	<0.1
Dorvilleidae				
Protodorvillea gracilis	0.8 ±1.0	<0.1	3.3 ±2.1	<0.1
Glyceridae				
Glycera americana	0		0.3 ±0.5	<0.1
Goniadidae				
Glycinde armigera	1.0 ±1.4	<0.1	1.8 ±1.5	<0.1

Pillar Point Subtidal

	-5m		-10m	
	#	wt	#	wt
Goniada maculata	1.0 ±0.8	<0.1	0.3 ±0.5	<0.1
Hesionidae				
sp. A	0		0.5 ±0.6	<0.1
Gyptis brevipalpa	0.5 ±1.0	<0.1	1.3 ±1.0	<0.1
Micropodarke dubia	1.3 ±1.3	<0.1	1.0 ±0.8	<0.1
Lumbrineridae				
Lumbrineris sp.	3.0 ±3.6	<0.1	0.3 ±0.5	<0.1
Maldanidae				
Euclymene sp.	17.3 ±8.5	<0.1	4.8 ±2.5	<0.1
Nephtyidae				
Nephtys caecoides	0		0.5 ±1.0	<0.1
N. californiensis	0		0.3 ±0.5	<0.1
N. ciliata	0		0.3 ±0.5	<0.1
N. sp.	0.3 ±0.5	<0.1	0.8	<0.1
Nereidae				
Nereis sp. (juv.)	2.0 ±1.6	<0.1	0.8 ±1.0	<0.1
Platynereis bicanaliculata	5.0 ±4.2	<0.1	2.8 ±3.1	<0.1
Onuphidae				
Onuphis elegans	0.5 ±0.6	<0.1	1.3 ±0.5	<0.1

	±1.3		±0.8	
Lumbrineridae				
Lumbrineris sp.	3.0 ±3.6	<0.1	0.3 ±0.5	<0.1
Maldanidae				
Euclymene sp.	17.3 ±8.5	<0.1	4.8 ±2.5	<0.1
Nephtyidae				
Nephtys caecoides	0		0.5 ±1.0	<0.1
N. californiensis	0		0.3 ±0.5	<0.1
N. ciliata	0		0.3 ±0.5	<0.1
N. sp.	0.3 ±0.5	<0.1	0.8	<0.1
Nereidae				
Nereis sp. (juv.)	2.0 ±1.6	<0.1	0.8 ±1.0	<0.1
Platynereis bicanaliculata	5.0 ±4.2	<0.1	2.8 ±3.1	<0.1
Onuphidae				
Onuphis elegans	0.5 ±0.6	<0.1	1.3 ±0.5	<0.1

Pillar Point Subtidal

	-5m		-10m	
	#	wt	#	wt
Orbiniidae				
Scoloplos sp.	10.0 ±6.7	<0.1	3.8 ±0.5	<0.1
Oweniidae				
Myriochele oculata	0		0.3 ±0.5	<0.1
Owenia fusiformis	1.8 ±2.2	<0.1	0.5 ±0.6	<0.1
Paraonidae				
Aricidea sp.	0		5.5 ±3.9	<0.1
Pectinariidae				
Pectinaria granulata	0.3 ±0.5	<0.1	0	
Phyllodoce				
Eteone longa	0		0.3 ±0.5	<0.1
E. tuberculata	0.8 ±0.5	<0.1	0	
Eulalia viridis	0.3 ±0.5	<0.1	0	
Phyllodoce groenlandica	2.3 ±2.6	<0.1	0.3 ±0.5	<0.1
P. maculata	0.8 ±1.0	<0.1	0.5 ±0.6	<0.1
P. sp. (juv.)	12.5 ±4.9	<0.1	3.8 ±2.5	<0.1
Polynoide				
Harmothoe imbricata	2.8 ±2.5	<0.1	0.3 ±0.5	<0.1

fusiformis	±2.2		±0.6	
Paraonidae				
Aricidea sp.	0		5.5 ±3.9	<0.1
Pectinariidae				
Pectinaria granulata	0.3 ±0.5	<0.1	0	
Phyllodoce				
Eteone longa	0		0.3 ±0.5	<0.1
E. tuberculata	0.8 ±0.5	<0.1	0	
Eulalia viridis	0.3 ±0.5	<0.1	0	
Phyllodoce groenlandica	2.3 ±2.6	<0.1	0.3 ±0.5	<0.1
P. maculata	0.8 ±1.0	<0.1	0.5 ±0.6	<0.1
P. *sp. (juv.)*	12.5 ±4.9	<0.1	3.8 ±2.5	<0.1
Polynoide				
Harmothoe imbricata	2.8 ±2.5	<0.1	0.3 ±0.5	<0.1

Pillar Point Subtidal

	-5m		-10m	
	#	wt	#	wt
H. lunulata	0	0.3	0.1 ±0.5	
Sabellidae				
Chone acaudata	0		0.3 ±0.5	<0.1
Potamilla myriops	0.3 ±0.5	<0.1	0	
Sabella media	0		0.3 ±0.5	<0.1
Scalibregmidae				
Scalibregma inflatum	0		0.3 ±0.5	<0.1
Sigalionidae				
Pholoe minuta	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Spionidae				
Malacoceros glutaeus	0		0.3 ±0.5	<0.1
Polydora socialis	0.5 ±1.0	<0.1	0.8 ±0.1	<0.1
Prionospio cirrifera	0.3 ±0.5	<0.1	0	
P. steenstrupi	150.0 ±38.3	<0.1	38.5 ±18.3	<0.1
Spio filicornis	0		0.3 ±0.5	<0.1
Syllidae				
Exogone sp.	0.8 ±1.0	<0.1	0	
Pionosyllis uraga	0		0.3 ±0.5	<0.1

Pillar Point Subtidal

	-5m		-10m	
	#	wt	#	wt
Streptosyllis latipalpa	0.3 ±0.5	<0.1	0	
Syllides longocirrata	0.3 ±0.5	<0.1	0	
Syllis spp.	0.3 ±0.5	<0.1	2.5 ±2.7	<0.1
Crustacea				
Ostracoda spp.	51.8 ±4.2	<0.1	11.5 ±4.7	<0.1
Leptostraca				
Nebalia pugettensis	0.3 ±0.5	<0.1	0	
Cumacea				
Diastylis sp.	1.0 ±2.0	<0.1	0	
Diastylopsis sp.	4.3 ±2.9	<0.1	0.3 ±0.5	<0.1
Lampropidae	8.8 ±10.1	<0.1	0.3 ±0.5	<0.1
Tanaidacea				
Anatanais *normani*	0.8 ±1.0	<0.1	0.3 ±0.5	<0.1
Leptochelia dubia	18.3 ±13.2	<0.1	5.5 ±3.1	<0.1
Isopoda				
Aega symmetrica	0		0.3 ±0.5	<0.1
Idotea sp. (juv.)	0		0.3 ±0.5	<0.1
Ianiropsis sp.	0.3 ±0.5	<0.1	0	

Pillar Point Subtidal

	-5m		-10m	
	#	wt	#	wt
Jaeropsis dubia	0.5 ±1.0	<0.1	0	
Munna sp.	0.5 ±1.0	<0.1	0	
Paranthura elegans	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Synidotea bicuspida	0.5 ±1.0	<0.1	0	
S. sp. (juv.)	0.3 ±0.5	<0.1	0	
Amphipoda				
Gammaridea sp.	114.5	0.1	35.0	<0.1

North Beach Cobble +6

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Crustacea						
Cirripedia						
Balanus glandula	0		0		16.0 ±26.1	0.9 ±1.8
Chthamalus dalli	0.2 ±0.7	< 0.1	0		6.8 ±12.8	0.1 ±0.2
Isopoda						
Exosphaeroma media	0		0		18.3 ±13.1	< 0.1
Amphipoda						
gammaridea spp.	0		0		0.3 ±0.5	< 0.1
Species richness	16					
Diversity -H'	1.99					
Total number	537					
Total biomass	19.5					

Table 3b. North Beach Cobble (cobble over sand) benthic organisms from the mid (+3') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.01 (N=20), 0.05 (N=4), and 0.2 (N=4) m^2 ± standard deviation.

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Rhodophyta						
Choreocolax polysiphoniae		< 0.1		0		0
Polysiphonia hendryi		< 0.1		0		0
Cnidaria						
Anthopleura elegantissima	0		0.5 ±1.0	0.2 ±0.4	0.3 ±0.5	0.1 ±0.1
Nematoda	0			0	7.3 ±3.8	< 0.1
spp.						
Mollusca						
Amphineura						
sp.(juv.)	0.1 ±0.4	< 0.1	0		0	
Gastropoda						
Acmaeidae sp. (juv.)	0.7 ±1.3	< 0.1	0		0	
Collisella pelta	0.5 ±0.9	0.0 ±0.0	0		0	
C. strigatella	0.5 ±0.8	0.0 ±0.0	0.3 ±0.5	0.1 ±0.2	0	
Littorina scutulata	2.2 ±2.5	0.1 ±0.2	0		1.8 ±1.3	0.1 ±0.1
Littorina sitkana	4.4 ±6.9	0.3 ±0.6	1.8 ±2.4	0.9 ±1.5	31.3 ±26.1	1.1 ±0.6
Notoacmea fenestrata	0.1 ±0.2	0.0 ±0.0	0		0	
N. persona	0		0		1.3 ±2.5	0.1 ±0.2
N. scutum	0.3 ±0.8	0.0 ±0.0	0.3 ±0.5	0.4 ±0.8	0	

Cnidaria						
Anthopleura elegantissima	0		0.5 ±1.0	0.2 ±0.4	0.3 ±0.5	0.1 ±0.1
Nematoda	0			0	7.3 ±3.8	< 0.1
spp.						
Mollusca						
Amphineura						
sp.(juv.)	0.1 ±0.4	< 0.1	0		0	
Gastropoda						
Acmaeidae						
sp. (juv.)	0.7 ±1.3	< 0.1	0		0	
Collisella						
pelta	0.5 ±0.9	0.0 ±0.0	0		0	
C.						
strigatella	0.5 ±0.8	0.0 ±0.0	0.3 ±0.5	0.1 ±0.2	0	
Littorina						
scutulata	2.2 ±2.5	0.1 ±0.2	0		1.8 ±1.3	0.1 ±0.1
Littorina						
sitkana	4.4 ±6.9	0.3 ±0.6	1.8 ±2.4	0.9 ±1.5	31.3 ±26.1	1.1 ±0.6
Notoacmea						
fenestrata	0.1 ±0.2	0.0 ±0.0	0		0	
N.						
persona	0		0		1.3 ±2.5	0.1 ±0.2
N.						
scutum	0.3 ±0.8	0.0 ±0.0	0.3 ±0.5	0.4 ±0.8	0	

North Beach Cobble +3

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Notoacmea sp.	0		0.8 ±1.5	0.2 ±0.4	0	
Searlesia dira	0		0.3 ±0.5	0.8 ±1.5	0.5 ±1.0	0.3 ±0.6
Thais emarginata	0		0.8 ±1.5	0.3 ±0.5	0	
T. lamellosa	0		0.5 ±1.0	0.1 ±0.2	0.5 ±0.6	0.3 ±0.4
T. sp. (juv.)			0.5 ±1.0	0.2 ±0.4	0.3 ±0.5	< 0.1
Bivalvia						
Mysella tumida	0.1 ±0.4	< 0.1	0		0	
Mytilus sp. (juv.)	0.1 ±0.3	< 0.1	0		0	
Protothaca staminea	0.1 ±0.2	< 0.1	0		0	
Annelida						
Oligochaeta spp.	0		0		3.8 ±1.7	< 0.1
Polychaeta						
Capitellidae						
Capitella capitata	0		0		0.3 ±0.5	< 0.1
Glyceridae						
Hemipodus borealis	0		0		0.3 ±0.5	< 0.1
Lumbrineridae						
Lumbrineris sp.	0		0		0.5 ±1.0	< 0.1

Saxidomus tumida	0.1 ±0.4	<0.1	0		0	
Mytilus sp. (juv.)	0.1 ±0.3	<0.1	0		0	
Protothaca staminea	0.1 ±0.2	<0.1	0		0	
Annelida						
Oligochaeta spp.	0		0		3.8 ±1.7	<0.1
Polychaeta						
Capitellidae						
Capitella capitata	0		0		0.3 ±0.5	<0.1
Glyceridae						
Hemipodus borealis	0		0		0.3 ±0.5	<0.1
Lumbrineridae						
Lumbrineris sp.	0		0		0.5 ±1.0	<0.1

North Beach Cobble +3

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Nereidae						
Nereis vexillosa	0		0		2.8 ±2.2	<0.1
N. sp.	0		0		4.8 ±5.6	
Spionidae						
Polydora proboscidea	0		0		3.8 ±4.3	<0.1
Pygospio elegans	0		0		0.3 ±0.5	<0.1
Syllidae						
Syllis sp.	0		0		6.3 ±4.3	<0.1
Crustacea						
Cirripedia						
Balanus cariosus	0.4 ±1.3	0.1 ±0.3	0		0.5 ±1.0	0.1 ±0.2
B. glandula	0.3 ±0.7	<0.1	0		2.3 ±4.5	0.1 ±0.2
Chthamalus dalli	0.3 ±0.9	<0.1	0		0	
Isopoda						
Exosphaeroma media	0.1 ±0.2	<0.1	0		48.5 ±40.8	0.0 ±0.1
Gnorimosphaeroma oregonense	0		0		19.0 ±22.0	0.0 ±0.1
Amphipoda						
gammaridea spp.	0		0		0.5 ±1.0	<0.1
Decapoda						
Hemigrapsus nudus	0.1 ±0.2	0.2 ±0.7	1.3 ±1.9	4.6 ±5.6	0	

Syllidae						
Syllis sp.	0		0		6.3 ±4.3	< 0.1
Crustacea						
Cirripedia						
Balanus cariosus	0.4 ±1.3	0.1 ±0.3	0		0.5 ±1.0	0.1 ±0.2
B. glandula	0.3 ±0.7	< 0.1	0		2.3 ±4.5	0.1 ±0.2
Chthamalus dalli	0.3 ±0.9	< 0.1	0		0	
Isopoda						
Exosphaeroma media	0.1 ±0.2	< 0.1	0		48.5 ±40.8	0.0 ±0.1
Gnorimosphaeroma oregonense	0		0		19.0 ±22.3	0.0 ±0.1
Amphipoda						
gammaridea spp.	0		0		0.5 ±1.0	< 0.1
Decapoda						
Hemigrapsus nudus	0.1 ±0.2	0.2 ±0.7	1.3 ±1.9	4.6 ±5.6	0	

North Beach Cobble +3

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Insecta						
Diptera larva	0.2 ±0.5	< 0.1	0		0	
Species richness	38					
Diversity -H'	2.48					
Total number	950.5					
Total biomass	32.1					

Table 3c. North Beach Cobble (cobble over sand) benthic organisms from the low (+0') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.01 (N=20), 0.05 (N=4), and 0.2 (N=4) m^2 ± standard deviation.

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Chlorophyta						
Cladophoraceae sp.		< 0.1		0		0
Enteromorpha linza		< 0.1		0		0
Monostroma fuscum		0.0 ±0.0		0		0
M. spp.		0.2 ±0.6		4.3 ±6.5		0
Ulva spp.		0.9 ±1.1		8.2 ±8.0		< 0.1
Bacillariophyta						
Pennales		< 0.1		0		< 0.1
Phaeophyta						
Alaria spp.		5.5 ±13.1		142.6 ±212.0		0.0 ±0.0
Analipus japonicus		0.6 ±1.6		0		0
Desmarestia aculeata		0.0 ±0.0		0		0
Ectocarpus sp.		< 0.1		0		0
Fucus distichus		0.1 ±0.3		13.3 ±21.0		0
Laminariales sp.		0.0 ±0.0		0		0
Leathesia difformis		< 0.1		0		0
Nereocystis luetkeana		0		31.3 ±62.6		0

Bacillariophyta	±1.1	±8.0	·0.1
Pennales	<0.1	0	<0.1
Phaeophyta			
Alaria spp.	5.5 ±13.1	142.6 ±212.0	0.0 ±0.0
Analipus japonicus	0.6 ±1.6	0	0
Desmarestia aculeata	0.0 ±0.0	0	0
Ectocarpus sp.	<0.1	0	0
Fucus distichus	0.1 ±0.3	13.3 ±21.0	0
Laminariales sp.	0.0 ±0.0	0	0
Leathesia difformis	<0.1	0	0
Nereocystis luetkeana	0	31.3 ±62.6	0

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Petalonia fascia		<0.1		0		0
Ralfsiaceae		✓				✓
Sphacelaria racemosa		<0.1		0		0
Rhodophyta						
Antithamnion defectum		<0.1		0		0
Antithamnionella pacifica		<0.1		0		0
Callithamnion /Pleonosporium		<0.1		0		0
Ceramium pacificum		<0.1		0		0
Choreocolax polysiphoniae		<0.1		0		<0.1
Crytonemia sp.		0.0 ±0.0		0		0
Gigartina papillata		0.0 ±0.0		2.2 ±3.8		1.7 ±2.6
Gigartinaceae spp.		0		0		0.4 ±0.6
Herposiphonia plumula		<0.1		0		0
Laurencia spectabilis		0		0.0 ±0.1		0
Hollenbergia sublata		<0.1		0		0
Hymenena spp.		0.0 ±0.0		0.3 ±0.5		0

Cryptonemiaceae /Pleonosporium	<0.1	0	0
Ceramium pacificum	<0.1	0	0
Choreocolax polysiphoniae	<0.1	0	<0.1
Crytonemia sp.	0.0 ±0.0	0	0
Gigartina papillata	0.0 ±0.0	2.2 ±3.8	1.7 ±2.6
Gigartinaceae spp.	0	0	0.4 ±0.6
Herposiphonia plumula	<0.1	0	0
Laurencia spectabilis	0	0.0 ±0.1	0
Hollenbergia sublata	<0.1	0	0
Hymenena spp.	0.0 ±0.0	0.3 ±0.5	0

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Iridaea cordata	2.0 ±4.5		80.7 ±79.2		0.3 ±0.6	
I. spp.	0.1 ±0.1		0		0	
Odonthalia floccosa	<0.1		0		0	
O. sp.	<0.1		0		0	
Petrocelis middendorfii	✓				✓	
Pikea californica	0.0 ±0.1		0		0	
Plocamium coccineum	0.1 ±0.2		0		0	
P. spp.	0.1 ±0.1		0		0	
Polyneura latissima	0		0.1 ±0.2		0	
Polysiphonia hendryi	0.0 ±0.0		0		0	
P. pacifica	0.1 ±0.3		0		0.2 ±0.2	
P. paniculata	0.1 ±0.4		0		<0.1	
Porphyra spp	0.0 ±0.0		<0.1		0	
Pterosiphonia bipinnata	1.7 ±2.3		0		0.2 ±0.2	
P. dendroidea	<0.1		0		0	

coccineum	±0.2		0	0
P. spp.	0.1 ±0.1		0	0
Polyneura latissima	0		0.1 ±0.2	0
Polysiphonia hendryi	0.0 ±0.0		0	0
P. pacifica	0.1 ±0.3		0	0.2 ±0.2
P. paniculata	0.1 ±0.4		0	<0.1
Porphyra spp	0.0 ±0.0		<0.1	0
Pterosiphonia bipinnata	1.7 ±2.3		0	0.2 ±0.2
P. dendroidea	<0.1		0	0

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Scagelia occidentale		<0.1		0		<0.1
Spermatophyta Phyllospadix scouleri		0		0		0.0 ±0.0
Platyhelminthes Turbellaria spp.	0.6 ±1.6	<0.1	0		0	
Nemertea spp.	0.3 ±0.9	<0.1	0		1.8 ±2.9	<0.1
Nematoda spp.	0.6 ±1.4	<0.1	0		5.8 ±4.0	<0.1
Mollusca Amphineura spp.	0		0		0.5 ±0.6	<0.1
Cyanoplax dentiens	0		0.3 ±0.5	0.0 ±0.0	0	
Gastropoda Acmaeidae spp. (juv.)	0.2 ±0.7	<0.1	0		1.8	<0.1
Amphissa columbiana	0		0		0.3 ±0.5	<0.1
Collisella pelta	0		0.3 ±0.5	0.3 ±0.6	0	
Lacuna variegata	7.7 ±7.1	0.0 ±0.1	0.3 ±0.5	<0.1	5.8 ±2.8	0.0 ±0.0
Notoacmea scutum	0.1 ±0.2	<0.1	0.5 ±1.0	<0.1	0.3 ±0.5	0.0 ±0.1
Onchidella borealis	0.1 ±0.2	<0.1	0		0	

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Bivalvia						
Macoma sp.	0		0		0.3 ±0.5	< 0.1
Mya arenaria	0		0		0.1 ±0.2	< 0.1
Mysella tumida	0		0		0.3 ±0.5	< 0.1
Mytilus spp. (juv.)	0.2 ± 0.7	< 0.1	0		0.5 ±1.0	< 0.1
Venerupis japonica	0		0		0.3 ±0.5	1.9 ±3.9
Annelida						
Oligochaeta spp.	0.1 ±0.2	< 0.1	0		15.8 ±7.0	< 0.1
Polychaeta						
Arenicolidae	0		0		0.3 ±0.5	< 0.1
Capitellidae						
Capitella capitata	0.2 ±0.9	< 0.1	0		0.8 ±1.0	< 0.1
Mediomastus sp.	0		0		0.3 ±0.5	< 0.1
Notomastus tenuis	0		0		0.5 ±1.0	< 0.1
N. sp.	0		0		0.3 ±0.5	< 0.1
Cirratulidae spp. (juv.)	0.1 ±0.2	< 0.1	0		1.8 ±3.5	< 0.1
Cirratulus cirratus	0		0		0.3 ±0.5	< 0.1

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Tharyx multifilis	0		0		1.0 ±1.4	< 0.1
Dorvilleidae						
Protodorvillea gracilis	0		0		0.3 ±0.5	< 0.1
Eunicidae						
Eunice valens	0		0		1.4 ±2.0	< 0.1
Glyceridae						
Hemipodus borealis	0		0		6.9 ±0.8	< 0.1
Lumbrineridae						

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Tharyx multifilis	0		0		1.0 ±1.4	<0.1
Dorvilleidae						
Protodorvillea gracilis	0		0		0.3 ±0.5	<0.1
Eunicidae						
Eunice valens	0		0		1.4 ±2.0	<0.1
Glyceridae						
Hemipodus borealis	0		0		6.0 ±0.8	<0.1
Lumbrineridae						
Lumbrineris spp.	0.1 ±0.4	<0.1	0		0.3 ±0.5	<0.1
Nereidae						
spp.	0.5 ±1.4	<0.1	0		0	
Hereis vexillosa	0.1 ±0.2	<0.1	0		0	
N. spp.	0.5 ±1.6		0		0	
Platynereis bicanaliculata	0.1 ±0.3	<0.1	0.3 ±0.5	<0.1	0.5 ±1.0	<0.1
Onuphidae						
sp.	0.2 ±0.7	<0.1	0		0	
Onuphis stigmatis	0		0		5.0 ±3.8	<0.1
Opheliidae						
Armandia brevis	0		0		0.5 ±0.6	<0.1

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Phyllodocidae						
Eteone longa	0		0		0.3 ±0.5	<0.1
Hesionura coineaui difficilis	0		0		0.3 ±0.5	<0.1
Phyllodoce maculata	0		0		0.3 ±5	<0.1
Phyllodoce sp.	0.1 ±0.3	<0.1	0		0.3 ±0.5	<0.1
Polynoidae						
Harmothoe imbricata	0		0		0.3 ±0.5	<0.1
Sabellidae						
spp.	0.1 ±0.2	<0.1	0		0.3 ±0.5	<0.1
Fabricia oregonica	0.5 ±2.0	<0.1	0		0.3	<0.1

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Phyllodocidae						
Eteone longa	0		0		0.3 ±0.5	< 0.1
Hesionura coineaui difficilis	0		0		0.3 ±0.5	< 0.1
Phyllodoce maculata	0		0		0.3 ±5	< 0.1
Phyllodoce sp.	0.1 ±0.3	< 0.1	0		0.3 ±0.5	< 0.1
Polynoidae						
Harmothoe imbricata	0		0		0.3 ±0.5	< 0.1
Sabellidae spp.	0.1 ±0.2	< 0.1	0		0.3 ±0.5	< 0.1
Fabricia oregonica	0.5 ±2.0	< 0.1	0		0.3 ±0.5	< 0.1
Spionidae						
Malococeros glutaeus	0.2 ±0.7	< 0.1	0		12.5 ±11.7	< 0.1
Polydora columbiana	4.2 ±17.4	< 0.1	0		0.8 ±1.5	< 0.1
P. proboscidea	0.7 ±2.2	< 0.1	0		4.0 ±73	< 0.1
Pygospio elegans	0		0		0.5 ±0.6	< 0.1
Spio filicornis	0		0		0.5 ±1.0	< 0.1
Spiophanes bombyx	0		0		2.0 ±2.2	< 0.1

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Syllidae						
Exogone gemmifera	0.5 ±1.3	< 0.1	0		0.3 ±0.5	< 0.1
E. lourei	0.7 ±2.2	< 0.1	0		1.0 ±1.4	< 0.1
Syllis spp.	0.2 ±0.7	< 0.1	0		6.0 ±2.9	< 0.1
Terebellidae spp.	1.2 ±4.7	< 0.1	0		2.0 ±2.3	< 0.1
Crustacea						
Ostracoda spp.	0.4 ±0.8	< 0.1	0		0	
Cirripedia						
Balanus cariosus	0.1 ±0.4	0.0 ±0.1	0		0	
Balanus glandula	0.1 ±0.4	< 0.1	0		0	

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Syllidae						
Exogone gemmifera	0.5 ±1.3	<0.1	0		0.3 ±0.5	<0.1
E. lourei	0.7 ±2.2	<0.1	0		1.0 ±1.4	<0.1
Syllis spp.	0.2 ±0.7	<0.1	0		6.0 ±2.9	<0.1
Terebellidae spp.	1.2 ±4.7	<0.1	0		2.0 ±2.3	<0.1
Crustacea						
Ostracoda spp.	0.4 ±0.8	<0.1	0		0	
Cirripedia						
Balanus cariosus	0.1 ±0.4	0.0 ±0.1	0		0	
Balanus glandula	0.1 ±0.4	<0.1	0		0	
B. sp. (juv.)	0		0		0.3 ±0.5	<0.1
Mysidacea						
Archeomysis grebnitzkii	0.1 ±0.3	<0.1	0		0.5 ±1.0	
Cumacea						
Cumella vulgaris	0.1 ±0.3	<0.1	0		0	
Lampropidae spp.	0.1 ±0.2	<0.1	0		0.3 ±0.5	<0.1
Tanaidacea						
Leptochelia dubia	0.1 ±0.3	<0.1	0		0	

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Isopoda						
Exosphaeroma amplicauda	0.2 ±0.7	<0.1	0		0.5 ±1.0	<0.1
Exosphaeroma media	3.7 ±8.2	<0.1	0		3.0 ±2.4	<0.1
E. onctoncum					0.8 ±1.5	<0.1
E. spp. (juv.)	6.6 ±13.5	<0.1	0		0.5 ±0.1	<0.1
Gnorimosphaeroma orgonense	1.3 ±2.8	<0.1	0		0	
Idotea montereyensis	0.5 ±1.0	<0.1	0		0	
I. wosnesenskii	4.6 ±6.5	<0.1	1.0 ±0.8	0.1 ±0.1	0	
I. spp. (juv.)	6.4 ±13.1	<0.1	0		4.8 ±3.7	<0.1
Munna chromatocephala	0.2 ±0.5	<0.1	0		0	
Amphipoda						
Gammaridea sp	0		0.3 ±0.5	0.0 ±0.1	15.8 ±6.2	<0.1
Decapoda						
Cancer oregonensis	0.1 ±0.2	<0.1	0		0	
Crangon munitella	0.3 ±0.5	0.2 ±0.4	0		0	

montereyensis	±1.0		0		0	
I. woasensenskii	4.0 ±6.5	<0.1	1.0 ±0.8	0.1 ±0.1	0	
I. spp. (juv.)	6.4 ±13.1	<0.1	0		4.8 ±3.7	<0.1
Hunna chromatocephala	0.2 ±0.5	<0.1	0		0	
Amphipoda						
Gammaridea sp	0		0.3 ±0.5	0.0 ±0.1	15.8 ±6.2	<0.1
Decapoda						
Cancer oregonensis	0.1 ±0.2	<0.1	0		0	
Crangon munitella	0.3 ±0.5	0.2 ±0.4	0		0	

North Beach Cobble +0

	0.01 m^2		0.2 m^2		0.05 m^2 x 15 cm	
	#	wt	#	wt	#	wt
Insecta						
Dipteran larvae	0.2 ±0.5	<0.1	0		0.8 ±1.5	<0.1
Bryozoa						
Bryozoa spp.		0		0	0.3 ±0.5	<0.1

Species richness	125
Diversity -H'	3.24
Total number	1681.1
Total biomass	465.6

Table 4a. Morse Creek (sand-gravel-cobble) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.01 (N=20), 0.05 (N=4), and 0.2 (N=4) m^2 ± standard deviation.

	Spr 77						Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Nematoda spp.	0		0		0		0		0		0.3 ± 0.5	< 0.1
Nemertea spp.	0		0		0		0		0		0.3 ± 0.5	< 0.1
Mollusca												
Gastropoda												
Collisella strigatella	0		0		0		0		0		0	
Lacuna variegata	0		0		0		0		0		0.3 ± 0.5	< 0.1
Littorina scutulata	0		0		0		0		0		0	
L. sitkana	0		0		3.0 ± 2.9	0.0 ± 0.1	0		0		0	
Notoacmea persona	0		0		0.3 ± 0.5	< 0.1	0		0		0	
Bivalvia												
Mysella tumida	0		0		0		0		0		0.3 ± 0.5	< 0.1
Mytilus edulis	0		0		0		0		0		0	
M. sp. (juv.)	0		0		0		0		0		0	
Annelida												
Polychaeta												
Nereidae												
Nereis vexillosa	0		0		0		0		0		0.8 ± 0.5	0.1 ± 0.1
N. sp.	0		0		0		0		0		0.3 ± 0.5	< 0.1
Spionidae												
Polydora proboscidea	0		0		0		0		0		0.3 ± 0.5	< 0.1
P. sp. A	0		0		0		0		0		0.3 ± 0.5	< 0.1
Oligochaeta spp.	0		0		0.3 ± 0.5	< 0.1	0		0		2.0 ± 2.8	< 0.1
Crustacea												
Cirripedia												
Balanus glandula	0		0		0		0		0		0	
B. spp. (juv.)	0		0		0.3 ± 0.5	< 0.1	0		0		0	

') intertidal
biomass (g)

Sum 77				Fall 77						Win 78			
0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0.8 ±0.5	< 0.1
0		0.3 ±0.5	< 0.1	0		0		0		0		0		1.0 ±1.4	< 0.1
0		0		0		0		0		0		0		0.3 ±0.5	< 0.1
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0	
0		0		0		0		0.3 ±0.5	< 0.1	0		0		0	
0		0		0		0		0		0		0		4.0 ±3.4	0.4 ±0.2
0		0		0		0		0		0		0		0.5 ±1.0	0.0 ±0.0
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0.3 ±0.5	< 0.1
0		0		0		0		0		0		0		0.3 ±0.5	< 0.1
0		0		0		0		0		0		0		0.5 ±1.0	< 0.1
0		0.8 ±0.5	0.1 ±0.1	0		0		0		0		0		0	
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0	
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0	
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0	
0		2.0 ±2.8	< 0.1	0		0		0.5 ±1.0	< 0.1	0		0		1.0 ±1.2	< 0.1
0		0		0		0		5.5 ±11.0	0.3 ±0.5	0		0		20.3 ±33.0	0.6 ±0.8
0		0		0		0		0		0		0		0	

Morse Creek +6

	Spr 77				Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Crustacea (cont.)												
Cirripedia												
Chthamalus dalli	0		0		0		0		0		0	
Mysidacea												
sp. (juv.)	0		0		0		0		0		0	
Tanaidacea												
Leptochelia dubia	0		0		0.3 ± 0.5	< 0.1	0		0		0	
Isopoda												
Exosphaeroma sp.	0		0		0.3 ± 0.5	< 0.1	0		0		0	
Gnorimosphaeroma oregonense	0		0		0		0		0		16.3 ±32.5	0.2 ±0.3
Cumacea												
sp. (juv.)	0		0		0		0		0		0.3 ± 0.5	< 0.1
Amphipoda												
Gammaridea sp.	0		0		5.5 ± 1.9	< 0.1	-		-		-	
Allorchestes angustus	-		-		-		0		0		0.3 ± 0.5	< 0.1
Corophium brevis	0		0		0		0		0		0.3 ± 0.5	< 0.1
C. sp.	0		0		0		0		0		0	
Orchestia sp.	-		-		-		0		0		0.3 ± 0.5	< 0.1
Orchestoidea pugettensis	-		-		-		0		0		1.5 ± 1.7	< 0.1
Paramoera columbiana	-		-		-		0		0		99.0 ±125.4	0.2 ±0.1
Insecta												
Dipteran larvae	0		0		0.3 ± 0.5	< 0.1	0		0		0	
Species Richness			8						16			
Diversity, H^1			1.31						0.76			
Total Number			51.5						614.5			
Total Biomass (g)			< 0.8						< 9.0			

Morse Creek +6

Sum 77				Fall 77				Win 78			
0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
0		0		0		0		0		0		0		0.5 < 0.1 ±1.0	
0		0		0		0		0.3 < 0.1 ±0.5		0		0		0	
0		0		0		0		0		0		0		0.3 < 0.1 ±0.5	
0		0		0		0		0		0		0		0	
0		16.3 ±32.5	0.2 ±0.3	0		0		0.5 ±1.0	<0.1	0		0		5.8 ±7.7	< 0.1
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0	
0		-		0		0		55.3 ±31.5	0.2 ±0.2	0		0		6.3 ±6.3	< 0.1
-		-		-		-		-		0		0		0	
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0	
0		0		0		0		0.3 ±0.5	< 0.1	0		0		0.3 ±0.5	< 0.1
0		0.3 ±0.5	< 0.1	-		-		-		-		-		-	
0		1.5 ±1.7	< 0.1	-		-		-		-		-		-	
0		99.0 ±125.4	0.2 ±0.1	-		-		-		-		-		-	
0		0		0		0		0		0		0		0	
16						7						15			
0.76						0.48						1.72			
614.5						313.5						211.0			
9.0						<5.0						<11.5			

Table 4b. Morse Creek (cobble over sand) benthic organisms from the mid (+3') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.01 (N=20), 0.05 (N=4), and 0.2 (N=4) m^2 ± standard deviation.

	Spr 77				Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Chlorophyta												
Cladophoracaea sp.	<0.1		0		0		0		0		0	
Enteromorpha linza	<0.1		0		0		0.2 ±0.1	<0.1	3.4 ±3.4	0	0	
Monostroma sp.	0		0		0		<0.1		0		0	
Spongomorpha coalita	0		0		0		<0.1		0		0	
S. sp.	<0.1		0		0		<0.1		0		0	
Ulothrix sp.	<0.1		0		0		0		0		0	
Ulva sp.	0		0		0		0.3 ±0.5	<0.1	5.4 ±4.5	0	0	
Urospora sp.	<0.1		0		0		<0.1		0		0	
Bacillariophyta												
Pennales sp.	0.0 ±0.1		0		0		<0.1		0		0	
Phaeophyta												
Alaria sp.	0		0		0		0		0		0	
Desmerestia aculeata	<0.1		0		0		0		0		0	
Fucus distichus	<0.1		0		0		0.4 ±1.9	0.1 ±0.5	38.1 ±43.8	0	0	
Laminariales spp.	0		0		0		0		0		0	
Petalonia fascia	0		0		0		0		0.3 ±0.6		0	
Rhodophyta												
Acrochaetium sp.	<0.1		0		0		0		<0.1		0	
Ahnfeltia plicata	0.0 ±0.1		0		0		0		0		0	
Crytosiphonia woodii	<0.1		0		0		0		0		0	
Endocladia muricata	<0.1		0		0		0		0		0	
Gigartinaceae sp.	0		0		0		0		0		0	
Gigartina papillata complex	0.7 ±1.3		0		0		0.7 ±1.6		0.8 ±0.6		0	

ertidal
omass (g)

m 77

.2 m² wt	0.05 m² #	wt	Fall 77 0.01 m² #	wt	0.2 m² #	wt	0.05 m² #	wt	Win 78 0.01 m² #	wt	0.2 m² #	wt	0.05 m² #	wt
0		0	0		0		0		0		0		0	
3.4 ±3.4		0	0.1		0		0		0		0		0	
0		0	0		0		0		0		0		0	
0		0	0		0		0		0		0		0	
0		0	0		0		0		0		0		0	
0		0	0		0		0		0		0		0	
5.4 ±4.5		0	0.2 ±0.2		0.9 ±1.3		0		<0.1		0		0	
0		0	0		0		0		0		0		0	
0		0	0.1		0		0		0		0		0	
0		0	0		0		0		0.9 ±4.0		5.9 ±8.9		0	
0		0	0		0		0		0		0		0	
38.1 ±43.8		0	<0.1		<0.1		✓		0		0.7 ±1.4		0	
0		0	0		0		0		0		0		0	
0.3 ±0.6		0	0		0		0		0		0		0	
<0.1		0	0		0		0		0		0		0	
0		0	0		0		0		0		0		0	
0		0	0		0		0		0		0		0	
0		0	0		0		0		0		0		0	
0		0	0.1		0		0		0		0		0	
0.8 ±0.6		0	0.5 ±1.8		5.0 ±6.1		0		0.1 ±0.1		0.1 ±0.1		0	

Morse Creek +3

	Spr 77						Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Rhodophyta (conc.)												
Iridaea cordata	0		0		0		0		0		0	
I. sp.	0		0		0		0		0		0	
Odonthalia flocosaa	0		0		0		0		0		0	
Polysiphonia hendryi	0		0		0		0		0		0	
P. pacifica	<0.1		0		0		<0.1		0		0	
P. sp.	<0.1		0		0		0		0		0	
Porphyra sp.	0		0		0		0.1 ±0.1		0.6 ±0.7		0	
Rhodochorton sp.	0		0		0		0		0		0	
Rhodomela larix	<0.1		0		0		0		0		0	
Rhodymenia sp.	<0.1		0		0		0		0		0	
Cnidaria												
Anthozoa sp.	0.4 ±1.1	<0.1	1.0 ±2.0	0.0 ±0.1	0		0		0		0	
Anthopleura elegantissima	0.1 0.2	<0.1	0		0		0		0		0.3 ± 0.5	<0.1
Platyhelminthes												
Turbellaria spp.	0		0.3 ±0.5	0.1 ±0.2	0		0.9 ±3.8	<0.1	0.3 ±0.5	<0.1	0.8 ±1.0	<0.1
Nemertea spp.	0.1 ±0.2	<0.1	0.3 ±0.5	0.0 ±0.1	16.0 ±4.5	0.0 ±0.1	0.2 ±0.4	<0.1	0		32.5 ±8.5	<0.1
Emplectonema gracile	0		0.3 ±0.5	0.0 ±0.01	0		0.1 ±0.2	<0.1	0		0	
Nematoda sp.	0.1 ±0.2	<0.1	0		6.5 ±8.5	<0.1	0.6 ±1.0	<0.1	0		26.8 ±26.6	<0.1
Mollusca												
Amphineura sp.(juv.)	0.1 ±0.2	<0.1	0		0		0		0		0.3 ±0.5	<0.1
Cyanoplax dentiens	0		0		0		0.3 ±0.5	0.1 ±0.1	0		0	
Gastropoda												
Acmaeidae sp.	1.0 ±1.5	<0.1	0		2.3	<0.1	0.2 ±0.4	<0.1	0		1.0 ±1.4	<0.1

Morse Creek +1

Sum 77				Fall 77				Win 78	
0.2 m^2 #	wt	0.05 m^2 #	wt	0.01 m^2 #	wt	0.2 m^2 #	wt	0.05 m^2 #	wt
0		0		0		0		0	
0		0		0		<0.1		0	
0		0		0		0		0	
0		0		0		0		0	
0		0		<0.1		0		0	
0		0		0		0		0	
0.6 ±0.7		0		0		0		0	
0		0		0		0		0	
0		0		0		0		0	
0

Morse Creek +3

	Spr 77						Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Mollusca (cont.)												
Gastropoda												
Archidoris sp.												
Collisella digitalis	0		0		0		0		0		0	
C. pelta	0.1 ±0.3	< 0.1	0.3 ±0.5	0.1 ±0.2	0		0.2 ±0.4	0.2 ±0.8	6.3 ±11.2	2.5 ±4.2	0	
C. strigatella	0.2 ±0.4	< 0.1	0		0		0.4 ±0.9	0.2 ±0.2	0.5 ±1.0	0.1 ±0.1	0	
Lacuna variegata	0		0		0		0.1 ±0.2	< 0.1	0		0	
Littorina scutulata	0		0.3 ±0.5	0.2 ±0.3	0		0		0		0	
L. sitkana	25.8 ±11.9	3.2 ±2.3	2.5 ±2.6	0.8 ±0.8	95.8 ±41.6	5.3 ±1.4	6.6 ±12.5	0.9 ±0.1	0.5 ±1.0	0.1 ±0.2	10.3 ±12.3	0.5 ±0.5
Margarites pupillus	0		0		0.3 ±0.5	< 0.1	0		0		0	
Notoacmaea fenestrata	0		3.8 ±2.9	2.7 ±0.9	0		0.1 ±0.2	0.0 ±0.0	2.5 ±2.1	1.1 ±0.8	1.0 ±2.0	0.1 ±0.1
N. persona	0		0		0		0.2 ±0.5	0.0 ±0.1	0		0	
N. scutum	0		0		0		0.6 ±0.9	0.1 ±0.2	5.3 ±5.4	1.6 ±1.8	0	
Ocenebra lurida	0		0		0		0		0		0	
Onchidella borealis	0.8 ±1.1	1.6 ±4.7	3.8 ±2.2	2.6 ±1.0	1.3 ±1.5	< 0.1	0		0		0	
Thais emarginata	0		0		0		0		0		0	
T. lamellosa	0		0.3 ±0.5	0.2 ±0.5	0		0		2.5 ±4.4	< 0.1	0	
T. sp. (juv.)	0		0		0		0		0		0.3 ±0.5	< 0.1
Bivalvia												
Clinocardium nuttallii	0		0		0		0		0		0	
Macoma inquinata	0		0		0		0		0		0	
M. sp. (juv.)	0		0		0		0		0		0	
Musculus pygmaeus	0		0		0		0.1 ±0.2	< 0.1	0		0	
Mysella tumida	0		0		3.5 ±2.4	< 0.1	0		0		3.5 ±0.6	< 0.1
Mytilus californianus	0		0		0		0		0		0	

Morse Creek +3

Sum 77				Fall 77						Win 78			
0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
0		0		0.1 ±0.3	0.0 ±0.0	0		0		0.1 ±0.2	< 0.1	2.5 ±3.0	1.5 ±1.8		
										0		0		0	
6.3 ±11.2	2.5 ±4.2	0		0.2 ±0.5	0.1 ±0.5	1.8 ±2.2	1.6 ±1.2	0.5 ±1.0	0.0 ±0.1	0.6 ±0.9	0.4 ±0.7	2.5 ±1.9	2.5 ±3.0	0	
0.5 ±1.0	0.1 ±0.1	0		0.4 ±0.8	0.0 ±0.1	0		0		0.6 ±1.4	0.0 ±0.0	1.8 ±1.3	< 0.1	1.0 ±1.4	< 0.1
0		0		2.2 ±6.4	0.0 ±0.1	0		0.3 ±0.5	< 0.1	0.3 ±0.6	< 0.1	0		0.3 ±0.5	< 0.1
0		0		0.1 ±0.3	< 0.1	0		1.5 ±3.0	0.0 ±0.1	0		0		0	
0.5 ±1.0	0.1 ±0.2	10.3 ±12.3	0.5 ±0.5	1.9 ±2.5	0.1 ±0.1	0		3.5 ±3.9	0.1 ±0.1	5.4 ±10.0	1.2 ±3.4	0.3 ±0.5	0.1 ±0.1	5.5 ±3.7	0.0 ±0.1
0		0		0		0		0		0		0		0	
2.5 ±2.1	1.1 ±0.8	1.0 ±2.0	0.1 ±0.1	0.3 ±0.4	0.1 ±0.3	5.8 ±2.6	3.4 ±1.7	0		0.6 ±0.8	1.1 ±3.1	5.8 ±3.9	2.5 ±1.7	0	
0		0		0		0		0		0		0		0	
5.3 ±5.4	1.6 ±1.8	0		0.6 ±0.9	0.3 ±0.5	7.5 ±5.0	4.6 ±2.4	0		0.8 ±1.0	0.3 ±0.5	11.5 ±5.5	5.8 ±2.0	4.5 ±3.8	0.0 ±0.1
0		0		0		0		0.3 ±0.5	< 0.1	0		0		0	
0		0		0		0		0		0		0		0	
0		0		0		0		0		0.1 ±0.2	< 0.1	0		0	
2.5 ±4.4	< 0.1	0		0		0		0		0		1.0 ±2.0	0.8 ±1.7	0	
0		0.3 ±0.5	< 0.1	0		0		0		0		0		0	
0		0		0		0		0.5 ±0.6	< 0.1	0		0		0.3 ±0.5	0.3 ±0.5
0		0		0		0		0		0		0		0.3 ±0.5	0.1 ±0.2
0		0		0		0		0.3 ±0.5	< 0.1	0		0		0.5 ±0.6	0.1 ±0.1
0		0		0.3 ±1.1	< 0.1	0		0		0		0		0	
0		3.5 ±0.6	< 0.1	0		0		0		0		1.3 ±2.5	< 0.1	3.3 ±3.9	< 0.1
0		0		0		0		2.0 ±2.7	< 0.1	0		0.3 ±0.5	0.1 ±0.1	0	

	Spr 77						Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Mollusca (cont.)												
Bivalvia												
Mytilus edulis	0		0		0		0		0		0	
M. sp.(juv.)	0.1 ±0.2	< 0.1	0		0		0.3 ±0.7	0.0 ±0.1	0		0.3 ±0.5	< 0.1
Protothaca staminea	0		0		0.5 1.0	< 0.1	0		0		0	
Tresus capax	0		0		0		0		0		0	
Annelida												
Archiannelida												
Saccocirridae												
Saccocirrus sp.	0		0		0		0		0		0	
Polychaeta												
Arenicolidae sp.	0		0		1.8 ±2.2	0.1 ±0.1	0		0		0	
Abarenicola pacifica	0		0		0		0		0		0	
A. sp.	0		0		0.5 ±0.6	0.1 ±0.1	0		0		0.5 ±1.0	< 0.1
Capitellidae												
Capitella capitata	0.1 ±0.2	< 0.1	0		16.8 ±15.4	0.1 ±0.0	0		0		41.8 ±6.2	< 0.1
Mediomastus sp.	0		0		1.0 ±2.0	< 0.1	0		0		0	
Notomastus tenuis	0		0		0		0		0		0	
Cirratulidae sp.	0		0		0		0		0		0	
Cirratulus cirratus	0.1 ±0.2	< 0.1	0		6.3 ±4.0	0.1 ±0.0	0		0		8.3 ±6.9	< 0.1
Dorvilleidae												
Protodorvillea gracilis	0		0		0		0		0		1.0 ±1.4	< 0.1
Glyceridae												
Hemipodus borealis	0		0		0		0		0		0	

Morse Creek +3

Sum 77				Fall 77				Win 78	
0.2 m^2 #	wt	0.05 m^2 #	wt	0.01 m^2 #	wt	0.2 m^2 #	wt	0.05 m^2 #	wt
0		0		0		0		0	
0		0.3	< 0.1 ±0.5	0.5	0.0 ±0.8 ±0.1	0		0	
0		0		0		0		0.2	< 0.1 ±0.4
0		0		0		0.3	0.1 ±0.5 ±0.2	0	
0		0		0		0		0	
0		0		0		0		1.8	< 0.1 ±2.4
0		0		0		0.5	< 0.1 ±1.0	0	
0		0		0		0		0	
0		0.5	< 0.1 ±1.0	0		0.8	< 0.1 ±1.5	0	
0		41.8	< 0.1 ±6.2	0		21.5	< 0.1 ±21.0	0.3	< 0.1 ±0.5
0		0		0		0.5	< 0.1 ±1.0	0	
0		0		0		0.3	< 0.1 ±0.5	0	
0		0		0		0.3	< 0.1	0	
0		8.3	< 0.1 ±6.9	0		0.5		0	
0		0		0		1.8	< 0.1 ±3.5	0	
0		1.0	< 0.1 ±1.4	0		0		0	
0		0		0		0		0	

Morse Creek +3

	Spr 77						Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Annelida (cont.)												
Polychaeta												
Nereidae												
Nereis vexillosa	0.1 ±0.2	<0.1	0		0		0		0.3 ±0.5	<0.1	0	
N. sp.	0		0		0		0.1 ±0.4	<0.1	0		0.3 ±0.5	<0.1
Platynereis bicanaliculata	0		0		0		0		0		0.3 ±0.5	<0.1
Opheliidae												
Armandia brevis	0		0		0.5 ±1.0	<0.1	0		0		0	
Oweniidae												
Owenia fusiformis	0		0		0.5		0		0		0	
Phyllodocidae												
Eteone longa	0		0		1.3 ±1.9	0.1 ±0.1	0		0		1.8 ±1.7	<0.1
Eulalia viridis	0		0		0.3 ±0.5	0.0 ±0.1	0		0		0	
Sabellidae												
Fabricia oregonica	0.1 ±0.5	<0.1	0		0		0.3 ±0.7	<0.1	0		0.3 ±0.5	<0.1
F. sp.	0		0		0		0		0		0.3 ±0.5	<0.1
Spionidae												
Malacoceros glutaeus	0		0		0		0		0		16.0 ±14.4	<0.1
Polydora columbiana	0		0		0		0		0		0	
P. sp.	0		0		0		0.1 ±0.2	<0.1	0		0	
Pygospio elegans	0	0	0		0		0		0		0	
Scolelepis sp. C	0		0		0		0		0		1.0 ±1.2	<0.1
Spio filicornis	0		0		0		0		0		0	
Syllidae												
Syllis adamantea	0		0		0		0.1 ±0.3	<0.1	0		0	

Morse Creek +3

Sum 77						Fall 77						Win 78			
0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
0.3	< 0.1 ±0.5	0		0		0.1	0.9 ±0.2 ±1.9	0		0		0		0.3	< 0.1 ±0.5
0		0.3	< 0.1 ±0.5	0.1	< 0.1 ±0.2	0		1.3	< 0.1 ±2.5	0		0		0	
0		0.3	< 0.1 ±0.5	0		0		0		0		0		0	
0		0		0		0		0.5	< 0.1 ±1.0	0		0		0	
0		0		0		0		0		0		0		0.5	< 0.1 ±0.6
0		1.8	< 0.1 ±1.7	0		0		4.5	< 0.1 ±2.6	0		0		3.3	< 0.1 ±2.8
0		0		0		0		0		0		0		0	
0		0.3	< 0.1 ±0.5	0.3	< 0.1 ±0.7	0		2.5	< 0.1 ±3.1	0.1	< 0.1 ±0.3	0		0	
0		0.3	< 0.1 ±0.5	0		0		0		0		0		0	
0		16.0	< 0.1 ±14.4	0		0		91.5	< 0.1 ±56.3	0		0		3.0	< 0.1 ±2.5
0		0		0.5	< 0.1 ±0.8	0		2.3	< 0.1 ±3.2	0.6	< 0.1 ±1.5	0		2.3	< 0.1 ±3.9
0		0		0		0		0.3	< 0.1 ±0.5	0		0		0	
0		0		0		0		0.5	< 0.1 ±1.0	0		0		0.3	< 0.1 ±0.5
0		1.0	< 0.1 ±1.2	0		0		0		0		0		0.3	< 0.1 ±0.5
0		0		0		0		0.5	< 0.1 ±1.0	0		0		0	
0		0		0.1	< 0.1 ±0.3	0		0		0		0		0	

Morse Creek +3

	Spr 77						Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Annelida (cont.)												
Polychaeta												
Syllidae												
Syllis spp.	0		0		0		0.1 ±0.2	<0.1	0		0.5 ±1.0	<0.1
Oligochaeta spp.	0.1 ±0.2	<0.1	0		0.3 ±0.5	<0.1	0.2 ±0.5	<0.1	0		1.0 ±1.4	<0.1
Phoronida												
Phorenopsis harmeri	0		0		0		0		0		0	
Crustacea												
Ostracoda spp.	0		0		0		0.1 ±0.3	<0.1	0		0	
Cirripedia												
Balanus cariosus	1.1 ±3.4	0.3 ±1.5	0		0		4.7 ±15.8	0.6 ±1.3	0		25.8 ±48.9	0.4 ±0.7
B. glandula	0		0		0		7.0 ±22.7	0.2 ±0.6	1.3 ±2.5	0.1 ±0.2	24.0 ±33.0	0.4 ±0.6
B. spp. (juv.)	0.3 ±0.8	<0.1	0		3.0 ±6.0	0.1 ±0.1	175.4 ±214.2	5.1 ±7.4	0		69.5 ±39.8	0.3 ±0.2
Chthamalus dalli	0		0		0		0		0		0	
Cumacea												
Cumella vulgaris	0.1 ±0.2	<0.1	0		0		0		0		0	
Tanaidacea												
Anatanais normani	0		0		0		0		0		0	
Leptochelia dubia	0		0		0		0		0		0.3 ±0.5	<0.1
Isopoda												
Gnorimosphaeroma oregonense	0		0		1.0 ±1.4	<0.1	0.1 ±0.2	<0.1	0		1.0 ±2.0	<0.1
Ianiropsis kincaidi	0		0		0		0		0		0	
Idotea schmitti	0		0		0		0		0		0	
I. wosnesenskii	0		2.8 ±2.5	1.4 ±1.2	0		0.3 ±0.4	0.0 ±0.1	19.0 ±15.6	4.1 ±3.7	0.3 ±0.5	<0.1

Morse Creek +3

Sum 77						Fall 77						Win 78			
0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
0		0.5 < 0.1 ±1.0		0.3 < 0.1 ±0.7		0		0		0.5 < 0.1 ±1.0		0		0.3 < 0.1 ±0.5	
0		1.0 < 0.1 ±1.4		0.2 < 0.1 ±0.4		0		2.3 < 0.1 ±3.2		0		0		0.8 < 0.1 ±0.5	
0		0		0		0		0.3 < 0.1 ±0.5		0		0		0	
0		0		0.9 < 0.1 ±2.1		0		0		1.0 < 0.1 ±1.4		0		11.5 < 0.1 ±23.0	
0		25.8 ±48.9	0.4 ±0.7	0.4 ±1.3	0.3 ±0.9	21.0 ±42.0	12.5 ±25.1	6.3 ±11.2	0.3 ±0.5	0.8 ±1.9	0.1 ±0.3	0.5 ±1.0	4.2 ±8.4	0	
1.3 ±2.5	0.1 ±0.2	24.0 ±33.0	0.4 ±0.6	46.9 ±34.1	5.6 ±4.3	2.3 ±3.9	0.2 ±0.2	37.0 ±51.5	2.8 ±4.6	26.5 ±34.3	3.5 ±4.9	0		129.8 ±204.0	15.5 ±27.1
0		69.5 ±39.8	0.3 ±0.2	0.5 < 0.1 ±2.0		0		0		0		0		0	
0		0		0		0		0		0		0		0.3 < 0.1 ±0.5	
0		0		0		0		0		0		0		0.3 < 0.1 ±0.5	
0		0		0.1 ±0.2	0.1	0		0		0		0		0	
0		0.3 < 0.1 ±0.5		0		0		0		0		0		0	
0		1.0 < 0.1 ±2.0		1.3 ±2.6	0.0 ±0.1	0.5 ±1.0	0.0 ±0.1	52.8 ±51.4	0.7 ±0.8	0		0		0.5 < 0.1 ±1.0	
0		0		0.2 < 0.1 ±0.7		0		0		0		0		0	
0		0		0		5.3 ±10.5	2.0 ±3.9	0		0		0		0	
19.0 ±15.6	4.1 ±3.7	0.3 < 0.1 ±0.5		1.0 ±3.0	0.1 ±0.2	11.0 ±12.8	3.7 ±4.3	1.8 ±2.2	0.1 ±0.1	0		4.3 ±6.6	2.1 ±3.8	0	

Morse Creek +3

	Spr 77						Sum 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Crustacea (cont.)												
Isopoda												
Idotea spp. (juv.)	0.1 ±0.2	< 0.1	0		0		0.3 ±1.1	< 0.1	0		2.0 ±3.4	< 0.1
Limnoria algarum	0		0		0		0		0		0.3 ±0.8	< 0.1
Amphipoda												
Cammaridea spp.	0		0		0.3 ±0.5	< 0.1	0.3 ±0.7	< 0.1	1.0 ±1.4	< 0.1	1.8 ±1.0	< 0.1
Allorchestes angustus	-		-		-		0.1 ±0.2	< 0.1				
Ampithoe simulans	-		-		-		0.2 ±0.7	< 0.1	0.3 ±0.5	< 0.1	0.5 ±0.7	< 0.1
Corophium brevis	0		0		0		4.5 ±12.5	< 0.1	0		9.5 ±19.0	< 0.1
C. sp.	0.1 0.2	< 0.1	0		0		4.6 ±12.5	< 0.1	0		9.5 ±19.0	< 0.1
Hyale frequens	-		-		-		0.1 ±0.2	< 0.1	0		0	
Orchestia sp.	-		-		-		0		0		0.3 ±0.5	< 0.1
Paramoera "pogetica" n. sp.	-		-		-		0		0		0.3 ±0.5	< 0.1
Paraphoxus spinosus Type B	-		-		-		0		0		0.3 ±0.5	< 0.1
Pontogeneia cf. ivanovi	-		-		-		0		0		0.5 ±1.0	< 0.1
Decapoda												
Cancer magister	0		0		0		0		0		0	
C. oregonensis	0		0		0		0		0		0	
Cryptolithodes sp. (juv.)	0		0		0		0.3 ±0.6	< 0.1	0		7.3 ±2.4	< 0.1
Hemigrapsus nudus	0		4.0 ±2.2	12.1 ±7.9	0		0		8.0 ±3.4	36.9 ±32.5	0	
H. oregonensis	0		0		0		0		0		0	
H. sp. (juv.)	0		0		0		0.1 ±0.4	0.1	0		3.3 ±2.6	< 0.1
Pagurus h. hirsutiusculus	0		0		0		0.2 ±0.4	0.0 ±0.1	3.3 ±2.4	1.0 ±1.0	2.0 ±1.6	1.1 ±1.8
P. spp. (juv.)	0.1 ±0.2	< 0.1	0		1.3 ±1.9	0.9 ±1.4	0.1 ±0.2	< 0.1	0		1.3 ±1.5	< 0.1
Pugettia sp. (juv.)	0		0		0		0		0		0.5 ±1.0	< 0.1

Morse Creek +3

Sum 77						Fall 77						Win 78					
0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²			
#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt		
0		2.0	< 0.1 ±3.4	0.1	< 0.1 ±0.3	0		0.5	< 0.1 ±1.0	0		0		0			
0		0.3	< 0.1 ±0.8	0		0		0		0		0		0			
1.0	< 0.1 ±1.4	1.8	< 0.1 ±1.0	3.7	< 0.1 ±3.9	3.5	0.1 ±3.5 ±0.1	5.3	< 0.1 ±4.6	0.4	< 0.1 ±1.6	0.3	< 0.1 ±0.5	3.0	< 0.1 ±4.1		
0.3	< 0.1 ±0.5	0.5	< 0.1 ±0.7	-		-		-		-		-		-			
0		9.5	< 0.1 ±19.0	0		0		0		0		0		0			
0		9.5	< 0.1 ±19.0	167.6	0.1 ±175.7 ±0.1	0		41.5	< 0.1 ±67.8	20.7	< 0.1 ±38.4	0		38.3	< 0.1 ±73.2		
0		0		-		-		-		-		-		-			
0		0.3	< 0.1 ±0.5	-		-		-		-		-		-			
0		0.3	< 0.1 ±0.5	-		-		-		-		-		-			
0		0.3	< 0.1 ±0.5	-		-		-		-		-		-			
0		0.5	< 0.1 ±1.0	-		-		-		-		-		-			
0		0		0		0.3 ±0.5	0.4 ±0.8	0		0		0		0			
0		0		0		0.5 ±1.0	2.1 ±4.2	0		0		0		0			
0		7.3	< 0.1 ±2.4	0		0		0		0		0		0			
8.0	36.9 ±32.5	0		0		4.0 ±5.0	7.9 ±6.5	3.0 ±6.0	0.0 ±0.1	0		5.8 ±5.6	18.4 ±19.7	0.3 ±0.5	0.4 ±0.8		
0		0		0		0		5.0 ±6.2	0.2 ±0.2	0		0		2.3 ±3.9	0.4 ±0.8		
0		3.3	< 0.1 ±2.6	0		0		0		0.2 ±0.5	0.1	0		2.8 ±5.5	0.1 ±0.2		
3.3	1.0 ±1.0	2.0	1.1 ±1.8	0.1 ±0.2	0.0 ±0.0	0.8 ±1.0	0.2 ±0.2	0.3 ±0.5	< 0.1	2.4 ±5.5	0.0 ±0.0	1.0 ±1.4	0.2 ±0.2	1.3 ±1.5	0.8 ±1.3		
0		1.3	< 0.1 ±1.5	0		0		1.5 ±2.4	0.1 ±0.2	0.2 ±0.4	< 0.1	0		0			
0		0.5	< 0.1 ±1.0	0		0		0		0		0		0			

Morse Creek +3

	Spr 77						Sum 77						
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		C
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#
Insecta													
Dipteran larvae	1.2 $\pm$2.4	<0.1	0		0		20.9 $\pm$40.0	<0.1	0		2.3 $\pm$1.9	<0.1	20 $\pm$43
Species Richness			59						76				
Diversity, H^1			2.34						2.04				
Total Number			1613.1						7355.0				
Total Biomass			163.3						261.8				

Morse Creek +3

Sum 77						Fall 77						Win 78			
0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
0		2.3 ±1.9	<0.1	20.8 ±43.8	<0.1	0		2.0 ±4.0	<0.1	2.2 ±3.8	<0.1	0		9.0 ±13.7	<0.1
76						70						64			
2.04						1.97						2.50			
7355.0						8319.4						3378.5			
261.8						229.0						271.9			

Win 78									
0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2			
#	wt	#	wt	#	wt	#	wt		
2.0 ±4.0	<0.1	2.2 ±3.8	<0.1	0		9.0 ±13.7	<0.1		
				64					
				2.50					
				3378.5					
				271.9					

Table 4c. Morse Creek (cobble over sand) benthic organisms from the low (+0') intertidal zone collected spring 1977 through fall 1977, expressed as number and/or biomass (g) per 0.01 (N=20), 0.05 (N=4), and 0.2 (N=6) m^2 ± standard deviation.

	Spr 77						Sum 77						Fall 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Chlorophyta																		
Cladophoraceae sp.	0		0		0		<0.1		0		0		0		0		0	
Cladophora sp.	<0.1		0		0		0		0		0		0		0		0	
Enteromorpha flexuosa	0		0		0		<0.1		0		0		0		0		0	
E. intestinalis	0		0		0		<0.1		0		0		0		0		0	
E. linza	0.0 ±0.1		0.0 ±0.1		0		<0.1		0		0		0		0		0	
E. sp.	0		0		0		0		0.5 ±0.5		0		<0.1		0		0	
Monostroma sp.	0.0 ±0.0		0		0		0		0		0		0		0		0	
Spongomorpha coelita	0.5 ±1.4		0		0		0		0		0		0		0		0	
S. spinescens	<0.1		0		0		0		0		0		0		0		0	
S. spp.	0.0 ±0.1		0		0		0.7 ±2.8		0		0		0		0		0	
Urospora sp.	<0.1		0		0		0		0		0		0		0		0	
Ulva sp.	0.8 ±1.3		2.7 ±0.9		0		3.6 ±7.3		23.5 ±26.5		0		0.1 ±0.1		0.2 ±0.2		0	
Bacillariophyta																		
Fragilaria sp.	0.1 ±0.1		0		0		<0.1		0		0		0		0		0	
Phaeophyta																		
Alaria sp.	<0.1		140.3 ±194.4		0		10.3 ±29.8		100.6 ±177.2		0		0		294.7 ±143.2		0	

A. linea	0.0 ±0.1	0.0 ±0.1	0	<0.1	0.4 ±0.5	0	0	0	0
B. sp.	0	0	0	0	0	0	<0.1	0	0
Monostroma sp.	0.0 ±0.0	0	0	0	0	0	0	0	0
Spongomorpha coalita	0.5 ±1.4	0	0	0	0	0	0	0	0
U. spinescens	<0.1	0	0	0	0	0	0	0	0
U. spp.	0.0 ±0.1	0	0	0.7 ±2.8	0	0	0	0	0
Ulothrix sp.	<0.1	0	0	0	0	0	0	0	0
Ulva spp.	0.8 ±1.3	2.7 ±0.9	0	3.6 ±7.3	23.5 ±76.5	0	0.1 ±0.1	0.7 ±0.2	0
Bacillariophyta									
Fragilaria sp.	0.1 ±0.1	0	0	<0.1	0	0	0	0	0
Phaeophyta									
Alaria sp.	<0.1	140.3 ±194.4	0	10.3 ±29.8	100.6 ±177.2	0	0	294.7 ±141.2	0

Moran Creek +0

	Spr 77			Sum 77			Fall 77		
	0.01 m^2	0.2 m^2	0.05 m^2	0.01 m^2	0.2 m^2	0.05 m^2	0.01 m^2	0.2 m^2	0.05 m^2
	# wt	# wt	# wt	# wt	# wt	# wt	# wt	# wt	# wt
Phaeophyta (cont.)									
Desmarestia aculeata	<0.1	0	0	0	0	0	0	0	0
Ectocarpaceae spp.	<0.1	0	0	0	0	0	0	0	0
Ectocarpales sp.	0	0	0	<0.1	0	0	0	0	0
Ectocarpus sp.	<0.1	0	0	<0.1	0	0	0	0	0
Fucus distichus	<0.1	0	0	0	0	0	0	0	0
Hedophyllum sessile	0	11.5 ±23.0	0	0	0	0	0	0	0
Laminaria saccharina	3.8 ±17.1	0.1 ±0.3	0	0.1 ±0.2	1.1 ±2.2	0	0	1.2 ±1.1	0
L. groenlandica	0	0	0	0	0	0	0	11.8 ±20.5	0
Laminariales sp. (juv.)	<0.1	0.0 ±0.1	0	0.1 ±0.2	0	0	0	<0.1	0
Rhodophyta									
Acrochaetium sp.	<0.1	0	0	<0.1	0	0	<0.1	0	0
Ahnfeltia plicata	0.0 ±0.1	0	0	<0.1	0	0	<0.1	0	0
Cryptopleura woodii	<0.1	0	0	0	0	0	0	0	0
Delesseria decipiens	0	<0.1	0	0	0	0	0	0	0
Erythrotrichia carnea	<0.1	0	0	0	0	0	0	0	0
Gigartinaceae sp.	0	0	0	0	0	0	0.0 ±0.1	0	0

Morro Creek +0

	Spr 77			Sum 77			Fall 77		
	0.01 m^2	0.2 m^2	0.05 m^2	0.01 m^2	0.2 m^2	0.05 m^2	0.01 m^2	0.2 m^2	0.05 m^2
Rhodophyta (cont.)	# wt	# wt	# wt	# wt	# wt	# wt	# wt	# wt	# wt
Gigartina papillata complex	1.8 ±3.5	7.9 ±6.8	0	1.1 ±2.7	28.5 ±31.6	0	1.3 ±2.4	23.6 ±21.0	0
Heterosiphonia glandiformis	<0.1	0	0	0	0	0	0	0	0
Hymenena sp.	<0.1	0	0	0	0	0	0	0	0
Iridaea cordata	23.0 ±66.5	479.5 ±104.1	0	13.6 ±2.5	395.0 ±210.6	0	1.8 ±2.3	93.6 ±75.1	0
I. heterocarpa	0.1 ±0.5	4.0 ±4.7	0	1.4 ±6.3	0	0	<0.1	0	0
I. sp. (juv.)	0.4 ±1.2	0	0	<0.1	0	0	<0.1	0	0
Membranoptera sp.	0	0	0	0	0	0	<0.1	0	0
Odonthalia floccosa	<0.1	0	0	0	0	0	0	0	0
Petrocelis middendorfii	0	0	0		0	0	0	0	0
Polyneura latissima	0.8 ±0.1	0	0	0	0	0	<0.1	0	0
Polysiphonia pacifica	0.0 ±0.1	0	0	0.1 ±0.1	0	0	<0.1	0	0
Porphyra minista	0	0	0	<0.1	0	0	0	0	0
P. sp.	0.0 ±0.1	0	0	<0.1	0	0	0	0	0
Rhodochorton sp.	0	0	0	<0.1	0	0	<0.1	0	0
Rhodomela larix	<0.1	0	0	0	0	0	0	0	0
Rhodymenia californica	<0.1	0	0	0	0	0	0	0	0

Morro Creek +0

	Spr 77			Sum 77			Fall 77		
	0.01 m^2	0.2 m^2	0.05 m^2	0.01 m^2	0.2 m^2	0.05 m^2	0.01 m^2	0.2 m^2	0.05 m^2
Rhodophyta (cont.)	# wt	# wt	# wt	# wt	# wt	# wt	# wt	# wt	# wt
Rhodymenia pacifica	<0.1	0	0	0	0	0	0	0	0
R. palmata	0.3 ±1.1	0	0	0.7 ±1.4	8.2 ±4.2	0	<0.1	0.9 ±0.6	0
R. sp. (juv.)	0.0 ±0.0	0	0	0	0	0	0	0	0
Porifera									
Halichondria panicea	0	0	0	0	✓	0	0	✓	0
Halichondria panicea	0	0	0	0	✓	0	0	✓	0
Ophlitaspongia pennata	0	0	0	0	✓	0	0	0	0

Morse Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Rhodophyta (cont.)																		
Rhodymenia pacifica		<0.1		0		0		0		0		0		0		0		0
R. palmata		0.3 ±1.1		0		0		0.7 ±1.4		8.2 ±4.2		0		<0.1		0.9 ±0.6		0
R. sp. (juv.)		0.0 ±0.0		0		0		0		0		0		0		0		0
Porifera																		
Halichondria panicea		0		0		0		0		✓		0		0		✓		0
Halichona permollis		0		0		0		0		✓		0		0		✓		0
Ophlitaspongia pennata		0		0		0		0		✓		0		0		0		0
Coiderta																		
Anthozoa spp.	0.8 ±1.9	<0.1	0.3 ±0.5	0.2 ±0.4	3.5 ±2.1	0.2 ±0.3	0		0		1.5 ±3.0	0.1 ±0.1	0		0		0.3 ±0.5	<0.1
Anthopleura elegantissima	0		0		0		0		0		0.5 ±1.0	<0.1	0.1 ±0.2	0.1 ±0.2	0		0	
Anthopleura sp.	0		0		0		0.1 ±0.2	<0.1	0.3 ±0.5	0.1 ±0.2	0		0		0		0	
Hydrozoa spp.	✓		0		0		✓		0		0		0		0		0	
Platyhelminthes																		
Turbellaria spp.	1.0 ±2.5	<0.1	0		3.5 ±7.0	<0.1	0		0		0		0		0		0.1 ±0.5	<0.1
Nemertea spp.	0		0		0		0.3 ±0.6	<0.1	0		16.3 ±13.2	0.2 ±0.1	0.1 ±0.3	<0.1	0		12.0 ±6.1	<0.1

Morse Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Nemertea (cont.)																		
Emplectonema gracile	0		0		0		0.1 ±0.3	<0.1	0		0		0		0		0	
Nemertoda spp.	4.8 ±15.1	<0.1	0		0.5 ±0.6	<0.1	5.1 ±8.3	<0.1	0		1.3 ±2.5	<0.1	0.2 ±0.5	<0.1	0		4.7 ±5.0	<0.1
Mollusca																		
Amphissa sp. (juv.)	0.1 ±0.2	<0.1	0		0.3 ±0.5	0.0 ±0.1	0		0		0		0		0		0	
Cyanoplax dentiens	0		0		0		0		0		0.3 ±0.5	0.1 ±0.2	0		0		0	
Gastropoda																		

Horse Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Nemertea (cont.)																		
Emplectonema gracile	0		0		0		0.1 ±0.3	<0.1	0		0		0		0		0	
Nematoda	4.8	<0.1	0		0.5	<0.1	5.1	<0.1	0		1.3	<0.1	0.2	<0.1	0		4.7	<0.1
spp.	±15.1				±0.6		±8.3				±2.5		±0.5				±5.0	
Mollusca																		
Amphissura sp. (juv.)	0.1 ±0.2	<0.1	0		0.3 ±0.5	0.0 ±0.1	0		0		0		0		0		0	
Cyanoplax dentiens	0		0		0		0		0		0.3 ±0.5	0.1 ±0.2	0		0		0	
Gastropoda																		
Acmaeidae sp. (juv.)	0.1 ±0.2	<0.1	0		0.5 ±1.0	0.0 ±0.1	0.1 ±0.2	<0.1	0		1.3 ±1.5	<0.1	0.1 ±0.2	<0.1	0		0.7 ±1.2	<0.1
Collisella pelta	0.1 ±0.2	<0.1	0		0		0.2 ±0.7	<0.1	0		0		0		0		0	
Lacuna variegata	1.1 ±2.0	<0.1	2.8 ±5.5	0.1 ±0.1	0.8 ±1.0	<0.1	9.7 ±9.2	0.1 ±0.1	0.5 ±0.6	<0.1	1.5 ±0.6	0.1 ±0.1	6.2 ±9.1	0.1 ±0.1	0		10.7 ±16.8	0.1 ±0.1
Margarites/ Lirularia	0.3 ±0.6	0.1 ±0.3	1.2 ±3.5	0.1 ±0.2	0		0		0		0		0		0		0	
Margarites sp.	0		0		0		0		0		0		0.1 ±0.2	<0.1	0		0	
Retusa/Acteocina fenestrata	0		0		0		0.1 ±0.2	<0.1	0.8 ±1.0	0.5 ±0.6	1.3 ±1.5	<0.1	0.1 ±0.3	0.0 ±0.1	0		0	
N. scutum	0.2 ±0.4	0.0 ±0.1	2.5 ±3.1	1.1 ±1.3	0.3 ±0.5	0.0 ±0.1	0.2 ±0.4	<0.1	1.3 ±1.9	0.6 ±0.9	0.3 ±0.5	0.1 ±0.1	0.3 ±0.6	0.2 ±0.5	0		0.3 ±0.5	<0.1
Ocenebra lurida	0		0		0		0		0		0		0.1 ±0.2	<0.1	0		0	
Oenopota sp. (juv.)	0		0.5 ±1.0	<0.1	0		0		0		0		0		0		0	
Onchidella borealis	0		0		0		0		0		0		0		0		0	

Horse Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Gastropoda (cont.)																		
Thais emarginata	0		0.5 ±0.6	0.4 ±0.5	0		0		0		0		0		0		0	
T. lamellosa	0.1 ±0.2	<0.1	0		0		0		0		0		0		0		0	
Bivalvia																		
Adula californiensis	0.1 ±0.2	<0.1	0		0		0		0		0		0		0		0	
Clinocardium nuttalli	0		0		0		0		0		0		0		0		0	
Cryptomya californica	0		0		0.5 ±1.0	0.0 ±0.1	0		0		0		0		0		0.3 ±0.6	<0.1
Mytilus edulis	0.1 ±0.2	<0.1	0		0		0		0		0		0		0		0	
Nacoma	0		0		0													

Moose Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Gastropoda (cont.)																		
Thais emarginata	0		0.5 ±0.6	0.4 ±0.5	0		0		0		0		0		0		0	
T. lamellosa	0.1 ±0.2	<0.1	0		0		0		0		0		0		0		0	
Bivalvia																		
Adula californiensis	0.1 ±0.7	<0.1	0		0		0		0		0		0		0		0	
Clinocardium nuttallii	0		0		0		0		0		0		0		0		0.3 ±0.6	<0.1
Cryptomya californica	0		0		0.5 ±1.0	0.0 ±0.1	0		0		0		0		0		0	
Hiatella arctica	0.1 ±0.2	<0.1	0		0		0		0		0		0		0		0	
Macoma inquinata	0		0		0		0		0		0		0		0		0.3 ±0.6	0.3 ±0.7
M. nasuta	0		0		0.3 ±0.5	1.9 ±3.8	0		0		0		0		0		0	
M. sp.	0.1 ±0.2	<0.1	0		0		0		0		0		0		0		0.3 ±0.6	<0.1
Musculus pygmaeus	0.2 ±0.3	<0.1	0		0		0		0		0		0.1 ±0.2	<0.1	0		0	
Mysella tumida	0.1 ±0.2	<0.1	0		2.3 ±2.2	<0.1	0		0		9.8 ±3.9	<0.1	0		0		7.7 ±6.7	<0.1
Pettiba sp. (juv.)	1.9 ±2.8	<0.1	0.5 ±1.0	<0.1	0		0.1 ±0.3	<0.1	0		0		0		0		0	
Pinnixthenia stearnsae	0		0		0.3 ±.5	0.0 ±0.1	0		0		0		0		0		0	
Tresus capax	0		0		0.5 ±0.6	5.1 ±5.9	0.1 ±0.2	<0.1	0		1.0 ±2.0	0.1 ±0.2	0		0		0.3 ±0.5	0.0 ±0.1

Moree Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
Annelida	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Archiannelida																		
Saccocirrus sp.	0		0		1.3 ±2.5	<0.1	0		0		0		0		0		0	
Polychaeta																		
Aromicelidae spp.	0.1 ±0.3	<0.1	0		20.3 ±15.3	<0.1	0		0		3.1	<0.1	0		0		4.1 ±4.7	<0.1
Capitellidae																		
Capitella capitata	0		0		0		0.5 ±1.0	<0.1	0		32.5 ±32.5	<0.1	0.1 ±0.2	<0.1	0		177.3 ±34.6	<0.1
Mediomastus sp.	0		0		2.5 ±3.1	<0.1	0		0		1.3 ±1.0	<0.1	0		0		0.3 ±0.5	<0.1
Cirratulidae																		
Cirratulus cirratus	0.2	<0.1	0		90.3 ±11.3	<0.1	0.2	<0.1	0		89.5 ±75.5	4.1 ±4.9	0		0		69.0 ±23.5	<0.1
Dorvilleidae																		
Protodorvillea gracilis	0		0		0.8 ±1.0	<0.1	0		0		1.3 ±1.3	<0.1	0		0		2.3 ±3.2	<0.1
Goniadidae																		
Glycinde picta	0		0		0.3 ±0.5	<0.1	0		0		0		0		0		0.3 ±0.6	<0.1
Nereidae																		
spp. (juv.)	0.2 ±0.7	<0.1	0		0		0.5 ±1.6	<0.1	0		0.3 ±0.5	<0.1	0.6 ±0.9	<0.1	0		2.0 ±1.0	<0.1
Nereis vexillosa	0.1 ±0.4	<0.1	0.3 ±0.5	<0.1	0.5 ±0.6	<0.1	0.7 ±0.5	<0.1	0		0.5 ±1.0	3.2 ±6.4	0		0		1.3 ±0.6	<0.1
N. sp.	2.9 ±7.1	<0.1	0		0		0.6 ±0.9	<0.1	0		0.3 ±0.5	<0.1	0		0		0.7 ±0.6	<0.1
Platynereis bicanaliculata	4.1 ±4.2	<0.1	0.3 ±0.5	<0.1	1.3 ±1.3	<0.1	1.8 ±2.7	<0.1	0		1.5 ±2.4	<0.1	0.7 ±0.5	<0.1	0		0.3 ±0.6	<0.1

sp.					2.5 ±3.1	<0.1	0			0			1.3 ±1.0	<0.1	0.2 0		0	14.6 0.3 ±0.5	<0.1
Cirratulidae																			
Cirratulus cirratus	0.2	<0.1	0		90.3 ±11.3	<0.1	0.2	<0.1	0				89.5 ±75.5	4.1 ±4.9	0		0	69.0 ±23.5	<0.1
Dorvilleidae																			
Protodorvillea gracilis	0		0		0.8 ±1.0	<0.1	0			0			1.3 ±1.3	<0.1	0		0	2.3 ±3.2	<0.1
Glyceridae																			
Glycinde picta	0		0		0.3 ±0.5	<0.1	0			0			0		0		0	0.3 ±0.6	<0.1
Goniadidae																			
Goniada spp. (juv.)	0.2 ±0.7	<0.1	0		0		0.5 ±1.6	<0.1	0				0.1 ±0.5	<0.1	0.6 ±0.9	<0.1	0	2.0 ±1.0	<0.1
Goniada vanillosa	0.1 ±0.4	<0.1	0.3 ±0.5	<0.1	0.5 ±0.6	<0.1	0.2 ±0.5	<0.1	0				0.5 ±1.0	3.2 ±6.4	0		0	1.3 ±0.6	<0.1
G. sp.	2.9 ±7.1	<0.1	0		0		0.6 ±0.9	<0.1	0				0.3 ±0.5	<0.1	0		0	0.7 ±0.6	<0.1
Glyceridae																			
Glycera americana	4.1 ±9.2	<0.1	0.3 ±0.5	<0.1	1.3 ±1.3	<0.1	1.8 ±2.3	<0.1	0				1.5 ±2.4	<0.1	0.7 ±0.5	<0.1	0	0.3 ±0.6	<0.1

Morse Creek #0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Polychaeta (cont.)																		
Opheliidae																		
Armandia brevis	0		0		0		0.2 ±0.5	<0.1	0		2.0 ±1.2	<0.1	0		0		10.2 ±3.5	<0.1
Phyllodocidae																		
Eteone longa	0		0		0.5 ±0.6	<0.1	0			0	0.3 ±0.5	<0.1	0		0		6.3 ±1.0	<0.1
E. tuberculata	0		0		0		0			0	0.3 ±0.5	<0.1	0		0		0	
Eulalia quadrioculata	0		0		0		0			0	0.3 ±0.5	<0.1	0		0		0	
E. sp.	0		0		0		0.1 ±0.7	<0.1	0		0		0		0		0.7 ±0.6	<0.1
Mystides sp.	0.3 ±0.5	<0.1	0		0		0			0	0		0		0		0	
Phyllodoce mucosa	0		0		0.5 ±0.6	<0.1	0			0	0		0		0		0.3 ±0.6	<0.1
P. sp. (juv.)	0		0		0		0			0	0.3 ±0.5	<0.1	0		0		0	
Polynoidae																		
Harmothoe imbricata	0		0		0		0			0	3.8 ±7.4	<0.1	0		0		0.7 ±0.6	<0.1
Sabellidae																		
Chone spp. (juv.)	4.7 ±2.0	<0.1	0		0		0.4 ±0.8	<0.1	0		0.3 ±0.5	<0.1	0		0		0	
Chone ourgodata	0.2 ±0.5	<0.1	0		0		0.1 ±0.2	<0.1	0		0		0		0		0	
Fabricia sp.	108.7 ±299.1	<0.1	0		0.3 ±0.5	<0.1	76.9 ±149.6	<0.1	0		1.5 ±3.0	<0.1	0.5 ±1.3	<0.1	0		1.0 ±1.7	<0.1
Sabella sp.	0.1 ±0.4	<0.1	0		0		0			0	0		0		0		0	
Sabellastarte sp.	0.3 ±1.1	<0.1	0		0		0			0	0		0		0		0	

Cancricola																				
Bobalia quadricuelata	0		0		0		0		0		0.3 ± 0.5	< 0.1	0		0		0			
E. spp.	0		0		0		0.1 ± 0.2	< 0.1	0		0.3 ± 0.5	< 0.1	0		0		0			
Unciola spp.	0.3 ± 0.5	< 0.1	0		0		0		0		0		0		0		0.7 ± 0.6	< 0.1		
Phyllodoce maculata	0		0		0.5 ± 0.4	< 0.1	0		0		0		0		0		0			
P. sp. (juv.)	0		0		0		0		0		0.3 ± 0.5	< 0.1	0		0		0.3 ± 0.4	< 0.1		
Polynoidae																				
Harmothoe imbricata	0		0		0		0		0		3.8 ± 2.4	< 0.1	0		0		0.7 ± 0.6	< 0.1		
Sabellidae																				
spp. (juv.)	4.7 ± 2.0	< 0.1	0		0		0.4 ± 0.8	< 0.1	0		0.3 ± 0.5	< 0.1	0		0		0			
Chone sarsaudata	0.2 ± 0.5	< 0.1	0		0		0.1 ± 0.2	< 0.1	0		0		0		0		0			
Fabricia oregonica	108.7 ± 299.3	< 0.1	0		0.3 ± 0.5	< 0.1	76.9 ± 144.6	< 0.1	0		1.5 ± 3.0	< 0.1	0.5 ± 1.5	< 0.1	0		1.0 ± 1.7	< 0.1		
Sabella sp.	0.1 ± 0.4	< 0.1	0		0		0		0		0		0		0		0			
Sabellastarte sp.	0.3 ± 1.1	< 0.1	0		0		0		0		0		0		0		0			

Moree Creek #0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Sabellidae (cont.)																		
Schizobranchia insignis	0.1 ± 0.2	< 0.1	0		0		0.3 ± 0.9	< 0.1	0		0.5 ± 1.0	< 0.1	0		0		0.3 ± 0.6	< 0.1
Spionidae																		
Malacoceros glutaeus	0		0		0.8 ± 1.5	< 0.1	0.1 ± 0.4	< 0.1	0		36.3 ± 29.9	< 0.1	0		0		114.3 ± 86.2	< 0.1
Polydora columbiana	0		0		0		2.7 ± 4.3	< 0.1	0		0		2.7 ± 5.9	< 0.1	0		2.3 ± 2.5	< 0.1
P. proboscidea	0.5 ± 1.0	< 0.1	0		0		0		0		0		0		0		0	
P. socialis	0		0		0		0		0		0.3 ± 0.5	< 0.1	0		0		0	
P. spp.	0.2 ± 0.4	< 0.1	0		0		0.3 ± 0.7	< 0.1	0		0.3 ± 0.5	< 0.1	0		0		0.3 ± 0.6	< 0.1
Scoloplos sp. C	0		0		0.3 ± 0.5	< 0.1	0		0		0		0		0		0	
S. squamata	0		0		0		0		0		1.0 ± 1.4	< 0.1	0		0		1.3 ± 1.5	< 0.1
Spio filicornis	0		0		0		0		0		0		0		0		0	
Syllidae																		
Exogone gemmifera	0.4 ± 0.9	< 0.1	0		0		1.6 ± 2.7	< 0.1	0		0		0.4 ± 1.0	< 0.1	0		0	
E. lourei	0.1 ± 0.2	< 0.1	0		0.5 ± 1.0	< 0.1	0		0		0.3 ± 0.5	< 0.1	0		0		0	
Sphaerosyllis pirifera	0		0		0		0.1 ± 0.2	< 0.1	0		0		0		0		0	
Syllis spp.	0.5 ± 1.5	< 0.1	0		2.3 ± 2.9	< 0.1	0.4 ± 1.0	< 0.1	0		0.5 ± 1.0	< 0.1	0.1 ± 0.4	< 0.1	0		1.7 ± 0.6	< 0.1
Terebellidae spp.	0		0		0		0.1 ± 0.2	< 0.1	0		0		0.1 ± 0.3	< 0.1	0		0	

columbiana					0			2.7 ± 4.3	< 0.1	0				2.7 ± 3.9	< 0.1	0		
P. *proboscidea*	0.5 ± 1.8	< 0.1	0		0			0		0	0			0		0	2.1 ± 2.1	< 0.1
P. *sectella*	0		0		0			0		0						0	0	
P. spp.	0.2 ± 0.9	< 0.1	0		0			0.3 ± 0.7	< 0.1	0	0.3 ± 0.5	< 0.1	0			0		
Scoloplos spp. C	0		0		0.3 ± 0.5	< 0.1		0		0	0.3 ± 0.5	< 0.1	0			0	0.3 ± 0.6	< 0.1
S. *armiger*	0		0		0			0		0	0		0			0	0	
Spio *filicornis*	0		0		0			0		0	1.0 ± 1.4	< 0.1	0			0		
Syllidae											0		0			0	1.3 ± 1.5	< 0.1
Exogone *gemmifera*	0.4 ± 2.9	< 0.1	0		0			1.6 ± 2.7	< 0.1	0	0			0.4 ± 1.0	< 0.1	0	0	
S. *louvei*	0.1 ± 0.2	< 0.1	0		0.5 ± 1.0	< 0.1		0		0	0.3 ± 0.5	< 0.1		0		0	0	
Sphaerosyllis *pirifera*	0		0		0			0.1 ± 0.2	< 0.1	0	0			0		0	0	
Syllis spp.	0.5 ± 1.5	< 0.1	0		2.3 ± 3.9	< 0.1		0.4 ± 1.0	< 0.1	0	0.5 ± 1.0	< 0.1		0.1 ± 0.4	< 0.1	0	1.7 ± 0.6	< 0.1
Terebellidae spp.	0		0		0			0.1 ± 0.2	< 0.1	0	0			0.1 ± 0.3	< 0.1	0	0	

Morro Creek #0

	Spr 77						Sum 77						Fall 77					
	0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2		0.01 m^2		0.2 m^2		0.05 m^2	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Oligochaeta spp.	0		0		0		0.6 ± 2.5	< 0.1	0		0		0		0		0.7 ± 0.4	< 0.1
Nirudinea spp.	0		0		0		0.1 ± 0.2	< 0.1	0		0		0		0		0	
Pycnogonida *Phoxichilidium femoratum*	0		0		0		0.3 ± 0.7	< 0.1	0		0.5 ± 0.6	< 0.1	0.2 ± 0.5	0.0 ± 0.1	0		0	
Crustacea *Ostracoda* spp.	0.2 ± 0.4	< 0.1	0		0		9.2 ± 28.4	< 0.1	0		0		0.3 ± 1.3	< 0.1	0		0	
Cirripedia *Balanus crinitus*	0		0		0		0.1 ± 0.2	< 0.1	0		0.3 ± 0.5	< 0.1	0		0		0.3 ± 0.6	0.0 ± 0.1
Leptostraca *Nebalia pugettensis*	0		0		0		0		0		0.3 ± 0.5	< 0.1	0		0		0	
Cumacea *Cumella vulgaris*	0.1 ± 0.2	< 0.1	0		0.3 ± 0.5	< 0.1	0.1 ± 0.2	< 0.1	0		0		0		0		0	
Leucropidae spp.	0		0		0		0		0		0.3 ± 0.5	< 0.1	0		0		0	
Tanaidacea *Anatanais normani*	0		0		0		1.5 ± 3.4	< 0.1	0		0		0.1 ± 0.2	< 0.1	0		0	
Leptochelia dubia	0.3 ± 0.3	< 0.1	0.3 ± 0.5	< 0.1	0.3 ± 0.5	< 0.1	0.3 ± 0.8	< 0.1	0		0.3 ± 0.5	< 0.1	0		0		0.2 ± 1.2	< 0.1

Cirripedia																				
Balanus crenatus	0		0		0		0.1 ± 0.2	< 0.1	0		0.3 ± 0.5	< 0.1	0		0		0.3 ± 0.6	< 0.1		
Leptostraca																				
Nebalia pugettensis	0		0		0		0		0		0.3 ± 0.5	< 0.1	0		0		0			
Cumacea																				
Cumella vulgaris	0.1 ± 0.2	< 0.1	0		0.3 ± 0.5	< 0.1	0.1 ± 0.2	< 0.1	0		0		0		0		0			
Lamprops spp.	0		0		0		0		0		0.3 ± 0.5	< 0.1	0		0		0			
Tanaidacea																				
Anatanais normani	0		0		0		1.3 ± 1.4	< 0.1	0		0		0.1 ± 0.2	< 0.1	0		0			
Leptochelia dubia	3.3 ± 0.3	< 0.1	0.3 ± 0.5	< 0.1	0.3 ± 0.5	< 0.1	0.5 ± 0.8	< 0.1	0		0.3 ± 0.5	< 0.1	0		0		0.7 ± 1.2	< 0.1		

254

Horse Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
Tanaidacea (cont.)	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Pancolus californiensis	0.1 ± 0.2	< 0.1	0		0		0		0		0		0		0		0	
Isopoda																		
Dynamenella shoreri	0		0		0		0		0		0		0		0		0	
Enceladarmus duplicatus	0.2 ± 0.4	< 0.1	0		0.5 ± 0.6	< 0.1	0		0		0		0.2 ± 0.4	< 0.1	0		0	
E. media	1.6 ± 4.8	< 0.1	0		2.0 ± 4.0	< 0.1	0		0		0		0.4 ± 1.6	< 0.1	0		0.3 ± 0.6	0.1
E. rhombarum	0.4 ± 1.3	< 0.1	0		0		0		0		0		0		0		2.1 ± 4.0	0.2
Gnorimosphaeroma oregonensis	0.3 ± 0.8	< 0.1	0		0		0		0		0		0		0		0	
Ianiropsis kincaidi	0.7 ± 0.5	< 0.1	0.3 ± 0.5	< 0.1	0.3 ± 0.5	< 0.1	0.3 ± 0.6	< 0.1	0		2.8 ± 3.2	< 0.1	0.2 ± 0.4	< 0.1	0		0	
Idotea resecta	0		0		0.5 ± 1.0	< 0.1	0		0		0		0.3 ± 0.6	< 0.1	0		1.7 ± 0.6	< 0.1
I. wosnessenskii	0.6 ± 1.6	< 0.1	0.5 ± 1.0	0.2 ± 0.3	0		0.4 ± 1.0	0.1 ± 0.1	4.8 ± 3.4	1.2 ± 1.0	0		0		0		0	
I. sp. (juv.)	0.4 ± 0.6	< 0.1	1.0 ± 2.0	< 0.1	0.5 ± 0.6	< 0.1	0.3 ± 0.9	< 0.1	0		0		0.4 ± 0.7	0.0 ± 0.1	1.8 ± 3.5	< 0.1	0	
Limnoria algarum	0.1 ± 0.2	< 0.1	0		0.3 ± 0.5	< 0.1	0		0		0		0.2 ± 0.5	< 0.1	0		0.7 ± 1.2	< 0.1
Munna chromatocephala	0		0		0		0.1 ± 0.2	< 0.1	0		0		0		0		0	
Paranthura elegans	0		0		0.5 ± 0.6	< 0.1	0		0		0		0		0		0	
Amphipoda																		
Gammaridae spp.	8.0 ± 8.9	0.1 ± 0.1	0		5.8 ± 7.6	0.1 ± 0.0	–		–		–		9.0 ± 9.1	0.1 ± 0.1	2.5 ± 3.5	0.1 ± 0.1	11.0 ± 11.2	0.1

260

B.	1.6	<0.1	0		0.6								0.4	0.1	0		0.3	0.1		
gracilis	±4.8				±2.0	<0.1	0		0		0		±1.6				±0.6			
B.	0.4	<0.1	0		0		0		0		0		0		0		2.3	<0.1		
rhamburgi	±1.3																±4.0			
Choriocephalopsis	0.3	<0.1	0		0		0		0		0		0		0		0			
oregonensis	±0.8																			
Isotropis	0.2	<0.1	0.3	<0.1	0.3	<0.1	0.3	<0.1	0		2.8	<0.1	0.1	<0.1	0		0			
kincaidi	±0.5		±0.5		±0.5		±0.6				±3.2		±0.2							
Idotea	0		0		0.5	<0.1	0		0		0		0.3	<0.1	0		1.7	<0.1		
aculeata					±1.0								±0.6				±0.4			
I.	0.6	<0.1	0.3	0.2	0		0.4	0.1	4.8	1.2	0		0		0		0			
wosnessenskii	±1.6		±1.0	±0.3			±1.0	±0.1	±3.4	±1.0										
I.	0.4	<0.1	1.0	<0.1	0.5	<0.1	0.3	<0.1	0		0		0.6	<0.0	1.8	<0.1	0			
sp. (juv.)	±0.4		±2.0		±0.6		±0.9						±0.7	0.1	3.5	0.1				
Limnoria	0.1	<0 1	0		0.3	<0.1	0		0		0		0.2	<0.1	0		0.3	<0.1		
algarum	±0.2				±0.5								±0.5				±1.2			
Munna	0		0		0		0.1	<0.1	0		0		0		0		0			
chromtocephala							±0.2													
Paracerthura	0		0		0.5	<0.1	0		0		0		0		0		0			
elegans					±0.6															
Amphipoda																				
Gammaridea																				
spp.	8.0	0.1	0		5.8	0.1	–		–		–		9.0	0.1	2.5	0.1	11.0	0.1		
	±8.9	±0.1			±7.6	±0.0							±9.1	±0.1	±3.5	±0.1	±11.2			

Horse Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Amphipoda (cont.)																		
Accedomoera																		
vagor	–		–		–		0.1	<0.1	0		0		–		–		–	
							±0.2											
Amphithoe	–		–		–		0.2	<0.1	0.5	<0.1	0		–		–		–	
lacertosa							±0.4		±1.0									
A.	–		–		–		0.1	<0.1	0		0		–		–		–	
anacyrtus							±0.4											
A.	–		–		–		0.7	<0.1	0.3	<0.1	0.5	<0.1	–		–		–	
plumulosa							±2.9		±0.5		±1.0							
A.	–		–		–		0.1	<0.1	0.5	<0.1	0		–		–		–	
sp.							±0.3		±1.0									
Aoroides	–		–		–		0.1	<0.1	0		1.0	<0.1	–		–		–	
columbiae							±0.3				±1.4							
Caprella	0		0		0		0.1	<0.1	0		0		0		0		0	
natalensis							±0.4											
Caprellidae	0		0		0		0.1	<0.1	0		0		0		0		0	
spp. (juv.)							±0.2											
Corophium	0		0		0		0		0		0.3	<0.1	0		0		0	
spp.											±0.5							
Nyala	–		–		–		1.9	<0.1	0		0		–		–		–	
frequens							±4.4											
Ischyrocerus	–		–		–		0.5	<0.1	0		0.5	<0.1	–		–		–	
anguipes							±1.4				±0.6							
Melita	–		–		–		0		0		1.0	<0.1	–		–		–	
californica											±2.0							
M.	–		–		–		0.1	<0.1	0		7.0	<0.1	–		–		–	
dorotchada							±0.2				±7.4							
Naja	–		–		–		0.2	<0.1	0		0		–		–		–	
sp.							±0.4											
Parallorchestes	–		–		–		5.6	0.0	0		0		–		–		–	
ochotensis							±21.6	±0.1										
Photis	–		–		–		0.1	<0.1	0		0		–		–		–	
brevipes							±0.4											

stenisea															
A.	–	–	–	2.9 ± 0.3	<0.1	0.5 ± 1.0	<0.1	0.5 ± 0	<0.1	–	–	–	–	–	–
sp.	–	–	–	0.1 ± 0.3	<0.1	0		0		–	–	–	–	–	–
Aoroides columbiae	–	–	–	0.1 ± 0.3	<0.1	0		1.0 ± 1.4	<0.1	–	–	–	–	–	–
Caprella natalensis	0	0	0	0.1 ± 0.4	<0.1	0		0		0	0	0	0	0	0
Caprellidae spp. (juv.)	0	0	0	0.1 ± 0.2	<0.1	0		0		0	0	0	0	0	0
Corophium spp.	0	0	0	0		0		0.3 ± 0.5	<0.1	0	0	0	0	0	0
Dyopedos frequens	–	–	–	1.9 ± 4.4	<0.1	0		0		–	–	–	–	–	–
Ischyrocerus anguipes	–	–	–	0.5 ± 1.4	<0.1	0		0.5 ± 0.6	<0.1	–	–	–	–	–	–
Melita californica	–	–	–	0		0		1.0 ± 2.0	<0.1	–	–	–	–	–	–
M. dorsichoda	–	–	–	0.1 ± 0.2	<0.1	0		7.0 ± 7.4	<0.1	–	–	–	–	–	–
Mojua sp.	–	–	–	0.2 ± 0.4	<0.1	0		0		–	–	–	–	–	–
Parallorchestes ochotensis	–	–	–	5.6 ± 21.6	0.0 ± 0.1	0		0		–	–	–	–	–	–
Photis brevipes	–	–	–	0.1 ± 0.4	<0.1	0		0		–	–	–	–	–	–

Horse Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
Amphipods (cont.)	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Photis sp.	–		–		–		0		0		0.1 ± 0.5	<0.1	–		–		–	
Pontoporeia sp. (young)	–		–		–		0		0		1.0 ± 1.2	<0.1	–		–		–	
Decapods																		
Cancer oregonensis	0		0.5 ± 1.0	1.1 ± 2.1	0		0.1 ± 0.2	<0.1	0		1.1	0.4 ± 0.8	0		0		0	
C. productus	0.1 ± 0.2	0.1 ± 0.3	0		0		0		0.8 ± 1.0	3.8 ± 4.9	0.1 ± 0.5	0.2 ± 0.4	0		0		0.3 ± 0.6	0.2 ± 0.4
Hemigrapsus oregonensis	0		0		0		0		0		0		0		0		0	
Hyas sp. (juv.)	0.1 ± 0.2	0.0 ± 0.0	0		0		0		0		0		0		0.3 ± 0.5	2.0 ± 4.0	0	
Pagurus h. hirsutiusculus	0		0		0.3 ± 0.5	0.1 ± 0.1	0		0		0		0		0		0	
P. sp. (juv.)	0.1 ± 0.2	<0.1	0		0		0.4 ± 0.7	<0.1	0		0		0.1 ± 0.2	<0.1	0		0	
Ptomius faba	0		0		0.3 ± 0.5	<0.1	0		0		0.8 ± 0.5	<0.1	0		0		1.3 ± 1.2	0.0 ± 0.1
P. sp.	0		0		0.5 ± 0.6	0.1 ± 0.1	0		0		0		0		0		0	
Pugettia gracilis	0.3 ± 0.6	<0.1	0.3 ± 0.5	<0.1	0.5 ± 1.0	0.0 ± 0.1	3.4 ± 3.7	0.1 ± 0.1	2.0 ± 2.3	0.5 ± 0.9	4.8 ± 3.5	<0.1	6.3 ± 0.5	0.0 ± 0.1	0		1.3 ± 2.3	0.1 ± 0.2
P. producta	0		0		0		0		0		0.3 ± 0.5	0.1 ± 0.2	0		0		0	
Telmessus cheiragonus	0		0		0		0.1 ± 0.3	<0.1	0		0		0		0		0	
Insects																		
Diptera larvae	0.7 ± 1.0	<0.1	0.3 ± 1.0	<0.1	0.3 ± 0.5	<0.1	3.2 ± 10.6	<0.1	0		0		0.3 ± 0.2	<0.1	0		0	

C.	0.1	0.1	0		0		0.2					0.8			0		0	
productus	±0.2	±0.2					0		0.8	3.9	0.1	0.2	0		0		0.3	0.2
Hemigrapsus	0		0		0		0		±1.0	±6.9	±0.5	±0.4					±0.6	±0.4
nudus									0		0		0		0		0	
Majidae	0.1	0.0	0		0		0		0		0		0		0.3	2.0	0	
sp. (juv.)	±0.2	±0.0													±0.5	±4.0		
Pagurus h.	0		0		0.3	0.1	0		0		0		0		0		0	
hirsutiusculus					±0.5	±0.1												
P.	0.1	<0.1	0		0		0.4	<0.1	0		0.8	<0.1	0.1	<0.1	0		0	
sp. (juv.)	±0.2						±0.7				±0.5		±0.7					
Pinnixa	0		0		0.3	<0.1	0		0		0		0		0		1.3	0.0
faba					±0.5												±1.2	±0.1
P.	0		0		0.5	0.1	0		0		0		0		0		0	
sp.					±0.6	±0.1												
Pugettia	0.3	<0.1	0.3	<0.1	0.5	0.0	3.4	0.1	2.0	0.5	4.8	<0.1	0.3	0.0	0		1.3	0.1
gracilis	±0.6		±0.5		±1.0	±0.1	±3.7	±0.1	±2.3	±0.9	±3.5		±0.5	±0.1			±2.3	±0.2
P.	0		0		0		0		0		0.3	0.1	0		0		0	
productus											±0.5	±0.2						
Telmessus	0		0		0		0.1	<0.1	0		0		0		0		0	
cheiragonus							±0.3											
Insecta																		
Diptera	0.7	<0.1	0.5	<0.1	0.3	<0.1	3.2	<0.1	0		0		0.1	<0.1	0		0	
larvae	±1.0		±1.0		±0.5		±10.6						±0.2					

Morse Creek +0

	Spr 77						Sum 77						Fall 77					
	0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²		0.01 m²		0.2 m²		0.05 m²	
	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt	#	wt
Bryozoa		✓		0		0		✓		0		✓		0		0		0
spp.																		
Echinodermata																		
Holothuroidea	0.1	<0.1	0		0		0.2	<0.1	0		0.5	<0.1	0		0		0	
spp.	±0.2						±0.7				±0.6							
Eupentacta	0		0.3	<0.1	0		0		0		0		0.1	<0.1	0		0.3	<0.1
pseudoquinquesemita			±0.5										±0.2				±0.6	
Species richness			112						177						82			
Diversity - H'			2.14						2.55						2.29			
Total number			4,460.8						4,362.5						2,589.9			
Total biomass (g)			984.0						794.0						553.9			

Species richness	112	172	82
Diversity - H'	2.14	2.55	2.24
Total number	4,469.8	4,367.5	2,589.9
Total biomass (g)	994.0	794.0	553.9

Table 4d. Morse Creek (gravel-cobble) benthic organisms from the subtidal zone collected 7 June 1977, expressed as number and/or biomass (g) per 0.05 ($N=4$) m^2 ± standard deviation.

	-10 m.	
	#	wt
Chlorophyta		
Derbesia marina		< 0.1
Halicystis ovalis		< 0.1
Spongomorpha sp.		< 0.1
Bacillariophyta		
Pennales spp.		< 0.1
Phaeophyta		
Desmarestia ligulata		< 0.1
D. viridis		< 0.1
Ectocarpaceae sp.		< 0.1
Ectocarpus sp.		< 0.1
Laminariales spp.		0.1 ± 0.1
Ralfsia pacifica		
Stictyosiphon tortilis		< 0.1
Syringoderma abyssicola		< 0.1
Rhodophyta		
Acrochaetium sp.		< 0.1
Ahnfeltia plicata		< 0.1
Antithamnion defectum		< 0.1
Callophyllis flabellulata		< 0.1
Corallinaceae sp.		< 0.1
Delesseriaceae sp.		< 0.1
Gracilaria sp.		< 0.1
Halosaccion glandiforme		< 0.1
Hymenena sp.		< 0.1
Iridea sp.		< 0.1
Leptofauchea pacifica		< 0.1
Peyssonellia pacifica		< 0.1
Platythamnion heteromorphum		
Polyneura latissima		< 0.1
Polysiphonia pacifica		0.0 ± 0.1
Pterosiphonia dendroidea		< 0.1
Rhodochorton sp.		< 0.1
		< 0.1

Rhodophyta	
Acrochaetium sp.	< 0.1
Ahnfeltia plicata	< 0.1
Antithamnion defectum	< 0.1
Callophyllis flabellulata	< 0.1
Corallinaceae sp.	< 0.1
Delesseriaceae sp.	< 0.1
Gracilaria sp.	< 0.1
Halosaccion glandiforme	< 0.1
Hymenena sp.	< 0.1
Iridea sp.	< 0.1
Leptofauchea pacifica	< 0.1
Peyssonellia pacifica	
Platythamnion heteromorphum	< 0.1
Polyneura latissima	0.0 ± 0.1
Polysiphonia pacifica	< 0.1
Pterosiphonia dendroidea	< 0.1
Rhodochorton sp.	< 0.1

Horse Creek Subtidal

	-10 m.	
	#	wt
Porifera spp.		✓
Cnidaria		
Hydrozoa spp.		< 0.1
Tubularia	3.8 ± 4.5	< 0.1
Anthozoa spp.	2.3 ± 3.9	< 0.1
Halcampa sp.	0.5 ± 0.6	< 0.1
Nemertea spp.	5.5 ± 1.7	< 0.1
Nematoda spp.	21.5 ± 4.8	< 0.1
Mollusca		
Amphineura sp. (juv.)	0.3 ± 0.5	< 0.1
Mopalia sp. B	0.3 ± 0.5	0.0 ± 0.1
Tonicella lineata	0.3 ± 0.5	< 0.1
Gastropoda		
Aeolidacea sp. (juv.)	0.3 ± 0.5	< 0.1
Amphissa columbiana	12.5 ± 11.7	0.8 ± 1.5
Calliostoma ligatum	0.5 ± 1.0	0.4 ± 0.8
Calyptraea fastigiata	3.0 ± 1.4	0.1 ± 0.2
Collisella ochracea	0.3 ± 0.5	0.0 ± 0.1
Crepidula sp.	0.3 ± 0.5	0.0 ± 0.1
Margarites pupillus	0.3 ± 0.5	< 0.1
Margarites/Lirularia	0.3 ± 0.5	< 0.1
Natica clausa	0.3 ± 0.5	< 0.1
Trichotropis cancellata	0.3 ± 0.5	< 0.1
Bivalvia		
Crenella decussata	0.3 ± 0.5	< 0.1
Humilaria kennerleyi	0.3 ± 0.5	< 0.1
Macoma secta	0.3 ± 0.5	0.0 ± 0.1
M. sp. (juv.)	4.0 ± 3.7	0.0 ± 0.1

Morse Creek Subtidal

	-10 m. #	wt
Bivalvia (cont.)		
Modiolus rectus	0.3 ± 0.5	<0.1
Musculus discors	0.3 ± 0.5	<0.1
Mysella tumida	19.8 ± 5.0	<0.1
Protothaca staminea	1.8 ± 1.7	0.4 ±0.9
Transennella tantilla	0.5 ±0.6	<0.1
Annelida		
Oligochaeta spp.	5.8 ± 4.3	<0.1
Polychaeta		
Ampharetidae spp.	0.3 ± 0.5	<0.1
Asabellides littoralis	0.3 ± 0.5	<0.1
Capitellidae		
Capitella capitata	0.3 ± 0.5	<0.1
Mediomastus sp.	25.5 ±10.4	<0.1
Cirratulidae		
Chaetozone setosa	1.3 ±1.9	<0.1
Cirratulus cirratus	3.5 ± 3.0	<0.1
Tharyx multifilis	8.8 ± 8.3	<0.1
Dorvilleidae		
Protodorvillea gracilis	1.5 ± 3.0	<0.1
Flabelligeridae		
Pherusa plumosa	0.3 ±0.5	<0.1
Glyceridae		
Glycera americana	0.3 ± 0.5	<0.1
G. sp. (juv.)	0.3 ±0.5	<0.1
Goniadidae		
Glycinde picta	3.5 ± 1.7	<0.1

Morse Creek Subtidal

	-10 m. #	wt
Hesionidae		
Micropodarke dubia	7.3 ± 4.0	<0.1
Maldanidae sp. (juv.)	7.8 ± 4.6	<0.1
Axiothella rubrocincta	0.3 ± 0.5	<0.1
Micomache lumbricalis	0.3 ± 0.5	<0.1
Nereidae		
Nereis sp. (juv.)	0.3 ± 0.5	<0.1
Platynereis bicanaliculata	3.5 ± 1.7	<0.1
Opheliidae		
Armandia brevis	1.8 ± 1.3	<0.1
Orbiniidae		
Scoloplos sp.	1.3 ± 0.5	<0.1
Oweniidae		

Morse Creek Subtidal

	-10 m.	
	#	wt
Hesionidae		
Micropodarke dubia	7.3 ± 4.0	< 0.1
Maldanidae sp. (juv.)	7.8 ± 4.6	< 0.1
Axiothella rubrocincta	0.3 ± 0.5	< 0.1
Micomache lumbricalis	0.3 ± 0.5	< 0.1
Nereidae		
Nereis sp. (juv.)	0.3 ± 0.5	< 0.1
Platynereis bicanaliculata	3.5 ± 1.7	< 0.1
Opheliidae		
Armandia brevis	1.8 ± 1.3	< 0.1
Orbiniidae		
Scoloplos sp.	1.3 ± 0.5	< 0.1
Oweniidae		
Owenia fusiformis	0.8 ± 1.0	< 0.1
Paraonidae		
Aricidea sp.	0.5 ± 1.0	< 0.1
Phyllodocidae		
Eteone longa	0.3 ± 0.5	< 0.1
Eulalia sanguinea	0.5 ± 1.0	< 0.1
Phyllodoce madeirensis	0.3 ± 0.5	< 0.1
P. sp. (juv.)	0.5 ± 0.6	< 0.1
Polynoidae		
Harmothoe imbricata	1.0 ± 0.8	< 0.1
Sabellariidae		
Sabellaria cementarium	0.8 ± 0.5	< 0.1
Sabellidae		
Chone ecaudata	1.8 ± 1.0	< 0.1

Morse Creek Subtidal

	-10 m.	
	#	wt
Scalebregmidae		
Scalebregma inflatum	0.5 ± 0.6	< 0.1
Serpulidae		
Spirorbis moerchi	0.3 ± 0.5	< 0.1
S. sp.	0.3 ± 0.5	< 0.1
Spionidae		
Polydora armata	0.3 ± 0.5	< 0.1
P. socialis	0.3 ± 0.5	< 0.1
P. sp.	0.3 ± 0.5	< 0.1
Prionospio cirrifera	1.0 ± 0.8	< 0.1
P. steenstrupi	5.3 ± 3.4	< 0.1
Syllidae		
Exogone gemmifera	0.5 ± 1.0	< 0.1
E. lourei	0.8 ± 1.0	< 0.1
E. spp.	10.5 ± 2.1	

Morse Creek Subtidal

	-10 m. #	wt
Scalebregmidae		
Scalebregma inflatum	0.5 ± 0.6	<0.1
Serpulidae		
Spirorbis moerchi	0.3 ± 0.5	<0.1
S. sp.	0.3 ± 0.5	<0.1
Spionidae		
Polydora armata	0.3 ± 0.5	<0.1
P. socialis	0.3 ± 0.5	<0.1
P. sp.	0.3 ± 0.5	<0.1
Prionospio cirrifera	1.0 ± 0.8	<0.1
P. steenstrupi	5.3 ± 3.4	<0.1
Syllidae		
Exogone gemmifera	0.5 ± 1.0	<0.1
E. lourei	0.8 ± 1.0	<0.1
E. spp.	19.5 ± 2.1	<0.1
Syllis spp.	0.8 ± 1.5	<0.1
Terebellidae sp.	0.3 ± 0.5	<0.1
Sipuncula		
Golfingia vulgaris	0.3 ± 0.5	<0.1
Crustacea		
Ostracoda spp.	0.8 ± 1.5	<0.1
Cumacea		
Cumella spp.	0.8 ± 0.5	<0.1
Diastylis spp.	6.8 ± 6.4	<0.1
Leptocuma spp.	2.0 ± 2.7	<0.1
Tanaidacea		
Leptochelia dubia	240.3 ± 48.8	0.1 ± 0.1

Morse Creek Subtidal

	-10 m. #	wt
Isopoda		
Ianiropsis analoga	10.5 ± 6.7	<0.1
Jaeropsis dubia	5.0 ± 6.7	<0.1
Amphipoda		
Caprella mendax	0.5 ± 1.0	<0.1
C. striata	0.3 ± 0.5	<0.1
Gammaridea spp.	101.5 ± 41.8	0.2 ± 0.1
Decapoda		
Cancer productus	1.0 ± 1.4	0.6 ± 0.8
Caridea sp. (juv.)	0.5 ± 0.6	<0.1
Discorsopagurus schmitti	0.5 ± 1.0	<0.1
Eualus sp.	0.5 ± 1.0	<0.1
Paguridae sp. (juv.)	5.5 ± 2.4	0.0 ± 0.1
Pagurus beringanus	0.3 ± 0.5	0.4 ± 0.9
Pinnixa sp. (juv.)	1.0 ± 1.4	<0.1
Pugettia gracilis	3.0 ± 2.2	<0.1

Morse Creek Subtidal

	-10 m.	
	#	wt
Isopoda		
Ianiropsis analoga	10.5 ± 6.7	<0.1
Jaeropsis dubia	5.0 ± 6.7	<0.1
Amphipoda		
Caprella mendax	0.5 ± 1.0	<0.1
C. striata	0.3 ± 0.5	<0.1
Gammaridea spp.	101.5 ± 41.8	0.2 ± 0.1
Decapoda		
Cancer productus	1.0 ± 1.4	0.6 ± 0.8
Caridea sp. (juv.)	0.5 ± 0.6	<0.1
Discorsopagurus schmitti	0.5 ± 1.0	<0.1
Eualus sp.	0.5 ± 1.0	<0.1
Paguridae sp. (juv.)	5.5 ± 2.4	0.0 ± 0.1
Pagurus beringanus	0.3 ± 0.5	0.4 ± 0.9
Pinnixa sp. (juv.)	1.0 ± 1.4	<0.1
Pugettia gracilis	3.0 ± 2.2	<0.1
Echinodermata		
Ophiuroidea spp.	8.3 ± 6.2	<0.1
Holothuroidea		
Mopalia intermedia	0.5 ± 0.6	<0.1
Species richness	127	
Diversity - H'	2.72	
Total number	581.1	
Total biomass (g)	<14.4	

Table 5a. Beckett Point (protected sand-gravel) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter m^2 ± standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Nemertea								
spp.	1.5 ±0.7	<0.1	0.3 ±0.5	<0.1	0.8 ±0.5	<0.1	0.8 ±0.5	<0.1
Nematoda								
spp.	28.5 ± 9.2	<0.1	4.3 ±1.9	<0.1	6.8 ±4.1	<0.1	8.5 ±6.2	<0.1
Mollusca								
Gastropoda								
Fartulum occidentale	0		0		0.3 ±0.5	<0.1	0	
Lacuna variegata	0		0		0.3 ±0.5	<0.1	0	
Littorina sitkana	0		0.3 ±0.5	0.1 ±0.1	0		0	
Bivalvia								
Macoma sp. (juv.)	0		0.3 ±0.5	<0.1	0		0	
Mytilus sp. (juv.)	1.0 ± 0.0	<0.1	0		2.0 ±1.2	<0.1	0.5 ±1.0	<0.1
Protothaca staminea	0		0		0		0.8 ±1.0	<0.1
Transennella tantilla	0		0		1.8 ±1.0	<0.1	0	
Annelida								
Oligochaeta spp.	29.0 ±11.3	<0.1	2.3 ±1.0	<0.1	20.8 ±8.9	<0.1	19.0 ±9.5	<0.1
Polychaeta								
Glyceridae								
Hemipodus borealis	0.5 ±0.7	<0.1	0		0		0	

Bivalvia								
Macoma sp. (juv.)	0		0.3 ±0.5	<0.1	0		0	
Mytilus sp. (juv.)	1.0 ±0.0	<0.1	0		2.0 ±1.2	<0.1	0.5 ±1.0	<0.1
Protothaca staminea	0		0		0		0.8 ±1.0	<0.1
Transennella tantilla	0		0		1.8 ±1.0	<0.1	0	
Annelida								
Oligochaeta spp.	29.0 ±11.3	<0.1	2.3 ±1.0	<0.1	20.8 ±8.9	<0.1	19.0 ±9.5	<0.1
Polychaeta								
Glyceridae								
Hemipodus borealis	0.5 ±0.7	<0.1	0		0		0	

Beckett Point +6

	Spr 77 #	wt	Sum 77 #	wt	Fall 77 #	wt	Win 78 #	wt
Nereidae								
Nereis vexillosa	2.0 ±1.4	<0.1	0.3 ±0.5	✓	0		0.3 ±0.5	<0.1
N. sp.	0		0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Platynereis bicanaliculata	0		0.3 ±0.5	✓	0.8 ±0.5	<0.1	0.3 ±0.5	<0.1
Pisionidae spp.	0.5 ±0.7	<0.1	0		0		0	
Syllidae								
Exogone lourei	0		0		0.3 ±0.5	<0.1	0	
Syllis spp.	17.0 ±11.3	<0.1	3.5 ±4.5	<0.1	1.5 ±1.7	<0.1	3.5 ±3.7	<0.1
Crustacea								
Cirripedia								
Balanus glandula	0		2.8 ±4.3	0.7 ±0.8	12.0 ±11.2	4.2 ±4.2	10.8 ±11.9	4.2 ±6.6
B. sp. (juv.)	0		0.5 ±1.0	<0.1	0.3 ±0.5	<0.1	0	
Isopoda								
Exosphaeroma media	0.5 ±0.7	<0.1	0		61.3 ±30.6	0.4 ±0.2	2.0 ±2.5	<0.1
Amphipoda								
Gammaridea spp.	1.0 ±1.4	<0.1	–		0.8 ±1.0	<0.1	0.8 ±1.0	<0.1
Anisogammaropsis confervicolus	–		0.3 ±0.5	<0.1	–		–	
Orchestoidea pugettensis	–		0.3 ±0.5	<0.1	–		–	

spp.	±11.3		±4.5		±1.7		±3.7	<0.1
Crustacea								
Cirripedia								
Balanus glandula	0		2.8 ±4.3	0.7 ±0.8	12.0 ±11.2	4.2 ±4.2	10.8 ±11.9	4.2 ±6.6
B. sp. (juv.)	0		0.5 ±1.0	<0.1	0.3 ±0.5	<0.1	0	
Isopoda								
Exosphaeroma media	0.5 ±0.7	<0.1	0		61.3 ±30.6	0.4 ±0.2	2.0 ±2.5	<0.1
Amphipoda								
Gammaridea spp.	1.0 ±1.4	<0.1	–		0.8 ±1.0	<0.1	0.8 ±1.0	<0.1
Anisogammaropsis confervicolus	–		0.3 ±0.5	<0.1	–		–	
Orchestoidea pugettensis	–		0.3 ±0.5	<0.1	–		–	

Beckett Point +6

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Insecta								
Dipteran larvae	0		0.3 ±0.5	<0.1	0		0	
Species richness	10		13		15		12	
Diversity - H'	1.43		2.04		1.44		1.69	
Total number	81.5		15.8		110.1		47.6	
Total biomass (g)	<1.0		<1.7		<5.8		<5.3	

Table 5b. Beckett Point (protected sand-gravel) benthic organisms from the mid (+3') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter) m^2 + standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Enteromorpha compressa	0		0		0		0	
E. intestinalis	0		✓		0		✓	
E. linza	0		✓		0		✓	
Ulva sp.	0		✓		0		✓	
U. taeniata	0		0		0		0	
Urospora spp.	0		✓		0		0	
Bacillariophyta								
Pennales spp.	0		✓		0		✓	
Phaeophyta								
Feldmania spp.	0		0		0		0	
Rhodophyta								
Ceramium pacificum	0		✓		0		0	
C. spp.	0		0		0		✓	
Polysiphonia pacifica	0		✓		0		0	
P. paniculata	0		✓		0		0	
Platyhelminthes								
Turbellaria sp.	0		0		0.3 0.5	<0.1	0	

spp.	0		✓		0		✓	
Phaeophyta								
Feldmania spp.	0		0		0		0	
Rhodophyta								
Ceramium pacificum	0		✓		0		0	
C. spp.	0		0		0		✓	
Polysiphonia pacifica	0		✓		0		0	
P. paniculata	0		✓		0		0	
Platyhelminthes								
Turbellaria sp.	0		0		0.3 0.5	<0.1	0	

Beckett Point +3

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Nemertea spp.	1.5 ±0.7	<0.1	2.5 ±3.0	<0.1	5.3 ±4.0	<0.1	2.5 ±4.4	<0.1
Nematoda spp.	0.5 ±0.7	<0.1	0.3 ±0.5	<0.1	6.8 ±7.0	<0.1	0	
Mollusca								
Amphineura spp. (juv.)	0		0.8 ±1.0	<0.1	0		0	
Gastropoda								
Acmaeidae spp. (juv.)	0		1.0 ±1.1	<0.1	6.3 ±3.0	0.1 ±0.1	0.3 ±0.5	<0.1
Aglaja diomedia	0		0		1.3 ±0.5	<0.1	0	
Alvinia spp.	1.0 ±1.4	<0.1	0.8 ±1.0	<0.1	21.5 ±20.6	0.1 ±0.1	0	
Collisella strigatella	0		0		1.0 ±2.0	0.1 ±0.2	0	
Fartulum occidentale	41.0 ±58.0	<0.1	0.3 ±0.5	<0.1	0.8 ±1.0	<0.1	0.3 ±0.5	<0.1
Haminoea vesicula	0		0		10.0 ±9.9	0.2 ±0.2	0	
Lacuna variegata	0		4.3 ±3.2	0.0 ±0.1	77.3 ±12.4	0.3 ±0.1	0	
Littorina scutulata	0.5 ±0.7	0.1 ±0.1	0.3 ±0.5	0.0 ±0.1	0		0.3 ±0.5	<0.1
L. sitkana	0.5 ±0.7	0.1 ±0.1	0.3 ±0.5	<0.1	0		0	
Margarites pupillus	0		0		0.3 ±0.5	<0.1	0	
Ocenebra lurida	0		0		0.3 ±0.5	<0.1	0	
Thais spp.	0		0.8 ±0.5	<0.1	0		0	

diomedia					1.3 ±0.5	<0.1	0	
Alvinia spp.	1.0 ±1.4	<0.1	0.8 ±1.0	<0.1	21.5 ±20.6	0.1 ±0.1	0	
Collisella strigatella	0		0		1.0 ±2.0	0.1 ±0.2	0	
Fartulum occidentale	41.0 ±58.0	<0.1	0.3 ±0.5	<0.1	3.8 ±1.0	<0.1	0.3 ±0.5	<0.1
Haminoea vesicula	0		0		10.0 ± 9.9	0.2 ±0.2	0	
Lacuna variegata	0		4.3 ± 3.2	0.0 ±0.1	77.3 ±12.4	0.3 ±0.1	0	
Littorina scutulata	0.5 ±0.7	0.1 ±0.1	0.3 ±0.5	0.0 ±0.1	0		0.3 ±0.5	<0.1
L. sitkana	0.5 ±0.7	0.1 ±0.1	0.3 ±0.5	<0.1	0		0	
Margarites pupillus	0		0		0.3 ±0.5	<0.1	0	
Oceanebra lurida	0		0		0.3 ±0.5	<0.1	0	
Thais spp.	0		0.8 ±0.5	<0.1	0		0	

Beckett Point +3

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Bivalvia								
Adula californiensis	0.5 ±0.7	<0.1	0		0		0	
Clinocardium nuttallii	0		0		8.3 ±10.1	0.4 ±0.5	0	
Mysella tumida	1.0 ±0.0	<0.1	17.3 ±8.5	0.1 ±0.1	17.3 ±11.4	0.1 ±0.1	3.8 ±1.5	<0.1
Mytilus spp. (juv.)	5.5 ±7.8	<0.1	4.3 ±1.3	0.1 ±0.1	225.3 ±85.7	0.5 ±0.2	11.5 ±2.1	<0.1
Protothaca staminea	4.5 ±6.4	<0.1	1.3 ±1.5	<0.1	43.0 ±33.5	0.4 ±0.4	0.8 ±1.0	<0.1
Transennella tantilla	3.0 ±4.2	<0.1	3.3 ±2.6	0.0 ±0.1	9.5 ±7.2	0.2 ±0.1	0.5 ±0.6	<0.1
Tresus capax	0		0.3 ±0.5	14.6 ±29.2	4.5 ±3.1	1.3 ±1.6	0.5 ±0.6	2.0 ±1.7
Annelida								
Oligochaeta spp.	1.0 ±1.4	<0.1	2.5 ±2.1	<0.1	3.0 ±2.2	<0.1	3.8 ±5.6	<0.1
Polychaeta								
Capitellidae								
Capitella capitata	2.0 ±1.4	<0.1	0.5 ±1.0	<0.1	0.5 ±1.0	<0.1	0.3 ±0.5	<0.1
Mediomastus spp.	0		1.0 ±2.0	<0.1	0.3 ±0.5	<0.1	0	
Notomastus tenuis	1.0 ±1.4	<0.1	8.5 ±9.3	<0.1	3.3 ±3.3	<0.1	7.8 ±7.8	<0.1
Chaetopteridae								
Spiochaetopterus costarium	0		0		0.3 ±0.5	<0.1	0	
Chrysopetalidae								
Paleonotus bellis	0		0		0.5 ±0.6	<0.1	0	

Oligochaeta spp.	1.0 ±1.4	<0.1	2.5 ±2.1	<0.1	3.0 ±2.2	<0.1	3.8 ±5.6	<0.1
Polychaeta								
Capitellidae								
Capitella capitata	2.0 ±1.4	<0.1	0.5 ±1.0	<0.1	0.5 ±1.0	<0.1	0.3 ±0.5	<0.1
Mediomastus spp.	0		1.0 ±2.0	<0.1	0.3 ±0.5	<0.1	0	
Notomastus tenuis	1.0 ±1.4	<0.1	8.5 ±9.3	<0.1	3.3 ±3.3	<0.1	7.8 ±7.8	<0.1
Chaetopteridae								
Spiochaetopterus costarium	0		0		0.3 ±0.5	<0.1	0	
Chrysopetalidae								
Paleonotus bellis	0		0		0.5 ±0.6	<0.1	0	

Beckett Point +3

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Cirratulidae spp. (juv.)	0		0.3 ±0.5	<0.1	0		0	
Dorvilleidae spp.	0		0		0.5 ±0.6	<0.1	0	
Protodorvillea gracilis	0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Glyceridae								
Hemipodus borealis	68.5 ±2.1	✓	43.5 ±2.5	✓	78.8 ±4.6	✓	30.3 ±11.1	✓
Hesionidae								
Micropodarke dubia	0		0.3 ±0.5	<0.1	11.3 ±3.3	<0.1	0	
Ophiodromus pugettensis	0		0		1.8 ±1.7	<0.1	0	
Nereidae								
Nereis sp.	0		0		1.3 ±1.0	<0.1	0	
Platynereis bicanaliculata	0		0		9.8 ±10.2	<0.1	0	
Onuphidae								
Onuphis sp.	0		0		0		0.5 ±1.0	<0.1
Opheliidae								
Armandia brevis	0		0		2.8 ±1.7	<0.1	0	
Ophelia limacina	0		0		0.5 ±0.6	<0.1	0	

Nereidae								
Nereis sp.	0		0		1.3 ±1.0	<0.1	0	
Platynereis bicanaliculata	0		0		9.8 ±10.2	<0.1	0	
Onuphiidae								
Onuphis sp.	0		0		0		0.5 ±1.0	<0.1
Opheliidae								
Armandia brevis	0		0		2.8 ±1.7	<0.1	0	
Ophelia limacina	0		0		0.5 ±0.6	<0.1	0	

Beckett Point +3

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Oweniidae								
Owenia fusiformis	9.5 ±7.8	<0.1	7.0 ±6.5	✓	207.3 ± 86.2	✓	30.5 ±24.0	<0.1
Phyllodocidae								
Eteone longa	0		0		1.3 ±1.0	<0.1	0	
Eulalia quadrilobata	0		0		0.3 ±1.5	<0.1	0	
E. sanguinea	0		0		2.8 ±1.7	<0.1	0	
Phyllodoce maculata	0		0		1.3 ±1.0	<0.1	0	
P. spp.	0		0		0.8 ±1.5	<0.1	0	
Pisionidae								
Pisione sp.	0		0		0.5 ±0.6	<0.1	0	
Polynoidae								
Harmothoe lunulata	0		0		1.0 ±1.4	<0.1	0	
Sabellidae spp.	0		0		0.3 ±0.5	<0.1	0	
Sigalionidae								
Pholoe minuta	0		0		0.3 ±0.5	<0.1	0	
Spionidae								
Polydora columbiana	0		0		0.8 ± 1.0	<0.1	0	

Pisionidae						
Pisione sp.	0		0		0.5 ±0.6	<0.1	0
Polynoidae						
Harmothoe lunulata	0		0		1.0 ±1.4	<0.1	0
Sabellidae spp.	0		0		0.3 ±0.5	<0.1	0
Sigalionidae						
Pholoe minuta	0		0		0.3 ±0.5	<0.1	0
Spionidae						
Polydora columbiana	0		0		0.8 ±1.0	<0.1	0

Beckett Point +3

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Spionidae (cont.)								
Polydora proboscidea	0.5 ±0.7	<0.1	0		0		0	
P. sp.	0		0		0.5 ±0.6	<0.1	0	
Prionospio cirrifera	0.5 ±0.7	<0.1	0		1.0 ±2.0	<0.1	0	
P. steenstrupi	0		0.5 ±0.6	<0.1	0.5 ±1.0	<0.1	0	
Pygospio elegans	0		2.5 ±2.9	<0.1	47.0 ±47.3	<0.1	0	
Scolelepis sp.	0		0		0.5 ±0.6	<0.1	0	
Spio filicornis	0		1.3 ±1.0	<0.1	14.3 ±8.6	<0.1	0	
Spiophanes bombyx	0		0		1.5 ±1.7	<0.1	0	
Syllidae								
Brania brevipharyngia	0		0		0.3 ±0.5	<0.1	0	
Exogone lourei	1.0 ±1.4	<0.1	0		1.3 ±1.0	<0.1	0	
Sphaerosyllis pirifera	0		0		0.5 ±1.0	<0.1	0	
Syllis spp.	1.0 ±1.4	<0.1	1.0 ±1.4	<0.1	0.3 ±0.5	<0.1	0	
Terebellidae spp.	0		0		0		0.3 ±0.5	<0.1
Polycirrus sp. A	0		0		0.5 ±1.0	<0.1	0	
Crustacea								
Ostracoda spp.	0		0		1.0 ±1.2	<0.1	0	

filicornis			± 1.0			± 8.6		
Spiophanes bombyx	0		0			1.5 ± 1.7	<0.1	0
Syllidae								
Brania brevipharyngia	0		0			0.3 ± 0.5	<0.1	0
Exogone lourei	1.0 ± 1.4	<0.1	0			1.3 ± 1.0	<0.1	0
Sphaerosyllis pirifera	0		0			0.5 ± 1.0	<0.1	0
Syllis spp.	1.0 ± 1.4	<0.1	1.0 ± 1.4	<0.1		0.3 ± 0.5	<0.1	0
Terebellidae spp.	0		0			0		0.3 ± 0.5
Polycirrus sp. A	0		0			0.5 ± 1.0	<0.1	0
Crustacea								
Ostracoda spp.	0		0			1.0 ± 1.2	<0.1	0

Beckett Point +3

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Cirripedia								
Balanus glandula	3.0 ± 4.2	0.8 ± 1.1	117.8 ± 83.7	2.4 ± 2.0	19.8 ± 26.2	3.4 ± 3.5	1.0 ± 1.4	0.0 ± 0.1
B. sp. (juv.)	0		0		0.5 ± 0.6	<0.1	0	
Cumacea								
Cumella vulgaris	0		0		1.3 ± 1.5	<0.1	0	
Tanaidacea								
Leptochelia dubia	0		0		15.0 ± 12.9	<0.1	0.3 ± 0.5	<0.1
Isopoda								
Exosphaeroma amplicauda	0		3.8 ± 3.3	<0.1	40.0 ± 14.9	0.3 ± 0.1	0	
E. media	23.0 ± 5.7	<0.1	7.0 ± 8.7	<0.1	0		0.3 ± 0.5	<0.1
Gnorimosphaeroma oregonense	0		4.3 ± 6.0	0.1 ± 0.2	0		0	
Amphipoda								
Allorchestes angusta	–		0.5 ± 0.6	<0.1	–		–	
Anisogammarus confervicolus	–		28.5 ± 15.2	0.1 ± 0.2	–		–	
Caprella laeviuscula	0		0		0.8 ± 1.0	<0.1	0	
Corophium spp.	0		0.5 ± 1.0	<0.1	5.3 ± 3.8	<0.1	0	
Gammaridae spp.	2.0 ± 1.4	<0.1	–		10.0 ± 4.7	0.1	0.8 ± 1.0	<0.1
Orchestoidea augustata	–		2.3 ± 0.5	<0.1	–		–	

Beckett Point +3

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Decapoda								
Cancer magister	0		0.3 ±0.5	0.0 ±0.1	0		0	
Hemigrapsus oregonensis	0		0.3 ±0.5	0.2 ±0.4	2.8 ±1.5	0.1 0.1	0	
Pagurus hirsutiusculus	0		0.3 ±0.5	0.0 ±0.1	1.3 ±1.0	0.1 ±0.1	0	
P. spp. (juv.)	0		2.8 ±2.1	<0.1	1.3 ±1.9	0.0 ±0.1	0	
Pinnixidae spp.	0		0.3 ±0.5	0.1 ±0.2	0		0.3 ±0.5	<0.1
Insecta								
Dipteran larvae	0		0.3 ±0.5	<0.1	0		0	
Phoronida								
Phoronopsis harmeri	0		0.3 ±0.5	<0.1	6.0 ±4.1	<0.1	1.3 ±1.3	<0.1
Echinodermata								
Echinoidea								
Dendraster excentricus	0		1.0 ±0.8	0.1 ±0.1	16.8 ±11.9	0.0 ±0.1	0.8 ±1.0	0.0 ±0.1
Holothuroidea								
Leptosynapta clarki	0		0.3 ±0.5	<0.1	2.0 ±4.0	0.1 ±0.1	0	
Species richness	23		55		74		29	
Diversity - H'	1.89		2.20		2.73		2.15	
Total number	172.5		276.7		965.7		99.1	
Total biomass (g)	< 2.7		< 20.9		< 13.3		< 4.1	

Table 5c. Beckett Point (protected sand) benthic organisms from the low (+0') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter) m^2 ± standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Enteromorpha intestinalis	0		✓		0		0	
E. linza	0		✓		✓		0	
Ulva sp.	0		✓		✓		0	
Urospora spp.	0		0		✓		0	
Rhodophyta								
Ceramium pacificum	0		✓		✓		0	
Cnidaria								
Anthozoa sp.	0.5 ±0.7	<0.1	0.8 ±1.0	<0.1	0.8 ±1.5	<0.1	1.8 ±2.9	<0.1

Table 5c. Beckett Point (protected sand) benthic organisms from the low (+0') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2: spring) and 0.025 (N=4: summer-winter) m^2 ± standard deviation.

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Enteromorpha intestinalis		0		✓		0		0
E. linza		0		✓		✓		0
Ulva sp.		0		✓		✓		0
Urospora spp.		0		0		✓		0
Rhodophyta								
Ceramium pacificum		0		✓		✓		0
Cnidaria								
Anthozoa sp.	0.5 ± 0.7	<0.1	0.8 ± 1.0	<0.1	0.8 ± 1.5	<0.1	1.8 ± 2.9	<0.1
Platyhelminthes								
Turbellaria spp.	0.5 ± 0.7	<0.1	0		0.5 ± 1.0	<0.1	0	
Nemertea								
spp.	26.5 ± 12.0	<0.1	21.5 ± 9.3	✓	8.3 ± 4.0	<0.1	12.0 ± 2.4	<0.1
Nematoda								
spp.	45.0 ± 12.7	✓	7.3 ± 3.9	<0.1	220.8 ± 188.8	<0.1	41.3 ± 19.3	<0.1
Mollusca								
Amphineura spp.	0		0		0.5 ± 1.0	<0.1	0	
Gastropoda								
Acmaeidae spp. (juv.)	0		0		0.3 ± 0.5	<0.1	0	
Aglaja diomedea	0		0		0		0.3 ± 0.5	<0.1

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Gastropoda (cont.)								
Alvinia sp.	2.5 ± 3.5	<0.1	0.8 ± 1.5	<0.1	7.3 ± 3.6	<0.1	1.5 ± 3.0	<0.1
Cylichna sp.	6.0 ± 8.5	0.1 ± 0.1	0.3 ± 0.5	0.0 ± 0.1	0.5 ± 0.6	0.1 ± 0.1	0	
Fartulum occidentale	0		0.3 ± 0.5	<0.1	0		0.3 ± 0.5	<0.1
Haminoea vesicula	0		0.3 ± 0.5	<0.1	1.8 ± 1.5	<0.1	0.3 ± 0.5	<0.1
Lacuna variegata	4.0 ± 0.0	<0.1	16.3 ± 13.4	0.1 ± 0.1	3.8 ± 2.6	<0.1	0.8 ± 1.0	<0.1
Littorina sitkana	0		0.3 ± 0.5	<0.1	0		0	
Margarites/ Lirularia	0		0		0.3 ± 0.5	<0.1	0	
Mitrella tuberosa	1.0 ± 1.4	<0.1	0		0.8 ± 1.0	<0.1	0.3 ± 0.5	<0.1
Nassarius mendicus	1.5 ± 2.1	0.9 ± 1.2	0.5 ± 0.6	0.3 ± 0.4	0.5 ± 0.6	<0.1	0	

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Gastropoda (cont.)								
Alvinia sp.	2.5 ±3.5	<0.1	0.8 ±1.5	<0.1	7.3 ±3.6	<0.1	1.5 ±3.0	<0.1
Cylichna sp.	6.0 ±8.5	0.1 ±0.1	0.3 ±0.5	0.0 ±0.1	0.5 ±0.6	0.1 ±0.1	0	
Fartulum occidentale	0		0.3 ±0.5	<0.1	0		0.3 ±0.5	<0.1
Haminoea vesicula			0.3 ±0.5	<0.1	1.8 ±1.5	<0.1	0.3 ±0.5	<0.1
Lacuna variegata	4.0 ±0.0	<0.1	16.3 ±13.4	0.1 ±0.1	3.8 ±2.6	<0.1	0.8 ±1.0	<0.1
Littorina sitkana	0		0.3 ±0.5	<0.1	0		0	
Margarites/ Lirularia	0		0		0.3 ±0.5	<0.1	0	
Mitrella tuberosa	1.0 ± 1.4	<0.1	0		0.8 ±1.0	<0.1	0.3 ±0.5	<0.1
Nassarius mendicus	1.5 ± 2.1	0.9 ±1.2	0.5 ±0.6	0.3 ±0.4	0.5 ±0.6	<0.1	0	
Odostomia sp.	9.0 ±12.7	<0.1	0		0.5 ±0.6	<0.1	0	
Oconebra lurida	0		0		0		0.3 ±0.5	<0.1
Bivalvia								
Clinocardium nuttallii	9.5 ±3.5	0.9 ±1.1	0.3 ±0.5	0.1 ±0.3	14.5 ±10.5	0.2 ±0.1	24.3 ±3.8	0.2 ±0.1
Crenella decussata	0.5 ±0.7	<0.1	0		0		0	
Hiatella arctica	1.5 ±2.1	<0.1	0		0.3 ±0.5	<0.1	0	
Lucinoma tenuisculpta	1.5 ±2.1	<0.1	0		0		1.3 ±1.0	0.6 ±0.5
Macoma inquinata	0		0.3 ±0.5	0.1 ±0.1	1.3 ±2.5	0.1 ±0.2	0	

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Bivalvia(cont.)								
Macoma nasuta	0		0.3 ±0.5	1.1 ±2.2	0.3 ±0.5	0.1 ±0.1	0.8 ±1.0	0.3 ±0.5
M. secta	0		0		0		1.5 ±3.0	<0.1
M. spp. (juv.)	3.0 ±1.4	<0.1	0.3 ±0.5	<0.1	0		2.3 ±3.3	<0.1
Myella tumida	212.5 ±181.7	0.9 ±0.9	244.3 ±205.3	0.4 ±0.2	487.5 ± 89.0	0.8 ±0.5	220.3 ±64.7	0.4 ±0.1
Mytilus edulis	0		0.3 ±0.5	0.1 ±0.1	0		0	
M. sp. (juv.)	2.0 ±2.8	<0.1	1.0 ±0.8	<0.1	0.3 ±0.5	<0.1	0	
Panope generosa	0.5 ±0.7	0.3 ±0.4	0		0		0	
Protothaca staminea	9.5 ±9.2	0.1 ±0.1	0.8 ±0.5	0.3 ±0.5	7.3 ±5.4	0.9 ±1.7	7.0 ±2.6	0.1 ±0.2
Tellina	0							

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Bivalvia(cont.)								
Macoma nasuta	0		0.3 ±0.5	1.1 ±2.7	0.3 ±0.5	0.1 ±0.1	0.8 ±1.0	0.3 ±0.5
M. secta	0		0		0		1.5 ±3.0	< 0.1
M. spp. (juv.)	3.0 ±1.4	< 0.1	0.3 ±0.5	< 0.1	0		2.3 ±3.3	< 0.1
Mysella tumida	212.5 ±181.7	0.9 ±0.9	244.3 ±205.3	0.4 ±0.2	487.5 ± 89.0	0.8 ±0.5	220.3 ±64.7	0.4 ±0.1
Mytilus edulis	0		0.3 ±0.5	0.1 ±0.1	0		0	
M. sp. (juv.)	2.0 ±2.8	< 0.1	1.0 ±0.8	< 0.1	0.3 ±0.5	< 0.1	0	
Panope generosa	0.5 ±0.7	0.3 ±0.4	0		0		0	
Protothaca staminea	9.5 ±9.2	0.1 ±0.1	0.8 ±0.5	0.3 ±0.5	7.3 ±5.4	0.9 ±1.7	7.0 ±2.6	0.1 ±0.2
Tellina modesta	0		0		0		1.5 ±2.4	0.2 ±0.2
T. spp. (juv.)	6.0 ±1.4	< 0.1	5.8	0.3	1.5 ±3.0	0.0 ±0.1	4.0 ±3.9	0.1 ±0.2
Transennella tantilla	24.5 ± 5.0	0.1 ±0.1	28.0 ±20.4	0.1 ±0.1	5.8 ±4.9	0.1 ±0.1	12.0 ±5.7	< 0.1
Tresus capax	0		14.3 ±15.8	1.6 ±1.7	4.3 ±3.0	0.8 ±1.1	1.8 ±2.1	1.1 ±2.2
Annelida								
Oligochaeta spp.	11.0 ±10.2	< 0.1	1.3 ±0.5	< 0.1	31.0 ±10.2	< 0.1	3.5 ±3.3	< 0.1
Polychaeta								
Capitellidae sp.	0		0		1.0 ±2.0	< 0.1	0.8 ±1.5	< 0.1
Capitella capitata	4.0 ±5.7	< 0.1	0		3.5 ±2.4	< 0.1	4.5 ±8.4	< 0.1

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Capitellidae (cont.)								
Mediomastus sp.	15.5 ±12.0	<0.1	8.3 ±4.7	<0.1	31.0 ± 3.6	<0.1	11.3 ±11.7	<0.1
Notomastus lineatus	0		2.0 ±1.8	✓	0		3.3 ±3.3	<0.1
N. tenuis	11.0 ±2.8	<0.1	10.3 ±18.5	<0.1	7.3 ±3.8	<0.1	3.8 ±2.6	<0.1
N. sp. (juv.)	3.5 ±5.0	<0.1	0		0		0	
Chaetopteridae								
Mesochaetopterus taylori	5.0 ±5.0	<0.1	13.3 ±12.6	✓	2.5 ±1.3	<0.1	2.5 ±2.9	<0.1
Spiochaetopterus costarum	0.5 ±0.7	<0.1	4.0 ±1.6	✓	0.5 ±0.6	<0.1	2.3 ±1.7	<0.1
Cirratulidae								
spp. (juv.)	0		0		1.5 ±1.0	<0.1	0.5 ±0.6	<0.1
Tharyx multifilis	1.5 ±2.1	<0.1	0.3 ±0.5	<0.1	0		0	
Dorvilleidae								
Dorvillea rudolphi	0		0		0		0.3 ±0.5	<0.1
Protodorvillea gracilis	4.5 ±6.4	<0.1	1.0 ±0.0	<0.1	6.0 ±1.6	<0.1	1.3 ±1.0	<0.1
Glyceridae								
spp. (juv.)	0		0		0.3 ±0.5	<0.1	0	
Glycera americana	0		0		0.3 ±0.5	✓	0	
G. tesselata	0		0		0.3 ±0.5	<0.1	0	
Hemipodus borealis	47.0 ±19.8	<0.1	17.3 ±4.9	✓	12.0 ±1.4	<0.1	12.0 ±2.9	<0.1

costarum		±0.7		±1.6		±0.6		±1.7
Cirratulidae	0		0		1.5	<0.1	0.5	<0.1
spp. (juv.)					±1.0		±0.6	
Tharyx	1.5	<0.1	0.3	<0.1	0		0	
multifilis	±2.1		±0.5					
Dorvilleidae								
Dorvillea	0		0		0		0.3	<0.1
rudolphi							±0.5	
Protodorvillea	4.5	<0.1	1.0	<0.1	6.0	<0.1	1.3	<0.1
gracilis	±6.4		±0.0		±1.6		±1.0	
Glyceridae	0		0		0.3	<0.1	0	
spp. (juv.)					±0.5			
Glycera	0		0		0.3	✓	0	
americana					±0.5			
G.	0		0		0.3	<0.1	0	
tesselata					±0.5			
Hemipodus	47.0	<0.1	17.3	✓	12.0	<0.1	12.0	<0.1
borealis	±19.8		±4.9		±1.4		±2.9	

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Goniadidae								
Glycinde	9.5	<0.1	1.0	<0.1	6.8	<0.1	5.0	<0.1
picta	±6.4		±0.8		±1.0		±0.0	
Hesionidae	0		0.5	<0.1	3.0	<0.1	0	
sp. (juv.)			±1.0		±6.0			
Hesionid	0		0		4.3	<0.1	2.3	<0.1
sp. A					±4.6		±2.6	
Micropodarke	5.0	<0.1	4.8	<0.1	20.3	<0.1	10.5	<0.1
dubia	±2.8		±1.0		±10.8		±5.5	
Ophiodromus	4.3	0.0	1.0	<0.1	12.3	<0.1	8.8	<0.1
pugettensis	±8.5	±0.1	±0.0		±4.0		±5.9	
Magelonidae								
Magelona	0		0.3	<0.1	0		3.3	<0.1
japonica			±0.5				±1.3	
M.	0		6.3	<0.1	2.0	<0.1	0	
pitelkai			±7.6		±1.2			
Maldanidae	1.5	<0.1	0.8	<0.1	4.0	<0.1	1.3	<0.1
sp. (juv.)	±2.1		±1.0		±2.2		±1.5	
Axiothella	0		0.3	<0.1	0.8	<0.1	0.8	✓
rubrocincta			±0.5		±1.0		±1.0	
Nephtyidae								
Nephtys	0		0		0.3	0.1	0	
caecoides					±0.5	±0.3		
N.	0		0		0.3	<0.1	0.5	<0.1
sp. (juv.)					±0.5		±0.6	
Nereidae	0		0		35.3	✓	21.5	<0.1
sp. (juv.)					±11.9		±9.7	
Nereis	14.0	<0.1	4.8	<0.1	9.5	✓	8.5	<0.1
sp.	±2.8		±3.3		±6.5		±3.1	
Platynereis	12.5	<0.1	7.5	✓	42.3	✓	37.8	<0.1
bicanaliculata	±0.7		±5.1		±16.0		±9.0	

M. pitelkai	0		6.3 ±7.6	< 0.1	2.0 ±1.2	< 0.1	±1.3 0	
Maldanidae	1.5 ±2.1	< 0.1	0.8 ±1.0	< 0.1	4.0 ±2.2	< 0.1	1.3 ±1.5	< 0.1
sp. (juv.)	0		0.3 ±0.5	< 0.1	0.8 ±1.0	< 0.1	0.8 ±1.0	✓
Axiothella rubrocincta								
Nephtyidae								
Nephtys caecoides	0		0		0.3 ±0.5	0.1 ±0.3	0	
N. sp. (juv.)	0		0		0.3 ±0.5	< 0.1	0.5 ±0.6	< 0.1
Noreidae	0		0		35.3 ±11.9	✓	21.5 ±9.7	< 0.1
sp. (juv.)								
Nereis	14.0 ±2.8	< 0.1	4.8 ±3.3	< 0.1	9.5 ±6.5	✓	8.5 ±3.1	< 0.1
sp.								
Platynereis bicanaliculata	12.5 ±0.7	< 0.1	7.5 ±5.1	✓	42.3 ±16.0	✓	37.8 ±9.0	< 0.1

Beckett Point +0

	Spr 77 #	wt	Sum 77 #	wt	Fall 77 #	wt	Win 78 #	wt
Onuphidae								
Diopatra ornata	0		0.5 ± 0.6	< 0.1	0		0.3 ± 0.5	< 0.1
Opheliidae								
Armandia brevis	1.0 ± 1.4	< 0.1	1.5 ± 1.3	< 0.1	43.0 ± 20.0	< 0.1	18.5 ± 6.8	< 0.1
Orbiniidae								
Scoloplos sp.	3.5 ± 2.1	< 0.1	1.3 ± 1.0	< 0.1	2.5 ± 1.3	< 0.1	5.0 ± 4.6	< 0.1
Oweniidae								
Owenia fusiformis	15.5 ± 20.5	< 0.1	25.8 ± 4.8	✓	34.8 ± 12.3	< 0.1	21.8 ± 10.5	< 0.1
Pectinariidae								
Pectinaria granulata	0		0		0		0.5 ± 0.6	< 0.1
Phyllodocidae								
Eteone longa	1.0 ± 0.0	< 0.1	1.8 ± 1.5	< 0.1	0.5 ± 0.6	< 0.1	0.3 ± 0.5	< 0.1
E. tuberculata	0		0		0.3 ± 0.5	< 0.1	0	
E. sp. (juv.)	0		0		0.3 ± 0.5	< 0.1	0	
Eulalia sanguinea	3.5 ± 3.5	< 0.1	0.5 ± 0.6	< 0.1	5.8 ± 1.9	< 0.1	3.0 ± 0.8	< 0.1
Phyllodoce groenlandica	0.5 ± 0.7	< 0.1	0		0		0	
P. maculata	9.5 ± 10.6	< 0.1	7.0 ± 4.6	✓	21.8 ± 9.6	✓	5.3 ± 3.5	< 0.1
P. sp. A	0		2.5 ± 1.3	< 0.1	0.3 ± 0.5	< 0.1	0.8 ± 0.5	< 0.1

Owenia fusiformis	15.5 ± 20.5	< 0.1	25.8 ± 4.8	✓	34.8 ± 12.3	< 0.1	21.8 ± 10.5	< 0.1
Pectinariidae								
Pectinaria granulata	0		0		0		0.5 ± 0.6	< 0.1
Phyllodocidae								
Eteone longa	1.0 ± 0.0	< 0.1	1.8 ± 1.5	< 0.1	0.5 ± 0.6	< 0.1	0.3 ± 0.5	< 0.1
E. tuberculata	0		0		0.3 ± 0.5	< 0.1	0	
E. sp. (juv.)	0		0		0.3 ± 0.5	< 0.1	0	
Eulalia sanguinea	3.5 ± 3.5	< 0.1	0.5 ± 0.6	< 0.1	5.8 ± 1.9	< 0.1	3.0 ± 0.8	< 0.1
Phyllodoce groenlandica	0.5 ± 0.7	< 0.1	0		0		0	
P. maculata	9.5 ± 10.6	< 0.1	7.0 ± 4.6	✓	21.8 ± 9.6	✓	5.3 ± 3.5	< 0.1
P. sp. A	0		2.5 ± 1.3	< 0.1	0.3 ± 0.5	< 0.1	0.8 ± 0.5	< 0.1

Beckett Point +0

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Phyllodocidae (cont.)								
Phyllodoce sp.	0.5 ±0.7	< 0.1	0.3 ± 0.5	< 0.1	0		0.5 ±1.0	< 0.1
Polynoidae								
sp.	0.5 ±0.7	< 0.1	0		0.8 ±1.0	< 0.1	0	
Arctonoe vittata	0		0		0		0.3 ±0.5	< 0.1
Harmothoe imbricata	1.5 ±2.1	< 0.1	0.5 ±0.6	< 0.1	0		0.3 ±0.5	< 0.1
H. lunulata	0		0.8 ±0.5	< 0.1	0.8 ±1.0	< 0.1	1.0 ±0.8	< 0.1
Lepidasthenia berkeleyae	0.5 ±0.7	< 0.1	0		0		0	
Sigalonidae								
Pholoe minuta	1.0 ±1.4	< 0.1	0		1.3 ±1.3	< 0.1	0	
Spionidae								
Malacoceros glutaeus	0		1.5 ±1.9	< 0.1	5.8 ±5.6	< 0.1	0.8 ±1.0	< 0.1
Polydora socialis	37.5 ±53.0	< 0.1	259.8 ±118.5	✓	19.8 ±22.5	✓	3.5 ±5.2	< 0.1
P. sp. A	0		68.0 ±52.6	✓	1.8 ±2.1	< 0.1	0	
P. sp.	0		0		5.8 11.5	< 0.1	0	
Prionospio steenstrupi	4.5 ±2.1	< 0.1	2.8 ±2.2	< 0.1	11.0 ±3.4	< 0.1	4.8 ±2.4	< 0.1
Pygospio elegans	2.0 ±0.0	< 0.1	1.3 ±1.3	< 0.1	1.8 ±2.2	< 0.1	0.5 ±0.6	< 0.1
Scolelepis sp.	0.5 ±0.7	< 0.1	0		0		0	
Spio filicornis	0		25 0 ±6.2	✓	0.8 ±1.0	< 0.1	1.0 ±1.4	< 0.1

Sigalonidae								
Pholoe minuta	1.0 ±1.4	<0.1	0		1.3 ±1.3	<0.1	0	
Spionidae								
Malacoceros glutaeus	0		1.5 ±1.9	<0.1	5.8 ±5.6	<0.1	0.8 ±1.0	<0.1
Polydora socialis	37.5 ±53.0	<0.1	259.8 ±118.5	✓	19.8 ±22.5	✓	3.5 ±5.2	<0.1
P. sp. A	0		68.0 ±52.6	✓	1.8 ±2.1	<0.1	0	
P. sp.	0		0		5.8 11.5	<0.1	0	
Prionospio steenstrupi	4.5 ±2.1	<0.1	2.8 ±2.2	<0.1	11.0 ±3.4	<0.1	4.8 ±2.4	<0.1
Pygospio elegans	2.0 ±0.0	<0.1	1.3 ±1.3	<0.1	1.8 ±2.2	<0.1	0.5 ±0.6	<0.1
Scolelepis sp.	0.5 ±0.7	<0.1	0		0		0	
Spio filicornis	0		25.0 ±6.2	✓	0.8 ±1.0	<0.1	1.0 ±1.4	<0.1

Beckett Point +0

	Spr 77 #	wt	Sum 77 #	wt	Fall 77 #	wt	Win 78 #	wt
Spionidae (cont.)								
Spiophanes bombyx	6.5 ±9.2	<0.1	22.5 ±22.8	<0.1	9.0 ±6.2	<0.1	5.5 ±3.1	<0.1
Syllidae								
Brania brevipharyngia	0		0		0.5 ±1.0	<0.1	0	
Exogone gemmifera	1.0 ±1.4	<0.1	0		0.3 ±0.5	<0.1	0.5 ±0.6	<0.1
E. lourei	35.0 ±0.0	<0.1	22.3 ±8.7	<0.1	77.3 ±22.8	<0.1	39.5 ±4.5	<0.1
Sphaerosyllis pirifera	0		0		0.3 ±0.5	<0.1	0	
S. sp.	0		0		0		0.3 ±0.5	<0.1
Syllis spp.	1.5	<0.1	2.8 ±2.1	<0.1	1.0 ±1.4	<0.1	0.3 ±0.5	<0.1
Crustacea								
Ostracoda spp.	1.5 ±0.7	<0.1	2.0 ±4.0	<0.1	4.0 ±3.7	<0.1	0.3 ±0.5	<0.1
Leptostraca								
Nebalia pugettensis	0.5 ±0.7	<0.1	0		2.8 ±1.0	<0.1	1.8 ±1.3	<0.1
Mysidacea								
Archaeomysis grebnitzkii	0		0		0		0.3 ±0.5	<0.1
Cumacea								
Cumella vulgaris	25.5 ±0.7	<0.1	1.3 ±1.9	<0.1	4.0 ±2.2	<0.1	0.8 ±1.1	<0.1
Tanaidacea								
Leptochelia dubia	483.5 ±5.0	0.1 ± 0.1	449.5 ±332.7	0.2 ±0.1	1115.8 ±308.9	0.6 ±0.2	509.3 ±177.9	0.2 ±0.1

S. spp.	0		0		±0.5 0		0.3 ±0.5	< 0.1
Syllis spp.	1.5	< 0.1	2.8 ±2.1	< 0.1	1.0 ±1.4	< 0.1	0.3 ±0.5	< 0.1
Crustacea								
Ostracoda spp.	1.5 ±0.7	< 0.1	2.0 ±4.0	< 0.1	4.0 ±3.7	< 0.1	0.3 ±0.5	< 0.1
Leptostraca								
Nebalia pugettensis	0.5 ±0.7	< 0.1	0		2.8 ±1.0	< 0.1	1.8 ±1.3	< 0.1
Mysidacea								
Archaeomysis grebnitzkii	0		0		0		0.3 ±0.5	< 0.1
Cumacea								
Cumella vulgaris	25.5 ±0.7	< 0.1	1.3 ±1.9	< 0.1	4.0 ±2.2	< 0.1	0.8 ±1.1	< 0.1
Tanaidacea								
Leptochelia dubia	483.5 ±5.0	0.1 ± 0.1	449.5 ±332.7	0.2 ±0.1	1115.8 ±308.9	0.6 ±0.2	509.3 ±177.9	0.2 ±0.1

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Crustacea (cont.)								
Isopoda								
Exosphaeroma amplicauda	1.0 ±1.4	< 0.1	0		0.8 ±1.5	< 0.1	0	
Ianiropsis kincaidi	0		0		0		0.3 ±0.5	< 0.1
Amphipoda								
Caprellidea								
Caprella laeviuscula	0		0		0		0.3 ±0.5	< 0.1
Gammaridea	70.5 ±64.4	< 0.1	–		22.0 ±15.8	< 0.1	20.5 ±13.7	0.1 ±0.1
Ampelisca agassizi	–		1.5 ±1.7	< 0.1	–		–	
Ampithoe ?lacertosa	–		3.5 ±0.1	< 0.1	–		–	
Anisogammarus confervicolus	–		0.3 ±0.5	< 0.1	–		–	
Aoroides columbiae	–		1.0 ±0.8	< 0.1	–		–	
Corophium acherusicum	–		3.8 ±3.0	< 0.1	–		–	
C. spp.	1.5 ±0.7	< 0.1	3.0 ±2.5	< 0.1	0.3 ±0.5	< 0.1	0	
Gammaropsis thompsoni	–		0.5 ±1.0	< 0.1	–		–	
Melita dentata	–		0.3 ±0.5	< 0.1	–		–	
Paraphoxus sp. type A	–		1.8 ±2.2	< 0.1	–		–	
P. sp. type C	–		6.8 ±5.6	< 0.1	–		–	
Photis brevipes	–		72.0 ±64.7	0.8 ±1.5	–		–	

spp.	±64.4				±15.8		±13.7	±0.1
Ampelisca agassizi	–		1.5 ±1.7	<0.1	–		–	
Ampithoe ?lacertosa	–		3.5 ±0.1	<0.1	–		–	
Anisogammarus confervicolus	–		0.3 ±0.5	<0.1	–		–	
Aoroides columbiae	–		1.0 ±0.8	<0.1	–		–	
Corophium acherusicum	–		3.8 ±3.0	<0.1	–		–	
C. spp.	1.5 ±0.7	<0.1	3.0 ±2.5	<0.1	0.3 ±0.5	<0.1	0	
Gammaropsis thompsoni	–		0.5 ±1.0	<0.1	–		–	
Melita dentata	–		0.3 ±0.5	<0.1	–		–	
Paraphoxus sp. type A	–		1.8 ±2.2	<0.1	–		–	
P. sp. type C	–		6.8 ±5.6	<0.1	–		–	
Photis brevipes	–		72.0 ±64.7	0.8 ±1.5	–		–	

Beckett Point +0

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Gammaridea (cont.)								
Pontogeneia cf. rostrata	–		0.3 ±0.5	<0.1	–		–	
Synchilidium rectipalpum	–		0.3 ±0.5	<0.1	–		–	
Decapoda								
Cancer oregonensis	0		0.8 ±1.5	<0.1	0		0	
C. spp.	0		2.0 ±2.7	<0.1	0.3 ±0.5	<0.1	0	
Caridea sp. (juv.)	0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1	0	
Crangonidae sp. (juv.)	0		0.3 ±0.5	<0.1	0		0	
Natantia sp.	0		0.3 ±0.5	<0.1	0		0	
Pagurus spp. (juv.)	0		1.3 ±0.5	<0.1	0		0	
Pinnixa sp.	1.0 ±1.4	<0.1	0.8 ±1.5	<0.1	2.8 ±5.5	0.1 ±0.1	0.3 ±0.5	<0.1
Pinnotheridae spp.	0		0.5 ±0.6	<0.1	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Pugettia gracilis	0		6.8 ±5.4	<0.1	0		0	
Phoronida								
Phoronopsis harmeri	1.5 ±2.1	<0.1	0.3 ±0.5	<0.1	0.5 ±1.0	<0.1	0	
Echinodermata								
Echinoidea								
Dendraster excentricus	4.7 ±2.5	0.1 ±0.1	22.8 ±4.9	1.9 ±2.8	24.8 ±4.6	0.4 ±0.1	12.0 ±6.2	0.3 ±0.1

Pagurus spp. (juv.)	0		±0.5 1.3 ±0.5	<0.1	0		0	
Pinnixa sp.	1.0 ±1.4	<0.1	0.8 ±1.5	<0.1	2.6 ±5.5	0.1 ±0.1	0.3 ±0.5	<0.1
Pinnotheridae spp.	0		0.5 ±0.6	<0.1	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Pugettia gracilis	0		6.8 ±5.4	<0.1	0		0	
Phoronida								
Phoronopsis harmeri	1.5 ±2.1	<0.1	0.3 ±0.5	<0.1	0.5 ±1.0	<0.1	0	
Echinodermata								
Echinoidea								
Dendraster excentricus	4.7 ±2.5	0.1 ±0.1	22.8 ±4.9	1.9 ±2.8	24.8 ±4.6	0.4 ±0.1	12.0 ±6.2	0.3 ±0.1

Beckett Point +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Holothuroidea								
Leptosynapta clarki	5.5 ±6.4	0.1 ±0.1	2.8 ±1.0	0.1 ±0.2	3.5 ±1.9	0.0 ±0.1	2.0 ±1.2	✓
Species richness	68		83		93		79	
Diversity - H'	2.52		2.51		2.13		2.30	
Total number	1241.5		1464.6		2427.8		1144.6	
Total biomass (g)	<61.3		<69.5		<77.0		<69.6	

Table 5d. Beckett Point (sand) benthic organisms from the subtidal zone collected 6 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m.		-10 m.	
	#	wt	#	wt
Chlorophyta				
Ulva sp.		<0.1		0
Rhodophyta				
Ceramium nibrum		<0.1		0
Cnidaria				
Anthozoa				
Actinaria sp.	0.5 ± 1.0	0.1 ± 0.2	0	
Platyhelminthes				
Turbellaria spp.	0.3 ± 0.5	<0.1	0	
Nemertea spp.	13.0 ± 5.8	<0.1	20.0 ± 2.5	<0.1
Nematoda spp.	3.0 ± 4.2	<0.1	18.0 ± 7.9	<0.1
Mollusca				
Gastropoda				
Acmaeidae sp. (juv.)	0.3 ± 0.5	<0.1	0	
Aglaja diomedea	0		0.3 ± 0.5	0.1 ± 0.2
Alvinia sp.	15.8 ± 8.1	<0.1	17.0 ± 12.5	0.3 ± 0.6
Amphissa columbiana	0.3 ± 0.5	<0.1	0	
Cerithiopsis sp.	0.3 ± 0.5	<0.1	0	
Columbellidae	0.5 ± 1.0	<0.1	0	
Crepidula spp. (juv.)	0.5 ± 0.6	<0.1	0.5 ± 1.0	<0.1
Cylichna sp.	0.5 ± 0.6	<0.1	1.3 ± 1.5	<0.1
Haminoea vesicula	0		0.3 ± 0.5	<0.1
Lacuna variegata	9.5 ± 5.9	<0.1	3.3 ± 4.3	<0.1
Margarites pupillus	1.3 ± 2.5	0.1 ± 0.2	0	
Margarites/Lirularia	2.0 ± 1.4	<0.1	0	
Mitrella carinata	0.3 ± 0.5	<0.1	0	
Mitrella tuberosa	2.5 ± 2.7	0.1 ± 0.1	16.3 ± 18.6	0.7 ± 1.2
Nassarius mendicus	0		1.0 ± 0.8	0.0 ± 0.1
Odostomia sp.	0		2.8 ± 4.9	<0.1
Turbonilla sp.	1.3 ± 0.1	<0.1	0.8 1.0	<0.1

Turbellaria spp.	0.3 ± 0.5	<0.1	0	
Nemertea spp.	13.0 ± 5.8	<0.1	20.0 ± 2.5	<0.1
Nematoda spp.	8.0 ± 4.2	<0.1	18.0 ± 7.9	<0.1
Mollusca				
Gastropoda				
Acmaeidae sp. (juv.)	0.3 ± 0.5	<0.1	0	
Aglaja diomedea	0		0.3 ± 0.5	0.1 ± 0.2
Alvinia sp.	15.8 ± 8.1	<0.1	17.0 ± 12.5	0.3 ± 0.6
Amphissa columbiana	0.3 ± 0.5	<0.1	0	
Cerithiopsis sp.	0.3 ± 0.5	<0.1	0	
Columbellidae	0.5 ± 1.0	<0.1	0	
Crepidula spp. (juv.)	0.5 ± 0.6	<0.1	0.5 ± 1.0	<0.1
Cylichna sp.	0.5 ± 0.6	<0.1	1.3 ± 1.5	<0.1
Ramineocvesicula	0		0.3 ± 0.5	<0.1
Lacuna variegata	9.5 ± 5.9	<0.1	3.3 ± 4.3	<0.1
Margarites pupillus	1.3 ± 2.5	0.1 ± 0.2	0	
Margarites/Lirularia	2.0 ± 1.4	<0.1	0	
Mitrella carinata	0.3 ± 0.5	<0.1	0	
Mitrella tuberosa	2.5 ± 2.7	0.1 ± 0.1	16.3 ± 18.6	0.7 ± 1.2
Nassarius mendicus	0		1.0 ± 0.8	0.0 ± 0.1
Odostomia sp.	0		2.8 ± 4.9	<0.1
Turbonilla sp.	1.3 ± 0.1	<0.1	0.8 ± 1.0	<0.1

Beckett Point Subtidal

	+5 m.		+10 m.	
	#	wt	#	wt
Bivalvia				
Acila castrensis	0		0.3 ± 0.5	<0.1
Clinocardium nuttallii	0		0.3 ± 0.5	<0.1
Cromella decussata	0		1.8 ± 1.7	0.3 ± 0.5
Cryptomya californica	0.5 ± 1.0	<0.1	0	
Lucinoma tenuisculpta	2.8 ± 1.9	<0.1	3.8 ± 2.1	<0.1
Lyonsia californica	0.3 ± 0.5	<0.1	0	
Macoma sp. (juv.)	10.0 ± 7.1	0.2 ± 0.3	10.3 ± 10.3	0.1 ± 0.1
Mya arenaria	0		0.3 ± 0.5	<0.1
Nyssella tumida	44.5 ± 16.5	0.1 ± 0.1	153.8 ± 44.6	0.2 ± 0.1
Nytilus sp. (juv.)	0		0.3 ± 0.5	<0.1
Nucula tenuis	0		0.3 ± 0.5	<0.1
Pododesmus cepio	0.3 ± 0.5	<0.1	0	
Tellina sp.	18.8 ± 11.3	0.5 ± 0.5	2.3 ± 4.0	0.6 ± 0.6
Annelida				
Oligochaeta spp.	4.8 ± 3.4	<0.1	1.3 ± 1.5	<0.1
Polychaeta				
Ampharetidae sp.	0		0.3 ± 0.5	<0.1
Ampharete arctica	0.3 ± 0.5	<0.1	0	
Capitellidae				
Capitella capitata	0		1.0 ± 2.0	<0.1
Mediomastus sp.	0.3 ± 0.5	<0.1	1.8 ± 2.1	<0.1
Notomastus lineatus	0		1.5 ± 1.7	<0.1
Chaetopteridae				
Mesochaetopterus taylori	1.8 ± 2.9	<0.1	14.0 ± 13.9	<0.1
Phyllochaetopterus prolifica	0		41.3 ± 49.3	<0.1
Spiochaetopterus costarum	5.5 ± 3.1	<0.1	8.0 ± 4.9	<0.1
Dorvilleidae				
Protodorvillea gracilis	0		0.3 ± 0.5	<0.1
Glyceridae				
Glycera sp. (juv.)	0.8 ± 1.3	<0.1	0.3 ± 0.5	<0.1

Beckett Point Subtidal

	-5 m. #	-5 m. wt	-10 m. #	-10 m. wt
Spionidae (cont.)				
Polydora pygidialis	1.3 ± 2.5	<0.1	0	
P. socialis	3.8 ± 3.0	<0.1	54.0 ± 39.1	<0.1
P. sp.	1.0 ± 0.8	<0.1	0.8 ± 1.5	<0.1
Prionospio steenstrupi	81.5 ± 5.8	<0.1	36.5 ± 10.8	<0.1
Spio filicornis	0.8 ± 1.0	<0.1	0.3 ± 0.5	<0.1
Spiophanes bombyx	0.5 ± 0.6	<0.1	0	
Syllidae				
Exogone sp.	0.5 ± 0.6	<0.1	0.5 ± 0.6	<0.1
Sphaerosyllis brandhorsti	0.8 ± 1.5	<0.1	0	
Syllis spp.	0		1.6 ± 2.1	<0.1
Terebellidae spp.	0		0.3 ± 0.5	<0.1
Sipuncula spp.	0		0.3 ± 0.5	<0.1
Golfingia pugettensis	0		0.3 ± 0.5	<0.1
Crustacea				
Ostracods spp.	2.8 ± 2.1	<0.1	42.3 ± 16.3	<0.1
Leptostraca				
Nebalia pugettensis	2.0 ± 1.8	<0.1	5.8 ± 4.9	<0.1
Cumacea				
Cumella vulgaris	0.3 ± 0.5	<0.1	0.3 ± 0.5	<0.1
Diastylis sp.	0.3 ± 0.5	<0.1	0.3 ± 0.5	<0.1
Leptocuma sp.	0.3 ± 0.5	<0.1	0	
Tanaidacea				
Leptochelia dubia	63.0 ± 14.5	<0.1	15.8 ± 5.7	<0.1
Isopoda				
Limnoria algarum	0			
Munna ubiquata	0.3 ± 0.5	<0.1	0.3 ± 0.5	<0.1
Paranthura elegans	0.3 ± 0.5	<0.1	0	
			1.3 ± 1.5	<0.1

Beckett Point Subtidal

	-5 m. #	-5 m. wt	-10 m. #	-10 m. wt
Amphipoda				
Gammaridea spp.	148.8 ± 17.6	0.1 ± 0.1	151.3 ± 42.0	0.3 ± 0.3
Caprella sp.	0.3 ± 0.5	<0.1	0	
Metacaprella kennerlyi	1.3 ± 0.1	<0.1	0	
Decapoda				
Callianassidae sp. (juv.)	0.3 ± 0.5	<0.1	0	
Cancer oregonensis	0.3 ± 0.5	0.2 ± 0.4	0	
Crangon sp.	2.5 ± 2.1	0.0 ± 0.1	0	
Hippolytidae sp. (juv.)	1.3 ± 1.9	<0.1	1.3 ± 1.0	<0.1
Paguridae sp. (juv.)	0.8 ± 1.0	<0.1	14.0 ± 7.6	<0.1
Pagurus beringanus	1.0 ± 2.0	<0.1	0	
Pinnotheridae sp. (juv.)	1.0 ± 1.2	<0.1	3.3 ± 1.7	<0.1
Pugettia gracilis	2.8 ± 2.1	0.0 ± 0.1	4.8 ± 3.8	<0.1

Beckett Point Subtidal

	-5 m.		-10 m.	
	#	wt	#	wt
Amphipoda				
Gammaridea spp.	148.8 ± 17.6	0.1 ± 0.1	151.3 ±42.0	0.3 ± 0.3
Caprella sp.	0.3 ± 0.5	<0.1	0	
Metacaprella kennerlyi	1.3 ± 0.1	<0.1	0	
Decapoda				
Callianassidae sp. (juv.)	0.3 ± 0.5	<0.1	0	
Cancer oregonensis	0.3 ± 0.5	0.2 ± 0.4	0	
Crangon sp.	2.5 ± 2.1	0.0 ± 0.1	0	
Hippolytidae sp. (juv.)	1.3 ± 1.9	<0.1	1.3 ± 1.0	<0.1
Paguridae sp. (juv.)	0.8 ± 1.0	<0.1	14.0 ± 7.6	<0.1
Pagurus beringanus	1.0 ± 2.0	<0.1	0	
Pinnotheridae sp. (juv.)	1.0 ± 1.2	<0.1	3.3 ± 1.7	<0.1
Pugettia gracilis	2.8 ± 2.1	0.0 ± 0.1	4.8 ± 3.8	<0.1
Phoronida				
Phoronopsis harmeri	0		0.5 ± 0.6	<0.1
Echinodermata				
Ophiuroidea spp.	0		0.3 ± 0.5	< 0.1
Holothuroidea				
Leptosynapta clarki	0.3 ± 0.5	<0.1	0	
Species richness	83		90	
Diversity - H'	2.77		3.05	
Total number	670.8		877.1	
Total biomass (g)	<8.5		<10.7	

Table 6a. Dungeness Spit (exposed sand-gravel) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Annelida								
Oligochaeta spp.	0.2 ± 0.5	<0.1	0		0		0.2 ± 0.5	<0.1
Crustacea								
Amphipoda								
Gammarides spp.	0.2 ± 0.5	<0.1	-		0		0	
Orchestoidea pugettensis	-		16.6 ± 34.3	<0.1	-		-	
Species Richness	2		1		0		1	
Diversity, H^1	0.69		0.00		0		0.00	
Total Number	0.4		16.6		0		0.2	
Total Biomass	<0.2		<0.1		0		<0.1	

Crustacea				
Amphipoda				
Gammaridea spp.	13.6 ±26.6	0.0 ±0.1	-	-
Orchestoidea pugettensis	-		0.2 ±0.5	<0/1
	0.8 ±0.8	<0.1	28.6 ±15.9	<0.1
	-		-	
Species Richness	2		2	
	1		1	
Diversity, H^1	0.08		0.56	
	0.00		0.00	
Total Number	13.8		0.8	
	0.8		23.6	
Total Biomass	< 0.1		< 0.2	
	< 0.1		< 0.1	

Table 6c. Dungeness Spit (exposed sand-gravel) benthic organisms from the low (+0') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77 #	wt	Sum 77 #	wt	Fall 77 #	wt	Win 78 #	wt
Mollusca								
Gastropoda								
Amphissa columbiana	0		0		0.8 ±1.8	<0.1	0	
Lacuna variegata	0		0		0.2 ±0.5	<0.1	0	
Bivalvia								
Clinocardium spp.	0		0		0.2 ±0.5	<0.1	0	
Crenella decussata	0.2 ±0.5	<0.1	0		0		0	
Annelida								
Oligochaeta	0.4 ±0.9	<0.1	0		0		0	
Dorvilleidae								
Protodorvillea gracilis	0		0		0.2 ±0.5	<0.1	0	
Spionidae spp.	0		0.2 ±0.5	<0.1	0		0	
Crustacea								
Amphipoda								
Gammaridea spp.	2.0 ±2.2	<0.1	-		24.6 ±24.1	<0.1	3.4 ±4.6	<0.1
Paramoera "Serrata" n. sp.	-		7.0 ±5.2	<0.1	-		-	
Species Richness	3		2		5		1	
Diversity, H^1	0.69		0.13		0.27		0.00	
Total Number	2.6		7.2		26.0		3.4	
Total Biomass	< 0.3		< 0.2		< 0.5		< 0.1	

Annelida				
Oligochaeta	0.4 ±0.9	<0.1	0	0	0
Dorvilleidae					
Protodorvillea gracilis	0		0	0.2 ±0.5	<0.1	0
Spionidae	0		0.2 ±0.5	<0.1	0	0
spp.						
Crustacea						
Amphipoda						
Gammaridea spp.	2.0 ±2.2	<0.1	-	24.6 ±24.1	<0.1	3.4 ±4.6	<0.1
Paramoera "Serrata" n. sp.	-		7.0 ±5.2	<0.1	-	-
Species Richness	3		2	5	1
Diversity, H^1	0.69		0.13	0.27	0.00
Total Number	2.6		7.2	26.0	3.4
Total Biomass	< 0.3		<0.2	< 0.5	< 0.1

Table 6d. Dungeness Spit (sand-gravel) benthic organisms from the subtidal zone collected 6 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m.		-10 m.	
	#	wt.	#	wt.
Chlorophyta				
Chaetomorpha californica	0		0.0±0.1	
Bacillariophyta				
Pennales	0		0.1±0.1	
Phaeophyta				
Alaria spp.	0		0.2±0.4	
Costaria costata	0		0.2±0.2	
Desmarestia aculeata	0		0.1±0.1	
D. ligulata var. ligulata	0		0.1±0.0	
Ectocarpaceae	0		0.1±0.1	
Feldmania spp.	0		0.0±0.1	
Giffordia ovata	0		0.0±0.1	
Haplogloia andersonii	0		0.1±0.1	
Hedophyllum sessile (juv.)	0		0.0±0.1	
Laminariales spp.	0		0.1±0.1	
Laminaria spp.	0		1.1±2.0	
Ralfsiaceae	0		0.0±0.1	
Ralfsia pacifica	0		0.1±0.1	
Stictyosiphon tortilis	0		0.1±0.1	
Syringoderma abyssicola	0		0.1±0.0	
Rhodophyta				
Acrochaetium spp.	0		0.1±0.0	
Antithamnion defectum	0		0.0±0.1	
A. spp.	0.0 ± 0.1		0	
Botryocladia pseudodichotoma	0		0.0±0.1	
Callithamnion/Plenosporium	0		0.0±0.1	
Choreocolax polysiphoniae	0		0.0±0.1	
Cruoriopsis aestuarii	0.0 ± 0.1		0.0±0.1	
Cryptonemia borealis	0		0.0±0.1	
C. ovalifolia	0		0.0±0.1	
Euthora fruticulosa	0		0.0±0.1	
Gigartinaceae	0		0.0±0.1	
Goniotrichum alsidii	0		0.1±0.1	

Petalonia spp.	0	0.0±0.1
Giffordia ovata	0	0.0±0.1
Haplogloia andersonii	0	0.1±0.1
Hedophyllum sessile (juv.)	0	0.0±0.1
Laminariales spp.	0	0.1±0.1
Laminaria spp.	0	1.1±2.0
Ralfsiaceae	0	0.0±0.1
Ralfsia pacifica	0	0.1±0.1
Stictyosiphon tortilis	0	0.1±0.1
Syringoderma abyssicola	0	0.1±0.0
Rhodophyta		
Atrochaetium spp.	0	0.1±0.0
Antithamnion defectum	0	0.0±0.1
A. spp.	0.0 ± 0.1	0
Botryocladia pseudodichotoma	0	0.0±0.1
Callithamnion/Plenosporium	0	0.0±0.1
Choreocolax polysiphoniae	0	0.0±0.1
Cruoriopsis aestuarii	0.0 ± 0.1	0.0±0.1
Cryptonemia borealis	0	0.0±0.1
C. ovalifolia	0	0.0±0.1
Euthora fruticulosa	0	0.0±0.1
Gigartinaceae	0	0.0±0.1
Goniotrichum alsidii	0	0.1±0.1

Dungeness Spit Subtidal

	-5 m. #	-5 m. wt.	- 10 m. #	- 10 m. wt.
Rhodophyta (cont.)				
Gracilaria spp.		0		0.2 ± 0.2
Gymnogongrus leptophyllus		0		0.0 ± 0.1
Halymenia spp.		0		0.1 ± 0.1
Hollenbergia subulata		0		0.1 ± 0.1
Iridaea spp.		0		0.1 ± 0.1
Leptofauchea pacifica		0		0.1 ± 0.1
Membranoptera spp.		0		0.0 ± 0.1
Peyssonelia pacifica		0		0.1 ± 0.0
Phycodrys isabelliae		0		0.0 ± 0.1
Platythamnion pectiatum		0		0.0 ± 0.1
P. villosum		0		0.1 ± 0.1
P. spp.		0		0.1 ± 0.2
Polysiphonia hendryi		0		0.1 ± 0.0
P. pacifica		0		0.1±0.1
Porphyra spp.		0		0.1 ± 0.2
Pterosiphonia dendroidea		0		1.0 ± 1.0
Rhodymenia spp.		0		0.0 ± 0.1
Stenogramme interrupta		0		0.1 ± 0.0
Squamariaceae		0.0 ± 0.1		0.0 ± 0.1
Thuretellopsis peggiana		0		0.1 ± 0.0
Cnidaria				
Hydrozoa				
Coryne tubulosa	0		0.3 ± 0.5	<0.1
Anthozoa				
spp.	0		0.5 ± 1.0	<0.1
Platyhelminthes				
Turbellaria spp.	0		6.8 ± 2.6	<0.1
Nemertea spp.	1.3± 0.6	<0.1	43.8 ± 32.7	<0.1
Mollusca				
Amphineura				
Cryptobranchia concentrica	0		0.3 ± 0.5	<0.1

Polysiphonia hendryi		0		0.1 ± 0.2
P. pacifica		0		0.1 ± 0.0
Porphyra spp.		0		0.1 ± 0.1
Pterosiphonia dendroidea		0		0.1 ± 0.2
Rhodymenia spp.		0		1.0 ± 1.0
Stenogramme interrupta		0		0.0 ± 0.1
Squamariaceae		0		0.1 ± 0.0
Thuretellopsis peggiana		0.0 ± 0.1		0.0 ± 0.1
		0		0.1 ± 0.0
Cnidaria				
Hydrozoa				
Coryne tubulosa	0		0.3 ± 0.5	<0.1
Anthozoa				
spp.	0		0.5 ± 1.0	<0.1
Platyhelminthes				
Turbellaria spp.	0		6.8 ± 2.6	<0.1
Nemertea spp.	1.3± 0.6	<0.1	43.8 ± 32.7	<0.1
Mollusca				
Amphineura				
Cryptobranchia concentrica	0		0.3 ± 0.5	<0.1

Dungeness Spit Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Mollusca				
Gastropoda				
Amphissa columbiana	1.8 ± 3.5	<0.1	0.8 ± 1.0	<0.1
Calyptraea fastigata	0.3 ± 0.5	<0.1	4.3 ± 1.9	<0.1
Lacuna variegata	1.0 ± 1.4	<0.1	2.0 ± 2.7	<0.1
Margarites/Lirularia	0		3.8 ± 2.2	<0.1
Margarites pupillus	0.3 ± 0.5	<0.1	0	
Mitrella tuberosa	0.3 ± 0.5	<0.1	0	
Natica clausa	0		0.3 ± 0.5	<0.1
Trichotropis cancellata	0		0.3 ± 0.5	<0.1
Bivalvia				
Clinocardium nuttalli	0.5 ± 0.6	<0.1	0	
Crenella decussata	1.8 ± 2.9	<0.1	3.3 ± 4.6	<0.1
Rumilaria kennerleyi	0		0.3 ± 0.5	0.4 ± 0.9
Macoma sp.	0		2.3 ± 1.7	<0.1
M. sp. juv.	0		0.3 ± 0.5	<0.1
Mya arenaria	0		0.5 ± 0.6	0.2 ± 0.4
Mysella tumida	1.5 ± 1.0	<0.1	3.5 ± 4.4	<0.1
Protothaca staminea	0		0.5 ± 0.6	<0.1
Transennella tantilla	2.0 ± 2.2	<0.1	0.5 ± 0.6	<0.1
Tresus capax	0		0.3 ± 0.5	<0.1
Annelida				
Oligochaeta spp.	0		13.5±8.8	<0.1
Polychaeta				
Acrocirridae spp.	0		0.5 ± 1.0	<0.1
Capitellidae				
Mediomastus spp.	3.5 ± 1.7	<0.1	53.0 ± 9.3	0.0 ± 0.1
Notomastus lineatus	0		1.3 ± 1.5	<0.1
Cirratulidae spp.	0		1.8 ± 3.5	<0.1
Chaetozona setosa	0		3.8 ± 1.7	<0.1
Cauleriella spp.	0		1.3 ± 2.5	<0.1
Cirratulus cirratus	0		1.3 ± 1.5	<0.1
Tharyx multifilis	0		2.5 ± 3.0	<0.1
Dorvilleidae				
Protodorvillea gracilis	0		22.8 ± 29.3	<0.1
Glyceridae				
Glycinde picta	0.5 ± 0.6	<0.1	0.3 ± 0.5	<0.1

Nuculana kennerleyi	0			
Macoma sp.	0		0.3 ± 0.5	0.4 ± 0.9
M. sp. juv.	0		2.3 ± 1.7	<0.1
Mya arenaria	0		0.3 ± 0.5	<0.1
Mysella tumida	1.5 ± 1.0	<0.1	0.5 ± 0.6	0.2 ± 0.4
Protothaca staminea	0		3.5 ± 4.4	<0.1
Transennella tantilla	2.0 ± 2.2	<0.1	0.5 ± 0.6	<0.1
Tresus capax	0		0.5 ± 0.6	<0.1
			0.3 ± 0.5	<0.1
Annelida				
Oligochaeta spp.	0		13.5±8.8	<0.1
Polychaeta				
Acrocirridae spp.	0		0.5 ± 1.0	<0.1
Capitellidae				
Mediomastus spp.	3.5 ± 1.7	<0.1	53.0 ± 9.3	0.0 ± 0.1
Notomastus lineatus	0		1.3 ± 1.5	<0.1
Cirratulidae spp.	0		1.8 ± 3.5	<0.1
Chaetozona setosa	0		3.8 ± 1.7	<0.1
Cauleriella spp.	0		1.3 ± 2.5	<0.1
Cirratulus cirratus	0		1.3 ± 1.5	<0.1
Tharyx multifilis	0		2.5 ± 3.0	<0.1
Dorvilleidae				
Protodorvillea gracilis	0		22.8 ± 29.3	<0.1
Glyceridae				
Glycinde picta	0.5 ± 0.6	<0.1	0.3 ± 0.5	<0.1

Dungeness Spit Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Hesionidae				
Gyptis brevipalpa	0		0.3 ± 0.5	<0.1
Micropodarke dubia	0		11.0 ± 3.4	<0.1
Maldanidae (juv.)	0		3.8 ± 3.3	<0.1
Axiothella rubrocincta	0		1.3 ± 2.5	<0.1
Nephtyidae				
Nephtys ciliata	0		0.3 ± 0.5	<0.1
N. ferruginea	0		0.5 ± 1.0	<0.1
N. sp.	0		0.3 ± 0.5	<0.1
Nereidae				
Nereis sp.	0		0.3 ± 0.5	<0.1
Platynereis bicanaliculata	0.3 ± 0.5	<0.1	3.5 ± 2.7	<0.1
Opheliidae				
Armandia brevis	0.3 ± 0.5	<0.1	0	
Travisia forbesii	0		0.5 ± 0.6	<0.1
Orbiniidae				
Scoloplos sp.	0.5 ± 1.0	<0.1	0	
Oweniidae				
Owenia fusiformis	0		6.0 ± 3.4	<0.1
Phyllodocidae				
Eteone longa	0		0.5 ± 0.6	<0.1
Eulalia sanguinea	0		0.3 ± 0.5	<0.1
Phyllodoce sp. (juv.)	0		0.5 ± 0.6	<0.1
Polynoidae				
Harmothoe imbricata	0.5 ± 1.0	<0.1	0.8 ± 1.0	<0.1
Sabellidae				
Chone sp.	0		0.5 ± 0.6	<0.1
Sabella media	0		0.3 ± 0.5	<0.1
Scalibregmidae				
Scalibregma inflatum	0		5.3 ± 4.7	<0.1
Serpulidae spp.	0		0.3 ± 0.5	<0.1
Spirorbis sp.	0		1.3 ± 2.5	<0.1

Nereis sp.	0		0.3 ± 0.5	<0.1
Platynereis bicanaliculata	0.3 ± 0.5	<0.1	3.5 ± 2.7	<0.1
Opheliidae				
Armandia brevis	0.3 ± 0.5	<0.1	0	
Travisia forbesii	0		0.5 ± 0.6	<0.1
Orbiniidae				
Scoloplos sp.	0.5 ± 1.0	<0.1	0	
Oweniidae				
Owenia fusiformis	0		6.0 ± 3.4	<0.1
Phyllodocidae				
Eteone longa	0		0.5 ± 0.6	<0.1
Eulalia sanguinea	0		0.3 ± 0.5	<0.1
Phyllodoce sp. (juv.)	0		0.5 ± 0.6	<0.1
Polynoidae				
Harmothoe imbricata	0.5 ± 1.0	<0.1	0.8 ± 1.0	<0.1
Sabellidae				
Chone sp.	0		0.5 ± 0.6	<0.1
Sabella media	0		0.3 ± 0.5	<0.1
Scalibregmidae				
Scalibregma inflatum	0		5.3 ± 4.7	<0.1
Serpulidae spp.	0		0.3 ± 0.5	<0.1
Spirorbis sp.	0		1.3 ± 2.5	<0.1

	Dungeness Spit Subtidal			
	-5 m.		-10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Sigalionidae				
Pholoe minuta	0		0.5 ± 0.6	<0.1
Spionidae				
Malacoceros glutaeus	2.8 ± 4.9	<0.1	0	
Prionospio cirrifera	0		0.3 ± 0.5	<0.1
P. steenstrupi	0		7.3 ± 3.8	<0.1
Spio filicornis	0		1.3 ± 0.2	<0.1
Spiophanes bombyx	0		0.3 ± 0.5	<0.1
Syllidae				
Exogone spp.	0		20.8 ± 24.5	<0.1
E. gemmifera	0		0.3 ± 0.5	<0.1
E. lourei	0		4.3 ± 4.0	<0.1
Sphaerosyllis pirrifera	0		1.3 ± 1.5	<0.1
Syllides longocirrata	0		1.0 ± 1.2	<0.1
Syllis spp.	0		5.0 ± 1.4	<0.1
Terebellidae				
Polycirrus sp. A	0		9.6 ± 11.3	<0.1
P. sp. B	0		1.0 ± 2.0	<0.1
P. sp.	0		7.0 ± 8.1	<0.1
Archiannelida				
Polygordiidae				
Polygordius sp.	0		6.0 ± 2.5	<0.1
Crustacea				
Cumacea				
Diastylis sp.	0.8 ± 0.5	<0.1	1.0 ± 1.4	<0.1
Lampropidae sp.	0.5 ± 1.0	<0.1	0	
Leptocuma sp.	0		0.3 ± 0.5	<0.1
Tanaidacea				
Leptochelia dubia	0.3 ± 0.5	<0.1	12.3 ± 14.8	<0.1

Sphaerosyllis pirrifera	0		4.3 ± 4.0	<0.1
Syllides longocirrata	0		1.3 ± 1.5	<0.1
Syllis spp.	0		1.0 ± 1.2	<0.1
Terebellidae			5.0 ± 1.4	<0.1
Polycirrus sp. A	0			
P. sp. B	0		9.6 ± 11.3	<0.1
P. sp.	0		1.0 ± 2.0	<0.1
			7.0 ± 8.1	<0.1
Archiannelida				
Polygordiidae				
Polygordius sp.	0		6.0 ± 2.5	<0.1
Crustacea				
Cumacea				
Diastylis sp.	0.8 ± 0.5	<0.1	1.0 ± 1.4	<0.1
Lampropidae sp.	0.5 ± 1.0	<0.1	0	
Leptocuma sp.	0		0.3 ± 0.5	<0.1
Tanaidacea				
Leptochelia dubia	0.3 ± 0.5	<0.1	12.3 ± 14.8	<0.1

	Dungeness Spit Subtidal			
	-5 m.		-10 m.	
	#	wt.	#	wt.
Crustacea (cont.)				
Isopoda				
Exosphaeroma amplicanda	0			
E. rhomburum	0		0.3 ± 0.5	<0.1
E. sp. (juv.)	0		5.8 ± 7.0	<0.1
Gnorimorphaeroma oregonense	2.0 ± 2.7	<0.1	1.8 ± 3.5	<0.1
Idotea sp. (juv.)	0		0	
			0.3 ± 0.5	<0.1
Amphipoda				
Gammaridea	19.0 ± 23.6	<0.1	28.0 ± 8.5	<0.1
Decapoda				
Callianassidae sp. (juv.)	0.3 ± 0.5	<0.1	0.3 ± 0.5	<0.1
Hemigrapsus oregonensis	0		0.3 ± 0.5	<0.1
Hippolytidae	0		0.3 ± 0.5	<0.1
Majidae (juv.)	0		2.8 ± 3.0	<0.1
Paguridae sp. (juv.)	0.3 ± 0.5	<0.1	0.5 ± 0.6	<0.1
Pinnotheridae (juv.)	0		0.3 ± 0.5	<0.1
Pugettia gracilis	0		0.8 ± 1.5	<0.1
Phoronida				
Phoronopsis harmeri	0		0.5 ± 0.6	<0.1
Bryozoa		0	0.0 ± 0.1	<0.1
Echinodermata				
Ophiuroidea spp.	0		1.3 ± 1.3	<0.1
Holothuroidea				
Leptosynapta clarki	0		0.3 ± 0.5	<0.1
Species Richness	28		136	
Diversity, H^1	2.43		3.82	
Total number	42.9		338.2	
Total biomass (g)	< 2.8		< 16.1	

Pinnotheridae (juv.)	0		0.3 ± 0.6	<0.1
Pugettia gracilis	0		0.3 ± 0.5	<0.1
			0.8 ± 1.5	<0.1
Phoronida				
Phoronopsis harmeri	0		0.5 ± 0.6	<0.1
Bryozoa		0	0.0 ± 0.1	<0.1
Echinodermata				
Ophiuroidea spp.	0		1.3 ± 1.3	<0.1
Holothuroidea				
Leptosynapta clarki	0		0.3 ± 0.5	<0.1
Species Richness	28		136	
Diversity, H^1	2.43		3.82	
Total number	42.9		338.2	
Total biomass (g)	< 2.8		<16.1	

Table A. Twin Rivers (exposed sand-gravel) benthic organisms from the high (+4') intertidal zone collected spring 19[illegible], expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (S.D.).

	± S.D.	
	#	wt
Annelida		
Oligochaeta spp.	1.6 ± 1.1	< 0.1
Polychaeta		
Syllidae		
Exogone lourei	0.2 ± 0.4	< 0.1
Crustacea		
Amphipoda		
Commeridea spp.	0.4 ± 0.5	< 0.1
Species Richness	3	
Diversity, H^1	0.76	
Total Number	2.2	
Total Biomass	0.3	

Table 7b. Twin Rivers (exposed sand-gravel) benthic organisms from the mid (+3') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	+3'	
	#	wt
Annelida		
Oligochaeta spp.	1.4 ± 1.5	<0.1
Crustacea		
Isopoda		
Gnorimosphaeroma oregonense	1.6 ± 2.1	<0.1
Amphipoda		
Gammaridea spp.	28.8 ± 30.9	<0.1
Insecta		
Diptera larvae spp.	2.8 ± 5.2	<0.1
Species Richness	4	
Diversity, H^1	0.63	
Total Number	34.6	
Total Biomass	<0.4	

Table 7c. Twin Rivers (exposed sand-gravel) benthic organisms from the low (+0') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	+0'	
	#	wt.
Platyhelminthes		
Turbellaria spp.	0.6 ± 0.9	<0.1
Annelida		
Polychaeta		
Arenicolidae spp.	1.4 ± 1.7	<0.1
Capitellidae		
Mediomastus spp.	0.2 ± 0.4	<0.1
Capitella capitata	8.4 ± 9.6	<0.1
Notomastus tenuis	0.8 ± 1.3	<0.1
Goniadidae		
Glycinde picta	0.6 ± 0.8	<0.1
Lumbrineridae		
Lumbrineris zonata	1.2 ± 2.7	<0.1
Lumbrineris spp.	1.2 ± 2.2	<0.1
Nereidae		
Nereis spp.	0.4 ± 0.5	<0.1
Orbinidae		
Scoloplos spp.	0.2 ± 0.4	<0.1
Paraonidae		

Table 7c. Twin Rivers (exposed sand-gravel) benthic organisms from the low (+0') intertidal zone collected spring 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	+0' #	wt.
Platyhelminthes		
Turbellaria spp.	0.6 ± 0.9	<0.1
Annelida		
Polychaeta		
Arenicolidae spp.	1.4 ± 1.7	<0.1
Capitellidae		
Mediomastus spp.	0.2 ± 0.4	<0.1
Capitella capitata	8.4 ± 9.6	<0.1
Notomastus tenuis	0.8 ± 1.3	<0.1
Goniadidae		
Glycinde picta	0.6 ± 0.5	<0.1
Lumbrineridae		
Lumbrineris zonata	1.2 ± 2.7	<0.1
Lumbrineris spp.	1.2 ± 2.2	<0.1
Nereidae		
Nereis spp.	0.4 ± 0.5	<0.1
Orbinidae		
Scoloplos spp.	0.2 ± 0.4	<0.1
Paraonidae		
Paraonella platybranchia	0.2 ± 0.4	<0.1
Spionidae		
Malacoceros glutaeus	33.0±19.1	<0.1
Prionospio steenstrupi	0.2 ± 0.4	<0.1
Crustacea		
Amphipoda		
Gammaridea spp.	8.0 ± 12.3	<0.1
Eohaustorius washingtonianus	16.0±11.0	<0.1
Species Richness	15	
Diversity, H^1	1.62	
Total Number	72.4	
Total Biomass	<1.5	

Table 7d. Twin Rivers (gravel) benthic organisms from the subtidal zone collected 22 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m. #	wt.
Nemertea spp.	1.3 ± 0.5	<0.1
Nematoda spp.	0.8 ± 1.0	<0.1
Mollusca		
Bivalvia		
Mysella tumida	0.3 ± 0.5	<0.1
Protothaca staminea	0.5 ± 0.6	0.3 ± 0.4
Tellina sp.	1.0 ± 0.8	<0.1
Annelida		
Oligochaeta spp.	0.3 ± 0.5	<0.1
Polychaeta		
Capitellidae		
Mediomastus sp.	20.5±13.0	<0.1
Cirratulidae		
Tharyx multifilis	[illegible]	[illegible]

Table 7d. Twin Rivers (gravel) benthic organisms from the subtidal zone collected 22 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m.	
	#	wt.
Nemertea spp.	1.3 ± 0.5	<0.1
Nematoda spp.	0.8 ± 1.0	< 0.1
Mollusca		
Bivalvia		
Mysella tumida	0.3 ± 0.5	<0.1
Protothaca staminea	0.5 ± 0.6	0.3 ± 0.4
Tellina sp.	1.0 ± 0.8	<0.1
Annelida		
Oligochaeta spp.	0.3 ± 0.5	<0.1
Polychaeta		
Capitellidae		
Mediomastus sp.	20.5±13.0	<0.1
Cirratulidae		
Tharyx multifilis	259.5±365.6	✓
Goniadidae		
Glycinde picta	3.5 ± 2.9	<0.1
Nephtyidae		
Nephtys caecoides	0.3 ± 0.5	<0.1
N. sp. (juv.)	0.3 ± 0.5	<0.1
Nereidae		
Nereis procera	0.3 ± 0.5	<0.1
N. sp. (juv.)	0.3 ± 0.5	<0.1
Platynereis bicanaliculata	0.8 ± 1.5	<0.1
Orbinidae		
Naineris uncinata	0.5 ± 1.0	<0.1
Scoloplos sp.	3.5 ± 1.3	<0.1
Oweniidae		
Owenia fusiformis	33.5±36.2	<0.1
Phyllodocidae		
Eteone longa	0.3 ± 0.5	<0.1
Phyllodoce maculata	0.8 ± 1.0	<0.1

Twin Rivers Subtidal 22 June 1977

	-5 m.	
	#	wt.
Annelida (cont.)		
Polychaeta		
Spionidae		
Polydora socialis	0.3 ± 0.5	<0.1
Prionospio steenstrupi	7.5 ± 3.8	<0.1
Spiophanes bombyx	0.3 ± 0.5	<0.1
Crustacea		
Ostracoda spp.	0.3 ± 0.5	<0.1
Cumacea		
Diastylopsis sp.	88.3±25.5	0.1 ± 0.1
Isopoda		
Edotea sublittoralis	0.8 ± 0.5	<0.1
Gnorimosphaeroma oregonense	16.5±21.8	0.1 ± 0.1
Synidotea bicuspida	0.3 ± 0.5	<0.1
Amphipoda		

Twin Rivers Subtidal 22 June 1977

	-5 m.	
	#	wt.
Annelida (cont.)		
Polychaeta		
Spionidae		
Polydora socialis	0.3 ± 0.5	<0.1
Prionospio steenstrupi	7.5 ± 3.8	<0.1
Spiophanes bombyx	0.3 ± 0.5	<0.1
Crustacea		
Ostracoda spp.	0.3 ± 0.5	<0.1
Cumacea		
Diastylopsis sp.	88.3±25.5	0.1 ± 0.1
Isopoda		
Edotea sublittoralis	0.8 ± 0.5	<0.1
Gnorimosphaeroma oregonense	16.5±21.8	0.1 ± 0.1
Synidotea bicuspida	0.3 ± 0.5	<0.1
Amphipoda		
Gammaridea spp.	74.3±25.9	0.1± 0.1
Species Richness	28	
Diversity, H^1	1.69	
Total Number	442.6	
Total Biomass	< 2.8	

Table 8a. North Beach Sand (exposed sand) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Nemertea spp.	0.2 ± 0.5	<0.1	0.2 ± 0.5	<0.1	0		0	
Mollusca								
Gastropoda								
Lacuna variegata	0		0		0.2 ± 0.5	<0.1	0.2 ± 0.5	<0.1
Littorina scutulata	0.8 ± 0.8	<0.1	0.2 ± 0.5	0.0 ± 0.0	0		0	
L. sitkana	1.0 ± 1.0	<0.1	0.4 ± 0.9	0.0 ± 0.0	0		0	
Bivalvia								
Mytilus spp. (juv.)	0.2 ± 0.5	<0.1	0		0		0	
Annelida								
Oligochaeta spp.	1.2 ± 1.6	<0.1	0		1.4 ± 1.1	<0.1	0.4 ± 0.6	<0.1
Polychaeta								
Nephtyidae								
Nephtys californiensis	0.2 ± 0.5	<0.1	0		0		0	
Nereidae								
Nereis sp.	0.2 ± 0.5	<0.1	0		0		0	
Spionidae								
Malacoceros gluteus	0		0		0.2 ± 0.5	<0.1	0	
Archiannelida								
Polygordius spp.	0		2.2 ± 1.6	<0.1	0		0	

Oligochaeta spp.	1.2 ± 1.6	<0.1	0		1.4 ± 1.1	<0.1	0.4 ± 0.6	<0.1
Polychaeta								
Nephtyidae								
Nephtys californiensis	0.2 ± 0.5	<0.1	0		0		0	
Nereidae								
Nereis sp.	0.2 ± 0.5	<0.1	0		0		0	
Spionidae								
Malacoceros gluteus	0		0		0.2 ± 0.5	<0.1	0	
Archiannelida								
Polygordius spp.	0		2.2 ± 1.6	<0.1	0		0	

North Beach Sand + 6

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Crustacea								
Ostracoda								
spp.	0.2 ± 0.5	<0.1	0		0		0.2 ± 0.5	<0.1
Cirripedia								
Balanus cariosus	0		0.2 ± 0.5	<0.1	0.2 ± 0.5	<0.1	0	
B. glandula	0		0.4 ± 0.6	<0.1	0.2 ± 0.5	<0.1	0	
Mysidacea								
Archaeomysis grebnitzkii	0		4.0 ± 5.4	<0.1	0		0	
Tanaidacea								
Leptochelia dubia	0		0		0.2 ± 0.5	<0.1	0	
Isopoda								
Exosphaeroma media	0		0		0		0.2 ± 0.5	<0.1
Ianiropsis kincaidi	0		0.2 ± 0.4	<0.1	0		0	
Amphipoda								
Gammaridea spp.	0.2 ±0.5	<0.1	0		0		0.4 ± 0.6	0.1
Decapoda								
Pagurus spp. (juv.)	0.4 ± 0.6	<0.1	0		0		0	
Species Richness	10		9		6		5	
Diversity, H^1	2.02		1.48		1.35		1.55	
Total Number	4.6		7.8		2.4		1.4	
Total Biomass (g)	<1.0		<0.9		<0.6		<0.5	

grebnitzkii	0		4.0 ± 5.4	<0.1	0		0	
Tanaidacea								
Leptochelia dubia	0		0		0.2 ± 0.5	<0.1	0	
Isopoda								
Excosphaeroma media	0		0		0		0	
Ianiropsis kincaidi	0		0.2 ± 0.4	<0.1	0		0.2 ± 0.5	<0.1
Amphipoda								
Gammaridea spp.	0.2 ±0.5	<0.1	0		0		0	
Decapoda							0.4 ± 0.6	0.1
Pagurus spp. (juv.)	0.4 ± 0.6	<0.1	0		0		0	
Species Richness	10		8		6		5	
Diversity, H^1	2.02		1.48		1.35		1.55	
Total Number	4.6		7.8		2.4		1.4	
Total Biomass (g)	<1.0		<0.9		<0.6		<0.5	

Table 8b. North Beach Sand (exposed sand) benthic organisms from the mid (+2') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Nemertea spp.	0.2 ± 0.5	<0.1	0.6 ± 0.9	<0.1	0.2 ± 0.5	<0.1	0	
Nematoda spp.	0.2 ± 0.5	<0.1	0		0		0	
Mollusca								
Gastropoda								
Lacuna variegata	0		0		0.4 ± 0.6	<0.1	0	
Littorina scutulata	0		0		0.2 ± 0.5	<0.1	0.2 ± 0.5	<0.1
Bivalvia								
Mysella tumida	0.2 ± 0.5	<0.1	0		0		0	
Tellina sp.(juv.)	0		0		0.2 ± 0.5	<0.1	0	
Annelida								
Polychaeta								
Arenicolidae								
Abarenicola sp.	0.2 ± 0.5	<0.1	0.4 ± 0.6	<0.1	0		0	
Capitellidae								
Capitella capitata	0		0.4 ± 0.9	<0.1	1.4 ± 1.7	<0.1	0	
Magelonidae								
Magelona pitelkai	0		0.2 ± 0.5	<0.1	0		0	
Nereidae								
Nereis vexillosa	0		0.2 ± 0.5	<0.1	0		0	
Paraonidae								
Paraonella platybranchia	7.8 ± 12.5	<0.1	6.6 ± 5.6	<0.1	0.6 ± 0.9	<0.1	1.8 ± 1.8	<0.1

Tellina sp.(juv.)	± 0		0		0.2 ± 0.5	<0.1	0	
Annelida								
Polychaeta								
Arenicolidae								
Abarenicola sp.	0.2 ± 0.5	<0.1	0.4 ± 0.6	<0.1	0		0	
Capitellidae								
Capitella capitata	0		0.4 ± 0.9	<0.1	1.4 ± 1.7	<0.1	0	
Magelonidae								
Magelona pitelkai	0		0.2 ± 0.5	<0.1	0		0	
Nereidae								
Nereis vexillosa	0		0.2 ± 0.5	<0.1	0		0	
Paraonidae								
Paraonella platybranchia	7.8 ± 12.5	<0.1	6.6 ± 5.6	<0.1	0.6 ± 0.9	<0.1	1.8 ± 1.8	<0.1

North Beach Sand +2

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Annelida (cont.)								
Polychaeta								
Magelonidae								
Magelona pitelkai	0		0.2 ± 0.5	<0.1	0		0	
Nereidae								
Nereis vexillosa	0		0.2 ± 0.5	<0.1	0		0	
Paraonidae								
Paraonella platybranchia	7.8 ± 12.5	<0.1	6.6 ± 5.6	<0.1	0.6 ± 0.9	<0.1	1.8 ± 1.8	<0.1
Spionidae								
Malacoceros gluteus	0.4 ± 0.9	<0.1	0		0		1.0 ± 2.2	<0.1
Pygospio elegans	0		5.2 ± 2.2	<0.1	3.2 ± 3.6	<0.1	1.8 ± 2.1	<0.1
Syllidae								
Streptosyllis latipalpa	0		0.2 ± 0.5	<0.1	0		0.4 ± 0.6	<0.1
Crustacea								
Cirripedia								
Balanus cariosus	0		0		0.4 ± 0.9	0.0 ± 0.0	0	
B. glandula	0		0		0.6 ± 1.3	0.0 ± 0.0	0.2 ± 0.5	<0.1
Mysidacea								
Archaeomysis grebitzkii	0		0.4 ± 0.6	<0.1	0		0	
Cumacea								
Diastylopsis spp.	0.2 ±0.5	<0.1	0		0		0	
Tanaidacea								
Leptochelia dubia	0.2 ± 0.5	<0.1	0.2 ± 0.4	<0.1	0		0	
Isopoda								
Exosphaeroma media	0		0		0		2.6 ± 3.1	<0.1

latipalpa			0.2 ± 0.5	<0.1	0		0.4 ± 0.6	<0.1
Crustacea								
Cirripedia								
Balanus								
cariosus	0		0		0.4 ± 0.9	0.0 ± 0.0	0	
B. glandula	0		0		0.6 ± 1.3	0.0 ± 0.0	0.2 ± 0.5	<0.1
Mysidacea								
Archaeomysis grebitzkii	0		0.4 ± 0.6	<0.1	0		0	
Cumacea								
Diastylopsis spp.	0.2 ±0.5	<0.1	0		0		0	
Tanaidacea								
Leptochelia dubia	0.2 ± 0.5	<0.1	0.2 ± 0.4	<0.1	0		0	
Isopoda								
Exosphaeroma media	0		0		0		2.6 ± 3.1	<0.1

North Beach Sand + 2

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Crustacea (cont.)								
Amphipoda								
Eohaustorius spp.	120.4 ± 28.1	0.3 ± 0.2	303.6 ± 129.4	0.4 ± 0.1	76.2 ± 60.6	0.2 ± 0.2	99.4 ± 39.1	0.1 ± 0.1
Paraphoxus c.f.abronius	0		0.2 ± 0.5	<0.1	-		-	
P. spinosus Type B	0		0.2 ± 0.5	<0.1	-		-	
P.spp.	0		0		7.8 ± 7.4	<0.1	10.0 ± 7.8	<0.1
Decapoda								
Crangon franciscorum	0		0		0		0.2 ± 0.5	0.2 ± 0.4
Species Richness	9		13		10		10	
Diversity, H^1	0.33		0.26		0.70		0.66	
Total Number	130.0		318.6		91.2		117.6	
Total Biomass (g)	<1.2		<1.4		<1.4		<1.1	

Species Richness	9	13	10	10
Diversity, H^1	0.33	0.26	0.70	0.66
Total Number	130.0	318.6	91.2	117.6
Total Biomass (g)	<1.2	<1.4	<1.4	<1.1

Table 8c. North Beach Sand (exposed sand) benthic organisms from the low (+0') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Aut 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Cnidaria								
Anthozoa								
Anthopleura elegantissima	0		0.2 ± 0.5	<0.1	0		0	
Nemertea spp.	0.8 ± 1.3	<0.1	1.0 ± 0.7	<0.1	0		0.6 ± 0.6	<0.1
Nematoda spp.	0		0		0.2 ± 0.5	<0.1	0.2 ± 0.5	<0.1
Mollusca								
Gastropoda								
Littorina sitkana	0		0.2 ± 0.5	<0.1	0.2 ± 0.5	<0.1	0.2 ± 0.5	<0.1
Bivalvia								
Mysella tumida	0.4 ± 0.6	<0.1	0		0		0	
Annelida								
Oligochaeta spp.	0		0		0		0.2 0.5	<0.1
Polychaeta								
Arenicolidae								
Abarenicola (claparedi)oceanica	3.2 ± 2.0	<0.1	0.2 ± 0.5	<0.1	1.2 ± 1.0	<0.1	0.2 ± 0.5	<0.1
Capitellidae	0		0.2 ± 0.5	<0.1	2.4 ± 2.2	<0.1	2.0 ± 1.9	<0.1
Capitella capitata								
Goniadidae								
Glyceride picta	0		0		0.2 ± 0.5	<0.1	0.8 ± 0.5	<0.1
Magelonidae								
Magelona pitelkai	0.2 ± 0.5		0.2 ± 0.5	0.1	0		0.6 ± 0.9	<0.1

Bivalvia								
Mysella tumida	0.4 ± 0.6	<0.1	0		0		0	
Annelida								
Oligochaeta								
spp.	0		0		0		0.2 ± 0.5	<0.1
Polychaeta								
Arenicolidae								
Abarenicola (claparedi)oceanica	3.2 ± 2.0	<0.1	0.2 ± 0.5	<0.1	1.2 ± 1.0	<0.1	0.2 ± 0.5	<0.1
Capitellidae	0		0.2 ± 0.5	<0.1	2.4 ± 2.2	<0.1	2.0 ± 1.9	<0.1
Capitella capitata								
Goniadidae								
Glyceride picta	0		0		0.2 ± 0.5	<0.1	0.8 ± 0.5	<0.1
Magelonidae								
Magelona pitelkai	0.2 ± 0.5		0.2 ± 0.5	0.1	0		0.6 ± 0.9	<0.1

North Beach Sand +0

Spr 77

	Spr 77 #	wt	Sum 77 #	wt	Fall 77 #	wt	Win 78 #	wt
Annelida (cont)								
Polychaeta								
Nephtyidae								
Nephtys spp.(juv.)	0		0		1.8 ± 1.6	<0.1	0.2 ±0.5	<0.1
N. californiensis	0		0		0.2 ±0.5	<0.1	0	
Orbiniidae								
Scolopolos sp.	5.6 ± 2.5	✓	6.6 ± 2.9	✓	7.6 ± 1.5	<0.1	5.6 ± 2.5	<0.1
Owenidae								
Owenia fusiformis	0		0.2 ± 0.5	<0.1	0		0	
Paraonidae								
Paraonella platybranelia	108.4 ± 95.1	✓	54.2 ± 17.7	✓	24.0 ± 19.0	<0.1	72.4 ± 35.6	<0.1
Spionidae								
Malacoceros gluteus	4.6 ± 5.1	<0.1	1.0 ± 1.4	<0.1	5.6 ± 2.3	<0.1	22.2 ± 16.1	<0.1
Polydora socialis	0		0.2 ± 0.5	<0.1	0		0	
Pygospio elegans	0		1.4 ± 1.1	<0.1	0.6 ± 0.9	<0.1	0.2 ± 0.5	<0.1
Spiophanes bombyx	0		0.2 ± 0.5	<0.1	0		0.4 ± 0.6	<0.1
Syllidae								
Streptosyllis latipalpa	5.8 ± 6.1	<0.1	6.2 ± 3.4	<0.1	0		9.8 ± 5.2	<0.1
Syllis spp.	0		0		0		0.4 ± 0.9	<0.1
Crustacea								
Cirripedia								
Balanus glandula	0		0.2 ± 0.5	<0.1	0		0	

Paraonella platybranchia	108.4 ± 95.1	✓	54.2 ± 17.7	✓	24.0 ± 19.0	<0.1	72.4 ± 35.6	<0.1
Spionidae								
Malacoceros gluteus	4.6 ± 5.1	<0.1	1.0 ± 1.4	<0.1	5.6 ± 2.3	<0.1	22.2 ± 16.1	<0.1
Polydora socialis	0		0.2 ± 0.5	<0.1	0		0	
Pygospio elegans	0		1.4 ± 1.1	<0.1	0.6 ± 0.9	<0.1	0.2 ± 0.5	<0.1
Spiophanes bombyx	0		0.2 ± 0.5	<0.1	0		0.4 ± 0.6	<0.1
Syllidae								
Streptosyllis latipalpa	5.8 ± 6.1	<0.1	6.2 ± 3.4	<0.1	0		9.8 ± 5.2	<0.1
Syllis spp.	0		0		0		0.4 ± 0.9	<0.1
Crustacea								
Cirripedia								
Balanus glandula	0		0.2 ± 0.5	<0.1	0		0	

North Beach Sand +0

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Crustacea (cont.)								
Mysidacea								
Archaeomysis grebnitzkii	0.8 ± 1.3	<0.1	59.4 ± 52.6	0.2 ±0.1	0.2 ± 0.5	<0.1	0	
Cumacea								
Diastylopsis spp.	0.2 ± 0.5	<0.1	2.0 ± 2.6	<0.1	0		0	
Lampropidae spp.	0		0.6 ± 1.3	<0.1	0.2 ± 0.5	<0.1	0.2 ± 0.5	<0.1
Isopoda								
Exosphaeroma media	0.6 ± 1.3	<0.1	0		0.6 ± 0.6	<0.1	1.0 ± 0.7	<0.1
Gnorimosphaeroma oregonense	0.2 ± 0.5	<0.1	0		0		0	
Tecticeps pugettensis	0.2 ± 0.5	0.0 ± 0.0	0		0		0	
Amphipoda								
Gammaridea spp.	0.8 ± 1.3		-		10.8 ± 3.9	<0.1	8.0 ± 1.9	<0.1
Kohaustorius spp.	147.0 ±128.9	0.3 ±0.4	49.6 ± 61.7	0.0 ± 0.1	139.6 ± 62.1	0.0 ±0.0	139.8 ± 92.9	0.1 ± 0.1
Paraphoxus c.f.abronius	-		0.6 ± 0.6		-		-	
P. spinosus Type B	-		0.2 ± 0.5		-		-	
P. spp.	1.6 ± 1.5	<0.1	0		0.2 ± 0.5	<0.1	0	
Species Richness	16		21		18		19	
Diversity, H^1	1.11		1.56		1.02		1.36	
Total Number	280.4		184.6		189.6		264.8	
Total Biomass	<1.4		<1.7		<1.8		<1.9	

Table 8d. North Beach Sand (sand-gravel-cobble) benthic organisms from the subtidal zone collected 24 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4) at -10m, per 0.1 m^2 ± standard deviation (N=2) at -5m.

	-5 m.		-10 m.	
	#	wt.	#	wt.
Chlorophyta				
Bryopsis corticulans		0		<0.1
B. sp.		0		<0.1
Chaetomorpha californica		<0.1		<0.1
Derbesia marina		<0.1		<0.1
Bacilariophyta				
Pennales spp.		<0.1		0
Phaeophyta				
Desmarestia aculeata		0		<0.1
D. ligulata var. ligulata		0		<0.1
Ectocarpales sp.		<0.1		0
Laminaria saccharina		165.5 ± 234.1		0
L. sp.		0.5 ± 0.7		0
Laminariaceae sp.		0.1 ± 0.1		0
Pterygophora californica		916.3 ± 1295.8		0
Ralfsia pacifica				
Sphacelaria sp.		0		<0.1
Syringoderma abyssicola		<0.1		<0.1

North Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Rhodophyta				
Acrochaetium sp.		<0.1		<0.1
Antithamnion defectum		0.1 ± 0.1		<0.1
A. dendroideum		0		<0.1
A. kylinii		<0.1		0
Antithamnionella pacifica var. pacifica		0		<0.1
Bonnemaisonia nootkana		<0.1		0
Botrycladia pseudodichotoma		0		0.2 ± 0.4
Botryoglossum farlowianium		5.7 ±		0

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Rhodophyta				
Acrochaetium sp.		<0.1		<0.1
Antithamnion defectum		0.1 ± 0.1		<0.1
A. dendroideum		0		<0.1
A. kylinii		<0.1		0
Antithamnionella pacifica var. pacifica		0		<0.1
Bonnemaisonia nootkana		<0.1		0
Botrycladia pseudodichotoma		0		0.2 ± 0.4
Botryoglossum farlowianium		5.7 ± 8.0		0
Callithamnion/ *Pleonosporium*		<0.1		0
Callophyllis flabellulata		1.0 ± 1.3		0.3 ± 0.5
C. haenophylla		0.9 ± 1.2		0
C. pinnata		0		3.5 ± 7.1
C. sp.		0.3 ± 0.2		0.1 ± 0.3
Ceramium californicum		<0.1		<0.1
C. gardneri		0		<0.1
C. strictum		<0.1		<0.1
C. sp.		<0.1		0

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Rhodophyta (cont.)				
Choreocolax polysiphoniae		<0.1		0
Constantinea simplex		4.6 ± 6.5		0
Corallinaceae sp.		0		✓
Cruoria profunda		✓		0
Cryptonemia borealis		<0.1		0.1 ± 0.1
C. obovata		0		0.4 ± 0.8
C. ovalifolia		0		0.1 ± 0.3
C. sp.		<0.1		0.1 ± 0.1
Delesseriaceae				

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Rhodophyta (cont.)				
Choreocolax polysiphoniae		<0.1		0
Constantinea simplex		4.6 ± 6.5		0
Corallinaceae sp.		0		✓
Cruoria profunda		✓		0
Cryptonemia borealis		<0.1		0.1 ± 0.1
C. obovata		0		0.4 ± 0.8
C. ovalifolia		0		0.1 ± 0.3
C. sp.		<0.1		0.1 ± 0.1
Delesseriaceae sp.		4.3 ± 5.9		0.0 ± 0.1
Delesseria decipiens		<0.1		<0.1
Euthora fruticulosa		0.5 ± 0.6		0.1 ± 0.1
Gigartina sp.		<0.1		0.1 ± 0.1
Gonimophyllum skottsbergii		<0.1		0
Gracilaria sp.		0.3 ± 0.1		0.8 ± 0.7
Griffithsia pacifica		0		<0.1
Halosaccion glandiforme		0		1.7 ± 3.0
Halymenia coccinea		1.6 ± 2.3		0
Herposiphonia grandis		0		0.1 ± 0.1
H. plumula		0.1 ± 0.1		0

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Rhodophyta (cont.)				
Heterosiphonia japonica		<0.1		0
Hollenbergia subulata		0		<0.1
Hymenena smithii		2.0 ± 2.8		0
H. sp.		0.8 ± 1.1		0
Iridaea sp.		<0.1		1.8 ± 3.6
Laurencia spectabilis		5.2 ± 7.3		0
Mesobranoptera platyphylla		0		<0.1
Neoagardhiella baileyi		<0.1		0
Nienburgia				

North Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Rhodophyta (cont.)				
Heterosiphonia japonica		<0.1		0
Hollenbergia subulata		0		<0.1
Hymenena smithii		2.0 ± 2.8		0
H. sp.		0.8 ± 1.1		0
Iridaea sp.		<0.1		1.8 ± 3.6
Laurencia spectabilis		5.2 ± 7.3		0
Membranoptera platyphylla		0		<0.1
Neoagerdhiella baileyi		<0.1		0
Nienburgia andersoniana		0		<0.1
Nitophyllum mirabile		3.8 ± 5.3		0
Odonthalia floccosa		<0.1		0.1 ± 0.2
O. washingtoniensis		0		0.1 ± 0.1
Opuntiella californica		70.0 ± 98.9		0
Petrocelis middendorfii		✓		0
Peyssonellia pacifica		✓		✓
Phycodrys isabellae		0		0.0 ± 0.1
Platysiphonia clevelandii		<0.1		0
Platythamanion heteromorphum		0		<0.1

North Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Rhodophyta (cont.)				
Platythamnion pectinatum		<0.1		0.2 ± 0.2
P. villosum		<0.1		<0.1
Plocamium cartilagineum		0.4 ± 0.5		0
P. coccineum		0		0.0 ± 0.1
P. sp.		0		0.0 ± 0.1
Polyneura latissima		0.3 ± 0.3		0.2 ± 0.1
Polysiphonia hendryi		<0.1		0.1 ± 0.2
P. pacifica		<0.1		<0.1
P. scopulorium		<0.1		0
Pterochondria woodii		<0.1		0
Pterosiphonia bipinnata		1.1 ± 1.3		<0.1
P. dendroidea		1.3 ± 1.6		0.7 ± 0.6
P. gardneri		<0.1		<0.1
P. gracilis		0		0.1 ± 0.1
Ptilota filicina		0		0.1 ± 0.1
Rhodoptilum plumosum		0.3 ± 0.2		6.7 ± 13.4
Rhodymenia pertusa		0		<0.1
R. stipitata		0		1.2 ± 0.9
R. sp.		0.7 ± 0.0		

P. pacifica		0.1 ± 0.2
P. scopulorium	<0.1	<0.1
Pterochondria woodii	<0.1	0
Pterosiphonia bipinnata		0
P. dendroidea	1.1 ± 1.3	<0.1
P. gardneri	1.3 ± 1.6	0.7 ± 0.6
P. gracilis	<0.1	<0.1
Ptilota filicina	0	0
Rhodoptilum plumosum	0.3 ± 0.2	0.1 ± 0.1
Rhodymenia pertusa	0	0.1 ± 0.1
R. stipitata	0	6.7 ± 13.4
R. sp.	0.7 ± 0.0	<0.1 1.2 ± 0.9

North Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Rhodophyta (cont.)				
Sarcodiotheca furcata		0		0.4 ± 0.7
Scagelia occidentale		<0.1		0.5 ± 0.8
Squamariaceae spp.		<0.1		0
Stenogramme interrupta		<0.1		0.2 ± 0.2
Thuretellopsis peggiana		0		<0.1
Traillielle intricata		<0.1		0
Cnidaria				
Hydrozoa spp.		✓		✓
Anthozoa				
Halcampa decemtentaculata	0.5 ± 0.7	<0.1	0.3 ± 0.5	<0.1
Platyhelminthes				
Turbellaria spp.	1.5 ± 2.1	<0.1	0	
Nemertea spp.	7.0 ± 4.2	<0.1	4.8 ± 3.4	<0.1
Nematoda spp.	33.0 ± 24.0	<0.1	13.0 ± 6.6	<0.1
Mollusca				
Amphineura sp.(juv.)	0		0.5 ± 0.6	0.1 ± 0.1

Anthozoa				
Halcampa decementaculata	0.5 ± 0.7	<0.1	0.3 ± 0.5	<0.1
Platyhelminthes				
Turbellaria spp.	1.5 ± 2.1	<0.1	0	
Nemertea spp.	7.0 ± 4.2	<0.1	4.8 ± 3.4	<0.1
Nematoda spp.	33.0 ± 24.0	<0.1	13.0 ± 6.6	<0.1
Mollusca				
Amphineura sp.(juv.)	0		0.5 ± 0.6	0.1 ± 0.1

North Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Mollusca (cont.)				
Amphineura				
Lepidozona mertensii	0		0.3 ± 0.5	0.4 ± 0.9
Tonicella lineata	3.0 ± 4.2	0.1 ± 0.2	0	
Gastropoda				
Acmaea mitra	2.5 ± 3.5	0.1 ± 0.1	0	
Alvinia sp.	3.0 ± 1.4	0.1	0	
Amphissa columbiana	0		0.5 ±1.0	
Calliostoma ligatum	2.0 ± 2.8	<0.1	0	
Calyptraea fastigiata	1.0 ± 1.4	<0.1	3.8 ± 3.0	2.3 ± 3.0
Cerithiopsis sp.	0.5 ± 0.7	<0.1	0	
Collisella ochracea	1.0 ± 1.4	<0.1	0	
Lacuna variegata	94.0 ± 125.9	0.5 ± 0.9	2.0 ± 3.4	<0.1
Velila cooperelliii	0.5 ± 0.7	<0.1	0	
Margarites/ Lirularia M. pupillus	0		1.5 2.4	<0.1
Natica clausa	12.0 ± 17.0	<0.1	0	
Odostomia sp.	0.5 ± 0.7	<0.1	0.3 ±0.5	1.3 ± 1.4
Searlesia dira	0.5 ± 0.7	<0.1	0	
	1.0 ± 0.0	<0.1	0	

fastigiata	± 1.4	< 0.1		
Cerithiopsis sp.	± 0.5	< 0.1	3.8 ± 3.0	2.3 ± 3.0
Collisella ochracea	± 0.7 1.0	< 0.1	0	
Lacuna variegata	± 1.4 94.0	0.5	0	
Laila cockerelli	± 125.9 0.5	± 0.9 < 0.1	2.0 ± 3.4	< 0.1
Margarites/ Lirularia	± 0.7 0		0	
M. pupillus			1.5	< 0.1
Natica clausa	12.0 ± 17.0	< 0.1	2.4 0	
Odostomia sp.	0.5 ± 0.7	< 0.1	0.3	1.3
Searlesia dira	0.5 ± 0.7	< 0.1	±0.5 0	± 1.4
	1.0 ± 0.0		0	

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Mollusca (cont.)				
Bivalvia				
Astarte compacta	0			
Clinocardium nuttallii	137.5 ± 154.9	0.1 ± 0.2	3.8 ± 3.6	2.3 ± 0.3
Crenella decussata	1.5 ± 2.1	< 0.1	1.5 ± 1.3	0.0 ± 0.1
Cryptomya californica	0.5 ± 0.7	< 0.1	32.3 ± 14.9	0.1 ± 0.1
Entodesma saxicola	0		0	
Glycymeris subobsoleta	0.3 ± 0.5	2.5 ± 5.0	0.3 ± 0.5	< 0.1
Humilaria kennerlyi	0		0	
Lasaea ciatula	0.5 ± 0.7	< 0.1	0.3 ± 0.5	43.2 ± 86.5
Macoma sp. (juv.)	0		0	
Mysella tumida	10.0 ± 4.2	< 0.1	0.5 ± 1.0	< 0.1
Semele rubropicta	0		1.0 ± 1.4	< 0.1
Tellina sp.	3.0 ± 4.2	< 0.1	0.3 ± 0.5	2.7 ± 5.3
Transennella tantilla	10.5 ± 4.9	< 0.1	0	
Tresus capax	0		2.3 ± 1.7	0.0 ± 0.1
			0.3 ± 0.5	< 0.1
Annelida				
Oligochaeta spp.	17.5 ± 9.2	< 0.1	62.5 ± 23.2	< 0.1
Polychaeta				
Acrocirridae spp.	0.5 ± 0.7	< 0.1	0	

kennerlyi	0		0.3 ± 0.5	43.2 ± 86.5
Lasaea cistula	0.5 ± 0.7	< 0.1	0	
Macoma sp. (juv.)	0		0.5 ± 1.0	< 0.1
Mysella tumida	10.0 ± 4.2	< 0.1	1.0 ± 1.4	< 0.1
Semele rubropicta	0		0.3 ± 0.5	2.7 ± 5.3
Tellina sp.	3.0 ± 4.2	< 0.1	0	
Transennella tantilla	10.5 ± 4.9	< 0.1	2.3 ± 1.7	0.0 ± 0.1
Tresus capax	0		0.3 ± 0.5	< 0.1
Annelida				
Oligochaeta spp.	17.5 ± 9.2	< 0.1	62.5 ± 23.2	< 0.1
Polychaeta				
Acrocirridae spp.	0.5 ± 0.7	< 0.1	0	

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Annelida (cont.)				
Polychaeta				
Acrocirridae				
Macrochaeta sp.	0		2.5 ± 1.7	< 0.1
Capitellidae				
Capitella capitata	4.5 ± 3.5	< 0.1	2.0 ± 2.3	< 0.1
Mediomastus sp.	3.5 ± 2.1	< 0.1	0.3 ± 0.5	< 0.1
Notomastus lineatus	0		2.3 ± 2.6	< 0.1
N. tenuis	1.0 ± 1.4	< 0.1	0.3 ± 0.5	< 0.1
Cirratulidae spp.	0		8.5 ± 6.0	< 0.1
Caulleriella gracilis	0		0.5 ± 1.0	< 0.1
Cirratulis cirratus	3.5 ± 0.7	< 0.1	5.0 ± 3.2	< 0.1
Dorvilleidae				
Protodorvillea gracilis	29.0 ± 25.5	< 0.1	1.5 ± 0.6	< 0.1
Eunicidae				
Eunice valens	0.5 ± 0.7	< 0.1	0	
Glyceridae				
Glycera capitata	0		0.8 ± 1.0	< 0.1
Hemipodus borealis	7.0 ± 9.9	< 0.1	8.5 ± 4.1	< 0.1
Nephtyidae sp. A	4.5 ± 6.4	< 0.1	0	
Micropodarke dubia	54.0 ± 12.7	< 0.1	20.8 ± 15.3	< 0.1
Ophiodromus pugettensis	0.5 ± 0.7	< 0.1	0	

Caullerie11a gracilis	0		± 6.0	<0.1
Cirratulis cirratus	± 3.5 0.7	<0.1	± 0.5 1.0	<0.1
Dorvilleidae Protodorvillea gracilis	± 29.0 25.5	<0.1	± 5.0 3.2	<0.1
Eunicidae Eunice valens	± 0.5 0.7	<0.1	1.5 ± 0.6	<0.1
Glyceridae Glycera capitata	0		0	
Hemipodus borealis	7.0 ± 9.9	<0.1	± 0.8 1.0	<0.1
Nesionidae sp. A	± 4.5 6.4	<0.1	± 8.5 4.1	<0.1
Micropodarke dubia	54.0 ± 12.7	<0.1	0	
Ophiodromus pugettensis	± 0.5 0.7	<0.1	± 20.8 15.3	<0.1

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Annelida (cont.)				
Maldanidae				
spp. (juv.)	± 7.5 7.8	0.1	± 1.3 1.0	0.1
Axiothella rubrocincta	± 0.5 0.7	0.1	0	
Nicomache lumbricalis	± 2.5 4.5	0.1	0	
N. personata	± 4.5 4.9	0.1	0	
Nephtyidae				
Nephtys californiensis	0		± 0.8 1.0	0.1
N. sp. (juv.)	0		± 0.3 0.5	0.1
Nereidae				
Nereis pelagica	± 5.5 7.8	0.1	0	
N. sp.	± 1.0 1.4	0.1	0	
Platynereis bicanaliculata	± 6.0 2.8	0.1	± 10.8 5.6	0.1
Onuphidae				
Onuphis stigmatis	28.5 37.5	0.1	± 0.5 1.0	0.1
Opheliidae				
Ophelia limacina	0		± 0.3 0.5	0.1
Oweniidae				
Owenia fusiformis	± 1.0 1.4	0.1	± 1.8 1.5	0.1
Phyllodocidae				
Eulalia macroceros	± 1.5 2.1	0.1	0	
E. nigrimaculata	± 0.5 0.7	0.1	0	
E. quadrioculata	± 1.0 1.4	0.1	0	
E. viridis	± 1.0 1.4	0.1	0	

pelagica	5.5 ± 7.8	0.1	0	
N. sp.	1.0 ± 1.4	0.1	0	
Platynereis bicanaliculata	6.0 ± 2.8	0.1	10.8 ± 5.6	0.1
Onuphidae				
Onuphis stigmatis	28.5 37.5	0.1	0.5 ± 1.0	0.1
Opheliidae				
Ophelia limacina	0		0.? ± 0.5	0.1
Oweniidae				
Owenia fusiformis	1.0 ± 1.4	0.1	1.8 ± 1.5	0.1
Phyllodocidae				
Eulalia macroceros	1.5 ± 2.1	0.1	0	
E. nigrimaculata	0.5 ± 0.7	0.1	0	
E. quadrioculata	1.0 ± 1.4	0.1	0	
E. viridis	1.0 ± 1.4	0.1	0	

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Annelida (cont.)				
Polychaeta				
Phyllodocidae				
Eulalia sp.	0.5 ± 0.7	<0.1	0	
Hesionura coinesuidifficilis	4.0 ± 0.0	<0.1	8.8 ± 2.1	<0.1
Phyllodoce groenlandica	1.0 ± 0.0	<0.1	0	
P. sp. (juv.)	0.5 ± 0.7	<0.1	0.5 ± 0.6	<0.1
Pilargidae				
Sigambra tentaculata	8.5 ± 12.0	<0.1	0	
Pisionidae				
Pisione sp.	0		0.3 ± 0.5	<0.1
Polynoidae sp.	1.5 ± 2.1	<0.1	0.3 ± 0.5	<0.1
Harmothoe imbricata	2.5 ± 0.7	<0.1	0.3 ± 0.5	<0.1
Harmothoe lunulata	0		0.3 ± 0.5	<0.1
Sabellidae sp.	2.5 ± 3.5	<0.1	0	
Chone ecaudata	3.5 ± 4.9	<0.1	2.3 ± 1.2	<0.1
Oriopsis minuta	45.5 ± 64.3	<0.1	0	
Potamilla intermedia	0.5 ± 0.7	<0.1	0	
Scalebragmidae				
Scalebregma inflatum	0.5 ± 0.7	<0.1	0	
Serpulidae				
Crucigera zygophora	0.5 ± 0.7	<0.1	0	

Pisione sp.	0			
Polynoidae sp.	1.5 ± 2.1	<0.1	0.3 ± 0.5	<0.1
Harmothoe imbricata	2.5 ± 0.7	<0.1	0.3 ± 0.5	<0.1
Harmothoe lunulata	0		0.3 ± 0.5	<0.1
Sabellidae sp.	2.5 ± 3.5	<0.1	0.3 ± 0.5	
Chone ecaudata	3.5 ± 4.9	<0.1	0	
Oriopsis minuta	45.5 ± 64.3	<0.1	2.3 ± 1.2	<0.1
Potamilla intermedia	0.5 ± 0.7	<0.1	0	
Scalebragmidae Scalebregma inflatum	0.5 ± 0.7	<0.1	0	
Serpulidae Crucigera zygophora	0.5 ± 0.7	<0.1	0	

North Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Serpulidae				
Serpula vermicularis	1.0 ± 1.4	<0.1	0	
Spirorbis sp.	2.5 ± 3.5	<0.1	0	
Sigalionidae Pholoe minuta	0		0.3 ± 0.5	<0.1
Sphaerodoridae Sphaerodoropsis minuta	0.5 ± 0.7	<0.1	0	
Spionidae				
Malacoceros glutaeus	0.5 ± 0.7	<0.1	0	
Polydora hamata	42.0 ± 59.4	<0.1	0	
P. pygidialis	27.5 ± 38.9	<0.1	0	
P. socialis	0		1.8 ± 1.3	<0.1
P. spongicola	0.5 ± 0.7	<0.1	0	
P. sp.	3.5 ± 4.9	<0.1	0	
Prionospio steenstrupi	13.0 ± 2.8	<0.1	1.5 ± 1.3	<0.1
Pygospio elegans	0.5 ± 0.7	<0.1	0	
Scolelepis sp. A	2.0 ± 1.4	<0.1	2.3 ± 1.5	<0.1
Spio filicornis	9.0 ± 0.0	<0.1	13.5 ± 6.6	<0.1
Spiophanes bombyx	0		3.3 ± 1.5	<0.1

Spionidae	± 0.7			
Malacoceros glutaeus	0.5 ± 0.7	<0.1	0	
Polydora hamata	42.0 ± 59.4	<0.1	0	
P. pygidialis	27.5 ± 38.9	<0.1	0	
P. socialis	0			
P. spongicola			1.8 ± 1.3	<0.1
P. sp.	0.5 ± 0.7	<0.1	0	
Prionospio steenstrupi	3.5 ± 4.9	<0.1	0	
Pygospio elegans	13.0 ± 2.8	<0.1	1.5 ± 1.3	<0.1
Scolelepis sp. A	0.5 ± 0.7	<0.1	0	
Spio filicornis	2.0 ± 1.4	<0.1	2.3 ± 1.5	<0.1
Spiophanes bombyx	9.0 ± 0.0	<0.1	13.5 ± 6.6	<0.1
	0		3.3 ± 1.5	<0.1

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Annelida (cont.)				
Polychaeta				
Syllidae				
Brania brevipharynges	1.5 ± 2.1	<0.1	0	
Exogone gemmifera	7.5 ± 10.6	<0.1	0	
E. lourei	4.0 ± 4.2	<0.1		
E. spp.	28.0 ± 26.9	<0.1	1.3 ± 1.9	<0.1
Pionosyllis uraga	0		7.0 ± 2.7	<0.1
Sphaerosyllis pirifera	4.0 ± 4.2	<0.1	0.3 ± 0.5	<0.1
Syllis armillaris	2.0 ± 2.8	<0.1	12.8 ± 6.2	<0.1
Syllis sp.	5.5 ± 4.9	<0.1	0	
Trypanosyllis gemmipara	2.0 ± 2.8	<0.1	2.8 ± 1.9	<0.1
Terebellidae			0	
Polycirrus sp. A	0.5 ± 0.7	<0.1		
P. sp. B	0.5 ± 0.7	<0.1	9.8 ± 9.2	<0.1
Archiannelida			2.3 ± 1.9	<0.1
Polygordiidae				
Polygordius sp.	52.0 ± 38.2	<0.1		
Saccocirridae			28.0 ± 22.3	<0.1
Saccocirrus eroticus	0			
Sipuncula			1.5 ± 1.7	<0.1
Phascolosoma agassizii	0.5 ± 0.7	<0.1	0	

Syllis	[illegible]		[illegible]	<0.1
armillaris	2.0 ± 2.8	<0.1	± 6.2 0	
Syllis				
sp.	5.5 ± 4.9	<0.1	2.8 ± 1.9	<0.1
Trypanosyllis				
gemmipara	2.0 ± 2.8	<0.1	0	
Terebellidae				
Polycirris				
sp. A	0.5 ± 0.7	<0.1	9.8 ± 9.2	<0.1
P. sp. B	0.5 ± 0.7	<0.1	2.3 ± 1.9	<0.1
Archiannelida				
Polygordiidae				
Polygordius				
sp.	52.0 ± 38.2	<0.1	28.0 ± 22.3	<0.1
Saccocirridae				
Saccocirrus				
eroticus	0		1.5 ± 1.7	<0.1
Sipuncula				
Phascolosoma				
agassizii	0.5 ± 0.7	<0.1	0	

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Crustacea				
Ostracoda				
spp.	6.5 ± 6.4	<0.1	0.5 ± 1.0	<0.1
Cirripedia				
Balanus				
sp.	1.5 ± 2.1	0.5 ± 1.0	0	
Leptostraca				
Nebalia				
pugettensis	0.5 ± 0.7	<0.1	0	
Mysidacea				
Archaeomysis				
grebnitzkii	1.0 ± 1.4	<0.1	0	
Cumacea				
Cumella				
sp.	0.5 ± 0.7	0.1 ± 1.0	0.5 ± 1.0	<0.1
Diastylopsis				
sp.	0.5 ± 0.7	<0.1	0	
Tanaidacea				
Leptochelia				
dubia	17.5 ± 13.4	<0.1	8.8 ± 6.9	<0.1
Isopoda				
Caecianiropsis				
psammophila	0.5 ± 0.7	<0.1	0	
Cirolana				
harfordi	1.0 ± 0.0	<0.1	0	
C. vancouverensis	0		0.5 ± 1.0	0.0 ± 0.1
Exosphaeroma				
amplicauda	0.5 ± 0.7	<0.1	0	
E. media	6.5 ± 9.2	<0.1	0	
E. rhomburum	58.5 ± 82.7	0.0 ± 0.1	6.8 ± 3.4	<0.1
Ianiropsis				
analoga	1.5 ± 2.1	<0.1	0.5 ± 6.9	<0.1
I. tridens	0.5 ± 0.7	<0.1	0	

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Crustacea (cont.)				
Isopoda				
Idotea rufescens	2.5 ± 2.1	<0.1	0	
I. sp. (juv.)	0.5 ± 0.7	<0.1	0	
Jaeropsis dubia	5.5 ± 7.8	<0.1	0	
J. lobata	2.0 ± 2.8	<0.1	0	
J. setosa	0.5 ± 0.7	<0.1	0	
Janirilata occidentales	0.5 ± 0.7	<0.1	0	
Limnoria algarum	13.5 ± 19.1	<0.1	0	
Munna stephenseni	0		0.3 ± 0.5	<0.1
M. ubiquita	0.5 ± 0.7	<0.1	0	
M. sp.	0.5 ± 0.7	<0.1	0	
Amphipoda				
Gammaridea spp.	427.5 ± 328.8	0.6 ± 0.9	31.5 ± 3.7	0.1 ± 0.1
Corophium sp.	0		8.3 ± 3.4	<0.1
Caprellidea				
Caprella californica	19.0 ± 26.9	<0.1	0.3 ± 0.5	<0.1
C. sp.	4.0 ± 5.7	<0.1	0.3 ± 0.5	<0.1
C. sp. (juv.)	1.0 ± 1.4	<0.1	0	
Metacaprella kennerlyi	0.5 ± 0.7	<0.1	0	

North Beach Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Crustacea (cont.)				
Amphipoda				
Caprellidea				
Tritella pilimana	0		0.3 ± 0.5	<0.1
Decapoda				
Cancer oregonensis	1.5 ± 0.7	0.3 ± 0.3	0	
Cancer productus	0.5 ± 0.7	0.6 ± 0.8	0	
C. sp. (juv.)	1.0 ± 1.4	<0.1	0	
Caridea sp.	0.5 ± 0.7	<0.1	0	
Crangon alaskensis	0		0.3 ± 0.5	1.0 ± 2.0
Hippolyte				

Table 9a. Kydaka Beach (exposed sand) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt.	#	wt.	#	wt.	#	wt.
Annelida								
Oligochaeta spp.	0.4 ± 0.5	<0.1	3.4 ± 2.1	<0.1	0.6 ± 0.9	<0.1	0.4 ± 0.5	<0.1
Polychaeta								
Capitellidae spp.	0		0		0.2 ± 0.4	<0.1	0	
Spionidae								
Pygospio elegans	0		0.2 ± 0.4	<0.1	0.2 ± 0.4	<0.1	0	
Syllidae								
Syllis spp.	0		0		0		0.2 ± 0.4	<0.1
Crustacea								
Isopoda								
Cirolana vancouverensis	0.2 ± 0.4	<0.1	0		0		0	
Amphipoda								
Gammaridea spp.	0		-		3.8 ± 3.3	<0.1	0	
Ischyrocerus anguipes	-		0.2 ± 0.4	<0.1	-		-	
Orchestoidea pugettensis	-		2.0 ± 1.7	<0.1	-		-	
Insecta								
Dipteran larvae spp.	0		1.4 ± 2.6	<0.1	0		0	
Species Richness	2		6		4		2	
Diversity, H^1	0.64		1.23		0.71		0.64	
Total Number	0.6		7.2		4.8		0.6	
Total Biomass (g)	<0.2		<0.6		<0.4		<0.2	

Table 9b. Kydaka Beach (exposed sand) benthic organisms from the mid (+3') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt.	#	wt.	#	wt.	#	wt.
Nemertea								
spp.	0		0.6 ± 0.9	<0.1	0		0	
Annelida								
Polychaeta								
Nephtyidae								
Nephtys californiensis	0		0.2 ± 0.4	<0.1	0.4 ± 0.5	<0.1	0	
Phyllodocidae								
Eteone longa	0		0.2 ± 0.4	<0.1	0		0	
Spionidae								
Pygospio elegans	0.2 ± 0.4	<0.1	0		0		0	
Crustacea								
Mysidacea								
Archaeomysis grebnitzkii	0.2 ± 0.4	<0.1	10.6 ± 7.1	<0.1	2.0 ±1.2	<0.1	0	
Amphipoda								
Gammaridea sp.	0		0		0		0	
Eohaustorius washingtonianus	0		4.8 ± 2.6	<0.1	0		0.6 ± 1.3	<0.1
Species Richness	2		5		2		1	
Diversity, H^1	0.69		0.87		0.45		0.00	
Total Number	0.4		16.4		2.4		0.6	
Total Biomass	<0.2		<0.5		<0.2		<0.1	

elegans	0.2 <0.1 ± 0.4	0	0	0
Crustacea				
Mysidacea				
Archaeomysis grebnitzkii	0.2 <0.1 ± 0.4	10.6 <0.1 ± 7.1	2.0 <0.1 ±1.2	0
Amphipoda				
Gammaridea sp.	0	0	0	0
Eohaustorius washingtonianus	0	4.8 <0.1 ± 2.6	0	0.6 <0.1 ± 1.3
Species Richness	2	5	2	1
Diversity, H^1	0.69	0.87	0.45	0.00
Total Number	0.4	16.4	2.4	0.6
Total Biomass	<0.2	<0.5	<0.2	<0.1

Table 9c. Kydaka Beach (exposed sand) benthic organisms from the low (+0') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt.	#	wt.	#	wt.	#	wt.
Annelida								
Oligochaeta spp.	0		0		0		0.4 ± 0.5	<0.1
Polychaeta								
Magelonidae								
Magelona sp.(juv.)	0		0		0.2 ± 0.4	<0.1	0	
Nephtyidae								
Nephtys californiensis	0		0		0.4 ± 0.5	<0.1	0	
Owenidae								
Owenia fusiformis	0		0		0.2 ± 0.4	<0.1	0	
Paraonidae								
Paraonella platybranchia	0		1.2 ± 0.8	<0.1	0.4 ± 0.9	<0.1	0	
Spionidae								
Malaceros glutaeus	0		0		0.4 ± 0.5	<0.1	0	
Pygospio elegans	0		0		1.0 ± 1.7	<0.1	0	
Scolelepis squamata	0		0.4 ± 0.9	<0.1	0.2 ± 0.4	<0.1	0	
Crustacea								
Ostracoda spp.	0.2 ± 0.4	<0.1	0		0		0	
Mysidacea								
Archaeomysis grebnitzkii	0.2 ± 0.4	<0.1	0.8 ± 0.8	<0.1	0		0	
Amphipoda								
Gammaridea spp.	1.2 ± 2.7	<0.1	-		0		0	
Atylus tridens	-		0.2 ± 0.4	<0.1	-		-	
Eohaustorius washingtonianus	1.2 2.7	<0.1	3.0 ± 1.2	<0.1	0		0	

Malaceros glutaeus	0		0		0.4 ± 0.5	<0.1	0
Pygospio elegans	0		0		1.0 ± 1.7	<0.1	0
Scolelepis squamata	0		0.4 ± 0.9	<0.1	0.2 ± 0.4	<0.1	0
Crustacea							
Ostracoda spp.	0.2 ± 0.4	<0.1	0		0		0
Mysidacea							
Archaeomysis grebnitzkii	0.2 ± 0.4	<0.1	0.8 ± 0.8	<0.1	0		0
Amphipoda							
Gammaridea spp.	1.2 ± 2.7	<0.1	-		0		0
Atylus tridens	-		0.2 ± 0.4	<0.1	-		-
Eohaustorius washingtonianus	1.2 2.7	<0.1	3.0 ± 1.2	<0.1	0		0

Kydaka Beach +0

	Spr 77 #	Spr 77 wt.	Sum 77 #	Sum 77 wt.	Fall 77 #	Fall 77 wt.	Win 78 #	Win 78 wt.
Crustacea								
Amphipoda								
Gammaridea								
Eohaustorius sp.	10.8 ± 18.6	<0.1	0		0		0	
Paraphoxus sp.	0.2 ± 0.4	<0.1	0		0		0	
Species Richness	6		5		7		1	
Diversity, H^1	0.61		1.25		1.7		0.00	
Total number	13.8		5.6		2.8		0.4	
Total biomass (g)	<0.6		<0.5		<0.7		<0.1	

Table 9d. Kydaka Beach (sand) benthic organisms from the subtidal zone collected 21 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m.		-10 m.	
	#	wt.	#	wt.
Rhodophyta				
Antithamnion defectum		0		
Choreocolax polysiphoniae		0		<0.1
Leptofauchea pacifica		0		<0.1
Polysiphonia hendryi		0		<0.1
Pterosiphonia bipinnata		0		<0.1
P. gracilis		0		<0.1
				<0.1
Cnidaria				
Hydrozoa spp.		0		✓
Nemertea spp.	8.5 ± 7.0	<0.1	12.3 ± 5.8	0.0 ± 0.1
Nematoda spp.	3.3 ± 5.3	<0.1	23.8 ± 12.6	0.0 ± 0.1
Mollusca				
Gastropoda				
Amphissa columbiana	0		0.3 ± 0.5	0.1 ± 0.2
Calliostoma sp.	0.3 ± 0.5	0.0 ± 0.1	0	
Lacuna variegata	1.8 ± 2.8	0.1 ± 0.1	0	
Nassarius mendicus	0		0.3 ± 0.5	0.2 ± 0.3
Odostomia sp.	0		0.8 ± 1.0	0.1 ± 0.1
Trichotropsis cancellata	0		1.3 ± 2.5	0.1 ± 0.2
Bivalvia				
Clinocardium nuttallii	0.3 ± 0.5	0.0 ± 0.1	0.8 ± 1.0	0.1 ± 0.1
Hiatella artica	0		0.8 ± 1.5	0.0 ± 0.1
Lucinoma tenuisculpta	0.3 ± 0.5	0.0 ± 0.1	8.8 ± 5.0	0.4 ± 0.3
Macoma sp.	0		0.5 ± 1.0	0.0 ± 0.1
Mysella tumida	30.5±22.7	0.1 ± 0.0	82.8±79.5	0.2 ± 0.1
Solen sicarius	0.3 ± 0.5	0.0 ± 0.1	0.3 ± 0.5	0.0 ± 0.1
Tellina sp.	1.3 ± 0.5	0.1 ± 0.1	2.8 ± 1.5	0.1 ± 0.0
Transennella tantilla	0		65.8±23.7	0.4 ± 0.2
Annelida				
Oligochaeta spp.	0.3 ± 0.5	<0.1	0.8 ± 1.0	0.0 ± 0.1

Mollusca				
Gastropoda				
Amphissa columbiana	0		0.3 ± 0.5	0.1 ± 0.2
Calliostoma sp.	0.3 ± 0.5	0.0 ± 0.1	0	
Lacuna variegata	1.8 ± 2.8	0.1 ± 0.1	0	
Nassarius mendicus	0		0.3 ± 0.5	0.2 ± 0.3
Odostomia sp.	0		0.8 ± 1.0	0.1 ± 0.1
Trichotropsis cancellata	0		1.3 ± 2.5	0.1 ± 0.2
Bivalvia				
Clinocardium nuttallii	0.3 ± 0.5	0.0 ± 0.1	0.8 ± 1.0	0.1 ± 0.1
Hiatella artica	0		0.8 ± 1.5	0.0 ± 0.1
Lucinoma tenuisculpta	0.3 ± 0.5	0.0 ± 0.1	8.8 ± 5.0	0.4 ± 0.3
Macoma sp.	0		0.5 ± 1.0	0.0 ± 0.1
Mysella tumida	30.5±22.7	0.1 ± 0.0	82.8±79.5	0.2 ± 0.1
Solen sicarius	0.3 ± 0.5	0.0 ± 0.1	0.3 ± 0.5	0.0 ± 0.1
Tellina sp.	1.3 ± 0.5	0.1 ± 0.1	2.8 ± 1.5	0.1 ± 0.0
Transennella tantilla	0		65.8±23.7	0.4 ± 0.2
Annelida				
Oligochaeta spp.	0.3 ± 0.5	<0.1	0.8 ± 1.0	0.0 ± 0.1

Kydaka Beach Subtidal

	~5 m.		~10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Ampharetidae sp. (juv.)	0		0.3 ± 0.5	<0.1
Capitellidae				
Capitella capitata	13.0 ± 8.8	<0.1	15.3±14.5	0.0 ± 0.1
Mediomastus sp.	12.8 ± 11.9	<0.1	83.5±52.7	0.0 ± 0.1
Notomastus lineatus	0.5 ± 1.0	<0.1	0.3 ± 0.1	<0.1
N. sp.	0		0.5 ± 1.0	0.0 ± 0.1
Chrysopetellidae spp.	0		0.3 ± 0.5	0.0 ± 0.1
Cirratulidae sp.	0		1.5 ± 1.0	<0.1
Chaetozone setosa	0.3 ± 0.5	<0.1	0	
Flabelligeridae				
Pherusa plumosa	0		0.3 ± 0.5	<0.1
Glyceridae				
Glycera capitata	0			
Hemipodus borealis	0		0.3 ± 0.5	<0.1
Goniadidae			0.5 ± 1.0	0.0 ± 0.1
Glycinde picta	1.0 ± 0.8	<0.1		
Hesionidae			2.5 ± 2.1	0.0 ± 0.1
Micropodarke dubia	0			
Lumbrineridae			1.0 ± 1.4	0.0 ± 0.1
Lumbrineris sp.	0			
Magelonidae			1.5 ± 0.6	0.0 ± 0.1
Magelona pitelkai	0.5 ± 0.6	<0.1		
Maldanidae spp.	1.8 ± 2.4	<0.1	0	
Nicomache personata	0		17.6	0.0 ± 0.1
Nephtyidae			3.5 ± 3.3	0.0 ± 0.1
Nephtys caeca	0			
N. caecoides	1.5 ± 1.3	<0.1	0.8 ± 1.5	0.0 ±0.1
N. sp. (juv.)	0.3 ± 0.5	<0.1	1.8 ± 1.3	<0.1
Nereidae			1.0 ± 1.4	<0.1
Nereis procera	0.5 ± 0.6	<0.1		
N. sp. (juv.)	0		0	
Platynereis bicanaliculata	2.3 ± 3.9	<0.1	0.5 ± 0.6	<0.1
			2.3 ± 4.5	<0.1

Glycinde picta				0.0 ± 0.1
Hesionidae	1.0 ± 0.8	<0.1	2.5 ± 2.1	0.0 ± 0.1
Micropodarke dubia	0			
Lumbrineridae			1.0 ± 1.4	0.0 ± 0.1
Lumbrineris sp.	0			
Magelonidae			1.5 ± 0.6	0.0 ± 0.1
Magelona pitelkai	0.5 ± 0.6	<0.1		
Maldanidae spp.	1.8 ± 2.4	<0.1	0	
Nicomache personata	0		17.6	0.0 ± 0.1
Nephtyidae			3.5 ± 3.3	0.0 ± 0.1
Nephtys caeca	0			
N. caecoides	1.5 ± 1.3	<0.1	0.8 ± 1.5	0.0 ± 0.1
N. sp. (juv.)	0.3 ± 0.5	<0.1	1.8 ± 1.3	<0.1
Nereidae			1.0 ± 1.4	<0.1
Nereis procera	0.5 ± 0.6	<0.1		
N. sp. (juv.)	0		0	
Platynereis bicanaliculata	2.3 ± 3.9	<0.1	0.5 ± 0.6	<0.1
			2.3 ± 4.5	<0.1

Kydaka Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Onuphidae				
Onuphis elegans	0.8 ± 1.0	<0.1	0.8 ± 1.0	0.1
O. stigmatis	0.3 ± 0.5	<0.1	0.8 ± 1.5	0.0 ± 0.1
O. sp. (juv.)	0.3 ± 0.5	<0.1	←	0.3 ± 0.5
Ophelliidae				
Armandia brevis	0.8 ± 0.5	<0.1	5.5 ± 4.1	0.0 ± 0.1
Orbiniidae				
Naineris uncinata	0		1.0 ± 1.4	0.0 ± 0.1
Scoloplos sp.	5.5 ± 3.1	<0.1	2.5 ± 2.4	0.0 ± 0.1
Oweniidae				
Owenia fusiformis	7.5 ± 2.4	<0.1	11.0±5.4	0.0 ± 0.1
Paraonidae				
Paraonella platybranchia	0.3 ± 0.5	<0.1	0	
Pectinariidae				
Pectinaria granulata	0		2.8 ± 2.2	0.0 ± 0.1
Phyllodocidae				
Etone longa	0		1.3 ± 1.9	0.0 ± 0.1
Eulalia viridis	0.3 ± 0.5	<0.1	0	
Phyllodoce groenlandica	0		3.5 ± 6.4	0.0 ± 0.1
P. malculata	0		1.0 ± 2.0	<0.1
P. multiseriata	0		0.8 ± 1.5	0.0 ± 0.1
P. sp. A	0.3 ± 0.5	<0.1	1.0 ± 0.8	<0.1
P. sp. (juv.)	1.0 ± 1.2	<0.1	4.5 ± 3.7	<0.1
Polynoidae				
Eunoe senta	0		0.3 ± 0.5	<0.1
Harmothoe imbricata	0		0.8 ± 1.0	0.0 ± 0.1
Sabellidae				
Eudistylia vancouveri	0		0.3 ± 0.5	0.0 ± 0.1
Schizobranchia insignis	0		0.5 ± 1.0	0.0 ± 0.1
Sigalionidae				
Pholoe minuta	1.0±1.4	<0.1	2.8 ± 3.1	0.0 ± 0.1
Spionidae				
Malacoceros glutaeus	0.8 ± 1.5	<0.1	8.5 ± 8.2	0.0 ± 0.1
Polydora cauller yi	0		0.3 ± 0.5	<0.1

Pectinariidae		<0.1	0	
Pectinaria granulata	0			
Phyllodocidae			2.8 ± 2.2	0.0 ± 0.1
Etone longa	0			
Eulalia viridis	0.3 ± 0.5	<0.1	1.3 ± 1.9	0.0 ± 0.1
Phyllodoce groenlandica	0		0	
P. maculata	0		3.5 ± 6.4	0.0 ± 0.1
P. multiseriata	0		1.0 ± 2.0	<0.1
P. sp. A	0.3 ± 0.5	<0.1	0.8 ± 1.5	0.0 ± 0.1
P. sp. (juv.)	1.0 ± 1.2	<0.1	1.0 ± 0.8	<0.1
Polynoidae			4.5 ± 3.7	<0.1
Eunoe senta	0			
Harmothoe imbricata	0		0.3 ± 0.5	<0.1
Sabellidae			0.8 ± 1.0	0.0 ± 0.1
Eudistylia *vancouveri*	0			
Schizobranchia insignis	0		0.3 ± 0.5	0.0 ± 0.1
Sigalionidae			0.5 ± 1.0	0.0 ± 0.1
Pholoe minuta	1.0±1.4	<0.1	2.8 ± 3.1	0.0 ± 0.1
Spionidae				
Malacoceros glutaeus	0.8 ± 1.5	<0.1	8.5 ± 8.2	0.0 ± 0.1
Polydora caulleryi	0		0.3 ± 0.5	<0.1

Kydaka Beach Subtidal

	~5 m.		~10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Spionidae				
Polydora socialis	3.0 ± 2.5	<0.1	5.8 ± 2.9	0.0 ± 0.1
P. sp. A	0		0.3 ± 0.5	<0.1
Prionospio cirrifera	0		8.0 ± 3.5	0.0 ± 0.1
P. steenstrupi	37.0±19.4	<0.1	192.5±70.5	0.0 ± 0.1
Pygospio elegans	0		32.0±35.2	0.0 ± 0.1
Spio filicornis	0.3 ± 0.5	<0.1	0.3 ± 0.5	0.0 ± 0.1
Spiophanes bombyx	1.8 ± 1.5	<0.1	3.8 ± 1.0	0.0 ± 0.1
Syllidae				
Exogone gemmifera	0		0.8 ± 1.5	0.0 ± 0.1
Z. spp.	0		9.8 ± 7.8	<0.1
Sphaerosyllis pirifera	0		0.3 ± 0.5	0.0 ± 0.1
Streptosyllis latipalpa	0.3 ± 0.5	<0.1	0	
Syllis sp.	0		0.3 ± 0.5	0.0 ± 0.1
Terebellidae			0.5 ± 1.0	0.0 ± 0.1
Thelepus sp.	0			
Sipuncula spp.	0.3 ± 0.5	<0.1	0	
Crustacea				
Ostracoda spp.	9.8 ± 4.7	0.1 ± 0.0	78.0±29.1	0.1 ± 0.0
Leptostraca				
Nebalia pugettensis	0.3 ± 0.5	0.0 ± 0.1	0.3 ± 0.5	0.0 ± 0.1
Mysidacea				
Archaeomysis grebnitzkii	0.3 ± 0.5	0.0 ± 0.1	0	
Cumacea				
Cumella vulgaris	0		0.3 ± 0.5	0.0 ± 0.1
Diastylis sp.	0		2.3 ± 1.5	0.1 ± 0.0
Diastylopsis sp.	23.8±8.8	0.1 ± 0.0	0.3 ± 0.5	0.0 ± 0.1
Lampropidae spp.	0.3 ± 0.5	0.0 ± 0.1	0	
Tanaidacea				
Anatanais normani	0		0.5 ± 1.0	0.0 ± 0.1
Leptochelia dubia	0		8.0 ± 2.9	0.1 ± 0.0

Sipuncula spp.	0.3 ± 0.5	<0.1	0.5 ± 1.0 0	0.0 ± 0.1
Crustacea				
Ostracoda spp.	9.8 ± 4.7	0.1 ± 0.0	78.0±29.1	0.1 ± 0.0
Leptostraca				
Nebalia pugettensis	0.3 ± 0.5	0.0 ± 0.1	0.3 ± 0.5	0.0 ± 0.1
Mysidacea				
Archaeomysis grebnitzkii	0.3 ± 0.5	0.0 ± 0.1	0	
Cumacea				
Cumella vulgaris	0		0.3 ± 0.5	0.0 ± 0.1
Diastylis sp.	0		2.3 ± 1.5	0.1 ± 0.0
Diastylopsis sp.	23.8±8.8	0.1 ± 0.0	0.3 ± 0.5	0.0 ± 0.1
Lampropidae spp.	0.3 ± 0.5	0.0 ± 0.1	0	
Tanaidacea				
Anatanais normani	0		0.5 ± 1.0	0.0 ± 0.1
Leptochelia dubia	0		8.0 ± 2.9	0.1 ± 0.0

Kydaka Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Crustacea (cont.)				
Isopoda				
Cyathura munda	0			
Edotea sublittoralis	1.0 ± 1.4	0.1 ± 0.1	0.5 ± 0.6	0.1 ± 0.1
Limnoria algarum	0			
Munna stephenseni	0		3.8 ± 7.5	0.0 ± 0.1
Paranthura elegans	0		0.5 ± 1.0	0.0 ± 0.1
Synidotea bicuspida	2.0 ± 2.5	0.1 ± 0.1	2.3 ± 1.0	0.1 ± 0.0
Amphipoda			0	
Caprellidea				
Tritella pilimonia	3.0 ± 3.6	0.1 ± 0.1		
Gammaridea spp.	103.8±60.7	0.2 ± 0.2	0	
Decapoda			128.8±51.4	0.3 ± 0.2
Cancer oregonensis	0.3 ± 0.5	0.0 ± 0.1		
Pinnotheridae sp. (juv.)	5.8 ± 11.5	0.0 ± 0.1	0	
Pugettia gracilis	0		0.8 ± 1.0	0.5 ± 0.6
			0.3 ± 0.5	0.0 ± 0.1
Phoronida				
Phoronopsis harmeri	1.0 ± 0.8	0.0 ± 0.1	0.8 ± 1.5	0.0 ± 0.1
Bryozoa spp.		✓		✓
Echinodermata				
Ophiuroidea sp.(juv.)	0		0.3 ± 0.5	0.0 ± 0.1
Echinoidea				
Dendraster excentricus	0.3 ± 0.5	0.0 ± 0.1	0	
Holothuroidea				
Leptosynapta clarki	16.8±18.6	0.3 ± 0.2	0	
Species Richness	54		96	
Diversity, H^1	2.55		2.83	
Total Number	311.5		870.5	
Total Biomass	<5.7		<11.1	

	0		0.3 ± 0.5	0.0 ± 0.1
Phoronida				
Phoronopsis harmeri	1.0 ± 0.8	0.0 ± 0.1	0.8 ± 1.5	0.0 ± 0.1
Bryozoa spp.		✓		✓
Echinodermata				
Ophiuroidea sp.(juv.)	0		0.3 ± 0.5	0.0 ± 0.1
Echinoidea				
Dendraster excentricus	0.3 ± 0.5	0.0 ± 0.1	0	
Holothuroidea				
Leptosynapta clarki	16.8±18.6	0.3 ± 0.2	0	
Species Richness	54		96	
Diversity, H^1	2.55		2.83	
Total Number	311.5		870.5	
Total Biomass	<5.7		<11.1	

Table 10a. Jamestown (protected sand-gravel) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter) m^2 ± standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Nemertea								
spp.	0		0		0		0.3 ± 0.5	<0.1
Paranemertes peregrina	8.0 ± 11.3	<0.1	0		0		0	
Nematoda								
spp.	3.0 ± 1.4	<0.1	1.8 ± 1.7	<0.1	1.5 ± 1.9	<0.1	0.5 ± 0.6	<0.1
Mollusca								
Gastropoda								
Acmaeidae								
spp.	0		0		0		0.3 ± 0.5	<0.1
Lacuna variegata	0		0		0		0.5 ± 1.0	<0.1
Bivalvia								
Transennella tantilla	0		0		0		0.3 ± 0.5	<0.1
Annelida								
Oligochaeta spp.	7441.5 ± 1013.3	<0.1	1108.3 ± 844.5	<0.1	766.0 ± 592.5	<0.1	40.3 ± 21.7	<0.1
Polychaeta								
Nereidae								
spp. (juv.)	0		0.3 ± 0.5	<0.1	0		0	
Nereis vexillosa	0		0		0		0.5 ± 1.0	<0.1
Phyllodocidae								
Phyllodoce maculata	1.0 ± 0.0	<0.1	0		0		0.3 ± 0.5	<0.1
Polynoidae								
Harmothoe imbricata	0		0		0		0.5 ± 0.6	<0.1

tantilla					0		0.3 ±0.5	<0.1
Annelida								
Oligochaeta spp.	7441.5 ±1013.3	<0.1	1108.3 ±844.5	<0.1	766.0 ±592.5	<0.1	40.3 ±21.7	<0.1
Polychaeta								
Nereidae spp. (juv.)	0		0.3 ±0.5	<0.1	0		0	
Nereis vexillosa	0		0		0		0.5 ±1.0	<0.1
Phyllodocidae								
Phyllodoce maculata	1.0 ±0.0	<0.1	0		0		0.3 ±0.5	<0.1
Polynoidae								
Harmothoe imbricata	0		0		0		0.5 ±0.6	<0.1

Jamestown +6

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Crustacea								
Cumacea								
Cumella vulgaris	4.5 ±6.4	<0.1	0		0		0	
Tanaidacea								
Leptochelia dubia	18.5 ±26.2	<0.1	0.3 ±0.5	<0.1	0		0.5 ±0.6	<0.1
Amphipoda								
Caprellidea spp.	0		0		3.3 ±6.5	<0.1	0	
Gammaridea spp.	32.5 ±46.0	<0.1	0		3.5 ±4.4	<0.1	2.0 ±1.4	<0.1
Decapoda								
Pinnixa spp. (juv.)	0		0		0		0.3 ±0.5	<0.1
Pugettia gracilis	0		0		0		0.3 ±0.5	<0.1
Insecta								
Dipteran larvae	2.0 ±2.8	<0.1	0		0		0	
Dolichopodidae spp.	0		0		0		0.3 ±0.5	<0.1
Species richness	8		4		4		14	
Diversity - H'	0.07		0.02		0.07		0.73	
Total number	7511.0		1110.7		774.3		46.9	
Total biomass (g)	<0.7		<0.4		<0.4		<1.3	

Table 10b. Jamestown (protected sand) benthic organisms from the mid (+1.4') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter) m^2 ± standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Ulva taeniata		0		0		✓		0
U. sp.		0		0		✓		✓
Rhodophyta								
Ceramium eatorianum		0		0		✓		0
Cnidaria								
Anthozoa spp.	0		0		0.5 ±0.6	0.1 ±0.1	0	
Hydrozoa								
Coryne sp.	0		0		✓	<0.1	0	
Nemertea spp.	1.0 ±1.4	<0.1	1.5 ±1.7	<0.1	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Paranemertes peregrina	0		0		0.3 ±0.5	<0.1	0	
Nematoda spp.	2.0 ±2.8	<0.1	10.3 ±12.3	<0.1	6.3 ±4.7	<0.1	11.8 ±6.4	<0.1
Mollusca								
Gastropoda								
Acmaeidae spp.	0		0		0		0.3 ±0.5	<0.1
Aglaja diomedia	0		0		0.5 ±0.6	<0.1	0.3 ±0.5	<0.1
Lacuna variegata	0		0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Opisthobranchia	0		0		0		0.3 ±0.5	<0.1

Jamestown +1.4

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Bivalvia								
Macoma inquinata	0		0		0.5 ±1.0	3.8 ±7.6	0	
M. nasuta	3.0 ±1.4	7.8 ±0.6	0.5 ±0.6	3.7 ±4.7	1.8 ±1.7	8.5 ±9.7	0.3 ±0.5	2.0 ±3.9
M. spp.	0.5 ±0.7	0.2 ±0.2	0		0		0.3 ±0.5	<0.1
Mytilus sp.	0.5 ±0.7	<0.1	0		0.3 ±0.5	0.1	0	
Transennella tantilla	63.5 ±9.2	0.4 ±0.2	19.0 ±17.3	0.1	180.8 ±16.4	0.8 ±1.0	132.0 ±23.0	<0.1
Annelida								
Oligochaeta spp.	38.0 ±24.0	<0.1	40.3 ±24.4	<0.1	542.0 ±1046.0	0.2 ±0.4	12.5 ±10.0	<0.1
Polychaeta								
Arenicolidae spp. (juv.)	2.5	<0.1	17.5	<0.1	176.3	<0.1		

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Bivalvia								
Macoma inquinata	0		0		6.5 ±1.0	3.8 ±7.6	0	
M. nasuta	3.0 ±1.4	7.8 ±0.6	0.5 ±0.6	3.7 ±4.7	1.8 ±1.7	8.5 ±9.7	0.3 ±0.5	2.0 ±3.9
M. spp.	0.5 ±0.7	0.2 ±0.2	0		0		0.3 ±0.5	<0.1
Mytilus sp.	0.5 ±0.7	<0.1	0		0.3 ±0.5	0.1	0	
Transennella tantilla	63.5 ± 9.2	0.4 ±0.2	19.0 ±17.3	0.1	180.8 ±16.4	0.8 ±1.0	132.0 ± 23.0	<0.1
Annelida								
Oligochaeta								
spp.	38.0 ±24.0	<0.1	40.3 ± 24.4	<0.1	542.0 ±1046.0	0.2 ±0.4	12.5 ±10.0	<0.1
Polychaeta								
Arenicolidae spp. (juv.)	2.5 ±3.5	<0.1	17.5 ±28.7	<0.1	176.3 ±21.6	<0.1	53.3 ±25.1	<0.1
Capitellidae								
Capitella capitata	43.5 ±24.8	<0.1	90.8 ±69.4	<0.1	75.3 ±36.2	0.1 ±0.1	23.5 ± 8.9	<0.1
Mediomastus sp.	± 1.0 1.4	<0.1	± 1.5 1.7	<0.1	0.5 ±1.0	<0.1	0	
Notomastus sp.	0		0		0		0.8 ±1.0	<0.1
Cirratulidae spp.	0		0		0		0.3 ±0.5	<0.1
Goniadidae								
Glycinde picta	0		0.3 ±0.5	<0.1	0		0.5 ±1.0	<0.1
Lumbrineridae								
Lumbrineris spp.	0.5 ±0.7	<0.1	0		0.3 ±0.5	<0.1	0	

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Maldanidae spp. (juv.)	1.0 ±1.4	<0.1	0		0		0.5 ±1.0	<0.1
Nephtyidae								
Nephtys caeca	2.5 ±0.7	✓	0.3 ±0.5	<0.1	0.3 ±0.5	✓	0	
N. caecoides	0		0.3 ±0.5	<0.1	0.3 ±0.5	✓	2.3 ±1.7	✓
N. californiensis	0		0		0		0.8 ±1.5	<0.1
N. spp. (juv.)	0		0		0.8 ±1.0	<0.1	1.0 ±1.4	<0.1
Nereidae								
Nereis spp. (adult)	0		0		3.0 ±3.4	<0.1	0.8 ±1.5	<0.1
N. spp. (juv.)	0		15.8	<0.1	0.3	<0.1		

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Maldanidae								
spp. (juv.)	1.0 ±1.4	<0.1	0		0		0.5 ±1.0	<0.1
Nephtyidae								
Nephtys caeca	2.5 ±0.7	✓	0.3 ±0.5	<0.1	0.3 ±0.5	✓	0	
N. caecoides	0		0.3 ±0.5	<0.1	0.3 ±0.5	✓	2.3 ±1.7	✓
N. californiensis	0		0		0		0.8 ±1.5	<0.1
N. spp. (juv.)	0		0		0.8 ±1.0	<0.1	1.0 ±1.4	<0.1
Nereidae								
Nereis spp. (adult)	0		0		3.0 ±3.4	<0.1	0.8 ±1.5	<0.1
N. spp. (juv.)	0		15.8 ±10.2	<0.1	0.3 ±0.5	<0.1	0	
Platynereis bicanaliculata	0		0		2.5 ±3.0	<0.1	0	
Opheliidae								
Armandia brevis	3.0 ±4.2	<0.1	0		1.3 ±1.3	<0.1	0.5 ±0.6	<0.1
Orbiniidae								
Naineris spp.	0		0.3 ±0.5	<0.1	1.3 ±2.5	<0.1	0.3 ±0.5	<0.1
Scoloplos spp.	3.0 ±0.0	<0.1	0		0.3 ±0.5	<0.1	0.5 ±0.6	<0.1
Paraonidae								
Paraonella platybranchia	3.0 ±2.8	<0.1	8.3 ±5.4	<0.1	2.8 ±3.1	<0.1	1.3 ±1.5	<0.1

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Phyllodocidae								
spp.	0		0.5 ±0.6	<0.1	0		0	
Eteone longa	19.0 ±5.7	<0.1	43.8 ±13.7	<0.1	17.8 ±5.7	<0.1	33.8 ±16.8	<0.1
E. tuberculata	0		0		0.5 ±1.0	<0.1	0	
Eulalia sanguinea	0.5 ±0.7	<0.1	0		0.3 ±0.5	<0.1	0	
Phyllodoce maculata	1.0 ±1.4	<0.1	0.3 ±0.5	<0.1	8.0 ±4.2	<0.1	8.5 ±8.1	<0.1
P. spp.	0		0.5 ±1.0	<0.1	0		0	
Polynoidae spp.	0		0.3 ±0.5	<0.1	0		0	
Spionidae								
spp. (juv.)	0.5 ±0.7	<0.1	40.0 ±72.2	<0.1	0.5 ±0.1	<0.1	0	
Malacoceros	287.5	<0.1	20.5	<0.1				

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Phyllodocidae spp.	0		0.5 ±0.5	<0.1	0		0	
Eteone longa	19.0 ±5.7	<0.1	43.8 ±13.7	<0.1	17.8 ±5.7	<0.1	33.8 ±16.8	<0.1
E. tuberculata	0		0		0.5 ±1.0	<0.1	0	
Eulalia sanguinea	0.5 ±0.7	<0.1	0		0.3 ±0.5	<0.1	0	
Phyllodoce maculata	1.0 ±1.4	<0.1	0.3 ±0.5	<0.1	8.0 ±4.2	<0.1	8.5 ±8.1	<0.1
P. spp.	0		0.5 ±1.0	<0.1	0		0	
Polynoidae-spp.	0		0.3 ±0.5	<0.1	0		0	
Spionidae spp. (juv.)	0.5 ±0.7	<0.1	40.0 ±72.2	<0.1	0.5 ±0.1	<0.1	0	
Malacoceros glutaeus	287.5 ±369.8	<0.1	20.5 ±14.3	<0.1	297.3 ±20.8	✓	326.0 ±38.5	<0.1
Polydora kempi japonica	4.0 ±1.4	<0.1	47.0 ±27.4	<0.1	73.5 ±14.1	✓	6.8 ±5.5	<0.1
P. quadrilobata	0		0.3 ±0.5	<0.1	0		0	
P. sp.	0.5 ±0.7	<0.1	0		0		0	
Prionospio cirrifera	0.5 ±0.7	<0.1	0		0		0	
Pygospio elegans	41.0 ±22.6	<0.1	1287.8 ±1495.7	<0.1	68.5 ±8.5	<0.1	49.5 ±35.2	<0.1
Scolelepis sp. C	0		0		0.3 ±0.5	<0.1	0	
Spiophanes bombyx	0		0		0		0.3 ±0.5	<0.1

Jamestown +1.4

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Syllidae								
Exogone lourei	2.0 ±1.4	<0.1	0		1.0 ±0.8	<0.1	4.0 ±5.0	<0.1
Streptosyllis latipalpa	2.5 ±2.1	<0.1	1.8 ±3.5	<0.1	1.0 ±0.8	<0.1	1.8 ±1.5	<0.1
Syllis spp.	0.5 ±0.7	<0.1	1.1 ±1.5	<0.1	0		0	
Crustacea								
Cumacea								
Cumella vulgaris	2.5 ±3.5	<0.1	0.8 ±0.5	<0.1	2.5 ±1.0	<0.1	3.3 ±2.0	<0.1
Tanaidacea								
Leptochelia dubia	0.5 ±0.7	<0.1	1.0 ±1.4	<0.1	15.0 ±9.6	<0.1	31.3 ±10.8	<0.1
Isopoda								
Exosphaeroma media	0		0		1.0 ±1.2	<0.1	0	
Amphipoda								
Ampelisca agassizii	–		2.8 ±1.7	<0.1	–		–	
Ampithoe lacertosa	–		0.3 ±0.5	<0.1	–		–	
Anisogammarus confervicolus	–		0.3 ±0.5	<0.1	–		–	
Caprella laeviuscula	0		0		0.3 ±0.5	<0.1	0	
Caprellidae spp.	0		0		0.3 ±0.5	<0.1	0	
Corophium acherusicum	42.3 ±22.7	<0.1	24.3 ±6.6	<0.1	–		–	
C. salmonis	0		28.5 ±27.2	<0.1	–		–	

			± 1.4		± 9.6		± 10.8	
Isopoda								
Exosphaeroma media	0		0		1.0 ± 1.2	<0.1	0	
Amphipoda								
Ampelisca agassizii	–		2.8 ± 1.7	<0.1	–		–	
Ampithoe lacertosa	–		0.3 ± 0.5	<0.1	–		–	
Anisogarrerus confervicolus	–		0.3 ± 0.5	<0.1	–		–	
Caprella laeviuscula	0		0		0.3 ± 0.5	<0.1	0	
Caprellidae spp.	0		0		0.3 ± 0.5	<0.1	0	
Corophium acherusicum	42.3 ± 22.7	<0.1	24.3 ± 6.6	<0.1	–		–	
C. salmonis	0		28.5 ± 27.2	<0.1	–		–	

Jamestown +1.4

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Amphipoda (cont.)								
Corophium spp.	0		0		23.3 ± 4.4	<0.1	0.3 ± 0.5	<0.1
Gammaridea spp.	3.0 ± 4.2	<0.1	–		22.8 ± 9.6	0.0 ± 0.1	0.3 ± 0.5	<0.1
Paraphoxus spinosus type A	–		0.5 ± 0.6	<0.1	–		–	
Pontogeneia cf rostrata	–		1.3 ± 1.9	<0.1	–		–	
Decapoda								
Crridea spp.	0		0		0.5 ± 0.6	<0.1	0	
Pinnixa sp. (juv.)	0		0		0		0.8 ± 1.5	<0.1
Pinnotheridae spp.	0		0		0.3 ± 0.5	<0.1	0	
Upogebia pugettensis	0		1.5 ± 1.9	1.3 ± 2.7	0		0	
Echinodermata								
Holothuroidea								
Leptosynapta clarki	0.5 ± 0.7	<0.1	0		0.3 ± 0.5	<0.1	4.3 ± 2.9	<0.1
Species richness	33		36		46		38	
Diversity - H'	1.87		1.19		2.02		1.90	
Total number	576.8		1706.1		1533.9		715.8	
Total biomass (g)	<11.2		<8.5		<17.5		<5.5	

pugettensis			±1.9	±2.7	0		0	
Echinodermata								
Holothuroidea								
Leptosynapta clarki	0.5 ±0.7	<0.1	0		0.3 ±0.5	<0.1	4.3 ±2.9	<0.1
Species richness	33		36		46		38	
Diversity - H'	1.87		1.19		2.02		1.90	
Total number	576.8		1706.1		1533.9		715.8	
Total biomass (g)	<11.2		<8.5		<17.5		<5.5	

Table 10c. Jamestown (protected sand) benthic organisms from the low (+0') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter) m^2 ± standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Enteromorpha prolifera		0		✓		0		0
Ulva sp.		0		✓		✓		✓
Urospora sp.		0		0		0		✓
Rhodophyta								
Delessericeae		0		0		0		✓
Hymenena sp.		0		0		0		✓
Pterosiphonia bipinnata		0		0		0		✓
P. sp.		0		0		0		✓
Cnidaria								
Anthozoa sp.	0.5 ±0.7	<0.1	8.0 ±5.6	<0.1	2.5 ±1.9	0.0 ±0.1	0.3 ±0.5	<0.1
Halcampa decemtentaculata	31.0 ±11.3	0.1 ±0.0	2.5 ±5.0	<0.1	0		2.0 ±4.0	<0.1
Nemertea spp.	2.5 ±2.1	<0.1	0.8 ±0.5	<0.1	3.0 ±1.8	<0.1	2.5 ±1.3	<0.1
Nematoda spp.	0		0.3 ±0.5	<0.1	1.5 ±1.3	<0.1	8.5 ±9.5	<0.1
Mollusca								
Gastropoda								
Alvinia sp.	0		0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Lacuna variegata	0		0		0.3 ±0.5	<0.1	0	
Aeolididae sp. (juv.)	0		0		0.3 ±0.5	<0.1	0	

bipinnata					0			✓
P. sp.		0		0		0		✓
Cnidaria								
Anthozoa sp.	0.5 ±0.7	<0.1	8.0 ±5.6	<0.1	2.5 ±1.9	0.0 ±0.1	0.3 ±0.5	<0.1
Halcampa decomtentaculata	31.0 ±11.3	0.1 ±0.0	2.5 ±5.0	<0.1	0		2.0 ±4.0	<0.1
Nemertea spp.	2.5 ±2.1	<0.1	0.8 ±0.5	<0.1	3.0 ±1.8	<0.1	2.5 ±1.3	<0.1
Nematoda spp.	0		0.3 ±0.5	<0.1	1.5 ±1.3	<0.1	8.5 ±9.5	<0.1
Mollusca								
Gastropoda								
Alvinia sp.	0		0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Lacuna variegata	0		0		0.3 ±0.5	<0.1	0	
Aeolidiidae sp. (juv.)	0		0		0.3 ±0.5	<0.1	0	

Jamestown +0

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 77 #	Win 77 wt
Bivalvia								
Cryptomya californica	0		0.3 ±0.5	<0.1	0.5 ±0.6	0.5 ±0.6	0	
Macoma inquinata	0		0.3 ±0.5	0.3 ±0.5	0.5 ±0.6	0.1 ±0.2	0	
Macoma nasuta	0		0		0		0.3 ±0.5	0.1 ±0.3
M. spp.	16.0 ±27.7	0.1 ±0.2	0.5 ±1.0	0.3 ±0.7	0		0	
Protothaca staminea	0		0.3 ±0.5	0.9 ±1.8	0		0	
Transennella tantilla	39.0 ±44.2	0.2 ±0.2	13.5 ±1.7	<0.1	64.0 ±30.7	0.3 ±0.3	39.3 ±16.6	<0.1
Tresus capax	0		0		0		1.8 ±0.5	0.4 ±0.7
Annelida								
Oligochaeta spp.	584.5 ±135.0	<0.1	238.3 ±84.7	<0.1	495.5 ±140.5	<0.1	676.3 ±189.6	✓
Polychaeta								
Arenicolidae sp. (juv.)	1.0 ±1.4	<0.1	1.5 ±1.9	<0.1	2.0 ±1.4	<0.1	4.0 ±2.9	<0.1
Branchiomaldane vincenti	12.0 ±2.8	<0.1	4.5 ±4.4	<0.1	2.8 ±3.0	<0.1	2.3 ±3.9	<0.1
Capitellidae								
Capitella capitata	53.0 ±8.5	<0.1	15.8 ±4.9	<0.1	74.0 ±14.0	<0.1	58.3 ±23.5	<0.1
Mediomastus sp.	38.5 ±2.1	<0.1	37.5 ±14.8	<0.1	44.3 ±9.4	<0.1	32.8 ±13.9	<0.1
Cirratulidae sp.	14.5 ±20.5	<0.1	1.5 ±3.0	<0.1	1.0 ±1.4	<0.1	3.8 ±3.5	<0.1

capax							1.8 ±0.5	0.4 ±0.7
Annelida								
Oligochaeta spp.	584.5 ±135.0	<0.1	238.3 ±84.7	<0.1	495.5 ±140.5	<0.1	676.3 ±189.6	✓
Polychaeta								
Arenicolidae sp. (juv.)	1.0 ±1.4	<0.1	1.5 ±1.9	<0.1	2.0 ±1.4	<0.1	4.0 ±2.9	<0.1
Branchiomaldane vincenti	12.0 ±2.8	<0.1	4.5 ±4.4	<0.1	2.8 ±3.0	<0.1	2.3 ±3.9	<0.1
Capitellidae								
Capitella capitata	53.0 ±8.5	<0.1	15.8 ±4.9	<0.1	74.0 ±14.0	<0.1	58.3 ±23.5	<0.1
Mediomastus sp.	38.5 ±2.1	<0.1	37.5 ±14.8	<0.1	44.3 ±9.4	<0.1	32.8 ±13.9	<0.1
Cirratulidae sp.	14.5 ±20.5	<0.1	1.5 ±3.0	<0.1	1.0 ±1.4	<0.1	3.8 ±3.5	<0.1

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Cirratulidae (cont.)								
Cirratulus cirratus	1.5 ±2.1	<0.1	0.8 ±1.0	<0.1	1.8 ±1.7	<0.1	0	
Tharyx multifilis	4.5 ±3.5	<0.1	2.5 ±2.4	<0.1	1.0 ±1.4	<0.1	1.8 ±1.5	<0.1
Dorvilleidae								
Dorvillea rudolphi	16.5 ±23.3	<0.1	4.5 ±2.7	<0.1	9.5 ±8.7	<0.1	4.8 ±3.4	<0.1
Protodorvillea gracilis	2.0 ±2.8	<0.1	0		0		0	
Eunicoidea sp.	0		0		0.5 ±1.0	<0.1	0	
Goniadidae								
Glycinde picta	0		0		0		0.5 ±1.0	<0.1
Hesionidae								
Cyptis brevipalpa	0.5 ±0.7	<0.1	0		0		0	
Ophiodromus pugettensis	3.0 ±1.4	<0.1	2.3 ±1.5	<0.1	3.0 ±2.9	<0.1	4.0 ±0.8	<0.1
O. sp. A	0		0		0.3 ±0.5	<0.1	0	
Lumbrineridae								
Lumbrineris inflata	0		1.5 ±1.9	<0.1	0		0	
L. spp.	60.5 ±2.1	<0.1	26.3 ±6.2	<0.1	51.1 ±2.1	1.9	29.3	✓
Maldanidae sp. (juv.)	27.5 ±38.9	<0.1	7.8 ±15.5	<0.1	57.5 ±12.8	0.1 ±0.1	54.3 ±15.0	✓

Goniadidae								
Glycinde picta	0		0		0		0.5 ±1.0	<0.1
Hesionidae								
Gyptis brevipalpa	0.5 ±0.7	<0.1	0		0		0	
Ophiodromus pugettensis	3.0 ±1.4	<0.1	2.3 ±1.5	<0.1	3.0 ±2.9	<0.1	4.0 ±0.8	<0.1
O. sp. A	0		0		0.3 ±0.5	<0.1	0	
Lumbrineridae								
Lumbrineris inflata	0		1.5 ±1.9	<0.1	0		0	
L. spp.	60.5 ± 2.1	<0.1	26.3 ±6.2	<0.1	51.1	1.9 ±2.1	29.3	✓
Maldanidae sp. (juv.)	27.5 ±38.9	<0.1	7.8 ±15.5	<0.1	57.5 ±12.8	0.1 ±0.1	54.3 ±15.0	✓

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Maldanidae (cont.)								
Axiothella rubrocincta	49.5 ±40.3	<0.1	26.3 ±11.6	<0.1	20.8 ±7.4	0.2 ±0.2	6.0 ±5.4	✓
Euclymene delineata	0		0		0.3 ±0.5	<0.1	0	
Nephtyidae								
Nephtys caeca	0		0		0.5 ±1.0	<0.1	0	
N. caecoides	0		0		0.3 ±0.5	<0.1	0	
N. californiensis	0		0		0		0.3 ±0.5	<0.1
N. sp. (juv.)	0		0		0		0.3 ±0.5	<0.1
Nereidae								
Nereis vexillosa	0		0.3 ±0.5	<0.1	0		0.8 ±1.0	<0.1
N. sp. (juv.)	0		1.0 ±1.4	<0.1	0.3 ±0.5	<0.1	5.5 ±11.0	<0.1
Platynereis bicanaliculata	0.5 ±0.7	<0.1	0		20.5 ±4.4	0.0 ±0.1	8.3 ±7.9	<0.1
Onuphidae								
Onuphis iridescens	0.5 ±0.7	<0.1	0		0		0	
O. stigmatus	0.5 ±0.7	<0.1	0		0		0	
Opheliidae								
Armandia brevis	4.5 ±2.1	<0.1	0.5 ±0.6	<0.1	5.3 ±1.9	<0.1	7.0 ±3.2	<0.1
Orbiniidae								
Naineris dendritica	0.5 ±0.7	<0.1	0		0		0.3 ±0.5	<0.1

vexillosa	0		0.3 ±0.5	<0.1	0		0.8 ±1.0	<0.1
N. sp. (juv.)	0		1.0 ±1.4	<0.1	0.3 ±0.5	<0.1	5.5 ±11.0	<0.1
Platynereis bicanaliculata	0.5 ±0.7	<0.1	0		20.5 ±4.4	0.0 ±0.1	8.3 ±7.9	<0.1
Onuphidae								
Onuphis fridescens	0.5 ±0.7	<0.1	0		0		0	
O. stigmatus	0.5 ±0.7	<0.1	0		0		0	
Opheliidae								
Armandia brevis	4.5 ±2.1	<0.1	0.5 ±0.6	<0.1	5.3 ±1.9	<0.1	7.0 ±3.2	<0.1
Orbiniidae								
Naineris dendritica	0.5 ±0.7	<0.1	0		0		0.3 ±0.5	<0.1

Jamestown +0

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Orbiniidae (cont.)								
Naineris uncinata	27.5 ±17.7	<0.1	11.3 ±2.2	<0.1	3.5 ±7.0	<0.1	10.8 ±7.5	✓
N. sp.	0		0		13.8	<0.1	6.8 ±3.9	<0.1
Phyllodocidae								
Eteone longa	2.0 ±0.0	<0.1	0.5 ±0.6	<0.1	0.3 ±0.5	<0.1	1.0 ±0.8	<0.1
E. tuberculata	0		0		0.3 ±0.5	<0.1	0	
Eulalia sanguinea	1.0 ±1.4	<0.1	0		0.8 ±1.0	<0.1	0.8 ±1.0	<0.1
E. sp. (juv.)	0		0.3 0.5	0.1	0		0	
Phyllodoce maculata	2.0 ±1.4	<0.1	1.3 ±0.5	<0.1	3.0 ±3.1	<0.1	6.3 ±3.4	<0.1
P. spp.	0		0		2.5 ±2.4	<0.1	0	
Polynoidae								
Harmothoe imbricata	2.5 ±3.5	<0.1	9.5 ±3.0	<0.1	12.3 ±2.1	0.2 ±0.2	1.3 ±1.0	✓
H. sp. (juv.)	1.0 ±1.4	<0.1	0		0		0	
Sabellidae								
Chone sp.	0		0.3 ±0.5	<0.1	0		0	
Sphaerodoridae								
Sphaerodoropsis minuta	0		0		0.3 ±0.5	<0.1	0	
Spionidae								
Malacoceros glutaeus	32.5 ±19.1	<0.1	15.0 ±10.8	<0.1	67.3 ±2.1	<0.1	101.3 ±37.5	✓

P. spp.	0		±0.5 0		±3.1 2.5 ±2.4	<0.1	6.3 ±3.4 0	<0.1
Polynoidae								
Harmothoe imbricata	2.5 ±3.5	<0.1	9.5 ±3.0	<0.1	12.3 ±2.1	0.2 ±0.2	1.3 ±1.0	✓
H. sp. (juv.)	1.0 ±1.4	<0.1	0		0		0	
Sabellidae								
Chone sp.	0		0.3 ±0.5	<0.1	0		0	
Sphaerodoridae								
Sphaerodoropsis minuta	0		0		0.3 ±0.5	<0.1	0	
Spionidae								
Malacoceros glutaeus	32.5 ±19.1	<0.1	15.0 ±10.8	<0.1	67.3 ±2.1	<0.1	101.3 ±37.5	✓

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Spionidae (cont.)								
Polydora sp.	0		0.3 ±0.5	<0.1	0		0	
Pygospio elegans	0		0		0		0.3 ±0.5	<0.1
Spio filicornis	0		0.3 ±0.5	<0.1	0		0	
Syllidae								
Brania brevipharyngea	0		0.3 ±0.5	<0.1	0		0	
Exogone gemmifera	0		0		1.5 ±1.3	<0.1	0	
E. lourei	130.5 ±94.0	<0.1	64.0 ±17.8	<0.1	129.5 ±40.8	<0.1	85.8 ±33.5	<0.1
Sphaerosyllis brandhorsti	0		0		0.3 ±0.5	<0.1	0	
S. pirifera	0		0		0.3 ±0.5	<0.1	0	
S. sp.	8.5 ±10.6	<0.1	0		0.5 ±0.6	<0.1	0	
Streptosyllis latipalpa	0		0		0		0.5 ±1.0	<0.1
Syllides longocirrata	0		0		1.0 ±1.4	<0.1	0	
Syllis spp.	0		1.0 ±0.8	<0.1	0		6.5 ±9.1	✓
Terebellidae spp.	0		0		12.3 ±12.3	<0.1	0.5 ±1.0	<0.1
Eupolymnia heterobranchia	3.5 ±3.5	✓	0.5 ±0.5	<0.1	0.3 ±0.5	<0.1	1.3 ±1.9	✓
Nicolea zostericola	0		0		1.3 ±1.3	<0.1	0	
Pista brevibranchiata	26.0 ±2.8	✓	12.8 ±3.9	<0.1	8.5 ±4.2	0.5 ±0.4	12.3 ±2.2	✓

S. pirifera	0		0		±0.5 0.3 ±0.5	<0.1	0	
S. sp.	8.5 ±10.6	<0.1	0		0.5 ±0.6	<0.1	0	
Streptosyllis latipalpa	0		0		0		0.5 ±1.0	<0.1
Syllides longocirrata	0		0		1.0 ±1.4	<0.1	0	
Syllis spp.	0		1.0 ±0.8	<0.1	0		6.5 ±9.1	✓
Terebellidae spp.	0		0		12.3 ±12.3	<0.1	0.5 ±1.0	<0.1
Eupolymnia heterobranchia	3.5 ±3.5	✓	0.5 ±0.6	<0.1	0.3 ±0.5	<0.1	1.3 ±1.9	✓
Nicolea zostericola	0		0		1.3 ±1.3	<0.1	0	
Pista brevibranchiata	26.0 ± 2.8	✓	12.8 ±3.9	<0.1	8.5 ±4.2	0.5 ±0.4	12.3 ±2.2	✓

Jamestown +0

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Terebellidae (cont.)								
Polycirrus sp.	8.5 ±0.7	<0.1	3.3 ±3.6	<0.1	7.0 ±6.7	<0.1	2.0 ±1.8	<0.1
Sipuncula								
Golfingia pugettensis	0		0		0		0.3 ±0.5	<0.1
Crustacea								
Leptostraca								
Nebalia pugettensis	0		0		0.3 ±0.5	<0.1	1.0 ±0.8	<0.1
Ostracoda spp.	0		0		0.8 ±1.0	<0.1	0	
Mysidacea								
Archaeomysis grebnitzkii	0		0		0		4.5 ±9.0	<0.1
Cumacea								
Cumella vulgaris	0		0		0.3 ±0.5	<0.1	0	
Leptocuma sp.	0.5 ±0.7	<0.1	0		0		0	
Tanaidacea								
Leptochelia dubia	40.5 ±20.5	<0.1	37.3 ±22.9	<0.1	44.0 ±10.2	<0.1	52.0 ±19.3	<0.1
Isopoda								
Exosphaeroma amplicauda	0		0		0.3 ±0.5	<0.1	1.8 ±1.3	<0.1
Idotea sp. (juv.)	0		0		0.5 ±1.0	<0.1	0	

					±1.0			
Mysidacea								
Archaeomysis grebnitzkii	0		0		0		4.5 ±9.0	<0.1
Cumacea								
Cumella vulgaris	0		0		0.3 ±0.5	<0.1	0	
Leptocuma sp.,	0.5 ±0.7	<0.1	0		0		0	
Tanaidacea								
Leptochelia dubia	40.5 ±20.5	<0.1	37.3 ±22.9	<0.1	44.0 ±10.2	<0.1	52.0 ±19.3	<0.1
Isopoda								
Exosphaeroma amplicauda	0		0		0.3 ±0.5	<0.1	1.8 ±1.3	<0.1
Idotea sp. (juv.)	0		0		0.5 ±1.0	<0.1	0	

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Isopoda (cont.)								
Phyllodorus abdominalis	0		0.3 ±0.5	<0.1	0		0	
Synidotea bicuspida	0		0		0.5 ±1.0	<0.1	0	
Amphipoda								
Caprellidea								
Caprella sp.	0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1	0	
Gammaridea								
spp.	29.5 ±9.2	<0.1	-		54.5 ±9.3	0.4 ±0.3	16.5 ±5.5	<0.1
Ampithoe lacertosa	–		2.8 ±5.5	<0.1	–		–	
Calliopiella pratti	–		0.3 ±0.5	<0.1	–		–	
Corophium spp.	0.5 0.7	0.1	0		0.3 0.5	0.1	3.5 1.7	0.1
Melita dentata	–		0.5 ±1.0	<0.1	–		–	
Paraphoxus similis	–		0.3 ±0.5	<0.1	–		–	
P. spinosus type A	–		1.3 ±2.5	<0.1	–		0.3 ±0.5	<0.1
Pontogeneia cf. ivanovi	–		0.3 ±0.5	<0.1	–		–	
P. cf. rostrata	–		5.5 ±10.3	<0.1	–		–	
Tritella pilimana	0		0.3 ±0.5	<0.1	0		0	
Decapoda								
Callianassidae sp. (juv.)	0		0.3 ±0.5	<0.1	0		0	
Caridea spp.	0		0		0		0.8 ±1.0	<0.1

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Decapoda (cont.)								
Heptacarpus sp.	0		0		0.5 ±1.0	0.0 ±0.1	0	
Pinnixa littoralis	0		0.3 ±0.5	0.0 ±0.1	0		0	
P. sp. (juv.)	2.5 ±0.7	0.2 ±0.1	0.3 ±0.5	<0.1	3.5	<0.1	1.3 ±1.3	<0.1
Upogebia pugettensis	6.0 ±0.0	2.0 ±1.1	16.5 ±12.6	1.5 ±1.3	5.5 ±0.8	7.2 ±8.0	8.3 ±5.6	<0.1
Insecta								
Diptera larva	0		0		0		0.3 ±0.5	<0.1
Phoronida								
Phoronopsis harmeri	1.0 ±0.0	<0.1	1.0 ±0.8	<0.1	0.3 ±0.5	<0.1	0	
Echinodermata								
Ophuroidea spp.	1.5 ±0.7	<0.1	0.5 ±1.0	<0.1	8.8 ±8.3	<0.1	4.8 ±1.5	<0.1
Amphipholus squamata	0		0		6.3	0.1	0	
					12.5	0.2		
Holothuroidea								
Leptosynapta clarki	11.0 ±4.2	<0.1	2.8 ±1.5	<0.1	0.5 ±0.6	<0.1	2.5 ±3.8	<0.1
Species richness	47		57		76		61	
Diversity - H'	2.36		2.42		2.48		2.10	
Total number	1295.5		605.4		1260.0		1291.1	
Total biomass (g)	15.1		6.3		27.1		0.5	

Table 10d. Jamestown (sand) benthic organisms from the subtidal zone collected 7 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m.		-10 m.	
	#	wt.	#	wt.
Chlorophyta				
Chaetomorpha californica		<0.1		<0.1
Cladophora pygmaea		<0.1		<0.1
Entocladia viridis		0		<0.1
Phaeophyta				
Ectocarpus sp.		0		<0.1
Laminariales		2.5 ±5.0		0
Ralfsia sp.		<0.1		<0.1
Stictyosiphon tortilis		0		

Table 10d. Jamestown (sand) benthic organisms from the subtidal zone collected 7 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m.		-10 m.	
	#	wt.	#	wt.
Chlorophyta				
Chaetomorpha californica		<0.1		<0.1
Cladophora pygmaea		<0.1		<0.1
Entocladia viridis		0		<0.1
Phaeophyta				
Ectocarpus sp.		0		<0.1
Laminariales		2.5 ±5.0		0
Ralfsia sp.		<0.1		<0.1
Stictyosiphon tortilis		0		<0.1
Syringoderma abyssicola		0		<0.1
Rhodophyta				
Antithamnion glandulifera		<0.1		0
Asterocolax gardneri		0		<0.1
Callithamnion/ Pleonosporium		<0.1		<0.1
Callophyllis flabellulata		<0.1		0.5 ±1.1
C. haenophylla		0		0.2 ±0.3
C. sp. (juv.)		<0.1		0
Ceramium californicum		0.1 ±0.1		0

Jamestown Subtidal

	-5 m.		-10 m.	
Rhodophyta (cont.)	#	wt.	#	wt.
Choreocolax polysiphoniae		<0.1		0
Cruoriaceae		<0.1		0
Euthora fruticulosa		<0.1		<0.1
Fauchea laciniata		3.5 ±5.6		0
Goniotrichum alsidii (= G. elegans)		0		<0.1
Gracilaria verrucosa		11.0 ±14.6		<0.1
Gymnogongus leptophyllus		<0.1		0
Halymenia californica		2.5 ±5.0		0
Herposiphonia grandis		<0.1		<0.1

Jamestown Subtidal

Rhodophyta (cont.)	-5 m.		-10 m.	
	#	wt.	#	wt.
Choreocolax polysiphoniae		<0.1		0
Cruoriaceae		<0.1		0
Euthora fruticulosa		<0.1		<0.1
Fauchea laciniata		3.5 ±5.6		0
Goniotrichum alsidii (= G. elegans)		0		<0.1
Gracilaria verrucosa		11.0 ±14.6		<0.1
Gymnogongus leptophyllus		<0.1		0
Halymenia californica		2.5 ±5.0		0
Herposiphonia grandis		<0.1		<0.1
Hymenena sp.		<0.1		0
Iridaea sp.		9.3 ±18.5		0
Membranoptera platyphylla		0		<0.1
Peyssonellia pacifica		<0.1		<0.1
Platythamnion heteromorphum		0		<0.1
P. pectinatum		0		0.1 ±0.1
P. reversum		<0.1		0
P. villosum		0		0.3 ±0.6

Jamestown Subtidal

Rhodophyta (cont.)	-5 m.		-10 m.	
	#	wt.	#	wt.
Plocamium coccineum		0.1 ±0.2		0
Polyneura latissima		7.2 ±12.9		0.2 ±0.4
Polysiphonia hendryi		0.2 ±0.3		<0.1
P. pacifica		<0.1		0
Pterosiphonia bipinnata		0		<0.1
P. dendroidea		0.6 ±0.2		0
Rhodoptilum plumosum		0		<0.1
Rhodymenia sp.		0.1 ±0.1		<0.1
Scagelia occidentale		<0.1		<0.1
Stenogramme				

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Rhodophyta (cont.)				
Plocamium coccineum		0.1 ±0.2		0
Polyneura latissima		7.2 ±12.9		0.2 ±0.4
Polysiphonia hendryi		0.2 ±0.3		<0.1
P. pacifica		<0.1		0
Pterosiphonia bipinnata		0		<0.1
P. dendroidea		0.5 ±0.2		0
Rhodoptilum plumosum		0		<0.1
Rhodymenia sp.		0.1 ±0.1		<0.1
Scagelia occidentale		<0.1		<0.1
Stenogramme interrupta		0.1 ±0.0		<0.1
Porifera spp.		✓		
Cnidaria				
Anthozoa spp.	2.8 ±2.5	0.1 ±0.1	1.5 ±1.9	<0.1
Halcampa decemtantaculata	0		0.3 ±0.5	<0.1
Platyhelminthes - Turbellaria spp.	0		0.3 ±0.5	<0.1
Nemertea spp.	4.8 ±4.8	<0.1	8.5 ±1.7	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Nematoda				
spp.	66.8 ±37.5	<0.1	21.3 ±11.3	<0.1
Mollusca				
Amphineura				
Mopalia lignosa	0.3 ±0.5	0.3 ±0.6	0	
Gastropoda				
Alvinia sp.	20.5 ±7.2	<0.1	1.3 ±1.5	<0.1
Amphissa columbiana	0		0.3 ±0.5	<0.1
Bittium eschrichtii	3.8 ±4.4	0.0 ±0.1	0	
Calyptraea fastigiata	2.0 ±2.2	0.1 ±0.1	1.5 ±1.3	<0.1
Cerithiopsis sp.	2.3 ±2.9	<0.1	0	
Collisella ochracea	0.3 ±0.5	<0.1	0	
Lacuna variegata	0.3 ±0.5	<0.1	0.8 ±1.5	<0.1
Margarites/ Lirularia	9.8 ±6.2	<0.1	11.3 ± 6.7	<0.1
Margarites pupillus	0		2.8 ±4.3	<0.1
Nassarius mendicus	0		0.3 ±0.5	<0.1
Natica clausa	0		0.3 ±0.5	<0.1
Odostomia sp.	0		1.5 ±3.0	<0.1
Oenopota tabulata	0		0.3 ±0.5	<0.1

fastigata	±2.2	±0.1	1.5 ±1.3	<0.1
Cerithiopsis sp.	2.3 ±2.9	<0.1	0	
Collisella ochracea	0.3 ±0.5	<0.1	0	
Lacuna variegata	0.3 ±0.5	<0.1	0.8 ±1.5	<0.1
Margarites/ Lirularia	9.8 ±6.2	<0.1	11.3 ± 6.7	<0.1
Margarites pupillus	0		2.8 ±4.3	<0.1
Nassarius mendicus	0		0.3 ±0.5	<0.1
Natica clausa	0		0.3 ±0.5	<0.1
Odostomia sp.	0		1.5 ±3.0	<0.1
Oenopota tabulata	0		0.3 ±0.5	<0.1

Jamestown Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Gastropoda (cont.)				
Thais sp.	0.3 ±0.5	<0.1	0	
Trichotropis cancellata	0		0.3 ±0.5	0.0 ±0.1
Turbonilla sp.	0.5 ±1.0	<0.1	0.5 ±0.6	<0.1
Bivalvia				
Chlamys hastata	0		0.3 ±0.6	<0.1
Clinocardium nuttallii	10.5 ± 7.1	0.1 ±0.1	1.0 ±1.2	<0.1
Crenella decussata	68.3 ±59.7	0.1 ±0.1	4.3 ±4.4	<0.1
Lucinoma tenuisculpta	0		3.0 ±1.2	<0.1
Lyonsia californica	0		0.5 ±0.6	<0.1
Macoma nasuta	0.3 ±0.5	0.1 ±0.1	4.3 ±8.5	1.7 ±3.4
Macoma sp. (juv.)	6.0 ±3.5	0.1 ±0.1	18.3 ±5.7	<0.1
Musculus discors	0.3 ±0.5	<0.1	0.8 ±1.0	0.1 ±0.1
Mya arenaria	1.0 ±1.4	<0.1	0.8 ±0.5	<0.1
Mysella tumida	72.5 ±33.1	0.1 ±0.1	14.0 ±6.9	<0.1
Nuculana hamata	0		3.3 ±1.9	0.1 ±0.1
Nucula tenuis	0.5 ±0.6	<0.1	0	
Protothaca staminea	0.3 ±0.5	0.1 ±0.3	0.8 ±1.5	0.0 ±0.1

Lyonsia californica	0		±1.2 0.5	<0.1
Macoma nasuta	0.3 ±0.5	0.1 ±0.1	±0.6 4.3	1.7
Macoma sp. (juv.)	6.0 ±3.5	0.1 ±0.1	±8.5 18.3	±3.4 <0.1
Musculus discors	0.3 ±0.5	<0.1	±5.7 0.8	0.1
Mya arenaria	1.0 ±1.4	<0.1	±1.0 0.8	±0.1 <0.1
Myella tumida	72.5 ±33.1	0.1 ±0.1	±0.5 14.0	<0.1
Nuculana hamata	0		±6.9 3.3	0.1
Nucula tenuis	0.5 ±0.6	<0.1	±1.9 0	±0.1
Protothaca staminea	0.3 ±0.5	0.1 ±0.3	0.8 ±1.5	0.0 ±0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Bivalvia (cont.)				
Transennella tantilla	10.5 ±4.7	<0.1	7.8 ±1.7	<0.1
Tresus capax	0.3 ±0.5	<0.1	1.3 ±1.3	0.1 ±0.2
Annelida				
Archiannelida				
Polygordius sp.	0.3 ±0.5	<0.1	0	
Polychaeta				
Ampharetidae				
Ampharete arctica	0		12.0 ±3.2	<0.1
spp. (juv.)	0		1.5 ±2.4	<0.1
Apistobranchidae				
Apistobranchus sp.	C		0.3 ±0.5	<0.1
Capitellidae				
Capitella capitata	0		1.0 ±0.8	<0.1
Mediomastus sp.	21.3 ±11.6	<0.1	39.8 ±15.4	<0.1
Chaetopteridae				
Phyllochaetopterus prolifica	14.0 ±6.3	<0.1	4.0 ±4.1	<0.1
Spiochaetopterus costarum	0.3 ±0.5	<0.1	1.8 ±1.0	<0.1
Cirratulidae				
spp.	2.5 ±2.7	<0.1	32.3 ±38.5	<0.1

spp. (juv.)	0		± 3.2	
Apistobranchidae			1.5 ± 2.4	<0.1
Apistobranchus sp.	0		0.3 ± 0.5	<0.1
Capitellidae				
Capitella capitata	0		1.0 ± 0.8	<0.1
Mediomastus sp.	21.3 ± 11.6	<0.1	39.8 ± 15.4	<0.1
Chaetopteridae				
Phyllochaetopterus prolifica	14.0 ± 6.3	<0.1	4.0 ± 4.1	<0.1
Spiochaetopterus costarum	0.3 ± 0.5	<0.1	1.8 ± 1.0	<0.1
Cirratulidae spp.	2.5 ± 2.7	<0.1	32.3 ± 38.6	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Cirratulidae (cont.)				
Chaetozone setosa	3.0 ± 1.4	<0.1	5.5 ± 3.9	<0.1
Cirratulus cirratus	0		0.3 ± 0.5	<0.1
Tharyx multifilis	3.8 ± 7.5	<0.1	6.8 ± 8.6	<0.1
Dorvilleidae				
Protodorvillea gracilis	11.8 ± 7.3	<0.1	2.8 ± 2.2	<0.1
Dorvillea rudolphi	1.5 ± 1.3	<0.1	0	
Glyceridae				
Glycera sp. (juv.)	0		0.5 ± 0.6	<0.1
G. americana	1.5 ± 1.0	<0.1	0.5 ± 0.6	<0.1
G. capitata	1.0 ± 1.2	<0.1	0	
Goniadidae				
Glycinde picta	2.0 ± 0.8	<0.1	2.8 ± 2.8	<0.1
Goniada maculata	0		0.8 ± 1.0	<0.1
Hesionidae				
Gyptis brevipalpa	0		0.5 ± 0.6	<0.1
Micropodarke dubia	20.3 ± 8.7	<0.1	31.8 ± 11.7	<0.1
Lumbrineridae				
Lumbrineris sp.	4.5 ± 1.0	<0.1	4.3 ± 2.2	<0.1

Glycera sp. (juv.)	0		0.5 ±0.6	<0.1
G. americana	1.5 ±1.0	<0.1	0.5 ±0.6	<0.1
G. capitata	1.0 ±1.2	<0.1	0	
Goniadidae				
Glycinde picta	2.0 ±0.8	<0.1	2.8 ±2.8	<0.1
Goniada maculata	0		0.8 ±1.0	<0.1
Hesionidae				
Gyptis brevipalpa	0		0.5 ±0.6	<0.1
Micropodarke dubia	20.3 ± 8.7	<0.1	31.8 ±11.7	<0.1
Lumbrineridae				
Lumbrineris sp.	4.5 ±1.0	<0.1	4.3 ±2.2	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Maldanidae				
spp. (juv.)	14.3 ±10.4	<0.1	10.0 ±8.5	<0.1
Euclymene sp.	5.3 ±10.5	<0.1	4.5 ±7.7	<0.1
Nicomache personata	20.0 ± 7.4	<0.1	2.0 ±2.5	<0.1
Nephtyidae				
Nephtys sp.	0.3 ±0.5	<0.1	0	
N. ciliata	0		1.0 ±1.4	<0.1
Nereidae				
Nereis sp. (juv.)	0.3 ±0.5	<0.1	1.0 ±0.8	<0.1
N. procera	0.3 ±0.5	<0.1	0.5 ±0.6	<0.1
Platynereis bicanaliculata	16.3 ±7.7	<0.1	8.8 ±8.7	<0.1
Onuphidae				
Onuphis iridescens	0		1.0 ±0.8	<0.1
O. stigmatis	0.5 ±1.0	<0.1	0	
O. sp. (juv.)	0		2.3 ±1.7	<0.1
Ophelidae				
Ammotrypane aulogaster	0		0.3 ±0.5	<0.1
Armandia brevis	3.3 ±2.1	<0.1	0	
Travisia forbesii	0		0.5 ±1.0	<0.1

Platynereis bicanaliculata	16.3 ±7.7	<0.1	±0.6 8.8 ±8.7	<0.1
Onuphidae				
Onuphis iridescens	0		1.0 ±0.8	<0.1
O. stigmatis	0.5 ±1.0	<0.1	0	
O. sp. (juv.)	0		2.3 ±1.7	<0.1
Opheliidae				
Ammotrypane aulogaster	0		0.3 ±0.5	<0.1
Armandia brevis	3.3 ±2.1	<0.1	0	
Travisia forbesii	0		0.5 ±1.0	<0.1

Jamestown Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Orbiniidae				
Scoloplos sp.	2.8 ±1.7	<0.1	1.5 ±1.0	<0.1
Oweniidae				
Owenia fusiformis	6.5 ± 4.9	<0.1	2.5 ±1.0	<0.1
Paraonidae				
Aricidea sp.	1.8 ±1.0	<0.1	1.3 ±1.0	<0.1
Pectinariidae				
Pectinaria granulata	0		3.0 ±2.2	<0.1
Phyllodocidae				
Eteone longa	0.5 ±1.0	<0.1	0.8 ±1.0	<0.1
Eulalia sanguinea	0.3 ±0.5	<0.1	1.5 ±1.9	<0.1
Phyllodoce sp. A	0		0.3 ±0.5	<0.1
Phyllodoce groenlandica	1.3 ±1.3	<0.1	0.8 ±1.0	<0.1
Phyllodoce maculata	0		2.0 ±1.2	<0.1
Phyllodoce sp. (juv.)	1.3 ±1.3	<0.1	5.8 ±5.2	<0.1
Polynoidae				
Harmothoe imbricata	20.8 ±8.2	<0.1	10.0 ±7.0	<0.1
H. lunulata	0.5 ±0.6	<0.1	1.5 ±1.3	<0.1
H. sp.	0.5 ±1.0	<0.1	0	

Phyllodocidae				
Eteone longa	0.5 ±1.0	<0.1	0.8 ±1.0	<0.1
Eulalia sanguinea	0.3 ±0.5	<0.1	1.5 ±1.9	<0.1
Phyllodoce sp. A	0		0.3 ±0.5	<0.1
Phyllodoce groenlandica	1.3 ±1.3	<0.1	0.8 ±1.0	<0.1
Phyllodoce maculata	0		2.0 ±1.2	<0.1
Phyllodoce sp. (juv.)	1.3 ±1.3	<0.1	5.8 ±5.2	<0.1
Polynoidae				
Harmothoe imbricata	20.8 ±8.2	<0.1	10.0 ±7.0	<0.1
H. lunulata	0.5 ±0.6	<0.1	1.5 ±1.3	<0.1
H. sp.	0.5 ±1.0	<0.1	0	

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Sabellidae				
Chone ecaudata	1.5 ±1.3	< 0.1	3.8 ±1.5	< 0.1
C. spp.	0		5.0 ±5.6	< 0.1
Euchone analis	0		4.0 ±2.2	< 0.1
Laonome sp.	0		2.0 ±4.0	< 0.1
Potamilla intermedia	0		0.3 ±0.5	< 0.1
P. myriops	0		0.5 ±1.0	< 0.1
Sabella media	0		13.5 ±10.2	< 0.1
Scalebregmidae				
Scalebregma inflatum	0		1.3 ±1.3	< 0.1
Serpulidae				
Spirorbis sp.	0		0.3 ±0.5	< 0.1
Sigalionidae				
Pholoe minuta	1.5 ±0.6	< 0.1	1.0 ±0.8	<0.1
Spionidae				
Laonice cirrata	0		0.8 ±1.3	<0.1
Malacoceros gluteaeus	0.5	0.1	0.8	0.1
Polydora sp. A.	0.6		1.0	
	0		0.3	0.1
			0.5	

			±1.3	
Serpulidae				
Spirorbis				
sp.	0		0.3 ±0.5	<0.1
Sigalionidae				
Pholoe				
minuta	1.5 ±0.6	<0.1	1.0 ±0.8	<0.1
Spionidae				
Leonice				
cirrata	0		0.8 ±1.3	<0.1
Malacoceros	0.5		0.8	
glutaeus	0.6	0.1	1.0	0.1
Polydora	0		0.3	
sp. A.			0.5	0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Spionidae (cont.)				
Polydora				
quadrilobata	0		2.5 ±1.9	<0.1
P.				
socialis	1.3 ±1.3	<0.1	2.3 ±1.3	<0.1
Prionospio				
cirrifera	0.5 ±0.6	<0.1	0	
P.				
steenstrupi	7.3 ±2.5	<0.1	8.3 ±3.3	<0.1
Spiophanes				
berkeleyorum	0.3 ±0.5	<0.1	1.5 ±1.7	<0.1
S.				
bombyx	4.5 ±3.9	<0.1	1.0 ±0.8	<0.1
Syllidae				
Exogone				
lourei	1.0 ±1.4	<0.1	0.8 ±1.5	<0.1
E.				
spp.	96.0 ±43.5	<0.1	40.5 ±21.5	<0.1
Pionosyllis				
uraga	0.3 ±0.5	<0.1	0	
Sphaerosyllis				
brandhorsti	0.5 ±0.6	<0.1	0	
S.				
pirifera	3.5 ±2.7	<0.1	1.0 ±1.4	<0.1
Syllides				
longocirrata	1.3 ±1.5	<0.1	1.0 ±0.8	<0.1
Syllis				
spp.	4.0 ±5.1	<0.1	2.3 ±2.9	<0.1
Terebellidae				
spp.	0.5 ±1.0	<0.1	1.0 ±1.4	<0.1
Nicolea				
zostericola	0.5 ±0.6	<0.1	0.3 ±0.5	<0.1
Pista	0			
brevibranchiata			0.8 ±1.0	<0.1

	±1.4		±1.5	
E.	96.0	<0.1	40.5	<0.1
spp.	±43.5		±21.5	
Pionosyllis	0.3	<0.1	0	
uraga	±0.5			
Sphaerosyllis	0.5	<0.1	0	
brandhorsti	±0.6			
S.	3.5	<0.1	1.0	<0.1
pirifera	±2.7		±1.4	
Syllides	1.3	<0.1	1.0	<0.1
longocirrata	±1.5		±0.8	
Syllis	4.0	<0.1	2.3	<0.1
spp.	±5.1		±2.9	
Terebellidae	0.5	<0.1	1.0	<0.1
spp.	±1.0		±1.4	
Nicolea	0.5	<0.1	0.3	<0.1
zostericola	±0.6		±0.5	
Pista	0		0.8	<0.1
brevibranchiata			±1.0	

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Terebellidae (cont.)				
Pista				
cristata	0		0.5	<0.1
Polycirrus			±1.0	
sp. A.	1.3	<0.1	0.3	<0.1
Proclea	±1.0		±0.5	
graffi	0		1.0	<0.1
			±1.4	
Oligochaeta				
spp.	13.5	<0.1	31.0	<0.1
	±14.9		±19.9	
Sipunculida				
spp.	1.8	<0.1	0.3	<0.1
Phascolosoma	±2.1		±0.5	
agassizii	0.3	<0.1	0.3	<0.1
	±0.5		±0.5	
Priapulida				
Priapulus				
caudatus	0		0.3	<0.1
			±0.5	
Crustacea				
Ostracoda				
spp.	16.8	<0.1	18.8	<0.1
	±6.7		±11.9	
Leptostraca				
Nebalia				
pugettensis	0.3	<0.1	0.3	<0.1
	±0.5		±0.5	
Cumacea				
Cumella				
vulgaris	0.3	<0.1	3.0	<0.1
Diastylis	±0.5		±1.2	
sp.	0.3	<0.1	2.5	<0.1
Lampropidae	±0.5		±1.9	
spp.	0.5	<0.1	0.5	<0.1
	±1.0		±1.0	

Priapulida				
Priapulus caudatus	0		0.3 ±0.5	<0.1
Crustacea				
Ostracoda spp.	16.8 ± 6.7	<0.1	18.8 ±11.9	<0.1
Leptostraca				
Nebalia pugettensis	0.3 ± 0.5	<0.1	0.3 ±0.5	<0.1
Cumacea				
Cumella vulgaris	0.3 ± 0.5	<0.1	3.0 ±1.2	<0.1
Diastylis sp.	0.3 ± 0.5	<0.1	2.5 ±1.9	<0.1
Lampropidae spp.	0.5 ± 1.0	<0.1	0.5 ± 1.0	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Tanaidacea				
Leptochelia dubia	132.3 ± 41.9	0.0 ±0.1	68.5 ±43.6	<0.1
Isopoda				
Epicaridea sp.	0.3 ±0.5	<0.1	0	
Exosphaeroma media	0.8 ±1.0	<0.1	0	
E. rhomburum	1.0 ±1.2	<0.1	0.5 ±1.0	<0.1
Gnorimosphaeroma oregonense	0		0.3 ±0.5	<0.1
Jaeropsis dubia	0		0.3 ±0.5	<0.1
Paranthura elegans	0		1.3 ±1.5	<0.1
Amphipoda				
Corophium spp.	0.3 ± 0.5	<0.1	0	
Gammaridea spp.	83.0 ± 26.8	0.2 ±0.2	76.6 ±48.1	0.1 ±0.1
Decapoda				
Caridea sp. (juv.)	1.3 ±1.9	<0.1	1.3 ±1.5	<0.1
Crangon munitella	0.5 ±1.0	0.1 ±0.1	0.5 ±1.0	0.1 ±0.2
Crangon sp.	0.8 ±1.0	0.1 ±0.1	0	
Heptacarpus stimpsoni	0.3 ±0.5	0.1 ±0.2	0	
Hippolytidae sp.	2.3 ±4.5	<0.1	0	

	North Beach Subtidal			
	-5 m.		-10 m.	
	#	wt.	#	wt.
Bryozoa spp.		✓		
Echinodermata				
Ophiuroidea spp. (juv.)	0		0.3 ± 0.5	0.1
Holothuroidea Leptosynapta clarki	4.5 ± 0.7	0.1 ± 0.1	1.5 ± 1.3	0.1 ± 0.1
Ascidiacea Pyura haustor	0.5 ± 0.7	6.7 ± 9.5	0	
Species Richness	201		151	
Diversity, H^1	1.44		3.86	
Total number	1410.3		372.1	
Total biomass	1202.1		73.7	

Table 9a. Kydaka Beach (exposed sand) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt.	#	wt.	#	wt.	#	wt.
Annelida								
Oligochaeta spp.	0.4 ± 0.5	<0.1	3.4 ± 2.1	<0.1	0.6 ± 0.9	<0.1	0.4 ± 0.5	<0.1
Polychaeta								
Capitellidae spp.	0		0		0.2 ± 0.4	<0.1	0	
Spionidae Pygospio elegans	0		0.2 ± 0.4	<0.1	0.2 ± 0.4	<0.1	0	
Syllidae Syllis spp.	0		0		0		0.2 ± 0.4	<0.1
Crustacea								
Isopoda								
Cirolana vancouverensis	0.2 ± 0.4	<0.1	0		0		0	
Amphipoda								
Gammaridea	0							

Table 9a. Kydaka Beach (exposed sand) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt.	#	wt.	#	wt.	#	wt.
Annelida								
Oligochaeta								
spp.	0.4 ± 0.5	<0.1	3.4 ± 2.1	<0.1	0.6 ± 0.9	<0.1	0.4 ± 0.5	<0.1
Polychaeta								
Capitellidae								
spp.	0		0		0.2 ± 0.4	<0.1	0	
Spionidae								
Pygospio elegans	0		0.2 ± 0.4	<0.1	0.2 ± 0.4	<0.1	0	
Syllidae								
Syllis spp.	0		0		0		0.2 ± 0.4	<0.1
Crustacea								
Isopoda								
Cirolana vancouverensis	0.2 ± 0.4	<0.1	0		0		0	
Amphipoda								
Gammaridea spp.	0		-		3.8 ± 3.3	<0.1	0	
Ischyrocerus anguipes	-		0.2 ± 0.4	<0.1	-		-	
Orchestoidea pugettensis	-		2.0 ± 1.7	<0.1	-		-	
Insecta								
Dipteran larvae spp.	0		1.4 ± 2.6	<0.1	0		0	
Species Richness	2		6		4		2	
Diversity, H^1	0.64		1.23		0.71		0.64	
Total Number	0.6		7.2		4.8		0.6	
Total Biomass (g)	<0.2		<0.6		<0.4		<0.2	

Table 9b. Kydaka Beach (exposed sand) benthic organisms from the mid (+3') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt.	#	wt.	#	wt.	#	wt.
Nemertea								
spp.	0		0.6 ± 0.9	<0.1	0		0	
Annelida								
Polychaeta								
Nephtyidae								
Nephtys californiensis	0		0.2 ± 0.4	<0.1	0.4 ± 0.5	<0.1	0	
Phyllodocidae								
Eteone longa	0		0.2 ± 0.4	<0.1	0		0	
Spionidae								
Pygospio elegans	0.2 ± 0.4	<0.1	0		0		0	
Crustacea								
Mysidacea								
Archaeomysis grebnitzkii	0.2 ± 0.4	<0.1	10.6 ± 7.1	<0.1	2.0 ±1.2	<0.1	0	
Amphipoda								
Gammaridea sp.	0		0		0		0	
Eohaustorius washingtonianus	0		4.8 ± 2.6	<0.1	0		0.6 ± 1.3	<0.1
Species Richness	2		5		2		1	
Diversity, H^1	0.69		0.87		0.45		0.00	
Total Number	0.4		16.4		2.4		0.6	
Total Biomass	<0.2		<0.5		<0.2		<0.1	

Mysidacea				
Archaeomysis grebnitzkii	0.2 ± 0.4	<0.1	10.6 ± 7.1	<0.1
Amphipoda				
Gammaridea sp.	0		0	
Eohaustorius washingtonianus	0		4.8 ± 2.6	<0.1
Species Richness	2		5	
Diversity, H^1	0.69		0.87	
Total Number	0.4		16.4	
Total Biomass	<0.2		<0.5	

Mysidacea				
Archaeomysis grebnitzkii	2.0 ± 1.2	<0.1	0	
Amphipoda				
Gammaridea sp.	0		0	
Eohaustorius washingtonianus	0		0.6 ± 1.3	<0.1
Species Richness	2		1	
Diversity, H^1	0.45		0.00	
Total Number	2.4		0.6	
Total Biomass	<0.2		<0.1	

Table 9c. Kydaka Beach (exposed sand) benthic organisms from the low (+0') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=5).

	Spr 77 #	wt.	Sum 77 #	wt.	Fall 77 #	wt.	Win 78 #	wt.
Annelida								
Oligochaeta spp.	0		0		0		0.4 ± 0.5	<0.1
Polychaeta								
Magelonidae								
Magelona sp.(juv.)	0		0		0.2 ± 0.4	<0.1	0	
Nephtyidae								
Nephtys californiensis	0		0		0.4 ± 0.5	<0.1	0	
Oweniidae								
Owenia fusiformis	0		0		0.2 ± 0.4	<0.1	0	
Paraonidae								
Paraonella platybranchia	0		1.2 ± 0.8	<0.1	0.4 ± 0.9	<0.1	0	
Spionidae								
Malaceros glutaeus	0		0		0.4 ± 0.5	<0.1	0	
Pygospio elegans	0		0		1.0 ± 1.7	<0.1	0	
Scolelepis squamata	0		0.4 ± 0.9	<0.1	0.2 ± 0.4	<0.1	0	
Crustacea								
Ostracoda spp.	0.2 ± 0.4	<0.1	0		0		0	
Mysidacea								
Archaeomysis grebnitzkii	0.2 ± 0.4	<0.1	0.8 ± 0.8	<0.1	0		0	
Amphipoda								
Gammaridea spp.	1.2 ± 2.7	<0.1	-		0		0	
Acylus tridens	-		0.2 ± 0.4	<0.1	-		-	
Eohaustorius washingtonianus	1.2 ± 2.7	<0.1	3.0 ± 1.2	<0.1	0		0	

Malaceros glutaeus	0		0		0.4 ± 0.5	<0.1	0	
Pygospio elegans	0		0		1.0 ± 1.7	<0.1	0	
Scolelepis squamata	0		0.4 ± 0.9	<0.1	0.2 ± 0.4	<0.1	0	
Crustacea								
Ostracoda spp.	0.2 ± 0.4	<0.1	0		0		0	
Mysidacea								
Archaeomysis grebnitzkii	0.2 ± 0.4	<0.1	0.8 ± 0.8	<0.1	0		0	
Amphipoda								
Gammaridea spp.	1.2 ± 2.7	<0.1	-		0		0	
Atylus tridens	-		0.2 ± 0.4	<0.1	-		-	
Eohaustorius washingtonianus	1.2 2.7	<0.1	3.0 ± 1.2	<0.1	0		0	

Kydaka Beach +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt.	#	wt.	#	wt.	#	wt.
Crustacea								
Amphipoda								
Gammaridea								
Eohaustorius sp.	10.8 ± 18.6	<0.1	0		0		0	
Paraphoxus sp.	0.2 ± 0.4	<0.1	0		0		0	
Species Richness	6		5		7		1	
Diversity, H^1	0.61		1.25		1.77		0.00	
Total number	13.8		5.6		2.8		0.4	
Total biomass (g)	<0.6		<0.5		<0.7		<0.1	

Table 9d. Kydaka Beach (sand) benthic organisms from the subtidal zone collected 21 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m.		-10 m.	
	#	wt.	#	wt.
Rhodophyta				
Antithamnion defectum		0		<0.1
Choreocolax polysiphoniae		0		<0.1
Leptofauchea pacifica		0		<0.1
Polysiphonia hendryi		0		<0.1
Pterosiphonia bipinnata		0		<0.1
P. gracilis		0		<0.1
Cnidaria				
Hydrozoa spp.		0		✓
Nemertea spp.	8.5 ± 7.0	<0.1	12.3 ± 5.8	0.0 ± 0.1
Nematoda spp.	3.3 ± 5.3	<0.1	23.8 ± 12.6	0.0 ± 0.1
Mollusca				
Gastropoda				
Amphissa columbiana	0		0.3 ± 0.5	0.1 ± 0.2
Calliostoma sp.	0.3 ± 0.5	0.0 ± 0.1	0	
Lacuna variegata	1.8 ± 2.8	0.1 ± 0.1	0	
Nassarius mendicus	0		0.3 ± 0.5	0.2 ± 0.3
Odostomia sp.	0		0.8 ± 1.0	0.1 ± 0.1
Trichotropsis cancellata	0		1.3 ± 2.5	0.1 ± 0.2
Bivalvia				
Clinocardium nuttallii	0.3 ± 0.5	0.0 ± 0.1	0.8 ± 1.0	0.1 ± 0.1
Hiatella artica	0		0.8 ± 1.5	0.0 ± 0.1
Lucinoma tenuisculpta	0.3 ± 0.5	0.0 ± 0.1	8.8 ± 5.0	0.4 ± 0.3
Macoma sp.	0		0.5 ± 1.0	0.0 ± 0.1
Mysella tumida	30.5±22.7	0.1 ± 0.0	82.8±79.5	0.2 ± 0.1
Solen sicarius	0.3 ± 0.5	0.0 ± 0.1	0.3 ± 0.5	0.0 ± 0.1
Tellina sp.	1.3 ± 0.5	0.1 ± 0.1	2.0 ± 1.5	0.1 ± 0.0
Transennella tantilla	0		65.8±23.7	0.4 ± 0.2
Annelida				
Oligochaeta spp.	0.3 ± 0.5	<0.1	0.8 ± 1.0	0.0 ± 0.1

Gastropoda				
Amphissa columbiana	0		0.3 ± 0.5	0.1 ± 0.2
Calliostoma sp.	0.3 ± 0.5	0.0 ± 0.1	0	
Lacuna variegata	1.8 ± 2.8	0.1 ± 0.1	0	
Nassarius mendicus	0		0.3 ± 0.5	0.2 ± 0.3
Odostomia sp.	0		0.8 ± 1.0	0.1 ± 0.1
Trichotropsis cancellata	0		1.3 ± 2.5	0.1 ± 0.2
Bivalvia				
Clinocardium nuttallii	0.3 ± 0.5	0.0 ± 0.1	0.8 ± 1.0	0.1 ± 0.1
Hiatella arctica	0		0.8 ± 1.5	0.0 ± 0.1
Lucinoma tenuisculpta	0.3 ± 0.5	0.0 ± 0.1	8.8 ± 5.0	0.4 ± 0.3
Macoma sp.	0		0.5 ± 1.0	0.0 ± 0.1
Mysella tumida	30.5±22.7	0.1 ± 0.0	82.8±79.5	0.2 ± 0.1
Solen sicarius	0.3 ± 0.5	0.0 ± 0.1	0.3 ± 0.5	0.0 ± 0.1
Tellina sp.	1.3 ± 0.5	0.1 ± 0.1	2.3 ± 1.5	0.1 ± 0.0
Transennella tantilla	0		65.8±23.7	0.4 ± 0.2
Annelida				
Oligochaeta spp.	0.3 ± 0.5	<0.1	0.8 ± 1.0	0.0 ± 0.1

Kydaka Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Ampharetidae sp. (juv.)	0		0.3 ± 0.5	<0.1
Capitellidae				
Capitella capitata	13.0 ± 8.8	<0.1	15.3±14.5	0.0 ± 0.1
Mediomastus sp.	12.8 ± 11.9	<0.1	83.5±52.7	0.0 ± 0.1
Notomastus lineatus	0.5 ± 1.0	<0.1	0.3 ± 0.1	<0.1
N. sp.	0		0.5 ± 1.0	0.0 ± 0.1
Chrysopetlidae spp.	0		0.3 ± 0.5	0.0 ± 0.1
Cirratulidae sp.	0		1.5 ± 1.0	<0.1
Chaetozone setosa	0.3 ± 0.5	<0.1	0	
Flabelligeridae				
Pherusa plumosa	0		0.3 ± 0.5	<0.1
Glyceridae				
Glycera capitata	0		0.3 ± 0.5	<0.1
Hemipodus borealis	0		0.5 ± 1.0	0.0 ± 0.1
Goniadidae				
Glycinde picta	1.0 ± 0.8	<0.1	2.5 ± 2.1	0.0 ± 0.1
Hesionidae				
Micropodarke dubia	0		1.0 ± 1.4	0.0 ± 0.1
Lumbrineridae				
Lumbrineris sp.	0		1.5 ± 0.6	0.0 ± 0.1
Magelonidae				
Magelona pitelkai	0.5 ± 0.6	<0.1	0	
Maldanidae spp.	1.8 ± 2.4	<0.1	17.6	0.0 ± 0.1
Nicomache personata	0		3.5 ± 3.3	0.0 ± 0.1
Nephtyidae				
Nephtys caeca	0		0.8 ± 1.5	0.0 ±0.1
N. caecoides	1.5 ± 1.3	<0.1	1.8 ± 1.3	<0.1
N. sp. (juv.)	0.3 ± 0.5	<0.1	1.0 ± 1.4	<0.1
Nereidae				
Nereis procera	0.5 ± 0.6	<0.1	0	
N. sp. (juv.)	0		0.5 ± 0.6	<0.1
Platynereis bicanaliculata	2.3 ± 3.9	<0.1	2.3 ± 4.5	<0.1

Glycinde picta	1.0 ± 0.8	<0.1	2.5 ± 2.1	0.0 ± 0.1
Hesionidae				
Micropodarke dubia	0		1.0 ± 1.4	0.0 ± 0.1
Lumbrineridae				
Lumbrineris sp.	0		1.5 ± 0.6	0.0 ± 0.1
Magelonidae				
Magelona pitelkai	0.5 ± 0.6	<0.1	0	
Maldanidae spp.	1.8 ± 2.4	<0.1	17.6	0.0 ± 0.1
Nicomache personata	0		3.5 ± 3.3	0.0 ± 0.1
Nephtyidae				
Nephtys caeca	0		0.8 ± 1.5	0.0 ±0.1
N. caecoides	1.5 ± 1.3	<0.1	1.8 ± 1.3	<0.1
N. sp. (juv.)	0.3 ± 0.5	<0.1	1.0 ± 1.4	<0.1
Nereidae				
Nereis procera	0.5 ± 0.6	<0.1	0	
N. sp. (juv.)	0		0.5 ± 0.6	<0.1
Platynereis bicanaliculata	2.3 ± 3.9	<0.1	2.3 ± 4.5	<0.1

Kvdaka Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Onuphidae				
Onuphis elegans	0.8 ± 1.0	<0.1	0.8 ± 1.0	0.1
O. stigmatis	0.3 ± 0.5	<0.1	0.8 ± 1.5	0.0 ± 0.1
O. sp. (juv.)	0.3 ± 0.5	<0.1	←	0.3 ± 0.5
Opheliidae				
Armandia brevis	0.8 ± 0.5	<0.1	5.5 ± 4.1	0.0 ± 0.1
Orbiniidae				
Naineris uncinata	0		1.0 ± 1.4	0.0 ± 0.1
Scoloplos sp.	5.5 ± 3.1	<0.1	2.5 ± 2.4	0.0 ± 0.1
Oweniidae				
Owenia fusiformis	7.5 ± 2.4	<0.1	11.0±5.4	0.0 ± 0.1
Paraonidae				
Paraonella platybranchia	0.3 ± 0.5	<0.1	0	
Pectinariidae -				
Pectinaria granulata	0		2.8 ± 2.2	0.0 ± 0.1
Phyllodocidae				
Etone longa	0		1.3 ± 1.9	0.0 ± 0.1
Eulalia viridis	0.3± 0.5	<0.1	0	
Phyllodoce groenlandica	0		3.5 ± 6.4	0.0 ± 0.1
P. malculata	0		1.0 ± 2.0	<0.1
P. multiseriata	0		0.8 ± 1.5	0.0 ± 0.1
P. sp. A	0.3 ± 0.5	<0.1	1.0 ± 0.8	<0.1
P. sp. (juv.)	1.0 ± 1.2	<0.1	4.5 ± 3.7	<0.1
Polynoidae				
Eunoe senta	0		0.3 ± 0.5	<0.1
Harmothoe imbricata	0		0.8 ± 1.0	0.0 ± 0.1
Sabellidae				
Eudistylia vancouveri	0		0.3 ± 0.5	0.0 ± 0.1
Schizobranchia insignis	0		0.5 ± 1.0	0.0 ± 0.1
Sigalionidae				
Pholoe minuta	1.0±1.4	<0.1	2.8 ± 3.1	0.0± 0.1
Spionidae				
Malacoceros glutaeus	0.8 ± 1.5	<0.1	8.5 ± 8.2	0.0 ± 0.1
Polydora caulleryi	0		0.3 ± 0.5	<0.1

Phyllodocidae	0		2.8 ± 2.2	0.0 ± 0.1
Etone longa	0			
Eulalia viridis	0.3 ± 0.5	<0.1	1.3 ± 1.9	0.0 ± 0.1
Phyllodoce groenlandica	0		0	
P. malculata	0		3.5 ± 6.4	0.0 ± 0.1
P. multiseriata	0		1.0 ± 2.0	<0.1
P. sp. A	0.3 ± 0.5	<0.1	0.8 ± 1.5	0.0 ± 0.1
P. sp. (juv.)	1.0 ± 1.2	<0.1	1.0 ± 0.8	<0.1
Polynoidae			4.5 ± 3.7	<0.1
Eunoe senta	0			
Harmothoe imbricata	0		0.3 ± 0.5	<0.1
Sabellidae			0.8 ± 1.0	0.0 ± 0.1
Eudistylia vancouveri	0			
Schizobranchia insignis	0		0.3 ± 0.5	0.0 ± 0.1
Sigalionidae			0.5 ± 1.0	0.0 ± 0.1
Pholoe minuta	1.0±1.4	<0.1	2.8 ± 3.1	0.0 ± 0.1
Spionidae				
Malacoceros glutaeus	0.8 ± 1.5	<0.1	8.5 ± 8.2	0.0 ± 0.1
Polydora caulleryi	0		0.3 ± 0.5	<0.1

Kydaka Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Annelida (cont.)				
Polychaeta				
Spionidae				
Polydora socialis	3.0 ± 2.5	<0.1	5.8 ± 2.9	0.0 ± 0.1
P. sp. A	0		0.3 ± 0.5	<0.1
Prionospio cirrifera	0		8.0 ± 3.5	0.0 ± 0.1
P. steenstrupi	37.0±19.4	<0.1	192.5±70.5	0.0 ± 0.1
Pygospio elegans	0		32.0±35.2	0.0 ± 0.1
Spio filicornis	0.3 ± 0.5	<0.1	0.3 ± 0.5	0.0 ± 0.1
Spiophanes bombyx	1.8 ± 1.5	<0.1	3.8 ± 1.0	0.0 ± 0.1
Syllidae				
Exogone gemmifera	0		0.8 ± 1.5	0.0 ± 0.1
E. spp.	0		9.8 ± 7.8	<0.1
Sphaerosyllis pirifera	0		0.3 ± 0.5	0.0 ± 0.1
Streptosyllis latipalpa	0.3 ± 0.5	<0.1	0	
Syllis sp.	0		0.3 ± 0.5	0.0 ± 0.1
Terebellidae				
Thelepus sp.	0		0.5 ± 1.0	0.0 ± 0.1
Sipuncula spp.	0.3 ± 0.5	<0.1	0	
Crustacea				
Ostracoda spp.	9.8 ± 4.7	0.1 ± 0.0	78.0±29.1	0.1 ± 0.0
Leptostraca				
Nebalia pugettensis	0.3 ± 0.5	0.0 ± 0.1	0.3 ± 0.5	0.0 ± 0.1
Mysidacea				
Archaeomysis grebnitzkii	0.3 ± 0.5	0.0 ± 0.1	0	
Cumacea				
Cumella vulgaris	0		0.3 ± 0.5	0.0 ± 0.1
Diastylis sp.	0		2.3 ± 1.5	0.1 ± 0.0
Diastylopsis sp.	23.8±8.8	0.1 ± 0.0	0.3 ± 0.5	0.0 ± 0.1
Lampropidae spp.	0.3 ± 0.5	0.0 ± 0.1	0	
Tanaidacea				
Anatanais normani	0		0.5 ± 1.0	0.0 ± 0.1
Leptochelia dubia	0		8.0 ± 2.9	0.1 ± 0.0

	0		0.5 ± 1.0	0.0 ± 0.1
Sipuncula spp.	0.3 ± 0.5	<0.1	0	
Crustacea				
Ostracoda spp.	9.8 ± 4.7	0.1 ± 0.0	78.0±29.1	0.1 ± 0.0
Leptostraca				
Nebalia pugettensis	0.3 ± 0.5	0.0 ± 0.1	0.3 ± 0.5	0.0 ± 0.1
Mysidacea				
Archaeomysis grebnitzkii	0.3 ± 0.5	0.0 ± 0.1	0	
Cumacea				
Cumella vulgaris	0		0.3 ± 0.5	0.0 ± 0.1
Diastylis sp.	0		2.3 ± 1.5	0.1 ± 0.0
Diastylopsis sp.	23.8±8.8	0.1 ± 0.0	0.3 ± 0.5	0.0 ± 0.1
Lampropidae spp.	0.3 ± 0.5	0.0 ± 0.1	0	
Tanaidacea				
Anatanais normani	0		0.5 ± 1.0	0.0 ± 0.1
Leptochelia dubia	0		8.0 ± 2.9	0.1 ± 0.0

Kydaka Beach Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Crustacea (cont.)				
Isopoda				
Cyathura munda	0			
Edotea sublittoralis	1.0 ± 1.4	0.1 ± 0.1	0.5 ± 0.6	0.1 ± 0.1
Limnoria algarum	0			
Munna stephenseni	0		3.8 ± 7.5	0.0 ± 0.1
Paranthura elegans	0		0.5 ± 1.0	0.0 ± 0.1
Synidotea bicuspida	2.0 ± 2.5	0.1 ± 0.1	2.3 ± 1.0	0.1 ± 0.0
Amphipoda			0	
Caprellidea				
Tritella pilimonia	3.0 ± 3.6	0.1 ± 0.1		
Gammaridea spp.	103.8±60.7	0.2 ± 0.2	0	
Decapoda			128.8±51.4	0.3 ± 0.2
Cancer oregonensis	0.3 ± 0.5	0.0 ± 0.1		
Pinnotheridae sp. (juv.)	5.8 ± 11.5	0.0 ± 0.1	0	
Pugettia gracilis	0		0.8 ± 1.0	0.5 ± 0.6
			0.3 ± 0.5	0.0 ± 0.1
Phoronida				
Phoronopsis harmeri	1.0 ± 0.8	0.0 ± 0.1	0.8 ± 1.5	0.0 ± 0.1
Bryozoa spp.		✓		✓
Echinodermata				
Ophiuroidea sp.(juv.)	0		0.3 ± 0.5	0.0 ± 0.1
Echinoidea				
Dendraster excentricus	0.3 ± 0.5	0.0 ± 0.1	0	
Holothuroidea				
Leptosynapta clarki	16.8±18.6	0.3 ± 0.2	0	
Species Richness	54		96	
Diversity, H^1	2.55		2.83	
Total Number	311.5		870.5	
Total Biomass	<5.7		<11.1	

Bryozoa spp.	1.0 ± 0.8	0.0 ± 0.1	0.8 ± 1.5	0.0 ± 0.1
Echinodermata		✓		✓
Ophiuroidea sp.(juv.)	0		0.3 ± 0.5	0.0 ± 0.1
Echinoidea				
Dendraster excentricus	0.3 ± 0.5	0.0 ± 0.1	0	
Holothuroidea				
Leptosynapta clarki	16.8±18.6	0.3 ± 0.2	0	
Species Richness	54		96	
Diversity, H^1	2.55		2.83	
Total Number	311.5		870.5	
Total Biomass	<5.7		<11.1	

Table 10n. Jamestown (protected sand-gravel) benthic organisms from the high (+6') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter) m^2 ± standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Nemertea								
spp.	0		0		0		0.3 ± 0.5	<0.1
Paranemertes peregrina	8.0 ± 11.3	<0.1	0		0		0	
Nematoda								
spp.	3.0 ± 1.4	<0.1	1.8 ± 1.7	<0.1	1.5 ± 1.9	<0.1	0.5 ± 0.6	<0.1
Mollusca								
Gastropoda								
Acmaeidae spp.	0		0		0		0.3 ± 0.5	<0.1
Lacuna variegata	0		0		0		0.5 ± 1.0	<0.1
Bivalvia								
Transennella tantilla	0		0		0		0.3 ± 0.5	<0.1
Annelida								
Oligochaeta spp.	744±.5 ±1013.3	<0.1	1108.3 ±844.5	<0.1	766.0 ±592.5	<0.1	40.3 ± 21.7	<0.1
Polychaeta								
Nereidae								
spp. (juv.)	0		0.3 ± 0.5	<0.1	0		0	
Nereis vexillosa	0		0		0		0.5 ± 1.0	<0.1
Phyllodocidae								
Phyllodoce maculata	1.0 ± 0.0	<0.1	0		0		0.3 ± 0.5	<0.1
Polynoidae								
Harmothoe imbricata	0		0		0		0.5 ± 0.6	<0.1

Halicentella tantilla	0		0		0		0.3 ±0.5	<0.1
Annelida								
Oligochaeta spp.	7441.5 ±1013.3	<0.1	1108.3 ±844.5	<0.1	766.0 ±592.5	<0.1	40.3 ±21.7	<0.1
Polychaeta								
Nereidae spp. (juv.)	0		0.3 ±0.5	<0.1	0		0	
Nereis vexillosa	0		0		0		0.5 ±1.0	<0.1
Phyllodocidae								
Phyllodoce maculata	1.0 ±0.0	<0.1	0		0		0.3 ±0.5	<0.1
Polynoidae								
Harmothoe imbricata	0		0		0		0.5 ±0.6	<0.1

Jamestown +6

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Crustacea								
Cumacea								
Cumella vulgaris	4.5 ±6.4	<0.1	0		0		0	
Tanaidacea								
Leptochelia dubia	18.5 ±26.2	<0.1	0.3 ±0.5	<0.1	0		0.5 ±0.6	<0.1
Amphipoda								
Caprellidea spp.	0		0		3.3 ±6.5	<0.1	0	
Gammaridea spp.	32.5 ±46.0	<0.1	0		3.5 ±4.4	<0.1	2.0 ±1.4	<0.1
Decapoda								
Pinnixa spp. (juv.)	0		0		0		0.3 ±0.5	<0.1
Pugettia gracilis	0		0		0		0.3 ±0.5	<0.1
Insecta								
Dipteran larvae	2.0 ±2.8	<0.1	0		0		0	
Dolichopodidae spp.	0		0		0		0.3 ±0.5	<0.1
Species richness	8		4		4		14	
Diversity - H'	0.07		0.02		0.07		0.73	
Total number	7511.0		1110.7		774.3		46.9	
Total biomass (g)	<0.7		<0.4		<0.4		<1.3	

Table 10b. Jamestown (protected sand) benthic organisms from the mid (+1.4') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter) m^2 ± standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Ulva taeniata		0		0		✓		0
U. sp.		0		0		✓		✓
Rhodophyta								
Ceramium eatorianum		0		0		✓		0
Cnidaria								
Anthozoa spp.	0		0		0.5 ±0.6	0.1 ±0.1	0	
Hydrozoa								
Coryne sp.	0		0		✓	<0.1	0	
Nemertea spp.	1.0 ±1.4	<0.1	1.5 ±1.7	<0.1	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Paranemertes peregrina	0		0		0.3 ±0.5	<0.1	0	
Nematoda spp.	2.0 ±2.8	<0.1	10.3 ±12.3	<0.1	6.3 ±4.7	<0.1	11.8 ±6.4	<0.1
Mollusca								
Gastropoda								
Acmaeidae spp.	0		0		0		0.3 ±0.5	<0.1
Aglaja diomedia	0		0		0.5 ±0.6	<0.1	0.3 ±0.5	<0.1
Lacuna variegata	0		0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Opisthobranchia	0		0		0		0.3 ±0.5	<0.1

Jamestown +1.4

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Bivalvia								
Macoma inquinata	0		0		0.5 ±1.0	3.8 ±7.6	0	
M. nasuta	3.0 ±1.4	7.8 ±0.6	0.5 ±0.6	3.7 ±4.7	1.8 ±1.7	8.5 ±9.7	0.3 ±0.5	2.0 ±3.9
M. spp.	0.5 ±0.7	0.2 ±0.2	0		0		0.3 ±0.5	<0.1
Mytilus sp.	0.5 ±0.7	<0.1	0		0.3 ±0.5	0.1	0	
Transennella tantilla	63.5 ±9.2	0.4 ±0.2	19.0 ±17.3	0.1	180.8 ±16.4	0.8 ±1.0	132.0 ±23.0	<0.1
Annelida								
Oligochaeta spp.	38.0 ±24.0	<0.1	40.3 ±24.4	<0.1	542.0 ±1046.0	0.2 ±0.4	12.5 ±10.0	<0.1
Polychaeta								
Arenicolidae								

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Bivalvia								
Macoma inquinata	0		0		0.5 ±1.0	3.8 ±7.6	0	
M. nasuta	3.0 ±1.4	7.8 ±0.6	0.5 ±0.6	3.7 ±4.7	1.8 ±1.7	8.5 ±9.7	0.3 ±0.5	2.0 ±3.9
M. spp.	0.5 ±0.7	0.2 ±0.2	0		0		0.3 ±0.5	<0.1
Mytilus sp.	0.5 ±0.7	<0.1	0		0.3 ±0.5	0.1	0	
Transennella tantilla	63.5 ± 9.2	0.4 ±0.2	19.0 ±17.3	0.1	180.8 ±16.4	0.8 ±1.0	132.0 ± 23.0	<0.1
Annelida								
Oligochaeta spp.	38.0 ±24.0	<0.1	40.3 ± 24.4	<0.1	542.0 ±1046.0	0.2 ±0.4	12.5 ±10.0	<0.1
Polychaeta								
Arenicolidae spp. (juv.)	2.5 ±3.5	<0.1	17.5 ±28.7	<0.1	176.3 ±21.6	<0.1	53.3 ±25.1	<0.1
Capitellidae								
Capitella capitata	43.5 ±24.8	<0.1	90.8 ±69.4	<0.1	75.3 ±36.2	0.1 ±0.1	23.5 ± 8.9	<0.1
Mediomastus sp.	± 1.0 1.4	<0.1	1.5 ±1.7	<0.1	0.5 ±1.0	<0.1	0	
Notomastus sp.	0		0		0		0.8 ±1.0	<0.1
Cirratulidae spp.	0		0		0		0.3 ±0.5	<0.1
Goniadidae								
Glycinde picta	0		0.3 ±0.5	<0.1	0		0.5 ±1.0	<0.1
Lumbrineridae								
Lumbrineris spp.	0.5 ±0.7	<0.1	0		0.3 ±0.5	<0.1	0	

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Maldanidae spp. (juv.)	1.0 ±1.4	<0.1	0		0		0.5 ±1.0	<0.1
Nephtyidae								
Nephtys caeca	2.5 ±0.7	✓	0.3 ±0.5	<0.1	0.3 ±0.5	✓	0	
N. caecoides	0		0.3 ±0.5	<0.1	0.3 ±0.5	✓	2.3 ±1.7	✓
N. californiensis	0		0		0		0.8 ±1.5	<0.1
N. spp. (juv.)	0		0		0.8 ±1.0	<0.1	1.0 ±1.4	<0.1
Nereidae								
Nereis spp. (adult)	0		0		3.0 ±3.4	<0.1	0.8 ±1.5	<0.1
N.	0							

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Maldanidae								
spp. (juv.)	1.0 ±1.4	<0.1	0		0		0.5 ±1.0	<0.1
Nephtyidae								
Nephtys caeca	2.5 ±0.7	✓	0.3 ±0.5	<0.1	0.3 ±0.5	✓	0	
N. caecoides	0		0.3 ±0.5	<0.1	0.3 ±0.5	✓	2.3 ±1.7	✓
N. californiensis	0		0		0		0.8 ±1.5	<0.1
N. spp. (juv.)	0		0		0.8 ±1.0	<0.1	1.0 ±1.4	<0.1
Nereidae								
Nereis spp. (adult)	0		0		3.0 ±3.4	<0.1	0.8 ±1.5	<0.1
N. spp. (juv.)	0		15.8 ±10.2	<0.1	0.3 ±0.5	<0.1	0	
Platynereis bicanaliculata	0		0		2.5 ±3.0	<0.1	0	
Opheliidae								
Armandia brevis	3.0 ±4.2	<0.1	0		1.3 ±1.3	<0.1	0.5 ±0.6	<0.1
Orbiniidae								
Naineris spp.	0		0.3 ±0.5	<0.1	1.3 ±2.5	<0.1	0.3 ±0.5	<0.1
Scoloplos spp.	3.0 ±0.0	<0.1	0		0.3 ±0.5	<0.1	0.5 ±0.6	<0.1
Paraonidae								
Paraonella platybranchia	3.0 ±2.8	<0.1	8.3 ±5.4	<0.1	2.8 ±3.1	<0.1	1.3 ±1.5	<0.1

Jamestown +1.4

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Phyllodocidae								
spp.	0		0.5 ±0.6	<0.1	0		0	
Etaone longa	19.0 ±5.7	<0.1	43.8 ±13.7	<0.1	17.8 ±5.7	<0.1	33.8 ±16.8	<0.1
E. tuberculata	0		0		0.5 ±1.0	<0.1	0	
Eulalia sanguinea	0.5 ±0.7	<0.1	0		0.3 ±0.5	<0.1	0	
Phyllodoce maculata	1.0 ±1.4	<0.1	0.3 ±0.5	<0.1	8.0 ±4.2	<0.1	8.5 ±8.1	<0.1
P. spp.	0		0.5 ±1.0	<0.1	0		0	
Polynoidae spp.	0		0.3 ±0.5	<0.1	0		0	
Spionidae								
spp. (juv.)	0.5 ±0.7	<0.1	40.0 ±72.2	<0.1	0.5 ±0.1	<0.1	0	
Malacoceros	287.5	<0.1	20.5	<0.1				

Jamestown +1.4

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Phyllodocidae spp.	0		0.5 ±0.5	<0.1	0		0	
Eteone longa	19.0 ± 5.7	<0.1	43.8 ±13.7	<0.1	17.8 ± 5.7	<0.1	33.8 ±16.8	<0.1
E. tuberculata	0		0		0.5 ±1.0	<0.1	0	
Eulalia sanguinea	0.5 ± 0.7	<0.1	0		0.3 ± 0.5	<0.1	0	
Phyllodoce maculata	1.0 ± 1.4	<0.1	0.3 ± 0.5	<0.1	8.0 ±4.2	<0.1	8.5 ±8.1	<0.1
P. spp.	0		0.5 ±1.0	<0.1	0		0	
Polynoidae spp.	0		0.3 ±0.5	<0.1	0		0	
Spionidae spp. (juv.)	0.5 ± 0.7	<0.1	40.0 ±72.2	<0.1	0.5 ± 0.1	<0.1	0	
Malacoceros glutaeus	287.5 ±369.8	<0.1	20.5 ±14.3	<0.1	297.3 ±20.8	✓	326.0 ± 38.5	<0.1
Polydora kempi japonica	4.0 ± 1.4	<0.1	47.0 ±27.4	<0.1	73.5 ±14.1	✓	6.8 ±5.5	<0.1
P. quadrilobata	0		0.3 ±0.5	<0.1	0		0	
P. sp.	0.5 ± 0.7	<0.1	0		0		0	
Prionospio cirrifera	0.5 ± 0.7	<0.1	0		0		0	
Pygospio elegans	41.0 ±22.6	<0.1	1287.8 ±1495.7	<0.1	68.5 ± 8.5	<0.1	49.5 ±35.2	<0.1
Scolelepis sp. C	0		0		0.3 ± 0.5	<0.1	0	
Spiophanes bombyx	0		0		0		0.3 ±0.5	<0.1

Jamestown +1.4

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Syllidae								
Exogone lourei	2.0 ±1.4	<0.1	0		1.0 ±0.8	<0.1	4.0 ±5.0	<0.1
Streptosyllis latipalpa	2.5 ±2.1	<0.1	1.8 ±3.5	<0.1	1.0 ±0.8	<0.1	1.8 ±1.5	<0.1
Syllis spp.	0.5 ±0.7	<0.1	1.1 ±1.5	<0.1	0		0	
Crustacea								
Cumacea								
Cumella vulgaris	2.5 ±3.5	<0.1	0.8 ±0.5	<0.1	2.5 ±1.0	<0.1	3.3 ±2.0	<0.1
Tanaidacea								
Leptochelia dubia	0.5 ±0.7	<0.1	1.2 ±1.4	<0.1	15.0 ±9.6	<0.1	31.3 ±10.8	<0.1
Isopoda								
Exosphaeroma media	0		0		1.0 ±1.2	<0.1	0	
Amphipoda								
Ampelisca agassizii	–		2.8 ±1.7	<0.1	–		–	
Ampithoe lacertosa	–		0.3 ±0.5	<0.1	–		–	
Anisogammarus confervicolus	–		0.3 ±0.5	<0.1	–		–	
Caprella laeviuscula	0		0		0.3 ±0.5	<0.1	0	
Caprellidae spp.	0		0		0.3 ±0.5	<0.1	0	
Corophium acherusicum	42.3 ±22.7	<0.1	24.3 ±6.6	<0.1	–		–	
C. salmonis	0		28.5 ±27.2	<0.1	–		–	

Isopoda								
Exosphaeroma media	0		0		1.0 ± 1.2	<0.1	0	
Amphipoda								
Ampelisca agassizii	–		2.8 ± 1.7	<0.1	–		–	
Ampithoe lacertosa	–		0.3 ± 0.5	<0.1	–		–	
Anisogammarus confervicolus	–		0.3 ± 0.5	<0.1	–		–	
Caprella laeviuscula	0		0		0.3 ± 0.5	<0.1	0	
Caprellidae spp.	0		0		0.3 ± 0.5	<0.1	0	
Corophium acherusicum	42.3 ± 22.7	<0.1	24.3 ± 6.6	<0.1	–		–	
C. salmonis	0		28.5 ± 27.2	<0.1	–		–	

Jamestown +1.4

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Amphipoda (cont.)								
Corophium spp.	0		0		23.3 ± 4.4	<0.1	0.3 ± 0.5	<0.1
Gammaridea spp.	3.0 ± 4.2	<0.1	–		22.8 ± 9.6	0.0 ± 0.1	0.3 ± 0.5	<0.1
Paraphoxus spinosus type A	–		0.5 ± 0.6	<0.1	–		–	
Pontogeneia cf rostrata	–		1.3 ± 1.9	<0.1	–		–	
Decapoda								
Caridea spp.	0		0		0.5 ± 0.6	<0.1	0	
Pinnixa sp. (juv.)	0		0		0		0.8 ± 1.5	<0.1
Pinnotheridae spp.	0		0		0.3 ± 0.5	<0.1	0	
Upogebia pugettensis	0		1.5 ± 1.9	1.3 ± 2.7	0		0	
Echinodermata								
Holothuroidea								
Leptosynapta clarki	0.5 ± 0.7	<0.1	0		0.3 ± 0.5	<0.1	4.3 ± 2.9	<0.1
Species richness	33		36		46		38	
Diversity - H'	1.87		1.19		2.02		1.90	
Total number	576.8		1706.1		1533.9		715.8	
Total biomass (g)	<11.2		<8.5		<17.5		<5.5	

Echinodermata				
Holothuroidea				
Leptosynapta clarki	0.5 ±0.7 <0.1	0	0.3 ±0.5 <0.1	4.3 ±2.9 <0.1
Species richness	33	36	46	38
Diversity - H'	1.87	1.19	2.02	1.90
Total number	576.8	1706.1	1533.9	715.8
Total biomass (g)	<11.2	<8.5	<17.5	<5.5

Table 10c. Jamestown (protected sand) benthic organisms from the low (+0') intertidal zone collected spring 1977 through winter 1978, expressed as number and/or biomass (g) per 0.05 (N=2; spring) and 0.025 (N=4; summer-winter) m^2 ± standard deviation.

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Chlorophyta								
Enteromorpha prolifera		0		✓		0		0
Ulva sp.		0		✓		✓		✓
Urospora sp.		0		0		0		✓
Rhodophyta								
Delessericeae		0		0		0		✓
Hymenena sp.		0		0		0		✓
Pterosiphonia bipinnata		0		0		0		✓
P. sp.		0		0		0		✓
Cnidaria								
Anthozoa sp.	0.5 ±0.7	<0.1	8.0 ±5.6	<0.1	2.5 ±1.9	0.0 ±0.1	0.3 ±0.5	<0.1
Halcampa decemtentaculata	31.0 ±11.3	0.1 ±0.0	2.5 ±5.0	<0.1	0		2.0 ±4.0	<0.1
Nemertea spp.	2.5 ±2.1	<0.1	0.8 ±0.5	<0.1	3.0 ±1.8	<0.1	2.5 ±1.3	<0.1
Nematoda spp.	0		0.3 ±0.5	<0.1	1.5 ±1.3	<0.1	8.5 ±9.5	<0.1
Mollusca								
Gastropoda								
Alvinia sp.	0		0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Lacuna variegata	0		0		0.3 ±0.5	<0.1	0	
Aeolididae sp. (juv.)	0		0		0.3 ±0.5	<0.1	0	

capitata								
P. sp.	0		0		0		✓	
Cnidaria								
Anthozoa sp.	0.5 ±0.7	<0.1	8.0 ±5.6	<0.1	2.5 ±1.9	0.0 ±0.1	0.3 ±0.5	<0.1
Halcampa decemtentaculata	31.0 ±11.3	0.1 ±0.0	2.5 ±5.0	<0.1	0		2.0 ±4.0	<0.1
Nemertea spp.	2.5 ±2.1	<0.1	0.8 ±0.5	<0.1	3.0 ±1.8	<0.1	2.5 ±1.3	<0.1
Nematoda spp.	0		0.5 ±0.5	<0.1	1.5 ±1.3	<0.1	8.5 ±9.5	<0.1
Mollusca								
Gastropoda								
Alvinia sp.	0		0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Lacuna variegata	0		0		0.3 ±0.5	<0.1	0	
Aeolididae sp. (juv.)	0		0		0.3 ±0.5	<0.1	0	

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 77	
	#	wt	#	wt	#	wt	#	wt
Bivalvia								
Cryptomya californica	0		0.3 ±0.5	<0.1	0.5 ±0.6	0.5 ±0.6	0	
Macoma inquinata	0		0.3 ±0.5	0.3 ±0.5	0.5 ±0.6	0.1 ±0.2	0	
Macoma nasuta	0		0		0		0.3 ±0.5	0.1 ±0.3
M. spp.	16.0 ±27.7	0.1 ±0.2	0.5 ±1.0	0.3 ±0.7	0		0	
Protothaca staminea	0		0.3 ±0.5	0.9 ±1.8	0		0	
Transennella tantilla	39.0 ±44.2	0.2 ±0.2	13.5 ±1.7	<0.1	64.0 ±30.7	0.3 ±0.3	39.3 ±16.6	<0.1
Tresus capax	0		0		0		1.8 ±0.5	0.4 ±0.7
Annelida								
Oligochaeta spp.	584.5 ±135.0	<0.1	238.3 ±84.7	<0.1	495.5 ±140.5	<0.1	676.3 ±189.6	✓
Polychaeta								
Arenicolidae sp. (juv.)	1.0 ±1.4	<0.1	1.5 ±1.9	<0.1	2.0 ±1.4	<0.1	4.0 ±2.9	<0.1
Branchiomaldane vincenti	12.0 ±2.8	<0.1	4.5 ±4.4	<0.1	2.8 ±3.0	<0.1	2.3 ±3.9	<0.1
Capitellidae								
Capitella capitata	53.0 ±8.5	<0.1	15.8 ±4.9	<0.1	74.0 ±14.0	<0.1	58.3 ±23.5	<0.1
Mediomastus sp.	38.5 ±2.1	<0.1	37.5 ±14.8	<0.1	44.3 ±9.4	<0.1	32.8 ±13.9	<0.1
Cirratulidae sp.	14.5 ±20.5	<0.1	1.5 ±3.0	<0.1	1.0 ±1.4	<0.1	3.8 ±3.5	<0.1

capax							1.8 ±0.5	0.4 ±0.7
Annelida								
Oligochaeta spp.	584.5 ±135.0	<0.1	238.3 ±84.7	<0.1	495.5 ±140.5	<0.1	676.3 ±189.6	✓
Polychaeta								
Arenicolidae sp. (juv.)	1.0 ±1.4	<0.1	1.5 ±1.9	<0.1	2.0 ±1.4	<0.1	4.0 ±2.9	<0.1
Branchiomaldane vincenti	12.0 ±2.8	<0.1	4.5 ±4.4	<0.1	2.8 ±3.0	<0.1	2.3 ±3.9	<0.1
Capitellidae								
Capitella capitata	53.0 ±8.5	<0.1	15.8 ±4.9	<0.1	74.0 ±14.0	<0.1	58.3 ±23.5	<0.1
Mediomastus sp.	38.5 ±2.1	<0.1	37.5 ±14.8	<0.1	44.3 ±9.4	<0.1	32.8 ±13.9	<0.1
Cirratulidae sp.	14.5 ±20.5	<0.1	1.5 ±3.0	<0.1	1.0 ±1.4	<0.1	3.8 ±3.5	<0.1

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Cirratulidae (cont.)								
Cirratulus cirratus	1.5 ±2.1	<0.1	0.8 ±1.0	<0.1	1.8 ±1.7	<0.1	0	
Tharyx multifilis	4.5 ±3.5	<0.1	2.5 ±2.4	<0.1	1.0 ±1.4	<0.1	1.8 ±1.5	<0.1
Dorvilleidae								
Dorvillea rudolphi	16.5 ±23.3	<0.1	4.5 ±2.7	<0.1	9.5 ±8.7	<0.1	4.8 ±3.4	<0.1
Protodorvillea gracilis	2.0 ±2.8	<0.1	0		0		0	
Eunicoidea sp.	0		0		0.5 ±1.0	<0.1	0	
Goniadidae								
Glycinde picta	0		0		0		0.5 ±1.0	<0.1
Hesionidae								
Gyptis brevipalpa	0.5 ±0.7	<0.1	0		0		0	
Ophiodromus pugettensis	3.0 ±1.4	<0.1	2.3 ±1.5	<0.1	3.0 ±2.9	<0.1	4.0 ±0.8	<0.1
O. sp. A	0		0		0.3 ±0.5	<0.1	0	
Lumbrineridae								
Lumbrineris inflata	0		1.5 ±1.9	<0.1	0		0	
L. spp.	60.5 ±2.1	<0.1	26.3 ±6.2	<0.1	51.1 ±2.1	1.9	29.3	✓
Maldanidae sp. (juv.)	27.5 ±38.9	<0.1	7.8 ±15.5	<0.1	57.5 ±12.8	0.1 ±0.1	54.3 ±15.0	✓

Glycinde picta	0		0		0		0.5 ±1.0	<0.1
Hesionidae								
Gyptis brevipalpa	0.5 ±0.7	<0.1	0		0		0	
Ophiodromus pugettensis	3.0 ±1.4	<0.1	2.3 ±1.5	<0.1	3.0 ±2.9	<0.1	4.0 ±0.8	<0.1
O. sp. A	0		0		0.3 ±0.5	<0.1	0	
Lumbrineridae								
Lumbrineris inflata	0		1.5 ±1.9	<0.1	0		0	
L. spp.	60.5 ± 2.1	<0.1	26.3 ± 6.2	<0.1	51.1	1.9 ±2.1	29.3	✓
Maldanidae sp. (juv.)	27.5 ±38.9	<0.1	7.8 ±15.5	<0.1	57.5 ±12.8	0.1 ±0.1	54.3 ±15.0	✓

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Maldanidae (cont.)								
Axiothella rubrocincta	49.5 ±40.3	<0.1	26.3 ±11.6	<0.1	20.8 ± 7.4	0.2 ±0.2	6.0 ±5.4	✓
Euclymene delineata	0		0		0.3 ±0.5	<0.1	0	
Nephtyidae								
Nephtys caeca	0		0		0.5 ±1.0	<0.1	0	
N. caecoides	0		0		0.3 ±0.5	<0.1	0	
N. californiensis	0		0		0		0.3 ±0.5	<0.1
N. sp. (juv.)	0		0		0		0.3 ±0.5	<0.1
Nereidae								
Nereis vexillosa	0		0.3 ±0.5	<0.1	0		0.8 ±1.0	<0.1
N. sp. (juv.)	0		1.0 ±1.4	<0.1	0.3 ±0.5	<0.1	5.5 ±11.0	<0.1
Platynereis bicanaliculata	0.5 ±0.7	<0.1	0		20.5 ± 4.4	0.0 ±0.1	8.3 ±7.9	<0.1
Onuphidae								
Onuphis iridescens	0.5 ±0.7	<0.1	0		0		0	
O. stigmatus	0.5 ±0.7	<0.1	0		0		0	
Opheliidae								
Armandia brevis	4.5 ±2.1	<0.1	0.5 ±0.6	<0.1	5.3 ±1.9	<0.1	7.0 ±3.2	<0.1
Orbiniidae								
Naineris dendritica	0.5 ±0.7	<0.1	0		0		0.3 ±0.5	<0.1

Nereidae								
Nereis vexillosa	0		0.3 ±0.5	<0.1	0		0.8 ±1.0	<0.1
N. sp. (juv.)	0		1.0 ±1.4	<0.1	0.3 ±0.5	<0.1	5.5 ±11.0	<0.1
Platynereis bicanaliculata	0.5 ±0.7	<0.1	0		20.5 ± 4.4	0.0 ±0.1	8.3 ±7.9	<0.1
Onuphidae								
Onuphis iridescens	0.5 ±0.7	<0.1	0		0		0	
O. stigmatus	0.5 ±0.7	<0.1	0		0		0	
Opheliidae								
Armandia brevis	4.5 ±2.1	<0.1	0.5 ±0.6	<0.1	5.3 ±1.9	<0.1	7.0 ±3.2	<0.1
Orbiniidae								
Naineris dendritica	0.5 ±0.7	<0.1	0		0		0.3 ±0.5	<0.1

Jamestown +0

	Spr 77 #	wt	Sum 77 #	wt	Fall 77 #	wt	Win 78 #	wt
Orbiniidae (cont.)								
Naineris uncinata	27.5 ±17.7	<0.1	11.3 ± 2.2	<0.1	3.5 ±7.0	<0.1	10.8 ± 7.5	✓
N. sp.	0		0		13.8	<0.1	6.8 ±3.9	<0.1
Phyllodocidae								
Eteone longa	2.0 ±0.0	<0.1	0.5 ±0.6	<0.1	0.3 ±0.5	<0.1	1.0 ±0.8	<0.1
E. tuberculata	0		0		0.3 ±0.5	<0.1	0	
Eulalia sanguinea	1.0 ±1.4	<0.1			0.8 ±1.0	<0.1	0.8 ±1.0	<0.1
E. sp. (juv.)	0		0.3 0.5	0.1	0		0	
Phyllodoce maculata	2.0 ±1.4	<0.1	1.3 ±0.5	<0.1	3.0 ±3.1	<0.1	6.3 ±3.4	<0.1
P. spp.	0		0		2.5 ±2.4	<0.1	0	
Polynoidae								
Harmothoe imbricata	2.5 ± 3.5	<0.1	9.5 ±3.0	<0.1	12.3 ± 2.1	0.2 ±0.2	1.3 ±1.0	✓
H. sp. (juv.)	1.0 ±1.4	<0.1	0		0		0	
Sabellidae								
Chone sp.	0		0.3 ±0.5	<0.1	0		0	
Sphaerodoridae								
Sphaerodoropsis minuta	0		0		0.3 ±0.5	<0.1	0	
Spionidae								
Malacoceros glutaeus	32.5 ±19.1	<0.1	15.0 ±10.8	<0.1	67.3 ± 2.1	<0.1	101.3 ± 37.5	✓

sp. (juv.)			0.5				0	
Phyllodoce maculata	2.0 ± 1.4	<0.1	1.3 ± 0.5	<0.1	3.0 ± 3.1	<0.1	6.3 ± 3.4	<0.1
P. spp.	0		0		2.5 ± 2.4	<0.1	0	
Polynoidae								
Harmothoe imbricata	2.5 ± 3.5	<0.1	9.5 ± 3.0	<0.1	12.3 ± 2.1	0.2 ±0.2	1.3 ± 1.0	✓
H. sp. (juv.)	1.0 ± 1.4	<0.1	0		0		0	
Sabellidae								
Chone sp.	0		0.3 ± 0.5	<0.1	0		0	
Sphaerodoridae								
Sphaerodoropsis minuta	0		0		0.3 ± 0.5	<0.1	0	
Spionidae								
Malacoceros glutaeus	32.5 ± 19.1	<0.1	15.0 ± 10.8	<0.1	67.3 ± 2.1	<0.1	101.3 ± 37.5	✓

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Spionidae (cont.)								
Polydora sp.	0		0.3 ± 0.5	<0.1	0		0	
Pygospio elegans	0		0		0		0.3 ± 0.5	<0.1
Spio filicornis	0		0.3 ± 0.5	<0.1	0		0	
Syllidae								
Brania brevipharyngea	0		0.3 ± 0.5	<0.1	0		0	
Exogone gemmifera	0		0		1.5 ± 1.3	<0.1	0	
E. lourei	130.5 ± 94.0	<0.1	64.0 ± 17.8	<0.1	129.5 ± 40.8	<0.1	85.8 ± 33.5	<0.1
Sphaerosyllis brandhorsti	0		0		0.3 ± 0.5	<0.1	0	
S. pirifera	0		0		0.3 ± 0.5	<0.1	0	
S. sp.	8.5 ± 10.6	<0.1	0		0.5 ± 0.6	<0.1	0	
Streptosyllis latipalpa	0		0		0		0.5 ± 1.0	<0.1
Syllides longocirrata	0		0		1.0 ± 1.4	<0.1	0	
Syllis spp.	0		1.0 ± 0.8	<0.1	0		6.5 ± 9.1	✓
Terebellidae spp.	0		0		12.3 ± 12.3	<0.1	0.5 ± 1.0	<0.1
Eupolymnia heterobranchia	3.5 ± 3.5	✓	0.5 ± 0.6	<0.1	0.3 ± 0.5	<0.1	1.3 ± 1.9	✓
Nicolea zostericola	0		0		1.3 ± 1.3	<0.1	0	
Pista brevibranchiata	28.0 ± 2.8	✓	12.8 ± 3.9	<0.1	8.5 ± 4.2	0.5 ±0.4	12.3 ± 2.2	✓

brandhorsti					±0.5			
S. pirifera	0		0		0.3 ±0.5	<0.1	0	
S. sp.	8.5 ±10.6	<0.1	0		0.5 ±0.6	<0.1	0	
Streptosyllis latipalpa	0		0		0		0.5 ±1.0	<0.1
Syllides longocirrata	0		0		1.0 ±1.4	<0.1	0	
Syllis spp.	0		1.0 ± 0.8	<0.1	0		6.5 ± 9.1	✓
Terebellidae spp.	0		0		12.3 ±12.3	<0.1	0.5 ±1.0	<0.1
Eupolymnia heterobranchia	3.5 ±3.5	✓	0.5 ±0.6	<0.1	0.3 ±0.5	<0.1	1.3 ±1.9	✓
Nicolea zostericola	0		0		1.3 ±1.3	<0.1	0	
Pista brevibranchiata	28.0 ± 2.8	✓	12.8 ±3.9	<0.1	8.5 ±4.2	0.5 ±0.4	12.3 ±2.2	✓

Jamestown +0

	Spr 77 #	wt	Sum 77 #	wt	Fall 77 #	wt	Win 78 #	wt
Terebellidae (cont.)								
Polycirrus sp.	8.5 ±0.7	<0.1	3.3 ±3.6	<0.1	7.0 ±6.7	<0.1	2.0 ±1.8	<0.1
Sipuncula								
Golfingia pugettensis	0		0		0		0.3 ±0.5	<0.1
Crustacea								
Leptostraca								
Nebalia pugettensis	0		0		0.3 ±0.5	<0.1	1.0 ±0.8	<0.1
Ostracoda spp.	0		0		0.8 ±1.0	<0.1	0	
Mysidacea								
Archaeomysis grebnitzkii	0		0		0		4.5 ±9.0	<0.1
Cumacea								
Cumella vulgaris	0		0		0.3 ±0.5	<0.1	0	
Leptocuma sp.	0.5 ±0.7	<0.1	0		0		0	
Tanaidacea								
Leptochelia dubia	40.5 ±20.5	<0.1	37.3 ±22.9	<0.1	44.0 ±10.2	<0.1	52.0 ±19.3	<0.1
Isopoda								
Exosphaeroma amplicauda	0		0		0.3 ±0.5	<0.1	1.8 ±1.3	<0.1
Idotea sp. (juv.)	0		0		0.5 ±1.0	<0.1	0	

Archaeomysis grebnitzkii	0		0		0		4.5 ±9.0	<0.1
Cumacea								
Cumella vulgaris	0		0		0.3 ±0.5	<0.1	0	
Leptocuma sp.	0.5 ±0.7	<0.1	0		0		0	
Tanaidacea								
Leptochelia dubia	40.5 ±20.5	<0.1	37.3 ±22.9	<0.1	44.0 ±10.2	<0.1	52.0 ±19.3	<0.1
Isopoda								
Exosphaeroma amplicauda	0		0		0.3 ±0.5	<0.1	1.8 ±1.3	<0.1
Idotea sp. (juv.)	0		0		0.5 ±1.0	<0.1	0	

Jamestown +0

	Spr 77		Sum 77		Fall 77		Win 78	
	#	wt	#	wt	#	wt	#	wt
Isopoda (cont.)								
Phyllodorus abdominalis	0		0.3 ±0.5	<0.1	0		0	
Synidotea bicuspida	0		0		0.5 ±1.0	<0.1	0	
Amphipoda								
Caprellidea								
Caprella sp.	0		0.3 ±0.5	<0.1	0.3 ±0.5	<0.1	0	
Gammaridea spp.	29.5 ±9.2	<0.1	-		54.5 ±9.3	0.4 ±0.3	16.5 ±5.5	<0.1
Ampithoe lacertosa	–		2.8 ±5.5	<0.1	–		–	
Calliopiella pratti	–		0.3 ±0.5	<0.1	–		–	
Corophium spp.	0.5 0.7	0.1	0		0.3 0.5	0.1	3.5 1.7	0.1
Melita dentata	–		0.5 ±1.0	<0.1	–		–	
Paraphoxus similis	–		0.3 ±0.5	<0.1	–		–	
P. spinosus type A	–		1.3 ±2.5	<0.1	–		0.3 ±0.5	<0.1
Pontogeneia cf. ivanovi	–		0.3 ±0.5	<0.1	–		–	
P. cf. rostrata	–		5.5 ±10.3	<0.1	–		–	
Tritella pilimana	0		0.3 ±0.5	<0.1	0		0	
Decapoda								
Callianassidae sp. (juv.)	0		0.3 ±0.5	<0.1	0		0	
Caridea spp.	0		0		0		0.8 ±1.0	<0.1

Jamestown +0

	Spr 77 #	Spr 77 wt	Sum 77 #	Sum 77 wt	Fall 77 #	Fall 77 wt	Win 78 #	Win 78 wt
Decapoda (cont.)								
Heptacarpus sp.	0		0		0.5 ±1.0	0.0 ±0.1	0	
Pinnixa littoralis	0		0.3 ±0.5	0.0 ±0.1	0		0	
P. sp. (juv.)	2.5 ±0.7	0.2 ±0.1	0.3 ±0.5	<0.1	3.5	<0.1	1.3 ±1.3	<0.1
Upogebia pugettensis	6.0 ±0.0	2.0 ±1.1	16.5 ±12.6	1.5 ±1.3	5.5 ±0.8	7.2 ±8.0	8.3 ±5.6	<0.1
Insecta								
Diptera larva	0		0		0		0.3 ±0.5	<0.1
Phoronida								
Phoronopsis harmeri	1.0 ±0.0	<0.1	1.0 ±0.8	<0.1	0.3 ±0.5	<0.1	0	
Echinodermata								
Ophuroidea spp.	1.5 ±0.7	<0.1	0.5 ±1.0	<0.1	8.8 ±8.3	<0.1	4.8 ±1.5	<0.1
Amphipholus squamata	0		0		6.3 12.5	0.1 0.2	0	
Holothuroidea								
Leptosynapta clarki	11.0 ± 4.2	<0.1	2.8 ±1.5	<0.1	0.5 ±0.6	<0.1	2.5 ±3.8	<0.1
Species richness	47		57		76		61	
Diversity - H'	2.36		2.42		2.48		2.10	
Total number	1295.5		605.4		1260.0		1291.1	
Total biomass (g)	15.1		6.3		27.1		0.5	

Table 10d. Jamestown (sand) benthic organisms from the subtidal zone collected 7 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Chlorophyta				
Chaetomorpha californica		<0.1		<0.1
Cladophora pygmaea		<0.1		<0.1
Entocladia viridis		0		<0.1
Phaeophyta				
Ectocarpus sp.		0		<0.1
Laminariales		2.5 ±5.0		0
Ralfsia sp.		<0.1		<0.1
Stictyosiphon tortilis		0		

Table 10d. Jamestown (sand) benthic organisms from the subtidal zone collected 7 June 1977, expressed as number and/or biomass (g) per 0.05 m^2 ± standard deviation (N=4).

	-5 m.		-10 m.	
	#	wt.	#	wt.
Chlorophyta				
Chaetomorpha californica		<0.1		<0.1
Cladophora pygmaea		<0.1		<0.1
Entocladia viridis		0		<0.1
Phaeophyta				
Ectocarpus sp.		0		<0.1
Laminariales		2.5 ±5.0		0
Ralfsia sp.		<0.1		<0.1
Stictyosiphon tortilis		0		<0.1
Syringoderma abyssicola		0		<0.1
Rhodophyta				
Antithamnion glandulifera		<0.1		0
Asterocolax gardneri		0		<0.1
Callithamnion/ Pleonosporium		<0.1		<0.1
Callophyllis flabellulata		<0.1		0.5 ±1.1
C. haenophylla		0		0.2 ±0.3
C. sp. (juv.)		<0.1		0
Ceramium californicum		0.1 ±0.1		0

Jamestown Subtidal

	-5 m.		-10 m.	
Rhodophyta (cont.)	#	wt.	#	wt.
Choreocolax polysiphoniae		<0.1		0
Cruoriaceae		<0.1		0
Euthora fruticulosa		<0.1		<0.1
Fauchea laciniata		3.5 ±5.6		0
Goniotrichum alsidii (= G. elegans)		0		<0.1
Gracilaria verrucosa		11.0 ±14.6		<0.1
Gymnogongus leptophyllus		<0.1		0
Halymenia californica		2.5 ±5.0		0
Herposiphonia				

Jamestown Subtidal

Rhodophyta (cont.)	-5 m. ϕ	-5 m. wt.	-10 m. ϕ	-10 m. wt.
Choreocolax polysiphoniae		<0.1		0
Cruoriaceae		<0.1		0
Euthora fruticulosa		<0.1		<0.1
Fauchea laciniata		3.5 ±5.6		0
Goniotrichum alsidii (= G. elegans)		0		<0.1
Gracilaria verrucosa		11.0 ±14.6		<0.1
Gymnogongus leptophyllus		<0.1		0
Halymenia californica		2.5 ±5.0		0
Herposiphonia grandis		<0.1		<0.1
Hymenena sp.		<0.1		0
Iridaea sp.		9.3 ±18.5		0
Membranoptera platyphylla		0		<0.1
Peyssonellia pacifica		<0.1		<0.1
Platythamnion heteromorphum		0		<0.1
P. pectinatum		0		0.1 ±0.1
P. reversum		<0.1		0
P. villosum		0		0.3 ±0.6

Jamestown Subtidal

Rhodophyta (cont.)	-5 m. ϕ	-5 m. wt.	-10 m. ϕ	-10 m. wt.
Plocamium coccineum		0.1 ±0.2		0
Polyneura latissima		7.2 ±12.9		0.2 ±0.4
Polysiphonia hendryi		0.2 ±0.3		<0.1
P. pacifica		<0.1		0
Pterosiphonia bipinnata		0		<0.1
P. dendroidea		0.6 ±0.2		0
Rhodoptilum plumosum		0		<0.1
Rhodymenia				

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Rhodophyta (cont.)				
Plocamium				
coccineum		0.1		
		±0.2		0
Polyneura		7.2		
latissima		±12.9		0.2
Polysiphonia		0.2		±0.4
hendryi		±0.3		<0.1
P.		<0.1		
pacifica				0
Pterosiphonia		0		
bipinnata				<0.1
P.		0.6		
dendroidea		±0.2		0
Rhodoptilum		0		
plumosum				<0.1
Rhodymenia		0.1		
sp.		±0.1		<0.1
Scagelia		<0.1		
occidentale				<0.1
Stenogramme		0.1		
interrupta		±0.0		<0.1
Porifera				
spp.		✓		
Cnidaria				
Anthozoa				
spp.	2.8	0.1	1.5	<0.1
Halcampa	±2.5	±0.1	±1.9	
decemtantaculata	0		0.3	<0.1
			±0.5	
Platyhelminthes - Turbellaria				
spp.	0		0.3	<0.1
			±0.5	
Nemertea				
spp.	4.8	<0.1	8.5	<0.1
	±4.8		±1.7	

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Nematoda				
spp.	66.8 ±37.5	<0.1	21.3 ±11.3	<0.1
Mollusca				
Amphineura				
Mopalia lignosa	0.3 ±0.5	0.3 ±0.6	0	
Gastropoda				
Alvinia sp.	20.5 ±7.2	<0.1	1.3 ±1.5	<0.1
Amphissa columbiana	0		0.3 ±0.5	<0.1
Bittium eschrichtii	3.8 ±4.4	0.0 ±0.1	0	
Calyptraea fastigata	2.0 ±2.2	0.1 ±0.1	1.5 ±1.3	<0.1
Cerithiopsis sp.	2.3 ±2.9	<0.1	0	
Collisella ochracea	0.3 ±0.5	<0.1	0	
Lacuna variegata	0.3 ±0.5	<0.1	0.8 ±1.5	<0.1
Margarites/ Lirularia	9.8 ±6.2	<0.1	11.3 ±6.7	<0.1
Margarites pupillus	0		2.8 ±4.3	<0.1
Nassarius mendicus	0		0.3 ±0.5	<0.1
Natica clausa	0		0.3 ±0.5	<0.1
Odostomia sp.	0		1.5 ±3.0	<0.1
Oenopota tabulata	0		0.3 ±0.5	<0.1

sp.	2.3 ±2.9	<0.1	0	
Collisella ochracea	0.3 ±0.5	<0.1	0	
Lacuna variegata	0.3 ±0.5	<0.1	0.8 ±1.5	<0.1
Margarites/ Lirularia	9.8 ±6.2	<0.1	11.3 ± 6.7	<0.1
Margarites pupillus	0		2.8 ±4.3	<0.1
Nassarius mendicus	0		0.3 ±0.5	<0.1
Natica clausa	0		0.3 ±0.5	<0.1
Odostomia sp.	0		1.5 ±3.0	<0.1
Onopota tabulata	0		0.3 ±0.5	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Gastropoda (cont.)				
Thais sp.	0.3 ±0.5	<0.1	0	
Trichotropis cancellata	0		0.3 ±0.5	0.0 ±0.1
Turbonilla sp.	0.5 ±1.0	<0.1	0.5 ±0.6	<0.1
Bivalvia				
Chlamys hastata	0		0.3 ±0.6	<0.1
Clinocardium nuttallii	10.5 ± 7.1	0.1 ±0.1	1.0 ±1.2	<0.1
Crenella decussata	68.3 ±59.7	0.1 ±0.1	4.3 ±4.4	<0.1
Lucinoma tenuisculpta	0		3.0 ±1.2	<0.1
Lyonsia californica	0		0.5 ±0.6	<0.1
Macoma nasuta	0.3 ±0.5	0.1 ±0.1	4.3 ±8.5	1.7 ±3.4
Macoma sp. (juv.)	6.0 ±3.5	0.1 ±0.1	18.3 ±5.7	<0.1
Musculus discors	0.3 ±0.5	<0.1	0.8 ±1.0	0.1 ±0.1
Mya arenaria	1.0 ±1.4	<0.1	0.8 ±0.5	<0.1
Myella tumida	72.5 ±33.1	0.1 ±0.1	14.0 ±6.9	<0.1
Nuculana hamata	0		3.3 ±1.9	0.1 ±0.1
Nucula tenuis	0.5 ±0.6	<0.1	0	
Protothaca staminea	0.3 ±0.5	0.1 ±0.3	0.8 ±1.5	0.0 ±0.1

californica			0.5 ±0.6	<0.1
Macoma nasuta	0.3 ±0.5	0.1 ±0.1	4.3 ±8.5	1.7 ±3.4
Macoma sp. (juv.)	6.0 ±3.5	0.1 ±0.1	18.3 ±5.7	<0.1
Musculus discors	0.3 ±0.5	<0.1	0.8 ±1.0	0.1 ±0.1
Mya arenaria	1.0 ±1.4	<0.1	0.8 ±0.5	<0.1
Mysella tumida	72.5 ±33.1	0.1 ±0.1	14.0 ±6.9	<0.1
Nuculana hamata	0		3.3 ±1.9	0.1 ±0.1
Nucula tenuis	0.5 ±0.6	<0.1	0	
Protothaca staminea	0.3 ±0.5	0.1 ±0.3	0.8 ±1.5	0.0 ±0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Bivalvia (cont.)				
Transennella tantilla	10.5 ±4.7	<0.1	7.8 ±1.7	<0.1
Tresus capax	0.3 ±0.5	<0.1	1.3 ±1.3	0.1 ±0.2
Annelida				
Archiannelida				
Polygordius sp.	0.3 ±0.5	<0.1	0	
Polychaeta				
Ampharetidae				
Ampharete arctica	0		12.0 ±3.2	<0.1
spp. (juv.)	0		1.5 ±2.4	<0.1
Apistobranchidae				
Apistobranchus sp.	0		0.3 ±0.5	<0.1
Capitellidae				
Capitella capitata	0		1.0 ±0.8	<0.1
Mediomastus sp.	21.3 ±11.6	<0.1	39.8 ±15.4	<0.1
Chaetopteridae				
Phyllochaetopterus prolifica	14.0 ±6.3	<0.1	4.0 ±4.1	<0.1
Spiochaetopterus costarum	0.3 ±0.5	<0.1	1.8 ±1.0	<0.1
Cirratulidae				
spp.	2.5 ±2.7	<0.1	32.3 ±38.6	<0.1

	0		1.5 ±2.4	<0.1
Apistobranchidae				
Apistobranchus sp.	0		0.3 ±0.5	<0.1
Capitellidae				
Capitella capitata	0		1.0 ±0.8	<0.1
Mediomastus sp.	21.3 ±11.6	<0.1	39.8 ±15.4	<0.1
Chaetopteridae				
Phyllochaetopterus prolifica	14.0 ±6.3	<0.1	4.0 ±4.1	<0.1
Spiochaetopterus costarum	0.3 ±0.5	<0.1	1.8 ±1.0	<0.1
Cirratulidae				
spp.	2.5 ±2.7	<0.1	32.3 ±38.6	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Cirratulidae (cont.)				
Chaetozone setosa	3.0 ±1.4	<0.1	5.5 ±3.9	<0.1
Cirratulus cirratus	0		0.3 ±0.5	<0.1
Tharyx multifilis	3.8 ±7.5	<0.1	6.8 ±8.6	<0.1
Dorvilleidae				
Protodorvillea gracilis	11.8 ±7.3	<0.1	2.8 ±2.2	<0.1
Dorvillea rudolphi	1.5 ±1.3	<0.1	0	
Glyceridae				
Glycera sp. (juv.)	0		0.5 ±0.6	<0.1
G. americana	1.5 ±1.0	<0.1	0.5 ±0.6	<0.1
G. capitata	1.0 ±1.2	<0.1	0	
Goniadidae				
Glycinde picta	2.0 ±0.8	<0.1	2.8 ±2.8	<0.1
Goniada maculata	0		0.8 ±1.0	<0.1
Hesionidae				
Gyptis brevipalpa	0		0.5 ±0.6	<0.1
Micropodarke dubia	20.3 ±8.7	<0.1	31.8 ±11.7	<0.1
Lumbrineridae				
Lumbrineris sp.	4.5 ±1.0	<0.1	4.3 ±2.2	<0.1

G. americana	1.5 ±1.0	<0.1	±0.6 0.5 ±0.6	<0.1
G. capitata	1.0 ±1.2	<0.1	0	
Goniadidae				
Glycinde picta	2.0 ±0.8	<0.1	2,8 ±2.8	<0.1
Goniada maculata	0		0.8 ±1.0	<0.1
Hesionidae				
Cyptis brevipalpa	0		0.5 ±0.6	<0.1
Micropodarke dubia	20.3 ± 8.7	<0.1	31.8 ±11.7	<0.1
Lumbrineridae				
Lumbrineris sp.	4.5 ±1.0	<0.1	4.3 ±2.2	<0.1

Jamestown Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Maldanidae				
spp. (juv.)	14.3 ±10.4	<0.1	10.0 ±8.5	<0.1
Euclymene sp.	5.3 ±10.5	<0.1	4.5 ±7.7	<0.1
Nicomache personata	20.0 ± 7.4	<0.1	2.0 ±2.5	<0.1
Nephtyidae				
Nephtys sp.	0.3 ±0.5	<0.1	0	
N. ciliata	0		1.0 ±1.4	<0.1
Nereidae				
Nereis sp. (juv.)	0.3 ±0.5	<0.1	1.0 ±0.8	<0.1
N. procera	0.3 ±0.5	<0.1	0.5 ±0.6	<0.1
Platynereis bicanaliculata	16.3 ±7.7	<0.1	8.8 ±8.7	<0.1
Onuphidae				
Onuphis iridescens	0		1.0 ±0.8	<0.1
O. stigmatis	0.5 ±1.0	<0.1	0	
O. sp. (juv.)	0		2.3 ±1.7	<0.1
Ophelidae				
Ammotrypane aulogaster	0		0.3 ±0.5	<0.1
Armandia brevis	3.3 ±2.1	<0.1	0	
Travisia forbesii	0		0.5 ±1.0	<0.1

	±0.5		±0.6	<0.1
Platynereis bicanaliculata	16.3 ±7.7	<0.1	8.8 ±8.7	<0.1
Onuphidae				
Onuphis iridescens	0		1.0 ±0.8	<0.1
O. stigmatis	0.5 ±1.0	<0.1	0	
O. sp. (juv.)	0		2.3 ±1.7	<0.1
Opheliidae				
Ammotrypane aulogaster	0		0.3 ±0.5	<0.1
Armandia brevis	3.3 ±2.1	<0.1	0	
Travisia forbesii	0		0.5 ±1.0	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Orbiniidae				
Scoloplos sp.	2.8 ±1.7	<0.1	1.5 ±1.0	<0.1
Oweniidae				
Owenia *fusiformis*	6.5 ±4.9	<0.1	2.5 ±1.0	<0.1
Paraonidae				
Aricidea sp.	1.8 ±1.0	<0.1	1.3 ±1.0	<0.1
Pectinariidae				
Pectinaria granulata	0		3.0 ±2.2	<0.1
Phyllodocidae				
Etsone longa	0.5 ±1.0	<0.1	0.8 ±1.0	<0.1
Eulalia sanguinea	0.3 ±0.5	<0.1	1.5 ±1.9	<0.1
Phyllodoce sp. A	0		0.3 ±0.5	<0.1
Phyllodoce groenlandica	1.3 ±1.3	<0.1	0.8 ±1.0	<0.1
Phyllodoce maculata	0		2.0 ±1.2	<0.1
Phyllodoce sp. (juv.)	1.3 ±1.3	<0.1	5.8 ±5.2	<0.1
Polynoidae				
Harmothoe imbricata	20.8 ±8.2	<0.1	10.0 ±7.0	<0.1
H. lunulata	0.5 ±0.6	<0.1	1.5 ±1.3	<0.1
H. sp.	0.5 ±1.0	<0.1	0	

Phyllodocidae				
Eteone longa	0.5 ±1.0	<0.1	0.8 ±1.0	<0.1
Eulalia sanguinea	0.3 ±0.5	<0.1	1.5 ±1.9	<0.1
Phyllodoce sp. A	0		0.3 ±0.5	<0.1
Phyllodoce groenlandica	1.3 ±1.3	<0.1	0.8 ±1.0	<0.1
Phyllodoce maculata	0		2.0 ±1.2	<0.1
Phyllodoce sp. (juv.)	1.3 ±1.3	<0.1	5.8 ±5.2	<0.1
Polynoidae				
Harmothoe imbricata	20.8 ±8.2	<0.1	10.0 ±7.0	<0.1
H. lunulata	0.5 ±0.6	<0.1	1.5 ±1.3	<0.1
H. sp.	0.5 ±1.0	<0.1	0	

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Sabellidae				
Chone ecaudata	1.5 ±1.3	< 0.1	3.8 ±1.5	< 0.1
C. spp.	0		5.0 ±5.6	< 0.1
Euchone analis	0		4.0 ±2.2	< 0.1
Laonome sp.	0		2.0 ±4.0	< 0.1
Potamilla intermedia	0		0.3 ±0.5	< 0.1
P. myriops	0		0.5 ±1.0	< 0.1
Sabella media	0		13.5 ±10.2	< 0.1
Scalebregmidae				
Scalebregma inflatum	0		1.3 ±1.3	< 0.1
Serpulidae				
Spirorbis sp.	0		0.3 ±0.5	< 0.1
Sigalionidae				
Pholoe minuta	1.5 ±0.6	< 0.1	1.0 ±0.8	<0.1
Spionidae				
Laonice cirrata	0		0.8 ±1.3	<0.1
Malacoceros glutaeus	0.5	0.1	0.8	0.1
Polydora sp. A.	0.6 0		1.0 0.3 0.5	0.1

Spirorbis sp.	0		0.3 ±0.5	<0.1
Sigalionidae				
Pholoe minuta	1.5 ±0.6	<0.1	1.0 ±0.8	<0.1
Spionidae				
Leonice cirrata	0		0.8 ±1.3	<0.1
Malacoceros gluteeus	0.5	0.1	0.8	0.1
Polydora sp. A.	0.6 0		1.0 0.3 0.5	0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Spionidae (cont.)				
Polydora quadrilobata	0		2.5 ±1.9	<0.1
P. socialis	1.3 ±1.3	<0.1	2.3 ±1.3	<0.1
Prionospio cirrifera	0.5 ±0.6	<0.1	0	
P. steenstrupi	7.3 ±2.5	<0.1	8.3 ±3.3	<0.1
Spiophanes berkeleyorum	0.3 ±0.5	<0.1	1.5 ±1.7	<0.1
S. bombyx	4.5 ±3.9	<0.1	1.0 ±0.8	<0.1
Syllidae				
Exogone lourei	1.0 ±1.4	<0.1	0.8 ±1.5	<0.1
E. spp.	96.0 ±43.5	<0.1	40.5 ±21.5	<0.1
Pionosyllis uraga	0.3 ±0.5	<0.1	0	
Sphaerosyllis brandhorsti	0.5 ±0.6	<0.1	0	
S. pirifera	3.5 ±2.7	<0.1	1.0 ±1.4	<0.1
Syllides longocirrata	1.3 ±1.5	<0.1	1.0 ±0.8	<0.1
Syllis spp.	4.0 ±5.1	<0.1	2.3 ±2.9	<0.1
Terebellidae				
spp.	0.5 ±1.0	<0.1	1.0 ±1.4	<0.1
Nicolea zostericola	0.5 ±0.6	<0.1	0.3 ±0.5	<0.1
Pista brevibranchiata	0		0.8 ±1.0	<0.1

lourei	1.0 ±1.4	<0.1	0.8 ±1.5	<0.1
E. spp.	96.0 ±43.5	<0.1	40.5 ±21.5	<0.1
Pionosyllis urage	0.3 ±0.5	<0.1	0	
Sphaerosyllis brandhorsti	0.5 ±0.6	<0.1	0	
S. pirifera	3.5 ±2.7	<0.1	1.0 ±1.4	<0.1
Syllides longocirrata	1.3 ±1.5	<0.1	1.0 ±0.8	<0.1
Syllis spp.	4.0 ±5.1	<0.1	2.3 ±2.9	<0.1
Terebellidae spp.	0.5 ±1.0	<0.1	1.0 ±1.4	<0.1
Nicolea zostericola	0.5 ±0.6	<0.1	0.3 ±0.5	<0.1
Pista brevibranchiata	0		0.8 ±1.0	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Terebellidae (cont.)				
Pista cristata	0		0.5 ±1.0	<0.1
Polycirrus sp. A.	1.3 ±1.0	<0.1	0.3 ±0.5	<0.1
Proclea graffi	0		1.0 ±1.4	<0.1
Oligochaeta spp.	13.5 ±14.9	<0.1	31.0 ±19.9	<0.1
Sipunculida spp.	1.8 ±2.1	<0.1	0.3 ±0.5	<0.1
Phascolosoma agassizii	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Priapulida				
Priapulus caudatus	0		0.3 ±0.5	<0.1
Crustacea				
Ostracoda spp.	16.8 ±6.7	<0.1	18.8 ±11.9	<0.1
Leptostraca				
Nebalia pugettensis	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Cumacea				
Cumella vulgaris	0.3 ±0.5	<0.1	3.0 ±1.2	<0.1
Diastylis sp.	0.3 ±0.5	<0.1	2.5 ±1.9	<0.1
Lampropidae spp.	0.5 ±1.0	<0.1	0.5 ±1.0	<0.1

Priapulida				
Priapulus caudatus	0		0.3 ±0.5	<0.1
Crustacea				
Ostracoda spp.	16.8 ±6.7	<0.1	18.8 ±11.9	<0.1
Leptostraca				
Nebalia pugettensis	0.3 ±0.5	<0.1	0.3 ±0.5	<0.1
Cumacea				
Cumella vulgaris	0.3 ±0.5	<0.1	3.0 ±1.2	<0.1
Diastylis sp.	0.3 ±0.5	<0.1	2.5 ±1.9	<0.1
Lampropidae spp.	0.5 ±1.0	<0.1	0.5 ±1.0	<0.1

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Tanaidacea				
Leptochelia dubia	132.3 ±41.9	0.0 ±0.1	68.5 ±43.6	<0.1
Isopoda				
Epicaridea sp.	0.3 ±0.5	<0.1	0	
Exosphaeroma media	0.8 ±1.0	<0.1	0	
E. rhomburum	1.0 ±1.2	<0.1	0.5 ±1.0	<0.1
Gnorimosphaeroma oregonense	0		0.3 ±0.5	<0.1
Jaeropsis dubia	0		0.3 ±0.5	<0.1
Paranthura elegans	0		1.3 ±1.5	<0.1
Amphipoda				
Corophium spp.	0.3 ±0.5	<0.1	0	
Gammaridea spp.	83.0 ±28.8	0.2 ±0.2	76.8 ±48.1	0.1 ±0.1
Decapoda				
Caridea sp. (juv.)	1.3 ±1.9	<0.1	1.3 ±1.5	<0.1
Crangon munitella	0.5 ±1.0	0.1 ±0.1	0.5 ±1.0	0.1 ±0.2
Crangon sp.	0.8 ±1.0	0.1 ±0.1	0	
Heptacarpus stimpsoni	0.3 ±0.5	0.1 ±0.2	0	
Hippolytidae sp.	2.3 ±4.5	<0.1	0	

Jamestown Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Decapoda (cont.)				
Oregonia gracilis	0.3 ±0.5	0.1 ±0.1	0	
Pagurus beringanus	0		0.3 ±0.5	0.1 ±0.3
Paguridae sp. (juv.)	2.3 ±2.1	<0.1	4.8 ±5.0	<0.1
Pinnixa sp.	0.3 ±0.5	<0.1	0	
Pinnotheridae sp. (juv.)	0.5 ±1.0	<0.1	1.8 ±1.3	<0.1
Pugettia gracilis	7.3 ±4.8	0.0 ±0.1	1.5 ±1.7	<0.1
Pugettia producta	0.3 ±0.5	0.0 ±0.1	0	
Pugettia sp. (juv.)	0.3 ±0.5	<0.1	0.5 ±0.6	<0.1
Spirontocaris prionota	0.3 ±0.5	0.1 ±0.1	0	
Phoronida				
Phoronopsis harmeri	0		2.3 ±0.5	<0.1
Bryozoa spp.				
Echinodermata				
Ophiuroidea sp. (juv.)	1.5 ±1.3	<0.1	0.3 ±0.5	0.1 ±0.1
Holothuroidea				
Eupentacta sp.	0		0.3 ±0.5	0.1 ±0.2
Leptosynapta clarki	7.3 ±4.6	0.1 ±0.1	0.3 ±0.5	<0.1

Jamestown Subtidal

	-5 m. #	-5 m. wt.	-10 m. #	-10 m. wt.
Species richness	136		156	
Diversity - H'	3.49		3.81	
Total number	868.2		643.2	
Total biomass (g)	39.1		3.8	

Jamestown Subtidal

	-5 m.		-10 m.	
	#	wt.	#	wt.
Species richness	136		156	
Diversity - H'	3.49		3.81	
Total number	868.2		643.2	
Total biomass (g)	39.1		3.8	

APPEN

COMPLETE S

APPENDIX II

COMPLETE SPECIES LISTS

Table 1. Tongue Point (rock). Co
collected from spring 1976 th
tide heights where organism w

Chlorophyta

Blidingia sp.
Chaetomorpha sp.

Cladophora sp.
Codium sp.
Derbesia marina

Enteromorpha compressa
E. crinita
E. intestinales
E. linza

Monostroma fuscum
Rhizoclonium riparium

Spongomorpha coalita
S. spinescens
Ulothrix sp.

Ulva spp.
Ulvaria sp.
Urospora sp.

Bacillariophyta

Pennales spp.

Phaeophyta

Alaria spp.
Analipus japonicus
Costaria costata

Desmarestia aculeata
D. ligulata
D. viridis

Table 1. Tongue Point (rock). Complete list of all benthic organisms collected from spring 1976 through winter 1978. Checks indicate tide heights where organism was found.

	+6'	+3'	+0'	-5m	-10m
Chlorophyta					
Blidingia sp.		✓			
Chaetomorpha sp.	✓	✓	✓	✓	
Cladophora sp.	✓	✓	✓		
Codium sp.			✓		
Derbesia marina			✓	✓	✓
Enteromorpha compressa			✓		
E. crinita			✓		
E. intestinales	✓	✓	✓		
E. linza	✓	✓	✓	✓	
Monostroma fuscum	✓	✓	✓		
Rhizoclonium riparium	✓	✓	✓	✓	
Spongomorpha coalita	✓	✓	✓	✓	
S. spinescens	✓	✓	✓		✓
Ulothrix sp.		✓			
Ulva spp.	✓	✓	✓	✓	
Ulvaria sp.	✓	✓			
Urospora sp.		✓			
Bacillariophyta					
Pennales spp.	✓	✓	✓	✓	✓
Phaeophyta					
Alaria spp.	✓	✓	✓	✓	
Analipus japonicus	✓	✓		✓	
Costaria costata	✓		✓		✓
Desmarestia aculeata			✓		
D. ligulata			✓	✓	✓
D. viridis				✓	✓

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Ectocarpus parvus			✓		
Fucus disticus	✓	✓			
Giffordia ovata				✓	
Hedophyllum sessile		✓	✓		
Laminaria groenlandica		✓	✓		
L. saccharina			✓		
L. setchellii			✓		
Leathesia difformis	✓	✓	✓		
Nereocystis leutkeana				✓	
Petalonia fascia	✓	✓	✓		
Phaeostrophion irregulare		✓			
Pterogophora californica					✓
Pylaiella tenella				✓	
Ralfsia pacifica	✓	✓			
Saundersella simplex	✓				
Sphacelaria norrissii					✓
S. racemosa		✓			
Syringoderma abyssicola				✓	✓
Rhodophyta					
Acrochaetium sp.	✓	✓	✓	✓	✓
Ahnfeltia plicata			✓		
Amplisiphonia pacifica				✓	
Antithamnion defectum		✓	✓	✓	✓
A. dendroideum	✓	✓	✓		
A. kylinii		✓	✓	✓	✓
Antithamnionella pacifica var. pacifica		✓	✓		
Bonnemaisonia nootkana					✓
Bossiella orbigiana				✓	✓
B. plumosa	✓	✓	✓	✓	
Calliarthron tuberculosum			✓	✓	✓
Callithamnion biseriatum				✓	
C. pikeanum	✓	✓	✓	✓	

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Callophyllis edentata					
C. flabellulata			✓		
C. firma					✓
C. haenophylla			✓		
			✓		✓
Ceramium californicum					
C. pacificum		✓		✓	✓
C. washingtoniense		✓			
Choreocolax polysiphoniae		✓		✓	
Clathromorphum parcum			✓	✓	✓
Corallina vancouveriensis			✓	✓	
	✓	✓	✓		
Constantinea simplex					
Cruoria profunda			✓		
				✓	
Cryptonemia obovata					
C. ovalifolia			✓		
			✓		✓
Cryptosiphonia woodii					
	✓	✓	✓		
Delesseria decipiens					
			✓		
Endocladia muricata					
	✓	✓	✓	✓	
Erythrotrichia parksii					
Farlowia mollis			✓		
		✓			
Fauchea laciniata					
Gigartina papillata				✓	
	✓	✓	✓		✓
Gloiopeltis furcata					
Gonimophyllum skottsbergii	✓				
		✓	✓		
Goniotrichum elegans					
Gracilaria verrucosa		✓			
Grateloupia doryphora		✓			
			✓		
Griffithsia pacifica					
Halosaccion glandiforme					
Halymenia coccinea	✓	✓	✓	✓	✓
			✓		
Harveyella mirabilis					
Herposiphonia grandis			✓		
Herposiphonia plumula				✓	
				✓	✓

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Heterosiphonia sp.					
Hildenbrandia occidentale			✓		
Hollenbergia nigricans		✓	✓		
Hollenbergia subulata				✓	
				✓	✓
Hymenena flabelligera					
H. multiloba		✓	✓		
H. setchellii		✓			
		✓			
Iridaea cordata					
I. cornucopiae	✓	✓	✓		
I. heterocarpa	✓				
I. lineare	✓	✓			
			✓		
Laurencia spectabilis					
			✓		
Leptofauchea pacifica					
Lithophyllum sp.			✓		
			✓		
Lithothamnion californicum					
L. muricatum					✓
		✓			
Melobesia mediocris					
Membranoptera dimorpha			✓		
M. multiramosa			✓		
M. platyphylla			✓		
			✓		
Mesophyllum conchatum					
M. lamellatum	✓	✓	✓	✓	
			✓		
Microcladia borealis					
M. coulteri	✓	✓	✓	✓	
		✓			
Neoptilota californica					
N. hypnoides			✓		
Odonthalia flocossa			✓		
O. kamtschatica	✓	✓	✓		
Opuntiella californica			✓		
					✓
Petrocelis middendorfii					
Peyssonellia pacifica	✓	✓	✓		
Phycodrys sp.				✓	
			✓		
Platythamnion pectinatum					
P. villosum				✓	✓
Pleonosporium vancouverianum			✓		✓
				✓	

TONGUE POINT

	+6'	+3'	+0'	-5 m	-10 m
Plocamium coccineum					
P. pacificum		✓			
P. tenue			✓		
	✓	✓	✓		
Polysiphonia hendryi					
P. pacifica	✓	✓	✓	✓	
P. paniculata	✓	✓	✓	✓	✓
P. scopulorum var. villosum				✓	✓
				✓	✓
Porphyra pseudolanceolata					
P. smithii	✓				
P. sp.	✓				
	✓	✓	✓	✓	✓
Pterosiphonia bipinnata					
P. dendroidea	✓	✓	✓	✓	✓
P. gardneri	✓	✓	✓	✓	✓
P. gracilis	✓			✓	✓
Prionitis lanceolata				✓	✓
Ptilota filicina		✓			
Ptilota pectinata			✓		
Ptilothamnionopsis lejolisea			✓		
Rhodochorton purpureum			✓	✓	✓
			✓		
Rhodoglossum californicum					
Rhodomela larix			✓		
Rhodoptilum plumosum	✓	✓	✓		
Rhodymenia californica					✓
R. pacific			✓		
R. palmata			✓		
R. pertusa			✓	✓	✓
				✓	
Rhodymeniocolax botryoidea					
Scagelia occidentale			✓		
		✓		✓	✓
Spermatophyta					
Phyllospadix scouleri		✓	✓	✓	
Porifera spp.	✓	✓	✓	✓	
Halichondria panicea					
Haliclona permollis	✓	✓	✓		
Ophlitaspongia pennata		✓			
		✓	✓		

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Cnidaria					
Anthozoa					
Anthopleura elegantissima					
Balanophyllia elegans		✓	✓		
Tealia sp.				✓	
		✓			
Hydrozoa spp.		✓	✓	✓	✓
Aglaophenia sp.					✓
Plumularia sp.					
Sertularella sp.			✓		✓
Sertularia sp.			✓		
Platyhelminthes					
Turbellaria spp.	✓	✓	✓	✓	
Nemertea spp.	✓	✓	✓	✓	✓
Emplectonema gracile	✓	✓			
Nematoda spp.	✓	✓	✓	✓	✓
Mollusca					
Amphineura					
Cyanoplax dentiens					
Katharina tunicata	✓	✓	✓		✓
		✓	✓		
Lepidozona cooperi					
L. mertensii					✓
					✓
Mopalia ciliata					
M. hindsii			✓		
M. lignosa	✓		✓		
M. muscosa				✓	
M. sp. K.		✓			
			✓		

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Tonicella lineata		✓	✓	✓	✓
Gastropoda					
Acteocina sp.			✓		
Acmaea mitra			✓	✓	✓
Aeolididae sp.				✓	✓
Alvinia sp.		✓	✓	✓	✓
Amphissa columbiana			✓	✓	✓
Balcis montereyensis				✓	
Barleeia haliotiphila	✓	✓	✓		
Bittium eschrichtii		✓	✓	✓	
Calliostoma ligatum		✓	✓	✓	✓
Calyptraea fastigiata		✓	✓		✓
Cerithiopsis sp.	✓	✓	✓	✓	✓
Ceratostoma foliatum					✓
Collisella digitalis	✓	✓	✓		
C. ochracea	✓	✓	✓		✓
C. pelta	✓	✓			
C. strigatella			✓		
Crepidula aculeata			✓		
C. adunca				✓	
C. fornicata			✓		
Crepipatella lingulata			✓	✓	
Cryptobranchia concentrica				✓	
Cylichna sp.		✓			
Diaphana sp.				✓	
Diodora aspera			✓		✓
Fusitriton oregonensis				✓	✓
Granulina margaritula				✓	✓
Homalopoma baculum		✓	✓		
Lacuna variegata	✓	✓	✓	✓	✓
Lirularia lirulata		✓		✓	✓
L. succincta		✓			

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Littorina scutulata	✓	✓	✓		
L. sitkana	✓	✓	✓	✓	
Margarites pupillus		✓	✓	✓	
Mitrella carinata			✓	✓	
M. gouldi			✓		
M. tuberosa				✓	
Moelleria sp.				✓	✓
Nassarius mendicus					
Notoacmea fenestrata	✓	✓			
N. persona	✓	✓			
N. scutum		✓	✓	✓	
Ocenebra lurida			✓	✓	✓
Odostomia sp.			✓		
Oenopota tabulata				✓	
Onchidella borealis	✓	✓	✓		
Retusa sp.				✓	
Searlesia dira		✓		✓	
Siphonaria thersites	✓	✓			
Thais canaliculata	✓	✓	✓		
T. emarginata	✓	✓	✓		
T. lamellosa		✓	✓		
Tricolia sp.		✓			
Trichotropis cancellata			✓	✓	✓
Velutina laevigata		✓	✓	✓	
Vermetus compactus			✓		
Bivalvia					
Adula californiensis		✓	✓		
Chlamys hastata					✓
Entodesma saxicola				✓	

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Hiatella arctica	✓	✓	✓		✓
Lasaea cistula	✓	✓	✓		
Lyonsia californica			✓		
Modiolus rectus		✓	✓		
Musculus discors		✓			
M. pygmaeus	✓	✓	✓		
Mysella tumida			✓	✓	
Mytilus californianus	✓	✓	✓		
M. edulis	✓	✓	✓		
Netastoma sp.			✓		
Penitella penita			✓		
Protothaca staminea		✓	✓		
Transennella tantilla		✓	✓		
Tresus capax			✓		
Zirfaea pilsburyi			✓		
Annelida					
Archiannelida					
Polygordiidae					
Polygordius sp.		✓		✓	
Oligochaeta spp.	✓	✓	✓	✓	
Polychaeta					
Ampharetidae spp.				✓	
Arenicolidae sp.			✓		
Branchiomaldane vincenti		✓	✓		
Capitellidae					
Capitella capitata		✓	✓		
Chrysopetalidae					
Paleanotus bellis		✓	✓		

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Cirratulidae					
Cirratulus cirratus					
Dococeoceria concharum		✓	✓	✓	
Tharyx multifilis				✓	
			✓	✓	
Eunicidae					
Eunice valens					
			✓	✓	
Hesionidae					
Micropodarke dubia					
Ophiodromus pugettensis				✓	
				✓	
Lumbrineridae					
Lumbrineris inflata					
		✓	✓	✓	
Maldanidae					
Nicomache personata					
					✓
Nereidae					
Nereis pelagica					
N. vexillosa			✓	✓	
		✓			
Platynereis bicanaliculata					
		✓	✓	✓	✓
Onuphidae					
Onuphis stigmatus					
		✓	✓		
Opheliidae					
Armandia brevis					
		✓		✓	

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Orbiniidae					
Naineris dendritica					
N. quadricuspida			✓		
Protoariciella oligobranchia		✓	✓		
Scoloplos spp.		✓	✓		
Phyllodocidae					
Eteone longa					
Eulalia bilineata			✓		
E. nigrimaculata			✓		
E. quadrioculata		✓	✓	✓	✓
E. sanguinea		✓	✓		
E. viridis				✓	
Phyllodoce sp.				✓	✓
Pilargidae					
Sigambra tentaculata				✓	
Polynoidae					
Arctonoe vittata					
Halosynda brevisetosa			✓		✓
Harmothoe imbricata			✓	✓	
Polyodoniidae					
Peisidice aspera				✓	
Sabellidae					
Chone ecaudata			✓	✓	
Eudistylia polymorpha					✓
E. vancouveri			✓		
Fabricia oregonica	✓	✓	✓		

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Oriopsis minuta		✓	✓	✓	
Sabella media			✓		
Sabellastarte sp.			✓		
Schizobranchia insignis		✓	✓		
Sabellariidae					
Idanthyrsus armatus			✓	✓	✓
Sabellaria cementarium			✓		✓
Serpulidae					
Spirorbis nakamurai		✓	✓	✓	✓
S. spirillum		✓			
Sigalonidae					
Pholoe minuta		✓			
Sphaerodoridae					
Sphaerodoropsis minuta			✓	✓	
Spionidae					
Malacoceros glutaeus				✓	
Polydora columbiana		✓	✓		
P. pygidialis			✓		
P. spongicola			✓		
Prionospio steenstrupi				✓	
Spio filicornis				✓	
Syllidae					
Autolytus sp.			✓		
Brania brevipharyngea			✓	✓	

Species ri
Diversity
Total numb
Total biom

TONGUE POINT

	+6'	+3'	+0'	-5 m	-10 m
Exogone gemmifera					
E. lourei		✓	✓	✓	
Odontosyllis sp.		✓	✓	✓	
Sphaerosyllis brandhorsti			✓	✓	
S. pirifera			✓		
		✓	✓	✓	
Syllis adamantea					
S. alternata	✓	✓			
S. hyalina			✓		
S. stewarti		✓			
		✓	✓		
Terebellidae					
Amphitrite cirrata		✓			
Nicolea zostericola					
Pista brevibranchiata		✓	✓	✓	✓
Polycirrus spp.				✓	
			✓	✓	
Sipunculida					
Phascolosoma agassizii		✓	✓	✓	
Crustacea					
Ostracoda spp.	✓	✓	✓	✓	
Cirripedia					
Balanus cariosus					
B. glandula	✓	✓	✓		
	✓	✓	✓		
B. nubilus					
			✓		
Chthamalus dalli					
Pollicipes polymerus	✓	✓	✓		
	✓	✓			
Amphipoda					
Allorchestes caprella					
Amphilochus sp. A		✓	✓		
Ampithoe simulans					
A. sp. C	✓	✓		✓	
A. mea			✓		
			✓	✓	
				✓	

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Aoroides columbiae		✓	✓	✓	✓
Atylus levidensis			✓	✓	
Caprella californica				✓	
C. drepanechir			✓		
C. greenlyi		✓	✓		
C. laeviuscula		✓	✓		
C. mendax				✓	
C. natalensis			✓		
C. verrucosa			✓		
Ceradocus spinicaudus					
Cercops compactus					✓
Corophium brevis		✓	✓		
Cymadusa uncinata					
Deutella californica			✓		
Eohaustorius sp.			✓		
Ericthonius brasiliensis		✓			
Gammaropsis sp. B.				✓	
G. thompsoni				✓	
Hyale anceps			✓	✓	
H. frequens	✓	✓	✓	✓	
H. grandicornis californica		✓	✓	✓	
H. pugettensis	✓	✓			
Ischyrocerus anguipes	✓	✓			
Jassa falcata			✓	✓	✓
Kermystheus ociosa		✓	✓		
Lepidepecreum sp. A.				✓	
L. gurjanovae			✓	✓	
Levcothoe sp. A.			✓		
Maera simile			✓		
Melita californica				✓	
Metacaprella anomala			✓		
M. kennerlyi				✓	
Metopa cistella				✓	✓
Najna cf. consiliorum		✓	✓		
				✓	

O. ligulata			✓		
D. viridis			✓	✓	✓
				✓	✓

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Oligochinus lighti					
Orchomene sp. A.	✓	✓	✓	✓	
O. sp. B				✓	
		✓			
Panoploea hedgepethi					
Parallorchestes ochotensis				✓	
		✓			
Paramoera serrata					
P. sp. E.	✓				
Paraphoxus spp.		✓			
				✓	
Parapleustes nautilus					
P. pugettensis	✓	✓	✓		
P. sp. B.			✓		
				✓	
Photis bifurcata					
P. brevipes			✓	✓	
P. sp. A.			✓	✓	
			✓		
Pleusirus secorrus					
Pleustes depressa					✓
				✓	
Podocerus cristatus					
Polycheria osborni				✓	
			✓		
Pontogeneia sp. D					
P. intermedia				✓	
P. rostrata			✓		
			✓		
Stenothoides sp.					
Synchelidium rectipalmum			✓		
		✓		✓	
Tritella pilimana					
			✓		

Cumacea

Bathycuma sp.					
Cumella vulgaris		✓			
			✓	✓	
Diastylopsis sp.					
Lampropidae sp.				✓	
		✓		✓	
Leptocuma sp.					
Vaunthompsonia sp.				✓	
			✓		

Calliarthron tuberculosum					
Callithamnion biseriatum			✓	✓	✓
C. pikeanum	✓	✓	✓	✓	

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Decapoda					
Callianassidae sp. (juv.)				✓	
Cancer oregonensis			✓	✓	
C. productus			✓		
Cryptolithodes sitchensis			✓	✓	
C. typicus				✓	
Discorsopagurus schmitti				✓	✓
Elassochinus tenuimanus					✓
Fabia subquadrata		✓			
Heptacarpus stimpsoni			✓		
Lebbeus sp. (juv.)				✓	
Mimulus foliatus				✓	
Oedignathus inermis			✓		
Orogonia gracilis				✓	
Pachycheles rudis			✓		
Pagurus beringanus		✓		✓	✓
P. caurinus				✓	✓
P. dalli		✓	✓		
P. h. hirsutiusculus		✓		✓	
P. kennerlyi				✓	✓
Petrolisthes eriomerus				✓	
Phyllolithodes papillosus			✓	✓	
Pinnotheres pugettensis				✓	
Pugettia gracilis		✓	✓	✓	✓
Spirontocaris prionota	✓	✓	✓	✓	
Isopoda					
Bopyridae sp.		✓			
Cirolana harfordi		✓	✓		
Colanthura squamosissima			✓	✓	
Dynamenella dilitata			✓	✓	
D. glabra		✓	✓	✓	
D. sheareri	✓	✓	✓		

Herposiphonia glandis				✓	
Herposiphonia plumula				✓	✓

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Exosphaeroma amplicauda					
E. media		✓	✓		
E. rhomburum	✓	✓	✓		
		✓	✓	✓	
Gnorimosphaeroma oregonense					
Ianiropsis analoga	✓	✓	✓	✓	
I. kincaidi			✓	✓	
I. minuta	✓	✓	✓	✓	
I. tridens			✓		
			✓	✓	
Idotea aculeata					
I. montereyensis			✓		
I. resecta			✓		
I. schmitti			✓		
I. stenops			✓		
I. wosnesenskii			✓		
	✓	✓	✓		
Jaeropsis dubia					
J. lobata			✓	✓	✓
J. setosa		✓	✓	✓	✓
			✓		✓
Ligia pallasii					
Limnoria algarum	✓				
		✓	✓		
Munna chromatocephala					
M. stephenseni	✓	✓	✓	✓	
M. ubiquita		✓	✓	✓	
			✓	✓	✓
Paranthura elegans					
Synidotea pettiboneae			✓	✓	✓
S. sp. A			✓		
			✓		
Tanaidacea					
Anatanais normani					
Leptochelia dubia	✓	✓	✓	✓	
Pancolus californiensis	✓	✓	✓	✓	
	✓	✓	✓		✓
Insecta					
Chironomidae sp.					
Coleoptera sp.	✓	✓			
Collembola sp.	✓	✓	✓		
Dipteran larvae			✓		
Dolichopodidae sp.	✓	✓	✓	✓	
Ephydridae sp.		✓			
	✓	✓			

P. pectinatum
P. villosum
Pleonosporium vancouverianum

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Pycnogonida					
Achelia chelata					
A. spinoseta				✓	
Ammothella tuberculata		✓			
Halosoma compactum			✓		
H. viridintestinale		✓	✓		
		✓	✓		
Phoxichilidium femoratum					
Pychogonum stearnsi		✓	✓		
		✓			
Bryozoa spp.		✓	✓	✓	✓
Bicrisia sp.					
Cheilostomata sp.			✓		
Crisia sp.			✓		
			✓		
Filicrisia sp.					
Flustrella sp.			✓		
Heteropora magna			✓		
H. sp.					✓
					✓
Hippothoa hyalina					
Membranipora sp.			✓		
			✓		
Echinodermata					
Asteroidea					
Henricia leviuscula					
Leptasterias hexactis			✓		
	✓		✓		
Orthasterias koehleri					
Pisaster ochraeceous					✓
				✓	
Echinoidea					
Strongylocentrotus droebachiensis					
S. franciscanus				✓	✓
S. purpuratus				✓	✓
				✓	

Ophlitaspongia pennata ✓ ✓ ✓

TONGUE POINT

	+6'	+3'	+0'	-5m	-10m
Holothuroidea					
Cucumaria miniata		✓			
C. pseudocurata	✓	✓	✓		
Eupentacta quinquesemita					
Leptosynapta clarki		✓		✓	
Parastichopus californiensis					
Thyone benti				✓	✓
Ophiuroidea					
Amphipholis squamata			✓	✓	✓
Diamphiodia occidentalis			✓		
Chordata					
Ascidiacea sp.		✓	✓	✓	

M. sp. K. ✓ ✓

Table 2. Pillar Point (rock intertidal; fine-medium sand subtidal). Complete list of all benthic organisms collected from spring 1976 through spring 1977. Checks indicate tide height where organism was found.

	Tide Ht.				
	+6'	+3'	-0'	-5m	-10m
Chlorophyta					
Bryopsis sp.		✓			
Chaetomorpha sp.		✓	✓		
Cladophoraceae sp.	✓	✓	✓		
Enteromorpha crinita		✓			
E. intestinalis		✓	✓		
E. linza		✓	✓		
Monostroma fuscum	✓	✓	✓		
Rhizoclonium riparium	✓	✓	✓		
Spongomorpha coalita	✓	✓	✓		
S. spinescens	✓	✓			
Ulothrix sp.	✓	✓	✓		
Ulva spp.	✓	✓	✓		
Urospora sp.	✓		✓		
Bacillariophyta					
Pennales spp.	✓	✓	✓	✓	✓
Phaeophyta					
Alaria spp.		✓	✓		
Analipus japonicus	✓	✓	✓		
Cymathere triplicata					
Desmarestia aculeata	✓		✓		✓
D. ligulata				✓	
Ectocarpus simulans		✓			
Egregia menziesii		✓	✓		
Feldmannia simplex			✓		
Fucus distichus	✓	✓	✓		
Giffordia sp.		✓	✓		
Hedophyllum sessile		✓	✓		
Laminaria groenlandica		✓			
L. saccharina			✓		
L. setchellii			✓		
Leathesia difformis			✓		
Nereocystis luetkeana					✓
Petalonia fascia		✓	✓		
Phaestrophion irregulare			✓		

	✓	✓	✓	✓	✓
Lirularia lirulata		✓			
L. succincta		✓		✓	✓

PILLAR POINT

	Tide Ht.				
	+6'	+3'	-0'	-5m	-10m
Phaeophyta (cont.)					
Ralfsiaceae sp.		✓			
Sphacelaria racemosa		✓	✓		
Stictyosiphon tortilis			✓		
Rhodophyta					
Acrochaetium sp.		✓	✓		
Ahnfeltia gigartinoides			✓		
A. plicata	✓	✓	✓		
Antithamnion defectum		✓	✓		
A. dendroideum	✓	✓	✓		
A. kylinii		✓			
Antithamnionella glandulifera		✓	✓		
A. pacifica		✓			
Bosiella plumosa		✓	✓		
Callithamnion acutum		✓	✓		
C. pikeanum		✓	✓		
Callophyllis firma			✓		
Ceramium eatonianum			✓		
Choreocolax polysiphoniae		✓	✓		
Corallina vancouveriensis		✓	✓		
Cryptosiphonia woodii		✓	✓		
Delesseria decipiens		✓	✓		
Dilsea californica			✓		
Endocladia muricata	✓		✓		
Erythrophyllum delesseroides		✓			
Erythrotrichia parksii		✓			
Gigartina papillata	✓	✓	✓		
Gloiopeltis furcata			✓		
Gracilaria andersonii			✓		
G. sjoestedtii				✓	
Gracilariophila oryzoides			✓		
Gymnogongrus leptophyllus			✓		
G. linearis			✓		

Adula californiensis		✓	✓		
Chlamys hastata					✓
Entodesma saxicola				✓	

PILLAR POINT

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Rhodophyta (cont.)					
Halosaccion glandiforme	✓	✓	✓		
Halymenia coccinea		✓			
Herposiphonia gracilis			✓		
H. grandis		✓			
H. plumula		✓			
Hildenbrandia prototypus			✓		
Hymenena sp.		✓	✓		
Iridaea cordata		✓	✓		
I. heterocarpa	✓	✓	✓		
Lithothamnion californicum			✓		
Lophosiphonia villum		✓			
Membranoptera dimorpha		✓			
M. multiramosa		✓			
M. platyphylla		✓	✓		
Mesophyllum conchatum			✓		
Microcladia borealis		✓	✓		
Nemalion elminthoides			✓		
Neogardhiella baileyi		✓			
Neoptilota asplenioides	✓	✓	✓		
N. californica		✓			
Odonthalia floccosa		✓	✓		
Petrocelis middenforffii	✓	✓	✓		
Phycodrys isabellae					
Pikea californica					
Platythamnion heteromorphum					
P. pectinatum					
P. villosum		✓			
Plocamium coccineum		✓			
P. tenue			✓		
Polysiphonia hendryi	✓	✓	✓		
P. pacifica	✓	✓	✓		
Porphyra spp.	✓	✓	✓		✓
Pterosiphonia bipinnata	✓	✓	✓		
P. dendroidea		✓	✓		✓
Ptilota filicina		✓	✓		
Ptilothamnionopsis lejolisea		✓	✓		

Paleanotus bellis ✓ ✓

PILLAR POINT

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Rhodophyta (cont.)					
Rhodochorton purpureum		✓			
Rhodoglossum californicum			✓		
Rhodomela larix		✓			
Rhodymenia palmata		✓	✓		
Scagelia occidentale		✓	✓		✓
Smithora naiadum			✓		
Tiffaniella snyderae			✓		
Spermatophyta					
Phyllospadix scouleri	✓	✓	✓		
Fostera marina				✓	
Porifera spp.	✓	✓	✓		
Halichondria panicea		✓	✓		
Haliclonia permollis		✓	✓		
Ophlitaspongia pennata		✓	✓		
Cnidaria					
Hydrozoa spp.		✓	✓	✓	
Abietinaria sp.			✓		
Obelia sp.			✓		
Phialidium sp.			✓		
Anthozoa					
Anthopleura elegantissima		✓			
Scyphozoa					
Haliclystus auricula			✓		
Platyhelminthes					
Turbellaria spp.	✓	✓		✓	✓
Nemertea spp.	✓	✓	✓	✓	✓
Amphiporus sp.		✓			
Cerebratulus sp.				✓	
Nematoda spp.	✓	✓	✓	✓	✓
Mollusca					
Amphineura					
Chaetopleura gemma		✓			
Cyanoplax dentiens		✓	✓		

Armandia brevis ✓ ✓

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Mollusca (cont.)					
Amphineura (cont.)					
Katharina tunicata		✓	✓		
Mopalia ciliata		✓	✓		
M. hindsi		✓	✓		
M. lignosa			✓		
M. muscosa		✓	✓		
M. sp. A		✓			
Tonicella lineata		✓	✓		
Gastropoda					
Aeolidadae spp.				✓	✓
Alvinia sp.				✓	
Amphissa columbiana		✓	✓		✓
Archidoris montereyensis			✓		
Baricela haliotiphila		✓	✓		
Bittium eschrichtii		✓	✓		
Calyptraea fastigiata			✓		✓
Cerithiopsis sp.		✓	✓		
Collisella digitalis	✓	✓	✓		
C. pelta	✓	✓	✓		
C. strigatella	✓	✓			
Crepidula sp.		✓			
Homalopoma *baculum*			✓		
Lacuna variegata		✓	✓	✓	✓
Littorina scutulata	✓		✓		
L. sitkana	✓	✓	✓		
Margarites pupillus			✓	✓	✓
Mitrella carinata			✓		
Mcelleria sp.		✓	✓		
Notoacmea persona	✓				
N. scutum	✓	✓	✓		
Odostomia sp.				✓	✓
Onchidella borealis		✓			
Tegula funebralis		✓			
Thais canaliculata		✓			
T. emarginata	✓	✓	✓		
T. lamellosa		✓	✓		✓
Turbonilla sp.	✓	✓			
Velutina laevigata			✓		
Vermetus compactus			✓		

Fabricia oregonica			✓		
	✓	✓	✓		

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Bivalvia (cont.)					
Adula californiensis		✓	✓		
Clinocardium nuttallii				✓	
Hiatella arctica		✓	✓		
Lasaea cistula		✓			
Lucinoma tenuisculpta				✓	✓
Macoma nasuta				✓	✓
Musculus pygmaeus		✓	✓		✓
Mya arenaria		✓		✓	✓
Mysella tumida		✓	✓	✓	✓
Mytilus californianus	✓	✓			
M. edulis	✓	✓	✓		
Panopea generosa				✓	
Penitella conradi		✓			
Protothaca staminea		✓	✓		
Solen sicarius		✓		✓	✓
Tellina spp.				✓	✓
Transennella tantilla		✓	✓	✓	✓
Tresus capax		✓		✓	✓
Zirfaea pisbryi		✓			
Annelida					
Oligochaeta spp.	✓	✓	✓	✓	✓
Polychaeta					
Aphroditidae spp.		✓			
Arabellidae					
Arabella iricolor					✓
Arenicolidae					
Branchiomaldane vincenti			✓		
Capitellidae					
Capitella capitata		✓	✓	✓	✓
Mediomastus sp.			✓	✓	✓
Notomastus lineatus				✓	✓
N. tenuis					✓
Chaetopteridae					
Spiochaetopterus costarum					✓

Autolytus sp. ✓
Brania brevipharyngea ✓ ✓

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Polychaeta (cont.)					
Chrysopetalidae					
Paleanotus bellis		✓	✓		
Cirratulidae					
Chaetozone setosa				✓	✓
Cirratulus cirratus		✓	✓		✓
Tharyx multifilis				✓	✓
Dorvilleidae					
Protodorvillea gracilis				✓	✓
Flabelligeridae					
Pherusa plumosa			✓		
Glyceridae					
Glycera americana					✓
Goniadidae					
Glycinde armigera				✓	✓
G. picta			✓		✓
Goniada brunnea					✓
G. maculata				✓	✓
Hesionidae					
Gyptis brevipalpa				✓	✓
Hesionidae sp. A					✓
Micropodarke dubia				✓	✓
Ophiodromus pugettensis				✓	✓
Lumbrineridae					
Lumbrineris inflata	✓	✓			
L. zonata				✓	✓
Maldanidae					
Euclymene sp.				✓	✓
Nephtyidae					
Nephtys caeca				✓	
N. caecoides				✓	✓
N. californiensis				✓	✓
N. ciliata					✓
Nereidae					
Nereis brandti				✓	
N. pelagica		✓			
N. vexillosa	✓	✓			
Platynereis bicanaliculata	✓	✓	✓	✓	

Allorchestes caprella		✓	✓		
Amphilochus sp. A				✓	
Ampithoe simulans	✓	✓	✓		
A. sp. C			✓	✓	
A. mea				✓	

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Polychaeta (cont.)					
Onuphidae					
Onuphis elegans				✓	✓
O. iridescens					✓
O. stigmatis				✓	✓
Opheliidae					
Armandia brevis			✓		✓
Orbiniidae					
Naineris dendritica		✓	✓		
N. uncinata				✓	
Scoloplos sp.				✓	✓
Oweniidae					
Myriochele oculata					✓
Owenia fusiformis			✓	✓	✓
Paraonidae					
Aricidea sp.					✓
Pectinariidae					
Pectinaria granulata				✓	
Phyllodocidae					
Eteone longa			✓	✓	✓
E. tuberculata				✓	
Eulalia bilineata				✓	
E. quadrioculata		✓	✓		
E. sanguinea				✓	
E. viridis				✓	
Phyllodoce groenlandica				✓	✓
P. maculata			✓	✓	✓
P. multiserata					✓
Polynoidae					
Halosydna brevisetosa		✓	✓		
Harmothoe imbricata				✓	✓
H. lunulata		✓		✓	✓
Sabellariidae					
Sabellaria cementarium		✓			
Sabellidae					
Chone ecaudata				✓	✓
Eudistylia vancouveri		✓	✓		
Fabricia oregonica		✓			

Metopa cistella				✓	✓
Najna cf. consiliorum			✓		
		✓	✓	✓	

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Polychaeta (cont.)					
Sabellidae (cont.)					
Manayunkia aestuarine		✓			
Oriopsis minuta		✓			
Potamilla myriops				✓	✓
Sabella media					✓
Schizobranchia insignis		✓	✓		
Scalibregmidae					
Scalibregma inflatum				✓	✓
Serpulidae					
Spirorbis nakamurai		✓			
S. spirillum		✓			
Sigalionidae					
Pholoe minuta		✓		✓	✓
Spionidae					
Malacoceros glutaeus			✓	✓	✓
Polydora columbiana		✓	✓		
P. limicola			✓		
P. socialis				✓	✓
P. sp. A				✓	
Prionospio cirrifera				✓	✓
P. steenstrupi				✓	✓
Pygospio elegans			✓		
Spio filicornis				✓	✓
Spiophanes bombyx				✓	
Syllidae					
Brania brevipharyngea			✓		
Exogone gemmifera		✓	✓	✓	
E. lourei			✓		
Odontosyllis sp.		✓			
Pionosyllis uraga					✓
Sphaerosyllis pirifera		✓			
Streptosyllis latipalpa				✓	
Syllides longocirrata				✓	
Syllis adamantea	✓	✓			
S. hyalina		✓			
S. pulchra		✓			
S. stewarti		✓	✓		

Leptocuma sp. ✓
Vaunthompsonia sp. ✓

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Polychaeta (cont.)					
Terebellidae					
Thelepus crispus			✓		
Sipunculida					
Phascolosoma agassizii		✓	✓		
Pycnogonida					
Achelia chelata					
A. gracilipes		✓	✓		
A. nudiuscula		✓			
		✓	✓		
Halosoma compactum					
H. viridintestinale		✓	✓		
		✓	✓		
Nymphon pixellae					
N. spinosissima		✓	✓		
Phoxochilidium femoratum			✓		
Pycnogonum rickettsi		✓	✓		
		✓	✓		
Crustacea					
Ostracoda spp.		✓	✓	✓	✓
Cirripedia					
Balanus cariosus	✓				
B. glandula	✓	✓	✓		
B. nubilis		✓	✓		
B. rostratus alaskensis		✓	✓		
			✓		
Chthamalus dalli	✓	✓	✓		
Leptostraca					
Nebalia pugettensis				✓	✓
Cumacea					
Cumella vulgaris					
Diastylis sp.		✓	✓		
Diastylopsis sp.				✓	✓
Lampropidae sp.				✓	✓
Leptocuma sp.				✓	✓
		✓		✓	
Tanaidacea					
Anatanais normani		✓	✓	✓	✓
Leptochelia dubia		✓	✓	✓	✓
Pancolus californiensis	✓	✓	✓		
Pseudotanais oculatus			✓		

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Isopoda					
Aega symmetrica					
Cirolana harfordi		✓	✓		✓
Cryptothir balani	✓				
Dynamenella glabra		✓			
D. sheareri	✓	✓	✓		
Edotea sublittoralis				✓	
Exosphaeroma amplicauda	✓	✓	✓		
E. media	✓	✓	✓		
E. rhomburum		✓	✓		
Gnorimosphaeroma oregonense	✓	✓	✓		
Ianiropsis analoga			✓		
I. kincaidi		✓	✓		
Idotea aculeata			✓		
I. fewkesi			✓		
I. montereyensis	✓		✓		
I. rufescens			✓		
I. wosnesenskii	✓	✓	✓		
Jaeropsis dubia			✓	✓	
J. setosa			✓		
Limnoria algarum		✓	✓		
Munna chromatocephala		✓	✓		
M. stephenseni		✓	✓		
M. ubiquita			✓		
Munnagonium waldronense					
Paranthura elegans					✓
Synidotea bicuspida				✓	✓
S. pettiboneae			✓	✓	
Amphipoda					
Accedomoera vagor			✓		
Allorchestes angustus			✓		
Ampeliuca agassizi				✓	
A. hancocki					✓
Ampithoe humeralis					✓
A. mea			✓		
A. simulans		✓	✓		
Anisogammarus pugettensis			✓		
Aoroides columbiae			✓	✓	✓
Atylus levidensis			✓	✓	
A. tridens			✓		

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Amphipoda (cont.)					
Calliopiella pratti		✓	✓		
Calliopius sp. A			✓		
Caprella incisa			✓		
C. irregularis			✓		
C. laeviuscula			✓		
C. natalensis			✓	✓	✓
C. pustulata			✓		
Caprella verrucosa			✓		
Cercops compactus		✓	✓		
Corophium brevis		✓	✓		
Deutella californica			✓		
Ericthonius brasiliensis				✓	
Gammaropsis thompsoni				✓	
Hyale anceps	✓	✓			
H. frequens		✓	✓		
Ischyrocerus anguipes		✓	✓	✓	✓
Ischyroceridae sp. 2			✓		
Jassa falcata		✓	✓	✓	
Megaluropus longimerus			✓		
Melita californica				✓	
M. desdichada			✓		
Monoculodes zernovi				✓	✓
Najna consiliorum		✓	✓		
Oligochinus lighti		✓			
Orchomene sp. A				✓	
O. sp. B		✓			
Parallorchestes ochotensis			✓		
Paraphoxus cognatus/simulans					✓
P. nautilus		✓			
P. spinosus			✓		✓
P. variatus					✓
Parapleustes pugettensis			✓	✓	
P. nautilus			✓		
Photis sp. A		✓	✓		
P. bifurcata					✓
Photis brevipes			✓		
Pleusymetes sp. A.					✓
Pontogeneia ivanovi			✓		
P. rostrata			✓	✓	✓

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Amphipoda (cont.)					
Protomedeia sp. A				✓	✓
Synchelidium rectipalmum				✓	✓
S. shoemakeri				✓	✓
Tritella pilimana			✓	✓	✓
Westwoodilla caecula				✓	✓
Decapoda					
Callianassidae sp.				✓	✓
Cancer gracilis		✓			✓
C. oregonensis		✓	✓		
Crangon munitella				✓	
Cryptolithodes sitchensis			✓		
Hemigrapsus nudus		✓			
Oedignathus inermis		✓			
Pagurus granosimanus		✓			
P. h. hirsutiusculus		✓	✓		
Pandalus montagui tridens				✓	
Pinnotheridae sp.				✓	✓
Pugettia gracilis		✓	✓	✓	✓
Telmessus cheiragonus		✓			
Insecta					
Coleopteran larvae	✓				
Dipteran larvae	✓	✓	✓		
Phoronida					
Phoronis ijimai				✓	
Bryozoa spp.		✓	✓	✓	
Crisia sp.			✓		
Filicrisia sp.			✓		
Flustrella sp.		✓	✓		
Heteropora magna			✓		
Hippothoa sp.			✓		
Membranipora membranacea			✓		
Microporella sp.			✓		
Echinodermata					
Ophiuroidea spp.		✓			✓
Asteroidea					
Leptasterias hexactis		✓	✓		

PILLAR POINT

	+6'	+3'	+0'	-5m	-10m
Echinodermata (cont.)					
Holothuroidea					
Eupentacta quinquesemita		✓			
Leptosynapta clarki				✓	✓
Chordata - Ascidiacea spp.		✓			

Table 3. North Beach Cobble (cobble over sand). Complete list of all benthic organisms collected from spring 1976 through spring 1977. For subtidal see North Beach Sand, Table 8. Checks indicate tide heights where organism was found.

	+6'	+3'	+0'
Chlorophyta			
Cladophora sp.		✓	✓
Enteromorpha intestinalis			✓
E. linza		✓	✓
Monostroma fuscum			✓
Rhizoclonium sp.			✓
Spongomorpha coalita		✓	✓
S. spinescens			✓
Ulva spp.		✓	✓
Bacillariophyta			
Pennales spp.			✓
Phaeophyta			
Alaria spp.		✓	✓
Analipus japonicus			✓
Desmarestia aculeata		✓	✓
Ectocarpus sp.			✓
Fucus distichus			✓
Hedophyllum sessile			✓
Laminaria saccharina			✓
Leathesia difformis			✓
Nereocystis luetkeana			✓
Petalonia fascia		✓	✓
Phaeostrophion irregulare		✓	✓
Ralfsiaceae spp.			✓
Scytosiphon lomentaria			✓
Sphacelaria norrissii			✓
S. racemosa			✓
Rhodophyta			
Antithamnion defectum			✓
A. dendroideum			✓
Antithamnionella glandulifera			✓
A. pacifica			✓
Bossiella plumosa		✓	✓
Calliarthron tuberculosum			✓
Ceramium pacificum			✓
Choreocolax polysiphoniae		✓	✓
Cryptosiphonia woodii			✓
Crytonemia sp.			✓
Dilsea californica		✓	
Gigartinaceae spp.		✓	✓

NORTH BEACH COBBLE

	+6'	+3'	+0'
Herposiphonia grandis			✓
H. plumula			✓
Hollenbergia nigricans			✓
H. sublata			✓
Hymenena flabelligera		✓	
Iridaea cordata			✓
I. heterocarpa			✓
Laurencia spectabilis			✓
Lomentaria baileyana			✓
Membranoptera weeksiae			✓
Microcladia borealis			✓
Odonthalia floccosa		✓	✓
Petrocelis middendorfii		✓	✓
Pikea californica			✓
Platythamnion villosum			✓
Pleonosporium sp.			✓
Plocamium coccineum		✓	✓
Polyneura latissima			✓
Polysiphonia hendryi		✓	✓
P. pacifica		✓	✓
P. paniculata			✓
Porphyra spp.		✓	✓
Pterochondria woodii			✓
Pterosiphonia bipinnata		✓	✓
P. dendroidea		✓	✓
Rhodomela larix			✓
Rhodoptilum plumosum			✓
Scagelia occidentale		✓	✓
Spermatophyta			
Phyllospadix scouleri			✓
Cnidaria			
Hydrozoa			
spp.			✓
Anthozoa			
Anthopleura elegantissima	✓	✓	✓
Platyhelminthes			
Turbellaria spp.	✓	✓	✓
Nemertea			
spp.	✓	✓	✓

NORTH BEACH COBBLE

	+6'	+3'	+0'
Nematoda			
spp.	✓	✓	✓
Mollusca			
Amphineura			
Cyanoplax dentiens		✓	✓
Katharina tunicata		✓	
Lepidozona mertensii			✓
Mopalia lignosa			✓
M. muscosa			✓
Gastropoda			
Alvinia sp.	✓		
Amphissa columbiana			✓
Archidoris montereyensis		✓	
Collisella digitalis	✓	✓	
C. pelta	✓	✓	✓
C. strigatella	✓	✓	✓
Lacuna variegata	✓	✓	✓
Littorina scutulata	✓	✓	✓
L. sitkana	✓	✓	✓
Margarites pupillus			✓
Notoacmaea fenestrata		✓	✓
N. persona	✓	✓	
N. scutum		✓	✓
Onchidella borealis		✓	✓
Searlesia dira		✓	✓
Thais emarginata	✓	✓	✓
T. lamellosa	✓	✓	✓
Bivalvia			
Adula californiensis			✓
Crenella decussata	✓		
Macoma sp.			✓
Musculus pygmaeus			✓
Mya arenaria		✓	✓
Mysella tumida	✓	✓	✓
Mytilus edulis		✓	✓
Protothaca staminea		✓	✓
Solen sicarius			✓
Transennella tantilla		✓	✓
Venerupis japonica			✓
Oligochaeta			
spp.	✓	✓	✓

NORTH BEACH COBBLE

	+6'	+3'	+0'
Polychaeta			
Arenicolidae			
Abarenicola sp. (juv)			✓
Capitellidae			
Capitella capitata	✓	✓	✓
Decamastus gracilis			✓
Mediomastus sp.	✓		✓
Notomastus tenuis			✓
Cirratulidae			
Cirratulus cirratus			✓
Tharyx multifilis			✓
Dorvilleidae			
Protodorvillea gracilis		✓	✓
Eunicidae			
Eunice valens			✓
Glyceridae			
Hemipodus borealis		✓	✓
Lumbriner idae			
Lumbrineris inflata			✓
Nephtyidae			
Nephtys caeca			✓
Nereidae			
Nereis vexillosa	✓	✓	✓
Platynereis bicanaliculata	✓	✓	✓
Onuphidae			
Onuphis stigmatis			✓
Opheliidae			
Armandia brevis			✓
Ophelia limacina			✓
Orbiniidae			
Scoloplos spp.			✓
Paraonidae			
Paraonella platybranchia		✓	

NORTH BEACH COBBLE

	+6'	+3'	+0'
Phyllodocidae			
Eteone longa		✓	✓
Eulalia quadrioculata		✓	✓
E. sanguinea			✓
Hesionura coineaui difficilis			✓
Phyllodoce maculata			✓
Pisionidae			
Pisione sp.	✓		
Polynoidae			
Halosydna brevisetosa			✓
Harmothoe imbricata			✓
Sabellidae			
Fabricia oregonica			✓
Schizobranchia insignis			✓
Spionidae			
Malacocerus glutaeus		✓	✓
Polydora columbiana		✓	✓
P. proboscidea		✓	✓
P. sp. A			
Prionospio steenstrupi			✓
Pygospio elegans		✓	✓
Spio cirrifera			✓
S. filicornis		✓	✓
Spiophanes bombyx			✓
Syllidae			
Exogone gemmifera			✓
E. lourei	✓	✓	✓
Syllis adamantea		✓	
S. hyalina			
Terebellidae			
Eupolymnia heterobranchia			✓
Crustacea			
Ostracoda			
spp.		✓	✓
Cirripedia			
Balanus cariosus	✓	✓	✓
B. glandula	✓	✓	✓
Chthamalus dalli	✓	✓	

NORTH BEACH COBBLE

	+6'	+3'	+0'
Mysidacea			
Archaeomysis grebnitzkii			✓
Cumacea			
Cumella vulgaris			
Lampropinae spp.			✓
			✓
Tanaidacea			
Anatanais normani			
Leptochelia dubia			✓
Pancolus californiensis			✓
		✓	✓
Isopoda			
Dynamenella sheareri			
Exosphaeroma amplicauda		✓	✓
E. media	✓	✓	✓
E. onctoncum	✓	✓	✓
			✓
Gnorimosphaeroma oregonense	✓		
Idotea aculeata		✓	✓
I. montereyensis			✓
I. resecata			✓
I. wosnesenskii			✓
		✓	✓
Jaeropsis lobata			
Munna chromatocephala			✓
M. stephenseni			✓
			✓
Amphipoda			
Accedomoera sp.			
Ampithoe simulans			✓
Anonyx sp. B			✓
			✓
Atylus tridens			
Calliopiella pratti			✓
Caprella incisa	✓		✓
		✓	
Corophium brevis			
		✓	
Eohautorius washingtonianus			
			✓
Guernea sp. A			
Hyale frequens			✓
			✓
Ischyrocerus anguipes			
Megaluropus longimerus			✓
Melita californica			✓
Oligochinus lighti			✓
Orchestia sp.			✓
Parallorchestes ochotensis	✓		
			✓

NORTH BEACH COBBLE

	+6'	+3'	+0'
Paramoera mohri	✓	✓	
Paraphoxus spinosus		✓	
Parapleustes pugettensis			✓
Photis brevipes			✓
Pontogeneia cf. ivanovi			✓
P. sp. D			✓
Synchelidium shoemakeri			✓
Decapoda			
Cancer gracilis			
C. oregonensis			✓
			✓
Crangon munitella			
C. nigricauda			✓
			✓
Hemigrapsus nudus			
H. oregonensis		✓	
Pagurus granosimanus			
P. hirsutiusculus			✓
			✓
Pugettia gracilis			✓
Insecta			
Dipteran larvae		✓	✓
Bryozoa			
spp.		✓	✓
Enchinodermata			
Holothuroidea			
Eupentacta quinquesemita			✓

Table 4. Morse Creek (cobble over sand-gravel intertidal; gravel-cobble subtidal). Complete list of all benthic organisms collected from spring 1976 through winter 1978. Checks indicate tide heights where organism was found.

	+6'	+3'	+0'	-5m	-10m
Chlorophyta					
Blidingia minima		✓	✓		
Cladophora sp.		✓	✓		
Derbesia marina					✓
Enteromorpha flexusoa			✓		
E. intestinalis		✓	✓		
E. linza		✓	✓		
Halicystis ovalis					✓
Monostroma sp.		✓	✓		
Rhizoclonium sp.			✓		
Spongomorpha coalita		✓	✓		
S. spinescens		✓	✓		
Ulothrix sp.		✓	✓		
Ulva spp.		✓	✓		
Urospora sp.		✓	✓		
Bacillariophyta					
Pennales spp.		✓	✓	✓	✓
Phaeophyta					
Alaria spp.		✓	✓		
Analipus japonicus		✓			
Desmarestia aculeata		✓	✓		
D. ligulata		✓		✓	✓
D. viridis				✓	✓
Ectocarpus simulans			✓		
Fucus distichus		✓	✓		
Hedophyllum sessile			✓		
Laminaria groenlandica			✓		
L. saccharina			✓		
L. setchellii			✓		
Nereocystis luetkeana				✓	
Petalonia fascia		✓	✓		
Ralfsia pacifica					✓
Sphacelaria racemosa			✓		
S. subfusca			✓		
Stictyosiphon tortilis					✓
Syringoderma abyssicola					✓
Rhodophyta					
Acrochaetium sp.	✓	✓	✓	✓	✓
Ahnfeltia plicata	✓	✓	✓	✓	✓
Antithamnion defectum					✓
A. dendroideum		✓			

MORSE CREEK

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Rhodophyta (cont.)					
Bangia fuscopurpureum		✓			
Bossiella plumosa			✓		
Botryoglossum farlowianum					✓
Callithamnion pikeanum			✓		
Callophyllis flabellulata					✓
Ceramium pacificum			✓		
Choreocolax polysiphoniae			✓		
Corallina vancouveriensis			✓		
Cryptosiphonia woodii		✓	✓		
Delesseria decipiens			✓		
Endocladia muricata		✓	✓		
Erythrotrichia parksii			✓		
Gigartina papillata complex		✓	✓		
Gonimophyllum skottsbergii					✓
Gracilaria verrucosa					✓
Gymnogongrus leptophyllis		✓			
Halosaccion glandiforme			✓		✓
Halymenia coccinea				✓	
Hildenbrandia sp.					✓
Hymenena sp.			✓		✓
Iridaea cordata		✓	✓		
I. heterocarpa			✓		
Leptofauchea pacifica					✓
Membranoptera sp.			✓		
Microcladia borealis		✓	✓		
Odonthalia floccosa		✓	✓		
O. washingtoniensis					✓
Petrocelis middendorfii			✓		
Peyssonelia pacifica				✓	✓
Platythamnion heteromorphum					✓
Pleonosporium sp.			✓		
Plocamium coccineum					✓
Polyneura latissima			✓		✓
Polysiphonia hendryi		✓	✓		
P. pacifica		✓	✓		✓
Porphyra miniata			✓		
Prionitis lyallii			✓		
Pterosiphonia bipinnata			✓		
P. dendroidea				✓	✓

MORSE CREEK

	Tide Ht. +6'	+3'	+0'	-5m	-10m
Rhodophyta (cont.)					
Ptilota filicina			✓		
P. pectinata					✓
Rhodochorton purpureum		✓	✓		
Rhodomela larix		✓	✓		
Rhodymenia californica			✓		
R. pacifica			✓		
R. palmata			✓		
R. pertusa			✓		
Sarcodiotheca furcata			✓		
Scagelia occidentale				✓	✓
Porifera spp.					
Halichondria panicea			✓		✓
Haliclona permollis			✓		
Ophlitaspongia pennata			✓		
Cnidaria					
Hydrozoa spp.					
Tubularia sp.			✓		✓
			✓		✓
Anthozoa					
Anthopleura elegantissima		✓	✓		
Halcampa sp.					
Tealia sp.				✓	✓
Platyhelminthes					
Turbellaria spp.		✓	✓		
Nemertea spp.	✓	✓	✓	✓	✓
Emplectonema gracile		✓	✓		
Nematoda spp.	✓	✓	✓	✓	✓
Mollusca					
Amphineura					
Cyanoplax dentiens		✓	✓		
Katharina tunicata			✓		
Mopalia sp. B					✓
Tonicella lineata					✓

Photis brevipes			✓		
Pleusymetes sp. A.					✓
Pontogeneia ivanovi			✓		
P. rostrata			✓	✓	✓

MORSE CREEK

Gastropoda	Tide Ht. +6'	+3'	+0'	-5m	-10m
Acmea mitra			✓		✓
Aeolididae sp.			✓		✓
Alvinia sp.				✓	
Amphissa columbiana			✓	✓	✓
Archidoris montereyensis		✓	✓		
Barleeia haliotiphila			✓		
Calliostoma ligatum			✓		
Calyptraea fastigiata					✓
Collisella digitalis		✓			✓
C. ochracea					
C. pelta		✓	✓		✓
C. strigatella	✓	✓			
Crepidula sp.				✓	✓
Lacuna variegata	✓	✓	✓	✓	✓
Lirularia lirulata				✓	
Littorina scutulata	✓	✓			
L. sitkana	✓	✓	✓		
Margarites pupillus		✓		✓	✓
Nassarius mendicus			✓	✓	
Natica clausa					✓
Notoacmea fenestrata		✓	✓		
N. persona	✓	✓	✓		
N. scutum		✓	✓		
Ocenebra lurida		✓	✓		
Onchidella borealis		✓	✓		
Searlesia dira			✓		
Thais emarginata		✓	✓		
T. lamellosa		✓	✓		
Trichotropis cancellata			✓		✓
Bivalvia					
Adula californiensis		✓	✓		
Clinocardium nuttallii		✓	✓		
Crenella decussata					✓
Cryptomya californica			✓		✓
Hiatella arctica		✓	✓		
Humilaria kennerleyi					✓
Lucinoma tenuisculpta				✓	✓
Lyonsia californica		✓			
Macoma inquinata		✓	✓		
M. nasuta			✓		
M. secta					✓

Leptasterias hexactis	✓	✓

MORSE CREEK

Bivalvia (Cont.)	Tide Ht. +6'	+3'	+0'	-5m	-10m
Modiolus rectus					✓
Musculus discors					✓
M. pygmaeus		✓	✓		
Mya arenaria			✓	✓	✓
Mysella tumida	✓	✓	✓	✓	✓
Mytilus californianus		✓			
M. edulis	✓	✓	✓		
Protothaca staminea	✓	✓	✓	✓	✓
Tellina nuculoides			✓		
Transennella tantilla			✓		
Tresus capax		✓	✓		✓
Annelida					
Oligochaeta spp.	✓	✓	✓	✓	✓
Polychaeta					
Ampharetidae					
Ampharete arctica		✓	✓		
Asabellides littoralis			✓		✓
Arenicolidae					
Abarenicola pacifica		✓			
Branchiomaldane vincenti					✓
Capitellidae					
Capitella capitata	✓	✓	✓	✓	✓
Mediomastus sp.		✓	✓	✓	✓
Notomastus tenuis		✓	✓		✓
Chrysopetalidae					
Paleonotus bellis			✓		
Cirratulidae					
Chaetozone setosa					✓
Cirratulus cirratus		✓	✓	✓	✓
Tharyx multifilis		✓			✓
Dorvilleidae					
Protodorvillea gracilis		✓	✓	✓	✓
Flabelligeridae					
Pherusa plumosa					✓
Glyceridae					
Glycera americana					✓
Hemipodus borealis		✓	✓		✓

MORSE CREEK

	Tide Ht. +6'	+3'	+0'	-5m	-10m
Polychaeta (cont.)					
Goniadidae					
Glycinde picta		✓	✓		✓
Hesionidae					
Micropodarke dubia			✓		✓
Ophiodromus pugettensis					✓
Lumbrineridae					
Lumbrineris inflata			✓		✓
Magelonidae					
Magelona pitelkai					✓
Maldanidae					
Axiothella rubrocincta					
Euclymene sp.				✓	✓
Nicomache personata					✓
N. lubricalis					✓
Nephtyidae					
Nephtys caeca					
N. californiensis		✓			✓
Nereidae					
Micronereis nanaimoensis					✓
Nereis pelagica	✓	✓	✓		✓
N. vexillosa					
Platynereis bicanaliculata		✓	✓	✓	✓
Opheliidae					
Armandia brevis		✓	✓	✓	✓
Orbiniidae					
Scoloplos sp.		✓		✓	✓
Oweniidae					
Owenia fusiformis		✓			✓
Paraonidae					
Aricidea sp.					
Paraonella platybranchia		✓			✓
Pectinariidae					
Pectinaria granulata					✓
Phyllodocidae					
Eteone longa		✓	✓		✓
E. tuberculata			✓		

MORSE CREEK

	Tide Ht. +6'	+3'	+0'	-5m	-10m
Phyllodocidae (cont.)					
Eulalia quadrioculata			✓		
E. sanguinea					
E. viridis		✓			✓
Hesionura coineaui difficilis					✓
					✓
Phyllodoce maculata			✓	✓	✓
P. madeirensis					✓
Polynoidae					
Harmothoe imbricata			✓		✓
Sabellariidae					
Idanthyrsus armatus					✓
Sabellaria cementarium			✓	✓	✓
Sabellidae					
Chone ecaudata			✓		
Fabricia oregonica		✓	✓		✓
Jasmineira sp.					✓
Manayunkia aestuarine			✓		
Schizobranchia insignis			✓		✓
Sabella sp.			✓		
Sabellastarte sp.			✓		
Scalibregmidae					
Scalibregma inflatum					✓
Serpulidae					
Spirorbis moerchi					✓
S. nakamurai					✓
S. spirillum					✓
Sigalionidae					
Pholoe minuta					✓
Sphaerodoridae					
Sphaerodorum papillifera					✓
Spionidae					
Malacoceros glutaeus		✓	✓		
Polydora armata					
P. columbiana	✓	✓	✓		✓
P. commensalis			✓		✓
P. proboscidea	✓		✓		
P. socialis			✓	✓	✓
P. spongicola					✓
P. sp. A	✓				✓
Prionospio cirrifera				✓	✓
P. steenstrupi		✓		✓	✓

Gigartinaceae spp. ✓ ✓

MORSE CREEK

	Tide Ht. +6'	+3'	+0'	-5m	-10m
Spionidae (cont.)					
Pygospio elegans		✓	✓		
Scolelepis sp. C		✓	✓		✓
S. squamata			✓		
Spio filicornis		✓	✓		
Spiophanes bombyx					✓
Syllidae					
Autolytus sp.				✓	✓
Exogone gemmifera			✓		✓
E. lourei			✓		✓
Eusyllis sp.				✓	
Spaerosyllis pirifera			✓		
Syllis adamantea		✓			
S. heterochaeta				✓	
S. longocirrata					✓
Trypanosyllis gemmipara				✓	✓
Terebellidae spp.			✓		✓
Archiannelida					
Polygordidae					
Polygordius sp.					✓
Saccocirridae					
Saccocirrus sp.		✓	✓		
Hirudinea sp.			✓		
Sipuncula					
Golfingia vulgaris					
Phascolosoma agassizii			✓		✓
Pycnogonida					
Halosoma compactum			✓		
H. viridintestinales			✓		
Nymphon grossipes			✓		
Phoxichilidium femoratum		✓	✓		
Crustacea					
Ostracoda spp.		✓	✓		✓
Cirripedia					
Balanus cariosus	✓	✓	✓		
B. glandula	✓		✓		
B. nubilis			✓		
Chthamalus dalli	✓	✓			

MORSE CREEK

Crustacea (cont.)	Tide Ht. +6'	+3'	+0'	-5m	-10m
Leptostraca					
Nebalia pugettensis			✓	✓	
Cumacea					
Cumella vulgaris		✓	✓	✓	✓
Diastylis sp.		✓			
Lampropidae spp.					✓
Leptocuma sp.			✓		
					✓
Tanaidacea					
Anatanais normani		✓	✓		
Leptochelia dubia	✓	✓	✓	✓	✓
Pancolus californiensis			✓		✓
Isopoda					
Caccianiropsis psammophila			✓		
Dynamenella sheareri			✓		
Exosphaeroma amplicauda			✓		
E. media			✓		
E. rhomburum		✓	✓	✓	
Gnorimosphaeroma oregonense	✓	✓	✓		
Ianiropsis analoga			✓		
I. kincaidi		✓	✓		✓
I. magnocula					✓
Idotea aculeata			✓		
I. montereyensis			✓		
I. schmitti		✓	✓		
I. wosnesenskii		✓	✓		
Jaeropsis dubia					
J. lobata			✓		✓
Limnorid algarum		✓	✓		
Munna chromatocephala			✓		
M. stephenseni				✓	
Paranthura elegans			✓		✓
Amphipoda					
Accedomoera vagor			✓		
A. sp. C			✓		✓
Allorchestes angustus	✓	✓	✓		
Ampelisca cristata					✓
A. pugetica				✓	✓
Ampithoe lacertosa			✓		
A. mea			✓		
A. simulans		✓	✓		
Anonyx laticoxae					✓
Aoroides columbiae		✓	✓	✓	✓
Atylus levidensis				✓	✓

MORSE CREEK

	Tide Ht. +6'	+3'	+0'	-5m	-10m
Amphipoda (cont.)					
Caprella laeviuscula					✓
C. mendax					✓
C. natalensis			✓		
C. striata					✓
Cercops compactus			✓		
Corophium brevis	✓	✓	✓		
C. crassicorne					✓
Eohaustorius washingtonianus			✓		
Gammaropsis thompsoni					✓
Guernea sp. A					✓
Hyale frequens		✓	✓		
Ischyrocerus sp. 2		✓	✓	✓	✓
I. anguipes			✓		
Jassa falcata				✓	✓
Kermystheus ociosa				✓	✓
Maera simile				✓	✓
Melita californica			✓		
M. dentata				✓	✓
M. desdichada			✓	✓	✓
Najna consiliorum				✓	
Orchestia sp.	✓	✓			
Orchestoidea pugettensis	✓				
Parallorchestes ochotensis			✓		
Paramoera columbiana	✓		✓		
P. "pugetica" n. sp.		✓			
P. serrata	✓				
Paraphoxus cognatus					✓
P. spinosus / obtusidens		✓	✓		
P. spinosus Type B		✓			
Parapleustes pugettensis			✓		
Photis brevipes			✓		
P. sp. D			✓	✓	✓
Pleusirus seccrrus				✓	✓
Pontogeneia cf. ivanovi		✓	✓		
Stenothoides beringiensis					✓
Synchelidium rectipalmum					✓
Westwoodilla caecula					✓
Decapoda					
Callianassidae sp. (juv.)			✓	✓	
Cancer magister		✓			
C. oregonensis		✓	✓		
C. productus			✓		✓

MORSE CREEK

	Tide Ht. +6'	+3'	+0'	-5m	-10m
Decapoda (cont.)					
Crangon dalli				✓	
C. munitella					✓
Cryptolithodes sp. (juv.)		✓			
Discorsopagurus schmitti					✓
Eulalus sp. (juv.)			✓		✓
Hemigrapsus nudus		✓	✓		
H. oregonensis		✓			
Heptacarpus sp. (juv.)			✓		
Hippolyte clarki			✓		
Oedignathus inermis			✓		
Pagurus h. hirsutiusculus		✓	✓		
P. beringanus					✓
Pinnixa faba			✓		
Pugettia gracilis			✓	✓	✓
P. productus			✓		
Telmessus cheiragonus			✓		
Upogebia pugettensis			✓		
Insecta					
Dipteran larvae	✓	✓	✓		
Phoronida					
Phoronopsis harmeri		✓			
Bryozoa spp.					
Flustrella sp.			✓		✓
Hippothoa hyalina			✓		
Membranipora sp.			✓		
			✓		
Echinodermata					
Ophiuroidea					
Amphipholis squamata					✓
Holothuroidea					
Cucumaria sp.			✓		
Eupentacta pseudoquinquesemita			✓		
Leptosynapta clarki			✓		✓
Mopalia intermedia					✓

Chthamalus dalli ✓ ✓

Table 5. Beckett Point (protected sand-gravel intertidal; sand subtidal). Complete list of all benthic organisms collected from spring 1976 through winter 1978. Checks indicate tide heights where organism was found.

	+6'	+3'	+0'	-5m	-10m
Chlorophyta					
Enteromorpha compressa		✓			
E. intestinalis		✓	✓		
E. linza		✓	✓		
Ulva taeniata		✓			
Urospora spp.		✓	✓		
Bacillariophyta					
Pennales spp.		✓			
Phaeophyta					
Feldmania spp.		✓			
Rhodophyta					
Ceramium nibrum				✓	
C. pacificum		✓	✓		
Polysiphonia pacifica		✓			
Polysiphonia paniculata		✓			
Porphyra sp.			✓		
Spermatophyta					
Zostera marina			✓		
Cnidaria					
Anthozoa					
Actinaria spp.			✓	✓	✓
Platyhelminthes					
Turbellaria spp.		✓	✓	✓	✓
Nemertea					
spp.	✓	✓	✓	✓	✓
Nematoda					
spp.	✓	✓	✓	✓	✓
Mollusca					
Gastropoda					
Aeolididae sp. (juv.)				✓	✓
Aglaja diomedia		✓	✓		✓
Alvinia spp.	✓	✓	✓	✓	✓
Amphissa columbiana			✓	✓	
Barleeia haliotiphila			✓		
Cerithiopsis sp.				✓	

Oligochinus lighti			✓
Orchestia sp.		✓	✓
Parallorchestes ochotensis			✓

BECKETT POINT

	+6'	+3'	+0'	-5m	-10m
Collisella ochracea				✓	
C. pelta	✓	✓			
C. strigatella	✓	✓			
Crepidula adunca					✓
Crepipetella lingulata				✓	
Cylichna sp.			✓	✓	✓
Fartulum occidentale	✓	✓	✓		
Haminoea vesicula	✓	✓	✓		✓
Lacuna variegata	✓	✓	✓	✓	✓
Lirularia lirulata				✓	✓
Littorina scutulata	✓	✓			
L. sitkana	✓	✓	✓		
Margarites pupillus		✓		✓	
Mitrella carinata				✓	
M. tuberosa			✓	✓	✓
Nassarius mendicus			✓		✓
Natica clausa					✓
Notoacmea persona	✓				
N. scutum		✓			
Ocenebra lurida		✓	✓		
Odostomia sp.		✓	✓		✓
Polinices lewisii			✓		
Solariella obscura					✓
Thais spp.		✓			
Turbonilla sp.				✓	✓
Bivalvia					
Acila castrensis					✓
Adula californiensis		✓	✓		
Clinocardium nuttallii	✓	✓	✓	✓	✓
Crenella decussata		✓	✓	✓	✓
Cryptomya californica				✓	
Hiatella arctica			✓		
Lucinoma tenuisculpta		✓	✓	✓	✓
Lyonsia californica			✓	✓	
Macoma inquinata			✓		✓
M. nasuta			✓		✓
M. secta			✓	✓	
Modiolus sp.				✓	
Musculus pygmaeus			✓		
Mya arenaria			✓	✓	✓
Mysella tumida	✓	✓	✓	✓	✓
Mytilus edulis	✓	✓	✓		
Nucula tenuis					✓

BECKETT POINT

	+6'	+3'	+0'	-5m	-10m
Panope generosa			✓		
Pododesmus cepio					
Protothaca staminea	✓	✓	✓	✓	
Psephidia lordi					
Saxidomus giganteus		✓		✓	✓
Tellina carpenteri					
T. modesta			✓		
			✓		
Transennella tantilla	✓	✓	✓		
Tresus capax		✓	✓		
T. nuttallii		✓			
Annelida					
Oligochaeta					
spp.	✓	✓	✓	✓	✓
Polychaeta					
Ampharetidae					
Amphrete					
arctica				✓	
Arenicolidae					
sp. (juv.)	✓		✓		
Capitellidae					
Capitella					
capitata		✓	✓		✓
Mediomastus sp.		✓	✓	✓	✓
Notomastus lineatus			✓		✓
N. tenuis		✓	✓		✓
Chaetopteridae					
Mesochaetopterus taylori			✓	✓	✓
Phyllochaetopterus prolifica					✓
Spiochaetopterus costarum		✓	✓	✓	✓
Chrysopetalidae					
Paleonotus bellis		✓			
Cirratulidae					
Chaetozone setosus			✓		
Cirratulus cirratus		✓	✓		
Tharyx multifilis		✓	✓		
Dorvilleidae					
Dovillea annulata		✓			
D. rudolphi			✓		
Protodorvillea gracilis		✓	✓	✓	✓
Eunicoidea					
sp.			✓		
Glyceridae					
Glycera americana			✓		
G. capitata					✓
G. tesselata			✓		
Hemipodus borealis	✓	✓	✓	✓	✓

BECKETT POINT

Goniadidae
Glycinde armigera
G. picta

Hesionidae
Gyptis brevipalpa
Hesionid sp. A
Micropodarke dubia
Ophiodromus pugetten
Lumbrineridae
Lumbrineris zonata
Magelonidae
Magelona japonica
M. pitelkai

Maldanidae
Axiothella rubrocinct
Euclymene delineata
Maldane glebifex
Nichomache lumbricali
N. personata

Nephytidae
Nephtys californiensi
N. caeca
N. caecoides
N. ferringinea

Nereidae
Nereis pelagica
N. procera
N. vexillosa
Platynereis bicanalicu

Onuphidae
Diopatra ornata
Onuphis stigmatus

Opheliidae
Armandia brevis
Ophelia limacina

Orbiniidae
Scoloplos sp.

Oweniidae
Owenia fusiformis

Paranoidae
Aricidia sp.

Pectinariidae
Pectinaria granulata

BECKETT POINT

	+6'	+3'	+0'	-5m	-10m
Goniadidae					
Glycinde armigera			✓		
G. picta			✓	✓	✓
Hesionidae					
Gyptis brevipalpa			✓		✓
Hesionid sp. A		✓	✓		
Micropodarke dubia		✓	✓	✓	✓
Ophiodromus pugettensis		✓	✓	✓	✓
Lumbrineridae					
Lumbrineris zonata					✓
Magelonidae					
Magelona japonica			✓	✓	
M. pitelkai			✓	✓	✓
Maldanidae					
Axiothella rubrocincta			✓	✓	✓
Euclymene delineata			✓		
Maldane glebifex			✓		
Nichomache lumbricalis					✓
N. personata					✓
Nephtyidae					
Nephtys californiensis			✓	✓	✓
N. caeca			✓		
N. caecoides			✓		
N. ferringinea				✓	✓
Nereidae					
Nereis pelagica					✓
N. procera				✓	✓
N. vexillosa	✓				
Platynereis bicanaliculata	✓	✓	✓	✓	✓
Onuphidae					
Diopatra ornata			✓	✓	✓
Onuphis stigmatus		✓			
Opheliidae					
Armandia brevis		✓	✓	✓	✓
Ophelia limacina		✓			
Orbiniidae					
Scoloplos sp.			✓	✓	✓
Oweniidae					
Owenia fusiformis	✓	✓	✓	✓	✓
Paranoidae					
Aricidia sp.					
Pectinariidae					
Pectinaria granulata			✓	✓	✓

Prionitis lyallii			✓		
Pterosiphonia bipinnata			✓		
P. dendroidea				✓	✓

BECKETT POINT

	+6'	+3'	+0'	-5m	-10m
Phyllodocidae					
Eteone longa		✓	✓		✓
E. tuberculata			✓		
Eulalia quadrioculata		✓			
E. sanguinea		✓	✓	✓	✓
E. viridis				✓	✓
Hesionura coineaui difficilis		✓			
Phyllodoce castanea					
P. groenlandica					✓
P. maculata			✓		✓
P. sp. A		✓	✓	✓	✓
			✓	✓	✓
Pilargidae					
Pilargis berkleyae					✓
Sigambra tentaculata				✓	✓
Pisionidae					
Pisione sp.		✓			
Arctonoe vittata			✓		
Harmothoe imbricata			✓	✓	✓
H. lunulata		✓	✓		✓
Lepidasthenia berkleyae			✓		✓
Tenonia kitsapensis					✓
Sabellidae					
Chone ecaudata					✓
Sabella media					✓
Serpulidae					
Spirobis nakamurai					✓
Sigalonidae					
Pholoe minuta		✓	✓		✓
Spionidae					
Malacocerus glutaeus			✓		
Polydora caulleryi			✓		✓
P. columbiana		✓			✓
P. limicola					
P. proboscidea	✓	✓			✓
P. pygidialis			✓	✓	
P. quadrilobata				✓	
P. socialis			✓	✓	✓
P. sp. A			✓	✓	✓
Prionospio cirrifera	✓	✓		✓	✓
P. steenstrupi		✓	✓	✓	✓
Pygospio elegans	✓	✓	✓		
Scolelepis sp.		✓	✓		
Spio filicornis		✓	✓	✓	✓
Spiophanes berkeyorum			✓	✓	✓
S. bombyx		✓	✓	✓	✓
Syllidae					
Brania brevipharyngia		✓	✓		
Exogone gemmifera			✓	✓	
E. lourei	✓	✓	✓	✓	✓
Sphaerosyllis brandhorsti			✓	✓	✓
S. pirifera		✓	✓	✓	

BECKETT POINT

	+6'	+3'	+0'	-5m	-10m
Terebellidae					
Polycirrus sp. A		✓			
Archiannelida					
Polygordius sp.					
Protodrilidae sp.		✓			
		✓			
Sipuncula					
Golfingia vulgaris					
G. pugettensis					✓
Crustacea					✓
Leptostraca					
Nebalia pugettensis					
Ostracoda			✓	✓	✓
spp.					
Cirripedia		✓	✓	✓	✓
Balanus glandula	✓	✓			
Cumacea					
Cumella vulgaris					
Diastylis sp.		✓	✓	✓	✓
Diastylopsis sp.				✓	✓
Eudorella sp.				✓	✓
Lampropidae sp.				✓	✓
Leptocuma sp.				✓	✓
			✓	✓	
Tanaidacea					
Leptochelia dubia	✓	✓	✓	✓	✓
Isopoda					
Cirolana vancouveriensis	✓				
Dynamenella sheareri					
Exosphaeroma amplicauda			✓		
E. media		✓	✓		
Gnorimosphaeroma oregonense	✓	✓	✓		
Ianiropsis kincaidi		✓		✓	
Idotea resecata			✓		
				✓	
Limnoria algarum					
Munna ubiquata					✓
Paranthura elegans				✓	
				✓	✓
Mysidacea					
Archaeomysis grebnitzkii					
Amphipoda			✓		
Allorchestes augustus					
Ampelisca agassizi		✓			
A. pugetica			✓	✓	✓
				✓	✓
Ampithoe lacertosa					
Anisogammarus confervicolus			✓		
Aoroides columbiae	✓	✓	✓		
			✓	✓	✓

BECKETT POINT

	+6'	+3'	+0'	-5m	-10m
Amphipoda					
Byblis serrata					
Caprella laeviscula		✓	✓	✓	
Corophium ascherusicum					
C. crassicorne			✓		
Dulichia sp. A					✓
Gammaropsis thompsoni				✓	
Guernea sp. A			✓	✓	✓
Hippomedon sp. B				✓	✓
Ischyrocerus anguipes					✓
Metacaprella kennerlyi				✓	✓
Melita dentata				✓	
M. desdichada			✓		✓
Orchomene sp. A				✓	✓
Orchestoidea pugettensis	✓	✓		✓	✓
Pachynus cf. barnardi				✓	✓
Paramoera "serrata" n. sp.			✓		
Paraphoxus sp. A			✓		
P. sp. C			✓		
P. spinosus			✓		
Photis brevipes			✓		
Pleusirus secorrus				✓	✓
Podoceropsis inaequistylis				✓	
Pontogeneia cf. rostrata				✓	✓
Protomedeia sp. A			✓	✓	✓
Synchelidium rectipalmum				✓	✓
S. shoemakeri			✓	✓	
Tritella pilimana				✓	✓
Westwoodilla caecula			✓		
Decapoda				✓	✓
Callianassidae sp. (juv.)				✓	✓
Cancer gracilis				✓	✓
C. magister		✓			
C. oregonensis			✓	✓	✓
C. productus			✓		
Crangon nigracauda			✓		
Hemigrapsus nudus	✓	✓			
H. oregonensis	✓	✓			

Lucinoma tenuisculpta			✓	✓	
Lyonsia californica	✓				
Macoma inquinata	✓	✓			
M. nasuta		✓			
M. secta				✓	

BECKETT POINT

	+6'	+3'	+0'	-5m	-10m
Hippolytidae					
sp.			✓	✓	✓
Labidochirus splendescens					✓
Oregonia gracilis			✓		
Pagurus beringanus				✓	
P. h. hirsutiusculus		✓	✓		
Pinnixa littoralis		✓			
P. occidentalis			✓		
Pugettia gracilis			✓	✓	✓
Telmessus cheiragonus			✓		
Upogebia pugettensis		✓			
Insecta					
Dipteran larvae	✓	✓	✓		
Phoronida					
Phoronopsis harmeri		✓	✓		✓
Phoronis ijimai				✓	
Echinodermata					
Echinoidea					
Dendraster excentricus		✓	✓		
Holothuroidea					
Leptosynapta clarki		✓	✓	✓	
Molpadia intermedia				✓	
Ophiuroidea					
Amphipholis squamata				✓	

Glycera americana
Hemipodus borealis ✓ ✓ ✓ ✓

Table 6. Dungeness Spit (exposed gravel-sand). Complete list of all benthic organisms collected spring 1976 through winter 1978. Checks indicate tide heights where organism was found.

Genus Species	Tide Ht. +6'	+3'	+0'	-5m	-10m
Chlorophyta					
Chaetomorpha californica					✓
Bacillariophyta					
Pennales spp.					✓
Phaeophyta					
Alaria spp.					✓
Costaria costata					✓
Desmarestia aculeata					✓
D. ligulata var. ligulata					✓
Ectocarpaceae					✓
Feldmania spp.					✓
Giffordia ovata					✓
Haplogloia andersonii					✓
Hedophyllum sessile					✓
Laminaria spp.					✓
Ralfsia pacifica					✓
Stictyosiphon tortilis					✓
Syringoderma abyssicola					✓
Rhodophyta					
Acrochaetium spp.					✓
Antithamnion defectum					✓
Botryocladia pseudodichotoma					✓
Callithamnion/Pleonosporium					✓
Choreocolax polysiphoniae					✓

P. steenstrupi ✓ ✓ ✓

Dungeness Spit

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Cruoriopsis aestuarii					
Cryptonemia borealis				✓	
C. ovalifolia					✓
					✓
Euthora fruticulosa					
					✓
Gigartinaceae spp.					
Goniotrichum alsidii					✓
					✓
Gracilaria spp.					
Gymnogongius leptophyllus					✓
					✓
Halymenia spp.					
					✓
Hollenbergia subulata					
					✓
Iridaea spp.					
					✓
Leptofauchea pacifica					
					✓
Membranoptera spp.					
Odonthalia sp.					✓
Peyssonelia pacifica					✓
Phycodrys isabelliae					✓
					✓
Platythamnion pectiatum					
P. villosum					✓
				✓	✓
Polysiphonia hendryi					
P. pacifica				✓	✓
					✓
Porphyra spp.					
					✓
Pterosiphonia dendroidea					
P. gracilis					✓
					✓
Ptilota filicina					
				✓	
Rhodoptilum plumosum					
					✓
Rhodymenia spp.					
					✓

Chthamalus dalli	✓	✓	✓		

Dungeness Spit

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Scagelia occidentale				✓	✓
Stenogramme interrupta					✓
Thuretellopsis peggiana					✓
Cnidaria					
Hydrozoa					
Coryne tubulosa					✓
Hydroidea spp.					✓
Tubularia sp.					✓
Anthozoa					
Halcampa sp.					✓
Platyhelminthes					
Turbellaria spp.	✓	✓		✓	✓
Nemertea spp.	✓	✓	✓	✓	✓
Nematoda spp.	✓		✓		✓
Mollusca					
Amphineura					
Cryptobranchia concentrica					✓
Leptochiton internexus					✓
Gastropoda					
Aeolididae spp.					✓
Amphissa columbiana			✓	✓	✓

A. simulans		✓	✓		
Anonyx laticoxae					
Aoroides columbiae		✓	✓	✓	✓
Atylus levidensis				✓	✓

Dungeness Spit

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Calliostoma ligatum				✓	
Calyptraea fastigata				✓	✓
Lacuna variegata			✓	✓	✓
Margarites pupillus				✓	
Mitrella tuberosa				✓	
Natica clausa					✓
Thais canaliculata				✓	
Trichotropis cancellata					✓
Bivalvia					
Clinocardium nuttallii			✓	✓	✓
Crenella decussata			✓	✓	✓
Humilaria kennerleyi					✓
Macoma sp.					✓
Modiolus sp.					✓
Mya arenaria					✓
Mysella tumida				✓	✓
Protothaca staminea					✓
P. tenerrima					✓
Tellina sp.					✓
Transenella tantilla				✓	✓
Tresus capax					✓
Annelida					
Oligochaeta spp.	✓	✓	✓	✓	✓

Dungeness Spit

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Polychaeta					
Acrocirridae spp.					
Arenicolidae spp.	✓				✓
Capitellidae					
Capitella capitata				✓	✓
Mediomastus sp.				✓	✓
Notomastus lineatus					✓
N. tenuis					✓
Cirratulidae					
Chaetozona setosa					✓
Cauleriella sp.					✓
Cirratulus cirratus					✓
Tharyx multifilis					✓
Dorvilleidae					
Protodorvillea gracilis			✓		✓
Goniadidae					
Glycinde picta					✓
Hesionidae					
Gyptis brevipalpa					✓
Micropodarke dubia					✓
Maldanidae					
Axiothella rubrocincta					✓
Euclymene sp.					✓
Nephtyidae					
Nephtys caeca					✓
N. ciliata					✓
N. ferruginea					✓
Nereidae					
Nereis sp.					✓
Platynereis bicanaliculata				✓	✓
Opheliidae					
Armandia brevis				✓	✓
Travisia forbesii					✓

Dungeness Spit

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Orbiniidae					
Scoloplos sp.					✓
Oweniidae					
Owenia fusiformis					✓
Paraonidae					
Paraonella platybranchia				✓	
Phyllodocidae					
Eteone longa					✓
Eulalia sanguinea					✓
Polynoidae					
Harmothoe imbricata					✓
Sabellidae					
Chone sp.					✓
Sabella media					✓
Scalibregmidae					
Scalibregma inflatum					✓
Serpulidae					
Spirorbis sp.					✓
Sigalionidae					
Pholoe minuta					✓
Spionidae					
Malacoceros glutaeus			✓	✓	✓
Polydora quadrilobata					
P. socialis				✓	✓

Cerithiopsis sp. ✓

Dungeness Spit

	Tide Ht. +6'	+3'	+0'	-5m	-10m
Prionospio cirrifera					✓
P. steenstrupi					✓
Spio filicornis					✓
Spiophanes bombyx					✓
Syllidae					
Eusyllis sp.					✓
Exogone gemmifera					✓
E. lourei					✓
Sphaerosyllis pirrifera					✓
Syllis heterochaeta					✓
S. longocirrata					✓
Terebellidae					
Polycirrus sp. A					✓
P. sp. B					✓
Archiannelida					
Polygordiidae					
Polygordius sp.					✓
Sipuncula					
Phascolosoma agassizii					✓
Crustacea					
Cirripedia					
Balanus rostratus alaskensis				✓	
Cumacea					
Diastylis sp.				✓	✓
Lampropidae				✓	✓
Leptocuma sp.					✓
Leptostylis sp.					✓

Mya arenaria			✓	✓	✓
Mysella tumida	✓	✓	✓	✓	✓
Mytilus edulis	✓	✓	✓		
Nucula tenuis					✓

Dungeness Spit

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Leptostraca					
Nebalia pugettensis				✓	
Mysidacea					
Archaeomysis grebnitzkii	✓		✓	✓	
Tanaidacea					
Leptochelia dubia				✓	✓
Isopoda					
Exosphaeroma amplicauda					
E. rhomburum					✓
					✓
Gnorimosphaeroma oregonense					✓
Idotea sp. (juv.)					✓
Amphipoda					
Accedomoera vagor					
Ampelisca cristata				✓	
A. macrocephala					✓
Anoryx laticoxae				✓	
Aorcides columbiae				✓	✓
Atylus levidensis					✓
Caprella laeviuscula					✓
Corophium crassicorne					✓
Eohaustorius washingtonianus					✓
Guernea sp. A.				✓	
Ischyrocerus anguipes					✓
Melita californica				✓	✓
M. dentata					✓
M. desdichada					✓
Orchomene sp. A.				✓	✓
Orchestoidea pugettensis	✓	✓			✓
Paramoera serrata n. sp.		✓	✓		
Paraphoxus spp.					
Paraphoxus spinosus	✓			✓	✓
Parapleustes sp.				✓	
Photis sp.					✓
Synchelidium shoemakeri				✓	
Tiron biocellata				✓	

Dungeness Spit

	Tide Ht. +6'	+3'	+0'	-5m	-10m
Leptostraca					
Nebalia pugettensis				✓	
Mysidacea					
Archaeomysis grebnitzkii	✓		✓	✓	
Tanaidacea					
Leptochelia dubia				✓	✓
Isopoda					
Exosphaeroma amplicauda					✓
E. rhomburum					✓
Gnorimosphaeroma oregonense					✓
Idotea sp. (juv.)					✓
Amphipoda					
Accedomoera vagor				✓	
Ampelisca cristata					✓
A. macrocephala				✓	
Anoryx laticoxae				✓	✓
Aorcides columbiae					✓
Atylus levidensis					✓
Caprella laeviuscula					✓
Corophium crassicorne					✓
Eohaustorius washingtonianus				✓	
Guernea sp. A.					✓
Ischyrocerus anguipes				✓	✓
Melita californica					✓
M. dentata					✓
M. desdichada				✓	✓
Orchomene sp. A.					✓
Orchestoidea pugettensis	✓	✓			
Paramoera serrata n. sp.		✓	✓		
Paraphoxus spp.				✓	✓
Paraphoxus spinosus	✓				
Parapleustes sp.				✓	
Photis sp.					✓
Synchelidium shoemakeri				✓	
Tiron biocellata				✓	
Decapoda					
Callianassidae (juv.)					
Hemigrapsus oregonensis					
Hippolytidae spp. (juv.)					
Paguridae spp. (juv.)					
Pinnotheridae spp. (juv.)					
Pugettia gracilis					
Phoronida					
Phoronopsis harmeri					
Bryozoa spp.					
Membranipora sp.					
Echinodermata					
Ophiuroidea spp.					
Holothuroidea					
Eupentacta sp. (juv.)					
Leptosynapta clarki					
Chordata - Ascidacea					
Cnemidocarpa finmarkiensis					

Dungeness Spit

	Tide Ht.				
	+6'	+3'	+0'	-5m	-10m
Decapoda					
Callianassidae (juv.)				✓	✓
Hemigrapsus oregonensis					✓
Hippolytidae spp. (juv.)					✓
Paguridae spp. (juv.)				✓	✓
Pinnotheridae spp. (juv.)					✓
Pugettia gracilis					✓
Phoronida					
Phoronopsis harmeri					✓
Bryozoa spp.					
Membranipora sp.					✓
					✓
Echinodermata					
Ophiuroidea spp.					✓
Holothuroidea					
Eupentacta sp. (juv.)					✓
Leptosynapta clarki					✓
Chordata - Ascidacea					
Cnemidocarpa finmarkiensis					✓

Table 7. Twin Rivers (exposed gr
organisms collected spring 197
tide heights where organism wa

Chlorophyta
Enteromorpha linza
Ulva spp.
Bacillariophyta
Pennales spp.
Phaeophyta
Desmarestia viridis
Ralfsia sp.
Syringoderma abyssicola
Rhodophyta
Acrochaetium sp.
Antithamnion dendroideum
Ceramium washingtoniense
Gracilaria verrucosa
Gracilaria sjoestedtii
Gymnogongrus leptophyllus
Hollenbergia subulata
Iridaea sp.
Neoptilota asplenioides
Platythamnion reversum
Platythmanion pectinatum
Platythamnion villosum
Pleonosporium sp.
Polysiphonia hendryi
Polysiphonia pacifica
Polysiphonia paniculata
Porphyra sp.
Pterosiphonia bipinnata
P. dendroidea
Ptilota filicina
Rhodymenia palmata
Sarcodiotheca furcata
Scagelia occidentale
Stenogramme interrupta
Cnidaria
Hydrozoa
spp.
Scyphozoa
Haliclystus auricula
Anthozoa
Halcampa decemtentaculata
Platyhelminthes
Turbellaria
spp.
Nemertea
spp.
Amphiporus sp.
Nematoda
spp.

Table 7. Twin Rivers (exposed gravel-sand). Complete list of all benthic organisms collected spring 1976 through spring 1977. Checks indicate tide heights where organism was found.

	+6'	+3'	+0'	-5m	-10m
Chlorophyta					
Enteromorpha linza				✓	
Ulva spp.				✓	
Bacillariophyta					
Pennales spp.				✓	
Phaeophyta					
Desmarestia viridis				✓	
Ralfsia sp.				✓	
Syringoderma abyssicola				✓	
Rhodophyta					
Acrochaetium sp.				✓	
Antithamnion dendroideum				✓	
Ceramium washingtoniense				✓	
Gracilaria verrucosa				✓	
Gracilaria sjoestedtii				✓	
Gymnogongrus leptophyllus				✓	
Hollenbergia subulata				✓	
Iridaea sp.				✓	
Neoptilota asplenioides				✓	
Platythamnion reversum				✓	
Platythmanion pectinatum				✓	
Platythamnion villosum				✓	
Pleonosporium sp.				✓	
Polysiphonia hendryi				✓	
Polysiphonia pacifica				✓	
Polysiphonia paniculata				✓	
Porphyra sp.				✓	
Pterosiphonia bipinnata				✓	
P. dendroidea				✓	
Ptilota filicina				✓	
Rhodymenia palmata				✓	
Sarcodiotheca furcata				✓	
Scagelia occidentale				✓	
Stenogramme interrupta				✓	
Cnidaria					
Hydrozoa					
spp.				✓	
Scyphozoa					
Haliclystus auricula				✓	
Anthozoa					
Halcampa decemtentaculata				✓	✓
Platyhelminthes					
Turbellaria					
spp.			✓		
Nemertea					
spp.	✓	✓	✓	✓	✓
Amphiporus sp.			✓		
Nematoda					
spp.		✓		✓	✓

S. bombyx		✓	✓	✓	✓
Syllidae					
Brania brevipharyngia		✓	✓		
Exogone gemmifera			✓		
E. lourei	✓	✓	✓	✓	
Sphaerosyllis brandhorsti			✓	✓	✓
S. pirifera		✓	✓	✓	✓

TWIN RIVERS

	+6'	+3'	+0'	-5m	-10m
Mollusca					
Gastropoda					
Aglaja diomedea					✓
Calyptraea fastigiata				✓	
Crepidula perforans				✓	
Lacuna variegata				✓	
Lirularia lirulata				✓	✓
Margarities pupillus				✓	
Thais canaliculata				✓	
Thais lamellosa				✓	
Bivalvia					
Clinocardium sp.					✓
Crenella decussata				✓	
Lucinoma tenuisculpta					✓
Macoma spp.				✓	✓
Modiolus sp.					✓
Musculus sp.				✓	
Mya sp.				✓	
Mysella tumida				✓	✓
Protothaca staminea				✓	
Psephidia lordi				✓	✓
Tellina sp.				✓	✓
Transennella tantilla				✓	
Annelida					
Oligochaeta					
spp.	✓	✓	✓	✓	✓
Polychaeta					
Arenicolidae					
Abarenicola sp. (juv.)		✓			
Ampharetidae					
Ampharete arctica					✓
Capitellidae					
Barantolla americana					✓
Capitella capitata			✓	✓	✓
Mediomastus spp.			✓	✓	✓
Notomastus tenuis			✓		
Cirratulidae					
Chaetozone setosa					✓
Tharyx multifilis				✓	✓
Glyceridae					
Glycera sp.					✓
Hemipodus borealis				✓	✓
Goniadidae					
Glycinde picta			✓	✓	✓
Goniada sp. (juv.)					✓
Hesionidae					
Gyptis brevipalpa				✓	
Micropodarke dubia				✓	
Lumbrineridae					
Lumbrineris luti			✓		✓
L. zonata					✓

TWIN RIVERS

	+6'	+3'	+0'	-5m	-10m
Magelonidae					
Magelona pitelkai					✓
Maldanidae					
Euclymene dilineata					✓
Nephtyidae					
Nephtys caecoides				✓	
N. californiensis			✓	✓	✓
Nereidae					
Micronereis nanaimoensis				✓	✓
Nereis pelagica					✓
N. procera				✓	✓
N. vexillosa			✓		
Platynereis bicanaliculata				✓	✓
Onuphidae					
Onuphis iridescens					✓
Opheliidae					
Armandia brevis				✓	✓
Orbiniidae					
Naineris uncinata				✓	✓
Scoloplos sp.			✓	✓	✓
Oweniidae					
Owenia fusiformis				✓	✓
Paraonidae					
Aricidea sp.					✓
Paraonella platybranchia			✓		
Phyllodocidae					
Eteone longa			✓	✓	✓
E. tuberculata				✓	
Phyllodoce maculata				✓	✓
Polynoidae					
Arctone vittata				✓	
Harmothoe imbricata				✓	
Sigalionidae					
Pholoe minuta					✓
Sphaerodoridae					
Sphaerodoropsis minuta				✓	✓
Spionidae					
Malcoceros glutaeus		✓	✓	✓	
Polydora socialis				✓	
Prionospio steenstrupi			✓	✓	✓
P. cirrifera				✓	
Spio filicornis				✓	
Spiophanes bombyx				✓	
Syllidae					
Autolytus sp.				✓	
Exogone gemmifera				✓	✓
E. loueri	✓		✓	✓	✓
Terebellidae					
sp.				✓	
Pycnogonida					
Nymphon pixellae				✓	

TWIN RIVERS

Crustacea	+6'	+3'	+0'	-5m	-10m
Ostracoda					
spp.	✓			✓	✓
Cirripedia					
Balanus sp.				✓	
Cumacea					
Cumella sp.				✓	
Diastylis sp.				✓	
Diastylopsis sp.				✓	
Leptocuma sp.				✓	✓
Tanaidacea					
Leptochelia dubia				✓	✓
Isopoda					
Edotea sublittoralis	✓	✓	✓	✓	
Gnorimosphaeroma oregonense				✓	
Idotea sp.				✓	
Synidotea bicuspida				✓	
S. pettiboneae				✓	
Amphipoda					
Caprellidea					
Caprella gracilior				✓	
Tritella pilimana				✓	
Gammaridea					
Accedomoera vagor				✓	
Ampelisca agassizi				✓	✓
A. macrocephala					✓
A. pugetica				✓	
Anonyx laticoxae				✓	
Aoroides columbiae				✓	✓
Argissa hamatipes				✓	
Atylus levidensus				✓	
Eohaustorius washingtonianus				✓	
Gammaropsis thompsoni				✓	
Guernea sp. A				✓	
Hyale pugettensis				✓	
Ischyrocerus anguipes				✓	
Jassa falcata				✓	
Lepidepecreum sp. A				✓	
Melita desdichada				✓	
Monoculodes zernovi				✓	
Orchestia georgiana	✓	✓			✓
Orchomene sp. A				✓	
Paraphoxus spp.				✓	✓
Paramoera "serrata" n.s.p.	✓				
Photis brevipes				✓	
Photis sp. D				✓	✓
Pleusirus secorrus				✓	
Pontogeneia rostrata				✓	
Protomedia sp. A				✓	✓
Synchelidium rectipalmum				✓	
S. shoemakeri				✓	
Trion biocellata				✓	✓
Westwoodilla caecula				✓	

TWIN RIVERS

	+6'	+3'	+0'	-5m	-10m
Decapoda					
Callianassidae sp. (juv.)				✓	✓
Cancer gracilis				✓	
C. oregonensis				✓	
Hippolytidae sp. (juv.)				✓	
Pagaurus beringanus				✓	
P. kennerlyi				✓	
Pinnixa sp.				✓	
Pugettia gracilis				✓	
Insecta				✓	
Diptera larva spp.		✓			
Phoronida				✓	
Phoronis ijimai				✓	
Bryozoa					
spp.				✓	

Table 8. North Beach Sand (exposed sand intertidal; sand-gravel-cobble subtidal). Complete list of all benthic organisms collected spring 1976 through winter 1978. Checks indicate tide heights where organism was found.

	+6'	+2'	+0'	-5m	-10m
Chlorophyta					
Bryopsis corticulans					✓
Chaetomorpha californica				✓	✓
Derbesia marina				✓	✓
Bacillariophyta					
Pennales spp.				✓	✓
Phaeophyta					
Alaria sp.				✓	
Agarum cribrosum				✓	
Costaria costata			✓		
Desmarestia aculeata					✓
D. ligulata				✓	
Ectocarpales sp.				✓	
Laminaria saccharina				✓	
Pterygophora californica				✓	
Sphacelaria sp.					✓
Syringoderma abyssicola				✓	✓
Rhodophyta					
Acrochaetium sp.				✓	✓
Ahnfeltia plicata				✓	
Antithamnion defectum				✓	✓
A. dendroideum				✓	✓
A. kylinii				✓	
Antithamnionella pacifica					✓
A. glandulifera					✓
Bonnemaisonia nootkana				✓	
Botrycladia pseudodichotoma				✓	✓
Botryoglossum farlowianum				✓	
Calliarthron tuberculosum				✓	✓
Callithamnion sp.				✓	✓
Callophyllis firma				✓	✓
C. flabellulata				✓	✓
C. haenophylla				✓	
C. pinnata				✓	✓
Ceramium californicum				✓	✓
C. gardneri				✓	✓
C. strictum				✓	✓
C. washingtoniense				✓	✓
Choreocolax polysiphoniae				✓	
Constantinea simplex				✓	
Cruoria profunda				✓	
Cryptonemia borealis				✓	
C. obovata				✓	✓
C. ovalifolia				✓	✓
Delessaria decipiens				✓	✓
Euthora fruticulosa				✓	✓
Gigartina sp.				✓	✓
Gonimophyllum skottsbergii				✓	✓

NORTH BEACH SAND

	+6'	+2'	+0'	-5m	-10m
Goniotrichum elegans					✓
Gracilaria verrucosa				✓	✓
G. sjoestedtii				✓	
Griffithsia pacifica					✓
Halosaccion glandiforme					✓
Halymenia coccineae				✓	
Herposiphonia grandis				✓	✓
H. plumula				✓	
Heterosiphonia densiuscula				✓	
H. japonica				✓	
Hildenbrandia sp.				✓	✓
Hollenbergia subulata					✓
Hymenena smithii				✓	
Iridaea sp.				✓	✓
Laurencia spectabilis				✓	
Lophosiphonia villum				✓	
Membranoptera platyphylla					✓
Neoagardhiella baileyi				✓	✓
Nienburgia andersoniana				✓	
Nitophyllum mirabile				✓	✓
Odonthalia flocossa				✓	
O. kamtschatica				✓	✓
O. washingtoniensis				✓	✓
Opuntiella californica				✓	✓
Petrocelis middendorfii				✓	
Peyssonellia pacifica				✓	
Phycodrys isabelliae				✓	✓
Pikea robusta					✓
Platysiphonia clevelandii				✓	
Platythamnion heteromorphum				✓	
P. pectinatum					✓
P. villosum				✓	✓
Plocamium cartilagineum				✓	✓
P. coccineum				✓	
Polyneura latissima				✓	✓
Polysiphonia hendryi				✓	✓
P. pacifica				✓	✓
P. scopulorum				✓	
Porphyra spp.				✓	✓
Pterochondria woodii				✓	
Pterosiphonia bipinnata				✓	✓
P. dendroidea				✓	✓
P. gardneri				✓	✓
P. gracilis				✓	
P. pacificum				✓	✓
Ptilota filicina					✓
Rhodoglossum californicum					✓
Rhodoptilum plumosum					✓
Rhodymenia palmata				✓	✓
R. pertusa				✓	✓
R. stipitata					✓
Sarcodiotheca furcata					✓

NORTH BEACH SAND

	+6'	+2'	+0'	-5m	-10m
Scagelia occidentale				✓	✓
Stenogramme interrupta				✓	✓
Thuretellopsis peggiana				✓	✓
Trailliella intricata				✓	
Spermatophyta					
Zostera mar na				✓	
Cnidaria					
Hydrozoa				✓	
spp.			✓		
Anthozoa			✓	✓	✓
Anthopleura elegantissima				✓	
Halcampa decemtentaculata	✓				
Platyhelminthes	✓			✓	
Turbellaria				✓	
spp.	✓				
Itaspiella armata				✓	
Nemertea					
spp.	✓	✓	✓	✓	✓
Nematoda					
spp.	✓	✓	✓	✓	✓
Mollusca					
Amphineura					
Lepidozona mertensii					✓
Mopalia lignosa					✓
M. sp. A					✓
Tonicella lineata				✓	
Gastropoda				✓	
Acmaea mitra				✓	
Aeolididae sp.				✓	
Alvinia sp.				✓	
Amphissa columbiana				✓	✓
Calliostoma ligatum				✓	✓
Calyptraea fastigiata				✓	
Cerithiopsis sp.				✓	
Collisella ochracea				✓	
Lacuna variegata	✓	✓	✓	✓	✓
Laila cockerellii				✓	
Lirularia lirulata				✓	✓
Littorina scutulata	✓	✓		✓	
L. sitkana	✓		✓		
Margarities pupillus				✓	✓
Notoacmea persona	✓			✓	
Nassarius mendicus				✓	✓
Natica clausa				✓	✓
Odostomia sp.				✓	
Searlesia dira				✓	
Bivalvia					
Astarte compacta					✓
Cardita ventricosa					✓
Clinocardium nuttallii				✓	✓
Crenella decussata		✓	✓	✓	

NORTH BEACH SAND

	+6'	+2'	+0'	-5m	-10m
Cryptomya californica				✓	
Entodesma saxicola					✓
Glycymeris subobsoleta				✓	
Humilaria kennerlyi					✓
Lasaea cistula				✓	
Lucinoma tenuisculpta				✓	✓
Macoma secta					✓
Macoma spp.				✓	✓
Mya sp.				✓	✓
Mysella tumida		✓	✓	✓	✓
Mytilus spp.	✓				
Protothaca staminea		✓			✓
Psephidia lordi				✓	✓
Semele rubropicta				✓	✓
Tellina spp.		✓		✓	✓
Transennella tantilla				✓	✓
Tresus capax					✓
Zirfaea pilsbryi					✓
Annelida					✓
Oligochaeta					
spp.	✓	✓	✓	✓	✓
Polychaete					
Acrocirridae					
spp.				✓	
Macrochaeta sp.					✓
Arenicolidae					
Abarenicola sp.		✓			
A. claparedi oceanica			✓		
Capitellidae					
Capitella capitata		✓	✓	✓	✓
Mediomastus sp.				✓	✓
Notomastus lineatus				✓	✓
Notomastus tenuis				✓	✓
Cirratulidae					
Caulleriella gracilis					✓
Chaetozone setosa					✓
Cirratulus cirratus				✓	✓
Cirriformia sp.				✓	
Tharyx multifilis				✓	✓
Dorvilleidae					
Protodorvillea gracilis				✓	✓
Eunicidae					
Eunice valens				✓	
Flabelligeridae					✓
Pherusa plumosa				✓	
Glyceridae					
Glycera capitata					✓
Hemipodus borealis	✓	✓		✓	✓
Goniadidae					
Glycinde armigera			✓	✓	✓
G. picta					✓

Armandia brevis ✓ ✓
Travisia forbesii ✓

NORTH BEACH SAND

	+6'	+2'	0'	-5m	-10m
Hesionidae					
Hesionidae sp. A				✓	
Micropodarke dubia				✓	✓
Ophiodromus pugettensis				✓	✓
Magelonidae		✓	✓		
Magelona pitelkai				✓	
Maldanidae				✓	✓
Axiothella rubrocincta				✓	✓
Euclymene sp.				✓	
Nicomache lumbricalis				✓	
N. personata				✓	
Nephtyidae	✓		✓		✓
Nephtys californiensis				✓	✓
Nereidae				✓	✓
Micronereis nanaimoensis				✓	
Nereis pelagica	✓	✓		✓	
N. vexillosa				✓	✓
Platynereis bicanaliculata				✓	
Onuphidae				✓	
Onuphis iridescens				✓	✓
Onuphis stigmatis				✓	✓
Opheliidae				✓	✓
Armandia brevis				✓	
Ophelia limacina				✓	✓
Orbiniidae		✓	✓		
Naineris uncinata		✓	✓		
Scoloplos sp.					✓
Oweniidae			✓	✓	✓
Owenia fusiformis				✓	
Paraonidae	✓	✓	✓	✓	
Paraonella platybranchia				✓	
Phyllodocidae				✓	
Eteone sp.				✓	
Eulalia bilineata				✓	
Eulalia macroceros				✓	
E. nigrimaculata				✓	✓
E. quadrioculata				✓	
E. viridis	✓			✓	
Hesionura coineaui difficilis				✓	✓
Phyllodoce groenlandica				✓	
P. maculata				✓	
Pilargidae				✓	
Sigambra tentaculata				✓	
Pisionidae				✓	
Pisione sp.				✓	
Polynoidae				✓	
Harmothoe imbricata				✓	
H. lunulata				✓	
Sabellidae				✓	
Chone ecaudata				✓	
Oriopsis minuta				✓	
Potamilla intermedia				✓	

NORTH BEACH SAND

	+6'	+2'	+0'	-5m	-10m
Scalebregmidae					
Scalebregma inflatum				✓	
Serpulidae					
Crucigera zygophora				✓	
Serpula vermicularis				✓	
Spirorbis nakamurai				✓	
Sigalionidae					
Pholoe minuta					✓
Sphaerodoridae					
Sphaerodoropsis minuta				✓	
Spionidae					
Laonice cirrata	✓	✓	✓	✓	
Malococeros glutaeus				✓	
Polydora hamata				✓	
P. pygidialis				✓	
P. socialis		✓	✓	✓	✓
P. spongicola				✓	
Prionospio cirrifera				✓	✓
Prionospio steenstrupi				✓	✓
Pygospio elegans	✓	✓	✓	✓	✓
Scolelepis sp. A				✓	✓
Spio cirrifera			✓		
Spio filicornis				✓	✓
Spiophanes bombyx			✓	✓	✓
Syllidae				✓	
Brania brevipharyngea				✓	
Exogone gemmifera	✓			✓	
E. lourei				✓	✓
Pionosyllis uraga					✓
Sphaerosyllis pirifera			✓	✓	✓
Streptosyllis latipalpa		✓	✓		
Syllis armillaris				✓	
S. heterochaeta				✓	
S. hyalina	✓				
Trypanosyllis gemmipara				✓	
Terebellidae					
Polycirris sp. A				✓	
P. sp. B				✓	
Archiannelida					
Polygordiidae					
Polygordius spp.	✓			✓	✓
Protodrillidae spp.					✓
Saccocirridae					
Saccocirrus eroticus					✓
Sipuncula					
Golfingia pugettensis				✓	
Phascolosoma agassizii				✓	
Crustacea					
Ostracoda					
spp.	✓			✓	✓
Cirripedia					
Balanus cariosus	✓	✓			
B. glandula	✓	✓	✓		

NORTH BEACH SAND

	+6'	+2'	+0'	-5m	-10m
Leptostraca					
Nebalia pugettensis				✓	✓
Mysidacea					
Archaeomysis grebnitzkii	✓	✓	✓	✓	
Holmesiella anomala				✓	
Cumacea					
Cumella sp.				✓	✓
Diastylis sp.					✓
Diastylopsis spp.		✓	✓	✓	
Lampropidae spp.			✓	✓	
Tanaidacea					
Leptochelia dubia	✓	✓		✓	✓
Isopoda					
Caecianiropsis psammophila				✓	
Cirolana harfordi				✓	
C. vancouverensis					✓
Exosphaeroma amplicauda		✓		✓	
E. media	✓	✓	✓	✓	
E. rhomburum				✓	✓
Gnorimosphaeroma oregonense			✓		
Ianiropsis analoga				✓	✓
I. kincaidi	✓			✓	
I. tridens				✓	
Idotea rufescens				✓	
Jaeropsis dubia				✓	✓
J. lobata				✓	
J. setosa				✓	
Janirilata occidentales				✓	
Limnoria algarum				✓	
Munna stephenseni					✓
M. ubiquita				✓	
Munnagonium waldronense				✓	
Paranthura elegans				✓	✓
Tecticeps pugettensis			✓		
Amphipoda					
Gammaridea					
Accedomoera vagor				✓	✓
Ampelisca cristata				✓	✓
A. pugetica				✓	✓
Ampithoe simulans				✓	✓
Anonyx laticoxae				✓	✓
Aorides columbiae	✓			✓	✓
Atylus levidensis				✓	
A. tridens	✓			✓	
Corophium crassicorne				✓	
Eohaustorius washingtonianus	✓	✓	✓	✓	✓
Ericthonius brasiliensis				✓	
Gammaropsis thompsoni				✓	✓
Guernea sp. A				✓	
Ischyrocerus anguipes				✓	✓
Maera simile				✓	
Megaluropus longimerus				✓	

NORTH BEACH SAND

	+6'	+2'	+0'	-5m	-10m
Melita californica					✓
Melita desdichada				✓	✓
Orchestia sp. (juv.)	✓				
Orchomene sp. A				✓	
Paramoera "serrata" n. sp.	✓				
Paraphoxus spp.		✓	✓	✓	✓
P. c.f. abronius		✓	✓		
P. spinosus type B		✓	✓		
Parapleustes pugettensis				✓	
Photis brevipes				✓	
Pleusirus secorrus				✓	
Pontogeneia ivanovi				✓	
P. rostrata				✓	✓
Protomedeia sp. A				✓	
Synchelidium rectipalmum				✓	✓
Caprellidea					
Caprella augusta				✓	
Caprella gracilior				✓	✓
Caprella californica				✓	✓
Metacaprella kennerlyi				✓	
Tritella pilimana					✓
Decapoda					
Cancer oregonensis				✓	✓
C. productus				✓	
Crangon alaskensis		✓			✓
C. transciscorum				✓	
C. munitella				✓	
Hippolyte clarki					✓
Lebbeus sp.					✓
Lophopanopeus bellus				✓	✓
Oregonia gracilis	✓			✓	✓
Paguridae sp. (juv.)				✓	✓
Phyllolithodes papillosus				✓	✓
Pinnixa sp.				✓	
Pugettia gracilis				✓	✓
Insecta					
Diptera larva	✓		✓		
Bryozoa					
spp.				✓	✓
Brachopoda					
Terebratalia transversa					✓
Echinodermata					
Ophiuroidea spp. (juv.)					✓
Holothuroidea				✓	✓
Leptosynapta clarki					✓
Mopadia intermedia				✓	
Ascidiacea					
Pyura haustor				✓	

Table 9. Kydaka Beach (exposed sand). Complete list of all benthic organisms collected spring 1976 through winter 1978. Checks indicate tide heights where organism was found.

	+6'	+3'	+0'	-5m	-10m
Rhodophyta					
Anthithamnion defectum					✓
Choreocolax polysiphoniae					✓
Leptofauchea pacifica					✓
Polysiphonia hendryi					✓
Pterosiphonia bipinnata					✓
P. gracilis					✓
Cnidaria					
Hydrozoa spp.					✓
Anthozoa spp.					✓
Nemertea spp.	✓	✓	✓	✓	✓
Nematoda spp.				✓	✓
Mollusca					
Gastropoda					
Aglaja diomedea				✓	
Amphissa columbiana					✓
Calliostoma sp.				✓	
Lacuna variegata				✓	✓
Nassarius mendicus					✓
Odostomia sp.					✓
Trichotropsis cancellata					✓
Bivalvia					
Clinocardium nuttallii				✓	✓
Hiatella arctica					✓
Lucinoma tenuisculpta				✓	✓
Macoma sp.				✓	✓
Mysella tumida				✓	✓
Semele rubropicta			✓		
Solen sicarius				✓	✓
Tellina sp.				✓	✓
Transennella tantilla					✓
Annelida					
Oligochaeta spp.	✓	✓	✓	✓	✓
Polychaeta					
Capitellidae					
Capitella capitata				✓	✓
Decamastus gracilis					✓
Mediomastus sp.				✓	✓
Notomastus lineatus				✓	✓
Chrysoptellidae spp.					✓
Cirratulidae					
Chaetozone setosa				✓	
Tharyx sp.					✓
Flabelligeridae					
Pherusa plumosa					✓
Glyceridae					
Glycera capitata					✓
Hemipodus borealis			✓		✓
Goniadidae					
Glycinde picta					
Hesionidae					
Micropodarke dubia					
Lumbrineridae					
Lumbrineris sp.					
Magelonidae					
Magelona pitelkai					
Maldanidae					
Axiothella rubrocin					
Euclymene sp.					
Nicomache personata					
Nephtyidae					
Nephtys caeca					
N. caecoides					
N. californiensis					
Nereidae					
Nereis procera					
Platynereis bicanal					
Onuphidae					
Onuphis elegans					
O. iridescens					
O. stigmatis					
Opheliidae					
Armandia brevis					
Orbiniidae					
Naineris uncinata					
Scoloplos sp.					
Oweniidae					
Owenia fusiformis					
Paraonidae					
Paraonella platybran					
Pectinariidae					
Pectinaria granulata					
Phyllodocidae					
Eteone longa					
Eulalia viridis					
Phyllodoce castanea					
P. groenlandica					
P. maculata					
P. multiseriata					
P. sp. A					
Polynoidae					
Eunoe senta					
Harmothoe imbricata					
Sabellidae					
Eudistylia vancouver					
Schizobranchia insig					
Sigalionidae					
Pholoe minuta					
Thalenessa spinosa					

KYDAKA BEACH

	+6'	+3'	+0'	-5m	-10m
Goniadidae					
Glycinde picta				✓	✓
Hesionidae					
Micropodarke dubia					✓
Lumbrineridae					
Lumbrineris sp.					✓
Magelonidae					
Magelona pitelkai				✓	
Maldanidae					
Axiothella rubrocincta				✓	
Euclymene sp.				✓	✓
Nicomache personata					✓
Nephtyidae					
Nephtys caeca				✓	✓
N. caecoides				✓	✓
N. californiensis		✓	✓	✓	✓
Nereidae					
Nereis procera				✓	
Platynereis bicanaliculata				✓	✓
Onuphidae					
Onuphis elegans				✓	✓
O. iridescens					✓
O. stigmatis				✓	✓
Opheliidae					
Armandia brevis		✓	✓	✓	✓
Orbiniidae					
Naineris uncinata					✓
Scoloplos sp.				✓	✓
Oweniidae					
Owenia fusiformis			✓	✓	✓
Paraonidae					
Paraonella platybranchia			✓	✓	
Pectinariidae					
Pectinaria granulata					✓
Phyllodocidae					
Eteone longa			✓		✓
Eulalia viridis				✓	
Phyllodoce castanea					✓
P. groenlandica					✓
P. maculata					✓
P. multiseriata					✓
P. sp. A				✓	✓
Polynoidae					
Eunoe senta					✓
Harmothoe imbricata					✓
Sabellidae					
Eudistylia vancouveri					✓
Schizobranchia insignis					✓
Sigalionidae					
Pholoe minuta				✓	✓
Thalenessa spinosa				✓	✓

Lumbrineris luti		✓
L. zonata	✓	✓

KYDAKA BEACH

	+6'	+3'	+0'	-5m	-10m
Spionidae					
Laonice cirratus					✓
Malacoceros glutaeus	✓	✓	✓	✓	✓
Polydora caulleryi					✓
P. socialis				✓	✓
P. sp. A					✓
Prionospio cirrifera					✓
P. steenstrupi				✓	✓
Pygospio elegans	✓	✓	✓		✓
Scolelepis squamata			✓		
Spio filicornis				✓	✓
Spiophanes bombyx				✓	✓
Syllidae					
Exogone gemmifera					✓
E. lourei					✓
Sphaerosyllis pirifera					✓
Streptosyllis latipalpa				✓	
Syllis sp.	✓	✓			✓
Terebellidae					
Thelepus sp.					✓
Sipuncula spp.				✓	
Priapulida					
Priapulus caudatus					✓
Crustacea					
Ostracoda spp.			✓	✓	✓
Leptostraca					
Nebalia pugettensis				✓	✓
Mysidacea					
Archaeomysis grebnitzkii	✓	✓	✓	✓	
Cumacea					
Cumella vulgaris					✓
Diastylis sp.				✓	✓
Diastylopsis sp.				✓	✓
Lampropidae spp.				✓	
Leptocuma sp.				✓	
Tanaidacea					
Anatanais normani					✓
Leptochelia dubia	✓	✓	✓		✓
Isopoda					
Cirolana vancouverensis	✓	✓			
Cyanthura munda					✓
Edotea sublittoralis				✓	✓
Gnorimosphaeroma oregonense	✓			✓	
Idotea wosnesenskii					✓
Limnoria algarum					✓
Munna stephenseni					✓
Paranthura elegans					✓
Synidotea bicuspida				✓	

Trion biocellata	✓	
Westwoodilla caecula	✓	✓

KYDAKA BEACH

	+6'	+3'	+0'	-5m	-10m
Amphipoda					
Ampelisca agassizi				✓	✓
A. macrocephala				✓	✓
Ampithoe humeralis					✓
Aoroides columbiae				✓	✓
Atylus levidensus					✓
A. tridens			✓		
Caprella laeviuscula					✓
Dulichia sp. A				✓	✓
Eohaustorius sp. B				✓	✓
E. washingtonianus		✓	✓		
Ericthonius brasiliensis					✓
Hippomedon sp. A				✓	
Ischyrocerus anguipes	✓	✓			✓
Lepidepecreum sp. A					✓
Megaluropus longimerus				✓	✓
Melita desdichada					✓
Monoculodes spinipes				✓	✓
Najna consiliorum					✓
Orchestoidea pugettensis	✓		✓		
Orchomene sp. A					✓
Paraphoxus epistomus		✓			
P. milleri			✓		
P. vigitegus				✓	
P. spp.			✓	✓	✓
Parapleustes spp.					✓
Photis brevipes				✓	✓
P. sp. A				✓	✓
Pleustes depressa					✓
Pontogeneia rostrata					✓
Protomedeia sp. A				✓	✓
P. sp. B			✓		
Synchelidium shoemakeri				✓	✓
Tiron biocellata		✓			
Tritella pilimana				✓	
Westwoodilla caecula					✓
Decapoda					
Cancer oregonensis				✓	
Callianassidae sp. (juv.)				✓	
Paguridae sp. (juv.)					✓
Pinnotheridae sp. (juv.)				✓	✓
Pugettia gracilis					✓
Insecta					
Diptera larvae	✓				
Phoronida					
Phoronopsis harmeri				✓	✓
Bryozoa spp.				✓	✓
Echinodermata					
Ophiuroidea sp. (juv.)					✓
Echinoidea					
Dendraster excentricus				✓	
Holothuroidea					
Leptosynapta clarki				✓	✓

Table 10. Jamestown (protected sand). Complete list of all benthic organisms collected spring 1976 through winter 1978. Checks indicate tide heights where organism was found.

	+6'	+1.4'	+0'	-5m	-10m
Chlorophyta					
Chaetomorpha californica				✓	✓
Cladophora pygmaea				✓	✓
Endocladia viridis					✓
Enteromorpha intestinalis	✓				
E. linza	✓	✓			
E. prolifera	✓		✓		
Monostroma sp.			✓		
Ulva taeniata		✓			
U. spp.	✓	✓	✓		
Urospora sp.			✓		
Bacillariophyta					
Pennales spp.		✓		✓	
Phaeophyta					
Cymathere triplicata				✓	
Desmarestia sp.				✓	
Ectocarpus sp.					✓
Laminaria saccharina				✓	
Ralfsia sp.				✓	✓
Stictyosiphon tortilis					✓
Syringoderma abyssicola					✓
Rhodophyta					
Antithamnion glandulifera				✓	
Asterocolax gardneri					✓
Bangia tenuis				✓	
Callithamnion/Pleonosporium				✓	✓
Callophyllis flabellulata				✓	✓
C. haenophylla				✓	
C. marginata				✓	
Ceramium californicum		✓		✓	
C. eatorianum	✓		✓		
C. washingtoniense				✓	
Choreocolax polysiphoniae			✓		
Delessericeae spp.				✓	✓
Euthora fruticulosa				✓	✓
Fauchea laciniata				✓	
Goniotrichum alsidii					✓
Gracilaria sjoestedtii				✓	
G. verrucosa			✓	✓	✓
Gymnogongrus leptophyllus				✓	
Halymenia californica				✓	
Herposiphonia grandis				✓	✓
Hymenena sp.			✓	✓	
H. flabelligera				✓	
Iridaea sp.				✓	
Membranoptera platyphylla					✓
Neogradhiella baileyi				✓	
Neoptilota asplenoides				✓	
Nitophyllum sp.				✓	
Peyssonellia pacifica				✓	✓
Platythamnion heteromorphum					✓
P. pectinatum					✓

	JAMESTOWN				
	+6'	+1.4'	+0'	-5m	-10m
Platythamnior reversum					
P. villosum				✓	
Plocamium coccineum					✓
P. tenue				✓	
Polyneura latissima				✓	
Polysiphonia hendryi				✓	✓
P. pacifica	✓		✓	✓	✓
Porphyra sp.				✓	
Pterosiphonia bipinnata	✓		✓	✓	
P. dendroidea			✓		
Rhodoglossum roseum			✓		✓
Rhodoptilum plumosum				✓	
Rhodymenia palmata				✓	
Seagelia occidentale			✓	✓	✓
Stenogramme interrupta				✓	✓
Spermatophyta				✓	✓
Zostera marina					
Porifera			✓	✓	
spp.					
Cnidaria				✓	
Hydrozoa					
spp.					
Coryne sp.				✓	
Anthozoa		✓			
spp.					
Halcampa decententaculata		✓	✓	✓	✓
Platyhelminthes			✓	✓	✓
Turbellaria spp.					
Nemertea					✓
spp.	✓				
Paranemertes peregrina	✓	✓	✓	✓	✓
Nematoda		✓	✓		
spp.	✓				
Mollusca		✓	✓	✓	✓
Amphineura					
Mopalia lignosa					
Tonicella sp.				✓	
Gastropoda				✓	
Aeolididae					
sp.					
Aglaja diomedia			✓		✓
Alvinia sp.		✓			
Amphissa columbiana			✓	✓	✓
Bittium eschrichtii					✓
Boreotrophon orpheus				✓	
Calyptraea fastigiata					✓
Cerithiopsis sp.				✓	✓
Collisella ochracea				✓	
Lacuna variegata				✓	
Margarites pupillus	✓	✓	✓	✓	✓
Nassarius mendicus				✓	✓
Natica clausa					✓
				✓	✓

JAMESTOWN

	+6'	+1.4'	+0'	-5m	-10m
Odostomia sp.					✓
Ocnopota tabulata					✓
Polinices pallidus					✓
Thais sp.				✓	
Trichotropis cancellata					✓
Turbonilla sp.				✓	✓
Bivalvia					
Cardita ventricosa				✓	✓
Chlamys hastata					✓
Clinocardium nuttallii				✓	✓
Crenella decussata		✓		✓	✓
Cryptomya californica			✓		
Lucinoma tenuisculpta					✓
Lysonia californica					✓
Macoma balthica			✓		
M. crassula				✓	
M. inquinata		✓	✓		
M. nasuta	✓	✓	✓	✓	✓
Modiolus rectus				✓	
Musculus discors				✓	✓
Mya arenaria				✓	✓
Mysella tumida		✓	✓	✓	✓
Mytilus edulis		✓			
Nuculana hamata					✓
Nuculana minuta					✓
Nucula tenuis				✓	
Protothaca staminea			✓	✓	✓
Psephidia lordi			✓	✓	✓
Solen sicarius					✓
Tellina sp.					✓
Trachycardium sp.				✓	
Transennella tantilla	✓	✓	✓	✓	✓
Tresus capax			✓	✓	✓
Yoldia sp.					✓
Annelida					
Oligochaeta spp.	✓	✓	✓	✓	✓
Archiannelida					
Polygordiidae					
Polygordius sp.				✓	✓
Polychaeta					
Ampharetidae					
Ampharete arctica				✓	✓
Apistobranchidae					
Apistobranchus sp.					✓
Arenicolidae					
Branchiomaldane vincenti			✓		
Capitellidae					
Capitella capitata	✓	✓	✓	✓	✓
Mediomastus sp.		✓	✓	✓	✓
Notomastus lineatus				✓	
N. tenuis				✓	✓

Sarcodiotheca furcata ✓ ✓

JAMESTOWN

	+6'	+1.4'	+0'	-5m	-10m
Chaetopteridae					
Phyllochaetopterus prolifica				✓	✓
Spiochaetopterus costarum				✓	✓
Cirratulidae					
Chaetozone setosa				✓	✓
Cirratulus cirratus		✓	✓	✓	✓
Tharyx multifilis			✓	✓	✓
Dorvilleidae					
Dorvillea rudolphi			✓	✓	
Protodorvillea gracilis			✓	✓	✓
Eunicoidea					
sp.			✓		
Glyceridae					
Glycera americana				✓	✓
G. capitata				✓	✓
G. tesselata				✓	
Hemipodus borealis		✓		✓	✓
Goniadidae					
Glycinde picta		✓	✓	✓	✓
Goniada maculata					✓
Hesionidae					
Hesionid sp. A				✓	✓
Gyptis brevipalpa			✓		✓
Micropodarke dubia		✓		✓	✓
Ophiodromus pugettensis			✓		✓
Lumbrineridae					
Lumbrineris inflata		✓	✓		✓
Maldanidae					
Axiothella rubrocincta			✓	✓	✓
Euclymene delineata			✓		
Nicomache personata				✓	✓
Nephtyidae					
Nephtys caeca		✓	✓		
N. caecoides		✓	✓		
N. californiensis		✓	✓		✓
N. ciliata					✓
Nereidae					
Nereis paucidentata			✓		
N. pelagica					✓
N. procera				✓	✓
N. vexillosa	✓		✓	✓	
Platynereis bicanaliculata	✓	✓	✓	✓	✓
Onuphidae					
Onuphis iridescens			✓	✓	✓
O. stigmatis		✓	✓	✓	✓
Opheliidae					
Ammotrypane aulogaster					✓
Armandia brevis		✓	✓	✓	✓
Travisia forbesii				✓	✓

			✓	✓	✓

JAMESTOWN

	+6'	+1.4'	+0'	-5m	-10m
Orbiniidae					
Naineris dendritica			✓		
N. quadricuspida			✓		
N. uncinata			✓		
Scoloplos spp.		✓	✓	✓	✓
Oweniidae					
Owenia fusiformis				✓	✓
Paraonidae					
Aricidea sp.			✓	✓	✓
Paraonella platybranchia		✓			
Pectinariidae					
Pectinaria granulata					✓
Phyllodocidae					
Eteone longa		✓	✓	✓	✓
E. tuberculata		✓	✓		
Eulalia bilineata			✓		
E. nigramaculata			✓		
E. sanguinea		✓	✓	✓	✓
Phyllodoce groenlandica				✓	✓
P. maculata	✓	✓	✓	✓	✓
P. sp. A					✓
Polynoidae					
Eunoe sp.			✓	✓	
Harmothoe imbricata	✓	✓	✓	✓	✓
H. lunulata			✓	✓	✓
Sabellidae					
Chone ecaudata				✓	✓
C. gracilis					✓
Euchone analis					✓
Eudistylia vancouveri				✓	✓
Laonome sp.					✓
Potamilla intermedia				✓	✓
P. myriops					✓
Sabella media				✓	✓
Sabellastarte sp.					✓
Scalebregmidae					
Scalebregma inflatum				✓	✓
Serpulidae					
Spirorbis sp.					✓
Sigalionidae					
Pholoe minuta				✓	✓
Sphaerodoridae					
Sphaerodoropsis minuta			✓		✓
Spionidae					
Laonice cirrata			✓		
Malacoceros glutaeus		✓	✓	✓	✓
Polydora sp. A		✓			✓
P. kempi japonica		✓			
P. quadrilobata		✓		✓	✓
P. socialis				✓	✓
Prionospio cirrifera		✓		✓	✓
P. steenstrupi			✓	✓	✓
Pygospio elegans		✓	✓		

JAMESTOWN

	+6'	+1.4'	+0'	-5m	-10m
Scolelepis sp. C		✓			
Spio filicornis		✓	✓	✓	✓
Spiophanes berkeleyorum			✓	✓	✓
S. bombyx		✓		✓	✓
Syllidae					
Brania brevipharyngea			✓		
Exogone gemmifera			✓	✓	✓
E. lourei	✓	✓	✓	✓	✓
Pionosyllis uraga				✓	
Sphaerosyllis brandhorsti			✓	✓	
S. pirifera			✓	✓	✓
Streptosyllis latipalpa		✓	✓		
Syllides longocirrata			✓	✓	✓
Syllis alternata				✓	
Terebellidae					
Eupolymnia heterobranchia			✓	✓	
Neoamphitrite sp.			✓		
Nicolea zostericola			✓	✓	✓
Pista brevibranchiata		✓	✓		✓
P. cristata					✓
Polycirrus sp. A				✓	✓
Proclea graffi					✓
Thelepus crispus			✓		
Hirudinea sp.			✓		
Sipunculida					
Golfingia pugettensis			✓	✓	✓
Phascolosoma agassizii				✓	✓
Priapulida					
Priapulus caudatus					✓
Crustacea					
Ostracoda					
spp.			✓	✓	✓
Leptostraca					
Nebalia pugettensis			✓		✓
Mysidacea					
Acanthomysis sculpta				✓	
Archaeomysis grebnitzkii			✓		
Cumacea					
Cumella vulgaris	✓	✓	✓	✓	✓
Dyastylis sp.				✓	✓
Dyastylopsis sp.	✓	✓			
Eudorella sp.			✓	✓	
Eudorellopsis sp.					✓
Lampropidae spp.				✓	✓
Lamprops sp.				✓	
Leptocuma sp.			✓		
Leptostylis sp.					✓
Tanaidacea					
Leptochelia dubia	✓	✓	✓	✓	✓

Oriopsis minuta	✓
Potamilla intermedia	✓

JAMESTOWN

	+6'	+1.4'	+0'	-5m	-10m
Isopoda					
Dynamenella sheareri	✓				
Exosphaeroma amplicauda			✓	✓	
E. media		✓	✓	✓	✓
E. rhomburum				✓	✓
Gnorimosphaeroma oregonenese					✓
Idotea sp. (juv.)			✓		
Jaeropsis dubia				✓	✓
Munna sp.				✓	
Munnogonium waldronense					✓
Paranthura elegans				✓	✓
Phyllodurus abdominalis			✓		
Synidotea bicuspida			✓		
Amphipoda					
Ampelisca agassizi		✓			
A. cristata				✓	✓
A. pugetica			✓	✓	✓
Ampithoe lacertosa		✓	✓		
Anisogammarus confervicolus		✓			
A. pugettensis			✓		
Anonyx laticoxae				✓	
Aoroides columbiae			✓	✓	✓
Argissa hamatipes				✓	✓
Atylus collingi			✓		
A. tridens				✓	
Byblis veleronis			✓		✓
Calliopiella pratti			✓		
Caprella laeviuscula		✓	✓		
Corophium acherusicum		✓			
C. crassicorne				✓	✓
C. salmonis	✓	✓			
Guernea sp. A				✓	✓
Hippomedon sp. A					✓
Ischyrocerus anguipes			✓	✓	
Lepidepecreum sp. A				✓	✓
Melita dentata			✓	✓	✓
Orchomene sp. A				✓	✓
Paraphoxus cognatus			✓		
P. robustus				✓	
P. similis			✓		
P. spinosus		✓	✓		
P. spinosus type A		✓	✓		
P. spinosus/obtusidens			✓		
P. tridentatus		✓			
Parapleustes sp.				✓	✓
Photis brevipes			✓	✓	
P. sp. D				✓	
Pleusirus secorrus				✓	
cf. Podoceropsis inaequistylis				✓	
Pontogeneia cf. ivanovi			✓	✓	✓
Pontogeneia cf. rostrata		✓	✓	✓	
P. sp. D			✓		

Megaluropus longimerus ✓

JAMESTOWN

	+6'	+1.4'	+0'	-5m	-10m
Protomedeia sp. A			✓	✓	
Stenothoides beringiensis				✓	
Synchelidium rectipalmum			✓	✓	✓
S. shoemakeri			✓	✓	✓
Tiron biocellata				✓	✓
Tritella pilimana			✓		
Westwoodilla caecula				✓	
Decapoda					
Argis dentata					✓
Cancer gracilis				✓	
Crangon franciscorum		✓			
C. munitella				✓	✓
C. nigricauda		✓	✓		
Heptacarpus stimpsoni				✓	
H. tenuissimus			✓		
Oregonia gracilis				✓	
Pagurus beringanus					✓
Pinnixa littoralis			✓		
Pugettia gracilis	✓		✓	✓	✓
P. producta				✓	
Scleroplax granulata				✓	
Spirontocaris prionota				✓	
Telemessus cheiragonus			✓		
Upogebia pugettensis		✓	✓	✓	
Insecta					
Dipteran larvae	✓		✓		
Dolichopodidae spp.	✓				
Phoronida					
Phoronis ijimai			✓	✓	✓
Phoronopsis harmeri			✓		✓
Bryozoa					
spp.					✓
Echinodermata					
Holothuroidea					
Cucumaria sp.					✓
Eupentacta pseudoquinquesemita				✓	
Leptosynapta clarki		✓	✓	✓	✓
Molpadia intermedia				✓	✓
Ophiuroidea					
spp.			✓	✓	✓
Amphiodia urtica			✓		
Amphipholus squamata			✓		
Diamphioda periercta			✓		

B. glandula ✓ ✓ ✓ ✓ ✓

APPENDIX III

PHYSICAL PARAMETERS

Table 1. Second year (1977-78) physical factor data on salinity, water and air temperature, weather, and sampling date.

	North Beach Sand	North Beach Cobble	Beckett Point	Jamestown	Dungeness Spit	Horse Creek	Tongue Point	Twin Rivers	Pillar Point	Kydaka Beach
Salinity o/ oo										
Spring 1977	31.4	30.2	31.0	30.6	32.9	29.1	32.3	30.8	32.5	26.5
Summer 1977	30.>	-	31.2	30.1	29.5	23.9	33.2	-	-	30.9
Fall 1977	30.1	-	30.5	30.2	29.1	30.1	30.9	-	-	30.3
Winter 1978	28.5	-	30.1	29.1	30.3	29.9	28.7	-	-	20.1
Water Temperture °C										
Spring 1977	12.0	10.3	10.6	10.5	10.4	8.8	8.2	no data	10.4	8.3
Summer 1977	12.5	-	11.2	14.2	11.1	11.2	8.5	-	-	9.0
Fall 1977	6.5	-	7.8	7.4	7.5	7.8	7.3	-	-	8.0
Winter 1978	6.2	-	6.2	5.8	6.3	7.5	5.5	-	-	7.8
Air Temperature °C										
Spring 1977	12.0	10.7	12.0	8.6	12.6	8.5	10.3	no data	9.0	9.0
Summer 1977	16.9	-	13.9	19.5	10.9	12.0	12.2	-	-	11.4
Fall 1977	6.5	-	6.4	5.7	7.8	5.4	4.5	-	-	5.0
Winter 1978	6.2	-	5.9	1.4	5.6	11.8	5.0	-	-	6.8
Precipitation (/-light, // -moderate, /// -heavy)										
Spring 1977	0	0	0	✓	0	0	0	no data	0	0
Summer 1977	0	-	0	0	0	✓	0	-	-	0
Fall 1977	0	-	0	0	✓	✓	✓✓	-	-	0
Winter 1978	✓✓	-	0	0	✓	✓	✓✓	-	-	✓

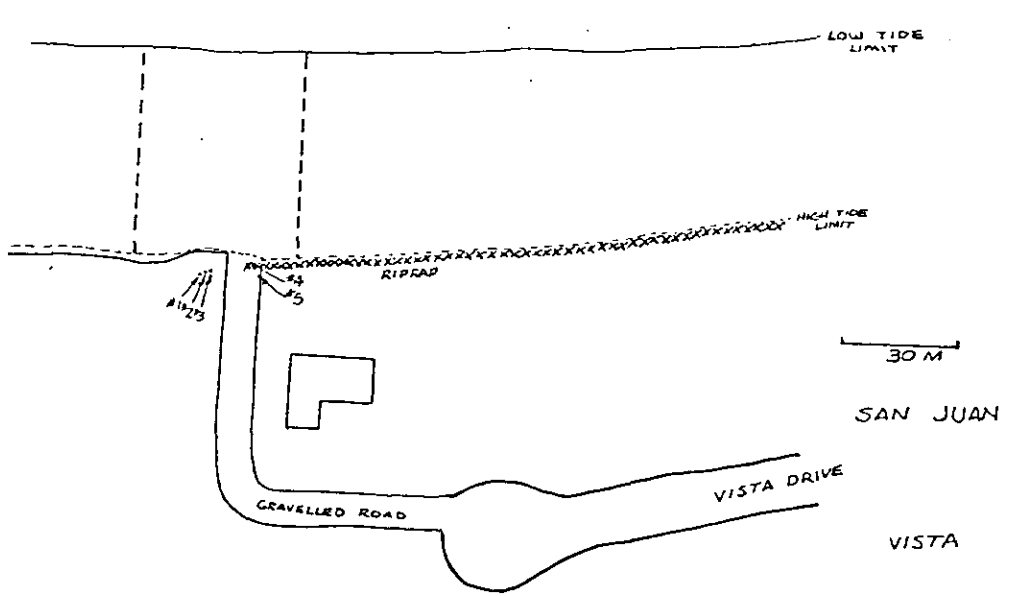
	North Beach Sand	North Beach Cobble	Beckett Point	Jamestown	Dungeness Spit	Morse Creek	Tongue Point	Twin Rivers	Pillar Point	Pysht Beach
Date (GMT)										
Spring 1977	8 May	7 April	6 April	8 April	7 May	4 May	6 May	3 May	5 May	5 April
Summer 1977	29 July	-	1 July	28 June	27 July	28 July	30 June	-	-	29 June
Fall 1977	15 Nov.	-	19 Oct.	17 Oct.	12 Nov.	13 Nov.	16 Oct.	-	-	15 Oct.
Winter 1978	10 Jan.	-	11 Jan.	7 Jan.	9 Jan.	6 Feb.	8 Jan.	-	-	8 Feb.

Table 2. Sediment Type by Study Area - Tide Height

Study Area	Tide Height +6'	+3'	+0'	-5m	-10m
Tongue Point	rock	rock	rock	rock	rock
Pillar Point	rock	rock	rock	fine-med sand	fine-med sand
North Beach Cobble	cobble/sand gravel	cobble/sand	cobble/sand	--	--
Morse Creek	cobble/sand-gravel	cobble/sand	cobble/sand	cobble/gravel	cobble/gravel
Beckett Point	sand-gravel	sand-gravel	fine-med sand	fine-med sand	fine-med sand
Dungeness Spit	sand-gravel	sand-gravel	sand-gravel	sand-gravel	sand-gravel
Twin Rivers	sand-gravel	sand-gravel	sand-gravel	gravel	fine sand-silt
North Beach Sand	fine-med sand	fine-med sand	(+2') fine-med sand	cobble/sand-gravel	cobble/sand-gravel
Kydaka Beach	fine-coarse sand	fine-coarse sand	fine-coarse sand	fine-med sand	fine-med sand
Jamestown	sand-gravel	fine sand	(+1.4') med sand	fine-coarse sand	fine-coarse sand

Figure 1.

KYDAKA BEACH
STUDY AREA



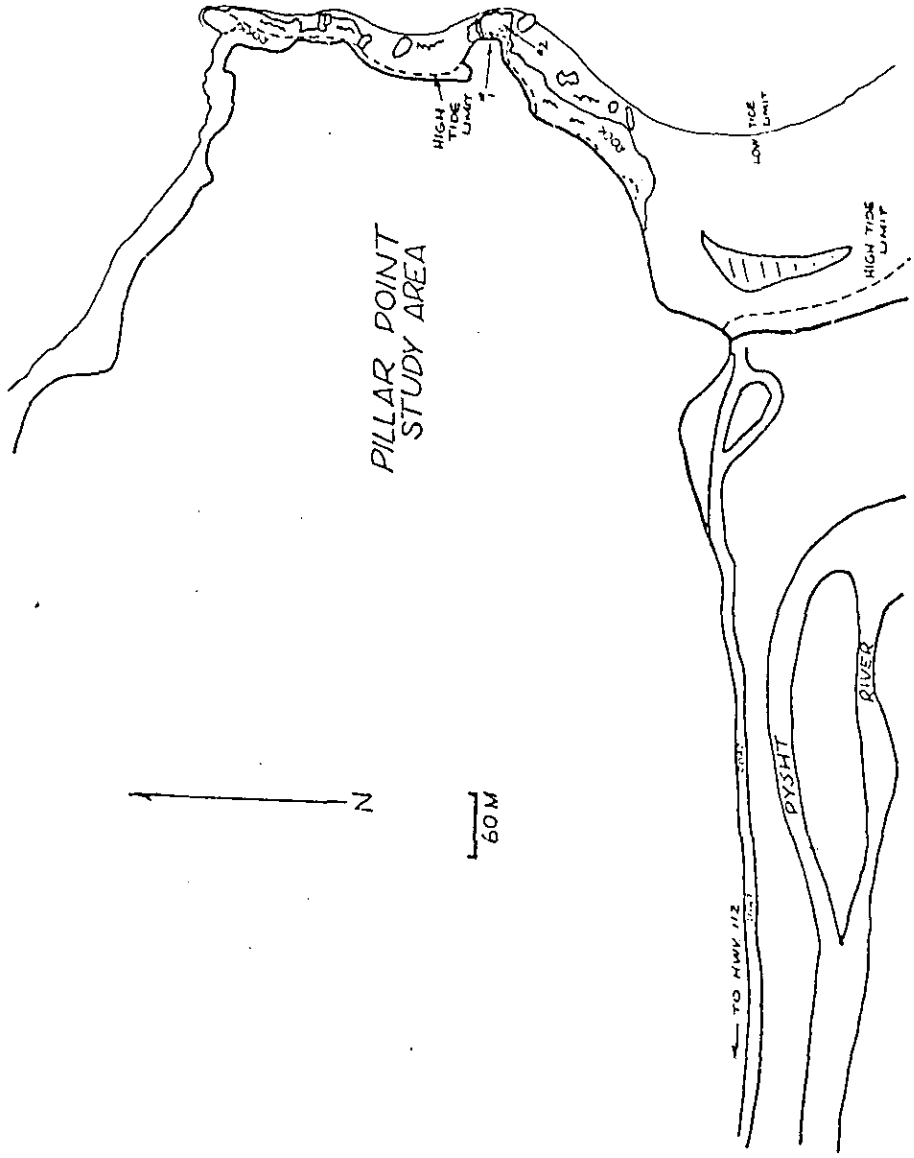

HIGH TIDE LIMIT
LOW TIDE LIMIT
HIGH TIDE LIMIT
PILLAR POINT
STUDY AREA
N
60 M
TO HWY 112
PYSHT
RIVER

Figure 2.

Peyssonellia pacifica
Platythamnion heteromorphum
P. pectinatum

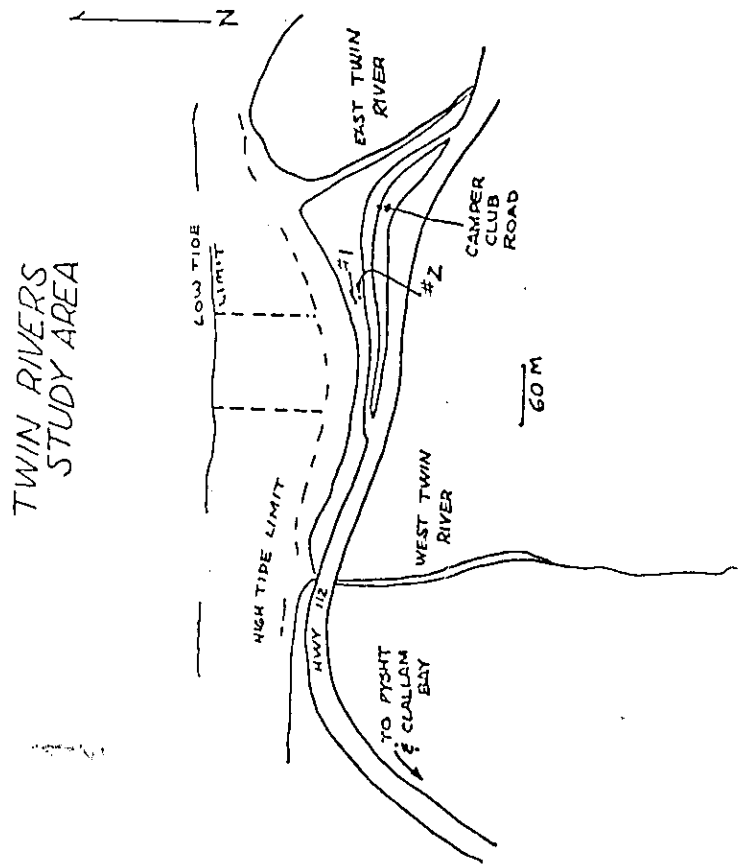


Figure 3.

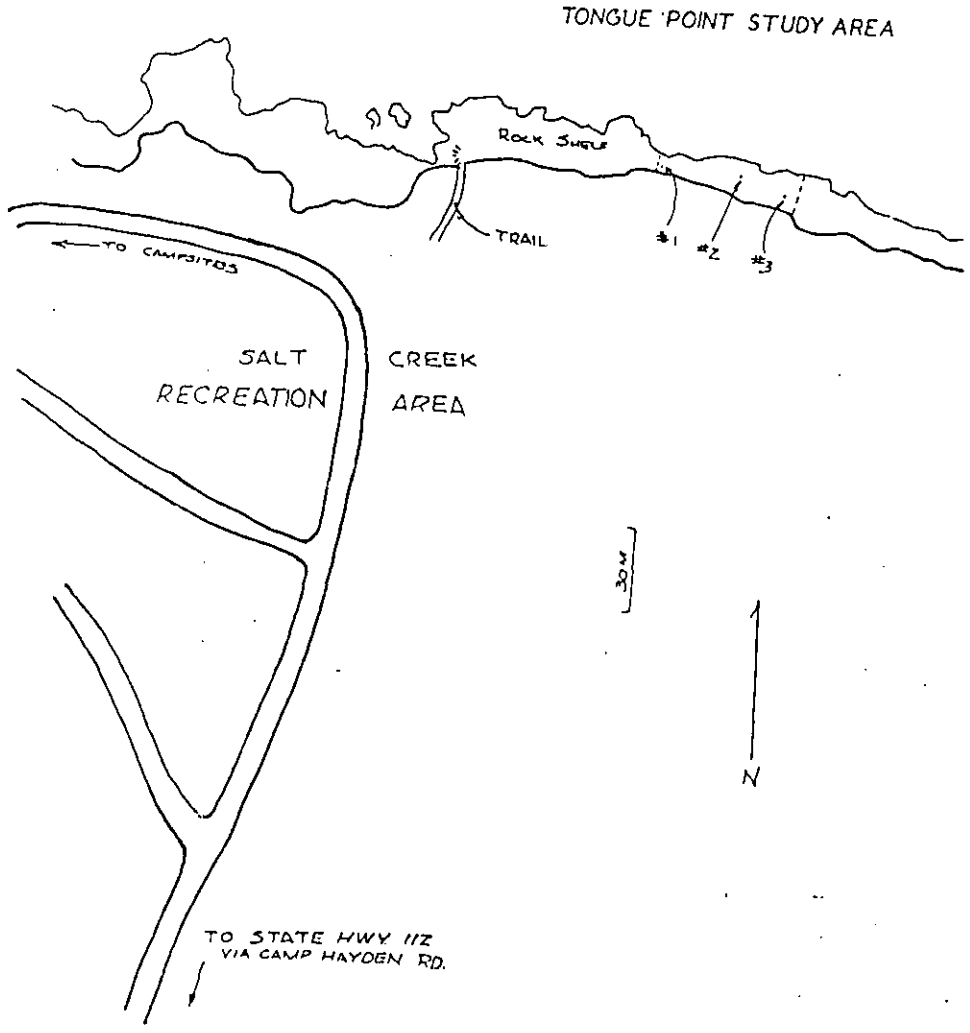

TONGUE POINT STUDY AREA
ROCK SHELF
TRAIL
#1
#2
#3
TO CAMPSITES
SALT
RECREATION
CREEK
AREA
30M
N
TO STATE HWY 112
VIA CAMP HAYDEN RD.

Figure 4.

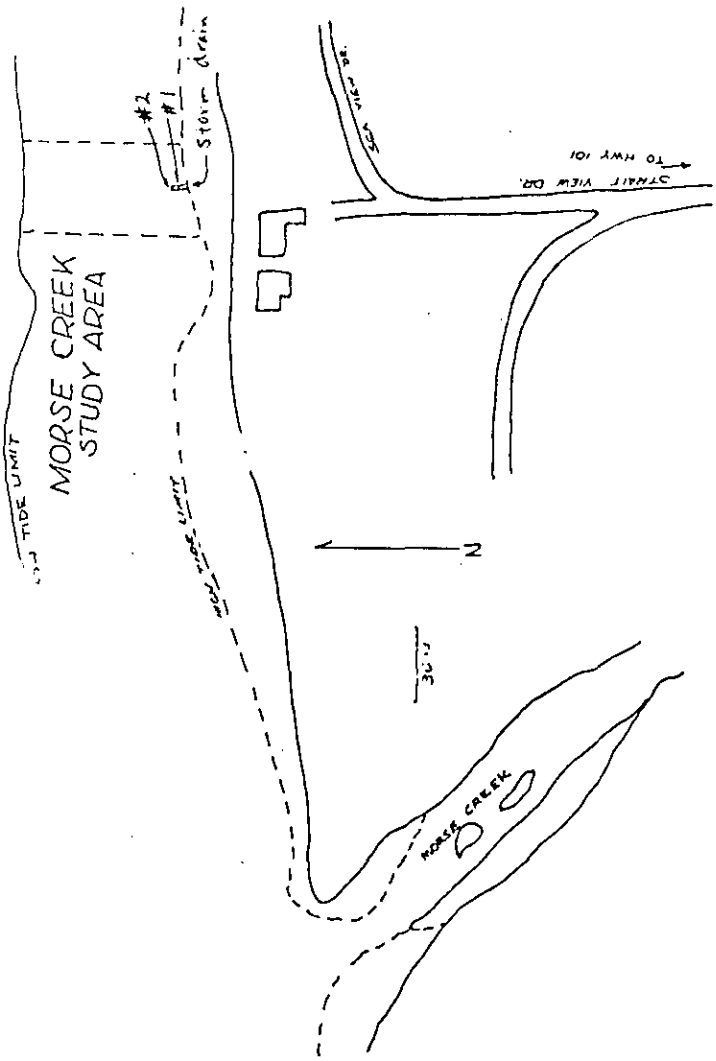

MORSE CREEK
STUDY AREA
TIDE LIMIT
#2
#1
Storm drain
STRAIT VIEW DR.
TO HWY 101
N
MORSE CREEK

Figure 5.

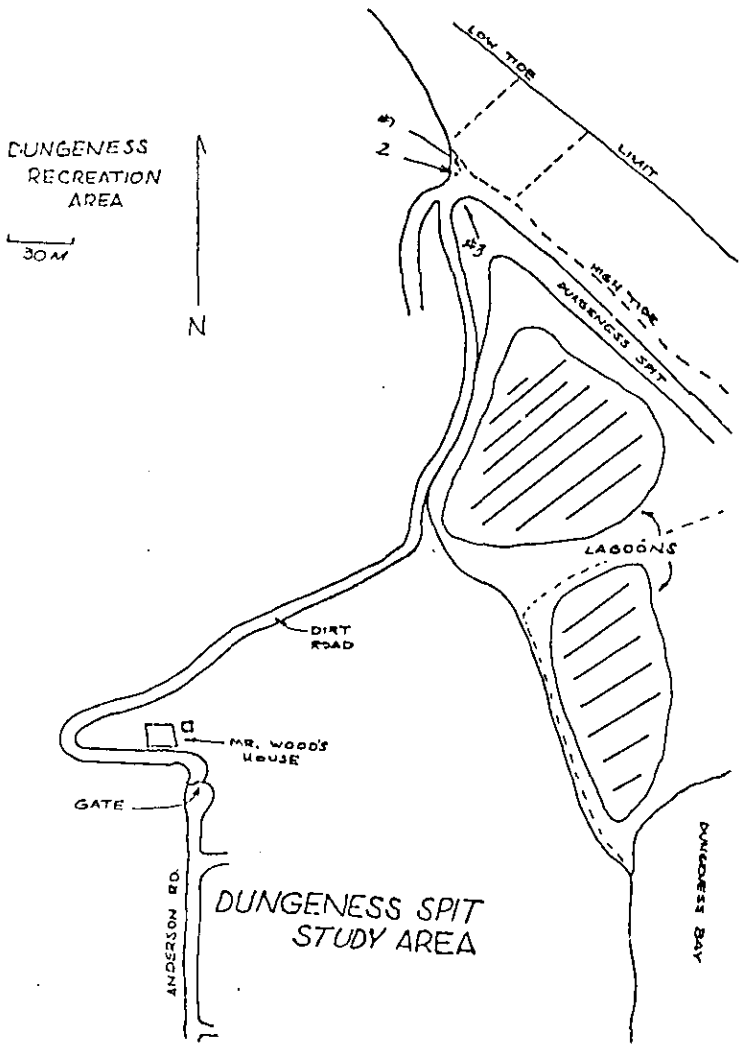
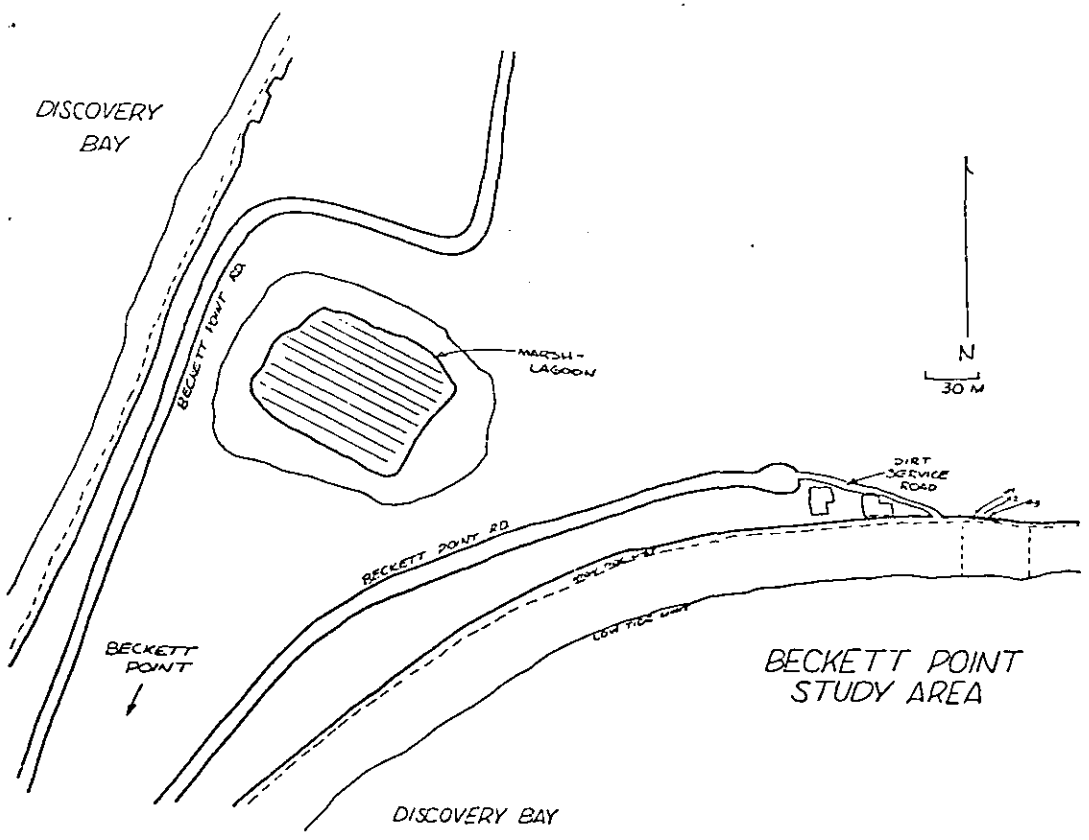

DUNGENESS
RECREATION
AREA
30 M
N
LOW TIDE
LIMIT
#1
2
#3
HIGH TIDE
DUNGENESS SPIT
LAGOONS
DIRT
ROAD
MR. WOOD'S
HOUSE
GATE
ANDERSON RD.
DUNGENESS SPIT
STUDY AREA
DUNGENESS BAY

Figure 6.

Figure 7.

Figure 8.


DISCOVERY BAY
BECKETT POINT RD
MARSH - LAGOON
N
30 M
DIRT SERVICE ROAD
BECKETT POINT RD
BECKETT POINT
BECKETT POINT STUDY AREA
DISCOVERY BAY

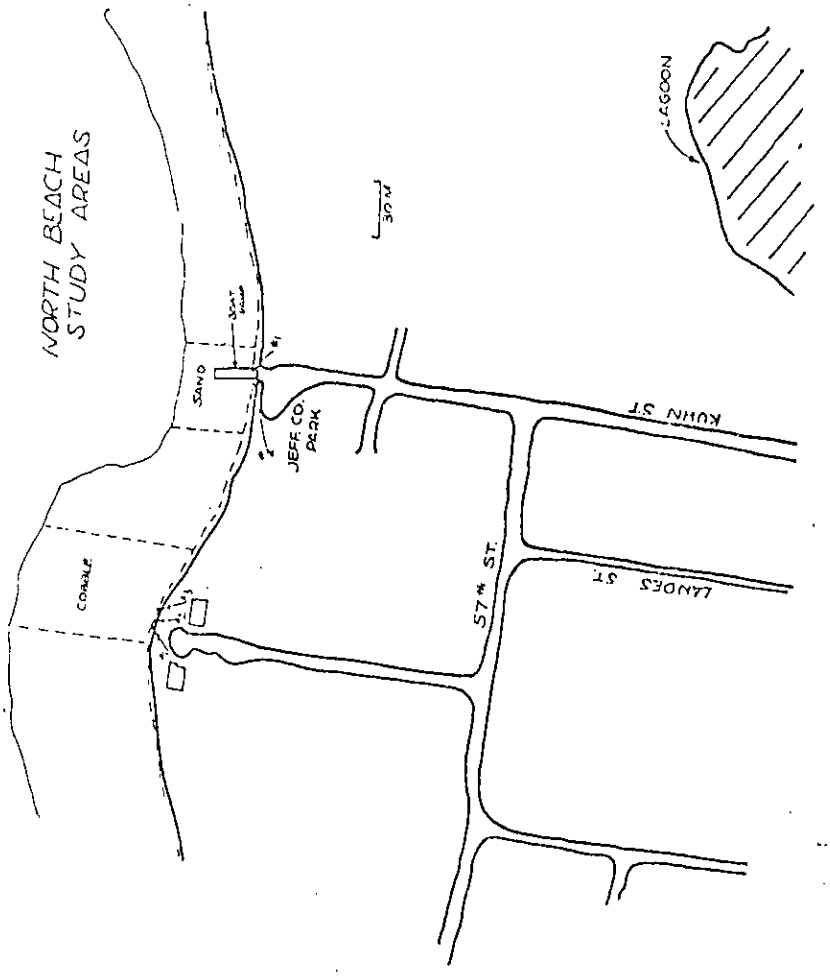

NORTH BEACH
STUDY AREAS
LAGOON
30 M
SAND
JEFF CO. PARK
KUHN ST
57TH ST.
LANDES ST
CORALE

Figure 9