OCS Study
BOEM 2018-037

ShoreZone Imaging and Mapping along the Alaska Peninsula

US Department of the Interior Bureau of Ocean Energy Management
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August 2018

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DISCLAIMER

Study concept, oversight, and funding were provided by the US Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Contract Number M15PC00008. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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ABOUT THE COVER

M/V Natural Habitat Ursus anchored in Wide Bay, Alaska Peninsula.

ACKNOWLEDGMENTS

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Abbreviations and Acronyms

AKDT	Alaska Daylight Time
ARCHI	Archipelago Marine Research, Ltd.
BOEM	Bureau of Ocean Energy Management
CIRCAC	Cook Inlet Regional Citizens Advisory Council
COR	Contracting Officer's Representative
CORI	Coastal and Ocean Resources
CSE	Council of Science Editors
CVM	Coastal Vulnerability Module
CVI	Coastal Vulnerability Index
DOI	US Department of the Interior
DPP	Development and Production Plan
EP	Exploration Plan
ESA	Endangered Species Act
ESP	Environmental Studies Program
ESPIS	Environmental Studies Program Information System
ESI	Environmental Sensitivity Index
GIS	Geographic Information System
km	kilometers
MHW	Mean High Water
MLW	Mean Low Water
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
ORI	Oil Residence Index
SfM	Structure from Motion
UTC	Coordinated Universal Time

1 Introduction

ShoreZone is an imaging and habitat classification system for the coastal nearshore margin including the shallow subtidal, intertidal shoreline and supratidal fringe. One objective of ShoreZone is to produce a georeferenced, searchable inventory of the physical and biological attributes of coastal habitats. ShoreZone imagery and habitat attributes can provide a useful baseline from which to study change over time, while the attributes mapped (such as shoreline sediments, predicted oil residence and biotic communities) provide an important resource for scientists and managers. The ShoreZone mapping system provides a decision support tool with many potential uses, including community planning, facilities citing, conservation planning, research and fisheries management, emergency planning and response, search and rescue, education and habitat modeling.

The ShoreZone system was developed in the 1980s and 1990s to map coastal habitats in British Columbia and Washington State (Howes 2001; Berry et al. 2004). In 2001, ShoreZone was implemented in Alaska, beginning with Cook Inlet, Outer Kenai, Katmai, and portions of the Kodiak Archipelago (Harper and Morris 2004). ShoreZone has since expanded to a spatially continuous database of over 75,000 km of coastal Alaska and 45,000 km of British Columbia, Washington and Oregon (Figure 1). The NOAA Fisheries Alaska Regional Office manages the ShoreZone online database for Alaska, Washington State and Oregon. This database allows users to see high resolution digital coastal imagery, download photos, access or visualize mapped physical and biological data, and even download the entire ShoreZone geodatabase.

The Alaska Peninsula was a gap in the ShoreZone imaging and mapping of the State of Alaska due to the remoteness of the area and challenges of mounting a survey there. The purpose of the work conducted under this contract was to fill that gap by imaging, mapping and conducting ground surveys along the Alaska Peninsula. Relative to prevailing currents, the Alaska Peninsula is downstream of the Cook Inlet Planning Area and adjacent to the Kodiak and Shumagin Planning areas. This information will provide BOEM with comprehensive coastal habitat data to help analysts and decision-makers identify high priority fish and wildlife habitats in National Environmental Policy Act (NEPA) and Endangered Species Act (ESA) analyses and documentation for lease sales, Exploration Plans (EP), Development and Production Plans (DPP), and other efforts to analyze risk from spills originating in these planning areas. Figure 2 shows the 2,216 km extent of the Alaska Peninsula shoreline from Mitrofania Island to Bear Bay in Shelikof Strait) that was covered under this study.

The ShoreZone imaging survey was conducted in May 2016 and acquired aerial video and digital still images of the coast during minus tides (zero-meter tide levels and lower) according to the ShoreZone protocol (Cook *et al*. 2017). The ground station surveys were conducted over two low tide windows in May 2016 as well. The imagery and associated audio commentary were then used to map the physical and biological attributes of the shoreline according the most recent ShoreZone coastal habitat mapping protocol (Cook *et al*. 2017). A summary of the imaging, habitat mapping and ground survey results are presented in this report. A catalog of benthic marine algae collected during the ground survey was also prepared as a NOAA Technical Memorandum (Lindeberg and Lindstrom 2018). That catalog was not a deliverable of the BOEM contract but acts as a complimentary report.

Figure 1. Extent of ShoreZone imagery and mapping as of June 2018.

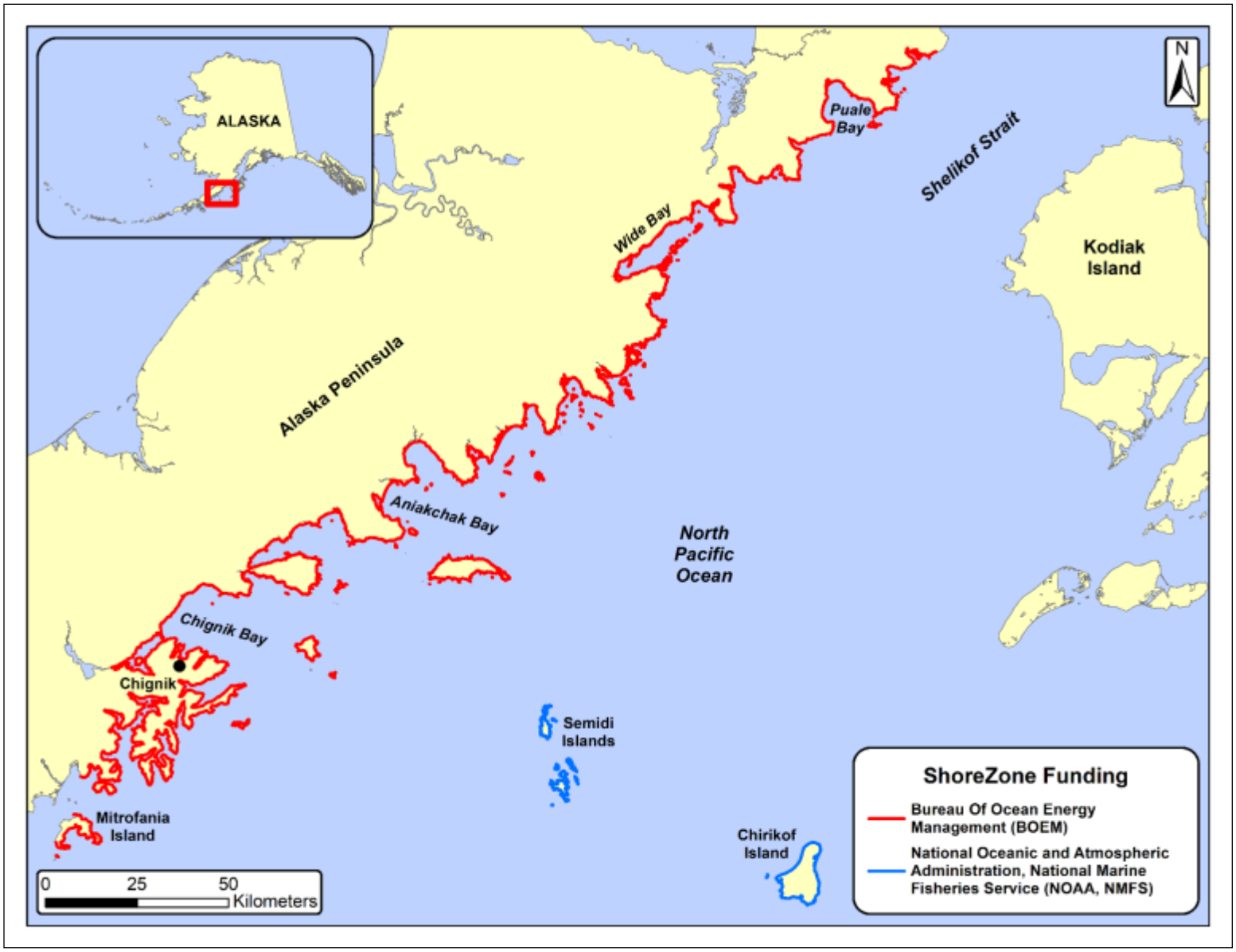

Figure 2. ShoreZone funding partners in the Alaska Peninsula survey area.

2 Imaging Flight Report

This flight report summarizes the field activities of the ShoreZone aerial video imaging surveys conducted by Coastal and Ocean Resources in Southwest Alaska during the 2016 field season.

The Alaska Peninsula survey was conducted by *Team Chignik* out of Chignik, Alaska (see Table 1 for personnel) from May 5-11, 2016 and collected imagery for 2,072 km of the coast, according to the Coast63 digital shoreline. Figure 1 shows extent of imaging and habitat mapping. A Bell 206 Jet Ranger was charted from Egli Air Haul based in King Salmon, Alaska and imagery was collected looking at the shoreline from the left side of the aircraft through large photography shooting windows. 25 HD videos were collected during the survey and recorded to MP4 format while a total of 14,709 photos were taken by the team.

Table 1. Flight Personnel and Responsibilities for ShoreZone Imaging Survey.

Crew Member	Individual / Affiliation	Responsibilities
Geomorphologist	Carl Schoch Coastal and Ocean Resources, Victoria, BC	Videography, geomorphic commentary, post-flight data processing
Coastal Ecologist	Sarah Cook Coastal and Ocean Resources, Victoria, BC	Digital photography, biologic commentary, post-flight data processing
In-Flight Navigator	Kalen Morrow Coastal and Ocean Resources, Victoria, BC	In-flight navigation, survey planning and coordination, post-flight data processing
Pilot	Sam Egli Egli Air Haul King Salmon, Alaska	Bell 206 aircraft operation

The Chirikof and Semidi Islands survey was conducted by *Team Chignik* on May 8, 2016 while they were based in Chignik, Alaska. This survey was undertaken for the National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Region (NOAA, NMFS). That imagery captured 183 km of shoreline. That imagery was also contracted for habitat mapping by NOAA. Egli Air Haul and their Bell 206 Jet Ranger were used to collect the imagery looking at the shoreline from the left side of the aircraft through large photography shooting windows. 2 HD videos were collected during the survey and recorded to MP4 format while a total of 1,595 photos were taken by the team

A summary table and map for each video, illustrating its location, length, and key geographic points is presented in Appendix A. Maps for each video are annotated with representative geographic names, photo numbers and video times in Coordinated Universal Time (UTC) which is 8 hours ahead of Alaska Daylight Time (AKDT).

All videos and photos were supplied to NOAA on a hard drive, organized by video number and named consistently with the ShoreZone image library data schema. GIS data and imagery are linked by a date time code (yyyymmddhhmmss), and the GIS data that accompany this report illustrate the flight track positions at 1-second intervals. That imagery has been posted online at the NOAA ShoreZone web site: https://alaskafisheries.noaa.gov/habitat/shorezone

3 Physical Attribute Data Summary

This section presents summary statistics and distributions of some of the physical attributes classified in the Alaska Peninsula study area using the ShoreZone habitat mapping protocol (Cook *et al*. 2017). The length of shoreline imaged and mapped was 2,216 kilometers and was broken into 7,583 along-shore segments (units), averaging 292 m in length. The digital shoreline used for the ShoreZone habitat mapping was compiled from multiple sources to create the best available representation of the current shoreline. The primary source for this project was the AK_Shoreline_NHD_NOAA_Jan2015.

3.1 Coastal Class

The Coastal Class is used to define along-shore coastal units based on the dominant process, geomorphic features and other attributes such as substrate size, across-shore width, and slope (Cook *et al*. 2017, after Howes *et al*. 1994). The principal characteristics of each along-shore unit are used to assign one of 39 overall unit classifications. Sediment shorelines (48.9%) dominated the Alaska Peninsula area. Rock and Sediment shorelines followed with 28.2% and Rock shorelines were found on 16.5% of the coast (see Figures 3 and 4 for summary statistics and distribution). The description for each Coastal Class category in the survey area is presented in Table 2. Photographic examples of the major Coastal Classes mapped for the Alaska Peninsula are found in Appendix B, Table B-1.

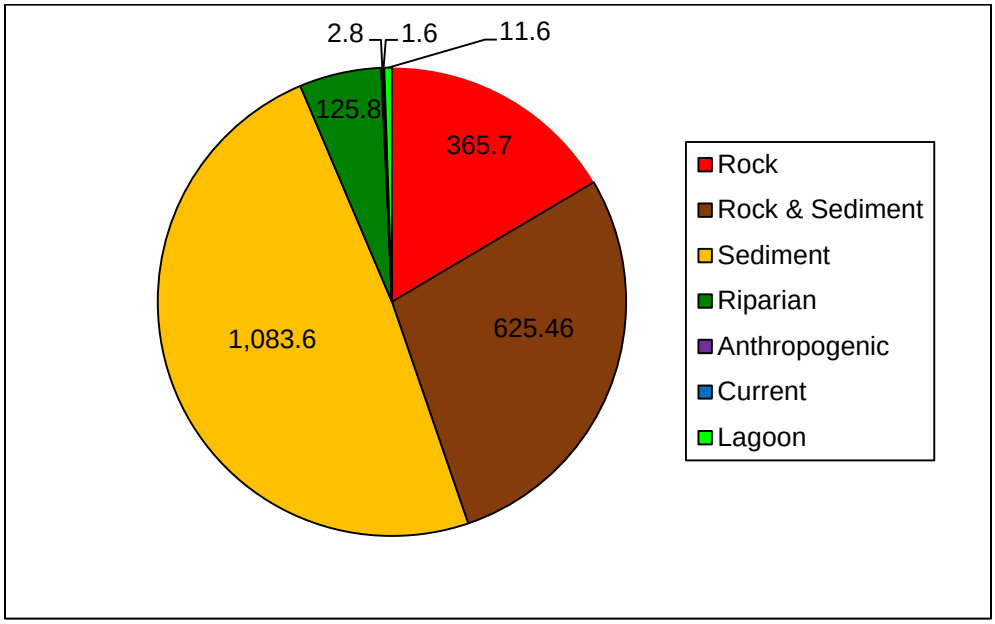

Figure 3. Proportion of Grouped Coastal Class categories by shoreline length (km).

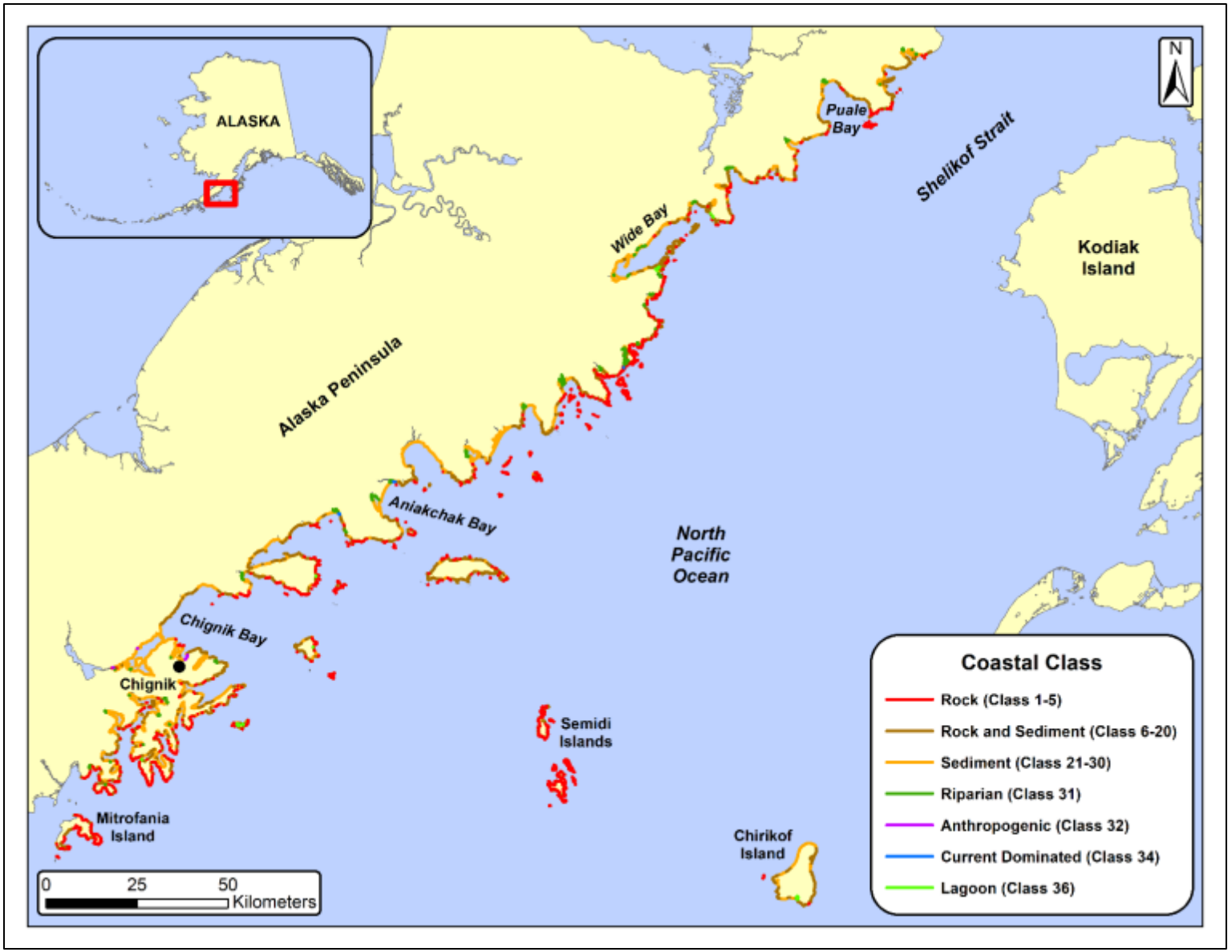

Figure 4. Distribution of Coastal Class categories.

Table 2. Summary of Coastal Classes for the Alaska Peninsula survey area.

Substrate Type	Shore Type		Sum of Unit Length (km)	# of Units	% Occurrence (by length)	Cumulative Occurrence (%, km)
	No.	Description				
Rock	1	Rock Ramp, wide	16.75	86	0.76	**16.50% 365.65 km**
	2	Rock Platform, wide	37.79	190	1.71	
	3	Rock Cliff	218.29	863	9.85	
	4	Rock Ramp, narrow	91.04	443	4.11	
	5	Rock Platform, narrow	1.77	12	0.08	
Rock and Sediment	6	Ramp w gravel beach, narrow	42.83	189	1.93	**28.22% 625.46 km**
	7	Platform w gravel beach, wide	107.89	371	4.87	
	8	Cliff with gravel beach	55.04	287	2.48	
	9	Ramp with gravel beach	99.44	527	4.49	
	10	Platform with gravel beach	3.05	13	0.14	
	11	Ramp w gravel & sand beach, wide	22.36	137	1.01	
	12	Platform with G&S beach, wide	201.03	671	9.07	
	13	Cliff with gravel/sand beach	23.33	161	1.05	
	14	Ramp with gravel/sand beach	34.00	202	1.53	
	15	Platform with gravel/sand beach	5.38	29	0.24	
	16	Ramp w sand beach, wide	2.30	17	0.10	
	17	Platform w sand beach, wide	24.94	84	1.13	
	18	Cliff with sand beach	1.05	7	0.05	
	19	Ramp w sand beach, narrow	2.25	15	0.10	
	20	Platform w sand beach, narrow	0.56	2	0.03	
Sediment	21	Gravel flat, wide	52.86	196	2.83	**48.89% 1,083.55 km**
	22	Gravel beach, narrow	94.11	458	4.25	
	23	Gravel flat or fan	1.23	5	0.06	
	24	Sand & gravel flat or fan	335.48	1,015	15.14	
	25	Sand & gravel beach, narrow	180.85	817	8.16	
	26	Sand & gravel flat or fan	3.60	13	0.16	
	27	Sand beach	3.06	11	0.14	
	28	Sand flat	326.78	466	14.74	
	29	Mudflat	71.06	127	3.21	
	30	Sand beach	14.52	47	0.66	
Organics	31	Organics/Estuarine	125.77	91	5.67	**5.67% 125.77 km**
Man-made	32	Man-made, permeable	2.82	9	0.13	**0.13% 2.82 km**
Current	34	Channel	1.62	7	0.07	**0.07% 1.62 km**
Lagoon	36	Lagoon	11.58	15	0.52	**0.52% 11.58 km**
Totals:			**2,216.45**	**7,583**	**100.00**	**100%**

Note: This table only includes Coastal Classes observed in the Alaska Peninsula survey area.

3.2 Environmental Sensitivity Index (ESI)

The NOAA Environmental Sensitivity Index (ESI) is a shoreline classification system developed to characterize coastal regions based on sensitivity to potential oil spills (Petersen *et al*. 2002). The ESI system uses wave exposure and principal substrate type to assign a rank of 1 to 10 (with 10 being the most sensitive to oil) to alongshore units. Up to three ESI numbers can be assigned to each ShoreZone unit (high, mid and low intertidal) if applicable. The highest ESI number for each unit, which is the most sensitive, is used in this analysis.

The Alaska Peninsula is balanced with a slight weight to the Low and Very Low categories (45.75% of shoreline length). These sections of the shoreline have a potentially low sensitivity to oil. At the other end of the spectrum, only 24.1% of the shoreline was mapped with a potentially high sensitivity to oil (Figures 5 and 6). The summary of Shore Type by ESI class is presented in Table 3.

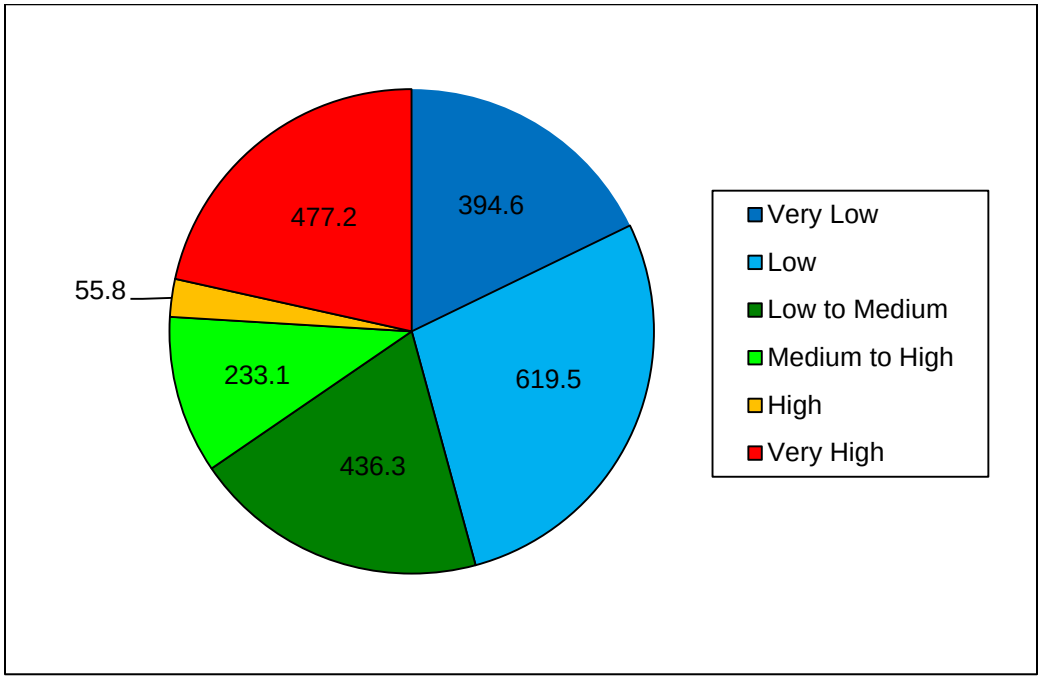

Figure 5. Proportion of grouped most sensitive ESI categories by shoreline length (km).

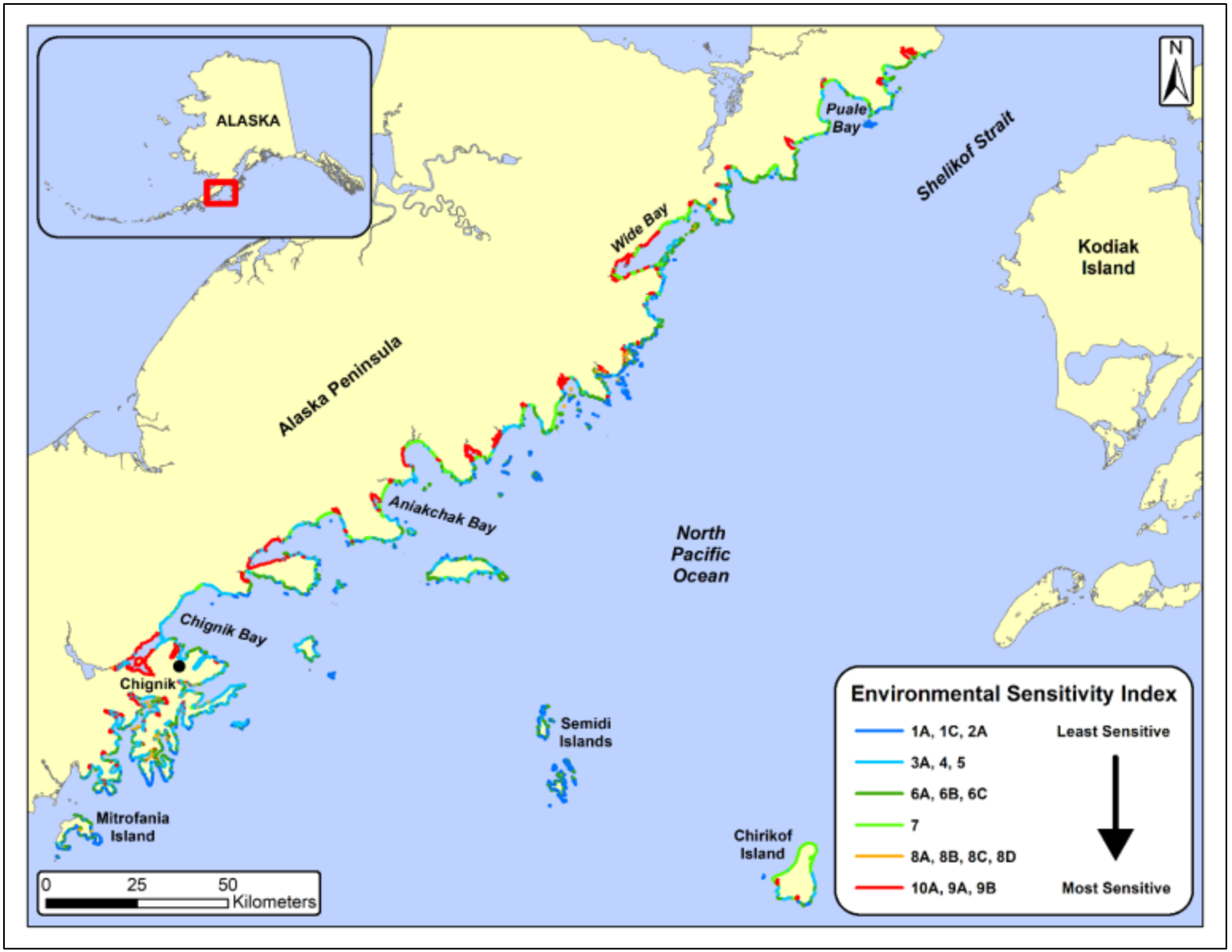

Figure 6. Distribution of the grouped ESI categories from least to most sensitive to oiling.

Table 3. Summary of ESI Classes for the Alaska Peninsula survey area.

Environmental Sensitivity Index (ESI)		Sum of Unit Length (km)	# of Units	% of Total Shoreline Length
No.	**Description**			
1A	Exposed rocky shores; Exposed rocky banks	207.86	799	9.38
1C	Exposed rocky cliffs with boulder talus base	23.72	124	1.07
2A	Exposed wave-cut platforms in bedrock, mud, or clay	163.01	808	7.35
3A	Fine- to medium-grained sand beaches	40.29	100	1.82
4	Coarse-grained sand beaches	61.81	204	2.79
5	Mixed sand and gravel beaches	517.43	2136	23.35
6A	Gravel beaches (granules and pebbles)	19.57	125	0.88
6B	Gravel beaches (cobbles and boulders)	414.48	1814	18.70
6C	Rip rap	2.27	11	0.10
7	Exposed tidal flats	233.05	417	10.51
8A	Sheltered scarps in bedrock, mud, or clay; sheltered rocky shores (impermeable)	30.31	174	1.37
8B	Sheltered, solid, man-made structures; sheltered rocky shores (permeable)	0.28	1	0.01
8C	Sheltered Rip Rap	0.60	2	0.03
8D	Sheltered rocky rubble shores	24.59	113	1.11
9A	Sheltered tidal flats	286.29	597	12.92
9B	Vegetated low banks	3.58	7	0.16
10A	Salt- and brackish-water marshes	187.29	152	8.45
Totals:	***218***	***2,216.45***	***7,583***	***100.00***

Note: ESI Classes not observed in this survey area were not included in the table.

3.3 Oil Residence Index (ESI)

The Oil Residence Index (ORI) is a rating between 1 and 5 with a value of 1 indicating a relatively short oil residence (days to weeks) while a value of 5 reflects potentially very long oil residence times (years). An ORI value is applied to each alongshore unit and to each across-shore component based on sediment texture and wave exposure (Cook *et al*. 2017). The ShoreZone ORI is an algorithm developed by Dr. John Harper based on his many years of experience with cleaning up oiled shorelines and observing behavior of oil on shorelines, starting with the Exxon Valdez spill in Prince William Sound in Alaska. Lower wave exposures and unconsolidated sand and gravel sediments lead to high ORI values for 54.4% of the shore segments of the Alaska Peninsula, indicating oil residence times are on the order of months to years (see Figures 7 and 8 for summary statistics and distribution).

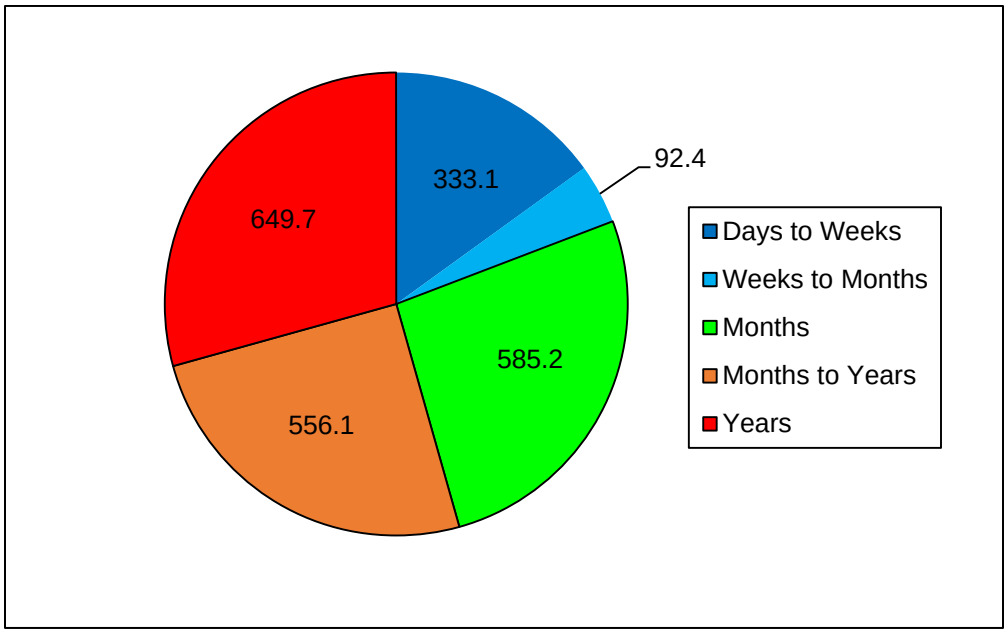

Figure 7. Proportion of Oil Residence Index categories by shoreline length (km).

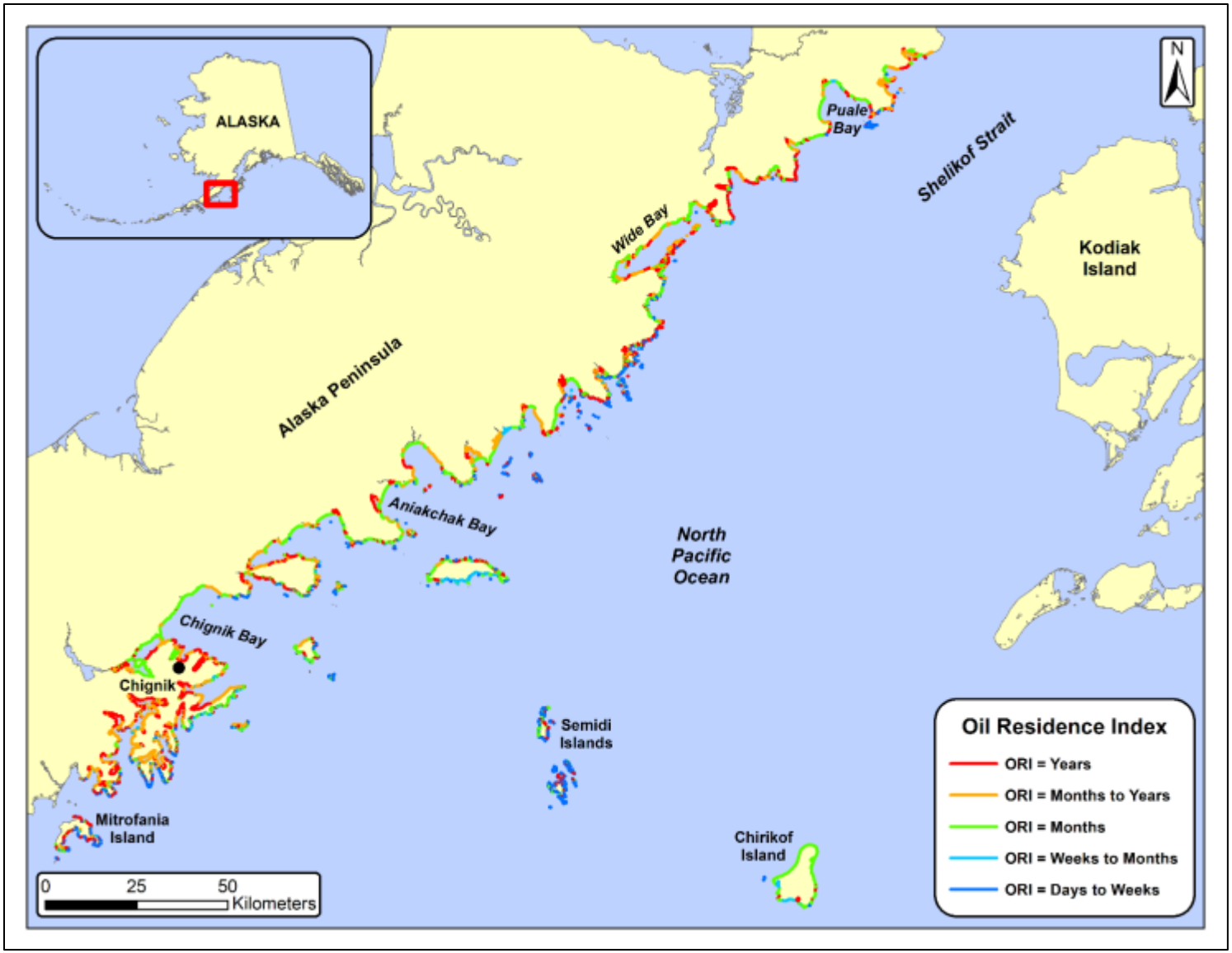

Figure 8. Distribution of the Oil Residence Index categories.

3.4 ShoreZone Coastal Vulnerability

3.4.1 Flood Zone Width

The Coastal Vulnerability Module (CVM) includes a classification of flooding sensitivity based on the across shore profile and photographic evidence of historical flooding such as an unambiguous marine debris line (Cook *et al*. 2017). The Flooding Class is an estimate of vulnerability to inundation of the terrestrial area beyond the supratidal. The distance to the debris line is measured and used to classify the flooding potential. Flat shorelines with very low gradients that show evidence of historical flooding have a higher risk of being inundated by storm surges. Potential for damage due to flooding is generally low in the study area, with 69.9% of the shoreline at a low risk of flooding <5m from Mean High Water (MHW) (see Figures 9 and 10 for summary statistics and distribution). The flooding class is a parameter of the Coastal Vulnerability Index (see section below).

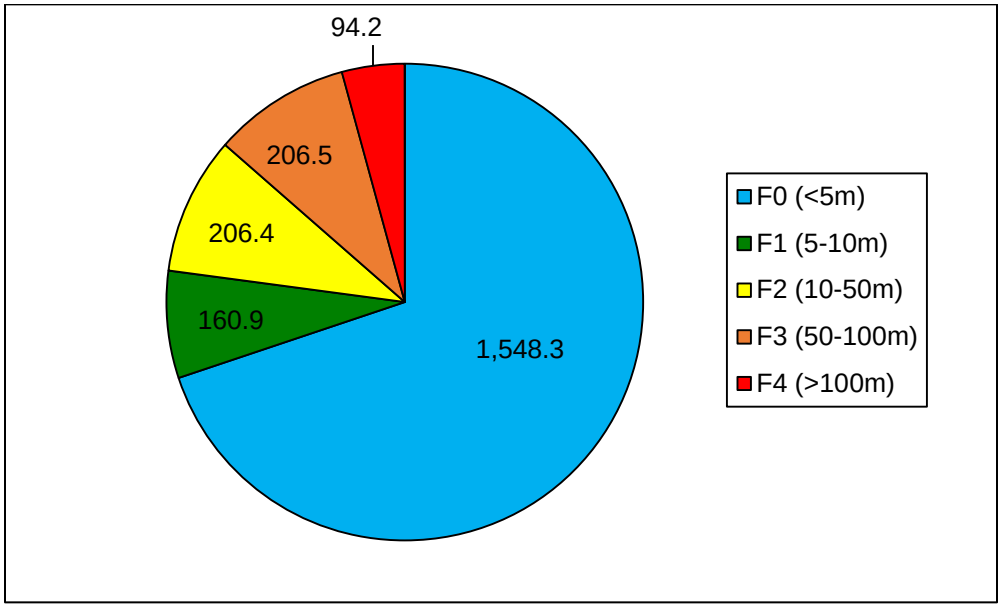

Figure 9. Proportion of Flood Zone Class categories by shoreline length (km).

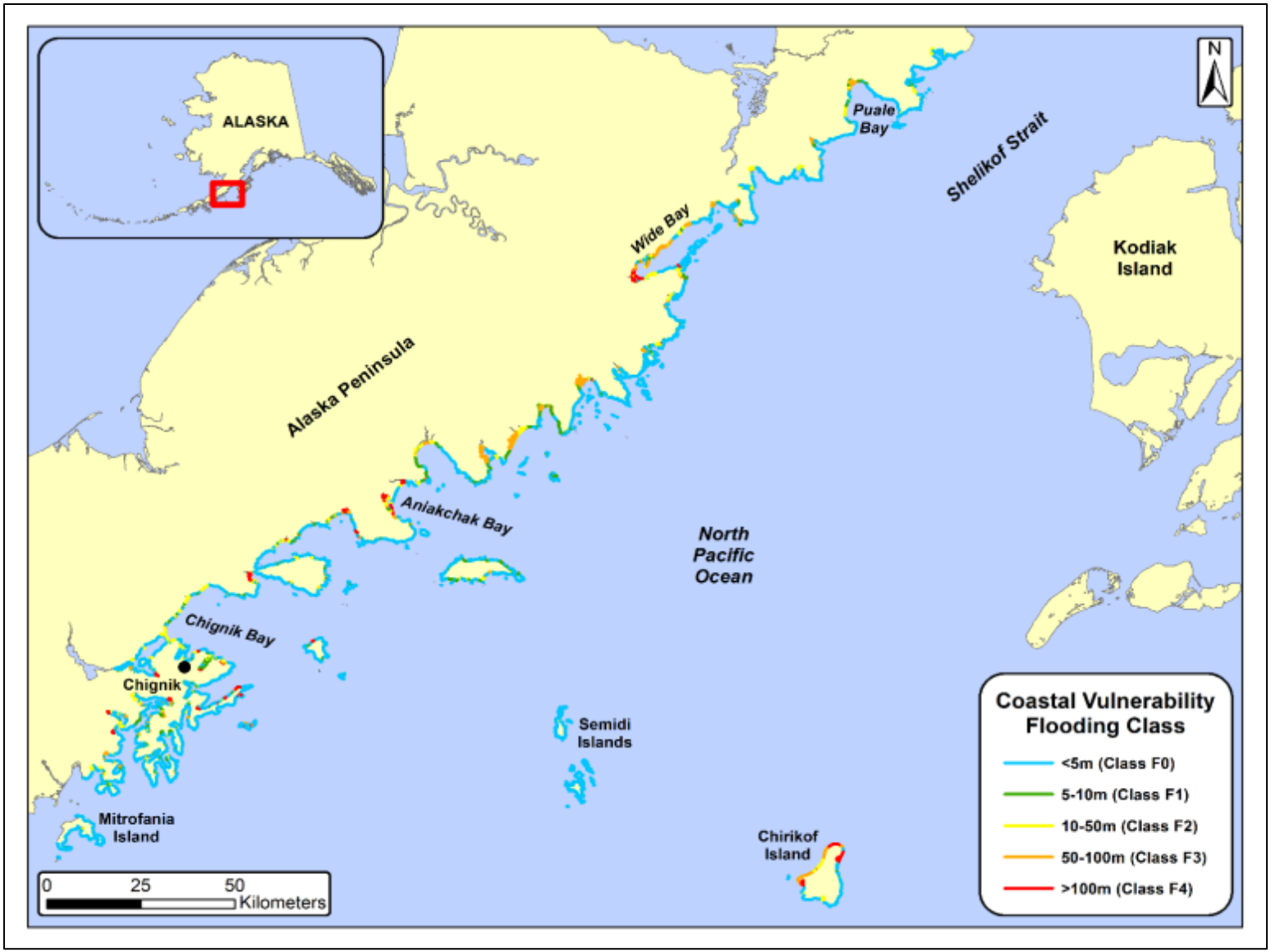

Figure 10. Distribution of the Coastal Vulnerability Flood Zone Class.

3.4.2 Coastal Vulnerability Index

The Coastal Vulnerability Module of ShoreZone includes several attributes that provide qualitative estimates of the vulnerability of a unit to impact from sea level rise, whether that is due to anthropogenic causes or natural phenomena such as storm surge (Cook *et al*. 2017). The ShoreZone Coastal Vulnerability Index (CVI) combines these attributes with several others from ShoreZone habitat mapping and combines them into one rank that assesses the overall vulnerability of a given unit to sea level rise. The methods of Thieler and Hammer-Klose (2000) were adapted to develop the CVI using these attributes: Coastal Class, Max Tide Range, Shoreline Erosion Index, Flood Zone Width, and Wave Height (Cook *et al*. 2017).

The Alaska Peninsula survey area was characterized by stable shorelines and low flood zone widths, so it is unsurprising the majority of the survey area (97%) was in the lower CVI ranks (Low and Moderate). See Figures 11 and 12 for statistics and distribution of the CVI, respectively.

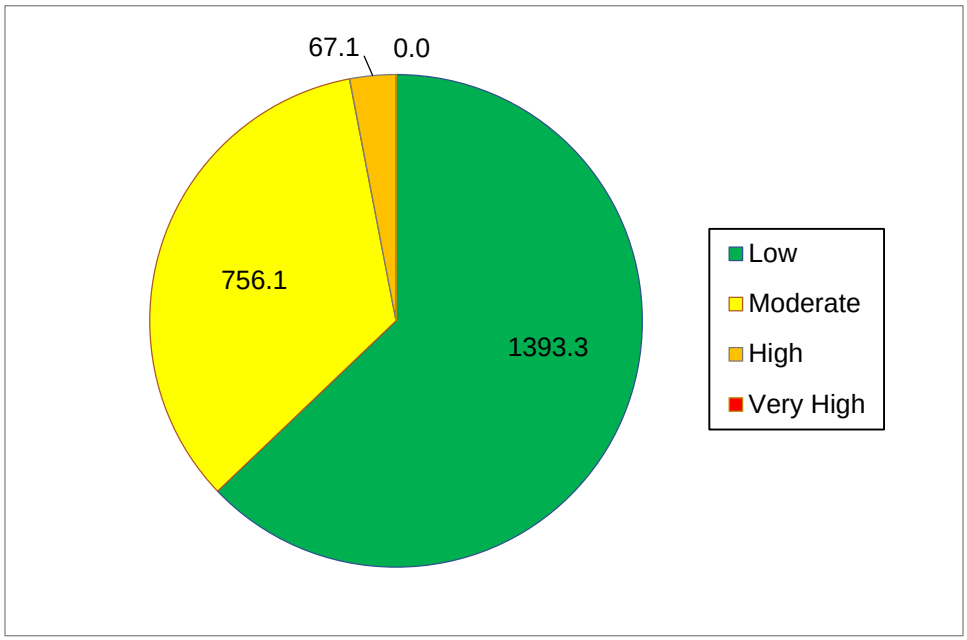

Figure 11. Proportion of Coastal Vulnerability Index ranks by shoreline length (km).

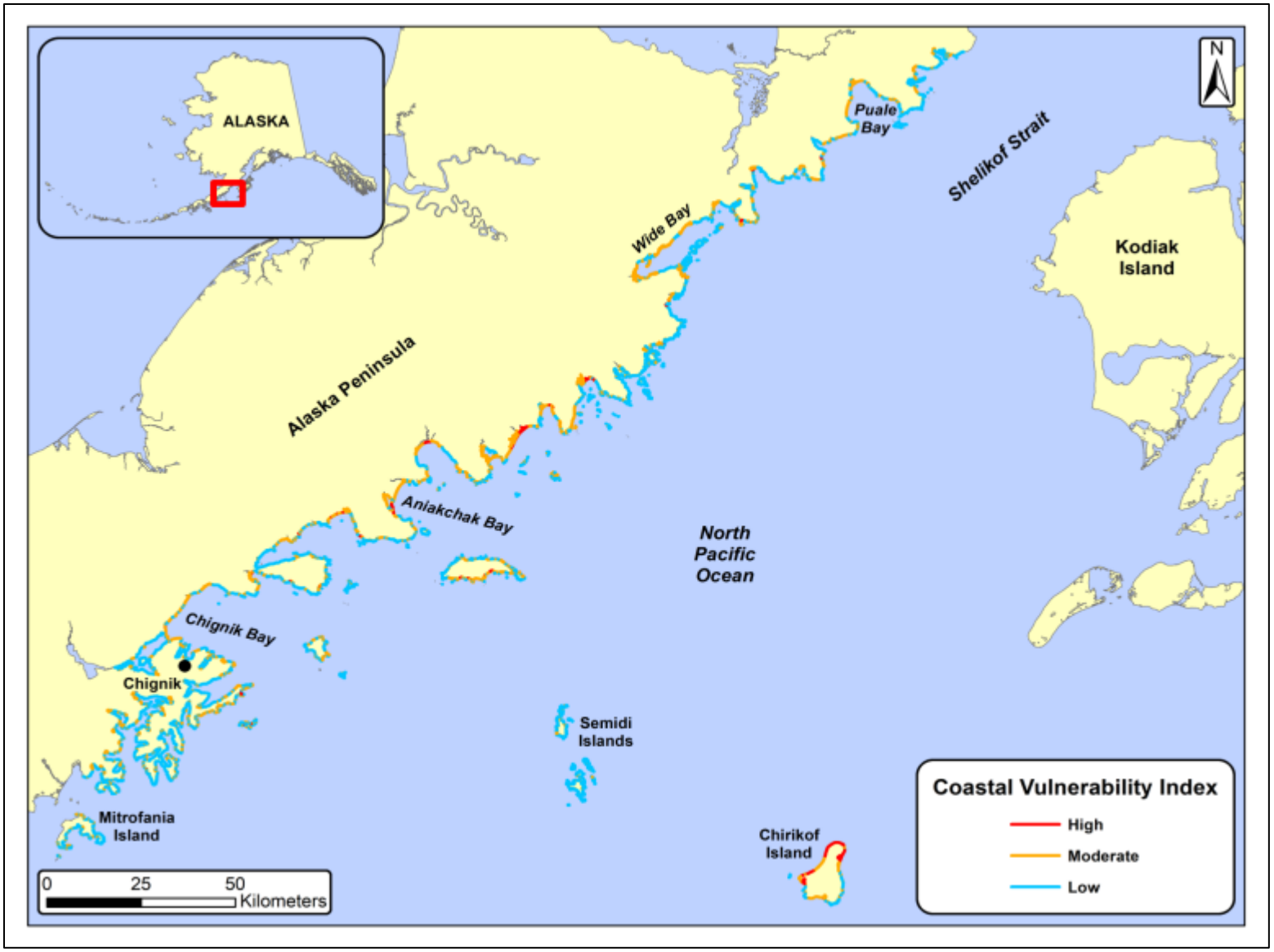

Figure 12. Distribution of the Coastal Vulnerability Index ranks.

3.5 Anthropogenic Shore Modifications

The Shoreline Modification attribute provides a thorough catalog of the specific types of anthropogenic modification in each unit (Cook *et al*. 2017). This can include multiple modifications within a given unit. For example, if both riprap and a pile-supported wharf occur, both are catalogued in the appropriate zone of that unit with an estimate of the alongshore length of the unit that modification covers. A total of 4.36 km of the shoreline (taking the estimated length of that modification within the unit into account) exhibits shore modifications in the Alaska Peninsula study area (Figure 13). Riprap was the most commonly recorded observation (55.3%) with Landfill for 20.7% of the observations. Figure 14 shows the distribution of primary shore modifications, though it should be noted that any given modification is not necessarily along the entire length of the indicated shore unit. The Geodatabase delivered with this report displays each shore modification with a specific length category (meters) for the shoreline pertaining to each unit and the specific zone in which the modification occurs (supratidal or intertidal).

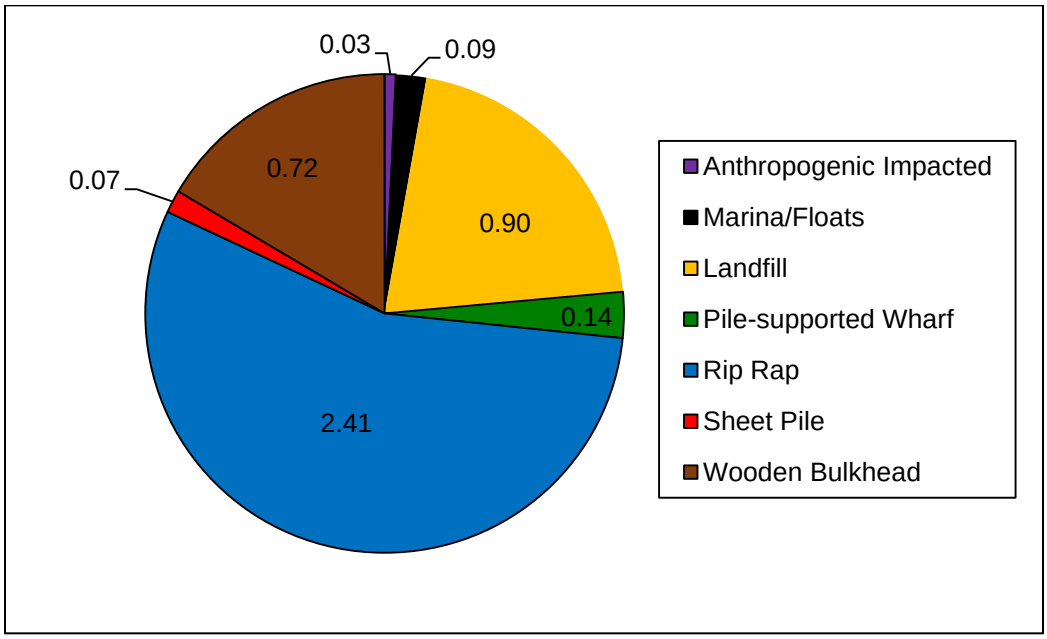

Figure 13. Proportion of Shore Modifications by estimated shoreline length (km).

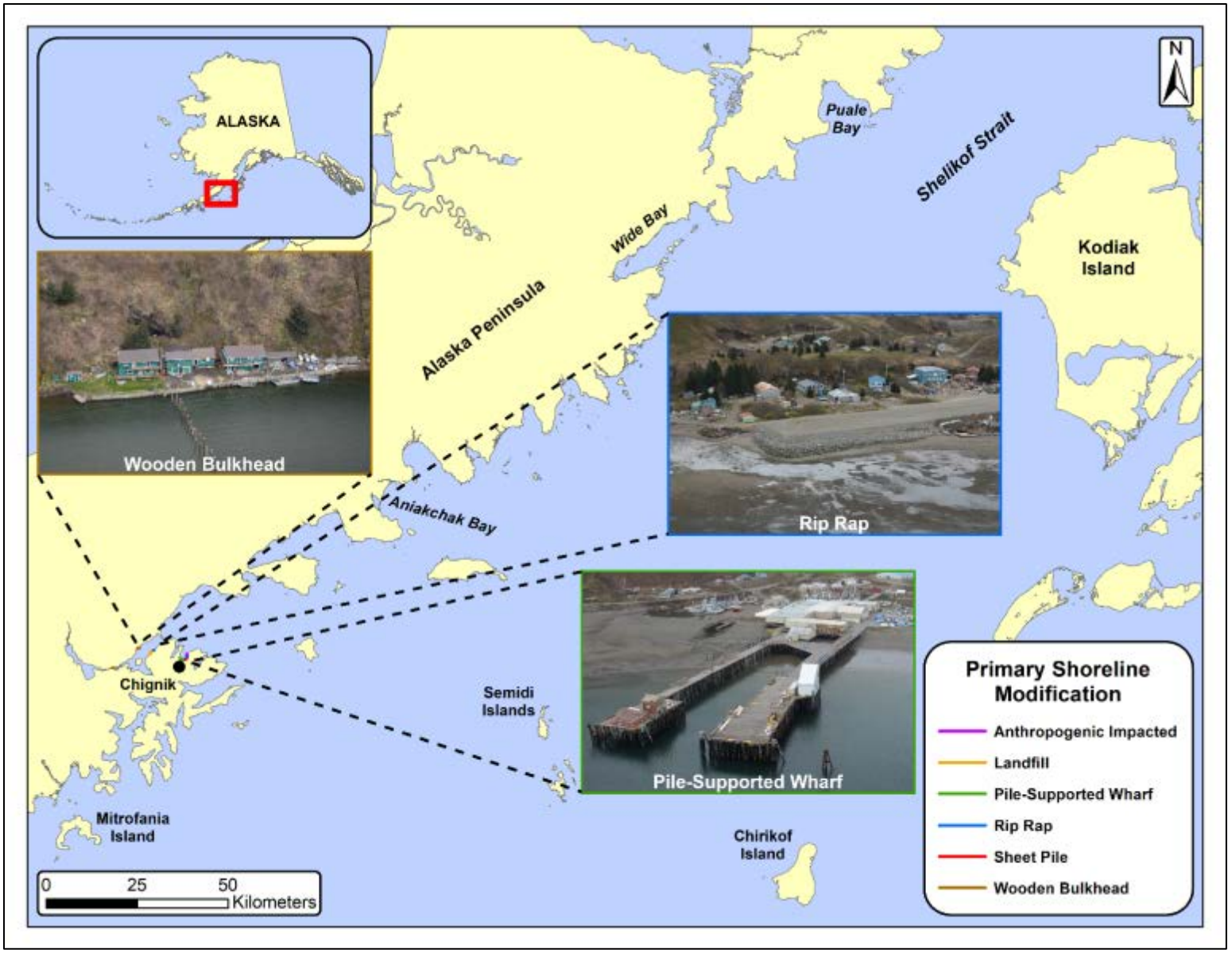

Figure 14. Distribution and examples of types of primary Shore Modification.

4 Biological Attribute Data Summary

4.1 Biobands

Biobands represent assemblages of coastal biota found on the shoreline at typical wave exposures, substrate conditions and across-shore elevations. Biobands are spatially distinct, with alongshore and across-shore patterns of color and texture that are visible in aerial imagery (see Appendix B, Table B-2 for examples from the Alaska Peninsula survey area). Full descriptions of all biobands, including indicator and associated species can be found in the ShoreZone protocol (Cook *et al*. 2017). The metrics for measuring the biobands are detailed in the protocol document. The specific elevation (or Zone) of the bioband on the shoreline determines the metrics applied. Biobands found in the supratidal (A Zone) and subtidal (C Zone) are described by percent of alongshore length of unit and a width category. The intertidal (B Zone) biobands are described by percent of alongshore length of the unit and percent cover of the zone.

The 29 individual biobands mapped in the Alaska Peninsula survey area are summarized in Tables 4 and 5. Please note that number of units is used to describe the distribution of biobands in the tables rather than length because biobands are usually not continuous along the entire length of a unit. The survey area was remote and diverse in terms of geomorphology of the shoreline, with a range of shore types and exposures represented. Filamentous and Foliose Red Algae was the most commonly observed intertidal bioband (68.3% of units) with Barnacle only slightly less common (66.0%). Kelps were common in the survey area with three biobands of Bladed Kelps recorded (Soft Brown Bladed Kelp, Dark Brown Bladed Kelp and Bladed Brown Kelps). Together, they occurred in 71.2% of the units. Surfgrass was only observed in 9.3% of units, mostly on large Semi-Exposed platforms (see Figure 15 for map of distribution).

Black Lichen was the most commonly occurring Splash Zone bioband (66.1% of units) while Dune Grass was the most common supratidal bioband (27.9%) (see Figure 16 for map of distribution). Salt Marsh was only observed in 6.7% of units, although it should be noted that both Salt Marsh and Dune Grass might have been underestimated due to the timing of the imaging survey, which was conducted in early May. The Dune Grass was still brown at that time and the plants that make up the Salt Marsh bioband were just beginning to grow. The imaging survey needed to be early in the year to avoid disturbing Stellar's Sea Lions, which are much more common on the Alaska Peninsula in the summer months.

Canopy Kelps were common in the survey area. There were two specific canopy kelps identified, Bull Kelp and Dragon Kelp. Where the imagery did not allow for specific identification of the kelp species, the general Brown Canopy-Forming Kelp bioband was used. Together, these biobands occurred in 50.8 percent of the units, with Bull Kelp making up almost 90% (see Figure 17 for map of distribution). Eelgrass was present in 587 units (7.7%) so was not common (see Figure 18 for distribution) although in some protected bays and lagoons, such as Chignik Lagoon, it formed extensive beds.

Table 4. Percent cover category for the intertidal biobands in the Alaska Peninsula survey area.

Bioband		Zone	Number of Units							Total Number of Units With Bioband Present	% of Total Units with Bioband Present
			Percent Cover Category (Intertidal Zone)								
Name	Code		<5%	5-25%	26-50%	51-75%	76-95%	>95%	Bioband Present, Percent Cover Not Assessed		
Salt Marsh	SAMA	Upper to Mid-Intertidal (B)	4	55	18	12	18	0	0	107	1.4
Wetland Vegetation	WEVE		0	7	0	0	0	0	0	7	<1
Winter Laver	WILA		250	2800	196	0	0	0	2	3248	42.8
Barnacle	BARN		285	4459	254	8	0	0	1	5007	66.0
Rockweed	ROCK		316	2496	76	6	0	1	3	2898	38.2
Intertidal/Subtidal Vegetation	INSV		0	3	0	0	0	0	0	3	<1
Diatoms	DIAT		0	3	1	0	0	0	0	4	<1
Blue Mussel	BLMU		577	1362	12	2	0	0	0	1953	25.8
Green Algae	GRAL		516	2824	132	6	3	1	0	3482	45.9
Bleached Red Algae	BRAL		10	37	6	2	0	0	0	55	<1
Filamentous and Foliose Red Algae	FFRA	Mid- to Lower Intertidal (B)	137	4602	421	18	0	0	2	5180	68.3
Surfgrass	SURF		55	567	71	11	0	1	1	706	9.3
Coralline Red Algae	CORA		426	1932	41	1	1	0	0	2401	31.7
Eelgrass	EELG		36	318	61	39	15	3	15	487	6.4
Soft Brown Bladed Kelps	SOBK		23	95	8	0	0	0	0	126	1.7
Dark Brown Bladed Kelps	DABK		10	490	429	47	1	0	0	977	12.9
Brown Bladed Algae	BRBA		174	3894	210	15	2	0	4	4299	56.7
Sponge	SPON		20	2	0	0	0	0	0	22	<1

Table 5. Width category of supratidal and subtidal biobands in the Alaska Peninsula survey area.

Bioband		Zone	Width Category (m)				Total Number of Units With Bioband Present*	% of Total Units with Bioband Present
Name	Code		<1 m	1-5 m	>5 m	Bioband Present, Width Category Not Assessed		
Splash Zone	SPZO	Splash Zone (A)	115	980	384	0	1479	19.5
Black Lichen	BLLI		848	3071	1094	0	5013	66.1
Yellow Lichen	YELI		89	185	294	0	568	7.5
White Lichen	WHLI		4	10	8	0	22	<1
			<10 m	10-30 m	>30 m	Bioband Present, Width Category Not Assessed		
Terrestrial Vegetation	TEVE	Supratidal (A)	3	1	0	0	4	<1
Trees and Shrubs	TRSH		26	32	30	0	88	1.1
Grasses	GRAS		75	4	2	0	81	1.1
Dune Grass	DUGR		1464	446	206	2	2118	27.9
Wetland Vegetation	WEVE		14	9	12	0	35	<1
Salt Marsh	SAMA		421	59	25	0	505	6.7
Surfgrass	SURF	Subtidal (C)	7	46	37	45	135	1.8
Intertidal/Subtidal Vegetation	INSV		5	12	6	27	50	<1
Eelgrass	EELG		55	44	90	180	369	4.9
Brown Bladed Algae	BRBA		78	120	49	2	249	3.3
Soft Brown Bladed Kelps	SOBK		18	37	57	59	171	2.3
Dark Brown Bladed Kelps	DABK		2	0	32	958	992	13.1
Brown Canopy-Forming Algae	BRCA		78	120	49	2	249	3.3
Dragon Kelp	DRKE		73	57	15	1	146	1.9
Bull Kelp	BUKE		504	1069	1798	89	3460	45.6

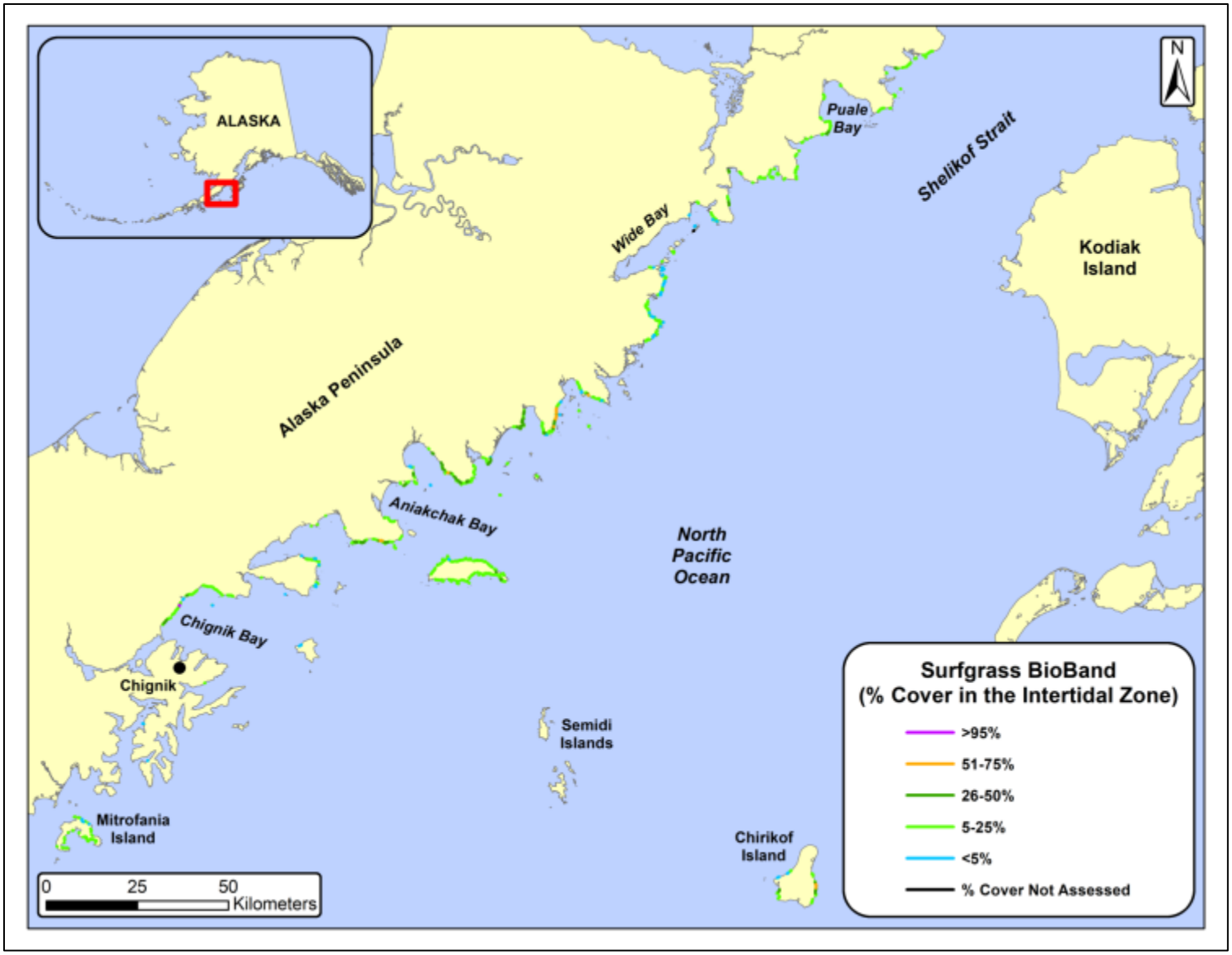

Figure 15. Distribution of the Surfgrass bioband by Percent Cover Category in the subtidal zone.

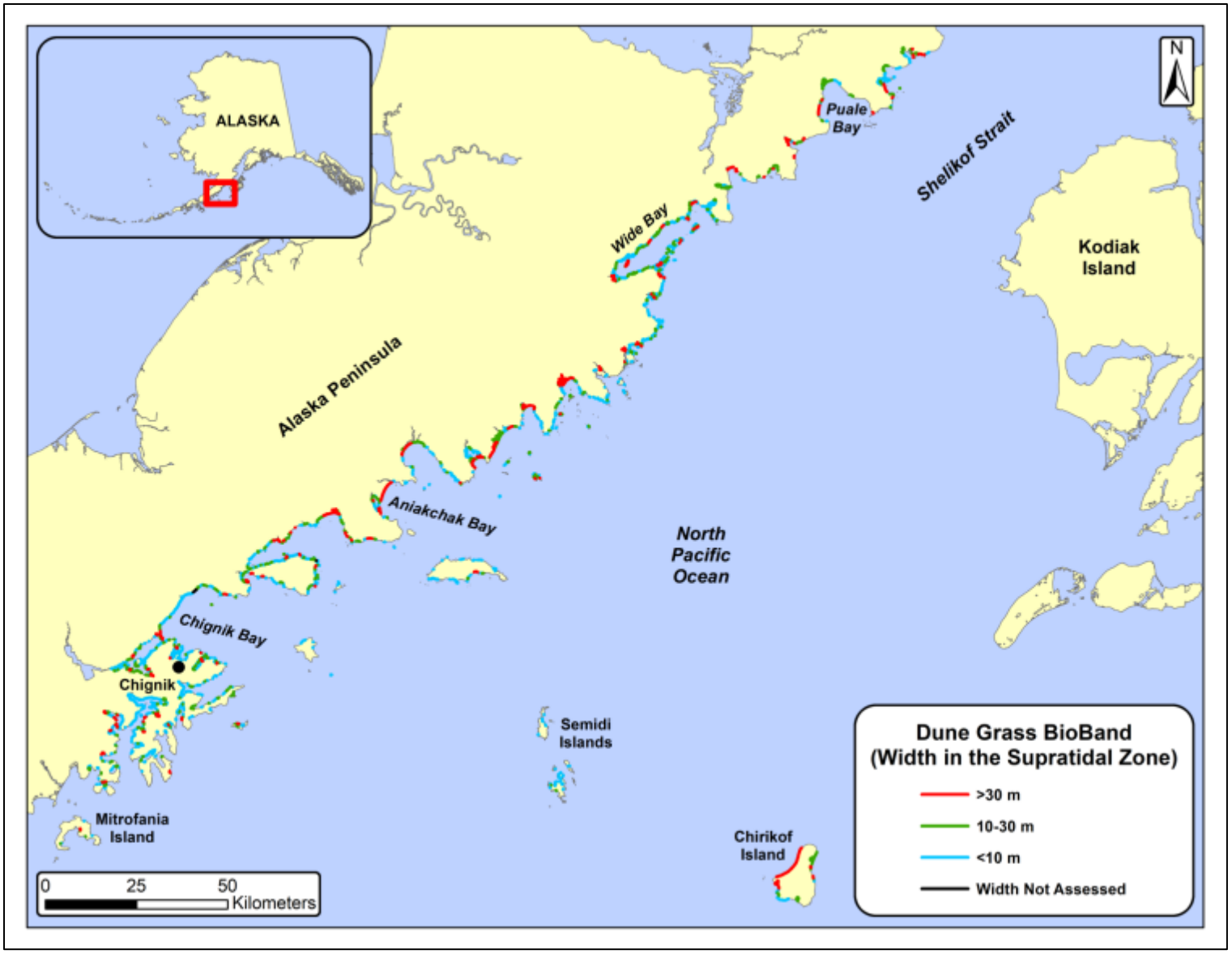

Figure 16. Distribution of the Dune Grass bioband by Width Category in the supratidal zone.

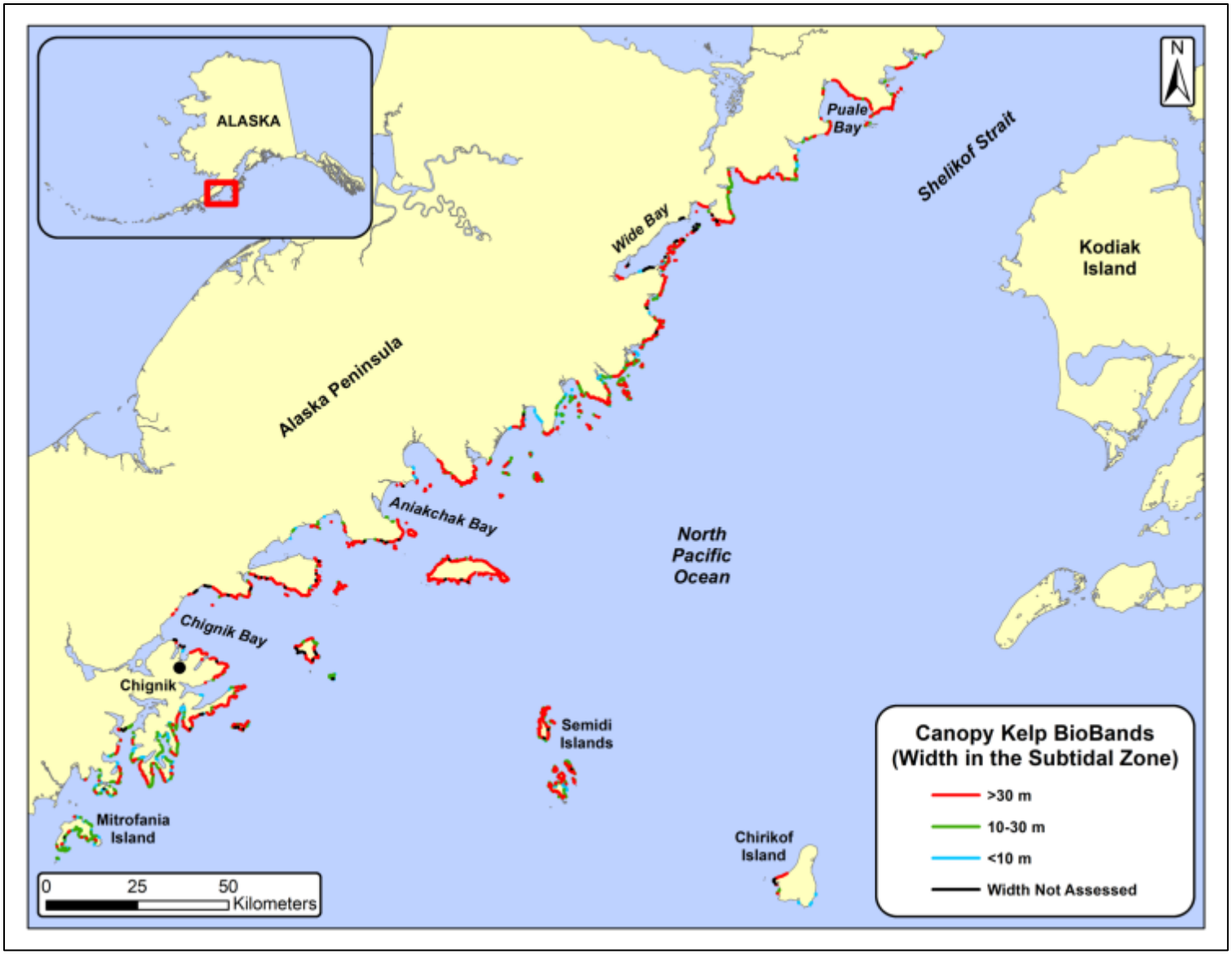

Figure 17. Distribution of the Canopy Kelp biobands (Bull Kelp, Dragon Kelp and Brown Canopy-forming Kelps) by Width Category.

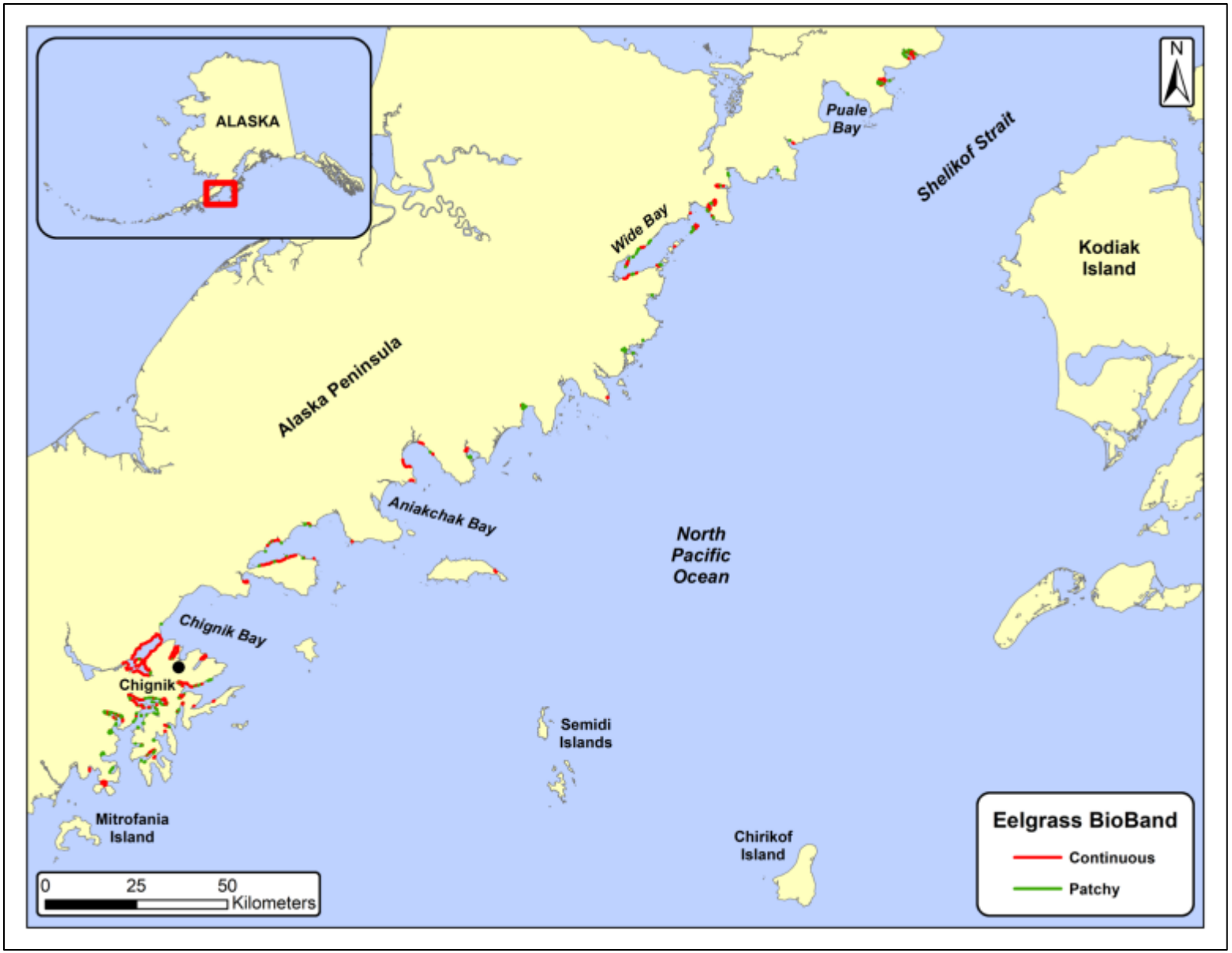

Figure 18. Distribution of the Eelgrass biobands in the intertidal and subtidal zones.

4.2 Biological Wave Exposure

Biological wave exposure categories range from Very Protected to Very Exposed and are defined in ShoreZone based on a typical set of biobands. When present the observation and relative abundance of biota in each alongshore unit is used to determine the classification for the biological wave exposure. The assemblages of biota observed are then used as a proxy for the wave exposure at that site. For definitions of the Biological Wave Exposures and the exposure ranges of the biobands, see the most recent ShoreZone protocol (Cook *et al*. 2017).

The distribution of the wave exposure categories mapped in the Alaska Peninsula survey area are summarized in Figure 19, and a distribution map of the categories is shown in Figure 20. This was a diverse survey area in terms of exposure, with 44.3% of the shoreline length in the lower exposure categories (Very Protected, Protected and Semi-Protected), and the rest was in the higher exposure categories, with Semi-Exposed making up 46.1% of the length of the shoreline in the survey area.

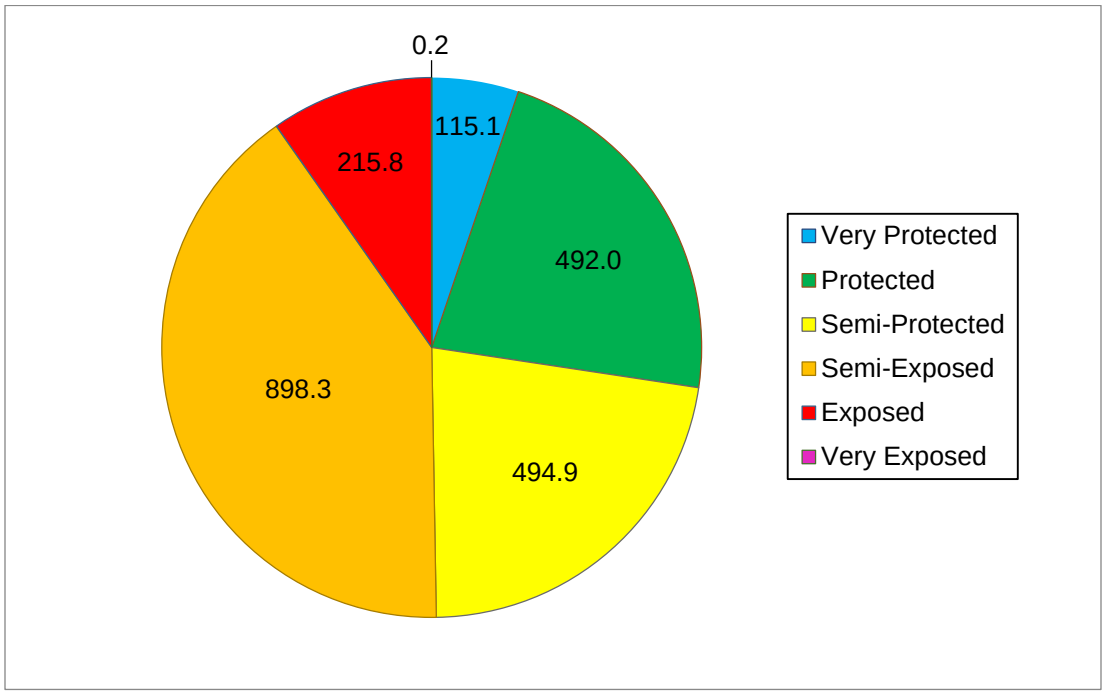

Figure 19. Proportion of Biological Wave Exposures by shoreline length (km).

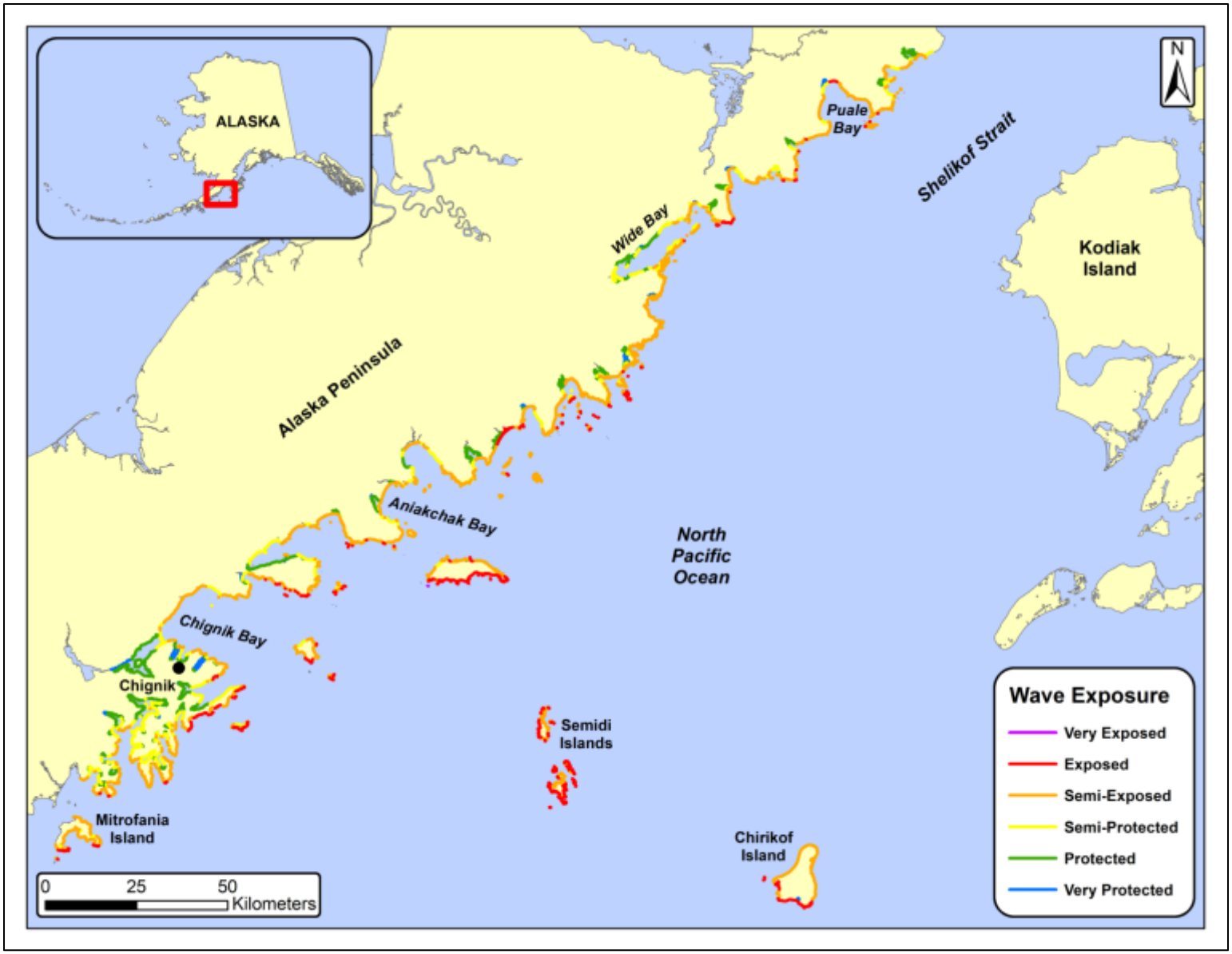

Figure 20. Distribution of the Biological Wave Exposure categories.

4.3 Habitat Class

The Habitat Class attribute is based on wave exposure and geomorphic characteristics observed on an alongshore unit. The habitat class is intended to provide a single attribute to characterize the biophysical features of each unit. The habitat class is assigned by the biological mapper and weighted according to the dominant structuring process. Wave exposure is the most common structuring process, while less commonly observed habitats are those structured by current, estuarine/fluvial processes, and anthropogenic structures. For habitat classes structured by wave exposure, substrate mobility determines the presence of epibenthic biota. Where the substrate is highly mobile, biota is sparse or absent, and where the substrate is stable, biota can be abundant. For further definitions and explanations of Habitat Class codes please see the most recent ShoreZone protocol (Cook *et al*. 2017).

The distribution of habitat class categories mapped for the Alaska Peninsula survey area are summarized in Figures 21 and 22. Partially Mobile and Immobile substrate classes are the dominant shoreline types (71.6%). The Riparian, or Estuary, Habitat Class was rare (6.6% of the shoreline length) and is characterized by a significant source of fresh water flowing into the unit, the presence of a delta fan and the presence of marsh habitat (the Salt Marsh bioband).

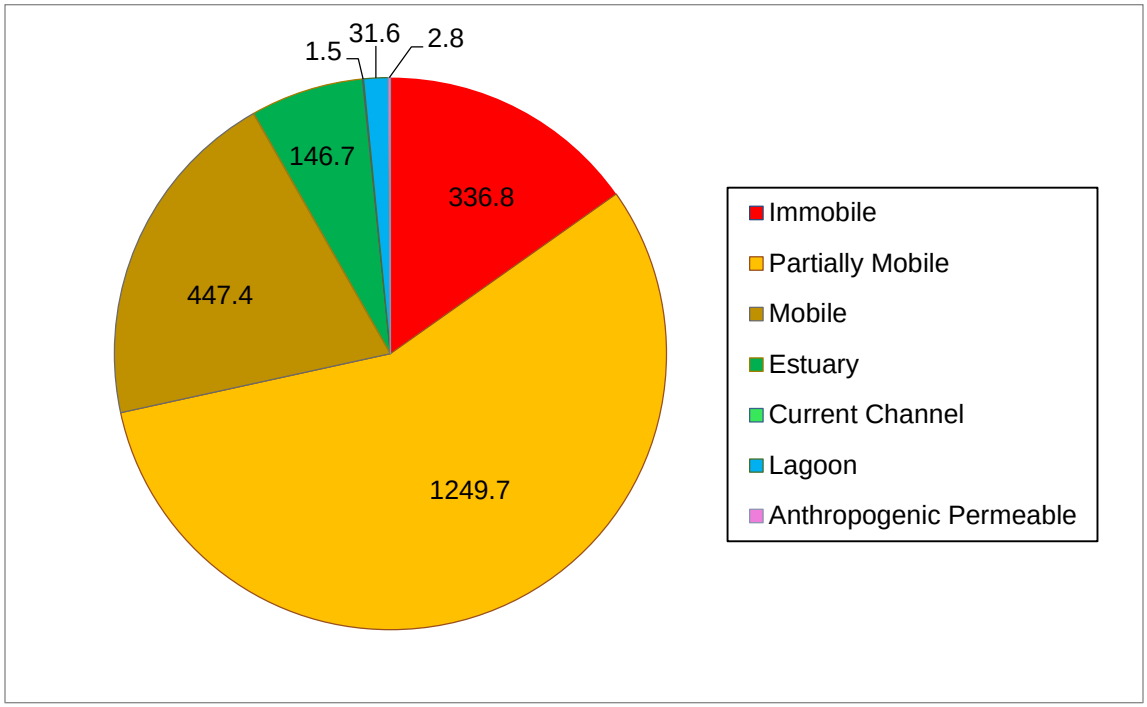

Figure 21. **Proportion of Habitat Class categories by shoreline length (km).**

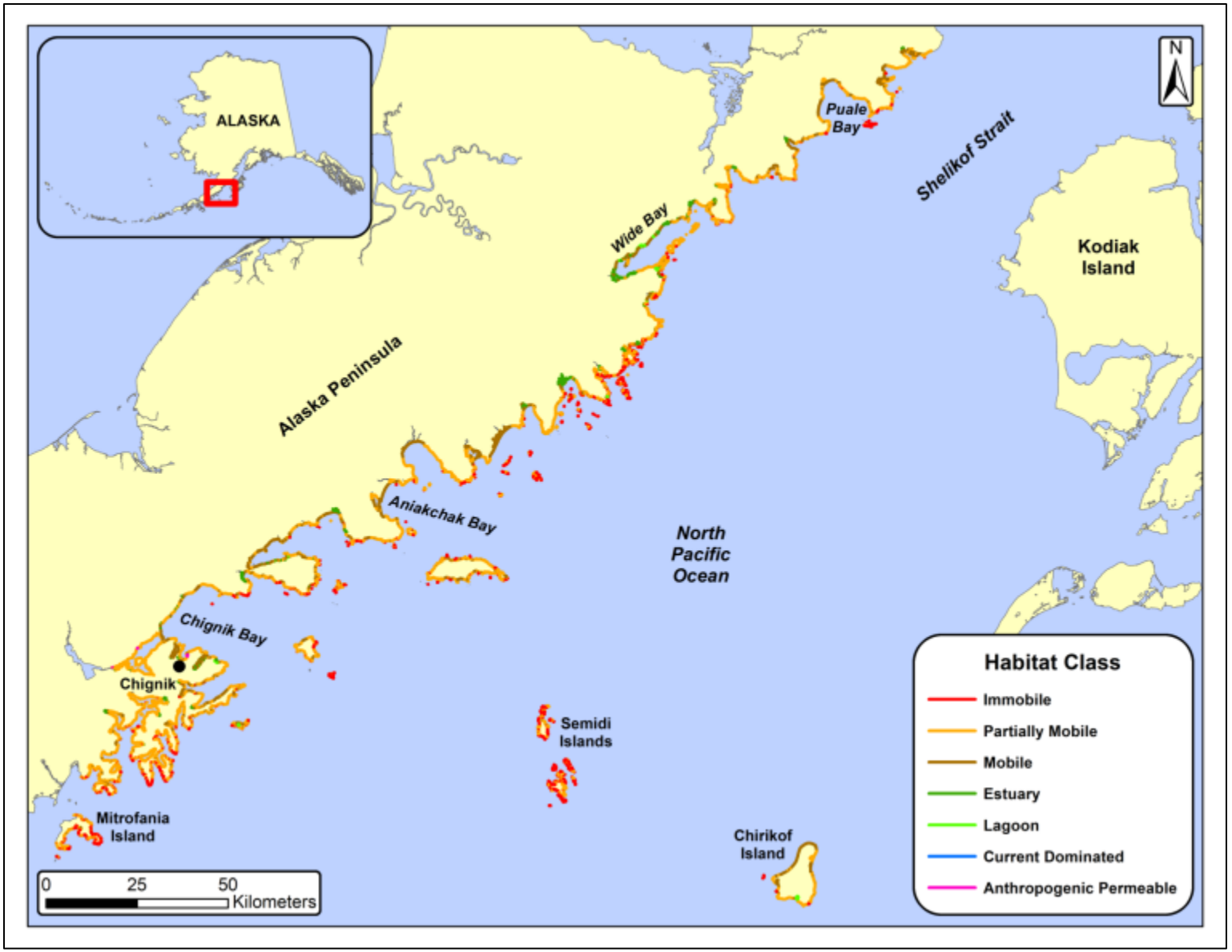

Figure 22. Distribution of Habitat Class categories.

5 Ground Station Survey Report

5.1 Introduction and Methods

The primary objective of a ShoreZone ground station survey is to obtain detailed geomorphologic and biological site information that compliments and improves the image classification and habitat mapping process and provides descriptions of the species associated with the biobands mapped in various habitats types and exposures. The collection of ground data can provide valuable information on regional differences in species diversity, species habitat requirements, and geographic ranges in Alaska and the Pacific Northwest. Hundreds of shore stations have been completed as part of the Alaska ShoreZone program. In the Gulf of Alaska, shore station data have been collected since 2002, including southeast Alaska, Prince William Sound, the outer Kenai Peninsula, the Kodiak archipelago, Cook Inlet, and the Katmai National Park coast. These data are spatially linked to the Alaska ShoreZone Database and are available through the NOAA online portal.

The specific objectives of the ground survey on the Alaska Peninsula were to:

1. Obtain specific site information and enhance knowledge and understanding of ShoreZone habitat mapping classifications.
2. Conduct detailed site specific observations of substrate, morphology and biota to better understand coastal processes and ecology and to complement interpretation of biobands from aerial imagery.
3. Document differences in species and assemblages in biobands for different coastal habitats and exposures.
4. Collect photographic evidence of sites, including alongshore and cross-shore details, biobands, and select species.
5. Make the information publically available by adding it to existing state-wide Shore Station database served online at http://alaskafisheries.noaa.gov/shorezone.

The Alaska Peninsula ground station surveys were conducted during two low-tide periods from May 4 - 12 and May 20 – 27, 2016. Sites were selected from the BOEM Alaska Peninsula study area as well as two sites on Chowiet Island in the Semidi Islands, which was part of the survey area paid for by NOAA. Two sites were also sampled opportunistically in Katmai National Park during vessel transit from the Alaska Peninsula study area back to Homer, Alaska (Figure 23). The survey team was supported by the Research Vessel (R/V) *Natural Habitat Ursus* for berthing accommodations. A skiff was available to access shore stations. Sampling was conducted within a three-hour window on either side of low tide to ensure sampling of the largest portion of the intertidal and shallow subtidal zones. The specific sites were selected to represent the diversity of wave exposures and Coastal Classes occurring along these shorelines (e.g. exposed rocky platforms, exposed boulder beaches, semi-exposed and semi-protected cobble beaches, salt marshes, eelgrass beds). An effort was made to sample habitats with multiple biobands and mixed species assemblages of individual species that may not be discernable from aerial imagery.
The shore station survey was conducted prior to ShoreZone habitat mapping, therefore detailed habitat data were not available for randomly selected sites representative of all habitats. As a result, sites were not selected based on statistical distribution of the range of habitats within the study area.

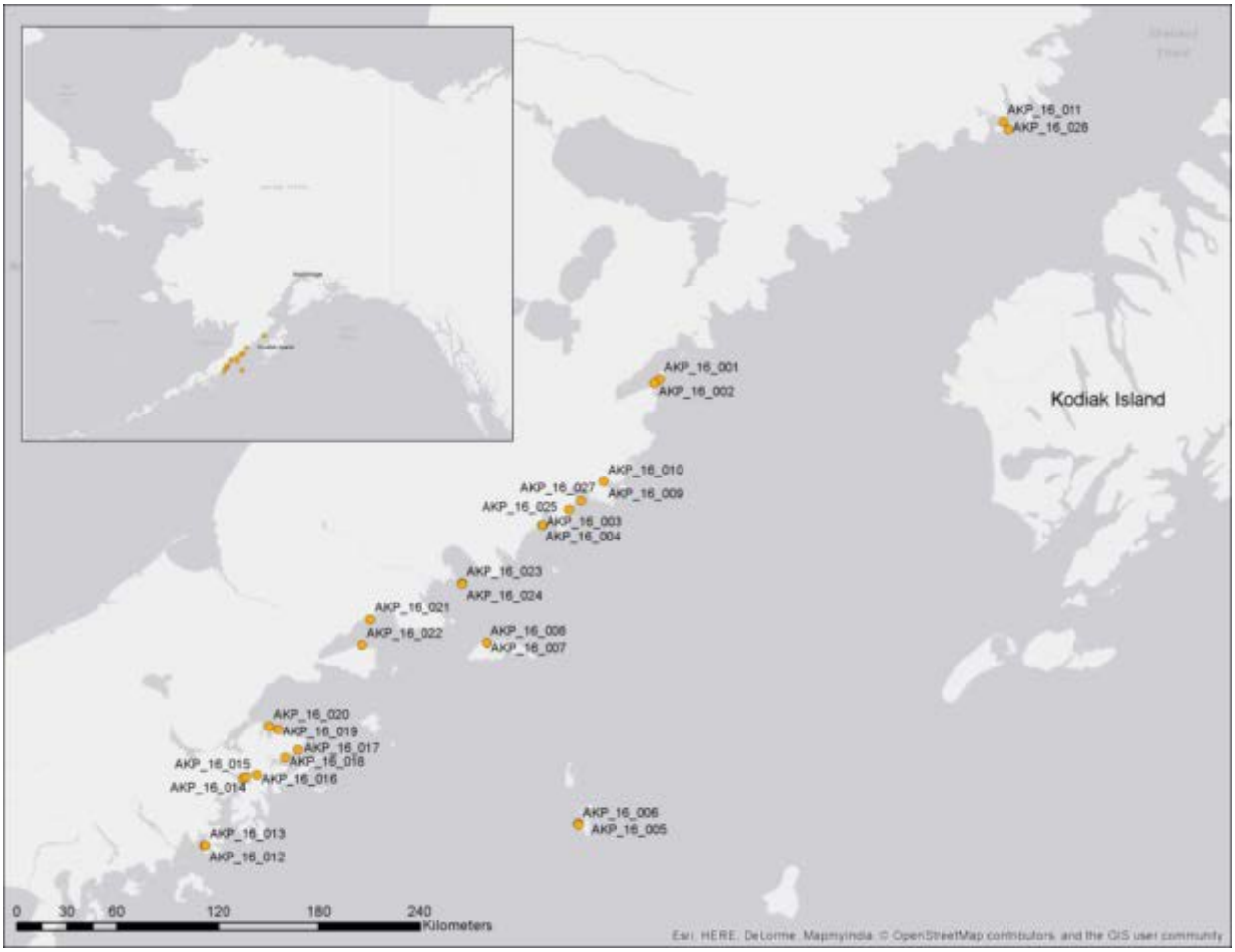

Figure 23. Study area map showing location of ground stations. Adjacent sites may show as one symbol on the map.

The shore station survey teams were composed of 3 to 4 specialists in ShoreZone survey and mapping techniques, Alaska seaweed and invertebrate taxonomists, and coastal ecologists with decades of experience working in Alaska's intertidal zone. A brief description and schematic of the geographic, geomorphic, and biological characteristics of the ground station were recorded for each site. This information included habitat type, exposure, major features or uniqueness of the site (e.g. adjacent freshwater influx), and the relative placement of substrates, geomorphic features, and dominant biota within the site and tidal zone. Representative site photographs were taken from the upper beach towards the waterline and from the lower beach towards the upland habitat to show the across-shore habitat and relative locations of biobands. Site photographs included alongshore and cross-shore views to show relative positions and patchiness of substrate and biota and to place the shore station in the context of nearby habitats. Additional site photos focused on individual biobands, species assemblages, or individual species.

A physical transect was placed within each site from the top of the beach to the bottom. It was placed to best reflect the overall shoreline habitat observed at that site. The GPS position was recorded at the top of the transect where the high water line was estimated to be. Profile breaks were established based on changes in biota (e.g. bioband divisions) and/or major substrate or slope changes (e.g. shift from a vertical rock wall to a rock platform or shift from a cobble beach face to a boulder field). Measurements of slope distance and vertical elevation were collected at the profile breaks to place features horizontally and

vertically within the profile. Vertical elevations were measured using a survey level and rod. Horizontal measurements were made with a stretched surveyor tape or range finder. The time at the water line was recorded so tidal corrections could later be made. Physical and biological characteristics were recorded for each across-shore section. The amount of the intertidal zone exposed at each site varied depending on when in the tide cycle it was sampled and where the site was located. For example, the tide level in Wide Bay (as predicted by the NOAA Tides and Current web site) when it was sampled was -0.7 feet, but was -2.55 feet on Chowiet Island when the ground team sampled there. The tide height directly influences the biobands exposed during the survey so can influence the data collected and comparisons to beaches of similar habitat and wave exposure which is why direct comparisons are not usually made.

Bioband boundaries were mapped and labeled on the profile sketch such that their relative position along the profile was reflected (vertically and horizontally), with the potential for bands to overlap. Detailed photographs were taken of each bioband to reflect species assemblages. It should be noted that bioband observations on the ground can be different from aerial observations as the patterns that appear clearly from the air may not be so obvious on the beach. Within each bioband, observed species were identified to the lowest taxonomic level along a 10 m swath on either side of the transect with an estimate of relative abundance. These abundance estimates were scaled to the size of individual organisms and their ecology. For example, a dozen Sunflower Stars (*Pycnopodia helianthoides*) in the swath would be considered abundant, whereas it would take many thousands of the Acorn Barnacles (*Balanus glandula*) in the same area to be considered abundant. The relative abundance categories used were:

- Abundant: the organism occurs in large numbers throughout most of a band.
- Common: the organism is present in moderate numbers throughout most of a band. Few: the organism occurs sporadically or in small patches within a band.
- Rare: only a few isolated individual of the organism occur in a band.

To provide more quantitative information to the ShoreZone mappers on bioband indicator species and assemblages, quadrat percent cover data (up to five quadrats per bioband) were collected when time allowed. If time precluded sampling five quadrats for each bioband, collections were prioritized for those biobands with the most complex species assemblages or that most difficult to identify from aerial imagery. Quadrats were randomly tossed roughly five meters apart along the band. Percent cover of each algal and non-motile invertebrate species was recorded within the gridded $0.25m^2$ quadrat frame. Motile invertebrates within each quadrat were also counted.

A sample of each algal species was collected, pressed and vouchered for taxonomic identification and archiving at the University of Vancouver and NOAA Auke Bay Laboratories herbaria. A complete taxonomic listing of seaweeds and seagrasses and a digital collection of all pressed specimens are provided in a NOAA Technical Memorandum (Lindeberg and Lindstrom, 2018).

Site data were entered in the standard Alaska ShoreZone ground station MS Access database. All data were reviewed following data entry for accuracy and completeness. Taxonomists reviewed the species lists and corrected misidentifications from the field, based on vouchered specimens and photographs.

5.2 Results

Shore station site names and their locations are provided in Table 6 along with substrate and exposure classifications.

Table 6. Ground stations sampled along the Alaska Peninsula.

Site Name	Location	Coordinates	Substrate	Exposure
AKP_16_001	Small islet, Wide Bay	N57.34408 W-156.30675	Partially mobile (vertical cliff and wide bedrock platform with gravel beach)	Semi-exposed
AKP_16_002	NW Slaughter Island, Wide Bay	N57.33322 W-156.33558	Immobile (vertical bedrock cliff with wide bedrock platform)	Semi-exposed
AKP_16_003	West coastline of Nakalilok Bay	N56.92094 W-156.93511	Immobile (vertical bedrock cliff with a wide, flat bedrock platform)	Semi-exposed
AKP_16_004	W coastline of Nakalilok Bay	N56.92119 W-156.93663	Partially mobile (wide, low gradient boulder beach over bedrock platform)	Semi-exposed
AKP_16_005	NW coast of Choweit Island, Semidi Islands	N56.03983 W-156.74269	Immobile (large boulders, over a steep and narrow beach face)	Exposed
AKP_16_006	NW coast of Choweit Island, Semidi Islands	N56.03626 W-156.73961	Partially mobile (wide, low gradient boulder beach)	Semi-exposed
AKP_16_007	NE coast of Sutwik Island	N56.57623 W-157.23144	Partially mobile (wide, mixed substrate beach with a bedrock outcrop)	Semi-exposed
AKP_16_008	NE coast of Sutwik Island	N56.57350 W-157.23236	Partially mobile (wide, low gradient boulder & cobble beach)	Semi-exposed
AKP_16_009	N coast of Port Wrangell	N57.04738 W-156.60645	Immobile (steep bedrock cliff with narrow, low gradient bedrock ramp)	Semi-exposed
AKP_16_010	NW corner at head of Port Wrangell	N57.05980 W-156.62245	Immobile (narrow, steep, bedrock ramp)	Semi-protected
AKP_16_011	Between Amalik and Kinak bays	N58.07936 W-154.46570	Partially mobile (bedrock ramp with a veneer of boulder and cobble)	Semi-exposed
AKP_16_012	Mitrofania Bay, east of Brother Islands	N55.97477 W-158.74127	Partially mobile (bedrock cliff with narrow boulder, cobble, & pebble beach)	Semi-protected
AKP_16_013	Mitrofania Bay, east of Brother Islands	N55.97477 W-158.73827	Partially mobile (bedrock cliff with narrow, low gradient boulder & cobble beach)	Semi-exposed
AKP_16_014	Island in Kuiukta Bay	N56.17455 W-158.73827	Partially mobile (steep bedrock cliff with boulder beach)	Semi-protected
AKP_16_015	Head of Kuiukta Bay, near Portage Bay	N56.17855 W-158.17855	Partially mobile (vertical bedrock wall with low gradient bedrock, boulder, & cobble beach)	Semi-protected
AKP_16_016	SE corner of Portage Bay	N56.18575 W-158.46141	Mobile (wide, low gradient cobble and pebble beach)	Protected
AKP_16_017	N coast Castle Bay, near entrance	N56.26083 W-158.24166	Immobile (large, angular boulders overlying a bedrock platform.)	Semi-exposed
AKP_16_018	N coast of Castle Bay	N56.23345 W-158.31236	Partially mobile (low gradient boulder, cobble, and pebble beach)	Semi-exposed
AKP_16_019	S coast of Chignik Bay	N56.32022 W-158.35013	Partially mobile (vertical bedrock cliff with wide, low gradient bedrock platform covered in cobble and boulder)	Semi-exposed
AKP_16_020	Eagle Rock in Chignik Bay	N56.32758 W-158.39377	Immobile (vertical bedrock wall with low gradient bedrock platform)	Semi-exposed
AKP_16_021	N coast of Kujilik Bay	N56.64483 W-157.85397	Partially mobile (vertical bedrock cliff with bedrock platform with boulder and cobble)	Semi-exposed
AKP_16_022	S coast of Kujulik Bay	N56.56994 W-157.89736	Partially mobile (low bedrock cliff with wide, low gradient bedrock, boulder,cobble beach)	Semi-protected
AKP_16_023	N Garden Island, Aniakchak Bay	N56.75130 W-157.36416	Partially mobile (wide, low gradient boulder, cobble, and pebble beach)	Semi-exposed
AKP_16_024	NE Garden Island, Aniakchak Bay	N56.75000 W-157.36094	Partially mobile (vertical bedrock cliff with low gradient, wide bedrock, boulder, cobble, and sand beach)	Semi-exposed
AKP_16_025	N coast of Chiginagak Bay	N56.96630 W-156.78813	Partially mobile (wide, low gradient boulder, cobble, pebble, and sand beach)	Semi-exposed
AKP_16_027	North Derickson I., Chiginagak Bay	N56.99163 W-156.72441	Partially mobile (steep large boulder beach)	Semi-protected
AKP_16_028	North Mink Island, Amalik Bay	N58.05822 W-154.43911	Partially mobile (long, low gradient boulder, cobble, and pebble spit)	Semi-protected

During the two ground station surveys we identified 252 unique taxa, including 114 invertebrates, 130 algal species, 2 seagrasses, and 6 forbs, grasses, and lichens. Though boulders were not overturned to look for intertidal fish, an additional 4 taxa were observed during the survey when fish were encountered in tide pools, in cobble, or between boulders. A complete list of species identified for each site are presented in Appendix C (Table C-1). Since species could occur in more than one bioband on a site, data in Appendix A are organized by major taxonomic groupings instead of by bioband. These groupings include the green algae (Phylum Chlorphyta), brown algae (Phylum Ochrophyta, Class Phaeophyceae, excluding Order Laminariales), Kelps (Order Laminariales), red algae (Phylum Rhodophyta, excluding Orders Corallinales and Hapalidiales), invertebrates (Phyla Annelids, Arthropoda, Platyhelminthes, Porifera, Echinodermata, Cnidaria, and Mollusca), seagrasses (Phylum Anthophyta), Lichens (Phylum Ascomycota), Grass (*Leymus mollis*), and forbes (*Glaux maritima* and *Senecio pseudoarnica*). Species are listed alphabetically within each group. Quadrat data are presented in Appendix C (Table C-2) and show percent cover for algae and sessile invertebrates, and counts for mobile invertebrates.

Narrative descriptions of the geomorphology and biological attributes observed in-situ for each shore station are presented in Appendix D. Also shown are satellite images with shore station locations and aerial images showing the exact transect locations. Biological observations are organized by intertidal biobands with observations of flora and fauna. The narrative for each site includes photos highlighting geomorphology, biobands, marine algae, and invertebrates. Note that a 'Bare' bioband does not mean that there were no species present. This bioband reflects a splash zone devoid of a distinct black seaside lichen (*Verrucaria* sp.) and typically appears as unpopulated gray, black, or white rock or gravel, but may include species not identifiable from aerial imagery. If present, these organisms typically include scattered invertebrates and small patches of algae.

5.3 Discussion

All Alaska ShoreZone ground station data has been posted online by NOAA's Alaska Regional Office and is available from the online portal. On the portal, species lists by bioband can be viewed and downloaded along with site profiles that place biobands within relative tidal elevations. The data can be viewed, compiled, and downloaded by shore stations, biobands within shore stations, shore station groupings, by a specific region (e.g. Alaska Peninsula), and by combined regions (e.g. Gulf of Alaska). All data collected in the Alaska Peninsula will be amalgamated into this online data portal.

This survey was the most extensive survey of intertidal species reported for this section of the Alaska Peninsula coast. The shore station survey provided a rare opportunity to conduct a comprehensive assessment of marine species occurring in a range of habitats across the littoral zone (including the splash zone, intertidal zones, and the very shallow subtidal). The suite of shore stations represents a diversity of habitats and wave exposures and provides a species list that is representative of epifaunal species along the shorelines of the study area. There is little historical information for intertidal species assemblages within the study area, providing few opportunities to compare the shore station species lists to those reported in other studies; however, a long-term intertidal monitoring study near the study area provides the opportunity to assess shore station survey methods for documenting species presence. The Southwest Alaska Inventory and Monitoring Network (SWAN) maintains a series of sites along over 500 km of the Katmai and Kenai Fjords National Park coastlines (Dean *et al.* 2014). From 2006-2014 these sites were surveyed almost yearly. Data from these 28 sites showed 103 unique algae and invertebrate taxa on rocky habitat (bedrock and gravel) and 129 taxa for all habitats including soft sediment habitats. Along a section of coastline overlapping the SWAN Katmai study area, ShoreZone shore station surveys were conducted by Archipelago Marine Research Ltd in 2003 and 2009. These data are available on the ShoreZone shore station online portal. A combined total of 46 sites were surveyed, once each, and 193 unique alage and

invertebrate taxa for rocky and soft sediment habitats were documented. When this is compared to the 246 unique invertebrate and algal taxa documented at the 27 shore station sites in our Alaska Peninsula survey it is clear that ShoreZone shore station survey methods are effective at providing comprehensive inventories of intertidal species across a range of habitats.

Another comparison can be made to the ShoreZone ground station data from the area which represents 116 sites along more than 5000 km shoreline that encompassed Kodiak, Afognak, Shuyak, Sitkalidak, Sitkinak, and Perevalnie islands. During those surveys, conducted in 2005, there were 141 unique identified algal and 180 unique identified invertebrate species for a total of 321 taxa, compared with 246 species reported for the Alaska Peninsula survey. The difference could be due to the higher number of stations sampled, but may be due in part to regional differences in shoreline aspect and wave exposure. Shore stations on Kodiak were sampled around the entire circumference of that island archipelago, including sites along Shelikof Strait on the western side and the Gulf of Alaska to the east. The suite of sites represented north-, south-, east-, and west-facing shorelines while the majority of the Alaska Peninsula shoreline faced mostly to the southeast. An additional factor potentially influencing differences between the Kodiak archipelago and both the Alaska Peninsula and Katmai areas could be differences in input of freshwater to the nearshore. The Alaska current hugs the coastline, with a stronger component following along the Katmai and Alaska Peninsula coast than the Kodiak coastline. Glacier ice melt can depress intertidal biotic communities by introducing turbidity and freshwater stresses (Peterson 2005). The Katmai coast is also somewhat in the lee of Kodiak Island so has some protection from major storms from the southeast, while both the east side of Kodiak and the Alaska Peninsula study area would be strongly influenced by strong onshore winds. These winds have the potential to mix the water column and bring deeper saline, nutrient-rich water to the surface.

The updated Alaska shore station database with May 2016 Alaska Peninsula data provides information that can be compiled and assessed at the site level and at different regional scales. However, the Alaska shore station master database must be further updated to incorporate the numerous taxonomic revisions made to invertebrate and algae species since the first shore Gulf of Alaska station survey in 2002. The Alaska Peninsula dataset provides an impetus for updating the master database and improving website capabilities. Species assemblages at hundreds of shore stations in the Gulf of Alaska could be compared at various taxonomic and spatial scales if the database included a tool to extract and normalize data to account for varying sampling tidal ranges. Subsequent multi-variate analyses of the most complete datasets along the Kenai Peninsula, Katmai National Park, Alaska Peninsula, and Kodiak Island Archipelago might provide insight into what are the main drivers of intertidal diversity and richness in the western Gulf of Alaska.

5.4 Expanded Bioband Table

The ground station data collected in the survey area was provided to the ShoreZone biophysical mappers to assist in interpretation of the aerial imagery. The ground station data also allows us to create a bioband table with actual indicator and associated species for the common biobands in the Alaska Peninsula survey area. This expanded bioband table is found in Table 7.

Table 7. Bioband descriptions for the Alaska Peninsula as determined from the ground survey data.

Bioband	Code	Zone	Typical Color	Description	Indicator Species	Associated Species	Biological Wave Exposure	Number of Sites
Black Lichen	BLLI	A	Black to grey-black	Visible as a dark stripe on bare rock marking the upper limit of the intertidal zone.	*Verrucaria* sp.	*Littorina sitkana* *Lottia* sp. *Pyropia* sp. *Tectura persona* *Rosenvingiella polyrhiza*	All	21
Dune Grass	DUGR	A	Pale blue-green	Found in the upper intertidal zone, tall grasses observed as clumps continuous on dunes, in logline or on beach berms. This band may be the only band present on high-energy beaches.	*Leymus mollis*	*Glaux maritima* *Senecio pseudoarnica*	VP to E	2
Winter Laver	WILA	B	Pale green to greenish-gold	These species of *Porphyra* and *Pyropia* grow in the high intertidal of more exposed coasts in the winter season (sometimes seen in spring or summer in colder climes. It is associated with the Barnacle bioband.	*Pyropia* sp.	*Littorina sitkana* *Lottia* sp. *Tectura* sp.	SP to E	4
Barnacle	BARN	B	Grey-white to pale yellow	Visible on bedrock or large boulders. Can form an extensive band in higher exposures where algae have been grazed away.	*Balanus glandula* *Semibalanus* sp. *Chthamalus dalli*	*Fucus distichus* *Gloiopeltis furcata* *Halosaccion* sp. *Mastocarpus* sp. *Neorhodomela aculeata* *Pyropia* sp. *Mytilus trossulus* *Littorina* sp. *Lottia* sp. *Pagurus* sp. *Tectura* sp. *Pentidotea* sp.	P to VE	12

Bioband	Code	Zone	Typical Color	Description	Indicator Species	Associated Species	Biological Wave Exposure	Number of Sites
Rockweed	ROCK	B	Golden-brown to brown	Appears on bedrock cliffs and boulder, cobble or gravel beaches. Commonly occurs at the same elevation as the barnacle band.	*Fucus distichus*	Barnacles *Cryptosiphonia woodii* *Devaleraea* sp. *Endocladia muricata* *Halosaccion glandiforme* *Mastocarpus alaskensis* *Neorhodomela* sp. *Odonthalia floccosa* *Polyostea bipinnata* *Ulva* sp. *Pyropia* sp. *Mytilus trossulus* *Littorina sitkana* *Lottia* sp./ *Tectura* sp. *Nucella* sp. *Anthopleura* sp. *Pagurus* sp. *Halichondria* sp. *Katharina tunicata* Coralline red algae	VP to E	20
Blue Mussels	BLMU	B	Black or blue-black	Visible on bedrock and on boulder, cobble or gravel beaches. Appears in dense clusters that form distinct black patches or bands, either above or below the barnacle band.	*Mytilus trossulus*	*Neorhodomela aculeata* *Polyostea bipinnata* *Pyropia abbottiae* Barnacles *Littorina sitkana* *Lottia pelta* *Katharina tunicata* *Acmea mitra*	P to VE	2

Bioband	Code	Zone	Typical Color	Description	Indicator Species	Associated Species	Biological Wave Exposure	Number of Sites
Green Algae	GRAL	B	Various shades of green	Found on a variety of substrates. The band consists of filamentous and/or foliose green algae. Filamentous species often form a low turf of dark green.	*Ulva* sp. *Monostroma* sp. *Ulothrix flacca* *Pyropia* sp.	*Chthamalus dalli* *Littorina* sp. *Lottia* sp. *Tectura* sp.	VP to E	7
Filamentous and Foliose Algae	FFRA	B	Dark to bright red and red-brown	Diversity of foliose red algae indicates medium to high exposures, with filamentous species, often mixed with green algae, occurring at medium and lower exposures.	*Mastocarpus* alaskensis *Odonthalia* sp. *Neorhodomela* sp. *Palmaria* sp. Devaleraea sp. *Neoptilota* sp. *Ptilota* sp.	*Saccharina* sp. *Alaria marginata* *Polyostea bipinnata* *Halosaccion glandiforme* *Fucus distichus* Coralline red algae *Cryptosiphonia woodii* *Acrosiphonia* sp. *Semibalanus cariosus* *Ulva* sp. *Tonicella* sp. *Tectura* sp. *Pagurus* sp. *Nucella* sp. *Mytilus trossulus* *Margarites* sp. *Lottia* sp. *Katharina tunicata*	P to E	18
Bleached Red Algae	BRAL	B	Olive, golden or yellow-brown	Common on bedrock platforms, and cobble or gravel beaches. Distinguished from the FFRA band by color, although may be similar species. The bleached color usually indicates lower wave exposure.	*Devaleraea mollis*	*Saccharina latissima* *Halosaccion* sp. Barnacles *Pagurus* sp. *Halichondira panicea*	P to SP	2

Bioband	Code	Zone	Typical Color	Description	Indicator Species	Associated Species	Biological Wave Exposure	Number of Sites
Coralline Red Algae	CORA	B	Pink to whitish-pink	A combination of foliose and encrusting coralline algae occurring in the low intertidal. Lush coralline red algae indicate highest wave exposures.	*Clathromorphum sp.*	*Semibalanus cariosus* *Katharina tunicata* *Odonthalia floccosa* *Tectura* sp.	SE to VE	2
Surfgrass	SURF	B/C	Bright to dark green	Appears in tide pools on rock platforms, often forming extensive beds. This species has a clearly defined upper exposure limit of Semi-Exposed and its presence in units of Exposed wave energy indicates a wide across-shore profile, where wave energy is dissipated by wave run-up across the broad intertidal.	*Phyllospadix serrulatus*	*Laminaria*/*Sacharrina* sp. *Alaria marginata* *Pyropia* sp. *Monostroma grevillei* *Ulva* sp. *Polyostea binpinnata* *Pagurus* sp. Snails *Katharina tunicata*	SP to SE	1
Eelgrass	EELG	B/C	Bright to dark green	Commonly visible in estuaries, lagoons or channels, generally in areas with fine sediments. Eelgrass can occur in sparse patches or thick dense meadows.	*Zostera marina*	*Semibalanus balanoides* *Pylaiella littoralis* *Mytiulus trossulus* *Monostroma grevillei*	VP to SP	1
Bladed Brown Kelps	BRBA	B/C	Various shades of brown	Non-specific non-bladed brown algae that does not fit into a more specific algal bioband or cannot be clearly identified from the imagery.	*Alaria marginata* *Laminaria*/ *Saccharina* sp.	Coralline red algae *Costaria costata* *Fucus distichus* *Odonthalia* sp. *Palmaria*/*Devaleraea* *Mastocarpus* sp. *Polyostea bipinnata* *Katharina tunicata* *Margarites pupillus* *Metridium senile* *Nucella* sp. *Tectura scutum* *Semibalanus cariosus*	All	10

Bioband	Code	Zone	Typical Color	Description	Indicator Species	Associated Species	Biological Wave Exposure	Number of Sites
Soft Brown Bladed Kelps	SOBK	B/C	Various shades of brown	This band is defined by non-floating large browns and can form lush bands in semi-protected areas. The kelp fronds have a ruffled appearance and can be encrusted with diatoms and bryozoans giving the blades a 'dusty' appearance.	*Laminaria*/ *Saccharina* sp.	Coralline red algae *Mastocarpus pacificus* *Neorhodomela aculeata* *Polyostea bipinnata* *Scytosiphon lomentaria* *Ulva* sp.	P to SP	1
Dark Brown Bladed Kelps	DABK	B/C	Various shades of brown	Found at higher wave exposures, these stalked kelps grow in the lower intertidal. Blades are leathery, shiny, and smooth. A mixture of species occurs at the moderate wave exposures, while single-species stands of *Lessoniopsis* occur at high exposures.	*Laminaria*/ *Saccharina* sp.	*Alaria marginata* *Costaria costata* *Cymathere triplicata* *Desmarestia* sp. *Devaleraea mollis* *Mazzaella* sp. *Odonthalia* sp. *Ptilota asplenoides* *Tonicella lineata* Coralline red algae	SE to VE	11

6 Aerial Imaging and Ground Station Data Comparison

The goal of ShoreZone is to provide first responders, managers and researchers with a descriptive overview of the geomorphology and biology of the shoreline from the splash zone to the subtidal. It is therefore important to know if the aerial imagery collected in ShoreZone surveys was interpreted consistently and accurately. Consistency among mappers is addressed by an internal QAQC process where mappers review 10% of each other's work and discuss or correct discrepancies. The accuracy of the data interpreted from ShoreZone imagery is generally measured by comparison to shore station data collected during ground surveys. Shore station data used for this purpose has primarily been transect-based, in which a cross-shore profile is completed with a basic description of the substrate and a listing of the algal and invertebrate species that make up the biobands adjacent to each transect. The algal and invertebrate species found on these transects are then used to define the 'Associated Species' for each bioband, as discussed in the previous section.

While this methodology has worked well in previous surveys, we decided to develop a different techniques for this project. In the past we compared the ground survey transect to the ShoreZone unit in which the transect was located which meant comparing different spatial scales (a small swath compared to a broad expanse of beach). For this project, we defined small homogenous ground units during the field survey which were then classified using the aerial imagery in the office. This meant the same area was classified both from the ground and from the air and ensured that all classifications were directly comparable. It should be noted, however, that observations made from the ground will always differ somewhat from observations made using aerial imagery. This verification survey focused on defining the differences in the observations at the two different scales so the datasets can be interpreted appropriately.

The ground verification sites were completed during the field survey conducted in May 2016 in partnership with Sue Saupe at the Cook Inlet Regional Citizens Advisory Council (CIRCAC). The results of that survey are presented in Section 5 of this report. The verification sites were completed by Coastal and Ocean Resources (CORI) and were adjacent to the transect sites chosen for the ground stations. The start and end coordinates of the site were recorded by the field verifier as they walked the shoreline. Those boundaries were then marked on the corresponding high-resolution aerial still image and given to CORI physical and biological mapping technicians to classify. See example of ground verification unit in Figure 24 below.

The attributes classified by both the field verifier and the office classifier were Intertidal Zone Slope, Intertidal Zone Width and Substrate (Primary, Secondary and Tertiary/Interstitial). These attributes were classified over the entire intertidal zone. The office classifier was not allowed to see the classification done in the field prior to their own classification to preserve the rigor of the comparison.

Figure 24. Example of still image of ground verification unit AKP16_018.

The office and field classifications were put in an Excel spreadsheet and the attributes were scored using the criteria shown in Table 8. For this system, it is assumed the field classification is most accurate and it is the office classification that is being scored as the same or different. The spreadsheets with the classified attributes and the scores are found in Appendix E. The scores were summed for each site, giving an idea of how similar the field classification was to the office classification. The lower the score, the more similar the ground and office classifications.

Table 8. ShoreZone ground verification survey scoring criteria for each attribute classified.

Attributes	Score and Criteria			
	0	1	2	3
Intertidal Zone Slope	Same	One category difference	Two category difference	>2 category difference
Intertidal Zone Width	Within 10%	>10 to 25% different	>25 to 50% different	>50% different
Substrate	Same	All substrates the same but different order	One or more substrate codes differet and those that are the same are in a different order	Most or all substrate codes different
Biobands	Same	One Bioband different	2-3 Biobands different	>3 Biobands different

The overall scores for the 26 verification sites completed during the May 2016 ground station survey are presented in Table 9. The rank for each site was based on the following criteria: 0-4 indicates a Match between the office and field classification, 5-8 indicates the office and field classification were Similar with a few significant differences, and >8 was a Mismatch between the office and field classifications.

Table 9. Results of the comparison between the field and office classification for the ShoreZone verification sites.

Verification Site Number	Site Score	Site Rank
AKP16_001	3	Match
AKP16_002	2	Match
AKP16_003	2	Match
AKP16_004	1	Match
AKP16_005	6	Similar
AKP16_006	5	Similar
AKP16_007	7	Similar
AKP16_008	5	Similar
AKP16_009	4	Match
AKP16_010	4	Match
AKP16_011	5	Similar
AKP16-012	4	Match
AKP16-013	4	Match
AKP16-014	7	Similar
AKP16-015	5	Similar
AKP16-016	6	Similar
AKP16-017	2	Match
AKP16-018	6	Similar
AKP16-019	5	Similar
AKP16-020	7	Similar
AKP16-021	2	Match
AKP16-022	4	Match
AKP16-023	5	Similar
AKP16-024	4	Match
AKP16-025	5	Similar
AKP16-027	3	Match

Half the sites were ranked as a Match between the field and office classification while half were ranked Similar, and no sites were ranked as a Mismatch. For those sites that were ranked Similar the main differences between the field and office classifications were:

- The tertiary substrate was the most commonly mismatched, which is unsurprising since there may be more than just three substrates, so deciding which is the third most abundant is a judgement call. Also, the tertiary substrate may be interstitial or underlying the primary and secondary substrates and is therefore harder to assess from aerial imagery than the more abundant substrates.
- The Intertidal Zone Slope category was rarely off by more than one category.
- The Intertidal Zone Width is still the most problematic attribute despite the inclusion of the orthophotos created using Structure from Motion (SfM). The lack of ground control points during the image collection makes taking measurements from orthophotos more challenging, especially on complex and constantly changing shorelines such as those found in the Alaska Peninsula. We are currently working on ways to both collect the imagery and process it with the SfM software to make the measurement of intertidal width more accurate.
- Biobands were generally similar, with those most often missed by either the office classifier being the Barnacle, Green Algae and Bleached Red Algae bands. This is unsurprising since those bands often overlap with each other and with the Rockweed and Filamentous and Foliose Algae bands which tend to be more obvious in the areal imagery. It should be pointed out that green and red algal and barnacle species are defined as associated species with both the Rockweed and Filamentous and Foliose Red biobands, so while those groups may not appear as biobands from the air, the species themselves are considered to be present on the beach.
- The weather often was cloudy and rainy, making the survey challenging and the imagery dark. This made identification of the substrates and biobands from the aerial imaging challenging at times.

7 References

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Appendix A: Imaging Survey Summary Maps and Video Logs

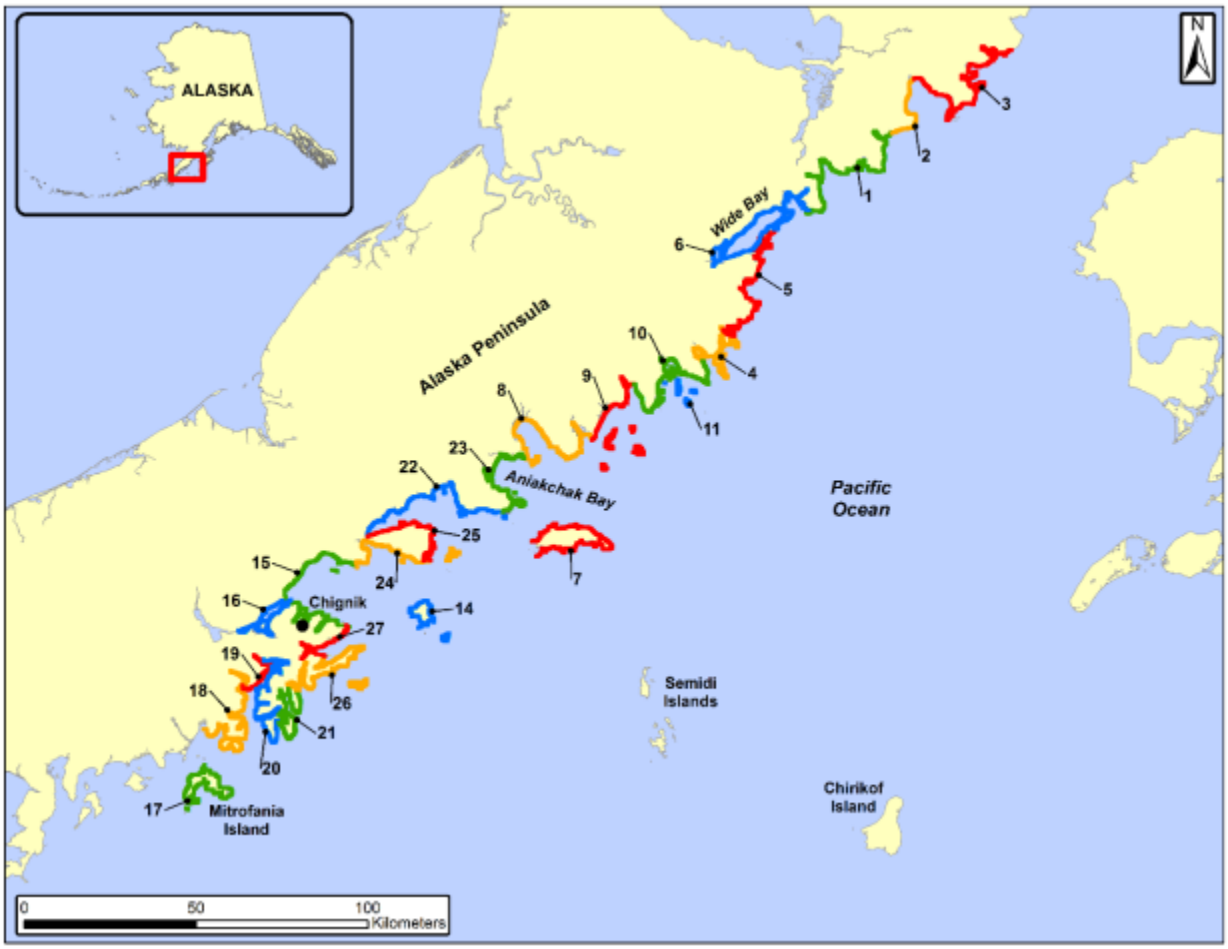
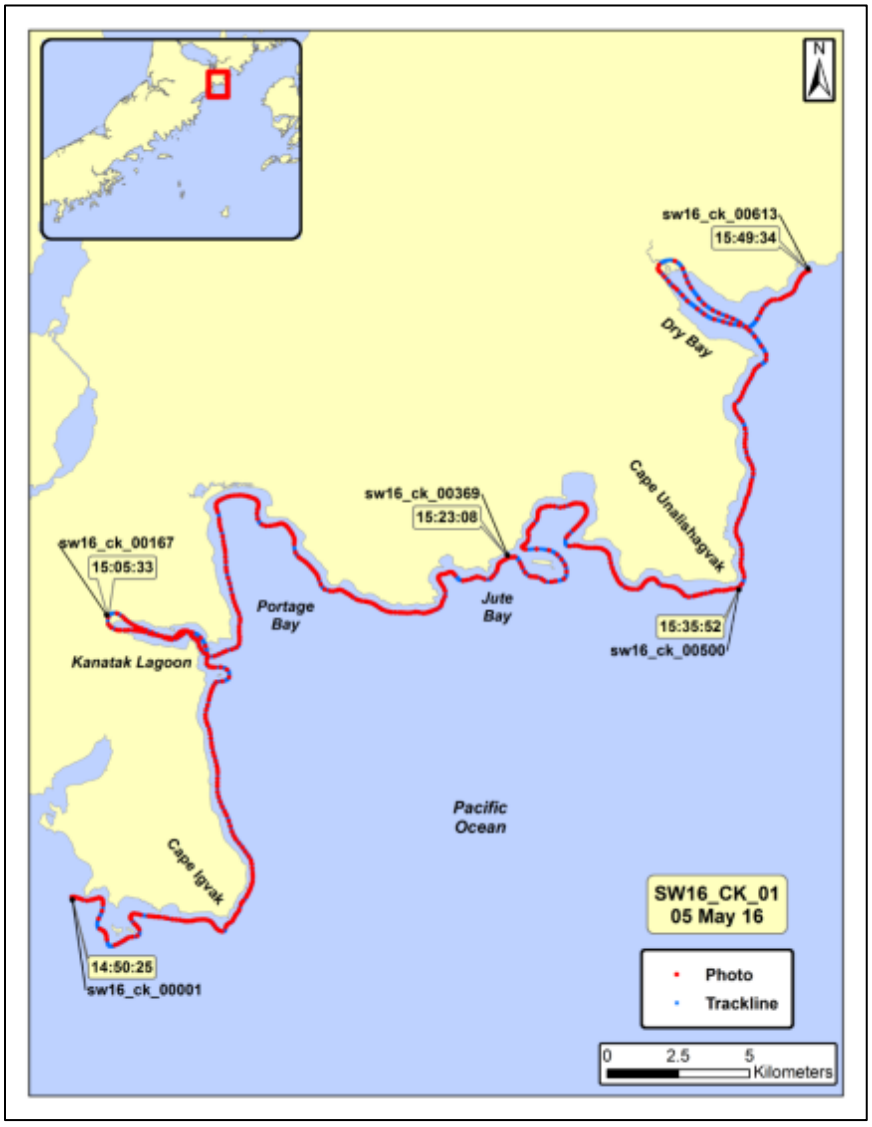


Figure A-1. Video location map for the Alaska Peninsula imaging survey.

Video: SW16_CK_01 **Date (AKDT):** 05 May 2016

General Location:	Portage Bay, Jute Bay		
Time Start (UTC):	14:50:24	**Geo:**	Schoch
Time End (UTC):	15:49:34	**Bio:**	Cook
Video Length:	49 min 10 sec	**Nav:**	Morrow
Weather:	Wind, Rain	**Pilot:**	Egli

Time (UTC)	Location	Photo
14:50:25	Cape Igvak	sw16_ck_00001
15:05:33	Kanatak Lagoon	sw16_ck_00167
15:23:08	Jute Bay	sw16_ck_00369
15:35:52	Cape Unalishagvak	sw16_ck_00500
15:49:34	Dry Bay	sw16_ck_00613

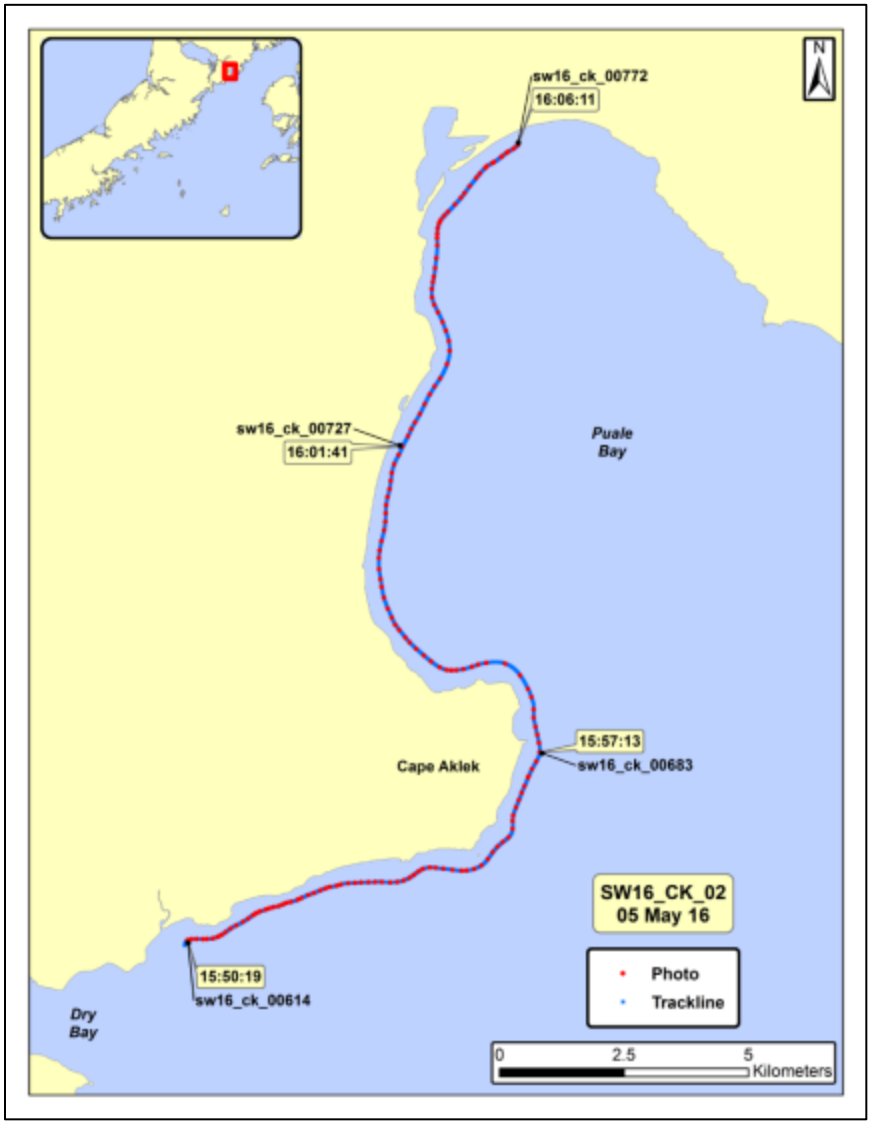


Video: SW16_CK_02 **Date (AKDT):** 05 May 2016

General Location: Puale Bay
Time Start (UTC): 15:50:12
Time End (UTC): 16:06:12
Video Length: 16 min 0 sec
Weather: Wind, Rain

Geo: Schoch
Bio: Cook
Nav: Morrow
Pilot: Egli

Time (UTC)	Location	Photo
15:50:19	East of Dry Bay	sw16_ck_00614
15:57:13	Cape Aklek	sw16_ck_00683
16:01:41	Puale Bay	sw16_ck_00727
16:06:11	Puale Bay	sw16_ck_00772



Video: SW16_CK_03 **Date (AKDT):** 05 May 2016

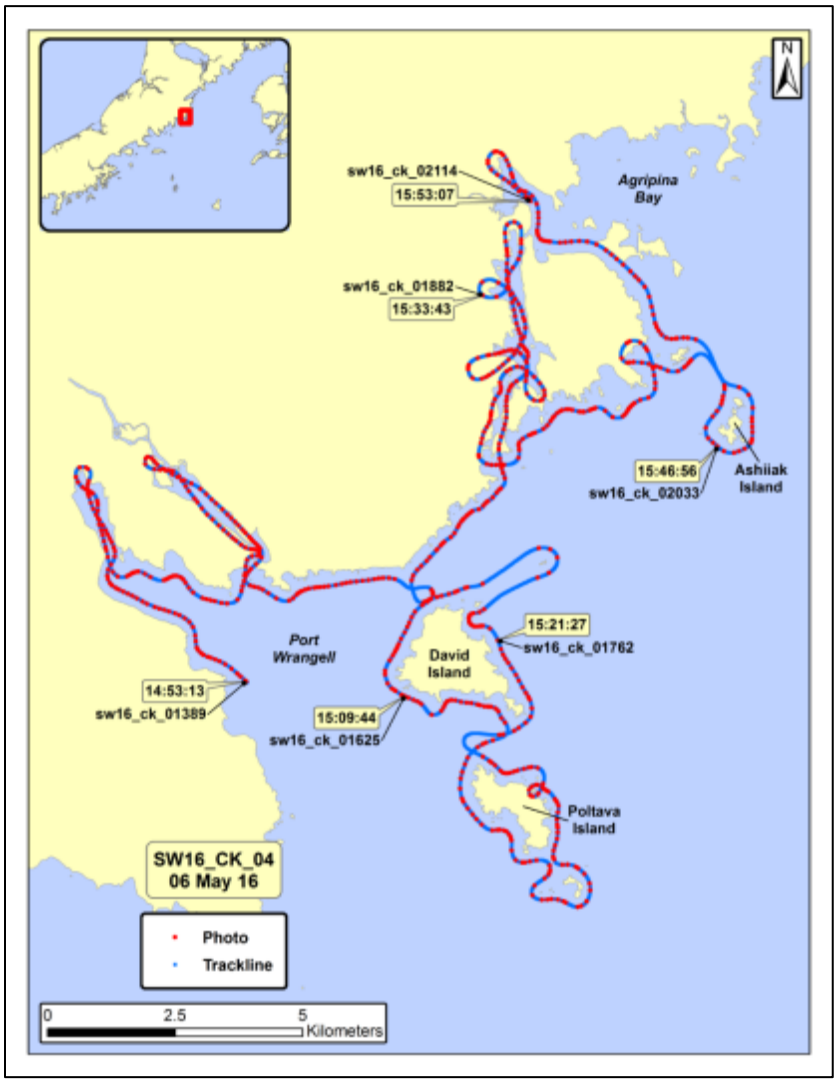
General Location:	Puale Bay, Alinchak Bay		
Time Start (UTC):	16:46:58	**Geo:**	Schoch
Time End (UTC):	17:57:02	**Bio:**	Cook
Video Length:	1 hr 6 min 57 sec	**Nav:**	Morrow
Weather:	Wind, Rain	**Pilot:**	Egli

Time (UTC)	Location	Photo
16:46:59	Puale Bay	sw16_ck_00779
17:09:03	Cape Kekurnoi	sw16_ck_00990
17:22:44	Little Alinchak Bay	sw16_ck_01104
17:39:21	Bear Bay	sw16_ck_01256
17:48:37	Cape Kubugakli	sw16_ck_01344
	Video Break: 17:48:55 to 17:52:01	
17:57:01	Bear Bay	sw16_ck_01388

Video: SW16_CK_04 **Date (AKDT):** 06 May 2016

General Location:	Port Wrangell, Agripina Bay		
Time Start (UTC):	14:53:12	**Geo:**	Schoch
Time End (UTC):	15:53:07	**Bio:**	Cook
Video Length:	59 min 55 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

Time (UTC)	Location	Photo
14:53:13	Port Wrangell	sw16_ck_01389
15:09:44	David Island	sw16_ck_01625
15:21:27	David Island	sw16_ck_01762
15:33:43	Unnamed Lagoon	sw16_ck_01882
15:46:56	Ashiiak Island	sw16_ck_02033
15:53:07	Agripina Bay	sw16_ck_02114



Video: SW16_CK_05 **Date (AKDT):** 06 May 2016

General Location: Agripina Bay, Imuya Bay, Cape Kayakliut
Time Start (UTC): 15:53:34 **Geo:** Schoch
Time End (UTC): 16:56:08 **Bio:** Cook
Video Length: 1 hr 2 min 34 sec **Nav:** Morrow
Weather: Overcast **Pilot:** Egli

Time (UTC)	Location	Photo
15:53:41	Agripina Bay	sw16_ck_02115
16:18:33	Imuya Bay	sw16_ck_02428
16:32:36	Cape Kayakliut	sw16_ck_02617
16:42:45	Slaughter Island	sw16_ck_02744
16:56:07	Terrace Island	sw16_ck_02893

Video: SW16_CK_06 **Date (AKDT):** 06 May 2016

General Location:	Wide Bay		
Time Start (UTC):	16:56:54	**Geo:**	Schoch
Time End (UTC):	18:08:08	**Bio:**	Cook
Video Length:	57 min 51 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

Time (UTC)	Location	Photo
16:56:55	West Channel Island	sw16_ck_02894
17:09:51	Slaughter Island	sw16_ck_03040
	Video Break: 17:13:01 to 17:26:23	
17:26:24	Wide Bay	sw16_ck_03085
17:41:54	Wide Bay	sw16_ck_03267
17:51:20	Coal Pt.	sw16_ck_03413
18:08:07	Cape Igvak	sw16_ck_03630

Video: SW16_CK_07 **Date (AKDT):** 07 May 2016

General Location: Sutwik Island
Time Start (UTC): 15:35:54 **Geo:** Schoch
Time End (UTC): 16:18:48 **Bio:** Cook
Video Length: 42 min 54 sec **Nav:** Morrow
Weather: Overcast **Pilot:** Egli

Time (UTC)	Location	Photo
15:35:54	West Sutwik Island	sw16_ck_03635
15:45:17	South Sutwik Island	sw16_ck_03763
15:56:32	Foggy Cape	sw16_ck_03935
16:05:21	North Sutwik Island	sw16_ck_04059
16:18:48	West Sutwik Island	sw16_ck_04237

Video: SW16_CK_08 **Date (AKDT):** 07 May 2016

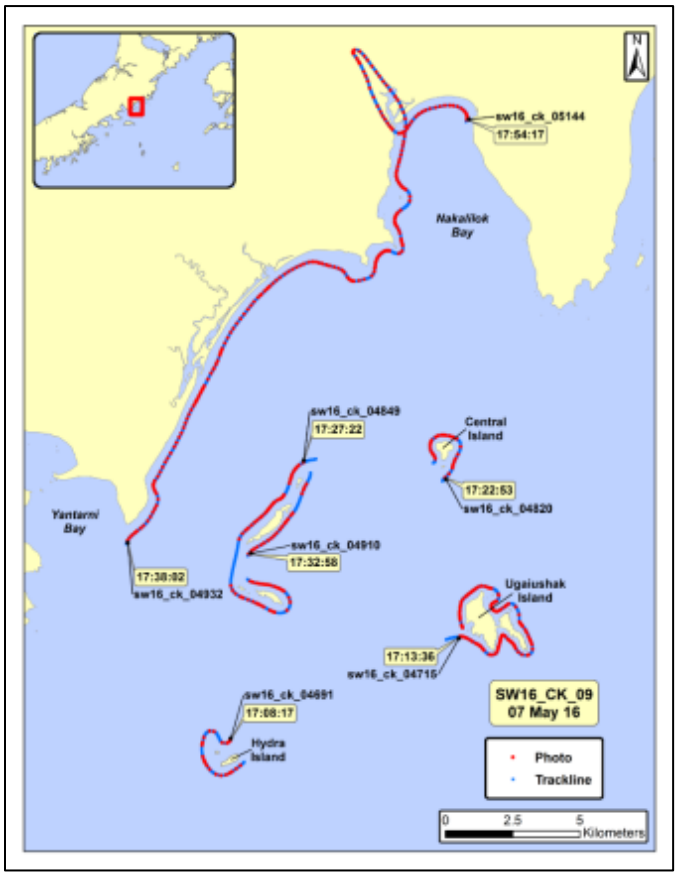
General Location:	Amber Bay. Yantarni Bay		
Time Start (UTC):	16:26:20	**Geo:**	Schoch
Time End (UTC):	17:04:44	**Bio:**	Cook
Video Length:	37 min 27 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

Time (UTC)	Location	Photo
16:26:24	Garden Island	sw16_ck_04239
	Video Break: 16:30:39 to 16:31:35	
16:31:43	Cape Ayutka	sw16_ck_04277
16:40:27	Amber Bay	sw16_ck_04398
16:54:00	Cape Kunmik	sw16_ck_04568
17:04:41	Yantarni Bay	sw16_ck_04690

Video: SW16_CK_09 **Date (AKDT):** 07 May 2016

General Location:	Nakalilok Bay, Ugaiushak Island		
Time Start (UTC):	17:08:14	**Geo:**	Schoch
Time End (UTC):	17:54:20	**Bio:**	Cook
Video Length:	35 min 42 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

Time (UTC)	Location	Photo
17:08:17	Hydra Island	sw16_ck_04691
	Video Break: 17:10:27 to 17:13:21	
17:13:36	Ugaiushak Island	sw16_ck_04715
	Video Break: 17:20:38 to 17:22:45	
17:22:53	Central Island	sw16_ck_04820
	Video Break: 17:25:15 to 17:27:05	
17:27:22	Islands off Yantarni Bay	sw16_ck_04849
	Video Break: 17:32:37 to 17:32:55	
17:32:58	Islands off Yantarni Bay	sw16_ck_04910
	Video Break: 17:34:47 to 17:37:57	
17:38:02	Yantarni Bay Entrance	sw16_ck_04932
17:54:17	Nakalilok Bay	sw16_ck_05144



Video: SW16_CK_10 **Date (AKDT):** 07 May 2016

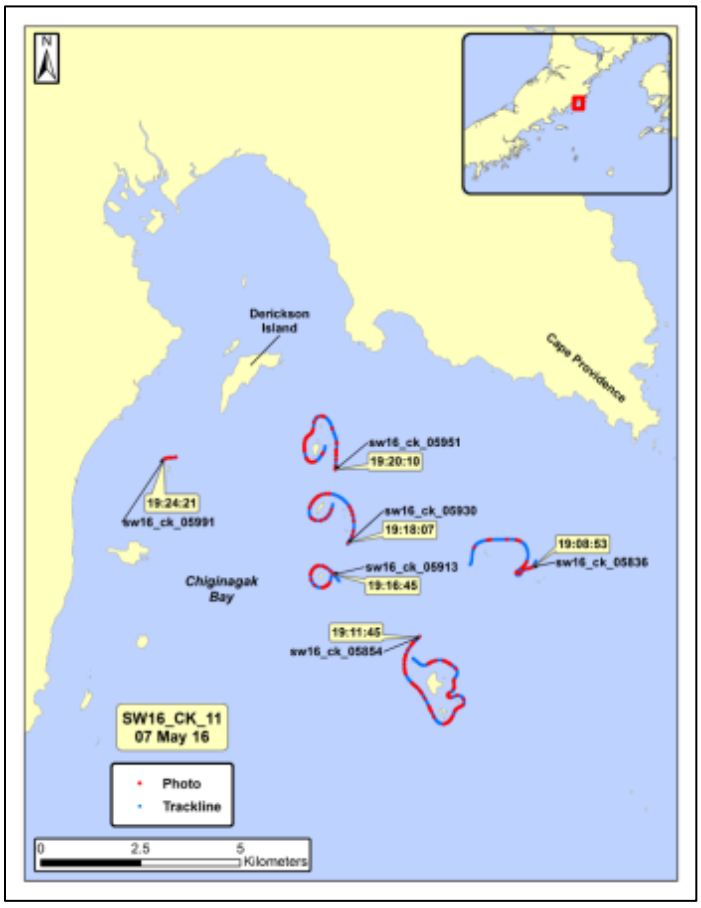
General Location:	Nakalilok Bay, Chiginagak Bay, Port Wrangell		
Time Start (UTC):	18:14:40	**Geo:**	Schoch
Time End (UTC):	19:04:20	**Bio:**	Cook
Video Length:	48 min 15 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

Time (UTC)	Location	Photo
18:14:58	Nakalilok Bay	sw16_ck_05145
18:23:09	Cupcake Island	sw16_ck_05267
18:37:52	Chiginagak Bay	sw16_ck_05467
	Video Break: 18:45:15 to 18:45:42	
18:45:43	Derickson Island	sw16_ck_05554
	Video Break: 18:50:07 to 18:51:03	
18:51:27	Chiginagak Bay	sw16_ck_05621
19:04:14	Port Wrangell	sw16_ck_05835

Video: SW16_CK_11 **Date (AKDT):** 07 May 2016

General Location: Chiginagak Bay
Time Start (UTC): 19:08:48 **Geo:** Schoch
Time End (UTC): 19:24:24 **Bio:** Cook
Video Length: 11 min 07 sec **Nav:** Morrow
Weather: Overcast **Pilot:** Egli

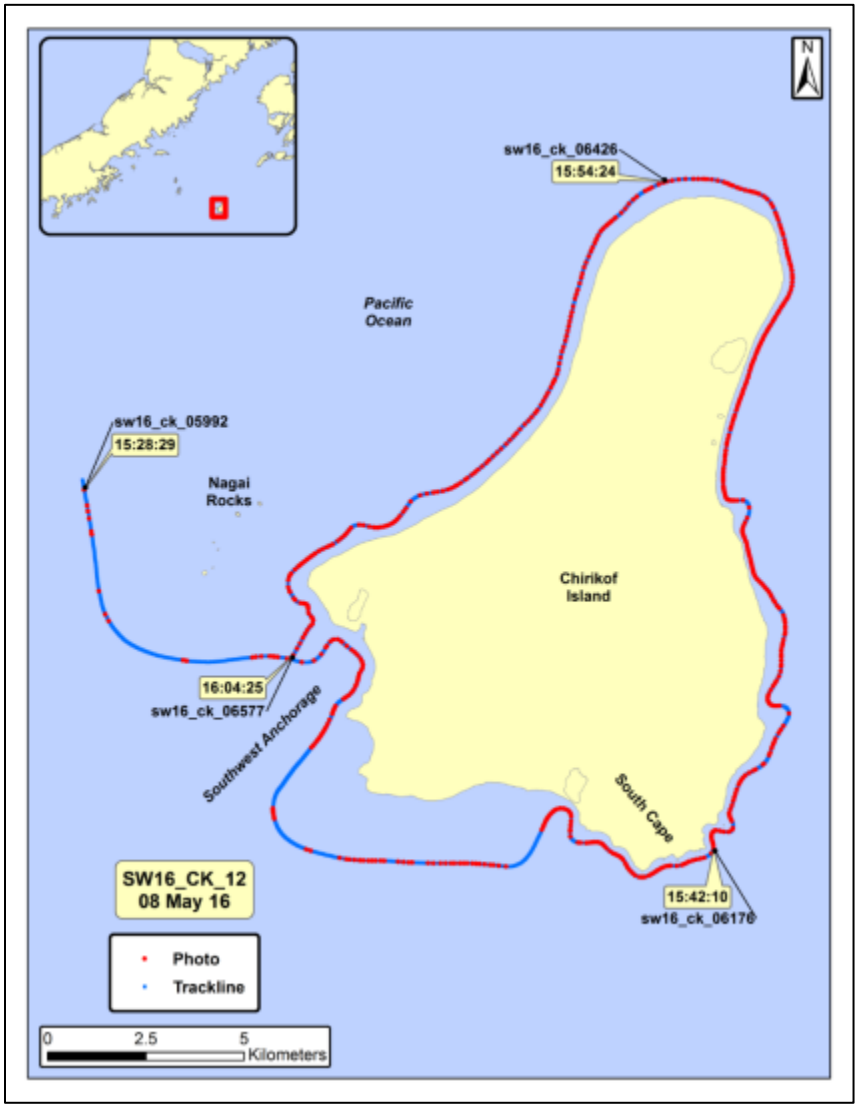
Time (UTC)	Location	Photo
19:08:53	Chiginagak Bay Islands	sw16_ck_05836
	Video Break: 19:10:45 to 19:11:43	
19:11:45	Chiginagak Bay Islands	sw16_ck_05854
	Video Break: 19:15:39 to 19:16:39	
19:16:45	Chiginagak Bay Islands	sw16_ck_05913
	Video Break: 19:17:43 to 19:18:05	
19:18:07	Chiginagak Bay Islands	sw16_ck_05930
	Video Break: 19:19:49 to 19:20:09	
19:20:10	Chiginagak Bay Islands	sw16_ck_05951
	Video Break: 19:22:23 to 19:24:07	
19:24:21	Chiginagak Bay Islands	sw16_ck_05991



Video: SW16_CK_12 **Date (AKDT):** 08 May 2016

General Location: Chirikof Island
Time Start (UTC): 15:28:22 **Geo:** Schoch
Time End (UTC): 16:04:26 **Bio:** Cook
Video Length: 36 min 04 sec **Nav:** Morrow
Weather: Overcast **Pilot:** Egli

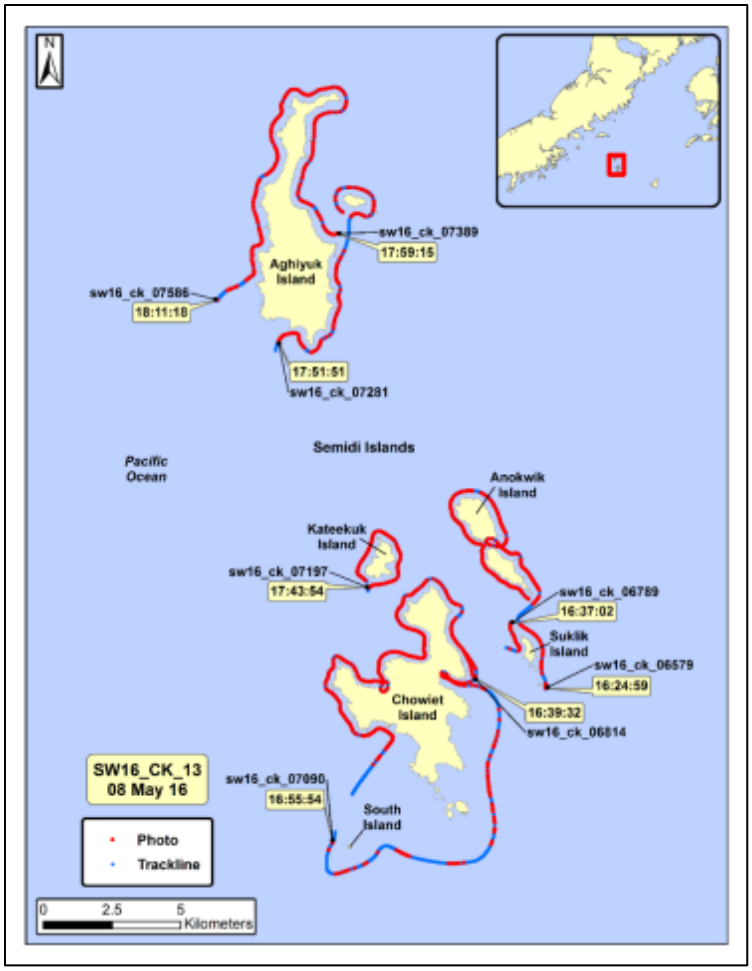
Time (UTC)	Location	Photo
15:28:29	Nagai Rocks	sw16_ck_05992
15:42:10	South Cape	sw16_ck_06176
15:54:24	North Chirikof	sw16_ck_06426
16:04:25	Southwest Anchorage	sw16_ck_06577



Video: SW16_CK_13 **Date (AKDT):** 08 May 2016

General Location: Semidi Islands
Time Start (UTC): 16:24:58 **Geo:** Schoch
Time End (UTC): 18:11:20 **Bio:** Cook
Video Length: 59 min 32 sec **Nav:** Morrow
Weather: Overcast, Windy **Pilot:** Egli

Time (UTC)	Location	Photo
16:24:59	Suklik Island	sw16_ck_06579
	Video Break: 16:36:07 to 16:36:59	
16:37:02	Suklik Island	sw16_ck_06789
	Video Break: 16:38:19 to 16:39:29	
16:39:32	Chowiet Island	sw16_ck_06814
	Video Break: 16:55:01 to 16:55:39	
16:55:54	South Island	sw16_ck_07090
	Video Break: 17:03:37 to 17:43:49	
17:43:54	Kateekuk Island	sw16_ck_07197
	Video Break: 17:48:21 to 17:51:39	
17:51:51	South Aghiyuk Island	sw16_ck_07281
	Video Break: 17:58:40 to 17:59:14	
17:59:15	East Aghiyuk Island	sw16_ck_07389
18:11:18	West Aghiyuk Island	sw16_ck_07586


N
sw16_ck_07389
17:59:15
Aghiyuk Island
sw16_ck_07586
18:11:18
17:51:51
sw16_ck_07281
Semidi Islands
Pacific Ocean
Anokwik Island
Kateekuk Island
sw16_ck_07197
17:43:54
sw16_ck_06789
16:37:02
Sukiik Island
sw16_ck_06579
16:24:59
Chowiet Island
16:39:32
sw16_ck_06814
SW16_CK_13
08 May 16
sw16_ck_07090
16:55:54
South Island
Photo
Trackline
0
2.5
5
Kilometers

Video: SW16_CK_14 **Date (AKDT):** 08 May 2016

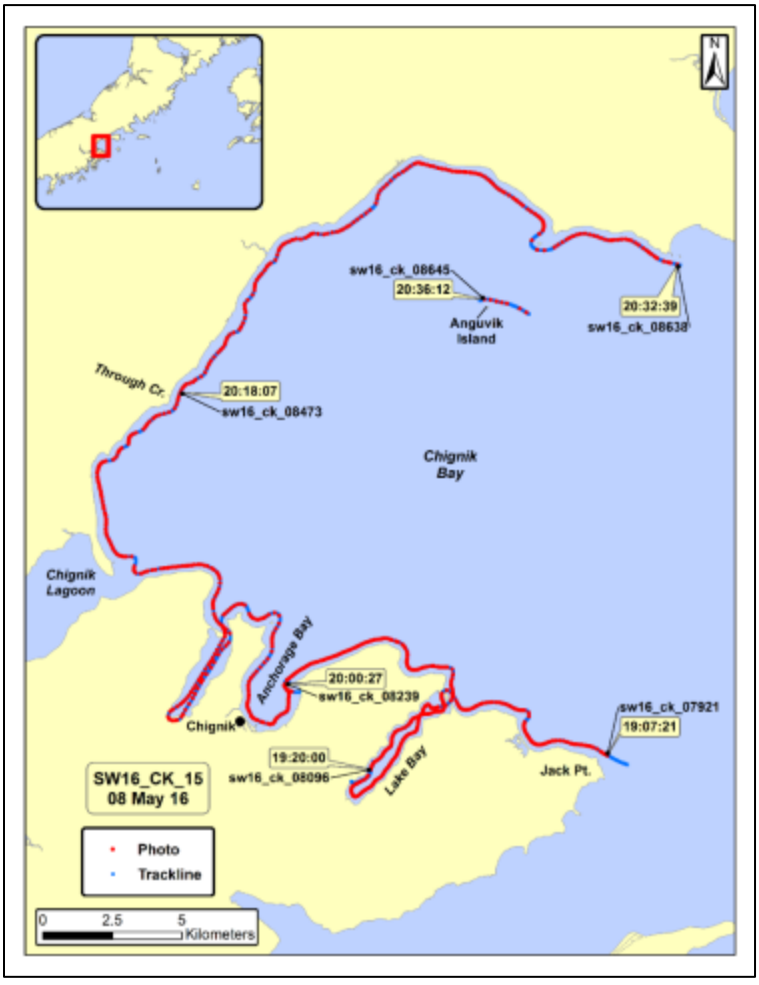
General Location:	Atkulik Island, Nakchamik Island, Kak Island		
Time Start (UTC):	18:31:26	**Geo:**	Schoch
Time End (UTC):	18:56:00	**Bio:**	Cook
Video Length:	20 min 40 sec	**Nav:**	Morrow
Weather:	Overcast, Windy	**Pilot:**	Egli

Time (UTC)	Location	Photo
18:31:40	Atkulik Island	sw16_ck_07587
	Video Break: 18:35:29 to 18:37:23	
18:37:34	South Nakchamik Island	sw16_ck_07651
18:45:04	North Nakchamik Island	sw16_ck_07791
18:52:03	South Nakchamik Island	sw16_ck_07894
	Video Break: 18:53:41 to 18:55:39	
18:56:00	Kak Island	

Video: SW16_CK_15 **Date (AKDT):** 08 May 2016

General Location: Chignik Bay
Time Start (UTC): 19:07:02 **Geo:** Schoch
Time End (UTC): 20:36:18 **Bio:** Cook
Video Length: 53 min 45 sec **Nav:** Morrow
Weather: Overcast, Windy **Pilot:** Egli

Time (UTC)	Location	Photo
19:07:21	Jack Pt.	sw16_ck_07921
	Video Break: 19:18:01 to 19:19:13	
19:20:00	Lake Bay	sw16_ck_08096
	Video Break: 19:28:37 to 20:00:17	
20:00:27	Chignik Spit, Anchorage Bay	sw16_ck_08239
20:18:07	Through Creek, Chignik Bay	sw16_ck_08473
20:32:39	Chignik Bay	sw16_ck_08638
	Video Break: 20:32:43 to 20:35:19	
20:36:12	Anguvik Island	sw16_ck_08645



Video: SW16_CK_16 **Date (AKDT):** 08 May 2016

General Location: Chignik Lagoon
Time Start (UTC): 20:42:16 **Geo:** Schoch
Time End (UTC): 21:18:02 **Bio:** Cook
Video Length: 35 min 46 sec **Nav:** Morrow
Weather: Overcast, Windy **Pilot:** Egli

Time (UTC)	Location	Photo
20:42:20	Chignik Lagoon Entrance	sw16_ck_08647
20:51:14	Chignik Lagoon	sw16_ck_08754
21:00:45	Chignik River	sw16_ck_08879
21:10:12	Chignik Island	sw16_ck_08995
21:18:02	Chignik Lagoon Entrance	sw16_ck_09098

Video: SW16_CK_17 **Date (AKDT):** 09 May 2016

General Location: Mitrofania Island
Time Start (UTC): 16:54:50 **Geo:** Schoch
Time End (UTC): 17:39:00 **Bio:** Cook
Video Length: 42 min 26 sec **Nav:** Morrow
Weather: Overcast **Pilot:** Egli

Time (UTC)	Location	Photo
16:55:28	North Mitrofania Island	sw16_ck_09099
	Video Break: 17:06:27 to 17:07:29	
17:07:30	Spitz Island	sw16_ck_09259
	Video Break: 17:08:09 to 17:08:49	
17:08:59	South Mitrofania Island	sw16_ck_09271
17:23:56	Sosbee Bay	sw16_ck_09477
17:38:58	North Mitrofania Island	sw16_ck_09660

Video: SW16_CK_18 **Date (AKDT):** 09 May 2016

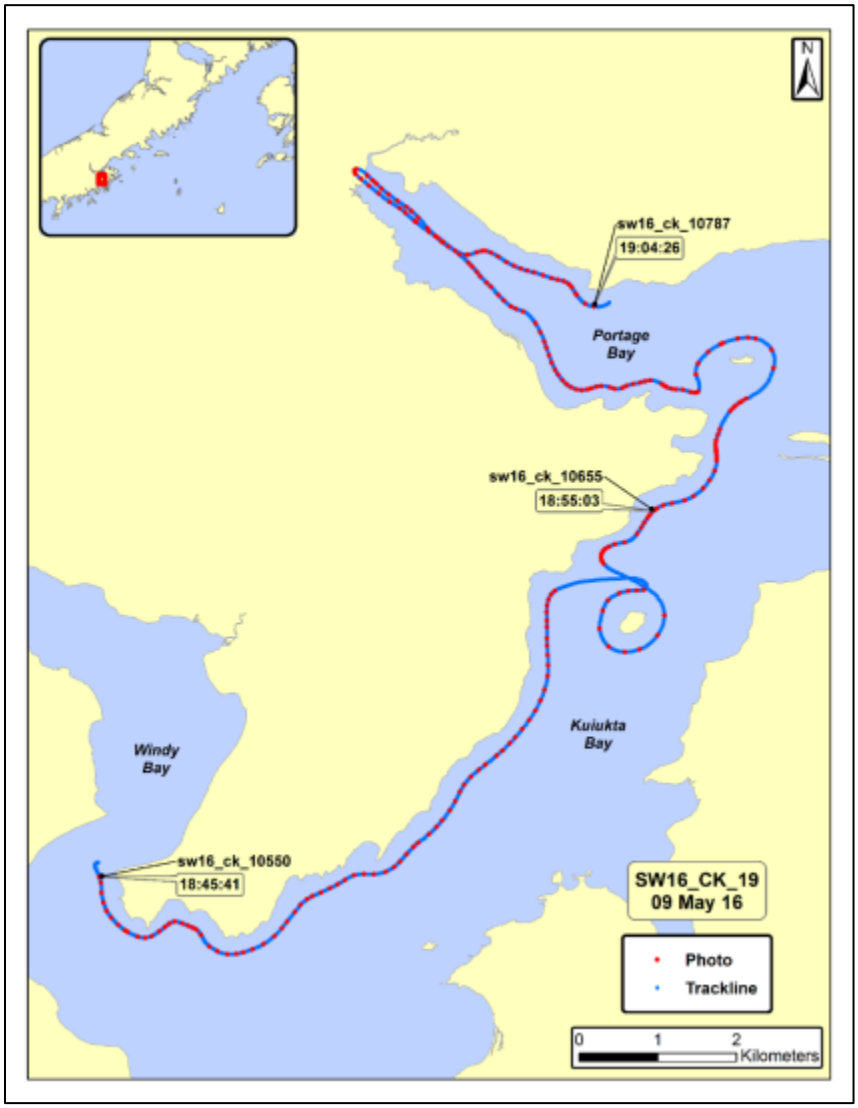
General Location:	Mitrofania Bay, Kuiukta Bay		
Time Start (UTC):	17:43:38	**Geo:**	Schoch
Time End (UTC):	18:45:10	**Bio:**	Cook
Video Length:	1 hr 1 min 32 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

Time (UTC)	Location	Photo
17:43:45	Ivan Bay	sw16_ck_09661
18:08:15	Herring Lagoon	sw16_ck_10007
18:19:42	Fishhook Bay	sw16_ck_10177
18:29:15	Kuiukta Bay	sw16_ck_10324
18:45:10	Windy Bay	sw16_ck_10549

Video: SW16_CK_19 **Date (AKDT):** 09 May 2016

General Location:	Kuiukta Bay, Portage Bay		
Time Start (UTC):	18:45:24	**Geo:**	Schoch
Time End (UTC):	19:04:34	**Bio:**	Cook
Video Length:	19 min 10 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

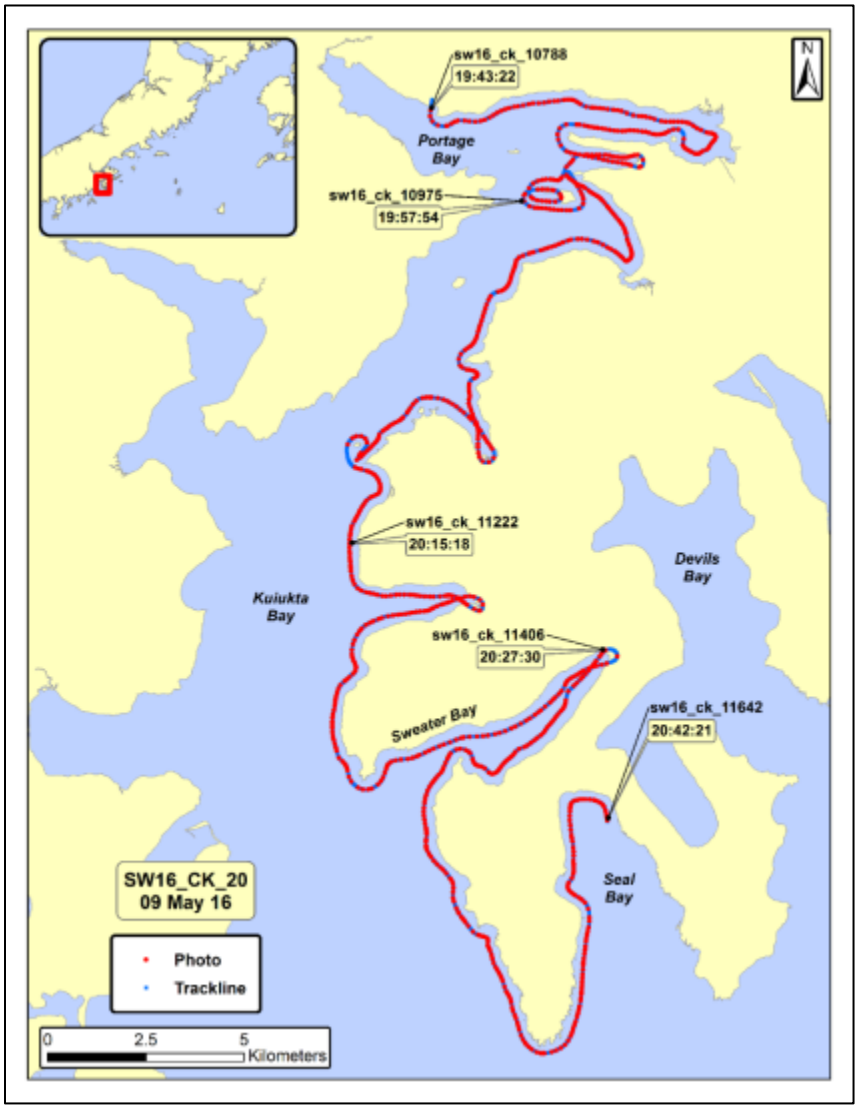
Time (UTC)	Location	Photo
18:45:41	Windy Bay	sw16_ck_10550
18:55:03	Kuiukta Bay	sw16_ck_10655
19:04:26	Portage Bay	sw16_ck_10787



Video: SW16_CK_20 **Date (AKDT):** 09 May 2016

General Location:	Kuiukta Bay, Seal Bay		
Time Start (UTC):	19:43:12	**Geo:**	Schoch
Time End (UTC):	20:42:22	**Bio:**	Cook
Video Length:	59 min 10 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

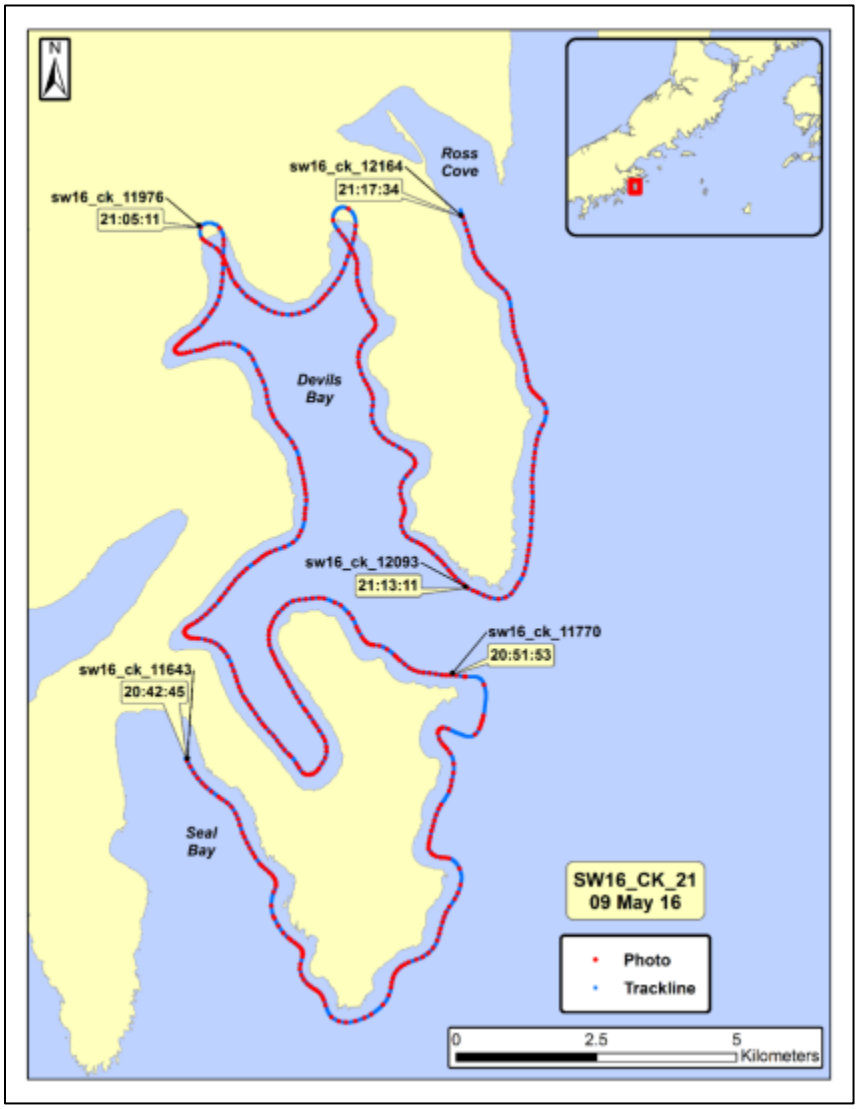
Time (UTC)	Location	Photo
19:43:22	Portage Bay	sw16_ck_10788
19:57:54	Kuiukta Bay	sw16_ck_10975
20:15:18	Kuiukta Bay	sw16_ck_11222
20:27:30	Sweater Bay	sw16_ck_11406
20:42:21	Seal Bay	sw16_ck_11642



Video: SW16_CK_21 **Date (AKDT):** 09 May 2016

General Location:	Seal Bay, Devils Bay		
Time Start (UTC):	20:42:40	**Geo:**	Schoch
Time End (UTC):	21:17:38	**Bio:**	Cook
Video Length:	34 min 58 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

Time (UTC)	Location	Photo
20:42:45	Seal Bay	sw16_ck_11643
20:51:53	Entrance to Devils Bay	sw16_ck_11770
21:05:11	Devils Bay	sw16_ck_11976
21:13:11	Entrance to Devils Bay	sw16_ck_12093
21:17:34	Ross Cove	sw16_ck_12164



Video: SW16_CK_22 **Date (AKDT):** 10 May 2016

General Location:	Kujulik Bay, Cape Kumlik		
Time Start (UTC):	18:12:12	**Geo:**	Schoch
Time End (UTC):	19:08:26	**Bio:**	Cook
Video Length:	54 min 27 sec	**Nav:**	Morrow
Weather:	Fog, Showers	**Pilot:**	Egli

Time (UTC)	Location	Photo
18:12:23	Kujulik Bay	sw16_ck_12165
	Video Break: 18:30:43 to 18:30:53	
18:30:58	Kujulik Bay islands	sw16_ck_12443
	Video Break: 18:35:02 to 18:35:49	
18:35:53	Kujulik Bay islands	sw16_ck_12505
	Video Break: 18:36:53 to 18:37:15	
18:45:15	Kujulik Bay	sw16_ck_12641
19:00:38	Cape Kumlik	sw16_ck_12878
	Video Break: 19:05:17 to 19:05:41	
19:08:23	Cape Kumlik offshore islands	sw16_ck_13021

Video: SW16_CK_23 **Date (AKDT):** 10 May 2016

General Location: Aniakchak Bay
Time Start (UTC): 19:08:46 **Geo:** Schoch
Time End (UTC): 19:47:12 **Bio:** Cook
Video Length: 36 min 09 sec **Nav:** Morrow
Weather: Fog, Showers **Pilot:** Egli

Time (UTC)	Location	Photo
19:08:56	Cape Kumlik	sw16_ck_13022
	Video Break: 19:11:33 to 19:11:55	
19:15:10	Kumlik Island	sw16_ck_13139
	Video Break: 19:17:49 to 19:18:11	
19:18:13	Cape Kumlik	sw16_ck_13190
	Video Break: 19:20:19 to 19:21:07	
19:21:38	Aniakchak Bay island	sw16_ck_13242
	Video Break: 19:22:04 to 19:22:45	
19:22:52	Elephant Head	sw16_ck_13251
19:37:00	Aniakchak Bay	sw16_ck_13484
19:47:10	Cape Ayutka	sw16_ck_13657

Video: SW16_CK_24 **Date (AKDT):** 10 May 2016

General Location:	Hook Bay, Cape Kumliun		
Time Start (UTC):	20:47:26	**Geo:**	Schoch
Time End (UTC):	21:31:30	**Bio:**	Cook
Video Length:	40 min 4 sec	**Nav:**	Morrow
Weather:	Fog, Showers	**Pilot:**	Egli

Time (UTC)	Location	Photo
20:47:46	Chignik Bay	sw16_ck_13661
20:57:57	Hook Bay	sw16_ck_13861
	Video Break: 21:08:55 to 21:09:45	
21:09:46	Gull Island	sw16_ck_14083
	Video Break: 21:11:33 to 21:12:11	
21:12:18	Cape Kumliun	sw16_ck_14108
	Video Break: 21:18:25 to 21:20:29	
21:20:49	Unavikshak Island	sw16_ck_14218
	Video Break: 21:30:05 to 21:30:29	
21:31:26	Reefs off of Unavikshak Island	sw16_ck_14389

Video: SW16_CK_25 **Date (AKDT):** 10 May 2016

General Location:	Cape Kumliun, Kujulik Bay		
Time Start (UTC):	21:33:30	**Geo:**	Schoch
Time End (UTC):	22:09:00	**Bio:**	Cook
Video Length:	35 min 30 sec	**Nav:**	Morrow
Weather:	Fog, Showers	**Pilot:**	Egli

Time (UTC)	Location	Photo
21:33:32	Islands off Cape Kumliun	sw16_ck_14390
21:48:18	Cape Kumliun	sw16_ck_14622
22:00:47	Islands in Kujulik Bay	sw16_ck_14830
22:08:47	Kujulik Bay	sw16_ck_14950

Video: SW16_CK_26 **Date (AKDT):** 11 May 2016

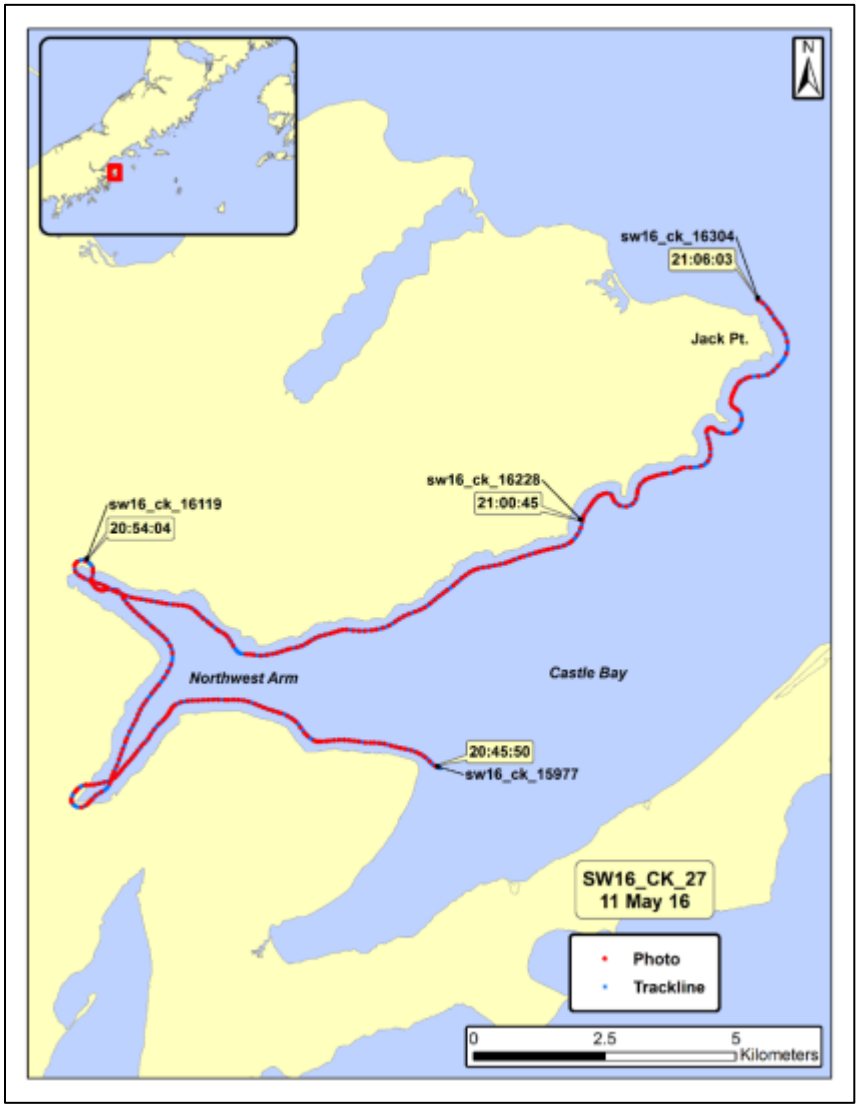
General Location:	Chankliut Island, Castle Cape, Castle Bay		
Time Start (UTC):	19:40:20	**Geo:**	Schoch
Time End (UTC):	20:45:20	**Bio:**	Cook
Video Length:	58 min 21 sec	**Nav:**	Morrow
Weather:	Overcast, Fog	**Pilot:**	Egli

Time (UTC)	Location	Photo
19:40:25	Chankliut Island	sw16_ck_14951
	Video Break: 19:49:11 to 19:55:49	
19:55:59	Ross Cove	sw16_ck_15116
20:10:37	Warner Bay	sw16_ck_15359
20:18:47	Necessity Cove	sw16_ck_15493
20:33:41	Castle Cape	sw16_ck_15752
20:45:14	Castle Bay	sw16_ck_15976

Video: SW16_CK_27 **Date (AKDT):** 11 May 2016

General Location:	Castle Bay		
Time Start (UTC):	20:45:44	**Geo:**	Schoch
Time End (UTC):	21:06:04	**Bio:**	Cook
Video Length:	20 min 20 sec	**Nav:**	Morrow
Weather:	Overcast	**Pilot:**	Egli

Time (UTC)	Location	Photo
20:45:50	Castle Bay	sw16_ck_15977
20:54:04	Northwest Arm, Castle Bay	sw16_ck_16119
21:00:45	Castle Bay	sw16_ck_16228
21:06:03	Jack Pt.	sw16_ck_16304



Appendix B: Illustrated Data Dictionary

Table B-1. Photographic examples of the Coastal Classes in the Alaska Peninsula.

Photo sw16_ck_02918: Example of Coastal Class 2; Rock Platform, wide.
Channel Rock.

Photo sw16_ck_01621: Example of Coastal Class 3; Rock Cliff. David Island.

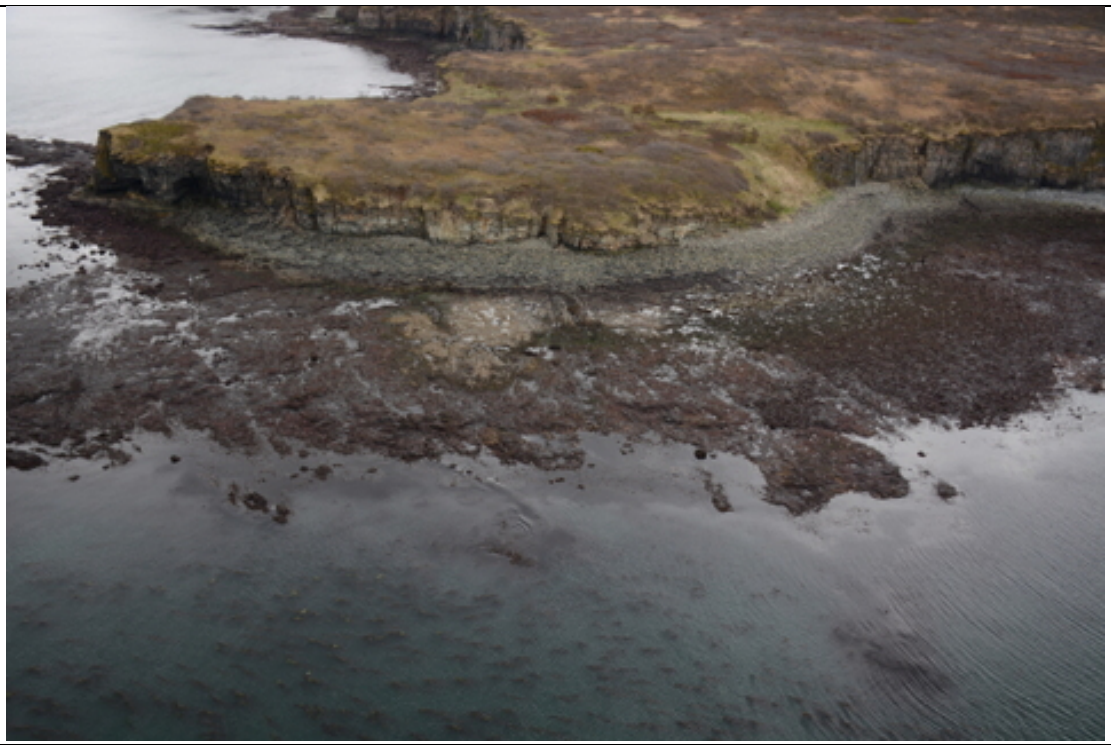


Photo sw16_ck_08311: Example of Coastal Class 7; Platform with gravel beach.
Chignik Bay.

Photo sw16_ck_10053: Example of Coastal Class 8; Cliff with gravel beach.
Herring Lagoon.

Photo sw16_ck_03020: Example of Coastal Class 12; Platform with gravel & sand beach.
Hartman Island.

Photo sw16_ck_03197: Example of Coastal Class 17; Platform with sand beach.
Wide Bay.

Photo sw16_ck_00699: Example of Coastal Class 24; Sand & gravel flat or fan.
Puale Bay.

Photo sw16_ck_03796: Example of Coastal Class 28; Sand Flat.
Sutwik Island.

Photo sw16_ck_08244: Example of Coastal Class 32; Man-made, permeable.
Anchorage Bay.

Photo sw16_ck_01949: Example of Coastal Class 34; Current-dominated.
Shelikof Strait.

Table B-2. Examples of the most common biobands in the Alaska Peninsula survey area.

Photo sw16_ck_12538: Good example of the Dune Grass (DUGR) bioband. New Dune Grass here is shown as a narrow blue-green strip, at the top of the beach, while older Dune Grass appears beige. Kujulik Bay.

Photo sw16_ck_07904: Good example of the Splash Zone (SPZO) bioband. Nakchamik Island.

Photo sw16_ck_00031: Example of the Black Lichen (BLLI) bioband, visible as a dark strip on bare rock marking the upper limit of the intertidal zone. Cape Igvak.

Photo sw16_ck_01987: Example of the White Lichen (WHLI). Visible as a bright white stripe on bare rock. Shelikof Strait.

Photo sw16_ck_14828: Example of the Yellow Lichen (YELI) bioband. Visible as bright yellow forming on bare rock. Kujulik Bay.

Photo sw16_ck_01673: Example of the Barnacle (BARN) bioband. Visible as the grey-white band. Poltava Island.

Photo sw16_ck_16224: Good example of the black, velvety Blue Mussel (BLMU) bioband in the mid-to lower intertidal. Castle Bay.

Photo sw16_ck_07457: Example of the Sponges (SPON) bioband, visible as the orange band at the waterline. Aghiyuk Island.

Photo sw16_ck_08860: Good example of the Salt Marsh (SAMA) bioband which appears light, bright or dark green with red brown. Chignik River, Chignik Bay.

Photo sw16_ck_15162: Example of the Diatom (DIAT) bioband, shown here as a beige band in the shallow subtidal. Ross Cove.

Photo sw16_ck_15273: Good example of the Green Algae (GRAL) bioband in the mid- to lower intertidal. Warner Bay.

Photo sw16_ck_11782: Example of the Coralline Red Algae (CORA) bioband in low intertidal. Devil's Bay.

Photo sw16_ck_06281: Example of the Filamentous and Foliose Red Algae (FFRA) bioband in the lower intertidal. Chirikof Island.

Photo sw16_ck_03845: Example of the Winter Laver (WILA) bioband. Visible as the greenish gold band in the high intertidal. Sutwik Island.

Photo sw16_ck_14703: Example of the Bleached Red Algae (BRAL) bioband. Golden brown bioband common on rock platforms. Cape Kumliun.

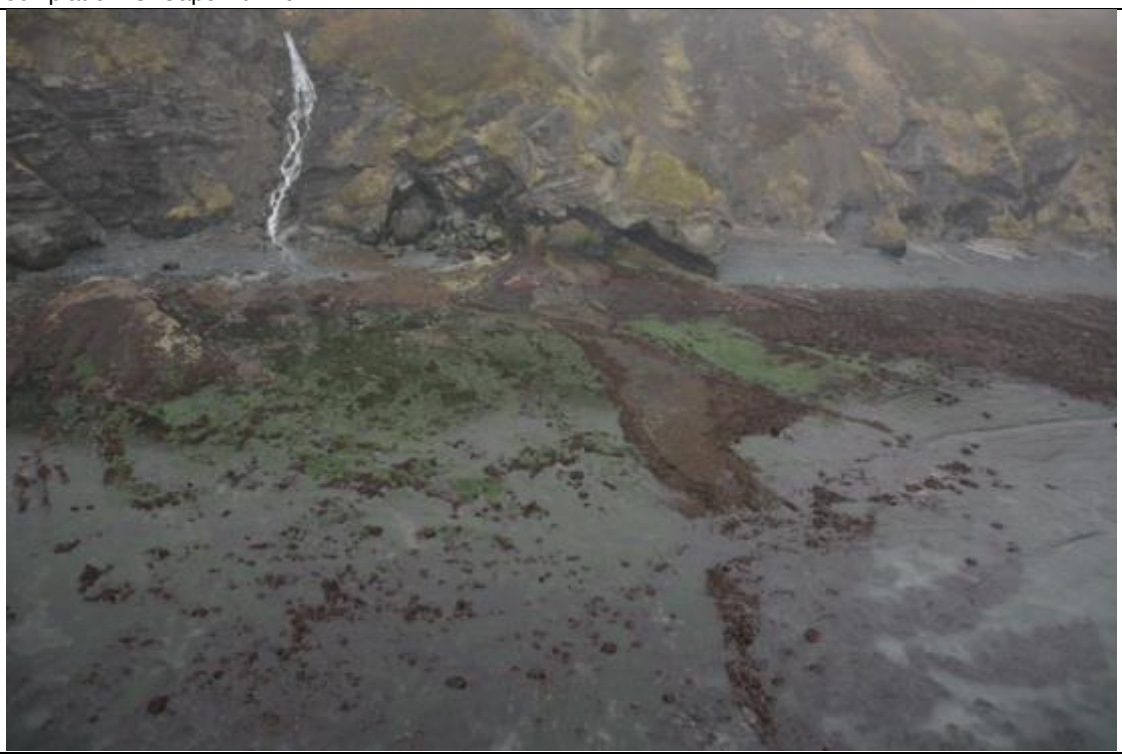


Photo sw16_ck_12909: Good example of the Surfgrass (SURF). This bright to dark green bioband can form extensive beds in tide pools and on rock platforms. Cape Kumlik.

Photo sw16_ck_09038: Good example of the Eelgrass (EELG) bioband. Chignik Lagoon.

Photo sw16_ck_11465: Good example of the Brown Bladed Algae (BRBA) bioband in the lower intertidal, right at the waterline. Sweater Bay.

Photo sw16_ck_16169: Example of the Soft Brown Kelps (SOBK) bioband in the intertidal. Northwest Arm, Castle Bay.

Photo sw16_ck_05973: Example of the Dark Brown Kelps (DABK) bioband in the lower intertidal. Chiginagak Bay.

Photo sw16_ck_01060: Example of the Rockweed (ROCK) bioband, a golden brown to brown bioband. Alinchak Bay

Photo sw16_ck_03642: Example of the Brown Canopy Forming Algae (BRCA) bioband, a non-specific canopy forming kelp. Sutwik Island.

Photo sw16_ck_04223: Example of the Dragon Kelp (DRKE) bioband in shallow subtidal. A canopy forming kelp, with winged blades on gas-filled center midrib. Sutwik Island.

Photo sw16_ck_07827: Example of the Bull Kelp (BUKE) bioband in shallow subtidal. Nakchamik Island.

Appendix C: Ground Station Site Data

Table C-1. Taxa observed at Alaska Peninsula ground stations.

Station	Group	Scientific Name	Common name
AKP_16_001	Green Algae	*Acrosiphonia coalita*	Green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Rosenvingiella polyrhiza	Green rock scum
		Ulva "lactuca"	Sea lettuce
	Brown Algae	*Colpomenia peregrina*	Bulb seaweed
		Elachista fucicola	Rockweed tuft
		Fucus distichus	Rockweed
		Petalonia fascia	False kelp
		Pylaiella littoralis	Sea felt
		Ralfsia fungiformis	Sea fungus
		Soranthera ulvoidea	Studded sea balloons
	Kelps – Brown Algae	*Alaria marginata*	Ribbon kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina sessile	Sea cabbage
	Red Algae	*Antithamnionella pacifica*	Hooked skein
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Halosaccion firmum	Flattened sea sac
		Halosaccion glandiforme	Sea sac
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Microcladia borealis	Coarse sea lace
		Neorhodomela aculeata	Graceful black pine
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Palmaria hecatensis	Stiff red ribbon
		Ptilota serrata	filamentous red alga
		Pyropia fucicola	Rockweed laver
		Pyropia pseudolanceolata	Olive green winter laver
		Pyropia sp.	Laver
		Pyropia taeniata	Long laver
		Sparlingia pertusa	Red eyelet silk
		Tokidadendron bullatum	Northern sea oak
	Corallines	*Crustose Corallinales*	encrusting coralline red
		Foliose Corallinales	foliose branched coralline red
	Invertebrates	*Anthopleura elegantissima*	small aggregating green anemone
		Paranemertes peregrina	Purple ribbon worm
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Nudibranchia	nudibranch
		Mytilus trossulus	Pacific blue mussel
		Chthamalus dalli	small brown barnacle
		Semibalanus balanoides	Acorn barnacle
		Semibalanus cariosus	Thatched barnacle
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star
		Pycnopodia helianthoides	sunflower star
	Lichens	*Caloplaca/ Xanthoria sp.*	Orange seaside lichen

Station	Group	Scientific Name	Common name
		Verrucaria sp.	Black seaside lichen
AKP_16_002	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Acrosiphonia coalita	Green rope
		Rosenvingiella polyrhiza	Green rock scum
		Ulothrix sp.	filamentous green alga
		Ulva "lactuca"	Sea lettuce
		Ulvaria obscura	dark sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Petalonia fascia	False kelp
		Ralfsia fungiformis	Sea fungus
		Ralfsia phase	Brown spot
		Saundersella simplex	Golden bottlebrush epiphyte
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
	Kelps – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Cymathaere triplicata	Three-ribbed kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
		Saccharina sessile	Sea cabbage
	Red Algae	*"Bangia" spp.*	Black sea hair
		Antithamnion sp.	filamentous red alga
		Antithamnionella pacifica	Hooked skein
		Constantinea subulifera	Cracked saucer
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus alaskensis	Turkish washcloth complex
		Mazzaella phyllocarpa	Northern mazza weed
		Mikamiella ruprechtiana	Mikami's sea oak
		Neorhodomela aculeata	Graceful black pine
		Odonthalia floccosa	Sea brush
		Odonthalia setacea	Russian sea brush
		Palmaria hecatensis	Stiff red ribbon
		Phycodrys fimbriata	Common sea oak
		Polyostea bipinnata	Black tassel
		Ptilota asplenioides	Sea fern
		Ptilota sp.	filamentous red alga
		Pyropia abbottiae	Black seaweed
		Pyropia fucicola	Rockweed laver
		Sparlingia pertusa	Red eyelet silk
		Tokidadendron bullatum	Northern sea oak
		Wildemania cuneiformis	Red cellophane
	Corallines	*Neopolyporolithon reclinatum*	Coralline disc
		Bossiella frondescens	Enigmatic coral seaweed
		Corallina vancouveriensis	Graceful coral seaweed
		Crustose Corallinales	encrusting coralline red
	Invertebrates	*Halichondria sp.*	bread crumb sponge
		Haliclona sp.	purple sponge
		Abietinaria filicula and Unidentified A. sp.	hydroid

Station	Group	Scientific Name	Common name
		Anthopleura artemisia	Burrowing green anemone
AKP_16_002	Invertebrates	*Metridium senile*	Plumose anemone
		Urticina coriacea	Red bead anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Nemertea	ribbon worm
		Eudistylia vancouveri	Northern feather duster worm
		Nereis sp.	polychaete worm
		Polynoidae	polychaete worm
		Cryptochiton stelleri	Gumboot chiton
		Katharina tunicata	Black katy chiton
		Mopalia kennerleyi	Northern hairy chiton
		Tonicella lineata	Red lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Fusitriton oregonensis	Oregon or Hairy triton
		Littorina sitkana	Sitka periwinkle
		Nucella canaliculata	Channelled dogwinkle
		Nucella lamellosa	Frilled dogwinkle
		Peltodoris nobilis	Orange fragrant nudibranch
		Mytilus trossulus	Pacific blue mussel
		Membranipora membranacea	lacy encrusting bryozoan
		Balanamorpha	barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus balanoides	Acorn barnacle
		Semibalanus cariosus	Thatched barnacle
		Traskorchestia traskiana	Beach hopper
		Pentidotea wosnesenskii	Rockweed idotea
		Pagurus sp.	hermit crab
		Pugettia gracilis	Graceful kelp crab
		Pandalus danae	Coon striped shrimp
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star
		Leptasterias alaskensis	six-arm sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Strongylocentrotus droebachiensis	Green sea urchin
		Eudistoma sp.	ascidian
	Lichen	*Verrucaria* sp.	Black Seaside lichen
AKP_16_003	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Chaetomorpha sp.	Curly sea hair
		Rosenvingiella polyrhiza	Green rock scum
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Ulvaria obscura	dark sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Ectocarpus/ Sphacelaria sp.	Ectocarpus/ Sphacelaria complex
		Elachista fucicola	Rockweed tuft
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Petalonia fascia	False kelp
		Ralfsia fungiformis	Sea fungus

Station	Group	Scientific Name	Common name
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
AKP_16_003	Kelps – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Cymathaere triplicata	Three-ribbed kelp
		Desmarestia sp.	acid kelp
		Laminaria longipes	Northern rhizome kelp
		Laminaria setchellii	Southern stiff-stiped kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
		Saccharina sessile	Sea cabbage
	Red Algae	*Cryptosiphonia woodii*	Bleached brunette
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Endocladia muricata	Sea moss
		Halosaccion glandiforme	Sea sac
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Neorhodomela aculeata	Graceful black pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Polyostea bipinnata	Black tassel
		Ptilota sp.	red alga
		Pyropia abbottiae	Black seaweed
		Pyropia fucicola	Rockweed laver
		Pyropia pseudolanceolata	Olive green winter laver
		Turnerella mertensiana	Red sea cabbage
		Wildemania norrissii	Norris' laver
	Corallines	*Bossiella frondescens*	Enigmatic coral seaweed
		Corallina officinalis	Chalky coral seaweed
		Corallina vancouveriensis	Graceful coral seaweed
		Crustose Corallinales	encrusting coralline red
	Seagrass	*Phyllospadix serrulatus*	Serrulated surfgrass
	Invertebrates	*Halichondria sp.*	bread crumb sponge
		Anthopleura artemisia	Burrowing green anemone
		Epiactis prolifera	brooding anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Spirorbis sp.	tiny white tube worms
		Katharina tunicata	Black katy chiton
		Tonicella lineata	Red lined chiton
		Lottia pelta	shield limpet
		Tectura scutum	Plate limpet
		Acmaea mitra	White capped limpet
		Fusitriton oregonensis	Oregon or Hairy triton
		Littorina sitkana	Sitka periwinkle
		Margarites sp.	margarite snail
		Nucella lamellosa	Frilled dogwinkle
		Peltodoris nobilis	Orange fragrant nudibranch
		Mytilus trossulus	Pacific blue mussel
		Balanus glandula	Acorn barnacle
		Semibalanus cariosus	Thatched barnacle
		Traskorchestia traskiana	Beach hopper
		Pagurus sp.	hermit crab

Station	Group	Scientific Name	Common name
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star
		Ascidiacea	tunicate
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_004	Green Algae	*Acrosiphonia coalita*	Green rope
		Blidingia minima	Dwarf sea hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Ulvaria obscura	dark sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Ectocarpus/ Sphacelaria sp.	Ectocarpus/ Sphacelaria complex
		Elachista fucicola	Rockweed tuft
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Petalonia fascia	False kelp
		Pylaiella sp.	filamentous brown
		Ralfsia fungiformis	Sea fungus
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
	Kelps – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Cymathaere triplicata	Three-ribbed kelp
		Laminaria longipes	Northern rhizome kelp
		Laminaria setchellii	Southern stiff-stiped kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
		Saccharina sessile	Sea cabbage
	Red Algae	*"Bangia" spp.*	Black sea hair
		Antithamnionella pacifica	Hooked skein
		Callophyllis spp.	Red sea fan
		Constantinea subulifera	Cracked saucer
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Endocladia muricata	Sea moss
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Mastocarpus alaskensis	Turkish washcloth complex
		Mazzaella phyllocarpa	Northern mazza weed
		Mikamiella ruprechtiana	Mikami's sea oak
		Neorhodomela aculeata	Graceful black pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Odonthalia setacea	Russian sea brush
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Polysiphonia sp.	filamentous red alga
		Ptilota asplenioides	Sea fern
		Pyropia abbottiae	Black seaweed
		Pyropia fucicola	Rockweed laver
		Pyropia taeniata	Long laver

Station	Group	Scientific Name	Common name
		Sparlingia pertusa	Red eyelet silk
		Tokidadendron bullatum	Northern sea oak
	Corallines	*Bossiella frondescens*	Enigmatic coral seaweed
AKP_16_004	Corallines	*Corallina vancouveriensis*	Graceful coral seaweed
		Crustose Corallinales	encrusting coralline red
	Seagrass	*Phyllospadix serrulatus*	Serrulated surfgrass
	Invertebrates	*Anthopleura artemisia*	Burrowing green anemone
		Metridium farcimen	solitary giant plumose anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Katharina tunicata	Black katy chiton
		Tonicella lineata	Red lined chiton
		Lottia pelta	shield limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Acmaea mitra	White capped limpet
		Fusitriton oregonensis	Oregon or Hairy triton
		Lirabuccinum dirum	Dire whelk
		Littorina sitkana	Sitka periwinkle
		Margarites sp.	margarite snail
		Nucella canaliculata	Channelled dogwinkle
		Nucella lamellosa	Frilled dogwinkle
		Onchidella borealis	Leather sea-slug
		Peltodoris nobilis	Orange fragrant nudibranch
		Mytilus trossulus	Pacific blue mussel
		Tetrocycloecia magna	Northern staghorn bryozoan
		Balanamorpha	barnacle
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Traskorchestia traskiana	Beach hopper
		Pagurus sp.	hermit crab
		Dermasterias imbricata	Leather star
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star
		Orthasterias sp.	sea star
		Pycnopodia helianthoides	sunflower star
		Solaster sp.	sun star
	Fish	*Oligocottus maculosus*	Tidepool sculpin
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_005	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
		Ulvaria obscura	dark sea lettuce
	Brown Algae	*Fucus distichus*	Rockweed
		Pylaiella sp.	filamentous brown
	Kelps – Brown Algae	*Alaria marginata*	Ribbon kelp
		Eualaria fistulosa	Dragon kelp
		Laminaria longipes	Northern rhizome kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
	Red Algae	*Cryptosiphonia woodii*	Bleached brunette
		Endocladia muricata	Sea moss

Station	Group	Scientific Name	Common name
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Hildenbrandia sp.	encrusting red alga
		Mastocarpus alaskensis	Turkish washcloth complex
AKP_16_005	Red Algae	*Mastocarpus sp. (Petrocelis phase)*	Tar spot alga
		Mazzaella parksii	Iridescent horn-of-plenty
		Mikamiella ruprechtiana	Mikami's sea oak
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Odonthalia setacea	Russian sea brush
		Palmaria hecatensis	Stiff red ribbon
		Phycodrys sp.	foliose red alga
		Polyostea bipinnata	Black tassel
		Ptilota asplenioides	Sea fern
		Ptilota serrata	filamentous red alga
		Pyropia schizophylla	Laver
	Corallines	*Corallina vancouveriensis*	Graceful coral seaweed
		Crustose Corallinales	encrusting coralline red
	Invertebrates	*Porifera*	sponge
		Lottia pelta	shield limpet
		Calliostoma sp.	topsnail
		Bryozoa	bryozoan
		Balanus glandula	Acorn barnacle
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star
		Orthasterias sp.	sea star
		Ascidiacea	tunicate
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_006	Green Algae	*Acrosiphonia duriuscula*	Northern green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulothrix flacca	Mermaid's tresses
		Ulva sp.	green alga
	Brown Algae	*Fucus distichus*	Rockweed
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Cymathaere triplicata	Three-ribbed kelp
		Eualaria fistulosa	Dragon kelp
		Laminaria longipes	Northern rhizome kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
	Red Algae	*Antithamnionella pacifica*	Hooked skein
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Kallymeniopsis spp.	Russian red blades
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Mazzaella parksii	Iridescent horn-of-plenty
		Mazzaella phyllocarpa	Northern mazza weed
		Neodilsea borealis	Northern red blade
		Neorhodomela sp.	red alga

Station	Group	Scientific Name	Common name
		Odonthalia setacea	Russian sea brush
		Palmaria hecatensis	Stiff red ribbon
		Phycodrys fimbriata	Common sea oak
		Polyostea bipinnata	Black tassel
		Ptilota asplenioides	Sea fern
AKP_16_006	Red Algae	*Ptilota serrata*	filamentous red alga
		Pyropia abbottiae	Black seaweed
		Pyropia fucicola	Rockweed laver
		Pyropia nereocystis	Bull kelp laver
		Pyropia taeniata	Long laver
		Schizymenia pacifica	Slippery red blade
		Sparlingia pertusa	Red eyelet silk
		Tokidadendron bullatum	Northern sea oak
		Turnerella mertensiana	Red sea cabbage
	Corallines	*Bossiella frondescens*	Enigmatic coral seaweed
		Corallina vancouveriensis	Graceful coral seaweed
		Crustose Corallinales	encrusting coralline red
		Foliose Corallinales	foliose branched coralline red
	Invertebrates	*Tonicella lineata*	Red lined chiton
		Lottia paradigitalis	Dwarfed ribbed limpet
		Acmaea mitra	White capped limpet
		Littorina scutulata	Checkered periwinkle
		Henricia leviuscula	Blood star
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_007	Green Algae	*Acrosiphonia coalita*	Green rope
		Ulva "lactuca"	Sea lettuce
		Ulvaria obscura	dark sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Fucus distichus	Rockweed
		Pylaiella littoralis	Sea felt
		Scytosiphon lomentaria	Soda straws
		Stephanocystis geminata	Northern bladder chain
	Kelps – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Cymathaere triplicata	Three-ribbed kelp
		Desmarestia aculeata	Witch's hair
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
	Red Algae	*Cryptosiphonia woodii*	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Endocladia muricata	Sea moss
		Halosaccion glandiforme	Sea sac
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Mazzaella phyllocarpa	Northern mazza weed
		Microcladia borealis	Coarse sea lace
		Neorhodomela aculeata	Graceful black pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon
		Pterosiphonia sp.	filamentous red
		Ptilota asplenioides	Sea fern
		Ptilota serrata	filamentous red alga

Station	Group	Scientific Name	Common name
		Pyropia fucicola	Rockweed laver
		Pyropia taeniata	Long laver
		Tokidadendron bullatum	Northern sea oak
	Corallines	*Neopolyporolithon reclinatum*	Coralline disc
		Bossiella frondescens	Enigmatic coral seaweed
		Foliose Corallinales	foliose branched coralline red
AKP_16_007	Seagrass	*Phyllospadix serrulatus*	Serrulated surfgrass
	Invertebrates	*Anthopleura artemisia*	Burrowing green anemone
		Metridium senile	Plumose anemone
		Sabellidae	Feather duster worm
		Katharina tunicata	Black katy chiton
		Tonicella lineata	Red lined chiton
		Lottia pelta	shield limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Margarites sp.	margarite snail
		Nucella canaliculata	Channelled dogwinkle
		Nucella lamellosa	Frilled dogwinkle
		Nucella lima	File dogwinkle
		Mytilus trossulus	Pacific blue mussel
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Pagurus sp.	hermit crab
		Henricia leviuscula	Blood star
		Strongylocentrotus droebachiensis	Green sea urchin
AKP_16_008	Green Algae	*Acrosiphonia coalita*	Green rope
		Chaetomorpha melagonium	Green coarse sea hair
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Ulvaria obscura	dark sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Coilodesme bulligera	Sea chip
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Scytosiphon lomentaria	Soda straws
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Cymathaere triplicata	Three-ribbed kelp
		Desmarestia aculeata	Witch's hair
		Laminaria longipes	Northern rhizome kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
	Red Algae	*Ahnfeltia fastigiata*	Bushy ahnfelt's seaweed
		Antithamnionella pacifica	Hooked skein
		Ceramium pacificum	Staghorn felt
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Halosaccion firmum	Flattened sea sac
		Halosaccion glandiforme	Sea sac
		Mastocarpus spp.	Turkish washcloth complex
		Mazzaella splendens subsp. fulgens	Splendid iridescent seaweed
		Odonthalia floccosa	Sea brush

Station	Group	Scientific Name	Common name
		Odonthalia setacea	Russian sea brush
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Ptilota asplenioides	Sea fern
		Ptilota serrata	filamentous red alga
		Pyropia taeniata	Long laver
		Tokidadendron bullatum	Northern sea oak
AKP_16_008	Corallines	*Neopolyporolithon reclinatum*	Coralline disc
		Bossiella frondescens	Enigmatic coral seaweed
	Seagrass	*Phyllospadix serrulatus*	Serrulated surfgrass
	Invertebrates	*Katharina tunicata*	Black katy chiton
		Margarites sp.	margarite snail
		Pentidotea wosnesenskii	Rockweed idotea
		Pagurus hirsutiusculus	Hairy hermit crab
AKP_16_009	Green Algae	*Acrosiphonia coalita*	Green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Rosenvingiella polyrhiza	Green rock scum
		Ulva "lactuca"	Sea lettuce
		Ulvaria obscura	dark sea lettuce
	Brown Algae	*Fucus distichus*	Rockweed
		Petalonia fascia	False kelp
		Pylaiella littoralis	Sea felt
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Desmarestia aculeata	Witch's hair
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
	Red Algae	*"Bangia" spp.*	Black sea hair
		Constantinea subulifera	Cracked saucer
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Endocladia muricata	Sea moss
		Halosaccion glandiforme	Sea sac
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Neorhodomela aculeata	Graceful black pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Odonthalia setacea	Russian sea brush
		Polyostea bipinnata	Black tassel
		Polysiphonia pacifica of unknown variety	Pretty polly
		Pyropia abbottiae	Black seaweed
		Pyropia fucicola	Rockweed laver
		Scagelia occidentale	Scagel's skein
	Corallines	*Bossiella frondescens*	Enigmatic coral seaweed
		Corallina vancouveriensis	Graceful coral seaweed
		Crustose Corallinales	encrusting coralline red
		Foliose Corallinales	foliose branched coralline red
	Invertebrates	*Anthopleura artemisia*	Burrowing green anemone
		Metridium senile	Plumose anemone

Station	Group	Scientific Name	Common name
		Serpulidae	polychaete worm
		Spirorbidae	polychaete worm
		Katharina tunicata	Black katy chiton
		Tonicella lineata	Red lined chiton
		Lottia digitalis	Ribbed limpet
		Lottiidae	limpet
		Acmaea mitra	White capped limpet
		Lacuna vincta	lacuna
AKP_16_009	Invertebrates	*Littorina sitkana*	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella canaliculata	Channelled dogwinkle
		Ocenebra sp.	rock snail
		Trichotropis sp.	hairy snail
		Peltodoris sp.	nudibranch
		Mytilus trossulus	Pacific blue mussel
		Schizoporella unicornis	orange encrusting bryozoan
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Idotea sp.	isopod spp
		Glebicarcinus oregonensis	Pygmy rock crab
		Pagurus sp.	hermit crab
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star
		Pycnopodia helianthoides	sunflower star
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_010	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Chaetomorpha sp.	Curly sea hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
	Brown Algae	*Fucus distichus*	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Pylaiella littoralis	Sea felt
		Soranthera ulvoidea	Studded sea balloons
	Red Algae	*Devaleraea mollis*	Red ribbon
		Dumontia alaskana	Purple pencils
		Endocladia muricata	Sea moss
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus alaskensis	Turkish washcloth complex
		Neorhodomela aculeata	Graceful black pine
		Polyostea bipinnata	Black tassel
		Pyropia abbottiae	Black seaweed
	Invertebrates	*Spirorbidae*	polychaete worm
		Lottiidae	limpet
		Chthamalus dalli	small brown barnacle
		Semibalanus balanoides	Acorn barnacle
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_011	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Blidingia minima	Dwarf sea hair
		Chaetomorpha sp.	Curly sea hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane

Station	Group	Scientific Name	Common name
		Rosenvingiella polyrhiza	Green rock scum
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Ulva intestinalis	Sea hair
		Ulva prolifera	Branched string lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Elachista fucicola	Rockweed tuft
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
AKP_16_011	Brown Algae	*Pylaiella littoralis*	Sea felt
		Saundersella simplex	Golden bottlebrush epiphyte
		Scytosiphon lomentaria	Soda straws
	Kelps – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Desmarestia aculeata	Witch's hair
		Saccharina nigripes	Split kelp
	Red Algae	*"Bangia" spp.*	Black sea hair
		Antithamnionella pacifica	Hooked skein
		Callithamnion pikeanum	Beauty bush
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Endocladia muricata	Sea moss
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Mazzaella phyllocarpa	Northern mazza weed
		Neorhodomela aculeata	Graceful black pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Polysiphonia pacifica of unknown variety	Pretty polly
		Pyropia abbottiae	Black seaweed
		Pyropia fallax	False laver
		Tokidadendron bullatum	Northern sea oak
	Corallines	*Bossiella frondescens*	Enigmatic coral seaweed
		Corallina officinalis	Chalky coral seaweed
		Crustose Corallinales	encrusting coralline red
	Invertebrates	*Anthopleura artemisia*	Burrowing green anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Nemertea	ribbon worm
		Serpulidae	polychaete worm
		Spirorbidae	polychaete worm
		Katharina tunicata	Black katy chiton
		Tonicella lineata	Red lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Littorina scutulata	Checkered periwinkle

Station	Group	Scientific Name	Common name
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella canaliculata	Channelled dogwinkle
		Nucella lamellosa	Frilled dogwinkle
		Nucella lima	File dogwinkle
		Onchidella borealis	Leather sea-slug
		Entodesma navicula	Ugly clam
		Mytilus trossulus	Pacific blue mussel
		Schizoporella unicornis	orange encrusting bryozoan
AKP_16_011	Invertebrates	*Balanus glandula*	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Gammaridae	amphipod
		Glebicarcinus oregonensis	Pygmy rock crab
		Hyas lyratus	Lyre crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Evasterias troschelii	Mottled sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Pycnopodia helianthoides	sunflower star
		Strongylocentrotus droebachiensis	Green sea urchin
	Fish	*Anoplarchus purpurescens*	High cockscomb
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_012	Diatom	*Bacillariophyta*	diatom
	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Acrosiphonia coalita	Green rope
		Acrosiphonia duriuscula	Northern green rope
		Acrosiphonia sonderi	Green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Urospora neglecta	Northern sea hair
	Brown Algae	*Fucus distichus*	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Pylaiella sp.	filamentous brown
		Scytosiphon lomentaria	Soda straws
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Cymathaere triplicata	Three-ribbed kelp
		Laminaria/Saccharina sp.	large bladed kelp
	Red Algae	*"Bangia" spp.*	Black sea hair
		Antithamnionella pacifica	Hooked skein
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Endocladia muricata	Sea moss
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus latissimus	low IT Turkish washcloth
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Pyropia abbottiae	Black seaweed

Station	Group	Scientific Name	Common name
		Pyropia fallax	False laver
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Pyropia pseudolanceolata	Olive green winter laver
		Pyropia taeniata	Long laver
		Pyropia torta	Laver
		Wildemania cuneiformis	Red cellophane
	Corallines	*Bossiella spp.*	winged coralline red alga
		Crustose Corallinales	encrusting coralline red
	Invertebrates	*Anthopleura xanthogrammica*	Giant green anemone
AKP_16_012	Invertebrates	*Metridium senile*	Plumose anemone
		Amphiporus imparispinosus	Flesh ribbon worm
		Spirorbidae	polychaete worm
		Katharina tunicata	Black katy chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Nucella canaliculata	Channelled dogwinkle
		Nucella lamellosa	Frilled dogwinkle
		Onchidella borealis	Leather sea-slug
		Peltodoris nobilis	Orange fragrant nudibranch
		Siphonaria thersites	False limpet
		Macoma baltica	Baltic macoma clam
		Mytilus trossulus	Pacific blue mussel
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Traskorchestia traskiana	Beach hopper
		Evasterias troschelii	Mottled sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Strongylocentrotus droebachiensis	Green sea urchin
	Fish	*Pholidae*	gunnel
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_013	Diatoms	*Bacillariophyta*	diatom
	Green Algae	*Acrosiphonia sp.*	filamentous green alga
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Pseudothrix borealis	filamentous green alga
	Brown Algae	*Scytosiphon lomentaria*	Soda straws
	Red Algae	*"Bangia" spp.*	Black sea hair
		Polyostea bipinnata	Black tassel
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Pyropia taeniata	Long laver
		Wildemania variegata	Kjellman's laver
	Invertebrates	*Lottia pelta*	shield limpet
		Lottiidae	limpet
		Tectura scutum	Plate limpet
		Calliostoma ligatum	Blue topsnail
		Fusitriton oregonensis	Oregon or Hairy triton
		Littorina sitkana	Sitka periwinkle
		Margarites marginatus	Smooth margarite snail
		Margarites pupillus	Little margarite snail

Station	Group	Scientific Name	Common name
		Nucella canaliculata	Channelled dogwinkle
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Traskorchestia traskiana	Beach hopper
		Pagurus hirsutiusculus	Hairy hermit crab
		Evasterias troschelii	Mottled sea star
		Leptasterias hexactis	Five-armed, six-armed star
	Fish	*Pholidae*	gunnel
		Xiphister sp.	prickleback
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_014	Green Algae	*Acrosiphonia coalita*	Green rope
		Acrosiphonia duriuscula	Northern green rope
		Blidingia minima	Dwarf sea hair
		Chaetomorpha sp.	Curly sea hair
		Cladophora sericea	Graceful green hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Pylaiella littoralis	Sea felt
		Ralfsia fungiformis	Sea fungus
		Ralfsia phase	Brown spot
		Scytosiphon lomentaria	Soda straws
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Saccharina nigripes	Split kelp
	Red Algae	*Antithamnionella pacifica*	Hooked skein
		Ceramium pacificum	Staghorn felt
		Constantinea subulifera	Cracked saucer
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Endocladia muricata	Sea moss
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus latissimus	low IT Turkish washcloth
		Neorhodomela aculeata	Graceful black pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Polyostea bipinnata	Black tassel
		Polysiphonia pacifica of unknown variety	Pretty polly
		Pyropia abbottiae	Black seaweed
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Tokidadendron bullatum	Northern sea oak
		Wildemania cuneiformis	Red cellophane
	Corallines	*Bossiella frondescens*	Enigmatic coral seaweed
		Clathromorphum sp.	rock crust

Station	Group	Scientific Name	Common name
		Crustose Corallinales	encrusting coralline red
	Invertebrates	*Anthopleura xanthogrammica*	Giant green anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Amphiporus imparispinosus	Flesh ribbon worm
		Paranemertes peregrina	Purple ribbon worm
		Katharina tunicata	Black katy chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Trichotropis cancellata	Checkered hairy snail
		Peltodoris nobilis	Orange fragrant nudibranch
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Chthamalus dalli	small brown barnacle
		Semibalanus balanoides	Acorn barnacle
		Semibalanus cariosus	Thatched barnacle
	Invertebrates	*Gammaridae*	amphipod
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star
		Leptasterias alaskensis	six-arm sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Pycnopodia helianthoides	sunflower star
		Cucumaria vegae	Alaska tar spot sea cucumber
		Strongylocentrotus droebachiensis	Green sea urchin
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_015	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Acrosiphonia duriuscula	Northern green rope
		Blidingia minima	Dwarf sea hair
		Cladophora sericea	Graceful green hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
		Ulva linza	Green string lettuce
	Brown Algae	*Coilodesme bulligera*	Sea chip
		Elachista fucicola	Rockweed tuft
		Fucus distichus	Rockweed
		Leathesia marina	Sea cauliflower
		Melanosiphon intestinalis	Twisted sea tubes
		Pylaiella littoralis	Sea felt
		Ralfsia fungiformis	Sea fungus
		Scytosiphon lomentaria	Soda straws
	Kelp – Brown Algae	*Costaria costata*	Five-ribbed Kelp
		Saccharina latissima	Sugar kelp
	Red Algae	*"Bangia" spp.*	Black sea hair
		Ceramium pacificum	Staghorn felt
		Constantinea subulifera	Cracked saucer
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Gloiopeltis furcata	Jelly moss

Station	Group	Scientific Name	Common name
AKP_16_015		*Halosaccion glandiforme*	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus pacificus	Turkish washcloth complex
		Mazzaella phyllocarpa	Northern mazza weed
		Membranoptera spinulosa	foliose red alga
		Neorhodomela aculeata	Graceful black pine
		Polyostea bipinnata	Black tassel
	Corallines	*Bossiella spp.*	winged coralline red alga
		Clathromorphum sp.	rock crust
		Crustose Corallinales	encrusting coralline red
	Invertebrates	*Amphiporus imparispinosus*	Flesh ribbon worm
		Emplectonema gracile	green nemertean
		Paranemertes peregrina	Purple ribbon worm
		Serpula columbiana	red calcareous tube worm
		Tonicella lineata	Red lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Acmaea mitra	White capped limpet
		Littorina sitkana	Sitka periwinkle
		Onchidella borealis	Leather sea-slug
		Peltodoris nobilis	Orange fragrant nudibranch
		Diplodonta impolita	bivalve
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Chthamalus dalli	small brown barnacle
		Semibalanus balanoides	Acorn barnacle
		Semibalanus cariosus	Thatched barnacle
		Hapalogaster mertensii	Hairy crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Dermasterias imbricata	Leather star
		Evasterias troschelii	Mottled sea star
		Leptasterias alaskensis	six-arm sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Pycnopodia helianthoides	sunflower star
		Ophiopholis aculeata	Daisy brittle star
		Cucumaria miniata	Red sea cucumber
		Cucumaria vegae	Alaska tar spot sea cucumber
		Strongylocentrotus droebachiensis	Green sea urchin
	Fish	*Pholidae*	gunnel
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_016	Green Algae	*Kornmannia leptoderma*	Seagrass cellophane
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
	Brown Algae	*Dictyosiphon foeniculaceus*	Golden sea hair
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Petalonia fascia	False kelp
		Pylaiella littoralis	Sea felt

Station	Group	Scientific Name	Common name
AKP_16_016		*Scytosiphon lomentaria*	Soda straws
	Kelp – Brown Algae	*Saccharina latissima*	Sugar kelp
	Red Algae	*Gloiopeltis furcata*	Jelly moss
		Neorhodomela oregona	Oregon pine
		Polyostea bipinnata	Black tassel
	Seagrass	*Zostera marina*	Eelgrass
	Invertebrates	*Nephtyidae*	polychaete worm
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Nucella lima	File dogwinkle
		Leukoma staminea	Littleneck clam
		Mytilus trossulus	Pacific blue mussel
		Semibalanus balanoides	Acorn barnacle
		Traskorchestia traskiana	Beach hopper
	Invertebrates	*Pentidotea wosnesenskii*	Rockweed idotea
		Glebicarcinus oregonensis	Pygmy rock crab
	Lichen	*Verrucaria sp.*	Black seaside lichen
	Forbes	*Glaux maritima*	Sea milk-wort
		Senecio pseudoarnica	Seashore sunflower
	Grasses	*Leymus mollis*	Dune grass
AKP_16_017	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Acrosiphonia coalita	Green rope
		Acrosiphonia duriuscula	Northern green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Rosenvingiella polyrhiza	Green rock scum
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Urospora neglecta	Northern sea hair
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Fucus distichus	Rockweed
		Leathesia marina	Sea cauliflower
		Melanosiphon intestinalis	Twisted sea tubes
		Scytosiphon lomentaria	Soda straws
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Laminaria/Saccharina sp.	large bladed kelp
	Red Algae	*Cryptosiphonia woodii*	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Endocladia muricata	Sea moss
		Fuscifolium papenfussii	Dark laver
		Gloiopeltis furcata	Jelly moss
		Halosaccion firmum	Flattened sea sac
		Halosaccion glandiforme	Sea sac
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Mazzaella parvula	mazza weed complex
		Microcladia borealis	Coarse sea lace
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon

Station	Group	Scientific Name	Common name
AKP_16_017		*Polyostea bipinnata*	Black tassel
		Polysiphonia pacifica of unknown variety	Pretty polly
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Pyropia pseudolanceolata	Olive green winter laver
		Pyropia schizophylla	Laver
		Pyropia torta	Laver
		Pyropia unabbottiae	Laver
		Rhodochorton purpureum	Red sea moss
		Schizymenia pacifica	Slippery red blade
	Corallines	*Clathromorphum sp.*	rock crust
	Invertebrates	*Halichondria panicea*	bread crumb sponge
		Anthopleura xanthogrammica	Giant green anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Katharina tunicata	Black katy chiton
		Tonicella lineata	Red lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella canaliculata	Channelled dogwinkle
		Nucella lamellosa	Frilled dogwinkle
		Peltodoris nobilis	Orange fragrant nudibranch
		Mytilus trossulus	Pacific blue mussel
		Terebratalia sp.	Brachiopod lamp shell
		Eurystomella bilabiata	Derby hat bryozoan
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Pagurus hirsutiusculus	Hairy hermit crab
		Henricia leviuscula	Blood star
		Leptasterias hexactis	Five-armed, six-armed star
		Pycnopodia helianthoides	sunflower star
		Solaster stimpsoni	Purple band sun star
		Strongylocentrotus droebachiensis	Green sea urchin
		Cnemidocarpa finmarkiensis	orange solitary tunicate
		Styela sp.	stalked solitary seasquirt
	Fish	*Oligocottus maculosus*	Tidepool sculpin
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_018	Diatom	*Bacillariophyta*	diatom
	Green Algae	*Acrosiphonia coalita*	Green rope
		Blidingia minima	Dwarf sea hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Prasiola borealis	Northern emerald carpet
		Ulva "lactuca"	Sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Coilodesme bulligera	Sea chip

Station	Group	Scientific Name	Common name
AKP_16_018		*Coilodesme californica*	saccate brown alga
		Colpomenia peregrina	Bulb seaweed
		Elachista fucicola	Rockweed tuft
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Petalonia fascia	False kelp
		Pylaiella littoralis	Sea felt
		Ralfsia phase	Brown spot
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
		Stephanocystis geminata	Northern bladder chain
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Desmarestia aculeata	Witch's hair
		Desmarestia viridis	Stringy acid kelp
		Laminaria/Saccharina sp.	large bladed kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina nigripes	Split kelp
	Red Algae	*Antithamnionella pacifica*	Hooked skein
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Endocladia muricata	Sea moss
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus latissimus	low IT Turkish washcloth
		Mazzaella parvula	mazza weed complex
		Membranoptera spinulosa	foliose red alga
		Neorhodomela aculeata	Graceful black pine
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Polysiphonia pacifica of unknown variety	Pretty polly
		Polysiphonia senticulosa	filamentous red alga
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Pyropia unabbottiae	Laver
		Rhodochorton purpureum	Red sea moss
		Salishia firma	foliose red
		Schizymenia pacifica	Slippery red blade
		Tokidadendron bullatum	Northern sea oak
		Wildemania variegata	Kjellman's laver
	Corallines	*Bossiella spp.*	winged coralline red alga
		Clathromorphum sp.	rock crust
	Invertebrates	*Halichondria panicea*	bread crumb sponge
		Anthopleura xanthogrammica	Giant green anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Amphiporus imparispinosus	Flesh ribbon worm

Station	Group	Scientific Name	Common name
AKP_16_018	Invertebrates	*Emplectonema gracile*	green nemertean
		Paranemertes peregrina	Purple ribbon worm
		Serpula columbiana	red calcareous tube worm
		Katharina tunicata	Black katy chiton
		Tonicella lineata	Red lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Amphissa columbiana	Wrinkled dove snail
		Calliostoma ligatum	Blue topsnail
		Lacuna variegata	Variegated lacuna
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella lamellosa	Frilled dogwinkle
		Trichotropis cancellata	Checkered hairy snail
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Maera danae	Pink beach hopper
		Pentidotea wosnesenskii	Rockweed idotea
		Elassochirus gilli	Pacific red hermit crab
		Glebicarcinus oregonensis	Pygmy rock crab
		Hapalogaster mertensii	Hairy crab
		Hyas lyratus	Lyre crab
		Pagurus beringanus	Bering hermit crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Evasterias troschelii	Mottled sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Pycnopodia helianthoides	sunflower star
		Solaster stimpsoni	Purple band sun star
		Strongylocentrotus droebachiensis	Green sea urchin
		Ascidiacea	tunicate
	Lichens	*Verrucaria sp.*	Black seaside lichen
AKP_16_019	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Acrosiphonia duriuscula	Northern green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Urospora neglecta	Northern sea hair
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Coilodesme californica	saccate brown alga
		Fucus distichus	Rockweed
		Haplogloia andersonii	Anderson's gooey brown
		Petalonia fascia	False kelp
		Ralfsia fungiformis	Sea fungus
		Scytosiphon lomentaria	Soda straws
		Stephanocystis geminata	Northern bladder chain
	Kelp – Brown	*Agarum clathratum*	Sieve kelp

Station	Group	Scientific Name	Common name
AKP_16_019	Algae	*Alaria marginata*	Ribbon kelp
		Laminaria/Saccharina sp.	large bladed kelp
		Nereocystis luetkeana	Bull kelp
	Red Algae	*"Bangia" spp.*	Black sea hair
		Ahnfeltia fastigiata	Bushy ahnfelt's seaweed
		Constantinea subulifera	Cracked saucer
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea mollis	Red ribbon
		Halosaccion glandiforme	Sea sac
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Mazzaella cf parvula	mazza weed complex
		Neorhodomela aculeata	Graceful black pine
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Odonthalia kamtschatica	foliose red alga
		Palmaria hecatensis	Stiff red ribbon
		Phycodrys fimbriata	Common sea oak
		Polyostea bipinnata	Black tassel
		Polysiphonia pacifica of unknown variety	Pretty polly
		Ptilota asplenioides	Sea fern
		Pyropia kurogii	laver
		Pyropia unabbottiae	Laver
		Schizymenia pacifica	Slippery red blade
	Corallines	*Neopolyporolithon reclinatum*	Coralline disc
		Bossiella spp.	winged coralline red alga
		Clathromorphum sp.	rock crust
		Corallina officinalis	Chalky coral seaweed
		Corallina officinalis var. chilensis	Common coral seaweed
		Crustose Corallinales	encrusting coralline red
		Lithothamnion/Lithophyllum sp.	pink calcareous crust
	Seagrass	*Phyllospadix serrulatus*	Serrulated surfgrass
	Invertebrate	*Cliona sp.*	yellow boring sponge
		Halichondria panicea	bread crumb sponge
		Halichondria sp.	bread crumb sponge
		Anthopleura artemisia	Burrowing green anemone
		Anthopleura elegantissima	small aggregating green anemone
		Anthopleura xanthogrammica	Giant green anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Urticina piscivora	Fish eating anemone
		Amphiporus imparispinosus	Flesh ribbon worm
		Emplectonema gracile	green nemertean
		Katharina tunicata	Black katy chiton
		Tonicella lineata	Red lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Acmaea mitra	White capped limpet
		Littorina sitkana	Sitka periwinkle

Station	Group	Scientific Name	Common name
		Margarites pupillus	Little margarite snail
		Nucella lima	File dogwinkle
		Trichotropis cancellata	Checkered hairy snail
		Peltodoris nobilis	Orange fragrant nudibranch
		Mytilus trossulus	Pacific blue mussel
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Maera danae	Pink beach hopper
		Traskorchestia traskiana	Beach hopper
		Glebicarcinus oregonensis	Pygmy rock crab
		Pagurus beringanus	Bering hermit crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Pugettia gracilis	Graceful kelp crab
		Henricia leviuscula	Blood star
		Leptasterias hexactis	Five-armed, six-armed star
		Pisaster ochraceus	Purple sea star
		Cucumaria vegae	Alaska tar spot sea cucumber
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_020	Green Algae	*Acrosiphonia coalita*	Green rope
		Acrosiphonia duriuscula	Northern green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Pseudothrix borealis	filamentous green alga
		Rosenvingiella polyrhiza	Green rock scum
		Ulva "lactuca"	Sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Elachista fucicola	Rockweed tuft
		Fucus distichus	Rockweed
		Leathesia marina	Sea cauliflower
		Melanosiphon intestinalis	Twisted sea tubes
		Ralfsia phase	Brown spot
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Laminaria yezoensis	Suction-cup kelp
		Laminaria/Saccharina sp.	large bladed kelp
		Saccharina nigripes	Split kelp
		Saccharina sessile	Sea cabbage
	Red Algae	*Constantinea subulifera*	Cracked saucer
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Endocladia muricata	Sea moss
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Hildenbrandia sp.	encrusting red alga
		Mastocarpus latissimus	low IT Turkish washcloth
		Mazzaella parvula	mazza weed complex
		Mikamiella ruprechtiana	Mikami's sea oak
		Neorhodomela aculeata	Graceful black pine

Station	Group	Scientific Name	Common name
AKP_16_020		*Neorhodomela oregona*	Oregon pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon
		Phycodrys fimbriata	Common sea oak
		Polyostea bipinnata	Black tassel
		Polysiphonia pacifica of unknown variety	Pretty polly
		Ptilota asplenioides	Sea fern
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Pyropia pseudolanceolata	Olive green winter laver
		Pyropia torta	Laver
		Pyropia unabbottiae	Laver
		Tokidadendron bullatum	Northern sea oak
		Wildemania variegata	Kjellman's laver
	Corallines	*Bossiella spp.*	winged coralline red alga
		Clathromorphum sp.	rock crust
	Invertebrates	*Halichondria panicea*	bread crumb sponge
		Haliclona sp.	purple sponge
		Ophlitaspongia pennata	Red midtide sponge
		Abietinaria sp.	branched hydroid
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Amphiporus imparispinosus	Flesh ribbon worm
		Serpula columbiana	red calcareous tube worm
		Cryptochiton stelleri	Gumboot chiton
		Katharina tunicata	Black katy chiton
		Mopalia sp.	chiton
		Tonicella lineata	Red lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella lamellosa	Frilled dogwinkle
		Peltodoris nobilis	Orange fragrant nudibranch
		Pododesmus macrochisma	Alaska jingle shell or Rock oyster
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Traskorchestia traskiana	Beach hopper
		Glebicarcinus oregonensis	Pygmy rock crab
		Pagurus beringanus	Bering hermit crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Pugettia gracilis	Graceful kelp crab
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star

Station	Group	Scientific Name	Common name
		Leptasterias hexactis	Five-armed, six-armed star
		Solaster sp.	sun star
		Ascidiacea	tunicate
		Cnemidocarpa finmarkiensis	orange solitary tunicate
	Lichen	*Caloplaca/ Xanthoria sp.*	Orange seaside lichen
		Verrucaria sp.	Black seaside lichen
AKP_16_021	Green Algae	*Acrosiphonia coalita*	Green rope
		Acrosiphonia duriuscula	Northern green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
		Ulvaria obscura	dark sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Fucus distichus	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Pylaiella littoralis	Sea felt
		Ralfsia phase	Brown spot
		Scytosiphon lomentaria	Soda straws
		Sphacelaria rigidula	brown sea moss
		Stephanocystis geminata	Northern bladder chain
	Kelp – Brown Algae	*Agarum clathratum*	Sieve kelp
		Alaria marginata	Ribbon kelp
		Laminaria/Saccharina sp.	large bladed kelp
		Saccharina latissima	Sugar kelp
		Saccharina nigripes	Split kelp
		Saccharina sessile	Sea cabbage
AKP_16_021	Red Algae	*Antithamnionella pacifica*	Hooked skein
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Halosaccion sp.	saccate red
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Mazzaella parvula	mazza weed complex
		Mazzaella phyllocarpa	Northern mazza weed
		Myrionema balticum	microscopic epiphyte on Palmaria mollis
		Neorhodomela aculeata	Graceful black pine
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Odonthalia kamtschatica	foliose red alga
		Palmaria hecatensis	Stiff red ribbon
		Phycodrys fimbriata	Common sea oak
		Polyostea bipinnata	Black tassel
		Polysiphonia pacifica of unknown variety	Pretty polly
		Ptilota asplenioides	Sea fern
		Ptilota serrata	filamentous red alga
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Pyropia torta	Laver
		Tokidadendron bullatum	Northern sea oak

Station	Group	Scientific Name	Common name
		Wildemania variegata	Kjellman's laver
	Corallines	*Clathromorphum sp.*	rock crust
		Crustose Corallinales	encrusting coralline red
	Invertebrates	*Halichondria panicea*	bread crumb sponge
		Anthopleura xanthogrammica	Giant green anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Urticina sp.	anemone
		Amphiporus imparispinosus	Flesh ribbon worm
		Paranemertes peregrina	Purple ribbon worm
		Nephtyidae	polychaete worm
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Nucella ostrina	Dwarf dogwinkle
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Chthamalus dalli	small brown barnacle
		Semibalanus balanoides	Acorn barnacle
		Semibalanus cariosus	Thatched barnacle
		Maera danae	Pink beach hopper
		Pentidotea wosnesenskii	Rockweed idotea
		Glebicarcinus oregonensis	Pygmy rock crab
		Pagurus beringanus	Bering hermit crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Henricia leviuscula	Blood star
		Leptasterias hexactis	Five-armed, six-armed star
		Cucumaria vegae	Alaska tar spot sea cucumber
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_022	Green Algae	*Acrosiphonia coalita*	Green rope
		Blidingia minima	Dwarf sea hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
	Brown Algae	*Fucus distichus*	Rockweed
		Melanosiphon intestinalis	Twisted sea tubes
		Petalonia fascia	False kelp
		Punctaria sp.	brown blade
		Pylaiella sp.	filamentous brown
		Ralfsia phase	Brown spot
		Scytosiphon lomentaria	Soda straws
		Stephanocystis geminata	Northern bladder chain
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Desmarestia aculeata	Witch's hair
		Laminaria/Saccharina sp.	large bladed kelp
		Saccharina latissima	Sugar kelp
	Red Algae	*Ahnfeltia fastigiata*	Bushy ahnfelt's seaweed
		Ceramium pacificum	Staghorn felt
		Constantinea subulifera	Cracked saucer

Station	Group	Scientific Name	Common name
AKP_16_022		*Cryptosiphonia woodii*	Bleached brunette
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Halosaccion firmum	Flattened sea sac
		Halosaccion glandiforme	Sea sac
		Neorhodomela aculeata	Graceful black pine
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Polysiphonia tongatensis cf. Melanothamnus eastwoodiae	filamentous red alga
		Pyropia kurogii	laver
		Scagelia occidentale	Scagel's skein
		Schizymenia pacifica	Slippery red blade
		Sparlingia pertusa	Red eyelet silk
		Tokidadendron bullatum	Northern sea oak
	Corallines	*Clathromorphum sp.*	rock crust
	Invertebrates	*Cliona sp.*	yellow boring sponge
		Halichondria panicea	bread crumb sponge
		Metridium senile	Plumose anemone
		Paranemertes peregrina	Purple ribbon worm
		Nereidae	polychaete worm
		Tonicella undocaerulea	Blue lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Nucella ostrina	Dwarf dogwinkle
		Mytilus trossulus	Pacific blue mussel
		Cheilostomata sp.	bryozoan
		Eurystomella bilabiata	Derby hat bryozoan
		Balanus crenatus	Smooth acorn barnacle
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus balanoides	Acorn barnacle
		Semibalanus cariosus	Thatched barnacle
		Maera danae	Pink beach hopper
		Traskorchestia traskiana	Beach hopper
		Glebicarcinus oregonensis	Pygmy rock crab
		Pagurus beringanus	Bering hermit crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Pagurus ochotensis	Alaskan hermit crab
		Pugettia gracilis	Graceful kelp crab
		Heptacarpus sp.	coastal shrimp
		Leptasterias alaskensis	six-arm sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Strongylocentrotus droebachiensis	Green sea urchin
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_023	Green Algae	*Acrosiphonia coalita*	Green rope
		Monostroma grevillei v ar. Grevillei	Sea cellophane

Station	Group	Scientific Name	Common name
AKP_16_023		*Ulothrix flacca*	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Urospora neglecta	Northern sea hair
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Elachista fucicola	Rockweed tuft
		Fucus distichus	Rockweed
		Leathesia marina	Sea cauliflower
		Melanosiphon intestinalis	Twisted sea tubes
		Soranthera ulvoidea	Studded sea balloons
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Laminaria/Saccharina sp.	large bladed kelp
		Nereocystis luetkeana	Bull kelp
	Red Algae	*"Bangia" spp.*	Black sea hair
		Antithamnionella pacifica	Hooked skein
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Endocladia muricata	Sea moss
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Halosaccion sp.	saccate red
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus latissimus	low IT Turkish washcloth
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Mazzaella parvula	mazza weed complex
		Microcladia borealis	Coarse sea lace
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Odonthalia kamtschatica	foliose red alga
		Palmaria hecatensis	Stiff red ribbon
		Phycodrys fimbriata	Common sea oak
		Polyostea bipinnata	Black tassel
		Ptilota asplenioides	Sea fern
		Ptilota serrata	filamentous red alga
		Pyropia abbottiae	Black seaweed
		Pyropia fallax	False laver
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Pyropia torta	Laver
		Sparlingia pertusa	Red eyelet silk
		Tokidadendron bullatum	Northern sea oak
	Corallines	*Neopolyporolithon reclinatum*	Coralline disc
		Bossiella spp.	winged coralline red alga
		Clathromorphum sp.	rock crust
		Crustose Corallinales	encrusting coralline red
		Lithothamnion/Lithophyllum sp.	pink calcareous crust
	Invertebrates	*Haliclona sp.*	purple sponge
		Abietinaria filicula	hydroid
		Anthopleura xanthogrammica	Giant green anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Amphiporus imparispinosus	Flesh ribbon worm
		Paranemertes peregrina	Purple ribbon worm

Station	Group	Scientific Name	Common name
		Hemipodus sp.	Polychaete
		Cryptochiton stelleri	Gumboot chiton
		Katharina tunicata	Black katy chiton
		Mopalia kennerleyi	Northern hairy chiton
		Tonicella lineata	Red lined chiton
		Lottia pelta	shield limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Boreotrophon multicostatus	murex snail
		Fusitriton oregonensis	Oregon or Hairy triton
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella canaliculata	Channelled dogwinkle
		Trichotropis cancellata	Checkered hairy snail
		Onchidella borealis	Leather sea-slug
		Peltodoris nobilis	Orange fragrant nudibranch
		Mytilus trossulus	Pacific blue mussel
		Cheilostomata sp.	bryozoan
		Eurystomella bilabiata	Derby hat bryozoan
		Neomolgus littoralis	red shore mite
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Maera danae	Pink beach hopper
		Traskorchestia traskiana	Beach hopper
		Pentidotea wosnesenskii	Rockweed idotea
		Glebicarcinus oregonensis	Pygmy rock crab
		Hapalogaster mertensii	Hairy crab
		Pagurus beringanus	Bering hermit crab
		Pagurus granosimanus	Grainyhand hermit crab
		Pugettia gracilis	Graceful kelp crab
		Henricia leviuscula	Blood star
		Leptasterias alaskensis	six-arm sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Strongylocentrotus droebachiensis	Green sea urchin
		Ascidiacea	tunicate
	Lichen	*Caloplaca/ Xanthoria sp.*	Orange seaside lichen
		Verrucaria sp.	Black seaside lichen
AKP_16_024	Diatom	*Bacillariophyta*	diatom
	Green Algae	*Acrosiphonia coalita*	Green rope
		Blidingia minima	Dwarf sea hair
		Chaetomorpha sp.	Curly sea hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
		Ulva prolifera	Branched string lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Coilodesme bulligera	Sea chip
		Coilodesme californica	saccate brown alga
		Colpomenia bullosa	Sea rubber
		Fucus distichus	Rockweed
		Leathesia marina	Sea cauliflower
		Melanosiphon intestinalis	Twisted sea tubes
		Petalonia fascia	False kelp

Station	Group	Scientific Name	Common name
AK_16_024		*Pylaiella sp.*	filamentous brown
		Ralfsia phase	Brown spot
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
		Stephanocystis geminata	Northern bladder chain
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Desmarestia aculeata	Witch's hair
		Desmarestia viridis	Stringy acid kelp
		Laminaria/Saccharina sp.	large bladed kelp
		Nereocystis luetkeana	Bull kelp
		Saccharina sessile	Sea cabbage
	Red Algae	*"Bangia" spp.*	Black sea hair
		Ahnfeltia fastigiata	Bushy ahnfelt's seaweed
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Endocladia muricata	Sea moss
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus alaskensis	Turkish washcloth complex
		Mastocarpus latissimus	low IT Turkish washcloth
		Mastocarpus sp. (Petrocelis phase)	Tar spot alga
		Mazzaella sp.	mazza weed complex
		Microcladia borealis	Coarse sea lace
		Mikamiella ruprechtiana	Mikami's sea oak
		Neorhodomela aculeata	Graceful black pine
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon
		Phycodrys sp.	foliose red alga
		Polyostea bipinnata	Black tassel
		Ptilota serrata	filamentous red alga
		Pyropia abbottiae	Black seaweed
		Pyropia fucicola	Rockweed laver
		Schizymenia pacifica	Slippery red blade
		Sparlingia pertusa	Red eyelet silk
		Tokidadendron bullatum	Northern sea oak
	Corallines	*Bossiella spp.*	winged coralline red alga
		Clathromorphum sp.	rock crust
		Corallina officinalis f. chilensis	coralline red alga
		Crustose Corallinales	encrusting coralline red
		Lithothamnion/Lithophyllum sp.	pink calcareous crust
	Invertebrates	*Cliona sp.*	yellow boring sponge
		Halichondria panicea	bread crumb sponge
		Haliclona sp.	purple sponge
		Anthopleura artemisia	Burrowing green anemone
		Anthopleura xanthogrammica	Giant green anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Paranemertes peregrina	Purple ribbon worm

Station	Group	Scientific Name	Common name
		Eudistylia vancouveri	Northern feather duster worm
		Polychaeta	polychaete worm
		Ischnochiton	Chiton
		Katharina tunicata	Black katy chiton
		Mopalia kennerleyi	Northern hairy chiton
		Tonicella lineata	Red lined chiton
		Tonicella undocaerulea	Blue lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Buccinum baeri	Baer's whelk
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella canaliculata	Channelled dogwinkle
		Nucella lamellosa	Frilled dogwinkle
		Nucella ostrina	Dwarf dogwinkle
		Trichotropis cancellata	Checkered hairy snail
		Peltodoris nobilis	Orange fragrant nudibranch
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Spinulogammarus subcarinatus	amphipod
		Traskorchestia traskiana	Beach hopper
		Pentidotea wosnesenskii	Rockweed idotea
		Glebicarcinus oregonensis	Pygmy rock crab
		Hapalogaster mertensii	Hairy crab
		Pagurus beringanus	Bering hermit crab
		Pagurus granosimanus	Grainyhand hermit crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Pinnixa sp.	pea crab
		Pugettia gracilis	Graceful kelp crab
		Scyra acutifrons	sharp nose decorator crab
		Heptacarpus stylus	Stiletto coastal shrimp
		Henricia leviuscula	Blood star
		Leptasterias alaskensis	six-arm sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Chiridota discolor	sea cucumber
	Lichen	*Verrucaria sp.*	Black seaside lichen
AKP_16_025	Diatom	*Bacillariophyta*	diatom
	Green Algae	*Acrosiphonia coalita*	Green rope
		Kornmannia leptoderma	Seagrass cellophane
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Coilodesme bulligera	Sea chip
		Coilodesme californica	saccate brown alga
		Colpomenia bullosa	Sea rubber
		Colpomenia peregrina	Bulb seaweed
		Fucus distichus	Rockweed
		Haplogloia andersonii	Anderson's gooey brown
		Leathesia marina	Sea cauliflower

Station	Group	Scientific Name	Common name
AKP_16_025		*Melanosiphon intestinalis*	Twisted sea tubes
		Petalonia fascia	False kelp
		Ralfsia fungiformis	Sea fungus
		Ralfsia phase	Brown spot
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
		Stephanocystis geminata	Northern bladder chain
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Laminaria yezoensis	Suction-cup kelp
		Laminaria/Saccharina sp.	large bladed kelp
		Saccharina sessile	Sea cabbage
	Red Algae	*Cryptosiphonia woodii*	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Dumontia alaskana	Purple pencils
		Dumontia simplex	saccate, branched red alga
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mazzaella parvula	mazza weed complex
		Neorhodomela aculeata	Graceful black pine
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Odonthalia kamtschatica	foliose red alga
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Ptilota asplenioides	Sea fern
		Pyropia kurogii	laver
	Corallines	*Bossiella spp.*	winged coralline red alga
		Clathromorphum sp.	rock crust
		Lithothamnion/Lithophyllum sp.	pink calcareous crust
	Invertebrates	*Cliona sp.*	yellow boring sponge
		Halichondria panicea	bread crumb sponge
		Haliclona sp.	purple sponge
		Anthopleura artemisia	Burrowing green anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Emplectonema gracile	green nemertean
		Nemertea	ribbon worm
		Eudistylia vancouveri	Northern feather duster worm
		Katharina tunicata	Black katy chiton
		Mopalia kennerleyi	Northern hairy chiton
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura scutum	Plate limpet
		Acmaea mitra	White capped limpet
		Buccinum baeri	Baer's whelk
		Lirabuccinum dirum	Dire whelk
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Trichotropis cancellata	Checkered hairy snail
		Peltodoris nobilis	Orange fragrant nudibranch
		Modiolus modiolus	Northern horse mussel
		Mytilus trossulus	Pacific blue mussel
		Balanus glandula	Acorn barnacle

Station	Group	Scientific Name	Common name
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Spinulogammarus subcarinatus	amphipod
		Traskorchestia traskiana	Beach hopper
		Pentidotea wosnesenskii	Rockweed idotea
		Glebicarcinus oregonensis	Pygmy rock crab
		Pagurus granosimanus	Grainyhand hermit crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Leptasterias alaskensis	six-arm sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Strongylocentrotus droebachiensis	Green sea urchin
	Seagrass	*Phyllospadix serrulatus*	Serrulated surfgrass
	Grasses	*Leymus mollis*	Dune grass
AKP_16_027	Diatom	*Bacillariophyta*	diatom
	Green Algae	*Acrosiphonia arcta*	Arctic sea moss
		Acrosiphonia coalita	Green rope
		Blidingia minima	Dwarf sea hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Pseudothrix borealis	filamentous green alga
		Ulothrix flacca	Mermaid's tresses
		Ulva "lactuca"	Sea lettuce
		Urospora neglecta	Northern sea hair
	Brown Algae	*Elachista fucicola*	Rockweed tuft
		Fucus distichus	Rockweed
		Pylaiella littoralis	Sea felt
		Scytosiphon lomentaria	Soda straws
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Costaria costata	Five-ribbed Kelp
		Desmarestia viridis	Stringy acid kelp
		Laminaria/Saccharina sp.	large bladed kelp
	Red Algae	*"Bangia" spp.*	Black sea hair
		Antithamnionella pacifica	Hooked skein
		Cryptosiphonia woodii	Bleached brunette
		Devaleraea callophylloides	Frilly red ribbon
		Devaleraea mollis	Red ribbon
		Endocladia muricata	Sea moss
		Halosaccion glandiforme	Sea sac
		Mastocarpus latissimus	low IT Turkish washcloth
		Mazzaella parvula	mazza weed complex
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Pyropia abbottiae	Black seaweed
		Pyropia fucicola	Rockweed laver
		Pyropia kurogii	laver
		Tokidadendron bullatum	Northern sea oak
		Wildemania variegata	Kjellman's laver
	Corallines	*Clathromorphum sp.*	rock crust
	Invertebrates	*Metridium senile*	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Kaburakia excelsa	Giant leaf worm

Station	Group	Scientific Name	Common name
		Nephtyidae	polychaete worm
		Serpula columbiana	red calcareous tube worm
		Katharina tunicata	Black katy chiton
		Mopalia kennerleyi	Northern hairy chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura scutum	Plate limpet
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella lamellosa	Frilled dogwinkle
		Trichotropis cancellata	Checkered hairy snail
		Peltodoris nobilis	Orange fragrant nudibranch
		Pododesmus macrochisma	Alaska jingle shell or Rock oyster
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus cariosus	Thatched barnacle
		Traskorchestia traskiana	Beach hopper
		Pentidotea wosnesenskii	Rockweed idotea
		Pagurus granosimanus	Grainyhand hermit crab
		Pagurus hirsutiusculus	Hairy hermit crab
		Pugettia gracilis	Graceful kelp crab
		Evasterias troschelii	Mottled sea star
		Henricia leviuscula	Blood star
		Henricia sanguinolenta	Sanguine sea star
		Leptasterias alaskensis	six-arm sea star
		Cucumaria vegae	Alaska tar spot sea cucumber
AKP_16_028	Diatom	*Bacillariophyta*	diatom
	Green Algae	*Acrosiphonia coalita*	Green rope
		Blidingia minima	Dwarf sea hair
		Monostroma grevillei v ar. Grevillei	Sea cellophane
		Ulva "lactuca"	Sea lettuce
		Urospora neglecta	Northern sea hair
	Brown Algae	*Analipus japonicus*	Bottlebrush seaweed
		Chordaria flagelliformis	Chocolate pencils
		Coilodesme californica	saccate brown alga
		Dictyosiphon foeniculaceus	Golden sea hair
		Fucus distichus	Rockweed
		Leathesia marina	Sea cauliflower
		Melanosiphon intestinalis	Twisted sea tubes
	Brown Algae	*Pylaiella littoralis*	Sea felt
		Scytosiphon lomentaria	Soda straws
		Soranthera ulvoidea	Studded sea balloons
		Stephanocystis geminata	Northern bladder chain
	Kelp – Brown Algae	*Alaria marginata*	Ribbon kelp
		Desmarestia aculeata	Witch's hair
		Desmarestia viridis	Stringy acid kelp
		Laminaria/Saccharina sp.	large bladed kelp
		Saccharina nigripes	Split kelp
	Red Algae	*"Bangia" spp.*	Black sea hair
		Cryptosiphonia woodii	Bleached brunette

Station	Group	Scientific Name	Common name
		Devaleraea mollis	Red ribbon
		Gloiopeltis furcata	Jelly moss
		Halosaccion glandiforme	Sea sac
		Hildenbrandia rubra	Rusty rock
		Mastocarpus alaskensis	Turkish washcloth complex
		Neorhodomela oregona	Oregon pine
		Odonthalia floccosa	Sea brush
		Odonthalia floccosa f. comosa	Rockweed brush
		Palmaria hecatensis	Stiff red ribbon
		Polyostea bipinnata	Black tassel
		Pyropia abbottiae	Black seaweed
		Pyropia kurogii	laver
		Tokidadendron bullatum	Northern sea oak
		Wildemania cuneiformis	Red cellophane
	Corallines	*Clathromorphum sp.*	rock crust
		Corallina officinalis	Chalky coral seaweed
		Crustose Corallinales	encrusting coralline red
	Seagrass	*Zostera marina*	Eelgrass
AKP_16_028	Invertebrates	*Cliona sp.*	yellow boring sponge
		Anthopleura artemisia	Burrowing green anemone
		Anthopleura xanthogrammica	Giant green anemone
		Metridium senile	Plumose anemone
		Urticina grebelnyi	Christmas or Painted anemone
		Urticina sp.	anemone
		Emplectonema gracile	green nemertean
		Eudistylia vancouveri	Northern feather duster worm
		Polychaeta	polychaete worm
		Katharina tunicata	Black katy chiton
		Mopalia kennerleyi	Northern hairy chiton
		Tonicella lineata	Red lined chiton
		Tonicella undocaerulea	Blue lined chiton
		Lottia digitalis	Ribbed limpet
		Lottia pelta	shield limpet
		Lottiidae	limpet
		Tectura persona	Mask limpet
		Tectura scutum	Plate limpet
		Acmaea mitra	White capped limpet
		Fusitriton oregonensis	Oregon or Hairy triton
		Littorina scutulata	Checkered periwinkle
		Littorina sitkana	Sitka periwinkle
		Margarites pupillus	Little margarite snail
		Nucella canaliculata	Channelled dogwinkle
		Nucella lima	File dogwinkle
		Pododesmus macrochisma	Alaska jingle shell or Rock oyster
		Mytilus trossulus	Pacific blue mussel
		Eurystomella bilabiata	Derby hat bryozoan
		Balanus glandula	Acorn barnacle
		Chthamalus dalli	small brown barnacle
		Semibalanus balanoides	Acorn barnacle
		Semibalanus cariosus	Thatched barnacle
		Gammaridea amphipod	amphipod
		Pentidotea wosnesenskii	Rockweed idotea
		Pagurus beringanus	Bering hermit crab
		Pagurus granosimanus	Grainyhand hermit crab

Station	Group	Scientific Name	Common name
		Pagurus hirsutiusculus	Hairy hermit crab
		Henricia leviuscula	Blood star
		Leptasterias alaskensis	six-arm sea star
		Leptasterias hexactis	Five-armed, six-armed star
		Strongylocentrotus droebachiensis	Green sea urchin
	Lichen	*Verrucaria sp.*	Black seaside lichen

Table C-2. Ground station quadrat data.

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_001	Bare	1	*Littorina sitkana*		50
AKP_16_001	Bare	1	*Tectura persona*		6
AKP_16_001	Bare	2	*Littorina sitkana*		100
AKP_16_001	Bare	2	*Tectura persona*		3
AKP_16_001	Bare	3	*Littorina sitkana*		30
AKP_16_001	Bare	3	*Pyropia pseudolanceolata*	3	
AKP_16_001	Barnacle	1	*Fucus distichus*	15	
AKP_16_001	Barnacle	1	*Littorina sitkana*	30	1000
AKP_16_001	Barnacle	1	*Semibalanus balanoides*	40	
AKP_16_001	Barnacle	1	*Tectura persona*		5
AKP_16_001	Barnacle	2	*Chthamalus dalli*	1	
AKP_16_001	Barnacle	2	*Littorina sitkana*		200
AKP_16_001	Barnacle	2	*Semibalanus balanoides*	<5%	
AKP_16_001	Barnacle	2	*Semibalanus balanoides*	1	
AKP_16_001	Barnacle	2	*Tectura persona*		2
AKP_16_001	Barnacle	3	*Balanamorpha*	<1	
AKP_16_001	Barnacle	3	*Chthamalus dalli*	<1	
AKP_16_001	Barnacle	3	*Corallinales*	<1	
AKP_16_001	Barnacle	3	*Fucus distichus*	15	
AKP_16_001	Barnacle	3	*Halosaccion glandiforme*	10	
AKP_16_001	Barnacle	3	*Lottia pelta*		3
AKP_16_001	Barnacle	3	*Mastocarpus sp. (Petrocelis phase)*	1	
AKP_16_001	Barnacle	3	*Mytilus trossulus*		3
AKP_16_001	Barnacle	3	*Neorhodomela oregona*	10	
AKP_16_001	Barnacle	3	*Semibalanus cariosus*	40	
AKP_16_001	Barnacle	3	*Soranthera ulvoidea*	<1	
AKP_16_001	Barnacle	3	*Tectura scutum*		2
AKP_16_001	Barnacle	4	*Fucus distichus*	10	
AKP_16_001	Barnacle	4	*Littorina sitkana*		60
AKP_16_001	Barnacle	4	*Semibalanus balanoides*	25	
AKP_16_001	Barnacle	4	*Tectura persona*		1
AKP_16_001	Barnacle	4	*Tectura scutum*		8
AKP_16_001	Barnacle	5	*Littorina sitkana*		200
AKP_16_001	Barnacle	5	*Semibalanus balanoides*	50	
AKP_16_001	Barnacle	5	*Tectura persona*		2
AKP_16_001	Red Algae	1	*Acrosiphonia sp.*	<1	
AKP_16_001	Red Algae	1	*Chthamalus dalli*	20	
AKP_16_001	Red Algae	1	*Fucus distichus*	10	
AKP_16_001	Red Algae	1	*Halosaccion glandiforme*	5	
AKP_16_001	Red Algae	1	*Mastocarpus sp. (Petrocelis phase)*	<1	
AKP_16_001	Red Algae	1	*Mastocarpus spp.*	20	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_001	Red Algae	1	*Nemertea*		1
AKP_16_001	Red Algae	1	*Palmaria callophylloides*	<5	
AKP_16_001	Red Algae	1	*Semibalanus cariosus*	<5	
AKP_16_001	Red Algae	1	*Ulva sp.*	5	
AKP_16_001	Red Algae	1	*Ulvaria sp.*	5	
AKP_16_001	Red Algae	2	*Acrosiphonia sp.*	<5	
AKP_16_001	Red Algae	2	*Alaria marginata*	25	
AKP_16_001	Red Algae	2	*Cryptosiphonia woodii*	<1	
AKP_16_001	Red Algae	2	*Fucus distichus*	30	
AKP_16_001	Red Algae	2	*Halosaccion glandiforme*	<5	
AKP_16_001	Red Algae	2	*Mastocarpus spp.*	<5	
AKP_16_001	Red Algae	2	*Microcladia borealis*	<1	
AKP_16_001	Red Algae	2	*Odonthalia floccosa*	<1	
AKP_16_001	Red Algae	2	*Palmaria hecatensis*	15	
AKP_16_001	Red Algae	2	*Palmaria mollis*	15	
AKP_16_001	Red Algae	2	*Tokidadendron bullatum*	<1	
AKP_16_001	Red Algae	2	*Ulva sp.*	5	
AKP_16_001	Red Algae	2	*Ulvaria sp.*	10	
AKP_16_001	Red Algae	3	*Halosaccion glandiforme*	1	
AKP_16_001	Red Algae	3	*Mastocarpus spp.*	10	
AKP_16_001	Red Algae	3	*Palmaria callophylloides*	30	
AKP_16_001	Red Algae	3	*Palmaria hecatensis*	5	
AKP_16_001	Red Algae	3	*Semibalanus cariosus*	<5	
AKP_16_001	Red Algae	3	*Ulva sp.*	1	
AKP_16_001	Red Algae	3	*Ulvaria sp.*	5	
AKP_16_001	Red Algae	4	*Acrosiphonia sp.*	15	
AKP_16_001	Red Algae	4	*Alaria marginata*	30	
AKP_16_001	Red Algae	4	*Cryptosiphonia woodii*	<1	
AKP_16_001	Red Algae	4	*Fucus distichus*	5	
AKP_16_001	Red Algae	4	*Halichondria sp.*	<1	
AKP_16_001	Red Algae	4	*Halosaccion sp.*	<1	
AKP_16_001	Red Algae	4	*Mastocarpus spp.*	<1	
AKP_16_001	Red Algae	4	*Odonthalia sp.*	<1	
AKP_16_001	Red Algae	4	*Palmaria callophylloides*	<5	
AKP_16_001	Red Algae	4	*Palmaria callophylloides*	present	
AKP_16_001	Red Algae	4	*Palmaria hecatensis*	5	
AKP_16_001	Red Algae	4	*Pholidae*		1
AKP_16_001	Red Algae	4	*Tokidadendron bullatum*	1	
AKP_16_001	Red Algae	4	*Ulva sp.*	25	
AKP_16_001	Red Algae	5	*Alaria marginata*	20	
AKP_16_001	Red Algae	5	*Colpomenia sp.*	<1	
AKP_16_001	Red Algae	5	*Fucus distichus*	5	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_001	Red Algae	5	*Halosaccion glandiforme*	1	
AKP_16_001	Red Algae	5	*Mastocarpus spp.*	1	
AKP_16_001	Red Algae	5	*Odonthalia floccosa*	1	
AKP_16_001	Red Algae	5	*Palmaria callophylloides*	10	
AKP_16_001	Red Algae	5	*Palmaria hecatensis*	40	
AKP_16_001	Red Algae	5	*Ulvaria sp.*	5	
AKP_16_002	Alaria	1	*Alaria marginata*	10	
AKP_16_002	Alaria	1	*Corallinales*	<1	
AKP_16_002	Alaria	1	*Katharina tunicata*		1
AKP_16_002	Alaria	1	*Mastocarpus spp.*	5	
AKP_16_002	Alaria	1	*Mazzaella sp.*	1	
AKP_16_002	Alaria	1	*Palmaria hecatensis*	45	
AKP_16_002	Alaria	1	*Phycodrys sp.*	1	
AKP_16_002	Alaria	1	*Ptilota sp.*	10	
AKP_16_002	Alaria	1	*Semibalanus cariosus*	25	
AKP_16_002	Alaria	1	*Ulva sp.*	<1	
AKP_16_002	Alaria	2	*Alaria marginata*	25	
AKP_16_002	Alaria	2	*Balanamorpha*	5	
AKP_16_002	Alaria	2	*Corallinales*	<1	
AKP_16_002	Alaria	2	*Mytilus trossulus*	30	
AKP_16_002	Alaria	2	*Odonthalia floccosa*	1	
AKP_16_002	Alaria	2	*Palmaria hecatensis*	5	
AKP_16_002	Alaria	2	*Peltodoris nobilis*		1
AKP_16_002	Alaria	2	*Polyostea bipinnata*	<1	
AKP_16_002	Alaria	2	*Pyropria sp.*	1	
AKP_16_002	Alaria	2	*Semibalanus cariosus*	10	
AKP_16_002	Alaria	2	*Tokidadendron bullatum*	1	
AKP_16_002	Alaria	2	*Ulva sp.*	1	
AKP_16_002	Alaria	3	*Alaria marginata*	98	
AKP_16_002	Alaria	3	*Halosaccion glandiforme*	5	
AKP_16_002	Alaria	3	*Nereis sp.*		1
AKP_16_002	Alaria	3	*Odonthalia floccosa*	5	
AKP_16_002	Alaria	3	*Palmaria hecatensis*	10	
AKP_16_002	Alaria	3	*Pyropria sp.*	5	
AKP_16_002	Alaria	3	*Semibalanus cariosus*	45	
AKP_16_002	Alaria	3	*Ulva sp.*	5	
AKP_16_002	Alaria	4	*Alaria marginata*	60	
AKP_16_002	Alaria	4	*Corallinales*	25	
AKP_16_002	Alaria	4	*Halosaccion glandiforme*	<1	
AKP_16_002	Alaria	4	*Mytilus trossulus*	<1	
AKP_16_002	Alaria	4	*Odonthalia floccosa*	5	
AKP_16_002	Alaria	4	*Palmaria callophylloides*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_002	Alaria	4	*Palmaria hecatensis*	20	
AKP_16_002	Alaria	4	*Pyropria sp.*	10	
AKP_16_002	Alaria	4	*Semibalanus cariosus*	25	
AKP_16_002	Alaria	4	*Tokidadendron bullatum*	<1	
AKP_16_002	Alaria	4	*Ulva sp.*	<1	
AKP_16_002	Alaria	5	*Alaria marginata*	25	
AKP_16_002	Alaria	5	*Odonthalia floccosa*	5	
AKP_16_002	Alaria	5	*Palmaria hecatensis*	35	
AKP_16_002	Alaria	5	*Saccharina bongardiana*	5	
AKP_16_002	Alaria	5	*Saccharina sessile*	40	
AKP_16_002	Barnacle	1	*Balanamorpha*	90	
AKP_16_002	Barnacle	1	*Littorina sitkana*		200
AKP_16_002	Barnacle	1	*Lottia digitalis*		2
AKP_16_002	Barnacle	1	*Lottia pelta*		14
AKP_16_002	Barnacle	1	*Lottia sp.*		20
AKP_16_002	Barnacle	1	*Mytilus trossulus*	2	
AKP_16_002	Barnacle	1	*Nucella canaliculata*		6
AKP_16_002	Barnacle	2	*Corallinales*	1	
AKP_16_002	Barnacle	2	*Halichondria sp.*	5	
AKP_16_002	Barnacle	2	*Littorina sitkana*		250
AKP_16_002	Barnacle	2	*Neorhodomela oregona*	80	
AKP_16_002	Barnacle	3	*Balanamorpha*	10	
AKP_16_002	Barnacle	3	*Chthamalus dalli*	5	
AKP_16_002	Barnacle	3	*Littorina sitkana*		100
AKP_16_002	Barnacle	3	*Lottia pelta*		8
AKP_16_002	Barnacle	3	*Lottia pelta*		20
AKP_16_002	Barnacle	3	*Mytilus trossulus*	1	
AKP_16_002	Barnacle	3	*Nucella canaliculata*	15	
AKP_16_002	Barnacle	4	*Balanus glandula*	3	
AKP_16_002	Barnacle	4	*Hildenbrandia sp.*	1	
AKP_16_002	Barnacle	4	*Lottia pelta*		6
AKP_16_002	Barnacle	4	*Lottia sp.*		5
AKP_16_002	Barnacle	4	*Mytilus trossulus*	1	
AKP_16_002	Barnacle	4	*Neorhodomela oregona*	1	
AKP_16_002	Barnacle	4	*Tectura persona*		7
AKP_16_002	Barnacle	5	*Balanus glandula*	30	
AKP_16_002	Barnacle	5	*Chthamalus dalli*	2	
AKP_16_002	Barnacle	5	*Littorina sitkana*		60
AKP_16_002	Barnacle	5	*Lottia pelta*		6
AKP_16_002	Barnacle	5	*Lottia sp.*		15
AKP_16_002	Barnacle	5	*Neorhodomela oregona*	20	
AKP_16_002	Red Algae	1	*Acrosiphonia sp.*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_002	Red Algae	1	*Anthopleura artemisia*		1
AKP_16_002	Red Algae	1	*Chthamalus dalli*	40	
AKP_16_002	Red Algae	1	*Corallinales*	15	
AKP_16_002	Red Algae	1	*Fucus distichus*	3	
AKP_16_002	Red Algae	1	*Halosaccion glandiforme*	1	
AKP_16_002	Red Algae	1	*Katharina tunicata*		1
AKP_16_002	Red Algae	1	*Neorhodomela sp.*	present	
AKP_16_002	Red Algae	1	*Odonthalia floccosa*	20	
AKP_16_002	Red Algae	1	*Semibalanus cariosus*	10	
AKP_16_002	Red Algae	1	*Ulva sp.*	15	
AKP_16_002	Red Algae	2	*Balanamorpha*	5	
AKP_16_002	Red Algae	2	*Halosaccion glandiforme*	<1	
AKP_16_002	Red Algae	2	*Littorina sitkana*		20
AKP_16_002	Red Algae	2	*Lottia sp.*		12
AKP_16_002	Red Algae	2	*Mytilus trossulus*	<1	
AKP_16_002	Red Algae	2	*Neorhodomela oregona*	20	
AKP_16_002	Red Algae	2	*Nucella canaliculata*		5
AKP_16_002	Red Algae	2	*Odonthalia floccosa*	20	
AKP_16_002	Red Algae	2	*Palmaria hecatensis*	<1	
AKP_16_002	Red Algae	2	*Pyropria sp.*	5	
AKP_16_002	Red Algae	2	*Semibalanus cariosus*	1	
AKP_16_002	Red Algae	3	*Acrosiphonia sp.*	<1	
AKP_16_002	Red Algae	3	*Balanamorpha*	present	
AKP_16_002	Red Algae	3	*Chthamalus dalli*	10	
AKP_16_002	Red Algae	3	*Corallinales*	10	
AKP_16_002	Red Algae	3	*Corallinales*	3	
AKP_16_002	Red Algae	3	*Lottia pelta*		6
AKP_16_002	Red Algae	3	*Neorhodomela oregona*	15	
AKP_16_002	Red Algae	3	*Odonthalia floccosa*	30	
AKP_16_002	Red Algae	3	*Semibalanus cariosus*	1	
AKP_16_002	Red Algae	3	*Ulva sp.*	5	
AKP_16_002	Red Algae	4	*Corallinales*	20	
AKP_16_002	Red Algae	4	*Corallinales*	5	
AKP_16_002	Red Algae	4	*Neorhodomela oregona*	20	
AKP_16_002	Red Algae	4	*Odonthalia floccosa*	60	
AKP_16_002	Red Algae	4	*Palmaria hecatensis*	1	
AKP_16_002	Red Algae	4	*Pyropria sp.*	1	
AKP_16_002	Red Algae	4	*Tectura scutum*		4
AKP_16_002	Red Algae	4	*Ulva sp.*	5	
AKP_16_002	Red Algae	5	*Balanamorpha*	5	
AKP_16_002	Red Algae	5	*Halosaccion glandiforme*	<1	
AKP_16_002	Red Algae	5	*Lottia sp.*		20

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_002	Red Algae	5	*Neorhodomela oregona*	10	
AKP_16_002	Red Algae	5	*Nucella canaliculata*		4
AKP_16_002	Red Algae	5	*Odonthalia floccosa*	10	
AKP_16_002	Red Algae	5	*Polyostea bipinnata*	10	
AKP_16_002	Red Algae	5	*Pyropria sp.*	20	
AKP_16_002	Red Algae	5	*Semibalanus cariosus*	1	
AKP_16_002	Red Algae	5	*Ulva sp.*	<1	
AKP_16_002	Winter Laver	1	*Balanus glandula*	1	
AKP_16_002	Winter Laver	1	*Bangia spp.*	10	
AKP_16_002	Winter Laver	1	*Littorina sitkana*		45
AKP_16_002	Winter Laver	1	*Lottia pelta*		4
AKP_16_002	Winter Laver	1	*Pyropria sp.*	10	
AKP_16_002	Winter Laver	1	*Ulothrix sp.*	10	
AKP_16_002	Winter Laver	2	*Balanus glandula*	1	
AKP_16_002	Winter Laver	2	*Littorina sitkana*		110
AKP_16_002	Winter Laver	2	*Lottia pelta*		8
AKP_16_002	Winter Laver	2	*Mytilus trossulus*	1	
AKP_16_002	Winter Laver	3	*Bangia spp.*	20	
AKP_16_002	Winter Laver	3	*Chthamalus dalli*	1	
AKP_16_002	Winter Laver	3	*Littorina sitkana*		60
AKP_16_002	Winter Laver	3	*Lottia pelta*		1
AKP_16_002	Winter Laver	3	*Pyropria sp.*	50	
AKP_16_002	Winter Laver	4	*Bangia spp.*	40	
AKP_16_002	Winter Laver	4	*Pyropria sp.*	60	
AKP_16_003	Alaria	1	*Alaria marginata*	85	
AKP_16_003	Alaria	1	*Corallinales*	1	
AKP_16_003	Alaria	1	*Epiactis prolifera*		2
AKP_16_003	Alaria	1	*Katharina tunicata*		4
AKP_16_003	Alaria	1	*Mastocarpus spp.*	2	
AKP_16_003	Alaria	1	*Odonthalia floccosa*	5	
AKP_16_003	Alaria	1	*Semibalanus cariosus*	50	
AKP_16_003	Alaria	2	*Acrosiphonia sp.*	<1	
AKP_16_003	Alaria	2	*Alaria marginata*	5	
AKP_16_003	Alaria	2	*Corallinales*	30	
AKP_16_003	Alaria	2	*Corallinales*	3	
AKP_16_003	Alaria	2	*Epiactis prolifera*		17
AKP_16_003	Alaria	2	*Katharina tunicata*		20
AKP_16_003	Alaria	2	*Pyropria sp.*	1	
AKP_16_003	Alaria	2	*Semibalanus cariosus*	50	
AKP_16_003	Alaria	2	*Tonicella lineata*		1
AKP_16_003	Alaria	2	*Ulva sp.*	<1	
AKP_16_003	Alaria	3	*Acrosiphonia arcta*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_003	Alaria	3	*Alaria marginata*	8	
AKP_16_003	Alaria	3	*Anthopleura sp.*		1
AKP_16_003	Alaria	3	*Corallinales*	1	
AKP_16_003	Alaria	3	*Doridoidea*		1
AKP_16_003	Alaria	3	*Epiactis prolifera*		12
AKP_16_003	Alaria	3	*Katharina tunicata*		11
AKP_16_003	Alaria	3	*Semibalanus cariosus*	70	
AKP_16_003	Alaria	4	*Alaria marginata*	90	
AKP_16_003	Alaria	4	*Anthozoa*		50
AKP_16_003	Alaria	4	*Corallinales*	5	
AKP_16_003	Alaria	4	*Corallinales*	<1	
AKP_16_003	Alaria	4	*Katharina tunicata*		19
AKP_16_003	Alaria	4	*Lottia pelta*		2
AKP_16_003	Alaria	4	*Nucella canaliculata*		1
AKP_16_003	Alaria	4	*Semibalanus cariosus*	80	
AKP_16_003	Alaria	5	*Alaria marginata*	80	
AKP_16_003	Alaria	5	*Corallinales*	10	
AKP_16_003	Alaria	5	*Corallinales*	1	
AKP_16_003	Alaria	5	*Epiactis prolifera*		9
AKP_16_003	Alaria	5	*Katharina tunicata*		14
AKP_16_003	Alaria	5	*Odonthalia sp.*	5	
AKP_16_003	Alaria	5	*Semibalanus cariosus*	50	
AKP_16_003	Alaria	5	*Tonicella lineata*		1
AKP_16_003	Alaria	5	*Ulva sp.*	<1	
AKP_16_003	Alaria	6	*Alaria marginata*	5	
AKP_16_003	Alaria	6	*Corallinales*	10	
AKP_16_003	Alaria	6	*Corallinales*	1	
AKP_16_003	Alaria	6	*Halosaccion glandiforme*	<1	
AKP_16_003	Alaria	6	*Katharina tunicata*		34
AKP_16_003	Alaria	6	*Semibalanus cariosus*	80	
AKP_16_003	Alaria	6	*Tonicella lineata*		2
AKP_16_003	Alaria	6	*Ulva sp.*	<1	
AKP_16_003	Barnacle	1	*Littorina sitkana*		300
AKP_16_003	Barnacle	1	*Mytilus trossulus*	<1	
AKP_16_003	Barnacle	1	*Neorhodomela aculeata*	75	
AKP_16_003	Barnacle	1	*Pagurus hirsutiusculus*		2
AKP_16_003	Barnacle	1	*Semibalanus cariosus*	1	
AKP_16_003	Barnacle	2	*Balanus glandula*	60	
AKP_16_003	Barnacle	2	*Littorina sitkana*		100
AKP_16_003	Barnacle	2	*Mytilus trossulus*	1	
AKP_16_003	Barnacle	2	*Neorhodomela sp.*	1	
AKP_16_003	Barnacle	3	*Balanus glandula*	5	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_003	Barnacle	3	*Endocladia muricata*	<1	
AKP_16_003	Barnacle	3	*Littorina sitkana*		60
AKP_16_003	Barnacle	3	*Lottiidae*		3
AKP_16_003	Barnacle	3	*Neorhodomela sp.*	12	
AKP_16_003	Barnacle	4	*Balanus glandula*	<1	
AKP_16_003	Barnacle	4	*Chthamalus dalli*	1	
AKP_16_003	Barnacle	4	*Littorina sitkana*		250
AKP_16_003	Barnacle	4	*Neorhodomela sp.*	80	
AKP_16_003	Barnacle	5	*Acrosiphonia sp.*	<1	
AKP_16_003	Barnacle	5	*Balanus glandula*	25	
AKP_16_003	Barnacle	5	*Endocladia muricata*	<1	
AKP_16_003	Barnacle	5	*Fucus distichus*	2	
AKP_16_003	Barnacle	5	*Littorina sitkana*		100
AKP_16_003	Barnacle	5	*Mastocarpus spp.*	<1	
AKP_16_003	Barnacle	5	*Mytilus trossulus*	2	
AKP_16_003	Barnacle	5	*Neorhodomela sp.*	5	
AKP_16_003	Barnacle	5	*Polyostea bipinnata*	3	
AKP_16_003	Dark Brown Kelp	1	*Alaria marginata*	80	
AKP_16_003	Dark Brown Kelp	1	*Corallinales*	40	
AKP_16_003	Dark Brown Kelp	1	*Desmarestia sp.*	2	
AKP_16_003	Dark Brown Kelp	1	*Evasterias sp.*		1
AKP_16_003	Dark Brown Kelp	1	*Fusitriton oregonensis*		3
AKP_16_003	Dark Brown Kelp	1	*Henricia sp.*		2
AKP_16_003	Dark Brown Kelp	1	*Nereocystis luetkeana*	1	
AKP_16_003	Dark Brown Kelp	1	*Nucella lamellosa*		2
AKP_16_003	Dark Brown Kelp	1	*Odonthalia sp.*	5	
AKP_16_003	Dark Brown Kelp	1	*Saccharina sp.*	5	
AKP_16_003	Dark Brown Kelp	1	*Semibalanus cariosus*	15	
AKP_16_003	Dark Brown Kelp	2	*Alaria marginata*	15	
AKP_16_003	Dark Brown Kelp	2	*Corallinales*	50	
AKP_16_003	Dark Brown Kelp	2	*Corallinales*	2	
AKP_16_003	Dark Brown Kelp	2	*Fusitriton oregonensis*		1
AKP_16_003	Dark Brown Kelp	2	*Katharina tunicata*		15
AKP_16_003	Dark Brown Kelp	2	*Margarites pupillus*		5
AKP_16_003	Dark Brown Kelp	2	*Nucella canaliculata*		2
AKP_16_003	Dark Brown Kelp	2	*Nucella lamellosa*		2
AKP_16_003	Dark Brown Kelp	2	*Pagurus sp.*		4
AKP_16_003	Dark Brown Kelp	2	*Saccharina bongardiana*	5	
AKP_16_003	Dark Brown Kelp	2	*Semibalanus cariosus*	15	
AKP_16_003	Dark Brown Kelp	3	*Alaria marginata*	5	
AKP_16_003	Dark Brown Kelp	3	*Corallinales*	40	
AKP_16_003	Dark Brown Kelp	3	*Corallinales*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_003	Dark Brown Kelp	3	*Fusitriton oregonensis*		3
AKP_16_003	Dark Brown Kelp	3	*Henricia sp.*		2
AKP_16_003	Dark Brown Kelp	3	*Nucella lamellosa*		2
AKP_16_003	Dark Brown Kelp	3	*Odonthalia sp.*	5	
AKP_16_003	Dark Brown Kelp	3	*Saccharina bongardiana*	50	
AKP_16_003	Dark Brown Kelp	4	*Acmaea mitra*		2
AKP_16_003	Dark Brown Kelp	4	*Alaria marginata*	10	
AKP_16_003	Dark Brown Kelp	4	*Corallinales*	70	
AKP_16_003	Dark Brown Kelp	4	*Corallinales*	10	
AKP_16_003	Dark Brown Kelp	4	*Laminaria longipes*	40	
AKP_16_003	Dark Brown Kelp	4	*Lottia sp.*		12
AKP_16_003	Dark Brown Kelp	4	*Margarites pupillus*		4
AKP_16_003	Dark Brown Kelp	4	*Neoptilota sp.*	5	
AKP_16_003	Dark Brown Kelp	4	*Odonthalia sp.*	20	
AKP_16_003	Dark Brown Kelp	4	*Saccharina bongardiana*	10	
AKP_16_003	Dark Brown Kelp	5	*Corallinales*	60	
AKP_16_003	Dark Brown Kelp	5	*Corallinales*	10	
AKP_16_003	Dark Brown Kelp	5	*Gastropoda*		1
AKP_16_003	Dark Brown Kelp	5	*Margarites pupillus*		2
AKP_16_003	Dark Brown Kelp	5	*Odonthalia sp.*	75	
AKP_16_003	Dark Brown Kelp	5	*Pagurus hirsutiusculus*		3
AKP_16_003	Dark Brown Kelp	5	*Saccharina bongardiana*	25	
AKP_16_003	Dark Brown Kelp	5	*Tonicella lineata*		4
AKP_16_003	Rockweed	1	*Fucus distichus*	25	
AKP_16_003	Rockweed	1	*Lottia pelta*		2
AKP_16_003	Rockweed	1	*Lottiidae*		10
AKP_16_003	Rockweed	1	*Mytilus trossulus*	40	
AKP_16_003	Rockweed	1	*Pyropria sp.*	20	
AKP_16_003	Rockweed	2	*Chthamalus dalli*	1	
AKP_16_003	Rockweed	2	*Corallinales*	80	
AKP_16_003	Rockweed	2	*Corallinales*	1	
AKP_16_003	Rockweed	2	*Epiactis prolifera*		5
AKP_16_003	Rockweed	2	*Fusitriton oregonensis*		1
AKP_16_003	Rockweed	2	*Neorhodomela sp.*	10	
AKP_16_003	Rockweed	2	*Polyostea bipinnata*	2	
AKP_16_003	Rockweed	2	*Semibalanus cariosus*	40	
AKP_16_003	Rockweed	2	*Zosteraceae*	20	
AKP_16_003	Rockweed	3	*Balanus glandula*	1	
AKP_16_003	Rockweed	3	*Endocladia muricata*	7	
AKP_16_003	Rockweed	3	*Fucus distichus*	<1	
AKP_16_003	Rockweed	3	*Pyropria sp.*	80	
AKP_16_003	Rockweed	3	*Ulva sp.*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_003	Rockweed	4	*Balanus glandula*	2	
AKP_16_003	Rockweed	4	*Chthamalus dalli*	1	
AKP_16_003	Rockweed	4	*Fucus distichus*	10	
AKP_16_003	Rockweed	4	*Mytilus trossulus*	1	
AKP_16_003	Rockweed	4	*Odonthalia floccosa f. comosa*	70	
AKP_16_003	Rockweed	4	*Polyostea bipinnata*	30	
AKP_16_004	Barnacle	1	*Chthamalus dalli*	1	
AKP_16_004	Barnacle	1	*Littorina sitkana*		20
AKP_16_004	Barnacle	1	*Pyropria sp.*	3	
AKP_16_004	Barnacle	1	*Ulothrix sp.*	10	
AKP_16_004	Barnacle	2	*Balanamorpha*	30	
AKP_16_004	Barnacle	2	*Littorina scutulata*		3
AKP_16_004	Barnacle	2	*Littorina sitkana*		30
AKP_16_004	Barnacle	2	*Lottia sp.*		5
AKP_16_004	Barnacle	3	*Balanamorpha*	1	
AKP_16_004	Barnacle	3	*Littorina sitkana*		50
AKP_16_004	Red Algae	1	*Corallinales*	10	
AKP_16_004	Red Algae	1	*Fucus distichus*	1	
AKP_16_004	Red Algae	1	*Katharina tunicata*		6
AKP_16_004	Red Algae	1	*Laminaria/Saccharina sp.*	1	
AKP_16_004	Red Algae	1	*Lottia pelta*		7
AKP_16_004	Red Algae	1	*Mastocarpus spp.*	1	
AKP_16_004	Red Algae	1	*Nucella canaliculata*		2
AKP_16_004	Red Algae	1	*Odonthalia sp.*	70	
AKP_16_004	Red Algae	1	*Semibalanus cariosus*	10	
AKP_16_004	Red Algae	1	*Tectura scutum*		2
AKP_16_004	Red Algae	1	*Urticina sp.*		1
AKP_16_004	Red Algae	2	*Corallinales*	40	
AKP_16_004	Red Algae	2	*Corallinales*	1	
AKP_16_004	Red Algae	2	*Katharina tunicata*		2
AKP_16_004	Red Algae	2	*Margarites pupillus*		5
AKP_16_004	Red Algae	2	*Odonthalia sp.*	95	
AKP_16_004	Red Algae	2	*Saccharina bongardiana*	15	
AKP_16_004	Red Algae	2	*Semibalanus cariosus*	10	
AKP_16_004	Red Algae	3	*Corallinales*	15	
AKP_16_004	Red Algae	3	*Corallinales*	5	
AKP_16_004	Red Algae	3	*Fucus distichus*	3	
AKP_16_004	Red Algae	3	*Lirabuccinum dirum*		2
AKP_16_004	Red Algae	3	*Lottia pelta*		10
AKP_16_004	Red Algae	3	*Margarites pupillus*		5
AKP_16_004	Red Algae	3	*Nucella lamellosa*		2
AKP_16_004	Red Algae	3	*Odonthalia sp.*	60	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_004	Red Algae	3	*Semibalanus cariosus*	50	
AKP_16_004	Red Algae	3	*Tectura scutum*		10
AKP_16_004	Rockweed	1	*Acrosiphonia sp.*	<1	
AKP_16_004	Rockweed	1	*Chthamalus dalli*	1	
AKP_16_004	Rockweed	1	*Fucus distichus*	35	
AKP_16_004	Rockweed	1	*Melanosiphon intestinalis*	1	
AKP_16_004	Rockweed	1	*Odonthalia floccosa*	10	
AKP_16_004	Rockweed	1	*Palmaria callophylloides*	5	
AKP_16_004	Rockweed	1	*Palmaria mollis*	10	
AKP_16_004	Rockweed	1	*Pylaiella sp.*	2	
AKP_16_004	Rockweed	1	*Pyropria sp.*	25	
AKP_16_004	Rockweed	1	*Semibalanus cariosus*	1	
AKP_16_004	Rockweed	1	*Ulva sp.*	3	
AKP_16_004	Rockweed	2	*Acrosiphonia sp.*	3	
AKP_16_004	Rockweed	2	*Alaria marginata*	1	
AKP_16_004	Rockweed	2	*Analipus japonicus*	1	
AKP_16_004	Rockweed	2	*Fucus distichus*	25	
AKP_16_004	Rockweed	2	*Margarites pupillus*		6
AKP_16_004	Rockweed	2	*Palmaria callophylloides*	20	
AKP_16_004	Rockweed	2	*Palmaria mollis*	20	
AKP_16_004	Rockweed	2	*Polyostea bipinnata*	3	
AKP_16_004	Rockweed	2	*Pyropria sp.*	5	
AKP_16_004	Rockweed	2	*Tectura scutum*		3
AKP_16_004	Rockweed	2	*Ulva sp.*	20	
AKP_16_004	Rockweed	2	*Urticina grebelnyi*		1
AKP_16_004	Rockweed	3	*Acrosiphonia sp.*	3	
AKP_16_004	Rockweed	3	*Chthamalus dalli*	<1	
AKP_16_004	Rockweed	3	*Littorina sitkana*		8
AKP_16_004	Rockweed	3	*Odonthalia sp.*	15	
AKP_16_004	Rockweed	3	*Palmaria callophylloides*	2	
AKP_16_004	Rockweed	3	*Palmaria mollis*	1	
AKP_16_004	Rockweed	3	*Polyostea bipinnata*	5	
AKP_16_004	Rockweed	3	*Pyropria sp.*	25	
AKP_16_004	Rockweed	3	*Semibalanus cariosus*	<1	
AKP_16_004	Rockweed	3	*Tectura scutum*		2
AKP_16_004	Rockweed	3	*Ulva sp.*	30	
AKP_16_004	Rockweed	4	*Acrosiphonia sp.*	1	
AKP_16_004	Rockweed	4	*Doridoidea*		1
AKP_16_004	Rockweed	4	*Fucus distichus*	25	
AKP_16_004	Rockweed	4	*Katharina tunicata*		2
AKP_16_004	Rockweed	4	*Margarites pupillus*		2
AKP_16_004	Rockweed	4	*Mastocarpus spp.*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_004	Rockweed	4	*Polyostea bipinnata*	1	
AKP_16_004	Rockweed	4	*Pyropria sp.*	5	
AKP_16_004	Rockweed	4	*Semibalanus cariosus*	1	
AKP_16_004	Rockweed	4	*Tectura scutum*		2
AKP_16_004	Rockweed	4	*Ulva sp.*	<1	
AKP_16_005	Bleached Red Algae	1	*Balanus glandula*	1	
AKP_16_005	Bleached Red Algae	1	*Endocladia muricata*	10	
AKP_16_005	Bleached Red Algae	1	*Halosaccion glandiforme*	1	
AKP_16_005	Bleached Red Algae	1	*Hildenbrandia sp.*	5	
AKP_16_005	Bleached Red Algae	1	*Lottia pelta*		5
AKP_16_005	Bleached Red Algae	1	*Pyropria sp.*	50	
AKP_16_005	Bleached Red Algae	2	*Pyropria sp.*	100	
AKP_16_005	Bleached Red Algae	3	*Hildenbrandia sp.*	50	
AKP_16_005	Bleached Red Algae	3	*Mastocarpus sp. (Petrocelis phase)*	10	
AKP_16_005	Bleached Red Algae	3	*Pyropria sp.*	50	
AKP_16_005	Dark Brown Kelp	1	*Bryozoa*	1	
AKP_16_005	Dark Brown Kelp	1	*Corallinales*	15	
AKP_16_005	Dark Brown Kelp	1	*Corallinales*	1	
AKP_16_005	Dark Brown Kelp	1	*Laminaria longipes*	20	
AKP_16_005	Dark Brown Kelp	1	*Neoptilota asplenioides*	15	
AKP_16_005	Dark Brown Kelp	1	*Odonthalia setacea*	5	
AKP_16_005	Dark Brown Kelp	1	*Rhodophyta*	<1	
AKP_16_005	Dark Brown Kelp	1	*Saccharina bongardiana*	75	
AKP_16_005	Dark Brown Kelp	1	*Tonicella lineata*		1
AKP_16_005	Dark Brown Kelp	2	*Corallinales*	5	
AKP_16_005	Dark Brown Kelp	2	*Laminaria longipes*	60	
AKP_16_005	Dark Brown Kelp	2	*Metridium senile*		3
AKP_16_005	Dark Brown Kelp	2	*Mikamiella ruprechtiana*	5	
AKP_16_005	Dark Brown Kelp	2	*Neoptilota sp.*	2	
AKP_16_005	Dark Brown Kelp	2	*Odonthalia setacea*	40	
AKP_16_005	Dark Brown Kelp	2	*Porifera*	5	
AKP_16_005	Dark Brown Kelp	2	*Tonicella lineata*		2
AKP_16_005	Dark Brown Kelp	2	*Urochordata*	1	
AKP_16_005	Dark Brown Kelp	3	*Alaria marginata*	5	
AKP_16_005	Dark Brown Kelp	3	*Bryozoa*	1	
AKP_16_005	Dark Brown Kelp	3	*Calliostoma sp.*		1
AKP_16_005	Dark Brown Kelp	3	*Corallinales*	5	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_005	Dark Brown Kelp	3	*Corallinales*	15	
AKP_16_005	Dark Brown Kelp	3	*Laminaria longipes*	60	
AKP_16_005	Dark Brown Kelp	3	*Mikamiella ruprechtiana*	5	
AKP_16_005	Dark Brown Kelp	3	*Neoptilota sp.*	5	
AKP_16_005	Dark Brown Kelp	3	*Odonthalia sp.*	40	
AKP_16_005	Dark Brown Kelp	3	*Saccharina bongardiana*	5	
AKP_16_005	Dark Brown Kelp	3	*Semibalanus cariosus*	1	
AKP_16_005	Dark Brown Kelp	3	*Urochordata*	5	
AKP_16_005	Red Algae	1	*Acrosiphonia sp.*	<5	
AKP_16_005	Red Algae	1	*Chthamalus dalli*	<1	
AKP_16_005	Red Algae	1	*Cryptosiphonia woodii*	1	
AKP_16_005	Red Algae	1	*Fucus distichus*	30	
AKP_16_005	Red Algae	1	*Halosaccion glandiforme*	5	
AKP_16_005	Red Algae	1	*Mastocarpus spp.*	15	
AKP_16_005	Red Algae	1	*Mytilus trossulus*	<1	
AKP_16_005	Red Algae	1	*Phaeophyta*	20	
AKP_16_005	Red Algae	1	*Polysiphonia sp.*	1	
AKP_16_005	Red Algae	1	*Pylaiella sp.*	1	
AKP_16_005	Red Algae	1	*Semibalanus cariosus*	5	
AKP_16_005	Red Algae	1	*Ulva sp.*	1	
AKP_16_005	Red Algae	1	*Ulvaria sp.*	<1	
AKP_16_005	Red Algae	2	*Acrosiphonia sp.*	1	
AKP_16_005	Red Algae	2	*Alaria marginata*	40	
AKP_16_005	Red Algae	2	*Corallinales*	75	
AKP_16_005	Red Algae	2	*Corallinales*	10	
AKP_16_005	Red Algae	2	*Hildenbrandia sp.*	5	
AKP_16_005	Red Algae	2	*Katharina tunicata*		3
AKP_16_005	Red Algae	2	*Laminaria longipes*	30	
AKP_16_005	Red Algae	2	*Lottia pelta*		8
AKP_16_005	Red Algae	2	*Monostroma grevillei*	<1	
AKP_16_005	Red Algae	2	*Odonthalia sp.*	5	
AKP_16_005	Red Algae	2	*Palmaria hecatensis*	1	
AKP_16_005	Red Algae	2	*Phycodrys sp.*	1	
AKP_16_005	Red Algae	2	*Pyropria sp.*	1	
AKP_16_005	Red Algae	3	*Acrosiphonia sp.*	<1	
AKP_16_005	Red Algae	3	*Alaria marginata*	10	
AKP_16_005	Red Algae	3	*Corallinales*	5	
AKP_16_005	Red Algae	3	*Corallinales*	10	
AKP_16_005	Red Algae	3	*Fucus distichus*	10	
AKP_16_005	Red Algae	3	*Halosaccion glandiforme*	1	
AKP_16_005	Red Algae	3	*Mastocarpus spp.*	1	
AKP_16_005	Red Algae	3	*Odonthalia sp.*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_005	Red Algae	3	*Palmaria hecatensis*	<1	
AKP_16_005	Red Algae	3	*Phaeophyta*	30	
AKP_16_005	Red Algae	3	*Phycodrys sp.*	1	
AKP_16_005	Red Algae	3	*Pyropria sp.*	5	
AKP_16_005	Red Algae	3	*Semibalanus cariosus*	2	
AKP_16_005	Red Algae	3	*Ulva sp.*	<1	
AKP_16_005	Red Algae	4	*Alaria marginata*	15	
AKP_16_005	Red Algae	4	*Corallinales*	15	
AKP_16_005	Red Algae	4	*Corallinales*	30	
AKP_16_005	Red Algae	4	*Fucus distichus*	1	
AKP_16_005	Red Algae	4	*Halosaccion glandiforme*	<1	
AKP_16_005	Red Algae	4	*Katharina tunicata*		2
AKP_16_005	Red Algae	4	*Mastocarpus spp.*	<1	
AKP_16_005	Red Algae	4	*Odonthalia sp.*	70	
AKP_16_005	Red Algae	4	*Palmaria hecatensis*	<1	
AKP_16_005	Red Algae	4	*Phycodrys sp.*	<1	
AKP_16_005	Red Algae	4	*Pyropria sp.*	<1	
AKP_16_005	Red Algae	4	*Semibalanus cariosus*	<1	
AKP_16_005	Red Algae	5	*Alaria marginata*	7	
AKP_16_005	Red Algae	5	*Corallinales*	20	
AKP_16_005	Red Algae	5	*Corallinales*	1	
AKP_16_005	Red Algae	5	*Halosaccion glandiforme*	<1	
AKP_16_005	Red Algae	5	*Lottia pelta*		3
AKP_16_005	Red Algae	5	*Odonthalia sp.*	10	
AKP_16_005	Red Algae	5	*Palmaria hecatensis*	<1	
AKP_16_005	Red Algae	5	*Phycodrys sp.*	1	
AKP_16_005	Red Algae	5	*Polyostea bipinnata*	1	
AKP_16_005	Red Algae	5	*Semibalanus cariosus*	5	
AKP_16_005	Red Algae	5	*Ulva sp.*	<1	
AKP_16_005V	Red Algae	1	*Alaria marginata*	15	
AKP_16_005V	Red Algae	1	*Odonthalia floccosa*	5	
AKP_16_005V	Red Algae	1	*Palmaria hecatensis*	50	
AKP_16_005V	Red Algae	1	*Phycodrys sp.*	20	
AKP_16_005V	Red Algae	1	*Polyostea bipinnata*	2	
AKP_16_005V	Red Algae	1	*Saccharina sessile*	20	
AKP_16_005V	Red Algae	2	*Fucus distichus*	5	
AKP_16_005V	Red Algae	2	*Halosaccion sp.*	1	
AKP_16_005V	Red Algae	2	*Palmaria callophylloides*	5	
AKP_16_005V	Red Algae	2	*Palmaria hecatensis*	80	
AKP_16_005V	Red Algae	2	*Phycodrys sp.*	30	
AKP_16_005V	Red Algae	2	*Ulva sp.*	1	
AKP_16_005V	Red Algae	3	*Alaria marginata*	30	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_005V	Red Algae	3	*Palmaria callophylloides*	<5	
AKP_16_005V	Red Algae	3	*Palmaria mollis*	10	
AKP_16_005V	Red Algae	3	*Saccharina bongardiana*	30	
AKP_16_005V	Red Algae	3	*Saccharina sessile*	30	
AKP_16_005V	Red Algae	3	*Ulva sp.*	<1	
AKP_16_005V	Red Algae	4	*Chthamalus dalli*	1	
AKP_16_005V	Red Algae	4	*Fucus distichus*	30	
AKP_16_005V	Red Algae	4	*Palmaria hecatensis*	25	
AKP_16_005V	Red Algae	4	*Phycodrys sp.*	40	
AKP_16_005V	Red Algae	4	*Polyostea bipinnata*	15	
AKP_16_005V	Red Algae	4	*Ptilota sp.*	5	
AKP_16_005V	Red Algae	4	*Rhodophyta*	1	
AKP_16_005V	Rockweed	1	*Fucus distichus*	30	
AKP_16_005V	Rockweed	1	*Odonthalia floccosa*	5	
AKP_16_005V	Rockweed	1	*Palmaria hecatensis*	20	
AKP_16_005V	Rockweed	1	*Ptilota sp.*	5	
AKP_16_005V	Rockweed	1	*Ulva sp.*	10	
AKP_16_005V	Rockweed	1	*Ulvaria sp.*	1	
AKP_16_005V	Rockweed	2	*Alaria marginata*	80	
AKP_16_005V	Rockweed	2	*Corallinales*	10	
AKP_16_005V	Rockweed	2	*Saccharina bongardiana*	10	
AKP_16_005V	Rockweed	2	*Saccharina sessile*	20	
AKP_16_005V	Rockweed	3	*Fucus distichus*	20	
AKP_16_005V	Rockweed	3	*Mastocarpus spp.*	1	
AKP_16_005V	Rockweed	3	*Odonthalia floccosa*	1	
AKP_16_005V	Rockweed	3	*Palmaria callophylloides*	10	
AKP_16_005V	Rockweed	3	*Palmaria hecatensis*	20	
AKP_16_005V	Rockweed	3	*Polyostea bipinnata*	1	
AKP_16_005V	Rockweed	3	*Pylaiella sp.*	1	
AKP_16_005V	Rockweed	3	*Rhodophyta*	1	
AKP_16_005V	Rockweed	3	*Ulva sp.*	5	
AKP_16_005V	Rockweed	4	*Acrosiphonia sp.*	3	
AKP_16_005V	Rockweed	4	*Fucus distichus*	25	
AKP_16_005V	Rockweed	4	*Halosaccion glandiforme*	1	
AKP_16_005V	Rockweed	4	*Palmaria callophylloides*	10	
AKP_16_005V	Rockweed	4	*Palmaria hecatensis*	45	
AKP_16_005V	Rockweed	4	*Ulva sp.*	1	
AKP_16_005V	Rockweed	4	*Ulvaria sp.*	1	
AKP_16_006	Dark Brown Kelp	1	*Alaria marginata*	3	
AKP_16_006	Dark Brown Kelp	1	*Laminaria longipes*	20	
AKP_16_006	Dark Brown Kelp	1	*Neorhodomela sp.*	5	
AKP_16_006	Dark Brown Kelp	1	*Palmaria mollis*	15	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_006	Dark Brown Kelp	1	*Phycodrys sp.*	<1	
AKP_16_006	Dark Brown Kelp	1	*Ptilota sp.*	50	
AKP_16_006	Dark Brown Kelp	1	*Saccharina bongardiana*	25	
AKP_16_006	Dark Brown Kelp	2	*Alaria marginata*	2	
AKP_16_006	Dark Brown Kelp	2	*Corallinales*	60	
AKP_16_006	Dark Brown Kelp	2	*Corallinales*	1	
AKP_16_006	Dark Brown Kelp	2	*Laminaria longipes*	80	
AKP_16_006	Dark Brown Kelp	2	*Mazzaella sp.*	5	
AKP_16_006	Dark Brown Kelp	2	*Odonthalia setacea*	1	
AKP_16_006	Dark Brown Kelp	2	*Palmaria mollis*	1	
AKP_16_006	Dark Brown Kelp	2	*Ptilota sp.*	30	
AKP_16_006	Dark Brown Kelp	3	*Acmaea mitra*		1
AKP_16_006	Dark Brown Kelp	3	*Corallinales*	60	
AKP_16_006	Dark Brown Kelp	3	*Cymathaere triplicata*	5	
AKP_16_006	Dark Brown Kelp	3	*Laminaria longipes*	5	
AKP_16_006	Dark Brown Kelp	3	*Lottia pelta*		3
AKP_16_006	Dark Brown Kelp	3	*Mikamiella ruprechtiana*	2	
AKP_16_006	Dark Brown Kelp	3	*Neoptilota sp.*	1	
AKP_16_006	Dark Brown Kelp	3	*Odonthalia setacea*	20	
AKP_16_006	Dark Brown Kelp	3	*Ptilota sp.*	25	
AKP_16_006	Dark Brown Kelp	3	*Saccharina bongardiana*	80	
AKP_16_006	Dark Brown Kelp	3	*Tonicella lineata*		1
AKP_16_006	Dark Brown Kelp	4	*Callophyllis spp.*	10	
AKP_16_006	Dark Brown Kelp	4	*Corallinales*	20	
AKP_16_006	Dark Brown Kelp	4	*Laminaria longipes*	40	
AKP_16_006	Dark Brown Kelp	4	*Mazzaella sp.*	10	
AKP_16_006	Dark Brown Kelp	4	*Palmaria mollis*	2	
AKP_16_006	Dark Brown Kelp	4	*Ptilota sp.*	30	
AKP_16_006	Dark Brown Kelp	4	*Tokidadendron bullatum*	20	
AKP_16_006	Dark Brown Kelp	5	*Callophyllis spp.*	15	
AKP_16_006	Dark Brown Kelp	5	*Cymathaere triplicata*	10	
AKP_16_006	Dark Brown Kelp	5	*Neoptilota sp.*	5	
AKP_16_006	Dark Brown Kelp	5	*Palmaria mollis*	10	
AKP_16_006	Dark Brown Kelp	5	*Rhodophyta*	1	
AKP_16_006	Dark Brown Kelp	5	*Tokidadendron bullatum*	40	
AKP_16_006	Green Algae	1	*Littorina sitkana*		20
AKP_16_006	Green Algae	1	*Mastocarpus sp. (Petrocelis phase)*	4	
AKP_16_006	Green Algae	1	*Mastocarpus spp.*	10	
AKP_16_006	Green Algae	1	*Palmaria hecatensis*	10	
AKP_16_006	Green Algae	2	*Acrosiphonia sp.*	1	
AKP_16_006	Green Algae	2	*Chlorophyta*	present	
AKP_16_006	Green Algae	2	*Fucus distichus*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_006	Green Algae	2	*Mastocarpus spp.*	<1	
AKP_16_006	Green Algae	3	*Acrosiphonia sp.*	2	
AKP_16_006	Green Algae	3	*Mastocarpus spp.*	1	
AKP_16_006	Green Algae	3	*Palmaria hecatensis*	1	
AKP_16_006	Green Algae	4	*Chlorophyta*	20	
AKP_16_006	Green Algae	4	*Pyropria sp.*	<1	
AKP_16_006	Red Algae	1	*Acrosiphonia sp.*	5	
AKP_16_006	Red Algae	1	*Alaria marginata*	5	
AKP_16_006	Red Algae	1	*Mazzaella sp.*	30	
AKP_16_006	Red Algae	1	*Neoptilota sp.*	20	
AKP_16_006	Red Algae	1	*Palmaria hecatensis*	20	
AKP_16_006	Red Algae	1	*Tokidadendron bullatum*	10	
AKP_16_006	Red Algae	1	*Ulva sp.*	5	
AKP_16_006	Red Algae	2	*Acrosiphonia sp.*	5	
AKP_16_006	Red Algae	2	*Alaria marginata*	15	
AKP_16_006	Red Algae	2	*Corallinales*	3	
AKP_16_006	Red Algae	2	*Cryptosiphonia woodii*	<1	
AKP_16_006	Red Algae	2	*Fucus distichus*	2	
AKP_16_006	Red Algae	2	*Mastocarpus spp.*	60	
AKP_16_006	Red Algae	2	*Palmaria hecatensis*	15	
AKP_16_006	Red Algae	3	*Acrosiphonia sp.*	<1	
AKP_16_006	Red Algae	3	*Alaria marginata*	30	
AKP_16_006	Red Algae	3	*Corallinales*	1	
AKP_16_006	Red Algae	3	*Mastocarpus alaskensis*	10	
AKP_16_006	Red Algae	3	*Palmaria hecatensis*	50	
AKP_16_006	Red Algae	3	*Polysiphonia sp.*	<1	
AKP_16_006	Red Algae	3	*Ptilota serrata*	5	
AKP_16_007	Red Algae	1	*Alaria marginata*	70	
AKP_16_007	Red Algae	1	*Corallinales*	10	
AKP_16_007	Red Algae	1	*Corallinales*	2	
AKP_16_007	Red Algae	1	*Fucus distichus*	10	
AKP_16_007	Red Algae	1	*Mastocarpus spp.*	5	
AKP_16_007	Red Algae	1	*Odonthalia floccosa*	5	
AKP_16_007	Red Algae	1	*Ptilota sp.*	2	
AKP_16_007	Red Algae	1	*Semibalanus cariosus*	<1	
AKP_16_007	Red Algae	1	*Ulva sp.*	<1	
AKP_16_007	Red Algae	1	*Zosteraceae*	10	
AKP_16_007	Red Algae	2	*Anthopleura artemisia*		3
AKP_16_007	Red Algae	2	*Corallinales*	5	
AKP_16_007	Red Algae	2	*Katharina tunicata*		1
AKP_16_007	Red Algae	2	*Odonthalia floccosa*	15	
AKP_16_007	Red Algae	2	*Polychaeta*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_007	Red Algae	2	*Semibalanus cariosus*	<1	
AKP_16_007	Red Algae	2	*Tonicella lineata*		1
AKP_16_007	Red Algae	2	*Zosteraceae*	15	
AKP_16_007	Red Algae	3	*Alaria marginata*	30	
AKP_16_007	Red Algae	3	*Corallinales*	<1	
AKP_16_007	Red Algae	3	*Odonthalia floccosa*	65	
AKP_16_007	Red Algae	3	*Strongylocentrotus droebachiensis*		6
AKP_16_007	Red Algae	3	*Ulva sp.*	<1	
AKP_16_007	Red Algae	4	*Acrosiphonia sp.*	2	
AKP_16_007	Red Algae	4	*Alaria marginata*	60	
AKP_16_007	Red Algae	4	*Corallinales*	2	
AKP_16_007	Red Algae	4	*Corallinales*	5	
AKP_16_007	Red Algae	4	*Odonthalia floccosa*	10	
AKP_16_007	Red Algae	4	*Ptilota sp.*	1	
AKP_16_007	Red Algae	4	*Ulva sp.*	5	
AKP_16_007	Red Algae	4	*Ulvaria sp.*	1	
AKP_16_007	Red Algae	5	*Alaria marginata*	2	
AKP_16_007	Red Algae	5	*Halosaccion glandiforme*	1	
AKP_16_007	Red Algae	5	*Odonthalia floccosa*	1	
AKP_16_007	Red Algae	5	*Saccharina bongardiana*	20	
AKP_16_007	Red Algae	5	*Zosteraceae*	60	
AKP_16_007	Rockweed	1	*Balanamorpha*	1	
AKP_16_007	Rockweed	1	*Chthamalus dalli*	1	
AKP_16_007	Rockweed	1	*Fucus distichus*	30	
AKP_16_007	Rockweed	1	*Lottia pelta*		6
AKP_16_007	Rockweed	1	*Melanosiphon intestinalis*	1	
AKP_16_007	Rockweed	1	*Odonthalia floccosa f. comosa*	40	
AKP_16_007	Rockweed	1	*Polyostea bipinnata*	10	
AKP_16_007	Rockweed	1	*Semibalanus cariosus*	10	
AKP_16_007	Rockweed	1	*Ulvaria sp.*	1	
AKP_16_007	Rockweed	2	*Chthamalus dalli*	<1	
AKP_16_007	Rockweed	2	*Fucus distichus*	1	
AKP_16_007	Rockweed	2	*Halosaccion glandiforme*	<1	
AKP_16_007	Rockweed	2	*Neorhodomela sp.*	1	
AKP_16_007	Rockweed	2	*Odonthalia floccosa*	10	
AKP_16_007	Rockweed	2	*Odonthalia floccosa f. comosa*	3	
AKP_16_007	Rockweed	2	*Polyostea bipinnata*	1	
AKP_16_007	Rockweed	2	*Pyropria sp.*	1	
AKP_16_007	Rockweed	2	*Ulva sp.*	5	
AKP_16_007	Rockweed	2	*Ulvaria sp.*	5	
AKP_16_007	Rockweed	3	*Acrosiphonia sp.*	1	
AKP_16_007	Rockweed	3	*Chthamalus dalli*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_007	Rockweed	3	*Fucus distichus*	5	
AKP_16_007	Rockweed	3	*Metridium senile*		2
AKP_16_007	Rockweed	3	*Odonthalia floccosa*	50	
AKP_16_007	Rockweed	3	*Palmaria hecatensis*	1	
AKP_16_007	Rockweed	3	*Polyostea bipinnata*	1	
AKP_16_007	Rockweed	3	*Pyropria sp.*	5	
AKP_16_007	Rockweed	3	*Semibalanus cariosus*	1	
AKP_16_007	Rockweed	3	*Ulvaria sp.*	3	
AKP_16_007	Rockweed	4	*Alaria marginata*	40	
AKP_16_007	Rockweed	4	*Desmarestia sp.*	1	
AKP_16_007	Rockweed	4	*Mastocarpus spp.*	1	
AKP_16_007	Rockweed	4	*Odonthalia floccosa*	5	
AKP_16_007	Rockweed	4	*Palmaria hecatensis*	10	
AKP_16_007	Rockweed	4	*Polyostea bipinnata*	1	
AKP_16_007	Rockweed	4	*Saccharina bongardiana*	20	
AKP_16_007	Rockweed	4	*Ulva sp.*	20	
AKP_16_007	Rockweed	4	*Ulvaria sp.*	5	
AKP_16_007	Rockweed	5	*Alaria marginata*	1	
AKP_16_007	Rockweed	5	*Neorhodomela sp.*	60	
AKP_16_007	Rockweed	5	*Odonthalia floccosa*	<1	
AKP_16_007	Rockweed	5	*Polychaeta*	10	
AKP_16_007	Rockweed	5	*Ulva sp.*	5	
AKP_16_007	Rockweed	5	*Ulvaria sp.*	5	
AKP_16_007	Rockweed	5	*Zosteraceae*	<1	
AKP_16_008	Green Algae	1	*Pyropria sp.*	3	
AKP_16_008	Green Algae	1	*Ulothrix sp.*	40	
AKP_16_008	Green Algae	2	*Ulothrix sp.*	10	
AKP_16_008	Green Algae	3	*Pyropria sp.*	<1	
AKP_16_008	Green Algae	3	*Ulothrix sp.*	3	
AKP_16_008	Red Algae	1	*Acrosiphonia sp.*	1	
AKP_16_008	Red Algae	1	*Alaria marginata*	1	
AKP_16_008	Red Algae	1	*Halosaccion firmum*	20	
AKP_16_008	Red Algae	1	*Mastocarpus spp.*	1	
AKP_16_008	Red Algae	1	*Odonthalia floccosa*	5	
AKP_16_008	Red Algae	1	*Palmaria mollis*	25	
AKP_16_008	Red Algae	1	*Ptilota sp.*	2	
AKP_16_008	Red Algae	1	*Saccharina bongardiana*	2	
AKP_16_008	Red Algae	1	*Ulva sp.*	15	
AKP_16_008	Red Algae	2	*Alaria marginata*	5	
AKP_16_008	Red Algae	2	*Coilodesme sp.*	<1	
AKP_16_008	Red Algae	2	*Halosaccion firmum*	1	
AKP_16_008	Red Algae	2	*Odonthalia floccosa*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_008	Red Algae	2	*Palmaria mollis*	20	
AKP_16_008	Red Algae	2	*Polyostea bipinnata*	5	
AKP_16_008	Red Algae	2	*Ulva sp.*	10	
AKP_16_008	Red Algae	2	*Ulvaria sp.*	5	
AKP_16_008	Red Algae	3	*Alaria marginata*	15	
AKP_16_008	Red Algae	3	*Costaria costata*	5	
AKP_16_008	Red Algae	3	*Cymathaere triplicata*	3	
AKP_16_008	Red Algae	3	*Halosaccion firmum*	5	
AKP_16_008	Red Algae	3	*Odonthalia floccosa*	30	
AKP_16_008	Red Algae	3	*Palmaria mollis*	5	
AKP_16_008	Red Algae	3	*Polyostea bipinnata*	1	
AKP_16_008	Red Algae	3	*Ptilota sp.*	1	
AKP_16_008	Red Algae	3	*Ulvaria sp.*	2	
AKP_16_008	Red Algae	4	*Acrosiphonia sp.*	5	
AKP_16_008	Red Algae	4	*Idotea sp.*		5
AKP_16_008	Red Algae	4	*Melanosiphon intestinalis*	1	
AKP_16_008	Red Algae	4	*Pagurus hirsutiusculus*		3
AKP_16_008	Red Algae	4	*Palmaria hecatensis*	present	
AKP_16_008	Red Algae	4	*Ulvaria sp.*	60	
AKP_16_008	Red Algae	5	*Alaria marginata*	25	
AKP_16_008	Red Algae	5	*Cymathaere triplicata*	10	
AKP_16_008	Red Algae	5	*Halosaccion firmum*	30	
AKP_16_008	Red Algae	5	*Palmaria hecatensis*	30	
AKP_16_008	Red Algae	5	*Saccharina bongardiana*	40	
AKP_16_008	Red Algae	5	*Ulva sp.*	10	
AKP_16_008V	Barnacle	1	*Balanus glandula*	40	
AKP_16_008V	Barnacle	1	*Chthamalus dalli*	<1	
AKP_16_008V	Barnacle	1	*Littorina sitkana*		100
AKP_16_008V	Barnacle	1	*Lottia sp.*		20
AKP_16_008V	Barnacle	1	*Mytilus trossulus*	20	
AKP_16_008V	Barnacle	1	*Odonthalia floccosa*	<1	
AKP_16_008V	Barnacle	2	*Balanus glandula*	10	
AKP_16_008V	Barnacle	2	*Chthamalus dalli*	1	
AKP_16_008V	Barnacle	2	*Littorina sitkana*		100
AKP_16_008V	Barnacle	2	*Lottia sp.*		20
AKP_16_008V	Barnacle	2	*Mytilus trossulus*	10	
AKP_16_008V	Barnacle	3	*Balanus glandula*	25	
AKP_16_008V	Barnacle	3	*Littorina sitkana*		50
AKP_16_008V	Barnacle	3	*Lottia sp.*		15
AKP_16_008V	Barnacle	3	*Nucella canaliculata*		2
AKP_16_008V	Blue Mussel	1	*Balanamorpha*	<5	
AKP_16_008V	Blue Mussel	1	*Halosaccion sp.*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_008V	Blue Mussel	1	*Lottia sp.*		20
AKP_16_008V	Blue Mussel	1	*Margarites sp.*		1
AKP_16_008V	Blue Mussel	1	*Mytilus trossulus*	95	
AKP_16_008V	Blue Mussel	1	*Pyropria sp.*	<5	
AKP_16_008V	Blue Mussel	1	*Semibalanus cariosus*	1	
AKP_16_008V	Blue Mussel	1	*Ulva sp.*	<5	
AKP_16_008V	Blue Mussel	2	*Balanamorpha*	<1	
AKP_16_008V	Blue Mussel	2	*Halosaccion sp.*	<1	
AKP_16_008V	Blue Mussel	2	*Mytilus trossulus*	90	
AKP_16_008V	Blue Mussel	2	*Pyropria sp.*	<1	
AKP_16_008V	Blue Mussel	2	*Semibalanus cariosus*	2	
AKP_16_008V	Blue Mussel	3	*Halosaccion sp.*	<1	
AKP_16_008V	Blue Mussel	3	*Mytilus trossulus*	95	
AKP_16_008V	Blue Mussel	3	*Semibalanus cariosus*	1	
AKP_16_008V	Blue Mussel	3	*Ulva sp.*	<1	
AKP_16_009	Alaria	1	*Alaria marginata*	60	
AKP_16_009	Alaria	1	*Chthamalus dalli*	<1	
AKP_16_009	Alaria	1	*Corallinales*	3	
AKP_16_009	Alaria	1	*Fucus distichus*	1	
AKP_16_009	Alaria	1	*Monostroma grevillei*	5	
AKP_16_009	Alaria	1	*Odonthalia floccosa*	5	
AKP_16_009	Alaria	1	*Odonthalia floccosa f. comosa*	5	
AKP_16_009	Alaria	1	*Palmaria mollis*	5	
AKP_16_009	Alaria	1	*Polyostea bipinnata*	10	
AKP_16_009	Alaria	1	*Pyropria sp.*	2	
AKP_16_009	Alaria	1	*Semibalanus cariosus*	1	
AKP_16_009	Alaria	2	*Alaria marginata*	50	
AKP_16_009	Alaria	2	*Corallinales*	30	
AKP_16_009	Alaria	2	*Corallinales*	3	
AKP_16_009	Alaria	2	*Monostroma grevillei*	5	
AKP_16_009	Alaria	2	*Odonthalia floccosa*	20	
AKP_16_009	Alaria	2	*Odonthalia floccosa f. comosa*	3	
AKP_16_009	Alaria	2	*Palmaria mollis*	10	
AKP_16_009	Alaria	2	*Semibalanus cariosus*	2	
AKP_16_009	Alaria	3	*Acrosiphonia sp.*	3	
AKP_16_009	Alaria	3	*Alaria marginata*	25	
AKP_16_009	Alaria	3	*Corallinales*	3	
AKP_16_009	Alaria	3	*Halosaccion glandiforme*	1	
AKP_16_009	Alaria	3	*Katharina tunicata*		3
AKP_16_009	Alaria	3	*Monostroma grevillei*	3	
AKP_16_009	Alaria	3	*Odonthalia floccosa*	15	
AKP_16_009	Alaria	3	*Palmaria mollis*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_009	Alaria	3	*Semibalanus cariosus*	2	
AKP_16_009	Alaria	4	*Acrosiphonia sp.*	3	
AKP_16_009	Alaria	4	*Alaria marginata*	60	
AKP_16_009	Alaria	4	*Corallinales*	3	
AKP_16_009	Alaria	4	*Corallinales*	2	
AKP_16_009	Alaria	4	*Katharina tunicata*		1
AKP_16_009	Alaria	4	*Monostroma grevillei*	3	
AKP_16_009	Alaria	4	*Odonthalia floccosa*	10	
AKP_16_009	Alaria	4	*Odonthalia floccosa f. comosa*	5	
AKP_16_009	Alaria	4	*Palmaria mollis*	10	
AKP_16_009	Alaria	4	*Polysiphonia sp.*	5	
AKP_16_009	Alaria	4	*Polyostea bipinnata*	10	
AKP_16_009	Alaria	4	*Semibalanus cariosus*	2	
AKP_16_009	Alaria	4	*Tonicella lineata*		1
AKP_16_009	Alaria	5	*Acrosiphonia sp.*	2	
AKP_16_009	Alaria	5	*Alaria marginata*	30	
AKP_16_009	Alaria	5	*Fucus distichus*	40	
AKP_16_009	Alaria	5	*Katharina tunicata*		3
AKP_16_009	Alaria	5	*Palmaria mollis*	5	
AKP_16_009	Alaria	5	*Polysiphonia sp.*	5	
AKP_16_009	Alaria	5	*Polyostea bipinnata*	2	
AKP_16_009	Alaria	5	*Semibalanus cariosus*	20	
AKP_16_009	Alaria	5	*Ulva sp.*	5	
AKP_16_009	Barnacle	1	*Balanus glandula*	15	
AKP_16_009	Barnacle	1	*Chthamalus dalli*	10	
AKP_16_009	Barnacle	1	*Mytilus trossulus*	3	
AKP_16_009	Barnacle	2	*Balanus glandula*	5	
AKP_16_009	Barnacle	2	*Chthamalus dalli*	5	
AKP_16_009	Barnacle	2	*Mytilus trossulus*	<1	
AKP_16_009	Barnacle	3	*Balanus glandula*	20	
AKP_16_009	Barnacle	3	*Chthamalus dalli*	30	
AKP_16_009	Barnacle	3	*Mytilus trossulus*	3	
AKP_16_009	Blue Mussel	1	*Mytilus trossulus*	15	
AKP_16_009	Blue Mussel	1	*Odonthalia floccosa*	5	
AKP_16_009	Blue Mussel	1	*Polyostea bipinnata*	30	
AKP_16_009	Blue Mussel	1	*Pyropria sp.*	3	
AKP_16_009	Blue Mussel	1	*Semibalanus cariosus*	10	
AKP_16_009	Blue Mussel	2	*Fucus distichus*	2	
AKP_16_009	Blue Mussel	2	*Mytilus trossulus*	30	
AKP_16_009	Blue Mussel	2	*Neorhodomela sp.*	1	
AKP_16_009	Blue Mussel	2	*Odonthalia floccosa*	1	
AKP_16_009	Blue Mussel	2	*Polyostea bipinnata*	70	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_009	Blue Mussel	2	*Pyropria sp.*	2	
AKP_16_009	Blue Mussel	3	*Mytilus trossulus*	10	
AKP_16_009	Blue Mussel	3	*Neorhodomela sp.*	2	
AKP_16_009	Blue Mussel	3	*Odonthalia floccosa*	40	
AKP_16_009	Blue Mussel	3	*Polyostea bipinnata*	20	
AKP_16_009	Blue Mussel	3	*Pyropria sp.*	10	
AKP_16_009	Blue Mussel	3	*Semibalanus cariosus*	3	
AKP_16_009	Dark Brown Kelp	1	*Acrosiphonia sp.*	1	
AKP_16_009	Dark Brown Kelp	1	*Alaria marginata*	10	
AKP_16_009	Dark Brown Kelp	1	*Corallinales*	<1	
AKP_16_009	Dark Brown Kelp	1	*Halosaccion glandiforme*	1	
AKP_16_009	Dark Brown Kelp	1	*Monostroma grevillei*	5	
AKP_16_009	Dark Brown Kelp	1	*Odonthalia floccosa*	5	
AKP_16_009	Dark Brown Kelp	1	*Palmaria mollis*	10	
AKP_16_009	Dark Brown Kelp	1	*Petalonia fascia*	3	
AKP_16_009	Dark Brown Kelp	1	*Polyostea bipinnata*	3	
AKP_16_009	Dark Brown Kelp	1	*Pyropria sp.*	1	
AKP_16_009	Dark Brown Kelp	1	*Saccharina bongardiana*	40	
AKP_16_009	Dark Brown Kelp	2	*Acrosiphonia sp.*	5	
AKP_16_009	Dark Brown Kelp	2	*Alaria marginata*	15	
AKP_16_009	Dark Brown Kelp	2	*Corallinales*	5	
AKP_16_009	Dark Brown Kelp	2	*Corallinales*	2	
AKP_16_009	Dark Brown Kelp	2	*Odonthalia floccosa*	15	
AKP_16_009	Dark Brown Kelp	2	*Petalonia fascia*	1	
AKP_16_009	Dark Brown Kelp	2	*Saccharina bongardiana*	5	
AKP_16_009	Dark Brown Kelp	2	*Semibalanus cariosus*	20	
AKP_16_009	Dark Brown Kelp	3	*Corallinales*	5	
AKP_16_009	Dark Brown Kelp	3	*Costaria costata*	30	
AKP_16_009	Dark Brown Kelp	3	*Odonthalia floccosa*	70	
AKP_16_009	Dark Brown Kelp	3	*Palmaria mollis*	2	
AKP_16_009	Dark Brown Kelp	3	*Saccharina bongardiana*	30	
AKP_16_009	Dark Brown Kelp	4	*Alaria marginata*	20	
AKP_16_009	Dark Brown Kelp	4	*Corallinales*	15	
AKP_16_009	Dark Brown Kelp	4	*Odonthalia floccosa*	20	
AKP_16_009	Dark Brown Kelp	4	*Polysiphonia sp.*	10	
AKP_16_009	Dark Brown Kelp	4	*Saccharina bongardiana*	15	
AKP_16_009	Dark Brown Kelp	4	*Ulva sp.*	20	
AKP_16_009	Dark Brown Kelp	5	*Alaria marginata*	30	
AKP_16_009	Dark Brown Kelp	5	*Bryozoa*	5	
AKP_16_009	Dark Brown Kelp	5	*Constantinea sp.*	2	
AKP_16_009	Dark Brown Kelp	5	*Corallinales*	15	
AKP_16_009	Dark Brown Kelp	5	*Costaria costata*	20	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_009	Dark Brown Kelp	5	*Monostroma grevillei*	1	
AKP_16_009	Dark Brown Kelp	5	*Odonthalia floccosa*	60	
AKP_16_009	Dark Brown Kelp	5	*Polyostea bipinnata*	2	
AKP_16_009	Dark Brown Kelp	5	*Ulva sp.*	5	
AKP_16_009	Rockweed	1	*Alaria marginata*	10	
AKP_16_009	Rockweed	1	*Fucus distichus*	30	
AKP_16_009	Rockweed	1	*Monostroma grevillei v ar. Grevillei*	10	
AKP_16_009	Rockweed	1	*Odonthalia floccosa*	5	
AKP_16_009	Rockweed	1	*Polyostea bipinnata*	3	
AKP_16_009	Rockweed	1	*Semibalanus cariosus*	50	
AKP_16_009	Rockweed	1	*Ulva sp.*	10	
AKP_16_009	Rockweed	2	*Balanus glandula*	5	
AKP_16_009	Rockweed	2	*Fucus distichus*	3	
AKP_16_009	Rockweed	2	*Mytilus trossulus*	40	
AKP_16_009	Rockweed	2	*Odonthalia floccosa f. comosa*	50	
AKP_16_009	Rockweed	2	*Polyostea bipinnata*	15	
AKP_16_009	Rockweed	2	*Pyropria sp.*	5	
AKP_16_009	Rockweed	3	*Corallinales*	10	
AKP_16_009	Rockweed	3	*Fucus distichus*	25	
AKP_16_009	Rockweed	3	*Monostroma grevillei*	2	
AKP_16_009	Rockweed	3	*Mytilus trossulus*	<1	
AKP_16_009	Rockweed	3	*Odonthalia floccosa*	20	
AKP_16_009	Rockweed	3	*Semibalanus cariosus*	15	
AKP_16_009	Rockweed	4	*Alaria marginata*	5	
AKP_16_009	Rockweed	4	*Fucus distichus*	<1	
AKP_16_009	Rockweed	4	*Katharina tunicata*		3
AKP_16_009	Rockweed	4	*Monostroma grevillei*	2	
AKP_16_009	Rockweed	4	*Odonthalia floccosa*	40	
AKP_16_009	Rockweed	4	*Petalonia fascia*	<1	
AKP_16_009	Rockweed	4	*Semibalanus cariosus*	25	
AKP_16_010	Red Algae	1	*Fucus distichus*	<1	
AKP_16_010	Red Algae	1	*Halosaccion glandiforme*	5	
AKP_16_010	Red Algae	1	*Neorhodomela aculeata*	90	
AKP_16_010	Red Algae	1	*Palmaria mollis*	1	
AKP_16_010	Red Algae	1	*Polyostea bipinnata*	10	
AKP_16_010	Red Algae	1	*Ulva sp.*	1	
AKP_16_010	Red Algae	2	*Balanus glandula*	<1	
AKP_16_010	Red Algae	2	*Fucus distichus*	<1	
AKP_16_010	Red Algae	2	*Mastocarpus spp.*	<1	
AKP_16_010	Red Algae	2	*Neorhodomela sp.*	98	
AKP_16_010	Red Algae	2	*Polyostea bipinnata*	10	
AKP_16_010	Red Algae	2	*Ulva sp.*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_010	Red Algae	3	*Fucus distichus*	2	
AKP_16_010	Red Algae	3	*Halosaccion glandiforme*	25	
AKP_16_010	Red Algae	3	*Neorhodomela sp.*	70	
AKP_16_010	Red Algae	3	*Palmaria mollis*	2	
AKP_16_010	Red Algae	3	*Ulva sp.*	5	
AKP_16_010	Rockweed	1	*Acrosiphonia sp.*	1	
AKP_16_010	Rockweed	1	*Chaetomorpha sp.*	1	
AKP_16_010	Rockweed	1	*Chthamalus dalli*	1	
AKP_16_010	Rockweed	1	*Fucus distichus*	60	
AKP_16_010	Rockweed	1	*Halosaccion glandiforme*	<1	
AKP_16_010	Rockweed	1	*Melanosiphon intestinalis*	2	
AKP_16_010	Rockweed	1	*Neorhodomela sp.*	10	
AKP_16_010	Rockweed	1	*Palmaria mollis*	<1	
AKP_16_010	Rockweed	1	*Polyostea bipinnata*	20	
AKP_16_010	Rockweed	1	*Pylaiella sp.*	2	
AKP_16_010	Rockweed	1	*Ulva sp.*	5	
AKP_16_010	Rockweed	2	*Chthamalus dalli*	2	
AKP_16_010	Rockweed	2	*Fucus distichus*	5	
AKP_16_010	Rockweed	2	*Halosaccion glandiforme*	<1	
AKP_16_010	Rockweed	2	*Lottia sp.*		3
AKP_16_010	Rockweed	2	*Mastocarpus spp.*	1	
AKP_16_010	Rockweed	2	*Melanosiphon intestinalis*	15	
AKP_16_010	Rockweed	2	*Monostroma grevillei*	10	
AKP_16_010	Rockweed	2	*Neorhodomela sp.*	5	
AKP_16_010	Rockweed	2	*Polyostea bipinnata*	5	
AKP_16_010	Rockweed	2	*Pylaiella sp.*	2	
AKP_16_010	Rockweed	2	*Soranthera ulvoidea*	<1	
AKP_16_010	Rockweed	2	*Ulva sp.*	30	
AKP_16_010	Rockweed	3	*Chthamalus dalli*	5	
AKP_16_010	Rockweed	3	*Fucus distichus*	10	
AKP_16_010	Rockweed	3	*Lottia sp.*		8
AKP_16_010	Rockweed	3	*Mastocarpus spp.*	5	
AKP_16_010	Rockweed	3	*Melanosiphon intestinalis*	40	
AKP_16_010	Rockweed	3	*Monostroma grevillei*	2	
AKP_16_010	Rockweed	3	*Polyostea bipinnata*	1	
AKP_16_010	Rockweed	3	*Pylaiella sp.*	1	
AKP_16_010	Rockweed	3	*Pyropia abbottiae*	3	
AKP_16_010	Rockweed	3	*Ulva sp.*	3	
AKP_16_010	Rockweed	4	*Chthamalus dalli*	1	
AKP_16_010	Rockweed	4	*Fucus distichus*	10	
AKP_16_010	Rockweed	4	*Mastocarpus spp.*	2	
AKP_16_010	Rockweed	4	*Melanosiphon intestinalis*	40	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_010	Rockweed	4	*Polyostea bipinnata*	20	
AKP_16_010	Rockweed	4	*Ulva sp.*	<1	
AKP_16_011	Alaria	1	*Alaria marginata*	30	
AKP_16_011	Alaria	1	*Chthamalus dalli*	<1	
AKP_16_011	Alaria	1	*Fucus distichus*	10	
AKP_16_011	Alaria	1	*Melanosiphon intestinalis*	10	
AKP_16_011	Alaria	1	*Palmaria mollis*	2	
AKP_16_011	Alaria	1	*Polyostea bipinnata*	15	
AKP_16_011	Alaria	1	*Semibalanus cariosus*	5	
AKP_16_011	Alaria	1	*Ulva sp.*	5	
AKP_16_011	Alaria	1	*Ulvaria sp.*	3	
AKP_16_011	Alaria	2	*Alaria marginata*	40	
AKP_16_011	Alaria	2	*Anthopleura artemisia*		1
AKP_16_011	Alaria	2	*Chthamalus dalli*	3	
AKP_16_011	Alaria	2	*Corallinales*	15	
AKP_16_011	Alaria	2	*Fucus distichus*	5	
AKP_16_011	Alaria	2	*Mytilus trossulus*	1	
AKP_16_011	Alaria	2	*Pagurus hirsutiusculus*		3
AKP_16_011	Alaria	2	*Palmaria mollis*	1	
AKP_16_011	Alaria	2	*Polyostea bipinnata*	4	
AKP_16_011	Alaria	2	*Pyropria sp.*	2	
AKP_16_011	Alaria	2	*Semibalanus cariosus*	25	
AKP_16_011	Alaria	2	*Ulva sp.*	10	
AKP_16_011	Alaria	2	*Ulvaria sp.*	5	
AKP_16_011	Alaria	3	*Alaria marginata*	7	
AKP_16_011	Alaria	3	*Analipus japonicus*	<1	
AKP_16_011	Alaria	3	*Chthamalus dalli*	5	
AKP_16_011	Alaria	3	*Glebicarcinus oregonensis*		1
AKP_16_011	Alaria	3	*Palmaria callophylloides*	2	
AKP_16_011	Alaria	3	*Palmaria mollis*	5	
AKP_16_011	Alaria	3	*Polyostea bipinnata*	20	
AKP_16_011	Alaria	3	*Semibalanus cariosus*	3	
AKP_16_011	Alaria	3	*Ulva sp.*	10	
AKP_16_011	Alaria	3	*Ulvaria sp.*	7	
AKP_16_011	Alaria	4	*Alaria marginata*	65	
AKP_16_011	Alaria	4	*Bryozoa*	1	
AKP_16_011	Alaria	4	*Chthamalus dalli*	1	
AKP_16_011	Alaria	4	*Corallinales*	10	
AKP_16_011	Alaria	4	*Melanosiphon intestinalis*	1	
AKP_16_011	Alaria	4	*Metridium senile*		8
AKP_16_011	Alaria	4	*Odonthalia floccosa*	10	
AKP_16_011	Alaria	4	*Polyostea bipinnata*	30	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_011	Alaria	4	*Semibalanus cariosus*	1	
AKP_16_011	Alaria	4	*Ulva sp.*	5	
AKP_16_011	Alaria	5	*Alaria marginata*	20	
AKP_16_011	Alaria	5	*Corallinales*	5	
AKP_16_011	Alaria	5	*Evasterias sp.*		1
AKP_16_011	Alaria	5	*Fucus distichus*	5	
AKP_16_011	Alaria	5	*Nucella canaliculata*		1
AKP_16_011	Alaria	5	*Nucella lamellosa*		2
AKP_16_011	Alaria	5	*Odonthalia floccosa*	70	
AKP_16_011	Alaria	5	*Polyostea bipinnata*	20	
AKP_16_011	Alaria	5	*Semibalanus cariosus*	50	
AKP_16_011	Alaria	5	*Tokidadendron bullatum*	3	
AKP_16_011	Alaria	5	*Ulva sp.*	2	
AKP_16_011	Alaria	6	*Alaria marginata*	15	
AKP_16_011	Alaria	6	*Antithamnion sp.*	<1	
AKP_16_011	Alaria	6	*Evasterias sp.*		1
AKP_16_011	Alaria	6	*Fucus distichus*	15	
AKP_16_011	Alaria	6	*Metridium senile*		5
AKP_16_011	Alaria	6	*Neorhodomela sp.*	2	
AKP_16_011	Alaria	6	*Nucella lamellosa*		4
AKP_16_011	Alaria	6	*Odonthalia floccosa*	30	
AKP_16_011	Alaria	6	*Polyostea bipinnata*	10	
AKP_16_011	Alaria	6	*Semibalanus cariosus*	60	
AKP_16_011	Alaria	6	*Tokidadendron bullatum*	1	
AKP_16_011	Alaria	6	*Ulva sp.*	1	
AKP_16_011	Alaria	7	*Alaria marginata*	20	
AKP_16_011	Alaria	7	*Analipus japonicus*	1	
AKP_16_011	Alaria	7	*Antithamnion sp.*	1	
AKP_16_011	Alaria	7	*Chthamalus dalli*	5	
AKP_16_011	Alaria	7	*Fucus distichus*	5	
AKP_16_011	Alaria	7	*Palmaria mollis*	5	
AKP_16_011	Alaria	7	*Polyostea bipinnata*	10	
AKP_16_011	Alaria	7	*Semibalanus cariosus*	10	
AKP_16_011	Alaria	7	*Ulva sp.*	3	
AKP_16_011	Alaria	7	*Ulvaria sp.*	4	
AKP_16_011	Alaria	8	*Alaria marginata*	10	
AKP_16_011	Alaria	8	*Analipus japonicus*	1	
AKP_16_011	Alaria	8	*Chthamalus dalli*	<1	
AKP_16_011	Alaria	8	*Corallinales*	5	
AKP_16_011	Alaria	8	*Fucus distichus*	3	
AKP_16_011	Alaria	8	*Katharina tunicata*		2
AKP_16_011	Alaria	8	*Metridium senile*		3

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_011	Alaria	8	*Nucella canaliculata*		2
AKP_16_011	Alaria	8	*Palmaria mollis*	1	
AKP_16_011	Alaria	8	*Polyostea bipinnata*	3	
AKP_16_011	Alaria	8	*Semibalanus cariosus*	8	
AKP_16_011	Alaria	8	*Ulva sp.*	3	
AKP_16_011	Alaria	8	*Ulvaria sp.*	2	
AKP_16_011	Alaria	9	*Alaria marginata*	5	
AKP_16_011	Alaria	9	*Anthopleura elegantissima*		3
AKP_16_011	Alaria	9	*Chthamalus dalli*	1	
AKP_16_011	Alaria	9	*Corallinales*	1	
AKP_16_011	Alaria	9	*Fucus distichus*	5	
AKP_16_011	Alaria	9	*Katharina tunicata*		4
AKP_16_011	Alaria	9	*Lottia pelta*		5
AKP_16_011	Alaria	9	*Lottia sp.*		6
AKP_16_011	Alaria	9	*Monostroma grevillei*	3	
AKP_16_011	Alaria	9	*Mytilus trossulus*	5	
AKP_16_011	Alaria	9	*Odonthalia floccosa*	10	
AKP_16_011	Alaria	9	*Pagurus hirsutiusculus*		5
AKP_16_011	Alaria	9	*Polyostea bipinnata*	5	
AKP_16_011	Alaria	9	*Semibalanus cariosus*	80	
AKP_16_011	Alaria	9	*Ulva sp.*	3	
AKP_16_011	Alaria	9	*Ulvaria sp.*	1	
AKP_16_011	Alaria	9	*Urticina sp.*		1
AKP_16_011	Rockweed	1	*Acrosiphonia arcta*	present	
AKP_16_011	Rockweed	1	*Alaria marginata*	present	
AKP_16_011	Rockweed	1	*Anthopleura artemisia*	present	
AKP_16_011	Rockweed	1	*Fucus distichus*	present	
AKP_16_011	Rockweed	1	*Lottia sp.*	present	
AKP_16_011	Rockweed	1	*Monostroma grevillei*	present	
AKP_16_011	Rockweed	1	*Odonthalia floccosa f. comosa*	present	
AKP_16_011	Rockweed	1	*Pagurus hirsutiusculus*	present	
AKP_16_011	Rockweed	1	*Polyostea bipinnata*	present	
AKP_16_011	Rockweed	1	*Pyropria sp.*	present	
AKP_16_011	Rockweed	1	*Semibalanus cariosus*	present	
AKP_16_011	Rockweed	1	*Ulva sp.*	present	
AKP_16_011	Rockweed	2	*Acrosiphonia arcta*	<1	
AKP_16_011	Rockweed	2	*Alaria marginata*	1	
AKP_16_011	Rockweed	2	*Fucus distichus*	10	
AKP_16_011	Rockweed	2	*Metridium senile*		8
AKP_16_011	Rockweed	2	*Monostroma grevillei*	7	
AKP_16_011	Rockweed	2	*Mytilus trossulus*	2	
AKP_16_011	Rockweed	2	*Odonthalia floccosa f. comosa*	15	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_011	Rockweed	2	*Polyostea bipinnata*	5	
AKP_16_011	Rockweed	2	*Semibalanus cariosus*	40	
AKP_16_011	Rockweed	2	*Ulvaria sp.*	<1	
AKP_16_011	Rockweed	3	*Chthamalus dalli*	20	
AKP_16_011	Rockweed	3	*Fucus distichus*	60	
AKP_16_011	Rockweed	3	*Katharina tunicata*		5
AKP_16_011	Rockweed	3	*Mytilus trossulus*	15	
AKP_16_011	Rockweed	3	*Odonthalia floccosa f. comosa*	5	
AKP_16_011	Rockweed	3	*Polyostea bipinnata*	2	
AKP_16_011	Rockweed	3	*Semibalanus cariosus*	20	
AKP_16_011	Rockweed	4	*Chthamalus dalli*	10	
AKP_16_011	Rockweed	4	*Fucus distichus*	90	
AKP_16_011	Rockweed	4	*Lottia sp.*		8
AKP_16_011	Rockweed	4	*Odonthalia floccosa*	2	
AKP_16_011	Rockweed	4	*Polyostea bipinnata*	5	
AKP_16_011	Rockweed	4	*Pylaiella sp.*	2	
AKP_16_011	Rockweed	4	*Semibalanus cariosus*	15	
AKP_16_011	Rockweed	4	*Ulva sp.*	<1	
AKP_16_011	Rockweed	5	*Fucus distichus*	85	
AKP_16_011	Rockweed	5	*Gloiopeltis furcata*	2	
AKP_16_011	Rockweed	5	*Melanosiphon intestinalis*	1	
AKP_16_011	Rockweed	5	*Mytilus trossulus*	75	
AKP_16_011	Rockweed	5	*Polyostea bipinnata*	5	
AKP_16_011	Rockweed	5	*Pyropria sp.*	5	
AKP_16_011	Rockweed	5	*Semibalanus cariosus*	25	
AKP_16_011	Rockweed	5	*Ulva sp.*	1	
AKP_16_011	Rockweed	6	*Anthopleura artemisia*		1
AKP_16_011	Rockweed	6	*Balanus glandula*	10	
AKP_16_011	Rockweed	6	*Bangia spp.*	2	
AKP_16_011	Rockweed	6	*Endocladia muricata*	1	
AKP_16_011	Rockweed	6	*Fucus distichus*	2	
AKP_16_011	Rockweed	6	*Melanosiphon intestinalis*	1	
AKP_16_011	Rockweed	6	*Monostroma grevillei*	1	
AKP_16_011	Rockweed	6	*Mytilus trossulus*	20	
AKP_16_011	Rockweed	6	*Odonthalia floccosa f. comosa*	5	
AKP_16_011	Rockweed	6	*Polyostea bipinnata*	5	
AKP_16_011	Rockweed	6	*Pyropria sp.*	20	
AKP_16_012	Alaria	1	*Acrosiphonia sp.*	<1	
AKP_16_012	Alaria	1	*Alaria marginata*	5	
AKP_16_012	Alaria	1	*Bryozoa*	2	
AKP_16_012	Alaria	1	*Chlorophyta*	<1	
AKP_16_012	Alaria	1	*Katharina tunicata*		14

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_012	Alaria	1	*Metridium senile*		6
AKP_16_012	Alaria	1	*Polysiphonia sp.*	5	
AKP_16_012	Alaria	1	*Semibalanus cariosus*	50	
AKP_16_012	Alaria	1	*Tectura scutum*		23
AKP_16_012	Alaria	2	*Acrosiphonia sp.*	10	
AKP_16_012	Alaria	2	*Alaria marginata*	50	
AKP_16_012	Alaria	2	*Bryozoa*	1	
AKP_16_012	Alaria	2	*Monostroma grevillei*	15	
AKP_16_012	Alaria	2	*Palmaria mollis*	1	
AKP_16_012	Alaria	2	*Polysiphonia sp.*	2	
AKP_16_012	Alaria	2	*Pyropria sp.*	<1	
AKP_16_012	Alaria	2	*Tectura scutum*		3
AKP_16_012	Alaria	3	*Acrosiphonia sp.*	<1	
AKP_16_012	Alaria	3	*Alaria marginata*	<1	
AKP_16_012	Alaria	3	*Corallinales*	5	
AKP_16_012	Alaria	3	*Halosaccion glandiforme*	<1	
AKP_16_012	Alaria	3	*Hildenbrandia sp.*	3	
AKP_16_012	Alaria	3	*Katharina tunicata*		16
AKP_16_012	Alaria	3	*Lottia sp.*		12
AKP_16_012	Alaria	3	*Monostroma grevillei*	<1	
AKP_16_012	Alaria	3	*Nucella lamellosa*		6
AKP_16_012	Alaria	3	*Odonthalia floccosa*	2	
AKP_16_012	Alaria	3	*Palmaria mollis*	<1	
AKP_16_012	Alaria	3	*Polysiphonia sp.*	2	
AKP_16_012	Alaria	3	*Scytosiphon sp.*	<1	
AKP_16_012	Alaria	3	*Semibalanus cariosus*	50	
AKP_16_012	Alaria	3	*Tectura scutum*		5
AKP_16_012	Diatoms	1	*Bacillariophyta*	40	
AKP_16_012	Diatoms	2	*Acrosiphonia coalita*	10	
AKP_16_012	Diatoms	2	*Bacillariophyta*	90	
AKP_16_012	Diatoms	2	*Monostroma grevillei*	100	
AKP_16_012	Green Algae	1	*Urospora sp.*	30	
AKP_16_012	Green Algae	2	*Littorina sitkana*		100
AKP_16_012	Green Algae	2	*Urospora sp.*	20	
AKP_16_012	Green Algae	3	*Littorina sitkana*		2
AKP_16_012	Green Algae	3	*Urospora sp.*	80	
AKP_16_012	Red Algae	1	*Bacillariophyta*	20	
AKP_16_012	Red Algae	1	*Hildenbrandia sp.*	3	
AKP_16_012	Red Algae	1	*Katharina tunicata*		2
AKP_16_012	Red Algae	1	*Monostroma grevillei*	50	
AKP_16_012	Red Algae	1	*Pyropria sp.*	5	
AKP_16_012	Red Algae	1	*Semibalanus cariosus*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_012	Red Algae	1	*Siphonaria thersites*		3
AKP_16_012	Red Algae	2	*Acrosiphonia sp.*	3	
AKP_16_012	Red Algae	2	*Endocladia muricata*	5	
AKP_16_012	Red Algae	2	*Fucus distichus*	25	
AKP_16_012	Red Algae	2	*Halosaccion glandiforme*	5	
AKP_16_012	Red Algae	2	*Mastocarpus alaskensis*	5	
AKP_16_012	Red Algae	2	*Mastocarpus sp. (Petrocelis phase)*	<1	
AKP_16_012	Red Algae	2	*Monostroma grevillei*	1	
AKP_16_012	Red Algae	2	*Odonthalia floccosa*	1	
AKP_16_012	Red Algae	2	*Pyropria sp.*	<1	
AKP_16_012	Red Algae	2	*Semibalanus cariosus*	2	
AKP_16_012	Red Algae	2	*Siphonaria thersites*		36
AKP_16_012	Red Algae	2	*Tectura scutum*		3
AKP_16_012	Red Algae	3	*Acrosiphonia sp.*	10	
AKP_16_012	Red Algae	3	*Fucus distichus*	10	
AKP_16_012	Red Algae	3	*Halosaccion glandiforme*	15	
AKP_16_012	Red Algae	3	*Hildenbrandia sp.*	5	
AKP_16_012	Red Algae	3	*Mastocarpus spp.*	<1	
AKP_16_012	Red Algae	3	*Melanosiphon intestinalis*	3	
AKP_16_012	Red Algae	3	*Monostroma grevillei*	3	
AKP_16_012	Red Algae	3	*Pylaiella sp.*	<1	
AKP_16_012	Red Algae	3	*Pyropria sp.*	10	
AKP_16_012	Red Algae	3	*Siphonaria sp.*	2	
AKP_16_012	Red Algae	3	*Ulva sp.*	5	
AKP_16_012	Red Algae	4	*Acrosiphonia coalita*	30	
AKP_16_012	Red Algae	4	*Alaria marginata*	30	
AKP_16_012	Red Algae	4	*Monostroma grevillei*	5	
AKP_16_012	Red Algae	4	*Palmaria callophylloides*	10	
AKP_16_012	Red Algae	4	*Palmaria mollis*	2	
AKP_16_012	Red Algae	4	*Polysiphonia sp.*	1	
AKP_16_012	Red Algae	4	*Pyropria sp.*	2	
AKP_16_012	Red Algae	4	*Semibalanus cariosus*	1	
AKP_16_012	Winter laver	1	*Balanus glandula*		5
AKP_16_012	Winter laver	1	*Chthamalus dalli*	1	
AKP_16_012	Winter laver	1	*Fucus distichus*	1	
AKP_16_012	Winter laver	1	*Hildenbrandia sp.*	1	
AKP_16_012	Winter laver	1	*Littorina sitkana*		50
AKP_16_012	Winter laver	1	*Lottia digitalis*		2
AKP_16_012	Winter laver	1	*Lottia pelta*		5
AKP_16_012	Winter laver	1	*Mastocarpus spp.*	1	
AKP_16_012	Winter laver	1	*Pyropria sp.*	99	
AKP_16_012	Winter laver	2	*Amphipoda*		1

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_012	Winter laver	2	*Balanus glandula*	1	
AKP_16_012	Winter laver	2	*Chthamalus dalli*	<1	
AKP_16_012	Winter laver	2	*Fucus distichus*	10	
AKP_16_012	Winter laver	2	*Gloiopeltis furcata*	1	
AKP_16_012	Winter laver	2	*Hildenbrandia sp.*	1	
AKP_16_012	Winter laver	2	*Littorina sitkana*		25
AKP_16_012	Winter laver	2	*Lottia digitalis*		2
AKP_16_012	Winter laver	2	*Lottia pelta*		2
AKP_16_012	Winter laver	2	*Pyropria sp.*	100	
AKP_16_012	Winter laver	2	*Ulva sp.*	1	
AKP_16_012	Winter laver	3	*Bacillariophyta*	10	
AKP_16_012	Winter laver	3	*Balanus glandula*	5	
AKP_16_012	Winter laver	3	*Chthamalus dalli*	<1	
AKP_16_012	Winter laver	3	*Fucus distichus*	8	
AKP_16_012	Winter laver	3	*Gloiopeltis furcata*	2	
AKP_16_012	Winter laver	3	*Hildenbrandia sp.*	5	
AKP_16_012	Winter laver	3	*Littorina sitkana*		15
AKP_16_012	Winter laver	3	*Lottia pelta*		25
AKP_16_012	Winter laver	3	*Lottia sp.*		10
AKP_16_012	Winter laver	3	*Pyropria sp.*	85	
AKP_16_012	Winter laver	3	*Siphonaria thersites*		2
AKP_16_013	Green Algae	1	*Acrosiphonia coalita*	3	
AKP_16_013	Green Algae	1	*Bacillariophyta*	99	
AKP_16_013	Green Algae	1	*Monostroma grevillei*	20	
AKP_16_013	Green Algae	1	*Pagurus hirsutiusculus*		8
AKP_16_013	Green Algae	1	*Pyropria taeniata*	<1	
AKP_16_013	Green Algae	1	*Tectura scutum*		2
AKP_16_013	Green Algae	2	*Acrosiphonia coalita*	3	
AKP_16_013	Green Algae	2	*Bacillariophyta*	70	
AKP_16_013	Green Algae	2	*Monostroma grevillei*	30	
AKP_16_013	Green Algae	2	*Pagurus hirsutiusculus*		2
AKP_16_013	Green Algae	2	*Pyropria taeniata*	<1	
AKP_16_013	Green Algae	2	*Scytosiphon sp.*	<1	
AKP_16_013	Green Algae	3	*Acrosiphonia arcta*	<1	
AKP_16_013	Green Algae	3	*Acrosiphonia coalita*	1	
AKP_16_013	Green Algae	3	*Acrosiphonia sp.*	3	
AKP_16_013	Green Algae	3	*Bacillariophyta*	30	
AKP_16_013	Green Algae	3	*Monostroma grevillei v ar. Grevillei*	22	
AKP_16_013	Green Algae	3	*Palmaria mollis*	<1	
AKP_16_013	Green Algae	3	*Pyropria taeniata*	<1	
AKP_16_013	Green Algae	3	*Spirorbidae*	<1	
AKP_16_013	Green Algae	3	*Tectura scutum*		2

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_013	Green Algae	4	*Acrosiphonia coalita*	2	
AKP_16_013	Green Algae	4	*Bacillariophyta*	35	
AKP_16_013	Green Algae	4	*Monostroma grevillei v ar. Grevillei*	40	
AKP_16_013	Green Algae	4	*Pagurus hirsutiusculus*	1	
AKP_16_013	Green Algae	4	*Petalonia fascia*	1	
AKP_16_013	Green Algae	4	*Pseudothrix borealis*	1	
AKP_16_013	Green Algae	4	*Pyropria sp.*	<1	
AKP_16_013	Green Algae	4	*Pyropria taeniata*	<1	
AKP_16_013X	Blue Mussel	1	*Endocladia muricata*	<1	
AKP_16_013X	Blue Mussel	1	*Fucus distichus*	<1	
AKP_16_013X	Blue Mussel	1	*Littorina sitkana*		40
AKP_16_013X	Blue Mussel	1	*Lottia sp.*		10
AKP_16_013X	Blue Mussel	1	*Mytilus trossulus*	35	
AKP_16_013X	Blue Mussel	1	*Nucella lima*		2
AKP_16_013X	Blue Mussel	1	*Odonthalia floccosa*	3	
AKP_16_013X	Blue Mussel	1	*Polyostea bipinnata*	5	
AKP_16_013X	Blue Mussel	1	*Pyropria sp.*	<1	
AKP_16_013X	Blue Mussel	1	*Semibalanus cariosus*	<1	
AKP_16_013X	Blue Mussel	2	*Fucus distichus*	2	
AKP_16_013X	Blue Mussel	2	*Lottia sp.*		80
AKP_16_013X	Blue Mussel	2	*Mytilus trossulus*	60	
AKP_16_013X	Blue Mussel	2	*Nucella lima*		2
AKP_16_013X	Blue Mussel	2	*Odonthalia floccosa*	present	
AKP_16_013X	Blue Mussel	2	*Polyostea bipinnata*	25	
AKP_16_013X	Blue Mussel	2	*Pyropria sp.*	5	
AKP_16_013X	Blue Mussel	2	*Pyropria sp.*	<2	
AKP_16_013X	Blue Mussel	2	*Semibalanus cariosus*	20	
AKP_16_014	Barnacle	1	*Fucus distichus*	<1	
AKP_16_014	Barnacle	1	*Gloiopeltis furcata*	<1	
AKP_16_014	Barnacle	1	*Hildenbrandia sp.*	<1	
AKP_16_014	Barnacle	1	*Littorina sitkana*		175
AKP_16_014	Barnacle	1	*Lottia digitalis*		15
AKP_16_014	Barnacle	1	*Lottia pelta*		5
AKP_16_014	Barnacle	1	*Semibalanus balanoides*	60	
AKP_16_014	Barnacle	1	*Tectura persona*		5
AKP_16_014	Barnacle	2	*Fucus distichus*	<1	
AKP_16_014	Barnacle	2	*Gloiopeltis furcata*	<1	
AKP_16_014	Barnacle	2	*Littorina sitkana*		200
AKP_16_014	Barnacle	2	*Lottia digitalis*		5
AKP_16_014	Barnacle	2	*Mastocarpus sp. (Petrocelis phase)*	5	
AKP_16_014	Barnacle	2	*Mytilus trossulus*	<1	
AKP_16_014	Barnacle	2	*Semibalanus balanoides*	95	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_014	Barnacle	3	*Littorina sitkana*		75
AKP_16_014	Barnacle	3	*Semibalanus balanoides*	40	
AKP_16_014	Barnacle	3	*Tectura persona*		3
AKP_16_014	Red Algae	1	*Ascomycota*	<1	
AKP_16_014	Red Algae	1	*Chlorophyta*	1	
AKP_16_014	Red Algae	1	*Cryptosiphonia woodii*	2	
AKP_16_014	Red Algae	1	*Lottia sp.*		12
AKP_16_014	Red Algae	1	*Melanosiphon intestinalis*	1	
AKP_16_014	Red Algae	1	*Monostroma grevillei*	1	
AKP_16_014	Red Algae	1	*Odonthalia floccosa*	1	
AKP_16_014	Red Algae	1	*Odonthalia floccosa f. comosa*	5	
AKP_16_014	Red Algae	1	*Phaeophyta*	10	
AKP_16_014	Red Algae	1	*Polyostea bipinnata*	20	
AKP_16_014	Red Algae	1	*Semibalanus cariosus*	2	
AKP_16_014	Red Algae	1	*Siphonaria thersites*		3
AKP_16_014	Red Algae	1	*Ulva sp.*	1	
AKP_16_014	Red Algae	2	*Alaria marginata*	1	
AKP_16_014	Red Algae	2	*Chlorophyta*	10	
AKP_16_014	Red Algae	2	*Corallinales*	3	
AKP_16_014	Red Algae	2	*Dumontia alaskana*	1	
AKP_16_014	Red Algae	2	*Fucus distichus*	2	
AKP_16_014	Red Algae	2	*Lottia sp.*		18
AKP_16_014	Red Algae	2	*Monostroma grevillei*	3	
AKP_16_014	Red Algae	2	*Neorhodomela aculeata*	15	
AKP_16_014	Red Algae	2	*Odonthalia floccosa f. comosa*	10	
AKP_16_014	Red Algae	2	*Polyostea bipinnata*	40	
AKP_16_014	Red Algae	2	*Ulva sp.*	2	
AKP_16_014	Red Algae	3	*Chlorophyta*	40	
AKP_16_014	Red Algae	3	*Lottia sp.*		10
AKP_16_014	Red Algae	3	*Mastocarpus pacificus*	5	
AKP_16_014	Red Algae	3	*Melanosiphon intestinalis*	<1	
AKP_16_014	Red Algae	3	*Monostroma grevillei*	1	
AKP_16_014	Red Algae	3	*Odonthalia floccosa*	1	
AKP_16_014	Red Algae	3	*Odonthalia floccosa f. comosa*	1	
AKP_16_014	Red Algae	3	*Polyostea bipinnata*	40	
AKP_16_014	Red Algae	3	*Scytosiphon sp.*	<1	
AKP_16_014	Red Algae	3	*Trichotropis sp.*		1
AKP_16_014	Red Algae	3	*Ulva sp.*	2	
AKP_16_014	Red Algae	4	*Alaria marginata*	<1	
AKP_16_014	Red Algae	4	*Bryozoa*	<1	
AKP_16_014	Red Algae	4	*Chlorophyta*	5	
AKP_16_014	Red Algae	4	*Corallinales*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_014	Red Algae	4	*Cryptosiphonia woodii*	1	
AKP_16_014	Red Algae	4	*Fucus distichus*	15	
AKP_16_014	Red Algae	4	*Halosaccion glandiforme*	<1	
AKP_16_014	Red Algae	4	*Mastocarpus pacificus*	1	
AKP_16_014	Red Algae	4	*Monostroma grevillei*	1	
AKP_16_014	Red Algae	4	*Polyostea bipinnata*	80	
AKP_16_014	Red Algae	4	*Tectura scutum*		3
AKP_16_014	Red Algae	4	*Ulva sp.*	2	
AKP_16_014	Rockweed	1	*Endocladia muricata*	<1	
AKP_16_014	Rockweed	1	*Fucus distichus*	2	
AKP_16_014	Rockweed	1	*Melanosiphon intestinalis*	<1	
AKP_16_014	Rockweed	1	*Mytilus trossulus*	60	
AKP_16_014	Rockweed	1	*Polyostea bipinnata*	<1	
AKP_16_014	Rockweed	1	*Pyropria sp.*	2	
AKP_16_014	Rockweed	1	*Semibalanus balanoides*	3	
AKP_16_014	Rockweed	2	*Chthamalus dalli*	<1	
AKP_16_014	Rockweed	2	*Fucus distichus*	25	
AKP_16_014	Rockweed	2	*Gloiopeltis furcata*	present	
AKP_16_014	Rockweed	2	*Melanosiphon intestinalis*	<1	
AKP_16_014	Rockweed	2	*Monostroma grevillei*	2	
AKP_16_014	Rockweed	2	*Odonthalia floccosa*	present	
AKP_16_014	Rockweed	2	*Palmaria callophylloides*	5	
AKP_16_014	Rockweed	2	*Polyostea bipinnata*	5	
AKP_16_014	Rockweed	2	*Pyropia abbottiae*	1	
AKP_16_014	Rockweed	2	*Pyropria sp.*	1	
AKP_16_014	Rockweed	2	*Siphonaria thersites*		3
AKP_16_014	Rockweed	2	*Tectura scutum*		12
AKP_16_014	Rockweed	2	*Ulva sp.*	2	
AKP_16_014	Rockweed	3	*Fucus distichus*	40	
AKP_16_014	Rockweed	3	*Littorina sitkana*		18
AKP_16_014	Rockweed	3	*Lottia sp.*		15
AKP_16_014	Rockweed	3	*Melanosiphon intestinalis*	2	
AKP_16_014	Rockweed	3	*Polyostea bipinnata*	<1	
AKP_16_014	Rockweed	3	*Pylaiella sp.*	<1	
AKP_16_014	Rockweed	3	*Siphonaria thersites*		9
AKP_16_014	Rockweed	3	*Tectura scutum*		13
AKP_16_014	Rockweed	3	*Ulva sp.*	<1	
AKP_16_014	Rockweed	4	*Fucus distichus*	10	
AKP_16_014	Rockweed	4	*Gloiopeltis furcata*	<1	
AKP_16_014	Rockweed	4	*Lottia digitalis*		25
AKP_16_014	Rockweed	4	*Melanosiphon intestinalis*	3	
AKP_16_014	Rockweed	4	*Monostroma grevillei*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_014	Rockweed	4	*Mytilus trossulus*	1	
AKP_16_014	Rockweed	4	*Polyostea bipinnata*	20	
AKP_16_014	Rockweed	4	*Pyropia abbottiae*	2	
AKP_16_014	Rockweed	4	*Pyropria sp.*	<1	
AKP_16_014	Rockweed	4	*Semibalanus balanoides*	<1	
AKP_16_014	Rockweed	4	*Siphonaria thersites*		8
AKP_16_014	Rockweed	4	*Tectura scutum*		6
AKP_16_014	Rockweed	4	*Ulva linza*	<1	
AKP_16_014	Rockweed	4	*Ulva sp.*	5	
AKP_16_015	Barnacle	1	*Littorina sitkana*		80
AKP_16_015	Barnacle	1	*Lottia digitalis*		4
AKP_16_015	Barnacle	1	*Lottia pelta*		2
AKP_16_015	Barnacle	1	*Mytilus trossulus*	5	
AKP_16_015	Barnacle	1	*Semibalanus balanoides*	50	
AKP_16_015	Barnacle	1	*Tectura persona*		2
AKP_16_015	Barnacle	2	*Fucus distichus*	2	
AKP_16_015	Barnacle	2	*Littorina sitkana*		300
AKP_16_015	Barnacle	2	*Lottia sp.*		1
AKP_16_015	Barnacle	2	*Mytilus trossulus*	<1	
AKP_16_015	Barnacle	2	*Semibalanus balanoides*	35	
AKP_16_015	Barnacle	3	*Littorina sitkana*		275
AKP_16_015	Barnacle	3	*Lottia digitalis*		5
AKP_16_015	Barnacle	3	*Lottia sp.*		1
AKP_16_015	Barnacle	3	*Mytilus trossulus*	5	
AKP_16_015	Barnacle	3	*Semibalanus balanoides*	25	
AKP_16_015	Barnacle	3	*Tectura persona*		25
AKP_16_015	Red Algae	1	*Acrosiphonia duriuscula*	<1	
AKP_16_015	Red Algae	1	*Cladophora sp.*	40	
AKP_16_015	Red Algae	1	*Cryptosiphonia woodii*	15	
AKP_16_015	Red Algae	1	*Fucus distichus*	17	
AKP_16_015	Red Algae	1	*Halosaccion glandiforme*	2	
AKP_16_015	Red Algae	1	*Mastocarpus latissimus*	3	
AKP_16_015	Red Algae	1	*Mazzaella sp.*	2	
AKP_16_015	Red Algae	1	*Monostroma grevillei*	1	
AKP_16_015	Red Algae	1	*Palmaria callophylloides*	2	
AKP_16_015	Red Algae	1	*Palmaria mollis*	2	
AKP_16_015	Red Algae	1	*Polyostea bipinnata*	20	
AKP_16_015	Red Algae	1	*Ulva sp.*	4	
AKP_16_015	Red Algae	2	*Bacillariophyta*	40	
AKP_16_015	Red Algae	2	*Cladophora sericea*	20	
AKP_16_015	Red Algae	2	*Cryptosiphonia woodii*	1	
AKP_16_015	Red Algae	2	*Fucus distichus*	30	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_015	Red Algae	2	*Halosaccion glandiforme*	1	
AKP_16_015	Red Algae	2	*Mastocarpus latissimus*	2	
AKP_16_015	Red Algae	2	*Mazzaella sp.*	1	
AKP_16_015	Red Algae	2	*Palmaria callophylloides*	1	
AKP_16_015	Red Algae	2	*Palmaria mollis*	20	
AKP_16_015	Red Algae	2	*Polyostea bipinnata*	10	
AKP_16_015	Red Algae	2	*Ulva sp.*	3	
AKP_16_015	Red Algae	3	*Acrosiphonia duriuscula*	2	
AKP_16_015	Red Algae	3	*Bacillariophyta*	30	
AKP_16_015	Red Algae	3	*Cladophora sp.*	10	
AKP_16_015	Red Algae	3	*Corallinales*	1	
AKP_16_015	Red Algae	3	*Cryptosiphonia woodii*	7	
AKP_16_015	Red Algae	3	*Fucus distichus*	30	
AKP_16_015	Red Algae	3	*Halosaccion glandiforme*	1	
AKP_16_015	Red Algae	3	*Hildenbrandia sp.*	10	
AKP_16_015	Red Algae	3	*Mastocarpus latissimus*	1	
AKP_16_015	Red Algae	3	*Monostroma grevillei*	2	
AKP_16_015	Red Algae	3	*Palmaria callophylloides*	5	
AKP_16_015	Red Algae	3	*Palmaria mollis*	15	
AKP_16_015	Red Algae	3	*Polyostea bipinnata*	10	
AKP_16_015	Red Algae	3	*Ulva sp.*	1	
AKP_16_015	Red Algae	4	*Cladophora sp.*	20	
AKP_16_015	Red Algae	4	*Cryptosiphonia woodii*	10	
AKP_16_015	Red Algae	4	*Fucus distichus*	1	
AKP_16_015	Red Algae	4	*Halosaccion glandiforme*	5	
AKP_16_015	Red Algae	4	*Mastocarpus latissimus*	2	
AKP_16_015	Red Algae	4	*Palmaria mollis*	10	
AKP_16_015	Red Algae	4	*Polyostea bipinnata*	5	
AKP_16_015	Red Algae	4	*Pylaiella sp.*	2	
AKP_16_015	Red Algae	4	*Ulva sp.*	1	
AKP_16_015	Red Algae	5	*Bacillariophyta*	30	
AKP_16_015	Red Algae	5	*Cladophora sericea*	20	
AKP_16_015	Red Algae	5	*Cryptosiphonia woodii*	10	
AKP_16_015	Red Algae	5	*Fucus distichus*	5	
AKP_16_015	Red Algae	5	*Halosaccion glandiforme*	6	
AKP_16_015	Red Algae	5	*Mastocarpus spp.*	5	
AKP_16_015	Red Algae	5	*Melanosiphon intestinalis*	<1	
AKP_16_015	Red Algae	5	*Monostroma grevillei*	5	
AKP_16_015	Red Algae	5	*Palmaria callophylloides*	2	
AKP_16_015	Red Algae	5	*Palmaria mollis*	3	
AKP_16_015	Red Algae	5	*Polyostea bipinnata*	15	
AKP_16_015	Red Algae	5	*Ulva sp.*	5	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_015	Rockweed	1	*Acrosiphonia arcta*	5	
AKP_16_015	Rockweed	1	*Cryptosiphonia woodii*	10	
AKP_16_015	Rockweed	1	*Fucus distichus*	60	
AKP_16_015	Rockweed	1	*Halosaccion glandiforme*	2	
AKP_16_015	Rockweed	1	*Melanosiphon intestinalis*	<1	
AKP_16_015	Rockweed	1	*Monostroma grevillei v ar. Grevillei*	2	
AKP_16_015	Rockweed	1	*Pagurus sp.*		2
AKP_16_015	Rockweed	1	*Palmaria callophylloides*	15	
AKP_16_015	Rockweed	1	*Ulva sp.*	5	
AKP_16_015	Rockweed	2	*Acrosiphonia arcta*	1	
AKP_16_015	Rockweed	2	*Cladophora sp.*	10	
AKP_16_015	Rockweed	2	*Fucus distichus*	10	
AKP_16_015	Rockweed	2	*Halosaccion glandiforme*	5	
AKP_16_015	Rockweed	2	*Melanosiphon intestinalis*	1	
AKP_16_015	Rockweed	2	*Monostroma grevillei*	2	
AKP_16_015	Rockweed	2	*Palmaria callophylloides*	40	
AKP_16_015	Rockweed	2	*Polyostea bipinnata*	5	
AKP_16_015	Rockweed	2	*Ulva sp.*	7	
AKP_16_015	Rockweed	3	*Chthamalus dalli*	<1	
AKP_16_015	Rockweed	3	*Cladophora sp.*	3	
AKP_16_015	Rockweed	3	*Fucus distichus*	40	
AKP_16_015	Rockweed	3	*Halosaccion glandiforme*	1	
AKP_16_015	Rockweed	3	*Monostroma grevillei*	1	
AKP_16_015	Rockweed	3	*Pagurus hirsutiusculus*		2
AKP_16_015	Rockweed	3	*Palmaria hecatensis*	25	
AKP_16_015	Rockweed	3	*Pylaiella sp.*	<1	
AKP_16_015	Rockweed	3	*Tectura scutum*		3
AKP_16_015	Rockweed	3	*Ulva sp.*	2	
AKP_16_015	Rockweed	4	*Chthamalus dalli*	<1	
AKP_16_015	Rockweed	4	*Fucus distichus*	100	
AKP_16_015	Rockweed	4	*Halosaccion glandiforme*	1	
AKP_16_015	Rockweed	4	*Mastocarpus spp.*	<1	
AKP_16_015	Rockweed	4	*Melanosiphon intestinalis*	5	
AKP_16_015	Rockweed	4	*Palmaria callophylloides*	5	
AKP_16_015	Rockweed	4	*Pylaiella sp.*	3	
AKP_16_015	Rockweed	4	*Ulva sp.*	2	
AKP_16_015	Rockweed	5	*Chthamalus dalli*	<1	
AKP_16_015	Rockweed	5	*Cladophora sp.*	<1	
AKP_16_015	Rockweed	5	*Fucus distichus*	90	
AKP_16_015	Rockweed	5	*Littorina sitkana*		10
AKP_16_015	Rockweed	5	*Melanosiphon intestinalis*	3	
AKP_16_015	Rockweed	5	*Pagurus hirsutiusculus*		2

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_015	Rockweed	5	*Palmaria callophylloides*	15	
AKP_16_015	Rockweed	5	*Ulva sp.*	2	
AKP_16_016	Barnacle	1	*Kornmannia leptoderma*	<1	
AKP_16_016	Barnacle	1	*Lottia pelta*		2
AKP_16_016	Barnacle	1	*Mytilus trossulus*	5	
AKP_16_016	Barnacle	1	*Semibalanus balanoides*	3	
AKP_16_016	Barnacle	2	*Fucus distichus*	10	
AKP_16_016	Barnacle	2	*Lottia pelta*		2
AKP_16_016	Barnacle	2	*Mytilus trossulus*	5	
AKP_16_016	Barnacle	2	*Semibalanus balanoides*	15	
AKP_16_016	Barnacle	3	*Monostroma grevillei*	<1	
AKP_16_016	Barnacle	3	*Mytilus trossulus*	5	
AKP_16_016	Barnacle	3	*Semibalanus balanoides*	25	
AKP_16_016	Barnacle	4	*Lottia pelta*		5
AKP_16_016	Barnacle	4	*Mytilus trossulus*	15	
AKP_16_016	Barnacle	4	*Semibalanus balanoides*	20	
AKP_16_016	Blue Mussel	1	*Fucus distichus*	<1	
AKP_16_016	Blue Mussel	1	*Littorina sitkana*		12
AKP_16_016	Blue Mussel	1	*Lottia sp.*		8
AKP_16_016	Blue Mussel	1	*Mytilus trossulus*	85	
AKP_16_016	Blue Mussel	1	*Nucella lima*		5
AKP_16_016	Blue Mussel	1	*Semibalanus balanoides*	20	
AKP_16_016	Blue Mussel	2	*Littorina sitkana*		15
AKP_16_016	Blue Mussel	2	*Lottia pelta*		3
AKP_16_016	Blue Mussel	2	*Lottia sp.*		20
AKP_16_016	Blue Mussel	2	*Mytilus trossulus*	90	
AKP_16_016	Blue Mussel	2	*Nucella lima*		3
AKP_16_016	Blue Mussel	2	*Semibalanus balanoides*	15	
AKP_16_016	Blue Mussel	3	*Littorina sitkana*		12
AKP_16_016	Blue Mussel	3	*Lottia sp.*		8
AKP_16_016	Blue Mussel	3	*Mytilus trossulus*	95	
AKP_16_016	Blue Mussel	3	*Nucella lima*		6
AKP_16_016	Blue Mussel	3	*Semibalanus balanoides*	10	
AKP_16_016	Blue Mussel	4	*Littorina sitkana*		20
AKP_16_016	Blue Mussel	4	*Lottia sp.*		15
AKP_16_016	Blue Mussel	4	*Mytilus trossulus*	90	
AKP_16_016	Blue Mussel	4	*Nucella lima*		12
AKP_16_016	Blue Mussel	4	*Semibalanus balanoides*	15	
AKP_16_016	Eelgrass	1	*Kornmannia leptoderma*	5	
AKP_16_016	Eelgrass	1	*Mytilus trossulus*	15	
AKP_16_016	Eelgrass	1	*Pylaiella sp.*	8	
AKP_16_016	Eelgrass	1	*Semibalanus balanoides*	7	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_016	Eelgrass	1	*Zostera marina*	100	
AKP_16_016	Eelgrass	2	*Kornmannia leptoderma*	8	
AKP_16_016	Eelgrass	2	*Mytilus trossulus*	10	
AKP_16_016	Eelgrass	2	*Pylaiella sp.*	15	
AKP_16_016	Eelgrass	2	*Semibalanus balanoides*	5	
AKP_16_016	Eelgrass	2	*Zostera marina*	100	
AKP_16_016	Rockweed	1	*Fucus distichus*	1	
AKP_16_016	Rockweed	1	*Gloiopeltis furcata*	<1	
AKP_16_016	Rockweed	1	*Littorina sitkana*		14
AKP_16_016	Rockweed	1	*Lottia sp.*		1
AKP_16_016	Rockweed	1	*Mytilus trossulus*	2	
AKP_16_016	Rockweed	1	*Semibalanus balanoides*	20	
AKP_16_016	Rockweed	1	*Tectura persona*		2
AKP_16_016	Rockweed	2	*Amphipoda*		10
AKP_16_016	Rockweed	2	*Fucus distichus*	3	
AKP_16_016	Rockweed	2	*Gloiopeltis furcata*	1	
AKP_16_016	Rockweed	2	*Littorina sitkana*		3
AKP_16_016	Rockweed	2	*Mytilus trossulus*	<1	
AKP_16_016	Rockweed	2	*Semibalanus balanoides*	30	
AKP_16_016	Rockweed	3	*Amphipoda*		20
AKP_16_016	Rockweed	3	*Fucus distichus*	10	
AKP_16_016	Rockweed	3	*Littorina sitkana*		6
AKP_16_016	Rockweed	3	*Mytilus trossulus*	<1	
AKP_16_016	Rockweed	3	*Semibalanus balanoides*	10	
AKP_16_016	Rockweed	4	*Fucus distichus*	7	
AKP_16_016	Rockweed	4	*Littorina sitkana*		3
AKP_16_016	Rockweed	4	*Mytilus trossulus*	<1	
AKP_16_016	Rockweed	4	*Semibalanus balanoides*	2	
AKP_16_017	Red Algae	1	*Acrosiphonia coalita*	present	
AKP_16_017	Red Algae	1	*Acrosiphonia duriuscula*	present	
AKP_16_017	Red Algae	1	*Cryptosiphonia woodii*	present	
AKP_16_017	Red Algae	1	*Fucus distichus*	present	
AKP_16_017	Red Algae	1	*Fuscifoloium papenfussii*	present	
AKP_16_017	Red Algae	1	*Halosaccion glandiforme*	present	
AKP_16_017	Red Algae	1	*Mazzaella parvula*	present	
AKP_16_017	Red Algae	1	*Monostroma grevillei*	<1	
AKP_16_017	Red Algae	1	*Neorhodomela oregona*	present	
AKP_16_017	Red Algae	1	*Odonthalia floccosa*	present	
AKP_16_017	Red Algae	1	*Palmaria callophylloides*	present	
AKP_16_017	Red Algae	1	*Polyostea bipinnata*	present	
AKP_16_017	Red Algae	1	*Pyropria sp.*	present	
AKP_16_017	Red Algae	1	*Ulva sp.*	present	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_017	Red Algae	1	*Wildemania norrissii*	present	
AKP_16_018	Red Algae	1	*Alaria marginata*	1	
AKP_16_018	Red Algae	1	*Balanus sp.*	<1	
AKP_16_018	Red Algae	1	*Chthamalus dalli*	<1	
AKP_16_018	Red Algae	1	*Fucus distichus*	<1	
AKP_16_018	Red Algae	1	*Katharina tunicata*		3
AKP_16_018	Red Algae	1	*Lottia sp.*		15
AKP_16_018	Red Algae	1	*Monostroma grevillei*	2	
AKP_16_018	Red Algae	1	*Odonthalia floccosa*	25	
AKP_16_018	Red Algae	1	*Palmaria mollis*	1	
AKP_16_018	Red Algae	1	*Petalonia fascia*	1	
AKP_16_018	Red Algae	1	*Polyostea bipinnata*	20	
AKP_16_018	Red Algae	1	*Pycnopodia helianthoides*		1
AKP_16_018	Red Algae	1	*Semibalanus cariosus*	<1	
AKP_16_018	Red Algae	1	*Spirorbis sp.*	<1	
AKP_16_018	Red Algae	1	*Ulva sp.*	1	
AKP_16_018	Red Algae	2	*Bryozoa*	1	
AKP_16_018	Red Algae	2	*Corallinales*	<1	
AKP_16_018	Red Algae	2	*Mazzaella parvula*	2	
AKP_16_018	Red Algae	2	*Neorhodomela aculeata*	20	
AKP_16_018	Red Algae	2	*Odonthalia floccosa*	65	
AKP_16_018	Red Algae	2	*Palmaria hecatensis*	<1	
AKP_16_018	Red Algae	2	*Palmaria mollis*	<1	
AKP_16_018	Red Algae	2	*Phaeophyta*	1	
AKP_16_018	Red Algae	2	*Polyostea bipinnata*	15	
AKP_16_018	Red Algae	2	*Tonicella lineata*		1
AKP_16_018	Red Algae	2	*Ulva sp.*	3	
AKP_16_018	Red Algae	3	*Alaria marginata*	3	
AKP_16_018	Red Algae	3	*Chthamalus dalli*	<1	
AKP_16_018	Red Algae	3	*Corallinales*	<1	
AKP_16_018	Red Algae	3	*Halosaccion glandiforme*	1	
AKP_16_018	Red Algae	3	*Laminaria/Saccharina sp.*	3	
AKP_16_018	Red Algae	3	*Odonthalia floccosa*	60	
AKP_16_018	Red Algae	3	*Polyostea bipinnata*	10	
AKP_16_018	Red Algae	3	*Scytosiphon lomentaria*	<1	
AKP_16_018	Red Algae	3	*Semibalanus cariosus*	<1	
AKP_16_018	Red Algae	3	*Spirorbis sp.*	<1	
AKP_16_018	Red Algae	3	*Ulva sp.*	5	
AKP_16_018	Red Algae	4	*Halosaccion glandiforme*	1	
AKP_16_018	Red Algae	4	*Lottia sp.*		8
AKP_16_018	Red Algae	4	*Neorhodomela aculeata*	5	
AKP_16_018	Red Algae	4	*Odonthalia floccosa*	70	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_018	Red Algae	4	*Petalonia fascia*	1	
AKP_16_018	Red Algae	4	*Polysiphonia sp.*	5	
AKP_16_018	Red Algae	4	*Polyostea bipinnata*	10	
AKP_16_018	Red Algae	4	*Ulva sp.*	5	
AKP_16_018	Red Algae	5	*Alaria marginata*	7	
AKP_16_018	Red Algae	5	*Balanamorpha*	<1	
AKP_16_018	Red Algae	5	*Chthamalus dalli*	<1	
AKP_16_018	Red Algae	5	*Corallinales*	<1	
AKP_16_018	Red Algae	5	*Cryptosiphonia woodii*	3	
AKP_16_018	Red Algae	5	*Fucus distichus*	<1	
AKP_16_018	Red Algae	5	*Katharina tunicata*		3
AKP_16_018	Red Algae	5	*Mazzaella sp.*	1	
AKP_16_018	Red Algae	5	*Pagurus hirsutiusculus*		20
AKP_16_018	Red Algae	5	*Palmaria mollis*	3	
AKP_16_018	Red Algae	5	*Petalonia fascia*	1	
AKP_16_018	Red Algae	5	*Polysiphonia sp.*	1	
AKP_16_018	Red Algae	5	*Polyostea bipinnata*	3	
AKP_16_018	Red Algae	5	*Scytosiphon lomentaria*	5	
AKP_16_018	Red Algae	5	*Semibalanus cariosus*	<1	
AKP_16_018	Red Algae	5	*Ulva sp.*	15	
AKP_16_018	Rockweed	1	*Fucus distichus*	55	
AKP_16_018	Rockweed	1	*Hildenbrandia sp.*	<1	
AKP_16_018	Rockweed	1	*Katharina tunicata*		1
AKP_16_018	Rockweed	1	*Lacuna vincta*		10
AKP_16_018	Rockweed	1	*Littorina sitkana*		50
AKP_16_018	Rockweed	1	*Lottia pelta*		25
AKP_16_018	Rockweed	1	*Lottia sp.*		50
AKP_16_018	Rockweed	1	*Mastocarpus spp.*	<1	
AKP_16_018	Rockweed	1	*Mytilus trossulus*	15	
AKP_16_018	Rockweed	1	*Odonthalia floccosa f. comosa*	5	
AKP_16_018	Rockweed	1	*Pentidotea wosnesenskii*		1
AKP_16_018	Rockweed	1	*Polyostea bipinnata*	2	
AKP_16_018	Rockweed	1	*Semibalanus cariosus*	30	
AKP_16_018	Rockweed	1	*Ulva sp.*	<1	
AKP_16_018	Rockweed	2	*Chthamalus dalli*	65	
AKP_16_018	Rockweed	2	*Endocladia muricata*	5	
AKP_16_018	Rockweed	2	*Fucus distichus*	20	
AKP_16_018	Rockweed	2	*Hildenbrandia sp.*	<1	
AKP_16_018	Rockweed	2	*Lottia pelta*		5
AKP_16_018	Rockweed	2	*Lottia sp.*		2
AKP_16_018	Rockweed	2	*Mastocarpus spp.*	<1	
AKP_16_018	Rockweed	2	*Semibalanus cariosus*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_018	Rockweed	2	*Tectura scutum*		5
AKP_16_018	Rockweed	2	*Ulva sp.*	<1	
AKP_16_018	Rockweed	3	*Chthamalus dalli*	40	
AKP_16_018	Rockweed	3	*Endocladia muricata*	15	
AKP_16_018	Rockweed	3	*Fucus distichus*	20	
AKP_16_018	Rockweed	3	*Gloiopeltis furcata*	5	
AKP_16_018	Rockweed	3	*Hildenbrandia sp.*	10	
AKP_16_018	Rockweed	3	*Littorina sitkana*		10
AKP_16_018	Rockweed	3	*Lottia pelta*		1
AKP_16_018	Rockweed	3	*Pyropria fucicola*	1	
AKP_16_018	Rockweed	3	*Semibalanus cariosus*	1	
AKP_16_018	Rockweed	3	*Tectura scutum*		3
AKP_16_018	Rockweed	3	*Ulva sp.*	<1	
AKP_16_019	Green Algae	1	*Littorina sitkana*		10
AKP_16_019	Green Algae	1	*Ulothrix sp.*	99	
AKP_16_019	Green Algae	2	*Pyropria torta*	<1	
AKP_16_019	Green Algae	2	*Ulothrix sp.*	100	
AKP_16_019	Green Algae	3	*Traskorchestia traskiana*		150
AKP_16_019	Green Algae	3	*Ulothrix sp.*	20	
AKP_16_019	Red Algae	1	*Alaria marginata*	2	
AKP_16_019	Red Algae	1	*Bossiella sp.*	1	
AKP_16_019	Red Algae	1	*Corallinales*	10	
AKP_16_019	Red Algae	1	*Fucus distichus*	2	
AKP_16_019	Red Algae	1	*Halichondria sp.*	10	
AKP_16_019	Red Algae	1	*Halosaccion glandiforme*	1	
AKP_16_019	Red Algae	1	*Littorina sitkana*		8
AKP_16_019	Red Algae	1	*Lottia sp.*		4
AKP_16_019	Red Algae	1	*Mazzaella sp.*	3	
AKP_16_019	Red Algae	1	*Neorhodomela aculeata*	2	
AKP_16_019	Red Algae	1	*Odonthalia floccosa*	3	
AKP_16_019	Red Algae	1	*Palmaria hecatensis*	1	
AKP_16_019	Red Algae	1	*Palmaria mollis*	2	
AKP_16_019	Red Algae	1	*Phyllospadix serrulatus*	1	
AKP_16_019	Red Algae	1	*Polyostea bipinnata*	10	
AKP_16_019	Red Algae	1	*Semibalanus cariosus*	<1	
AKP_16_019	Red Algae	1	*Tokidadendron bullatum*	25	
AKP_16_019	Red Algae	1	*Ulva sp.*	2	
AKP_16_019	Red Algae	2	*Ahnfeltia fastigiata*	<1	
AKP_16_019	Red Algae	2	*Alaria marginata*	10	
AKP_16_019	Red Algae	2	*Corallinales*	25	
AKP_16_019	Red Algae	2	*Halichondria sp.*	55	
AKP_16_019	Red Algae	2	*Halosaccion glandiforme*	3	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_019	Red Algae	2	*Katharina tunicata*		2
AKP_16_019	Red Algae	2	*Odonthalia floccosa*	5	
AKP_16_019	Red Algae	2	*Palmaria hecatensis*	3	
AKP_16_019	Red Algae	2	*Palmaria mollis*	5	
AKP_16_019	Red Algae	2	*Phyllospadix sp.*	<1	
AKP_16_019	Red Algae	2	*Polyostea bipinnata*	3	
AKP_16_019	Red Algae	2	*Tectura scutum*		2
AKP_16_019	Red Algae	2	*Tokidadendron bullatum*	2	
AKP_16_019	Red Algae	3	*Alaria marginata*	20	
AKP_16_019	Red Algae	3	*Corallinales*	10	
AKP_16_019	Red Algae	3	*Corallinales*	2	
AKP_16_019	Red Algae	3	*Halichondria sp.*	25	
AKP_16_019	Red Algae	3	*Halosaccion glandiforme*	1	
AKP_16_019	Red Algae	3	*Katharina tunicata*		2
AKP_16_019	Red Algae	3	*Odonthalia floccosa*	3	
AKP_16_019	Red Algae	3	*Palmaria hecatensis*	5	
AKP_16_019	Red Algae	3	*Polyostea bipinnata*	3	
AKP_16_019	Red Algae	3	*Semibalanus cariosus*	1	
AKP_16_019	Red Algae	3	*Tokidadendron bullatum*	20	
AKP_16_019	Red Algae	3	*Ulva sp.*	3	
AKP_16_019	Red Algae	4	*Alaria marginata*	20	
AKP_16_019	Red Algae	4	*Corallinales*	5	
AKP_16_019	Red Algae	4	*Fucus distichus*	5	
AKP_16_019	Red Algae	4	*Halichondria sp.*	10	
AKP_16_019	Red Algae	4	*Katharina tunicata*		4
AKP_16_019	Red Algae	4	*Monostroma grevillei*	<1	
AKP_16_019	Red Algae	4	*Odonthalia floccosa*	5	
AKP_16_019	Red Algae	4	*Palmaria hecatensis*	2	
AKP_16_019	Red Algae	4	*Polyostea bipinnata*	8	
AKP_16_019	Red Algae	4	*Semibalanus cariosus*	2	
AKP_16_019	Red Algae	4	*Tectura scutum*		3
AKP_16_019	Red Algae	4	*Ulva sp.*	<1	
AKP_16_019	Red Algae	5	*Ahnfeltia fastigiata*	<1	
AKP_16_019	Red Algae	5	*Alaria marginata*	25	
AKP_16_019	Red Algae	5	*Corallinales*	1	
AKP_16_019	Red Algae	5	*Corallinales*	<1	
AKP_16_019	Red Algae	5	*Halichondria sp.*	15	
AKP_16_019	Red Algae	5	*Mazzaella sp.*	5	
AKP_16_019	Red Algae	5	*Odonthalia floccosa*	2	
AKP_16_019	Red Algae	5	*Pagurus hirsutiusculus*		2
AKP_16_019	Red Algae	5	*Palmaria mollis*	1	
AKP_16_019	Red Algae	5	*Tokidadendron bullatum*	25	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_019	Red Algae	5	*Ulva sp.*	2	
AKP_16_019	Rockweed	1	*Alaria marginata*	2	
AKP_16_019	Rockweed	1	*Corallinales*	5	
AKP_16_019	Rockweed	1	*Fucus distichus*	6	
AKP_16_019	Rockweed	1	*Halosaccion glandiforme*	<1	
AKP_16_019	Rockweed	1	*Neorhodomela aculeata*	5	
AKP_16_019	Rockweed	1	*Odonthalia floccosa*	10	
AKP_16_019	Rockweed	1	*Pagurus hirsutiusculus*		2
AKP_16_019	Rockweed	1	*Palmaria mollis*	10	
AKP_16_019	Rockweed	1	*Phyllospadix sp.*	3	
AKP_16_019	Rockweed	1	*Polyostea bipinnata*	3	
AKP_16_019	Rockweed	1	*Semibalanus cariosus*	<1	
AKP_16_019	Rockweed	1	*Tokidadendron bullatum*	7	
AKP_16_019	Rockweed	2	*Acrosiphonia arcta*	<1	
AKP_16_019	Rockweed	2	*Fucus distichus*	1	
AKP_16_019	Rockweed	2	*Halosaccion glandiforme*	1	
AKP_16_019	Rockweed	2	*Lottia pelta*		2
AKP_16_019	Rockweed	2	*Lottia sp.*		100
AKP_16_019	Rockweed	2	*Mazzaella sp.*	<1	
AKP_16_019	Rockweed	2	*Neorhodomela sp.*	5	
AKP_16_019	Rockweed	2	*Odonthalia floccosa*	30	
AKP_16_019	Rockweed	2	*Palmaria callophylloides*	<1	
AKP_16_019	Rockweed	2	*Polyostea bipinnata*	1	
AKP_16_019	Rockweed	2	*Pyropria sp.*	<1	
AKP_16_019	Rockweed	2	*Semibalanus cariosus*	30	
AKP_16_019	Rockweed	2	*Soranthera ulvoidea*	<1	
AKP_16_019	Rockweed	2	*Tokidadendron bullatum*	<1	
AKP_16_019	Rockweed	3	*Fucus distichus*	5	
AKP_16_019	Rockweed	3	*Littorina sitkana*		5
AKP_16_019	Rockweed	3	*Lottia pelta*		3
AKP_16_019	Rockweed	3	*Lottia sp.*		40
AKP_16_019	Rockweed	3	*Mazzaella sp.*	1	
AKP_16_019	Rockweed	3	*Odonthalia floccosa*	5	
AKP_16_019	Rockweed	3	*Palmaria hecatensis*	1	
AKP_16_019	Rockweed	3	*Polyostea bipinnata*	5	
AKP_16_019	Rockweed	3	*Pyropria sp.*	<1	
AKP_16_019	Rockweed	3	*Semibalanus cariosus*	2	
AKP_16_019	Rockweed	3	*Spirorbis sp.*	<1	
AKP_16_019	Rockweed	3	*Tectura scutum*		10
AKP_16_019	Rockweed	3	*Tokidadendron bullatum*	2	
AKP_16_019	Rockweed	3	*Ulva sp.*	1	
AKP_16_019	Rockweed	4	*Acrosiphonia arcta*	present	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_019	Rockweed	4	*Palmaria hecatensis*	1	
AKP_16_019	Rockweed	4	*Pyropria sp.*	1	
AKP_16_019	Rockweed	4	*Ulva sp.*	80	
AKP_16_020	Alaria	1	*Acrosiphonia sp.*	40	
AKP_16_020	Alaria	1	*Alaria marginata*	60	
AKP_16_020	Alaria	1	*Corallinales*	2	
AKP_16_020	Alaria	1	*Halichondria sp.*	5	
AKP_16_020	Alaria	1	*Katharina tunicata*	2	
AKP_16_020	Alaria	1	*Odonthalia floccosa*	1	
AKP_16_020	Alaria	1	*Palmaria hecatensis*	10	
AKP_16_020	Alaria	1	*Semibalanus cariosus*	3	
AKP_16_020	Alaria	1	*Tectura scutum*		6
AKP_16_020	Alaria	1	*Wildemania variegata*	<1	
AKP_16_020	Alaria	2	*Acrosiphonia coalita*	1	
AKP_16_020	Alaria	2	*Alaria marginata*	40	
AKP_16_020	Alaria	2	*Corallinales*	5	
AKP_16_020	Alaria	2	*Fucus distichus*	3	
AKP_16_020	Alaria	2	*Halosaccion glandiforme*	1	
AKP_16_020	Alaria	2	*Katharina tunicata*		2
AKP_16_020	Alaria	2	*Margarites pupillus*		3
AKP_16_020	Alaria	2	*Nucella lamellosa*		2
AKP_16_020	Alaria	2	*Odonthalia floccosa*	2	
AKP_16_020	Alaria	2	*Pagurus hirsutiusculus*		8
AKP_16_020	Alaria	2	*Palmaria mollis*	25	
AKP_16_020	Alaria	2	*Saccharina groenlandica*	5	
AKP_16_020	Alaria	2	*Semibalanus cariosus*	25	
AKP_16_020	Alaria	2	*Tectura scutum*		3
AKP_16_020	Alaria	2	*Ulva sp.*	<1	
AKP_16_020	Alaria	2	*Wildemania variegata*	1	
AKP_16_020	Alaria	3	*Acrosiphonia coalita*	10	
AKP_16_020	Alaria	3	*Alaria marginata*	90	
AKP_16_020	Alaria	3	*Corallinales*	5	
AKP_16_020	Alaria	3	*Odonthalia floccosa*	3	
AKP_16_020	Alaria	3	*Pagurus hirsutiusculus*		3
AKP_16_020	Alaria	3	*Palmaria hecatensis*	20	
AKP_16_020	Alaria	3	*Saccharina sessile*	10	
AKP_16_020	Alaria	4	*Acrosiphonia coalita*	3	
AKP_16_020	Alaria	4	*Alaria marginata*	80	
AKP_16_020	Alaria	4	*Halichondria sp.*	1	
AKP_16_020	Alaria	4	*Hildenbrandia sp.*	2	
AKP_16_020	Alaria	4	*Neorhodomela aculeata*	5	
AKP_16_020	Alaria	4	*Odonthalia floccosa*	5	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_020	Alaria	4	*Palmaria hecatensis*	20	
AKP_16_020	Alaria	4	*Semibalanus cariosus*	<1	
AKP_16_020	Alaria	4	*Tokidadendron bullatum*	1	
AKP_16_020	Alaria	5	*Alaria marginata*	15	
AKP_16_020	Alaria	5	*Corallinales*	20	
AKP_16_020	Alaria	5	*Glebicarcinus oregonensis*		1
AKP_16_020	Alaria	5	*Monostroma grevillei*	<1	
AKP_16_020	Alaria	5	*Odonthalia floccosa*	10	
AKP_16_020	Alaria	5	*Pagurus hirsutiusculus*		8
AKP_16_020	Alaria	5	*Palmaria hecatensis*	20	
AKP_16_020	Alaria	5	*Saccharina bongardiana*	10	
AKP_16_020	Alaria	5	*Saccharina sessile*	50	
AKP_16_020	Alaria	5	*Semibalanus cariosus*	8	
AKP_16_020	Red Algae	1	*Alaria marginata*	5	
AKP_16_020	Red Algae	1	*Chthamalus dalli*	<1	
AKP_16_020	Red Algae	1	*Fucus distichus*	2	
AKP_16_020	Red Algae	1	*Halosaccion glandiforme*	<1	
AKP_16_020	Red Algae	1	*Hildenbrandia sp.*	<1	
AKP_16_020	Red Algae	1	*Neorhodomela aculeata*	10	
AKP_16_020	Red Algae	1	*Odonthalia floccosa*	80	
AKP_16_020	Red Algae	1	*Palmaria hecatensis*	3	
AKP_16_020	Red Algae	1	*Polyostea bipinnata*	2	
AKP_16_020	Red Algae	1	*Semibalanus cariosus*	5	
AKP_16_020	Red Algae	1	*Tokidadendron bullatum*	<1	
AKP_16_020	Red Algae	1	*Ulva sp.*	2	
AKP_16_020	Red Algae	2	*Acrosiphonia coalita*	5	
AKP_16_020	Red Algae	2	*Chthamalus dalli*	<1	
AKP_16_020	Red Algae	2	*Corallinales*	<1	
AKP_16_020	Red Algae	2	*Fucus distichus*	25	
AKP_16_020	Red Algae	2	*Halosaccion glandiforme*	15	
AKP_16_020	Red Algae	2	*Katharina tunicata*		2
AKP_16_020	Red Algae	2	*Monostroma grevillei*	1	
AKP_16_020	Red Algae	2	*Neorhodomela aculeata*	3	
AKP_16_020	Red Algae	2	*Odonthalia floccosa*	10	
AKP_16_020	Red Algae	2	*Odonthalia floccosa f. comosa*	3	
AKP_16_020	Red Algae	2	*Palmaria mollis*	1	
AKP_16_020	Red Algae	2	*Semibalanus cariosus*	2	
AKP_16_020	Red Algae	2	*Ulva sp.*	3	
AKP_16_020	Red Algae	3	*Acrosiphonia sp.*	3	
AKP_16_020	Red Algae	3	*Alaria marginata*	<1	
AKP_16_020	Red Algae	3	*Corallinales*	10	
AKP_16_020	Red Algae	3	*Halosaccion glandiforme*	3	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_020	Red Algae	3	*Katharina tunicata*		4
AKP_16_020	Red Algae	3	*Lottia sp.*		9
AKP_16_020	Red Algae	3	*Margarites pupillus*		2
AKP_16_020	Red Algae	3	*Neorhodomela aculeata*	3	
AKP_16_020	Red Algae	3	*Odonthalia floccosa*	35	
AKP_16_020	Red Algae	3	*Pagurus hirsutiusculus*		3
AKP_16_020	Red Algae	3	*Palmaria hecatensis*	<1	
AKP_16_020	Red Algae	3	*Semibalanus cariosus*	10	
AKP_16_020	Red Algae	4	*Acrosiphonia sp.*	3	
AKP_16_020	Red Algae	4	*Corallinales*	1	
AKP_16_020	Red Algae	4	*Fucus distichus*	3	
AKP_16_020	Red Algae	4	*Halosaccion glandiforme*	2	
AKP_16_020	Red Algae	4	*Katharina tunicata*		2
AKP_16_020	Red Algae	4	*Monostroma grevillei v ar. Grevillei*	3	
AKP_16_020	Red Algae	4	*Neorhodomela aculeata*	3	
AKP_16_020	Red Algae	4	*Odonthalia floccosa*	40	
AKP_16_020	Red Algae	4	*Palmaria mollis*	5	
AKP_16_020	Red Algae	4	*Polysiphonia sp.*	1	
AKP_16_020	Red Algae	4	*Tokidadendron bullatum*	2	
AKP_16_020	Red Algae	4	*Ulva sp.*	5	
AKP_16_020	Rockweed	1	*Balanus glandula*	3	
AKP_16_020	Rockweed	1	*Fucus distichus*	35	
AKP_16_020	Rockweed	1	*Halosaccion glandiforme*	present	
AKP_16_020	Rockweed	1	*Littorina sitkana*		20
AKP_16_020	Rockweed	1	*Lottia pelta*		20
AKP_16_020	Rockweed	1	*Lottia sp.*		10
AKP_16_020	Rockweed	1	*Monostroma grevillei*	2	
AKP_16_020	Rockweed	1	*Mytilus trossulus*	40	
AKP_16_020	Rockweed	1	*Nucella lima*		3
AKP_16_020	Rockweed	1	*Odonthalia floccosa f. comosa*	30	
AKP_16_020	Rockweed	1	*Polyostea bipinnata*	5	
AKP_16_020	Rockweed	1	*Pyropria sp.*	<1	
AKP_16_020	Rockweed	1	*Semibalanus cariosus*	15	
AKP_16_020	Rockweed	2	*Analipus japonicus*	<1	
AKP_16_020	Rockweed	2	*Corallinales*	<1	
AKP_16_020	Rockweed	2	*Fucus distichus*	65	
AKP_16_020	Rockweed	2	*Halosaccion glandiforme*	10	
AKP_16_020	Rockweed	2	*Lottia pelta*		3
AKP_16_020	Rockweed	2	*Lottia sp.*		18
AKP_16_020	Rockweed	2	*Monostroma grevillei*	3	
AKP_16_020	Rockweed	2	*Mytilus trossulus*	2	
AKP_16_020	Rockweed	2	*Odonthalia floccosa f. comosa*	5	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_020	Rockweed	2	*Palmaria callophylloides*	5	
AKP_16_020	Rockweed	2	*Palmaria hecatensis*	3	
AKP_16_020	Rockweed	2	*Semibalanus cariosus*	30	
AKP_16_020	Rockweed	2	*Tectura scutum*		9
AKP_16_020	Rockweed	3	*Endocladia muricata*	<1	
AKP_16_020	Rockweed	3	*Fucus distichus*	5	
AKP_16_020	Rockweed	3	*Littorina sitkana*		65
AKP_16_020	Rockweed	3	*Lottia sp.*		20
AKP_16_020	Rockweed	3	*Mytilus trossulus*	25	
AKP_16_020	Rockweed	3	*Polyostea bipinnata*	<1	
AKP_16_020	Rockweed	3	*Semibalanus cariosus*	40	
AKP_16_020	Winter Laver	1	*Balanus glandula*	<1	
AKP_16_020	Winter Laver	1	*Chthamalus dalli*	10	
AKP_16_020	Winter Laver	1	*Littorina sitkana*		60
AKP_16_020	Winter Laver	1	*Melanosiphon intestinalis*	<1	
AKP_16_020	Winter Laver	1	*Pyropria pseudolanceolata*	85	
AKP_16_020	Winter Laver	2	*Bacillariophyta*	5	
AKP_16_020	Winter Laver	2	*Littorina sitkana*		2
AKP_16_020	Winter Laver	2	*Pyropria pseudolanceolata*	90	
AKP_16_020	Winter Laver	3	*Balanus glandula*	<1	
AKP_16_020	Winter Laver	3	*Hildenbrandia sp.*	<1	
AKP_16_020	Winter Laver	3	*Littorina sitkana*		23
AKP_16_020	Winter Laver	3	*Mastocarpus sp. (Petrocelis phase)*	<1	
AKP_16_020	Winter Laver	3	*Melanosiphon intestinalis*	5	
AKP_16_020	Winter Laver	3	*Pyropria pseudolanceolata*	20	
AKP_16_020	Winter Laver	3	*Tectura persona*		1
AKP_16_020V	Barnacle	1	*Balanus glandula*	10	
AKP_16_020V	Barnacle	1	*Chthamalus dalli*	1	
AKP_16_020V	Barnacle	1	*Endocladia muricata*	<1	
AKP_16_020V	Barnacle	1	*Littorina sitkana*		50
AKP_16_020V	Barnacle	1	*Mytilus trossulus*	<1	
AKP_16_020V	Barnacle	2	*Balanus glandula*	10	
AKP_16_020V	Barnacle	2	*Endocladia muricata*	1	
AKP_16_020V	Barnacle	2	*Littorina sitkana*		100
AKP_16_020V	Barnacle	2	*Mytilus trossulus*	2	
AKP_16_020V	Barnacle	3	*Balanus glandula*	7	
AKP_16_020V	Barnacle	3	*Endocladia muricata*	1	
AKP_16_020V	Barnacle	3	*Fucus distichus*	10	
AKP_16_020V	Barnacle	3	*Littorina sitkana*		25
AKP_16_020V	Red Algae	1	*Alaria marginata*	20	
AKP_16_020V	Red Algae	1	*Fucus distichus*	15	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_020V	Red Algae	1	*Palmaria hecatensis*	10	
AKP_16_020V	Red Algae	1	*Pyropria sp.*	2	
AKP_16_020V	Red Algae	1	*Ulva sp.*	1	
AKP_16_020V	Red Algae	2	*Fucus distichus*	30	
AKP_16_020V	Red Algae	2	*Palmaria callophylloides*	5	
AKP_16_020V	Red Algae	2	*Palmaria hecatensis*	80	
AKP_16_020V	Red Algae	3	*Acrosiphonia sp.*	30	
AKP_16_020V	Red Algae	3	*Alaria marginata*	35	
AKP_16_020V	Red Algae	3	*Palmaria hecatensis*	15	
AKP_16_020V	Red Algae	3	*Ulva sp.*	10	
AKP_16_020V	Red Algae	4	*Acrosiphonia sp.*	25	
AKP_16_020V	Red Algae	4	*Fucus distichus*	15	
AKP_16_020V	Red Algae	4	*Mastocarpus spp.*	5	
AKP_16_020V	Red Algae	4	*Palmaria callophylloides*	1	
AKP_16_020V	Red Algae	4	*Palmaria hecatensis*	5	
AKP_16_020V	Red Algae	4	*Polyostea bipinnata*	20	
AKP_16_020V	Red Algae	4	*Ulva sp.*	10	
AKP_16_020V	Red Algae	5	*Acrosiphonia sp.*	40	
AKP_16_020V	Red Algae	5	*Alaria marginata*	35	
AKP_16_020V	Red Algae	5	*Palmaria callophylloides*	5	
AKP_16_020V	Red Algae	5	*Palmaria hecatensis*	5	
AKP_16_020V	Red Algae	5	*Pyropria sp.*	1	
AKP_16_020V	Red Algae	5	*Ulva sp.*	5	
AKP_16_020V	Rockweed	1	*Acrosiphonia coalita*	30	
AKP_16_020V	Rockweed	1	*Fucus distichus*	1	
AKP_16_020V	Rockweed	1	*Palmaria callophylloides*	10	
AKP_16_020V	Rockweed	1	*Pyropria sp.*	2	
AKP_16_020V	Rockweed	1	*Ulva sp.*	1	
AKP_16_020V	Rockweed	2	*Acrosiphonia arcta*	30	
AKP_16_020V	Rockweed	2	*Fucus distichus*	5	
AKP_16_020V	Rockweed	2	*Lottia sp.*		5
AKP_16_020V	Rockweed	2	*Palmaria callophylloides*	5	
AKP_16_020V	Rockweed	2	*Palmaria hecatensis*	5	
AKP_16_020V	Rockweed	2	*Pyropria sp.*	10	
AKP_16_020V	Rockweed	2	*Ulva sp.*	5	
AKP_16_020V	Rockweed	3	*Acrosiphonia arcta*	10	
AKP_16_020V	Rockweed	3	*Fucus distichus*	15	
AKP_16_020V	Rockweed	3	*Palmaria callophylloides*	10	
AKP_16_020V	Rockweed	3	*Palmaria hecatensis*	5	
AKP_16_020V	Rockweed	3	*Pyropria sp.*	40	
AKP_16_020V	Rockweed	3	*Ulva sp.*	10	
AKP_16_020V	Rockweed	4	*Acrosiphonia sp.*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_020V	Rockweed	4	*Endocladia muricata*	1	
AKP_16_020V	Rockweed	4	*Fucus distichus*	15	
AKP_16_020V	Rockweed	4	*Mastocarpus spp.*	1	
AKP_16_020V	Rockweed	4	*Odonthalia floccosa*	2	
AKP_16_020V	Rockweed	4	*Palmaria callophylloides*	10	
AKP_16_020V	Rockweed	4	*Palmaria hecatensis*	5	
AKP_16_020V	Rockweed	4	*Pyropria sp.*	10	
AKP_16_020V	Rockweed	4	*Tectura scutum*		3
AKP_16_020V	Rockweed	4	*Ulva sp.*	5	
AKP_16_020V	Rockweed	5	*Acrosiphonia sp.*	40	
AKP_16_020V	Rockweed	5	*Pyropria sp.*	20	
AKP_16_020V	Rockweed	5	*Tectura scutum*		2
AKP_16_020V	Rockweed	5	*Ulva sp.*	5	
AKP_16_021	Barnacle	1	*Chthamalus dalli*	<1	
AKP_16_021	Barnacle	1	*Littorina sitkana*		20
AKP_16_021	Barnacle	1	*Lottia digitalis*		30
AKP_16_021	Barnacle	1	*Lottia pelta*		2
AKP_16_021	Barnacle	1	*Lottia sp.*		50
AKP_16_021	Barnacle	1	*Pentidotea wosnesenskii*		3
AKP_16_021	Barnacle	1	*Semibalanus balanoides*	45	
AKP_16_021	Barnacle	1	*Tectura scutum*		5
AKP_16_021	Barnacle	2	*Anthopleura xanthogrammica*		3
AKP_16_021	Barnacle	2	*Chthamalus dalli*	5	
AKP_16_021	Barnacle	2	*Gloiopeltis furcata*	5	
AKP_16_021	Barnacle	2	*Littorina sitkana*		2
AKP_16_021	Barnacle	2	*Lottia digitalis*		2
AKP_16_021	Barnacle	2	*Lottia sp.*		15
AKP_16_021	Barnacle	2	*Pagurus hirsutiusculus*		5
AKP_16_021	Barnacle	2	*Semibalanus balanoides*	20	
AKP_16_021	Barnacle	2	*Tectura scutum*		35
AKP_16_021	Barnacle	3	*Chthamalus dalli*	1	
AKP_16_021	Barnacle	3	*Glebicarcinus oregonensis*		2
AKP_16_021	Barnacle	3	*Littorina sitkana*		70
AKP_16_021	Barnacle	3	*Lottia pelta*		3
AKP_16_021	Barnacle	3	*Lottia sp.*		10
AKP_16_021	Barnacle	3	*Pagurus hirsutiusculus*		10
AKP_16_021	Barnacle	3	*Semibalanus balanoides*	15	
AKP_16_021	Barnacle	3	*Tectura scutum*		5
AKP_16_021	Barnacle	3	*Traskorchestia traskiana*		150
AKP_16_021	Dark Brown Kelp	1	*Acrosiphonia sp.*	1	
AKP_16_021	Dark Brown Kelp	1	*Alaria marginata*	10	
AKP_16_021	Dark Brown Kelp	1	*Bryozoa*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_021	Dark Brown Kelp	1	*Fucus distichus*	7	
AKP_16_021	Dark Brown Kelp	1	*Halosaccion glandiforme*	1	
AKP_16_021	Dark Brown Kelp	1	*Laminaria/Saccharina sp.*	10	
AKP_16_021	Dark Brown Kelp	1	*Mazzaella sp.*	1	
AKP_16_021	Dark Brown Kelp	1	*Monostroma grevillei*	1	
AKP_16_021	Dark Brown Kelp	1	*Odonthalia floccosa*	7	
AKP_16_021	Dark Brown Kelp	1	*Palmaria hecatensis*	8	
AKP_16_021	Dark Brown Kelp	1	*Palmaria mollis*	5	
AKP_16_021	Dark Brown Kelp	1	*Palmaria mollis*	5	
AKP_16_021	Dark Brown Kelp	1	*Phycodrys sp.*	2	
AKP_16_021	Dark Brown Kelp	1	*Saccharina sessile*	60	
AKP_16_021	Dark Brown Kelp	1	*Tokidadendron bullatum*	5	
AKP_16_021	Dark Brown Kelp	1	*Ulva sp.*	2	
AKP_16_021	Dark Brown Kelp	2	*Alaria marginata*	20	
AKP_16_021	Dark Brown Kelp	2	*Halichondria sp.*	4	
AKP_16_021	Dark Brown Kelp	2	*Laminaria/Saccharina sp.*	60	
AKP_16_021	Dark Brown Kelp	2	*Odonthalia floccosa*	10	
AKP_16_021	Dark Brown Kelp	2	*Palmaria hecatensis*	10	
AKP_16_021	Dark Brown Kelp	2	*Phycodrys sp.*	5	
AKP_16_021	Dark Brown Kelp	2	*Ptilota sp.*	20	
AKP_16_021	Dark Brown Kelp	2	*Saccharina groenlandica*	20	
AKP_16_021	Dark Brown Kelp	2	*Saccharina sessile*	present	
AKP_16_021	Dark Brown Kelp	2	*Tokidadendron bullatum*	10	
AKP_16_021	Dark Brown Kelp	2	*Ulva sp.*	5	
AKP_16_021	Dark Brown Kelp	3	*Alaria marginata*	15	
AKP_16_021	Dark Brown Kelp	3	*Chthamalus dalli*	<1	
AKP_16_021	Dark Brown Kelp	3	*Corallinales*	1	
AKP_16_021	Dark Brown Kelp	3	*Cryptosiphonia woodii*	3	
AKP_16_021	Dark Brown Kelp	3	*Fucus distichus*	15	
AKP_16_021	Dark Brown Kelp	3	*Halichondria sp.*	6	
AKP_16_021	Dark Brown Kelp	3	*Mazzaella parvula*	1	
AKP_16_021	Dark Brown Kelp	3	*Monostroma grevillei*	<1	
AKP_16_021	Dark Brown Kelp	3	*Odonthalia floccosa*	4	
AKP_16_021	Dark Brown Kelp	3	*Palmaria hecatensis*	3	
AKP_16_021	Dark Brown Kelp	3	*Palmaria mollis*	10	
AKP_16_021	Dark Brown Kelp	3	*Phycodrys sp.*	1	
AKP_16_021	Dark Brown Kelp	3	*Saccharina sessile*	50	
AKP_16_021	Dark Brown Kelp	3	*Tokidadendron bullatum*	12	
AKP_16_021	Dark Brown Kelp	4	*Alaria marginata*	5	
AKP_16_021	Dark Brown Kelp	4	*Corallinales*	25	
AKP_16_021	Dark Brown Kelp	4	*Corallinales*	3	
AKP_16_021	Dark Brown Kelp	4	*Cryptosiphonia woodii*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_021	Dark Brown Kelp	4	*Laminaria/Saccharina sp.*	25	
AKP_16_021	Dark Brown Kelp	4	*Monostroma grevillei*	<1	
AKP_16_021	Dark Brown Kelp	4	*Mopalia sp.*		1
AKP_16_021	Dark Brown Kelp	4	*Odonthalia sp.*	1	
AKP_16_021	Dark Brown Kelp	4	*Palmaria hecatensis*	3	
AKP_16_021	Dark Brown Kelp	4	*Palmaria mollis*	10	
AKP_16_021	Dark Brown Kelp	4	*Phycodrys sp.*	30	
AKP_16_021	Dark Brown Kelp	4	*Saccharina sessile*	30	
AKP_16_021	Dark Brown Kelp	4	*Tokidadendron bullatum*	3	
AKP_16_021	Dark Brown Kelp	4	*Ulva sp.*	2	
AKP_16_021	Dark Brown Kelp	5	*Alaria marginata*	20	
AKP_16_021	Dark Brown Kelp	5	*Cryptosiphonia woodii*	2	
AKP_16_021	Dark Brown Kelp	5	*Fucus distichus*	15	
AKP_16_021	Dark Brown Kelp	5	*Halichondria sp.*	20	
AKP_16_021	Dark Brown Kelp	5	*Halosaccion glandiforme*	1	
AKP_16_021	Dark Brown Kelp	5	*Monostroma grevillei*	2	
AKP_16_021	Dark Brown Kelp	5	*Odonthalia sp.*	3	
AKP_16_021	Dark Brown Kelp	5	*Palmaria hecatensis*	2	
AKP_16_021	Dark Brown Kelp	5	*Palmaria mollis*	20	
AKP_16_021	Dark Brown Kelp	5	*Polyostea bipinnata*	1	
AKP_16_021	Dark Brown Kelp	5	*Saccharina sessile*	50	
AKP_16_021	Dark Brown Kelp	5	*Ulva sp.*	<1	
AKP_16_021	Rockweed	1	*Chthamalus dalli*	2	
AKP_16_021	Rockweed	1	*Fucus distichus*	20	
AKP_16_021	Rockweed	1	*Halichondria sp.*	2	
AKP_16_021	Rockweed	1	*Halosaccion glandiforme*	1	
AKP_16_021	Rockweed	1	*Lottia sp.*		6
AKP_16_021	Rockweed	1	*Monostroma grevillei*	10	
AKP_16_021	Rockweed	1	*Neorhodomela aculeata*	30	
AKP_16_021	Rockweed	1	*Odonthalia floccosa*	7	
AKP_16_021	Rockweed	1	*Palmaria callophylloides*	3	
AKP_16_021	Rockweed	1	*Polyostea bipinnata*	10	
AKP_16_021	Rockweed	1	*Soranthera ulvoidea*	<1	
AKP_16_021	Rockweed	1	*Tectura scutum*		8
AKP_16_021	Rockweed	1	*Ulva sp.*	1	
AKP_16_021	Rockweed	2	*Chthamalus dalli*	2	
AKP_16_021	Rockweed	2	*Fucus distichus*	25	
AKP_16_021	Rockweed	2	*Halichondria sp.*	8	
AKP_16_021	Rockweed	2	*Halosaccion glandiforme*	1	
AKP_16_021	Rockweed	2	*Mazzaella parvula*	1	
AKP_16_021	Rockweed	2	*Monostroma grevillei*	2	
AKP_16_021	Rockweed	2	*Odonthalia floccosa*	3	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_021	Rockweed	2	*Palmaria callophylloides*	40	
AKP_16_021	Rockweed	2	*Palmaria hecatensis*	2	
AKP_16_021	Rockweed	2	*Palmaria mollis*	1	
AKP_16_021	Rockweed	2	*Polyostea bipinnata*	5	
AKP_16_021	Rockweed	2	*Pyropria sp.*	1	
AKP_16_021	Rockweed	2	*Semibalanus cariosus*	<1	
AKP_16_021	Rockweed	2	*Tectura scutum*		4
AKP_16_021	Rockweed	2	*Ulva sp.*	5	
AKP_16_021	Rockweed	3	*Acrosiphonia sp.*	1	
AKP_16_021	Rockweed	3	*Fucus distichus*	25	
AKP_16_021	Rockweed	3	*Halichondria sp.*	3	
AKP_16_021	Rockweed	3	*Halosaccion glandiforme*	2	
AKP_16_021	Rockweed	3	*Mazzaella parvula*	1	
AKP_16_021	Rockweed	3	*Monostroma grevillei*	2	
AKP_16_021	Rockweed	3	*Odonthalia floccosa*	7	
AKP_16_021	Rockweed	3	*Palmaria callophylloides*	25	
AKP_16_021	Rockweed	3	*Palmaria hecatensis*	5	
AKP_16_021	Rockweed	3	*Palmaria mollis*	2	
AKP_16_021	Rockweed	3	*Polyostea bipinnata*	2	
AKP_16_021	Rockweed	3	*Tectura scutum*		3
AKP_16_021	Rockweed	3	*Ulva linza*	1	
AKP_16_021	Rockweed	3	*Ulva sp.*	10	
AKP_16_021	Rockweed	4	*Acrosiphonia duriuscula*	<1	
AKP_16_021	Rockweed	4	*Chthamalus dalli*	2	
AKP_16_021	Rockweed	4	*Fucus distichus*	60	
AKP_16_021	Rockweed	4	*Gloiopeltis furcata*	2	
AKP_16_021	Rockweed	4	*Halosaccion glandiforme*	1	
AKP_16_021	Rockweed	4	*Lottia sp.*		8
AKP_16_021	Rockweed	4	*Monostroma grevillei*	5	
AKP_16_021	Rockweed	4	*Neorhodomela aculeata*	8	
AKP_16_021	Rockweed	4	*Odonthalia floccosa*	5	
AKP_16_021	Rockweed	4	*Polyostea bipinnata*	1	
AKP_16_021	Rockweed	4	*Pylaiella sp.*	3	
AKP_16_021	Rockweed	4	*Tectura scutum*		7
AKP_16_021	Rockweed	4	*Ulva sp.*	2	
AKP_16_021	Rockweed	5	*Chthamalus dalli*	<1	
AKP_16_021	Rockweed	5	*Fucus distichus*	15	
AKP_16_021	Rockweed	5	*Halosaccion glandiforme*	3	
AKP_16_021	Rockweed	5	*Lottia sp.*		10
AKP_16_021	Rockweed	5	*Mazzaella parvula*	3	
AKP_16_021	Rockweed	5	*Monostroma grevillei*	5	
AKP_16_021	Rockweed	5	*Odonthalia floccosa*	10	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_021	Rockweed	5	*Palmaria callophylloides*	10	
AKP_16_021	Rockweed	5	*Palmaria hecatensis*	7	
AKP_16_021	Rockweed	5	*Palmaria mollis*	6	
AKP_16_021	Rockweed	5	*Polyostea bipinnata*	2	
AKP_16_021	Rockweed	5	*Pylaiella sp.*	1	
AKP_16_021	Rockweed	5	*Tectura scutum*		3
AKP_16_021	Rockweed	5	*Ulva sp.*	7	
AKP_16_022	Barnacle	1	*Chthamalus dalli*	20	
AKP_16_022	Barnacle	1	*Littorina sitkana*		35
AKP_16_022	Barnacle	1	*Lottia digitalis*		1
AKP_16_022	Barnacle	1	*Lottia pelta*		1
AKP_16_022	Barnacle	1	*Neorhodomela oregona*	<1	
AKP_16_022	Barnacle	1	*Nucella ostrina*		3
AKP_16_022	Barnacle	1	*Semibalanus balanoides*	10	
AKP_16_022	Barnacle	1	*Tectura scutum*		10
AKP_16_022	Barnacle	1	*Traskorchestia traskiana*		15
AKP_16_022	Barnacle	2	*Chthamalus dalli*	5	
AKP_16_022	Barnacle	2	*Littorina sitkana*		55
AKP_16_022	Barnacle	2	*Lottia pelta*		2
AKP_16_022	Barnacle	2	*Metridium senile*		2
AKP_16_022	Barnacle	2	*Mytilus trossulus*	<1	
AKP_16_022	Barnacle	2	*Neorhodomela oregona*	5	
AKP_16_022	Barnacle	2	*Nucella ostrina*	5	
AKP_16_022	Barnacle	2	*Semibalanus balanoides*	15	
AKP_16_022	Barnacle	2	*Tectura scutum*		2
AKP_16_022	Barnacle	3	*Balanamorpha*	<1	
AKP_16_022	Barnacle	3	*Chthamalus dalli*	15	
AKP_16_022	Barnacle	3	*Littorina sitkana*		60
AKP_16_022	Barnacle	3	*Lottia pelta*		4
AKP_16_022	Barnacle	3	*Metridium senile*		1
AKP_16_022	Barnacle	3	*Nucella ostrina*		5
AKP_16_022	Barnacle	3	*Pentidotea wosnesenskii*		3
AKP_16_022	Barnacle	3	*Tectura persona*		1
AKP_16_022	Barnacle	3	*Tectura scutum*		6
AKP_16_022	Bleached Red Algae	1	*Fucus distichus*	15	
AKP_16_022	Bleached Red Algae	1	*Halosaccion firmum*	<1	
AKP_16_022	Bleached Red Algae	1	*Halosaccion glandiforme*	1	
AKP_16_022	Bleached Red Algae	1	*Mastocarpus pacificus*	2	
AKP_16_022	Bleached Red Algae	1	*Monostroma grevillei*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_022	Bleached Red Algae	1	*Odonthalia floccosa*	3	
AKP_16_022	Bleached Red Algae	1	*Palmaria mollis*	7	
AKP_16_022	Bleached Red Algae	1	*Polyostea bipinnata*	4	
AKP_16_022	Bleached Red Algae	1	*Saccharina sessile*	15	
AKP_16_022	Bleached Red Algae	1	*Ulva linza*	2	
AKP_16_022	Bleached Red Algae	1	*Ulva sp.*	3	
AKP_16_022	Bleached Red Algae	1	*Wildemania variegata*	1	
AKP_16_022	Bleached Red Algae	2	*Ahnfeltia fastigiata*	1	
AKP_16_022	Bleached Red Algae	2	*Bryozoa*	<1	
AKP_16_022	Bleached Red Algae	2	*Fucus distichus*	2	
AKP_16_022	Bleached Red Algae	2	*Halosaccion firmum*	<1	
AKP_16_022	Bleached Red Algae	2	*Halosaccion glandiforme*	3	
AKP_16_022	Bleached Red Algae	2	*Lottia pelta*		2
AKP_16_022	Bleached Red Algae	2	*Monostroma grevillei*	2	
AKP_16_022	Bleached Red Algae	2	*Odonthalia floccosa*	20	
AKP_16_022	Bleached Red Algae	2	*Palmaria mollis*	40	
AKP_16_022	Bleached Red Algae	2	*Polysiphonia sp.*	10	
AKP_16_022	Bleached Red Algae	2	*Polyostea bipinnata*	3	
AKP_16_022	Bleached Red Algae	2	*Tokidadendron bullatum*	1	
AKP_16_022	Bleached Red Algae	3	*Ahnfeltia fastigiata*	1	
AKP_16_022	Bleached Red Algae	3	*Corallinales*	<1	
AKP_16_022	Bleached Red Algae	3	*Halosaccion glandiforme*	2	
AKP_16_022	Bleached Red Algae	3	*Odonthalia floccosa*	10	
AKP_16_022	Bleached Red Algae	3	*Pagurus hirsutiusculus*		2
AKP_16_022	Bleached Red Algae	3	*Palmaria mollis*	20	
AKP_16_022	Bleached Red Algae	3	*Petalonia fascia*	2	
AKP_16_022	Bleached Red Algae	3	*Polysiphonia sp.*	30	
AKP_16_022	Bleached Red Algae	3	*Polyostea bipinnata*	10	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_022	Bleached Red Algae	3	*Tonicella lineata*		4
AKP_16_022	Bleached Red Algae	4	*Ahnfeltia fastigiata*	1	
AKP_16_022	Bleached Red Algae	4	*Cryptosiphonia woodii*	1	
AKP_16_022	Bleached Red Algae	4	*Fucus distichus*	5	
AKP_16_022	Bleached Red Algae	4	*Halosaccion glandiforme*	3	
AKP_16_022	Bleached Red Algae	4	*Mastocarpus spp.*	1	
AKP_16_022	Bleached Red Algae	4	*Monostroma grevillei*	1	
AKP_16_022	Bleached Red Algae	4	*Odonthalia floccosa*	2	
AKP_16_022	Bleached Red Algae	4	*Palmaria hecatensis*	5	
AKP_16_022	Bleached Red Algae	4	*Palmaria mollis*	80	
AKP_16_022	Bleached Red Algae	4	*Polysiphonia sp.*	2	
AKP_16_022	Bleached Red Algae	4	*Polyostea bipinnata*	3	
AKP_16_022	Bleached Red Algae	4	*Tokidadendron bullatum*	3	
AKP_16_022	Bleached Red Algae	4	*Ulva sp.*	3	
AKP_16_022	Bleached Red Algae	4	*Ulva sp.*	4	
AKP_16_022	Bleached Red Algae	5	*Corallinales*	1	
AKP_16_022	Bleached Red Algae	5	*Cryptosiphonia woodii*	2	
AKP_16_022	Bleached Red Algae	5	*Fucus distichus*	7	
AKP_16_022	Bleached Red Algae	5	*Halichondria sp.*	3	
AKP_16_022	Bleached Red Algae	5	*Halosaccion firmum*	2	
AKP_16_022	Bleached Red Algae	5	*Halosaccion glandiforme*	2	
AKP_16_022	Bleached Red Algae	5	*Mastocarpus spp.*	2	
AKP_16_022	Bleached Red Algae	5	*Monostroma grevillei*	7	
AKP_16_022	Bleached Red Algae	5	*Odonthalia floccosa*	3	
AKP_16_022	Bleached Red Algae	5	*Palmaria mollis*	60	
AKP_16_022	Bleached Red Algae	5	*Polysiphonia sp.*	5	
AKP_16_022	Bleached Red Algae	5	*Polyostea bipinnata*	10	
AKP_16_022	Rockweed	1	*Chthamalus dalli*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_022	Rockweed	1	*Cryptosiphonia woodii*	5	
AKP_16_022	Rockweed	1	*Fucus distichus*	60	
AKP_16_022	Rockweed	1	*Lottia pelta*		2
AKP_16_022	Rockweed	1	*Melanosiphon intestinalis*	1	
AKP_16_022	Rockweed	1	*Monostroma grevillei*	2	
AKP_16_022	Rockweed	1	*Neorhodomela aculeata*	5	
AKP_16_022	Rockweed	1	*Scytosiphon sp.*	1	
AKP_16_022	Rockweed	1	*Semibalanus cariosus*	<1	
AKP_16_022	Rockweed	1	*Ulva sp.*	5	
AKP_16_022	Rockweed	2	*Chthamalus dalli*	<1	
AKP_16_022	Rockweed	2	*Cryptosiphonia woodii*	3	
AKP_16_022	Rockweed	2	*Fucus distichus*	2	
AKP_16_022	Rockweed	2	*Halosaccion glandiforme*	2	
AKP_16_022	Rockweed	2	*Monostroma grevillei*	10	
AKP_16_022	Rockweed	2	*Odonthalia floccosa*	25	
AKP_16_022	Rockweed	2	*Palmaria mollis*	20	
AKP_16_022	Rockweed	2	*Polysiphonia sp.*	15	
AKP_16_022	Rockweed	2	*Polyostea bipinnata*	10	
AKP_16_022	Rockweed	2	*Scytosiphon sp.*	2	
AKP_16_022	Rockweed	2	*Ulva sp.*	5	
AKP_16_022	Rockweed	3	*Chthamalus dalli*	<1	
AKP_16_022	Rockweed	3	*Fucus distichus*	20	
AKP_16_022	Rockweed	3	*Halosaccion glandiforme*	1	
AKP_16_022	Rockweed	3	*Monostroma grevillei*	20	
AKP_16_022	Rockweed	3	*Neorhodomela aculeata*	present	
AKP_16_022	Rockweed	3	*Odonthalia floccosa*	present	
AKP_16_022	Rockweed	3	*Polysiphonia sp.*	10	
AKP_16_022	Rockweed	3	*Polyostea bipinnata*	10	
AKP_16_022	Rockweed	3	*Pylaiella sp.*	2	
AKP_16_022	Rockweed	3	*Ulva sp.*	5	
AKP_16_022	Rockweed	3	*Wildemania variegata*	2	
AKP_16_022	Rockweed	4	*Bryozoa*	2	
AKP_16_022	Rockweed	4	*Chthamalus dalli*	<1	
AKP_16_022	Rockweed	4	*Fucus distichus*	20	
AKP_16_022	Rockweed	4	*Mastocarpus spp.*	1	
AKP_16_022	Rockweed	4	*Monostroma grevillei*	3	
AKP_16_022	Rockweed	4	*Odonthalia floccosa*	5	
AKP_16_022	Rockweed	4	*Pagurus hirsutiusculus*		2
AKP_16_022	Rockweed	4	*Polysiphonia sp.*	3	
AKP_16_022	Rockweed	4	*Polyostea bipinnata*	5	
AKP_16_022	Rockweed	4	*Saccharina groenlandica*	30	
AKP_16_023	Alaria	1	*Acrosiphonia coalita*	5	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_023	Alaria	1	*Alaria marginata*	70	
AKP_16_023	Alaria	1	*Cryptosiphonia woodii*	1	
AKP_16_023	Alaria	1	*Halosaccion glandiforme*	2	
AKP_16_023	Alaria	1	*Katharina tunicata*	1	
AKP_16_023	Alaria	1	*Lottia pelta*		2
AKP_16_023	Alaria	1	*Mastocarpus latissimus*	1	
AKP_16_023	Alaria	1	*Monostroma grevillei*	3	
AKP_16_023	Alaria	1	*Palmaria callophylloides*	present	
AKP_16_023	Alaria	1	*Palmaria hecatensis*	50	
AKP_16_023	Alaria	1	*Polyostea bipinnata*	3	
AKP_16_023	Alaria	1	*Semibalanus cariosus*	3	
AKP_16_023	Alaria	1	*Tectura scutum*		3
AKP_16_023	Alaria	1	*Tokidadendron bullatum*	2	
AKP_16_023	Alaria	2	*Acrosiphonia coalita*	3	
AKP_16_023	Alaria	2	*Alaria marginata*	95	
AKP_16_023	Alaria	2	*Antithamnionella sp.*	<1	
AKP_16_023	Alaria	2	*Chthamalus dalli*	<1	
AKP_16_023	Alaria	2	*Corallinales*	1	
AKP_16_023	Alaria	2	*Corallinales*	3	
AKP_16_023	Alaria	2	*Mastocarpus spp.*	<1	
AKP_16_023	Alaria	2	*Palmaria hecatensis*	30	
AKP_16_023	Alaria	2	*Polyostea bipinnata*	1	
AKP_16_023	Alaria	2	*Semibalanus cariosus*	3	
AKP_16_023	Alaria	2	*Tokidadendron bullatum*	1	
AKP_16_023	Alaria	2	*Ulva sp.*	2	
AKP_16_023	Alaria	3	*Alaria marginata*	90	
AKP_16_023	Alaria	3	*Ascidiacea*	<1	
AKP_16_023	Alaria	3	*Bryozoa*	<1	
AKP_16_023	Alaria	3	*Corallinales*	40	
AKP_16_023	Alaria	3	*Corallinales*	10	
AKP_16_023	Alaria	3	*Katharina tunicata*		4
AKP_16_023	Alaria	3	*Metridium senile*		3
AKP_16_023	Alaria	3	*Polyostea bipinnata*	2	
AKP_16_023	Alaria	3	*Spirorbis sp.*	<1	
AKP_16_023	Alaria	3	*Ulva sp.*	<1	
AKP_16_023	Alaria	4	*Acrosiphonia coalita*	5	
AKP_16_023	Alaria	4	*Alaria marginata*	100	
AKP_16_023	Alaria	4	*Bryozoa*	3	
AKP_16_023	Alaria	4	*Mastocarpus spp.*	2	
AKP_16_023	Alaria	4	*Odonthalia floccosa*	15	
AKP_16_023	Alaria	4	*Palmaria hecatensis*	20	
AKP_16_023	Alaria	4	*Polyostea bipinnata*	3	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_023	Alaria	4	*Semibalanus cariosus*	2	
AKP_16_023	Alaria	4	*Tectura scutum*		5
AKP_16_023	Alaria	4	*Tokidadendron bullatum*	5	
AKP_16_023	Alaria	4	*Ulva sp.*	2	
AKP_16_023	Alaria	4	*Ulvaria sp.*	1	
AKP_16_023	Alaria	5	*Acrosiphonia coalita*	1	
AKP_16_023	Alaria	5	*Alaria marginata*	90	
AKP_16_023	Alaria	5	*Bryozoa*	3	
AKP_16_023	Alaria	5	*Chthamalus dalli*	<1	
AKP_16_023	Alaria	5	*Corallinales*	2	
AKP_16_023	Alaria	5	*Haliclona sp.*	2	
AKP_16_023	Alaria	5	*Mastocarpus spp.*	<1	
AKP_16_023	Alaria	5	*Odonthalia floccosa*	2	
AKP_16_023	Alaria	5	*Palmaria hecatensis*	15	
AKP_16_023	Alaria	5	*Pholidae*		1
AKP_16_023	Alaria	5	*Polyostea bipinnata*	2	
AKP_16_023	Alaria	5	*Semibalanus cariosus*	5	
AKP_16_023	Alaria	5	*Tectura scutum*		6
AKP_16_023	Alaria	5	*Ulva sp.*	1	
AKP_16_023	Rockweed	1	*Chthamalus dalli*	5	
AKP_16_023	Rockweed	1	*Endocladia muricata*	1	
AKP_16_023	Rockweed	1	*Fucus distichus*	50	
AKP_16_023	Rockweed	1	*Littorina sitkana*		20
AKP_16_023	Rockweed	1	*Lottia pelta*		3
AKP_16_023	Rockweed	1	*Lottia sp.*		25
AKP_16_023	Rockweed	1	*Paranemertes peregrina*		2
AKP_16_023	Rockweed	1	*Pyropria sp.*	6	
AKP_16_023	Rockweed	1	*Pyropria sp.*	5	
AKP_16_023	Rockweed	1	*Semibalanus cariosus*	10	
AKP_16_023	Rockweed	1	*Spirorbidae*	<1	
AKP_16_023	Rockweed	1	*Tectura scutum*		2
AKP_16_023	Rockweed	2	*Chthamalus dalli*	5	
AKP_16_023	Rockweed	2	*Endocladia muricata*	1	
AKP_16_023	Rockweed	2	*Fucus distichus*	70	
AKP_16_023	Rockweed	2	*Halosaccion glandiforme*	2	
AKP_16_023	Rockweed	2	*Mastocarpus spp.*	2	
AKP_16_023	Rockweed	2	*Monostroma grevillei*	1	
AKP_16_023	Rockweed	2	*Palmaria hecatensis*	<1	
AKP_16_023	Rockweed	2	*Polysiphonia sp.*	<1	
AKP_16_023	Rockweed	2	*Pyropria sp.*	8	
AKP_16_023	Rockweed	2	*Semibalanus cariosus*	5	
AKP_16_023	Rockweed	2	*Tectura scutum*		6

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_023	Rockweed	2	*Ulva sp.*	2	
AKP_16_023	Rockweed	3	*Acrosiphonia coalita*	1	
AKP_16_023	Rockweed	3	*Fucus distichus*	10	
AKP_16_023	Rockweed	3	*Halosaccion glandiforme*	8	
AKP_16_023	Rockweed	3	*Lottia sp.*		15
AKP_16_023	Rockweed	3	*Mastocarpus sp. (Petrocelis phase)*	2	
AKP_16_023	Rockweed	3	*Melanosiphon intestinalis*	<1	
AKP_16_023	Rockweed	3	*Monostroma grevillei*	3	
AKP_16_023	Rockweed	3	*Palmaria callophylloides*	1	
AKP_16_023	Rockweed	3	*Palmaria hecatensis*	1	
AKP_16_023	Rockweed	3	*Pyropria sp.*	20	
AKP_16_023	Rockweed	3	*Pyropria sp.*	25	
AKP_16_023	Rockweed	3	*Semibalanus cariosus*	5	
AKP_16_023	Rockweed	3	*Tectura scutum*		5
AKP_16_023	Rockweed	3	*Ulva sp.*	2	
AKP_16_023	Rockweed	4	*Acrosiphonia coalita*	2	
AKP_16_023	Rockweed	4	*Chthamalus dalli*	<1	
AKP_16_023	Rockweed	4	*Fucus distichus*	80	
AKP_16_023	Rockweed	4	*Halosaccion glandiforme*	2	
AKP_16_023	Rockweed	4	*Lottia sp.*		12
AKP_16_023	Rockweed	4	*Mastocarpus spp.*	2	
AKP_16_023	Rockweed	4	*Monostroma grevillei*	present	
AKP_16_023	Rockweed	4	*Palmaria hecatensis*	5	
AKP_16_023	Rockweed	4	*Pyropria sp.*	3	
AKP_16_023	Rockweed	4	*Pyropria sp.*	7	
AKP_16_023	Rockweed	4	*Semibalanus cariosus*	<1	
AKP_16_023	Rockweed	4	*Tectura scutum*		5
AKP_16_023	Rockweed	4	*Ulva sp.*	2	
AKP_16_023	Rockweed	5	*Chthamalus dalli*	<1	
AKP_16_023	Rockweed	5	*Fucus distichus*	10	
AKP_16_023	Rockweed	5	*Halosaccion glandiforme*	2	
AKP_16_023	Rockweed	5	*Lottia pelta*	present	
AKP_16_023	Rockweed	5	*Lottia sp.*		6
AKP_16_023	Rockweed	5	*Mastocarpus spp.*	present	
AKP_16_023	Rockweed	5	*Monostroma grevillei*	<1	
AKP_16_023	Rockweed	5	*Palmaria callophylloides*	15	
AKP_16_023	Rockweed	5	*Paranemertes peregrina*		1
AKP_16_023	Rockweed	5	*Polyostea bipinnata*	2	
AKP_16_023	Rockweed	5	*Pyropria sp.*	10	
AKP_16_023	Rockweed	5	*Semibalanus cariosus*	3	
AKP_16_023	Rockweed	5	*Tectura scutum*	present	
AKP_16_023	Rockweed	5	*Ulva sp.*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_024	Alaria	1	*Acrosiphonia coalita*	1	
AKP_16_024	Alaria	1	*Fucus distichus*	5	
AKP_16_024	Alaria	1	*Katharina tunicata*	present	
AKP_16_024	Alaria	1	*Mytilus trossulus*	<1	
AKP_16_024	Alaria	1	*Neorhodomela aculeata*	2	
AKP_16_024	Alaria	1	*Odonthalia floccosa f. comosa*	50	
AKP_16_024	Alaria	1	*Semibalanus cariosus*	80	
AKP_16_024	Alaria	1	*Ulvaria sp.*	1	
AKP_16_024	Alaria	2	*Alaria marginata*	present	
AKP_16_024	Alaria	2	*Chthamalus dalli*	<1	
AKP_16_024	Alaria	2	*Coilodesme sp.*	2	
AKP_16_024	Alaria	2	*Corallinales*	15	
AKP_16_024	Alaria	2	*Halosaccion glandiforme*	<1	
AKP_16_024	Alaria	2	*Katharina tunicata*		2
AKP_16_024	Alaria	2	*Odonthalia floccosa*	5	
AKP_16_024	Alaria	2	*Palmaria hecatensis*	<1	
AKP_16_024	Alaria	2	*Palmaria mollis*	1	
AKP_16_024	Alaria	2	*Pyropria sp.*	<1	
AKP_16_024	Alaria	2	*Semibalanus cariosus*	<1	
AKP_16_024	Alaria	2	*Ulvaria sp.*	10	
AKP_16_024	Alaria	3	*Acrosiphonia coalita*	15	
AKP_16_024	Alaria	3	*Alaria marginata*	10	
AKP_16_024	Alaria	3	*Analipus japonicus*	<1	
AKP_16_024	Alaria	3	*Bryozoa*	<1	
AKP_16_024	Alaria	3	*Henricia leviuscula*		1
AKP_16_024	Alaria	3	*Katharina tunicata*		2
AKP_16_024	Alaria	3	*Leptasterias sp.*		2
AKP_16_024	Alaria	3	*Mazzaella sp.*	1	
AKP_16_024	Alaria	3	*Neorhodomela aculeata*	10	
AKP_16_024	Alaria	3	*Odonthalia floccosa*	20	
AKP_16_024	Alaria	3	*Palmaria hecatensis*	1	
AKP_16_024	Alaria	3	*Pugettia sp.*		1
AKP_16_024	Alaria	3	*Semibalanus cariosus*	<1	
AKP_16_024	Alaria	3	*Soranthera ulvoidea*	<1	
AKP_16_024	Alaria	3	*Tectura scutum*		1
AKP_16_024	Alaria	3	*Tonicella lineata*		2
AKP_16_024	Alaria	3	*Ulvaria sp.*	3	
AKP_16_024	Alaria	4	*Acrosiphonia coalita*	3	
AKP_16_024	Alaria	4	*Alaria marginata*	75	
AKP_16_024	Alaria	4	*Balanamorpha*	<1	
AKP_16_024	Alaria	4	*Bryozoa*	<1	
AKP_16_024	Alaria	4	*Corallinales*	1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_024	Alaria	4	*Corallinales*	5	
AKP_16_024	Alaria	4	*Fucus distichus*	5	
AKP_16_024	Alaria	4	*Katharina tunicata*		2
AKP_16_024	Alaria	4	*Odonthalia floccosa*	20	
AKP_16_024	Alaria	4	*Palmaria hecatensis*	2	
AKP_16_024	Alaria	4	*Tectura scutum*		12
AKP_16_024	Alaria	4	*Ulvaria sp.*	<1	
AKP_16_024	Red Algae	1	*Acrosiphonia coalita*	2	
AKP_16_024	Red Algae	1	*Bryozoa*	2	
AKP_16_024	Red Algae	1	*Corallinales*	<1	
AKP_16_024	Red Algae	1	*Corallinales*	20	
AKP_16_024	Red Algae	1	*Corallinales*	1	
AKP_16_024	Red Algae	1	*Cryptosiphonia woodii*	1	
AKP_16_024	Red Algae	1	*Fucus distichus*	10	
AKP_16_024	Red Algae	1	*Halosaccion glandiforme*	1	
AKP_16_024	Red Algae	1	*Halosaccion glandiforme*	<1	
AKP_16_024	Red Algae	1	*Katharina tunicata*		2
AKP_16_024	Red Algae	1	*Katharina tunicata*		3
AKP_16_024	Red Algae	1	*Mastocarpus spp.*	<1	
AKP_16_024	Red Algae	1	*Neorhodomela aculeata*	20	
AKP_16_024	Red Algae	1	*Odonthalia floccosa*	25	
AKP_16_024	Red Algae	1	*Odonthalia floccosa*	30	
AKP_16_024	Red Algae	1	*Pagurus hirsutiusculus*		3
AKP_16_024	Red Algae	1	*Peltodoris nobilis*		1
AKP_16_024	Red Algae	1	*Phycodrys sp.*	<1	
AKP_16_024	Red Algae	1	*Polyostea bipinnata*	<1	
AKP_16_024	Red Algae	1	*Semibalanus cariosus*	2	
AKP_16_024	Red Algae	1	*Semibalanus cariosus*	<1	
AKP_16_024	Red Algae	1	*Soranthera ulvoidea*	1	
AKP_16_024	Red Algae	1	*Tectura scutum*		4
AKP_16_024	Red Algae	1	*Tectura scutum*		2
AKP_16_024	Red Algae	1	*Tokidadendron bullatum*	<1	
AKP_16_024	Red Algae	1	*Ulva sp.*	5	
AKP_16_024	Red Algae	1	*Ulvaria sp.*	1	
AKP_16_024	Red Algae	1	*Ulvaria sp.*	10	
AKP_16_024	Red Algae	2	*Acrosiphonia coalita*	5	
AKP_16_024	Red Algae	2	*Cryptosiphonia woodii*	<1	
AKP_16_024	Red Algae	2	*Fucus distichus*	10	
AKP_16_024	Red Algae	2	*Halosaccion glandiforme*	25	
AKP_16_024	Red Algae	2	*Monostroma grevillei*	5	
AKP_16_024	Red Algae	2	*Neorhodomela oregona*	5	
AKP_16_024	Red Algae	2	*Odonthalia floccosa*	3	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_024	Red Algae	2	*Palmaria callophylloides*	3	
AKP_16_024	Red Algae	2	*Pylaiella sp.*	1	
AKP_16_024	Red Algae	2	*Semibalanus cariosus*	60	
AKP_16_024	Red Algae	2	*Ulva sp.*	20	
AKP_16_024	Red Algae	3	*Alaria marginata*	20	
AKP_16_024	Red Algae	3	*Chthamalus dalli*	90	
AKP_16_024	Red Algae	3	*Cryptosiphonia woodii*	5	
AKP_16_024	Red Algae	3	*Fucus distichus*	5	
AKP_16_024	Red Algae	3	*Halosaccion glandiforme*	20	
AKP_16_024	Red Algae	3	*Mastocarpus spp.*	1	
AKP_16_024	Red Algae	3	*Microcladia sp.*	3	
AKP_16_024	Red Algae	3	*Monostroma grevillei*	2	
AKP_16_024	Red Algae	3	*Neorhodomela aculeata*	5	
AKP_16_024	Red Algae	3	*Odonthalia floccosa*	3	
AKP_16_024	Red Algae	3	*Palmaria mollis*	3	
AKP_16_024	Red Algae	3	*Semibalanus cariosus*	10	
AKP_16_024	Red Algae	3	*Soranthera ulvoidea*	<1	
AKP_16_024	Red Algae	3	*Ulva sp.*	3	
AKP_16_024	Red Algae	4	*Bryozoa*	<1	
AKP_16_024	Red Algae	4	*Corallinales*	<1	
AKP_16_024	Red Algae	4	*Corallinales*	<1	
AKP_16_024	Red Algae	4	*Fucus distichus*	15	
AKP_16_024	Red Algae	4	*Halosaccion glandiforme*	25	
AKP_16_024	Red Algae	4	*Katharina tunicata*		1
AKP_16_024	Red Algae	4	*Monostroma grevillei*	2	
AKP_16_024	Red Algae	4	*Neorhodomela aculeata*	3	
AKP_16_024	Red Algae	4	*Odonthalia floccosa*	5	
AKP_16_024	Red Algae	4	*Palmaria callophylloides*	2	
AKP_16_024	Red Algae	4	*Palmaria mollis*	1	
AKP_16_024	Red Algae	4	*Semibalanus cariosus*	10	
AKP_16_024	Red Algae	4	*Ulva sp.*	10	
AKP_16_024	Red Algae	5	*Acrosiphonia coalita*	3	
AKP_16_024	Red Algae	5	*Chthamalus dalli*	2	
AKP_16_024	Red Algae	5	*Corallinales*	1	
AKP_16_024	Red Algae	5	*Corallinales*	<1	
AKP_16_024	Red Algae	5	*Halosaccion glandiforme*	20	
AKP_16_024	Red Algae	5	*Katharina tunicata*		1
AKP_16_024	Red Algae	5	*Leptasterias sp.*		1
AKP_16_024	Red Algae	5	*Monostroma grevillei v ar. Grevillei*	5	
AKP_16_024	Red Algae	5	*Neorhodomela aculeata*	25	
AKP_16_024	Red Algae	5	*Pagurus sp.*		1
AKP_16_024	Red Algae	5	*Polyostea bipinnata*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_024	Red Algae	5	*Pugettia sp.*		1
AKP_16_024	Red Algae	5	*Pylaiella sp.*	3	
AKP_16_024	Red Algae	5	*Semibalanus cariosus*	3	
AKP_16_024	Red Algae	5	*Ulva sp.*	5	
AKP_16_024	Rockweed	1	*Chthamalus dalli*	70	
AKP_16_024	Rockweed	1	*Fucus distichus*	80	
AKP_16_024	Rockweed	1	*Halosaccion glandiforme*	<1	
AKP_16_024	Rockweed	1	*Katharina tunicata*		1
AKP_16_024	Rockweed	1	*Metridium senile*		1
AKP_16_024	Rockweed	1	*Pentidotea wosnesenskii*		1
AKP_16_024	Rockweed	1	*Pyropia abbottiae*	10	
AKP_16_024	Rockweed	1	*Tectura scutum*		5
AKP_16_024	Rockweed	1	*Trichotropis cancellata*		17
AKP_16_024	Rockweed	1	*Ulva sp.*	<1	
AKP_16_024	Rockweed	2	*Chthamalus dalli*	70	
AKP_16_024	Rockweed	2	*Corallinales*	5	
AKP_16_024	Rockweed	2	*Fucus distichus*	70	
AKP_16_024	Rockweed	2	*Halosaccion glandiforme*	1	
AKP_16_024	Rockweed	2	*Mastocarpus spp.*	1	
AKP_16_024	Rockweed	2	*Neorhodomela oregona*	5	
AKP_16_024	Rockweed	2	*Pentidotea wosnesenskii*		1
AKP_16_024	Rockweed	2	*Pyropia abbottiae*	20	
AKP_16_024	Rockweed	2	*Semibalanus cariosus*	<1	
AKP_16_024	Rockweed	2	*Tectura scutum*		2
AKP_16_024	Rockweed	2	*Ulva sp.*	5	
AKP_16_024	Rockweed	3	*Chthamalus dalli*	20	
AKP_16_024	Rockweed	3	*Fucus distichus*	30	
AKP_16_024	Rockweed	3	*Halichondria panicea*	<1	
AKP_16_024	Rockweed	3	*Halosaccion glandiforme*	<1	
AKP_16_024	Rockweed	3	*Lottia pelta*		1
AKP_16_024	Rockweed	3	*Pagurus hirsutiusculus*		2
AKP_16_024	Rockweed	3	*Pentidotea wosnesenskii*		1
AKP_16_024	Rockweed	3	*Pyropia abbottiae*	25	
AKP_16_024	Rockweed	3	*Semibalanus cariosus*	<1	
AKP_16_024	Rockweed	3	*Tectura scutum*		3
AKP_16_024	Rockweed	3	*Traskorchestia traskiana*		100
AKP_16_024	Rockweed	3	*Ulva sp.*	5	
AKP_16_025	Green Algae	1	*Acrosiphonia coalita*	90	
AKP_16_025	Green Algae	1	*Bacillariophyta*	60	
AKP_16_025	Green Algae	1	*Chthamalus dalli*	<1	
AKP_16_025	Green Algae	1	*Clathromorphum sp.*	2	
AKP_16_025	Green Algae	1	*Coilodesme sp.*	<1	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_025	Green Algae	1	*Halosaccion glandiforme*	<1	
AKP_16_025	Green Algae	1	*Monostroma grevillei*	3	
AKP_16_025	Green Algae	1	*Neorhodomela aculeata*	<1	
AKP_16_025	Green Algae	2	*Acrosiphonia coalita*	15	
AKP_16_025	Green Algae	2	*Bacillariophyta*	15	
AKP_16_025	Green Algae	2	*Monostroma grevillei*	15	
AKP_16_025	Green Algae	2	*Wildemania variegata*	10	
AKP_16_025	Green Algae	3	*Acrosiphonia coalita*	90	
AKP_16_025	Green Algae	3	*Bacillariophyta*	50	
AKP_16_025	Green Algae	4	*Acrosiphonia coalita*	50	
AKP_16_025	Green Algae	4	*Monostroma grevillei*	8	
AKP_16_025	Green Algae	4	*Wildemania variegata*	25	
AKP_16_025	Green Algae	5	*Acrosiphonia coalita*	2	
AKP_16_025	Green Algae	5	*Coilodesme sp.*	<1	
AKP_16_025	Green Algae	5	*Halosaccion glandiforme*	<1	
AKP_16_025	Green Algae	5	*Monostroma grevillei*	5	
AKP_16_025	Green Algae	5	*Neorhodomela oregona*	60	
AKP_16_025	Green Algae	5	*Polyostea bipinnata*	5	
AKP_16_025	Green Algae	5	*Wildemania variegata*	3	
AKP_16_025	Green Algae	6	*Acrosiphonia coalita*	1	
AKP_16_025	Green Algae	6	*Alaria marginata*	2	
AKP_16_025	Green Algae	6	*Coilodesme sp.*	2	
AKP_16_025	Green Algae	6	*Halosaccion glandiforme*	1	
AKP_16_025	Green Algae	6	*Monostroma grevillei*	20	
AKP_16_025	Green Algae	6	*Neorhodomela aculeata*	20	
AKP_16_025	Green Algae	6	*Wildemania variegata*	1	
AKP_16_025	Green Algae	7	*Alaria marginata*	<1	
AKP_16_025	Green Algae	7	*Coilodesme sp.*	<1	
AKP_16_025	Green Algae	7	*Halosaccion glandiforme*	<1	
AKP_16_025	Green Algae	7	*Littorina sitkana*		2
AKP_16_025	Green Algae	7	*Monostroma grevillei*	5	
AKP_16_025	Green Algae	7	*Neorhodomela aculeata*	80	
AKP_16_025	Green Algae	7	*Wildemania variegata*	<1	
AKP_16_025	Green Algae	8	*Acrosiphonia coalita*	2	
AKP_16_025	Green Algae	8	*Alaria marginata*	1	
AKP_16_025	Green Algae	8	*Cryptosiphonia woodii*	1	
AKP_16_025	Green Algae	8	*Dumontia alaskana*	<1	
AKP_16_025	Green Algae	8	*Halosaccion firmum*	<1	
AKP_16_025	Green Algae	8	*Halosaccion glandiforme*	<1	
AKP_16_025	Green Algae	8	*Littorina sitkana*		3
AKP_16_025	Green Algae	8	*Monostroma grevillei*	40	
AKP_16_025	Green Algae	8	*Neorhodomela aculeata*	80	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_025	Green Algae	8	*Soranthera ulvoidea*	<1	
AKP_16_025	Green Algae	9	*Alaria marginata*	2	
AKP_16_025	Green Algae	9	*Corallinales*	<1	
AKP_16_025	Green Algae	9	*Cryptosiphonia woodii*	<1	
AKP_16_025	Green Algae	9	*Littorina sitkana*		8
AKP_16_025	Green Algae	9	*Monostroma grevillei*	15	
AKP_16_025	Green Algae	9	*Neorhodomela aculeata*	60	
AKP_16_025	Green Algae	9	*Polyostea bipinnata*	2	
AKP_16_025	Green Algae	9	*Scytosiphon sp.*	<1	
AKP_16_025	Green Algae	9	*Wildemania variegata*	3	
AKP_16_025	Surf Grass	1	*Clathromorphum sp.*	5	
AKP_16_025	Surf Grass	1	*Lirabuccinum dirum*		1
AKP_16_025	Surf Grass	1	*Margarites pupillus*		10
AKP_16_025	Surf Grass	1	*Modiolus modiolus*		1
AKP_16_025	Surf Grass	1	*Pagurus sp.*		2
AKP_16_025	Surf Grass	1	*Phyllospadix sp.*	100	
AKP_16_025	Surf Grass	2	*Corallinales*	1	
AKP_16_025	Surf Grass	2	*Lirabuccinum dirum*		2
AKP_16_025	Surf Grass	2	*Margarites pupillus*		3
AKP_16_025	Surf Grass	2	*Modiolus modiolus*		1
AKP_16_025	Surf Grass	2	*Phyllospadix sp.*	100	
AKP_16_025	Surf Grass	2	*Trichotropis cancellata*		2
AKP_16_025	Surf Grass	3	*Alaria marginata*	<1	
AKP_16_025	Surf Grass	3	*Corallinales*	2	
AKP_16_025	Surf Grass	3	*Corallinales*	2	
AKP_16_025	Surf Grass	3	*Halichondria sp.*	2	
AKP_16_025	Surf Grass	3	*Lirabuccinum dirum*		14
AKP_16_025	Surf Grass	3	*Margarites pupillus*		1
AKP_16_025	Surf Grass	3	*Modiolus modiolus*		1
AKP_16_025	Surf Grass	3	*Phyllospadix serrulatus*	100	
AKP_16_025	Surf Grass	3	*Trichotropis cancellata*		5
AKP_16_025V	Alaria	1	*Alaria marginata*	25	
AKP_16_025V	Alaria	1	*Corallinales*	10	
AKP_16_025V	Alaria	1	*Lottia sp.*	10	
AKP_16_025V	Alaria	1	*Odonthalia sp.*	5	
AKP_16_025V	Alaria	1	*Polysiphonia sp.*	40	
AKP_16_025V	Alaria	1	*Polyostea bipinnata*	40	
AKP_16_025V	Alaria	1	*Semibalanus cariosus*	3	
AKP_16_025V	Alaria	1	*Ulvaria sp.*	5	
AKP_16_025V	Alaria	2	*Alaria marginata*	75	
AKP_16_025V	Alaria	2	*Dumontia alaskana*	1	
AKP_16_025V	Alaria	2	*Odonthalia floccosa*	5	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_025V	Alaria	2	*Polysiphonia sp.*	15	
AKP_16_025V	Alaria	2	*Ulvaria sp.*	3	
AKP_16_025V	Alaria	3	*Alaria marginata*	20	
AKP_16_025V	Alaria	3	*Dumontia alaskana*	1	
AKP_16_025V	Alaria	3	*Fucus distichus*	1	
AKP_16_025V	Alaria	3	*Odonthalia floccosa*	15	
AKP_16_025V	Alaria	3	*Polysiphonia sp.*	60	
AKP_16_025V	Alaria	3	*Polyostea bipinnata*	20	
AKP_16_025V	Alaria	3	*Semibalanus cariosus*	3	
AKP_16_025V	Alaria	3	*Ulvaria sp.*	10	
AKP_16_025V	Dark Brown Kelp	1	*Alaria marginata*	15	
AKP_16_025V	Dark Brown Kelp	1	*Costaria costata*	25	
AKP_16_025V	Dark Brown Kelp	1	*Palmaria mollis*	10	
AKP_16_025V	Dark Brown Kelp	1	*Polysiphonia sp.*	40	
AKP_16_025V	Dark Brown Kelp	1	*Saccharina bongardiana*	15	
AKP_16_025V	Dark Brown Kelp	1	*Tokidadendron bullatum*	2	
AKP_16_025V	Dark Brown Kelp	1	*Ulvaria sp.*	5	
AKP_16_025V	Dark Brown Kelp	2	*Alaria marginata*	25	
AKP_16_025V	Dark Brown Kelp	2	*Costaria costata*	80	
AKP_16_025V	Dark Brown Kelp	2	*Metridium senile*		10
AKP_16_025V	Dark Brown Kelp	2	*Odonthalia floccosa*	5	
AKP_16_025V	Dark Brown Kelp	2	*Polysiphonia sp.*	25	
AKP_16_025V	Dark Brown Kelp	2	*Ulvaria sp.*	10	
AKP_16_025V	Dark Brown Kelp	3	*Alaria marginata*	25	
AKP_16_025V	Dark Brown Kelp	3	*Corallinales*	20	
AKP_16_025V	Dark Brown Kelp	3	*Costaria costata*	10	
AKP_16_025V	Dark Brown Kelp	3	*Mastocarpus spp.*	3	
AKP_16_025V	Dark Brown Kelp	3	*Odonthalia sp.*	5	
AKP_16_025V	Dark Brown Kelp	3	*Pyropria sp.*	3	
AKP_16_025V	Dark Brown Kelp	3	*Semibalanus balanoides*	5	
AKP_16_025V	Dark Brown Kelp	3	*Ulvaria sp.*	25	
AKP_16_025V	Green Algae	1	*Acrosiphonia arcta*	70	
AKP_16_025V	Green Algae	1	*Pyropria sp.*	1	
AKP_16_025V	Green Algae	2	*Acrosiphonia sp.*	10	
AKP_16_025V	Green Algae	2	*Pyropria sp.*	<1	
AKP_16_025V	Green Algae	2	*Ulva sp.*	10	
AKP_16_025V	Red Algae	1	*Acrosiphonia sp.*	<1	
AKP_16_025V	Red Algae	1	*Corallinales*	40	
AKP_16_025V	Red Algae	1	*Dumontia sp.*	<1	
AKP_16_025V	Red Algae	1	*Fucus distichus*	<1	
AKP_16_025V	Red Algae	1	*Neorhodomela sp.*	20	
AKP_16_025V	Red Algae	1	*Petalonia fascia*	2	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_025V	Red Algae	1	*Pylaiella sp.*	10	
AKP_16_025V	Red Algae	1	*Pyropria sp.*	1	
AKP_16_025V	Red Algae	1	*Semibalanus cariosus*	15	
AKP_16_025V	Red Algae	1	*Soranthera ulvoidea*	<1	
AKP_16_025V	Red Algae	1	*Ulvaria sp.*	10	
AKP_16_025V	Red Algae	2	*Corallinales*	10	
AKP_16_025V	Red Algae	2	*Fucus distichus*	2	
AKP_16_025V	Red Algae	2	*Neorhodomela sp.*	15	
AKP_16_025V	Red Algae	2	*Polyostea bipinnata*	10	
AKP_16_025V	Red Algae	2	*Pylaiella sp.*	30	
AKP_16_025V	Red Algae	2	*Semibalanus cariosus*	1	
AKP_16_025V	Red Algae	2	*Ulvaria sp.*	25	
AKP_16_025V	Red Algae	3	*Bacillariophyta*	3	
AKP_16_025V	Red Algae	3	*Corallinales*	70	
AKP_16_025V	Red Algae	3	*Evasterias sp.*		1
AKP_16_025V	Red Algae	3	*Fucus distichus*	1	
AKP_16_025V	Red Algae	3	*Katharina tunicata*		2
AKP_16_025V	Red Algae	3	*Odonthalia floccosa*	1	
AKP_16_025V	Red Algae	3	*Pyropria sp.*	1	
AKP_16_025V	Red Algae	3	*Semibalanus cariosus*	60	
AKP_16_025V	Red Algae	3	*Tectura scutum*		3
AKP_16_025V	Red Algae	3	*Ulvaria sp.*	10	
AKP_16_025V	Red Algae	4	*Fucus distichus*	1	
AKP_16_025V	Red Algae	4	*Littorina sitkana*		10
AKP_16_025V	Red Algae	4	*Mytilus trossulus*	<1	
AKP_16_025V	Red Algae	4	*Neorhodomela sp.*	30	
AKP_16_025V	Red Algae	4	*Soranthera ulvoidea*	<1	
AKP_16_025V	Rockweed	1	*Balanus glandula*	10	
AKP_16_025V	Rockweed	1	*Fucus distichus*	50	
AKP_16_025V	Rockweed	1	*Mytilus trossulus*	<1	
AKP_16_025V	Rockweed	1	*Polyostea bipinnata*	40	
AKP_16_025V	Rockweed	1	*Pyropria sp.*	3	
AKP_16_025V	Rockweed	2	*Fucus distichus*	20	
AKP_16_025V	Rockweed	2	*Mytilus trossulus*	<1	
AKP_16_025V	Rockweed	2	*Odonthalia floccosa*	25	
AKP_16_025V	Rockweed	2	*Polyostea bipinnata*	30	
AKP_16_025V	Rockweed	2	*Pyropria sp.*	20	
AKP_16_025V	Rockweed	2	*Semibalanus cariosus*	5	
AKP_16_025V	Rockweed	2	*Ulva sp.*	<1	
AKP_16_025V	Rockweed	3	*Fucus distichus*	25	
AKP_16_025V	Rockweed	3	*Mastocarpus spp.*	<1	
AKP_16_025V	Rockweed	3	*Odonthalia floccosa*	85	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_025V	Rockweed	3	*Polyostea bipinnata*	10	
AKP_16_025V	Rockweed	3	*Pyropria sp.*	1	
AKP_16_025V	Rockweed	3	*Semibalanus cariosus*	40	
AKP_16_027	Alaria	1	*Alaria marginata*	70	
AKP_16_027	Alaria	1	*Bryozoa*	2	
AKP_16_027	Alaria	1	*Cryptosiphonia woodii*	3	
AKP_16_027	Alaria	1	*Fucus distichus*	1	
AKP_16_027	Alaria	1	*Halosaccion glandiforme*	1	
AKP_16_027	Alaria	1	*Lithothamnion/Lithophyllum sp.*	<1	
AKP_16_027	Alaria	1	*Lottia sp.*		10
AKP_16_027	Alaria	1	*Monostroma grevillei*	2	
AKP_16_027	Alaria	1	*Mytilus trossulus*	1	
AKP_16_027	Alaria	1	*Nucella lamellosa*		3
AKP_16_027	Alaria	1	*Odonthalia floccosa*	15	
AKP_16_027	Alaria	1	*Pagurus hirsutiusculus*		3
AKP_16_027	Alaria	1	*Palmaria hecatensis*	1	
AKP_16_027	Alaria	1	*Palmaria mollis*	1	
AKP_16_027	Alaria	1	*Polyostea bipinnata*	8	
AKP_16_027	Alaria	1	*Semibalanus cariosus*	5	
AKP_16_027	Alaria	1	*Spirorbis sp.*	<1	
AKP_16_027	Alaria	1	*Tectura scutum*		4
AKP_16_027	Alaria	2	*Alaria marginata*	20	
AKP_16_027	Alaria	2	*Bryozoa*	15	
AKP_16_027	Alaria	2	*Corallinales*	<1	
AKP_16_027	Alaria	2	*Fucus distichus*	1	
AKP_16_027	Alaria	2	*Halosaccion glandiforme*	4	
AKP_16_027	Alaria	2	*Lottia sp.*		6
AKP_16_027	Alaria	2	*Monostroma grevillei*	2	
AKP_16_027	Alaria	2	*Nucella lamellosa*		2
AKP_16_027	Alaria	2	*Odonthalia floccosa*	60	
AKP_16_027	Alaria	2	*Palmaria callophylloides*	6	
AKP_16_027	Alaria	2	*Palmaria hecatensis*	3	
AKP_16_027	Alaria	2	*Palmaria mollis*	3	
AKP_16_027	Alaria	2	*Polyostea bipinnata*	5	
AKP_16_027	Alaria	2	*Semibalanus cariosus*	40	
AKP_16_027	Alaria	3	*Alaria marginata*	40	
AKP_16_027	Alaria	3	*Bryozoa*	3	
AKP_16_027	Alaria	3	*Odonthalia floccosa*	25	
AKP_16_027	Alaria	3	*Pagurus hirsutiusculus*	3	
AKP_16_027	Alaria	3	*Polyostea bipinnata*	10	
AKP_16_027	Alaria	3	*Semibalanus cariosus*	15	
AKP_16_027	Alaria	3	*Tokidadendron bullatum*	present	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_027	Green Algae	1	*Bangia spp.*	40	
AKP_16_027	Green Algae	1	*Chthamalus dalli*	<1	
AKP_16_027	Green Algae	1	*Pyropia abbottiae*	5	
AKP_16_027	Green Algae	1	*Pyropria kurogii*	<1	
AKP_16_027	Green Algae	1	*Pyropria sp.*	5	
AKP_16_027	Green Algae	1	*Ulothrix sp.*	10	
AKP_16_027	Green Algae	2	*Bangia spp.*	2	
AKP_16_027	Green Algae	2	*Blidingia sp.*	3	
AKP_16_027	Green Algae	2	*Pyropria sp.*	4	
AKP_16_027	Green Algae	2	*Ulothrix sp.*	99	
AKP_16_027	Green Algae	3	*Bangia spp.*	2	
AKP_16_027	Green Algae	3	*Blidingia sp.*	2	
AKP_16_027	Green Algae	3	*Fucus distichus*	<1	
AKP_16_027	Green Algae	3	*Littorina sitkana*		6
AKP_16_027	Green Algae	3	*Pyropria sp.*	7	
AKP_16_027	Green Algae	3	*Ulothrix sp.*	60	
AKP_16_027	Rockweed	1	*Acrosiphonia duriuscula*	<1	
AKP_16_027	Rockweed	1	*Chthamalus dalli*	<1	
AKP_16_027	Rockweed	1	*Fucus distichus*	8	
AKP_16_027	Rockweed	1	*Halosaccion glandiforme*	1	
AKP_16_027	Rockweed	1	*Lottia sp.*		3
AKP_16_027	Rockweed	1	*Odonthalia floccosa*	25	
AKP_16_027	Rockweed	1	*Polyostea bipinnata*	70	
AKP_16_027	Rockweed	1	*Semibalanus cariosus*	15	
AKP_16_027	Rockweed	1	*Tokidadendron bullatum*	<1	
AKP_16_027	Rockweed	2	*Chthamalus dalli*	<1	
AKP_16_027	Rockweed	2	*Fucus distichus*	25	
AKP_16_027	Rockweed	2	*Halosaccion glandiforme*	1	
AKP_16_027	Rockweed	2	*Lottia sp.*		10
AKP_16_027	Rockweed	2	*Monostroma grevillei*	<1	
AKP_16_027	Rockweed	2	*Odonthalia floccosa*	30	
AKP_16_027	Rockweed	2	*Palmaria callophylloides*	5	
AKP_16_027	Rockweed	2	*Polyostea bipinnata*	10	
AKP_16_027	Rockweed	3	*Acrosiphonia duriuscula*	4	
AKP_16_027	Rockweed	3	*Chthamalus dalli*	<1	
AKP_16_027	Rockweed	3	*Fucus distichus*	10	
AKP_16_027	Rockweed	3	*Halosaccion glandiforme*	8	
AKP_16_027	Rockweed	3	*Monostroma grevillei*	2	
AKP_16_027	Rockweed	3	*Palmaria hecatensis*	2	
AKP_16_027	Rockweed	3	*Polyostea bipinnata*	1	
AKP_16_027	Rockweed	3	*Pyropria kurogii*	present	
AKP_16_027	Rockweed	3	*Semibalanus cariosus*	3	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_027	Rockweed	4	*Acrosiphonia duriuscula*	2	
AKP_16_027	Rockweed	4	*Fucus distichus*	20	
AKP_16_027	Rockweed	4	*Monostroma grevillei*	4	
AKP_16_027	Rockweed	4	*Palmaria callophylloides*	1	
AKP_16_027	Rockweed	4	*Polyostea bipinnata*	3	
AKP_16_027	Rockweed	4	*Pyropria sp.*	2	
AKP_16_027	Rockweed	4	*Semibalanus cariosus*	<1	
AKP_16_028	Barnacle	1	*Balanus glandula*	2	
AKP_16_028	Barnacle	1	*Chthamalus dalli*	<1	
AKP_16_028	Barnacle	1	*Gloiopeltis furcata*	<1	
AKP_16_028	Barnacle	1	*Littorina sitkana*		66
AKP_16_028	Barnacle	1	*Lottia sp.*		1
AKP_16_028	Barnacle	1	*Mytilus trossulus*	<1	
AKP_16_028	Barnacle	1	*Neorhodomela oregona*	1	
AKP_16_028	Barnacle	1	*Semibalanus balanoides*	<1	
AKP_16_028	Barnacle	1	*Semibalanus cariosus*	3	
AKP_16_028	Barnacle	1	*Tectura scutum*		7
AKP_16_028	Barnacle	2	*Balanus glandula*	8	
AKP_16_028	Barnacle	2	*Chthamalus dalli*	1	
AKP_16_028	Barnacle	2	*Fucus distichus*	1	
AKP_16_028	Barnacle	2	*Gloiopeltis furcata*	<1	
AKP_16_028	Barnacle	2	*Littorina sitkana*		141
AKP_16_028	Barnacle	2	*Lottia sp.*		6
AKP_16_028	Barnacle	2	*Mytilus trossulus*	<1	
AKP_16_028	Barnacle	2	*Neorhodomela oregona*	3	
AKP_16_028	Barnacle	2	*Semibalanus balanoides*	<1	
AKP_16_028	Barnacle	2	*Tectura scutum*		1
AKP_16_028	Rockweed	1	*Acrosiphonia coalita*	<1	
AKP_16_028	Rockweed	1	*Balanamorpha*	<1	
AKP_16_028	Rockweed	1	*Blidingia minima*	<1	
AKP_16_028	Rockweed	1	*Gloiopeltis furcata*	3	
AKP_16_028	Rockweed	1	*Lottia sp.*	1	
AKP_16_028	Rockweed	1	*Mytilus trossulus*	<1	
AKP_16_028	Rockweed	1	*Semibalanus cariosus*	2	
AKP_16_028	Rockweed	1	*Ulva lactuca*	2	
AKP_16_028	Rockweed	1	*Wildemania variegata*	1	
AKP_16_028	Rockweed	2	*Chthamalus dalli*	<1	
AKP_16_028	Rockweed	2	*Clathromorphum sp.*	<1	
AKP_16_028	Rockweed	2	*Fucus distichus*	<1	
AKP_16_028	Rockweed	2	*Gammaridea amphipod*	<1	
AKP_16_028	Rockweed	2	*Littorina sitkana*		1
AKP_16_028	Rockweed	2	*Lottia pelta*		3

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_028	Rockweed	2	*Melanosiphon intestinalis*	1	
AKP_16_028	Rockweed	2	*Monostroma grevillei v ar. Grevillei*	<1	
AKP_16_028	Rockweed	2	*Mytilus trossulus*	2	
AKP_16_028	Rockweed	2	*Odonthalia floccosa*	5	
AKP_16_028	Rockweed	2	*Polyostea bipinnata*	22	
AKP_16_028	Rockweed	2	*Pyropia abbottiae*	6	
AKP_16_028	Rockweed	2	*Pyropria fucicola*	3	
AKP_16_028	Rockweed	2	*Semibalanus cariosus*	23	
AKP_16_028	Rockweed	2	*Ulva lactuca*	6	
AKP_16_028	Rockweed	3	*Balanus glandula*	<1	
AKP_16_028	Rockweed	3	*Blidingia minima*	<1	
AKP_16_028	Rockweed	3	*Fucus distichus*	1	
AKP_16_028	Rockweed	3	*Littorina sitkana*		21
AKP_16_028	Rockweed	3	*Lottia digitalis*		3
AKP_16_028	Rockweed	3	*Lottia sp.*		31
AKP_16_028	Rockweed	3	*Mytilus trossulus*	2	
AKP_16_028	Rockweed	3	*Odonthalia floccosa f. comosa*	2	
AKP_16_028	Rockweed	3	*Pyropia abbottiae*	50	
AKP_16_028	Rockweed	3	*Semibalanus cariosus*	10	
AKP_16_028	Rockweed	3	*Tectura scutum*		3
AKP_16_028	Rockweed	4	*Balanus glandula*	1	
AKP_16_028	Rockweed	4	*Blidingia minima*	1	
AKP_16_028	Rockweed	4	*Chthamalus dalli*	<1	
AKP_16_028	Rockweed	4	*Fucus distichus*	2	
AKP_16_028	Rockweed	4	*Gloiopeltis furcata*	<1	
AKP_16_028	Rockweed	4	*Halosaccion glandiforme*	<1	
AKP_16_028	Rockweed	4	*Lottia sp.*	1	
AKP_16_028	Rockweed	4	*Melanosiphon intestinalis*	2	
AKP_16_028	Rockweed	4	*Mytilus trossulus*	1	
AKP_16_028	Rockweed	4	*Polyostea bipinnata*	5	
AKP_16_028	Rockweed	4	*Pyropia abbottiae*	60	
AKP_16_028	Rockweed	4	*Pyropria fucicola*	1	
AKP_16_028	Rockweed	4	*Semibalanus cariosus*	15	
AKP_16_028	Rockweed	4	*Tectura scutum*	1	
AKP_16_028	Rockweed	4	*Ulva lactuca*	1	
AKP_16_035V	Bleached Red Algae	1	*Chaetomorpha sp.*	1	
AKP_16_035V	Bleached Red Algae	1	*Neorhodomela aculeata*	30	
AKP_16_035V	Bleached Red Algae	1	*Punctaria sp.*	<1	
AKP_16_035V	Bleached Red Algae	1	*Semibalanus balanoides*	1	
AKP_16_035V	Bleached Red	1	*Ulva sp.*	20	

Station	Bioband	Quadrat	Species	%Cover	Count
	Algae				
AKP_16_035V	Bleached Red Algae	2	*Fucus distichus*	<1	
AKP_16_035V	Bleached Red Algae	2	*Mytilus trossulus*	1	
AKP_16_035V	Bleached Red Algae	2	*Neorhodomela sp.*	4	
AKP_16_035V	Bleached Red Algae	2	*Polysiphonia sp.*	2	
AKP_16_035V	Bleached Red Algae	2	*Ulva sp.*	1	
AKP_16_035V	Bleached Red Algae	3	*Mytilus trossulus*	10	
AKP_16_035V	Bleached Red Algae	3	*Neorhodomela sp.*	2	
AKP_16_035V	Bleached Red Algae	3	*Pagurus hirsutiusculus*		3
AKP_16_035V	Bleached Red Algae	3	*Polysiphonia sp.*	<1	
AKP_16_035V	Bleached Red Algae	3	*Semibalanus balanoides*	1	
AKP_16_036V	Rockweed	1	*Fucus distichus*	5	
AKP_16_036V	Rockweed	1	*Verrucaria sp.*	60	
AKP_16_036V	Rockweed	2	*Fucus distichus*	80	
AKP_16_036V	Rockweed	2	*Hildenbrandia sp.*	10	
AKP_16_036V	Rockweed	2	*Pylaiella sp.*	3	
AKP_16_036V	Rockweed	2	*Ulva linza*	1	
AKP_16_036V	Rockweed	3	*Fucus distichus*	40	
AKP_16_036V	Rockweed	3	*Hildenbrandia sp.*	5	
AKP_16_036V	Rockweed	3	*Melanosiphon intestinalis*	<1	
AKP_16_036V	Rockweed	3	*Pylaiella sp.*	3	
AKP_16_036V	Rockweed	3	*Ulva linza*	5	
AKP_16_039V	Red Algae	1	*Melanosiphon intestinalis*	1	
AKP_16_039V	Red Algae	1	*Polyostea bipinnata*	10	
AKP_16_039V	Red Algae	1	*Punctaria sp.*	10	
AKP_16_039V	Red Algae	1	*Scytosiphon sp.*	<1	
AKP_16_039V	Red Algae	1	*Semibalanus cariosus*	1	
AKP_16_039V	Red Algae	2	*Chaetomorpha sp.*	<1	
AKP_16_039V	Red Algae	2	*Fucus distichus*	<1	
AKP_16_039V	Red Algae	2	*Isopoda*		7
AKP_16_039V	Red Algae	2	*Melanosiphon intestinalis*	<1	
AKP_16_039V	Red Algae	2	*Pagurus sp.*		100
AKP_16_039V	Red Algae	2	*Polyostea bipinnata*	20	
AKP_16_039V	Red Algae	2	*Punctaria sp.*	1	
AKP_16_039V	Red Algae	2	*Semibalanus cariosus*	<1	
AKP_16_039V	Red Algae	2	*Ulva sp.*	1	
AKP_16_039V	Red Algae	3	*Acrosiphonia arcta*	3	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_039V	Red Algae	3	*Mytilus trossulus*	1	
AKP_16_039V	Red Algae	3	*Nereidae*		1
AKP_16_039V	Red Algae	3	*Pagurus hirsutiusculus*		30
AKP_16_039V	Red Algae	3	*Polyostea bipinnata*	40	
AKP_16_039V	Red Algae	3	*Pylaiella sp.*	2	
AKP_16_039V	Red Algae	4	*Acrosiphonia arcta*	3	
AKP_16_039V	Red Algae	4	*Melanosiphon intestinalis*	<1	
AKP_16_039V	Red Algae	4	*Pagurus hirsutiusculus*		10
AKP_16_039V	Red Algae	4	*Polyostea bipinnata*	5	
AKP_16_039V	Red Algae	4	*Pylaiella sp.*	1	
AKP_16_039V	Red Algae	4	*Scytosiphon sp.*	<1	
AKP_16_039V	Red Algae	5	*Polyostea bipinnata*	1	
AKP_16_039V	Red Algae	5	*Punctaria sp.*	1	
AKP_16_039V	Red Algae	5	*Scytosiphon sp.*	1	
AKP_16_039V	Red Algae	5	*Semibalanus cariosus*	4	
AKP_16_039V	Rockweed	1	*Mytilus trossulus*	10	
AKP_16_039V	Rockweed	1	*Semibalanus balanoides*	5	
AKP_16_039V	Rockweed	2	*Anoplarchus purpurescens*		3
AKP_16_039V	Rockweed	2	*Fucus distichus*	80	
AKP_16_039V	Rockweed	2	*Littorina sitkana*		50
AKP_16_039V	Rockweed	2	*Lottia pelta*		6
AKP_16_039V	Rockweed	2	*Mytilus trossulus*	5	
AKP_16_039V	Rockweed	2	*Semibalanus balanoides*	3	
AKP_16_039V	Rockweed	3	*Anoplarchus purpurescens*		2
AKP_16_039V	Rockweed	3	*Fucus distichus*	5	
AKP_16_039V	Rockweed	3	*Lottia pelta*		3
AKP_16_039V	Rockweed	3	*Lottia sp.*		6
AKP_16_039V	Rockweed	3	*Mytilus trossulus*	70	
AKP_16_039V	Rockweed	3	*Pagurus hirsutiusculus*		10
AKP_16_039V	Rockweed	3	*Semibalanus balanoides*	5	
AKP_16_039V	Rockweed	4	*Fucus distichus*	1	
AKP_16_039V	Rockweed	4	*Littorina sitkana*		10
AKP_16_039V	Rockweed	4	*Lottia sp.*		6
AKP_16_039V	Rockweed	4	*Mastocarpus spp.*	2	
AKP_16_039V	Rockweed	4	*Mytilus trossulus*	25	
AKP_16_039V	Rockweed	4	*Semibalanus balanoides*	10	
AKP_16_039V	Rockweed	4	*Tectura scutum*		15
AKP_16_039V	Rockweed	5	*Fucus distichus*	5	
AKP_16_039V	Rockweed	5	*Littorina sitkana*		10
AKP_16_039V	Rockweed	5	*Lottia sp.*		2
AKP_16_039V	Rockweed	5	*Mastocarpus spp.*	1	
AKP_16_039V	Rockweed	5	*Mytilus trossulus*	15	

Station	Bioband	Quadrat	Species	%Cover	Count
AKP_16_039V	Rockweed	5	*Semibalanus balanoides*	5	
AKP_16_039V	Rockweed	5	*Tectura scutum*		3

Appendix D: Narrative Descriptions of Ground Survey Sites

D.1 Station AKP_16_001

Location: Small islet, north-west of Slaughter Island, Wide Bay
Latitude /Longitude: N57.34408 W-156.30675
Region: Alaska Peninsula
Date sampled: May 4, 2016

Figure D-1. Location of site AKP_16_001 on small islet northwest of Slaughter Island, Wide Bay.

Figure D-2. Aerial photo of site AKP_16_001 from ShoreZone aerial survey May 6, 2016. Yellow line shows location of transect where site profile was measured

Site AKP_16_001 was located on the east side of Wide Bay, on the northwestern side of an islet, between Slaughter Island and Hartmen Island (Figure D-1; Figure D-2). The site was characterized by a semi-exposed vertical cliff and wide bedrock platform with gravel beach (Figure D-3; Photo A). The substrate was classified as partially mobile, current and sea swell influenced the site as noted by semi-rounded boulders. The upper intertidal zone had patchy flora and fauna, except within tide pools. The lower intertidal zone was lush with red, green and brown seaweeds, with few invertebrates observed. In the nearshore, bands of ribbon kelp (*Alaria marginata*), soft brown kelp and bull kelp (*Nereocystis luetkeana*).

Site AKP_16_001 consisted of a vertical bedrock wall above the high-water line. The intertidal zone was approximately 50 m in width, with a low gradient slope (<5°) to the waterline (Figure D-3; Photo B). In the upper intertidal zone, large boulders over bedrock dominated the substrate for approximately 30 m. In the lower intertidal zone, the substrate consisted of small boulders and cobbles over 20 m wide bedrock platform.

Splash Zone bioband: The supratidal zone consisted of a wide band of black seaside lichen (*Verrucaria* sp.) with patches of orange seaside lichen (*Caloplaca/Xanthoria* sp.). In addition, patches of green rock scum (*Rosenvingiella polyrhiza)* and olive green winter laver (*Pyropia pseudolanceolata*) were documented. Common splash zone invertebrates included the Sitka periwinkle (*Littorina sitkana*) and mask limpets (*Tectura persona*).

Bare bioband: Patches of *Caloplaca/Xanthoria* sp., *P. pseudolanceolata* and *R. polyrhiza* were documented. Common invertebrates in the bioband included *L. sitkana* and *T. persona*.

Barnacle bioband: A wide distribution of thatched barnacle (*Semibalanus cariosus*) and acorn barnacle (*S. balanoides*) were documented, along with an abundance of *L. sitkana* (Figure D-3; Photo C). During the quadrat survey, percent cover of *S. cariosus* ranged from 1-50% in all 5 quadrats. Counts of *L. sitkana* ranged from 60-1000 individuals in four out of five (4/5) quadrats. Patches of Turkish washcloth complex (*Mastocarpus alaskensis*), studded sea balloons (*Soranthera ulvoidea*), and graceful black pine (*Neorhodomela aculeate)* were distributed along the bioband. Quadrat data identified rockweed (*Fucus distichus)* ranged from 10-15% in 3/5 quadrats. Lower in the bioband, tide pools provided habitat for red coralline algae species (encrusting and articulating), rockweed tuft (*Elachista fucicola*), sea brush (*Odonthalia floccosa*), and sea fungus (*Ralfsia fungiformis*) (Figure D-3; Photo D).

Red Algae bioband: This lower intertidal bioband was wide and continuous, with a mix of red, green, and brown algae. Red algae species dominating the bioband included red ribbon (*Devaleraea* spp.; 5-40% cover in 5/5 quadrats), *Mastocarpus* sp. (1-20% cover in 5/5 quadrats), and *O. floccosa* (Figure D-3; Photo E). Common green algae species included green rope (*Acrosiphonia coalita*; 1-15% cover in 3/5 quadrats) and sea lettuce (*Ulva lactuca*; 1-25% cover in 4/5 quadrats). Observations of sea stars (*Evasterias troschelii, Henricia leviuscula* and *Pycnopodia helianthoides*) and dorid nudibranchs were recorded.

Nearshore biobands: Three biobands were present in the nearshore and included a patchy, narrow Alaria bioband, a moderate band of Soft Brown Kelps and a narrow, continuous band of Bull Kelp (Figure D-3; Photo F).

Photo A: The site was characterized by a semi-exposed vertical cliff with a wide bedrock platform with gravel beach.

Photo B: The intertidal zone was 50 m in width with a low gradient slope (5°) to the waterline.

Photo C: Common invertebrates in the Barnacle bioband included *Littorina sitkana*, *Semibalanus balanoides*, and *Semibalanus cariosus.*

Photo D: Lower in the barnacle bioband, tide pools provided habitat for algae species *Elachista fucicola, Odonthalia floccosa,* and *Ralfsia fungiformis*.

Photo E: The Red Algae bioband was dominated by *Devaleraea* spp., *Mastocarpus* sp.*,* and *Odonthalia floccosa*.

Photo F: Biobands in the nearshore included Alaria, Soft Brown Kelp, and Bull Kelp.

Figure D-3. Photo examples of Alaska Peninsula site AKP_16_001.

D.2 Station AKP_16_002

Location: West tip of Slaughter Island, Wide Bay
Latitude /Longitude: N57.33322 W-156.33558
Region: Alaska Peninsula
Date sampled: May 4, 2016

Figure D-4. Site AKP_16_002 on western tip of Slaughter Island (Digital Globe, June 17, 2013).

Figure D-5. Aerial photo of site AKP_16_002 from ShoreZone aerial survey May 6, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_002 was located in Wide Bay, on the western tip of Slaughter Island (Figure D-4; Figure D-5). The site consisted of a vertical bedrock cliff with wide bedrock platform that was classified as semi-exposed with immobile substrate. Both the ocean current and sea swell influence the site morphology as evidenced by polished bedrock in upper intertidal. The upper intertidal zone was mostly bare of flora, but a thick, wide barnacle band was present. The lower intertidal zone was lush, with almost 100% epifaunal cover along the entire Red Algae, Alaria, and Dark Brown Kelp biobands. Just offshore was a narrow Bull Kelp bioband. Site AKP_16_002 consisted of a high, vertical bedrock wall above the high-water line. The intertidal zone was characterized by a wide bedrock platform spanning 68 m in width, with a low gradient slope (4°) to the waterline (Figure D-6; Photo A). The upper intertidal zone was 18 m wide with scattered boulders and cobbles on the bedrock. The lower intertidal zone was 50 m wide with large boulders over bedrock.

Splash Zone bioband: The supratidal zone consisted of a medium (4 m) patchy band of black seaside lichen (*Verrucaria* sp.) and a wide patchy band of orange seaside lichen (*Caloplaca/Xanthoria* sp.).

Winter Laver bioband: Patches of red algae laver (*Pyropia* sp.) and black sea hair ("*Bangia*" spp.) were identified (Figure D-6; Photo B). In the quadrat survey, four quadrats were placed in this bioband. *Pyropia* sp. ranged from 10-60% cover in 3/4 quadrats. "*Bangia*" spp. ranged from 10-40% in 3/4 quadrats. Invertebrates common to the higher intertidal zone included shield limpets (*Lottia pelta*) and the Sitka periwinkle (*Littorina sitkana*).

Barnacle bioband: A continuous and wide distribution of acorn barnacles (*Semibalanus balanoides* and *Balanus glandula*) dominated this bioband (Figure D-6; Photo C). In the quadrat survey, *B. glandua* ranged from 3-30% cover in 2/5 quadrats while Balanamorpha ranged from 10-90% cover in 2/5 quadrats. Patches of the red alga, Oregon pine (*Neorhodomela oregona*), were present in the lower portion of this bioband. Quadrat counts of *L. sitkana* ranged from 60-250 individuals in 4/5 quadrats.

Red Algae bioband: This bioband consisted of a thick continuous mix of red, green, and brown algae. Along the upper parts of the bioband, *N. oregona* (10-20% cover in 4/5 quadrats) was present, while the red algae, sea brush (*Odonthalia floccosa*; 10-60% cover in 5/5 quadrats), fominated in the lower band. Tide pools scattered the bioband's bedrock substrate and provided habitat to several anthozoan species including plumose anemone (*Metridium senile*), red bead anemone (*Urticina coriacea*), and painted anemone (*U. grebelnyi*). Other marine invertebrates present included the chitons, black katy chiton (*Katharina tunicata*) and red lined chiton (*Tonicella lineata*), and the six-armed sea star (*Leptasterias* spp.).

Alaria bioband: A thick, continuous band of ribbon kelp (*Alaria marginata*; 10-98% cover in 5/5 quadrats) was observed in the bioband in addition to the common red ribbon alga (*Devaleraea* sp.; 5-45% cover in 5/5 quadrats), Turkish washcloth complex (*Mastocarpus* sp.; 5% cover in 1/5 quadrats), and laver species (*Pyropia* sp.; 1-10% cover in 3/5 quadrats) (Figure D-6; Photo D). Dense patches of the Pacific blue mussel (*Mytilus trossulus*) were scattered throughout the bioband (Figure D-6; Photo E).

Dark Brown Kelp bioband: This continuous bioband was dominated by brown bladed kelps, including split kelp (*Saccharina nigripes*), five-ribbed kelp (*Costaria costata*), three-ribbed kelp (*Cymathaere triplicate*), and *A. marginata* (Figure D-6; Photo F). Common red algae found in the bioband included corallines, Northern mazza weed (*Mazzaella phyllocarpa*), and Mikami's sea oak (*Mikamiella ruprechtiana*).

Bull Kelp bioband: A narrow, continuous band of bull kelp (*Nereocystis luetkeana*) was documented in the nearshore.

Photo A: The intertidal zone was 68 m in width with a low slope gradient of 4° to the waterline.

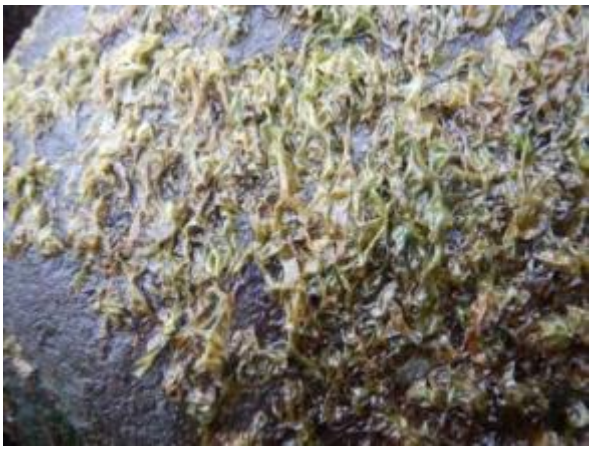


Photo B: The Winter Laver bioband comprised of *Pyropia* sp. and "*Bangia"* spp.

Photo C: The Barnacle bioband was wide and continuous covering boulders, cobbles and bedrock.

Photo D: The Alaria bioband was wide and lush, consisting of 10-98% quadrat cover of *Alaria marginata*.

Photo E: Dense patches of *Mytilus trossulus* occurred within the Alaria bioband.

Photo F: The Dark Brown Kelp bioband was dominated by *Saccharina nigripes*, *Costaria costata* and *Cymathaere triplicata*.

Figure D-6. Photo examples of Alaska Peninsula site AKP_16_002.

D.3 Station AKP_16_003

Location: West coast of Nakalilok Bay
Latitude /Longitude: N56.92094 W-156.93511
Region: Alaska Peninsula
Date sampled: May 7, 2016

Figure D-7. Site AKP_16_003 on the west coast of Nakalilok (Digital Globe, September 24, 2014).

Figure D-8. Aerial photo of site AKP_16_003 from ShoreZone aerial survey May 7, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_003 was located on the western coast of Nakalilok Bay (Figure D-7; Figure D-8). The site was characterized by a vertical bedrock cliff with a wide, flat bedrock platform. The site was classified as semi-exposed, with immobile substrate. Sea swell influences the site morphology. The upper intertidal zone had wide Splash Zone, Bare and Barnacle biobands. The lower intertidal was lush with relatively high species richness; bands consisted of a narrow bioband of Rockweed, and wide biobands of Alaria and Dark Brown Kelps. In the nearshore, a narrow Bull Kelp bioband was observed.

Site AKP_16_003 consisted of a high, vertical bedrock wall with boulders above the high-water line. The intertidal zone was approximately 109 m in width with an overall gradient of 2°. The higher intertidal zone was characterized by a 92 m wide bedrock platform with shallow surge tide (Figure D-9; Photo A). The lower intertidal zone was 16 m wide, with a steep drop off to the waterline (25^{o} slope over the last 14 meters of bedrock).

Splash Zone bioband: The supratidal zone consisted of a 7 m wide continuous band of black sea lichen (*Verrucaria* sp.). Common invertebrates included beach hoppers (*Traskorchestia traskiana*) and Sitka periwinkle (*Littorina sitkana*).

Bare bioband: This bioband spanned approximately 14 m in width and high intertidal invertebrates present included *L. sitkana* and shield limpet (*Lottia pelta*). There were no observations of flora within the bioband.

Barnacle bioband: A continuous and wide band of acorn barnacle (*Balanus glandula*) were observed. In the quadrat survey, *B. glandula* ranged from 1-60% cover in 4/5 quadrat plots. In tide pools, patches of the red filamentous algae, black pine (*Neorhodomela* sp.; 1-80% cover in 5/5 quadrats) and the seagrass, serrulated surfgrass (*Phyllospadix serrulatus*) were observed (Figure D-9; Photo B). Tide pools also provided refuge to anemone species, plumose anemone (*Metridium senile*) and green anemone (*Anthopleura* sp.; Figure D-9; Photo C), as well as hermit crabs (*Pagarus* sp.), periwinkles (*L. sitkana;* 60-300 count in 5/5 quadrats) and sculpins *(Oligocottus maculosus*).

Rockweed bioband: This band was dominated by a narrow band of rockweed (*Fucus distichus*; 1-25% cover in 3/4 quadrats) mixed with the Pacific blue mussel (*Mytilus trossulus*; 1-40% cover in 2/4 quadrats; Figure D-9; Photo D). Common red algae included laver (*Pyropia* sp.; 20-80% cover in 2/4 quadrats), rockweed brush (*Odonthalia floccosa*; 70% in 1/4 quadrat) and red alga (*Neorhodomela* sp.; 10% cover in 1/4 quadrat). Invertebrates inhabiting this bioband included thatched barnacle (*Semibalanus cariosus*; 40% cover in 1/4 quadrat), limpets (*Lottia* sp.), and brooding anemone (*Epiactis prolifera*).

Alaria bioband: A thick, continuous band of ribbon kelp (*Alaria marginata*; 5-95% cover in 6/6 quadrats) dominated the bioband with corallines, both encrusting and articulating crust present (1-30% in 6/6 quadrats), and *O. floccosa* at the waterline (Figure D-9; Photo E). Invertebrate abundance was high, with *S. cariosus* (50-80% cover in 6/6 quadrats), black katy chiton (*Katharina tunicata*; 4-34 count in 6/6 quadrats), and *E. prolifera* (2-17 count in 4/6 quadrats) common to the bioband.

Dark Brown Kelp bioband: This continuous bioband was dominated by the brown bladed kelps: Bongard's (*Saccharina nigripes*; 5-50% cover in 4/5 quadrats), *A. marginata* (5-80% cover in 4/5 quadrats), and Northern rhizome kelp (*Laminaria longipes*; 40% cover in 1/4 quadrat) (Figure D-9; Photo F). Coralline red algae were commonly encountered throughout the bioband covering 10-70% in all 5 quadrats. A variety of marine invertebrates were observed and included the sea stars, blood star (*Henricia* sp.) and mottled sea star (*Evasterias* sp.); and snail species, frilled dogwinkle (*Nucella lamellosa*), Oregon triton (*Fusitriton oregonensis*), and little margarite snail (*Margarites pupillus*).

Bull Kelp bioband: A narrow, continuous band of bull kelp (*Nereocystis luetkeana*) was observed in the nearshore.

Photo A: The higher intertidal zone spanned 92 m over bedrock platform with tide pools.

Photo B: Patches of *Neorhodomela aculeata* and *Phyllospadix serrulatus* were present within the Barnacle bioband.

Photo C: Tide pools provided habitat to *Anthopleura* sp. within the Barnacle bioband.

Photo D: The Rockweed bioband was narrow and consisted of *Fucus distichus* (1-25% cover) and *Mytilus trossulus* (1-40% cover).

Photo E**:** The Alaria bioband consisted predominantly of *Alaria marginata,* encrusting corallines, and *Odonthalia floccosa*.

Photo F: The Dark Brown Kelp band consisted of encrusting coralline algae, *Saccharina nigripes, Laminaria longipes* and *Alaria marginata.*

Figure D-9. Photo examples of Alaska Peninsula site AKP_16_003.

D.4 Station AKP_16_004

Location: West coast of Nakalilok Bay
Latitude /Longitude: N56.92119 W-156.93663
Region: Alaska Peninsula
Date sampled: May 7, 2016

Figure D-10. Site AKP_16_004 on the west coast of Nakalilok Bay (Digital Globe, September 24, 2014).

Figure D-11. Aerial photo of site AKP_16_004 from ShoreZone aerial survey May 7, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_004 was located on the western coast of Nakalilok Bay (Figure D-10; Figure D-11) adjacent to Site AKP_16_003. The site consisted of a wide, low gradient boulder beach over bedrock platform. The site was classified as semi-exposed, with partially mobile substrate, as evidenced by the well-rounded rounded bare boulders in the higher intertidal zone. In the upper- and mid- intertidal zones wide Splash Zone, Bare, and Barnacle biobands were present (Figure D-12; Photo A). A bedrock ramp was exposed in the mid-intertidal zone. The lower intertidal zone contained wide biobands of Rockweed, Red Algae and Dark Brown Kelps on rounded boulders. A narrow bioband of Bull Kelp was observed just offshore of site. Site AKP_16_004 was characterized by a 106 m wide low gradient boulder beach, with an overall slope of 2.5°. The 67 m upper intertidal zone consisted predominantly of smaller boulders, with cobble and shallow tide pools. The 39 m wide lower intertidal zone had medium to large boulder, most with close to 100% vegetation cover.

Splash Zone bioband: The supratidal zone consisted of a distinct, continuous band of black seaside lichen (*Verrucaria* sp.) covering most boulders. Common invertebrates were beach hoppers (*Traskorchestia traskiana*) and Sitka periwinkle (*Littorina sitkana*).

Bare bioband: The band spanned approximately 34 m and consisted of a mixture of boulders over bedrock with tide pools. Marine flora was sparse and included the red filamentous seaweed, black sea hair ("*Bangia*" spp.), graceful black pine (*Neorhodomela aculeata*), and encrusting coralline algae.

Barnacle bioband: The Barnacle bioband was 19 m in width with a composition of substrate and flora similar to the Bare bioband. Barnacle coverage was sparse at only 1-30% in the three quadrat plots. Common high intertidal invertebrates included *L. sitkana* (20-50 count in 3/3 quadrats) and limpets (*Lottia* sp.). Tidepool sculpin (*Oligocottus maculosus*) and serrulated surfgrass (*Phyllospadix serrulatus*) were common (Figure D-12; Photo B) in the tidepools.

Rockweed bioband: The band consisted predominantly of rockweed (*Fucus distichus*; 25-35% cover in 3/4 quadrats). Red algae were also observed and included sea brush (*Odonthalia* sp.; 10-15% in 2/4 quadrats), *Pyropia* sp. (laver; 5-25% cover in 4 quadrats), and red ribbon (*Devaleraea mollis*; 1-20% cover in 3/4 quadrats). Also common were the green algae, sea lettuce (*Ulva* sp.; 1-30% cover in 4 quadrats) and green rope (*Acrosiphonia coalita*), and the brown algae, soda straws (*Scytosiphon lomentaria*) (Figure D-12; Photo C). Marine invertebrates included black katy chiton (*Katharina tunicata*), Margarite snail (*Margarites* sp.), Pacific blue snail (*Mytilus trossulus*), and mask limpet (*Tectura persona*). During low tide, a red fox (*Vulpes vulpes)* was observed foraging for invertebrates (Figure D-12; Photo D) and eating several *K. tunicata*.

Red Algae bioband: The bioband was dominated by a thick, continuous layer of foliose red algae (*Odonthalia* sp.; 60-95% cover in 3/3 quadrats) (Figure D-12; Photo E). Encrusting coralline algae (5-40% cover in 3/3 quadrats) was observed below the other red algae. Marine invertebrates were diverse and included three seastars, the blood star (*Henricia leviuscula*), sunflower star (*Pycnopodia helianthoides*), and leather star (*Dermasterias imbricata*), and two anemones, the green anemone (*Anthopleura* sp.) and plumose anemone (*Metridium* sp.). Marine molluscs included white capped limpet (*Acmaea mitra*), Oregon triton (*Fusitriton oregonensis*), *Margarites* sp., *K. tunicata*, and orange fragrant nudibranch (*Peltodoris nobilis*).

Dark Brown Kelp bioband: This continuous band was dominated by the brown bladed kelps, southern stiff-stiped kelp (*Laminaria setchellii*), Northern rhizome kelp (*L. longipes*), five-ribbed kelp (*Costaria costata*) and split kelp (*Saccharina nigripes*) (Figure D-12; Photo F). Common red algae included sea fern (*Ptilota asplenioides*), Russian sea brush (*O. setacea*), bladed red alga (*Devaleraea* sp.), black tassel (*Polyostea bipinnata*), and red eyelet silk (*Sparlingia pertusa*). When sampled, this bioband was submerged and few invertebrates were observed.

Photo A: The upper intertidal zone showed a distinct Splash Zone (with *Verrucaria* sp), and wide Bare and Barnacle biobands.

Photo B: In the Barnacle bioband, encrusting coralline algae, the surfgrass *Phyllospadix serrulatus*, and filamentous red algae *Odonthalia* sp. were found in tide pools.

Photo C: Within the Rockweed bioband, the brown algae *Scytosiphon lomentaria,* and green algae species *Acrosiphonia coalita* and *Ulva* sp. covered boulders.

Photo D: A red fox (*Vulpes vulpes*) was observed foraging within the intertidal zone during the survey.

Photo E: The Red Algae bioband consisted of *Odonthalia* sp., covering 60-95% in 3/3 of the quadrats.

Photo F: The Dark Brown Kelp bioband consisted of a mix of *Laminaria* sp., *Saccharina nigripes* and *Costaria costata.*

Figure D-12. Photo examples of Alaska Peninsula site AKP_16_004.

D.5 Station AKP_16_005

Location: Northwest Choweit Island, Semidi Islands
Latitude /Longitude: N56.03983 W-156.74269
Region: Alaska Peninsula
Date sampled: May 8, 2016

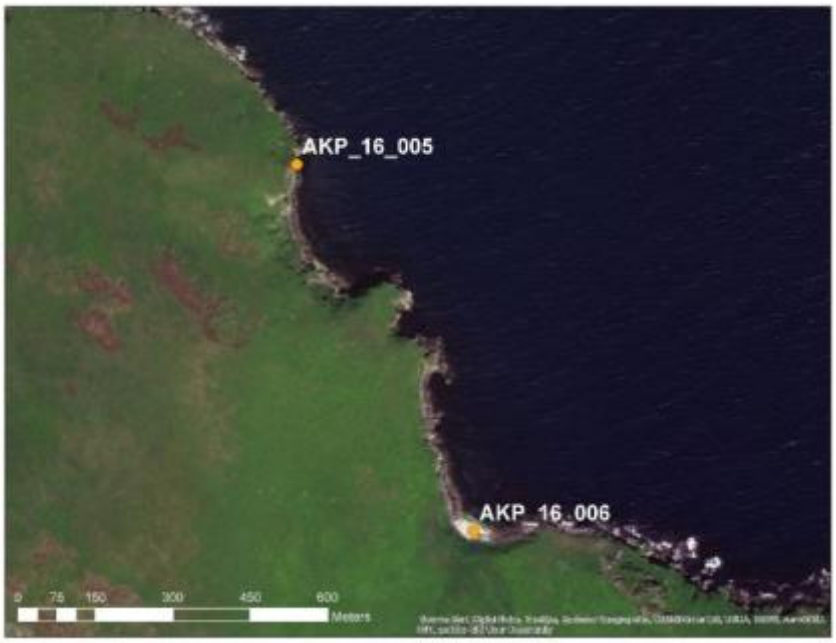


Figure D-13. Site AKP_16_005 on the northwestern coast of Choweit Island, part of the Semidi Islands group (Digital Globe, July 8, 2013).

Figure D-14. Aerial photo of site AKP_16_005 from ShoreZone aerial survey May 8, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_005 was in the Semidi Islands group, on the northwestern coast of Chowiet Island (Figure D-13; Figure D-14). The site was composed of large angular rubble at the top of the beach and semi-rounded large boulders and rubble over the steep and narrow (15 m cross-shore) beach face. The site was classified as exposed, with immobile substrate. Sea swell influences site morphology. The upper intertidal zone was dominated by a distinct, wide Splash Zone bioband and a Winter Laver bioband. The lower intertidal zone consisted of a patchy Red Algae bioband and a continuous Dark Brown Kelp bioband (Figure D-15; Photo A). Just offshore was a narrow band of mixed bull and dragon kelps.

Site AKP_16_005 was characterized by a narrow (15m) and steep boulder and rubble beach, with an overall slope of 20° (Figure D-15; Photo B). Above the Splash Zone, a high bedrock cliff with terrestrial vegetation transitioned to the boulders and rubble. From the Splash Zone bioband to the waterline, substrate consisted of very large boulders (1-3 m in size).

Splash Zone bioband: The supratidal zone consisted of a distinct, continuous band of black seaside lichen (*Verrucaria* sp.), spanning 7 m (Figure D-15; Photo B).

Winter Laver bioband: The bioband consisted of winter laver (*Pyropia* sp.), with quadrat cover ranging from 50-100% in all 3 quadrats (Figure D-15; Photo C). Red algae species included sea moss (*Endocladia muricata*; 10% cover in 1/3 quadrat) and encrusting red algae (*Hildenbrandia* sp.; 5-50% cover in 2/3 quadrats). Few invertebrates were observed, but included limpets (*Lottia* sp.) and acorn barnacles (*Balanus glandula*).

Red Algae bioband: Vegetation was patchy, and consisted of encrusting and articulating coralline red algae (1-75% quadrat cover in 5/5 quadrats) and Turkish washcloth complex (*Mastocarpus* sp.; 1-15% cover in 3/5 quadrats) (Figure D-15; Photo D). Brown algae included rockweed (*Fucus distichus*; 1-30% cover in 3/5 quadrats), unidentified brown algae (Phaeophyta; 20-30% in 2/5 quadrats), ribbon kelp (*Alaria marginata*; 7-40% cover in 4/5 quadrats) and Northern rhizome kelp (*Laminaria longipes*; 30% cover in 1/5 quadrat) (Figure D-15; Photo D). Invertebrate species richness was low, and included black katy chiton (*Katharina tunicata*) and *Lottia* sp,

Dark Brown Kelp bioband: A continuous cover of bladed kelps included *L. longipes* (20-60% quadrat cover in all 3 quadrats) and Bongard's kelp (*Saccharina nigripes*; 5-75% cover in 2/3 quadrats) (Figure D-15; Photo E). Common red algae included the filamentous sea fern (*Ptilota asplenioides*; 15% cover in 1 quadrat) and sea brush (*Odonthalia* spp.; 5-40% in 3/3 quadrats), with encrusting and articulating corallines (5-15% cover in 3/3 quadrats) observed in the understory. Marine invertebrates consisted of few unidentified tunicates (Ascidiacea) and sea stars, including mottled sea star (*Evasterias troschelli*) and blood star (*Henricia leviuscula*).

Bull Kelp bioband: A narrow, continuous band of bull kelp (*Nereocystis luetkeana*) and dragon kelp (*Eualaria fistulosa*) was observed just offshore (Figure D-15; Photo F).

Photo A: The lower intertidal zone consisted of a patchy bioband of Red Algae, and a continuous bioband of Dark Brown Kelps.

Photo B: The intertidal zone was narrow, and steep, spanning 15 m in width with an overall gradient of 20°.

Photo C: The Winter Laver bioband consisted of *Pyropia* sp., which ranged from 50-100% cover in 3 quadrats.

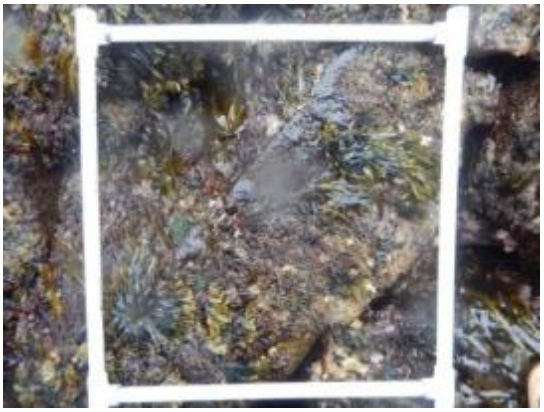


Photo D: The Red Algae bioband consisted of a mix of encrusting red algae, *Mastocarpus* sp., *Fucus distichus, Alaria marginata*, and *Laminaria* sp.

Photo E: Dominant bladed kelps included *Laminaria longipes* and *Saccharina nigripes* in the Dark Brown Kelp bioband.

Photo F: In the nearshore, a narrow band of *Nereocystis luetkeana* and *Eualaria fistulosa*.

Figure D-15. Photo examples of Alaska Peninsula site AKP_16_005.

D.6 Station AKP_16_006

Location: Northwest Choweit Island, Semidi Islands
Latitude /Longitude: N56.03626 W-156.73961
Region: Alaska Peninsula
Date sampled: May 8, 2016

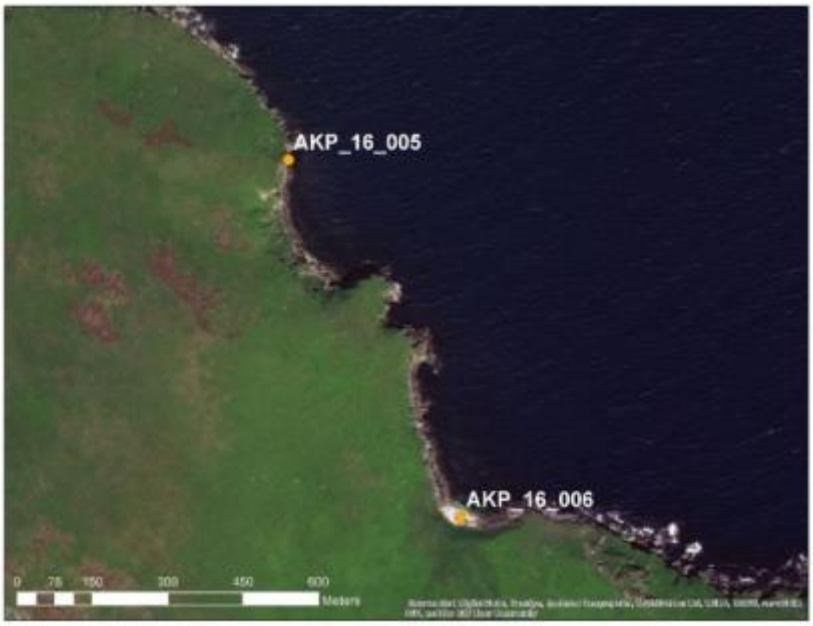


Figure D-16. Site AKP_16_006 on the northwestern coast of Choweit Island, part of the Semidi Islands group (Digital Globe, July 8, 2013).

Figure D-17. Aerial photo of site AKP_16_006 from ShoreZone aerial survey May 8, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_006 was in the Semidi Islands group, on the northwestern coast of Chowiet Island (Figure D-16; Figure D-17). The site consisted of a wide, low gradient beach with medium to large rounded boulders dominating the lower intertidal zone and large rounded cobble and small boulders on the beach face (Figure D-18; Photo A). The site was classified as semi-exposed with partially mobile substrate. Sea swell influences site morphology as evidenced by the well-rounded boulders and cobbles. Terrestrial grasses and woody debris were observed above the Splash Zone bioband (Figure D-18; Photo A). The upper intertidal zone consisted of Bare and Green Algae biobands. The lower intertidal zone contained relatively high algae diversity, with wide, continuous Red Algae and Dark Brown Kelp biobands. Though wave energy influences the beach, vegetation cover on tops of boulders indicates that it is not high enough to preclude attached epifauna in the lower zones. A narrow band of Bull Kelp was observed just offshore.

Site AKP_16_006 was characterized by a wide, low gradient boulder and cobble beach. The Splash Zone bioband consisted of large angular boulders. From the Bare bioband to the water, substrate was comprised of rounded boulders and cobbles. The Green Algae bioband spanned 14.5 m, the Red Algae bioband spanned 11.6 m, and the Dark Brown Kelp bioband spanned 7 m. Combined, the 33.1 m mid- to low intertidal zone spanned had an overall slope of 6.7°.

Supratidal zone: The high intertidal zone consisted of a Splash Zone bioband and a Bare bioband. Above the supratidal zone, terrestrial grasses and logs were present. The Splash Zone consisted of a patchy band of black seaside lichen (*Verrucaria* sp.) and sparse cover of laver (*Pyropia* sp.) over angular rocks. Seaweed drift and woody debris were recorded in the supratidal zone. There were no observations of fauna.

Green Algae bioband: The bioband consisted of a patchy distribution of the green filamentous algae, *Ulothrix* sp., and *Acrosiphonia* sp. (1-20% cover in 2/3 quadrats) (Figure D-18; Photo B). Red algae distribution was also patchy and included Turkish washcloth complex (*Mastocarpus* sp.; 1-10% cover in all 3 quadrats), stiff ribbon (*Palmaria hecatensis*; 1-10% cover in 2/3 quadrats), and laver (*Pyropia* sp.). Invertebrates were limited to common Sitka periwinkle (*Littorina sitkana*; approximately 20 individuals in 1 quadrat).

Red Algae bioband: Algae richness was high in the Red Algae bioband amd the dominant species included the red algae Turkish washcloth complex (*Mastocarpus* sp.; 60% cover in 1/3 quadrats), massa weed complex (*Mazzaella* sp.; 30% cover in 1/3 quadrats), *P. hecatensis* (15-50% cover in 3/3 quadrats), and sea sac (*Halosaccion glandiforme*) (Figure D-18; Photo C). Patches of bladed brown kelps included ribbon kelp (*Alaria marginata*; 5-30% cover in 3/3 quadrats) and split kelp (*Saccharina nigripes*) (Figure D-18; Photo D). Green algae included the filamentous *Acrosiphonia* sp. (1-5% cover in 3/3 quadrats) and foliose sea lettuce (*Ulva* sp.; 5% cover in 1/3 quadrat). There were no observations of marine invertebrates in this bioband.

Dark Brown Kelp bioband: The bioband was dominated by two bladed kelp species, split kelp (*Saccharina nigripes*; 25-80% cover in 2/5 quadrats) and Northern rhizome kelp (*Laminaria longipes*; 5-80% in 4/5 quadrats) (Figure D-18; Photo E). A variety of red algae were also commonly encountered, including filamentous red algae (*Ptilota* sp.; 25-50% cover in 4/5 quadrats), red ribbon (*Devaleraea mollis*; 1-15% cover in 4/5 quadrats) and encrusting and articulating coralline algae (20-60% cover in 4/5 quadrats). In addition, diatoms covered the *Ptilota* sp. (Figure D-18; Photo E). Few invertebrates were encountered within the bioband and were limited to grazers such as red lined chiton (*Tonicella lineata*), shield limpet (*Lottia pelta*), and white capped limpet (*Acmaea mitra*).

Bull Kelp bioband: A narrow, continuous band of bull kelp (*Nereocystis luetkeana*) and few strands of dragon kelp (*Eualaria fistulosa*) were observed just offshore.

Photo A: The site consisted of a wide, low gradient beach with rounded boulders and cobble.

Photo B: The Green Algae bioband consisted of a mix of the green algae *Ulothrix* sp., and *Acrosiphonia* sp. and the red algae *Devaleraea* sp. and *Mastocarpus* sp.

Photo C: The Red Algae bioband consisted of Devaleraea sp., Halosaccion glandiforme, Alaria marginata, and Mazzaella parksii.

Photo D: The brown bladed kelp Saccharina nigripes mixed with Devaleraea sp. and encrusting corallines in the Red Algae bioband.

Photo E: The Dark Brown Kelp bioband was dominated by *Saccharina nigripes* and *Laminaria longipes*.

Photo F: Within the Dark Brown Kelp bioband, red algae included *Schizymenia pacifica (red blade)* and *Ptilota* sp., covered in diatoms.

Figure D-18. Photo examples of Alaska Peninsula site AKP_16_006.

D.7 Station AKP_16_007

Location:	North coast of Sutwik Island
Latitude /Longitude:	N56.57623 W-157.23144
Region:	Alaska Peninsula
Date sampled:	May 9, 2016

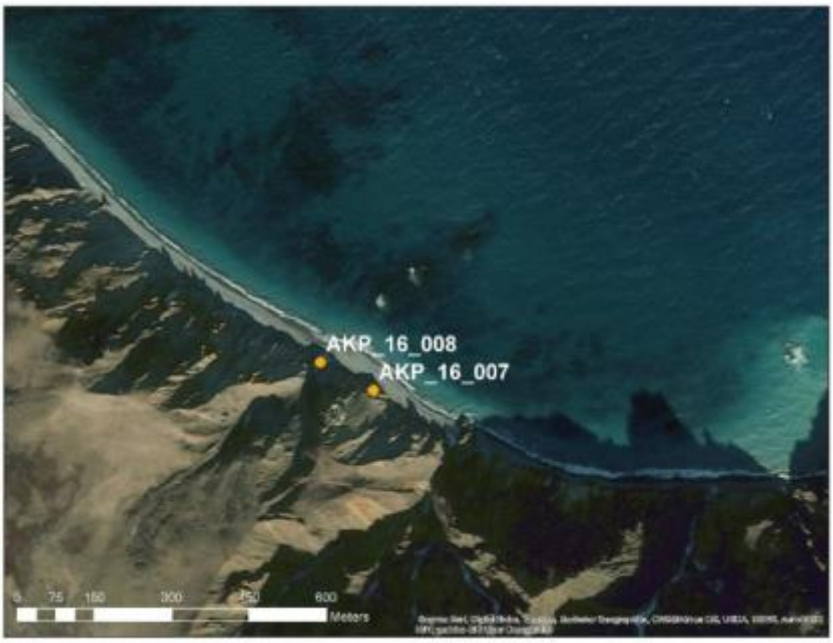


Figure D-19. Site AKP_16_007 on north coast of Sutwik Island (Digital Globe, March 16, 2011).

Figure D-20. Aerial photo of site AKP_16_007 from ShoreZone aerial survey May 7, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_007 was located on the northern coast of Sutwik island (Figure D-19; Figure D-20). The site was complex, consisting of a wide, mixed substrate beach with a bedrock outcrop in the mid- to lower intertidal zone. The site was classified as semi-exposed with partially mobile substrate. Sea swell influences the site morphology. In the upper intertidal zone, a Bare bioband was present with substrate consisting of sand, cobble, and boulders in the upper band transitioning to a bedrock platform in the mid- to lower portion. The Rockweed bioband consisted of a bedrock reef feature with shallow tide pools. A lush Rd Algae bioband, mixed with surfgrass, and a Dark Brown Kelp bioband were observed in the low intertidal. A Bull Kelp bioband was just offshore.

Site AKP_16_007 was characterized by a wide, low gradient beach spanning approximately 116 m in width, with an overall slope of 2.7° (Figure D-21; Photo A). The supratidal zone consisted of a log line over sand, cobble, and boulder substrate for 6 m. The Bare bioband was approximately 33 m wide, with substrate mixed sand, cobble, and boulder transitioning to a bedrock platform towards the waterline. The Rockweed bioband spanned 51 m in width. Geomorphic features included shallow tide pools and a basalt reef outcrop (Figure D-21; Photo B). The Red Algae bioband was approximately 27 m wide on a bedrock platform where tide pools were also present.

Bare bioband: The supratidal zone consisted of a wide log line over mobile substrate comprised of boulder, cobbles and sand (Figure D-21; Photo C). Approximately midway through the bioband, substrate transitioned to bedrock. Although no marine fauna or flora was observed, pockets of seaweed drift were present.

Rockweed bioband: The wide bioband had a patchy distribution of rockweed (*Fucus distichus*) that ranged from 1-30% cover in 3/6 quadrats (Figure D-21; Photo D). A mix of filamentous red algae included sea brush (*Odonthalia floccosa*; 1-50% cover in 2/6 quadrats; Figure D-21; Photo D), rockweed brush (*O. floccosa f. comosa*; 3-40% cover in 4/6 quadrats), and black tassel (*Polyostea bipinnata*; 10% cover in 1/6 quadrat). Marine invertebrates thatched barnacles (*Semibalanus cariosus*; 1-10% cover in 2/6 quadrats), small brown barnacles (*Chthamalus dalli*; 1-2% cover in 3/6 quadrats; Figure D-21; Photo D), shield limpets (*Lottia pelta*) and plumose anemones (*Metridum senile*).

Red Algae bioband: This wide, continuous bioband consisted of a mix of *O. floccosa* (1-65% cover in all 5 quadrats), ribbon kelp (*Alaria marginata*; 2-70% cover in 4/5 quadrats), and serrulated surfgrass (*Phyllospadix serrulatus*; 10-60% cover in 3/5 quadrats) (Figure D-21; Photo E). Marine invertebrate richness was low and common species were black katy chiton (*Katharina tunicata*; Figure D-21; Photo F), green sea urchin (*Strongylocentrotus droebachiensis*), and burrowing green anemone (*Anthopleura artemisia*).

Nearshore biobands: Dark Brown Kelp and Bull Kelp biobands were narrow and continuous just offshore. These bands included five-ribbed kelp (*Costaria costata*), three-ribbed kelp (*Cymathaere triplicata*), split kelp (*Saccharina nigripes*), and bull kelp (*Nereocystis luetkeana*).

Photo A: Looking towards the waterline, Site AKP_16_007 has complex beach features with substrate transitioning from sand, cobble, and boulder to a bedrock platform.

Photo B: Physical features included a bedrock outcrop and shallow tide pools in the Rockweed bioband.

Photo C: The higher intertidal zone consisted of a wide Bare bioband with substrate composed of boulder, cobble and pebble.

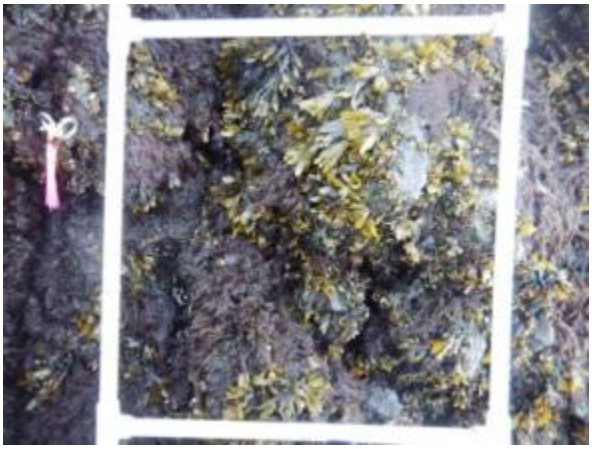


Photo D: Within the Rockweed bioband, patchy distributions of the brown seaweed, *Fucus distichus*, red seaweed *Odonthalia floccosa* and barnacles, *Semibalanus cariosus* were present.

Photo E: The Red Algae bioband consisted of red filamentous algae *Odonthalia floccosa*, brown kelp *Alaria marginata*, and the surfgrass *Phyllospadix serrulatus.*

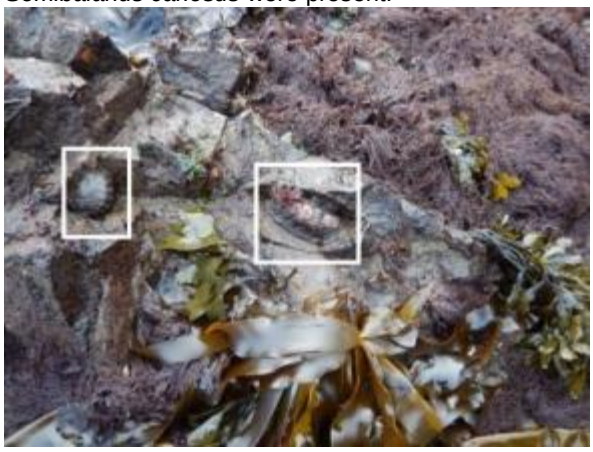


Photo F: Two chitons, *Katharina tunicata* grazing, in the Red Algae bioband.

Figure D-21. Photo examples of Alaska Peninsula site AKP_16_007.

D.8 Station AKP_16_008

Location:	North coast of Sutwik Island
Latitude /Longitude:	N56.57350 W-157.23236
Region:	Alaska Peninsula
Date sampled:	May 9, 2016

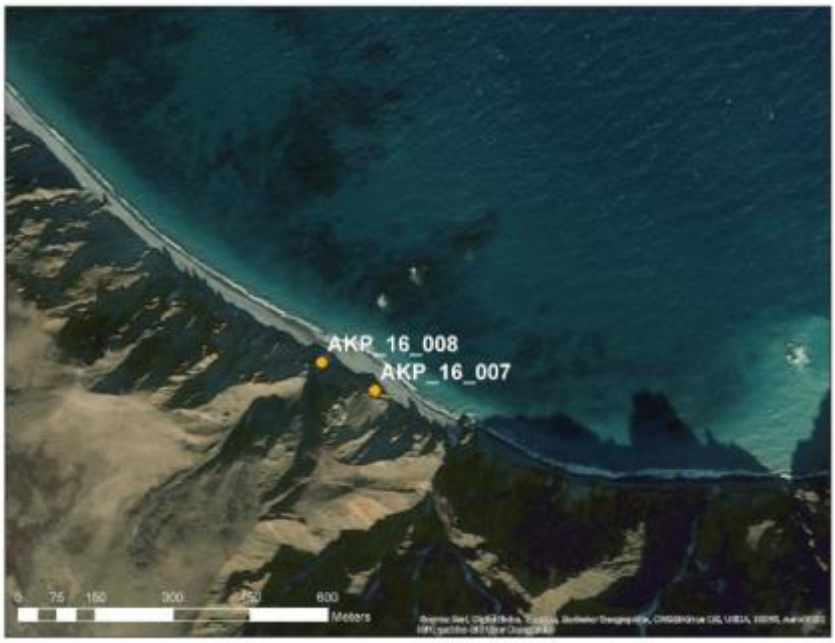


Figure D-22. Site AKP_16_008 on the north coast of Sutwik Island (Digital Globe, March 16, 2011).

Figure D-23. Aerial photo of site AKP_16_008 from ShoreZone aerial survey May 7, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_008 was located on the northern coast of Sutwik Island (Figure D-22; Figure D-23). The site consisted of a wide, low gradient beach with substrate composed of rounded small to large cobble and small boulders. The site was classified as semi-exposed with partially mobile substrate. A wide Bare bioband and narrow patchy Green Algae bioband over mobile substrate indicated higher wave energy in the high intertidal zone. The lower intertidal zone contained a lush and continuous, Red Algae bioband. In the nearshore, a bioband of Bull Kelp was present.

Site AKP_16_008 was characterized by a wide, low gradient beach spanning approximately 57 m, with an overall slope of 5.6° (Figure D-24; Photo A). The upper intertidal zone consisted of a wide Bare bioband, approximately 24 m in width, with a log berm at the top of the band. Substrate was predominantly rounded boulder and cobble, however patches of pebble, cobble and sand occurred throughout the Bare bioband (Figure D-24; Photo B). The 13 m wide Green Algae bioband was patchy and narrow with boulder over bedrock substrate. The 21 m wide Red Algae bioband had similar substrate in the upper band and transitioned exclusively to bedrock in the lower band.

Bare bioband: At the top of the bioband a 2 m wide log line was present. While no marine fauna or flora was attached to substrate, drift algae was observed within pockets of this bioband.

Green Algae bioband: This patchy bioband included the green algae mermaid's tresses (*Ulothrix flacca*), dark sea lettuce (*Ulvaria obscura*), and green rope (*Acrosiphonia coalita*). In the quadrat survey, *Ulothrix* sp. ranged from 3-40% and was present in all 3 quadrats (Figure D-24; Photo C). Additionally, trace amounts of the red foliose algae, winter laver (*Pyropia taeniata*), were present. There were no observations of marine invertebrates recorded.

Red Algae bioband: This wide, continuous bioband consisted of a rich diversity of red, brown and green algae. In the upper half of the band, stiff red ribbon (*Palmaria hecatensis*; 1-30% cover in 2/5 quadrats), *A. coalita*, and green algae (*Ulvaria* sp.) dominanted (Figure D-24; Photo D). The lower half of the bioband was dominated by flattened sea sac (*Halosaccion firmum*; 1-30% cover in 4/5 quadrats; Figure D-24; Photo E) and red ribbon (*Devalaraea mollis*; 5-25% cover in 3/5 quadrats). Patches of brown bladed kelps, ribbon kelp (*Alaria marginata*; 1-25% cover in 4/5 quadrats), three-ribbed kelp (*Cymathaere triplicata*; 3-10% cover in 2/5 quadrats), five-ribbed kelp (*Costaria costata*, and split kelp (*Saccharina nigripes*; 2-40% cover in 2/5 quadrats), were observed along the waterline (Figure D-24; Photo F). Marine invertebrate richness was low and included the hairy hermit crab (*Pagurus hirsutiusculus*), beach hoppers (*Traskorchestia traskiana)*, rockweed idotea (*Pentidotea wosnesenskii*), and the margarite snail (*Margarites* sp.).

Nearshore biobands: Just offshore, a Bull Kelp bioband of the canopy bull kelp (*Nereocystis luetkeana*) was mixed with the dark brown kelps Northern rhizome kelp (*Laminaria longipes*), *C. costata*, *C. triplicata* as well as canopy bull kelp (*Nereocystis luetkeana*).

Photo A: Overview of Site AKP_16_008, which consisted of a wide, low gradient beach spanning 57 m with an overall slope of 5.6°.

Photo B: The upper intertidal zone consisted of a wide Bare bioband. Substrate was predominantly boulders, with patches of cobble, pebbles and sand.

Photo C: The Green Algae bioband showed patchy distributions of *Ulothrix* sp., with cover ranging from 3-40% in the quadrat surveys.

Photo D: The upper portion of the Red Algae bioband consisted of the red algae *Palmaria hecatensis*, and the green algae *Acrosiphonia coalita* and *Ulvaria* sp.

Photo E: In the lower portion of the Red Algae bioband *Halosaccion firmum* ranged from 1-30% of the quadrat cover.

Photo F: Along the waterline patches of brown bladed kelps, *Alaria marginata, Costaria costata* and *Saccharina nigripes* were observed.

Figure D-24. Photo examples of Alaska Peninsula site AKP_16_008.

D.9 Station AKP_16_009

Location:	North coast of Port Wrangell
Latitude /Longitude:	N57.04738 W-156.60645
Region:	Alaska Peninsula
Date sampled:	May 10, 2016

Figure D-25. Site AKP_16_009 on the north coast of Port Wrangell. (Digital Globe, August 30, 2014).

Figure D-26. Aerial photo of site AKP_16_009 from ShoreZone aerial survey May 6, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_009 was on the north shoreline inside Port Wrangell (Figure D-25; Figure D-26). The site consisted of a steep bedrock cliff which transitioned to a narrow, benched, bedrock ramp (Figure D-27; Photo A). The site was classified as semi-exposed with immobile substrate. Sea swell and currents influence morphology. The upper intertidal zone consisted of narrow Splash Zone, Bare, and Barnacle biobands. The lower intertidal zone consisted of Blue Mussel, Rockweed, Alaria, and Dark Brown Kelp biobands. Species richness was relatively high at this site, and tide pools within the bedrock ramp scattered the intertidal zone. In the nearshore, a patchy Bull Kelp bioband was observed.

Site AKP_16_009 was characterized by a vertical bedrock wall which transitioned into a narrow bedrock ramp to the waterline. The upper intertidal zone was 2.20 m in height on the bedrock wall and consisted of a Splash Zone, Bare, and Barnacle bioband. The Blue Mussel band spanned the bottom of the bedrock cliff and covered 2.7 m of the bedrock ramp. The overall bedrock platform was narrow, at 20.6 m wide and the mid- to lower intertidal zone included Rockweed, Alaria, and Dark Brown Kelp biobands. The upper bedrock platform had shallow tide pools and deeper tide pools were present in the Alaria and Dark Brown Kelp biobands (Figure D-27; Photo A).

Splash Zone bioband: The high intertidal zone consisted of a continuous, medium width black seaside lichen (*Verrucaria* sp.) bioband on vertical bedrock.

Bare bioband: Beneath the *Verrucaria* sp. was a narrow 1.0 m wide Bare bioband of bedrock.

Barnacle bioband: A continuous and narrow distribution of acorn barnacles (*Balanus glandula*) and small brown barnacles (*Chthamalus dalli*) dominated the bioband. Barnacles were also present in all three quadrats, *B. glandula* ranged from 5-20% cover, while *C. dalli* ranged from 5-30%. Limpets (*Lottia* sp.), Pacific blue mussles (*Mytilus trossulus*), and Sitka periwinkles (*Littorina sitkana*) were present. Common high intertidal algae included sea moss (*Endocladia muricata*), black sea hair ("*Bangia*" spp.), rockweed laver (*Pyropia fucicola*), and green rock scum (*Rosenvingiella polyrhiza*).

Blue Mussel bioband: The Blue Mussel bioband originated at the base of the bedrock cliff and transitioned to the bedrock ramp. The bioband consisted of a mix of the Pacific blue mussel (*M. trossulus),* the brown alga rockweed (*Fucus distichus*), and the red algae sea brush (*Odonthalia floccosa*), and *Polyostea* sp. (Figure D-27; Photo B). Three quadrats were sampled in the Blue Mussel bioband with the following present in all three; *M. trossulus* (10-30% cover), *Polyostea* sp. (20-70% cover), and *O. floccosa* (1-40% cover). Shallow tide pools provided habitat to *L. sitkana,* plumose anemone (*Metridium senile*), and white capped limpet (*Acmaea mitra*).

Rockweed bioband: The rockweed bioband consisted of a continuous, wide mix of brown and red algae. Percent cover of the rockweed, *F. distichus*, ranged from 1-30% and was present in all 4 quadrats; the most abundant red algae was *Odonthalia floccosa* (5-50% cover in 3/4 quadrats; Figure D-27; Photo C). In the shallow tide pools, encrusting coralline algae, the barnacle *S. cariosus* (5-15% cover in 3/4 quadrats), and black katy chitons (*Katharina tunicata*) were observed (Figure D-27; Photo C). Additionally, patches of *M. trossulus* were present within this bioband, ranging from 1-40% in 2/4 quadrats.

Alaria bioband: This bioband consisted of a continuous, wide mix of brown bladed kelps and red algae (Figure D-27; Photo D). The most abundant brown bladed kelp was ribbon kelp (*Alaria marginata*), which was present in all five quadrats and ranged from 25-60% cover. The false brown kelp (*Petalonia fascia*), was also present. Red algae consisted of a mix of coralline red algae (encrusting and articulating; 2-30% cover in 5/5 quadrats), *O. floccosa* (5-20% cover in 4/5 quadrats), *Polyostea* sp. (2-10% cover in 3/5 quadrats), and red ribbon (*Devaleraea mollis*; 5-10% cover in 5/5 quadrats). Deep tide pools provided habitat for the sea stars, sunflower star (*Pycnopodia helianthoides*) and mottled sea star (*Evasterias troschelli*), and plumose anemone (*Metridium senile*). Other invertebrates included the black katy chiton

(*Katharina tunicata*) and barnacle *Semibalanus cariosus,* both common in tide pools (Figure D-27; Photo E).

Dark Brown Kelp bioband: The bioband was dominated by a variety of brown bladed kelps, split kelp (*Saccharina nigripes*; 5-40% cover in 4/5 quadrats), *A. marginata* (10-30% cover in 4/5 quadrats), and five-ribbed kelp (*Costaria costata*; 20-30% cover in 2/5 quadrats) (Figure D-27; Photo F). Common red algae in the band included *O. floccosa* (5-70% cover in 5/5 quadrats), *P. mollis,* and coralline red algae (encrusting and articulating; 1-15% cover in 5/5 quadrats). Green algae cover was low and included the filamentous *Acrosiphonia* sp. and foliose sea lettuce (*Ulva* sp.).

Bull Kelp bioband: A sparse, patchy band of bull kelp (*Nereocystis luetkeana*) was observed just offshore.

Photo A: Site AKP_16_009 consisted of a steep bedrock cliff which transitioned to a bedrock platform with tide pools.

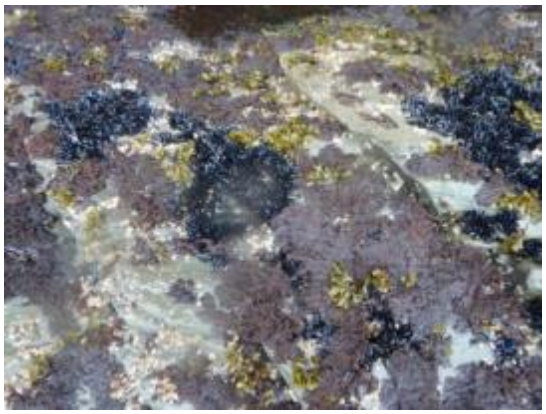


Photo B: The Blue Mussel bioband consisted of *Mytilus trossulus, Polyostea* sp., *Odonthalia floccosa,* and *Fucus distichus.*

Photo C: The Rockweed bioband was comprised of a mix of the brown algae *Fucus distichus,* red algae *Odonthalia floccosa*, barnacle *Semibalanus cariosus,* and encrusting coralline algae.

Photo D: The Alaria bioband consisted of the bladed brown kelp, *Alaria marginata*, with a variety of red algae.

Photo E: A commonly identified tide pool invertebrate, *Katharina tunicata* (black katy chiton).

Photo F: Common bladed kelps included *Saccharina nigripes*, *Costaria costata,* and *Alaria marginata* in the lower intertidal zone.

Figure D-27. Photo examples of Alaska Peninsula site AKP_16_009.

D.10 Station AKP_16_010

Location:	Northwest corner of Port Wrangell
Latitude /Longitude:	N57.05980 W-156.62245
Region:	Alaska Peninsula
Date sampled:	May 11, 2016

Figure D-28. Site AKP_16_010 at the northwest corner of Port Wrangell (Digital Globe, August 30, 2014).

Figure D-29. Aerial photo of site AKP_16_010 from ShoreZone aerial survey May 6, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_010 was located on the far northwest corner of Port Wrangell (Figure D-28; Figure D-29). The site is a narrow, steep, bedrock ramp, which was characterized as semi-protected with immobile substrate (Figure D-30; Photo A). As the site is located at the very head of Port Wrangell, it is protected from ground swell. Species richness was relatively low, with few invertebrates. The upper intertidal zone was mostly bare of fauna, and included a narrow Splash Zone and Bare biobands. The lower intertidal zone consisted of narrow, continuous Rockweed and Red Algae biobands. The Red Algae bioband was dominated by *Neorhodomela aculeata* (graceful black pine). Beneath the waterline, coralline red algae were visible. Canopy kelps were not present at this site.

Site AKP_16_010 consisted of a steep, narrow (8.9 m) bedrock beach, with an overall gradient of 29°. The upper intertidal zone consisted of a narrow Splash Zone and Bare bioband (3.9 m combined width) and the lower intertidal narrow Rockweed and Red Algae biobands spanned 5.0 m.
Splash Zone bioband: This narrow band was predominantly black seaside lichen (*Verrucaria* sp.), with patches of the red encrusting algae, rusty rock (*Hildenbrandia rubra*) (Figure D-30; Photo B).

Bare bioband: The bioband was mostly bare but included small amounts of the brown filamentous algae, sea felt (*Pylaiella littoralis*), the green filamentous algae, mermaid's tresses (*Ulothrix flacca*), and the red algae, *H. rubra*. High intertidal invertebrates included a few small brown barnacles (*Chthalamus dalli*) and acorn barnacles (*Semibalanus balanoides*).

Rockweed bioband: This bioband consisted of a narrow, continuous mix of brown, green, and red algae. Brown algae common to the bioband included, rockweed (*Fucus disctichus;* 5-60% cover in 4/4 quadrats*)* and twisted sea tubes (*Melanosiphon intestinalis;* 2-40% cover in 4/4 quadrats) (Figure D-30; Photo C). Common red algae included filamentous red algae (*Polyostea* sp.; 1- 20% cover in 4/4 quadrats; and *Neorhodomela* sp.; 5-10% cover in 2/4 quadrats). Foliose green algae included sea lettuce (*Ulva* sp.; 1-30% cover in 4/4 quadrats) and sea cellophane (*Monostroma grevillei*; 2-10% cover in 2/4 quadrats). Common invertebrates included *C. dalli* (1-5% cover in 4/4 quadrats) and *S. balanoides.*

Red Algae bioband: The Red Algae bioband was narrow and continuous with low species richness (Figure D-30; Photo D). This bioband was dominated by graceful black pine (*N. aculeata*; 70-98% cover in 3/3 quadrats; (Figure D-30; Photo D). Other red algae included red ribbon (*Devaleraea mollis*; 1-2% cover in 2/3 quadrats), *Polyostea* sp. (10% cover in 1/3 quadrat), and sea sac (*Halosaccion glandiforme*; 5-25% cover in 2/3 quadrats) (Figure D-30; Photo F). Marine invertebrates were limited to several observations of unidentified Spiroridae tubeworms recorded.

Nearshore bioband: A band of encrusting coralline red algae was visible beneath the waterline. Canopy and brown bladed kelps were not present within the nearshore.

Photo A: Site AKP_16_010 was classified as semi-exposed, with immobile substrate. The site consisted of a steep and narrow bedrock ramp.

Photo B: The supratidal zone consisted of a narrow Splash Zone bioband with *Verrucaria* sp. (black seaside lichen) and *Hildenbrandia rubra* (rusty rock) present.

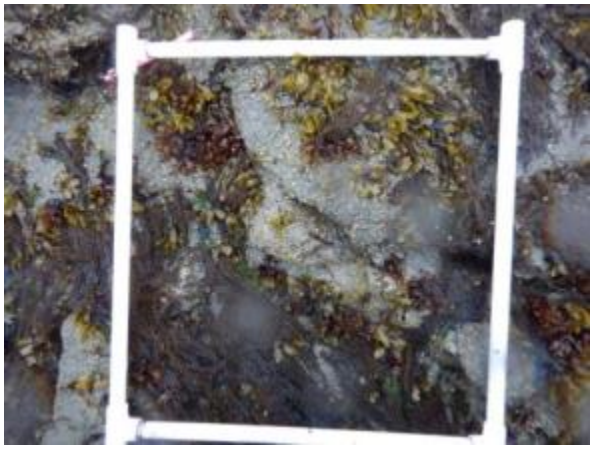


Photo C: The Rockweed bioband consisted of *Fucus distichus* (5-60% cover in quadrat survey) and *Melanosiphonia intestinalis* (2-40% cover in quadrat survey).

Photo D: The Red Algae bioband was narrow and continuous to the waterline with low species richness.

Photo E: The Red Algae bioband was dominated by *Neorhodomela aculeata*, which ranged from 70-98% cover in the quadrat survey.

Photo F: In the Red Algae bioband *Halosaccion glandiforme* cover ranged from 5-25% in two quadrats.

Figure D-30. Photo examples of Alaska Peninsula site AKP_16_010.

D.11 Station AKP_16_011

Location: North of Takli Island, between Amalik and Kinak bays
Latitude /Longitude: N58.07936 W-154.46570
Region: Alaska Peninsula
Date sampled: May 12, 2016

Figure D-31. Site AKP_16_011 was north of Takli Island, between Amalik and Kinak bays (Digital Globe, May 1, 2014).

Figure D-32. Aerial photo of site AKP_16_011 from ShoreZone aerial survey June 10, 2003. Yellow line shows location of transect where site profile was measured.

Site AKP_16_011 was located north of Takli Island, Between Amalik and Kinak bays in Katmai National Park (Figure D-31; Figure D-32). The site was classified as semi-exposed with partially mobile substrate and was comprised of an uneven bedrock ramp with a veneer of boulder and cobble in the lower intertidal zone (Figure D-33; Photo A). The supratidal zone and upper intertidal zone consisted of a narrow Splash Zone and Bare bioband on bedrock. Below that was were wide, lush Rockweed and Alaria biobands on bedrock. Species richness was high, including sea urchins, anemones, and sea stars common in tide pools. No nearshore canopy kelps were observed.

Site AKP_16_011 consisted of a vertical bedrock wall above the high-water line. The intertidal zone was approximately 43 m wide with an overall gradient of 7.2°, though stretches of the lower intertidal were steep (>20^{o}). The upper intertidal zone consisted of 9 m of combined Splash Zone and Bare biobands on bedrock. The lower intertidal zone consisted of a boulder and cobble saddle, with a bedrock outcrop, creating two Rockweed and Alaria biobands each (Figure D-33; Photos A and B). The predominant substrate was bedrock.

Splash Zone bioband: At the base of the bedrock cliff was a narrow, continuous band of black seaside lichen (*Verrucaria* sp.). The bioband included patchy distributions of the green algae, green rock scum (*Rosenvingiella polyrhiza*) and sea hair (*Ulva intestinalis*).

Bare bioband: While little flora was observed within the bioband, brown algae included twisted sea tubes (*Melanosiphon intestinalis)* within tide pools. Invertebrates common to this bioband were Sitka periwinkles (*Littorina sitkana*), checkered periwinkles (*L. scutulata*), and limpets (*Lottidae*).

Rockweed bioband: The bioband consisted predominantly of rockweed (*Fucus distichus*) which was present in all 6 quadrats and ranged from 2-90% cover (Figure D-33; Photo C). The upper zone of the Rockweed bioband consisted of sea moss (*Endocladia muricata*) and beauty bush (*Calithamnion pikeanum*). Mid-band were dense patches of Pacific blue mussel (*Mytilus trossulus*; 2-75% cover in 4/6 quadrats; Figure D-33; Photo B). Red algae were diverse and included the foliose reds, stiff red ribbon (*Palmaria hecatensis*), black seaweed (*Pyropia abbottiae*) and false laver (*P. fallax*). Filamentous red algae included graceful black pine (*Neorhodomela aculeata*) and black tassel (*Polyostea bipinnata*). Green algae included the foliose sea cellophane (*Monostroma grevillei), sea lettuce (Ulva* sp.) and arctic sea moss (*Acrosiphonia arcta*).

Invertebrates common to this bioband included thatched barnacles (*Semibalanus cariosus*; 15-40% cover in 5/6 quadrats), small brown barnacles (*Chthamalus dalli*; 10-20% cover in 2/6 quadrats) and acorn barnacles (*Balanus glandula*; 10% cover in 1/6 quadrats). A variety of invertebrates occurred in tide pools, including plumose anemones (*Metridium senile*), burrowing green anemones (*Anthopleura artemisia*), hair hermit crabs (*Pagurus hirsutiusculus*), sunflower stars (*Pycnopodia helianthoides*), and green sea urchins (*Strongylocentrotus droebachiensis*) (Figure D-33; Photo D).

Alaria bioband: Similar to the Rockweed bioband, two separatr sections of the Alaria bioband were occurred within the low intertidal zone. Both sections were continuous, however the higher section was wider at 13.3 m, while the second second spanned 1.2 m to the waterline. Ribbon kelp (*Alaria marginata*) was present in all 9 quadrats and ranged from 5-65% cover in the quadrat survey, with higher percent covers in the lower intertidal section. In the higher section, cobble and boulder were covered with foliose green algae *Ulva* sp. (1-10% cover in 9/9 quadrats) and *Ulvaria* sp. (1-7% cover in 6/9 quadrats) (Figure D-33; Photo A). Red algae included sea brush (*Odonthalia floccosa*; 10-70% cover in 4/9 quadrats), black tassel (*P. bipinnata*; 5-30% in 7/9 quadrats) and encrusting coralline red algae (1-15% cover in 5/9 quadrats) (Figure D-33; Photo F).

Barnacles were the most dominant invertebrate in the Alaria bioband, with *S. cariosus* cover ranging from 1-80% in 9/9 quadrats. Common marine invertebrates included at least two dogwinkle species (*Nucella*

spp.); the anemones *Urticina grebelnyi*, *M. senile*, and *A. artemisia*; and hermit crabs (*Pagurus* sp.). Echinoderms included *S. droebachiensis*, and sea star species, mottled sea star (*Evasterias* sp.) and sunflower star (*Pycnopodia helianthoides*).

Photo A: The upper and lower intertidal zone to the base of the boulder and cobble saddle (see Photo B). Substrate consisted predominantly of bedrock, however transitioned to boulders and cobbles in the first Alaria bioband.

Photo B: The bedrock outcrop in the lower intertidal zone with many tide pools present. In the middle of the Rockweed bioband dense patches of *Mytilus trossulus* were present.

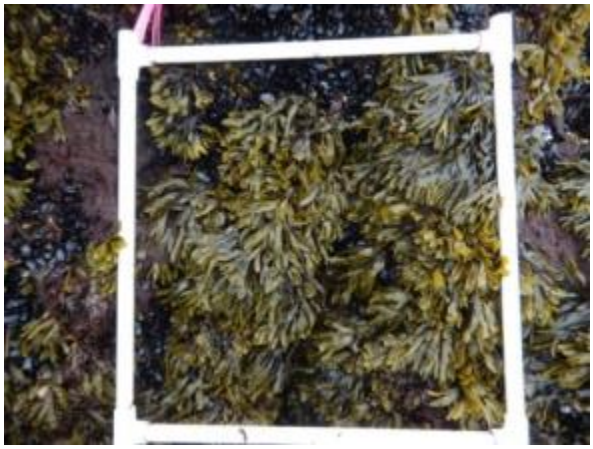


Photo C: The Rockweed bioband consisted predominantly of *Fucus distichus*, which ranged from 2-90% cover in the quadrat surveys.

Photo D: Tide pools provided habitat for sea urchins *Strongylocentrotus droebachiensis* and anemones *Metridium senile* in the Rockweed bioband.

Photo E: The second Alaria bioband extended midway through the bedrock outcrop to the waterline. Percent cover of *Alaria marginata* ranged from 5-65% in the quadrat survey.

Photo F: The Alaria bioband consisted of a mix of *Alaria marginata*, *Odonthalia floccosa, Polyostea* sp.*,* and foliose green algae.

Figure D-33. Photo examples of Alaska Peninsula site AKP_16_011.

D.12 Station AKP_16_012

Location:	Eastern entrance to Mitrofania Bay, north of Mitrofania Island
Latitude /Longitude:	N55.97477 W-158.74127
Region:	Alaska Peninsula
Date sampled:	May 20, 2016

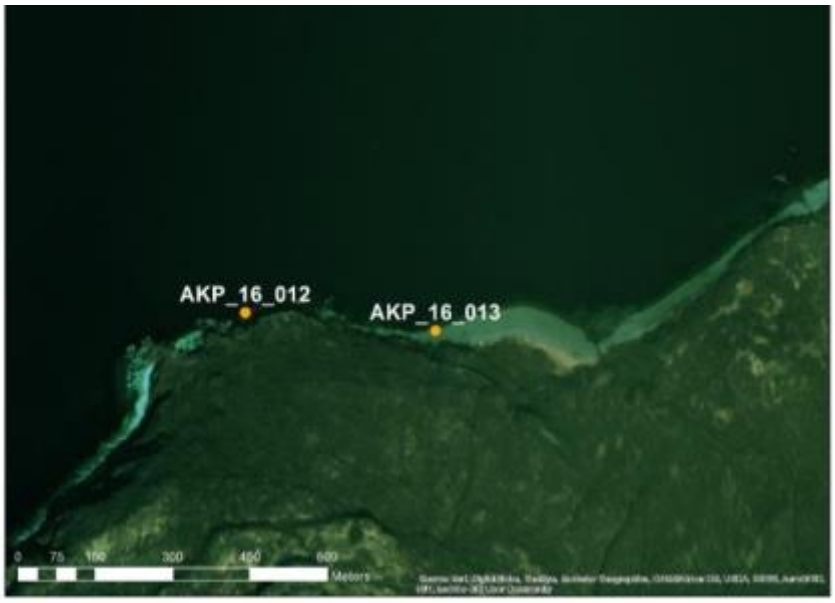


Figure D-34. Site AKP_16_012 on the eastern entrance to Mitrofania Bay, north of Mitrofania Island (Digital Globe, May 3, 2014).

Figure D-35. Aerial photo of site AKP_16_012 from ShoreZone aerial survey May 9, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_012 was located in the eastern entrance to Mitrofania Bay (Figure D-34; Figure D-35). The site was classified as semi-protected with partially mobile substrate. The site was characterized by a steep bedrock cliff above a narrow beach face consisting of semi-angular large boulders and rubble mixed with well-rounded cobbles and pebbles (

Figure D-36; Photo A). The beach surface was complex, with bedrock and large boulder outcrops creating many cracks and crevices (

Figure D-36; Photo B). The Splash Zone was continuous and wide (6.45 m), and included terrestrial grasses. Continuous Green Algae and Winter Laver biobands were in the upper intertidal zone and lower zones included patchy Rockweed, Red Algae and Alaria biobands. A Biofilm bioband covered the rocks near the waterline.

Site AKP_16_012 consisted of a vertical bedrock wall above the Splash Zone bioband. The overall width of the beach face was 34.5 m. The splash Zone bioband was 6.45 m wide and on bedrock substrate. The upper intertidal zone consisted of a 3.5 m Green Algae bioband and a 4.0 m Winter Laver bioband. Substrate was predominantly bedrock with some cobbles and large boulders present in both biobands (

Figure D-36; Photo B). The lower intertidal zone was 5.8 m with a substrate of mixed boulders, cobbles, and pebbles.

Splash Zone bioband: The Splash Zone bioband included a continuous 6.45 m black seaside lichen (*Verrucaria* sp.) band. While no marine flora were observed, marine fauna included Sitka periwinkle (*Littorina sitkana*), unidentified calcified worms (*Spirobidae* spp.), and small brown barnacles (*Chthamalus dalli*).

Green Algae bioband: This continuous bioband was a mix of filamentous green alga (*Urospora* sp.) and mermaid's tresses (*Ulothrix flacca;* Figure D-36; Photo C). *Urospora* sp. was present in all three quadrats and ranged from 20-80% cover. Common invertebrates included *L. sitkana* (2-100 individuals in 2/3 quadrats), *C. dalli*, and limpet (*Lottia* sp.).

Winter Laver bioband: This continuous bioband consisted almost entirely of the red foliose algae, laver (*Pyropia* sp.; 85-100% cover in 3/3 quadrats) covering boulders (

Figure D-36: Photo D). *Pyropia* species along the transect included black seaweed (*P. abbottiae*), laver (*P. kurogii*), olive green winter laver (*P. pseudolanceolata*) and laver (*P. torta*). Other red algae included Turkish washcloth complex (*Mastocarpus* sp.), jelly moss (*Gloiopeltis furcata*), and encrusting red algae (*Hildenbrandia* sp.). Invertebrates were limited to *L. sitkana* (15-50 individuals in 3/3 quadrats), *Lottia* sp. (2-10 individuals in 3/3 quadrats), acorn barnacles (*Balanus glandula*; 1- 5% cover in 3/3 quadrats), and *C. dalli* (1% cover in 3/3 quadrats).

Rockweed bioband: The patchy, narrow Rockweed bioband rockweed (*Fucus distichus*) mixed with Pacific blue mussel (*Mytilus trossulus*) (

Figure D-36; Photo E). Few red algae were present and included sea sac (*Halosaccion glandiforme*) and *Mastocarpus* sp. Invertebrates included *B. glandula*, black katy chiton (*Katharina tunicata*), *L. sitkana*, *Lottia* sp., and false limpet (*Siphonaria thersites*).

Red Algae bioband: A patchy, narrow Red Algae bioband consisted of a mix of red, brown, and green algae over boulder, cobble, and pebble. Commonly identified seaweeds included red ribbon (*Devaleraea* sp.; 2-10% in 2/4 quadrats), *Pyropia* sp. (1-10% in 4/4 quadrats), filamentous green alga (*Acrosiphonia* sp.; 3-10% in 2/4 quadrats), foliose green alga (*Monostroma grevillei*; 1-50% in 4/4 quadrats), and ribbon kelp (*Alaria marginata*; 30% in 1/4 quadrats) (

Figure D-36; Photo F). Marine invertebrates were limited to *K. tunicata*, *S. thersites* and plate limpet (*Tectura scutum*).

Alaria bioband: This bioband consisted of a narrow (3.4 m) and patchy distribution of *A. marginata* (1-50% cover in 3/3 quadrats). While seaweed abundance ranged from rare to common, seaweed species richness was high. Green algae included *Acrosiphonia* sp. (1-10% in 3/3 quadrats) and *M.* grevillei. (1-15% cover in 2/3 quadrats). Filamentous red algae included *Polysiphonia* sp. and black tassel (*Polyostea* sp.), and foliose red algae included red ribbon (*Devaleraea* sp.) and rockweed brush (*Odonthalia floccosa f. comosa*). Limpets and chitons were abundant. In addition, thatched barnacle (*Semibalanus cariosus*; 50% cover in 2/3 quadrats) and the sea stars species mottled sea star (*Evasterias troschelii*) and six-armed sea star (*Leptasterias hexactis*) were present.

Biofilm bioband: A Biofilm bioband of diatom (40-90% cover in 2/2 quadrats) was identified at the waterline, covering boulders, cobbles, and pebbles. *M. grevillei*, and green rope (*A. coalita*) were also present.

Photo A: Site AKP_16_012 was characterized by a vertical bedrock cliff above a narrow beach face consisting of boulder, cobble, and pebble.

Photo B: The substrate of the beach was complex, with bedrock and boulder outcrops mixed with rounded cobble.

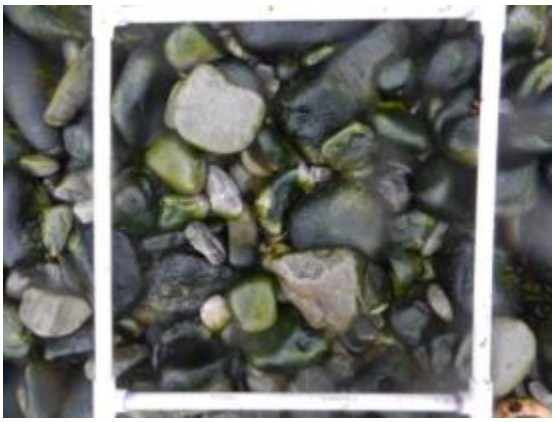


Photo C: The Green Algae bioband consisted predominantly of *Urospora* sp. and *Ulothrix flacca.*

Photo D: The Winter Laver bioband consisted of 85-95% *Pyropia* spp. cover in the quadrat survey.

Photo E: A patchy Rockweed bioband mixed with *Mytilus trossulus* can be seen on the large boulder at the waterline.

Photo F: The Red Algae bioband was patchy and consisted of a mix of red algae *Devaleraea* sp., green algae *Acrosiphonia* sp. and *Monostroma grevillei*, and brown algae *Alaria marginata.*

Figure D-36. Photo examples of Alaska Peninsula site AKP_16_012.

D.13 Station AKP_16_013

Location:	Eastern entrance to Mitrofania Bay, north of Mitrofania Island
Latitude /Longitude:	N55.97477 W-158.73827
Region:	Alaska Peninsula
Date sampled:	May 20, 2016

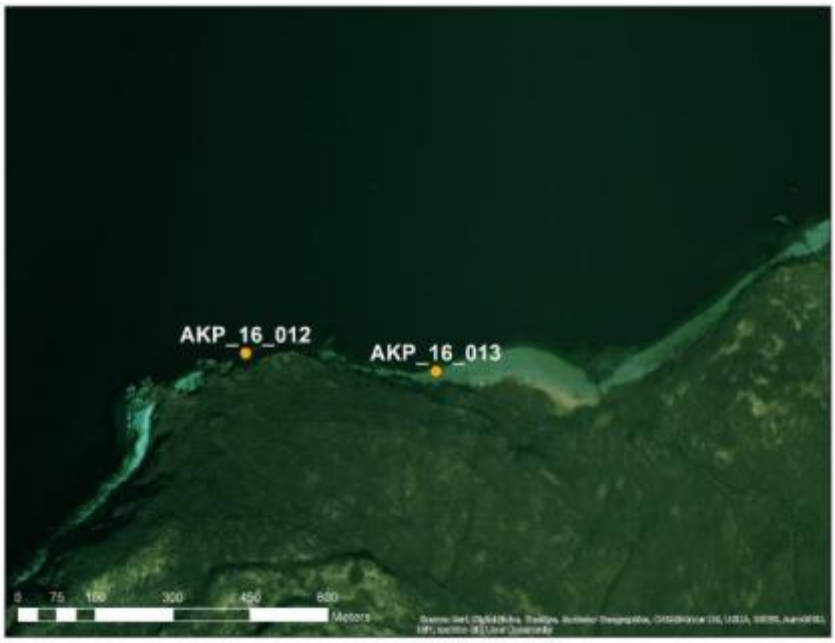


Figure D-37. Site AKP_16_013 on the eastern entrance to Mitrofania Bay, north of Mitrofania Island (Digital Globe, May 3, 2014).

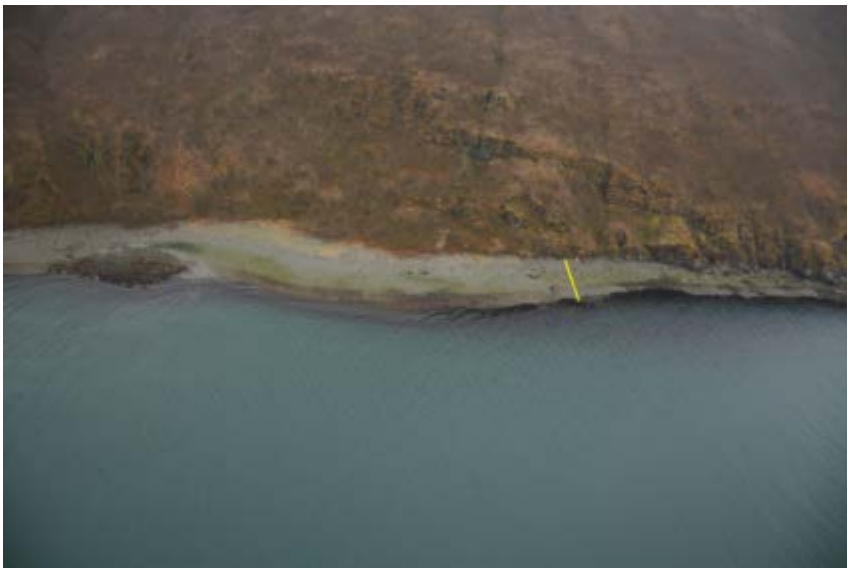


Figure D-38. Aerial photo of site AKP_16_013 from ShoreZone aerial survey May 9, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_013 was located on the eastern entrance to Mitrofania Bay (Figure D-37; Figure D-38). The site was characterized by a steep bedrock cliff and a narrow, moderate gradient beach face consisting of small to medium boulders and rounded cobble (Figure D-39; Photo A). The site was classified as semi-exposed with partially mobile substrate. The upper intertidal zone was bare, while the lower intertidal zone consisted solely of a Green Algae bioband (Figure D-39; Photo B). The low number of biobands and low number of species observed may be due to a combination of higher exposure and mobility of the sediments, which would reduce algae attachment and growth at the site. There were no canopy kelps in the nearshore.

Site AKP_16_013 consisted of a high, vertical bedrock wall above the high water line (Figure D-39; Photo A). The beach was characterized by a narrow moderate-gradient beach (15 m wide). The Splash Zone bioband spanned 4.7 m over the bedrock wall and boulder outcrops. The intertidal zone consisted of large boulder and rounded cobble (Figure D-39; Photo A).

Splash Zone bioband: The supratidal zone consisted of a medium widtj (4.7 m) patchy band of black seaside lichen (*Verrucaria* sp.).

Bare bioband: There were no observations of marine flora within the band. Common invertebrates included small brown barnacles (*Chthamalus dalli*). thatched barnacles (*Semibalanus cariosus*), and Sitka periwinkles (*Littorina sitkana*). A few Pacific blue mussels (*Mytilus trossulus*), shield limpets (*Lottia pelta*), and dogwinkles (*Nucella* sp.) were observed.

Green Algae bioband: This bioband consisted of a continuous, narrow band of foliose green algae (*Monostroma grevillei*), with some diatom cover (Figure D-39; Photo C). *M. grevillei* ranged from 20-30% cover in 2/4 quadrats; (Figure D-39; Photo D, Photo E). Diatoms were present in 4/4 quadrats with 30-99% cover (Figure D-39; Photo D, Photo E). Algae included the filamentous green alga (*Acrosiphonia* sp.; 1-3% cover in 4/4 quadrats); filamentous green algae (*Pseudothrix borealis*); and the *Pyropia* species, rockweed laver (*P. fucicola*), laver (*P. kurogii*) and long laver (*P. taeniata*). Few marine invertebrates were observed, and included hairy the hermit crab (*Pagurus hirsutiusculus*; 1-8 individuals in 3/4 quadrats), plate limpet (*Tectura scutum*; 2 individuals in 2/4 quadrats), and acorn barnacle (*Balanus glandula*).

Photo A: Site AKP_16_013 consisted of a steep bedrock wall, and a narrow beach face composed of rounded cobbles and boulders.

Photo B: The intertidal zone consisted of a wide Bare bioband, with no marine flora present.

Photo C: The lower intertidal zone consisted of a narrow Green Algae bioband covered in diatoms.

Photo D: The Green Algae bioband consisted of *Monostroma grevillei* (foliose green algae) which ranged from 20-30% in 2/4 quadrats surveyed.

Photo F: The Green Algae bioband was covered in diatoms ranging from 30-99% in 4/4 quadrats.

Figure D-39. Photo examples of Alaska Peninsula site AKP_16_013.

D.14 Station AKP_16_014

Location: Northwestern tip of unnamed island, at the base of Portage Bay, in Kuiukta Bay
Latitude /Longitude: N56.17455 W-158.73827
Region: Alaska Peninsula
Date sampled: May 21, 2016

Figure D-40. Site AKP_16_014 on the northwestern tip of an Island, in Kuiukta Bay (Digital Globe, April 30, 2014).

Figure D-41. Aerial photo of site AKP_16_014 from ShoreZone aerial survey May 9, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_014 was located on the northwestern tip of an unnamed island in Kuiukta Bay, near Portage Bay (Figure D-40; Figure D-41). The site was in a small cove and classified as semi-protected, with partially mobile substrate. Angular boulders dominated the beach face, with a steep bedrock cliff above the high water (Figure D-42; Photo A). The Splash Zone included a medium width (6.5 m), continuous band of black lichen over bedrock and boulders. The upper intertidal zone included Bare and Barnacle biobands (Figure D-42; Photo B). The lower intertidal zone consisted of a wide, patchy Rockweed bioband and a continuous Red Algae bioband. There were no canopy kelps observed in the nearshore.

Site AKP_16_014 consisted of a high, vertical bedrock cliff above the Splash Zone bioband. Beach width was 25.7 m from the Splash Zone bioband to the waterline and substrate consisted predominantly of angular boulders and cobbles, indicating the low wave energy at the back of Kuiukta Bay. The upper intertidal zone spanned 6.1m and consisted of Bare and Barnacle biobands, with boulder, cobble, and pebble substrate (Figure D-42; Photo B). Rockweed and Red Algae biobands spanned a total of 15.1 m on predominantly boulder substrate.

Splash Zone bioband: A medium width (6.5 m), continuous band of black seaside lichen (*Verrucaria* sp.) covered bedrock and boulders in the splash zone. Marine invertebrates included the Sitka periwinkle (*Littorina sitkana*) and mask limpet (*Tectura persona*).

Bare bioband: There were no marine flora observed within the band, Invertebrates included an abundance of *L. sitkana* and *T. persona* and few Pacific blue mussels (*Mytilus trossulus*) and acorn barnacles (*Semibalanus balanoides*).

Barnacle bioband: A continuous cover of acorn barnacles (*S. balanoides*) dominated this bioband. In the quadrats, *S. balanoides* was present in all three quadrats and ranged from 40-95% cover (Figure D-42; Photo C). *L. sitkana* were common, with 75-200 individuals counted in 3/3 quadrats (Figure D-42; Photo C). Other invertebrates included *M. trossulus* and the limpet (*Tectura* sp.). Seaweeds were sparse and included mainly encrusting red algae such as rock crust (*Clathromorphum* sp.), rusty rock (*Hildenbrandia rubra*), and crustose corallines.

Rockweed bioband: A wide, patchy band of rockweed (*Fucus distichus*; 2-40% cover in 4/4 quadrats) mixed with *M. trossulus* (1-60% cover in 2/4 quadrats) and black tassel (*Polyostea bipinnata*; 1-20% cover in 4/4 quadrats) formed this bioband (Figure D-42; Photo D). Also present were foliose green (*Ulva* sp.; 1-5% cover in 3/4 quadrats), twisted sea tubes (*Melanosiphon intestinalis*; 1-3% cover in 3/4 quadrats), and jelly moss (*Gloiopeltis furcata*). Marine invertebrate diversity was high, with cracks, crevices and tide pools providing habitat to sea cucumbers (*Cucumaria* sp.), sea stars (*Leptasterias* sp.), limpets (*Tectura* sp., *Lottia* sp., and *Siphonaria* sp.), and anemones (*Urticina* sp. and *Anthopleura* sp.).

Red Algae bioband: This bioband consisted of a continuous layer of the red algae species *P. bipinnata* (20-80% cover in 4/4 quadrats), sea brush (*Odonthalia* spp.; 1-10% cover in 3/4 quadrats), and graceful black pine (*Neorhodomela aculeata*; 15% cover in 1/4 quadrats). Patches of the brown algae *F. distichus*, and filamentous green algae (*Acrosiphonia* sp.) and sea lettuce (*Ulva* sp.) were also observed. Invertebrates included *Lottia* sp. (10-18 individuals in 3/4 quadrats), giant green anemones (*Anthopleura xanthogrammica*), derby hat bryozoans (*Eurystomella bilabiata*), and green sea urchins (*Strongylocentrotus droebachiensis*) (Figure D-42; Photo F).

Photo A: Site AKP_16_014 was located within a cove. The beach face consisted of large angular rocks and a bedrock cliff extended above the high water mark.

Photo B: The upper intertidal zone consisted of a Bare and Barnacle bioband with substrate composed of angular boulders. Within the Bare bioband cobbles and pebbles were also present.

Photo C: The barnacle band consisted of a mix of *Semibalanus balanoides* (40-95% cover) and *Littorina sitkana* (75-200 individuals per quadrat) in 3/3 quadrats.

Photo D: The Rockweed bioband was wide and patchy, consisting of a mix of brown algae *Fucus distichus,* mussels *Mytilus trossulus,* and red algae *Polyostea bipinnata.*

Photo E: The Red Algae bioband consisted of filamentous red algae including *Polyostea bipinnata* and *Odonthalia* spp.

Photo F: The green sea urchin, *Strongylocentrotus droebachiensis* was found in cracks and crevices in the Red Algae bioband.

Figure D-42. Photo examples of Alaska Peninsula site AKP_16_014.

D.15 Station AKP_16_015

Location:	Eastern entrance to Portage Bay, at head of Kuiukta Bay
Latitude /Longitude:	N56.17855 W-158.17855
Region:	Alaska Peninsula
Date sampled:	May 21, 2016

Figure D-43. Site AKP_16_015 on the eastern entrance to Portage Bay, at head of Kuiukta Bay (Digital Globe, April 30, 2014).

Figure D-44. Aerial photo of site AKP_16_015 from ShoreZone aerial survey May 9, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_015 was located on the eastern entrance to Portage Bay, in Kuiukta (Figure D-43; Figure D-44). The site has a vertical bedrock wall with a low gradient beach composed of bedrock, boulder, and cobble (Figure D-45; Photo A). The site was classified as semi-protected with partially mobile substrate. The Splash Zone bioband was narrow and continuous over the bedrock wall. The upper intertidal zone consisted of narrow Bare and Barnacle biobands, and a dense Rockweed bioband. In the lower intertidal zone, a Red Algae bioband was present consisting of mixed red, green and brown algae. A Soft Brown Kelp bioband was observed just offshore. Species richness was high in the lower intertidal zone, with a variety of marine invertebrates identified in the nearshore.

Site AKP_16_015 consisted of a high, vertical bedrock wall above the high water line. The intertidal zone was characterized by angular boulder and cobble habitat spanning 15.6 m. The upper intertidal zone was 9.6 m, with narrow Bare, Barnacle and Rockweed biobands. The lower intertidal zone spanned 6 m and consisted of a lush Red Algae bioband covering boulder and cobble.

Splash Zone bioband: The supratidal zone consisted of a narrow, continuous band of black seaside lichen (*Verrucaria* sp.). Invertebrates were limited to Sitka periwinkles (*Littorina sitkana*).

Bare bioband: In this narrow band patches of *Verrucaria* sp. were observed. Marine invertebrates included *L. sitkana* and mask limpets (*Tectura persona*).

Barnacle bioband: The Barnacle bioband was patchy and narrow and consisted of acorn barnacle (*Semibalanus balanoides*). *S. balanoides* was present in all three quadrats and ranged from 25-50% cover (Figure D-45; Photo B). An abundance of *L. sitkana* were present, with quadrat counts ranging from 80-300 individuals in 3/3 quadrats. Few other invertebrates were observed and included limpets (*Lottia* sp.; 1-5 individuals in 3/3 quadrats) and Pacific blue mussel (*Mytilus trossulus*; 1-5% cover in 3/3 quadrats). Marine flora were rare amd included black sea hair ("*Bangia*" spp.), jelly moss (*Gloiopeltis furcata*), rusty rock (*Hildenbrandia rubra*), and twisted sea tubes (*Melanosiphon intestinalis*).

Rockweed bioband: This bioband was dense and wide, consisting of a mix of brown, green, and red seaweeds (Figure D-45; Photo C). The most dominant seaweed was rockweed (*Fucus distichus*; 10-100% cover in 5/5 quadrats), while the foliose red algae, frilly red ribbon (*Devaleraea callophylloides*; 5-40% cover in 4/5 quadrats) was also abundant. Green algae included the filamentous green alga (*Cladophora* sp.;1-10% cover in 3/5 quadrats), sea lettuce (*Ulva* sp.), and sea cellophane (*Monostroma grevillei).* Commonly observed invertebrates included small brown barnacles (*Chthamalus dalli*), derby hat bryozoans (*Eurystomella bilabiata*), *L. sitkana, Lottia* sp., and *M. trossulus.*

Red Algae bioband: This band consisted of a continuous and dense mix of red, green and brown seaweeds covered in diatoms (Figure D-45; Photo E). Dominant red algae included red ribbon (*Devaleraea mollis*; 2-20% cover in 5/5 quadrats), black tassel (*Polyostea bipinnata*; 5-20% cover in 5/5 quadrats), and bleached brunette (*Cryptosiphonia woodii*; 1-15% cover in 5/5 quadrats). *F. distichus* was common (1-30% cover in 5/5 quadrats) (Figure D-45; Photo F). Patchy green algae included *Cladophora* sp. (10-40% cover in 3/5 quadrats), with some *Ulva* sp. (1-5% cover in 5/5 quadrats) and *M. grevillei* (1-5% cover in 3/5 quadrats). Diatoms coated the seaweeds and ranged from 30-40% cover in 3/5 quadrats.

Marine invertebrates in the Red Algae bioband included the sea stars, leather star (*Dermasterias imbricata*), six-armed sea star (*Leptasterias alaskensis*), and sunflower star (*Pycnopodia helianthoides*); *the* barnacle *S. cariosius*; *the* bryozoan *Eurystomella bilabiata*; and red calcareous tube worms (*Serpula columbiana*).

Soft Brown Kelp bioband: Below the waterline a continuous band of bladed brown kelps mixed with green and red algae was visible. The soft brown kelp species included sugar wrack kelp (*Saccharina latissima*) and five-ribbed kelp (*Costaria costata*). Few green and red algae were present, but included

Cladophora sp., *Ulva* sp., Turkish washcloth complex (*Mastocarpus pacificus*), *P. bipinnata,* graceful black pine (*Neorhodomela aculeata*), and coralline red algae.

Marine invertebrates were diverse in this bioband and included multiple sea stars species, sea cucumbers, and sea urchins. The tube worm *S. columbiana*, red lined chiton (*Tonicella lineata*), and daisy brittle star (*Ophiopholis aculeata*) were also present.

Photo A: Site AKP_16_015 consisted of a bedrock wall with a low gradient boulder and cobble beach.

Photo B: The upper intertidal zone consisted of a narrow Bare and patchy Barnacle bioband.

Photo C: The Rockweed bioband was dense and wide, consisting of a mix of brown, red, and green seaweeds.

Photo D: *Fucus distichus* cover ranged from 10-100% in 5/5 quadrats, while *Devaleraea callophylloides* ranged from 5-40% cover in 4/5 quadrats.

Photo E: The Red Algae bioband consisted of a mix of red, brown, and green algae covered in diatoms.

Photo F: Common red algae in the Red Algae bioband consisted of *Devaleraea mollis*, *Polyostea bipinnata*, and *Cryptosiphonia woodii*, with patches of the brown seaweed *Fucus distichus.*

Figure D-45. Photo examples of Alaska Peninsula site AKP_16_015.

D.16 Station AKP_16_016

Location:	Southeastern corner of Portage Bay at head of Kuiukta Bay
Latitude /Longitude:	N56.18575 W-158.46141
Region:	Alaska Peninsula
Date sampled:	May 21, 2016

Figure D-46. Site AKP_16_016 in the southeastern corner of Portage Bay, at head of Kuiukta Bay (Digital Globe, April 30, 2014).

Figure D-47. Aerial photo of site AKP_16_016 from ShoreZone aerial survey May 9, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_016 was located in an estuary, at the southeastern end of Portage bay, near Kuiukta Bay (Figure D-46; Figure D-47). The site was characterized by a wide, flat cobble and pebble beach (Figure D-48; Photo A) and classified as protected, with mobile substrate. The Splash Zone consisted of a dune grass berm backing the beach. The upper intertidal zone consisted of wide Bare bioband and a mix of Rockweed and Barnacle biobands, while the lower intertidal zone consisted of a Blue Mussel bioband mixed with barnacles. An Eelgrass bioband was present at the waterline extending into the subtidal zone.

A wide, continuous field of dune grass backed the beach in the foreshore (Figure D-48; Photo B). The intertidal zone was a very low gradient (2.3^{o}) 129 m wide beach. The upper intertidal zone spanned 88 m, with substrate composed predominantly of cobble and pebble. The lower intertidal zone was 41 m wide and substrate consisted of pebble over mud, with some cobble.

Dune Grass bioband: A wide field of dune grass (*Leymus mollis*) was present above the high water line, mixed with sparse sea milk-wort (*Glaux maritima*) and seashore sunflower (*Senecio pseudoarnica*).

Bare bioband: This bioband was wide and consisted of sparse patches of *G. maritima* and the brown algae rockweed (*Fucus distichus*).

Rockweed bioband: This patchy bioband was wide and consisted of *F. distichus* mixed with acorn barnacle (*Semibalanus balanoides*) (Figure D-48; Photo C). *F. distichus* and *S. balanoides* were present in all four quadrats, with cover ranging from 1-10% and 10-30%, respectively. Marine invertebrates common to this bioband included amphipods (10-20 individuals in 4/4 quadrats), Sitka periwinkle (*Littorina sitkana*; 1-14 individuals in 4/4 quadrats), and Pacific blue mussel (*Mytilus trossulus*; 1-2% cover in 4/4 quadrats).

Barnacle bioband: This bioband was dominated by the barnacle *S. balanoides* (2-35% cover in 4/4 quadrats*)*. Other invertebrates included *M. trossulus* (5-15% cover in 4/4 quadrats), *L. sitkana,* limpets (*Lottia* sp.), and amphipods. Very little marine flora was observed, however scattered patches of *F. distichus* were observed (10% cover in 1/4 quadrat).

Blue Mussel bioband: This lower intertidal bioband was wide and continuous, consisting predominantly of *M. trossulus* that extended to the waterline (Figure D-48; Photo D). *M. trossulus* was present in all four quadrats and ranged from 85-95% cover. Other abundant or common and included the periwinkle *L. sitkana* (15-20 individuals in 4/4 quadrats), barnacle *S. balanoides* (10-20% cover in 4/4 quadrats), limpet *Lottia* sp. (8-20 individuals in 4/4 quadrats), and file dogwinkle (*Nucella lima*; 3-12 individuals in 4/4 quadrats). Marine flora were rare and limited to a few filamentous greens, reds, and bladed brown algae.

Eelgrass bioband: A continuous band of eelgrass (*Zostera marina*) extended from the waterline into the nearshore subtidal zone. *Z. marina* covered 100% of the two quadrats (Figure D-48; Photo E; Photo F). In addition, the filamentous brown *Pylaiella* sp. (8-15% cover in 2/2 quadrats), and the green algae seagrass cellophane (*Kornmannia leptoderma*; 5-8% cover in 2/2 quadrats) were present (Figure D-48; Photo F). As in the biobands above, marine invertebrates included *M. trossulus* (10-15% cover in 2/2 quadrats) and *S. balanoides* (5-7% cover in 2/2 quadrats).

Photo A: Site AKP_16_016 was located in the southeastern end of Portage Bay, and consisted of a wide, low gradient cobble and pebble beach.

Photo B: The backshore consisted of a wide field of dune grass, *Leymus mollis*.

Photo C: The Rockweed bioband was wide and patchy, consisting of a mix of *Fucus distichus* (1-10% cover in 4/4 quadrats) and *Semibalanus balanoides* (2-30% cover in 4/4 quadrats).

Photo D: The Blue Mussel bioband was wide and continuous, extending to the waterline. It consisted of *Mytilus trossulus*, *Semibalanus cariosus,* and *Littorina sitkana*.

Photo E: In the nearshore patches of the eelgrass, *Zostera marina,* were present, with 100% cover in 2/2 quadrats.

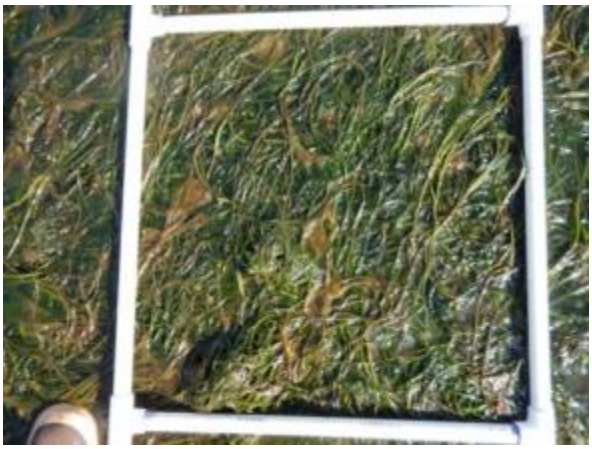


Photo F: Within the Eelgrass bioband quadrats, seaweed species included *Kornmannia leptoderma* and *Pylaiella* sp. and the eelgrass, *Zostera marina*.

Figure D-48. Photo examples of Alaska Peninsula site AKP_16_16.

D.17 Station AKP_16_017

Location:	Northeastern entrance to Castle Bay, near Chignik Bay
Latitude /Longitude:	N56.26083 W-158.24166
Region:	Alaska Peninsula
Date sampled:	May 22, 2016

Figure D-49. Site AKP_16_017 on the northeastern entrance to Castle Bay, near Chignik Bay (Digital Globe, June 12, 2012).

Figure D-50. Aerial photo of site AKP_16_017 from ShoreZone aerial survey May 9, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_017 was located at the eastern entrance of Castle Bay, near Chignik Bay (Figure D-49; Figure D-50). The site was composed of large, angular boulders overlying a bedrock platform. The site was classified as semi-exposed with immobile substrate. The Splash Zone was continuous and wide. The upper intertidal zone consisted of continuous Winter Laver and Rockweed biobands, while the lower intertidal zone consisted of a lush Red Algae bioband. Tide pools provided habitat to numerous invertebrates and encrusting coralline algae. Quadrat data were not collected at this site.

Site AKP_16_017 consisted of a soft sediment cliff wall above the high water line. From the Splash Zone to the water line, substrate was composed of a mix of angular rubble (in higher intertidal) and semi-rounded large boulders intermixed with angular cobbles and pebbles across the beach, all overlying a bedrock platform (Figure D-51; Photo A). The beach face was approximately 31 m in width, with the upper intertidal zone spanning 16.5 m and the lower intertidal zone spanning 6.0 m. The exposure, fetch, rounding of large rubble in the low intertidal, and the biota all indicate a relatively high energy beach. The angular cobble in the upper beach indicates an actively eroding bluff.

Splash Zone bioband: The supratidal zone consisted of a continuous band of black seaside lichen (*Verrucaria* sp.) (Figure D-51; Photo B). Common invertebrates associated with the high splash zone included the Sitka periwinkle (*Littorina sitkana*), and mask limpet (*Tectura persona*) and ribbed limpet (*Lottia digitalis*).

Winter Laver bioband: This continuous bioband consisted of a mix of *Pyropia* species, the most abundant being laver (*P. torta*) (Figure D-51; Photo B). In tide pools the red algae, rock crush (*Clathomorphum* sp.), Oregon pine (*Neorhodomela oregona*), and slippery red blade (*Schizymenia pacifica*), were observed. Invertebrates included *L. sitkana* and *Lottia* sp.

Rockweed bioband: This bioband consisted of a wide, patchy layer of rockweed (*Fucus distichus*) and sea moss (*Endocladia muricata*) mixed with Pacific blue mussel (*Mytilus trossulus*) and acorn barnacle (*Balanus glandula*) (Figure D-51; Photo C). In addition, a low abundance of the green seaweeds *Acrosiphonia* sp. and *Ulva* sp. was recorded. Cracks, crevices, and tide pools provided refuge for a diversity of marine invertebrates. These included channeled dogwinkle (*Nucella canaliculata*), limpets (*Lottia* sp.), *L. sitkana*, bread crumb sponge (*Halichondria panicea*), the giant green anemone (*Anthopleura xanthogrammica*), and the painted anemone (*Urticinia grebelnyi*).

Red Algae bioband: The lower intertidal zone was comprised of a continuous band of red, green, and brown seaweeds with a high abundance of marine invertebrates (Figure D-51; Photo D). While the most dominant red algae was stiff red ribbon (*Palmaria hecatensis*), the filamentous reds, bleached brunette (*Cryptosiphonia woodii*) and graceful black pine (*Neorhodomela oregona*), and the rock crust *Clathromorphum* sp. were also present. Brown and green algae abundance was low and included *F. distichus*, *Acrosiphonia* sp., and foliose green alga (*Monostroma grevillei*).

Marine invertebrate richness was high and included anemones, gastropods, bivalves, arthropods, and echinoderms. One tide pool was home to painted anemone (*Urticinia grebelnyi*), blood star (*Henricia leviuscula*), bread crumb sponge (*Halichondria panacea*), and encrusting coralline red algae (Figure D-51; Photo E). The large boulders overlying the bedrock platform created many cracks and crevices where orange solitary tunicates (*Cnemidocarpa finmarkiensis*) were observed (Figure D-51; Photo F).

Photo A: The intertidal zone consisted of large, angular boulders over bedrock with some cobble and pebble present.

Photo B: The Splash Zone bioband was marked by a continuous layer of *Verrucaria* sp., while the Winter Laver bioband consisted of *Pyropia* species.

Photo C: The Rockweed bioband consisted of a mix of the brown algae *Fucus distichus,* red algae *Endocladia muricata,* blue mussel *Mytilus trossulus,* and barnacle *Balanus glandula* (see large boulder).

Photo D: While the Red Algae bioband was dominated by the red algae *Palmaria hecatensis,* it also consisted of a mix of brown, green, and red algae.

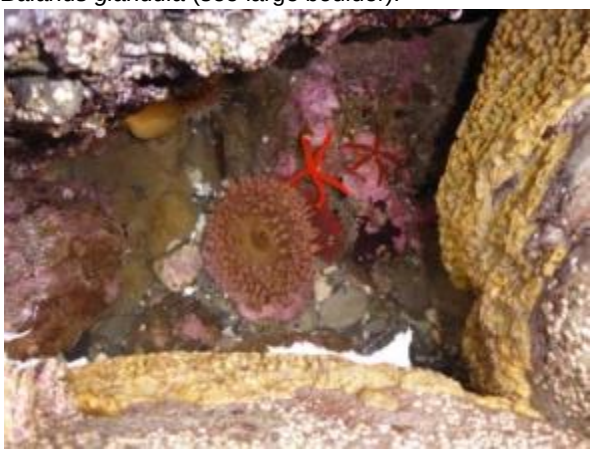


Photo E: Species richness within tide pools was high, with observations of the anemone *Urticinia grebelnyi*, sea star *Henricia leviuscula,* sponge *Halichondria panacea,* and encrusting coralline red algae.

Photo F: Under large boulders accumulations of the tunicate *Cnemidocarpa finmarkiensis* were observed.

Figure D-51. Photo examples of Alaska Peninsula site AKP_16_017.

D.18 Station AKP_16_018

Location: North coast of Castle Bay, near Chignik Bay
Latitude /Longitude: N56.23345 W-158.31236
Region: Alaska Peninsula
Date sampled: May 22, 2016

Figure D-52. Site AKP_16_018 on the northern coast of Castle Bay, near Chignik Bay (Digital Globe, No date available in metadata).

Figure D-53. Aerial photo of site AKP_16_018 from ShoreZone aerial survey May 11, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_018 was located on the eastern coast of Castle Bay, near Chignik (Figure D-52; Figure D-53). Above the high water mark, the site consisted of a log berm over cobble and pebble. From the Slash Zone to the water line, substrate consisted of large boulders mixed with cobble and pebble over an inclined beach slope (7.5^{o}). The site was classified as semi-exposed with partially mobile substrate. In the upper intertidal zone, patchy biobands of Red Algae and Rockweed were present, while the lower intertidal zone consisted of a continuous, lush bioband of Red Algae. A Dark Brown Kelp bioband was observed below the waterline.

Site AKP_16_018 consisted of a wide, moderate gradient beach spanning 45.8 m. Above the high water mark, a log pile had accumulated over cobble substrate. From the Splash Zone bioband to the water, substrate consisted of large boulder with cobble and pebble (Figure D-54; Photo A). The upper intertidal zone was wide, spanning 39.4 m, while the lower intertidal zone was 6.4 m wide.

Splash Zone bioband: The Splash Zone bioband was patchy, with some black seaside lichen (*Verrucaria* sp.) and green algae Northern emerald carpet (*Prasiola borealis*) present.

Bare bioband: There were no observations of marine flora in this bioband. Common high intertidal invertebrates included acorn barnacles (*Balanus glandula*) and small brown barnacles (*Chthamalus dalli*). The mask limpet (*Tectura persona*) and Sitka periwinkle (*Littorina sitkana*) were abundant.

Red Algae bioband: This wide bioband was patchy and consisted of the red algae jelly moss (*Gloiopeltis furcata*) mixed with the brown algae rockweed (*Fucus distichus*); and marine invertebrates, *C. dalli, L. sitkana*, and *T. persona* (Figure D-54; Photo B). Tide pools contained the brown algae, brown spot (*Ralfsia* sp.) and soda straws (*Scytosiphon lomentaria*).

Rockweed bioband: The Rockweed bioband was also patchy, consisting mostly of *F. distichus* mixed with the barnacle *C. dalli*. *F. distichus* was present in all three quadrats and ranged from 20-55% cover (Figure D-54; Photo C). *C. dalli* ranged from 40-65% cover in 2/3 quadrats (Figure D-54; Photo C). While flora were not abundant, a mix of red, green, and brown occurred. These included red algae species, sea moss (*Endocladia muricata*; 5-15% cover in 2/3 quadrats), *G. furcata* (5% cover in 1/3 quadrat) and encrusting red alga (*Hildenbrandia* sp.; 1-10% cover in 3/3 quadrats); foliose green algae *Ulva* sp. and *Monostroma grevillei*; and brown algae, studded sea balloons (*Soranthera ulvoidea*) and twisted sea tubes (*Melanosiphon intestinalis*).

Marine invertebrates in the Rockweed bioband were abundant and included anemones, barnacles, gastropods, amphipods, and sea stars. In the quadrat survey, limpet (*Lottia* sp.) counts ranged from 1-50 individuals in 3/3 quadrats, while *L. sitkana* counts ranged from 10-50 individuals in 2/3 quadrats.

Red Algae bioband: This bioband consisted of a thick and continuous layer of the filamentous red algae sea brush (*Odonthalia floccosa*; 25-70% cover in 4/5 quadrats), graceful black pine (*Neorhodomela aculeata*; 5-20% cover in 2/5 quadrats), and black tassel (*Polyostea bipinnata*; 3-20% cover in 5/5 quadrats) (Figure D-54: Photo D & E). Brown bladed kelps included a few ribbon kelp (*Alaria marginata*; 1-7% cover in 3/5 quadrats), large bladed kelp (*Laminaria/Saccharina* sp.) and five-ribbed kelp (*Costaria costata*). Additionally, foliose green algae *Ulva* sp. and *M.grevillei* cover ranged from 1-15% (in 5/5 quadrats) and 2% (in 1/5 quadrats), respectively.

Marine invertebrate richness was high in this bioband, with observations of gastropods, anemones, chitons, and starfish. In the quadrat survey, the most abundant species was hairy hermit crab (*Pagarus hirsutiusculus*), with 20 individuals recorded in one quadrat. Limpets (*Lottia* sp.) ranged from 8-15 individuals in 2/5 quadrats. Other invertebrates commonly encountered included the snails wrinkle dove snail (*Amphissa columbiana*), blue topsnail (*Calliostoma ligatum*), frilled dogwinkle (*Nucella lamellosa*),

and checkered hairy snail (*Trichotropis cancellata*); and the sea stars mottled sea star (E*vasterias troschelii*) and sunflower star (*Pycnopodia helianthoides*).

Dark Brown Kelp bioband: This continuous bioband began from the waterline and extended into the subtidal zone. It was comprised of *Saccharina nigripes*, *C. costata*, *A. marginata*, and *Neorhodomela aculeata* (Figure D-54; Photo F).

Photo A: Site AKP_16_018 was a wide, inclined beach spanning 45.8 m with substrate composed of boulder, cobble, and pebble.

Photo B: In the upper intertidal zone, a patchy Red Algae bioband consisted of the red algae *Gloiopeltis furcata,* the brown algae *Fucus distichus,* and marine invertebrates *Chthamalus dalli, Littorina sitkana* and *Tectura persona.*

Photo C: In the Rockweed bioband, patches of *Fucus distichus* (20-55% cover in 3/3 quadrats) and *Chthamalus dalli* (40-65% cover in 2/3 quadrats) were present.

Photo D: In the lower intertidal zone a continuous Red Algae bioband consisted of the filamentous red algae *Odonthalia floccosa, Neorhodomela aculeata* and *Polyostea bipinnata.*

Photo E: In the quadrat survey of the Red Algae bioband *Odonthalia floccosa* was the most abundant red algae, ranging from 25-75% cover in 4/5 quadrats.

Photo F: The Dark Brown Kelp bioband consisted of the brown algae *Saccharina nigripes, Costaria costata,* and *Alaria marginata;* and the red algae *Neorhodomela aculeata.*

Figure D-54. Photo examples of Alaska Peninsula site AKP_16_018.

D.19 Station AKP_16_019

Location: South coast of Chignik Bay
Latitude /Longitude: N56.32022 W-158.35013
Region: Alaska Peninsula
Date sampled: May 23, 2016

Figure D-55. Site AKP_16_019 was located on the south coast of Chignik (Digital GlobeMay 28, 2011).

Figure D-56. Aerial photo of site AKP_16_019 from ShoreZone aerial survey May 8, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_019 was located on the south coast of Chignik Bay, near the mouth of Anchorage Bay (Figure D-55; Figure D-56). The site was classified as semi-exposed with partially mobile substrate. The beach face consisted of a huge vertical bedrock cliff above the high water mark, with a wide, low gradient bedrock platform covered in cobbles and boulders to the waterline. These rocks were mostly highly rounded. However, spherical rocks were seen eroding from the cliff making it unlikely that wave energy is rounding the rocks. The upper intertidal zone consisted of Green Algae, Bare and patchy Rockweed biobands. In the lower intertidal zone, a continuous band of Red Algae was present. Species richness at this site was highest in the lower intertidal zone, with a wide variety of fauna and flora observed. In the nearshore, a band of coralline red algae was present, which may be an indication of sea urchin barrens[1], followed by a narrow Bull Kelp bioband.

Site AKP_16_019 consisted of a vertical bedrock wall and a low gradient beach face spanning 60 m in width (Figure D-57; Photo A). Substrate consisted predominantly of a bedrock platform, though bands of boulders and cobbles were present (Figure D-57; Photo B). In the upper intertidal zone, a narrow Green Algae bioband covered boulder, cobble, and pebble over bedrock for 3.7 m (Figure D-57; B). A wide Bare bioband spanned 17 m with substrate transitioning from boulder to bedrock (Figure D-57; Photo B). The Rockweed bioband was patchy and 22.2 m in width, with substrate consisting of bedrock and small boulders to the waterline. The lower intertidal zone consisted of a wide, continuous bioband of Red Algae, spanning 15 m. Below the waterline, substrate consisted of a bedrock platform, and in the nearshore a bioband of Bull Kelp was present.

Splash Zone bioband: The supratidal zone was mostly bare but included a patchy distribution of black seaside lichen (*Verrucaria* sp.) at the base of the bedrock cliff and on large boulders.

Green Algae bioband: This upper intertidal band was narrow and continuous, comprised mostly of the foliose green algae, mermaid's tresses (*Ulothrix flacca*). The red algae black sea hair ("*Bangia*" spp.), laver (*Pyropia kurogii*) and laver (*Pyropia unabbottiae*) were also present, albeit in low abundance. Invertebrates commonly found in the upper intertidal zone included the Sitka periwinkle (*Littorina sitkana*; 10 individuals in one quadrat), mask limpet (*Tectura persona*), and beach hopper (*Traskorchestia* traskiana; 150 individuals in one quadrat).

Bare bioband: In this wide Bare bioband, marine flora abundance ranged from rare to few and consisted of a mix of red and brown seaweeds. Red algae included the filamentous species, sea fern (*Ptilota asplenoides*) and Oregon pine (*Neorhodomela oregona*), the foliose species *P. unabbottiae.*, and the encrusting rock crust (*Clathromorphum* sp.). Brown algae present included, ribbon kelp (*Alaria marginata*) and soda straws (*Scytosiphon lomentaria*). While marine invertebrates were not abundant, a diverse amount of species were identified including anemones, barnacles, snails, limpets, mussels, and sponge.

Rockweed bioband: This wide, patchy bioband consisted of a sparse mix of algae. The brown seaweed, rockweed (*Fucus distichus*) was present in 3/4 quadrats, cover ranged from 1-6% (Figure D-57; Photo C). More abundant species included the red seaweed, sea brush (*Odonthalia floccosa*; 5-30% cover in 3/4 quadrats), and green algae (*Ulva* sp.; 1-80% cover in 2/4 quadrats) (Figure D-57; Photo C). While seaweed coverage was low, a diverse number of species were identified including, red ribbon (*Devaleraea* spp.; 1-10% cover in 4/4 quadrats), Northern sea oak (*Tokidadendron bullatum*; 1-7% cover in 3/4 quadrats), black tassel (*Polyostea bipinnata*; 1-5% cover in 3/4 quadrats), and *A. marginata* (2% cover in one quadrate); as well as the surfgrass *Phyllospadix* sp. (3% cover in one quadrate). Abundant marine invertebrates included the barnacle species thatched barnacle (*Semibalanus cariosus*; 1-30% cover

[1] The database lists this bioband as 'Urchin Barrens' (URC). As no urchins were recorded in the field, the bioband assigned could be updated to a newer ShoreZone code for Coralline Red Algae (CORA) used in the aerial classification, and not previously included in the shore station dataset.

in 3/4 quadrats), limpets *Lottia* sp. (3-100 individuals in 4/4 quadrats), and the periwinkle *L. sitkana*. The invertebrate, bread crump sponge (*Halichondria* sp.) was common and found on bedrock and boulders (Figure D-57; Photo D).

Red Algae bioband: The Red Algae bioband was narrow and continuous, with a rich array of marine flora and fauna. Common red algae included the filamentous species *T. bullatum* (2-25% cover in 4/5 quadrats) and *P. bipinnata* (3-10% cover in 4/5 quadrats); foliose species *Devaleraea* sp.; and encrusting *Clathromorphum* sp. (Figure D-57; Photo E). The bioband also included the brown bladed kelp *A. marginata* (2-25% cover in 5/5 quadrats), the sponge *Halichondria* sp. (10-55% cover in 5/5 quadrats) and patches of serrulated surfgrass (*Phyllospadix serrulatus*) (Figure D-57; Photo E). A high diversity of anemones, sea stars, gastropods, and hermit crabs were identified in this bioband.

Urchin Barrens bioband: At the waterline, a distinct band of encrusting coralline red algae over bedrock was identified (Figure D-57; Photo F). The encrusting coralline algae consisted predominantly of *Clathromorphum* sp., and was mixed with the foliose red algae, slippery red blade (*Schizymenia pacifica*), and patches of the filamentous brown algae, Northern bladder chain (*Stephanocytis germinata*).

Bull Kelp bioband: In the nearshore a continuous band of bull kelp (*Nereocystis luetkeana*) was observed.

Photo A: Site AKP_16_019 consisted of a vertical bedrock wall and low gradient beach face spanning approximately 60 m to the waterline.

Photo B: The upper intertidal zone consisted of a narrow Green Algae bioband, followed by a wide Bare bioband. Substrate consisted of a bedrock platform, with boulders and cobbles.

Photo C: The Rockweed bioband was composed of *Fucus distichus (*1-6% cover in 3/4 quadrats*),* *Odonthalia floccosa* (5-30% cover in 3/4 quadrats), and *Ulva* sp. (1-80% cover in 2/4 quadrats).

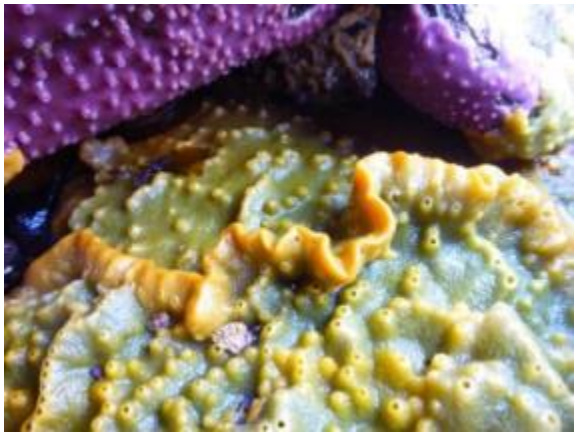


Photo D: The bread crumb sponge *Halichondria* sp., was abundant in both the Rockweed and Red Algae biobands.

Photo E: The lower intertidal Red Algae bioband consisted of a mix of filamentous, foliose, and encrusting red algae; the brown bladed kelp *Alaria marginata*; the surfgrass *Phyllospadix serrulatus*; and the sponge, *Halichondria* sp.

Photo F: At the waterline an Urchin Barrens bioband was present, consisting predominantly of *Clathromorphum* sp.

Figure D-57. Photo examples of Alaska Peninsula site AKP_16_019.

D.20 Station AKP_16_020

Location:	Eagle Rock, Eastern entrance to Anchorage Bay
Latitude /Longitude:	N56.32758 W-158.39377
Region:	Alaska Peninsula
Date sampled:	May 23, 2016

Figure D-58. Site AKP_16_020 on Eagle Rock, in the eastern entrance to Anchorage Bay (Digital Globe, May 28, 2011).

Figure D-59. Aerial photo of site AKP_16_020 from ShoreZone aerial survey May 8, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_020 was located on Eagle Rock, on the Eastern entrance to Anchorage Bay in Chignik Bay (Figure D-58; Figure D-59). The site consisted of a vertical bedrock wall in the upper intertidal zone, a mid-intertidal low gradient bedrock platform, and large boulders dominating the lower intertidal and shallow subtidal zones (Figure D-60; Photo A). The site was classified as semi-exposed with immobile substrate. Species richness at this site was high for both fauna and flora. On the bedrock wall, continuous Splash Zone and Winter Laver biobands were present. The upper intertidal zone consisted of wide Bare and Rockweed biobands, while the lower intertidal zone consisted of wide and lush Red Algae and Alaria biobands. In the nearshore Dark Brown Kelps were present.

Site AKP_16_020 consisted of vertical bedrock cliff in the supratidal and upper intertidal zone. The intertidal zone spanned 84.5 m in width and was a low gradient bedrock platform with large boulders overlaying the platform. Mid beach, a bedrock pinnacle was also present. The upper intertidal zone consisted of continuous Winter Laver and Bare biobands. The Rockweed bioband spanned 22.3 m and was continuous and dense. In the lower intertidal zone, a lush Red Algae bioband spanned 13.5 m, and the Alaria bioband spanned 38.4 m.

Splash Zone bioband: This continuous bioband consisted predominantly of black seaside lichen (*Verrucaria* sp.) with some patches of orange seaside lichen (*Caloplaca/Xanthoria* sp.).

Winter Laver bioband: The upper intertidal zone consisted of a continuous band of the red foliose algae, olive green winter laver (*Pyropia pseudolanceolata*). *P. pseudolanceolata* was present in all three quadrats and ranged from 20-95% cover. Observations of seaweeds included low abundance of filamentous green algae, Northern green rope (*Acrosiphonia duriscula*) and green rock scum (*Rosenvingiella polyrhiza*); red algae sea moss (*Endocladia muricata*) and Oregon pine (*Neorhodomela oregona*); and brown algae twisted sea tubes (*Melanosiphon intestinalis*; 1-5% cover in 2/3 quadrats). Commonly identified invertebrates in this bioband included Sitka periwinkle (*Littorina sitkana*; 2-60 individuals in 3/3 quadrats) and limpet (*Lottia* sp.).

Bare bioband: Seaweed coverage ranged from rare to common in the tide pools and included the brown bladed kelp ribbon kelp (*Alaria marginata*); brown spot (*Ralfsia* sp.) phase; and red algae species rock crush (*Clathromorphum* sp.), *N. oregona,* and red ribbon (*Devaleraea mollis*). Marine invertebrates were common and included acorn barnacles (*Balanus glandula*) and small brown barnacles (*Chthamalus dalli*); shield limpets (*Lottia pelta*) and mask limpet (*Tectura persona*); and the periwinkle *L. sitkana.*

Rockweed bioband: This continuous, wide bioband consisted of rockweed (*Fucus distichus*) mixed with the barnacles *C. dalli, B. glandula,* and *Semibalanus cariosus* (Figure D-60; Photo B). *F. distichus* and *S. cariosus* were present in all three quadrats with *F. distichus* percent cover ranging from 5-65% and *S. cariosus* from 15-40%. Patches of the Pacific blue mussel (*Mytilus trossulus*; 2-40% cover in 3/3 quadrats) and the red filamentous algae rockweed brush (*Odonthalia floccosa f. comosa*; 5-30% cover in 2/3 quadrats) were observed (Figure D-60; Photo B). A wide variety of marine invertebrates included the limpets *Tectura* sp. and *Lottia* sp. (3-20 individuals in 2/3 quadrats); the arthropods Pacific beach hopper (*Traskorchestia traskiana*) and hairy hermit crab (*Pagurus hirsutiusculus*); and the gastropods *L. sitkana* (20-65 individuals in 2/3 quadrats) and black katy chiton (*Katharina tunicata*).

Red Algae bioband: The Red Algae bioband was continuous and lush, with almost 100% cover consisting of a mix of red, green, and brown seaweeds. The most dominant red alga was sea brush (*Odonthalia floccosa*), which ranged between 10-80% cover in 4/4 quadrats. Patches of the brown algae ribbon kelp (*Alaria marginata*) and *F. distichus* (2-25% cover in 3/4 quadrats); the red algae sea sac (*Halosaccion glandiforme*; 1-15% in 4/4 quadrats); and the green algae *Ulva* sp. (2-5% in 3/4 quadrats) and green rope (*Acrosiphonia coalita*; 5% cover in one quadrat) were observed. In tide pools, encrusting coralline red algae ranged from 1-10% cover in 3/4 quadrats, and included the species *Bossiella* spp. (winged coralline red algae) and rock crust (*Clathromorphum* sp.). Similar to site AKP_16_019, sponge species, bread

crumb sponge (*Halichondria panicea*) and purple sponge (*Haliclona* sp); black katy chiton (*Katharina tunicata*; 2-4 individuals in 3/4 quadrats); and limpet *Lottia* sp. (9 individuals in one quadrat) were common (Figure D-60; Photo D).

Alaria bioband: This lower intertidal bioband was wide and continuous, consisting predominantly of the brown bladed algae riboon kelp (*Alaria marginata*; 15-90% cover in 5/5 quadrats), mixed with sea cabbage (*Saccharina sessilis*; 10-50% cover in 2/5 quadrats) and split kelp (*Saccharina nigripes*; 10% cover in one quadrat) (Figure D-60; Photo E; Photo F).Throughout this bioband patches of the foliose red algae, stiff red ribbon (*Palmaria hecatensis*; 10-20% cover in 4/5 quadrats), filamentous red algae *O. floccosa* (1-10% cover in 5/5 quadrats), brown algae *F. distichus*, and filamentous green algae *Acrosiphonia* sp. (40% cover in one quadrat) were observed. Marine invertebrate richness was high, and included the sunflower star (*Solaster* sp.; Figure D-60; Photo F), painted anemone (*Urticina grebelnyi*), chiton *K. tunicata*, and hermit crab *Pagurus* sp. (3-8 individuals in 3/5 quadrats).

Dark Brown Kelp bioband: In the nearshore, a continuous band of the dark brown kelp, plicate kelp (*Laminaria sp.nov*[2]) was observed. Common seaweeds included the encrusting *Clathromorphum* sp. and the filamentous red algae *O. floccosa.* A sparse mix of various green, brown, and red seaweeds also occurred. Marine invertebrate richness was high and included orange solitary tunicate (*Cnemidocarpa finmarkiensis*); the sea star species, mottled sea star (*Evasterias troschelii*) and blood star (*Henricia leviuscula*); plumose anemone (*Metridium senile*)*;* and Bering hermit crab (*Pagurus beringanus*).

[2]Dr. Sandra Lindstrom (pers. comm. February 4, 2018)

Photo A: Site AKP_16_020 consisted of a vertical bedrock wall, bedrock pinnacle midbeach, and a low gradient bedrock platform to the waterline.

Photo B: The Rockweed bioband included a mix of the seaweeds *Fucus distichus* and *Odonthalia* sp.; mussel *Mytilus trossulus;* and barnacles *Balanus glandula, Semibalanus cariosus,* and *Chthamalus dalli.*

Photo C: Looking towards the waterline, the Red Algae bioband was wide (13.5 m) and consisted of a mix of red, green, and brown algae.

Photo D: In the Red Algae bioband the sponge species *Halichondria panicea* and *Haliclona* sp.; the chiton *Katharina tunicata;* and limpet *Lottia* sp. were common.

Photo E: The Alaria bioband spanned 38.4 m wide to the waterline. The most dominant bladed brown kelp included *Alaria marginata, Saccharina nigripes,* and *Saccharina sessilis*.

Photo F: In the Alaria bioband marine invertebrates were diverse, here the sea star, *Solaster* sp., was found on top of *Alaria marginata* and *Saccharina* sp.

Figure D-60. Photo examples of Alaska Peninsula site AKP_16_020.

D.21 Station AKP_16_021

Location:	Northern coast of Kujilik Bay
Latitude /Longitude:	N56.64483 W-157.85397
Region:	Alaska Peninsula
Date sampled:	May 24, 2016

Figure D-61. Site AKP_16_021 on the northern coast of Kujilik Bay (Digital Globe, May 30, 2014).

Figure D-62. Aerial photo of site AKP_16_021 from ShoreZone aerial survey May 10, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_021 was located on the northern coast of Kujulik Bay (Figure D-61; Figure D-62). The site consisted of a vertical bedrock cliff above the high supratidal zone and a bedrock platform with boulders and cobbles in the intertidal zone (Figure D-63; Photo A). The site was classified as semi-exposed with partially mobile substrate. The supratidal zone consisted of a wide, continuous Splash Zone bioband on the bedrock wall. The upper intertidal zone consisted of wide Bare, Barnacle and Rockweed biobands (Figure D-63; Photo B). In the lower intertidal zone, a narrow Alaria bioband was followed by Dark Brown Kelps at the waterline. In the lower intertidal zone species richness was high, with a wide range of algae species recorded. Although marine invertebrate species richness was high, abundance of any one species was low.

Site AKP_16_020 consisted of a vertical bedrock cliff and a wide, low gradient bedrock platform spanning 41.2 m (Figure D-63; Photo A; Photo B). In the upper intertidal zone, the Barnacle and Rockweed biobands were wide, extending 14.5 m and 17.1 m respectively. The lower intertidal zone consisted of narrow Alaria and Dark Brown Kelps biobands, spanning 5.7 m. While substrate was predominantly bedrock, boulder and cobble were present across the beach.

Splash Zone bioband: This band included a continuous band of black seaside lichen (*Verrucaria* sp.). Common invertebrates found in the supratidal zone included Sitka periwinkle (*Littorina sitkana*) and mask limpets (*Tectura persona*).

Bare bioband: This wide bioband consisted of a diverse number of invertebrates including an abundance of *L. sitkana* (Figure D-63; Photo C), small brown barnacled (*Chthamalus dalli*), limpets (*Lottia* sp.), dogwinkled (*Nucella* sp.), hermit crabd (*Pagurus* sp.), and rockweed idotea (*Pentidotea wosnesenskii*). In tide pools, algae species included rock crust (*Clathromorphum* sp.), sea sacs (*Halosaccion* sp.), and Oregon black pine (*Neorhodomela oregona*).

Barnacle bioband: This patchy bioband, included acorn barnacles (*Semibalanus* balanoides) and *C. dalli* and both were present in all three quadrats, ranging from 15-40% and 1-5% cover, respectively. The quadrats contained an abundance of *Lottia* sp. (2-50 individuals in 3/3 quadrats), *L. sitkana* (2-70 individuals in 3/3 quadrats), and beach hoppers (*Traskorchestia traskiana*; 150 individuals in 1/3 quadrat). Few algae were identified in this bioband, however patches of the red algae, jelly moss (*Gloiopeltis furcata*) and *N. oregona* were recorded.

Rockweed bioband: This continuous, wide bioband consisted of a mix of brown, red, and green algae (Figure D-63; Photo D). Rockweed (*Fucus distichus*) was abundant and identified in all five quadrats (percent cover ranged from 16-60%). Common red algae included frilly red ribbon (*Devaleraea callophylloides*; 3-40% cover in 4/5 quadrats), graceful black pine (*Neorhodomela aculeata*; 8-30% cover in 2/5 quadrats) and sea brush (*Odonthalia floccosa*; 3-10% cover in 5/5 quadrats). Green algae abundance was low and consisted of the foliose sea lettuce (*Ulva* sp.; 1-10% cover in 5/5 quadrats) and sea cellophane (*Monostroma grevillei;* 2-10% in 5/5 quadrats).

A diverse array of marine invertebrates occured in this bioband. Commonly occurring were *C. dalli*, bread crumb sponge (*Halichondria* sp.; 2-8% cover in 3/5 quadrats), anemones (*Anthopleura* sp.), Derby hat bryozoans (*Eurystomella bilabiate*), pink beach hoppers (*Maera danae*), *Lottia* sp., and *Pagurus* sp.

Alaria bioband: This narrow, continuous bioband consisted of a similar mix of seaweeds to the Rockweed bioband, with an increased percent cover of bladed kelps. The most abundant brown seaweeds in this bioband included ribbon kelp (*Alaria marginata*), large bladed kelps (*Laminaria/Saccharina* sp.), and *F. distichus.* Red algae included the mazzaella weed complex (*Mazzaella* sp.), *O. floccosa*, and *Devaleraea* sp. (Figure D-63; Photo E). Patches of green algae included *Ulva* sp. and *M. grevillei.*

Dark Brown Kelp bioband: A continuous band of dark brown kelps at the waterline included *A. marginata* and the sea cabbage (*Saccharina sessilis*). Both occurred dentified in all five quadrats, ranging from 5-20% and 30-60% cover, respectively (Figure D-63; Photo F). In addition, *Laminaria/Saccharina* sp. (large bladed kelps; possibly an undescribed species, as noted in post-survey identifications of collections from this site) [3] ranged from 10-60% cover in 3/5 quadrats (Figure D-63; Photo F). Red algae included *Devalerea* sp. (2-20% cover in 5/5 quadrats) and *O. floccosa* (4-10% cover in 3/5 quadrats). The bioband also included *F. distichus* (7-15% cover in 3/5 quadrats). Additional species included northern sea oak (*Tokidadendron bullatum*; 3-12% cover in 4/5 quadrats) and the foliose red alga (*Phycodrys* sp.; 1-30% cover in 4/5 quadrats).

Marine invertebrates in the Dark Brown Kelp bioband ranged from rare to few, and included a variety of limpets, sea stars, sponge, bryozoans, and barnacles.

[3] Dr. Sandra Lindstrom pers. comm. January 2018.

Photo A: Site AKP_16_021 consisted of a vertical bedrock wall and wide bedrock platform in the upper intertidal zone.

Photo B: The intertidal zone consisted of Bare, Barnacle, Rockweed, and Alaria biobands.

Photo C: The gastropod *Littorina sitkana* is often observed higher in the intertidal zone.

Photo D: In the Rockweed bioband, common algae included brown algae *Fucus distichus;* and red algae *Palmaria hecatensis, Neorhodomela aculeata,* and *Odonthalia floccosa;* while green algae, *Ulva* sp. and *Monostroma grevillei,* were rare.

Photo E: Common algae in the Alaria bioband included *Alaria marginata*, *Saccharina* sp., *Fucus distichus*, *Odonthalia floccosa*, and *Devaleraea* sp.

Photo F: At the waterline, a continuous band of Dark Brown Kelps consisted of *Laminaria/Saccharina* sp., (possibly a new species), *Saccharina ses*silis, and *Alaria marginata*.

Figure D-63. Photo examples of Alaska Peninsula site AKP_16_021.

D.22 Station AKP_16_022

Location:	Southwest coast of Kujulik Bay
Latitude /Longitude:	N56.56994 W-157.89736
Region:	Alaska Peninsula
Date sampled:	May 4, 2016

Figure D-64. Site AKP_16_022 on the southwest coast of Kujulik Bay (Digital Globe, June 21, 2014).

Figure D-65. Aerial photo of site AKP_16_022 from ShoreZone aerial survey May 10, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_022 was located on the southwest coast of Kujulik Bay (Figure D-64; Figure D-65). The site was characterized by a low-lying cliff and a wide, low gradient beach consisting of bedrock, boulder, and cobble (Figure D-66; Photo A). The site was classified as semi-protected, with partially mobile substrate. The supratidal zone was marked by a distinct, continuous Splash Zone bioband. The upper intertidal zone consisted of wide Bare, Barnacle, and Rockweed biobands with a Bleached Red Algae bioband in the lower intertidal zone. There were no observations of canopy kelps in the nearshore. The Bleached Red Algae bioband appears to have bleached more than was shown during the aerial survey of the coastline, which took place two weeks prior to when this shore station was sampled.

Site AKP_16_022 consisted of a low gradient, 77.8 m wide beach. Substrate was complex, consisting predominantly of bedrock in the Splash Zone and Bare biobands transitioning to boulder, cobble, and pebble for the remainder of the beach. The upper intertidal zone was wide at 40.08 m, with Bare, Barnacle and Rockweed biobands. Lower in the intertidal zone, a continuous Bleached Red Algae bioband spanned the remaining 27 m to the waterline.

Splash Zone bioband: This band was comprised of a continuous band of black seaside lichen (*Verrucaria* sp.) was recorded.

Bare bioband: Common to abundant invertebrates in the Bare bioband included the Sitka periwinkle *Littorina sitkana*, beach hopper (*Traskorchestia traskiana*) acorn barnacle (*Semibalanus balanoides*) and small brown barnacle (*Chthamalus dalli*). A few Pacific blue mussel (*Mytilus trossulus*) and mask limpet (*Tectura persona*) were observed. Seaweeds were limited to the red algae Oregon pine (*Neorhodomela oregona*).

Barnacle bioband: In this wide, patchy bioband the barnacles *S. balanoides* and *C. dalli* were common. In the quadrats, *S. balanoides* ranged from 10-15% cover in 2/3 quadrats and *C. dalli* from 5-20% in 3/3 quadrats (Figure D-66; Photo B). Similar to the Bare bioband, an *L. sitkana* (35-60 individuals in 3/3 quadrats), *Tectura* sp. (2-10 individuals in 3/3 quadrats), and *T. traskiana* (15 individuals in 1/3 quadrat) were common to abundant in the quadrats. Tide pool algae identified Bushy ahnfelt's seaweed (*Ahnfeltia fastigiata*), purple pencils (*Dumontia alaskana*), sea sacs (*Halosaccion glandiforme*), sea cellophane *(Monostroma grevillei*), and *N. oregona* (1-5% cover in 2/3 quadrats) (Figure D-66; Photo B).

Rockweed bioband: In this wide, continuous bioband seaweed richness was high and included rockweed (*Fucus distichus*; 2-60% cover in 4/4 quadrats), sea brush (*Odonthalia floccosa*; 5-25% cover in 2/4 quadrats), red ribbon (*Devalarea* sp.; 20% cover in one quadrat), and *M. grevillei* (2-20% cover in 4/4 quadrats) (Figure D-66; Photo C). Additional algae species present at lower percent cover within the quadrat surveys included black tassel (*Polyostea bipinnata*; 5-10% cover in 3/4 quadrats), filamentous red alga (*Polysiphonia* sp.; 3-15% cover in 3/4 quadrats), bleached brunette (*Cryptosiphonia woodii*; 3-5% cover in 2/4 quadrats), and sea lettuce (*Ulva* sp.; 5% cover in 3/4 quadrats). The most abundant marine invertebrates identified included *Semibalanus* sp., limpets (*Lottia* sp.), and pink beach hoppers (*Maera danae*).

Bleached Red Algae bioband: In the lower intertidal zone a wide, continuous Bleached Red Algae bioband was present (Figure D-66; Photo D). Marine flora and fauna were diverse in this bioband. The most abundant bleached red alga was red ribbon (*Devaleraea mollis*), which ranged from 7-80% cover in 5/5 quadrats (Figure D-66; Photo E). Other red algae included *O. floccosa* (3-20% cover in 5/5 quadrats), *P. bipinnata* (3-10% cover in 5/5 quadrats), *Polysiphonia* sp. (2-30% cover in 4/5 quadrats), and sea fern (*Ptilota asplenioides*) (Figure D-66; Photo F). Brown algae observed included *F. distichus* (2-15% cover in 4/5 quadrats), and sea cabbage (*Saccharina sessilis*; 15% cover in 1/5 quadrats). Invertebrates common to this bioband included bread crumb sponge (*Halichondria panacea*), Derby hat bryozoans (*Eurystomella bilabiata*), Pygmy rock crab (*Glebicarcinus oregonensis*) hermit crab (*Pagurus* sp.), and *M. danae.*

Photo A: Site AKP_16_022 consisted of a low-lying cliff and a wide, low gradient beach with bedrock, boulder, and cobble substrate.

Photo B: The Barnacle bioband was wide and patchy, consisting of the barnacle species *Chthamalus dalli* and *Semibalanus balanoides*, and the red algae *Neorhodomela oregona* in tide pools.

Photo C: The Rockweed bioband consisted of a mix of brown algae *Fucus distichus,* foliose red algae *Devaleraea* sp., filamentous red algae *Odonthalia floccosa*, and foliose green algae *Monostroma grevillea.*

Photo D: In the lower intertidal zone a wide, continuous band of Bleached Red Algae extended to the waterline.

Photo E: In the Bleached Red Algae bioband *Devaleraea mollis* was present in all five quadrats, percent cover ranged from 7-80%.

Photo F: The Red Algae, *Ptilota asplenioides* was observed in the Bleached Red Algae bioband.

Figure D-66. Photo examples of Alaska Peninsula site AKP_16_022.

D.23 Station AKP_16_023

Location:	Northern tip of Garden Island, eastern entrance of Aniakchak Bay
Latitude /Longitude:	N56.75130 W-157.36416
Region:	Alaska Peninsula
Date sampled:	May 25, 2016

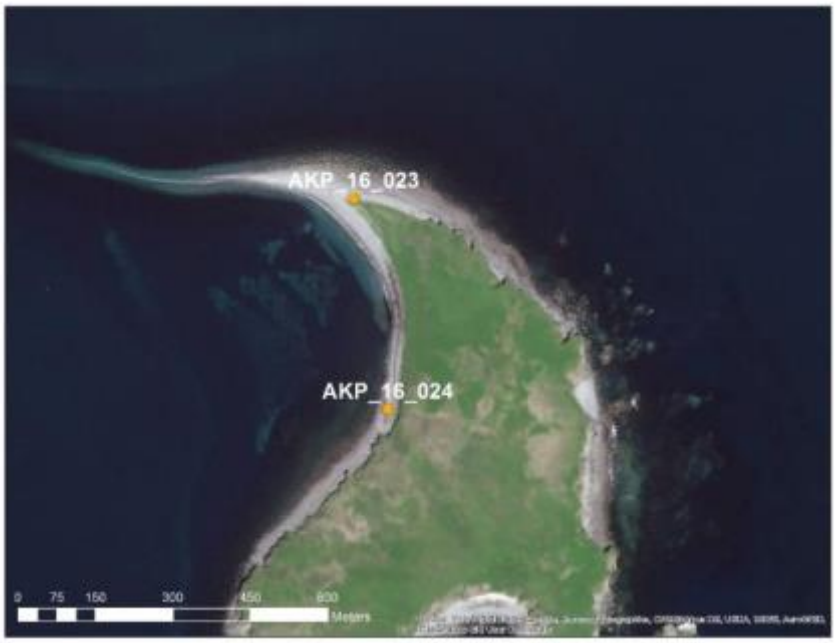


Figure D-67. Site AKP_16_023 on the northern tip of Garden Island, east of Aniakchak Bay (Digital Globe, June 21, 2014).

Figure D-68. Aerial photo of site AKP_16_023 from ShoreZone aerial survey May 7, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_023 was located on the northern tip of Garden Island, between Aniakchak and Amber bays (Figure D-67; Figure D-68). The site was characterized by a low gradient, wide beach consisting of boulder, cobble, and pebble substrate with wide, distinct biobands (Figure D-69; Photo A). Site AKP_16_The site was classified as semi-exposed with partially mobile substrate. The supratidal zone consisted of a wide, continuous Splash Zone bioband with woody debris (Figure D-69; Photo B). The upper intertidal zone included wide Bare and Rockweed biobands (Figure D-69; Photo B). The lower intertidal zone included a wide Alaria bioband with a Dark Brown Kelp band at the waterline. Species richness was high in the Rockweed and Alaria biobands for both flora and fauna.

Site AKP_16_023 was located at the base of a small spit on Garden Island and consisted of a low gradient, wide beach spanning 69.0 m to the waterline. Substrate was an amalgamation of boulder, cobble, and pebble in the higher intertidal, transitioning to larger boulders lower in the intertidal zone. The supratidal zone included terrestrial grasses, log piles, and a wide Splash Zone bioband (14.5 m). The upper intertidal zone included a wide Bare bioband with barnacles (7.9 m) and a wide Rockweed bioband (23.6 m). A wide Alaria bioband (18.4 m) occupied the lower intertidal zone.

Splash Zone bioband: The continuous, wide band consisted predominantly of black seaside lichen (*Verrucaria* sp.) with patches of orange seaside lichen (*Caloplaca/Xanthoria* sp.) (Figure D-69; Photo B). Marine invertebrates were limited to the Sitka periwinkle (*Littorina sitkana*).

Bare bioband: There was very little marine flora cover in this bioband, but included the red algae, sea moss (*Endocladia muricata*), jelly moss (*Gloiopeltis furcata*), false laver (*Pyropia fallax*) and laver (*P. torta*). The brown algae, sea cauliflower (*Leathesia marina*) and rockweed (*Fucus distichus*), were also present. Marine invertebrate richness was high with patchy distributions of acorn barnacles (*Balanus glandula*) and small brown barnacles (*Chthamalus dalli*). Limpets (*Tectura* sp.), Pacific beach hoppers (*Traskorchestia traskiana),* red shore mites (*Neomolgus littoralis*) and *L. sitkana* were common to abundant.

Rockweed bioband: The bioband was wide and continuous, consisting of a mix of brown, green, and red algae. *F. distichus* cocver ranged from 10-80% cover in 5 of 5 quadrats (Figure D-69; Photo D). Lower cover was recorded for the sea sac (*Halosaccion glandiforme*; 2-8% cover in 4/5 quadrats), laver (*Pyropia* spp.; 3-25% cover in 5/5 quadrats), frilly red ribbon (*Devaleraea callophylloides*; 1-15% cover in 2/5 quadrats); and sea lettuce (*Ulva* sp.; 2% cover in 4/5 quadrats) (Figure D-69; Photo D).

Marine invertebrate richness was high in the Rockweed bioband. *C. dalli* (1-5% cover in 4/5 quadrats), *B. glandula;* limpets (*Lottia* sp.; 25 individuals in 4/5 quadrats), plate limpet *(Tectura scutum*; 2-6 individuals in 5/5 quadrats); and the rockweed idotea (*Pentidotea wosnesenskii*were all common. The purple sponge (*Haliclona* sp.), black katy chiton (*Katharina tunicata*), Pacific blue mussel (*Mytilus trossulus),* blood star (*Henricia leviuscula*), and Derby hat bryozoan (*Eurystomella bilabiata)* also occurred, but were rare to few in relative abundance.

Alaria bioband: In the lower intertidal zone a wide and continuous band of ribbon kelp (*Alaria marginata*; 70-100% cover in 5/5 quadrats) was present (Figure D-69; Photo E). In addition, red algae identified included coralline red algae (crusting and articulating; 1-40% cover in 5/5 quadrats), stiff red ribbon (*P. hecatensis*; 15-50% cover in 4/5 quadrats), and sea brush (*Odonthalia floccosa*; 2-15% cover in 2/5 quadrats). Lastly, green algae recorded in the quadrat survey included green rope (*Acrosiphonia coalita*; 1-5% cover in 4/5 quadrats).

Marine invertebrate richness was high in this bioband, with many species ranging from common to abundant in the shore station transect survey. Abundant species included the plumose anemone (*Metridium senile*), the hairy crab (*Hapalogaster mertensii*), thatched barnacle (*Semibalanus cariosus*), and *E. bilabiata.* Other notable and commonly encountered invertebrates included little margarite snail

(*Margarites pupillus*), orange fragrant nudibranch (*Peltodoris nobilis*), *H. leviuscula*, six-armed star (*Leptasterias hexactis*), hermit crab (*Pagurus* sp.), and unidentified orange tunicates under rocks. Finally, there were several gastropod whose relative abundance ranged from rare to few. These included the leather sea-slug (*Onchidella borealis*), Northern hairy chiton (*Mopalia kennerleyi*), Oregon triton (*Fusitriton oregonensis*), murex snail (*Boreotropha multicostatus*) and graceful decorator crab (*Pugettia gracilis*) (Figure D-69; Photo F).

Dark Brown Kelp bioband: A patchy band of bladed kelps occurred just offshore that included five-ribbed kelp (*Costaria costata*) and bull kelp (*Nereocystis luetkeana*).

Photo A: Site AKP_16_023 consisted of a low gradient beach, spanning 69.0 m. Biobands were distinct and wide, and included Splash Zone, Bare, Rockweed, and Alaria.

Photo B: Looking towards the waterline, a distinct, wide Splash Zone bioband consisting of *Verrucaria* sp. (black seaside lichen), and a wide Bare bioband mixed with barnacles formed the supratidal and upper intertidal biobands.

Photo C: The Rockweed bioband was wide and continuous, consisting of a mix of brown, green, and red algae.

Photo D: In the quadrat survey a mix of *Fucus distichus, Halosaccion glandiforme, Pyropia spp.,* and *Ulva* sp. were identified.

Photo E: The lower intertidal zone consisted of a wide *Alaria marginata* bioband. *A. marginata* was present in all five quadrats, percent cover ranged from 70-95%.

Photo F: In both the Rockweed and Alaria biobands the graceful kelp crab (*Pugettia gracilis*) was observed. In this image *P. gracilis* has attached green and red algae to its rostrum.

Figure D-69. Photo examples of Alaska Peninsula site AKP_16_023.

D.24 Station AKP_16_024

Location:	Northeast coast of Garden Island, eastern entrance of Aniakchak Bay
Latitude /Longitude:	N56.75000 W-157.36094
Region:	Alaska Peninsula
Date sampled:	May 25, 2016

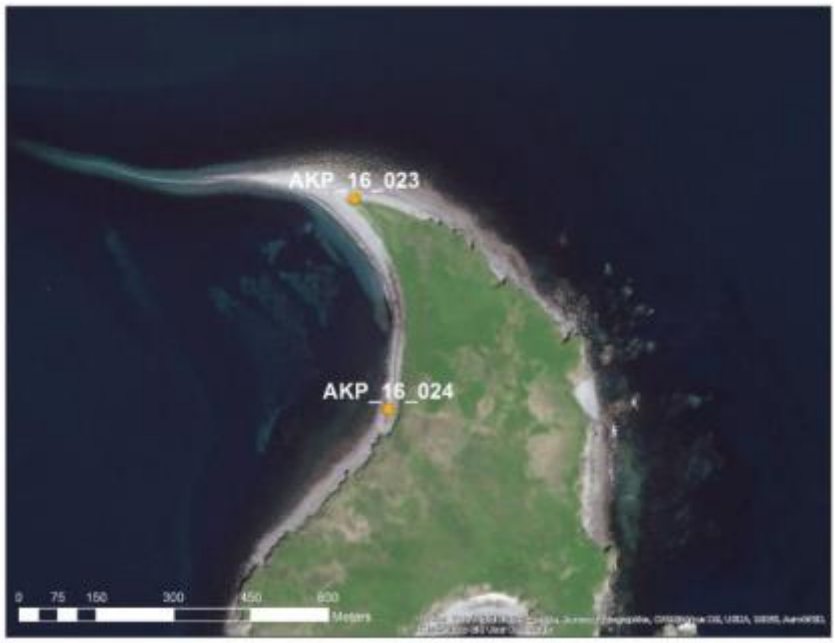


Figure D-70. Site AKP_16_024 on the northeast coast of Garden Island, east of Aniakchak Bay (Digital Globe, June 21, 2014).

Figure D-71. Aerial photo of site AKP_16_024 from ShoreZone aerial survey May 7, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_024 was located on the west side of Garden Island, between Aniakchak and Amber bays (Figure D-70; Figure D-71). The site was characterized by a vertical bedrock cliff and wide, low gradient (4.7°) beach consisting of a mix of bedrock, boulder, cobble, and sand (Figure D-72; Photo A). The site was classified as semi-exposed with partially mobile substrate. Species richness at this site was high from the Rockweed bioband to the waterline. In the supratidal zone a distinct, continuous Splash Zone bioband was present. The upper intertidal zone consisted of a wide Barnacle and Rockweed bioband, while the lower intertidal zone consisted of wide Red Algae and Alaria biobands. In the nearshore, a band of coralline red algae was present, which may indicate urchin barrens.[4]

Site AKP_16_024 consisted of a low gradient, wide beach spanning 91.7 m to the waterline. Above the supratidal zone a vertical bedrock cliff was present. The supratidal zone consisted of a Splash Zone bioband spanning 14.3 m over boulder and cobble. The upper intertidal zone consisted of wide Barnacle (30.2 m) and Rockweed (10.5 m) biobands over boulder, cobble, sand, and bedrock substrate. In the lower intertidal, substrate transitioned exclusively to bedrock. The lower intertidal zone included wide Red Algae (25.6 m) and Alaria (11.1 m) biobands to the waterline. Below the waterline an Urchin Barren bioband was visible.

Splash Zone bioband: The continuous wide band consisted of black seaside lichen (*Verrucaria* sp.).

Barnacle bioband: The wide band consisted of an abundance of acorn barnacles (*Balanus glandula),* small brown barnacles *(Chthamalus dalli)* and Sitka periwinkles (*Littorina sitkana)* (Figure D-72; Photo B). Invertebrates commonly identified in the higher intertidal zone included beach hoppers (*Traskorchestia traskiana*), amphipods (*Spinulogammarus subcarinatus*)*;* limpets (*Lottia* sp.) and dogwinkles (*Nucella* sp.). Marine flora were mostly sparse, with the exception of Oregon pine (*Neorhodomela oregona)* in tide pools in the lower portion of the bioband (Figure D-72; Photo B). Marine algae ranging from rare to few in abundance included studded sea balloons (*Soranthera ulvoidea*), rockweed *(Fucus distichus),* sea moss (*Endocladia muricata*), sea sacs (*Halosaccion glandiforme*), jelly moss (*Gloiopeltis furcata*); and curly sea hair (*Chaetomorpha* sp.)

Rockweed bioband: A mix of brown, green, and red algae occurred in the Rockweed bioband. *F. distichus* was present in all three quadrats, ranging from 30-80% cover (Figure D-72; Photo C). Black seaweed (*Pyropia abbottae*) and sea lettuce (*Ulva* sp.) were present in all three quadrats with percent cover ranging from 10-25% and 1-5% cover, respectively (Figure D-72; Photo C). *C. dalli* was also abundant, ranging from 20-70% cover in 3/3 quadrats. Common invertebrates were *T. traskiana* (100 individuals in 1/3 quadrat), checkered hairy snail (*Trichotropis cancellata*; 17 individuals in 1/3 quadrat), *Lottia* sp., and the Pygmy rock crab *Glebicarcinus oregonensis*.

Red Algae bioband: The Red Algae bioband was wide and continuous, consisting of a mix of red, brown, and green algae. While seaweed abundance was low, species richness was high. Red algae included sea brush (*Odonthalia floccosa*; 3-25% cover in 4/5 quadrats), *H. glandiforme* (1-25% cover in 5/5 quadrats), and graceful black pine (*N. aculeata*; 3-25% in 4/5 quadrats). Green algae consisted of sea lettuce (*Ulva* sp.; 3-20% cover in 5/5 quadrats), sea cellophane (*Monostroma grevillei;* 2-5% cover in 3/5 quadrats), and green rope (*Acrosiphonia coalita;* 2-5% cover in 3/5 quadrats). *F. distichus* ranged rom 1-15% cover in 4/5 quadrats). A variety of seaweeds were found in tide pools and included acid kelp (*Desmarestia* sp.), large bladed kelp (*Laminaria/Saccharina* sp.), sea cabbage (*Saccharina sessilis*), and pink calcareous crust (*Lithothamnion/Lithophyllum* sp.).

[4] The database lists this bioband as 'Urchin Barrens' (URC). As no urchins were recorded in the field, the bioband assigned could be updated to a newer ShoreZone code for Coralline Red Algae (CORA) used in the aerial classification, and not previously included in the shore station dataset.

Marine invertebrates were diverse in this bioband, with abundance of *C. dalli* (2-90% cover in 2/5 quadrats) and *Semibalanus cariosus* (thatched barnacle; 2-60% cover in 5/5 quadrats. Invertebrates that were few to common included painted anemones (*Urticina grebelnyi*), limpets (*Lottia* sp. and *Tectura scutum)*, red lined chiton (*Tonicella lineata*), and hermit crabs (*Pagurus* sp.).

Alaria bioband: The Alaria band was defined by continuous ribbon kelp (*Alaria marginata*) in the low intertidal zone (Figure D-72; Photo E). Quadrat data show *A. marginata* present in 2 of 4 quadrats and ranged rom 10-75% cover. Similar to the Red Algae bioband, this bioband included a mix of red algae *O. floccosa* (5-20% cover in 3/5 quadrats) and *N. aculeata* (2-10% cover in 2/5 quadrats); green algae *A. coalita* (1-15% cover in 3/5 quadrats) and *Ulvaria* sp. (1-10% cover in 4/5 quadrats); and barnacles *S. cariosus* (1-80% cover in 3/5 quadrats) (Figure D-72; Photo E).

Marine invertebrate richness was high, and included the northern feather duster worm (*Eudistylia vancouveri*), Derby hat bryozoan (*Eurystomella bilabiata*); purple sponge (*Haliclona* sp.); hermit crab (*Pagurus* sp.), and kelp crab (*Pugettia* sp.). A variety of anemones included the green anemone (*Anthopleura* sp.), plumose anemone (*Metridium* sp.), and the painted anemone (*Urticina grebelyni*). Echinoderms included the six-armed star (*Leptasterias* sp.) and the sea cucumber (*Chiridota* sp.). Gastropods included the dogwinkle (*Nucella* sp.), orange fragrant nudibranch (*Peltodoris nobilis*), and chitons (*Katharina tunicata, Mopalia kennerleyi, Tonicella undocaerulea,* and *Tonicella lineata*) (Figure D-72; Photo F).

Coralline Algae bioband: At the waterline, this bioband consisted predominantly of rock crust (*Clathromorphum* sp.) and *O. flocossa* (30% cover in 1/1 quadrat). Other algae were sparse (rare to few) and included filamentous red, foliose red, brown, and green algae. Marine invertebrates were similar to those in the Alaria bioband, but with an increase in abundance of anemones, chitons, dogwinkles, snails, barnacles, and sea stars.

Photo A: Site AKP_16_024 view from the water. The site was characterized by a vertical bedrock cliff and a low gradient beach consisting of boulder, cobble, and bedrock.

Photo B: The Barnacle bioband consisted of a mix of the barnacles *Balanus glandula* and *Chthamalus dalli,* the periwinkle *Littorina sitkana*, and the red algae *Neorhodomela oregona.*

Photo C: In the Rockweed bioband *Fucus distichus* (30-80% cover), *Pyropia abbottae* (10-25% cover), and *Ulva* sp. (1-5% cover) were identified in all three quadrats.

Photo D: The Red Algae bioband consisted of a mix of red, brown, and green algae over a bedrock platform. Barnacles were also abundant in this bioband.

Photo E: In the lower intertidal zone species included, *Alaria marginata, Odonthalia floccosa, Neorhodomela aculeata, Ulva* sp., and *Semibalanus cariosus.* In the nearshore pink coralline algae was observed.

Photo F: The lined chiton, *Tonicella* sp., was commonly encountered in the Alaria bioband.

Figure D-72. Photo examples of Alaska Peninsula site AKP_16_024.

D.25 Station AKP_16_025

Location:	West of Derickson Island, Northern coast of Chiginagak Bay
Latitude /Longitude:	N56.96630 W-156.78813
Region:	Alaska Peninsula
Date sampled:	May 26, 2016

Figure D-73. Site AKP_16_025 on the northern coast of Chiginagak Bay, west of Derickson Island (Digital Globe, September 24, 2014).

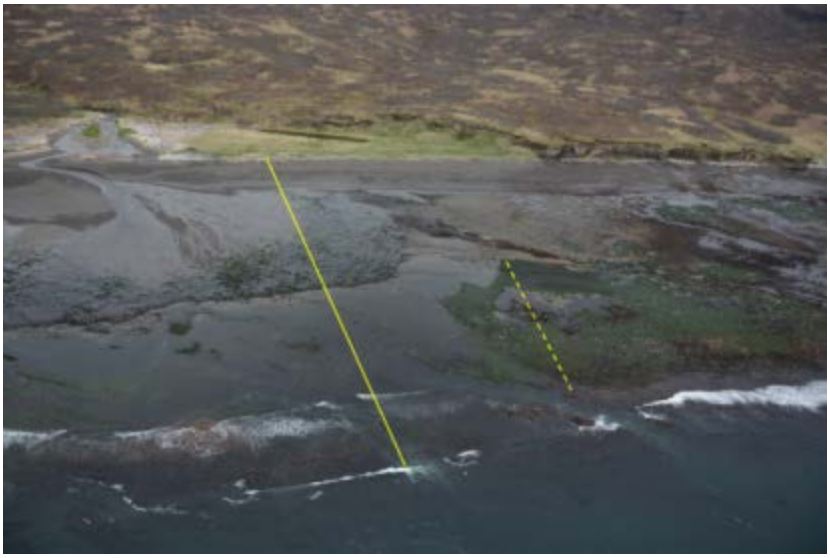


Figure D-74. Aerial photo of site AKP_16_025 from ShoreZone aerial survey May 7, 2016. Yellow line shows location of transect where site profile was measured. Dotted line reflects the addition of the surfgrass bioband adjacent to site 25 to ensure collection of species assemblages for this bioband that was common across portions of the nearby coast.

Site AKP_16_025 was located on the west side of Chiginagak Bay, west of Derickson Island (Figure D-73; Figure D-74). The site was characterized by an inclined gravel beach face above a wide, flat beach of sand, pebble, cobble, and small boulders. The site was classified as semi-exposed with partially mobile substrate. In the supratidal zone, biobands included a wide Dune Grass band with woody debris and a wide Bare band consisting of sand, pebble, and cobble (Figure D-75; Photo A). In the intertidal zone a continuous wide band of Green Algae and Surfgrass covering boulder, cobble, and pebble was observed.

Site AKP_16_025 consisted of a low gradient, wide beach spanning 154.5 m from the base of the dune grass to the waterline. In the supratidal zone a log pile had accumulated adjacent to the Dune Grass bioband, with substrate consisting solely of sand. A wide Bare bioband was also part of the supratidal and high intertidal zone, spanning 60.7 m. Substrate consisted predominantly of sand in the first half of the bioband and transitioned to pebble, cobble, and sand in the lower half. In addition, an ephemeral stream flowed through the Bare bioband. The mid intertidal zone included a 69.8 m wide Green Algae bioband with pooling water and a sand, pebble, cobble substrat (Figure D-75; Photo B). A wide, dense band of Surfgrass occurred in the low intertidal zone and extended beyond the waterline (Figure D-75; Photo B, Photo C).

Dune Grass bioband: Dune grass (*Leymus mollis*) extended 9 m above the high water mark and the top of the Bare bioband. Drift logs had accumulated at the base of the band.

Bare bioband: In the Bare bioband, marine flora ranged from rare to few and were limited to the lower band where substrate transitioned to cobble and pebble. Included were Green rope (*Acrosiphonia coalia*), Oregon pine (*Neorhodomela oregona*), frilly red ribbon (*Devaleraea callophylloides*), and laver (*Pyropia kurogi*). No invertebrates were observed in the band.

Green Algae bioband: The band was dominated by the abundant green *A. coalita* and sea cellophane (*Monostroma grevillei*). For the nine quadrats sampled in thd bioband, *A. coalita* ranged from 1-90% in 7/9 quadrats (Figure D-75; Photo D) and *M. grevillei* was present in 8/9 quadrats (Figure D-75; Photo D). In the ephemeral stream running through the band, a variety of seaweeds were identified, including ribbon kelp (*Alaria marginata*); graceful black pine (*N. aculeata*; 1-80% cover in 5/9 quadrats) Kjellman's laver (*Wildemania variegata*; 1-25% cover in 6/9 quadrats); and diatoms (15-60% cover in 3/9 quadrats) (Figure D-75; Photo E). Common invertebrates were the Sitka periwinkle (*Littorina sitkana),* small acorn barnacle (*Chthamalus dalli*), black kay chiton (*Katharina tunicata*), limpet (*Lottia* sp.), and hermit crab (*Pagurus* sp).

Surfgrass bioband: The wide and continuous bioband extended from the Green Algae bioband to beyond the waterline and consisted predominantly of serrulated surfgrass (*Phyllospadix serrulatus*; 100% cover in 3/3 quadrats) (Figure D-75; Photo C). Small tide pool pockets were present with encrusting and articulating coralline algae (*Bossiella* spp. and *Clathromorphum* sp.). Invertebrates included little Margarite snail (*Margarites pupillus*) and breadcrumb sponge (*Halichondria panacea*) (Figure D-75; Photo F). Northern horse mussle (*Modiolus modiolus*) and dire whelk (*Lirabuccinum dirum*) were observed in the quadrats.

D.26 Station AKP_16_026

Location:	West side of Chiginagak Bay, West of Derickson Island
Latitude /Longitude:	N56.96630 W-156.78813
Region:	Alaska Peninsula
Date sampled:	May 26, 2016

When shore station AKP_16_025 was sampled, the nearby low intertidal surfgrass bioband was also sampled for bioband relative species abundances (see dotted line in Figure D-74). Quadrat data were also collected. These data were recorded as shore station number AKP_16_026, but the bioband was incorporated with shore station AKP_16_025 in the site narrative, as the sites were adjacent and both were representative of long stretches of beaches along the shoreline.

Photo A: In AKP_16_025 the supratidal zone consisted of Dunegrass and a wide Bare bioband. Substrate consisted of sand and pebble.

Photo B: In the intertidal zone a wide Green Algae bioband covered boulder, cobble, and pebble. In the distance the Surfgrass bioband can be seen.

Photo C: In the lower intertidal zone a wide Surfgrass bioband was visible to the waterline.

Photo D: In the Green Algae bioband *Acrosiphonia coalita* and *Monostroma grevillei* covered the boulder and cobble, however, in pockets of water a variety of seaweeds was observed.

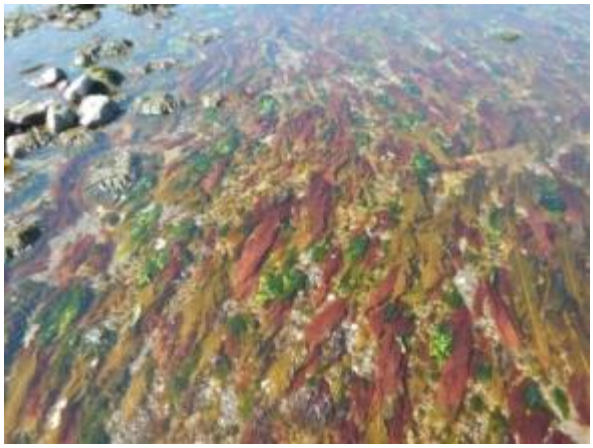


Photo E: In the Green Algae bioband patches of the brown bladed kelp *Alaria marginata*; the green algae *Acrosiphonia* sp. and *Monostroma grevillea;* and the foliose red algae *Wildemania* spp. were identified.

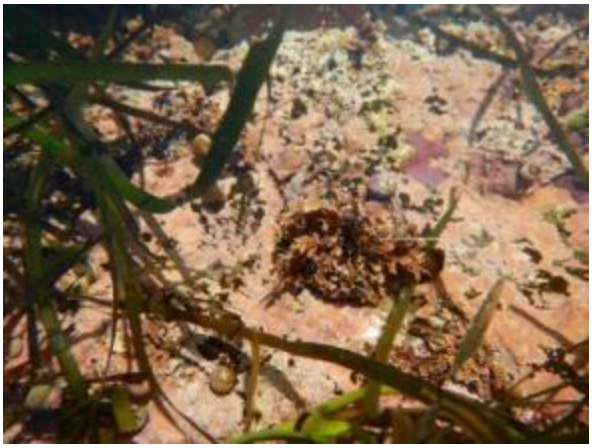


Photo F: In the Surfgrass bioband, small tide pool pockets were present with encrusting and articulating coralline algae and marine invertebrate species *Margarites pupillus* and *Halichondria* sp.

Figure D-75. Photo examples of Alaska Peninsula site AKP_16_025.

D.27 Station AKP_16_027

Location:	Northern coast of Derickson Island, Chiginagak Bay
Latitude /Longitude:	N56.99163 W-156.72441
Region:	Alaska Peninsula
Date sampled:	May 26, 2016

Figure D-76. Site AKP_16_027 on the northern coast of Derickson Island, Chiginagak Bay (Digital Globe, July 2, 2016).

Figure D-77. Aerial photo of site AKP_16_027 from ShoreZone aerial survey May 7, 2016. Yellow line shows location of transect where site profile was measured.

Site AKP_16_027 was located on the northern coast of Derickson Island, Chiginagak Bay (Figure D-76; Figure D-77). The site was characterized by a steep beach consisting of large, angular boulders (Figure D-78; Photo A). Evidence of a recent rock slide was apparent. The site was classified as semi-protected with partially mobile substrate. The supratidal zone included a medium Bare bioband. The upper intertidal was narrow, consisting of Green Algae and Rockweed biobands. Narrow Red Algae and Alaria biobands occurred in the lower intertidal zone.

Site AKP_16_027 consisted of a steep, narrow beach spanning 25.7 m wide, with substrate consisting predominantly of medium to large sub-angular boulders. In the supratidal zone a medium Bare bioband was visible, spanning 11.2 m. The upper intertidal zone included a narrow Green Algae bioband (5.2 m). In the mid intertidal zone were narrow Rockweed and Red Algae biobands, spanning 7.1 m collectively. The lower intertidal zone included a narrow (2 m) Alaria bioband.

Bare bioband: No marine flora were observed in this bioband. Marine invertebrates were limited to small acorn barnacles (*Chthamalus dalli*), and the Sitka periwinkle (*Littorina sitkana).*

Green Algae bioband: The continuous, narrow band of Green Algae consisted predominantly of filamentous green algae (*Ulothrix* sp.) mixed with black seaweed (*Pyropia abbotiaea),* laver (*P. kurogii*) and black sea hair ("*Bangia*" spp) (Figure D-78; Photo B). Both *Ulothrix* sp., and *Pyropia* spp., were present in all three quadrats. *Ulothrix* sp. ranged from 10-99% cover and *Pyropia* spp. ranged from 4-7% cover. Commonly identified invertebrates included *L. sitkana, C. dalli,* and Pacific beach hoppers (*Traskorchestia traskiana).*

Rockweed bioband: In the patchy and narrow bioband, seaweed abundance ranged from rare to few. A variety of seaweeds were identified and included rockweed (*Fucus distichus*), "*Bangia"* spp., sea brush (*Odonthalia floccose),* black tassel (*Polyostea bipinnata*), aver (*P. fucicola, P. kurogii), Ulothrix* sp., and green cellophane (*Monostroma grevillei*). Marine invertebrate abundances ranged from common to abundant and included acorn barnacles (*Balanus glandula*), thatched barnacle (*Semibalanus cariosus*), *C. dalli,* Pacific blue mussel (*Mytilus trossulus),* plate limpets (*Tectura scutum*)*;* and *T. traskiana.*

Red Algae bioband: The continuous, narrow bioband consisted of a mix of red, brown, and green algae (Figure D-78; Photo C). Dominant red algae in this bioband included *O. floccosa, P. bipinnata,* and bleached brunette (*Cryptosiphonia woodii*). Patches of green rope (*Acrosiphonia coalita*) and *F. distichus* were common (Figure D-78; Photo D). Marine invertebrates in this bioband were diverse, with abundance ranging from rare to common. Common invertebrates included limpets (*Lottia* sp.), *M. trossulus, S. cariosus,* and dogwinkle (*Nucella* sp.).

Alaria bioband: The continuous, narrow bioband was dominated by ribbon kelp (*Alaria marginata*; 20-70% cover in 3/3 quadrats) and *O. floccosa* (15-60% cover in 3/3 quadrats) (Figure D-78; Photo E). Species richness was high, although abundance with low, ranging from rare to few for most species. These included: five ribbed kelp (*Costaria costata*), large bladed kelp (*Laminaria/Saccharina* sp.); *A. coalita* and Dwarf sea hair (*Blidingia minima*). Red algae included red ribbon (*Devaleraea* sp.;1-6% cover in 2/3 quadrats), *P. bipinnnata* (5-10% cover in 3/3 quadrats), and Kjellman's laver (*Wildermania variegata).* Marine invertebrate abundance ranged mainly from rare to few and included observations of the Derby hat bryozoan (*Eurystomella bilabiata*), *S. cariosus,* and rockweed idotea (*Pentidotea wosnesenskii)* (Figure D-78; Photo F). In addition, anemones, chitons, snails, hermit crabs, and sea stars were observed in this bioband.

Photo A: Site AKP_16_027 consisted of a narrow, steep beach with angular boulders.

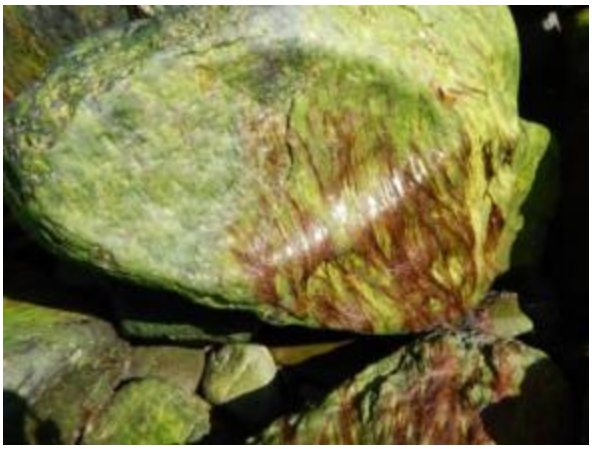


Photo B: The Green Algae bioband consisted predominantly of *Ulothrix* sp., mixed with "*Bangia"* spp. and *Pyropia* spp.

Photo C: The Red Algae bioband was narrow and continuous, consisting of a mix of red, green, and brown algae.

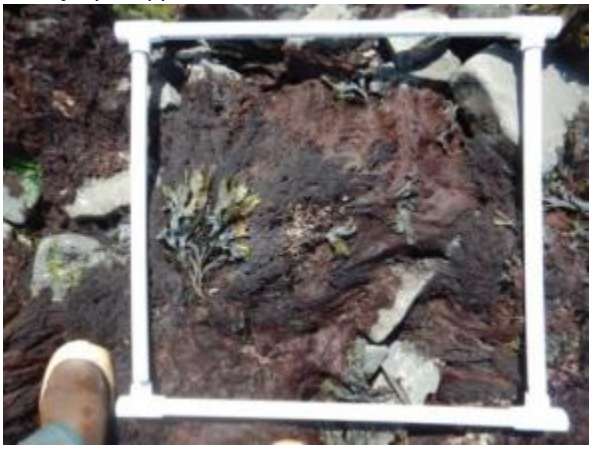


Photo D: Seaweeds identified in the Red Algae bioband included the red algae *Odonthalia floccosa, Polyostea bipinnata,* and *Cryptosiphonia woodii;* the brown algae *Fucus distichus;* and the green algae *Acrosiphonia coalita.*

Photo E: The Alaria bioband was narrow and continuous, consisting predominantly of *Alaria marginata* and *Odonthalia floccosa.*

Photo F: In the Alaria bioband marine invertebrates observed include the barnacle species *Semibalanus cariosus* and the bryozoan *Eurystomella bilabiata.*

Figure D-78. Photo examples of Alaska Peninsula site AKP_16_027.

D.28 Station AKP_16_028

Location: Northern coast of an islet, south of Takli Island, near Russian Anchorage
Latitude /Longitude: N58.05822 W-154.43911
Region: Alaska Peninsula
Date sampled: May 27, 2016

Figure D-79. Site AKP_16_028 on Little Takli Island Island, east of Takli Island, Katmai National Park (Digital Globe, May 1, 2014).

Figure D-80. Aerial photo of site AKP_16_028 from ShoreZone aerial survey June 12, 2003. Yellow line shows location of transect where site profile was measured

Site AKP_16_028 was located on the northern coast of an islet south of Takli Island and west of Russian Anchorage region (Figure D-79; Figure D-80). The site was complex and consisted of a long, low gradient bedrock reef with boulder, cobble, and pebble substrate (Figure D-81; Photo A, Photo B). Sandy beaches flanked the bedrock on either side. The site was classified as semi-protected with partially mobile substrate. The supratidal zone consisted of wide Splash Zone and Bare biobands. The upper intertidal zone also consisted of continuous Barnacle and Rockweed biobands, while the lower intertidal zone contained a continuous and lush Red Algae bioband.

Site AKP_16_028 consisted of a long, low gradient spit, spanning 82.8 m. Substrate was mixed, with bedrock, boulder, cobble, and sand. The supratidal zone consisted of a Splash Zone bioband (13.6 m) and a Bare bioband (12.3 m) over bedrock, boulder, cobble, pebble, and sand. The upper intertidal zone consisted of a wide Barnacle bioband (16.0 m) and Rockweed bioband (24.9 m). Barnacle bioband substrate was bedrock covered in sand, while Rockweed bioband substrate was boulder, cobble, sand, and shell hash. Lower intertidal zone substrate was similar to the Rockweek bioband and included a wide Red Algae bioband (16.0 m).

Splash Zone bioband: The splash zone had a wide and continuous band of black seaside lichen (*Verrucaria* sp.).

Bare bioband: Very little fauna were recorded in this bioband, with most having abundance category "few." They included Oregon pine (*Neorhodomela oregona),* rusty rock (*Hildenbrandia rubra*)*;* Dwarf sea hair (*Blidingia minima*); and twisted sea tubes (*Melanosiphon intestinalis*). Invertebrate were also limited, with low abundance of acorn barnacles (*Balanus glandula),* the Sitka periwinkle (*Littorina sitkana*), and the mask limpet (*Tectura persona*).

Barnacle bioband: The bioband consisted of a wide, continuous band of *B. glandula* and thatched barnacle (*Semibalanus cariosus*) (Figure D-81; Photo C). Invertebrates ranged from few to common, with the most abundant species being *L. sitkana* having counts ranging from 66-141 individuals in 2/2 quadrats. Other common ivertebrates were shielf limpets (*Lottia pelta*), hairy hermit crabs (*Pagurus hirsutisculus*), rockweed idotea (*Pentidotea wosnesenskii*), and Northern feather duster worms (*Eudistylia vancouveri).* The foliose red algae, black seaweed (*Pyropia abbottiae*), was also common. Less common (rare to few) algae included *N. oregona*, rockweed (*Fucus distichus*) and studded sea balloons (*Soranthera ulvoidea*).

Rockweed bioband: This continuous, wide bioband consisted of a mix of red, green and brown seaweed. Laver (*Pyropia* sp.) ranged from 5-60% cover in 3/4 quadrats. The relative abundances of marine flora were otherwise classified as rare to few. These included the brown algae species *F. distichus, S. ulvoidea*, soda straws (*Scytosiphonia lomentaria* and chocolate pencils (*Chordaria flagelliformis*). Red algae species included rock crust (*Clathromorphum* sp.), encrusting corallines, and black tassel *(Polyostea bipinnata*; 5-22% cover in 2/4 quadrats). Green sea lettuce (*Ulva* sp.) was found on bedrock and in tide pools. Marine invertebrates included an abundance of *S. cariosus* and *B. glanduala* (2-23% cover in 4/4 quadrats), *Lottia* sp., *L. sitkana,* and black katy chitons (*Katharina tunicata*). Other species ranging from rare to few included the painted anemone (*Urticina* sp.), red lined chiton (*Tonicella lineata*), hermit crab (*Pagurus* sp.), and blood star (*Henricia leviuscula*).

Red Algae bioband: In this wide, continuous bioband, common red algae included Kjellman's laver (*Wildemania variagata), P. bipinnata,* and *O. floccosa*; while the green algae *Ulva* sp. was abundant (Figure D-81; Photo D, Photo E). Invertebrate included: green anemone (*Anthopleura* sp.); *E. vancouveri, C. dalli* and *S. cariosus* in tide pools (Figure D-81; Photo F).

Photo A: Site AKP_16_028 was complex, consisting of a spit with sandy beaches on either side. The lower intertidal zone had a relatively high number of seaweed and invertebrate species.

Photo B: Looking towards the waterline along the long, narrow spit, the substrate consisted of a mix of bedrock, boulder, cobble, and pebble.

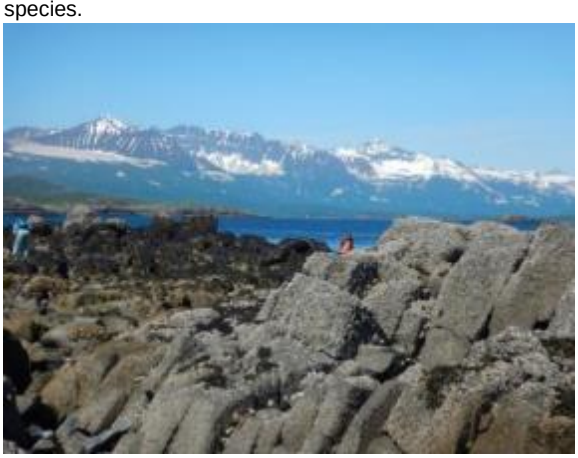


Photo C: The wide, continuous barnacle band consisted of *Balanus glandula*, *Semibalanus cariosus*, and patches of *Fucus distichus* and *Neorhodomela oregona*.

Photo D: In the intertidal zone a wide, patchy Rockweed bioband mixed with the foliose red algae *Pyropia* sp. was present. In the lower intertidal zone a Red Algae bioband included a mix of red, brown, and green algae.

Photo E: In the Red Algae bioband the sea star *Leptasterias* sp. sits atop the red algae *Odonthalia floccosa.* The foliose green algae *Ulva* sp. and foliose red algae *Pyropia* sp. can also be identified in this image.

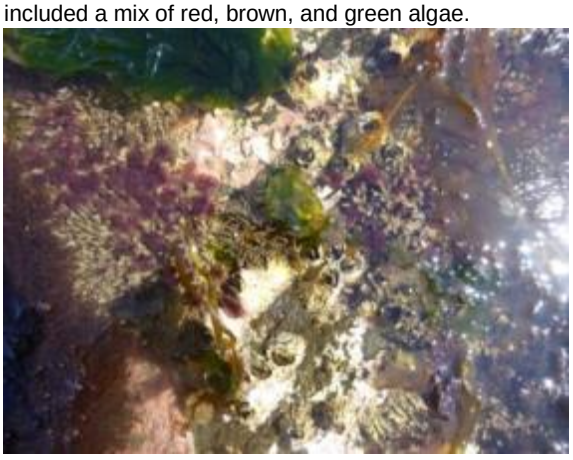


Photo F: In tide pools marine invertebrates included barnacles *Chthamalus dalli and Semibalanus cariosus*, the anemone *Anthopleura* sp., and the tube worm *Eudistylia vancouveri.*

Figure D-81. Photo examples of Alaska Peninsula site AKP_16_028.

Appendix E: Site Verification Classification and Scoring Data

Table E-1. ShoreZone ground survey verification study results.

Site Number	Classification	Intertidal Slope Category	Intertidal Zone Width (m)	Substrate Categories ($1^o/2^o/3^o$)			BioBands								Overall Score
AKP16_001	Field	2	85	1	3	4	BLLI	WILA	BARN	FFRA	ALAR				
	Office	2	90	1	4	6	BLLI	WILA	BARN	FFRA	BRBA	ROCK			
	Comparison Score	0	0	2			1								3
AKP16_002	Field	3	60	3	4	8	BLLI	BARN	BLMU		FFRA	ALAR			
	Office	3	60	3	4	5	BLLI	BARN	BLMU	GRAL	FFRA	BRBA			
	Comparison Score	0	0	1			1								2
AKP16_003	Field	2	120	1	3	4	BLLI	BARN		ROCK	FFRA	ALAR			
	Office	2	125	1	3	4	BLLI	BARN	BLMU	ROCK	FFRA	BRBA	CORA		
	Comparison Score	0	0	0			2								2
AKP16_004	Field	2	105	1	3	4	BLLI	BARN	ROCK	GRAL	FFRA	ALAR			
	Office	2	113	3	1	4	BLLI	BARN	ROCK	GRAL	FFRA	BRBA			
	Comparison Score	0	0	1			0								1
AKP16_005	Field	5	11	2	3	4	BLLI	WILA		FFRA	ALAR	ROCK			
	Office	4	14	3	2	4	BLLI	WILA	GRAL	FFRA	BRBA				
	Comparison Score	1	2	1			2								6
AKP16_006	Field	5	20	1			BLLI	ROCK	ALAR	BLMU					
	Office	3	10	1			BLLI	ROCK	BRBA						
	Comparison Score	2	2	0			1								5

Site Number	Classification	Intertidal Slope Category	Intertidal Zone Width (m)	Substrate Categories ($1^o/2^o/3^o$)			BioBands								Overall Score
AKP16_007	Field	5	3	3	2	4	BLLI		ROCK	GRAL					
	Office	4	9	3	4	5	BLLI	BARN	ROCK	GRAL					
	Comparison Score	1	3	2			1								7
AKP16_008	Field	4	8	4	5	3	BARE								
	Office	3	13	6	5	4	BARE								
	Comparison Score	1	2	2			0								5
AKP16_009	Field	5	6	1	3	4	BLLI		ROCK						
	Office	4	6	4	3	5	BLLI	BARN	ROCK						
	Comparison Score	1	0	2			1								4
AKP16_010	Field	6	0.5	1			BLLI	BARN	ROCK		FFRA				
	Office	6	2	1			BLLI	BARN	ROCK	BRBA					
	Comparison Score	0	2	0			2								4
AKP16_011	Field	4	9	3	4	6	BLLI		ROCK	FFRA					
	Office	3	7	4	6	3	BLLI	BARN	ROCK	FFRA	GRAL				
	Comparison Score	1	1	1			2								5
AKP16-012	Field	4	15	3	4	5	BLLI	GRAL	WILA	BARN	FFRA	ALAR			
	Office	3	9	3	6	5	BLLI	GRAL	WILA	BARN	FFRA	BRBA			
	Comparison Score	1	2	1			0								4

Site Number	Classification	Intertidal Slope Category	Intertidal Zone Width (m)	Substrate Categories ($1^o/2^o/3^o$)			BioBands								Overall Score
AKP16-013	Field	4	10	3	4	5	None	GRAL	DIAT						
	Office	3	8	4	3	5	SPZO	GRAL	BARN						
	Comparison Score	1	1	1			1								4
AKP16-014	Field	2	30	3	4	1	BLLI	BARN	ROCK	BLMU	FFRA	ALAR	GRAL		
	Office	4	11	3	4	1	BLLI	BARN	ROCK	BLMU	FFRA				
	Comparison Score	2	3	0			2								7
AKP16-015	Field	4	20	3	4	1	BLLI	BARN	ROCK	FFRA	GRAL	BRAL			
	Office	3	12	3	4	5	BLLI	BARN	ROCK	FFRA	GRAL				
	Comparison Score	1	2	1			1								5
AKP16-016	Field	3	130	5	4	6	DUGR	SAMA	BARN	ROCK	BLMU			EELG	
	Office	3	146	6	4	5	DUGR	SAMA	BARN	ROCK	BLMU	GRAL	FFRA	EELG	
	Comparison Score	0	2	2			2								6
AKP16-017	Field	3	59	5	6	4	BLLI	Bare							
	Office	3	47	5	6	4	BLLI	Bare							
	Comparison Score	0	2	0			0								2
AKP16-018	Field	4	70	4	3	5	DUGR	None	ROCK	BARN	FFRA	GRAL	BLMU	DABK	
	Office	3	44	4	5	3	DUGR	bare	ROCK	BARN	FFRA			BRBA	
	Comparison Score	1	2	1			2								6
AKP16-019	Field	3	75	3	4	5	None	BARN	SURF	ROCK	FFRA	CORA	GRAL	ALAR	
	Office	3	63	3	4	5	BLLI	BARN		ROCK	FFRA	CORA			
	Comparison Score	0	2	0			3								5

Site Number	Classification	Intertidal Slope Category	Intertidal Zone Width (m)	Substrate Categories ($1^o/2^o/3^o$)			BioBands								Overall Score
AKP16-020	Field	3	95	1	3		None		ROCK	GRAL	FFRA	BRAL	ALAR	DABK	
	Office	3	68	1	3	4	BLLI	WILA	ROCK	GRAL	FFRA		BRBA	BARN	
	Comparison Score	1	2	1			3								7
AKP16-021	Field	3	35	1	4	3	BLLI	ROCK	BARN	FFRA	BRBA				
	Office	3	30	1	3	4	BLLI	ROCK	BARN	FFRA	BRBA				
	Comparison Score	0	1	1			0								2
AKP16-022	Field	3	70	4	3	5	BLLI	BARN	ROCK	FFRA	BRAL				
	Office	2	51	4	3	6	BLLI	BARN	ROCK	FFRA	BRAL	BRBA			
	Comparison Score	1	1	1			1								4
AKP16-023	Field	1	170	3	4	5	BLLI	DUGR	BARN	ROCK	GRAL	FFRA	ALAR	DABK	
	Office	1	128	3	4	5	BLLI		BARN	ROCK		FFRA	BRBA		
	Comparison Score	0	2	1			2								5
AKP16-024	Field	4	35	3	4	5	DUGR	SAMA	None						
	Office	3	38	4	5	6	DUGR		Bare						
	Comparison Score	1	0	2			1								4
AKP16-025	Field	3	30	6	5	3	DUGR	SAMA	None						
	Office	3	54	6	5	8	DUGR		Bare						
	Comparison Score	0	3	1											5
AKP16-027	Field	4	30	3	4	5	BLLI		GRAL	ROCK	FFRA	ALAR			
	Office	4	25	3	4	5	BLLI	BARN	GRAL	ROCK	FFRA	BRBA			
	Comparison Score	0	2	0											3

Table E-2. Categories for the Intertidal Zone Slope attribute.

Category	Description	Slope (degrees)
1	Flat	0-1
2	Low Incline	2-5
3	Moderate Incline	6-10
4	High Incline	11-20
5	Steep	21-45
6	Very Steep	>45

Table E-3. Categories for the Substrate attribute (Primary, Secondary and Tertiary).

Category	Description	Size Range
1	Bedrock	N/A
2	Block	>3m
3	Boulder	25cm to 3m
4	Cobble	6cm to 25cm
5	Pebble	5mm to 6cm
6	Sand	0.063mm to 5mm
7	Silt	0.0039mm to 0.063mm
8	Mud/Ooze	Mix of silt and organics

Department of the Interior (DOI)

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation’s trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM’s Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).