

Table 3-13. Marsh and Riparian Areal Cover by Polygon at Squally Beach

Vegetation Polygon	Percent Cover	Dominant Species
MA	95	<i>Carex lyngbyei</i>
MB	70	<i>Scirpus americanus</i> , <i>Atriplex patula</i> , <i>Cotula coronopifolia</i>
MC	65	<i>Cotula coronopifolia</i> , <i>Carex</i> sp.
MD	65	<i>Glyceria</i> sp., <i>Lolium</i> sp., <i>Lotus corniculatus</i> , <i>Atriplex patula</i>
ME	25	<i>Atriplex patula</i>
MF	20	<i>Atriplex patula</i>
MG	40	<i>Atriplex patula</i>
MH	30	<i>Scirpus americanus</i> , <i>Atriplex patula</i> , <i>Cotula coronopifolia</i>
MI	45	<i>Carex lyngbyei</i>
MJ	90	<i>Jaumea carnosa</i>
MK	50	<i>Jaumea carnosa</i> , <i>Distichlis spicata</i> , <i>Salicornia virginica</i> , <i>Atriplex patula</i>
ML	34	<i>Atriplex patula</i>
RA	80	<i>Melilotus alba</i> , <i>Salix</i> spp., <i>Alnus rubra</i> , <i>Lupinus</i> sp., <i>Rosa</i> spp., <i>Rubus discolor</i>
RB	90	<i>Melilotus alba</i>
RC	95	<i>Melilotus alba</i>
RD	80	<i>Melilotus alba</i>

Note: In Vegetation Polygon column, M=Marsh polygon; R=Riparian polygon

Table 3-14. Quadrat Locations Along Marsh and Riparian Transects at Squally Beach

Marsh Transect 1-1		Marsh Transect 1-2		Riparian Transect 2	
Quadrat	Distance Along Transect (ft)	Quadrat	Distance Along Transect (ft)	Quadrat	Distance Along Transect (ft)
1	2	1	3	1	20
2	4	2	86	2	72
3	36	3	111	3	80
4	38	4	116	4	86
5	57	5	137	5	118
6	86	6	142	6	134
7	94	7	173	7	141
8	101	8	177	8	151
9	116	9	315	9	209
10	137	10	317	10	223
11	142	11	361	11	230
12	151	12	135	12	245
13	158	13	166	13	306
14	173	14	259	14	317
15	177	15	344	15	353
16	206			16	346
17	245			17	353
18	272			18	365
19	274			19	376
20	315			20	392
21	317			21	401
22	135			22	309
23	166			23	37
24	243			24	276
25	259			25	272
26	344				

Table 3-15. Marsh Development at Squally Beach - Percent Cover

Common Name	Scientific Name	Average % Cover	Quadrats, Transect 1-1																									
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
American glasswort, pickleweed	<i>Salicornia virginica</i>	6.3			T												10		5			15	5			3		
entire-leaved gumweed	<i>Grindelia integrifolia</i>	5.0																										5
fleshy jaumea	<i>Jaumea carnosa</i>	36.3			T	10											5	5			85	95			10		80	
Lyngby's sedge	<i>Carex lyngbyei</i>	60.0	85	85		10																						
orache, fat-hen salt bush	<i>Atriplex patula</i>	9.9		T	35	20		5	5		5			5	5	5	30	5							3		5	
seaside plantain	<i>Plantago maritima</i>	2.5				T																5						
seashore saltgrass	<i>Distichlis spicata</i>	8.0		3	T	10											30	5							3		5	
Non-Native or Invasive																												
broadleaved pepperweed	<i>Lepidium latifolium</i>	4.3															5	5										3
bull thistle	<i>Cirsium vulgare</i>	5.0																5										
white sweet-clover	<i>Melilotus alba</i>	5.0																5										

Common Name	Scientific Name	Average % Cover	Quadrats, Transect 1-2																								
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15										
American bulrush	<i>Scirpus americanus</i>	38.3		70							40	5															
American glasswort, pickleweed	<i>Salicornia virginica</i> ⁽¹⁾	15.0																						15			
creeping spike-rush	<i>Eleocharis palustris</i>	5.0											5														
fleshy jaumea	<i>Jaumea carnosa</i> ⁽¹⁾	15.0																					15				
Lyngby's sedge	<i>Carex lyngbyei</i> ⁽¹⁾	56.5				15																				98	
orache, fat-hen salt bush	<i>Atriplex patula</i>	15.9	1	T	45	15	25	15	5	10		5		25	20	25											
perennial ryegrass	<i>Lolium perenne</i>	Trace		T																							T
red alder	<i>Alnus rubra</i>	5.0			5																						
Scouler's willow	<i>Salix scouleriana</i>	30.0																					30				
seashore saltgrass	<i>Distichlis spicata</i>	6.0			10																						2
soft-stemmed bulrush	<i>Scirpus validus</i>	10.0										5	15														
tufted hairgrass	<i>Deschampsia cespitosa</i>	25.0																						25			
unclassified-sedge	<i>unclassified-sedge</i>	10.0							10																		
Non-Native or Invasive																											
birds-foot trefoil	<i>Lotus corniculatus</i>	42.5			65																			20			
creeping buttercup	<i>Ranunculus repens</i>	10.0							10																		
lambquarters	<i>Chenopodium sp.</i>	25.0							25																		
white clover	<i>Trifolium repens</i>	5.0			5																						
white sweet-clover	<i>Melilotus alba</i>	18.4							50															T	5		

Notes:

Blank indicates no vegetation was observed in the quadrat

Bold indicates planted native species, underline indicates volunteer native species

"T" = Trace

⁽¹⁾ *Salicornia virginica*, *Jaumea carnosa*, and *Carex lyngbyei* were present on the site prior to restoration. Supplement planting of these three species was also conducted.

Table 3-16. Marsh Development at Squally Beach - Cover (Daubenmire Method)

Common Name	Scientific Name	Total Canopy	Canopy Cover (%)	Frequency (%)	Species Composition
Transect 1-1					
American glasswort, pickleweed	<i>Salicornia virginica</i>	40	1.54	23.1%	0.21%
entire-leaved gumweed	<i>Grindelia integrifolia</i>	2.5	0.10	3.8%	0.01%
fleshy jaumea	<i>Jaumea carnosa</i>	292.5	11.25	30.8%	1.57%
Lynghby's sedge	<i>Carex lynghbyei</i>	185	7.12	11.5%	0.99%
morache, fat-hen salt bush	<i>Atriplex patula</i>	115	4.42	50.0%	0.62%
seaside plantain	<i>Plantago maritima</i>	5	0.19	7.7%	0.03%
seashore saltgrass	<i>Distichlis spicata</i>	65	2.50	26.9%	0.35%
	<i>Subtotal:</i>	705	27.12		3.78%
Non-Native or Invasive					
broadleaved pepperweed	<i>Lepidium latifolium</i>	7.5	0.29	11.5%	0.04%
bull thistle	<i>Cirsium vulgare</i>	2.5	0.10	3.8%	0.01%
white sweet-clover	<i>Melilotus alba</i>	2.5	0.10	3.8%	0.01%
	<i>Subtotal:</i>	12.5	0.48		0.07%
	TOTAL:	717.5	27.60		
Transect 1-2					
American bulrush	<i>Scirpus americanus</i>	102.5	6.83	20.0%	1.03%
American glasswort, pickleweed	<i>Salicornia virginica</i>	15	1.00	6.7%	0.15%
creeping spike-rush	<i>Eleocharis palustris</i>	2.5	0.17	6.7%	0.03%
fleshy jaumea	<i>Jaumea carnosa</i>	15	1.00	6.7%	0.15%
Lynghby's sedge	<i>Carex lynghbyei</i>	112.5	7.50	13.3%	1.13%
morache, fat-hen salt bush	<i>Atriplex patula</i>	152.5	10.17	80.0%	1.53%
perennial ryegrass	<i>Lolium perenne</i>	5	0.33	13.3%	0.05%
red alder	<i>Alnus rubra</i>	2.5	0.17	6.7%	0.03%
Scouler's willow	<i>Salix scouleriana</i>	37.5	2.50	6.7%	0.38%
seashore saltgrass	<i>Distichlis spicata</i>	17.5	1.17	13.3%	0.18%
soft-stemmed bulrush	<i>Scirpus validus</i>	17.5	1.17	13.3%	0.18%
tufted hairgrass	<i>Deschampsia cespitosa</i>	15	1.00	6.7%	0.15%
unclassified-sedge	<i>unclassified-sedge</i>	15	1.00	6.7%	0.15%
	<i>Subtotal:</i>	510	34.00		5.13%
Non-Native or Invasive					
birds-foot trefoil	<i>Lotus corniculatus</i>	77.5	5.17	13.3%	0.78%
creeping buttercup	<i>Ranunculus repens</i>	15	1.00	6.7%	0.15%
lambquarters	<i>Chenopodium sp.</i>	15	1.00	6.7%	0.15%
white clover	<i>Trifolium repens</i>	2.5	0.17	6.7%	0.03%
white sweet-clover	<i>Melilotus alba</i>	42.5	2.83	20.0%	0.43%
	<i>Subtotal:</i>	152.5	10.17		1.53%
	TOTAL:	662.5	44.17		

Notes:

Bold indicates planted native species, underline indicates volunteer native species

Total canopy: Obtained by counting the number of quadrats in each of six cover class (by species), multiplying this value times the midpoint of the appropriate cover class, and totalling the products for all cover classes by species.

Canopy cover: Obtained by dividing the total canopy by the total number of quadrats sampled on the transect.

Frequency: Obtained by dividing the number of occurrences of a plant species (the number of quadrats in which a plant species was observed) by the total number of quadrats sampled along the transect.

Species composition: Obtained by dividing the percent canopy cover of each plant species by the total canopy cover of all plant species.

See Appendix B for a complete description of the Daubenmire method.

Table 3-17. Marsh Development at Squally Beach - Stem Height

Common Name	Scientific Name	Average Stem Height (in.)	Quadrats, Transect 1-1																									
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
American glasswort, pickleweed	<i>Salicornia virginica</i>	5.4			1												4		7			4	4			13		
entire-leaved gumweed	<i>Grindelia integrifolia</i>	2.0																										2
fleshy jaumea	<i>Jaumea carnosa</i>	4.1			1	1												2	7			8	3			7	5	
Lyngby's sedge	<i>Carex lyngbyei</i>	13.3	14	24		2																						
orache, fat-hen salt bush	<i>Atriplex patula</i>	3.7		6	5	3		2	2		6			3		6	5	4	2							3	2	
seaside plantain	<i>Plantago maritima</i>	2.5				2																3						
seashore saltgrass	<i>Distichlis spicata</i>	5.5		13	1	2											10	1								9	3	
Non-Native or Invasive																												
broadleaved pepperweed	<i>Lepidium latifolium</i>	4.8															5	4									6	
bull thistle	<i>Cirsium vulgare</i>	0.5																	1									
white sweet-clover	<i>Melilotus alba</i>	2.5																3										

Common Name	Scientific Name	Average Stem Height	Quadrats, Transect 1-2																									
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15											
American bulrush	<i>Scirpus americanus</i>	21.0								18	24																	
American glasswort, pickleweed	<i>Salicornia virginica</i>	9.0											9															
creeping spike-rush	<i>Eleocharis palustris</i>	12.0										12																
fleshy jaumea	<i>Jaumea carnosa</i>	0.5											1															
Lyngby's sedge	<i>Carex lyngbyei</i>	19.0				13																						25
orache, fat-hen salt bush	<i>Atriplex patula</i>	3.7	2	7	6	4	4	2	6	3		4		2	2	4												
perennial ryegrass	<i>Lolium perenne</i>	10.5		15																							6	
red alder	<i>Alnus rubra</i>	18.0			18																							
Scouler's willow	<i>Salix scouleriana</i>	36.0																							36			
seashore saltgrass	<i>Distichlis spicata</i>	4.5			5																							4
soft-stemmed bulrush	<i>Scirpus validus</i>	42.0									48	36																
tufted hairgrass	<i>Deschampsia cespitosa</i>	24.0																								24		
unclassified-sedge	<i>unclassified-sedge</i>	9.0							9																			
Non-Native or Invasive																												
birds-foot trefoil	<i>Lotus corniculatus</i>	19.0			36																					2		
creeping buttercup	<i>Ranunculus repens</i>	3.0								3																		
lambquarters	<i>Chenopodium sp.</i>									N																		
white clover	<i>Trifolium repens</i>	1.0			1																							
white sweet-clover	<i>Melilotus alba</i>	65.3								66																70	60	

Notes:

Stem height in inches

1: Unknown species are assumed to be weeds or invasives.

Blank indicates no vegetation was observed in the quadrat

Bold indicates planted native species, underline indicates volunteer native species

"N" = Not measured

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Table 3-18. Marsh Development at Squally Beach - Shoot Density

Common Name	Scientific Name	Average Shoot Density	Quadrats, Transect 1-1																									
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Native																												
American glasswort, pickleweed	<i>Salicornia virginica</i>	13.8			1												6		3			48	20			5		
entire-leaved gumweed	<i>Grindelia integrifolia</i>	1.0																										1
fleshy jaumea	<i>Jaumea carnosa</i>	265.4			1	22												1	11			752	822			24	490	
Lyngby's sedge	<i>Carex lyngbyei</i>	123.0	298	41		30																						
orache, fat-hen salt bush	<i>Atriplex patula</i>	13.7		1	33	42		3	4		2			2		1	2	76	1							3	8	
seaside plantain	<i>Plantago maritima</i>	1.0				1																1						
seashore saltgrass	<i>Distichlis spicata</i>	15.3		2	3	40											28	4								5	25	
Non-Native or Invasive																												
broadleaved pepperweed	<i>Lepidium latifolium</i>	1.0															1	1										1
bull thistle	<i>Cirsium vulgare</i>	1.0																	1									
white sweet-clover	<i>Melilotus alba</i>	6.0																	6									

Common Name	Scientific Name	Average Shoot Density	Quadrats, Transect 1-2														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Native																	
American bulrush	<i>Scirpus americanus</i>	77.3		120							100	12					
American glasswort, pickleweed	<i>Salicornia virginica</i>	8.0											8				
creeping spike-rush	<i>Eleocharis palustris</i>	20.0									20						
fleshy jaumea	<i>Jaumea carnosa</i>	6.0											6				
Lyngby's sedge	<i>Carex lyngbyei</i>	90.0				38											142
orache, fat-hen salt bush	<i>Atriplex patula</i>	20.3	3	1	26	24	17	17	4	21		5	40	65	20		
perennial ryegrass	<i>Lolium perenne</i>	1.0		1												1	
red alder	<i>Alnus rubra</i>	1.0			1												
Scouler's willow	<i>Salix scouleriana</i>	7.0												7			
seashore saltgrass	<i>Distichlis spicata</i>	31.5			50												13
soft-stemmed bulrush	<i>Scirpus validus</i>	24.0								7	41						
tufted hairgrass	<i>Deschampsia cespitosa</i>	8.0												8			
unclassified-sedge	<i>unclassified-sedge</i>	7.0						7									
Non-Native or Invasive																	
birds-foot trefoil	<i>Lotus corniculatus</i>	15.0			22										8		
creeping buttercup	<i>Ranunculus repens</i>	5.0							5								
lambquarters	<i>Chenopodium sp.</i>	8.0							8								
white clover	<i>Trifolium repens</i>	25.0			25												
white sweet-clover	<i>Melilotus alba</i>	2.7							5					1	2		

Notes:

Shoot density in shoots per quadrat. Quadrats are 0.25 m² in area.

1: Unknown species are assumed to be weeds or invasives.

Bold indicates planted native species, underline indicates volunteer native species

Table 3-19. Riparian Coverage at Squally Beach - Percent Cover

Common Name	Scientific Name	No. of Quadrats Found 1	Percent Cover (range)	Percent Cover (mean)
Herbs, Forbs and Grasses				
birds-foot trefoil	<i>Lotus corniculatus</i>	20	2 to 35%	12.9
black medick	<i>Medicago lupulina</i>	12	Trace to 5%	3.3
bluegrass	<i>Poa sp.</i>	3	5 to 10%	8.3
brome	<i>Bromus sp.</i>	2	2 to 3%	2.5
bull thistle	<i>Cirsium vulgare</i>	2	3 to 20%	11.5
Canada thistle	<i>Cirsium arvense</i>	3	5 to 15%	11.7
cheatgrass	<i>Bromus tectorum</i>	5	1 to 5%	3.6
colonial bentgrass	<i>Agrostis tenuis</i>	14	Trace to 10%	3.4
common dandelion	<i>Taraxacum officinale</i>	1	3%	3.0
common horsetail	<i>Equisetum arvense</i>	11	2 to 50%	20.6
common rush	<i>Juncus effusus</i>	2	Trace to 3%	1.5
common St. John's-wort	<i>Hypericum perforatum</i>	1	3%	3.0
common stork's-bill	<i>Erodium cicutarium</i>	2	Trace	0.1
common velvet-grass	<i>Holcus lanatus</i>	15	Trace to 10%	3.5
creeping buttercup	<i>Ranunculus repens</i>	2	1%	1.0
hairy catsear	<i>Hypochaeris radicata</i>	1	Trace	0.1
hedge mustard	<i>Sisymbrium officinale</i>	3	5 to 50%	21.7
Japanese knotweed	<i>Polygonum cuspidatum</i>	2	Trace	0.1
lettuce	<i>Lactuca sp.</i>	1	2%	2.0
lupine	<i>Lupinus sp.</i>	14	Trace to 55%	11.2
oxeye daisy	<i>Chrysanthemum leucanthemum</i>	2	2 to 5%	3.5
pea	<i>Lathyrus sp.</i>	1	Trace	0.1
perennial ryegrass	<i>Lolium perenne</i>	24	3 to 45%	20.2
purple-leaved willowherb	<i>Epilobium ciliatum</i>	2	Trace to 3%	1.5
quackgrass	<i>Agropyron repens</i>	1	5%	5.0
rabbitfoot clover	<i>Trifolium arvense</i>	3	2 to 5%	3.0
red clover	<i>Trifolium pratense</i>	11	1 to 10%	3.9
red fescue	<i>Festuca rubra</i>	8	3 to 15%	5.8
English plantain	<i>Plantago lanceolata</i>	7	Trace to 3%	1.9
toad rush	<i>Juncus bufonius</i>	1	Trace	0.1
white clover	<i>Trifolium repens</i>	7	Trace to 5%	2.6
white sweet-clover	<i>Melilotus alba</i>	23	2 to 70%	28.6
willowherb	<i>Epilobium sp.</i>	13	Trace to 15%	3.1
yarrow	<i>Achillea millefolium</i>	3	Trace to 2%	0.7
yellow salsify	<i>Tragopogon dubius</i>	1	3%	3.0
unclassified-composite	<i>unclassified-composite</i>	6	Trace to 3%	1.8
unclassified-grass	<i>unclassified-grass</i>	10	1 to 15%	4.8
unclassified-herb	<i>unclassified-herb</i>	3	Trace	0.1
unclassified-wheat	<i>unclassified-wheat</i>	2	Trace	0.1
Shrubs				
beaked hazelnut	<i>Corylus cornuta</i>	1	3%	3.0
common snowberry	<i>Symphoricarpos albus</i>	2	5%	5.0
dull Oregon-grape	<i>Mahonia nervosa</i>	3	1 to 5%	3.0
Himalayan blackberry	<i>Rubus discolor</i>	11	Trace to 25%	3.7
nootka rose	<i>Rosa nutkana</i>	1	15%	15.0

Table 3-19. Riparian Coverage at Squally Beach - Percent Cover

Common Name	Scientific Name	No. of Quadrats Found 1	Percent Cover (range)	Percent Cover (mean)
oceanspray	<i>Holodiscus discolor</i>	4	3 to 10%	5.8
red-flowering current	<i>Ribes sanguineum</i>	1	3%	3.0
red-osier dogwood	<i>Cornus stolonifera</i>	3	5 to 15%	11.7
rose	<i>Rosa sp.</i>	10	1 to 10%	6.3
Scot's broom	<i>Cytisus scoparius</i>	4	2%	2.0
trailing blackberry	<i>Rubus ursinus</i>	1	Trace	0.1
Trees				
Douglas-fir	<i>Pseudotsuga menziesii</i>	5	2 to 15%	8.4
red alder	<i>Alnus rubra</i>	15	1 to 15%	6.5
Scouler's willow	<i>Salix scouleriana</i>	11	10 to 50%	22.3

Notes: There were a total of 26 quadrats

1: No. of Quadrats Found = Number of quadrats in which the species was observed

Bold are planted native species, underline indicates volunteer native species. (All other entries are non-native or invasive.) Unknown species are assumed to be weeds or invasives. Mean percent cover is calculated for the number of quadrats where the plant was observed.

Table 3-20. Riparian Coverage at Squally Beach - Cover (Daubenmire Method)

Common Name	Scientific Name	Canopy			
		Total Canopy	Cover (%)	Frequency (%)	Species Composition
Herbs, Forbes and Grasses					
birds-foot trefoil	<i>Lotus corniculatus</i>	267.5	10.70	80.0%	0.36%
black medick	<i>Medicago lupulina</i>	27.5	1.10	48.0%	0.04%
bluegrass	<i>Poa sp.</i>	32.5	1.30	12.0%	0.04%
brome	<i>Bromus sp.</i>	5	0.20	8.0%	0.01%
bull thistle	<i>Cirsium vulgare</i>	17.5	0.70	8.0%	0.02%
Canada thistle	<i>Cirsium arvense</i>	17.5	0.70	12.0%	0.02%
cheatgrass	<i>Bromus tectorum</i>	12.5	0.50	20.0%	0.02%
colonial bentgrass	<i>Agrostis tenuis</i>	45	1.80	56.0%	0.06%
common dandelion	<i>Taraxacum officinale</i>	2.5	0.10	4.0%	0.00%
common horsetail	<i>Equisetum arvense</i>	217.5	8.70	44.0%	0.30%
common rush	<i>Juncus effusus</i>	5	0.20	8.0%	0.01%
common St. John's-wort	<i>Hypericum perforatum</i>	2.5	0.10	4.0%	0.00%
common stork's-bill	<i>Erodium cicutarium</i>	5	0.20	8.0%	0.01%
common velvet-grass	<i>Holcus lanatus</i>	62.5	2.50	60.0%	0.09%
creeping buttercup	<i>Ranunculus repens</i>	5	0.20	8.0%	0.01%
hairy catsear	<i>Hypochaeris radicata</i>	2.5	0.10	4.0%	0.00%
hedge mustard	<i>Sisymbrium officinale</i>	55	2.20	12.0%	0.07%
Japanese knotweed	<i>Polygonum cuspidatum</i>	5	0.20	8.0%	0.01%
lettuce	<i>Lactuca sp.</i>	2.5	0.10	4.0%	0.00%
lupine	<i>Lupinus sp.</i>	180	7.20	52.0%	0.24%
oxeye daisy	<i>Chrysanthemum leucanthemum</i>	5	0.20	8.0%	0.01%
pea	<i>Lathyrus sp.</i>	2.5	0.10	4.0%	0.00%
perennial ryegrass	<i>Lolium perenne</i>	497.5	19.90	96.0%	0.68%
purple-leaved willowherb	<i>Epilobium ciliatum</i>	5	0.20	8.0%	0.01%
quackgrass	<i>Agropyron repens</i>	2.5	0.10	4.0%	0.00%
rabbitfoot clover	<i>Trifolium arvense</i>	7.5	0.30	12.0%	0.01%
red clover	<i>Trifolium pratense</i>	50	2.00	44.0%	0.07%
red fescue	<i>Festuca rubra</i>	32.5	1.30	32.0%	0.04%
English plantain	<i>Plantago lanceolata</i>	17.5	0.70	28.0%	0.02%
toad rush	<i>Juncus bufonius</i>	2.5	0.10	4.0%	0.00%
white clover	<i>Trifolium repens</i>	17.5	0.70	28.0%	0.02%
white sweet-clover	<i>Melilotus alba</i>	570	22.80	92.0%	0.78%
willowherb	<i>Epilobium sp.</i>	42.5	1.70	52.0%	0.06%
yarrow	<i>Achillea millefolium</i>	5	0.20	12.0%	0.01%
yellow salsify	<i>Tragopogon dubius</i>	2.5	0.10	4.0%	0.00%
unclassified-composite	<i>unclassified-composite</i>	15	0.60	24.0%	0.02%
unclassified-grass	<i>unclassified-grass</i>	50	2.00	40.0%	0.07%
unclassified-herb	<i>unclassified-herb</i>	5	0.20	12.0%	0.01%
unclassified-wheat	<i>unclassified-wheat</i>	5	0.20	8.0%	0.01%
<i>Subtotal:</i>		2305	92.20		3.14%
Shrubs					
beaked hazelnut	<i>Corylus cornuta</i>	2.5	0.10	4.0%	0.00%
common snowberry	<i>Symphoricarpos albus</i>	5	0.20	8.0%	0.01%

Table 3-20. Riparian Coverage at Squally Beach - Cover (Daubenmire Method)

Common Name	Scientific Name	Canopy			
		Total Canopy	Cover (%)	Frequency (%)	Species Composition
dull Oregon-grape	<i>Mahonia nervosa</i>	7.5	0.30	12.0%	0.01%
Himalayan blackberry	<i>Rubus discolor</i>	37.5	1.50	44.0%	0.05%
nootka rose	<i>Rosa nutkana</i>	5	0.20	4.0%	0.01%
oceanspray	<i>Holodiscus discolor</i>	22.5	0.90	16.0%	0.03%
red-flowering current	<i>Ribes sanguineum</i>	2.5	0.10	4.0%	0.00%
red-osier dogwood	<i>Cornus stolonifera</i>	32.5	1.30	12.0%	0.04%
rose	<i>Rosa sp.</i>	72.5	2.90	40.0%	0.10%
Scot's broom	<i>Cytisus scoparius</i>	7.5	0.30	16.0%	0.01%
<u>trailing blackberry</u>	<i>Rubus ursinus</i>	2.5	0.10	4.0%	0.00%
<i>Subtotal:</i>		197.5	7.90		0.27%
Trees					
Douglas-fir	<i>Pseudotsuga menziesii</i>	105	4.20	20.0%	0.14%
red alder	<i>Alnus rubra</i>	100	4.00	60.0%	0.14%
Scouler's willow	<i>Salix scouleriana</i>	232.5	9.30	44.0%	0.32%
<i>Subtotal:</i>		437.5	17.50		0.60%
TOTAL:		2940	117.60		

Notes:

Bold are planted native species, underline indicates volunteer native species. All other entries are non-native or invasive.

Total canopy: Obtained by counting the number of quadrats in each of six cover class (by species), multiplying this value times the midpoint of the appropriate cover class, and totalling the products for all cover classes by species.

Canopy cover: Obtained by dividing the total canopy by the total number of quadrats sampled on the transect.

Frequency: Obtained by dividing the number of occurrences of a plant species (the number of quadrats in which a plant species was observed) by the total number of quadrats sampled along the transect.

Species composition: Obtained by dividing the percent canopy cover of each plant species by the total canopy cover of all plant species.

See Appendix B for a complete description of the Daubenmire method.

Table 3-21. Fish Species Richness at Squally Beach

Common Name	Scientific Name	Number Caught
Staghorn sculpin	<i>Leptocottus armatus</i>	235
Shiner Perch	<i>Cymatogaster aggregata</i>	2,427
Threespine stickleback	<i>Gasterosteus aculeatus</i>	3

Table 3-22. Invertebrates in Fallout Traps at Squally Beach

Order	Family	June 26	August 8	Total
Amphipoda	unknown	69	128	197
Coleoptera	Cantharidae	1		1
Coleoptera	Curculionidae	4	16	20
Coleoptera	Elmidae	2		2
Coleoptera	Sphaeriidae	1		1
Coleoptera	unknown	3	4	7
Diptera	Agromyzidae	1	6	7
Diptera	Blephariceridae	1		1
Diptera	Calliphoridae	1		1
Diptera	Chironomidae	2	12	14
Diptera	Culicidae	7		7
Diptera	Dolichopodidae	63	20	83
Diptera	Syrphidae		1	1
Diptera	Tabanidae		5	5
Diptera	Tipulidae	11	12	23
Diptera	unknown	9	3	12
Hemiptera	Saldidae	61	24	85
Hemiptera	unknown		2	2
Homoptera	Aphididae	6		6
Homoptera	Cicadellidae	2	6	8
Hymenoptera	Apoidea		7	7
Hymenoptera	Ichneumonidae	3	12	15
Hymenoptera	unknown	1	8	9
Lepidoptera	unknown	2		2
Orthoptera	unknown	1		1

Notes:

Blank indicates no specimen was caught in the sampling for the month

Table 3-23. Seasonal Bird Counts at Squally Beach

Common Name	Scientific Name	Total Count	Spring	Summer	Fall
Cormorants					
double-crested cormorant	<i>Phalacrocorax auritus</i>	6		5	1
Bitterns and Herons					
great blue heron	<i>Ardea herodias</i>	10	1	5	4
Waterfowl					
American wigeon	<i>Anas americana</i>	237		4	233
Canada goose	<i>Branta canadensis</i>	33	9	24	
green-winged teal	<i>Anas crecca</i>	11			11
mallard	<i>Anas platyrhynchos</i>	96	1	30	65
Ospreys					
osprey	<i>Pandion haliaetus</i>	1		1	
Plovers					
killdeer	<i>Charadrius vociferus</i>	8		4	4
Sandpipers					
semipalmated sandpiper	<i>Calidris pusilla</i>	15		15	
spotted sandpiper	<i>Actitis macularia</i>	2		1	1
Gulls and Terns					
Caspian tern	<i>Sterna caspia</i>	7	4	3	
glaucous gull	<i>Larus hyperboreus</i>	1			1
glaucous-winged gull	<i>Larus glaucescens</i>	20		9	11
immature gull	<i>Larus sp.</i>	3		2	1
Kingfishers					
kingfisher	<i>Ceryle sp.</i>	1	1		
Woodpeckers					
red-shafted flicker	<i>Colaptes auratus cafer</i>	1			1
Swallows					
purple martin	<i>Progne subis</i>	26	2	24	
violet-green swallow	<i>Tachycineta thalassina</i>	2		2	
Chickadees					
black-capped chickadee	<i>Poecile atricapilla</i>	1		1	
Crows					
American crow	<i>Corvus brachyrhynchos</i>	7		3	4
Northwestern crow	<i>Corvus caurinus</i>	17	8	2	7
Thrushes					
American robin	<i>Turdus migratorius</i>	1			1
Starlings					
European starling	<i>Sturnus vulgaris</i>	6		6	
Finches and Sparrows					
American goldfinch	<i>Carduelis tristis</i>	6	1	5	
house finch	<i>Carpodacus mexicanus</i>	4		2	2
song sparrow	<i>Melospiza melodia</i>	19	2	7	10
white-crowned sparrow	<i>Zonotrichia leucophrys</i>	3		3	
Total Number of Species:		27	9	22	16
Total Number of Birds:		544	29	158	357

Notes:

Blank indicates no bird was observed.

Spring = March to May

Summer = June to August

Fall = September to November

Table 3-24 Bird Use at Squally Beach

Date	Common Name	Scientific Name	Gender	Count	Size	Seen	Heard	Tracks	Spill-over	Pier Pilings	Riparian	Marsh	Inter-tidal	Mud Flats	Open Water	Comments
5/31/02	American goldfinch	<i>Carduelis tristis</i>		9	M	X					X					
5/31/02	Canada goose	<i>Branta canadensis</i>		4	M	X									X	both males and females; 1 pr. With 7 goslings
5/31/02	Caspian tern	<i>Sterna caspia</i>		1	M	X	X								X	feeding on pilings
5/31/02	great blue heron	<i>Ardea herodias</i>	M	1	M	X			X	X						
5/31/02	house finch	<i>Carpodacus mexicanus</i>	U	1	M	X	X				X					
5/31/02	kingfisher	<i>Ceryle alcyon</i>	U	1	M	X	X									
5/31/02	mullard	<i>Anas platyrhynchos</i>	F	1	M	X									X	
5/31/02	Northwestern crow	<i>Corvus caurinus</i>		8	M	X			X							fly over
5/31/02	purple martin	<i>Progne subis</i>		2	M	X				X						male and female; 1 box active
5/31/02	song sparrow	<i>Melospiza melodia</i>		2	M	X	X				X					2 - off nests
6/21/02	American goldfinch	<i>Carduelis tristis</i>		3	L	X	X		X		X					number recorded as 3+; number heard recorded as 2+
6/21/02	European starling	<i>Sturnus vulgaris</i>		3	L											1 juvenile; at least 2 adults
6/21/02	glaucous-winged gull	<i>Larus glaucescens</i>		4	L								X	X		using trees north side of road
6/21/02	immature gull	<i>Larus sp.</i>		2	L	X										
6/21/02	killdeer	<i>Charadrius vociferans</i>		2	L	X	X						X	X		foraging
6/21/02	Northwestern crow	<i>Corvus caurinus</i>		3	M	X										foraging
6/21/02	purple martin	<i>Progne subis</i>		15	L	X	X		X	X						boxes seem occupied; young flying
6/21/02	song sparrow	<i>Melospiza melodia</i>	M	1	L	X	X				X					territorial male
6/21/02	song sparrow	<i>Melospiza melodia</i>		2	L	X						X				male and female; 2 seen while another sang in riparian
6/21/02	violet-green swallow	<i>Tachycineta thalassina</i>		2	L											
6/21/02	white-crowned sparrow	<i>Zonotrichia leucophrys</i>	M	1	L		X			X						singing in riparian
6/25/02	American goldfinch	<i>Carduelis tristis</i>		2	M	X	X		X							
6/25/02	American wigeon	<i>Anas americana</i>		3	M											X
6/25/02	black-capped chickadee	<i>Parus atricapilla</i>		1	M		X									
6/25/02	Canada goose	<i>Branta canadensis</i>		24	M	X					X	X				number recorded as 1+
6/25/02	Caspian tern	<i>Sterna caspia</i>		3	M	X	X									7 goslings
6/25/02	double-crested cormorant	<i>Phalacrocorax auritus</i>		4	M	X			X	X						X
6/25/02	European starling	<i>Sturnus vulgaris</i>		3	M	X			X	X	X	X				yellow faces
6/25/02	glaucous-winged gull	<i>Larus glaucescens</i>		4	M	X										young around (fledglings)
6/25/02	great blue heron	<i>Ardea herodias</i>	M	4	M	X			X							3 landed in trees across the street
6/25/02	house finch	<i>Carpodacus mexicanus</i>		2	M		X			X						saw 2 twice; same birds?
6/25/02	killdeer	<i>Charadrius vociferans</i>		2	M								X			not territorial
6/25/02	mullard	<i>Anas platyrhynchos</i>		19	M											while another on south shore
6/25/02	osprey	<i>Pandion haliaetus</i>		1	M										X	immature; unsuccessful foraging
6/25/02	purple martin	<i>Progne subis</i>		8	M				X	X						3 boxes used; using trees north side of road
6/25/02	song sparrow	<i>Melospiza melodia</i>	M	3	M	X	X			X						2 males singing
6/25/02	white-crowned sparrow	<i>Zonotrichia leucophrys</i>		2	M	X										male and female; 1 pair
8/22/02	American crow	<i>Corvus brachyrhynchos</i>		3	M	X	X		X							
8/22/02	American wigeon	<i>Anas americana</i>		1	M	X										X
8/22/02	double-crested cormorant	<i>Phalacrocorax auritus</i>		1	M	X			X							
8/22/02	glaucous-winged gull	<i>Larus glaucescens</i>		1	M	X			X							
8/22/02	great blue heron	<i>Ardea herodias</i>		1	M	X				X						resting
8/22/02	kingfisher	<i>Ceryle alcyon</i>		11	M	X	X									heard only
8/22/02	mullard	<i>Anas platyrhynchos</i>		1	M	X										male and female
8/22/02	purple martin	<i>Progne subis</i>		1	M	X	X		X							number recorded as 1-2; heard only
8/22/02	semipalmated sandpiper	<i>Callipepla plumifera</i>		15	M	X	X				X					foraging; faded plumage
8/22/02	song sparrow	<i>Melospiza melodia</i>		1	M	X					X					
8/22/02	spotted sandpiper	<i>Actitis macularia</i>		1	M	X	X						X			foraging
9/27/02	American crow	<i>Corvus brachyrhynchos</i>		4	M	X	X		X	X						
9/27/02	American wigeon	<i>Anas americana</i>		60	M	X	X									males and females; 60 recorded as +/-60; +/-20 recorded under pier/pilings; some resting on logs
9/27/02	black-capped chickadee	<i>Parus atricapilla</i>		1	M											
9/27/02	double-crested cormorant	<i>Phalacrocorax auritus</i>		1	M	X										X
9/27/02	great blue heron	<i>Ardea herodias</i>		1	M				X							
9/27/02	immature gull	<i>Larus sp.</i>		1	M											
9/27/02	mullard	<i>Anas platyrhynchos</i>	F	9	M				X							+/-5 recorded for pier/pilings
9/27/02	mullard	<i>Anas platyrhynchos</i>	M	10	M					X						+/-5 recorded for pier/pilings; some resting on logs (floating)
9/27/02	song sparrow	<i>Melospiza melodia</i>		2	M	X			X							male and female
9/27/02	song sparrow	<i>Melospiza melodia</i>	M	2	M	X										singing
9/30/02	American wigeon	<i>Anas americana</i>		150	L	X	X						X			150 recorded as +/-150
9/30/02	glaucous-winged gull	<i>Larus glaucescens</i>		2	L	X										
9/30/02	great blue heron	<i>Ardea herodias</i>		3	L	X								X	X	
9/30/02	house finch	<i>Carpodacus mexicanus</i>		2	L	X	X									
9/30/02	killdeer	<i>Charadrius vociferans</i>		1	L	X				X						
9/30/02	mullard	<i>Anas platyrhynchos</i>		20	L	X	X								X	20 recorded as +/-20
9/30/02	red-shafted flicker	<i>Colaptes auratus calderi</i>		1	L	X	X									fed shafted, across street
9/30/02	song sparrow	<i>Melospiza melodia</i>		3	L	X	X				X					
11/5/02	American crow	<i>Corvus brachyrhynchos</i>		1	M	X	X									
11/5/02	American robin	<i>Turdus migratorius</i>		1	M				X							
11/5/02	American wigeon	<i>Anas americana</i>		23	M	X										Drinking, foraging, resting
11/5/02	glaucous gull	<i>Larus hyperboreus</i>		1	M											X
11/5/02	glaucous-winged gull	<i>Larus glaucescens</i>		9	M	X			X					X		Resting, foraging
11/5/02	green-winged teal	<i>Anas crecca</i>		11	M	X										Resting, foraging
11/5/02	killdeer	<i>Charadrius vociferans</i>		3	M	X	X						X			Resting
11/5/02	mullard	<i>Anas platyrhynchos</i>		26	M	X	X			X					X	Resting, foraging
11/5/02	Northwestern crow	<i>Corvus caurinus</i>		7	M	X	X		X	X						
11/5/02	song sparrow	<i>Melospiza melodia</i>		5	M	X										foraging
11/5/02	spotted sandpiper	<i>Actitis macularia</i>		1	M								X			foraging in shallow water

Notes:
Gender: "F" = female, "M" = male, "U" = unknown
Size: "L" = low, "M" = medium, "H" = high