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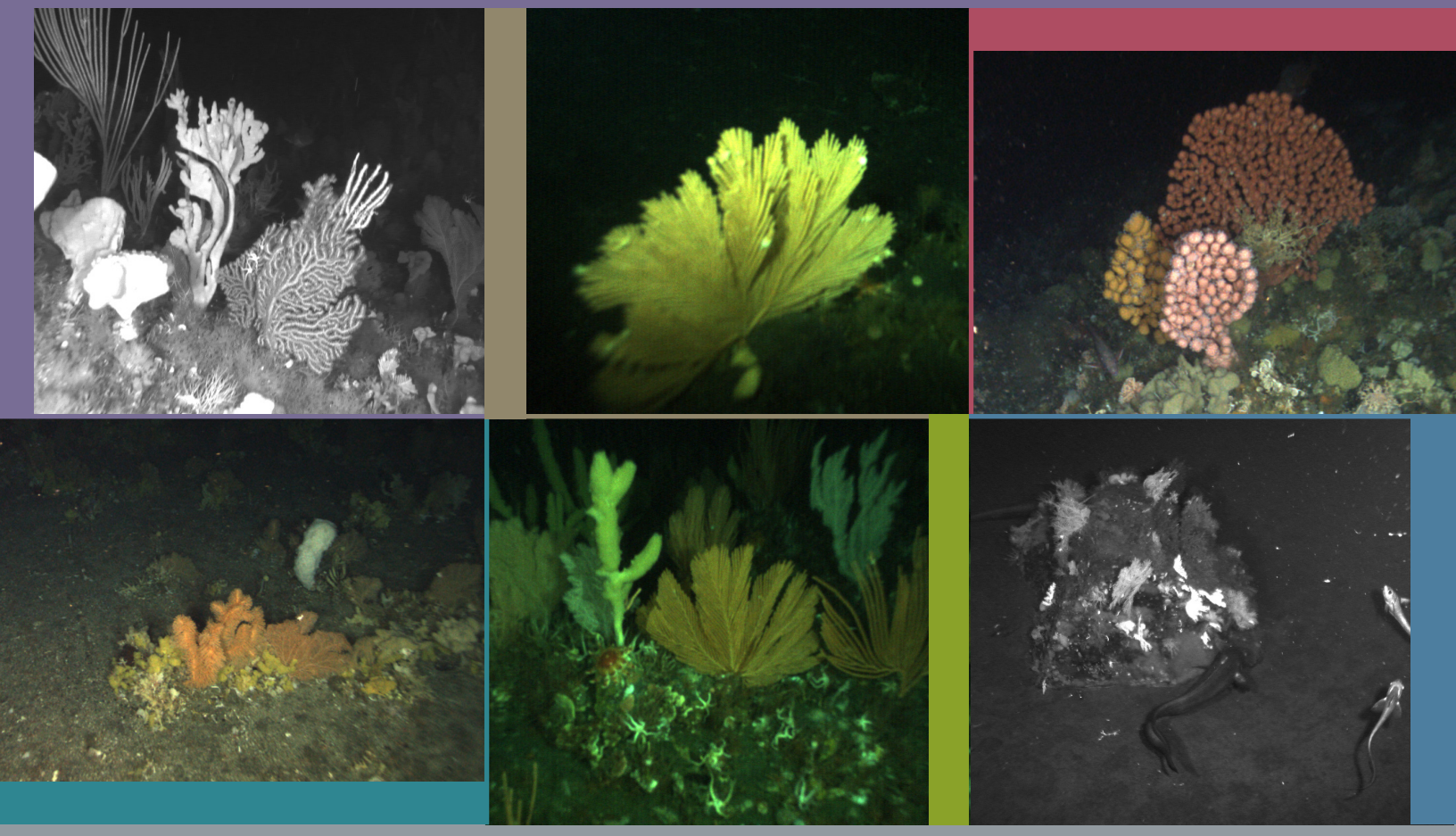

U.S. DEPARTMENT OF COMMERCE
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Results of the 2012 and 2014 Underwater Camera Surveys of the Aleutian Islands

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ABSTRACT

The 2012 and 2014 Underwater Camera Surveys of the Aleutian Islands conducted by NOAA Fisheries were the first comprehensive underwater camera surveys of corals and sponges in the Aleutian Islands. Two-hundred sixteen transects were successfully completed in an area which extended west from Akutan Island to Near Pass and north from Amchitka Island to the top of Bowers Bank. Each randomly selected transect was assigned to one of six geographical regions. Demersal populations of corals, sponges, hydrocorals, sea pens, sea whips, fishes, and crabs were sampled by drifting a stereo drop camera for 15 minutes at each transect. Survey results presented in this report include fish and crab composition and density, coral, sponge, sea pens, and sea whip density and height, and substrate composition for each transect. The Appendix lists survey region, start position, distance towed, swath, mean depth, and mean temperature for each transect completed.

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FIGURES

FIGURES continued

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TABLES continued

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INTRODUCTION

Alaska's marine waters support a diverse assemblage of fishes and invertebrates including communities of deep-sea corals and sponges. The western Aleutian Islands region may have the most abundant cold-water coral and sponge communities in the world. Lack of knowledge of where these organisms occur limits the ability to adequately manage the ecosystem. Because of the size and scope of Alaska's continental shelf and slope, the great majority of the area has not been surveyed for the presence of coral and sponge communities. Since the spatial distribution of these communities is not known in Alaska, it is difficult to predict the locations and types of human activities that may be threats to the deep-sea coral and sponge ecosystems. Effective management of these ecosystems requires knowledge of distribution, abundance, and patterns in diversity. The Aleutian Islands' marine environment covers over 64,415 square kilometers, therefore a systematic and statistically rigorous methodology was necessary to determine likely coral and sponge habitat throughout the region. The objectives of this survey were to collect density and size estimates for corals and sponges at randomly selected sites in the Aleutian Islands and document species associations with fishes and invertebrates.

METHODS

Study Area

The Aleutian Islands are a series of islands that stretch westward from the Alaska Peninsula across the North Pacific Ocean, dividing the western Gulf of Alaska from the Bering Sea (Fig. 1). The chain consists of a series of geologically active volcanoes with a relatively deep continental shelf (250 m). The continental slope is generally steep along both the northern and southern sides of the island chain and the area west of 170° W is dominated by oceanic water temperatures and salinities (Stabeno et al. 1999, Stabeno et al. 2005). The Alaska Coastal Stream and Alaska Coastal Current flow westward on the southern side of the Aleutian Islands, while on the Bering Sea side of the islands the dominant current flows eastward. There is extensive northward transport through the many deep passes in the island chain, and tidal currents can be large (Ladd et al. 2005). A faunal division in fish and invertebrate species abundance and diversity has been noted for the area around Samalga Pass (170° W) (Heifetz et al. 2005, Loggerwell et al. 2005). West of Samalga Pass deep-sea coral and sponge diversity and abundance are greater than many other areas of the world with 95 species or subspecies of coral of which at least 56 are endemic, and 136 confirmed species or subspecies of sponges (Stone & Shotwell 2007, Stone et al. 2011, Stone & Cairns 2017).

Survey Design and Field Sampling

A total of 216 station locations were randomly selected for sampling on two research cruises from August 14-28, 2012 and April 22 - May 13, 2014 (Fig. 2; Appendix A). Transects were chosen on a regularly-spaced grid (100 m x 100 m) overlaid on the Aleutian Islands between Akutan Island and Near Pass. Initially, 450 stations were randomly chosen across the entire Aleutian Islands in three depth strata (20-200 m, 200-500 m, and 500 – 1000 m); however after 2012, 135 stations were dropped at random and all remaining stations > 900 m depth (n = 15) were dropped. In 2014 an additional 84 stations were not sampled due to weather constraints.

A stereo drop camera system (Williams et al. 2010) was used as the primary sampling tool. The system was designed to be towed or drifted continuously along a linear transect at or near the seafloor. Two machine-vision cameras spaced approximately 30 cm apart in underwater housings were connected via Ethernet cables to a computer also in an underwater housing. One of the paired cameras recorded 1.45 megapixel monochromatic still images, while the other camera collected 1.73 megapixel color still images. Lighting was provided by four strobe lights constructed of four Bridgelux® BXRA LED arrays capable of producing 1,300 lumens at 10.4 W. The computer, cameras, and lights were powered by a 28 V NiMH battery pack. Synchronous images were collected from each of the cameras at a frequency of one image per second and written to a hard drive on the computer. Additionally, images were taken (but not written to the hard drive) from the monochrome camera at a rate of four images per second. These images were viewed in real time on a monitor at the surface. This allowed the height of the camera to be actively controlled to keep it just above the seafloor using a quick response electric winch. A 3/16-inch diameter coaxial cable provided the video connection from the drop camera system to the winch at the surface and allowed image viewing in real time.

At each occupied transect, the camera was deployed at the center of the grid cell and lowered to the seafloor. Once seafloor contact was made, the drop camera was drifted along the bottom for 15 minutes. During each deployment, the drop camera system was drifted through the water column in the direction of the prevailing current at a speed of 0.08 to 6.07 km/hr (0.05 to 3.28 knots) approximately 1 to 2 m above the substrate with the cameras pointed slightly downward at an angle of approximately 35° off parallel to the seafloor. The research vessel's global positioning system (GPS) was used to determine the position of the camera throughout the deployment. All latitudes are in degrees North and longitudes are in degrees West when negative and degrees East when positive. A concentrated effort was made to keep the deployment cable as near to vertical as possible. The distances traveled during deployments ranged from 21 m to 1,476 m (mean = 411 m, SE = 14.4). Transect area (m^2) was calculated by multiplying distance the camera drifted (m) by swath of the camera field of view (m).

Image Analysis

Each image pair collected during each deployment was viewed using stereo image processing software developed in the Python programming language (Williams et al. 2016). Image analysis resulted in densities of fishes, crabs, and structure-forming invertebrates (individuals/m^2) for each of

the 216 transects, fish lengths for each species that could be measured, heights of structure-forming invertebrates, and the proportions of each type of substrate found on the transect. Densities of individual taxa were calculated by dividing counts by the area swept (distance observed *x* path width observed). The image analysis software provided a range, in centimeters, from the camera to each individual target that was identified in an image pair. The path width was estimated from the median of this range for each transect. The median range of all objects counted on a transect was assumed to be the distance from the camera where 100% of fishes and invertebrates were detected for that transect. The viewing angle for each camera is known (and fixed by the camera lens). Using the median range and the known viewing angle, a horizontal line in front of the camera can be calculated using formulae for sizing triangle components. Since we have an angle (viewing angle) and the adjacent side of a triangle (range) for each camera, the length of the opposite side can be calculated. This opposite side is the viewing path width at the median range for each transect. This width was calculated for each transect and used as the path width in density estimation. The mean path width across all transects was 3.80 m (SE = 0.06), with a minimum of 1.82 m and a maximum of 6.32 m for any individual transect.

Substrates were classified by a commonly used seafloor substratum classification scheme (Stein et al. 1992, Yoklavich et al. 2000). The classification consists of a two-letter coding of substratum type denoting a primary substratum with > 50% coverage of the seafloor bottom and a secondary substratum with 20% - 49% coverage of the seafloor (Table 1). There were nine identified substratum types: mud/silt (M, distinguished from sand by presence of silt clouds), sand (S, grains often visible, no silt clouds), gravel (G), pebble (P, diameter < 6.5 cm)), mixed coarse material (MC), cobble (C, 6.5 < diameter < 25.5 cm), boulder (B, diameter > 25.5 cm), exposed low relief bedrock (R), and exposed high relief bedrock (K). By this classification, a section of seafloor covered primarily in cobble, but with boulders over more than 20% of the surface, would receive the substratum code Cobble.boulder (Cb) with the secondary substratum indicated by the lower-case letter. Substratum codes were changed if a substratum encompassed more than 10 consecutive images. Heights for substrate classifications were obtained using the image processing software when stereo images were available.

All fishes and commercially important crabs were identified to the lowest taxonomic level possible and counted for each image pair. Species identification for fishes was based on Butler (2012), Mecklenburg (2002), and J. W. Orr (AFSC, pers. comm.). Vertical habitat was defined as structure-forming invertebrates such as corals and sponges. Structure-forming invertebrates were identified to the lowest possible taxonomic level and counted for each image pair. Species identification were based on Cairns (2011), Stone et al. (2011), Stone (2014), R. Stone (AFSC, pers. comm.), Taylor et al. (2013), and Wing and Barnard (2004). For this report organisms were grouped into six taxonomic groups: soft corals, black corals, sponges, sea pens, sea whips, and hydrocorals (Table 4). Soft corals refers to all Alcyonaceans: Acanthogorgiidae, Isididae, Paragorgiidae, Plexauridae, and Primnoidae. Black corals refers only to Antipathidae. Sea pens (Pennatulidae) and sea whips (Halipteridae) are presented as separate groups. Hydrocoral refers only to Stylasteridae. For transects where densities were too high to count all individuals, a random subsample of 135 paired frames was obtained and all individuals were

counted within those frames. Sponges less than 20 cm in height were difficult to discern from other small white or yellow items on the seafloor, therefore these were not included in the counts or analyses.

Heights for structure-forming invertebrates were obtained when the base and tip of the invertebrate could be clearly identified in both images. Sea whips with bent tips were measured to their highest point above the seafloor. For transects where sponge or sea whip counts exceeded 500, a random subsample of 135 paired images were selected to obtain approximately 200 height measurements.

RESULTS

Two-hundred sixteen transects were successfully occupied covering 330,669 m^2. Each transect was assigned to one of six regions Akutan Island to Samalga Pass, Samalga Pass to Seguam Pass, Seguam Pass to Amchitka Pass, Amchitka Pass to Buldir Pass, Buldir Pass to Near Pass, and Bowers Bank. Regions were based on evidence of defining oceanographic conditions between passes as defined by Stabeno et. al 1999. Depths ranged from 47 m to 866 m, with the shallowest transect occurring between Amchitka and Buldir Pass and the deepest between Seguam and Amchitka Pass. Fifty-three different fish and crab species or taxonomic groups were identified (Table 2). Fishes and crabs were consolidated into seventeen groupings for the remainder of the report (Table 3). These groups were dominated by rockfishes (*Sebastes* sp.), and Atka mackerel (*Pleurogrammus monopterygius)*. Total fish and crab density for the survey was 7.24 individuals/m^2. Vertical habitat consisted of over 325,000 structure-forming invertebrates (Table 4). These were comprised of approximately 42% sponges, 49% corals, and 8% hydrocorals. Total mean density of structure-forming invertebrates for the survey was 0.99 individuals/m^2.

The soft corals were dominated by Primnoidae (40% of all observations). For this report sea pens (Pennatulidae) and sea whips (Halipteridae) are presented separately from soft corals because they inhabit disparate substrate types. Soft corals occurred on 139 of the 216 survey transects. They were grouped into seven taxonomic categories, (Acanthogorgiidae, Antipathidae, Isididae, Paragorgiidae, Plexauridae, Primnoidae, and soft coral unid.). The median depth at which corals occurred was 112 m (range = 47–866 m), fairly close to the median depth of all samples (118 m). Soft corals occurred at 100% (n = 24) of the survey transects between Amchitka and Buldir Pass, 83% of transects between Samalga and Seguam Passes, 69% between Seguam and Amchitka, and 56% or less in the remaining regions. Primnoidae were the second most abundant structure-forming invertebrate with a mean survey density of 0.35 individuals/m^2 (Table 5). Transect 2014-10 between Samalga Pass and Seguam Pass had the highest density of Primnoidae for the entire survey at 12.08 no./m^2. Over 132,000 primnoids were observed and enumerated. Soft coral densities ranged from < 0.01 to 12.08 individuals/m^2 with a survey mean density of 0.42 individuals/m^2. Only nine black corals were observed at three stations on Bowers Bank.

Sponges occurred on 177 (82%) of the 216 survey transects. They were identified into three classes: Hexactinellida, Demospongiae, and Calcarea. The median depth at which sponges occurred was 119 m, and they covered almost the entire depth range of sampling from 47 m to 866 m. Sponges were widely

distributed and occurred in all of the sampled regions. Demospongiae were the most abundant structure-forming invertebrates with a mean survey density of 0.47 individuals/m^2.

Three clusters of high coral and sponge densities were identified northwest of Kiska Island, South of Amchitka, and north of Amukta Island (Figs. 3-5). High density transects are defined as transects with a density of coral or sponge > 1.0 individuals/m^2. Two transects contained densities of coral or sponge > 10 individuals/m^2 (Fig. 4). All transects with high structure-forming invertebrate densities are labeled with an * in the figures and appendix.

Sea whips (*Halipteris* sp.) were the least abundant structure-forming invertebrates with a mean density of < 0.01 individuals/m^2. They occurred at depths from 79 m to 866 m (median = 225 m) and at 28 of the 250 transects surveyed. Sea whips occurred in all six regions. Heights ranged from 2 to 209 cm with a mean of 100 cm (Table 5). Mean sea whip density for the survey was < 0.01 individuals/m^2.

Sea pen (Pennatulidae) density for the survey was 0.01 individuals/m^2. Over 5,000 were enumerated at 60 stations. Densities were highest north of Umnak Island and southwest of Samalga Pass. Heights ranged from 5 to 33 cm with a mean of 16 cm (Table 5). Depths ranged from 56 to 175 m with a median of 100 m. Mean survey density of sea pens was 0.01 individuals/m^2.

Hydrocoral (Stylasteridae) density for the entire survey was 0.09 individuals/m^2. They occurred at 102 stations and had a total frequency of 27,297. Hydrocorals were distributed throughout the survey area at depths from 56 m to 866 m, median depth was 125 m. Heights ranged from 3 to 67 cm with a mean of 14 cm (Table 5). Mean survey density of Stylasteridae was 0.09 individuals/m^2.

Thirty-five different substrate combinations were identified. Substrate composition for each transect is presented in the site summaries as "Primary.secondary" (i.e., Sand.mud). Corals were most often associated with consolidated substrates such as boulders and bedrock (Wilborn et al. (in review); Rooper et al. (in review)).

Evidence of fishing was identified in 16 transects (Fig. 6). Eighty percent of the observations were long line or crab gear. The remaining 20% were trawl or door tracks. (Table 7; Fig. 6).

Survey results are presented in six sections according to geographical regions. Regional summary information is provided as well as information by transect. For each transect, the following information is provided: date, start location (decimal degrees), area (m^2), mean depth (m), mean temperature (°C), fish and crab composition; coral, sponge, sea pen, sea whip, and hydrocoral density and height; substrate composition; images; and a summary description. Sample sizes for vertical habitat summaries are presented in parentheses after each species grouping.

A more detailed discussion of the results is presented in Wilborn et al. (in review).

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made this survey possible. Appreciation is also extended to John Olson, Jerry Hoff, Bob Stone, Jay Orr, and Duane Stevenson of the AFSC for assistance with data collection and species identification. Finally, we would like to thank Rebecca White at the AFSC for graphics support, Jason Bennis for editing all of the still images presented, and the reviewers whose excellent comments and suggestions greatly improved the report.

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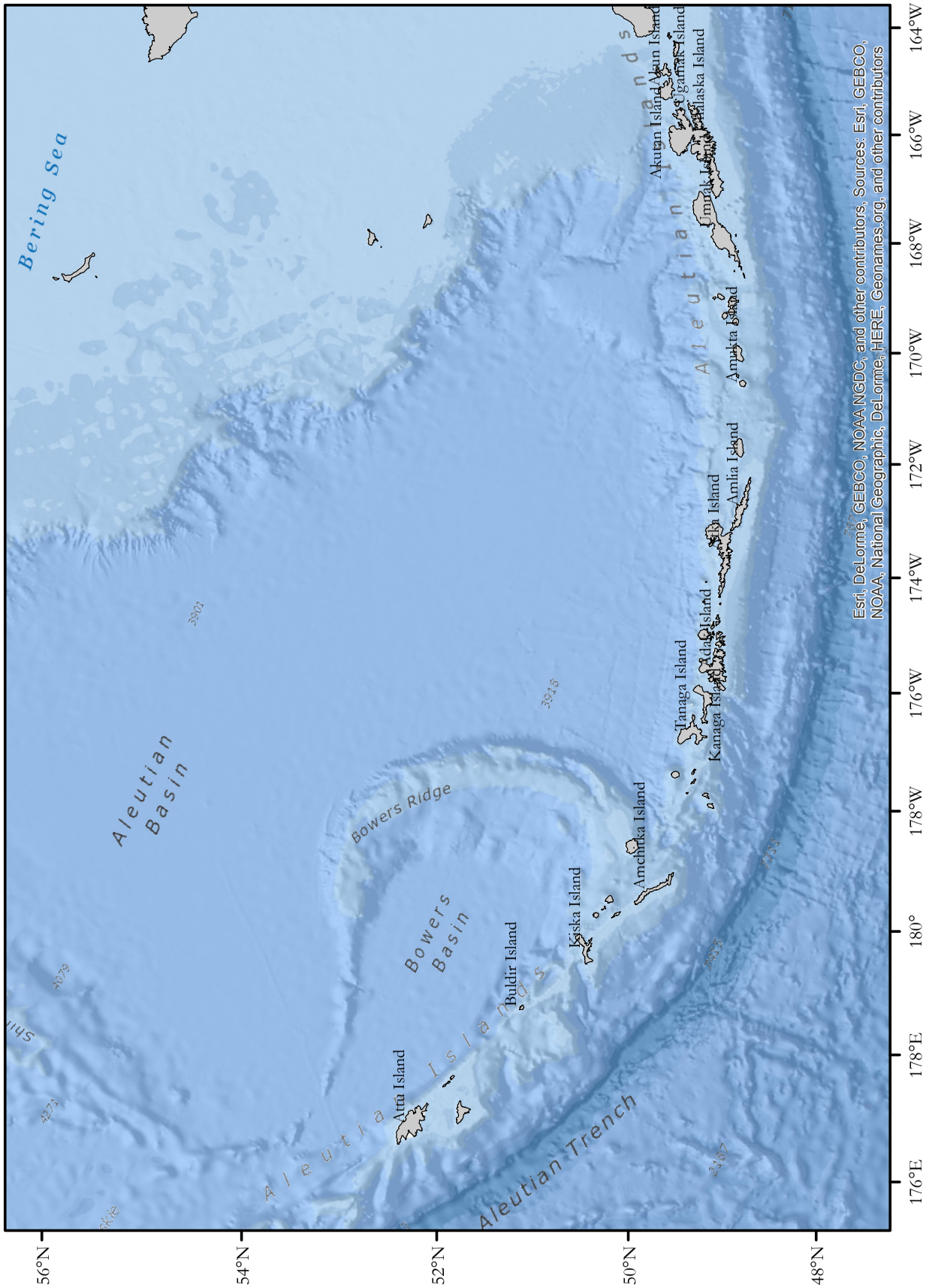


Figure 1. -- Aleutian Islands and Bering Sea.

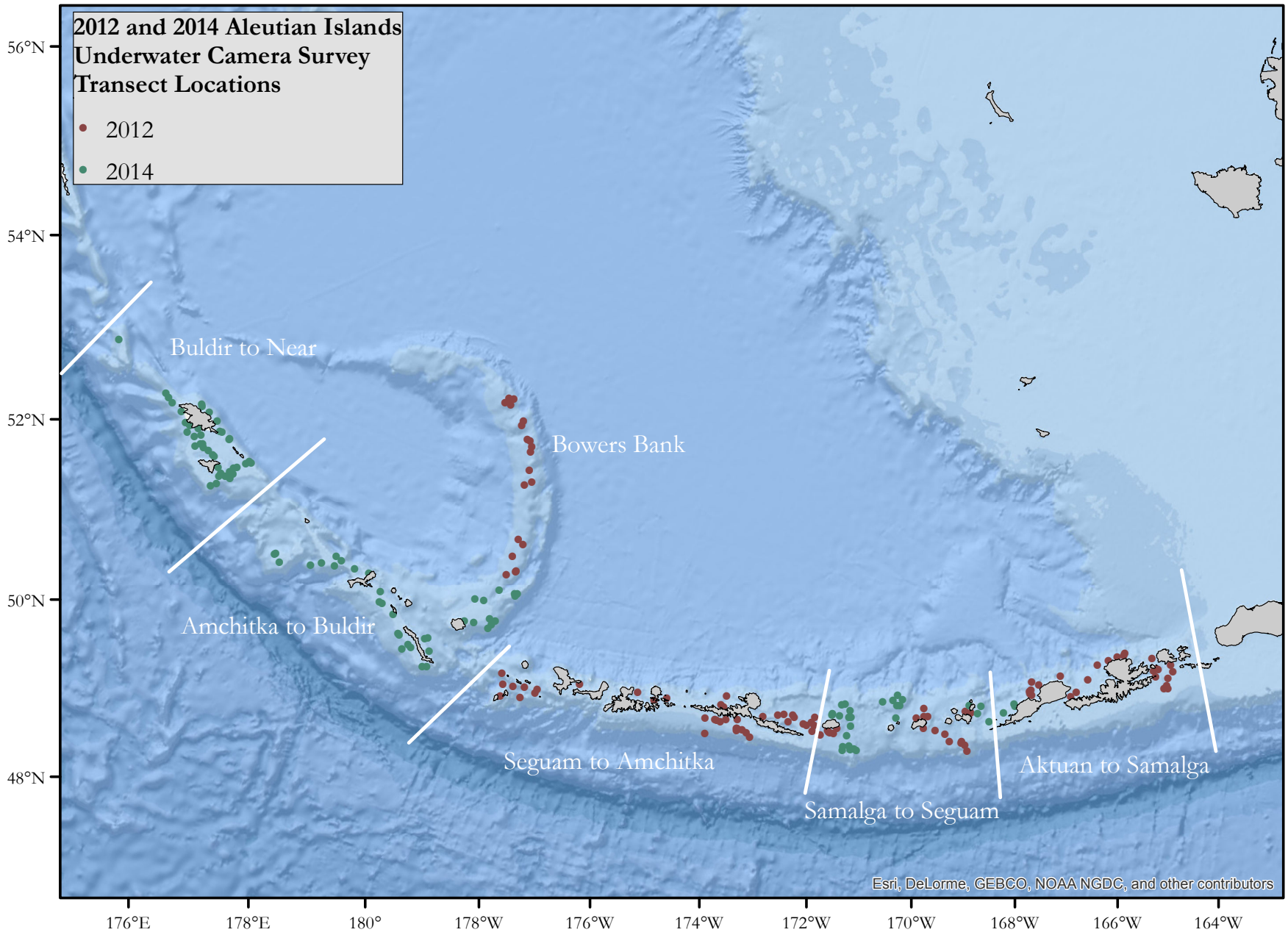


Figure 2. -- Aleutian Islands 2012 and 2014 camera surveys transect locations.

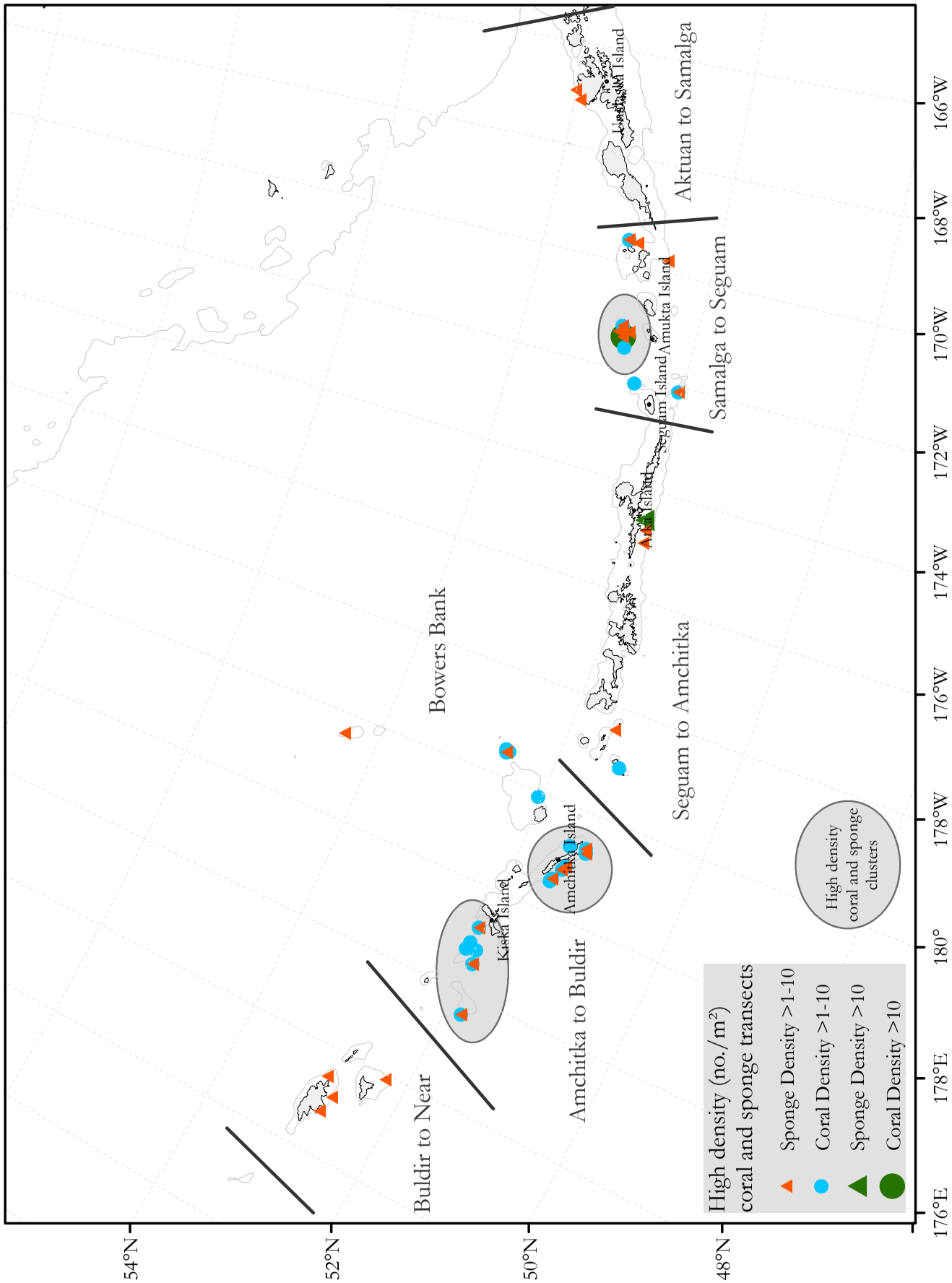


Figure 3. -- Aleutian Islands 2012 and 2014 camera surveys, high density clusters of sponges and corals where density is > 1-10 individuals/m² and > 10 individuals/m².

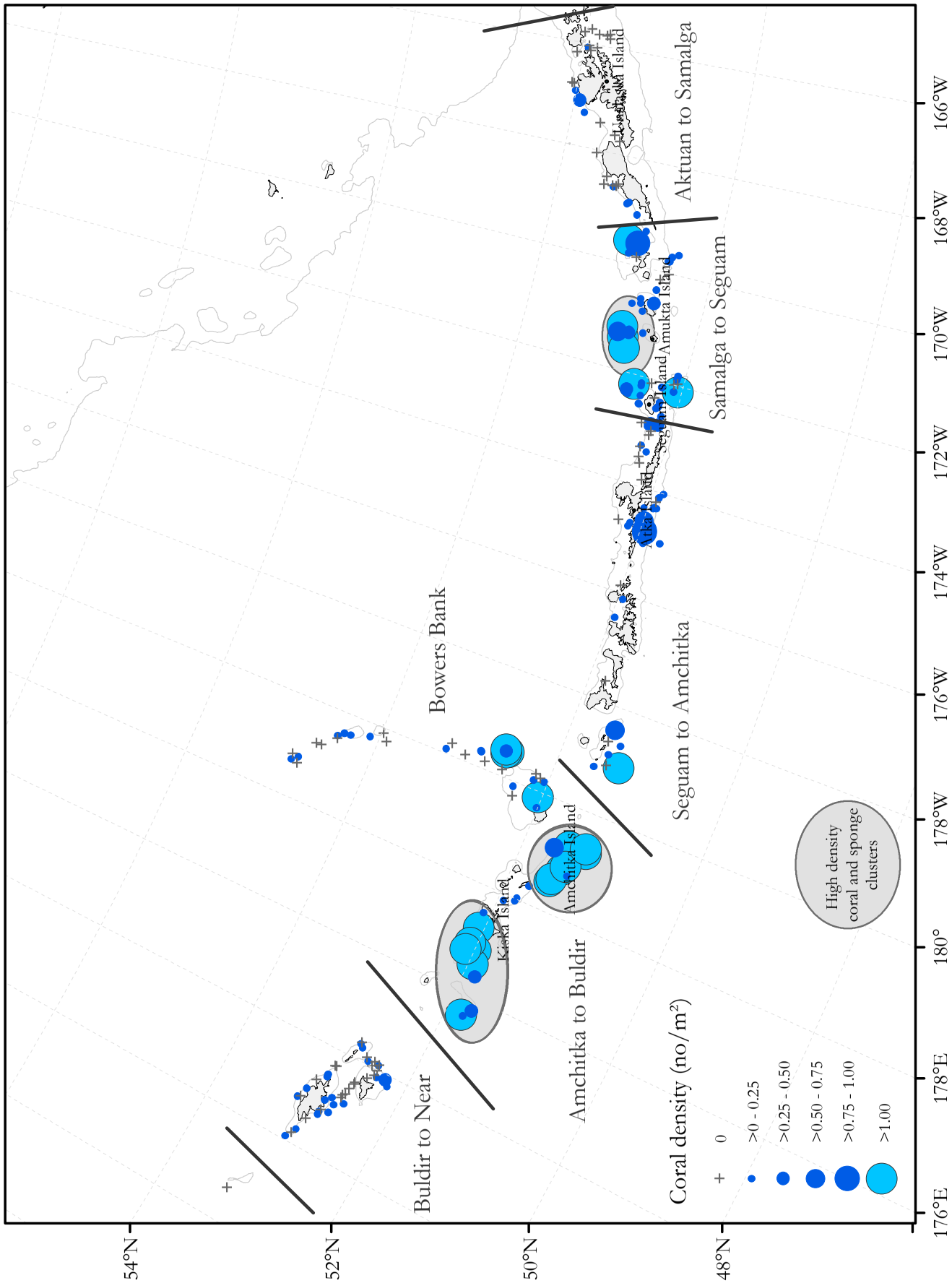


Figure 4. -- Aleutian Islands 2012 and 2014 camera surveys, density distribution of corals, with high density (> 1 individuals/m^2) clusters identified.

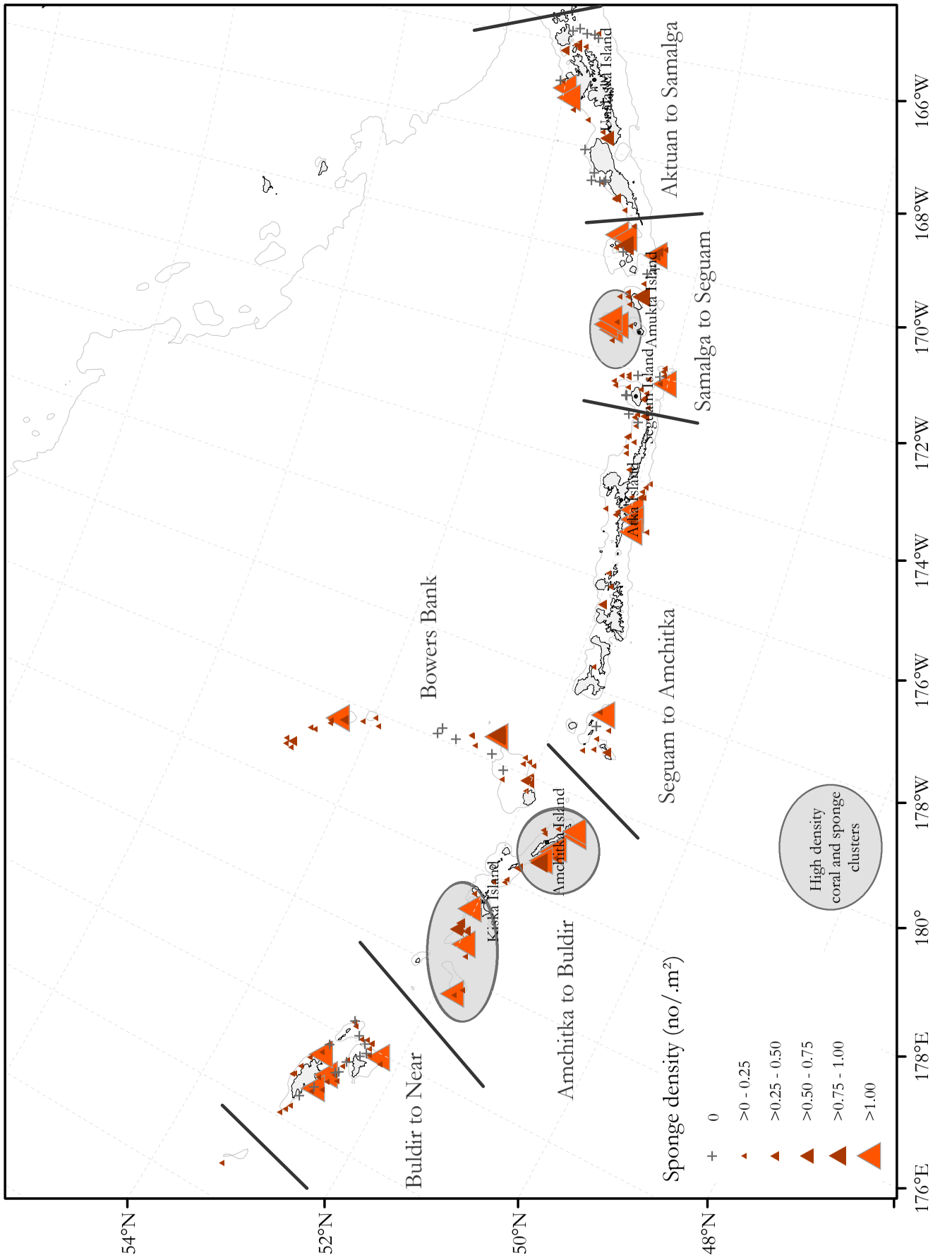


Figure 5. -- Aleutian Islands 2012 and 2014 camera surveys, density distribution of sponges, with high density (> 1 individuals/m^2) clusters identified.

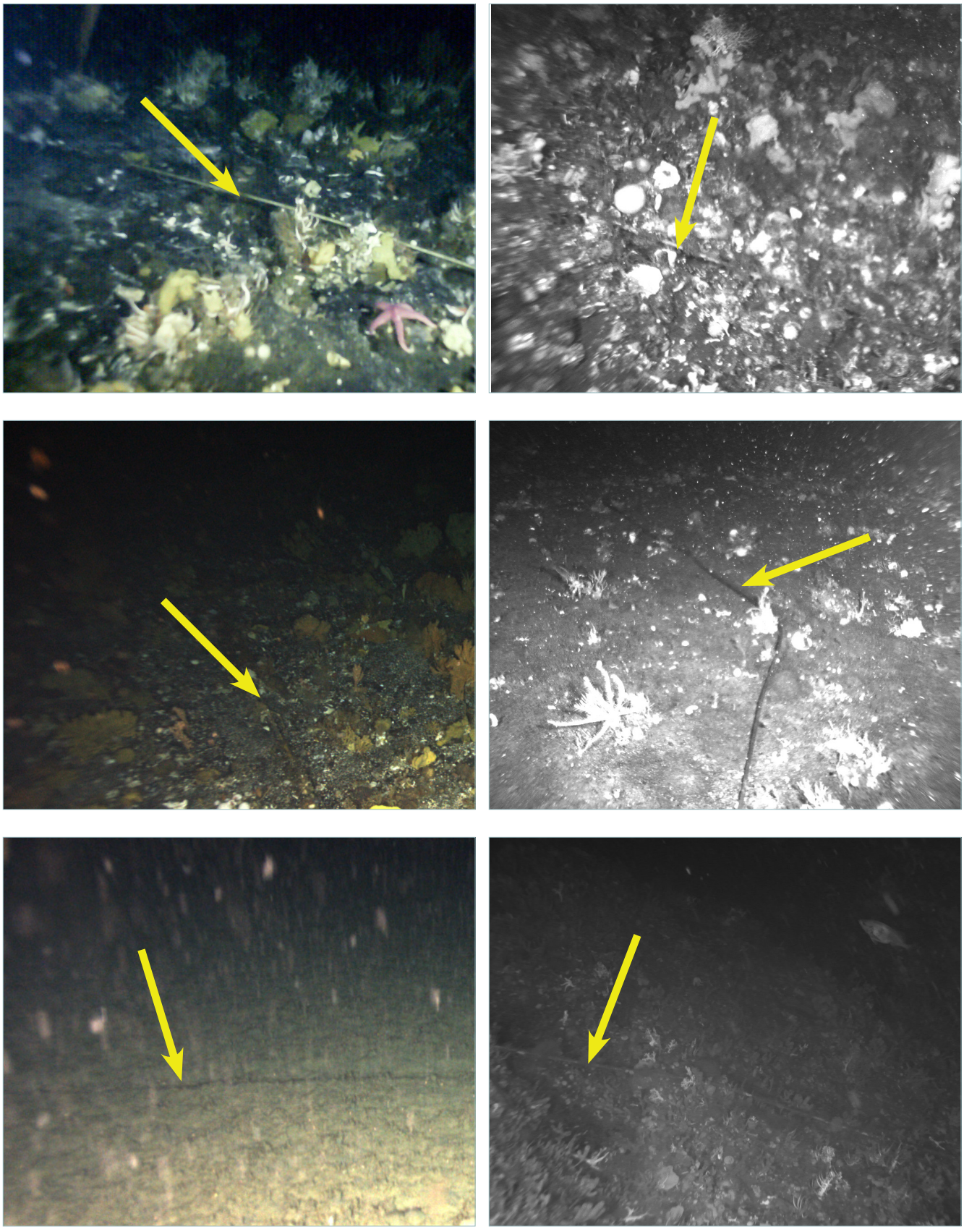


Figure 6. -- Aleutian Islands 2012 and 2014 camera surveys, evidence of commercial fishing.

Table 1. -- Aleutian Islands 2012 and 2014 camera surveys, examples of substrate classifications.

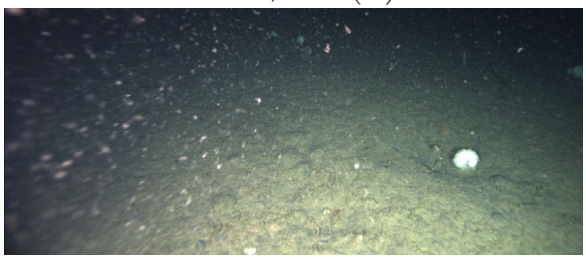
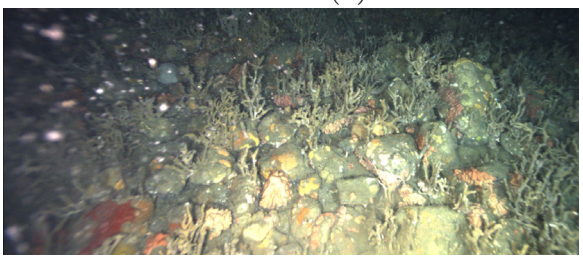
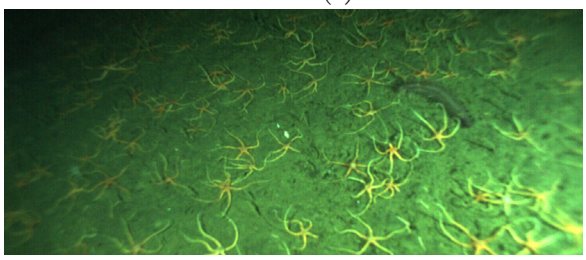
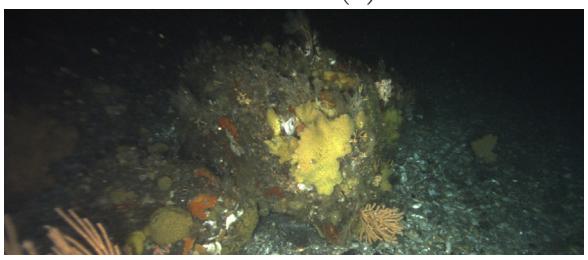
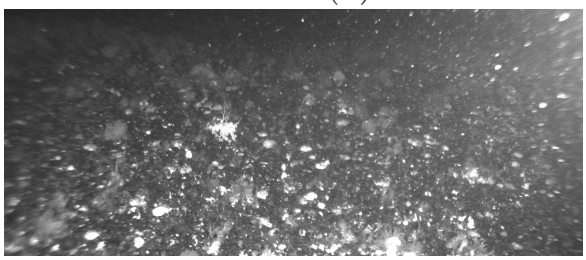
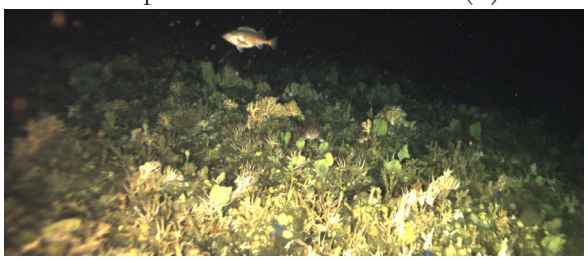
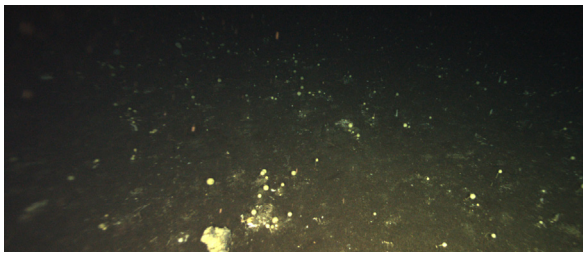
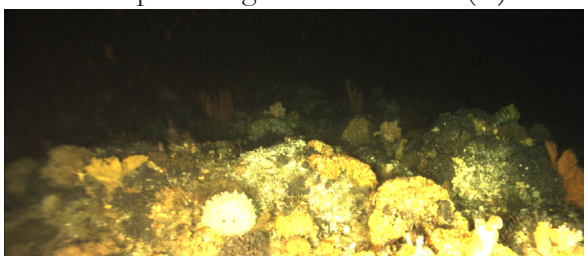
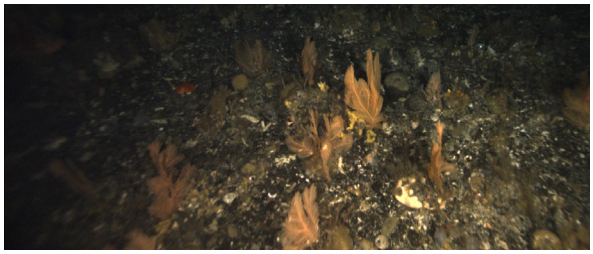
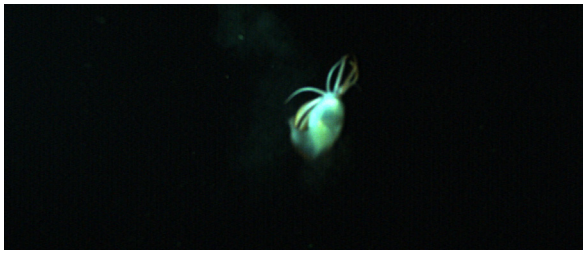
Mud/sand (M) 	Cobble (C) 
Sand (S) 	Boulder (B) 
Gravel (G) 	Exposed low-relief bedrock (R) 
Pebble 	Exposed high-relief bedrock (K) 
Mixed coarse (C) 	Off bottom (OB) 

Table 2. -- Aleutian Island underwater camera surveys fish and crab occurrences.

Species/Grouping	Number of occurrences	Percent of occurrences
Fish		
Rockfish unid. (*Sebastes* sp.)	3,465	34%
Northern rockfish (*Sebastes polyspinis*)	1,486	15%
Atka mackerel (*Pleurogrammus monopterygius*)	1,020	10%
Searcher/ronquil unid. (*Bathymaster* sp./*Ronquilus* sp.)	656	6%
Eelpout unid. (Zoarcidae)	449	4%
Pacific ocean perch (*Sebastes alutus*)	364	4%
Yellow Irish lord (*Hemilepidotus jordani*)	334	3%
Sculpin unid. (Cottidae, Hemitripteridae, Psychrolutidae)	325	3%
Roundfish unid.	322	3%
Flatfish unid. (Pleuronectidae)	265	3%
Popeye grenadier (*Coryphaenoides cinereus*)	257	3%
Giant grenadier (*Albatrossia pectoralis*)	177	2%
Pacific cod (*Gadus macrocephalus*)	152	2%
Skate unid. (*Bathyraja* sp.)	101	1%
Thornyhead unid. (*Sebastolobus* sp.)	92	1%
Poacher unid. (Agonidae)	57	1%
Arrowtooth/Kamchatka flounder (*Atheresthes* sp.)	43	< 1%
Pacific halibut (*Hippoglossus stenolepis*)	43	< 1%
Snailfish unid. (Liparidae)	42	< 1%
Shortspine thornyhead (*Sebastolobus alascanus*)	36	< 1%
Rock sole unid. (*Lepidopsetta* sp.)	27	< 1%
Rex sole (*Glyptocephalus zachirus*)	25	< 1%
Prowfish (*Zaprora silenus*)	24	< 1%
Dusky rockfish (*Sebastes variabilis*)	19	< 1%
Darkfin sculpin (*Malacocottus zonurus*)	15	< 1%
Walleye pollock (*Gadus chalcogrammus*)	14	< 1%
Blackspotted rockfish (*Sebastes melanostictus*)	13	< 1%
Rougheye rockfish (*Sebastes aleutianus*)	12	< 1%
Pacific cod/Walleye pollock unid. (*Gadus* sp.)	11	< 1%
Irish lord unid. (*Hemilepidotus* sp.)	11	< 1%
Shortraker rockfish (*Sebastes borealis*)	10	< 1%
Grenadier unid. (Macrouridae)	9	< 1%
Kelp greenling (*Hexagrammos decagrammus*)	8	< 1%
Mud skate (*Bathyraja taranetzi*)	7	< 1%
Greenling unid. (*Hexagrammos* sp.)	6	< 1%
Bigmouth sculpin (*Hemitripterus bolini*)	6	< 1%
Dark rockfish (*Sebastes ciliatus*)	5	< 1%
Big skate (*Raja binoculata*)	5	< 1%
Flathead sole (*Hippoglossoides elassodon*)	4	< 1%
Alaska skate (*Bathyraja parmifera*)	3	< 1%
Aleutian skate (*Bathyraja aleutica*)	3	< 1%

Table 2. -- Cont.

Species/Grouping	Number of occurrences	Percent of occurrences
Prickleback unid. (Stichaeidae)	3	< 1%
Great sculpin (*Myoxocephalus polyacanthocephalus*)	2	< 1%
Sablefish (*Anoplopoma fimbria*)	2	< 1%
Starry flounder (*Platichthys stellatus*)	2	< 1%
Harlequin rockfish (*Sebastes variegatus*)	1	< 1%
Scissortail sculpin (*Triglops forficatus*)	1	< 1%
Dover sole (*Microstomus pacificus*)	1	< 1%
Lumpsucker unid. (Cyclopteridae)	1	< 1%
Myctophid unid. (Myctophidae)	1	< 1%
Crab		
Crab unid. (Decapoda)	48	< 1%
Snow crab (*Chionoecetes* sp.)	31	< 1%
King crab unid. (Lithodidae)	108	1%
Golden king crab (*Lithodes aequispinus*)	4	< 1%

Table 3. -- Aleutian Island underwater camera surveys taxonomic groupings for fishes and crabs.

Report grouping	Original name
Fish	
Atka mackerel	*Pleurogrammus monopterygius*
Eelpout unid.	Zoarcidae
Flatfish unid.	Pleuronectidae, *Atheresthes* sp., *Hippoglossus stenolepis, Lepidopsetta* sp., *Glyptocephalus zachirus*, *Hippoglossoides elassodon, Platichthys stellatus, Microstomus pacificus*
Grenadier unid.	Macrouridae, *Coryphaenoides cinereus*
Irish lord unid.	*Hemilepidotus* sp., *Hemilepidotus jordani*
Pacific cod	*Gadus macrocephalus*
Walleye pollock	*Gadus chalcogrammus*
Rockfish unid.	*Sebastes* sp., *Sebastes polyspinis, Sebastes alutus*, *Sebastes variabilis, Sebastes melanostictus, Sebastes aleutianus, Sebastes borealis, Sebastes ciliatus, Sebastes variegatus*
Roundfish unid.	Fish unid, Agonidae, *Zaprora silenus*, *Gadus* sp., Hexagrammidae, Stichaeidae, *Anoplopoma fimbria,* Cyclopteridae, Myctophidae
Sculpin unid.	Cottidae, Hemitripteridae, Psychrolutidae, *Myoxocephalus polyacanthocephalus, Hemitripterus bolini*
Searcher/ronquil	*Bathymaster* sp., *Ronquilus* sp.
Skate unid.	*Bathyraja* sp., *Bathyraja parmifera, Bathyraja aleutica, Raja binoculata, Bathyraja taranetzi*
Snailfish unid.	Liparidae
Thornyhead unid.	*Sebastolobus* sp., *Sebastolobus alascanus*
Crab	
Crab unid.	Decapoda
King crab unid.	Lithodidae, *Lithodes aequispinus*
Snow crab unid.	*Chionoecetes* sp.

Table 4. -- Aleutian Island underwater camera surveys taxonomic groupings for structure-forming invertebrates.

Report grouping	Species identified
Sponges	
Demospongiae	
Hexactinellida	
Calcarea	
Soft Corals	
Primnoidae	*Arthrogorgia* sp.*, Fanellia,* sp. *Plumarella* sp.*, Primnoa* sp.*, Thouarella* sp.
Plexauridae	*Alaskagorgia* sp.*, Cryogorgia* sp.*, Mericeides* sp., *Swiftia* sp.
Acanthogorgiidae	*Calcigorgia* sp.*, Acanthogorgia* sp.
Paragorgiidae	*Paragorgia* sp.
Isididae	*Isidella* sp.*, Kearatoisis* sp.
soft coral unid.	coral unidentified,
Black Corals	
Antipathidae	black coral unid.
Pennatulaceans	
Pennatulidae	*Ptilosarcus gurneyi, Pennatula* sp.
Halipteridae	*Halipteris willimoesi*, *Halipteris* sp.
Hydrocorals	
Stylasteridae	*Cyclohelia lamellata, Stylaster* sp.

Table 5. -- Aleutian Islands 2012 and 2014 camera surveys number of occurrences, percent occurrences, and survey densities for sponges, corals, Pennatulaceans, and hydrocorals.

Species/Grouping	Number of occurrences	Percent of occurrences	Density (no./m^2) min.-max	Mean density (individuals/m^2)
Sponges				
Demospongiae	137,492	42%	< 0.01–12.15	0.46
Hexactinellida	1,615	< 1%	< 0.01–0.23	0.01
Calcarea	31	< 1%	NA	< 0.01
Soft Corals				
Primnoidae	132,488	40%	< 0.01–12.08	0.35
Plexauridae	20,363	6%	< 0.01–1.95	0.06
Acanthogorgiidae	1,410	< 1%	< 0.01–0.28	< 0.01
Paragorgiidae	1,325	< 1%	< 0.01–0.24	< 0.01
Isididae	689	< 1%	< 0.01–0.55	< 0.01
soft coral unid.	206	< 1%	< 0.01–0.06	< 0.01
Black Corals				
Antipathidae	9	< 1%	NA	< 0.01
Pennatulaceans				
Pennatulidae	5,042	2%	< 0.01–0.87	0.01
Halipteridae	761	< 1%	< 0.01–0.14	< 0.01
Hydrocorals				
Stylasteridae	27,297	8%	< 0.01–3.50	0.09

Table 6. -- Aleutian Islands 2012 and 2014 camera surveys, height data for sponges, corals, Pennatulaceans, and hydrocorals.

Name	No. of individuals	Min. height (cm)	Max height (cm)	Mean height (cm)
Sponges				
Demospongiae	5,487	20	143	32
Hexactinellida	286	20	116	35
Calcarea	1	27	27	27
Soft corals				
Primnoidae	4,866	6	128	34
Plexauridae	1,154	4	88	27
Acanthogorgiidae	193	6	57	20
Paragorgiidae	139	5	116	31
Isididae	77	7	75	31
soft coral unid.	7	10	43	21
Black corals				
Antipathidae	3	10	29	19
Pennatulaceans				
Pennatulidae	322	5	33	16
Halipteridae	215	6	209	100
Hydrocorals				
Stylasteridae	977	3	67	14

Table 7. -- Aleutian Islands 2012 and 2014 camera surveys, damaged corals, sponges, and sea whips.

Year Haul	Latitude	Longitude	Depth (m)	Damaged coral	Damaged sponge	Damaged sea whips	Total coral observed	Total sponge observed	Total sea whips observed	Long line or crab gear observed	Trawl tracks observed
2012_5	53.77	-165.78	96	0	0	8	0	0	259	No	No
2012_6	53.73	-165.75	93	0	0	3	0	1	82	No	No
2012_32	51.91	-174.09	101	1	0	0	368	360	0	Yes	No
2012_66	54.46	179.52	188	3	0	0	57	58	0	No	No
2012_94	52.53	-169.77	170	0	31	0	491	7,083	0	No	No
2014_94	52.58	173.44	140	0	0	1	0	1	77	No	Yes

Table 7. -- Aleutian Islands 2012 and 2014 camera survey, evidence of commercial fishing.

Year Haul	Latitude	Longitude	Depth (m)	Damaged coral	Damaged sponge	Damaged sea whips	Total coral observed	Total sponge observed	Total sea whips observed	Long line or crab gear observed	Trawl tracks observed
2012_27	52.25	-172.80	126	0	0	0	946	138	0	Yes	No
2012_32	51.91	-174.09	101	1	0	0	368	360	0	Yes	No
2012_52	51.58	-179.17	97	0	0	0	159	577	0	Yes	No
2012_86	52.82	-170.70	463	0	0	0	153	355	0	Yes	No
2012_95	52.52	-169.77	194	0	0	0	16	677	0	Yes	No
2012_101	53.66	-167.46	140	0	0	0	-	59	8	Yes	No
2012_103	53.93	-167.11	94	0	0	0	356	4,923	0	Yes	No
2014_19	52.60	-172.37	224	0	0	0	330	112	0	Yes	No
2014_35	52.05	179.91	112	0	0	0	4,712	2,389	0	Yes	No
2014_36	51.30	179.36	99	0	0	0	2,794	1,794	0	Yes	No
2014_51	51.99	176.83	105	0	0	0	19,058	1,810	0	Yes	No
2014_80	52.90	172.30	126	0	0	0	4	233	0	Yes	No
2014_81	52.93	172.19	389	0	0	0	-	4	0	Yes	No
2014_94	52.58	173.44	140	0	0	1	-	1	77	No	Yes
2014_96	52.62	173.27	86	0	0	0	-	-	0	No	Yes
2014_104	52.24	-172.09	337	0	0	0	51	78	0	Yes	No

Akutan Island to Samalga Pass

Thirty transects were completed from Akutan Island to Samalga Pass. Depths ranged from 50 m to 715 m. Fourteen taxa of fishes and crabs were identified (Table 9). Vertical habitat was dominated by Demospongiae (Table 10). Heights ranged from 20 cm to 77 cm (Table 11).

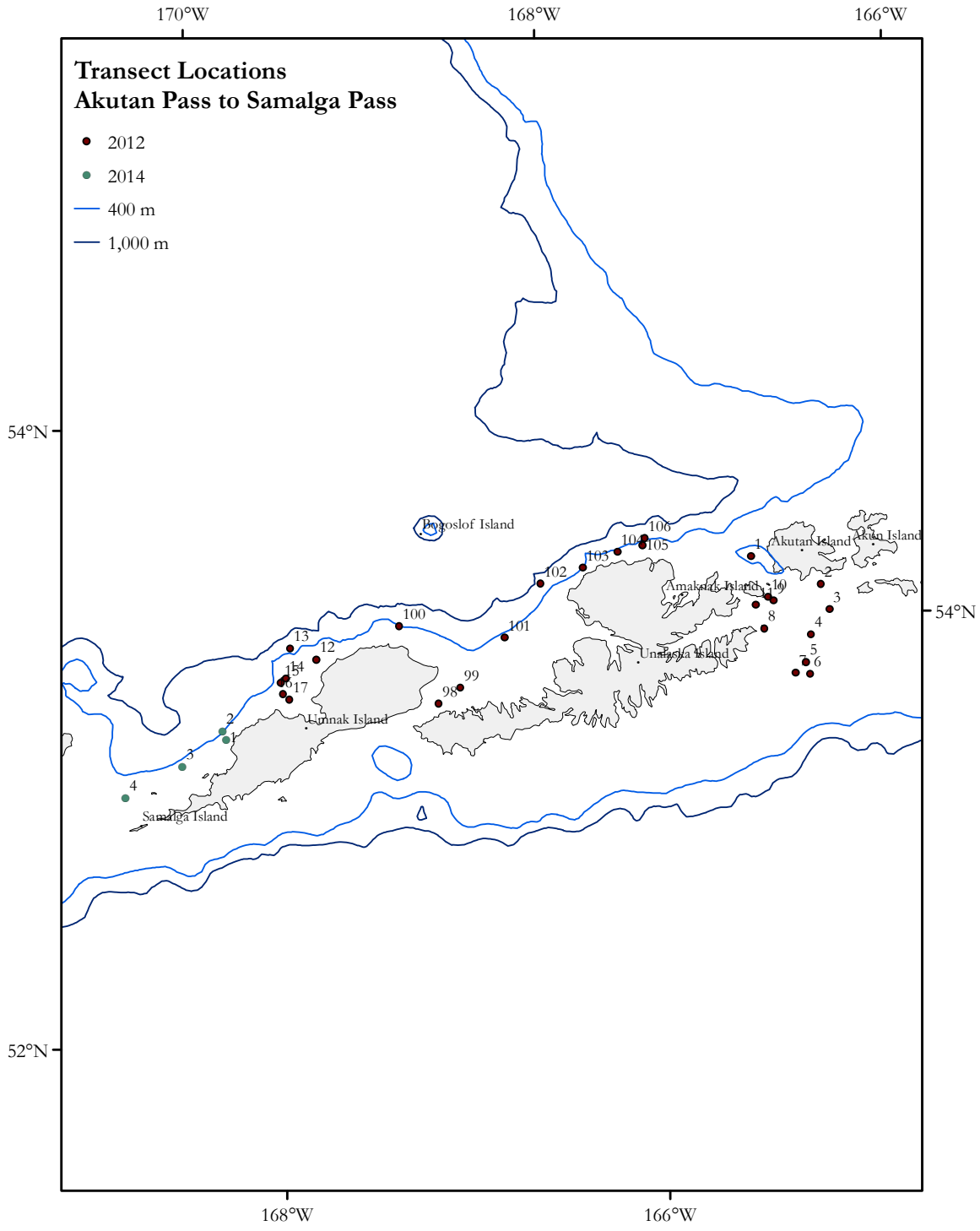


Figure 7. -- Survey transect locations, Akutan Island to Samalga Pass.

SITE SUMMARY: Akutan Island to Samalga Pass

Thirty transects were conducted between Akutan Island and Samalga Pass (Fig. 7). All but four of the transects for this region were completed in 2012. Depths ranged from 50 m to 715 m.

Sand was the primary substrate for over 50% of the transects. Gravel was the next most abundant substrate. Bedrock and boulder were present but not in the percentages seen in the western regions (Table 8). The remaining substrates were a mix of cobble and mixed coarse.

Fourteen taxa of fishes and crabs were identified. Eelpouts, Irish lords, and rockfishes were by far the most frequently observed species of fishes (Table 9). Only seven crabs were observed.

Ten taxa of corals, sponges, hydrocorals, sea pens, and sea whips were identified (Table 10). Sponges were the most abundant with Demospongiae (0.49 individuals/m^2) occurring at 18 of the 30 transects (Fig. 8). Pennatulidae was the next most abundant (0.04 individuals/m^2). Five taxa of corals were present with Acanthogorgiidae being the most abundant (Table 10).

Demospongiae and Hexactinellida were distributed across the region. Six transects south of Akutan Island had very low sponge presence (Fig. 8). Sea pens were present at 10 of 30 transects while sea whips were only identified at three transects (Fig. 9). Transects northwest of Inanudak Bay on Umnak Island and six stations south of Akutan Island had very low coral densities (Figs. 10-11). No corals occurred at the six stations south of Akutan Island. Stylasteridae were only present at the western edge of the region (Fig. 12).

The tallest vertical structure was Halipteridae at 195 cm (Table 11). Mean heights for all structure-forming invertebrates ranged from 8 cm to 120 cm.

High densities (> 1.0 individuals/m^2) of sponges occurred at two transects (2012- 103, 104). No high-density coral transects occurred between Akutan Island and Samalga Pass.

SITE SUMMARY: Akutan Island to Samalga Pass

Table 8. -- Summary of top 95% of primary and secondary substrates identified at 30 transects between Akutan Island and Samalga Pass.

Substrate	Minimum depth (m)	Maximum depth (m)	Number of hauls	Number of occurrences	Percent of occurrences
Sand.sand	51	755	19	13,705	54%
Gravel.gravel	50	95	5	2,784	11%
Gravel.boulder	51	94	6	1,129	4%
Sand.pebble	69	270	4	1,076	4%
Cobble.cobble	74	93	2	897	4%
Low Bedrock.mixed coarse	71	288	4	798	3%
Low Bedrock.low bedrock	70	96	3	792	3%
Boulder.gravel	45	84	3	737	3%
Sand.mixed coarse	69	274	4	478	2%
Sand.gravel	69	404	2	356	1%
Low Bedrock.boulder	71	286	5	294	1%
Sand.boulder	69	413	4	225	1%
High Bedrock.cobble	87	96	1	192	1%
Mixed Coarse.mixed coarse	80	278	3	189	1%
Boulder.boulder	54	85	4	181	1%
High Bedrock.sand	70	214	3	176	1%
High Bedrock.boulder	71	176	3	157	1%
Boulder.cobble	74	79	2	150	1%

SITE SUMMARY: Akutan Island to Samalga Pass

Table 9. -- Summary of fishes and crabs identified at 30 transects between Akutan Island and Samalga Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Fishes				
Eelpout unid.	307	4	394-715	0.02
Irish lord unid.	224	2	76-93	< 0.01
Rockfish unid.	198	10	50-394	0.01
Flatfish unid.	56	18	64-690	< 0.01
Searcher/ronquil unid.	44	6	72-94	< 0.01
Roundfish unid.	42	13	50-715	< 0.01
Sculpin unid.	26	10	72-715	< 0.01
Pacific cod	14	6	54-94	< 0.01
Grenadier unid.	7	2	690-715	< 0.01
Thornyhead unid.	6	4	140-715	< 0.01
Skate unid.	5	5	87-140	< 0.01
Snailfish unid.	4	3	72-690	< 0.01
Walleye pollock	3	2	87-140	< 0.01
Crabs				
Crab unid.	7	3	120-715	< 0.01

Table 10. -- Summary of sponges, corals, Pennatulaceans, and hydrocorals identified at 30 transects between Akutan Island and Samalga Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth ranges (m)	Mean density (individuals/m^2)
Sponges				
Demospongiae	14,034	18	50-715	0.49
Hexactinellida	41	8	64-715	< 0.01
Soft corals	1,223	19	50-715	0.03
Primnoidae	764	8	50-280	0.02
Acanthogorgiidae	360	4	50-94	0.01
Plexauridae	72	5	72-715	< 0.01
Isididae	24	1	715-715	< 0.01
Soft coral unid.	3	1	715-715	< 0.01
Pennatulaceans				
Pennatulidae	3,324	10	50-93	0.04
Halipteridae	349	3	93-140	0.01
Hydrocorals				
Stylasteridae	5	4	72-280	< 0.01

SITE SUMMARY: Akutan Island to Samalga Pass

Table 11. -- Summary of sponge, coral, Pennatulacean, and hydrocoral heights measured between Akutan Island and Samalga Pass.

Species/Grouping	Number measured	Minimum height (cm)	Maximum height (cm)	Mean height (cm)
Sponges				
Demospongiae	669	20	77	29
Hexactinellida	5	20	51	35
Soft corals				
Primnoidae	158	8	61	31
Acanthogorgiidae	69	10	33	22
Plexauridae	17	11	35	23
Isididae	8	11	75	44
Pennatulaceans				
Halipteridae	146	23	195	120
Pennatulidae	139	5	31	16
Hydrocorals				
Stylasteridae	1	8	8	8

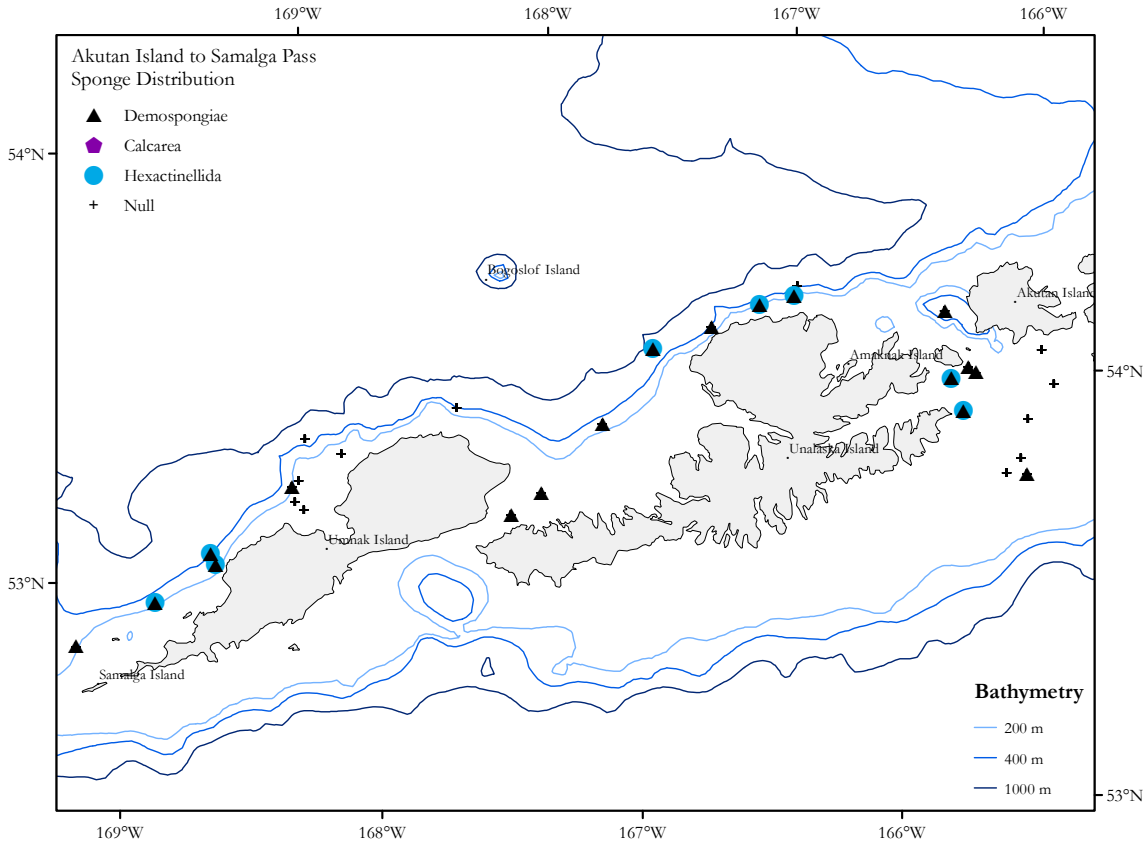


Figure 8. -- Sponge distribution, Akutan Island to Samalga Pass.

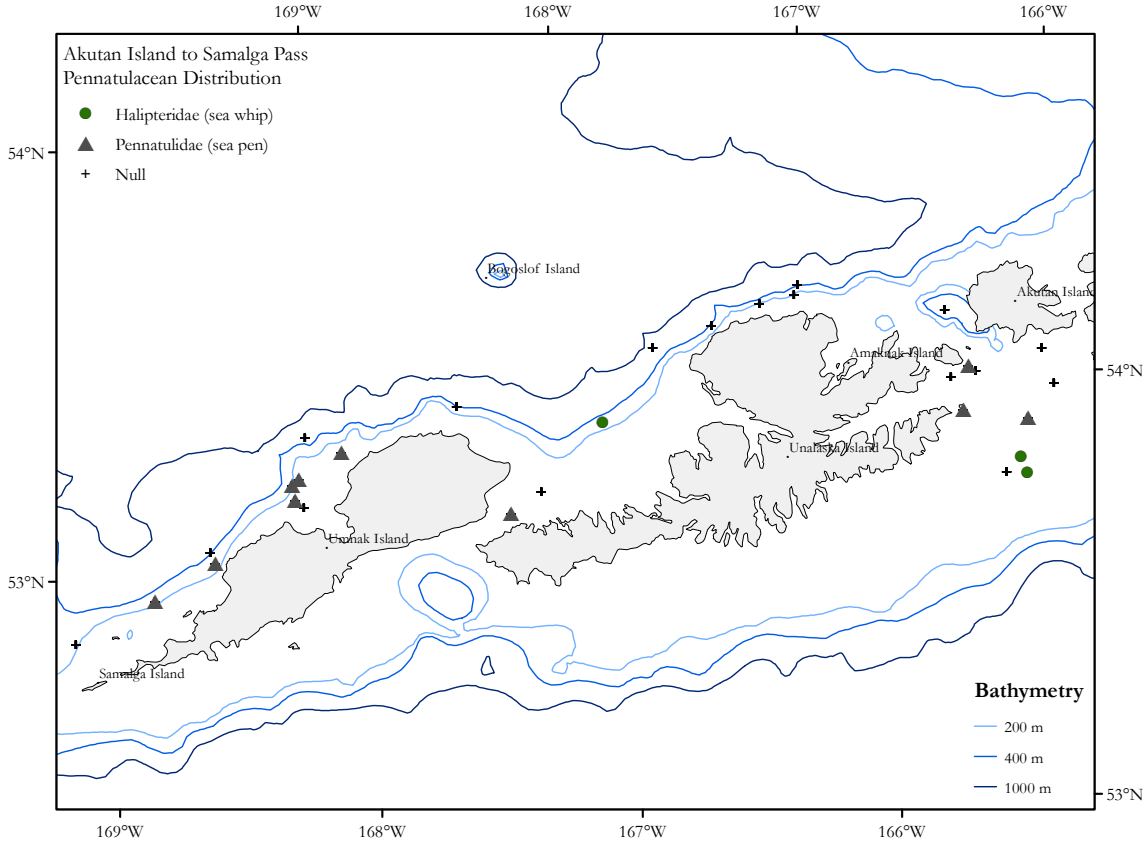


Figure 9. -- Pennatulacean distribution, Akutan Island to Samalga Pass.

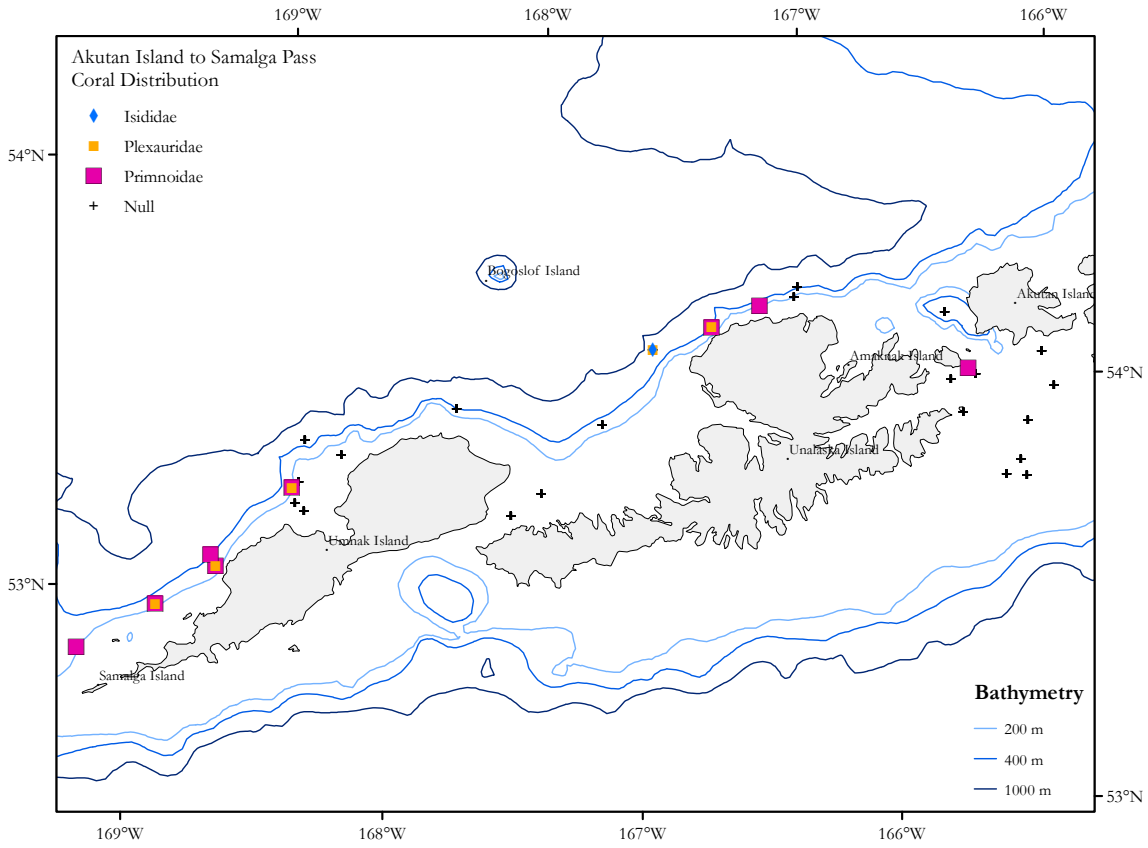


Figure 10. -- Isididae, Plexauridae, and Primnoidae distribution, Akutan Island to Samalga Pass.

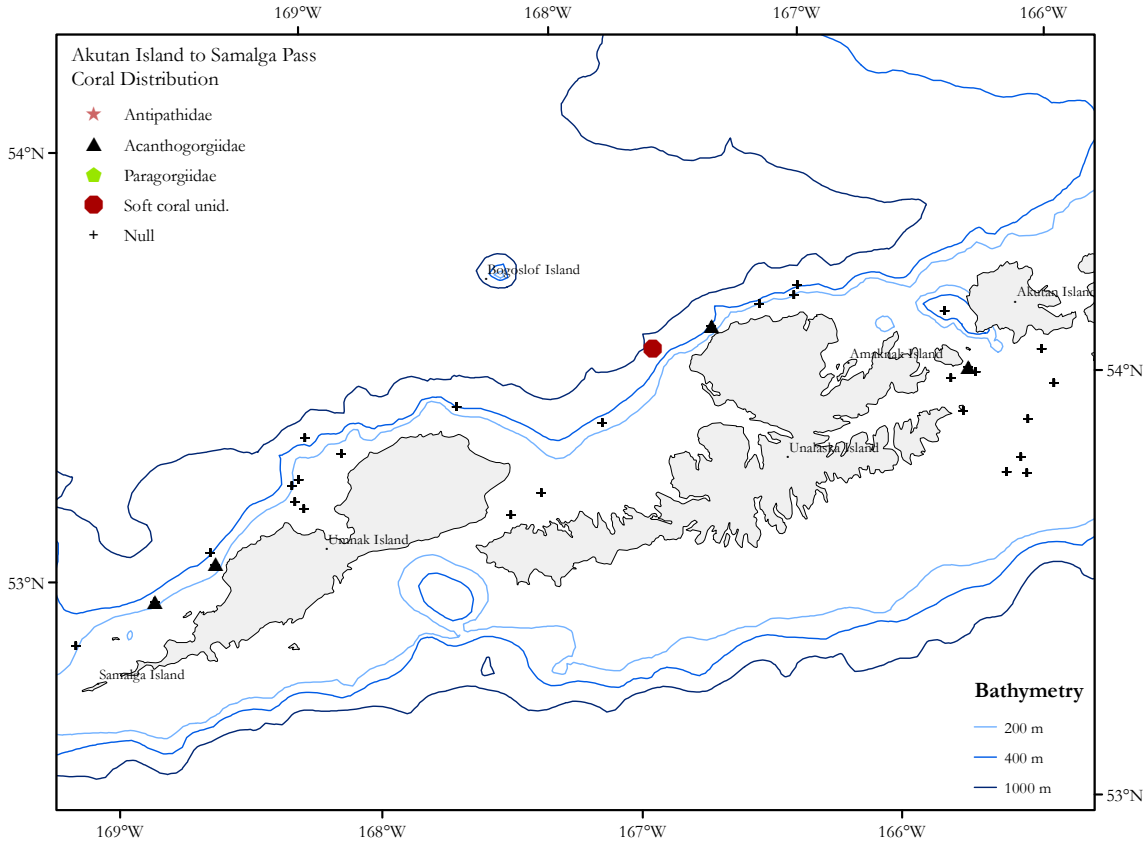


Figure 11. -- Antipathidae, Paragorgiidae, Acanthogorgiidae, and soft coral unidentified distribution, Akutan Island to Samalga Pass.

SITE SUMMARY: Akutan Island to Samalga Pass

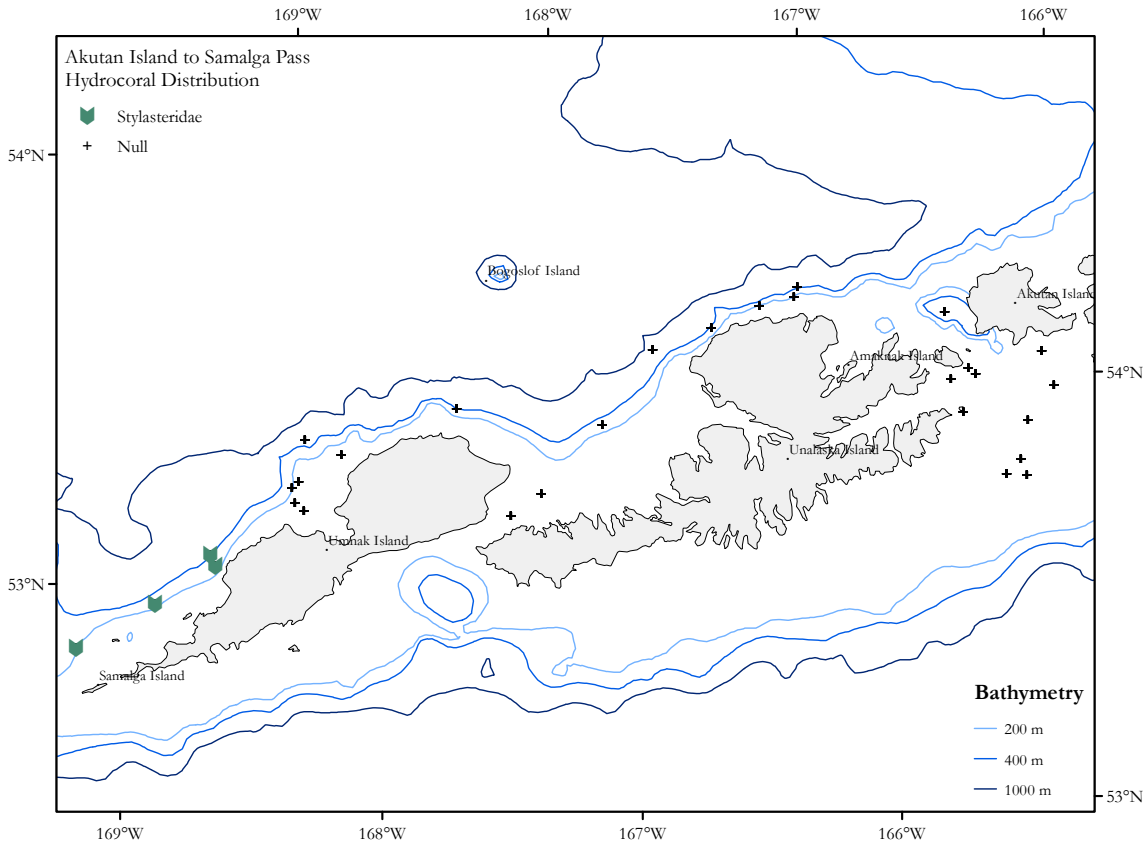
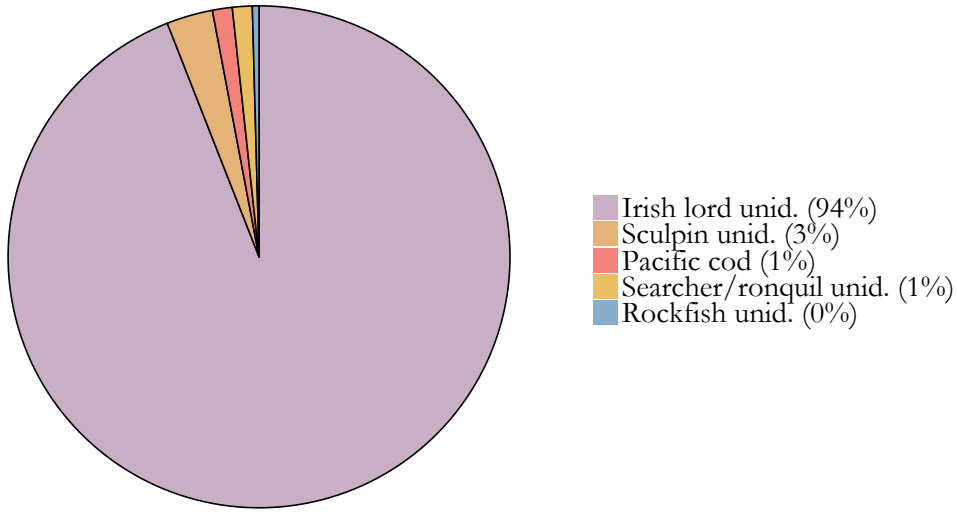


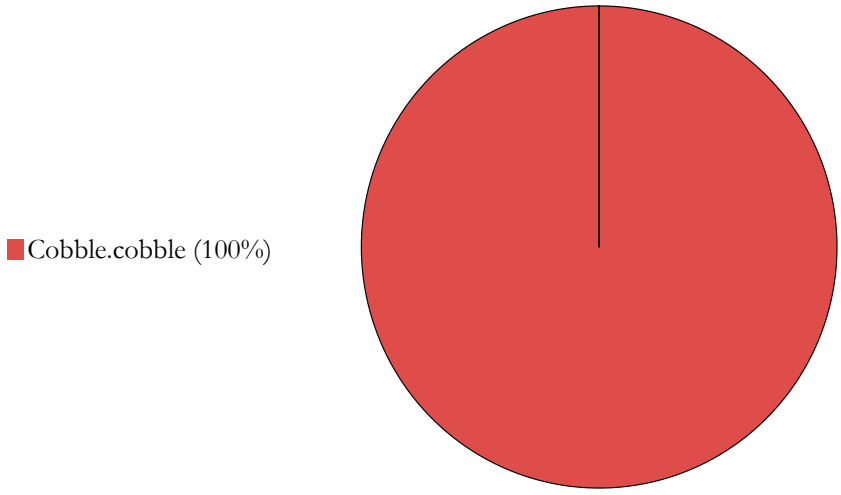
Figure 12. -- Hydrocoral distribution, Akutan Island to Samalga Pass.

AREA: Akutan Island to Samalga Pass			Transect	2012-1
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	54.08	-166.19	1,970	76	6.5

Fish and Crab Composition (n = 235)



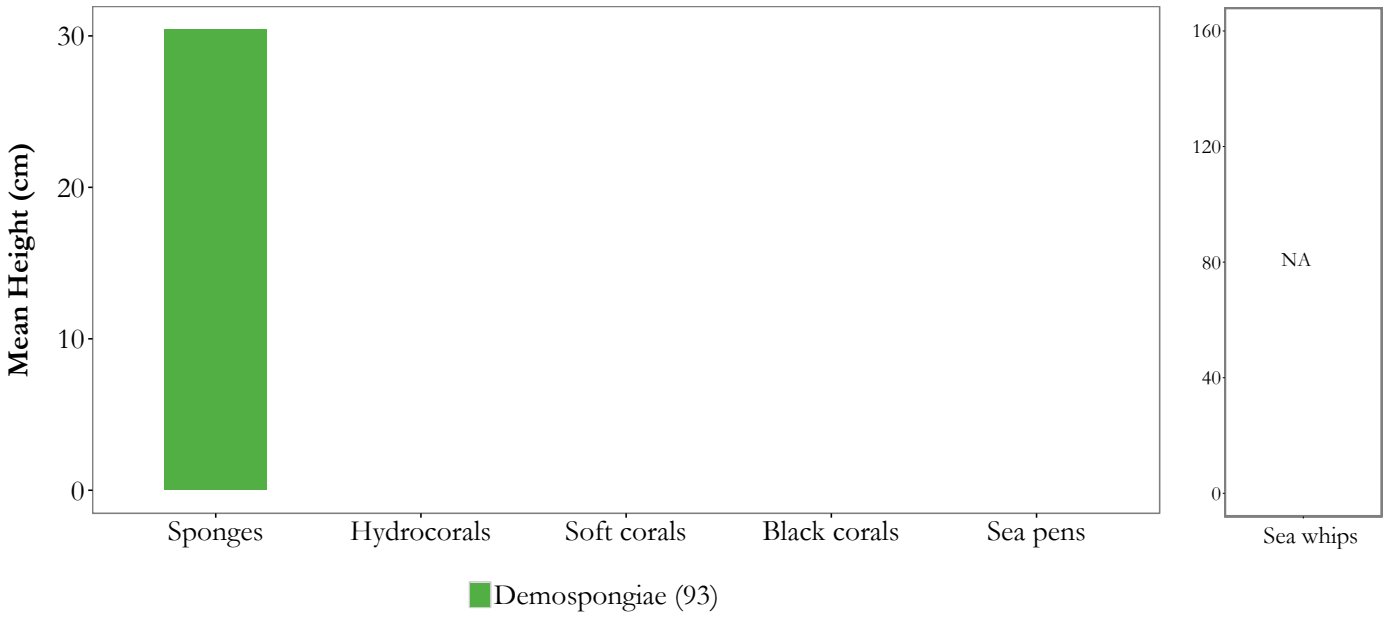
Substrate Composition

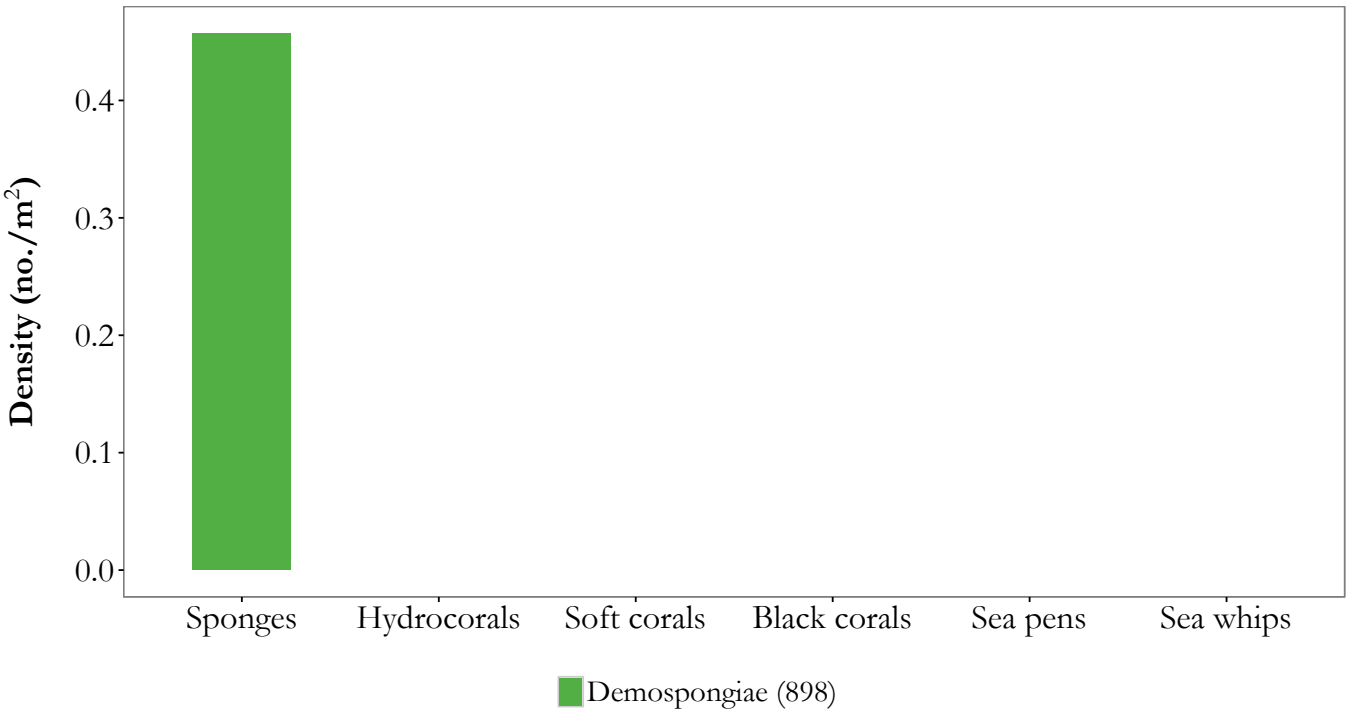


Images

AREA: Akutan Island to Samalga Pass Transect 2012-1

Vertical Habitat Summary





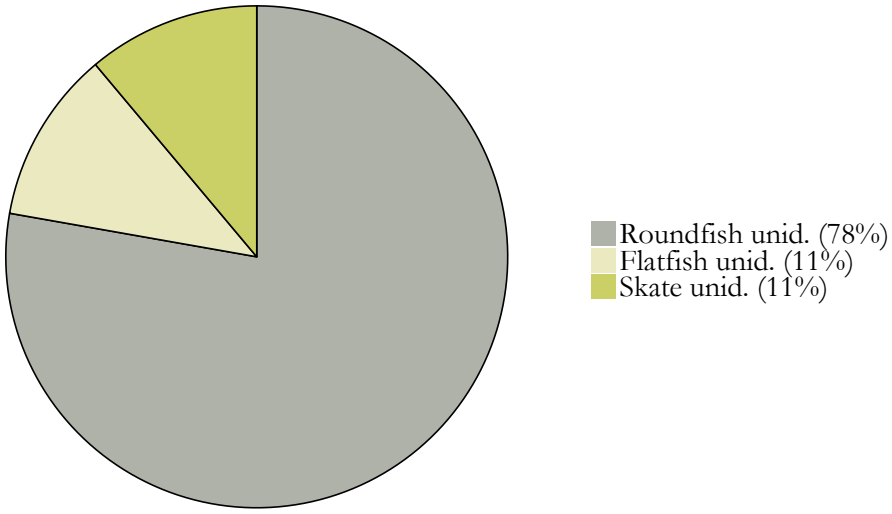
Summary - description of transect

Transect 2012-1: Primary and secondary substrates consisted entirely of cobble. Irish lords (n = 221) accounted for 94% of the fish density (0.12 individuals/m^2). Demospongiae (0.46 individuals/m^2) was the only structure-forming invertebrate present.

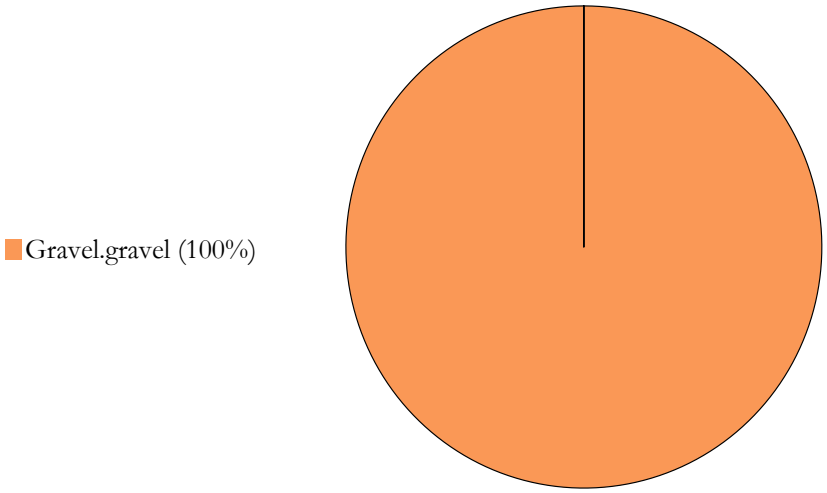
AREA: Akutan Island to Samalga Pass — Transect 2012-2

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	54.03	-165.78	1,880	92	6.6

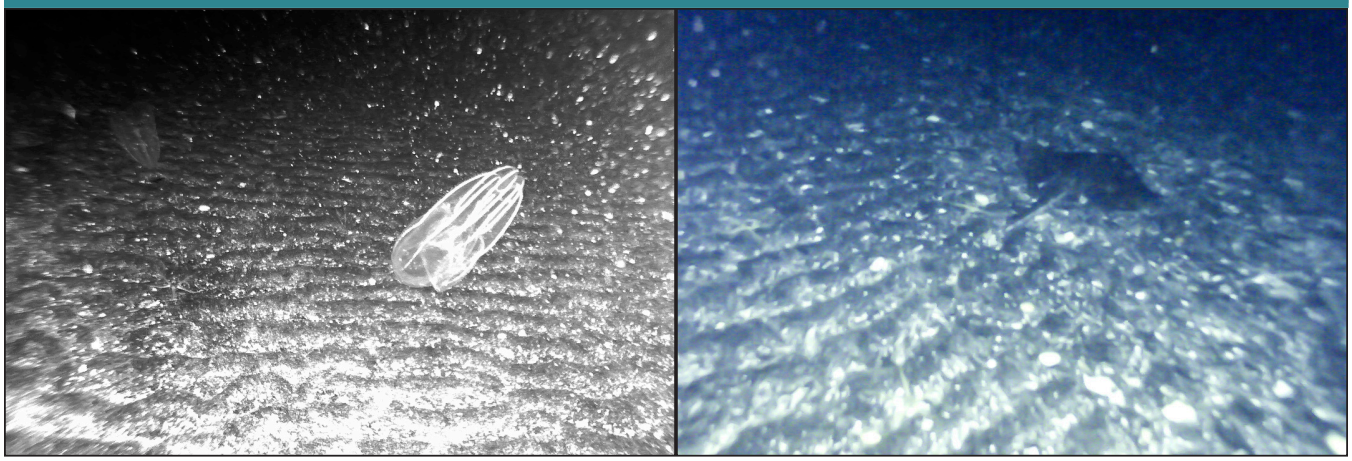
Fish and Crab Composition (n = 9)



Substrate Composition

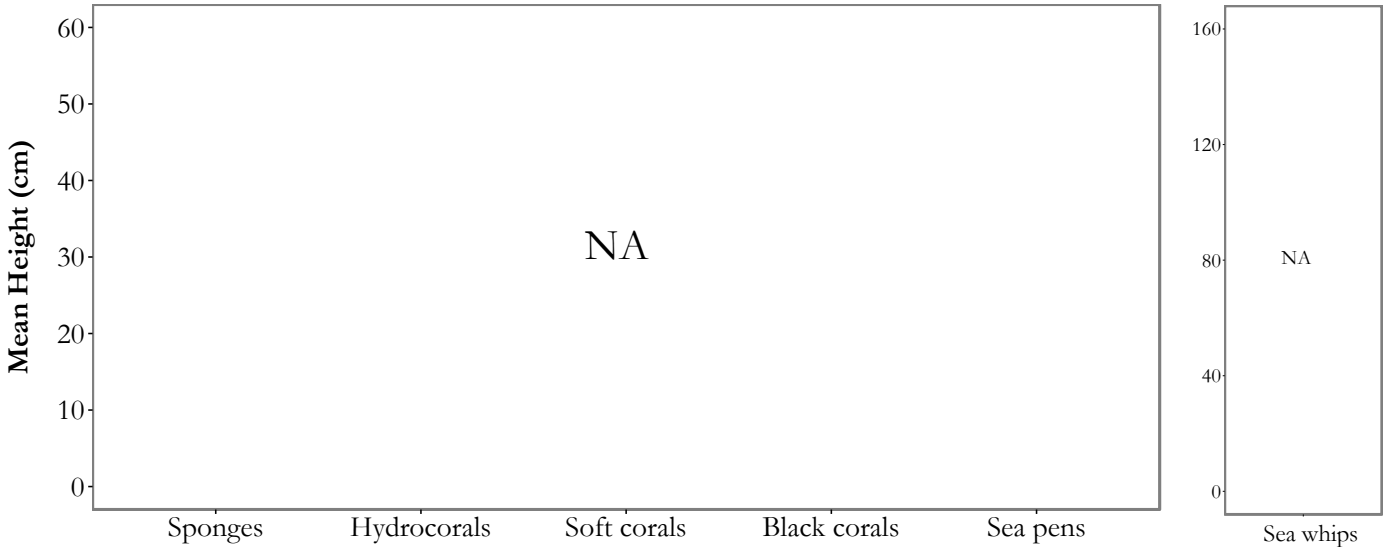


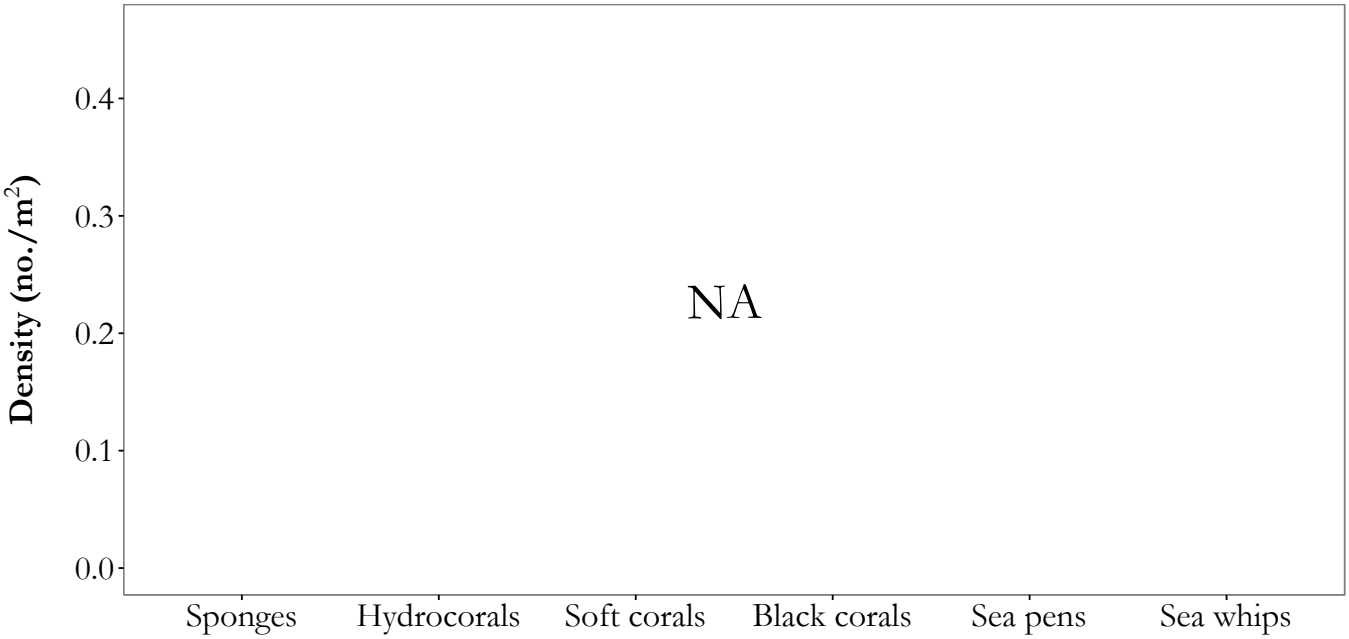
Images



AREA: Akutan Island to Samalga Pass Transect 2012-2

Vertical Habitat Summary





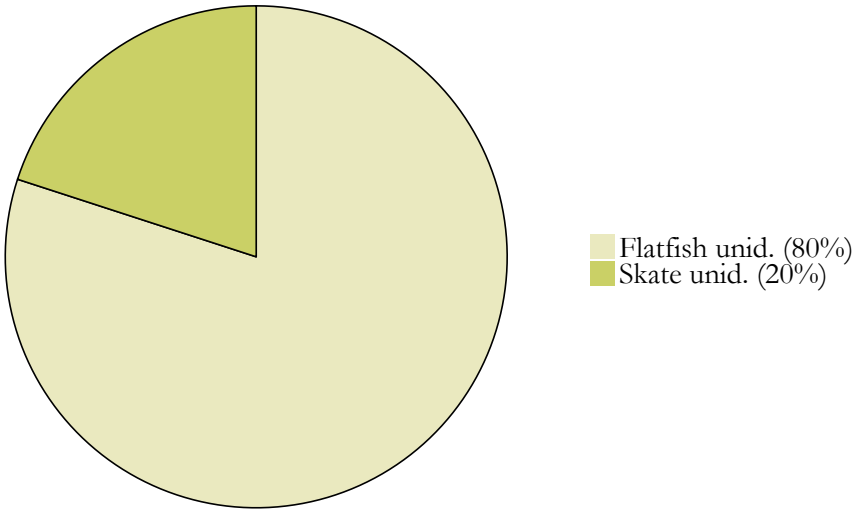
Summary - description of transcect

Transect 2012-2: Primary and secondary substrates consisted entirely of gravel. Only nine individual fishes from three taxa were identified in this transect; unidentified flatfishes, roundfishes, and skates accounted for 100% of the observations. Overall fish density for this transect was low (< 0.01 individuals/m²). No corals, sponges, sea whips, sea pens, or hydrocorals were observed.

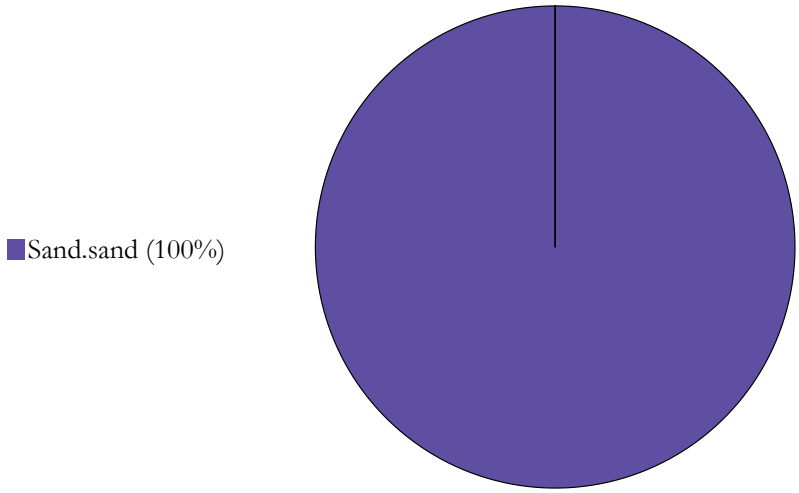
AREA: Akutan Island to Samalga Pass — Transect 2012-3

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.95	-165.71	1,447	98	6.6

Fish and Crab Composition (n = 5)



Substrate Composition



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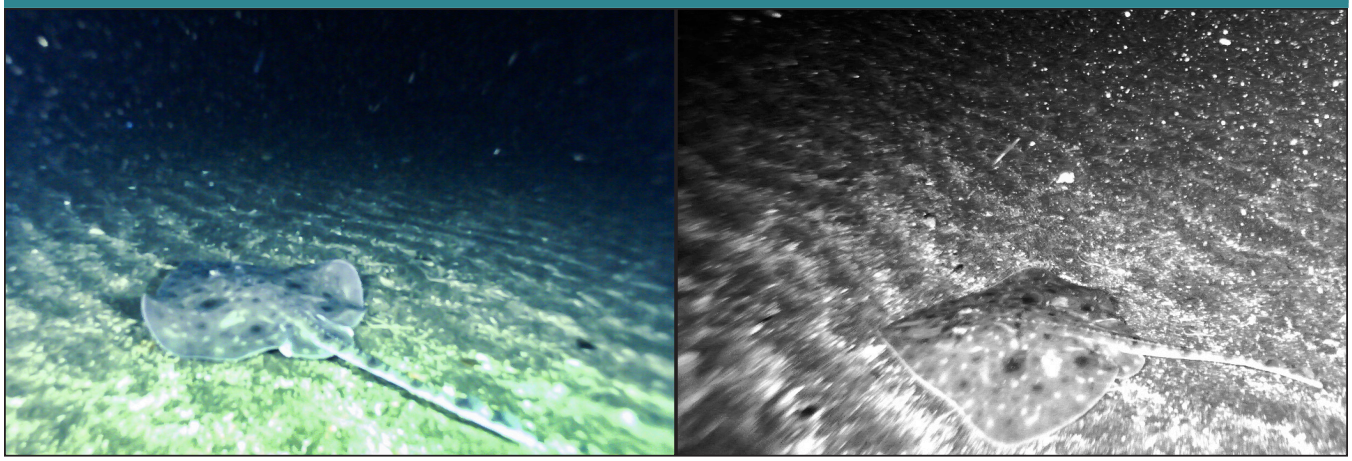
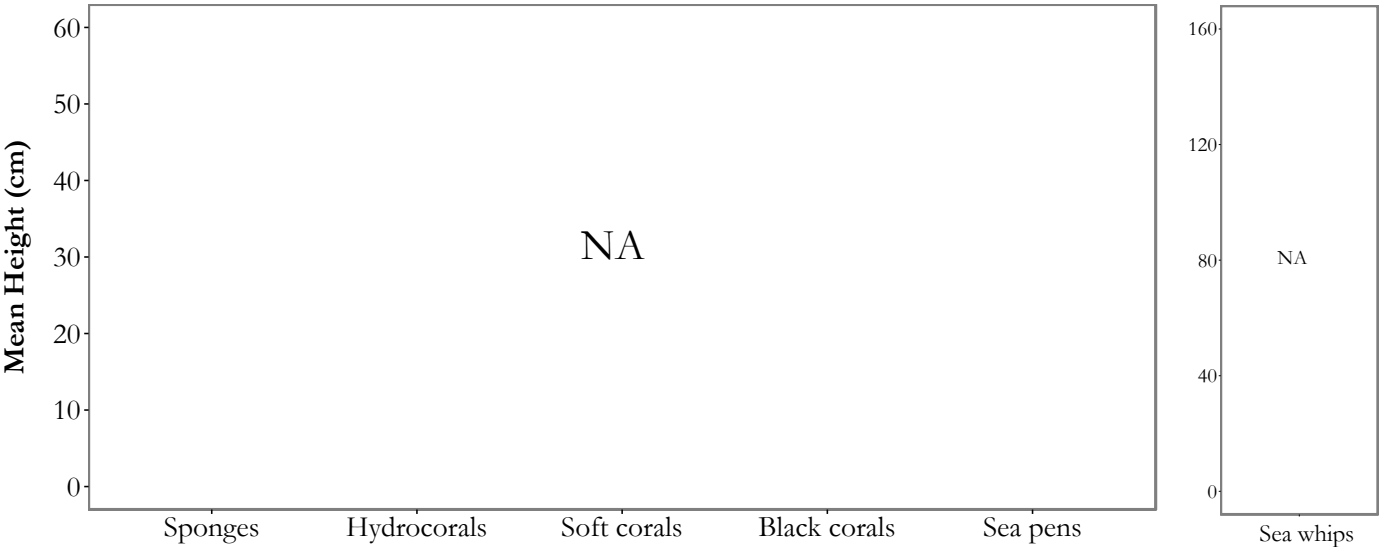
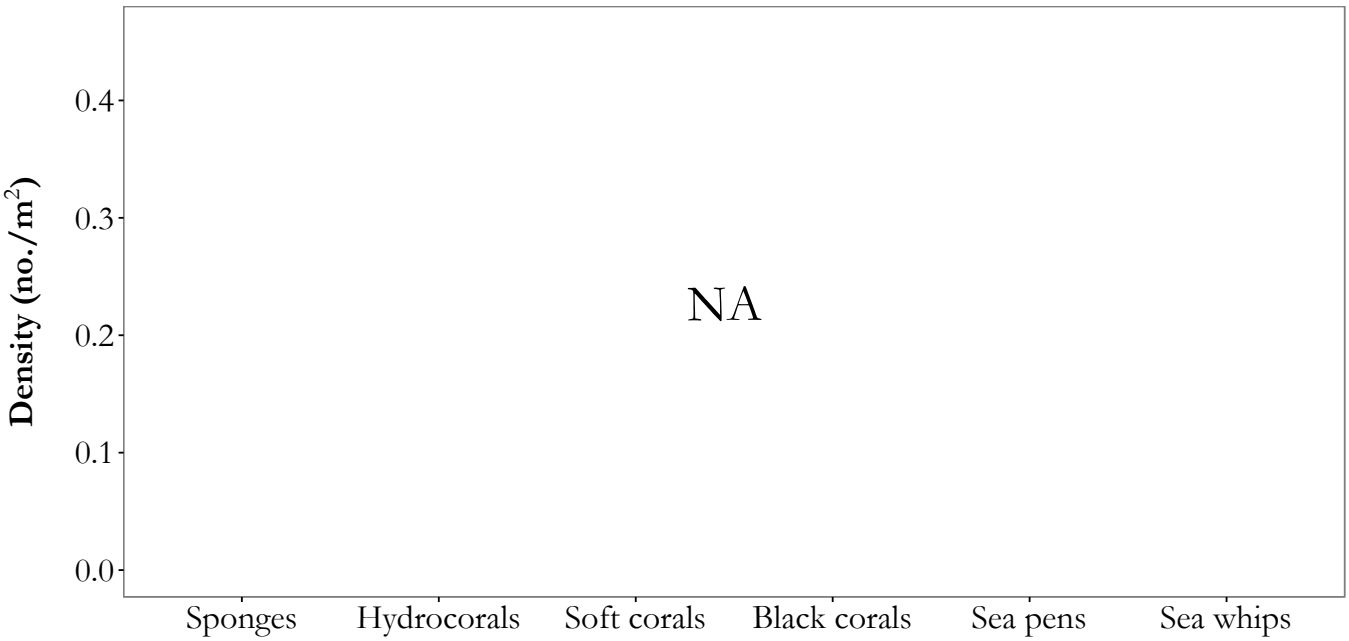


AREA: Akutan Island to Samalga Pass Transect 2012-3

Vertical Habitat Summary





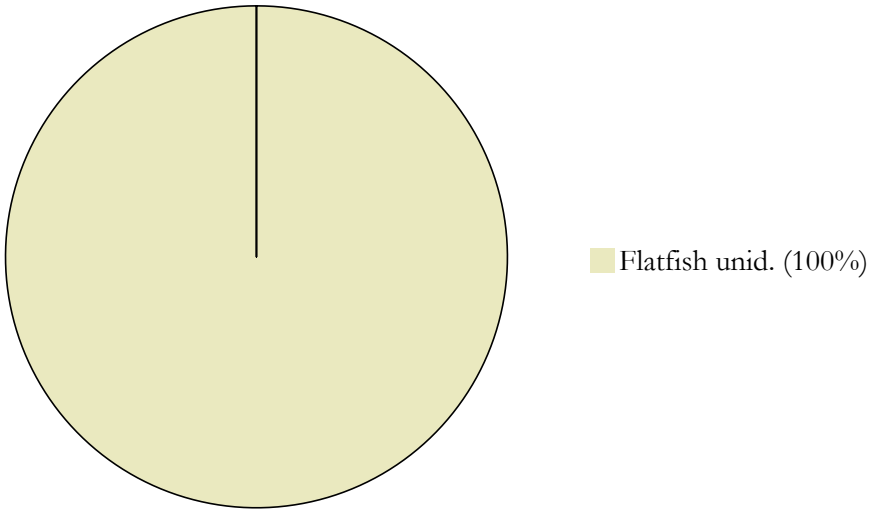
Summary - description of transect

Transect 2012-3: Primary and secondary substrates consisted entirely of sand. Only five fishes were identified in this transect; four unidentified flatfishes and one skate. As a result, fish density was very low (< 0.01 individuals/m^2). No corals, sponges, sea whips, sea pens, or hydrocorals were identified.

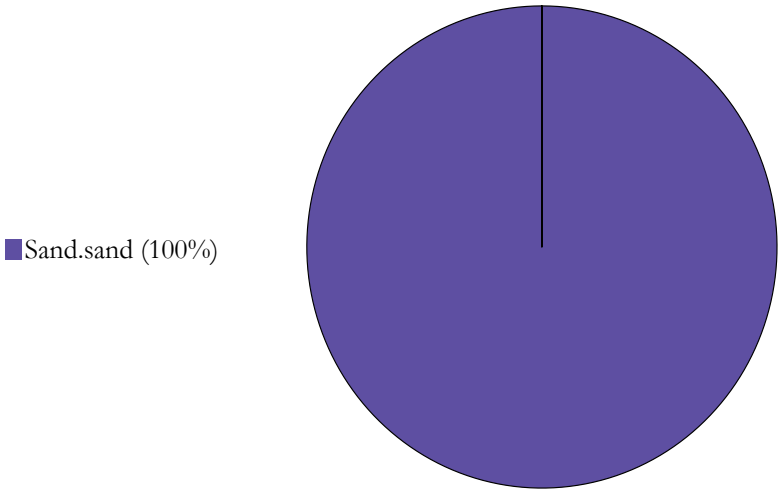
AREA: Akutan Island to Samalga Pass — Transect 2012-4

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.86	-165.78	1,369	77	6.8

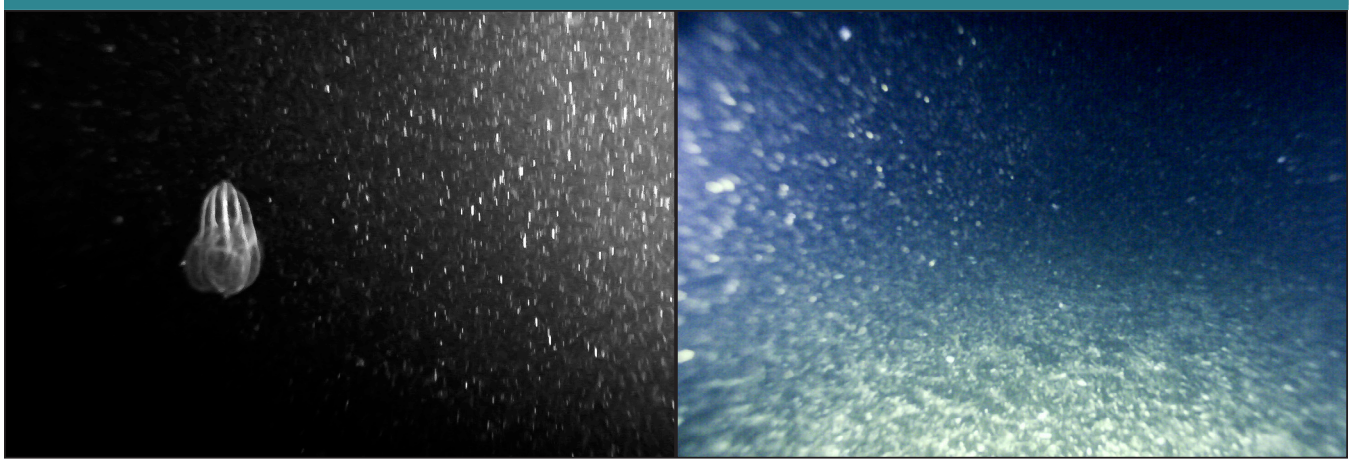
Fish and Crab Composition (n = 1)



Substrate Composition

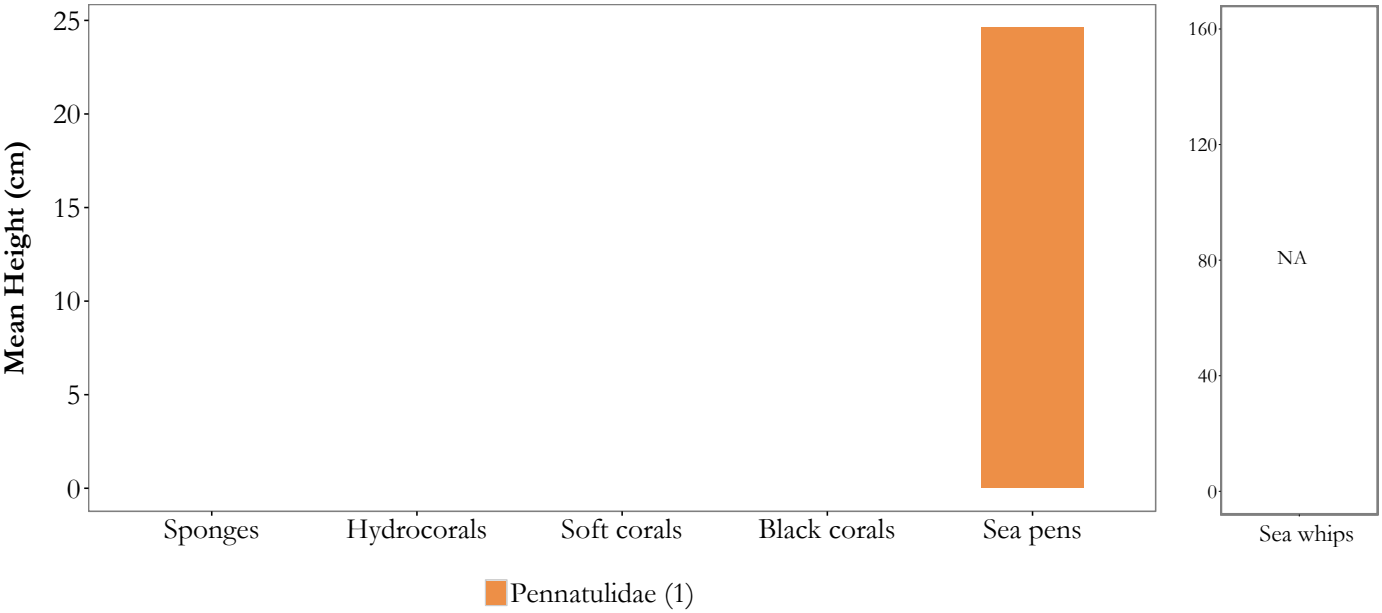


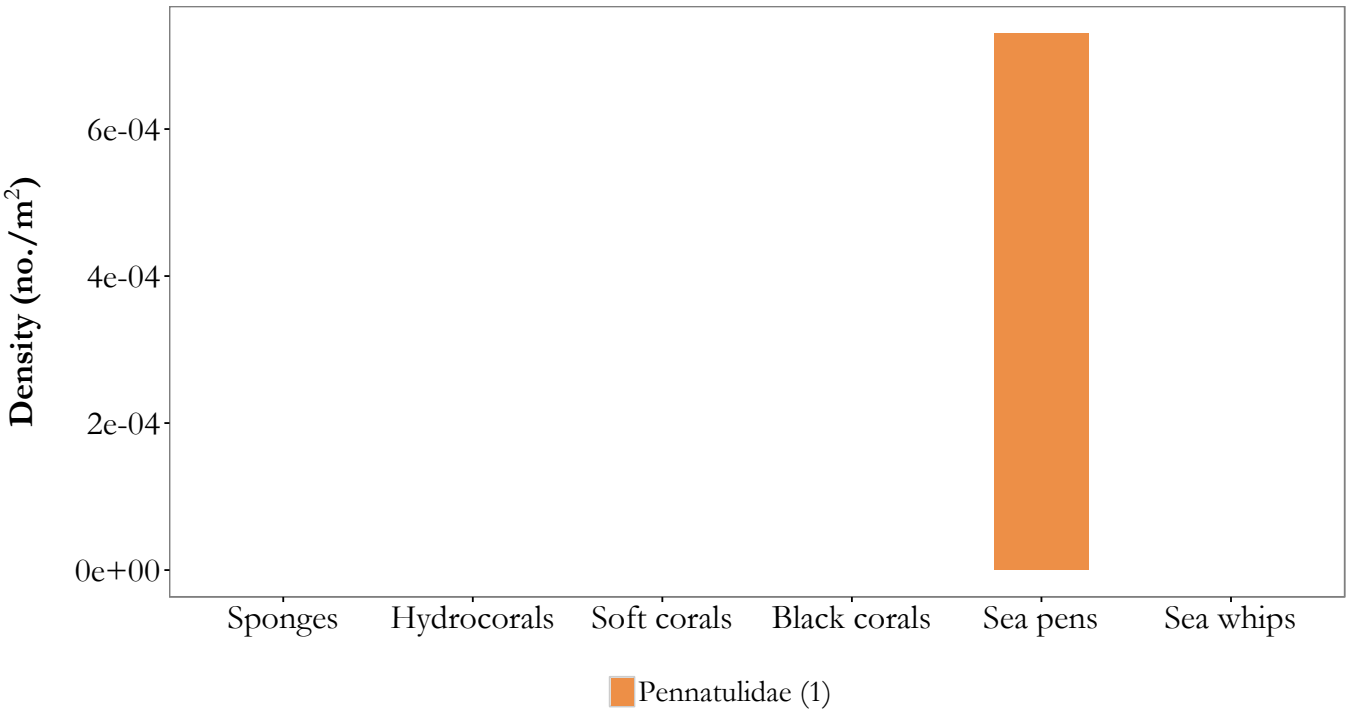
Images



AREA: Akutan Island to Samalga Pass Transect 2012-4

Vertical Habitat Summary



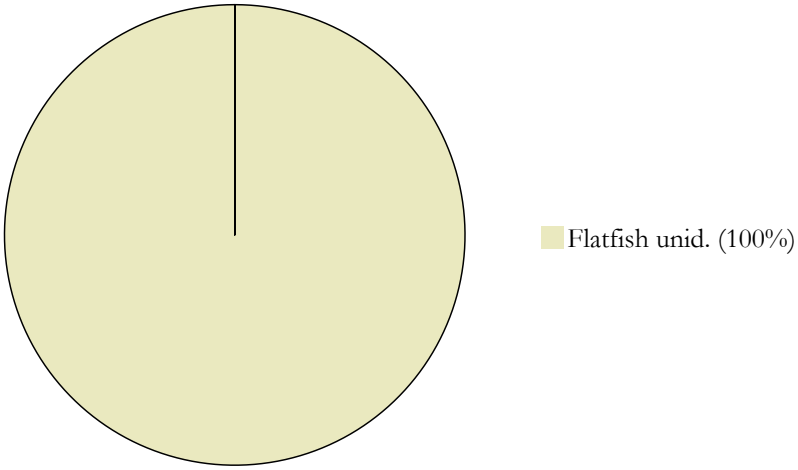


Summary - description of transect

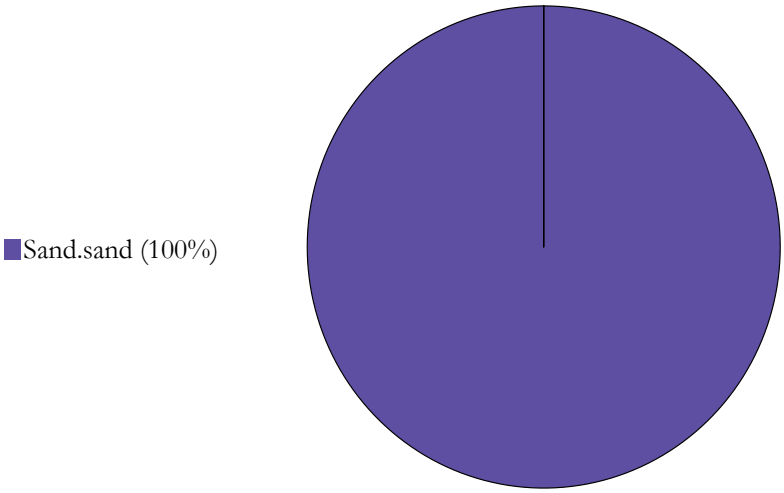
Transect 2012-4: Primary and secondary substrates consisted of sand. One unidentified flatfish accounted for 100% of the fishes identified. One sea pen was identified and measured (25 cm).

AREA: Akutan Island to Samalga Pass			Transect	2012-5
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.77	-165.78	1,916	96	4.9

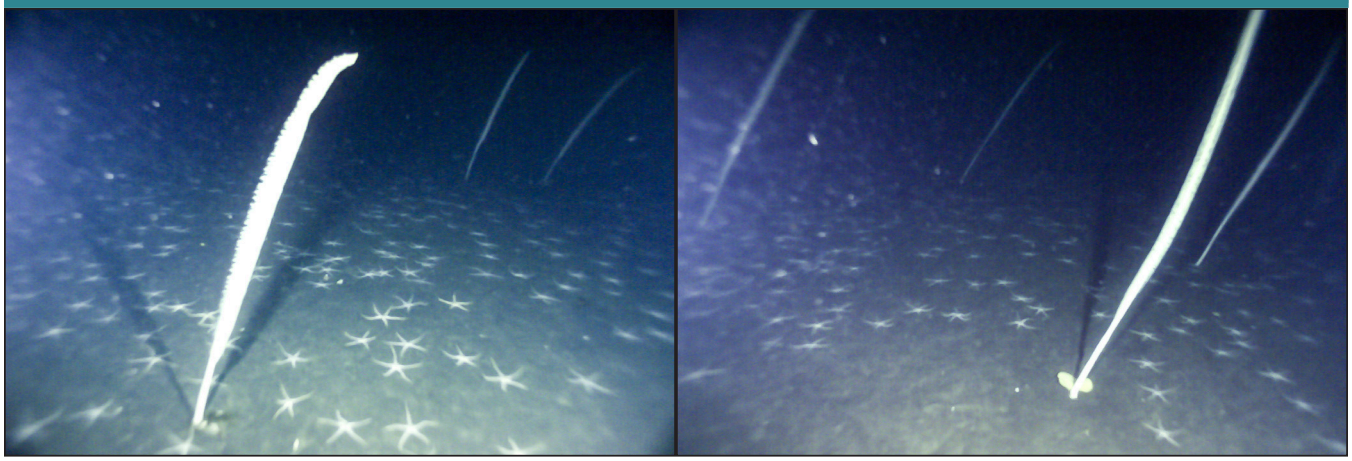
Fish and Crab Composition (n = 2)



Substrate Composition

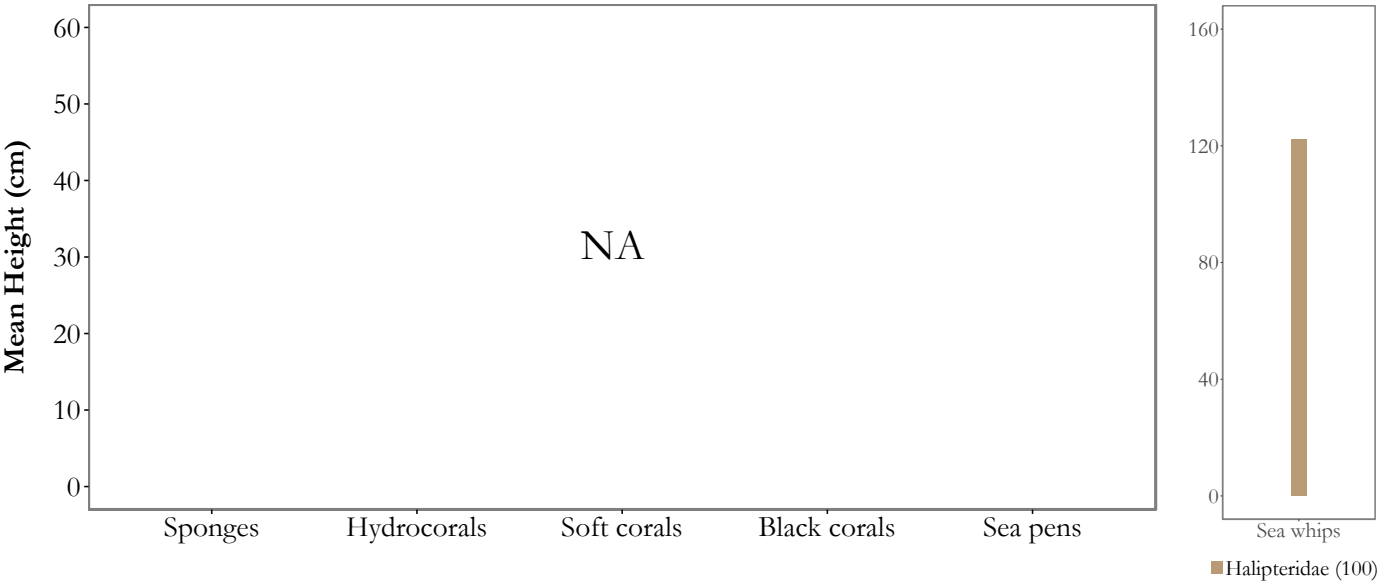


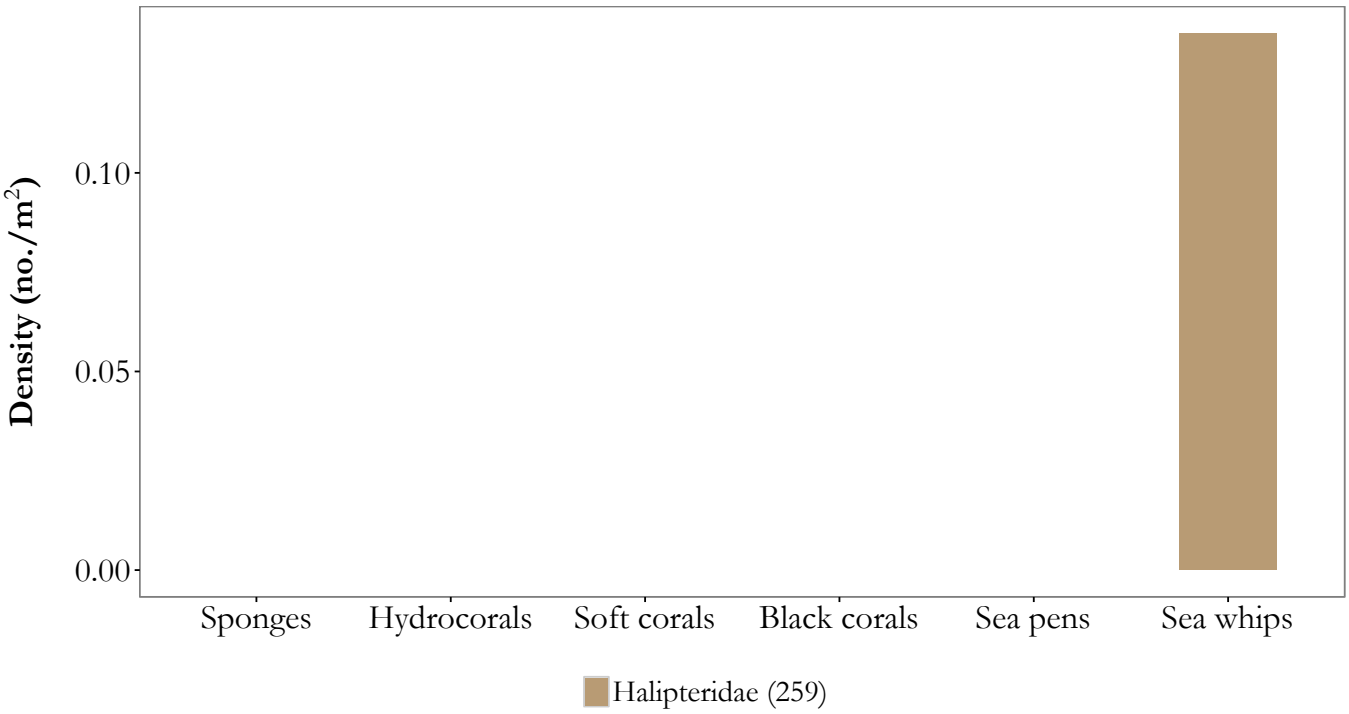
Images



AREA: Akutan Island to Samalga Pass Transect 2012-5

Vertical Habitat Summary





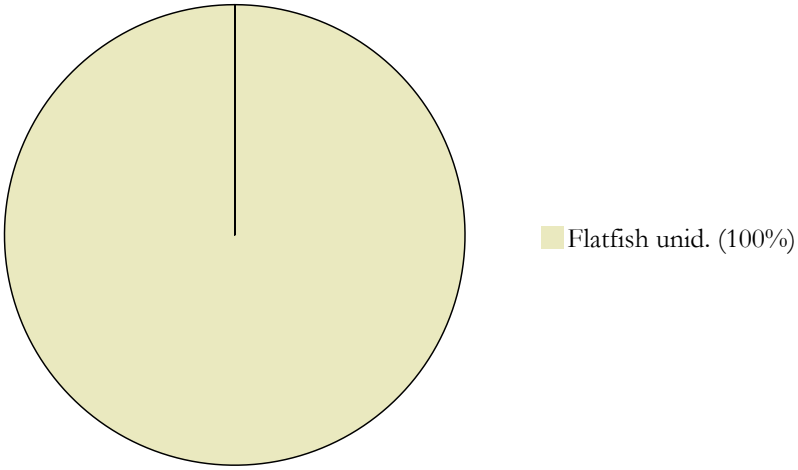
Summary - description of transcect

Transect 2012-5: Primary and secondary substrates consisted of sand. Only two unidentified flatfishes were observed. Structure-forming invertebrates consisted of 259 sea whips (0.14 individuals/m^2). The mean height of 100 measured sea whips was 122 cm. No other corals, sponges, sea pens, or hydrocorals were identified.

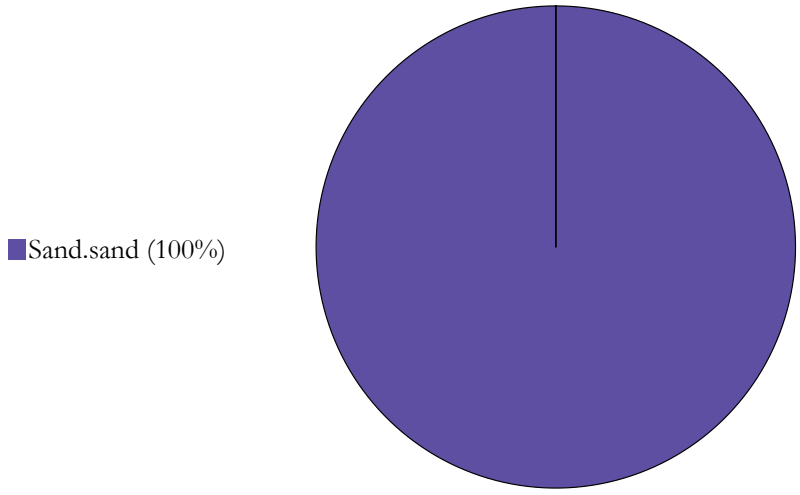
AREA: Akutan Island to Samalga Pass — Transect 2012-6

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.73	-165.75	1,908	93	4.7

Fish and Crab Composition (n = 7)



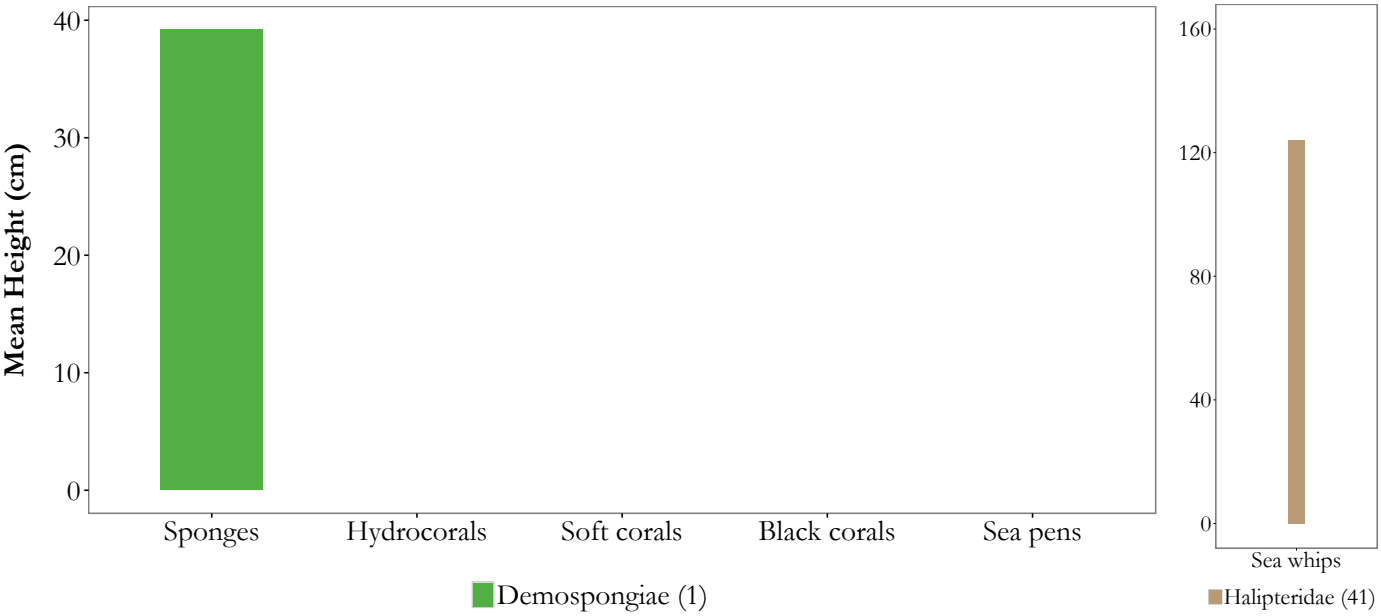
Substrate Composition

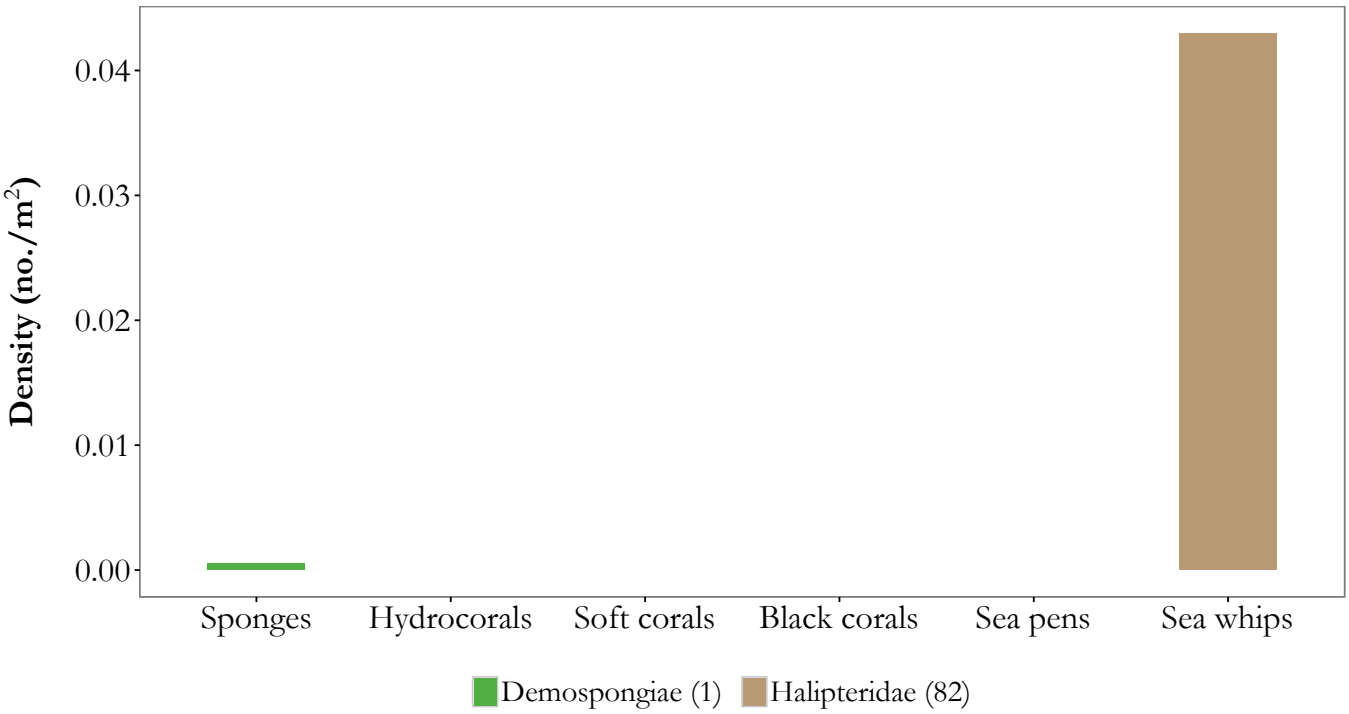


Images

AREA: Akutan Island to Samalga Pass Transect 2012-6

Vertical Habitat Summary





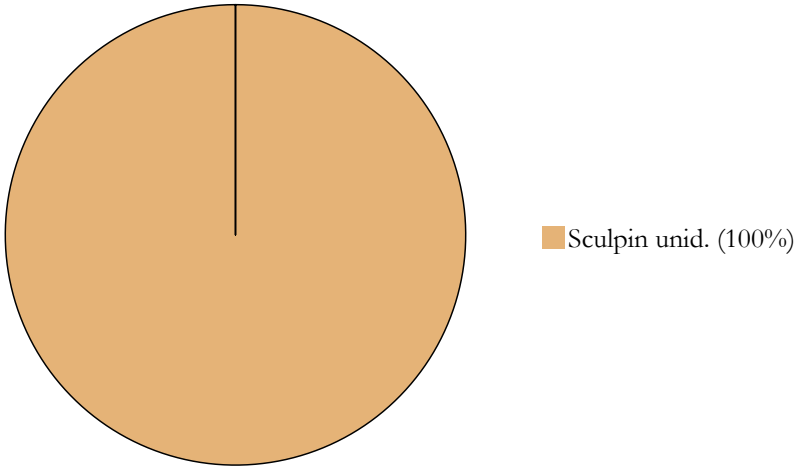
Summary - description of transect

Transect 2012-6: Primary and secondary substrates consisted entirely of sand. Few fishes were identified in this transect (n = 7) with 100% identified as flatfish. There was one demosponge with a height of 39 cm and 82 sea whips identified with a mean height of 124 cm. No other sponges, corals, sea pens, or hydrocorals were identified.

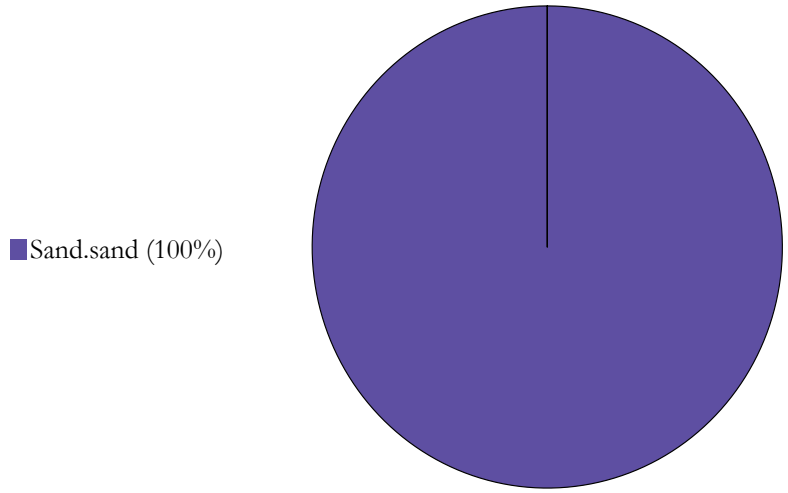
AREA: Akutan Island to Samalga Pass — Transect 2012-7

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.72	-165.83	1,166	123	4.6

Fish and Crab Composition (n = 3)



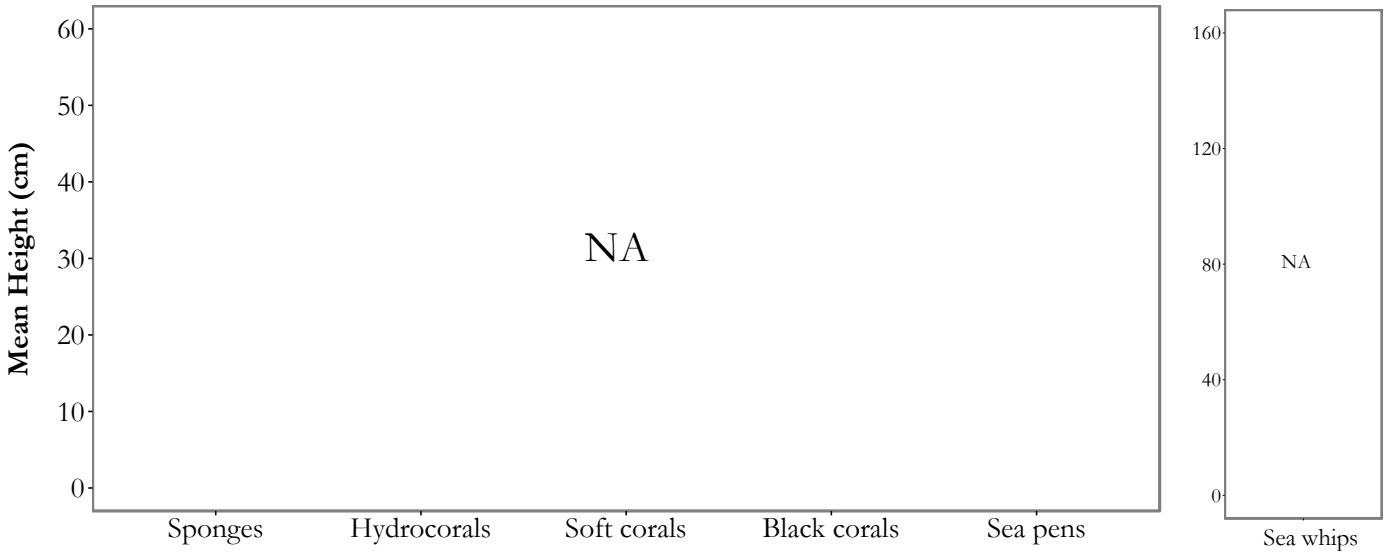
Substrate Composition

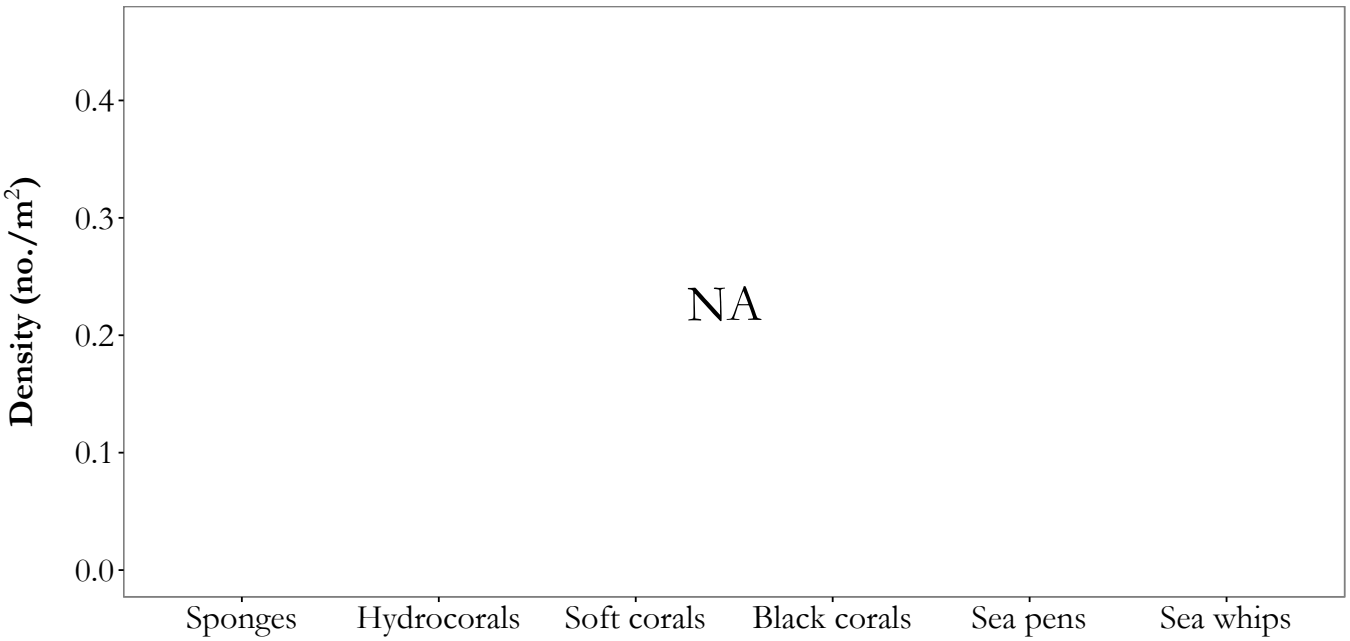


Images

AREA: Akutan Island to Samalga Pass Transect 2012-7

Vertical Habitat Summary



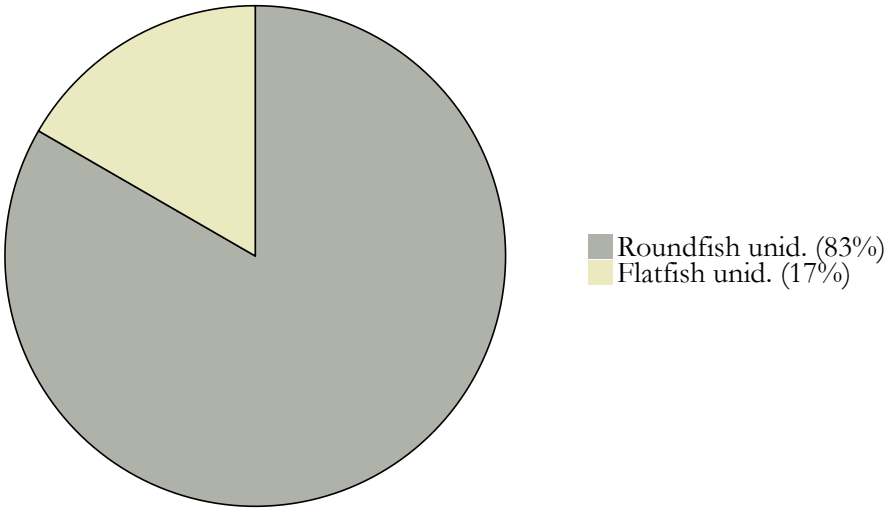


Summary - description of transcect

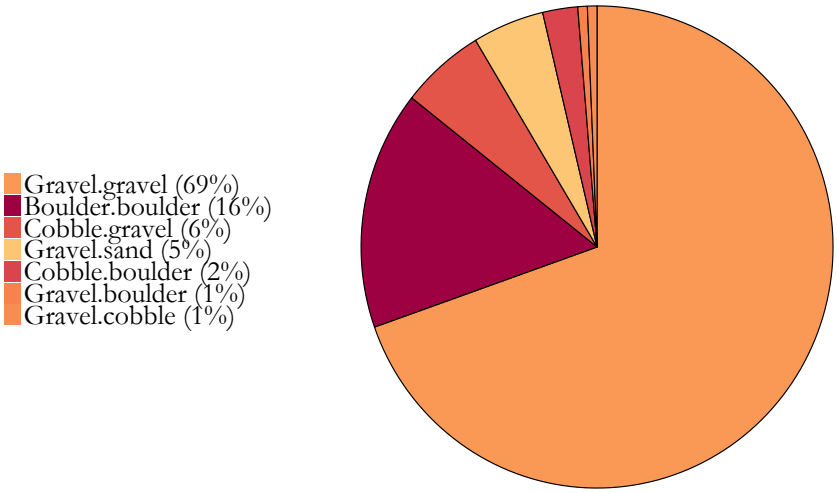
Transect 2012-7: Primary and secondary substrates consisted of sand. Sculpins (n = 3) accounted for 100% of the fish density (< 0.01 individuals/m²). No structure-forming invertebrates were observed.

AREA: Akutan Island to Samalga Pass			Transect	2012-8
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.85	-166.05	1,820	68	6.2

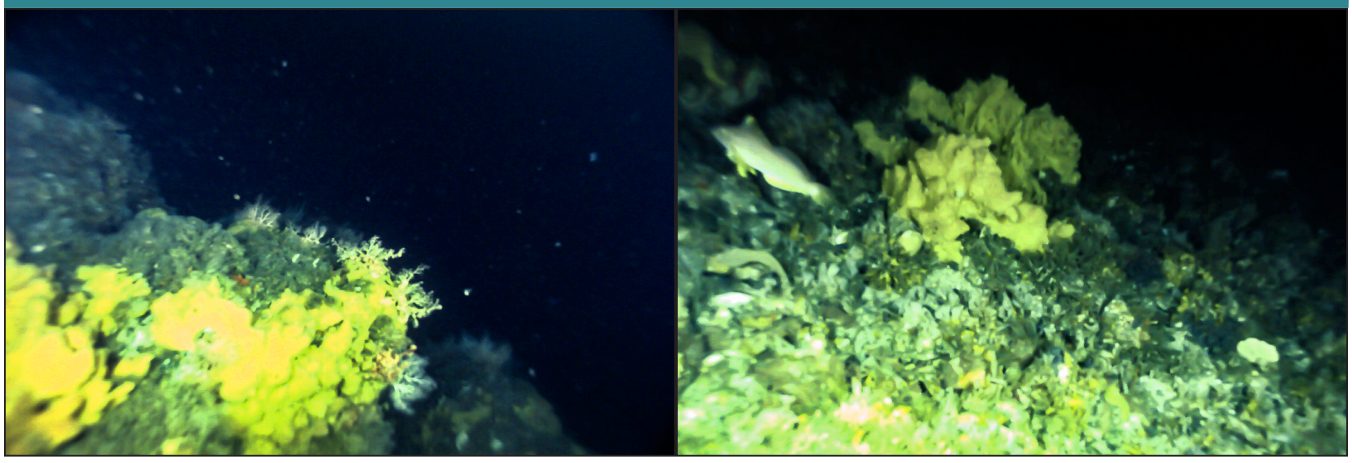
Fish and Crab Composition (n = 6)



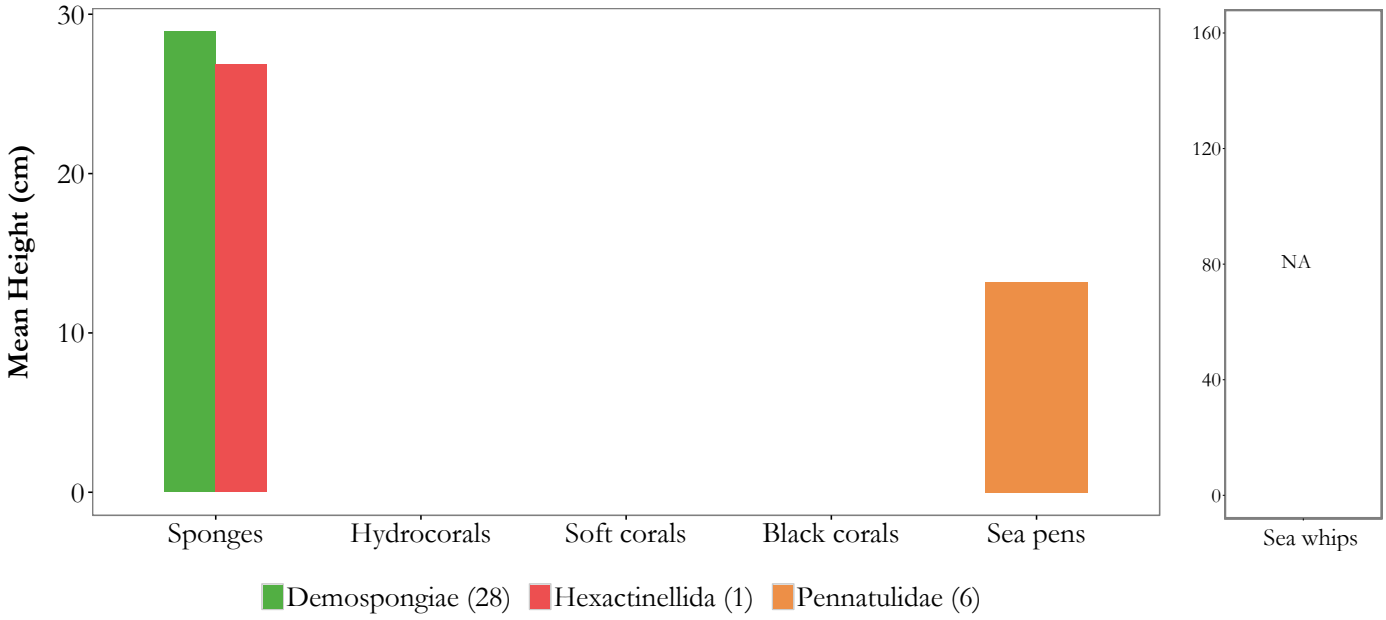
Substrate Composition

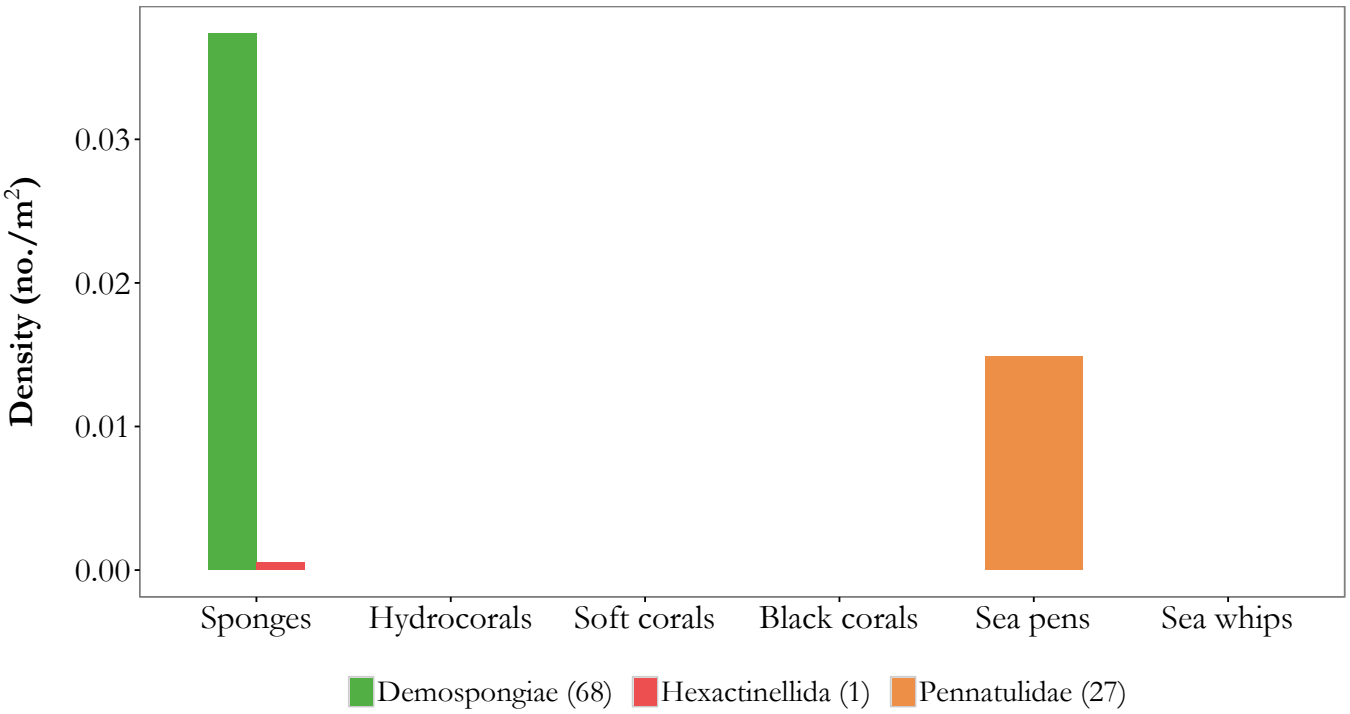


Images



Vertical Habitat Summary





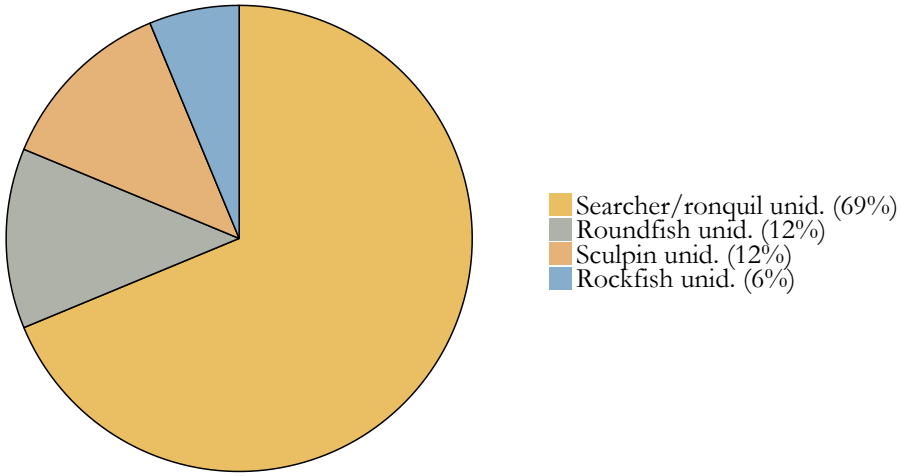
Summary - description of transect

Transect 2012-8: Primary and secondary substrates consisted largely of gravel (82%). Boulder accounted for over 16% of the remaining substrates. Overall fish and crab density was very low at < 0.01 individuals/m^2. Structure-forming invertebrate habitat consisted of Demospongiae, Hexactinellida, and sea pens for a combined density of 0.05 individuals/m^2. Mean heights ranged from 13 to 29 cm with Demospongiae and Hexactinellida being tallest and sea pens being the shortest. No other corals, sea whips, or hydrocorals were identified.

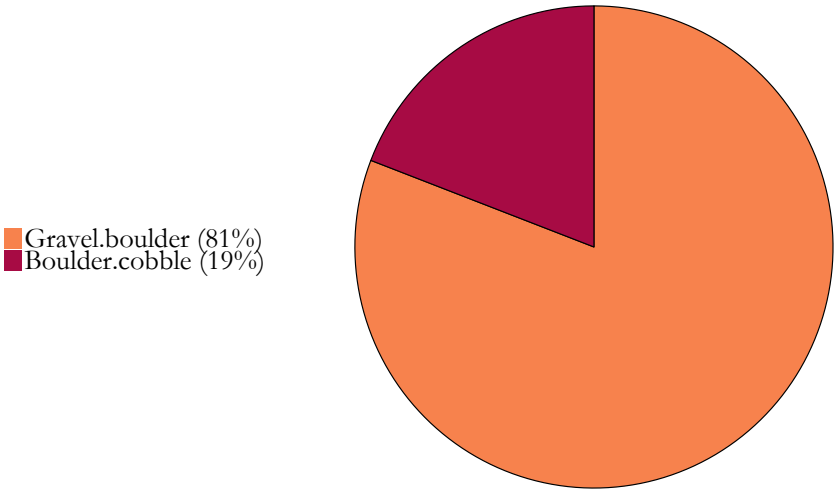
AREA: Akutan Island to Samalga Pass — Transect 2012-9

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.95	-166.02	2,785	83	6.0

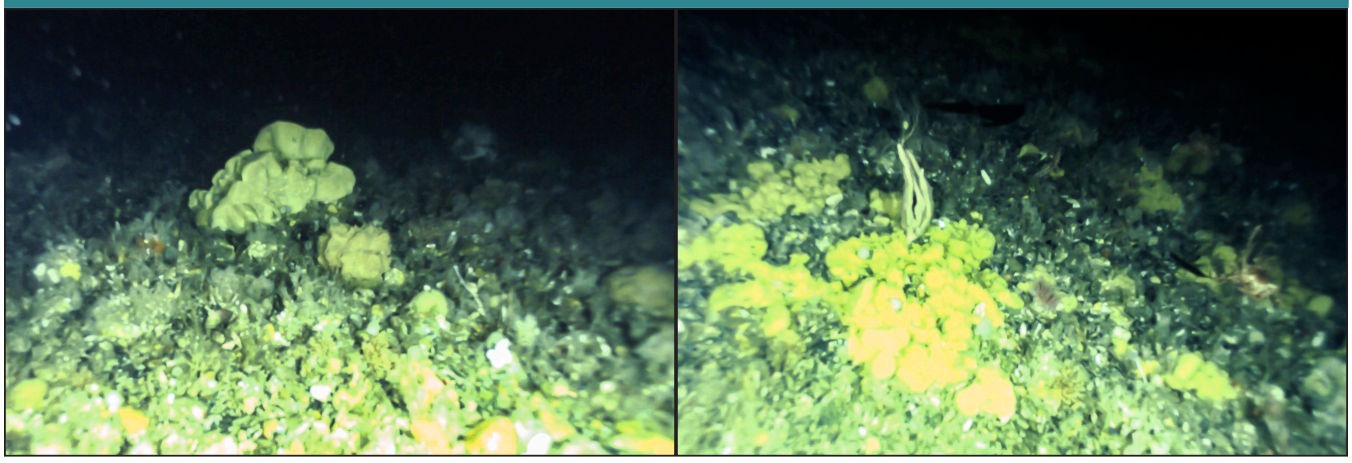
Fish and Crab Composition (n = 16)



Substrate Composition

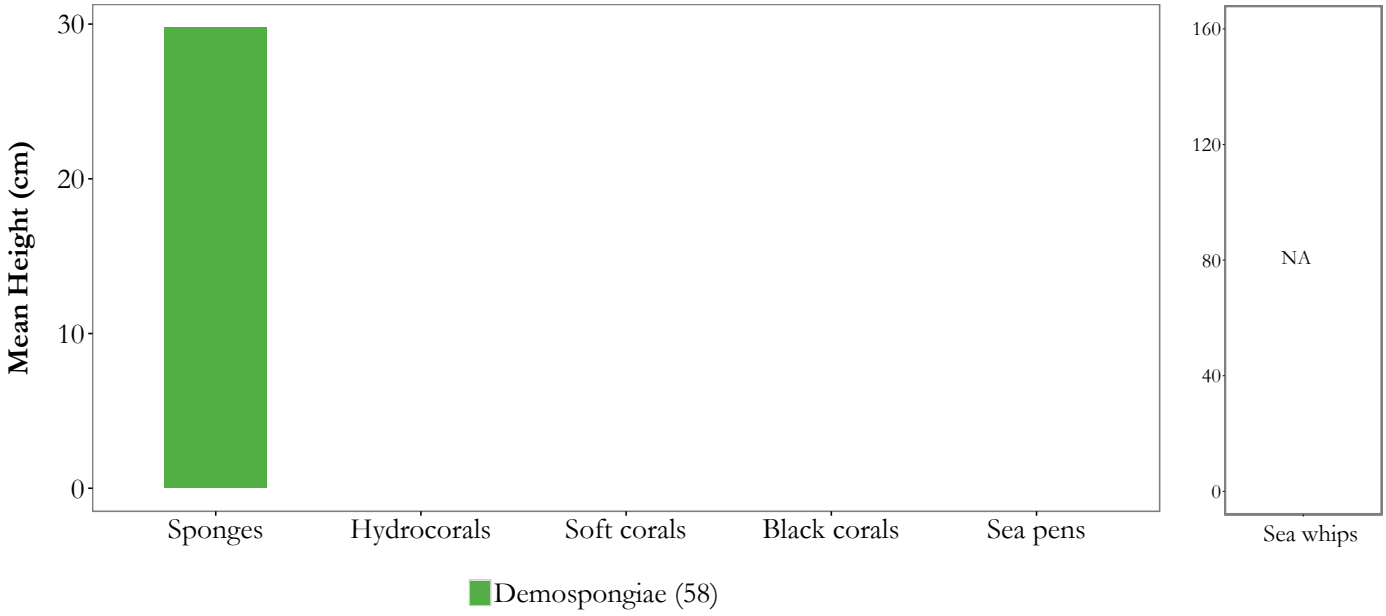


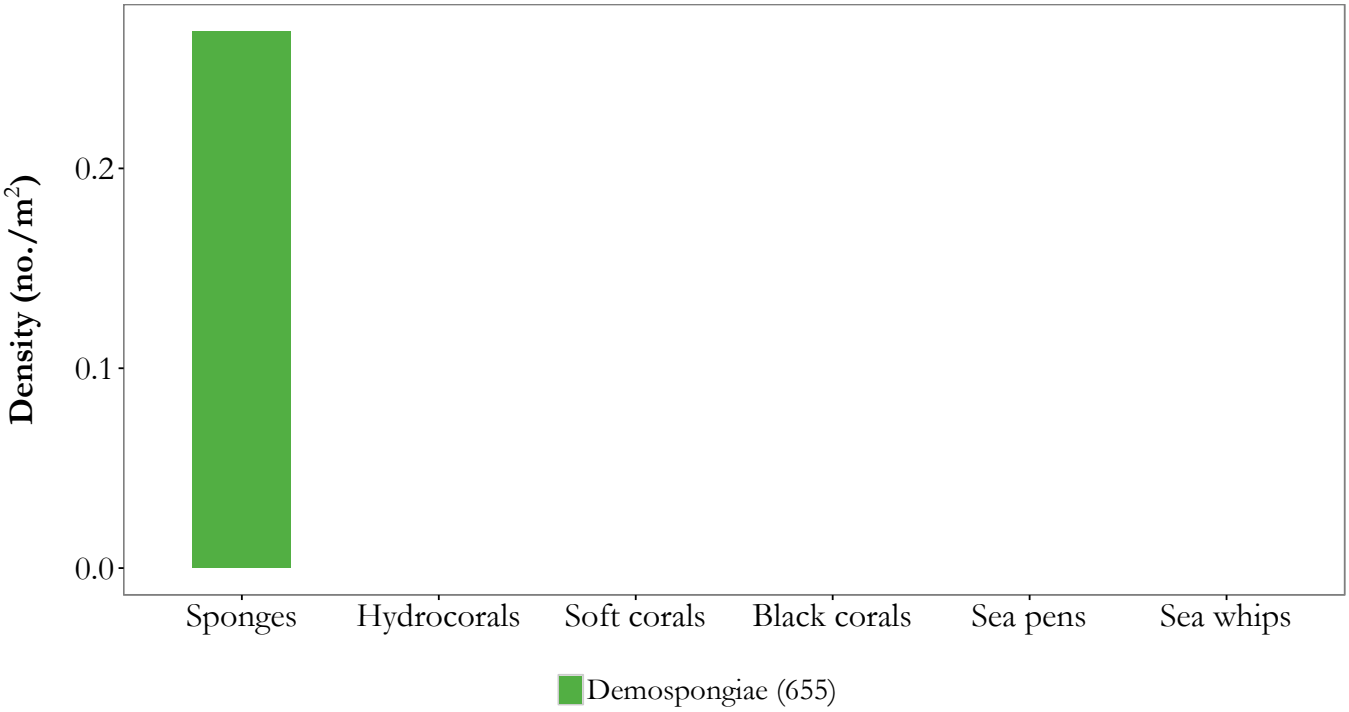
Images



AREA: Akutan Island to Samalga Pass Transect 2012-9

Vertical Habitat Summary





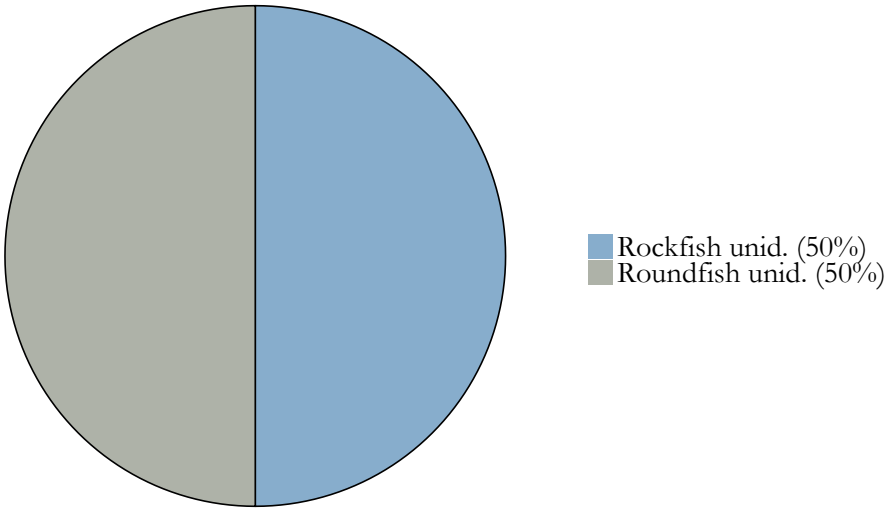
Summary - description of transect

Transect 2012-9: Primary and secondary substrates consisted largely of gravel and boulder. Only 16 fishes were identified for density of 0.01 individuals/m^2. Demospongiae dominated the invertebrate biota with a density of 0.27 individuals/m^2. Demosponge heights ranged from 20 to 56 cm with a mean of 30 cm.

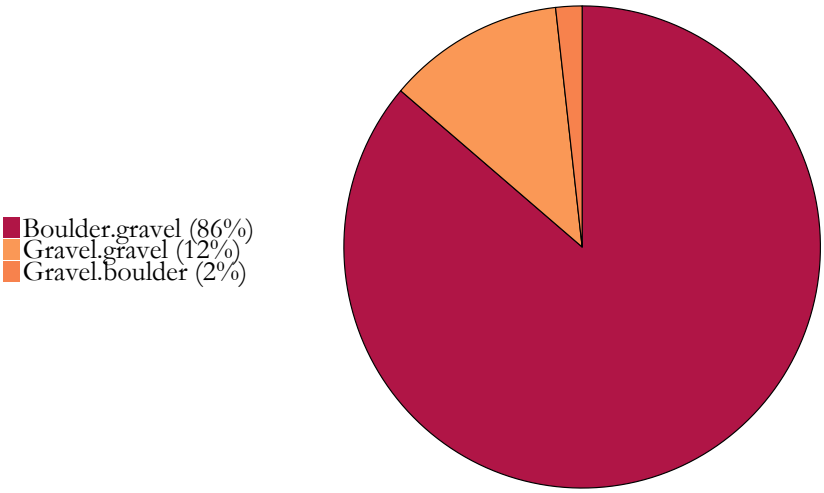
AREA: Akutan Island to Samalga Pass — Transect 2012-10

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.96	-166.06	3,009	50	6.3

Fish and Crab Composition (n = 4)



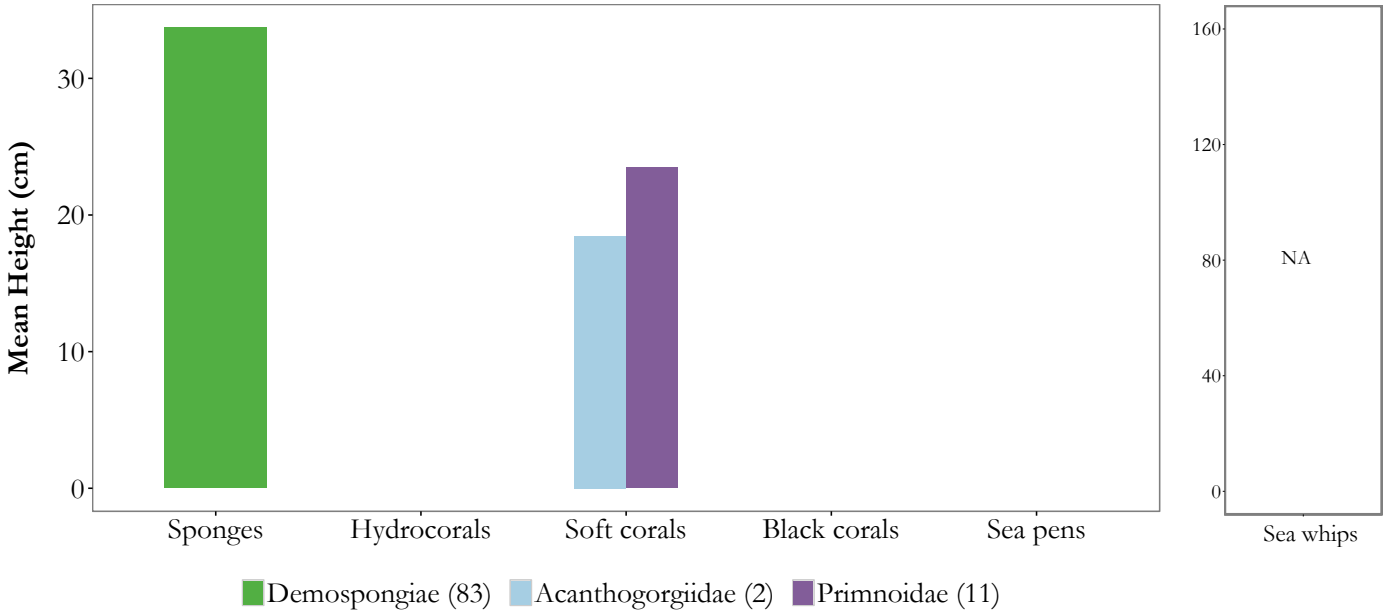
Substrate Composition

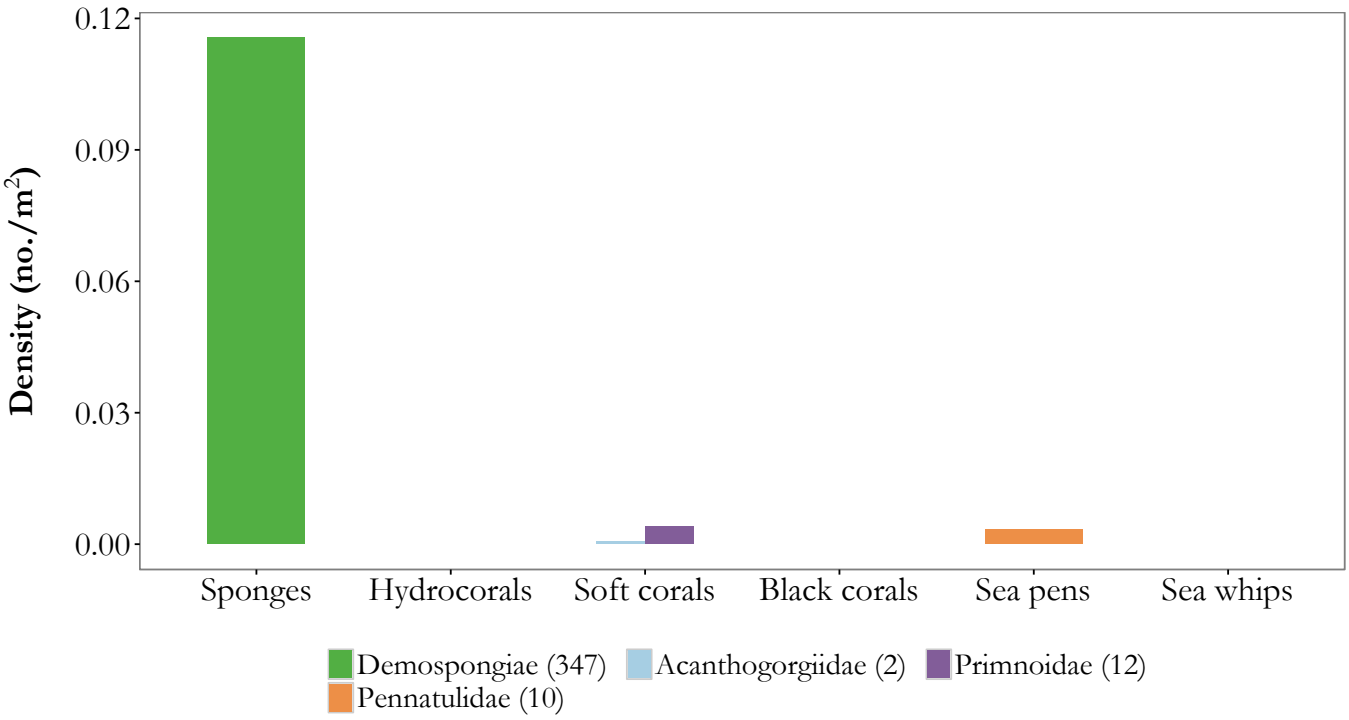


Images

AREA: Akutan Island to Samalga Pass Transect 2012-10

Vertical Habitat Summary





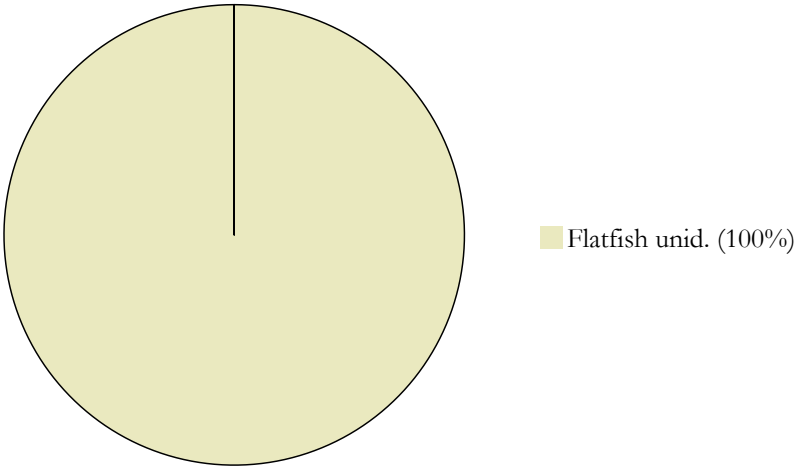
Summary - description of transect

Transect 2012-10: Primary and secondary substrates consisted almost entirely of boulder and gravel. Fish and crab density was very low, < 0.01 individuals/m^2, compared to the structure-forming invertebrate density of 0.12 individuals/m^2. Demospongiae was considerably more abundant than Primnoidae, Acanthogorgiidae, and Pennatulidae. Mean heights were 34 cm, 23 cm, and 18 cm, respectively. Pennatulidae were not measured.

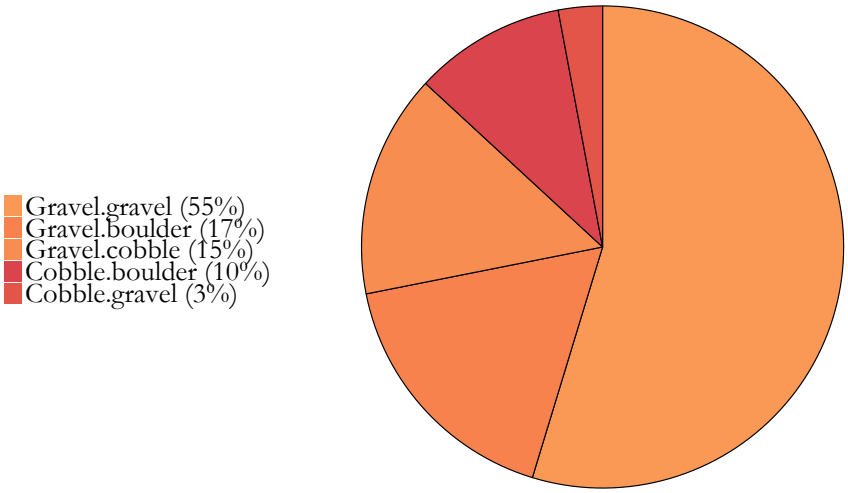
AREA: Akutan Island to Samalga Pass — Transect 2012-11

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/17/2012	53.92	-166.12	1,949	64	6.6

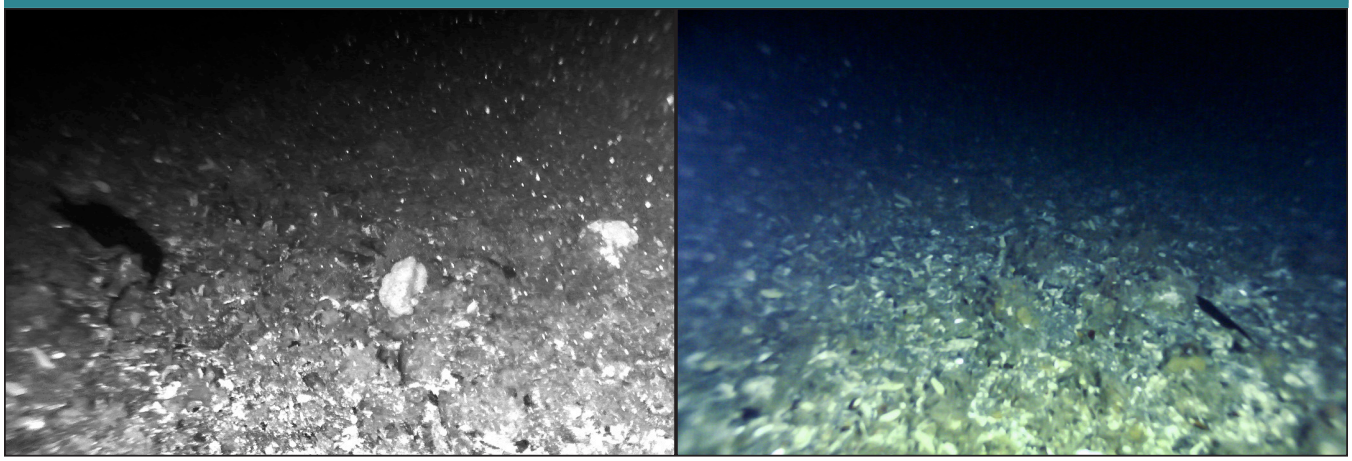
Fish and Crab Composition (n = 1)



Substrate Composition

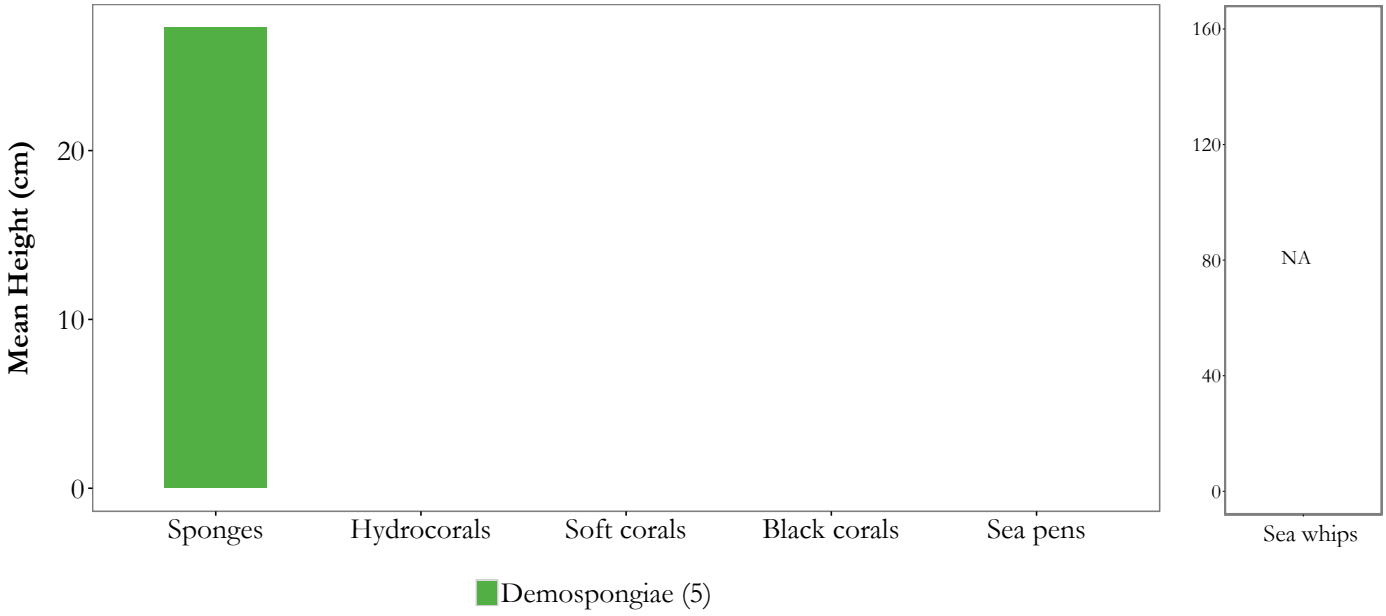


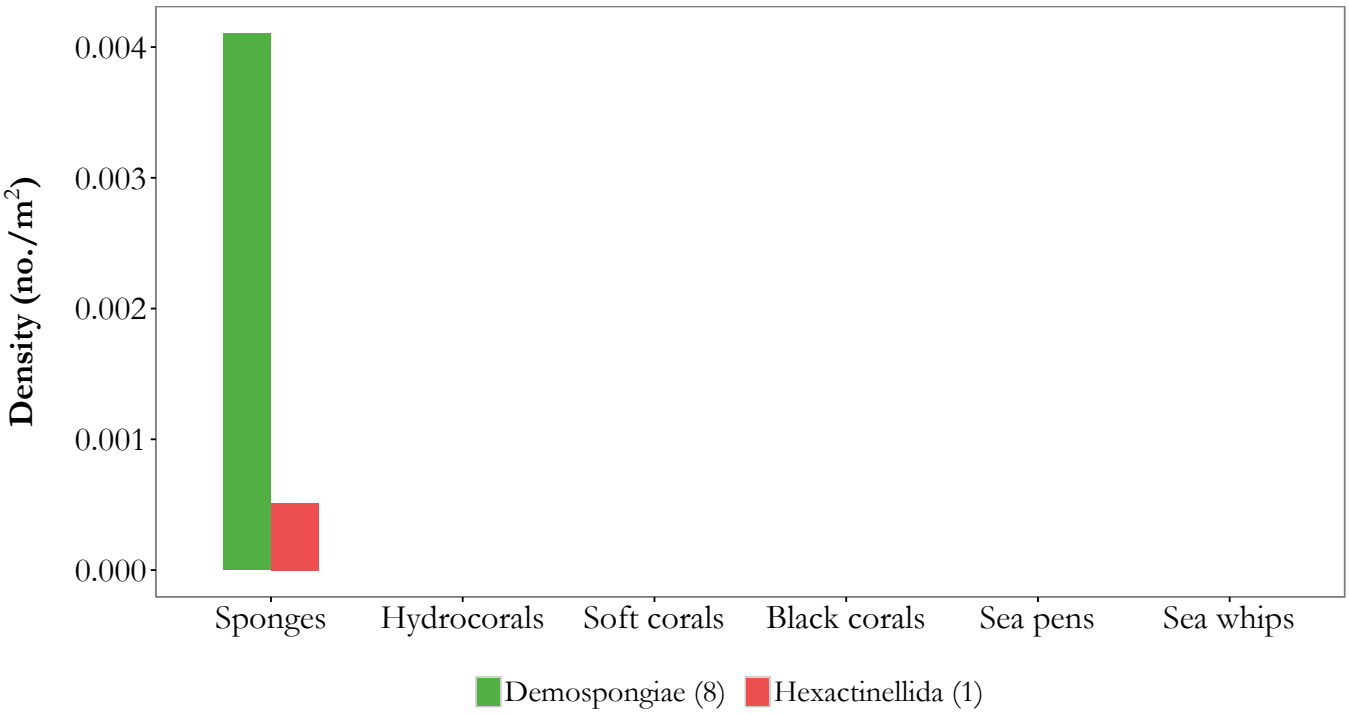
Images



AREA: Akutan Island to Samalga Pass Transect 2012-11

Vertical Habitat Summary





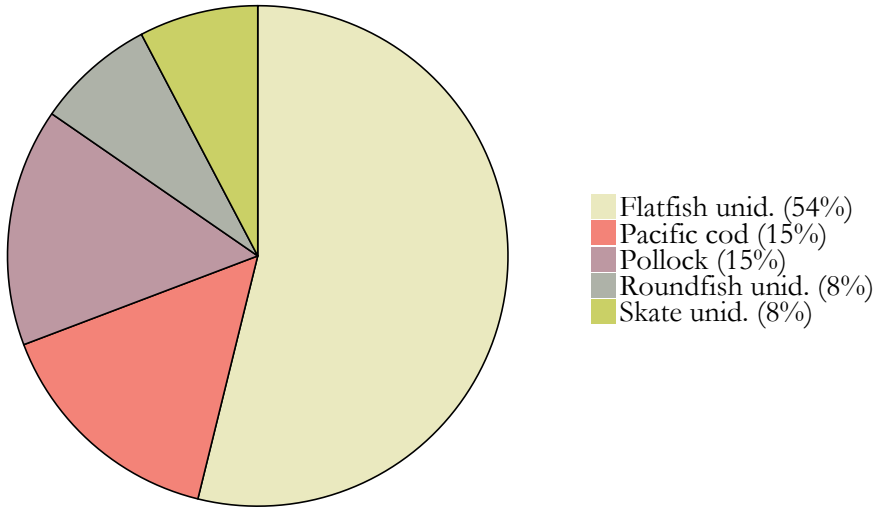
Summary - description of transect

Transect 2012-11: Primary and secondary substrates consisted of gravel, boulder, and cobble. Fish and sponge densities were both < 0.01 individuals/m^2. Only one fish and nine sponges were observed. Demospongiae mean height was 27 cm.

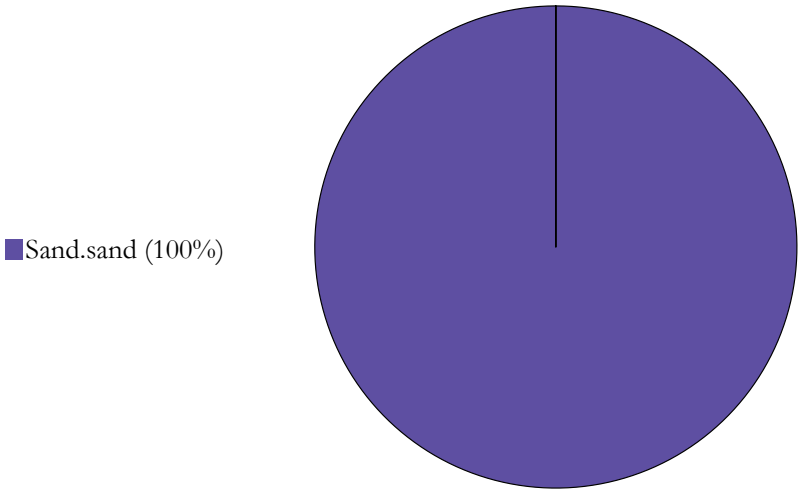
AREA: Akutan Island to Samalga Pass — Transect 2012-12

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/18/2012	53.45	-168.46	2,842	87	5.8

Fish and Crab Composition (n = 13)



Substrate Composition



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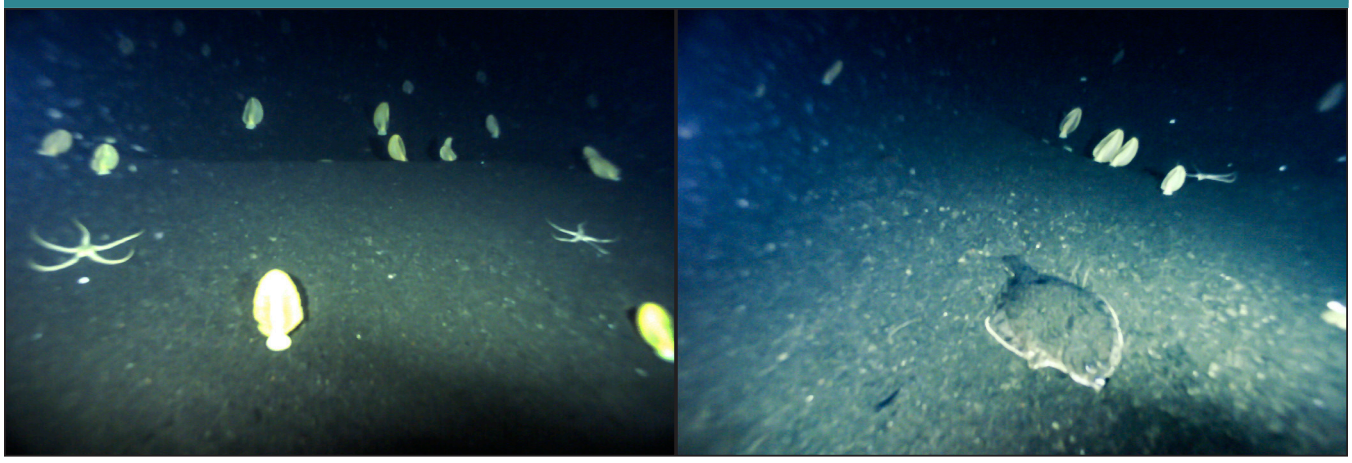
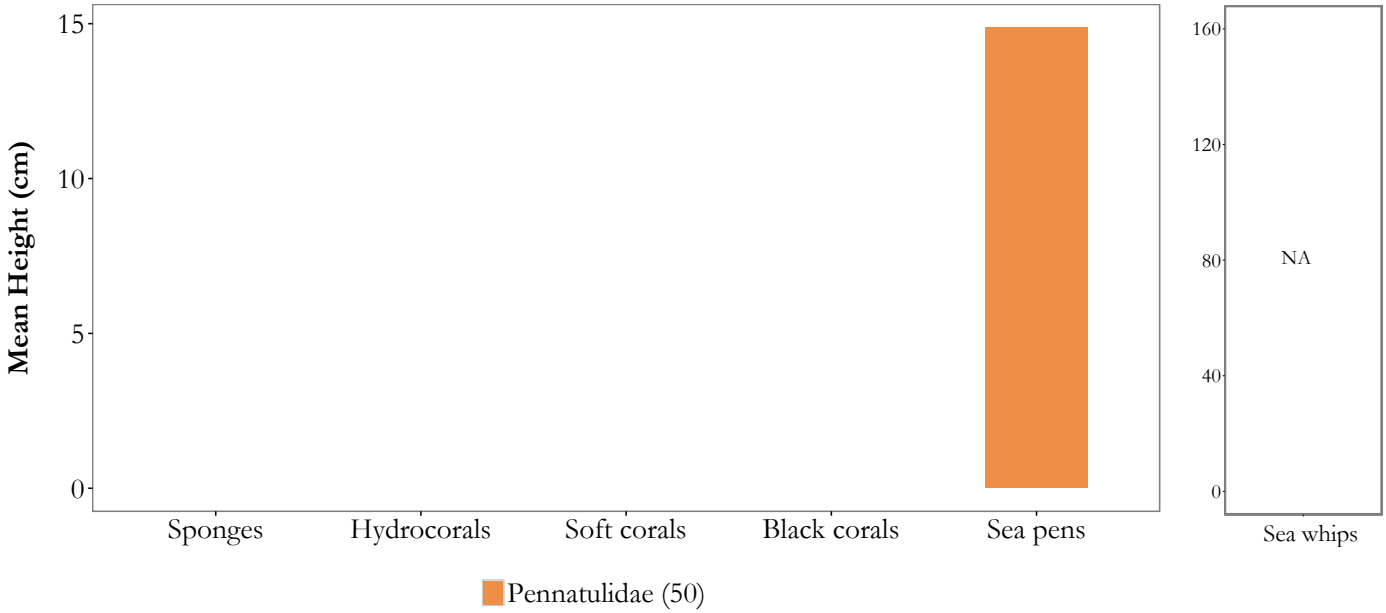
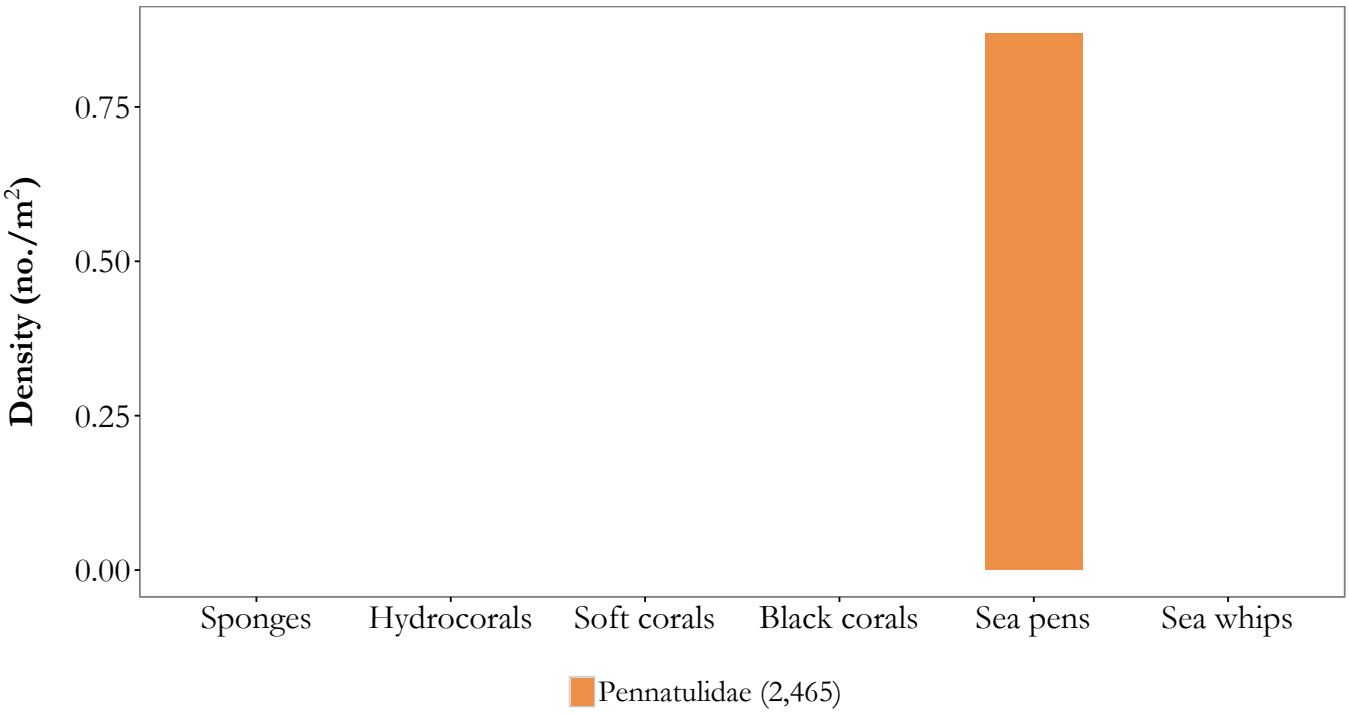


AREA: Akutan Island to Samalga Pass Transect 2012-12

Vertical Habitat Summary





Summary - description of transect

Transect 2012-12: Primary and secondary substrates consisted entirely of sand. Fish density was < 0.01 individuals/m^2, with flatfishes, Pacific cod, and walleye pollock accounting for 84% of the individuals identified. Structure-forming invertebrate habitat was comprised entirely of Pennatulidae or a density of 0.87 individuals/m^2. Mean height for 50 measured individuals was 15 cm. No other corals, sponges, hydrocorals, or sea pens were identified.

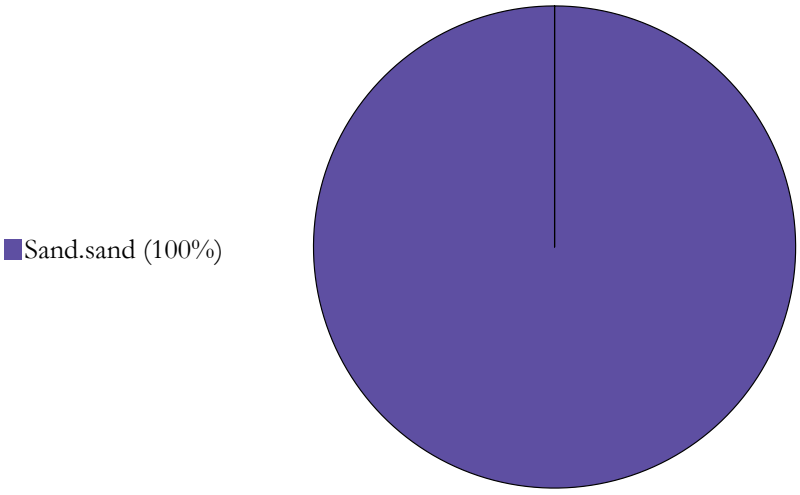
AREA: Akutan Island to Samalga Pass — Transect 2012-13

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/18/2012	53.47	-168.61	780	500	3.7

Fish and Crab Composition

NA

Substrate Composition



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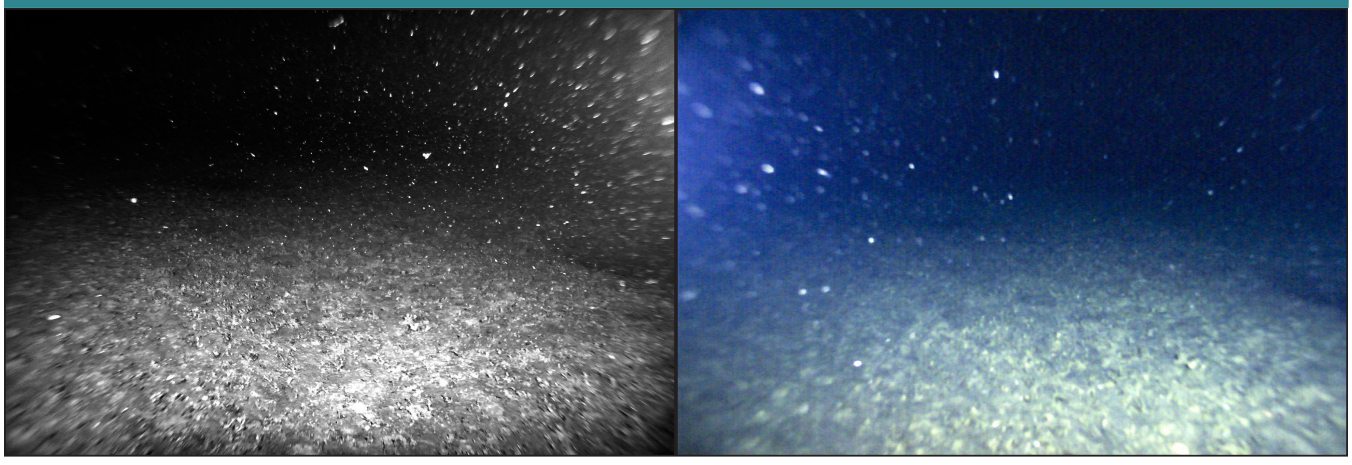
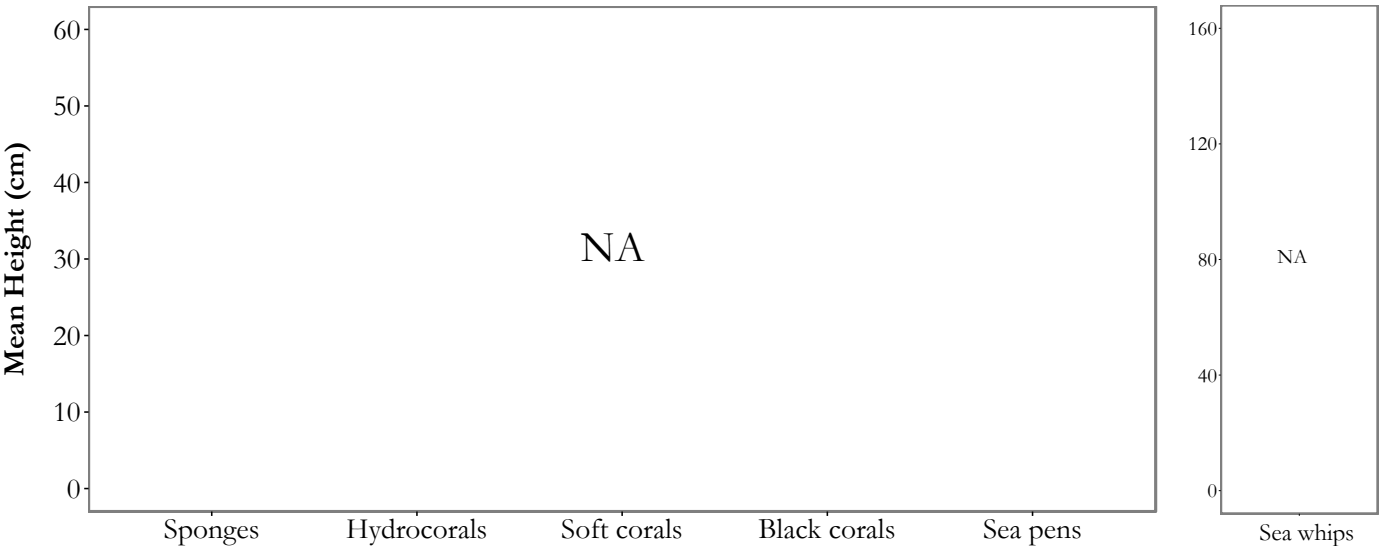
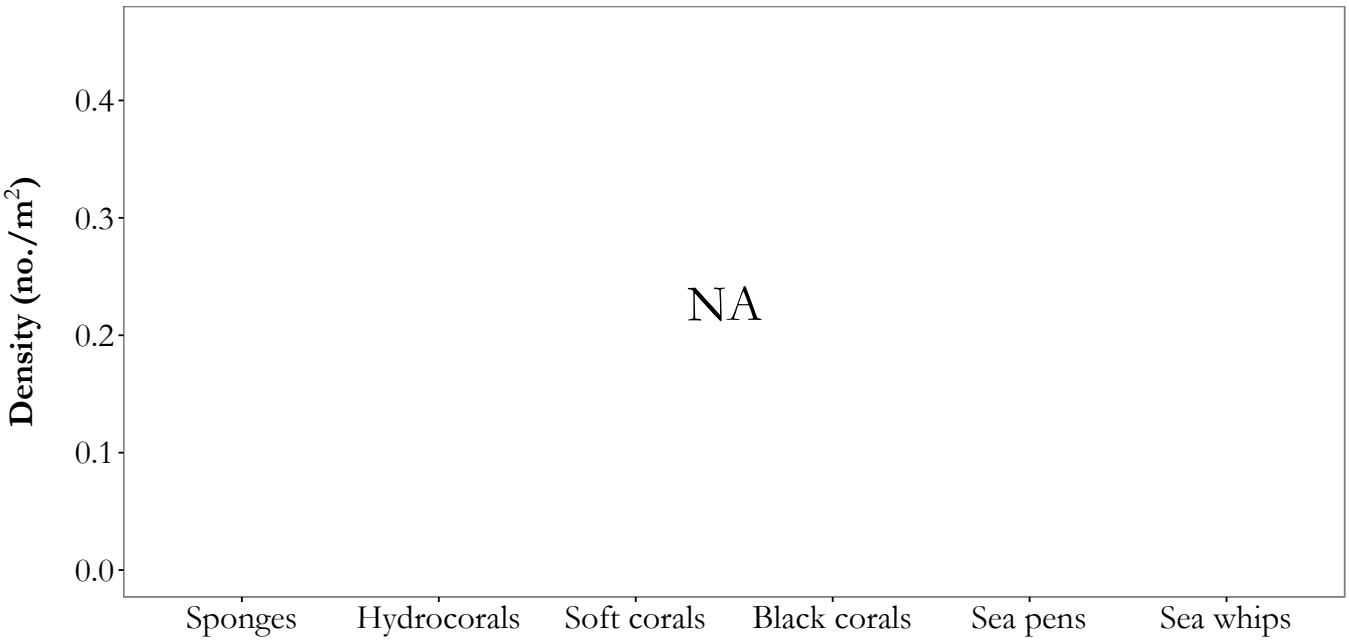


AREA: Akutan Island to Samalga Pass Transect 2012-13

Vertical Habitat Summary





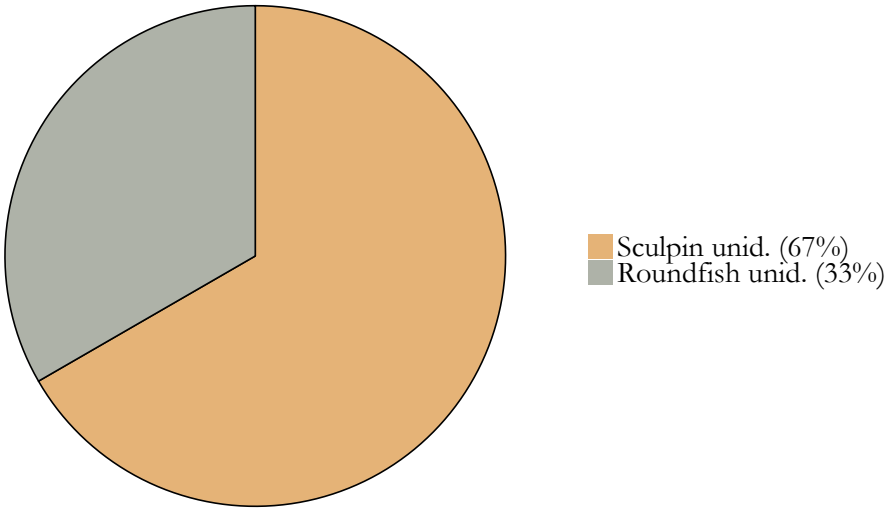
Summary - description of transect

Transect 2012-13: Primary and secondary substrates consisted entirely of sand. No fishes, crabs, sponges, corals, sea whips, sea pens, or hydrocorals were observed.

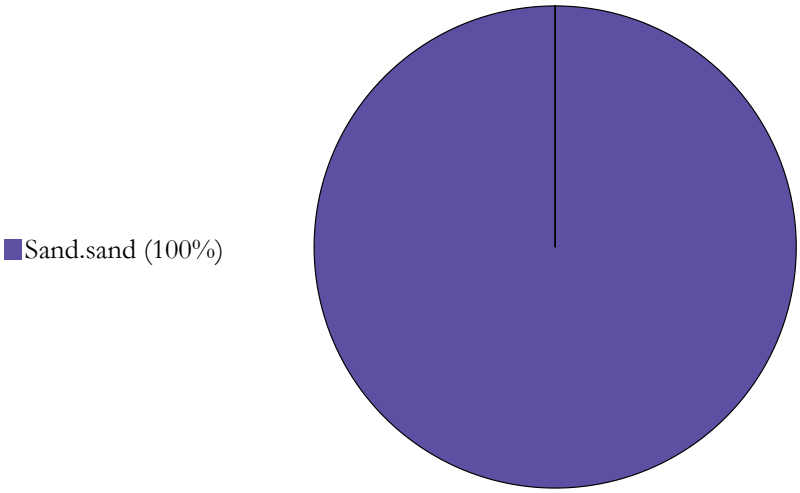
AREA: Akutan Island to Samalga Pass — Transect 2012-14

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/18/2012	53.37	-168.60	2,054	93	5.8

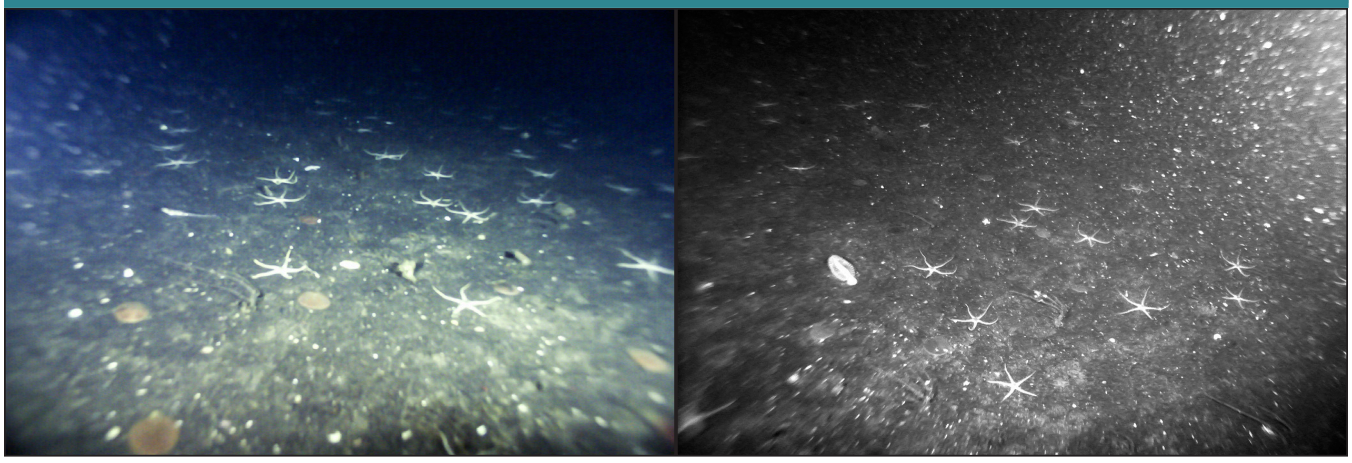
Fish and Crab Composition (n = 3)



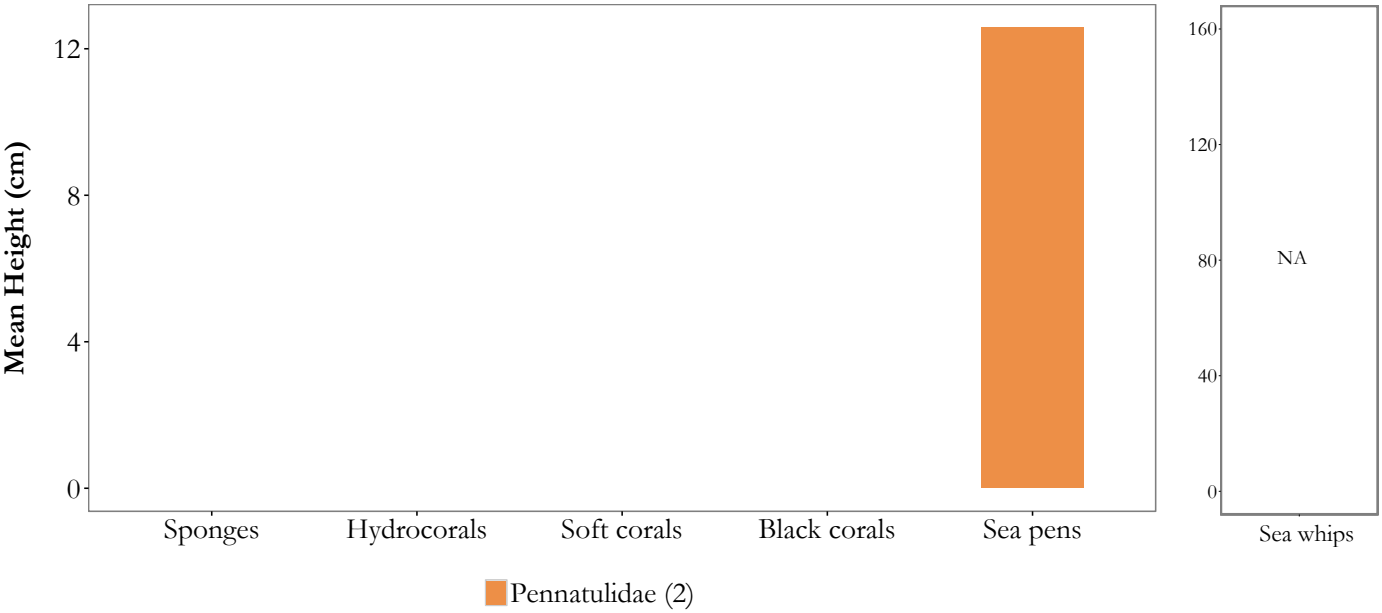
Substrate Composition

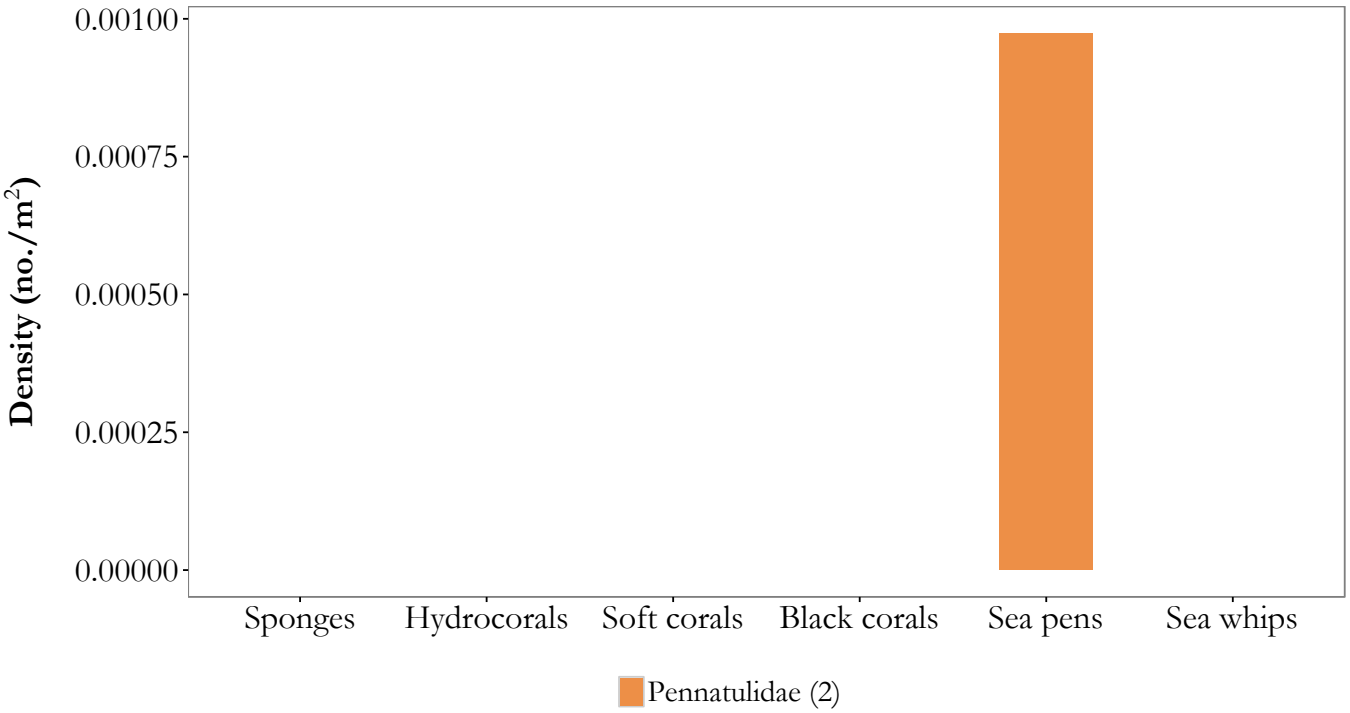


Images



Vertical Habitat Summary





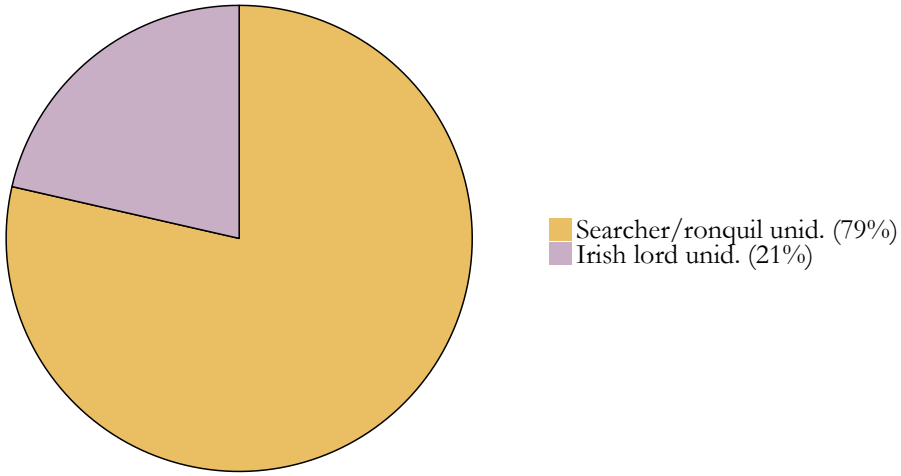
Summary - description of transect

Transect 2012-14: Primary and secondary substrates consisted entirely of sand. Only three fishes were observed; two sculpins and on roundfish unidentified. Pennatulidae provided the only vertical habitat (< 0.01 individuals/m^2).

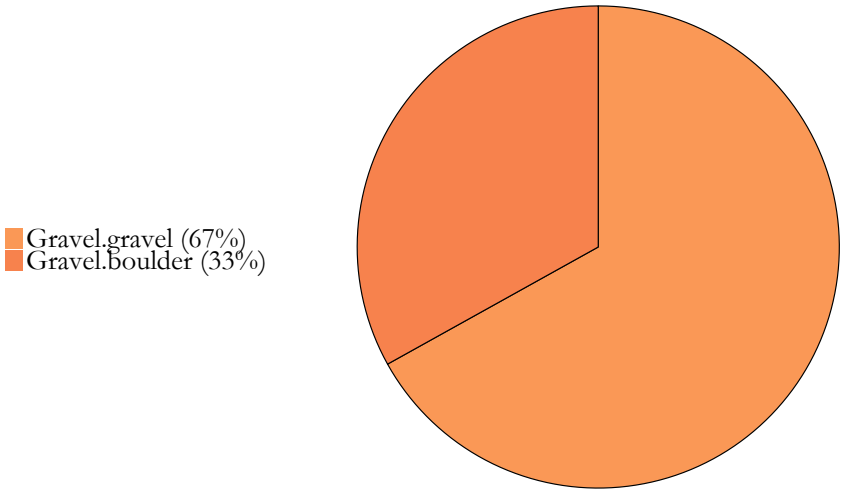
AREA: Akutan Island to Samalga Pass — Transect 2012-15

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/18/2012	53.35	-168.62	1,989	93	5.6

Fish and Crab Composition (n = 14)



Substrate Composition



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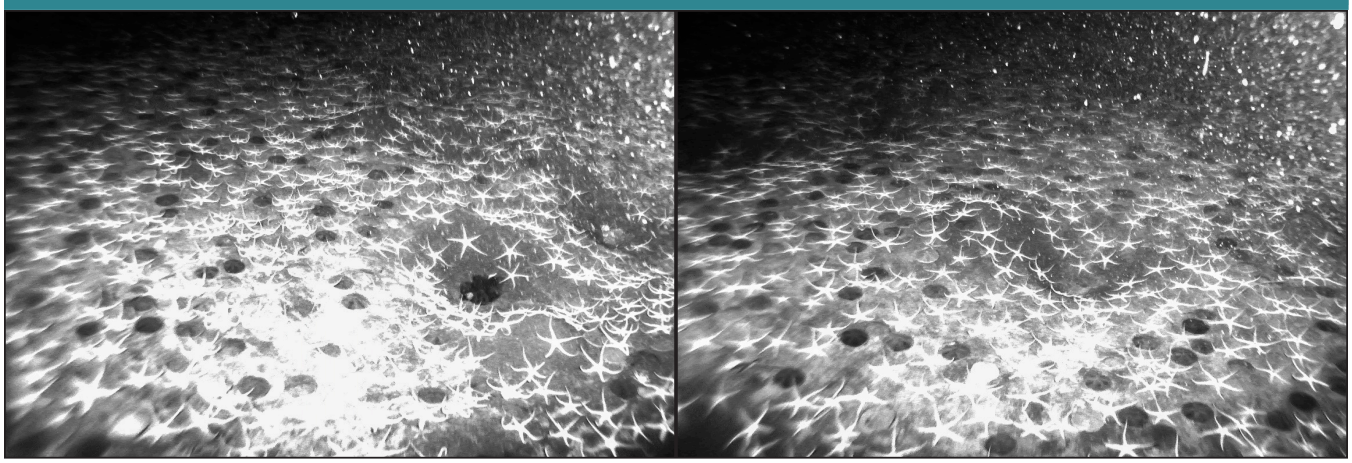
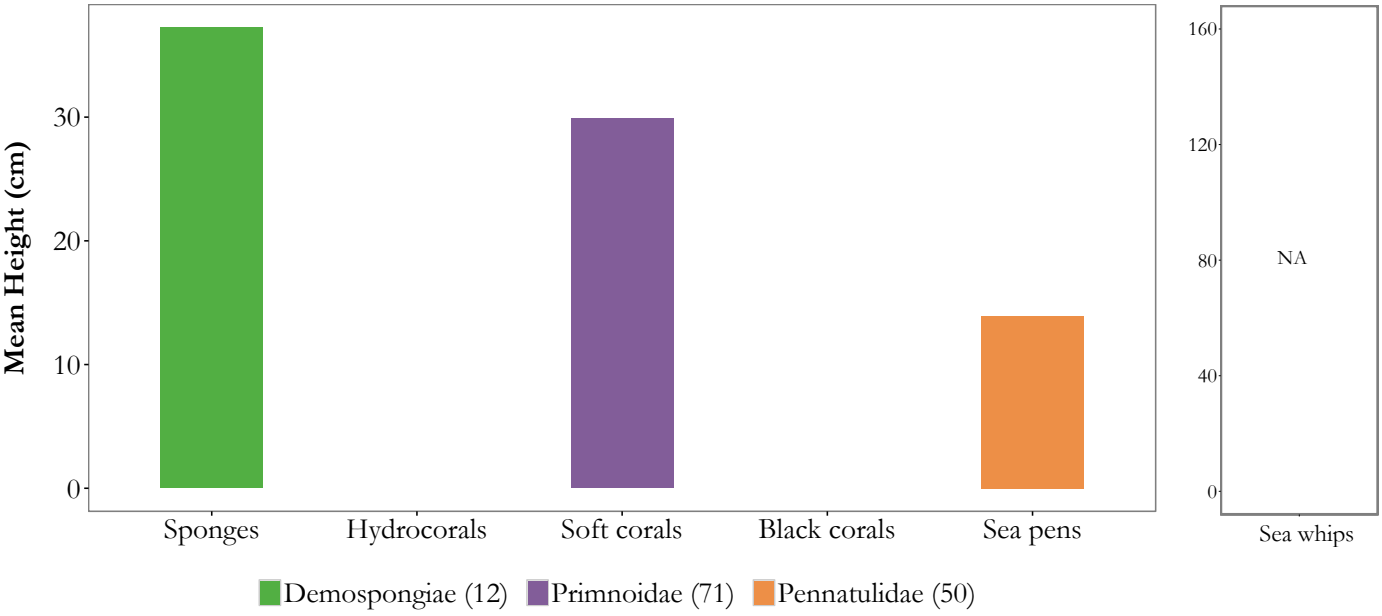
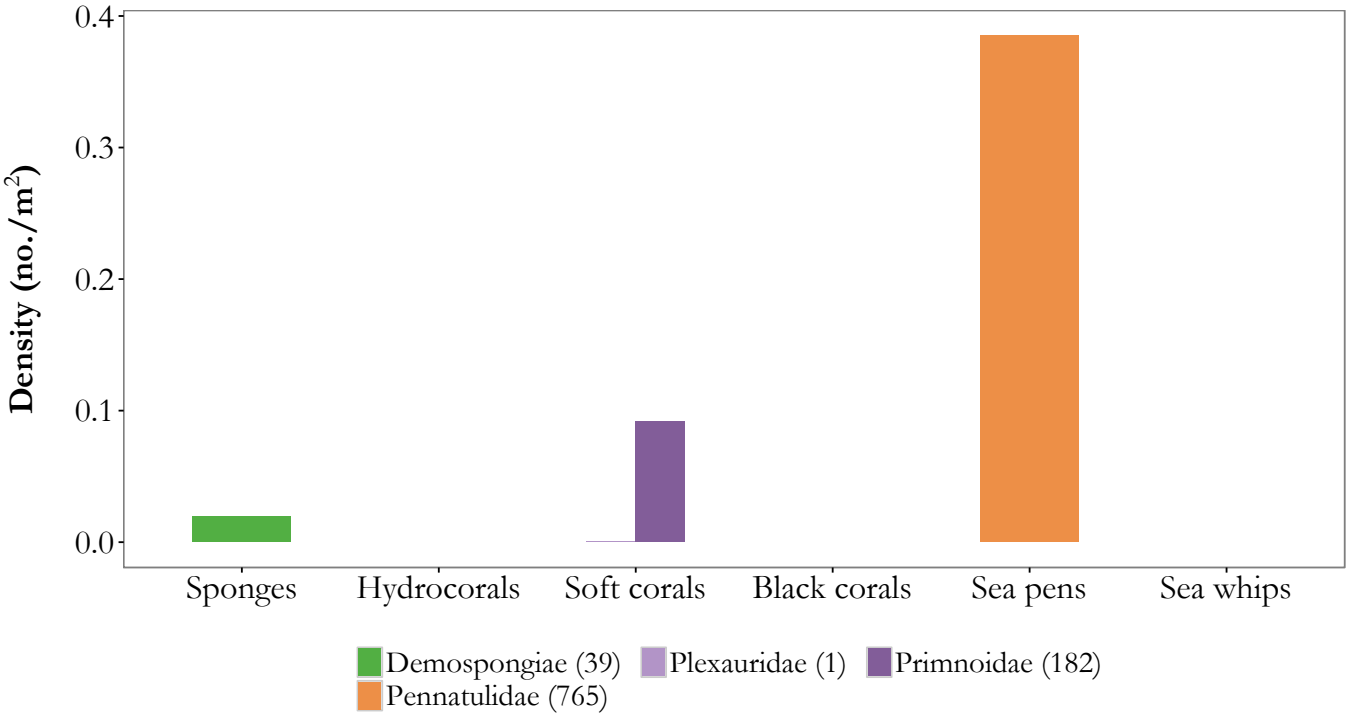


Vertical Habitat Summary



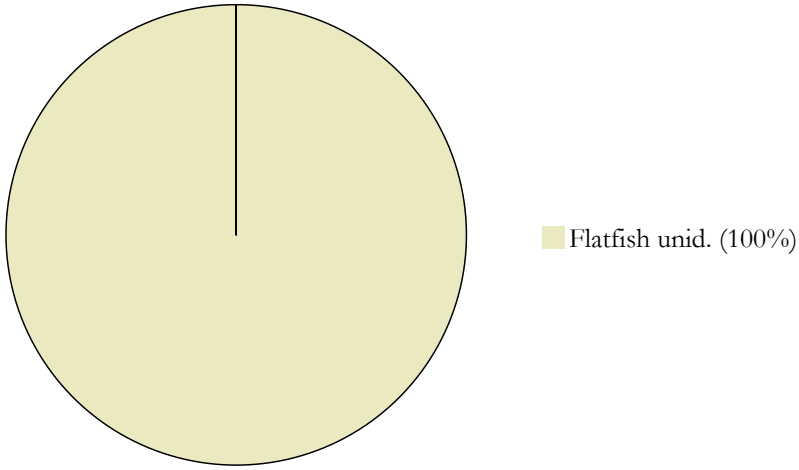


Summary - description of transect

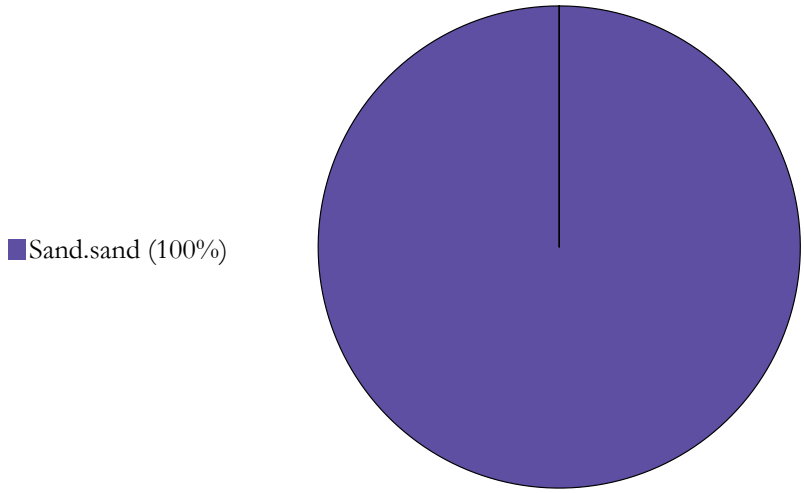
Transect 2012-15: Primary and secondary substrates consisted almost entirely of gravel, with a 33% gravel/boulder mix. Two fish taxa were identified: Irish lords and searchers/ronquils for a combined density of 0.01 individuals/m^2. Structure-forming invertebrate density was 0.50 individuals/m^2 of which 78% (0.38 individuals/m^2) was Pennatulidae. Primnoidae, Demospongiae, and Plexauridae comprised the remaining 22% of the density. Mean height were calculated for Demospongiae (37 cm), Primnoidae (30 cm), Pennatulidae (14 cm).

AREA: Akutan Island to Samalga Pass			Transect	2012-16
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/18/2012	53.32	-168.60	1,872	78	5.9

Fish and Crab Composition (n = 1)



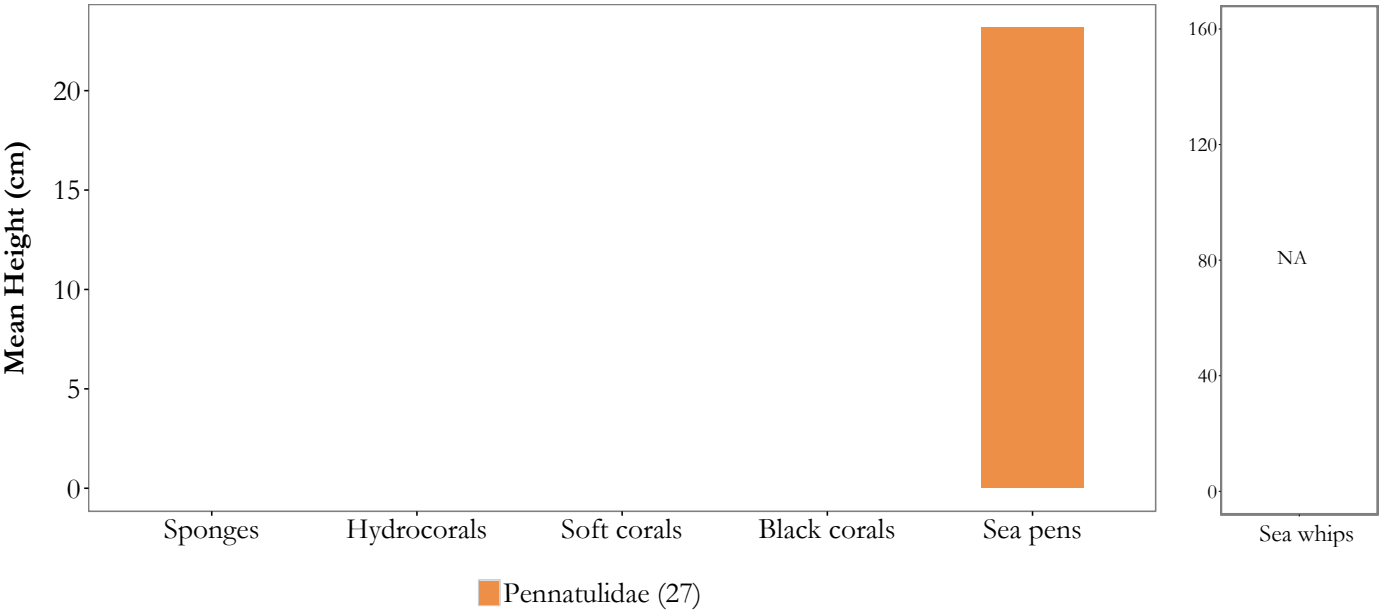
Substrate Composition

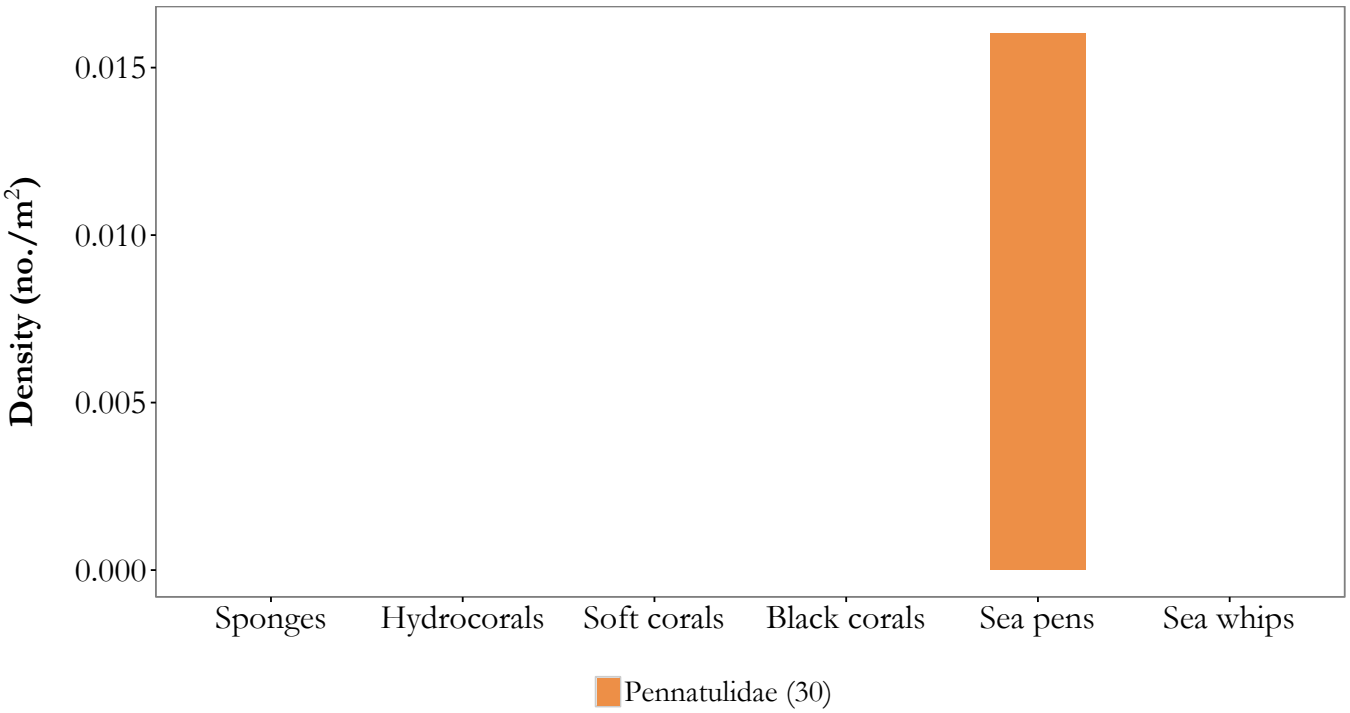


Images

AREA: Akutan Island to Samalga Pass Transect 2012-16

Vertical Habitat Summary





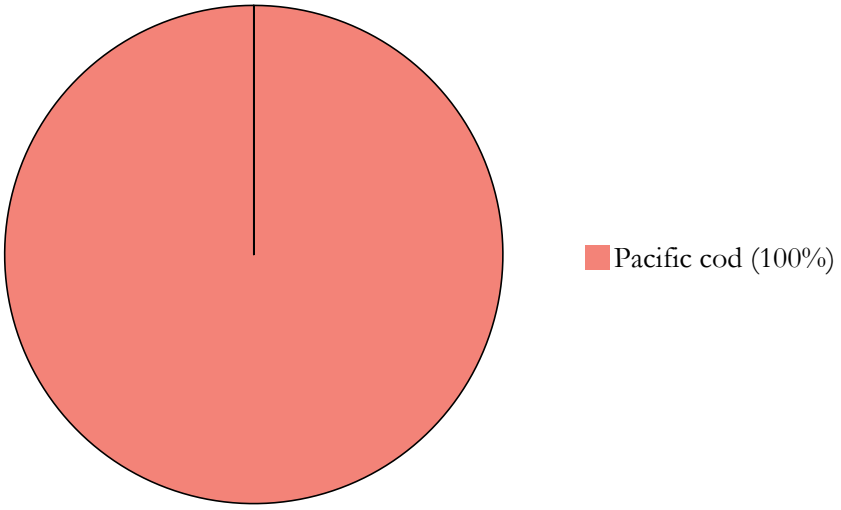
Summary - description of transect

Transect 2012-16: Primary and secondary substrates consisted entirely of sand. Only one flatfish was observed. Thirty Pennatulidae were identified (0.20 individuals/m^2) with a mean height of 23 cm.

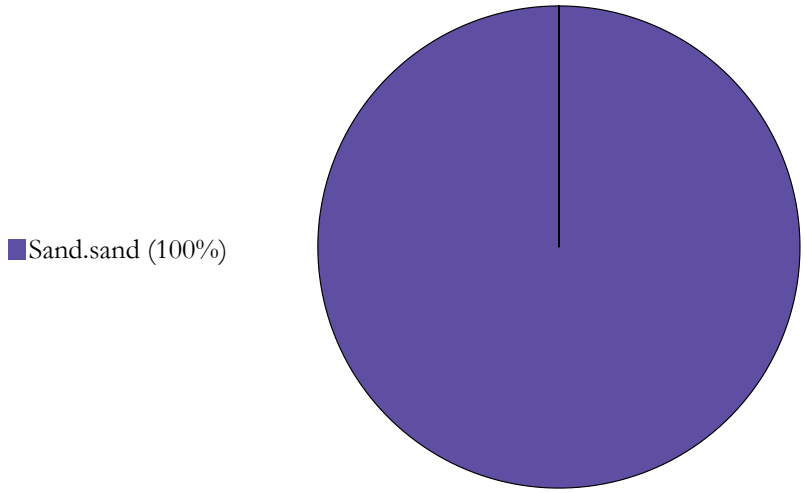
AREA: Akutan Island to Samalga Pass — Transect 2012-17

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/18/2012	53.31	-168.56	758	54	6.1

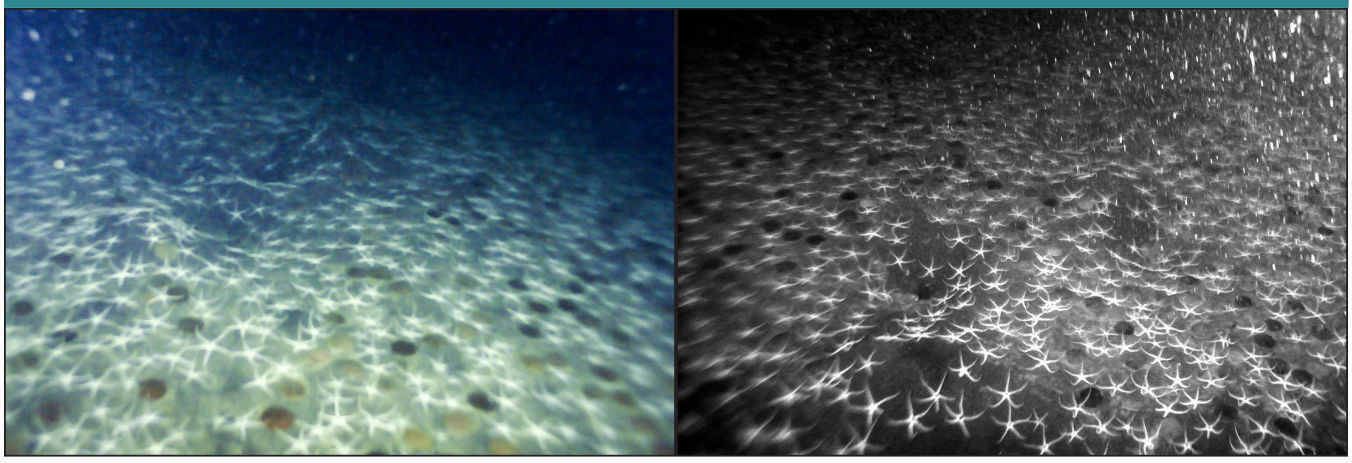
Fish and Crab Composition (n = 1)



Substrate Composition

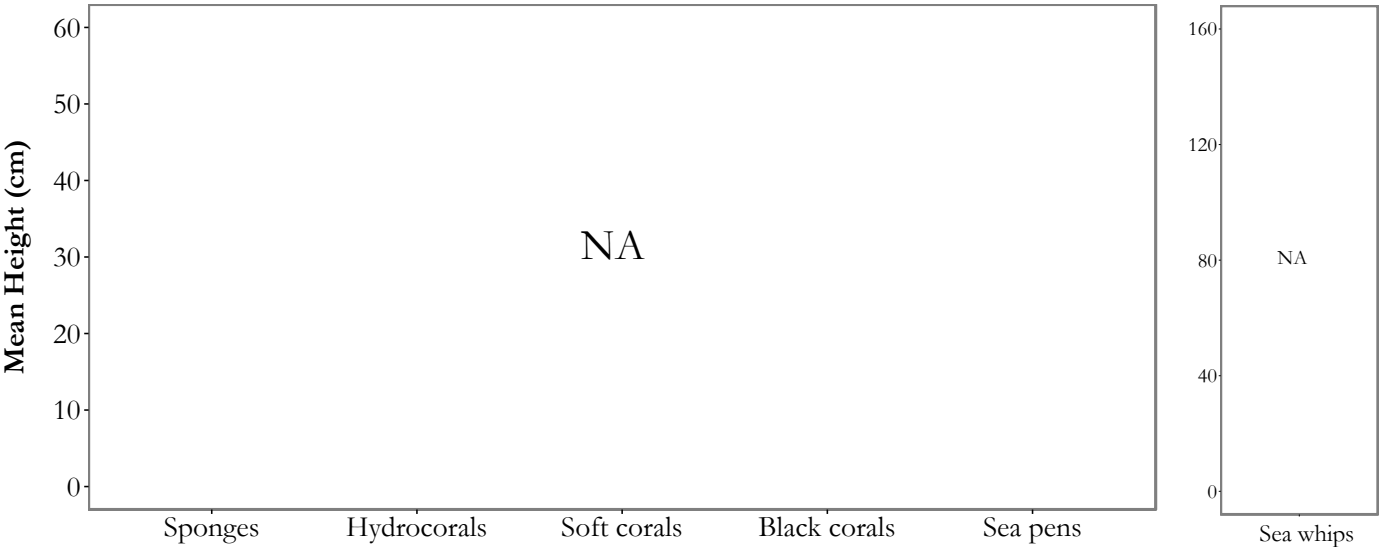


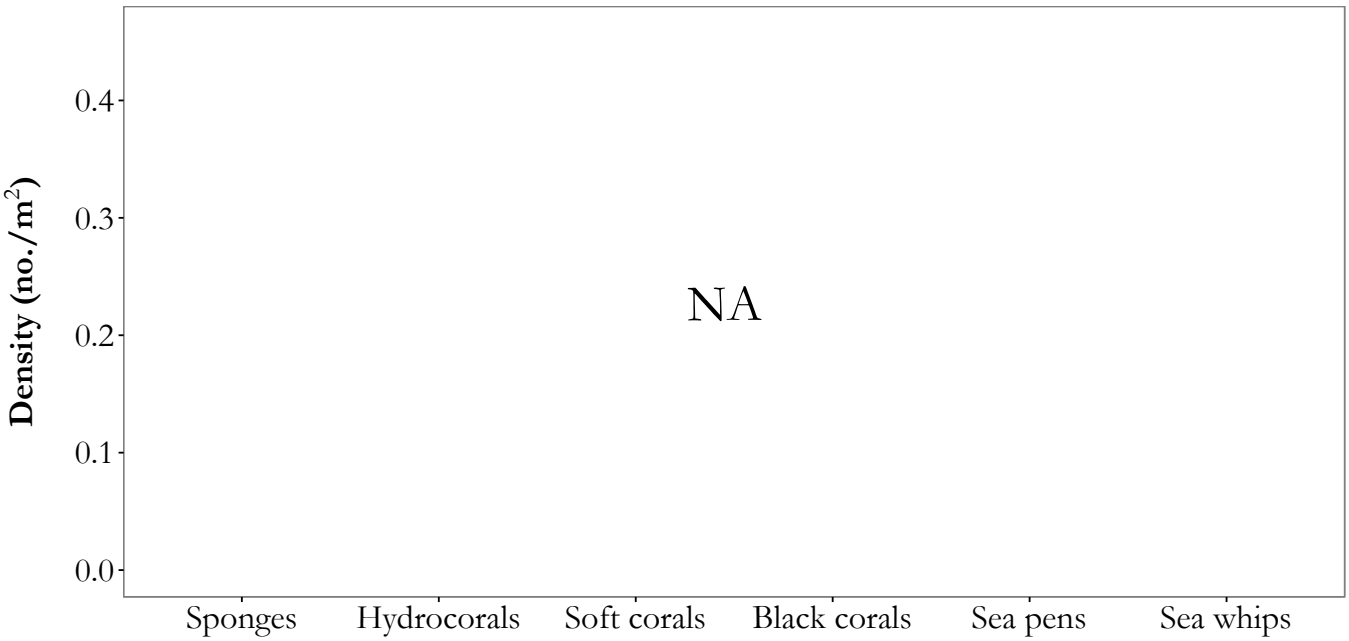
Images



AREA: Akutan Island to Samalga Pass Transect 2012-17

Vertical Habitat Summary



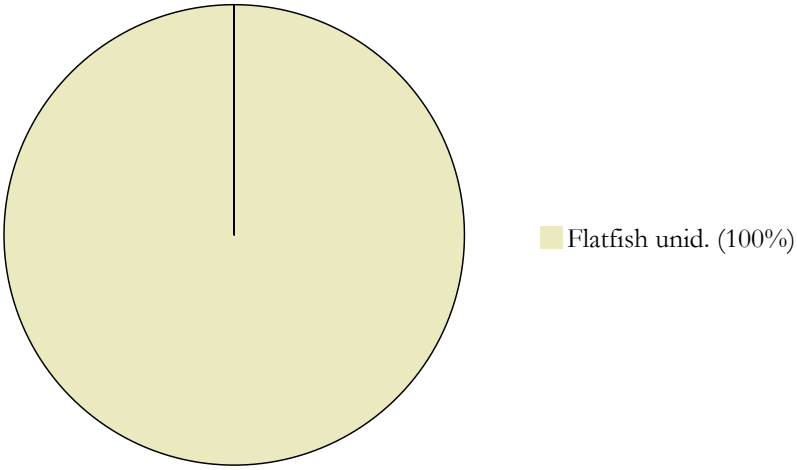


Summary - description of transect

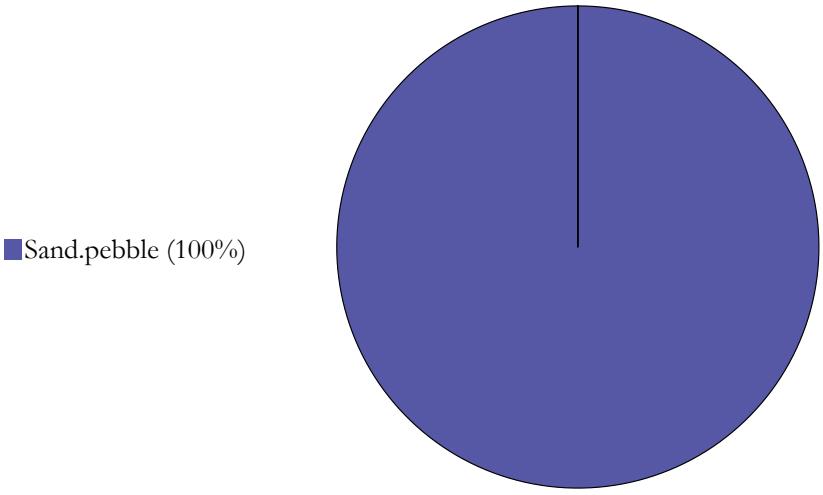
Transect 2012-17: Primary and secondary substrates consisted entirely of sand. Only one Pacific cod was identified. No corals, sponges, sea whip, sea pens, or hydrocorals were identified.

AREA: Akutan Island to Samalga Pass			Transect	2012-98
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	53.40	-167.74	1,922	70	6.6

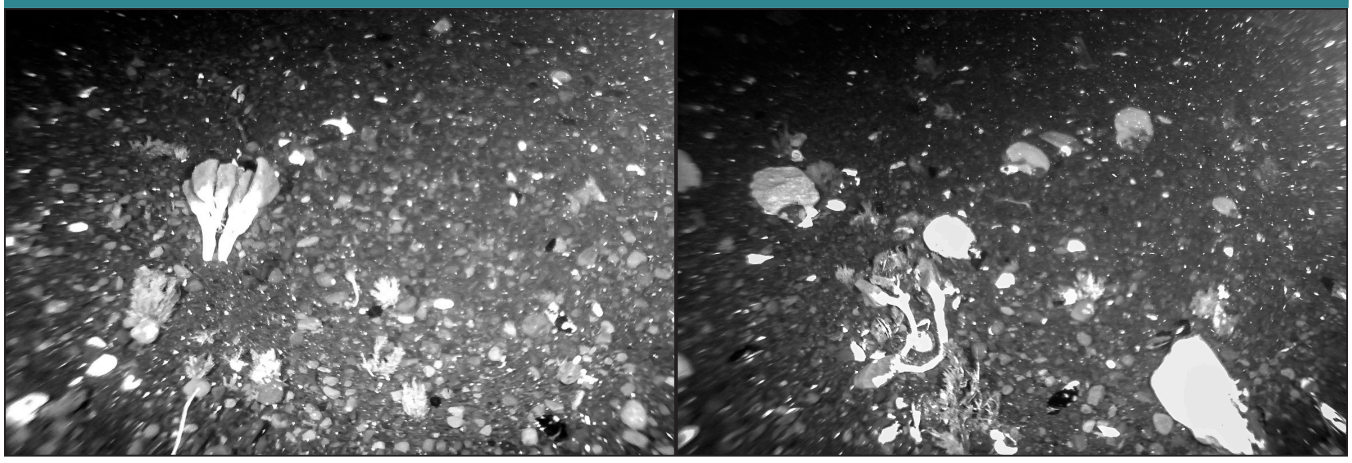
Fish and Crab Composition (n = 1)



Substrate Composition

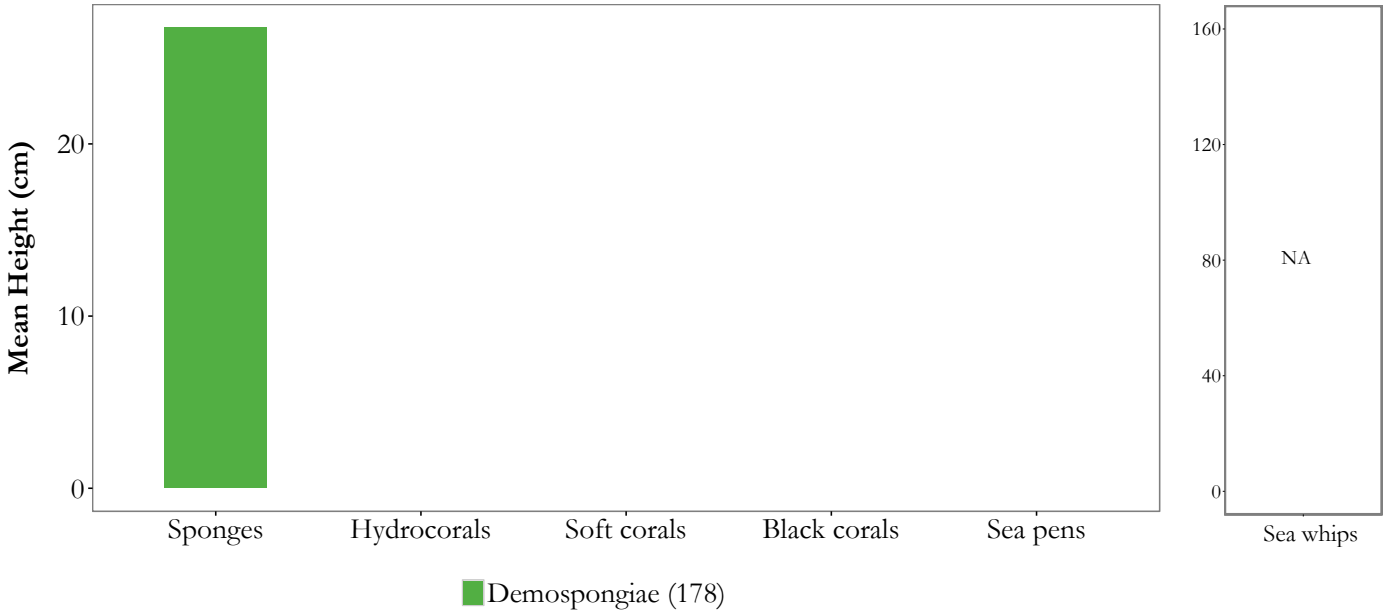


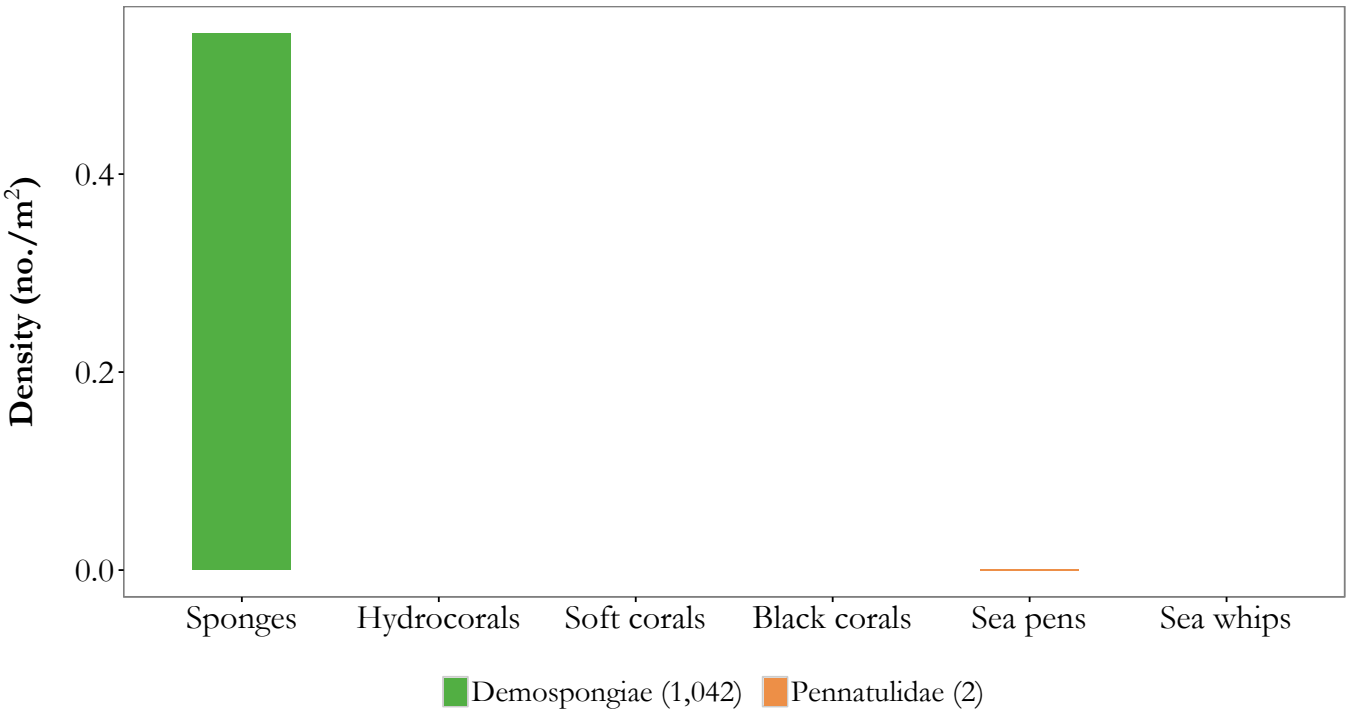
Images



AREA: Akutan Island to Samalga Pass Transect 2012-98

Vertical Habitat Summary





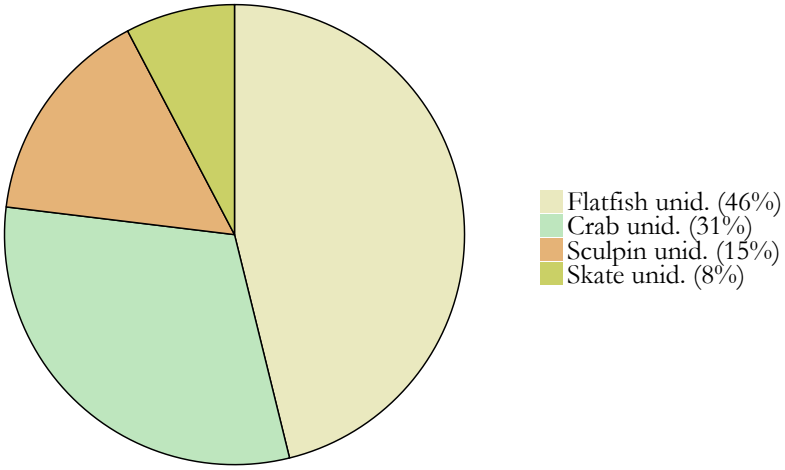
Summary - description of transect

Transect 2012-98: Primary and secondary substrates consisted of sand and pebble. Only one flatfish was counted for this transect. Demospongiae density (0.54 individuals/m²) accounted for > 99% of the structure-forming invertebrates. Mean height for 178 Demospongiae was 27 cm.

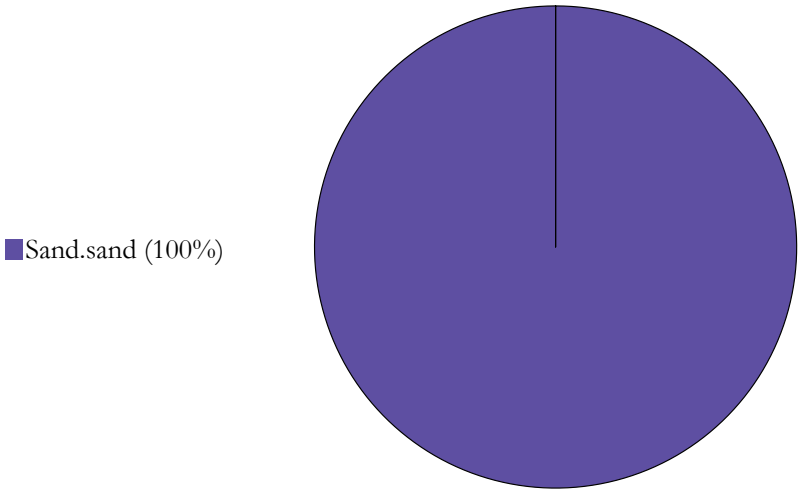
AREA: Akutan Island to Samalga Pass — Transect 2012-99

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	53.46	-167.64	1,395	120	6.0

Fish and Crab Composition (n = 13)



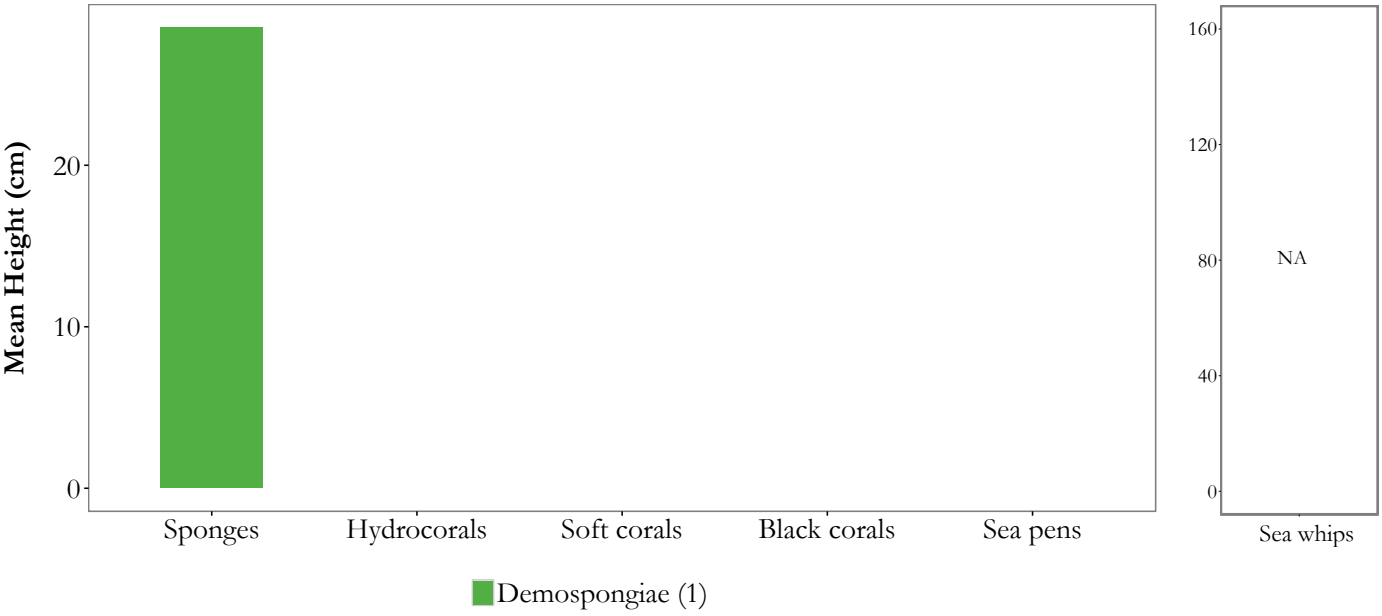
Substrate Composition

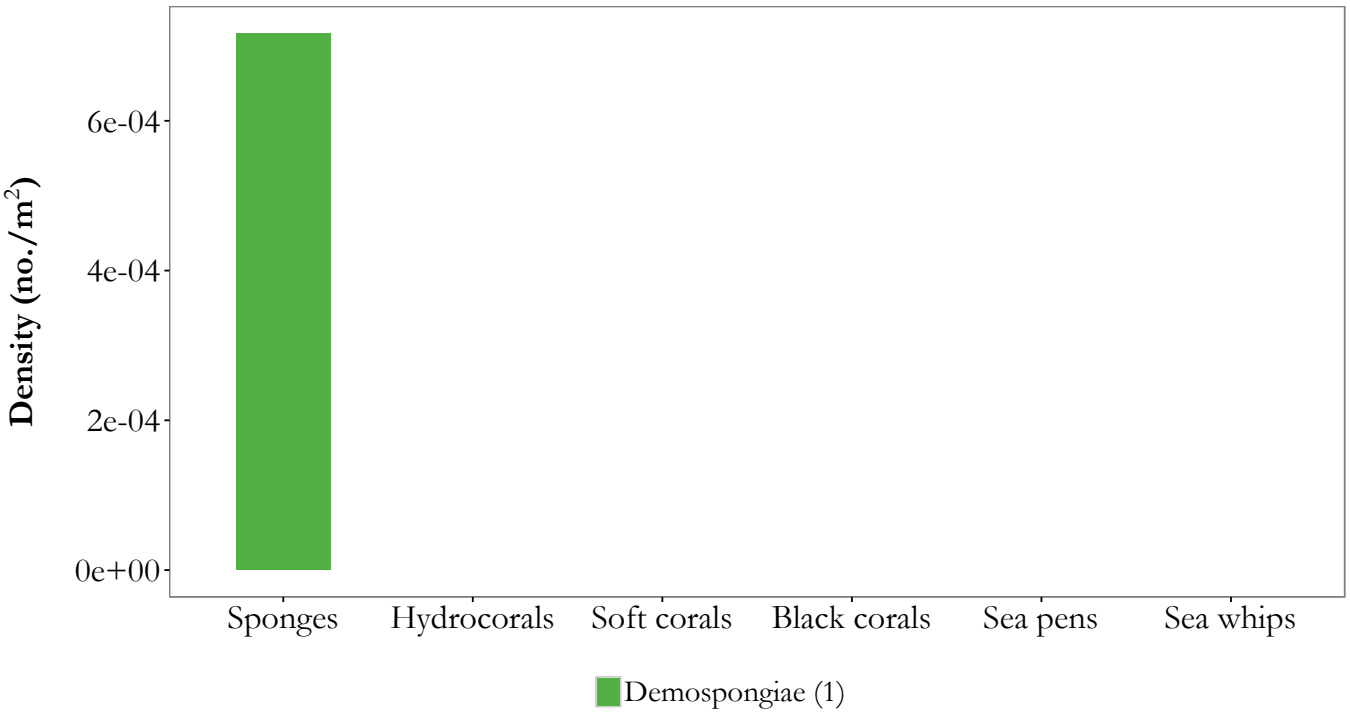


Images

AREA: Akutan Island to Samalga Pass Transect 2012-99

Vertical Habitat Summary





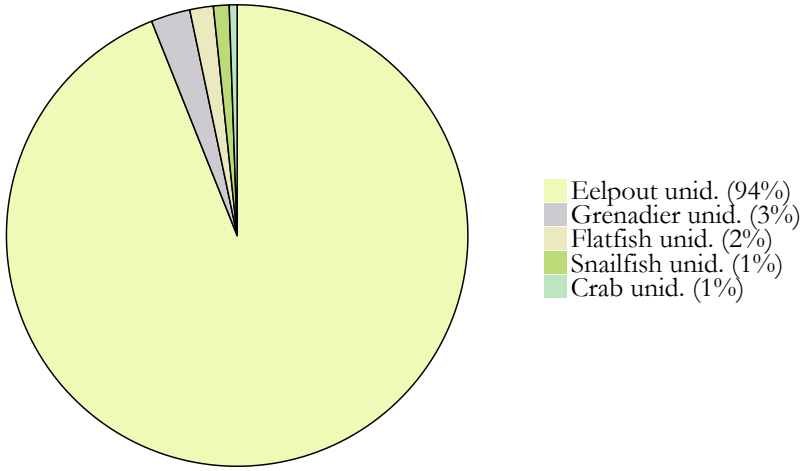
Summary - description of transect

Transect 2012-99: Primary and secondary substrates consisted entirely of sand. Fish and crab density was very low for this transect, 0.01 individuals/m^2. Flatfishes were the most abundant individuals identified. One Demospongiae was observed at 29 cm.

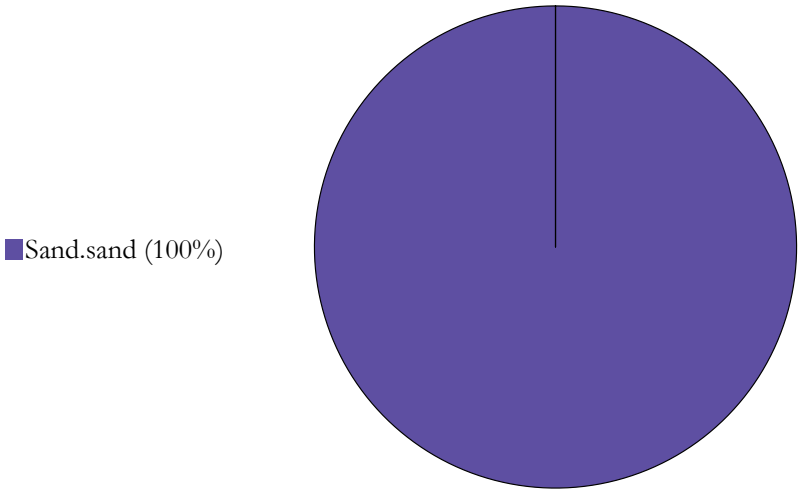
AREA: Akutan Island to Samalga Pass — Transect 2012-100

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	53.62	-168.05	618	690	3.3

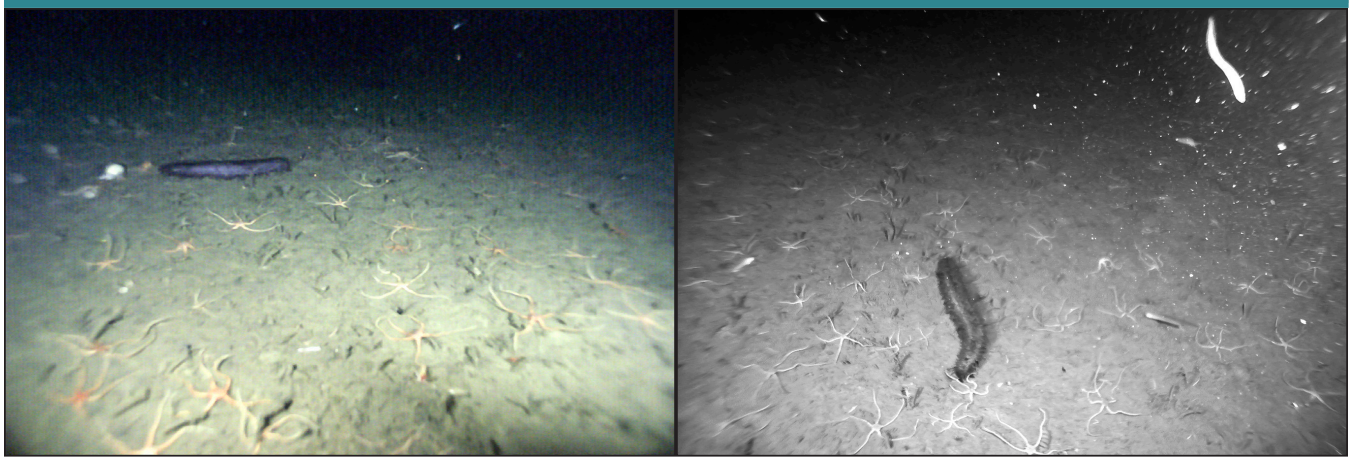
Fish and Crab Composition (n = 182)



Substrate Composition

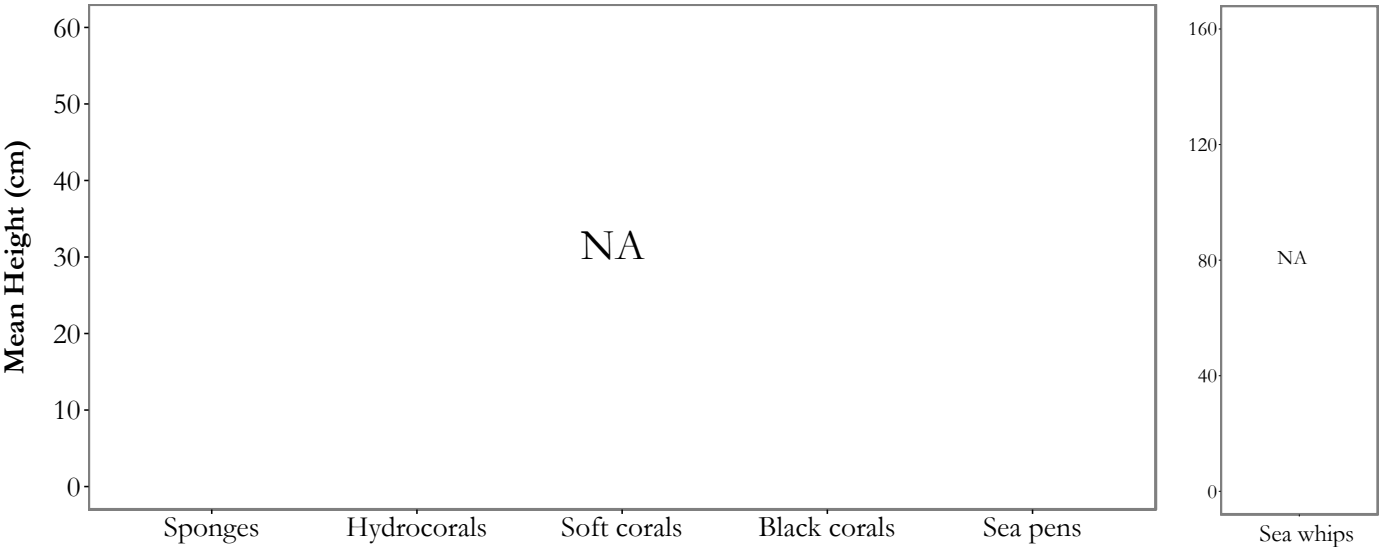


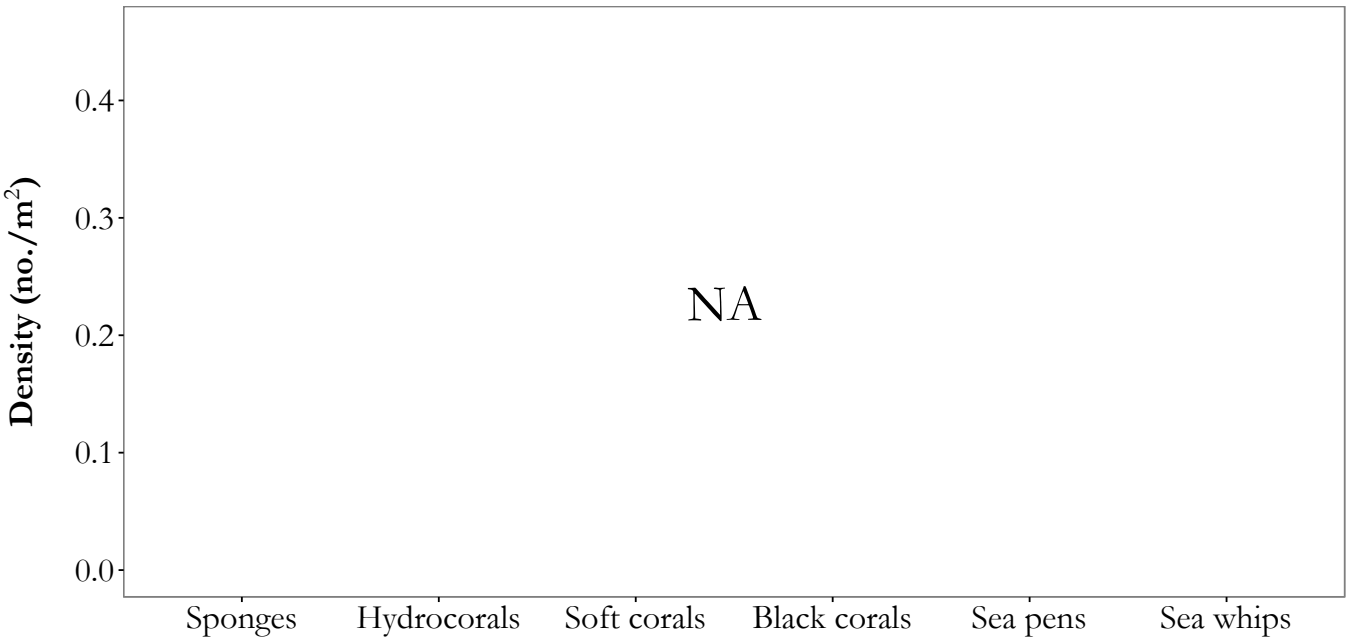
Images



AREA: Akutan Island to Samalga Pass Transect 2012-100

Vertical Habitat Summary





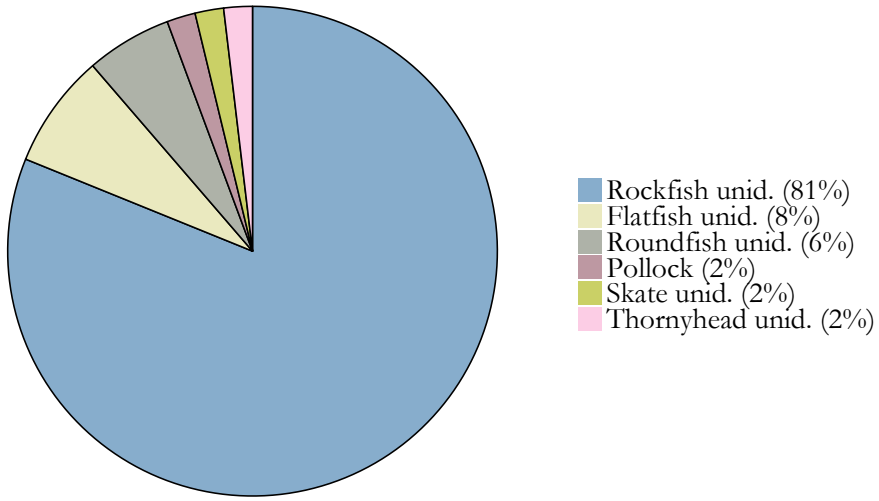
Summary - description of transect

Transect 2012-100: Primary and secondary substrates consisted entirely of sand. Of the 182 individuals identified, 171 were eelpouts. Fish and crab density was 0.2 individuals/m^2. No structure-forming invertebrates were identified.

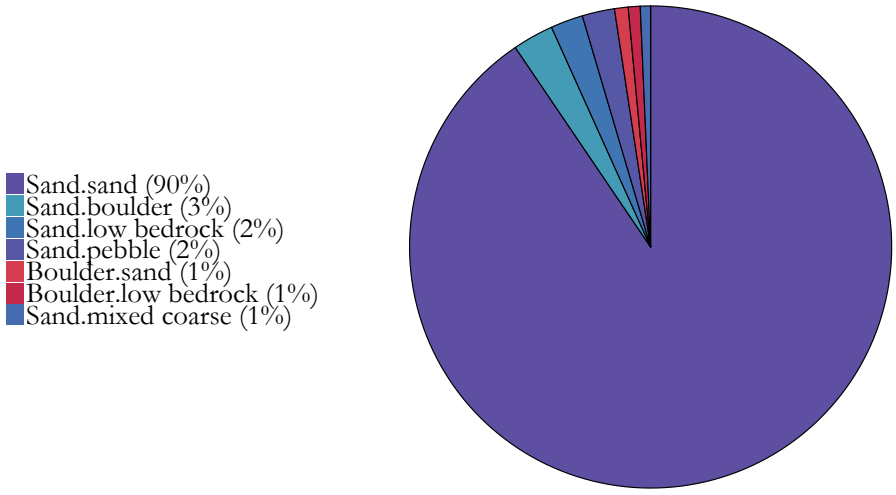
AREA: Akutan Island to Samalga Pass — Transect 2012-101

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	53.66	-167.46	1,353	140	5.2

Fish and Crab Composition (n = 53)



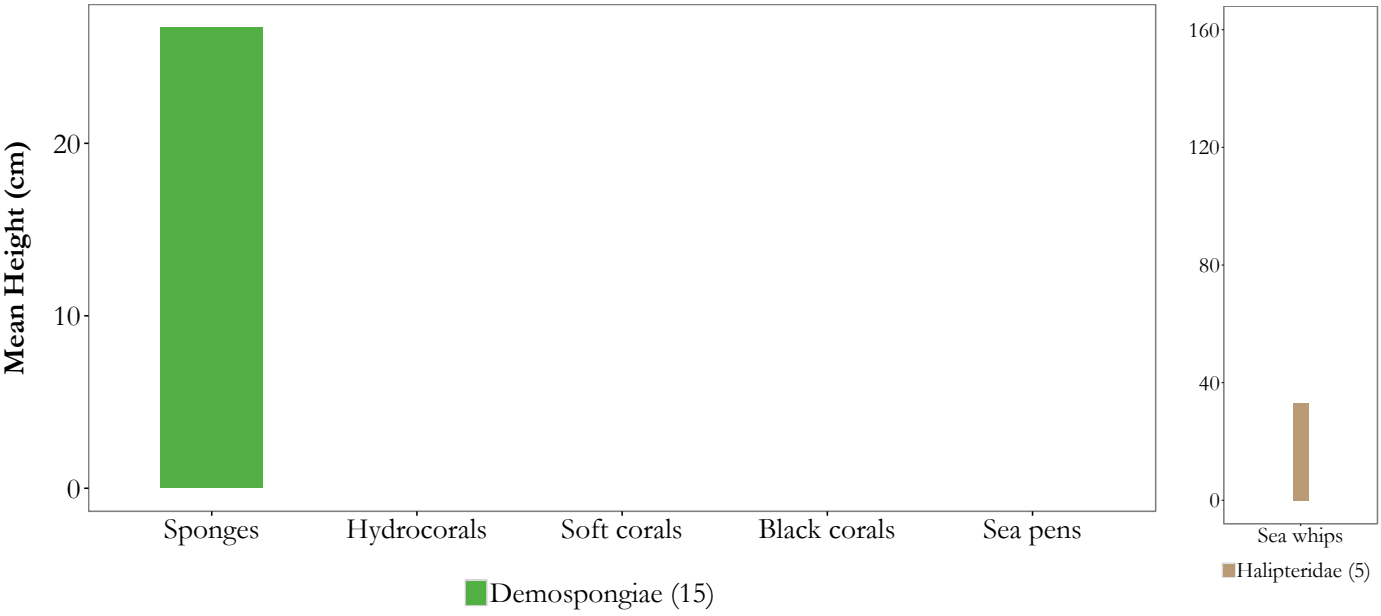
Substrate Composition

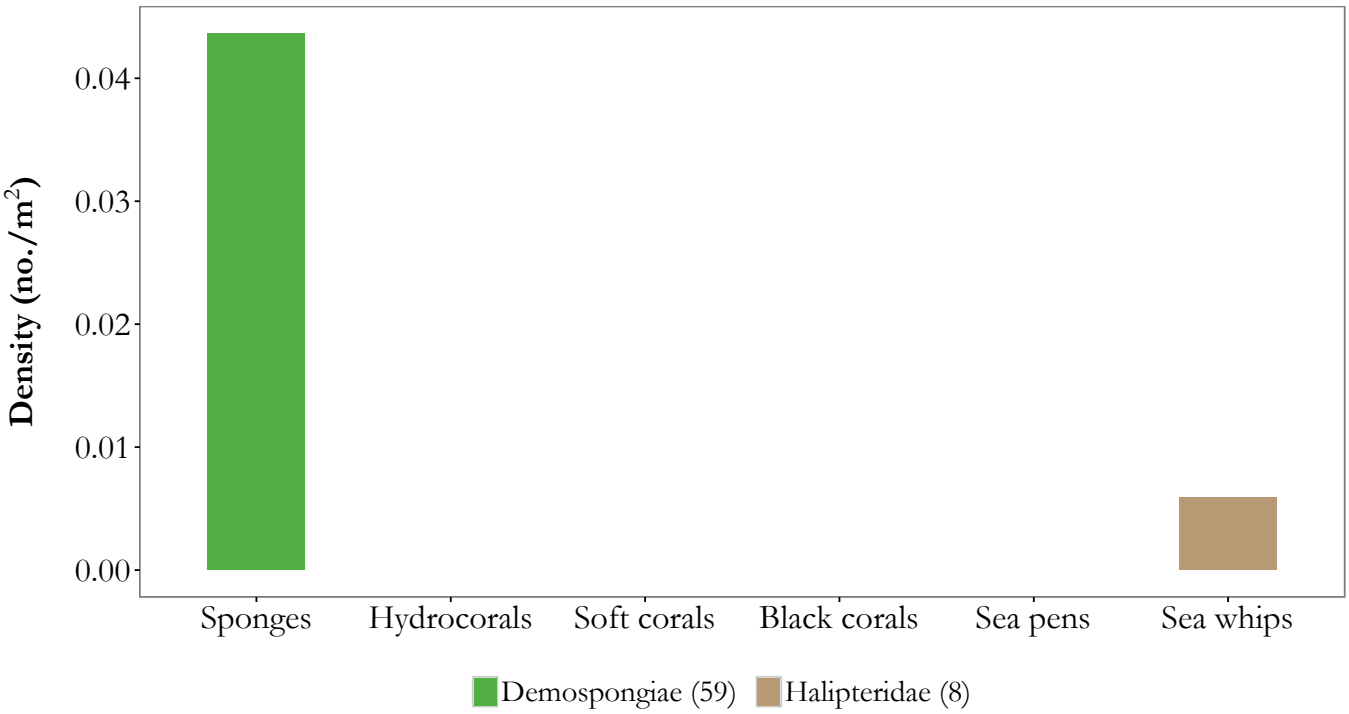


Images

AREA: Akutan Island to Samalga Pass Transect 2012-101

Vertical Habitat Summary





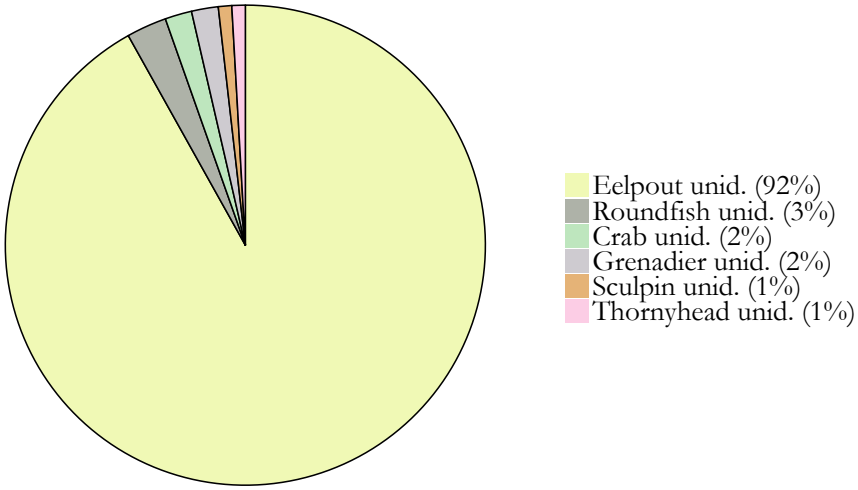
Summary - description of transect

Transect 2012-101: Primary and secondary substrates for 98% of the haul were sand. The remaining substrate consisted of pebble, mixed coarse, cobble, boulder, and low bedrock. Rockfishes accounted for 81% of the total fish density (0.05 individuals/m^2). Structure-forming invertebrate habitat consisted of Demospongiae (0.04 individuals/m^2) and Halipteridae (0.01 individuals/m^2) Mean height for the Demospongiae was 27 cm. Five Halipteridae had a mean height of 33 cm.

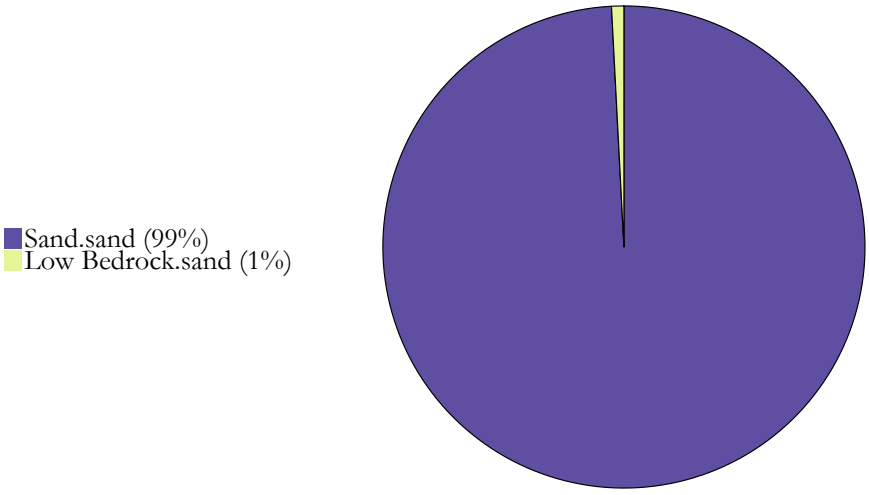
AREA: Akutan Island to Samalga Pass — Transect 2012-102

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	53.86	-167.32	646	715	3.2

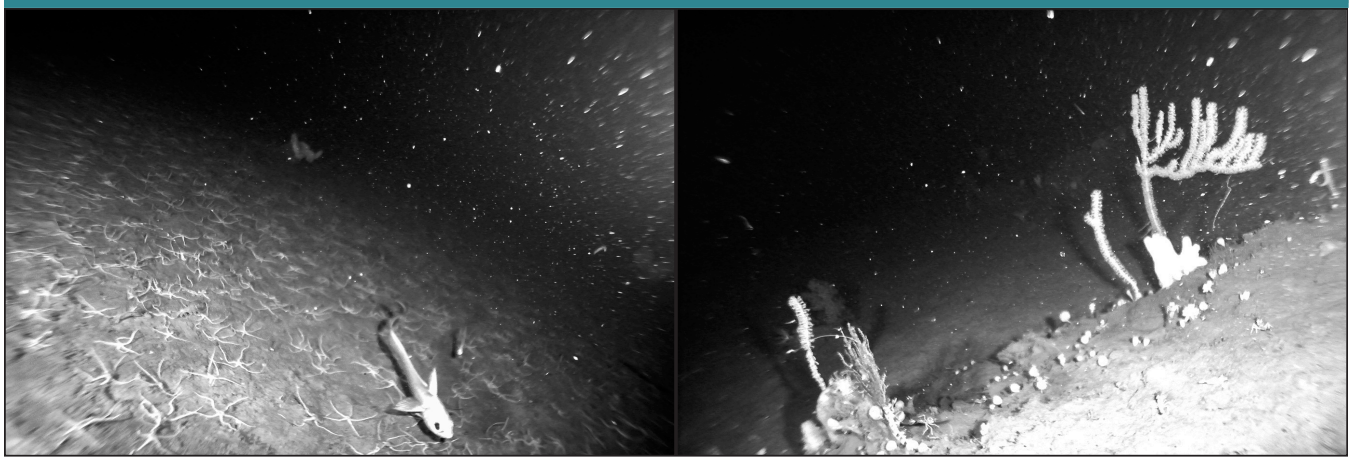
Fish and Crab Composition (n = 111)



Substrate Composition

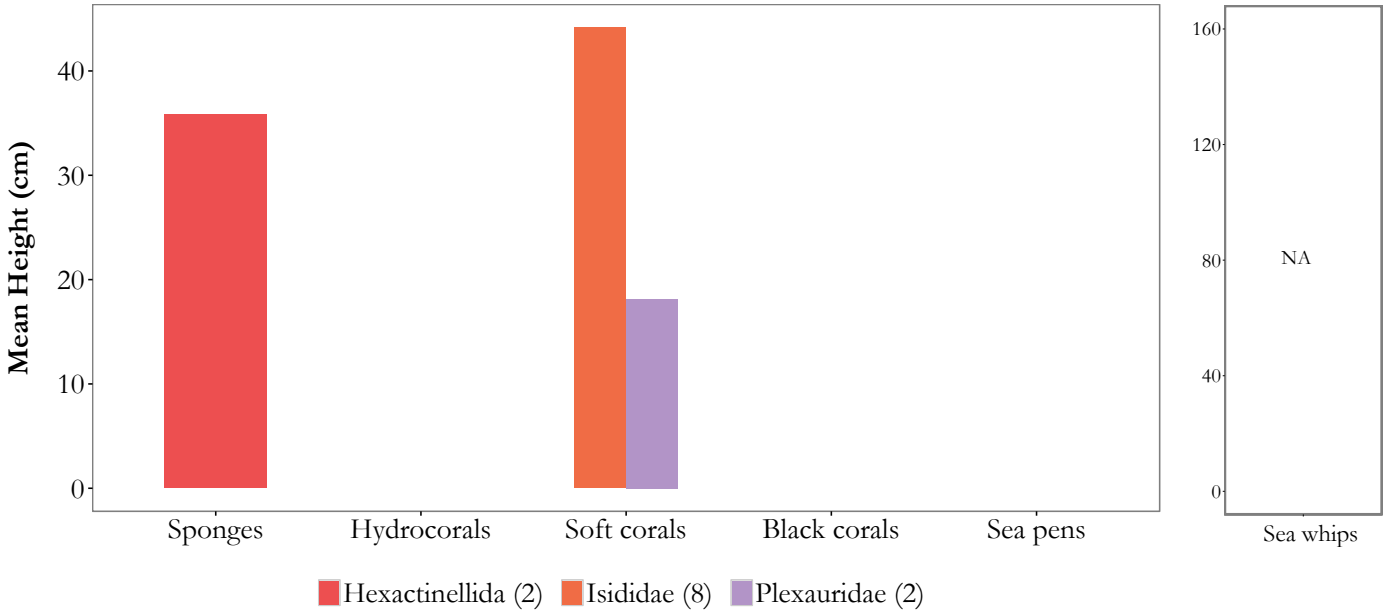


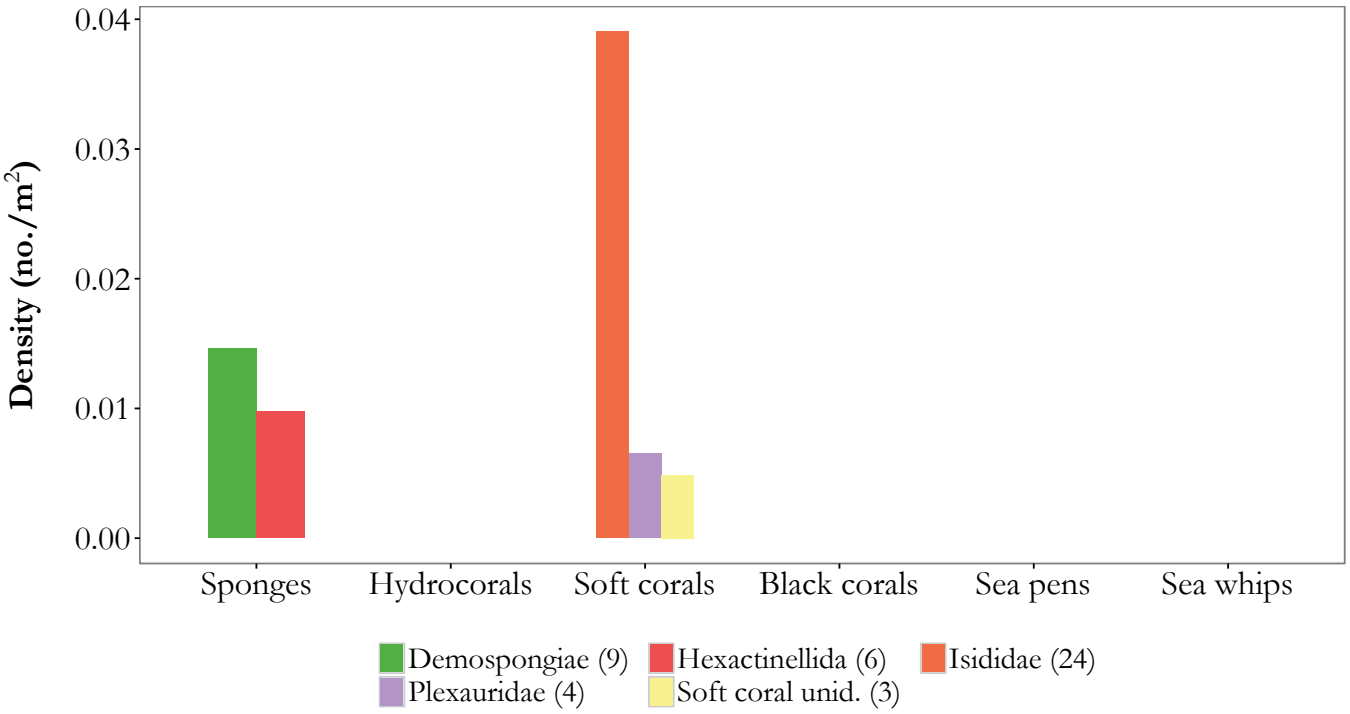
Images



AREA: Akutan Island to Samalga Pass Transect 2012-102

Vertical Habitat Summary





Summary - description of transect

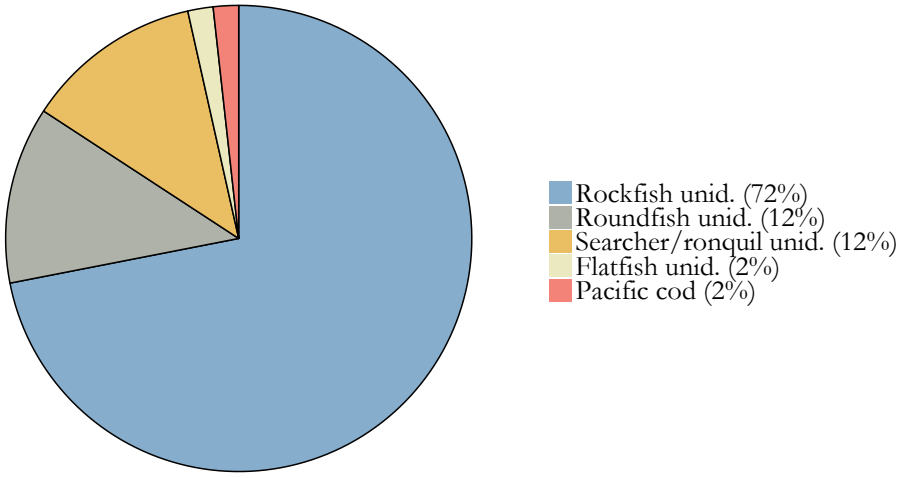
Transect 2012-102: Primary and secondary substrates consisted largely of sand with some low bedrock. Six taxa of fishes and crabs were identified. Over 90% of the fishes were eelpouts. Total fish density was 0.18 individuals/m^2. Sponge and coral density was 0.07 individuals/m^2. Structure-forming invertebrates consisted of Hexactinellida, Isididae, and Plexauridae. Mean heights were 36 cm, 41 cm, and 18 cm, respectively.

AREA: Akutan Island to Samalga Pass — Transect *2012-103

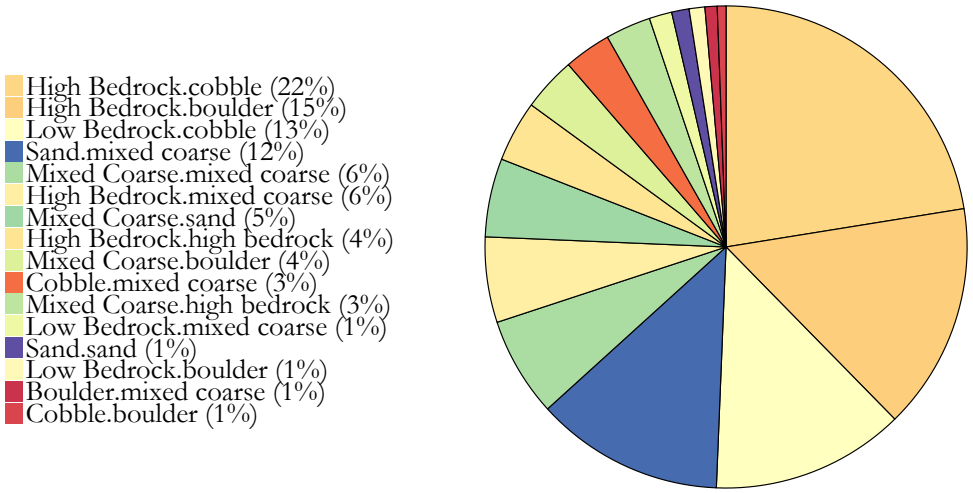
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	53.93	-167.11	1,225	94	5.5

*Area of high coral or sponge density (> 1.0 individuals/m^2)

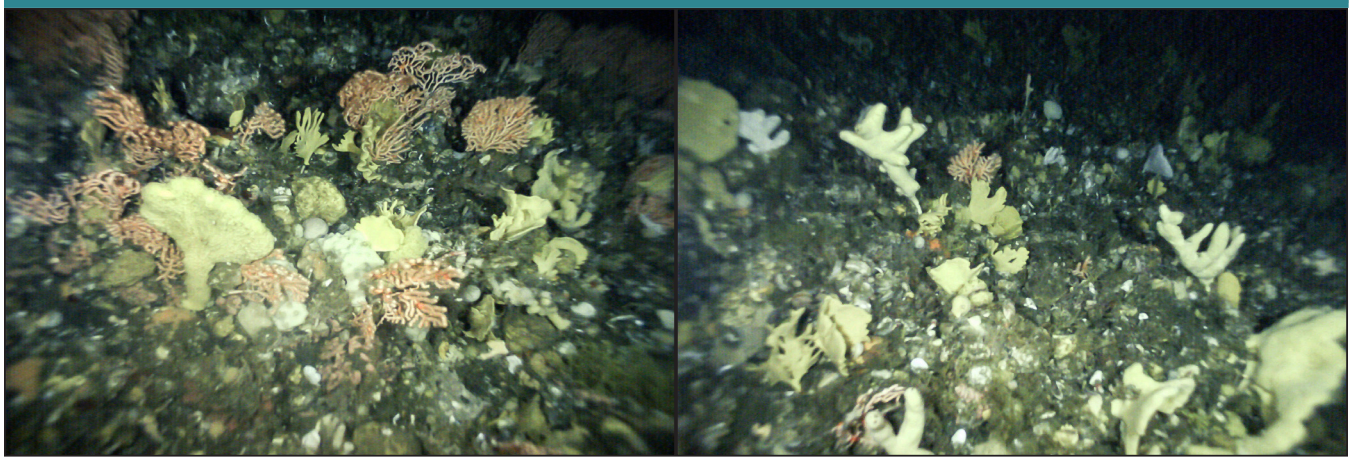
Fish and Crab Composition (n = 57)



Substrate Composition



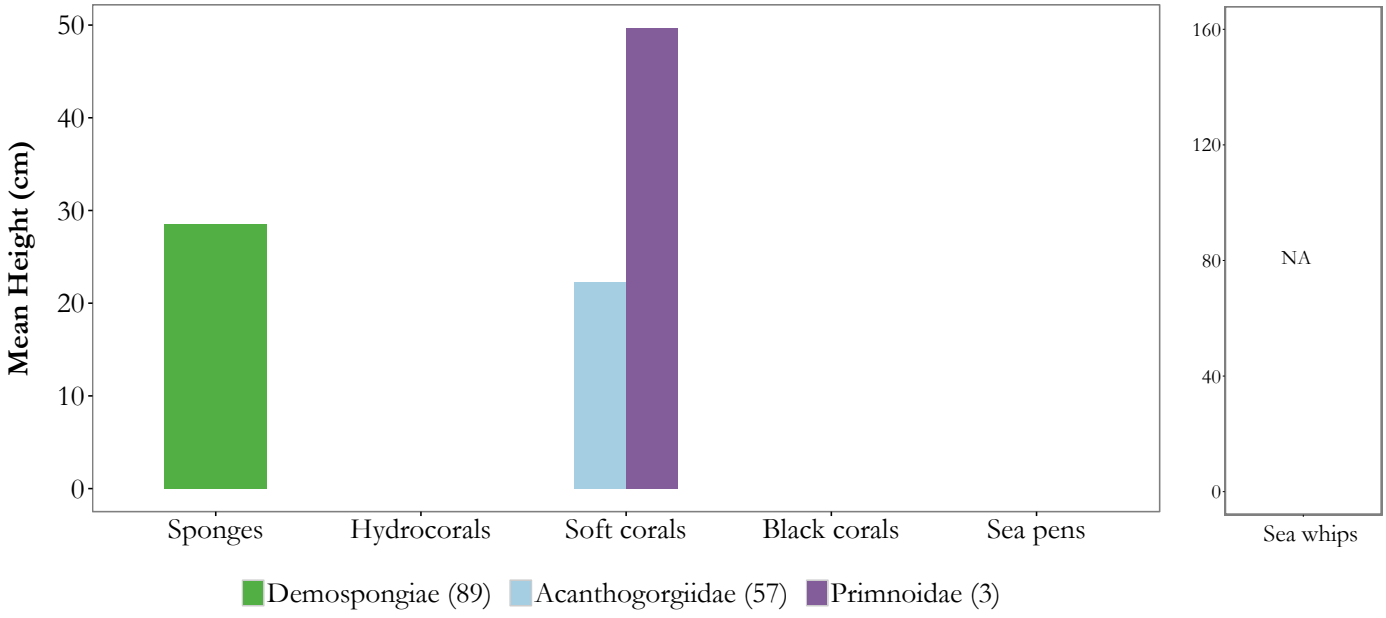
Images

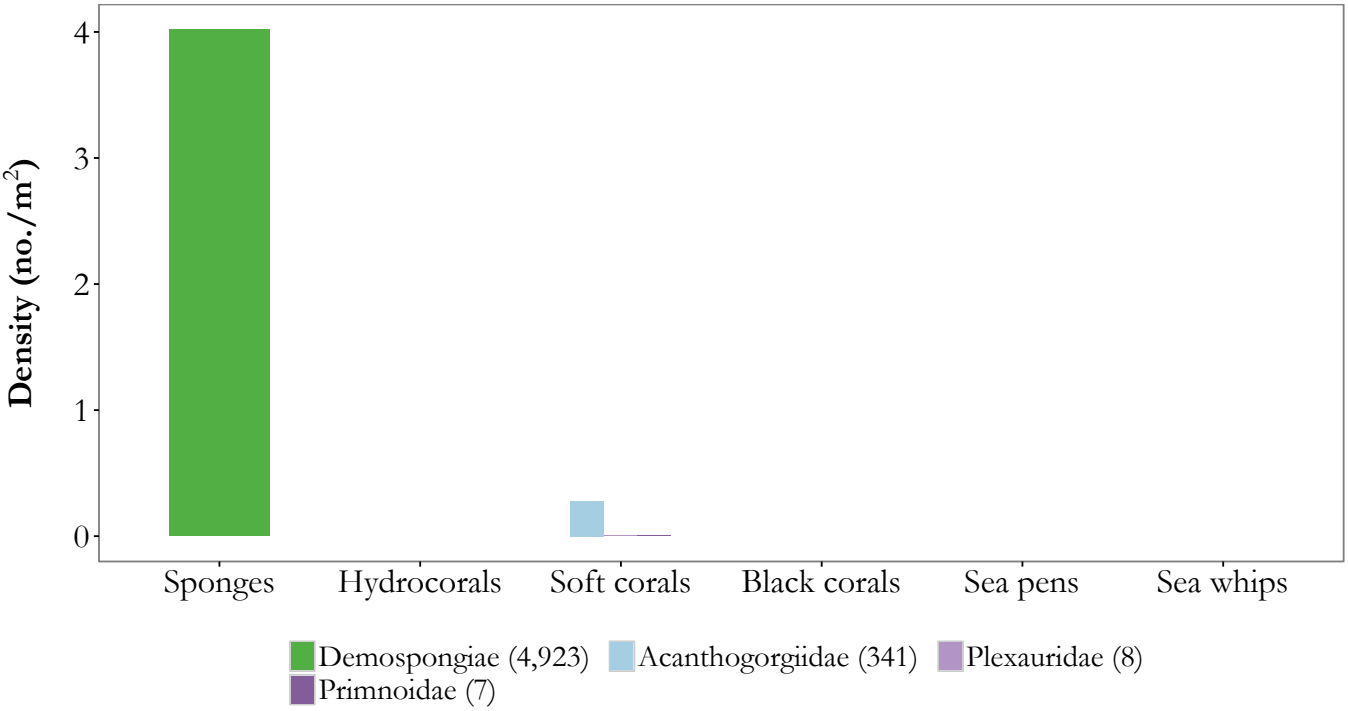


AREA: Akutan Island to Samalga Pass Transect *2012-103

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

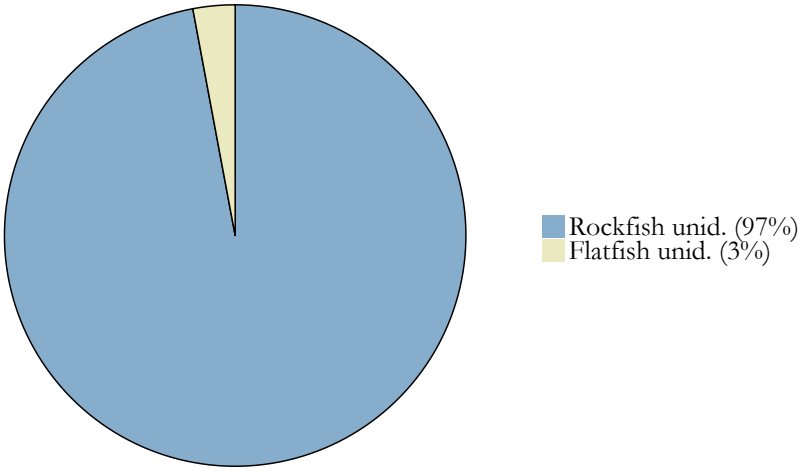
Transect 2012-103: Twenty-seven combinations of primary and secondary substrate were identified. Almost 66% of the observations contained bedrock with 62% having bedrock for the primary substrate. Rockfishes accounted for 72% of the total fish density (0.05 individuals/m^2). Demospongiae were 93% of the structure-forming invertebrates (4.31 individuals/m^2). Acanthogorgiidae were the next most abundant at 0.28 individuals/m^2. Mean heights were calculated for Acanthogorgiidae (22 cm), Demospongiae (29 cm), and Primnoidae (50 cm).

AREA: Akutan Island to Samalga Pass — Transect *2012-104

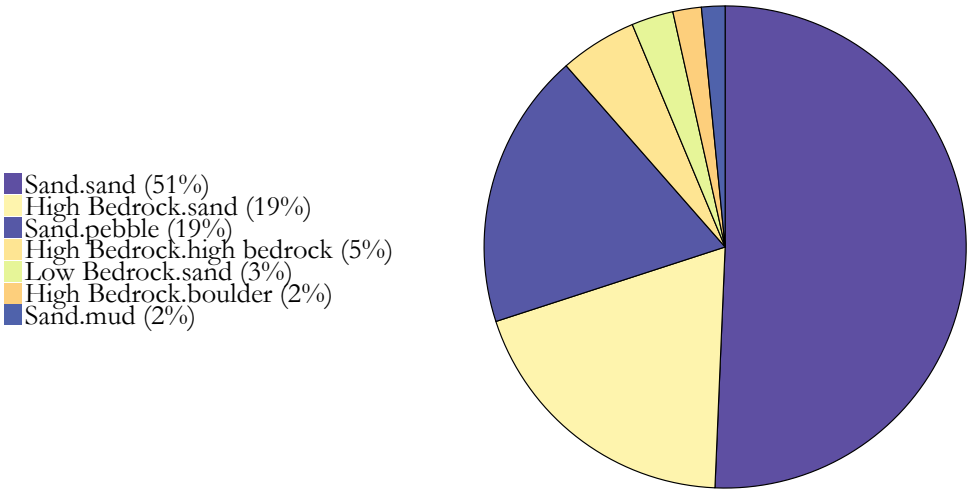
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	54.01	-166.94	610	192	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

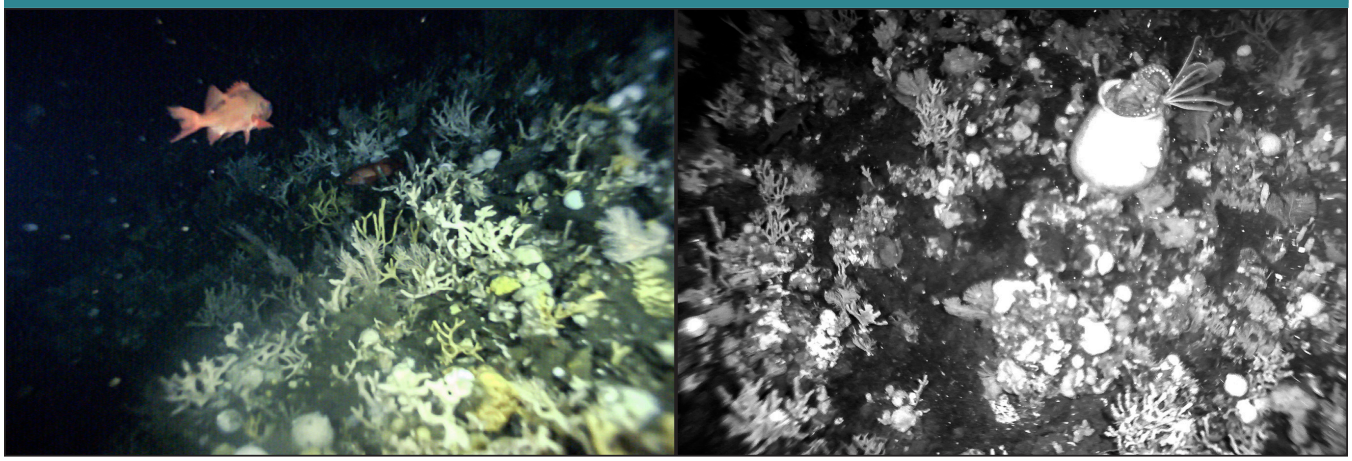
Fish and Crab Composition (n = 102)



Substrate Composition



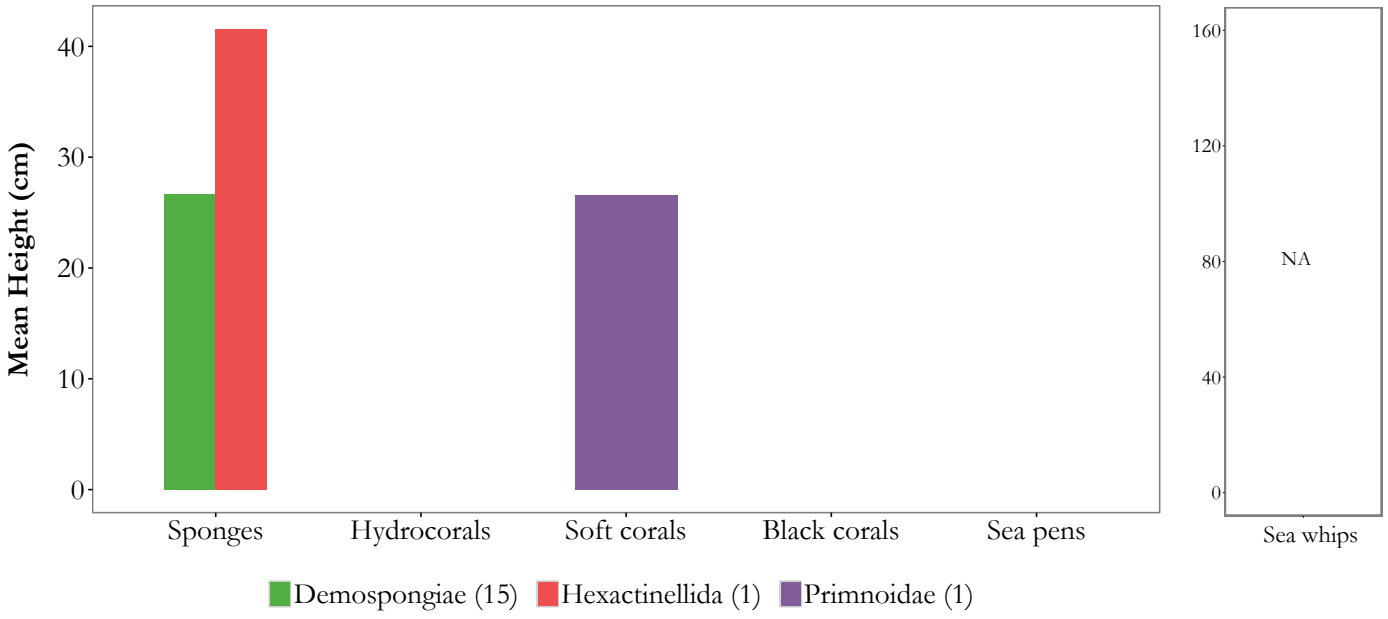
Images

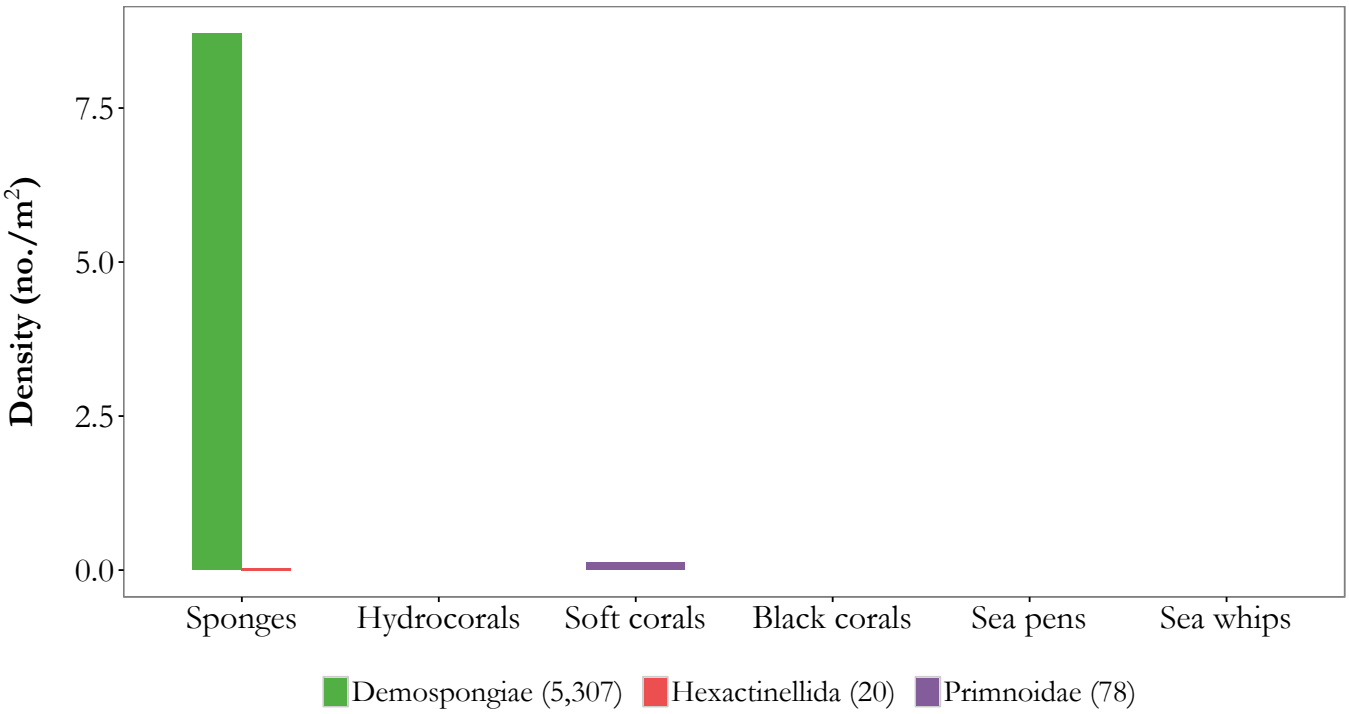


AREA: Akutan Island to Samalga Pass Transect *2012-104

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





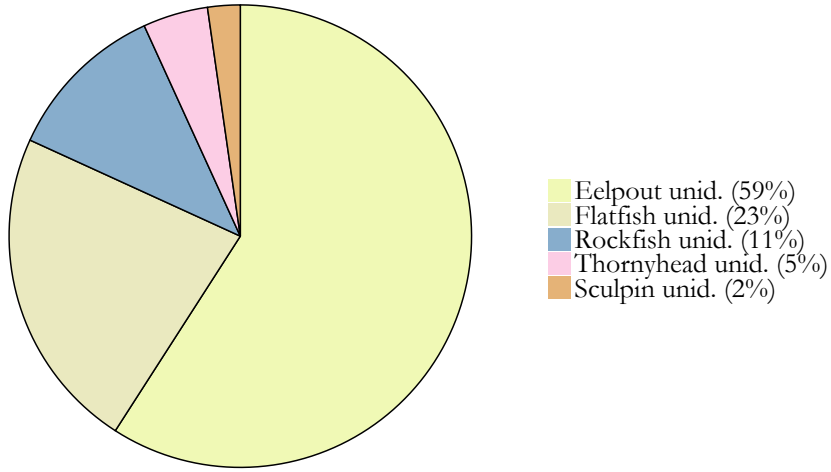
Summary - description of transect

Transect 2012-104: Primary and secondary substrates consisted largely of sand and high bedrock. Fish density was 0.17 individuals/m^2, with rockfishes comprising 97% of the density. Structure-forming invertebrate density was high, 8.87 individuals/m^2, due to the large number of Demospongiae (8.71 individuals/m^2). Primnoidae were the next most abundant at 0.13 individuals/m^2. Mean height for Demospongiae was 27 cm.

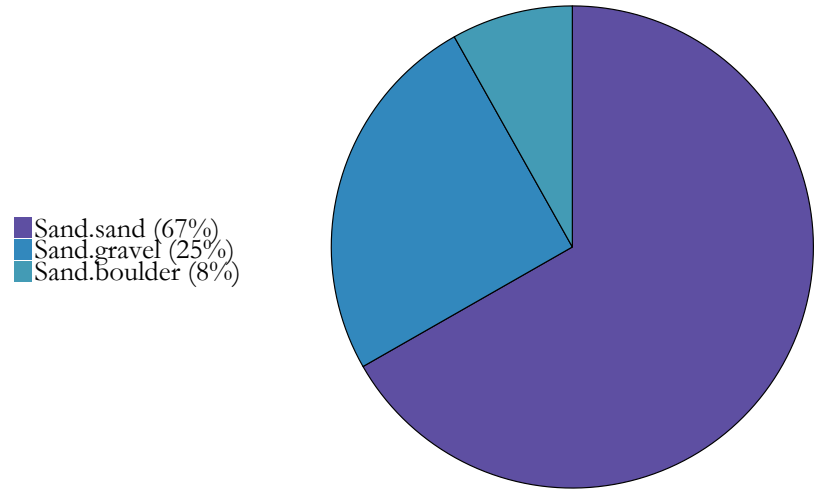
AREA: Akutan Island to Samalga Pass — Transect 2012-105

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	54.05	-166.81	1,101	394	3.7

Fish and Crab Composition (n = 44)



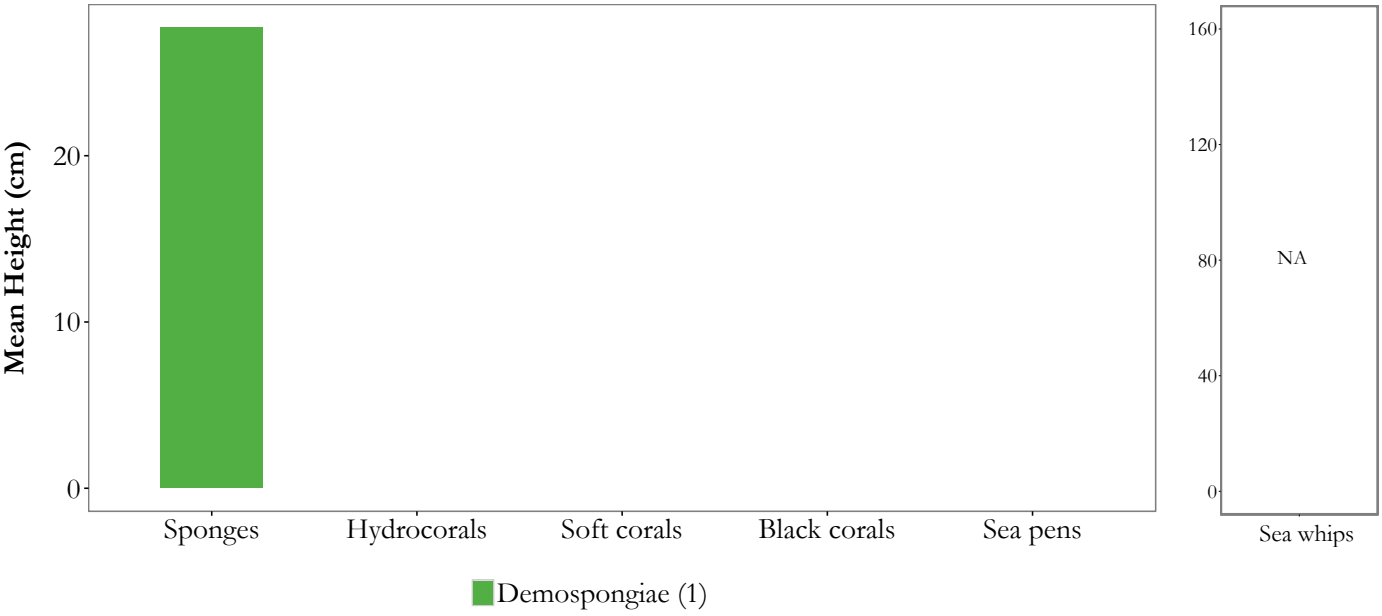
Substrate Composition

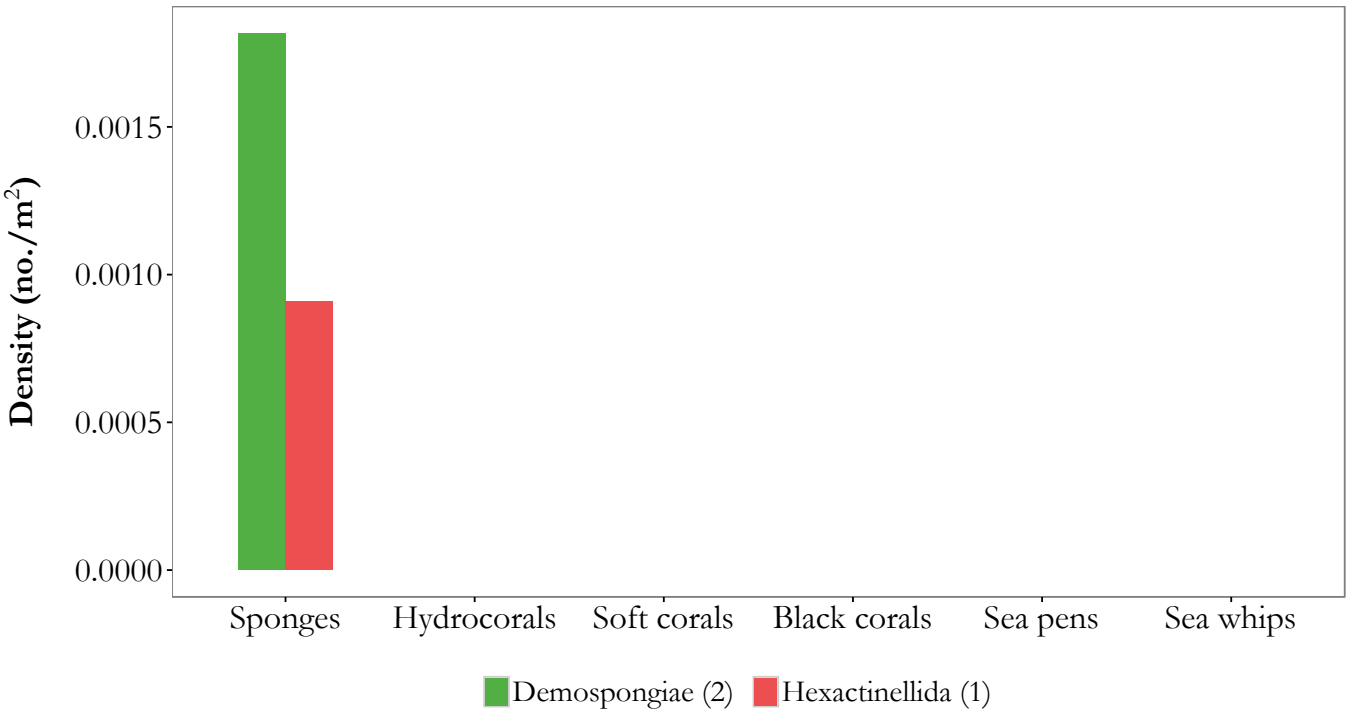


Images

AREA: Akutan Island to Samalga Pass Transect 2012-105

Vertical Habitat Summary





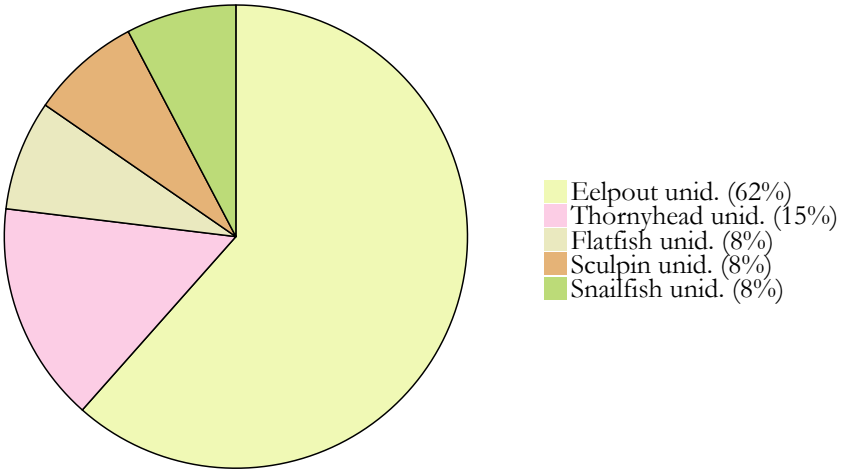
Summary - description of transect

Transect 2012-105: Primary and secondary substrates for 67% of the haul were sand. The remaining substrate consisted of sand/gravel or sand/boulder. Five taxa of fishes were identified, with eelpouts comprising 59% of the total density (0.04 individuals/m^2). Flatfishes were the next most abundant at 0.02 individuals/m^2. Structure-forming invertebrate density was very low, < 0.01 individuals/m^2. Two Demospongiae and one Hexactinellida were identified.

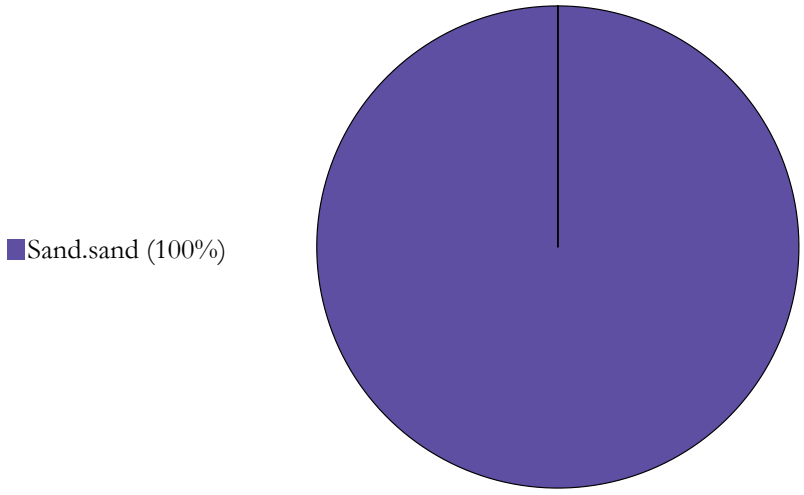
AREA: Akutan Island to Samalga Pass — Transect 2012-106

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/28/2012	54.07	-166.80	901	604	3.4

Fish and Crab Composition (n = 13)



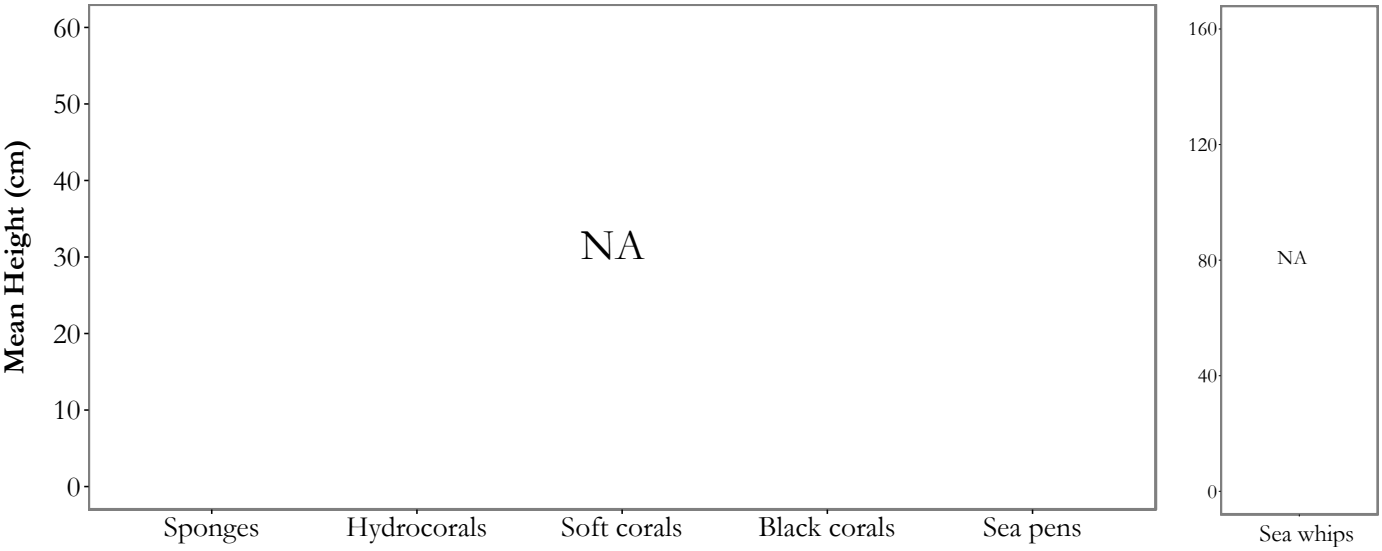
Substrate Composition

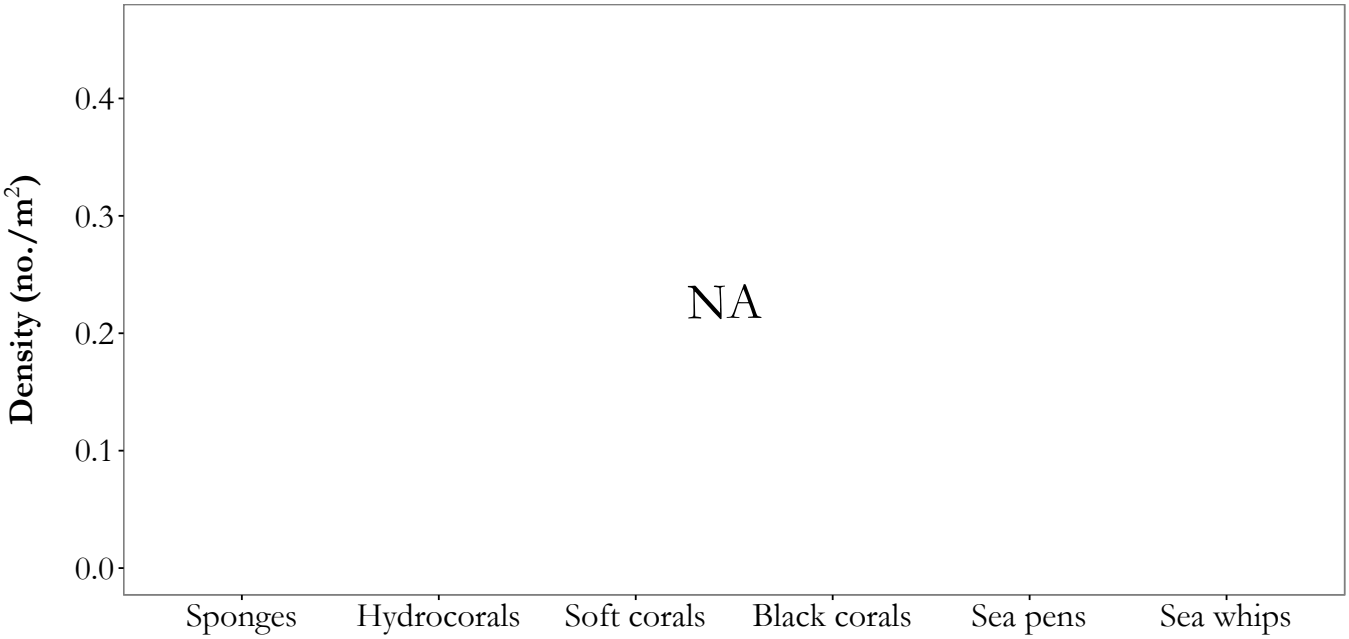


Images

AREA: Akutan Island to Samalga Pass Transect 2012-106

Vertical Habitat Summary





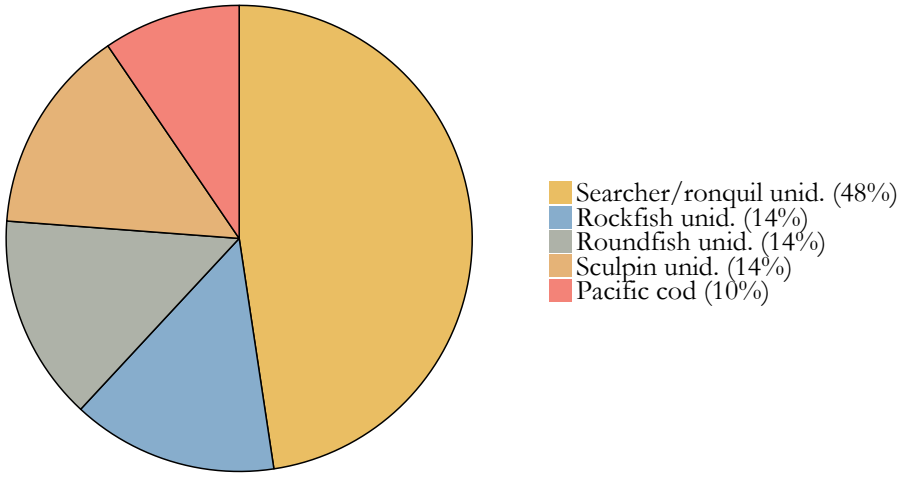
Summary - description of transect

Transect 2012-106: Primary and secondary substrates consisted of sand. Five taxa of fishes were identified, with eelpouts comprising 62% of the total density (0.01 individuals/m^2). Thornyheads were the next most abundant at < 0.01 individuals/m^2. No structure-forming invertebrates were identified.

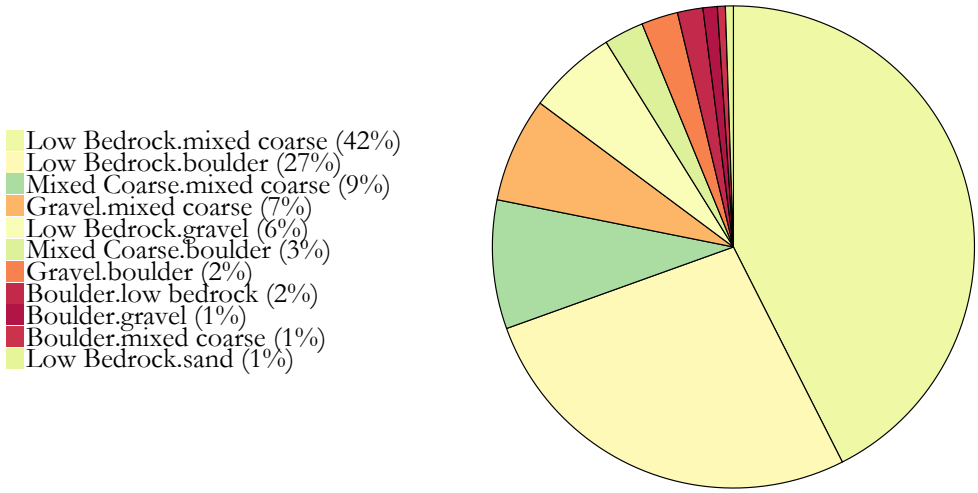
AREA: Akutan Island to Samalga Pass — Transect 2014-1

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/22/2014	53.13	-168.85	1,545	83	4.4

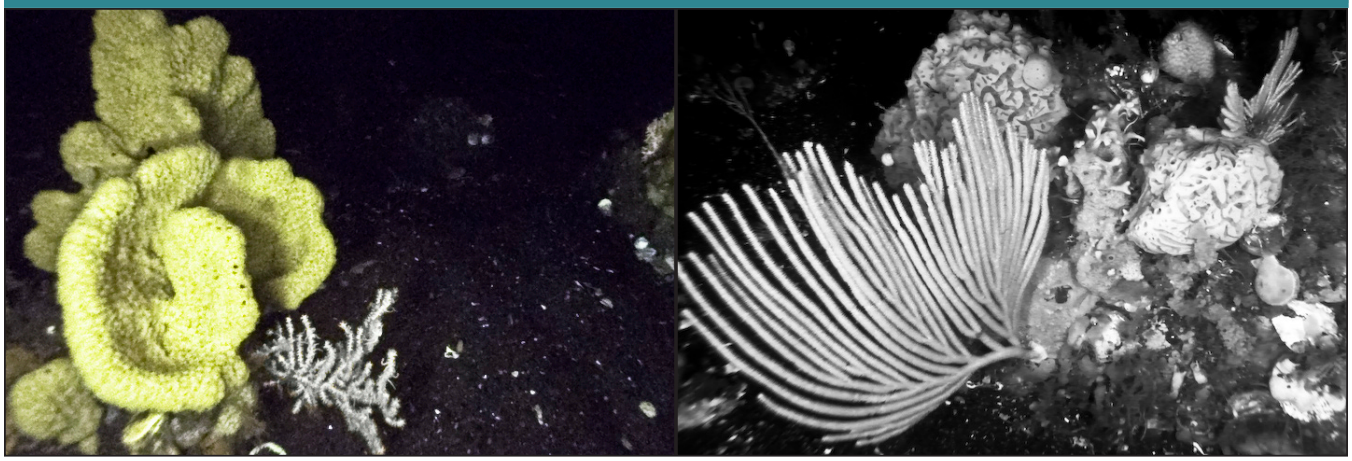
Fish and Crab Composition (n = 21)



Substrate Composition

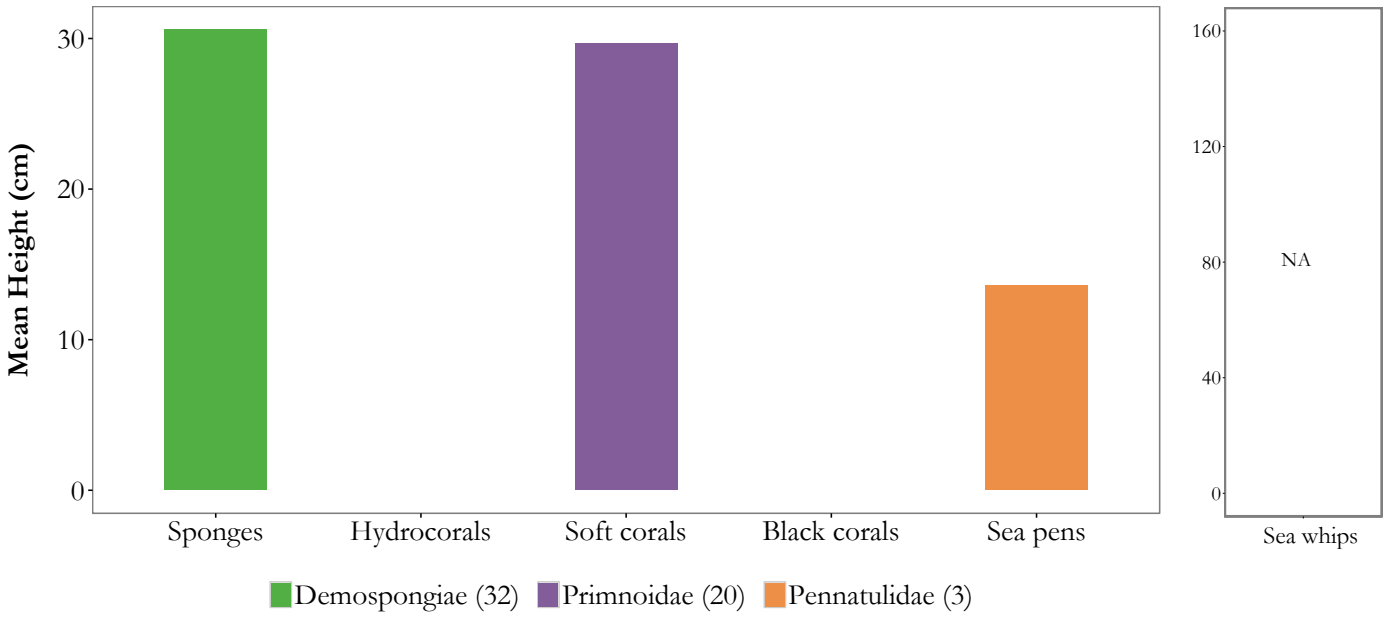


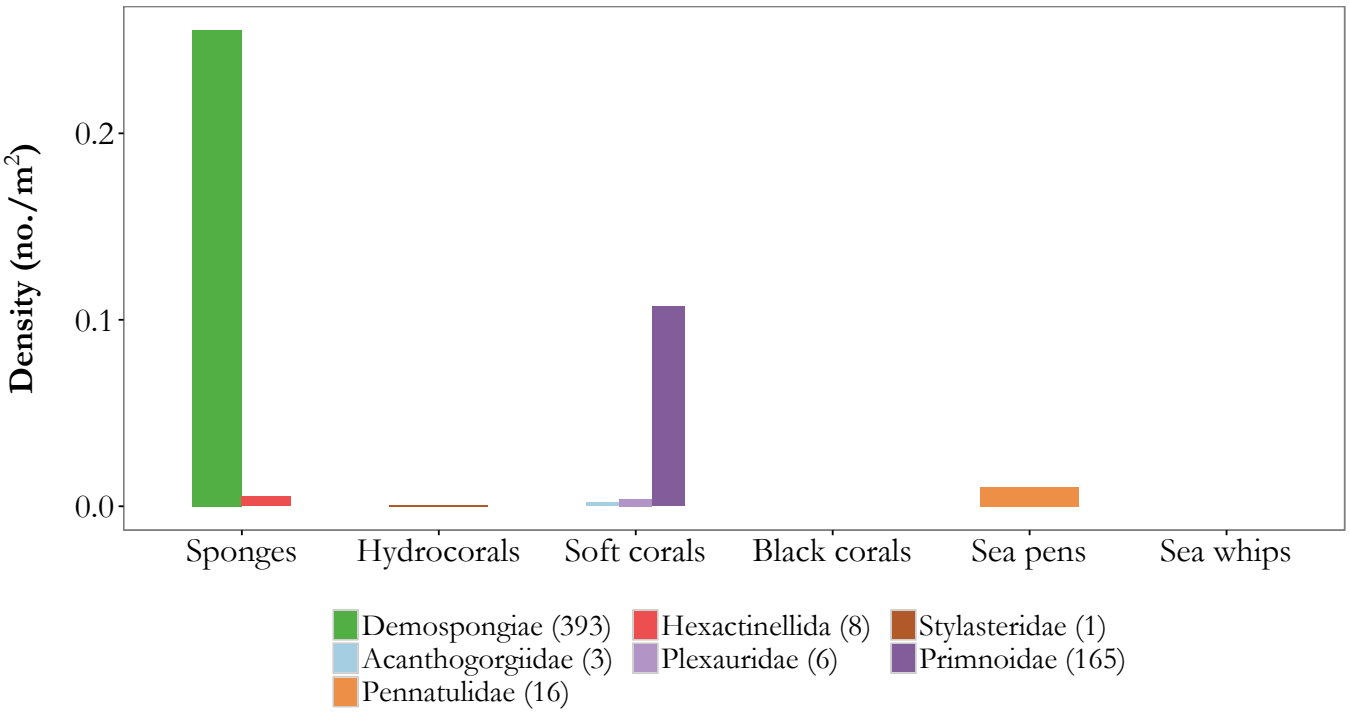
Images



AREA: Akutan Island to Samalga Pass Transect 2014-1

Vertical Habitat Summary





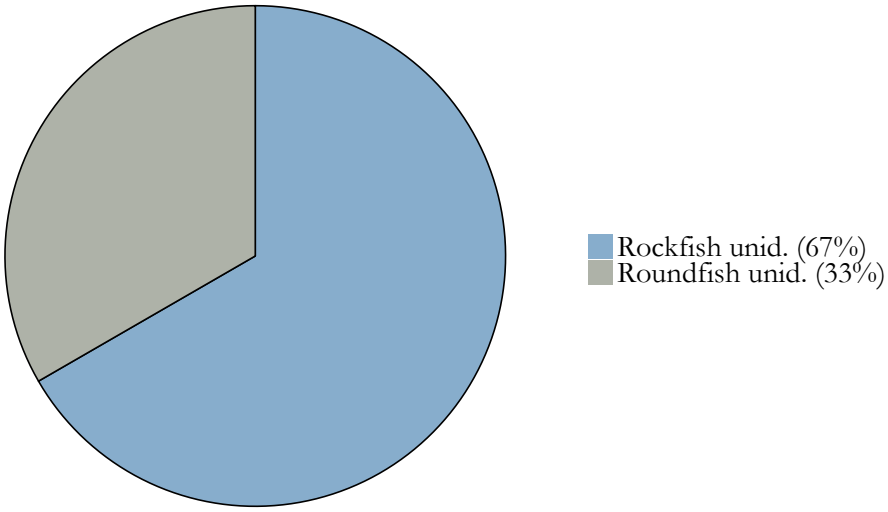
Summary - description of transect

Transect 2014-1: Primary substrates for 76% of the haul were low bedrock with boulder, gravel, or mixed coarse. Searchers/ronquils (n = 10) accounted for 48% of the individuals identified. The remaining densities were evenly distributed between rockfishes, roundfishes, sculpins, and Pacific cod. Fish density was low overall (0.01 individuals/m^2). Demospongiae (0.26 individuals/m^2) and Primnoidae (0.11 individuals/m^2) were the most abundant structure-forming invertebrates. Mean heights were 31 cm for Demospongiae, 30 cm for Primnoidae, and 14 cm for Pennatulidae.

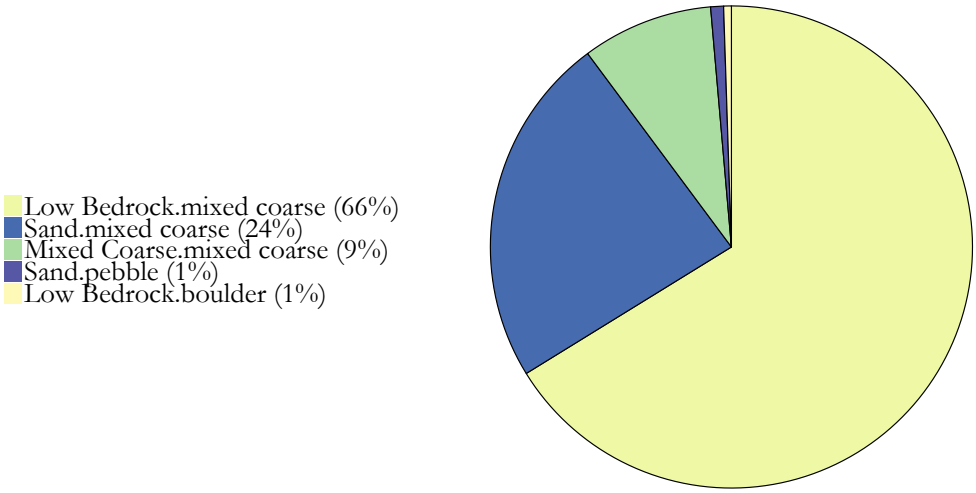
AREA: Akutan Island to Samalga Pass — Transect 2014-2

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/22/2014	53.15	-168.88	1,654	280	4.0

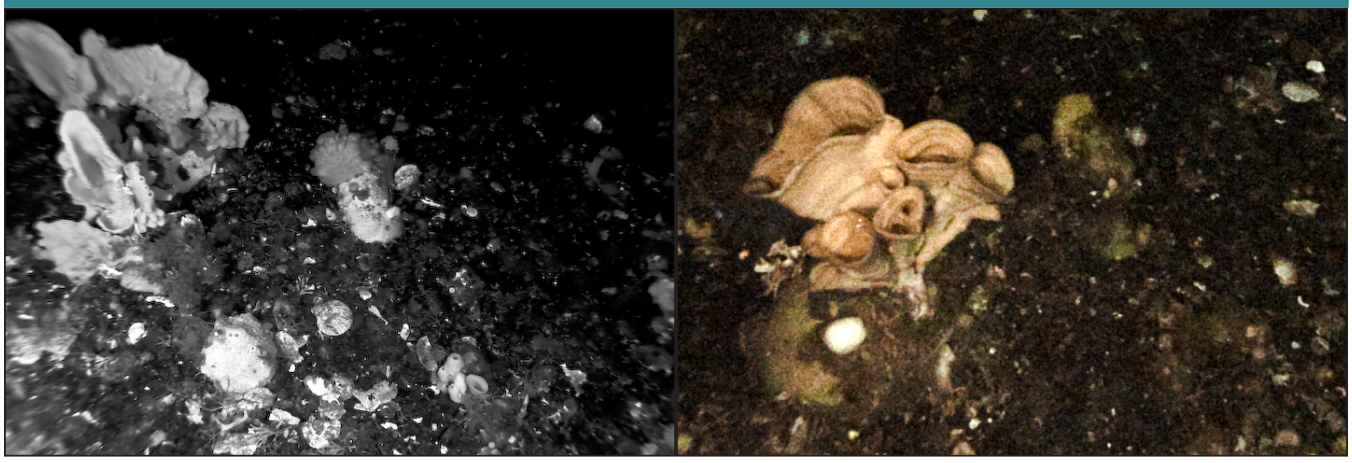
Fish and Crab Composition (n = 3)



Substrate Composition

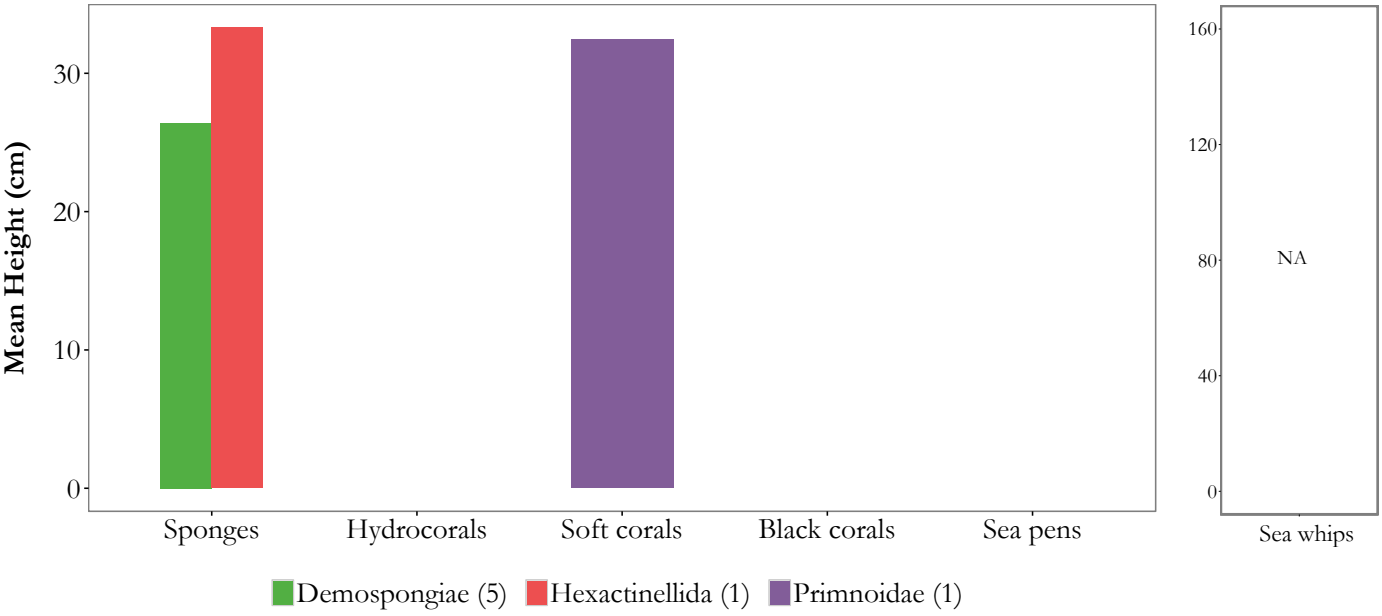


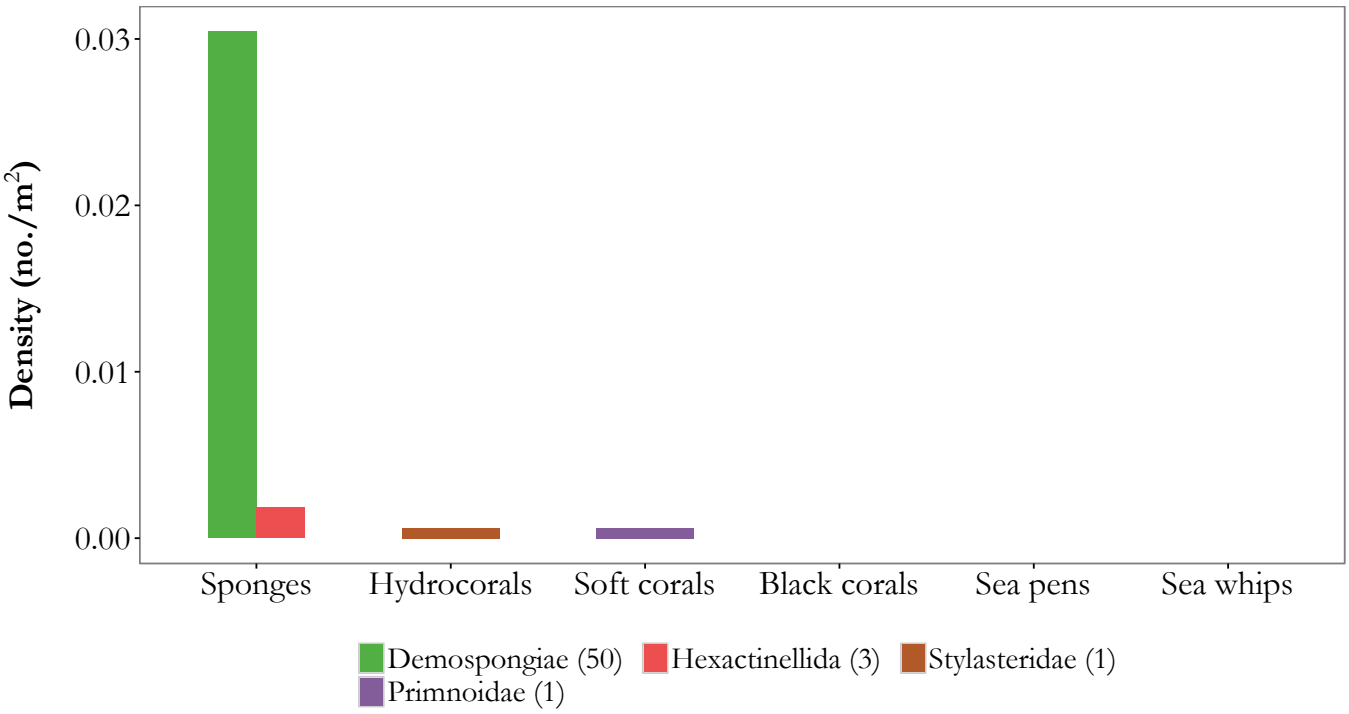
Images



AREA: Akutan Island to Samalga Pass Transect 2014-2

Vertical Habitat Summary





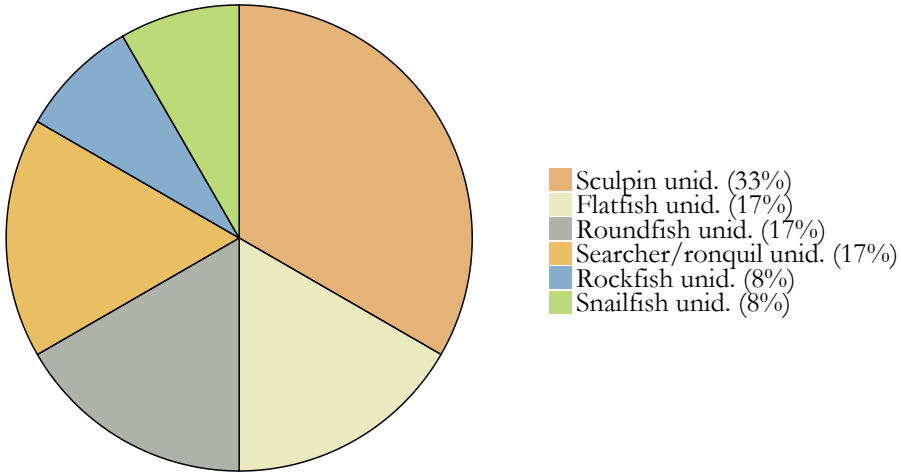
Summary - description of transect

Transect 2014-2: Primary and secondary substrates consisted largely of low bedrock, mixed coarse, and sand. Rockfishes and roundfishes accounted for 100% of the fishes identified. Fish density was low at < 0.01 individuals/m^2. Overall density for structure-forming invertebrates was 0.03 individuals/m^2. Ninety-one percent consisted of Demospongiae (0.03 individuals/m^2). Mean height for Demospongiae was 26 cm.

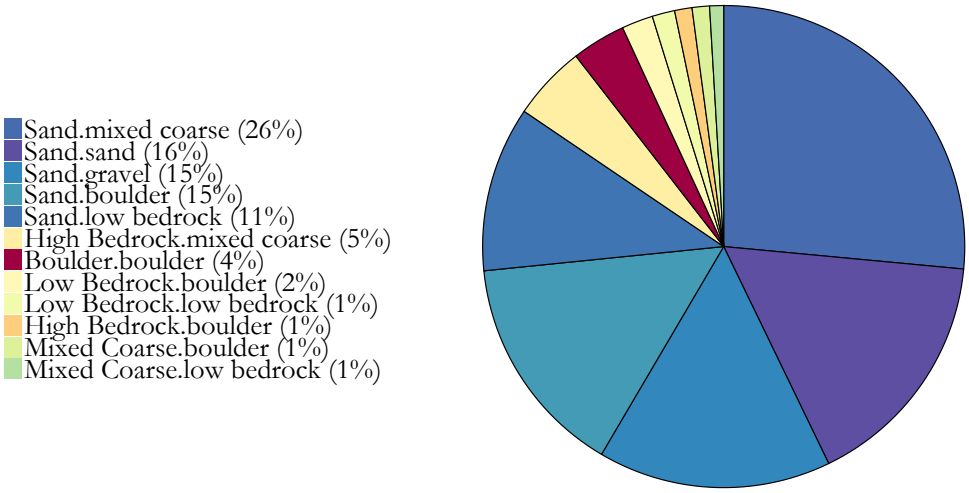
AREA: Akutan Island to Samalga Pass — Transect 2014-3

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/22/2014	53.01	-169.05	3,385	72	4.4

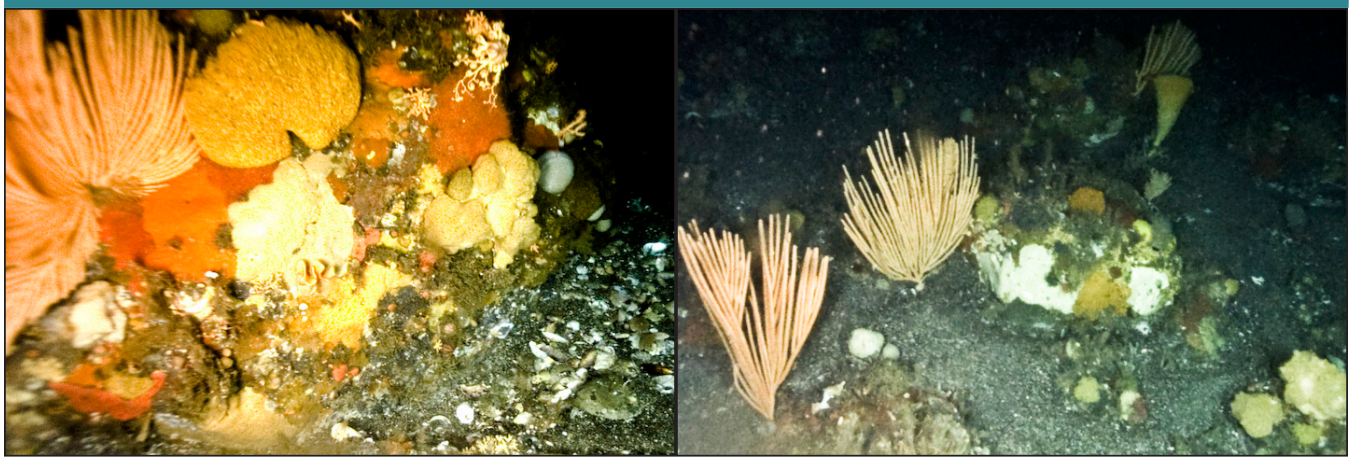
Fish and Crab Composition (n = 12)



Substrate Composition

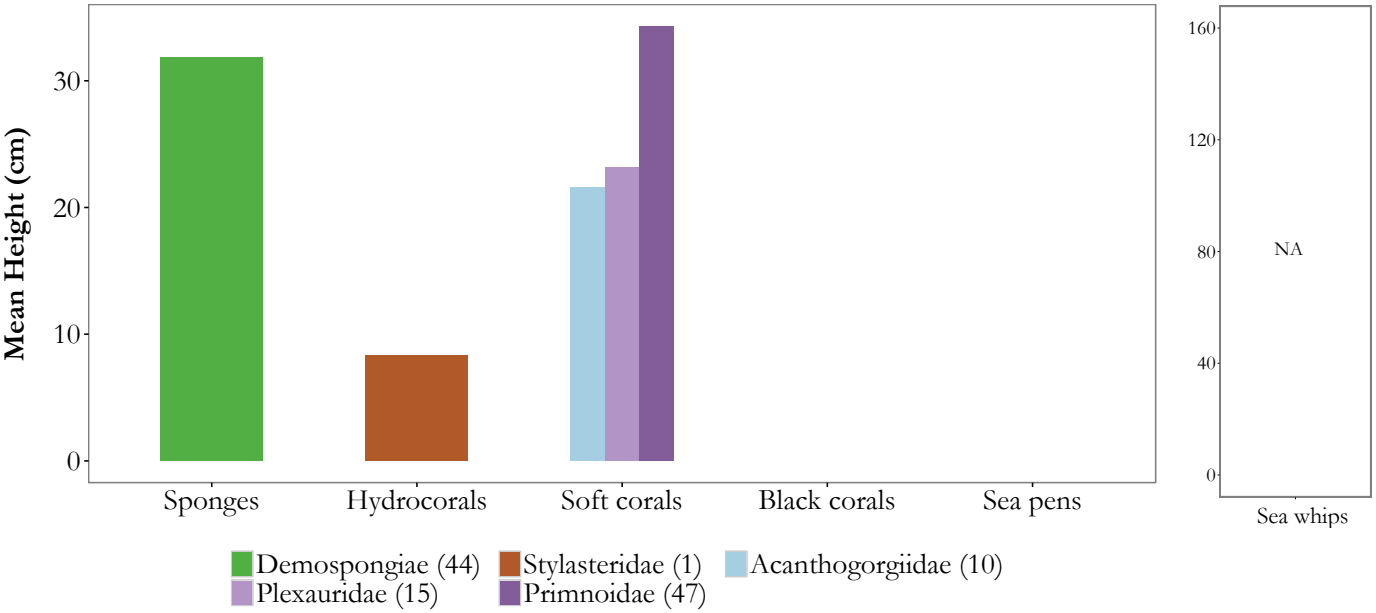


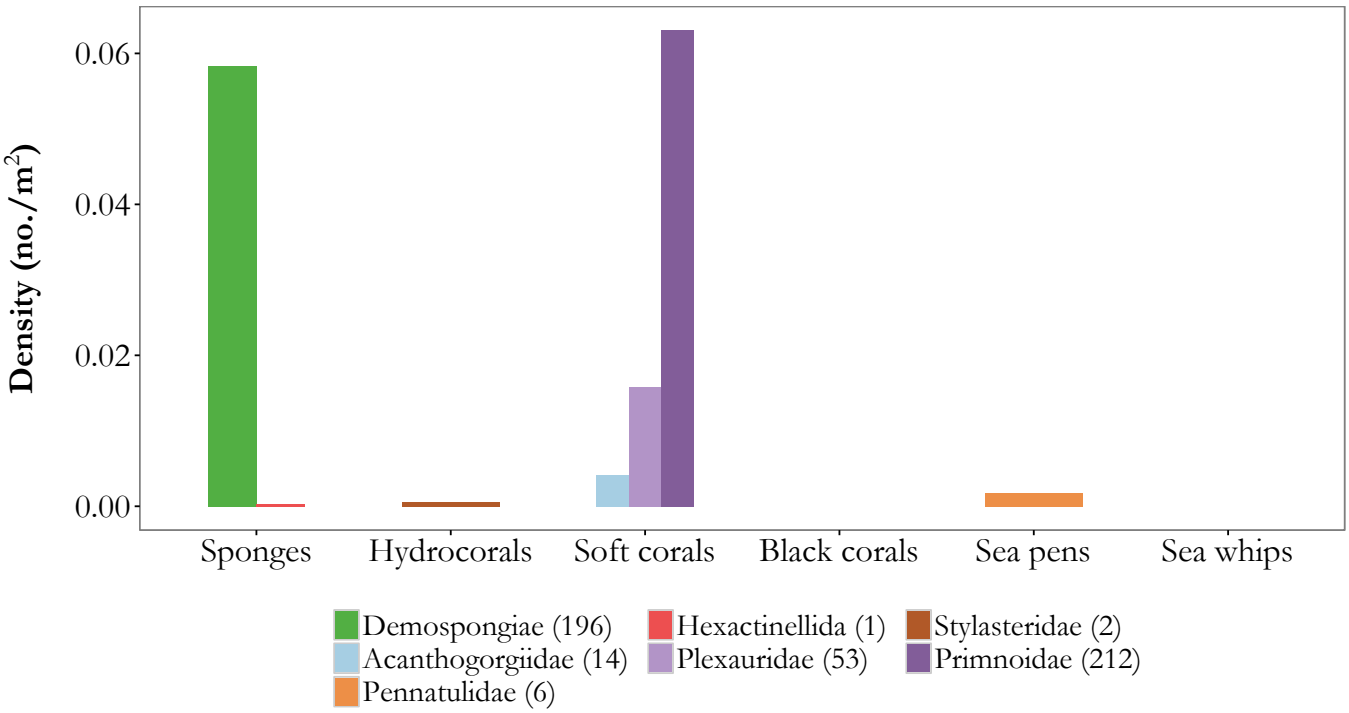
Images



AREA: Akutan Island to Samalga Pass Transect 2014-3

Vertical Habitat Summary



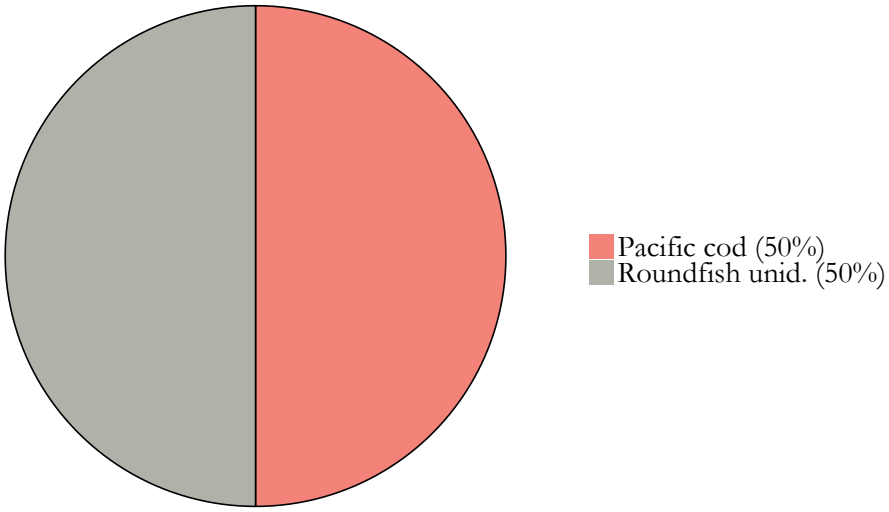


Summary - description of transect

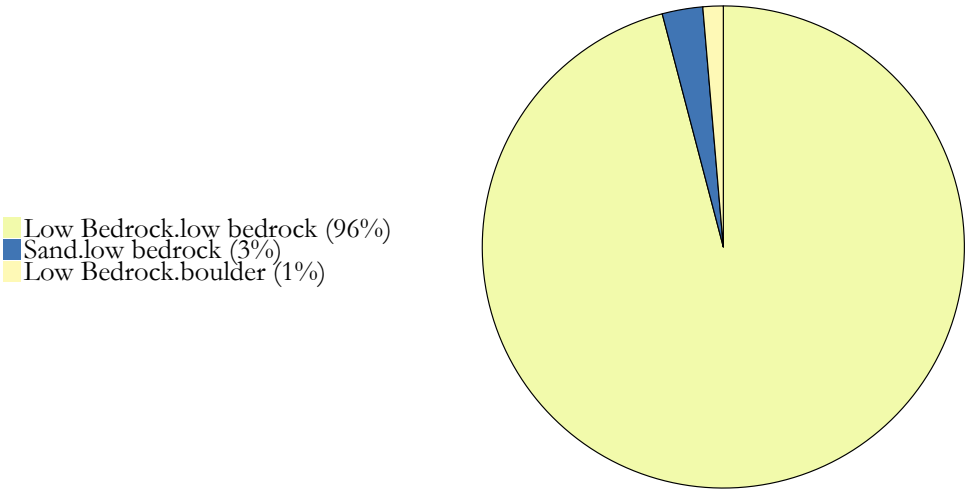
Transect 2014-3: Close to 83% of the primary substrate consisted of sand, with secondary substrates of mixed coarse, bedrock, gravel, boulder, and sand. Six taxa of fishes were identified resulting in a combined density of < 0.01 individuals/m^2. Sculpins were the most abundant (n = 4). Structure-forming invertebrates density was 0.14 individuals/m^2. Primnoidae (0.06 individuals/m^2) and Demospongiae (0.06 individuals/m^2) were the most abundant. Mean heights were calculated for Demospongiae (32 cm), Acanthogorgiidae (22 cm), Plexauridae (23 cm), and Primnoidae (34 cm).

AREA: Akutan Island to Samalga Pass			Transect	2014-4
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/22/2014	52.86	-169.31	1,433	88	4.4

Fish and Crab Composition (n = 10)



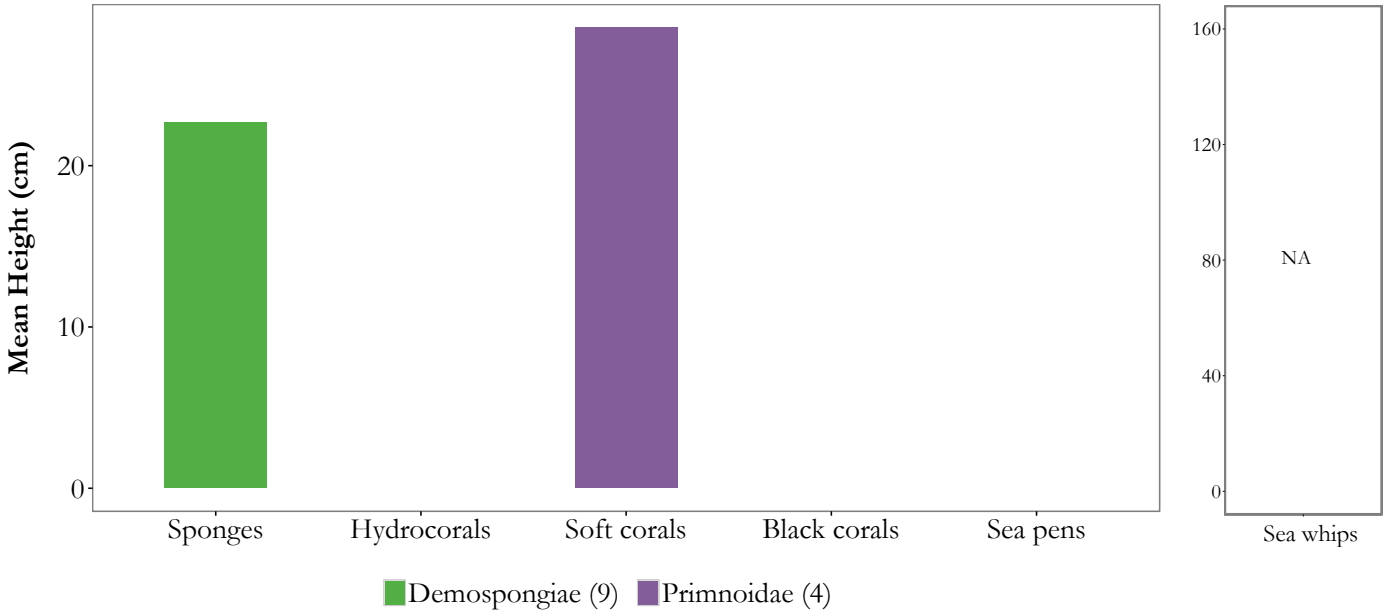
Substrate Composition

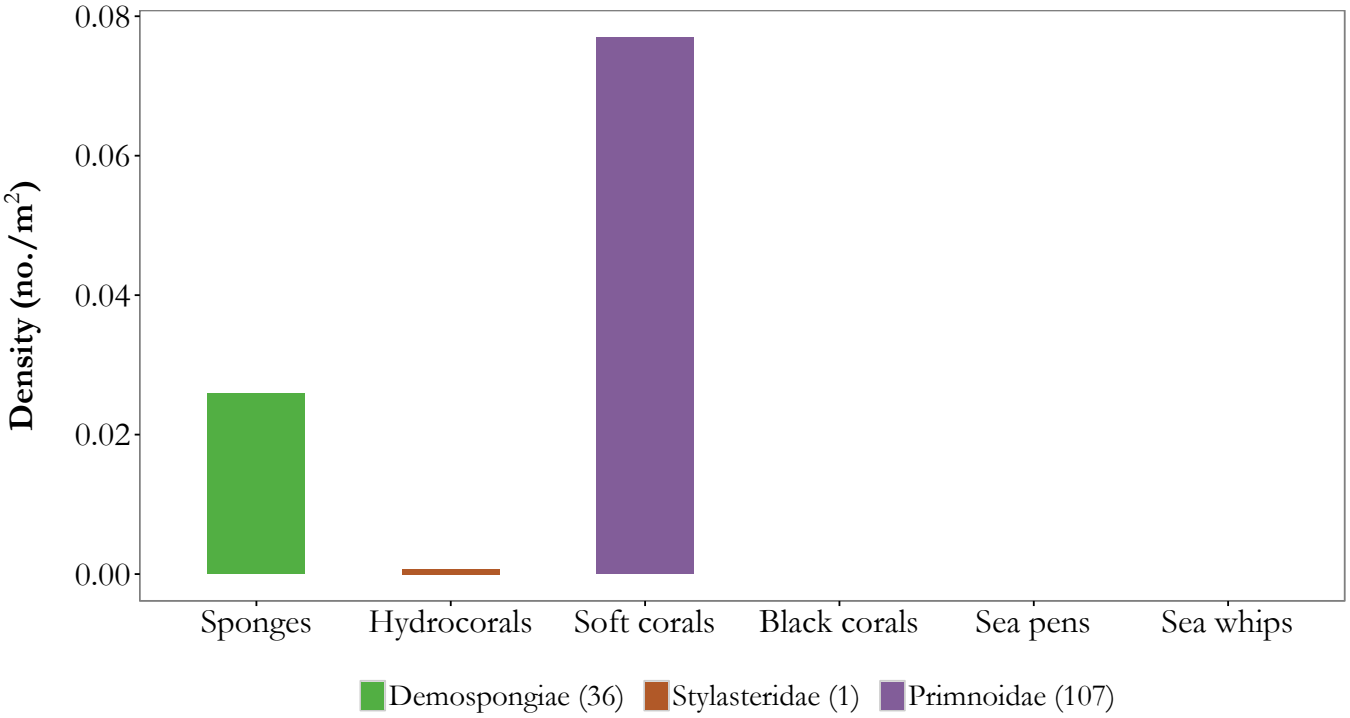


Images

AREA: Akutan Island to Samalga Pass Transect 2014-4

Vertical Habitat Summary





Summary - description of transect

Transect 2014-4: Primary and secondary substrates consisted largely of low bedrock. Fish densities were evenly distributed between unidentified roundfishes (< 0.01 individuals/m^2) and Pacific cod (< 0.01 individuals/m^2). Structure-forming invertebrate habitat consisted of Demospongiae (0.03 individuals/m^2), Stylasteridae (< 0.01 individuals/m^2), and Primnoidae (0.08 individuals/m^2). Mean heights were calculated for Demospongiae (23 cm) and Primnoidae (29 cm).

Samalga Pass to Seguam Pass

Fifty-two transects were completed between Samalga Pass and Seguam Pass. Depths ranged from 73 m to 704 m. Seventeen taxa of fishes and crabs were identified (Table 13). Vertical habitat was dominated by Demospongiae and Primnoidae (Table 14). Heights ranged from 6 cm to 128 cm (Table 15).

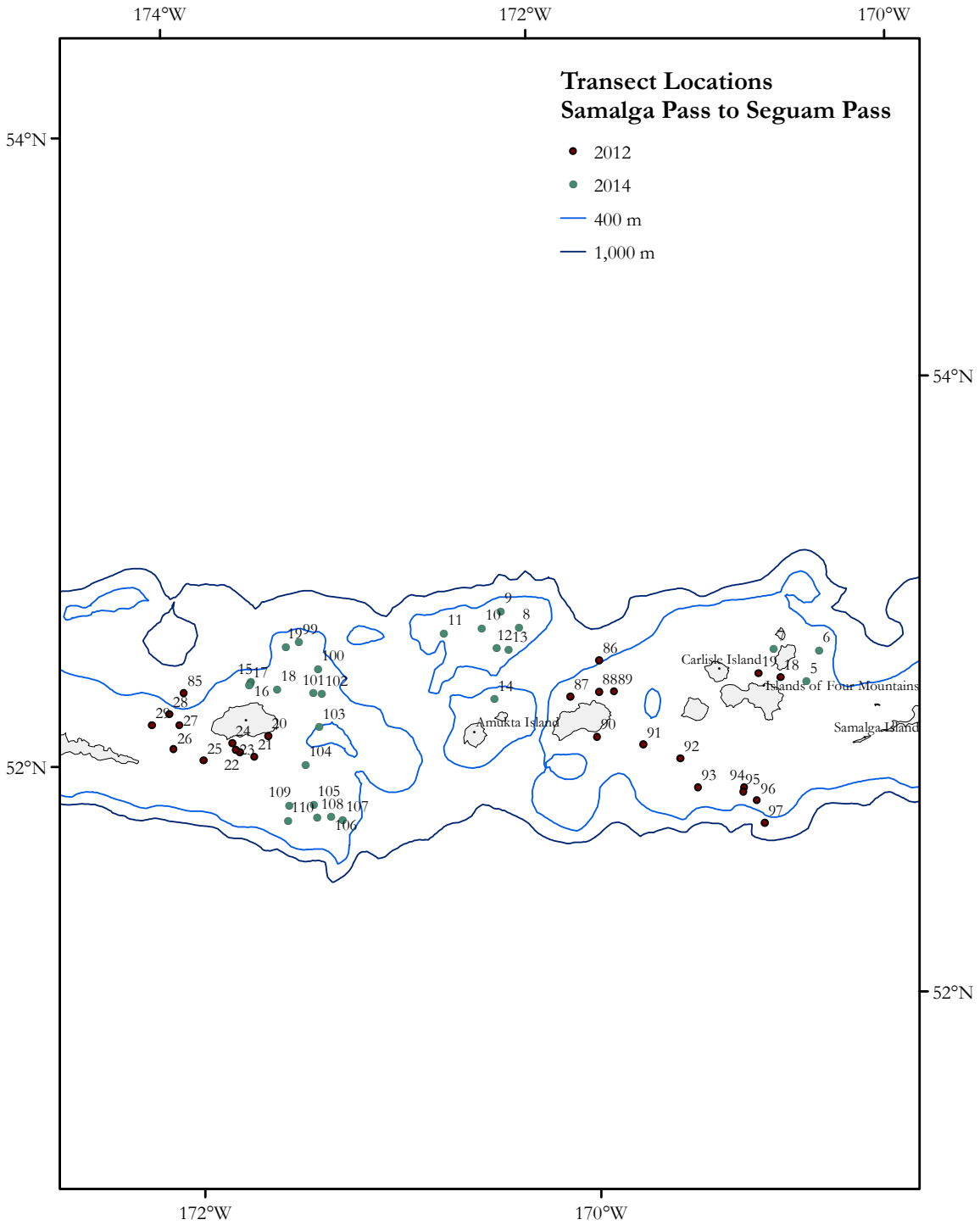


Figure 13. -- Survey transect locations, Samalga Pass to Seguam Pass.

SITE SUMMARY: Samalga Pass to Seguam Pass

Seguam Pass to Amchitka Pass had the highest sampling density, 52 transects, ranging in depth from 71 m to 710 m. Seventeen taxa of fishes and crabs were identified (Fig. 13).

The substrates in between Seguam Pass and Amchitka Pass were very diverse. Primary substrates included sand, gravel, pebble, mixed coarse, cobble,and bedrock (Table 12).

Rockfishes (n = 857) were the most frequently observed species of crabs or fishes (Table 13). Forty-six percent of the rockfish were identified in transect 2014-8. Atka mackerel, sculpins, and flatfishes were the next most abundant.

Twelve taxa of corals, sponges, and sea whips were identified (Table 14), more than any other region surveyed. Sponges were the most abundant with a mean density of 0.59 individuals/m^2. Demospongiae were 99% of the sponge density, occurring at 42 of the 52 transects. Transect 2014-6 had the highest density for the region, 7.17 individuals/m^2. Primnoidae were the most abundant coral with a mean density of 0.45 individuals/m^2 for the region. Transect 2014-10 accounted for 50% of the density and had the highest (12.08 individuals/m^2). density for Primnoidae of the whole survey. Stylasteridae and Plexauridae were the next most abundant taxa with densities of 0.06 and 0.05 individuals/m^2, respectively.

The tallest vertical structures were Primnoidae (128 cm), Demospongiae (102 cm), and Hexactinellida (78 cm) (Table 15). Mean heights ranged from 10 cm for Stylasteridae to 32 cm for Hexactinellida.

Demospongiae and Hexactinellida were evenly distributed (Fig. 14). Calcarea were only observed at two transects. Sea whips and sea pens were each observed at four transects east of Amukta Island (Fig. 15). All corals except for deep-dwelling Isididae and Antipathidae were abundant throughout the transects (Figs. 16-17). Isididae was only present on four deep transects and Antipathidae was not observed at all. Stylasteridae occurred at 29 stations (Fig. 18).

High densities (> 1.0 individuals/m^2) of sponges occurred at eight transects (2012- 94; 2014- 5, 6, 8, 9, 10, 12, 110) and corals at six transects (2014- 9, 8, 10, 11, 100, 110). Coral density at transect 2014-10 was 13.19 individuals/m^2, the highest coral density for the entire survey.

SITE SUMMARY: Samalga Pass to Seguam Pass

Table 12. -- Summary of top 95% of primary and secondary substrates identified at 52 transects between Samalga Pass and Seguam Pass.

Substrate	Minimum depth (m)	Maximum depth (m)	Number of hauls	Number of occurrences	Percent of occurrences
Low Bedrock.mixed coarse	78	494	16	6,575	15%
Sand.gravel	71	395	12	5,226	12%
Sand.sand	80	710	10	4,021	9%
Mixed Coarse.mixed coarse	138	374	8	2,882	6%
Cobble.cobble	117	155	3	2,330	5%
Sand.pebble	81	371	9	2,235	5%
Sand.low bedrock	81	498	4	1,778	4%
Gravel.gravel	66	274	4	1,627	4%
Sand.mixed coarse	78	494	8	1,383	3%
Mixed Coarse.sand	139	375	6	1,345	3%
Low Bedrock.cobble	103	471	4	1,250	3%
Mixed Coarse.cobble	81	338	5	1,067	2%
Gravel.pebble	107	371	3	999	2%
Mixed Coarse.boulder	82	374	10	999	2%
Gravel.cobble	189	193	3	945	2%
Boulder.cobble	70	76	1	939	2%
Mixed Coarse.low bedrock	139	149	3	929	2%
Gravel.mixed coarse	123	371	4	911	2%
Low Bedrock.boulder	87	471	11	840	2%
Boulder.high bedrock	116	130	1	758	2%
Gravel.boulder	82	373	5	631	1%
Gravel.low bedrock	188	194	1	582	1%
Pebble.gravel	124	205	2	571	1%
High Bedrock.high bedrock	78	336	3	542	1%
Cobble.boulder	116	137	2	525	1%
Sand.cobble	222	247	4	400	1%

SITE SUMMARY: Samalga Pass to Seguam Pass

Table 13. -- Summary of fishes and crabs identified at 52 transects between Samalga Pass and Seguam Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth ranges (m)	Mean density (individuals/m^2)
Fishes				
Rockfish unid.	857	25	88-393	0.01
Atka mackerel	309	11	73-228	< 0.01
Sculpin unid.	193	25	82-463	< 0.01
Flatfish unid.	162	22	74-704	< 0.01
Searcher/ronquil unid.	104	12	82-170	< 0.01
Skate unid.	81	27	74-704	< 0.01
Roundfish unid.	67	26	79-463	< 0.01
Pacific cod	56	15	73-273	< 0.01
Irish lord unid.	34	8	73-153	< 0.01
Eelpout unid.	21	7	257-704	< 0.01
Grenadier unid.	20	4	372-704	< 0.01
Snailfish unid.	14	6	211-463	< 0.01
Thornyhead unid.	13	2	372-393	< 0.01
Walleye pollock	5	5	128-273	< 0.01
Crabs				
King crab unid.	67	16	126-704	< 0.01
Crab unid.	10	7	214-463	< 0.01
Snow crab unid.	2	2	214-224	< 0.01

Table 14. -- Summary of sponges, corals, Pennatulaceans, and hydrocorals identified at 52 transects between Samalga Pass and Seguam Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth ranges (m)	Mean density (individuals/m^2)
Sponges				
Demospongiae	42,954	42	73-495	0.58
Hexactinellida	536	20	73-463	0.01
Calcarea	11	2	96-170	< 0.01
Soft corals				
Primnoidae	27,116	39	73-495	0.45
Plexauridae	3,350	31	73-495	0.05
Paragorgiidae	1,078	16	80-372	0.01
Acanthogorgiidae	278	15	80-337	< 0.01
Soft coral unid.	189	13	84-463	< 0.01
Isididae	135	4	80-372	< 0.01
Pennatulaceans				
Pennatulidae	869	4	79 -93	0.01
Halipteridae	56	3	84-393	< 0.01
Hydrocorals				
Stylasteridae	5,405	29	80-495	0.06

SITE SUMMARY: Samalga Pass to Seguam Pass

Table 15. -- Summary of sponge, coral, Pennatulacean, and hydrocoral heights from transects completed between Samalga Pass and Seguam Pass.

Species/Grouping	Number measured	Minimum height (cm)	Maximum height (cm)	Mean height (cm)
Sponges				
Demospongiae	1,339	20	102	29
Hexactinellida	34	20	78	32
Soft corals				
Primnoidae	1,644	6	128	25
Plexauridae	374	4	59	21
Paragorgiidae	114	5	56	28
Acanthogorgiidae	41	6	30	14
Isididae	7	15	27	21
Soft coral unid.	4	10	21	13
Pennatulaceans				
Pennatulidae	30	6	24	14
Halipteridae	7	10	25	17
Hydrocorals				
Stylasteridae	197	3	29	10

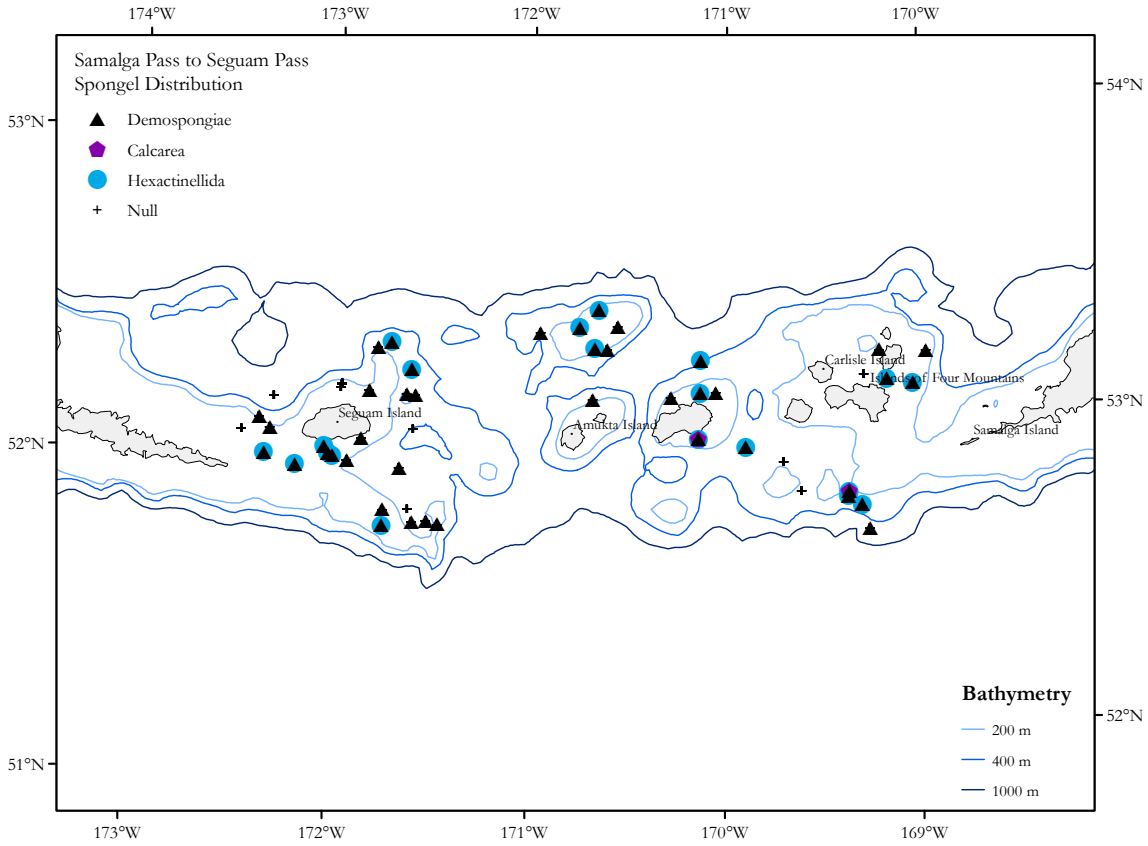


Figure 14. -- Sponge distribution, Samalga Pass to Seguam Pass.

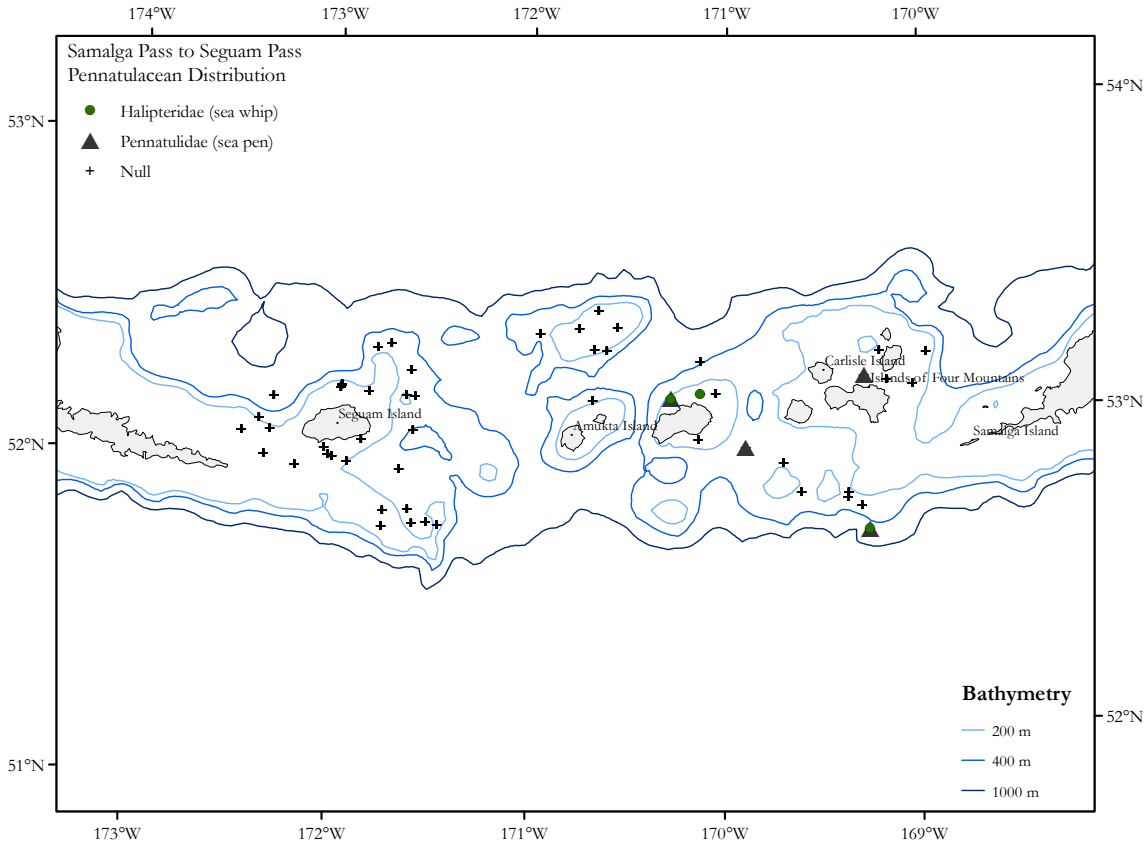


Figure 15. -- Pennatulacean distribution, Samalga Pass to Seguam Pass.

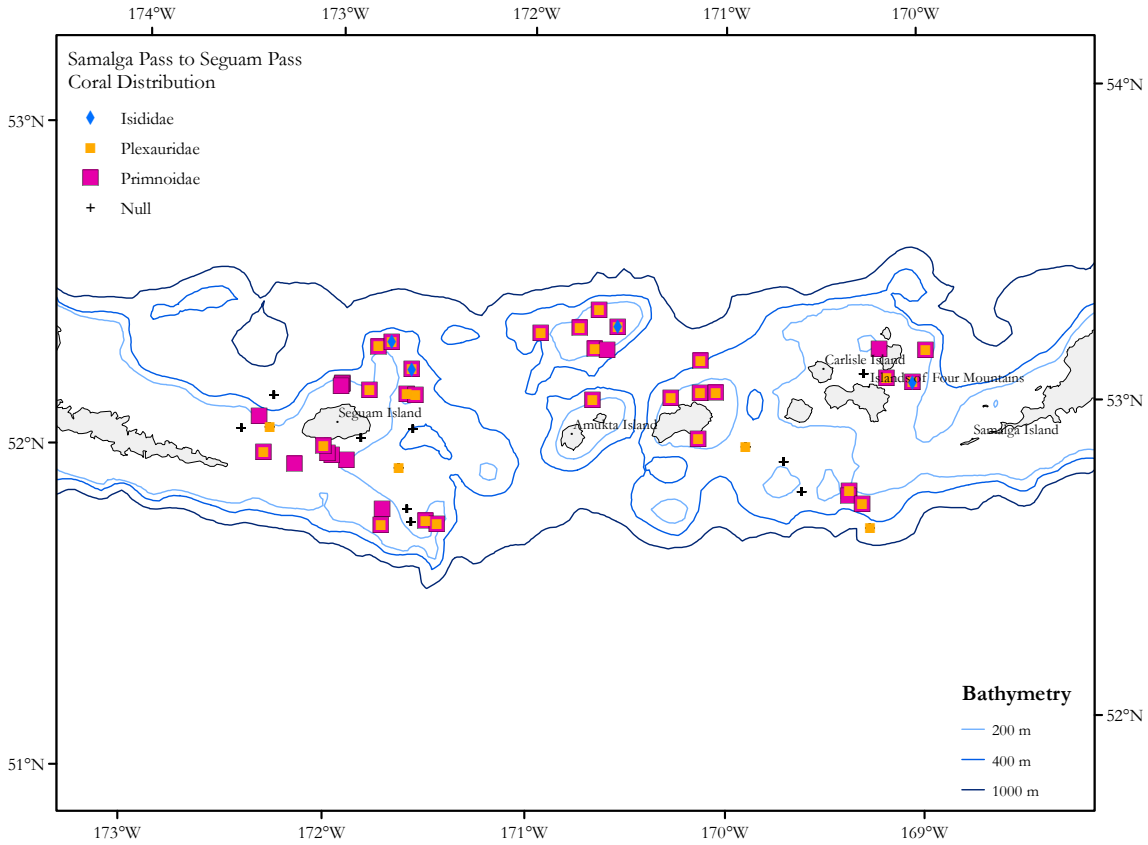


Figure 16. -- Isididae, Plexauridae, and Primnoidae distribution, Samalga Pass to Seguam Pass.

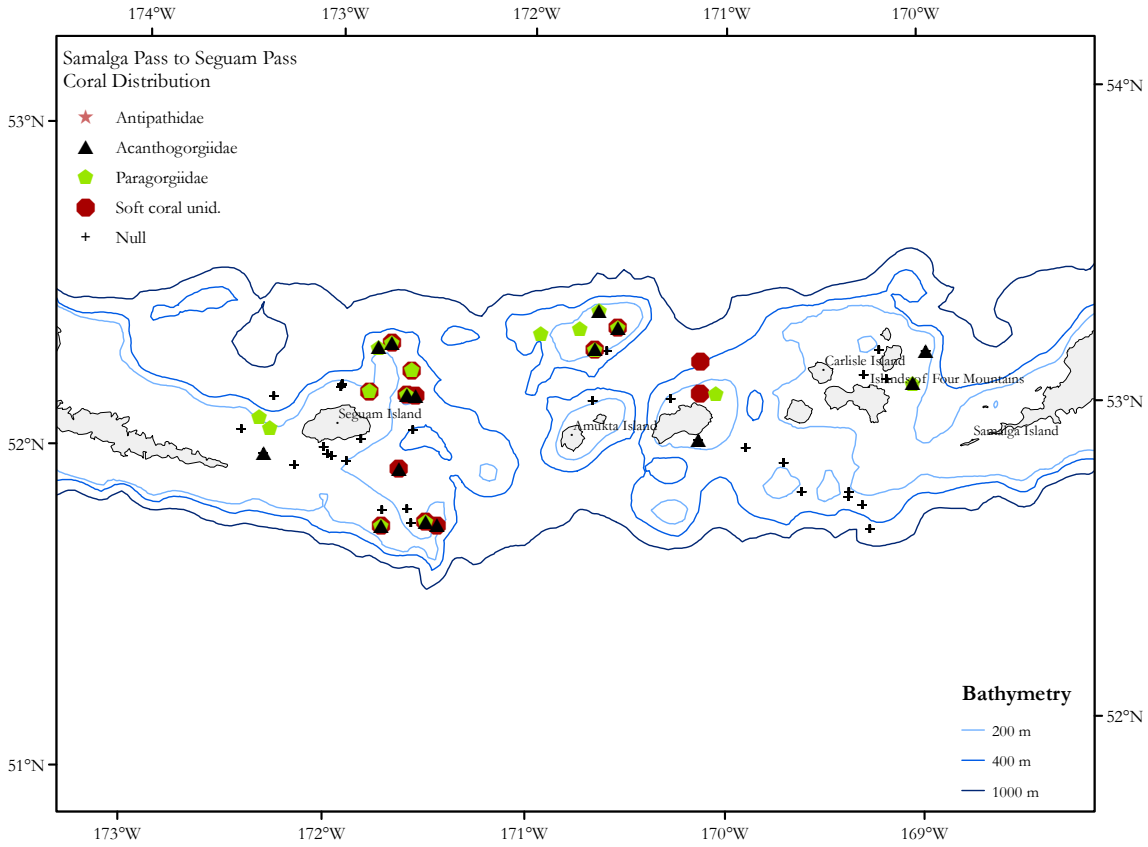


Figure 17. -- Antipathidae, Acanthogorgiidae, Paragorgiidae, and soft coral unidentified distribution, Samalga Pass to Seguam Pass.

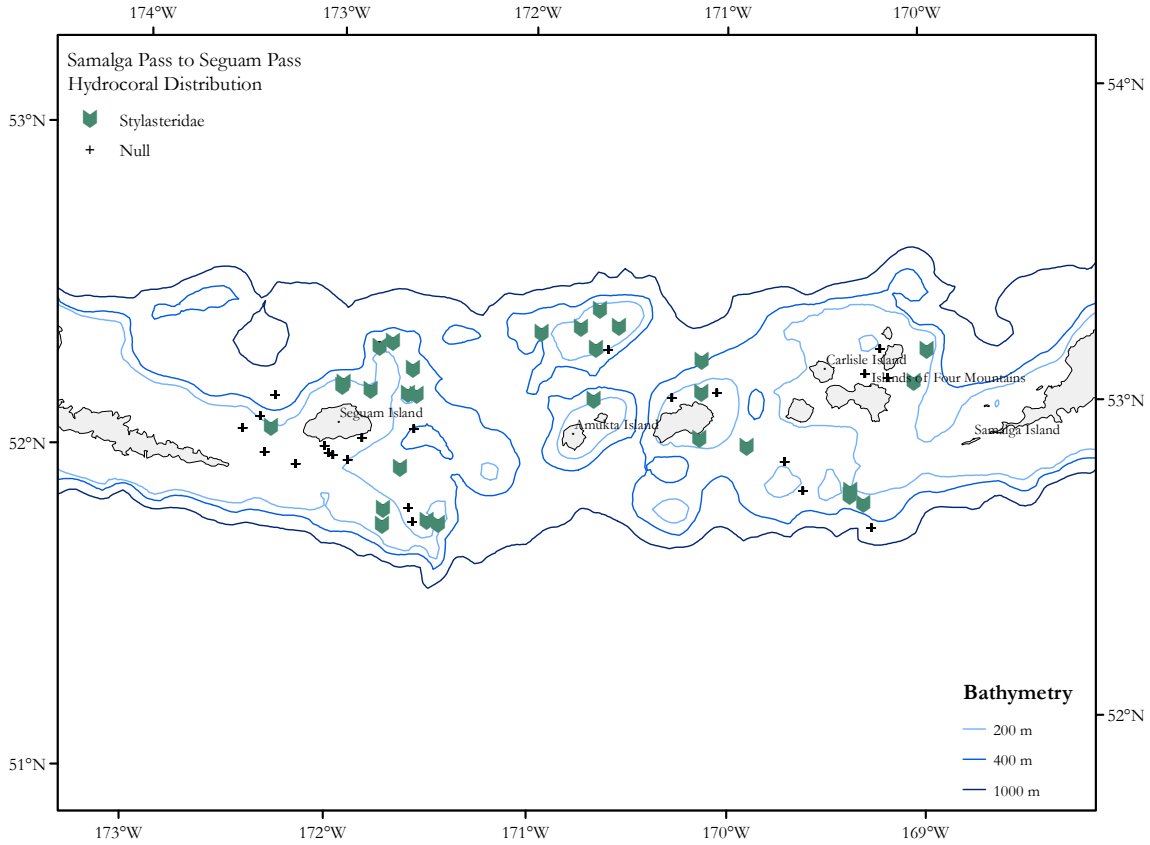
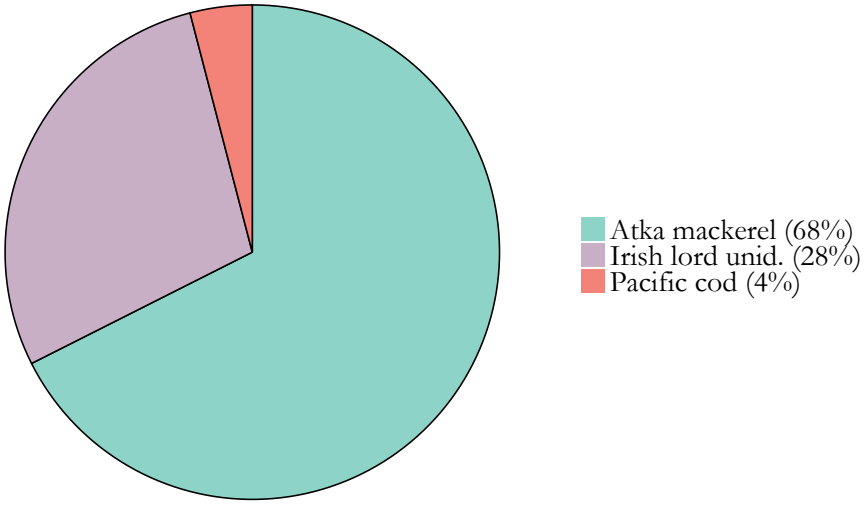


Figure 18. -- Hydrocoral distribution, Samalga Pass to Seguam Pass.

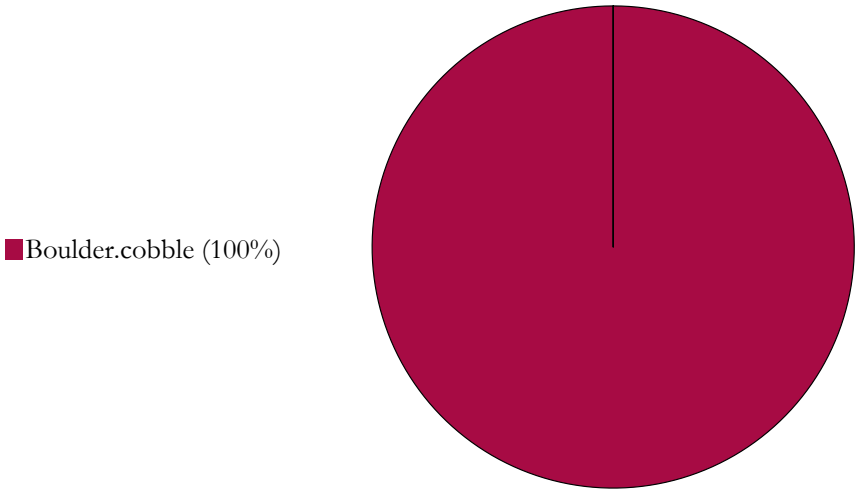
AREA: Samalga Pass to Seguam Pass — Transect 2012-18

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/18/2012	52.92	-169.71	1,317	73	5.3

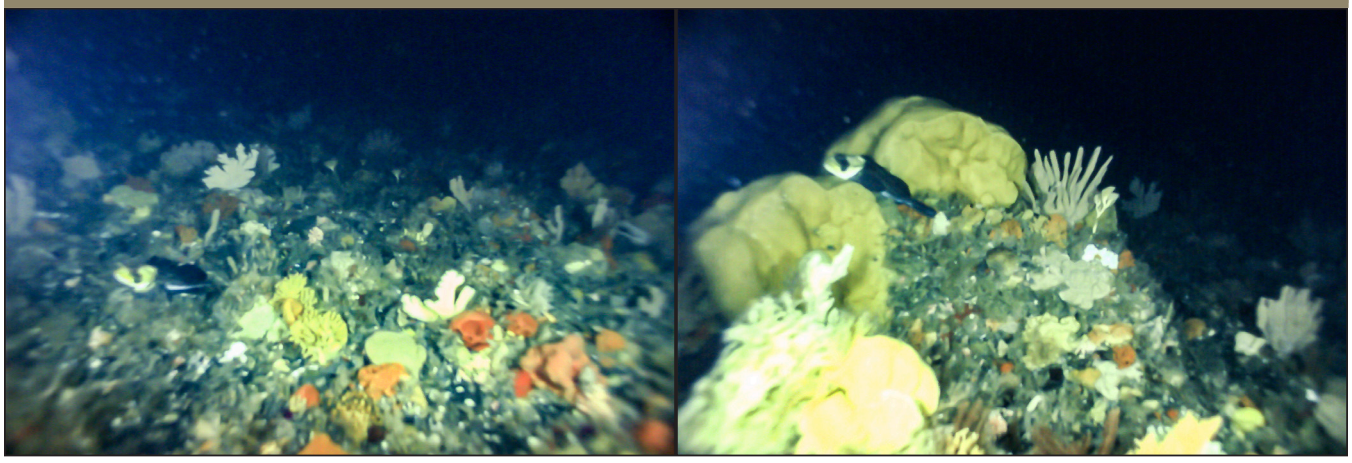
Fish and Crab Composition (n = 74)



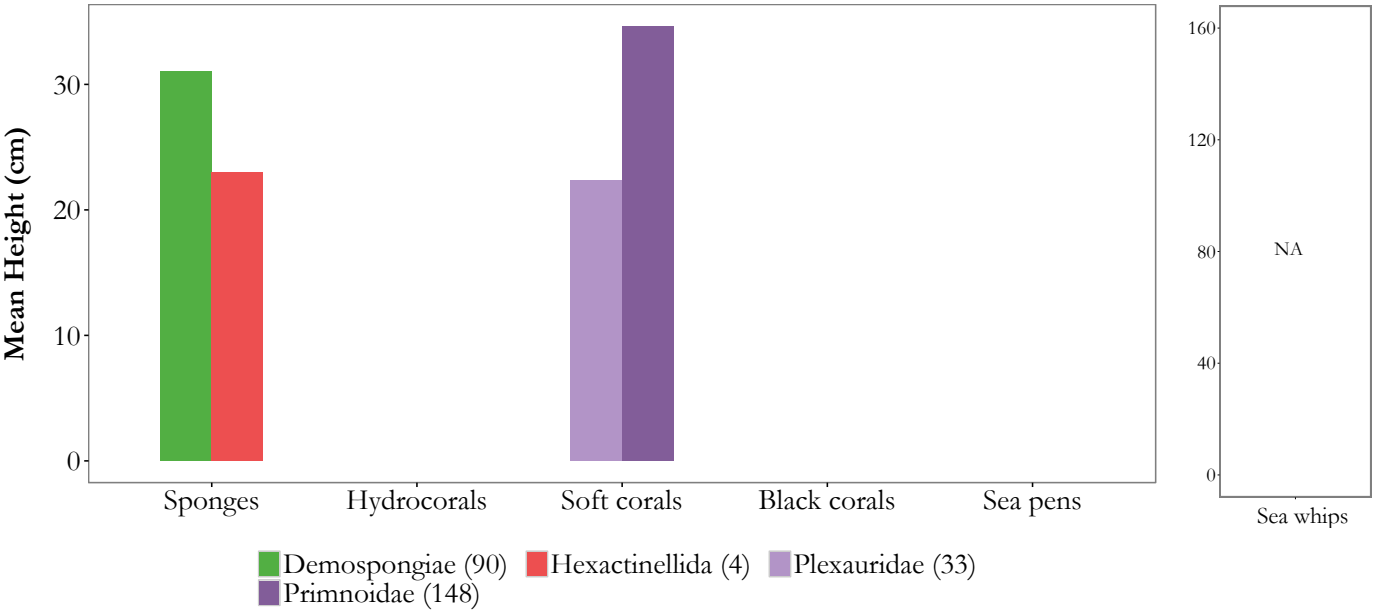
Substrate Composition

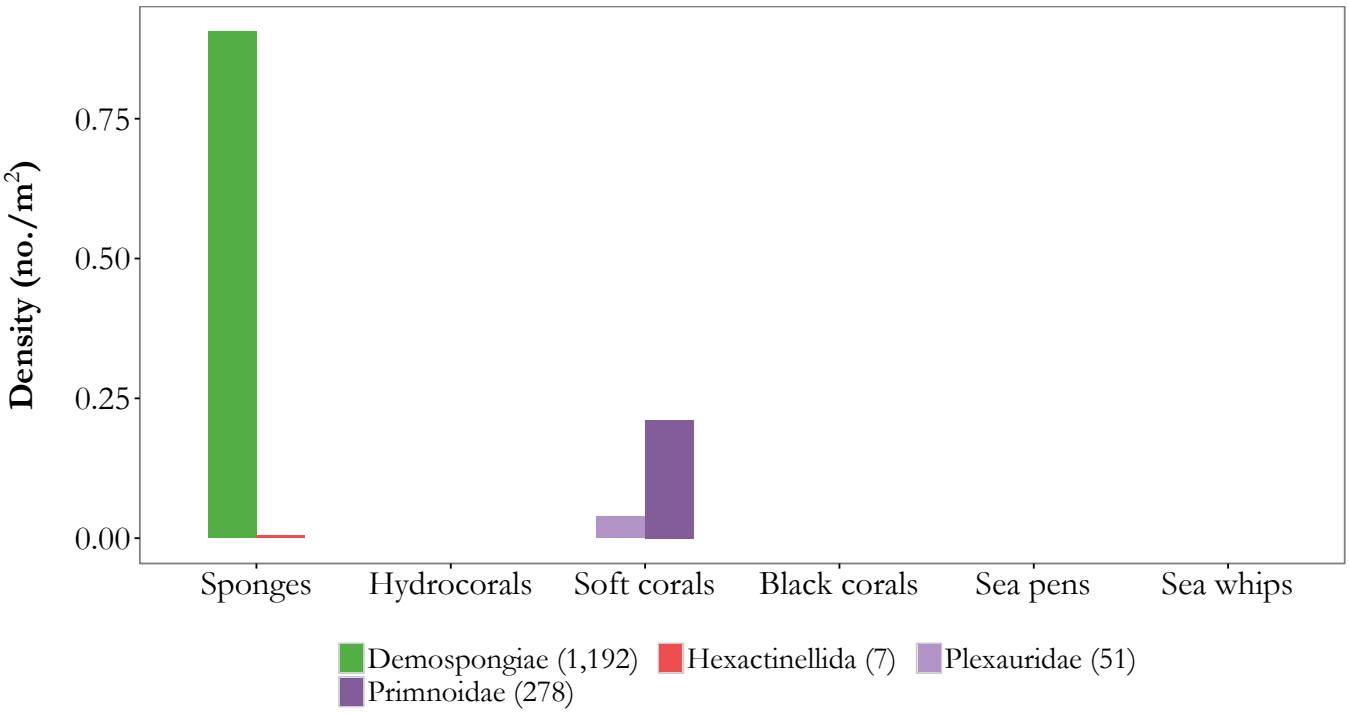


Images



Vertical Habitat Summary





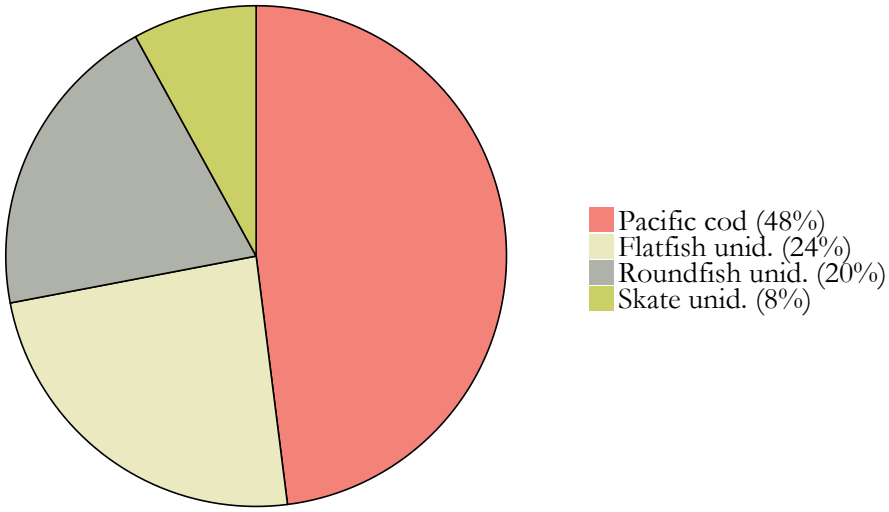
Summary - description of transect

Transect 2012-18: Primary and secondary substrates consisted of boulder and cobble. A majority (96%) of the fishes identified were Atka mackerel and Irish lords. Total fish density was low (0.06 individuals/m^2). Available structure-forming invertebrates consisted of Demospongiae (0.91 individuals/m^2), Hexactinellida (0.01 individuals/m^2), Plexauridae (0.04 individuals/m^2), and Primnoidae (0.21 individuals/m^2). Mean heights were 31 cm, 23 cm, 22 cm and 35 cm, respectively.

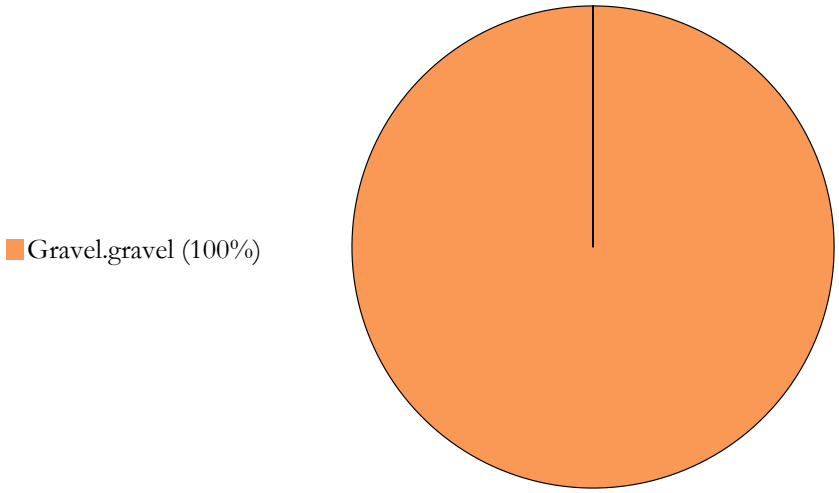
AREA: Samalga Pass to Seguam Pass — Transect 2012-19

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/18/2012	52.91	-169.84	3,009	79	5.3

Fish and Crab Composition (n = 25)



Substrate Composition



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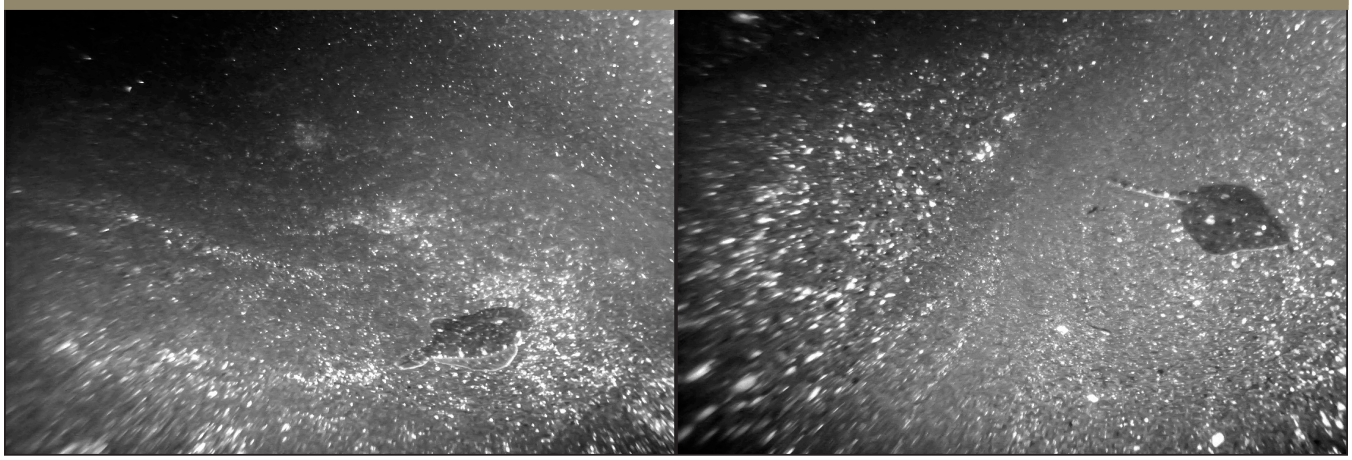
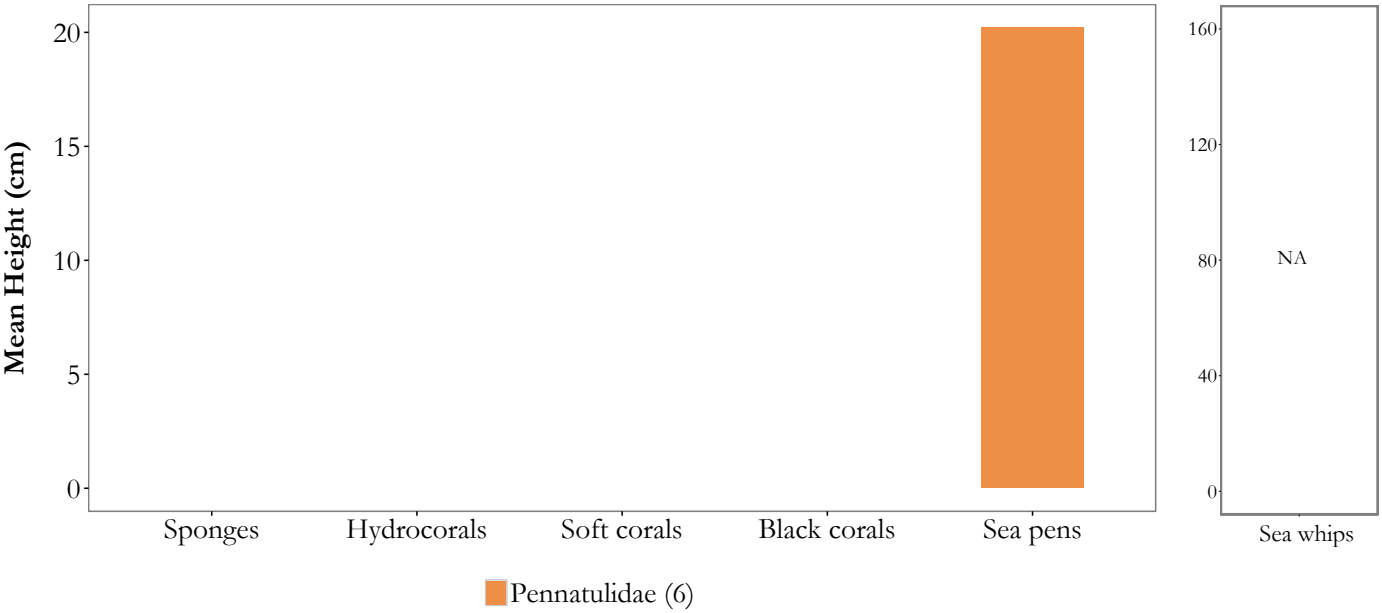
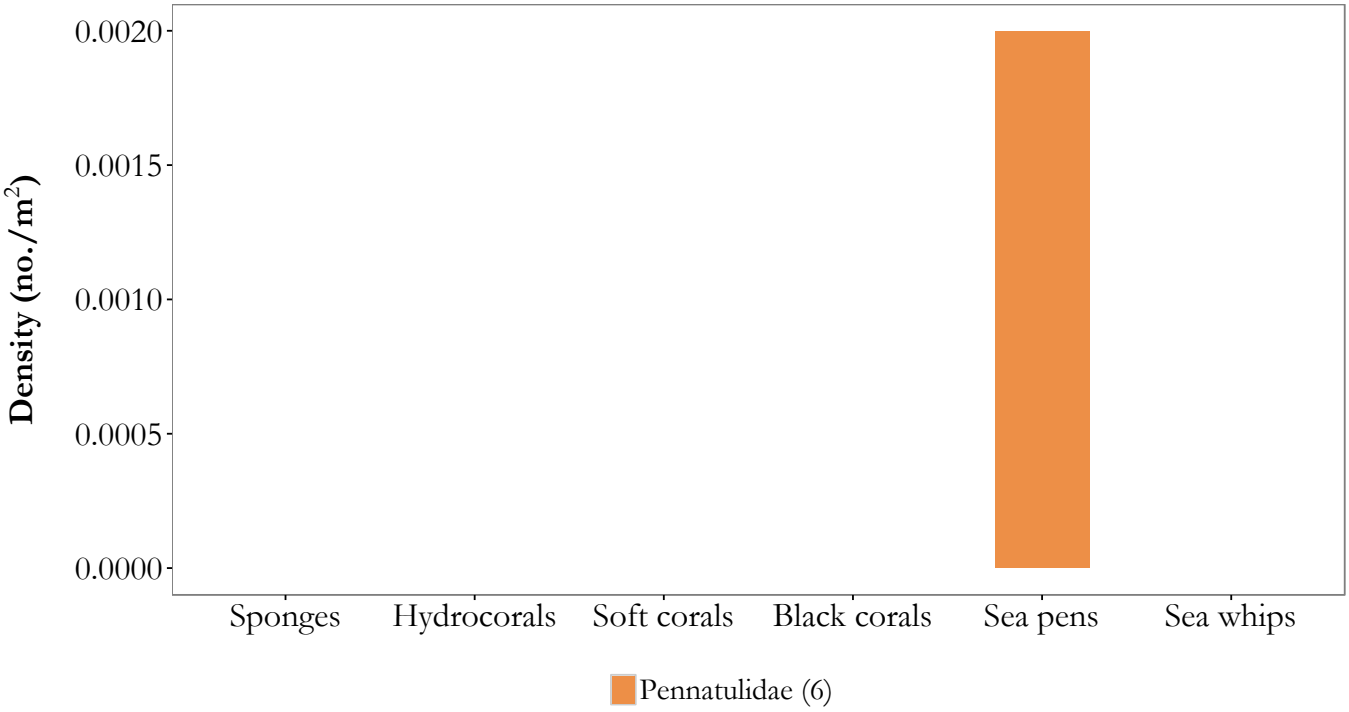


Vertical Habitat Summary





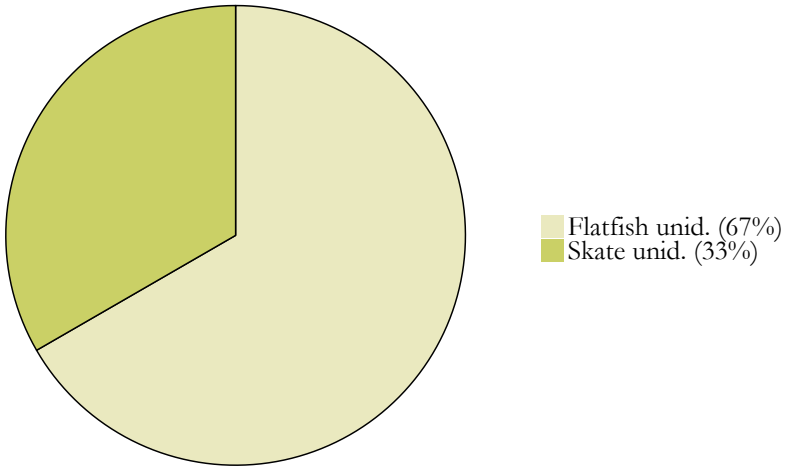
Summary - description of transect

Transect 2012-19: Primary and secondary substrates consisted entirely of gravel. Few fishes were identified in this transect (n = 25) with a majority (48%) identified as Pacific cod. Six Pennatulidae were identified, with a mean height of 20 cm. No other corals, sponges, sea whips, or hydrocorals were identified.

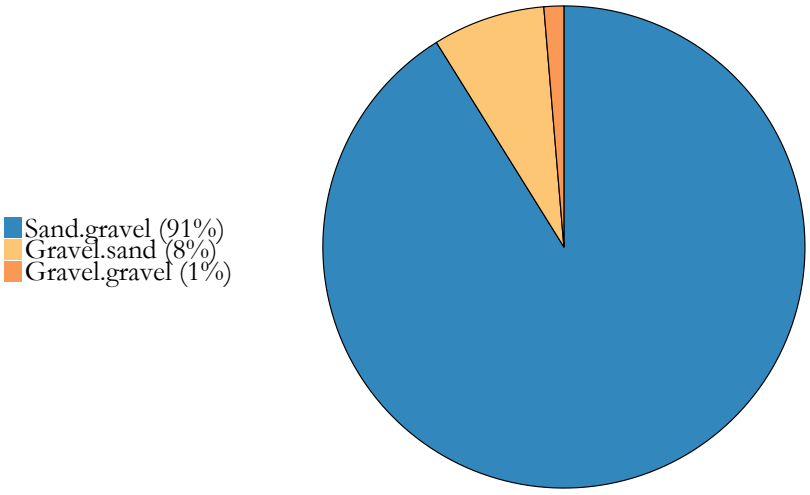
AREA: Samalga Pass to Seguam Pass — Transect 2012-20

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.29	-172.33	1,602	74	4.8

Fish and Crab Composition (n = 6)

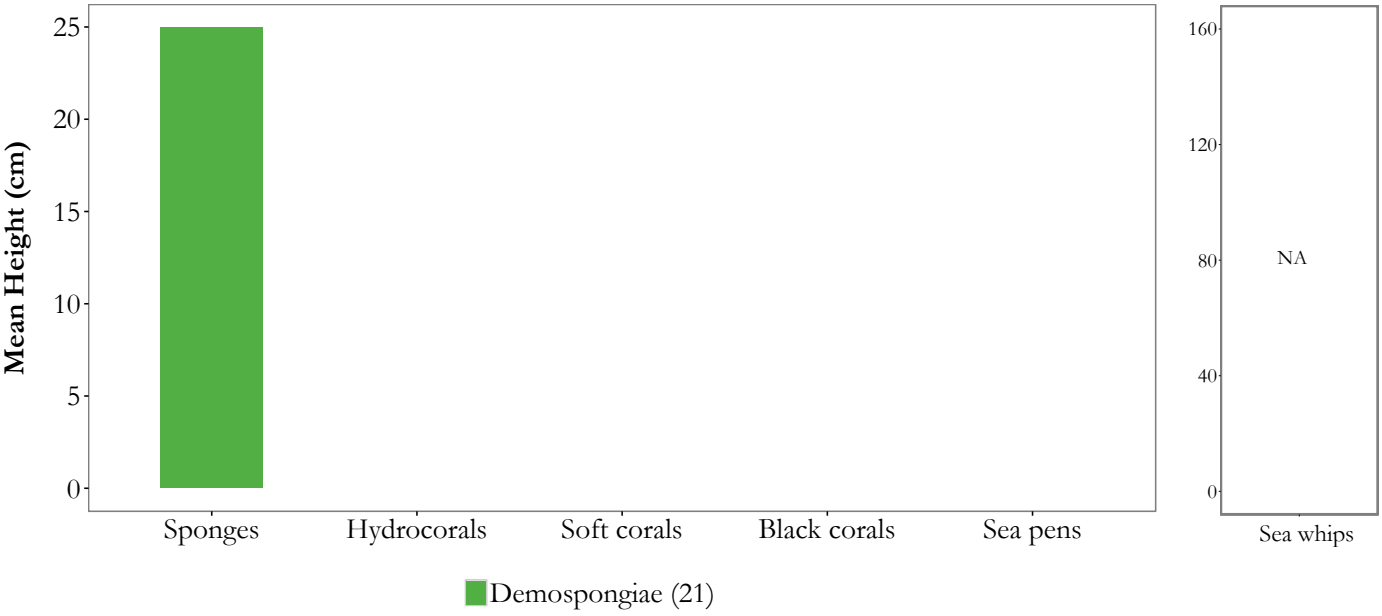


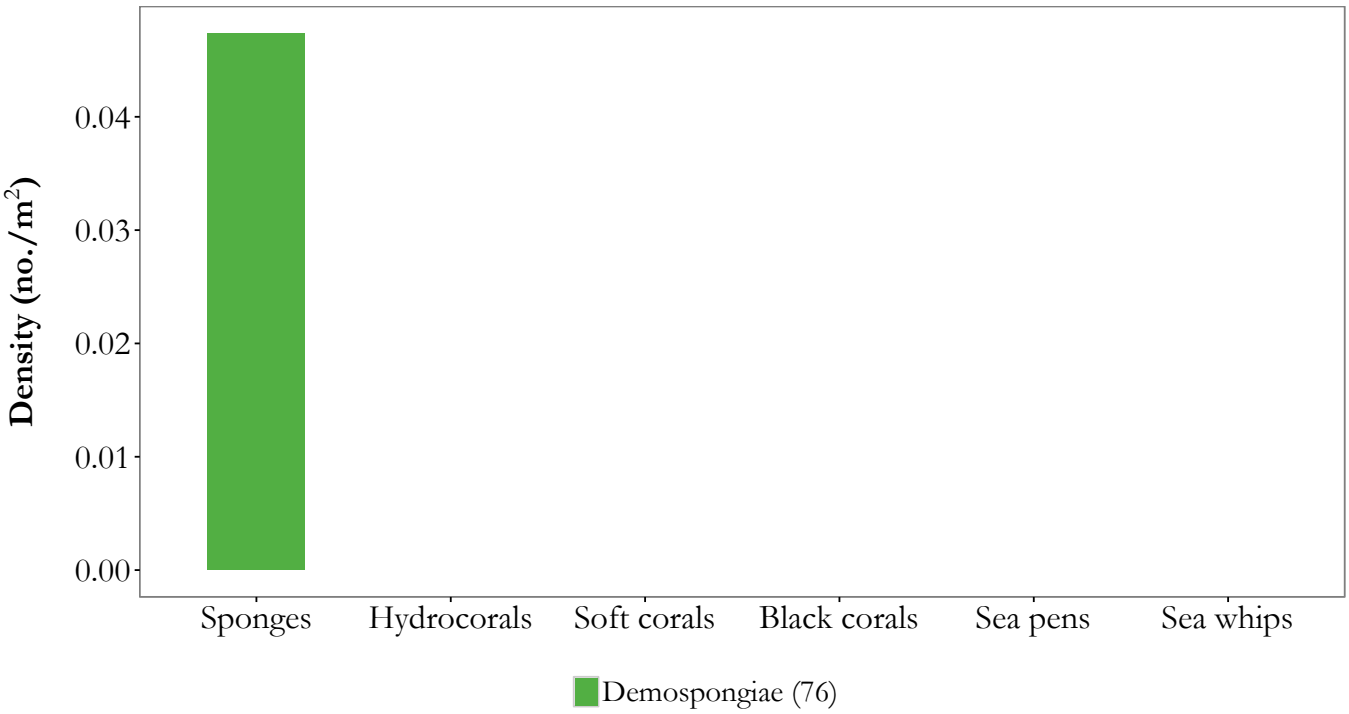
Substrate Composition



Images

Vertical Habitat Summary





Summary - description of transect

Transect 2012-20: Primary and secondary substrates consisted of sand and gravel. Only five flatfishes and one skate were identified resulting in a very low density of < 0.01 individuals/m^2. Structure-forming invertebrate habitat consisted of 76 Demospongiae with a density of 0.05 individuals/m^2. Mean height for 21 individuals was 25 cm. No other sponges, hydrocorals, corals, sea pens, or sea whips were identified.

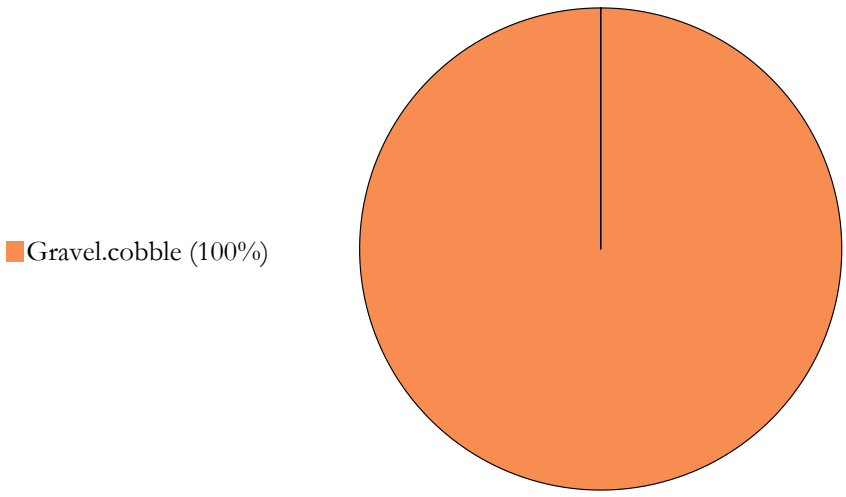
AREA: Samalga Pass to Seguam Pass — Transect 2012-21

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.21	-172.37	1,188	192	4.6

Fish and Crab Composition

NA

Substrate Composition



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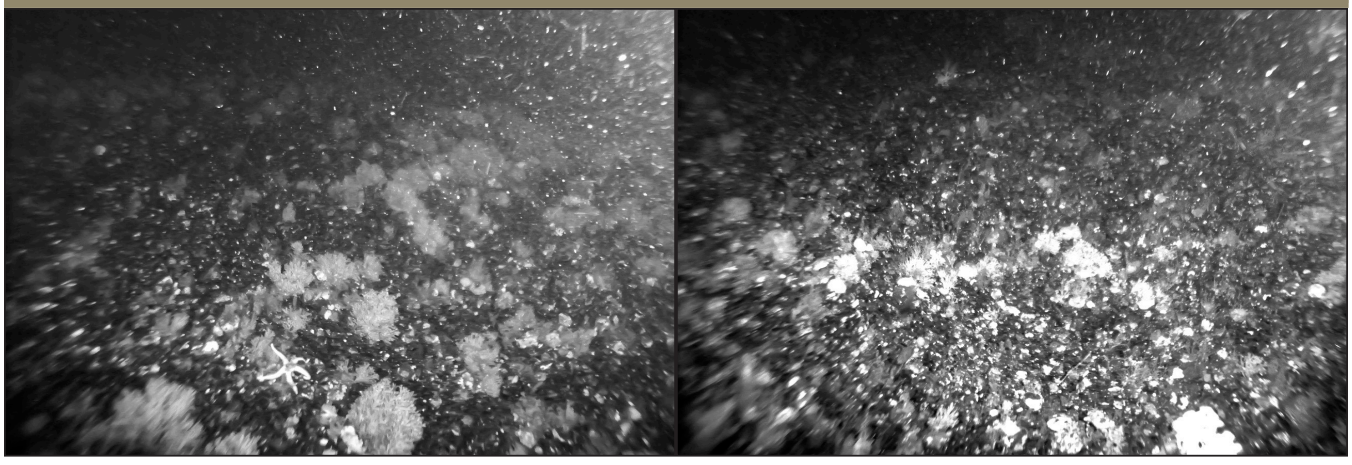
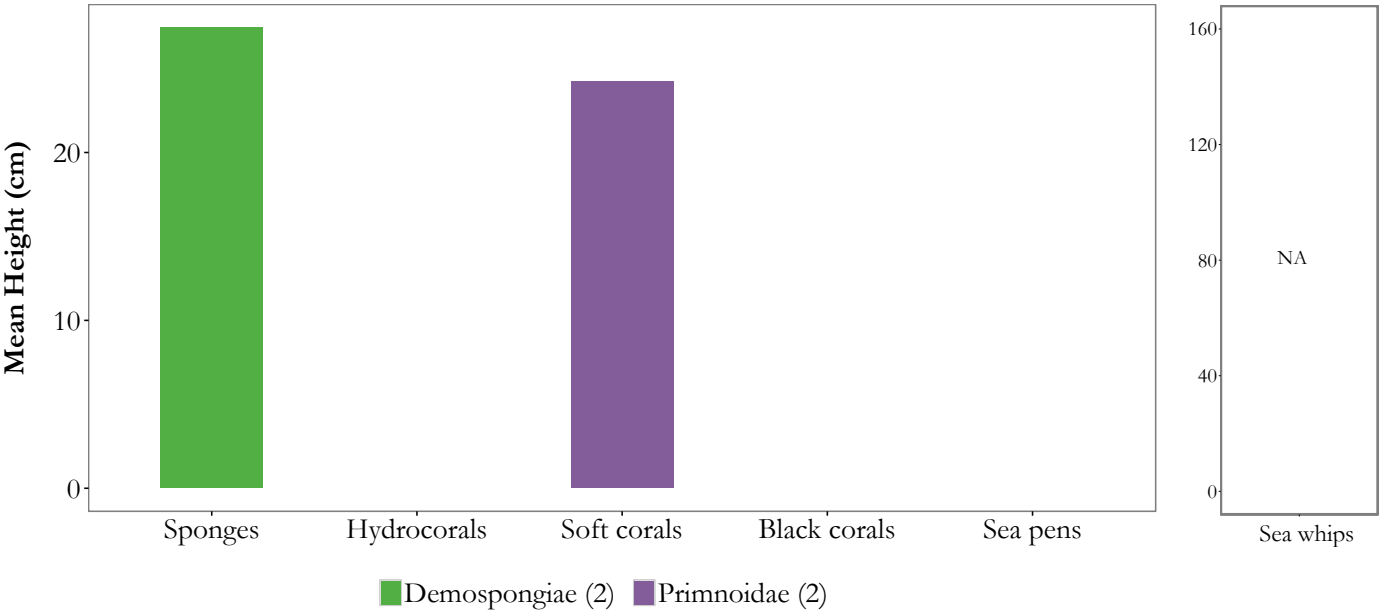
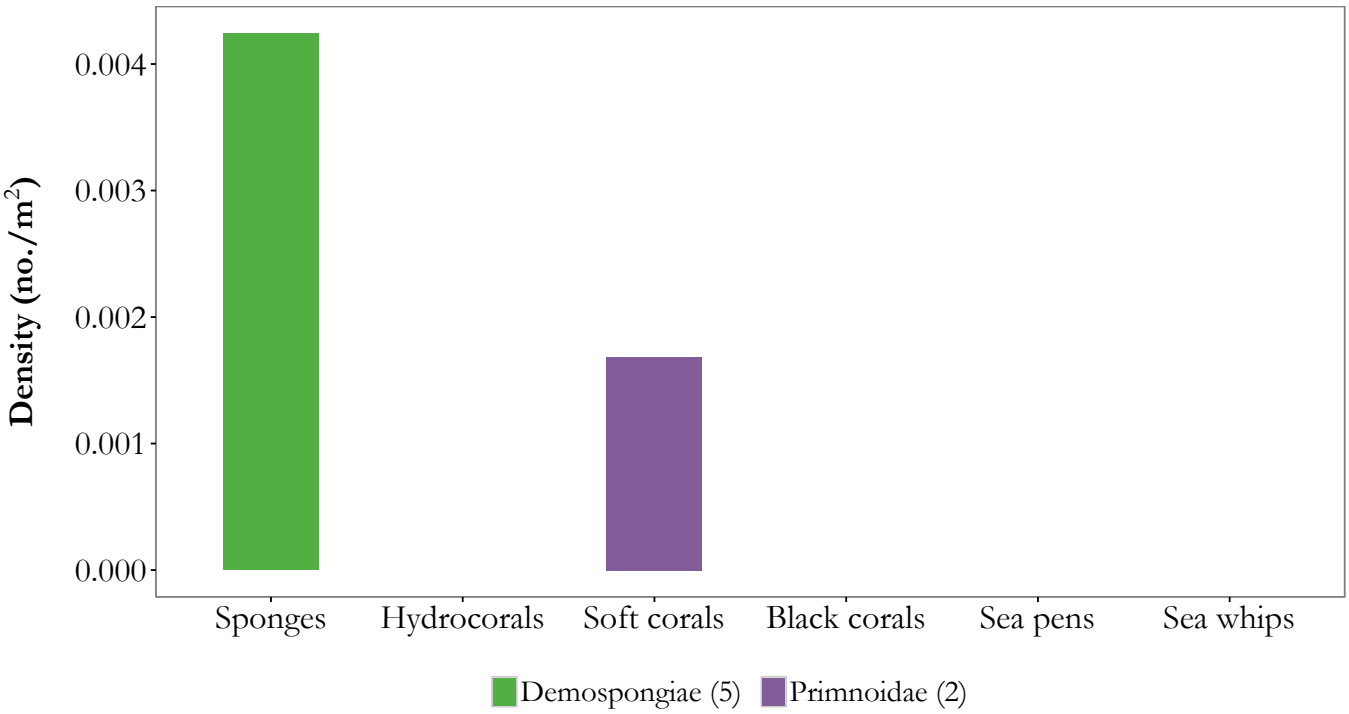


Vertical Habitat Summary





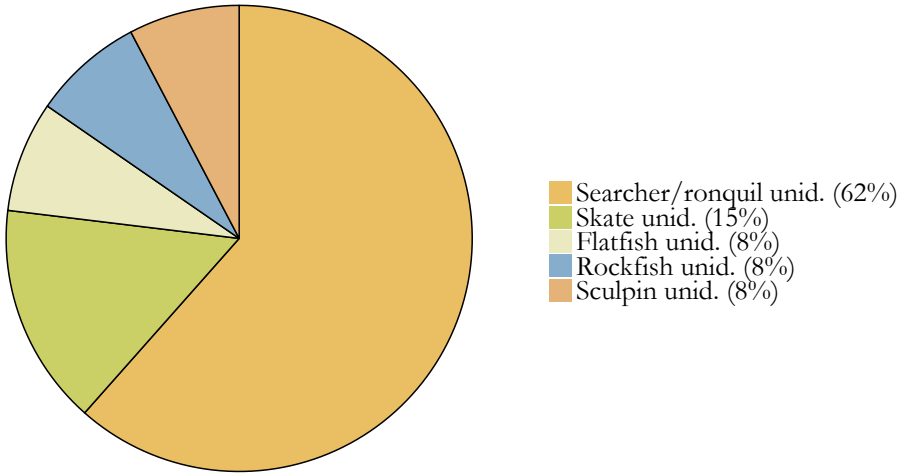
Summary - description of transect

Transect 2012-21: Primary and secondary substrates consisted of gravel and cobble, respectively. No fishes or crabs were identified. Structure-forming invertebrate density was very low (0.01 individuals/m^2). Only five Demospongiae and two Primnoidae were identified. Means heights were 27 cm and 24 cm, respectively.

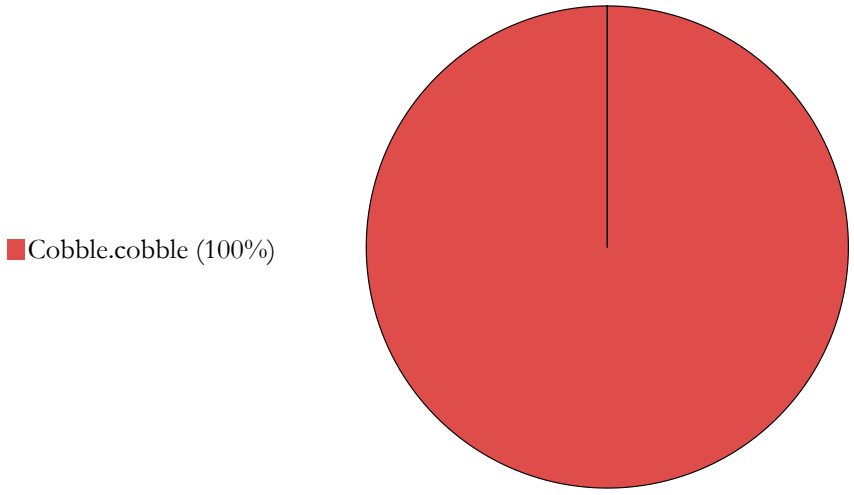
AREA: Samalga Pass to Seguam Pass — Transect 2012-22

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.22	-172.45	1,820	137	4.8

Fish and Crab Composition (n = 13)



Substrate Composition



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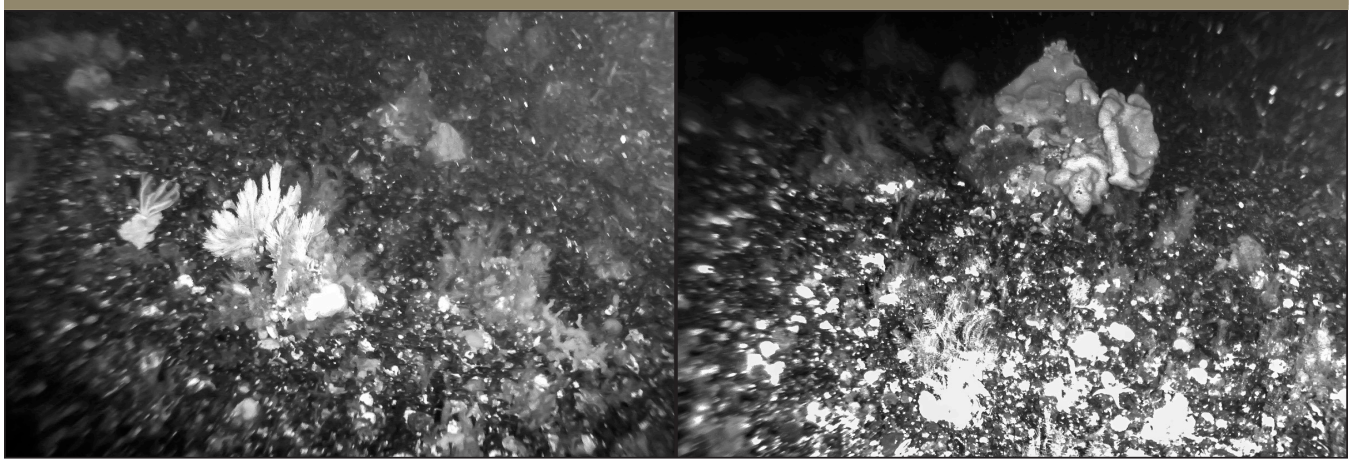
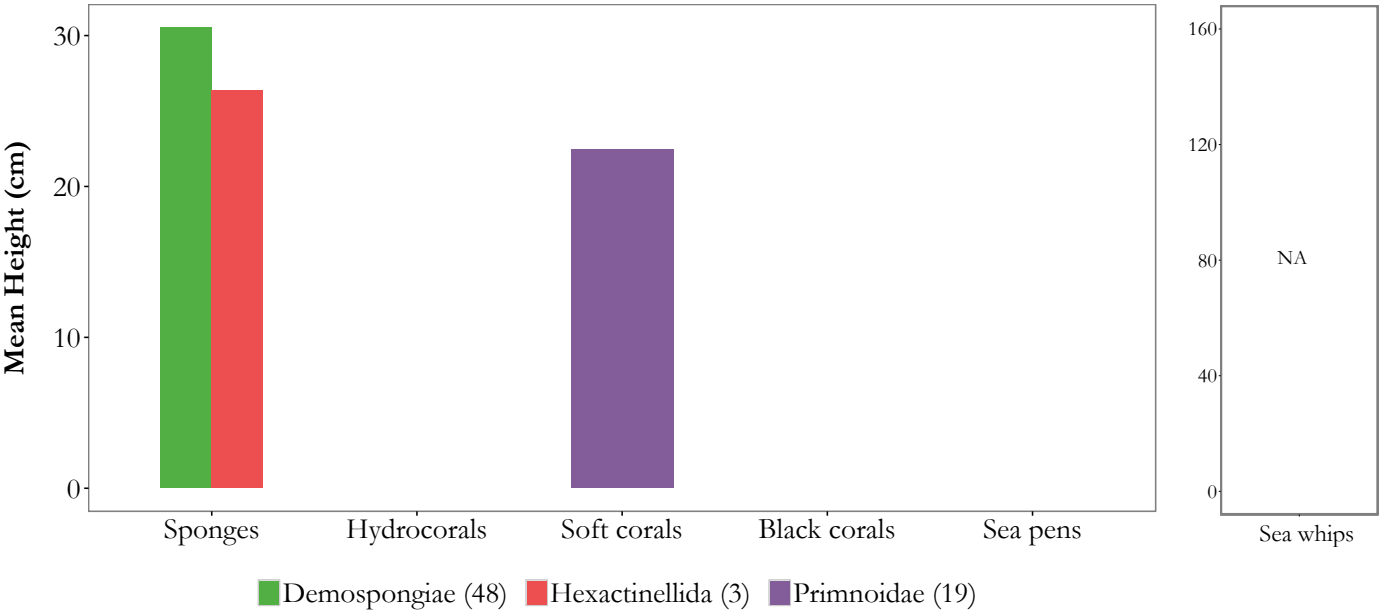
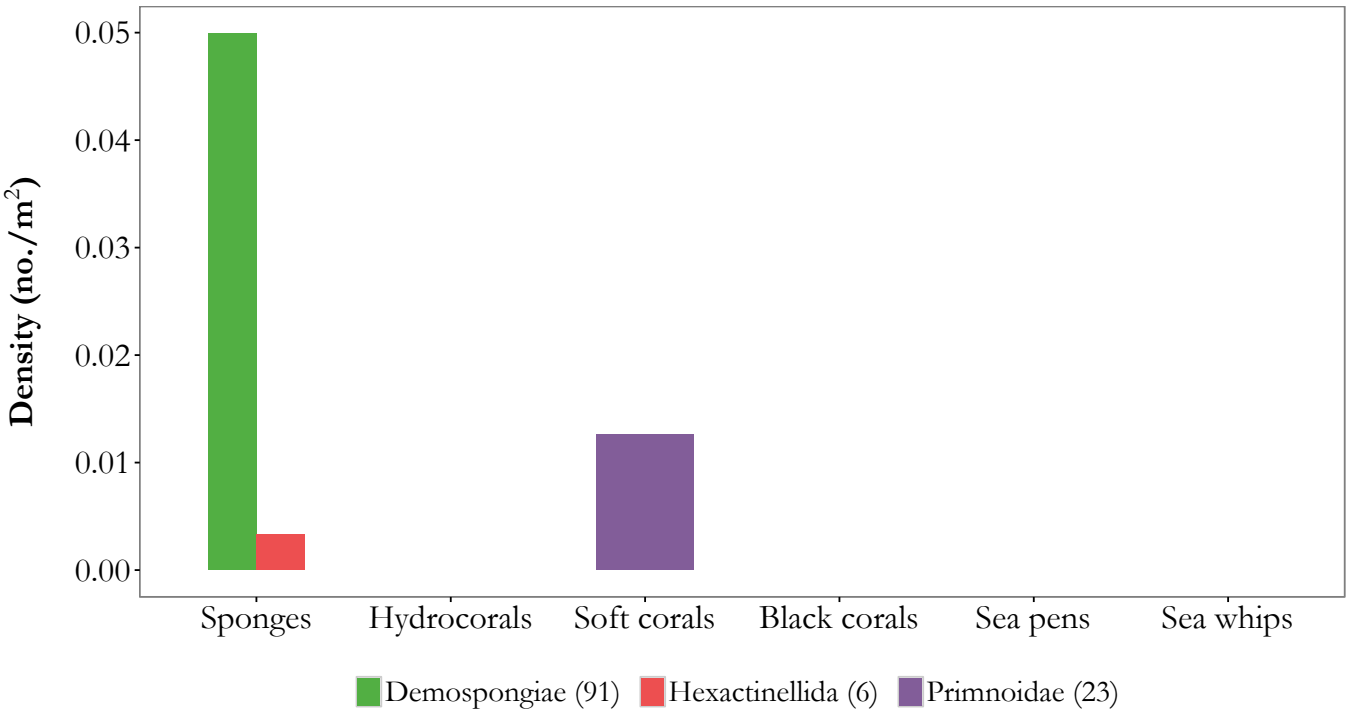


Vertical Habitat Summary





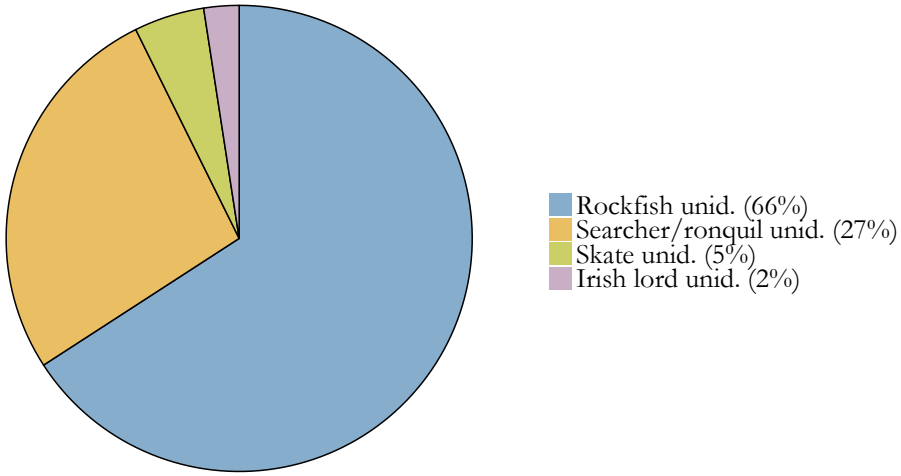
Summary - description of transect

Transect 2012-22: Primary and secondary substrates consisted entirely of cobble. Only 13 fishes were identified on this transect. Searchers/ronquils and skates (n = 10) accounted for 77% of the taxa identified. Fish density was low overall (0.01 individuals/m^2). Coral density was 0.01 individuals/m^2, and consisted of 23 Primnoidae. Sponge density was 0.06 individuals/m^2, of which Demospongiae were the most abundant.(0.05 individuals/m^2). Mean heights were calculated for Demospongiae (31 cm), Hexactinellida (26 cm), and Primnoidae (22 cm).

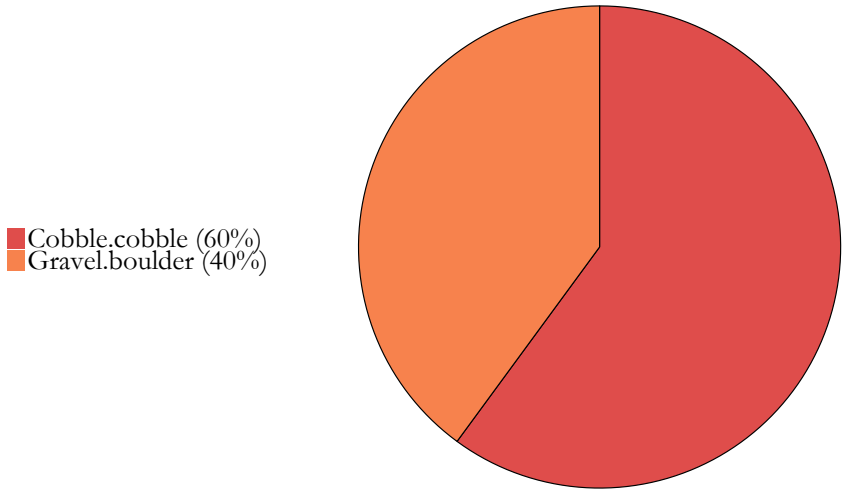
AREA: Samalga Pass to Seguam Pass — Transect 2012-23

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.22	-172.47	1,666	118	4.8

Fish and Crab Composition (n = 41)



Substrate Composition



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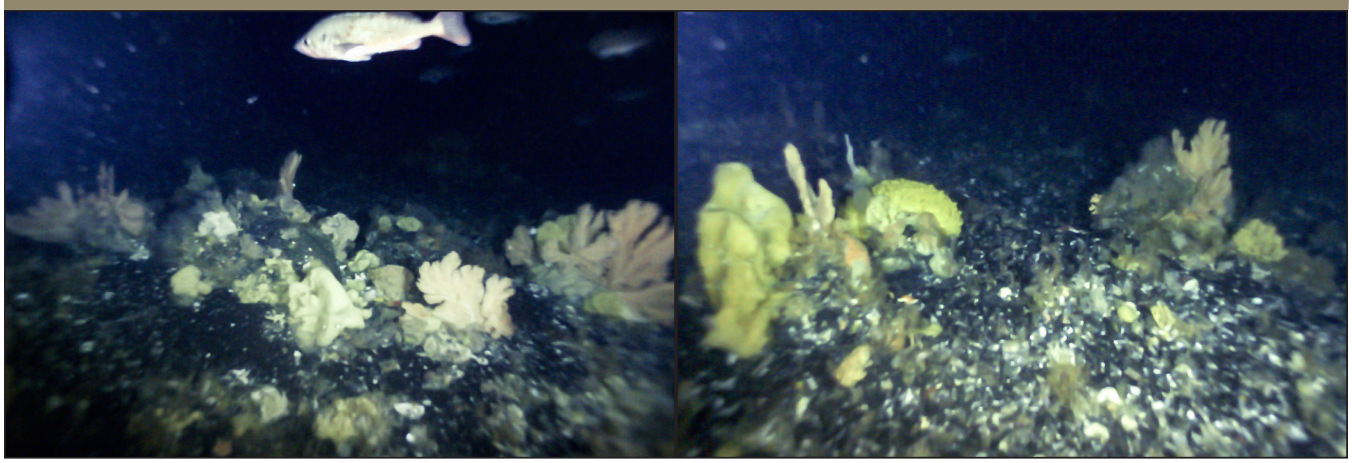
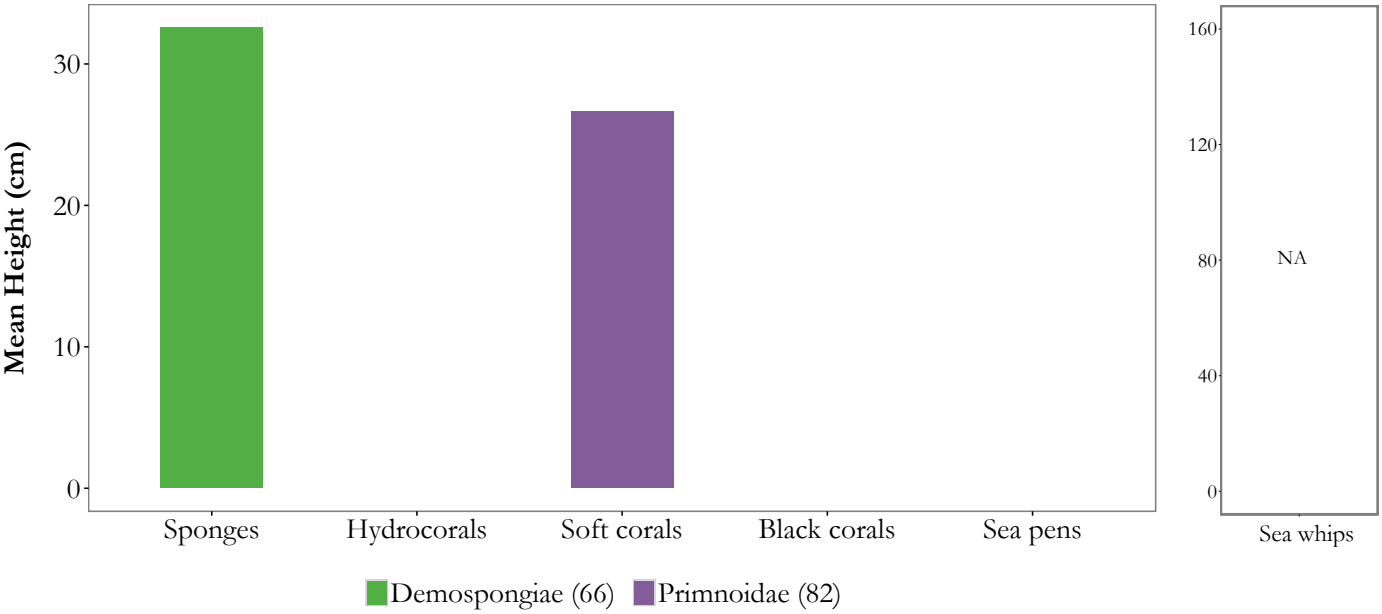
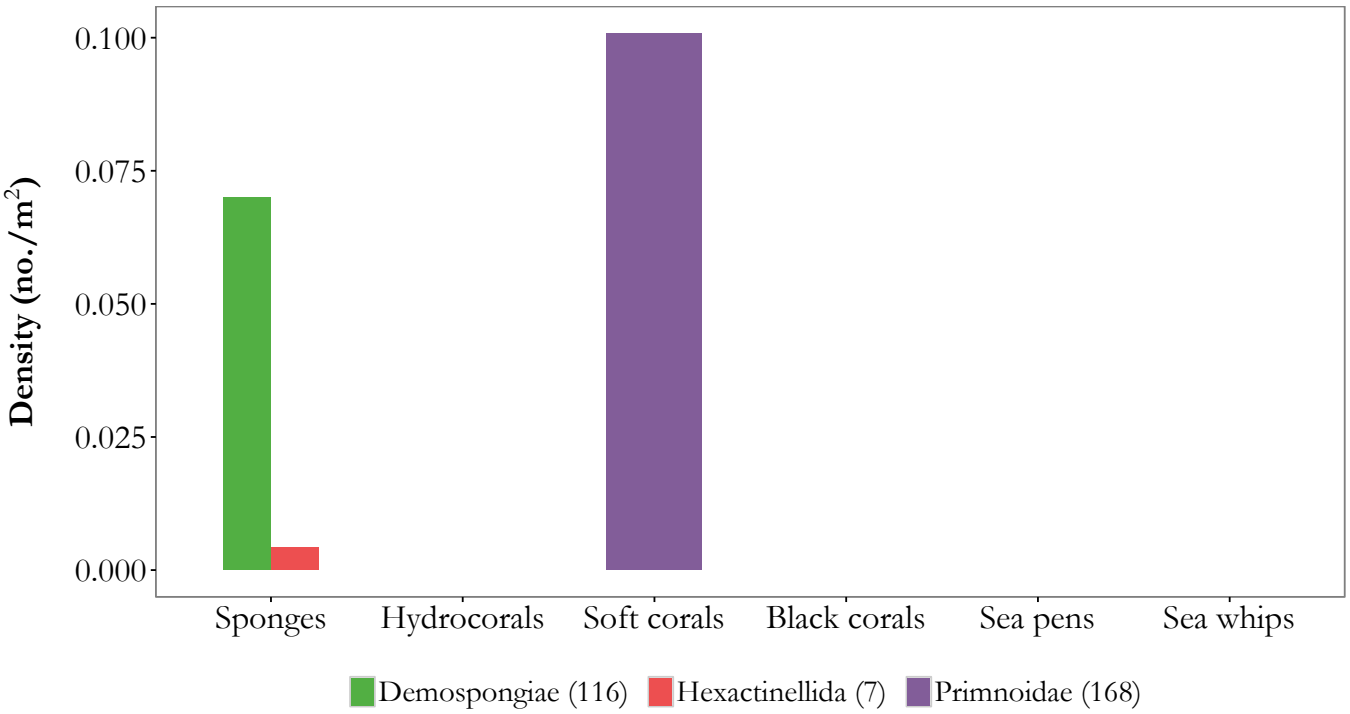


Vertical Habitat Summary





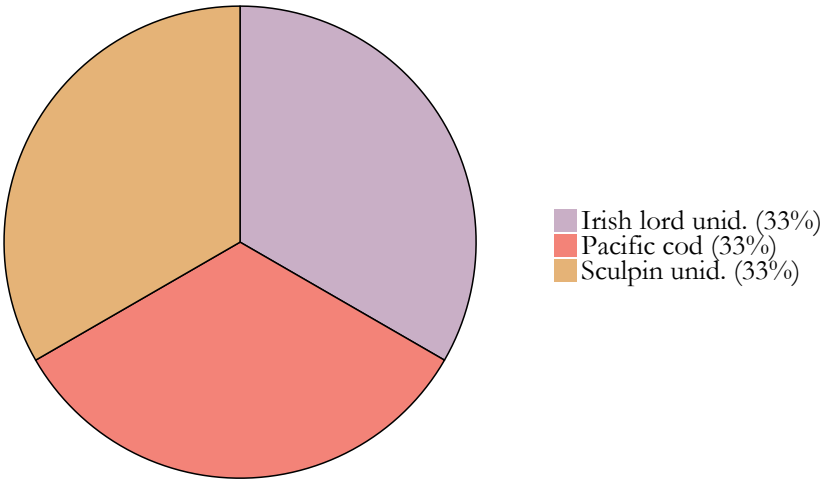
Summary - description of transect

Transect 2012-23: Primary and secondary substrates consisted of cobble and gravel/boulder. Few fishes were identified in this transect (n = 41) with a majority (66%) identified as rockfishes. Searchers/ronquils were the next most abundant (27%). Demospongiae (0.10 individuals/m^2) and Primnoidae (0.07 individuals/m^2) were the most abundant structure-forming invertebrates. Demospongiae mean height was 33 cm and Primnoidae mean height was 27 cm.

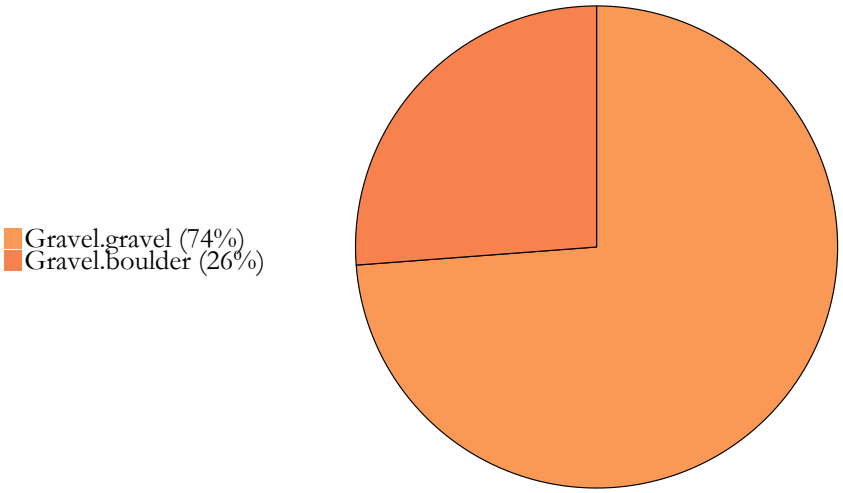
AREA: Samalga Pass to Seguam Pass — Transect 2012-24

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.24	-172.50	1,214	85	4.9

Fish and Crab Composition (n = 3)



Substrate Composition



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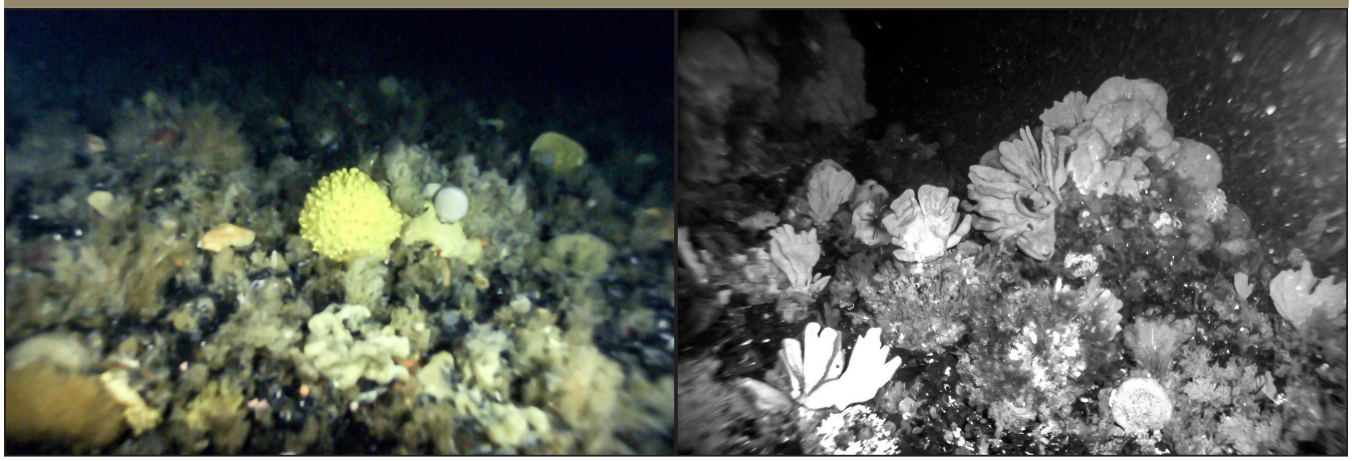
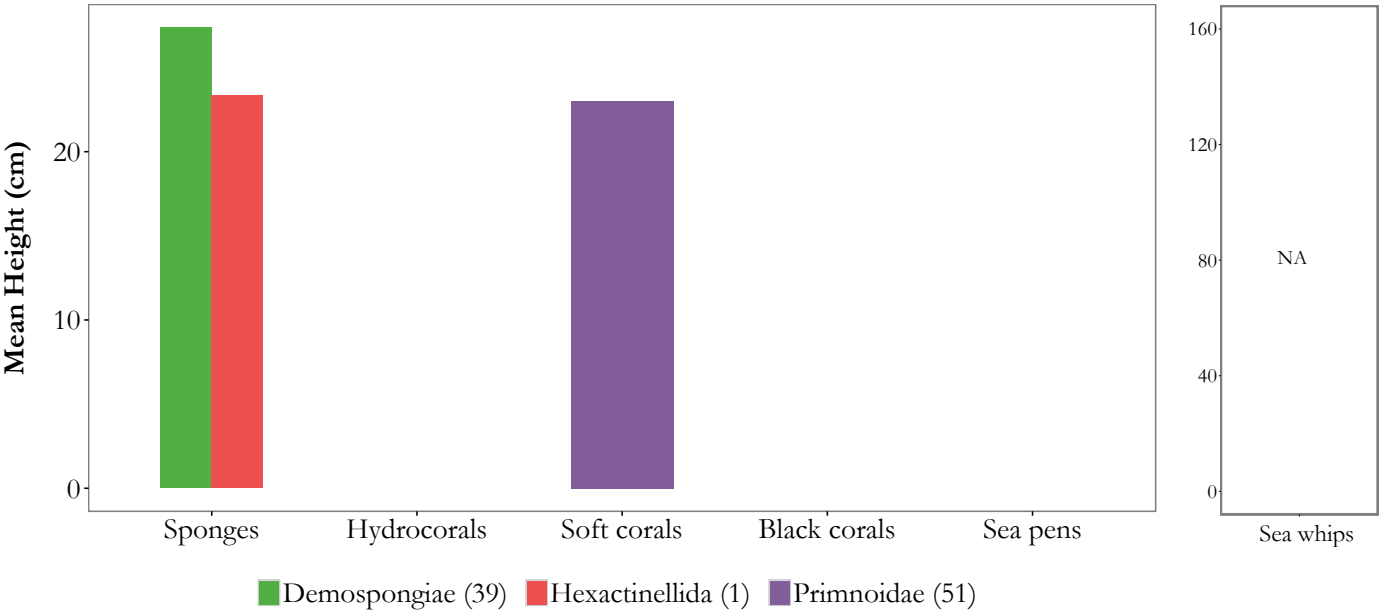
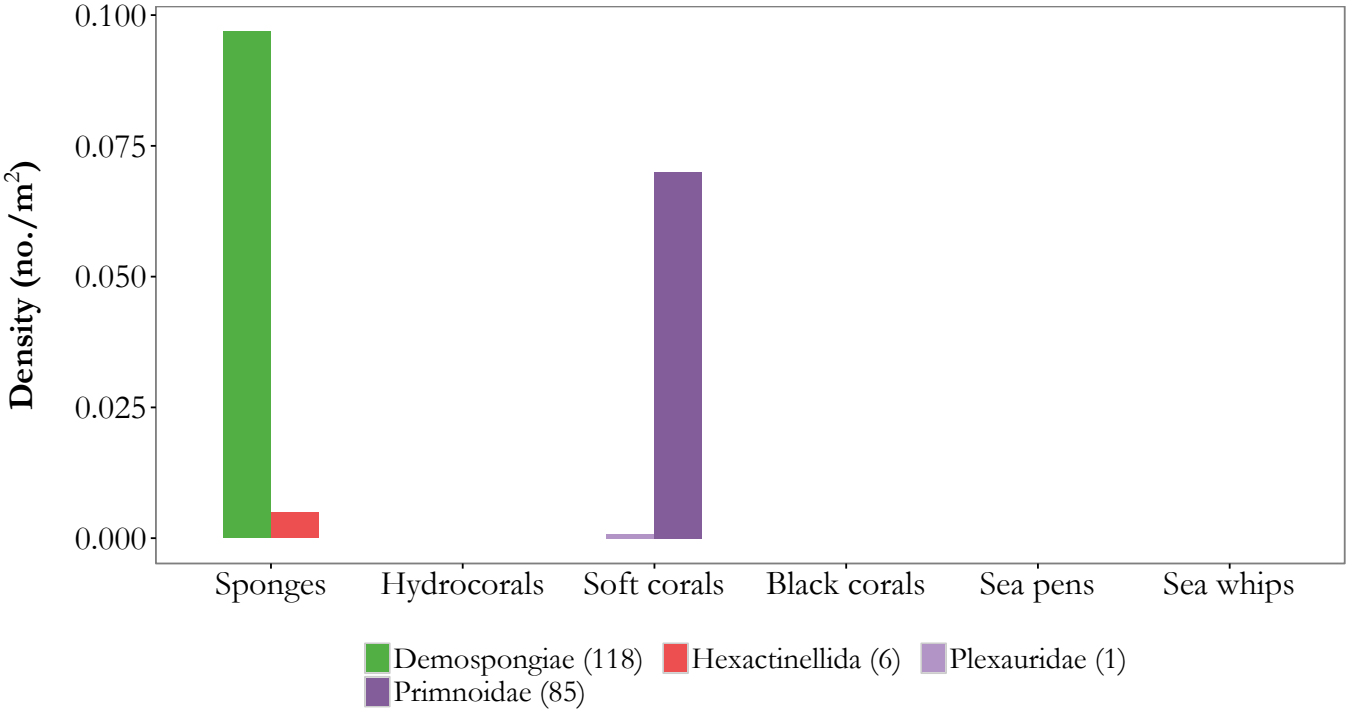


Vertical Habitat Summary





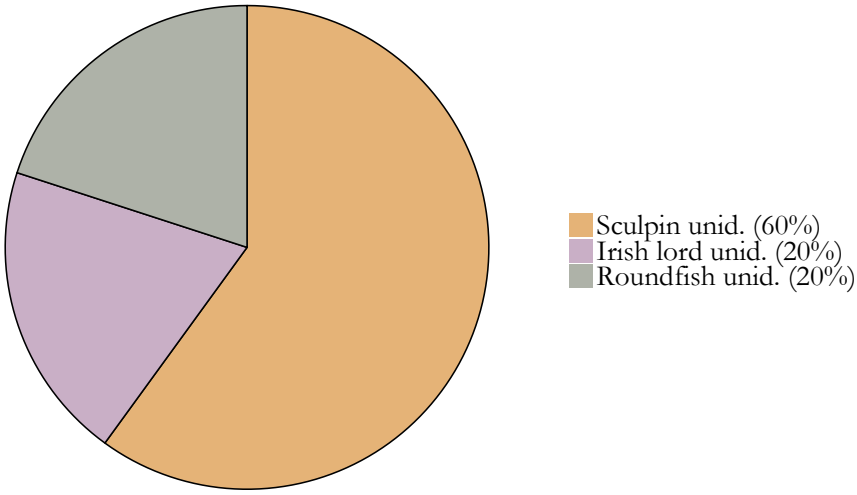
Summary - description of transect

Transect 2012-24: Primary and secondary substrates consisted largely of gravel. Twenty-six percent of the transects contained boulders as the secondary substrate. Only three individual fish were identified resulting in a very low density of < 0.01 individuals/m^2. Soft coral density was 0.07 individuals/m^2 and consisted of one Plexauridae and 85 Primnoidae. Sponge density was 0.10 individuals/m^2, 95% of which was Demospongiae. Mean heights were calculated for Demospongiae (27 cm) and Primnoidae (23 cm).

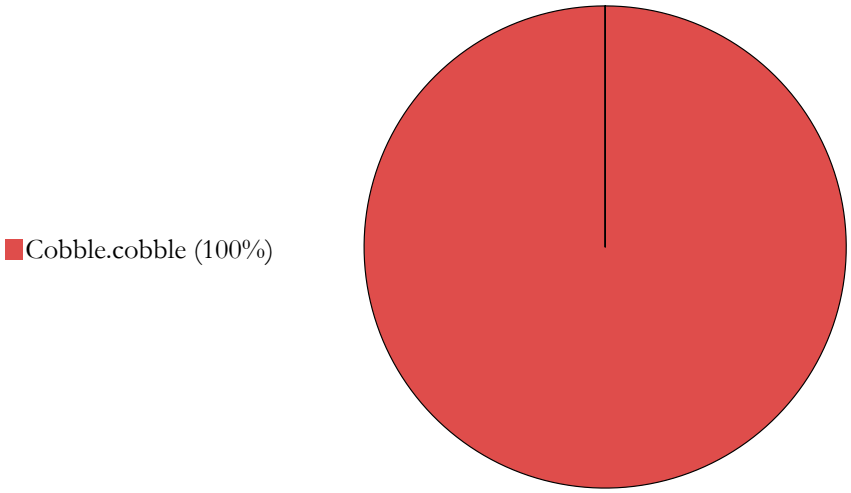
AREA: Samalga Pass to Seguam Pass — Transect 2012-25

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.16	-172.62	1,490	153	4.0

Fish and Crab Composition (n = 5)



Substrate Composition



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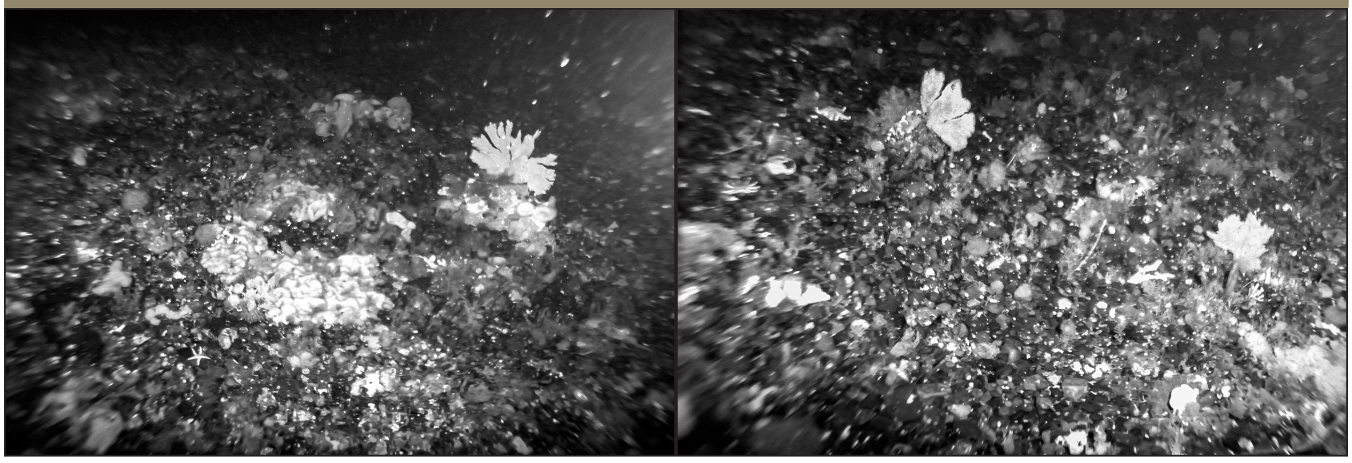
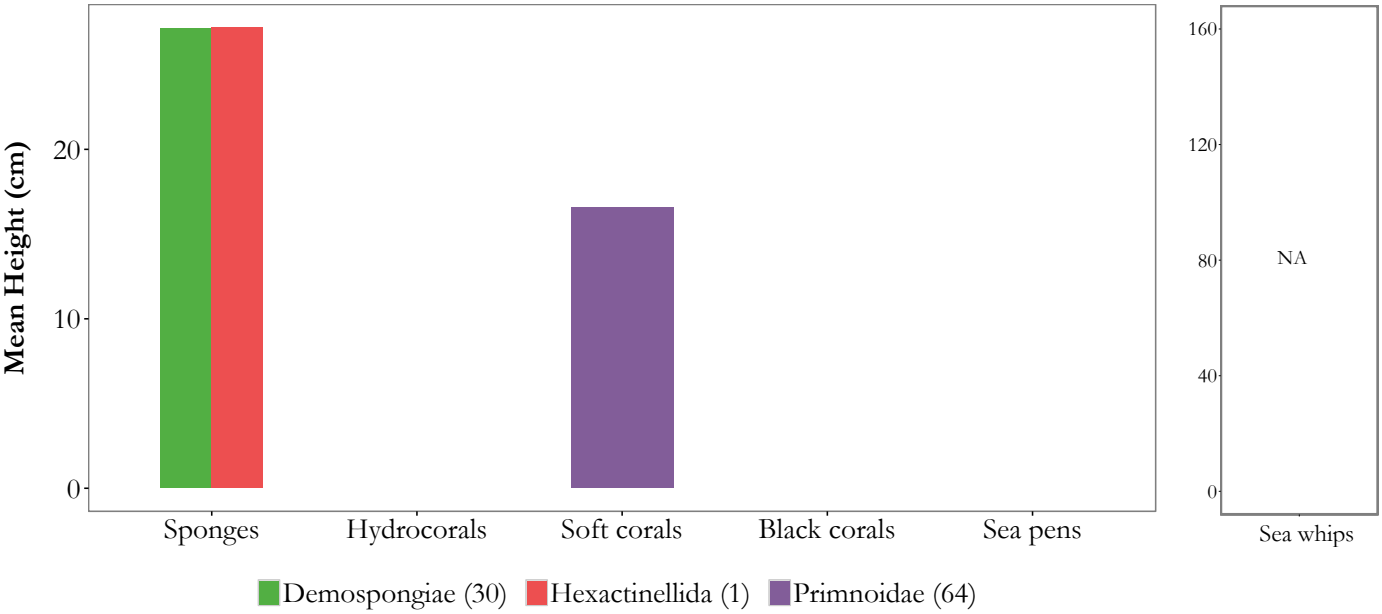
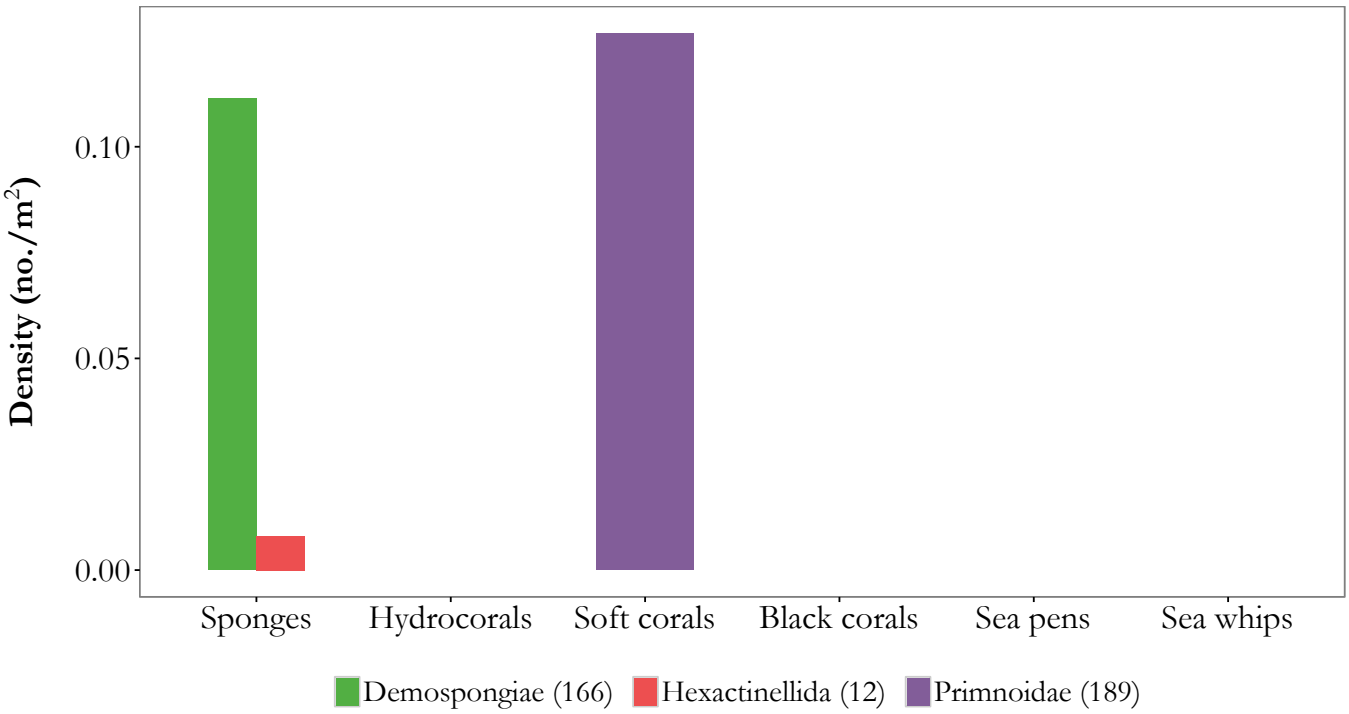


Vertical Habitat Summary





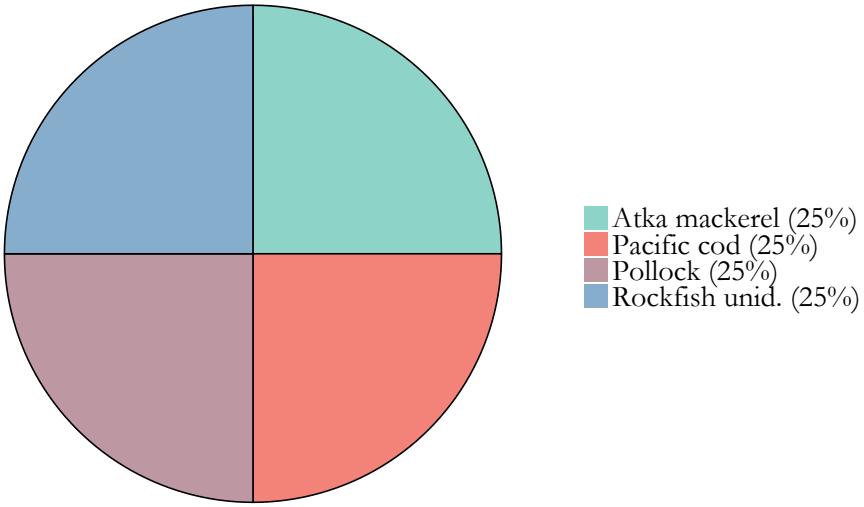
Summary - description of transect

Transect 2012-25: Primary and secondary substrates consisted entirely of cobble. Overall fish density was very low at < 0.01 individuals/m^2. Structure-forming invertebrate density was 0.25 individuals/m^2, and consisted of Demospongiae (0.11 individuals/m^2), Hexactinellida (0.01 individuals/m^2), and Primnoidae (0.13 individuals/m^2). Mean heights were calculated for Demospongiae (27 cm) and Primnoidae (17 cm).

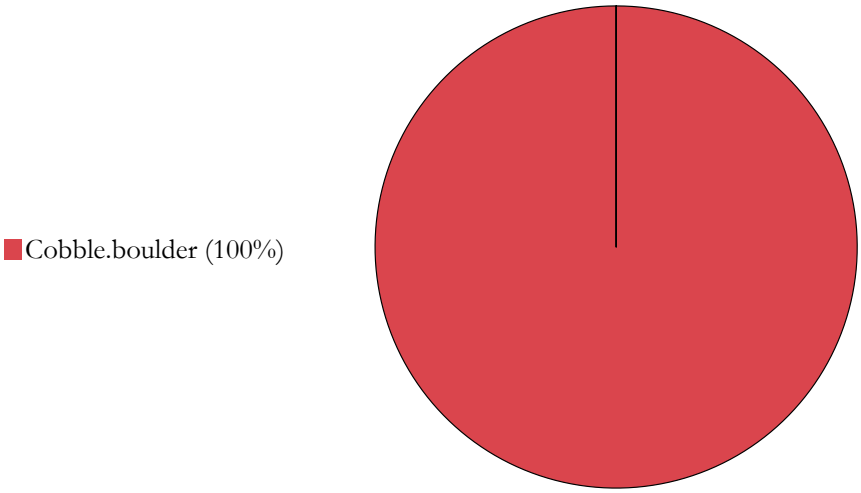
AREA: Samalga Pass to Seguam Pass — Transect 2012-26

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.16	-172.80	818	135	3.8

Fish and Crab Composition (n = 4)



Substrate Composition



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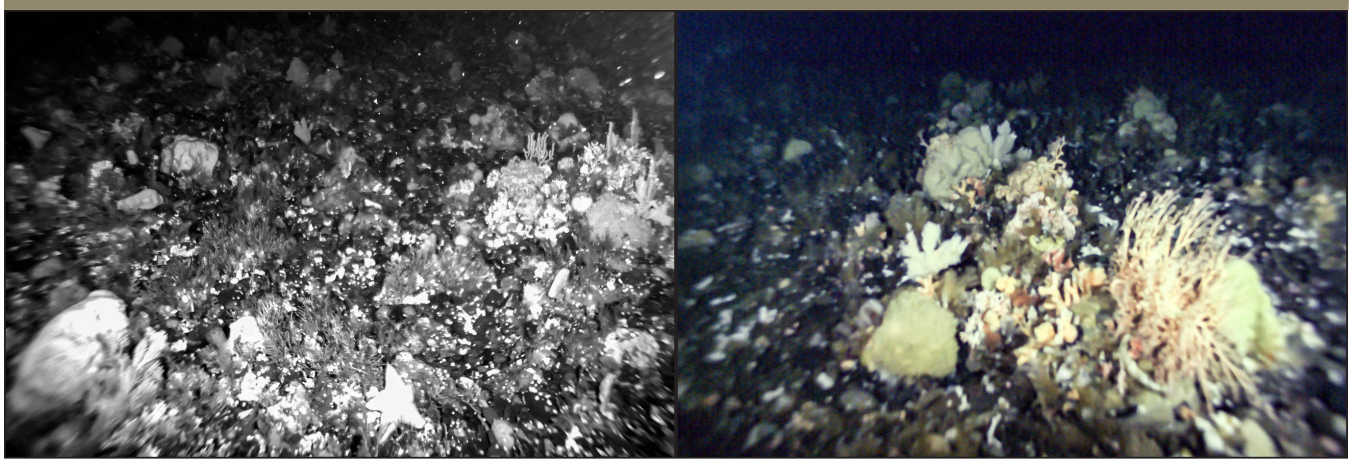
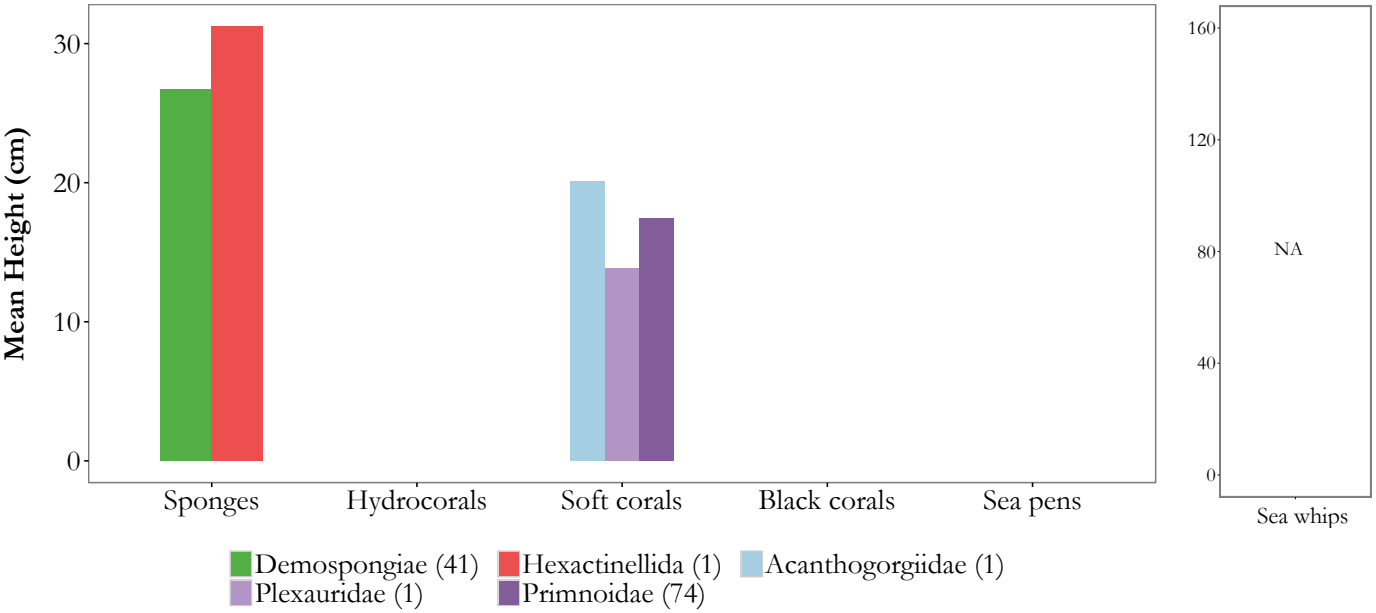
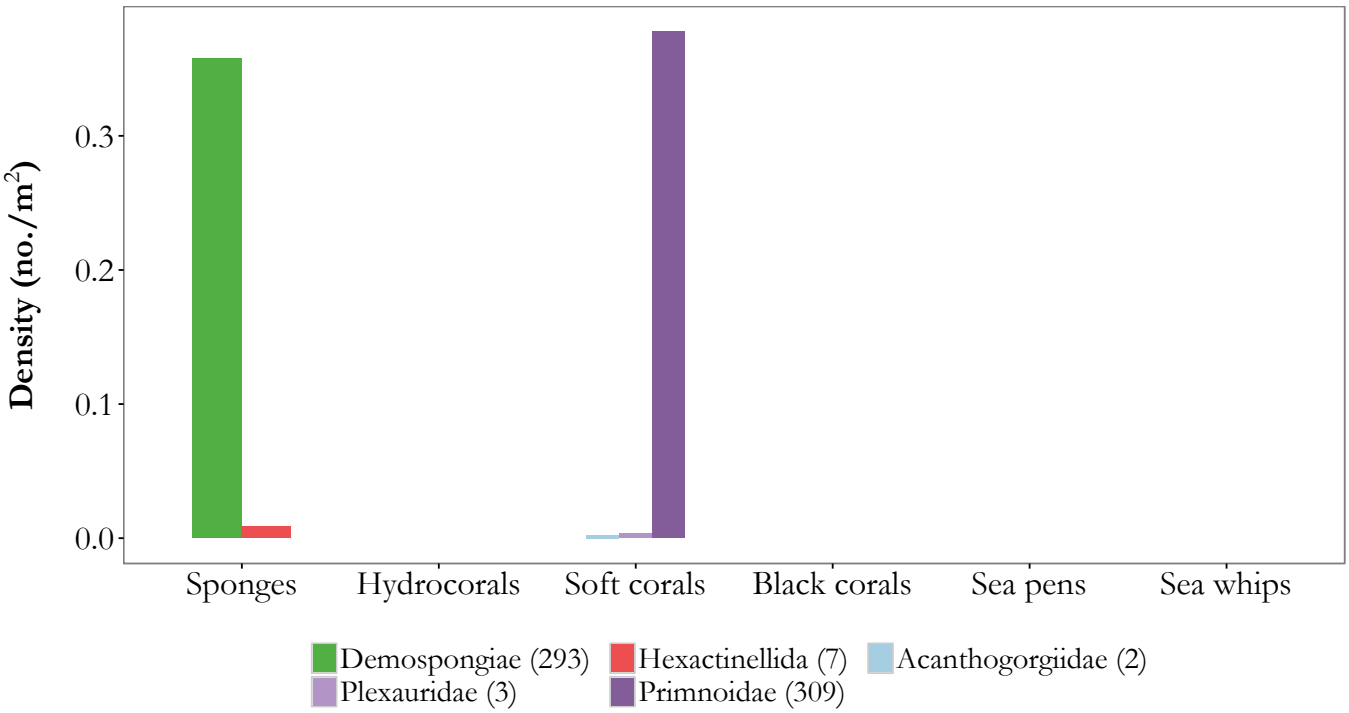


Vertical Habitat Summary





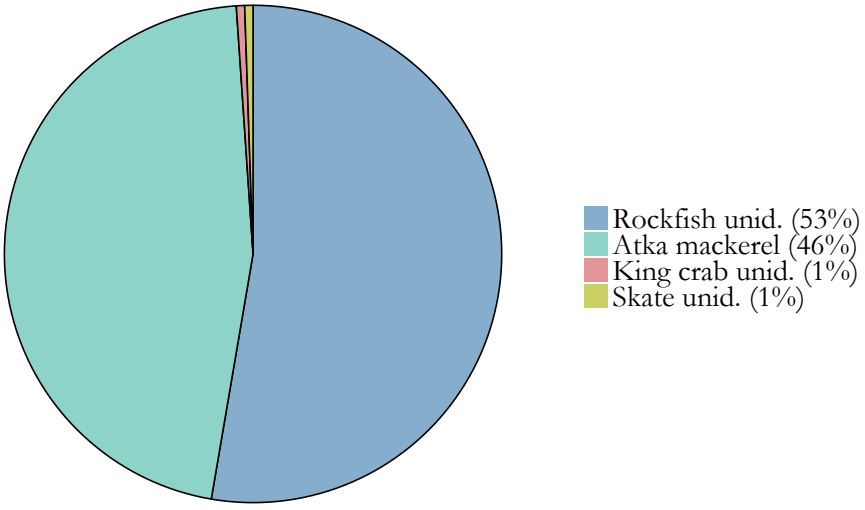
Summary - description of transect

Transect 2012-26: Primary and secondary substrates consisted of cobble and boulder. Fish density (< 0.01 individuals/m^2) was evenly distributed between Atka mackerel, Pacific cod, walleye pollock, and rockfishes. Demospongiae (0.36 individuals/m^2) and Primnoidae (0.38 individuals/m^2) comprised 98% of the structure-forming invertebrate density. Mean heights were 27 cm and 17 cm, respectively.

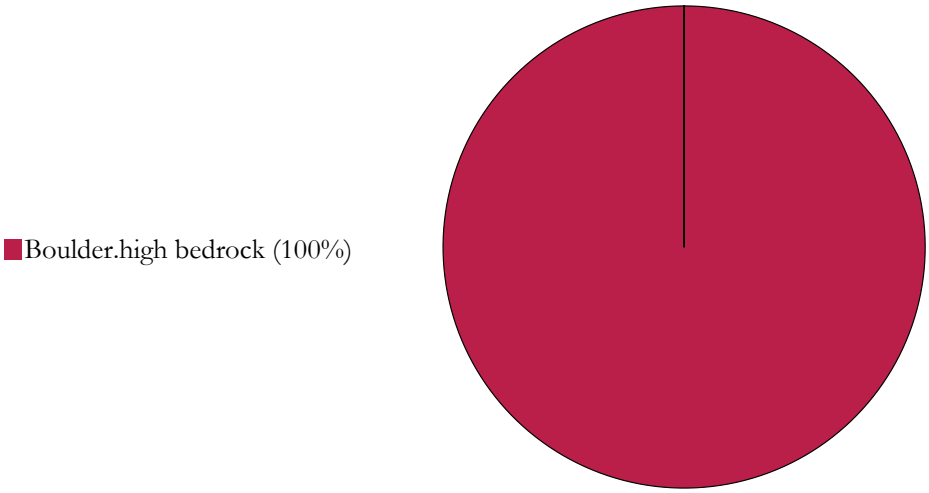
AREA: Samalga Pass to Seguam Pass — Transect 2012-27

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.25	-172.80	3,477	126	4.0

Fish and Crab Composition (n = 186)



Substrate Composition



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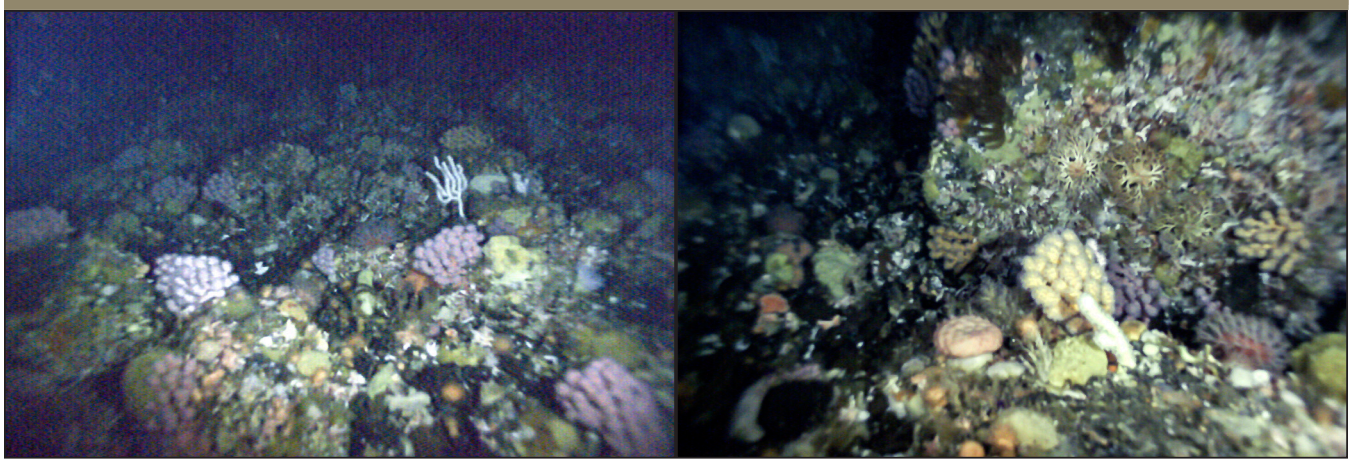
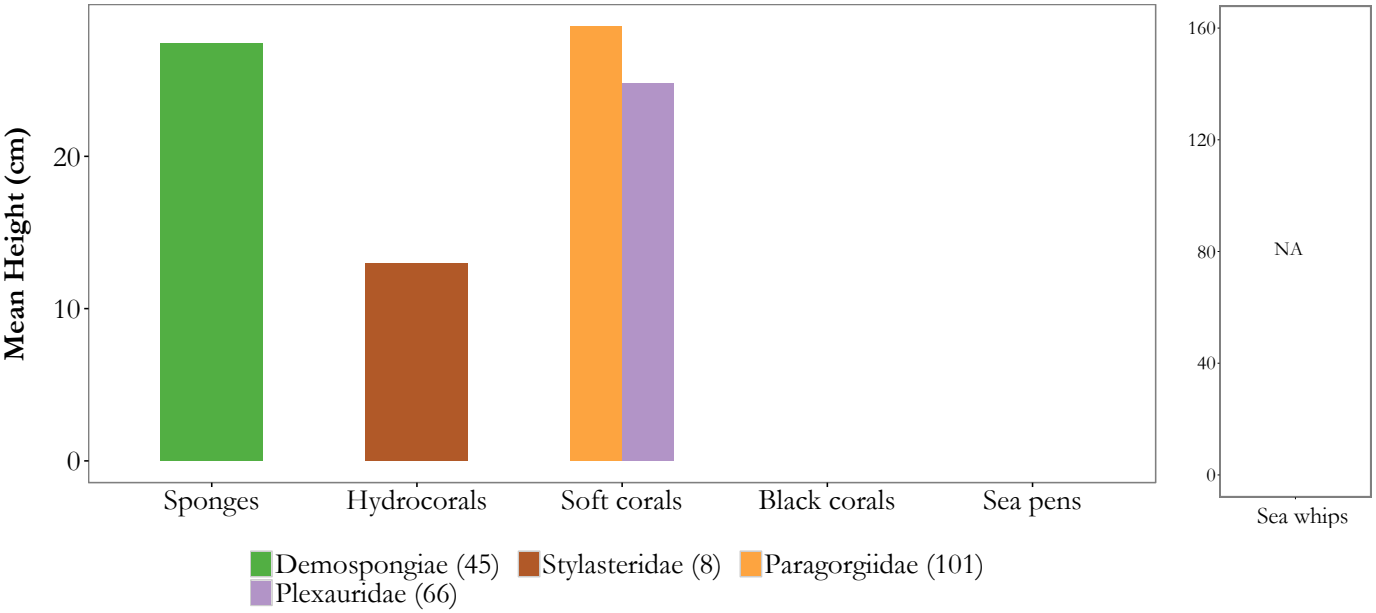
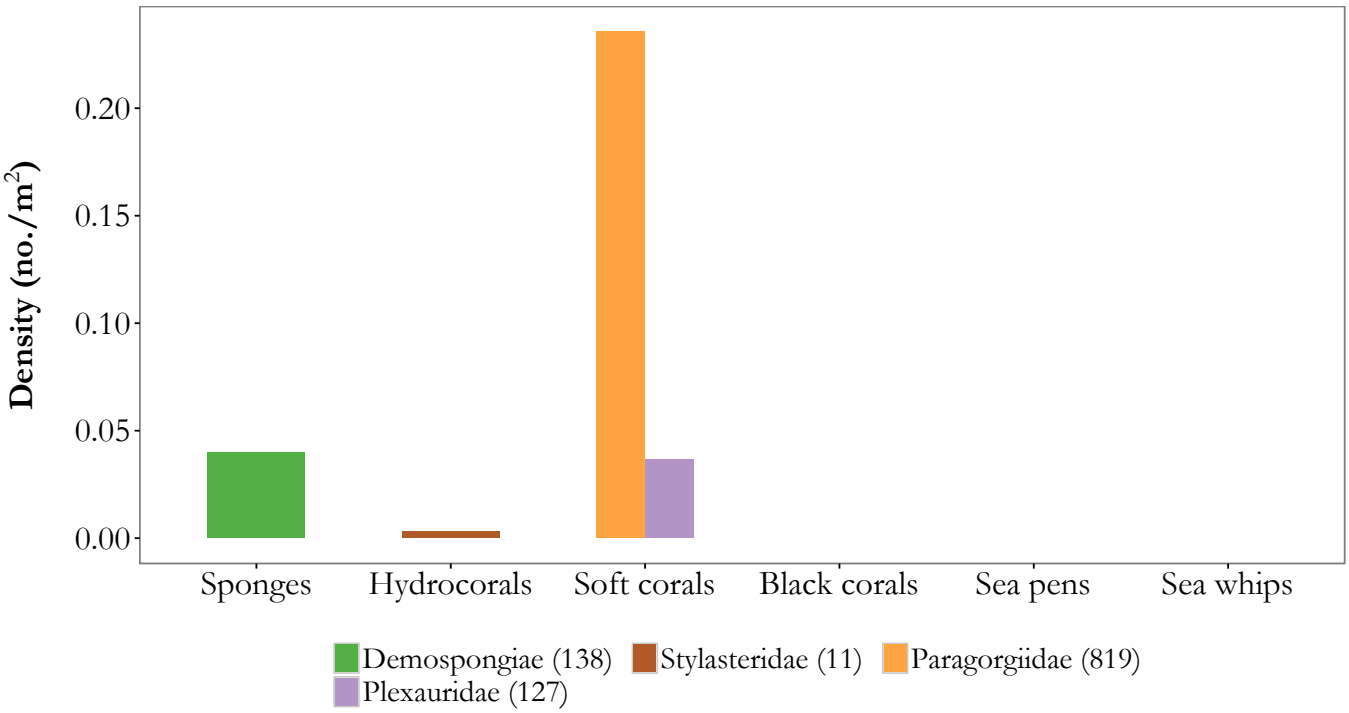


Vertical Habitat Summary





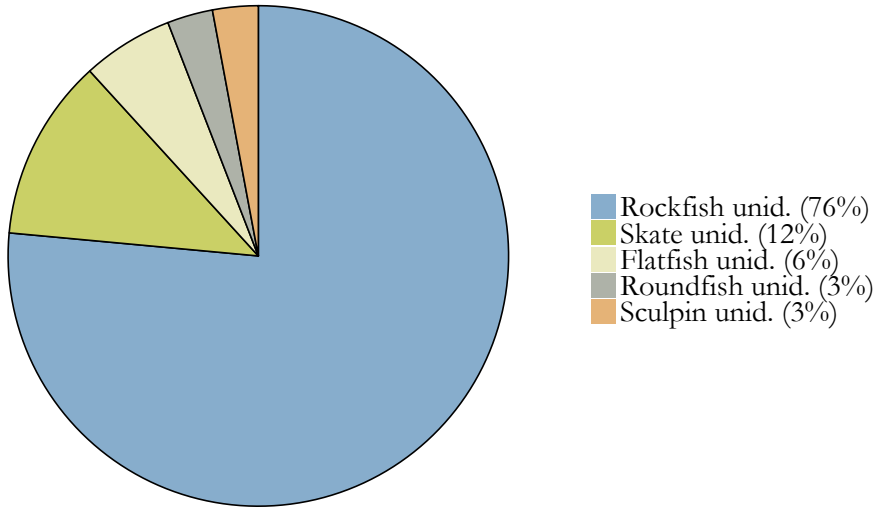
Summary - description of transect

Transect 2012-27: Primary and secondary substrates consisted of boulder and high bedrock. Rockfishes and Atka mackerel were 99% of the fish density (0.05 individuals/m^2). Structure-forming invertebrate density was 0.32 individuals/m^2. Paragorgiidae (0.24 individuals/m^2) and Plexauridae (0.04 individuals/m^2) were 88% of the density. Sixty-two percent of all Paragorgiidae identified for the survey were found on this transect. Mean heights were calculated for Demospongiae (27 cm), Stylasteridae (13 cm), Paragorgiidae (29 cm), and Plexauridae (25 cm).

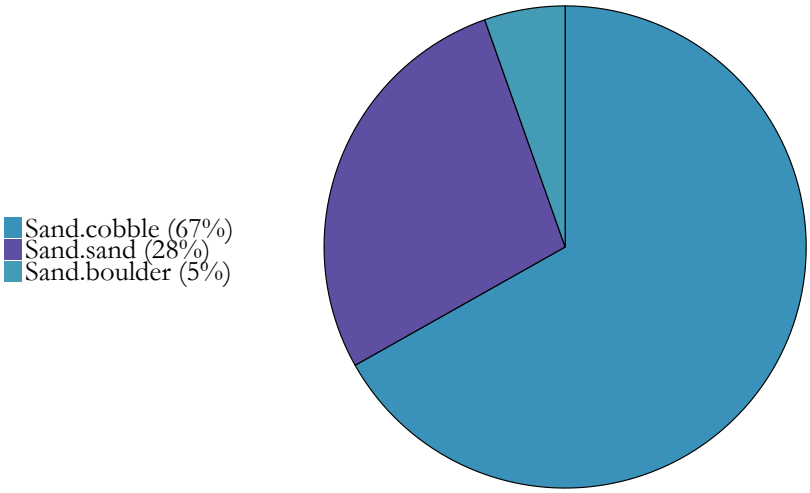
AREA: Samalga Pass to Seguam Pass — Transect 2012-28

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.27	-172.87	1,106	236	4.0

Fish and Crab Composition (n = 34)



Substrate Composition



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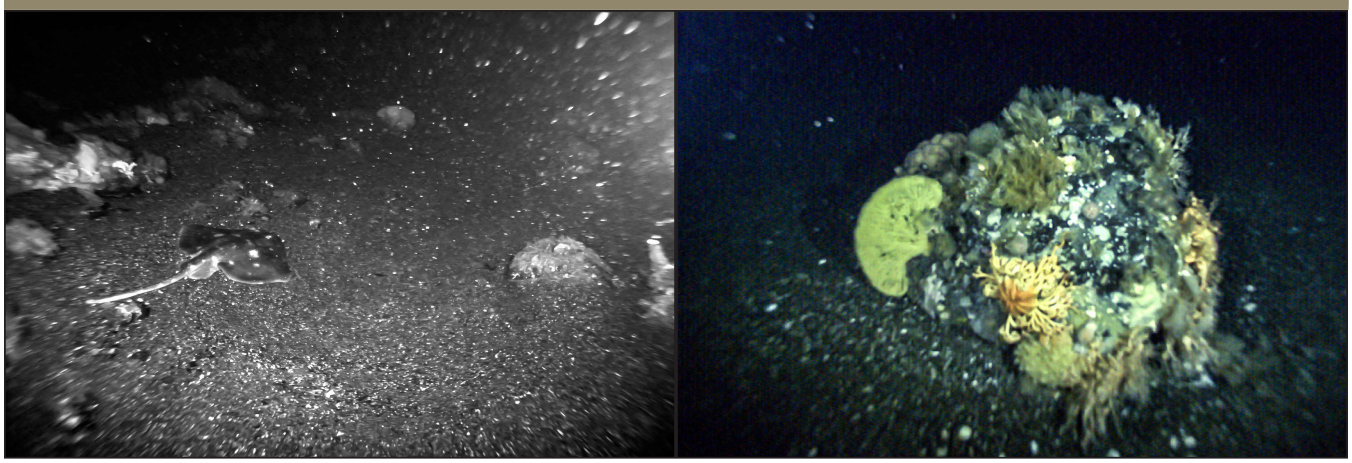
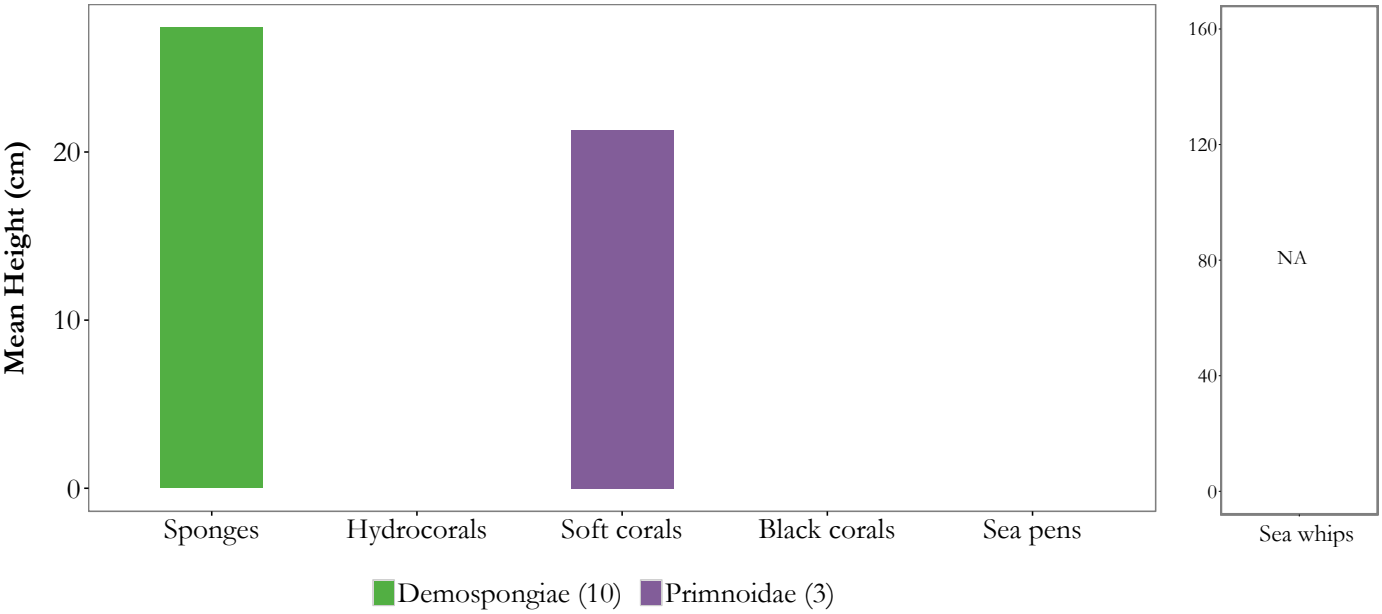
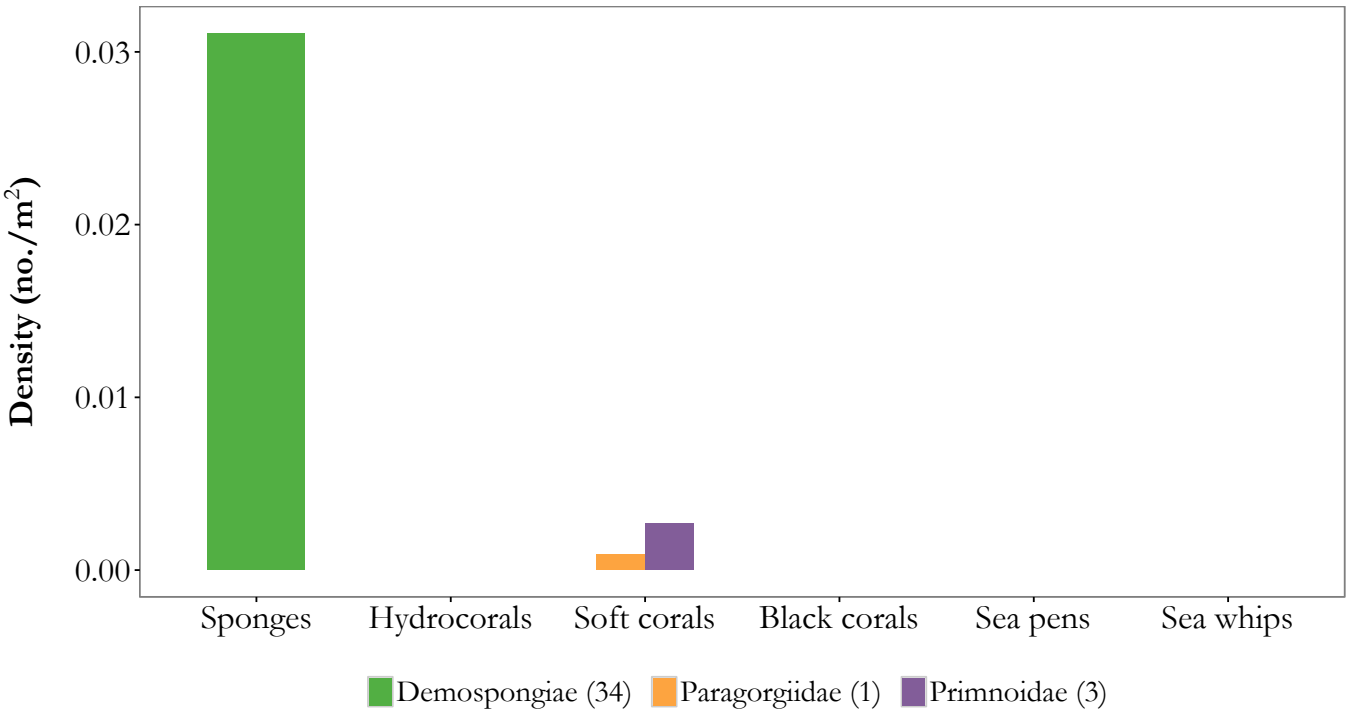


Vertical Habitat Summary





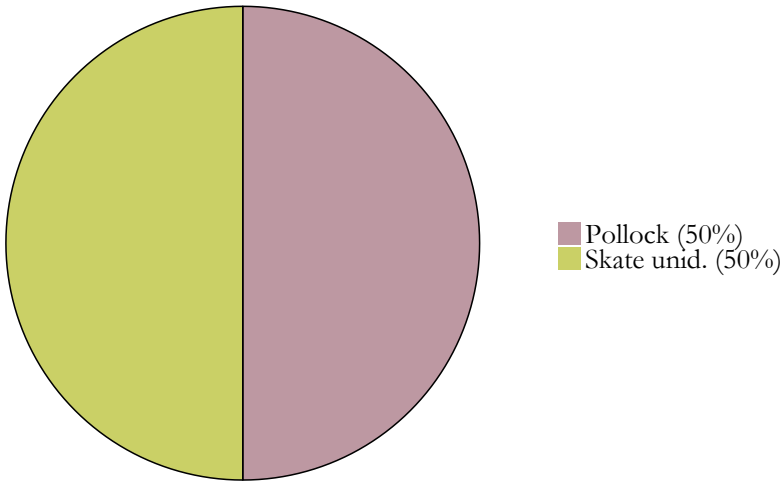
Summary - description of transect

Transect 2012-28: Primary and secondary substrates consisted largely of sand with cobble and boulders. Few fishes were identified in this transect with a majority (76%) identified as rockfishes. Fish density overall was low (0.03 individuals/m^2). Structure-forming invertebrate density was 0.03 individuals/m^2. Mean heights were 27 cm and 21 cm for Demospongiae and Primnoidae. No hydrocorals, sea pens, or sea whips were identified.

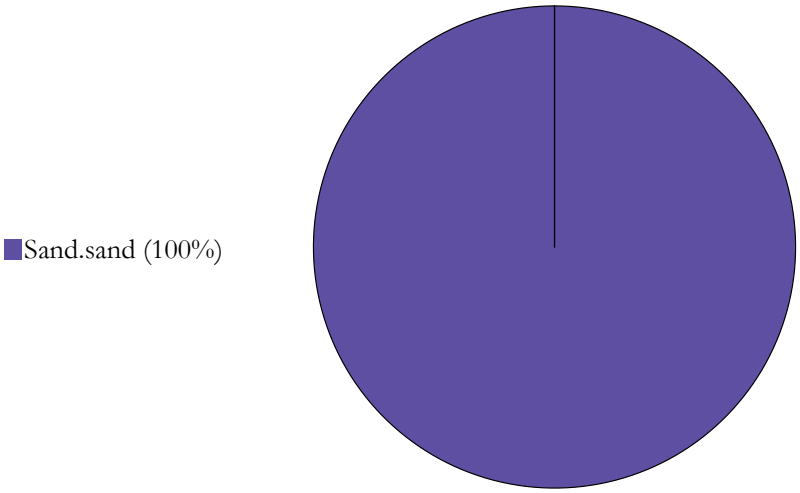
AREA: Samalga Pass to Seguam Pass — Transect 2012-29

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.22	-172.94	1,168	128	4.9

Fish and Crab Composition (n = 2)

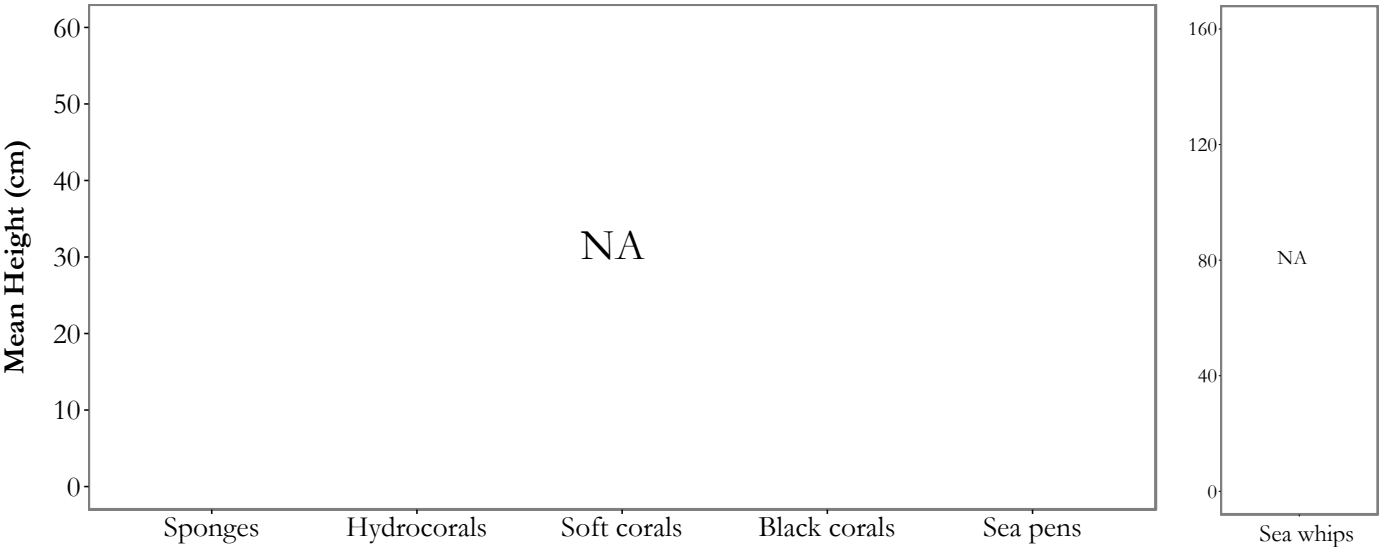


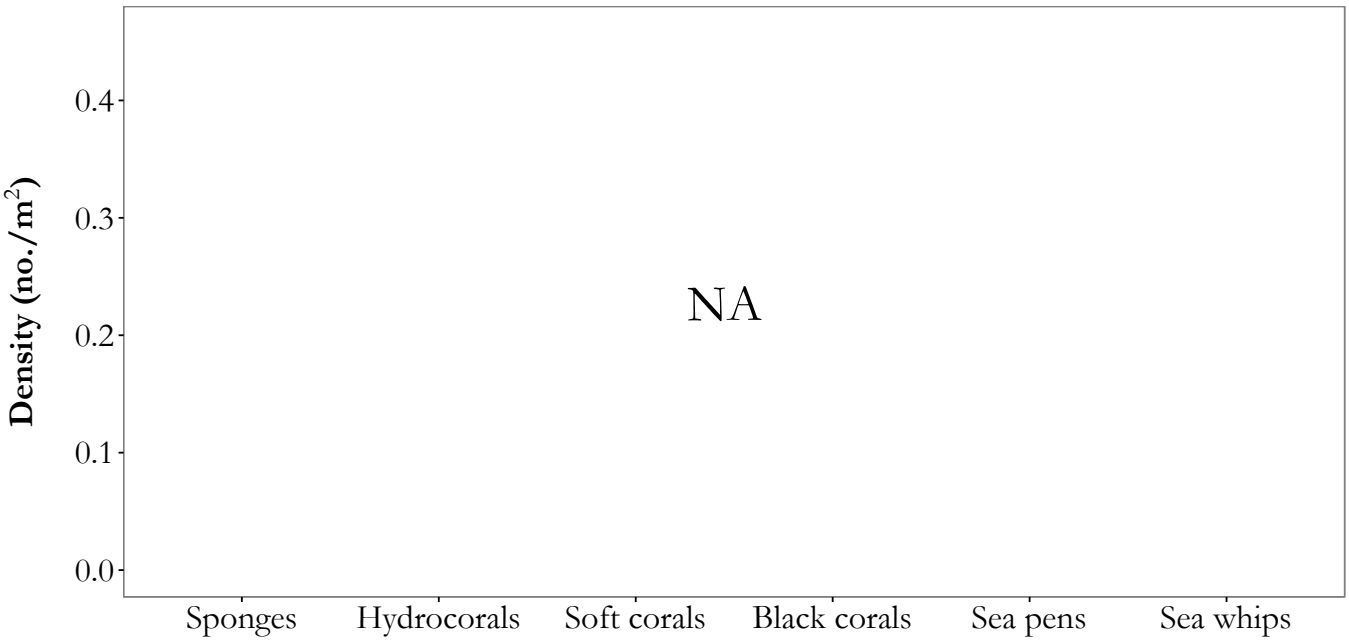
Substrate Composition



Images

Vertical Habitat Summary





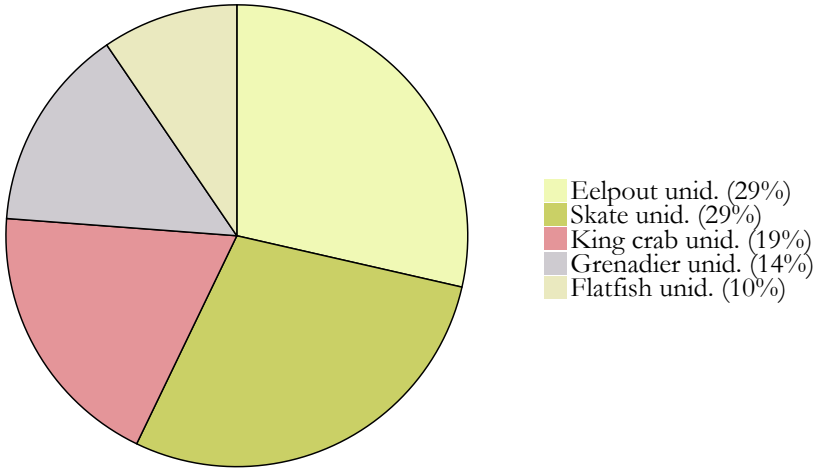
Summary - description of transect

Transect 2012-29: Primary and secondary substrates consisted entirely of sand. Only two individual fishes were identified in this transect: walleye pollock and skate. As a result, fish density was < 0.01 individuals/m^2. No sponges, hydrocorals, corals, sea pens, or sea whips were identified.

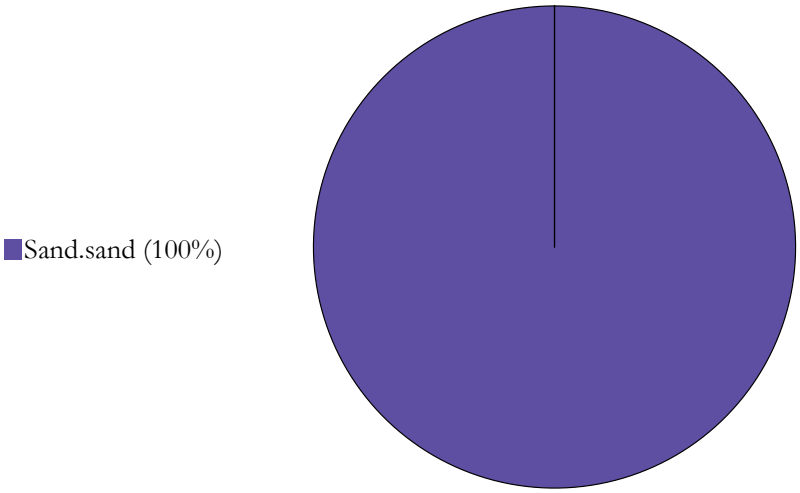
AREA: Samalga Pass to Seguam Pass — Transect 2012-85

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.35	-172.83	945	704	3.3

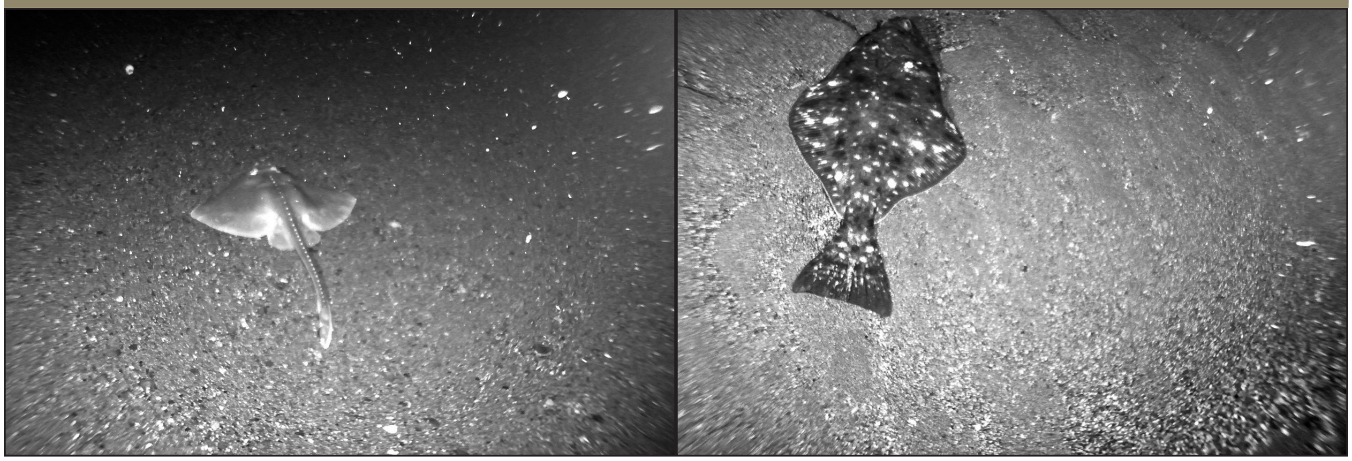
Fish and Crab Composition (n = 21)



Substrate Composition

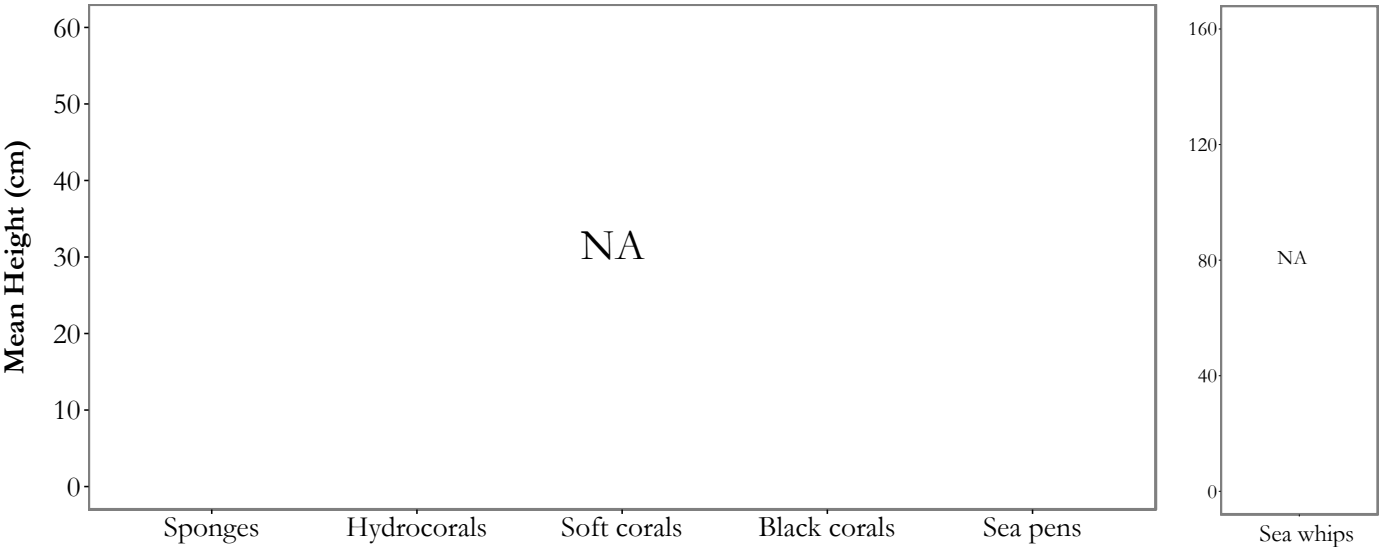


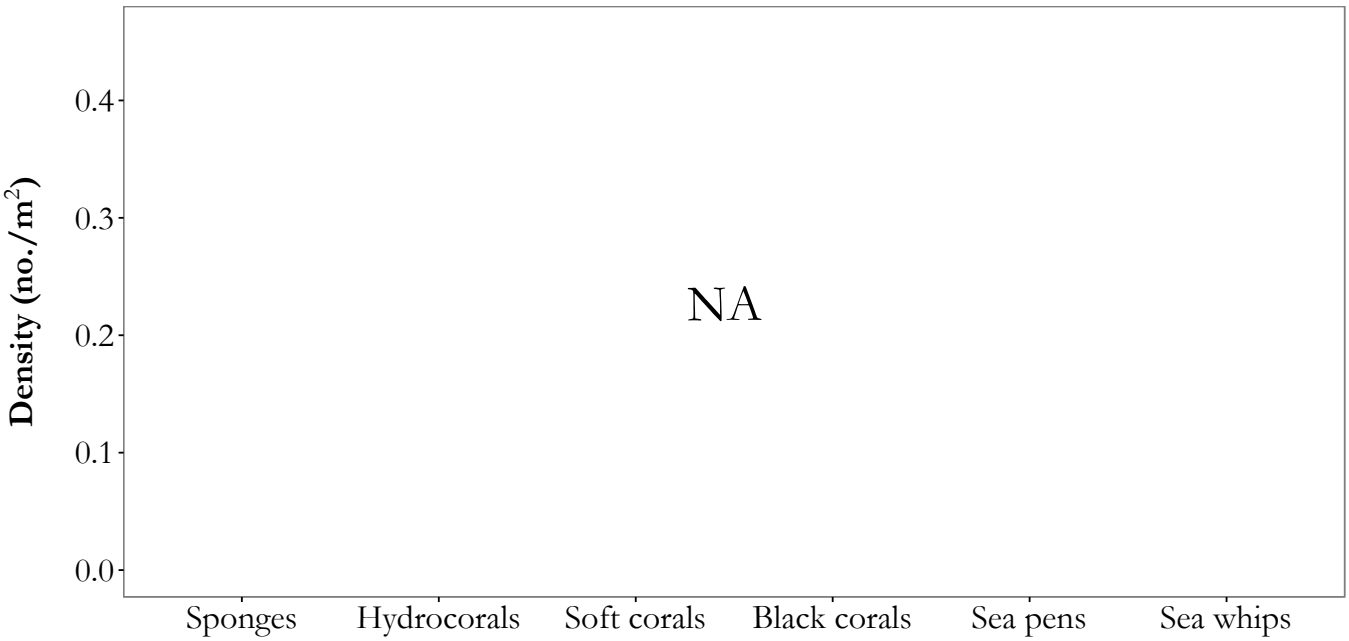
Images



AREA: Samalga Pass to Seguam Pass Transect 2012-85

Vertical Habitat Summary





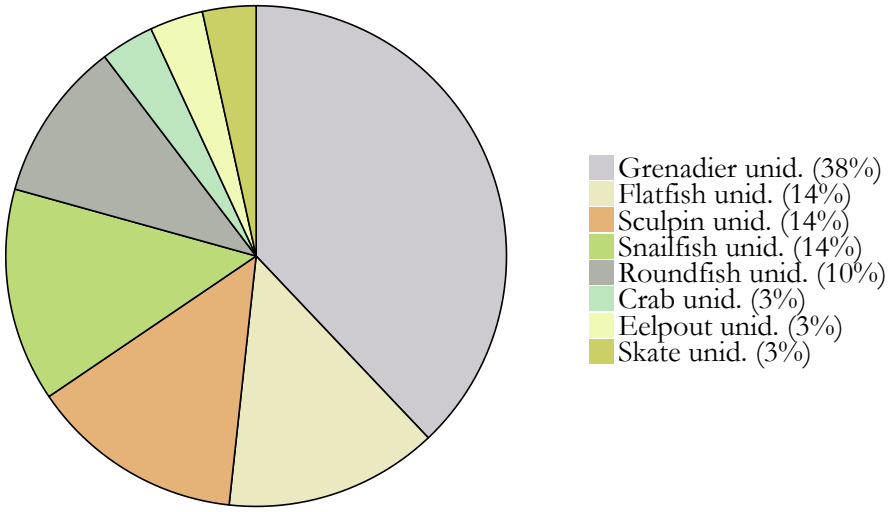
Summary - description of transect

Transect 2012-85: Primary and secondary substrates consisted entirely of sand. Fish density was 0.02 individuals/m^2. Eelpouts and skates made up 58% of the 21 individuals identified. No structure-forming invertebrates were observed.

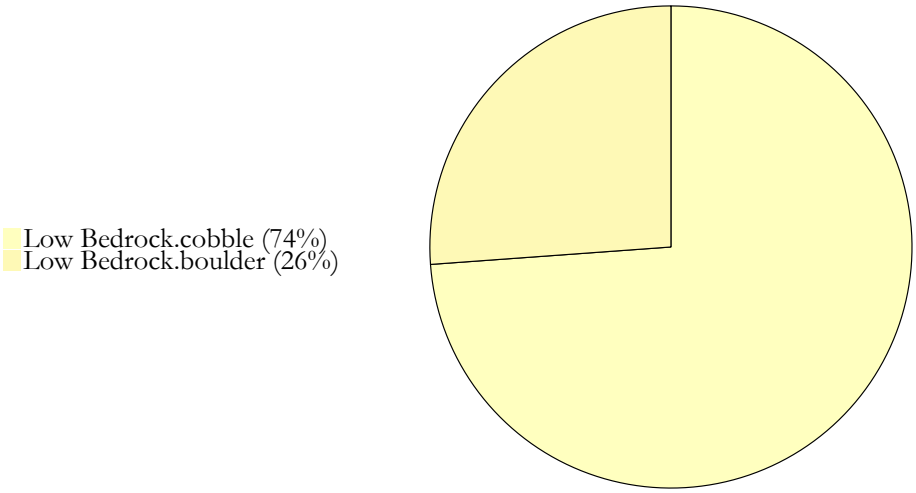
AREA: Samalga Pass to Seguam Pass — Transect 2012-86

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.82	-170.70	3,004	463	3.5

Fish and Crab Composition (n = 29)

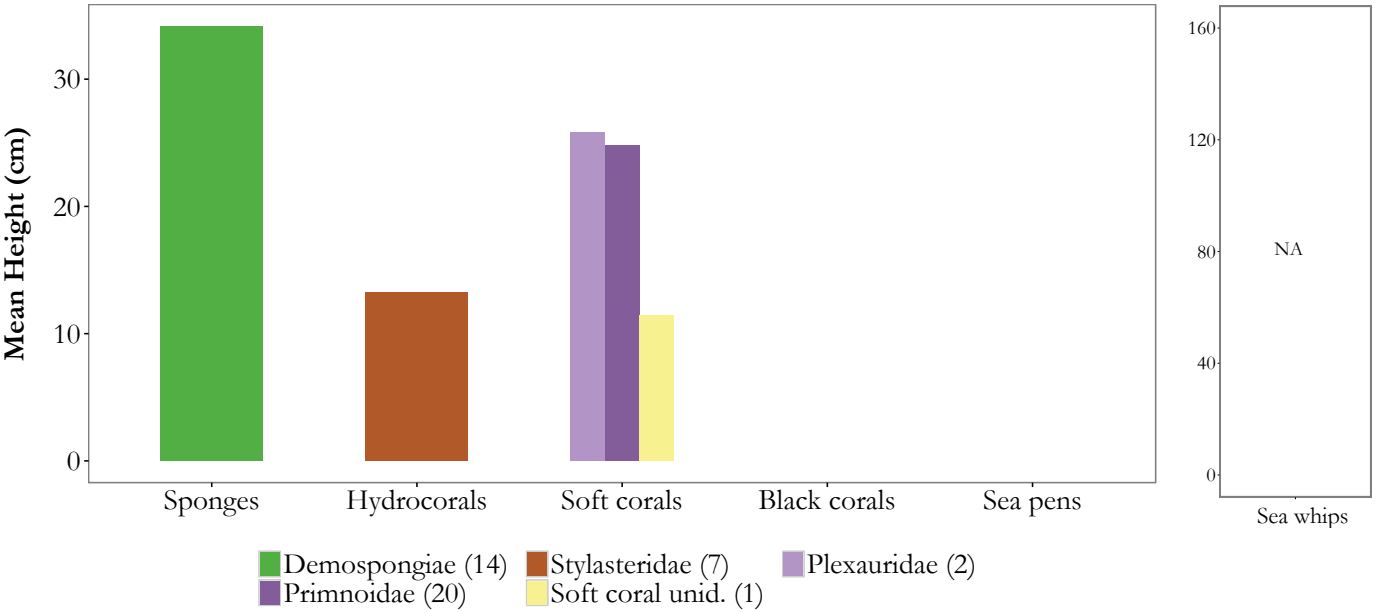


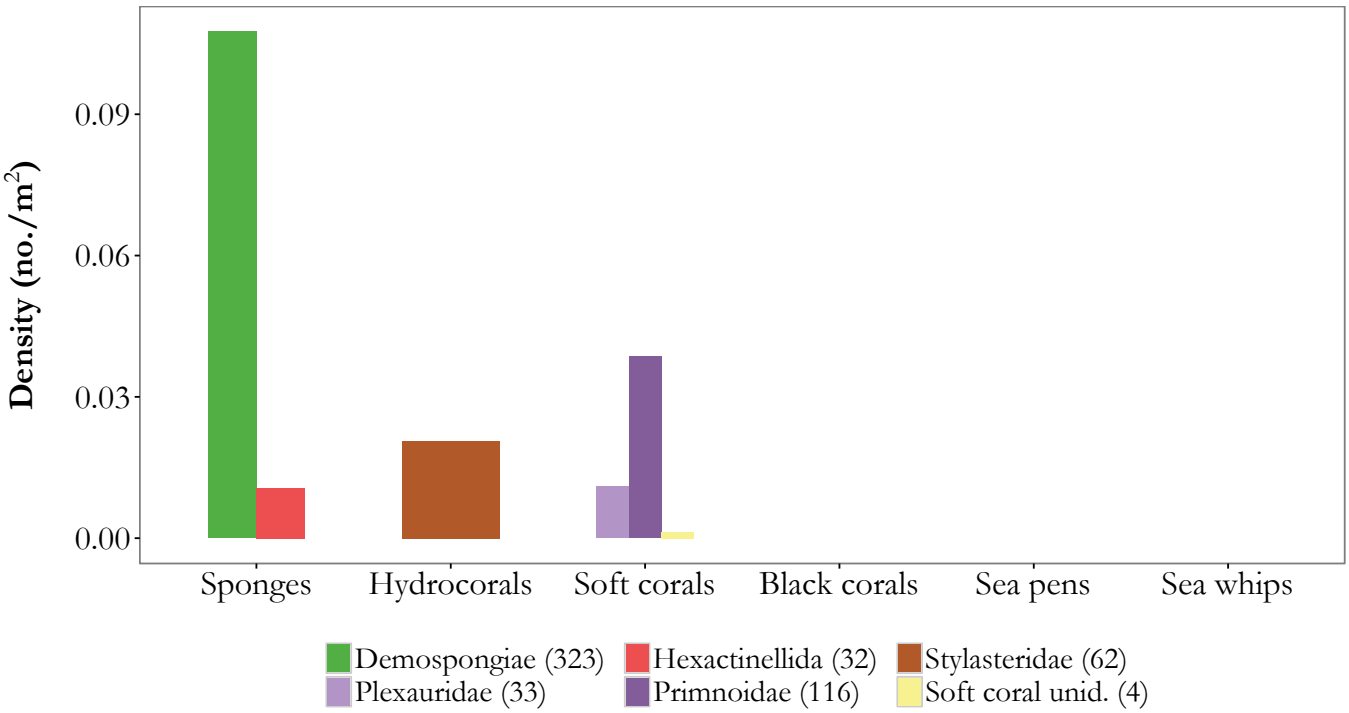
Substrate Composition



Images

Vertical Habitat Summary





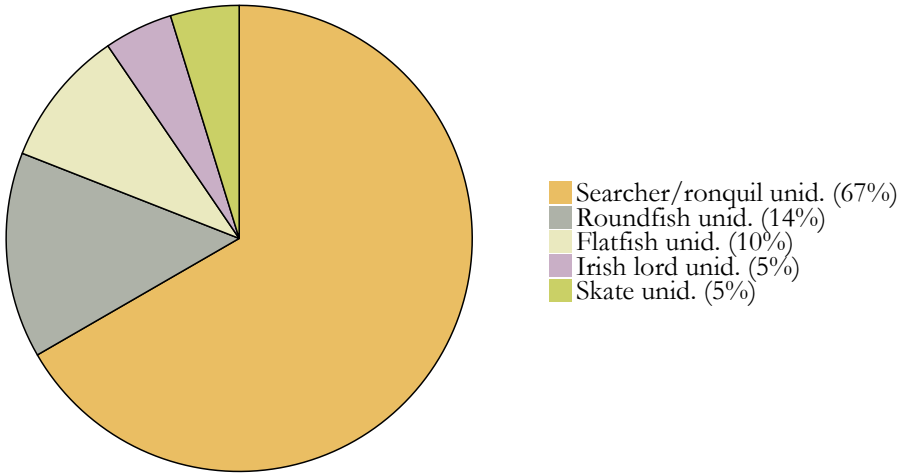
Summary - description of transect

Transect 2012-86: Primary and secondary substrates consisted largely of low bedrock with cobble and boulders. Of the 29 fishes and crabs observed, grenadiers were the most abundant (38%). Fish and crab density was low (0.01 individuals/m^2). Structure-forming invertebrate density was higher (0.19 individuals/m^2) with a majority of the individuals being Demospongiae (0.11 individuals/m^2) or Primnoidae (0.04 individuals/m^2). Mean heights ranged from 13 cm for Stylasteridae to 34 cm for Demospongiae.

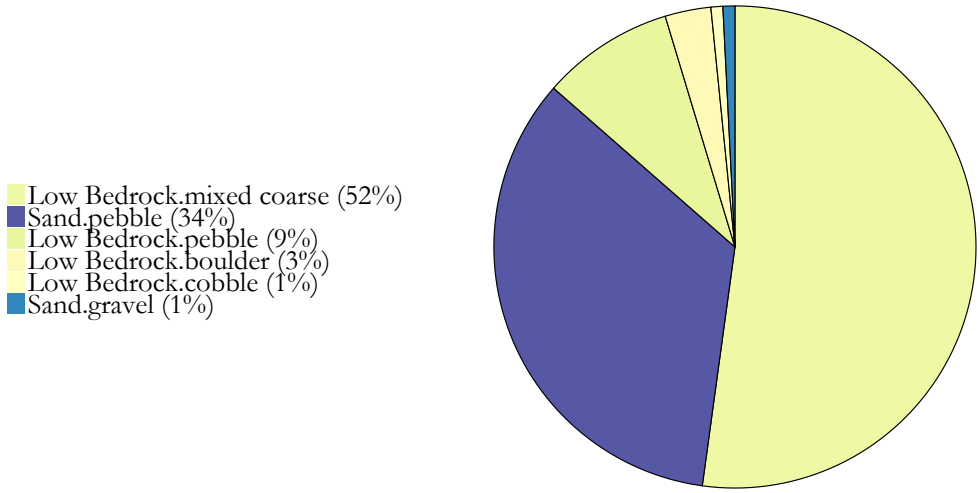
AREA: Samalga Pass to Seguam Pass — Transect 2012-87

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.68	-170.80	3,283	108	4.4

Fish and Crab Composition (n = 21)

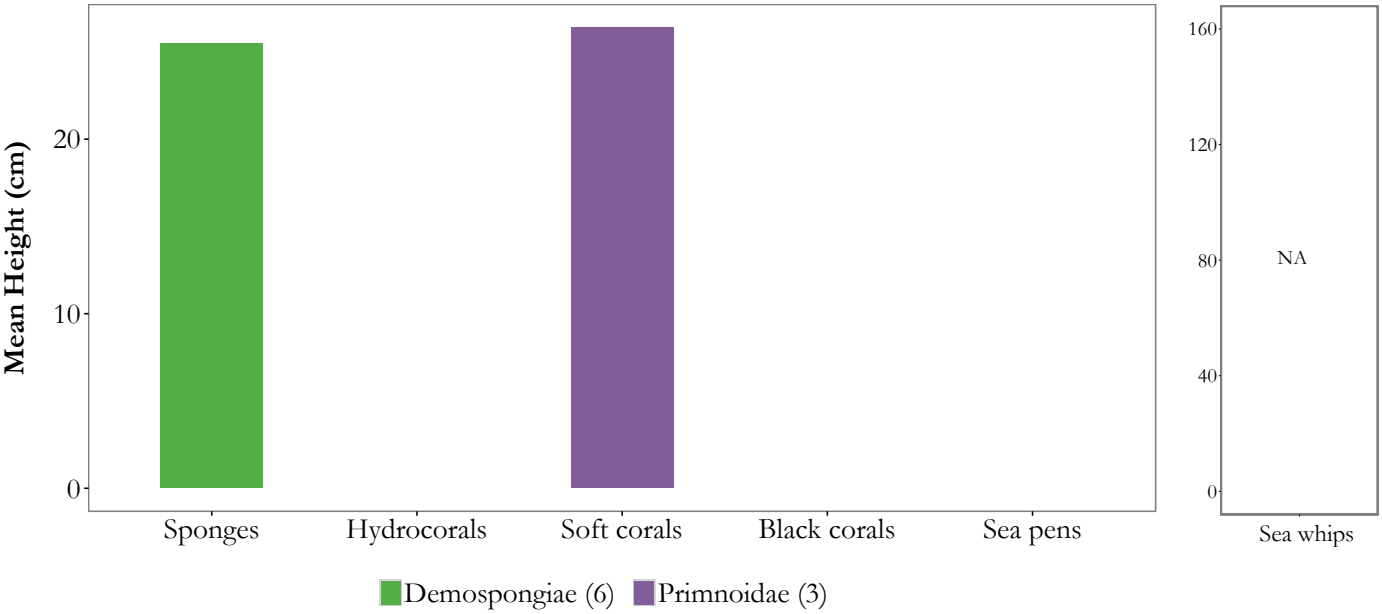


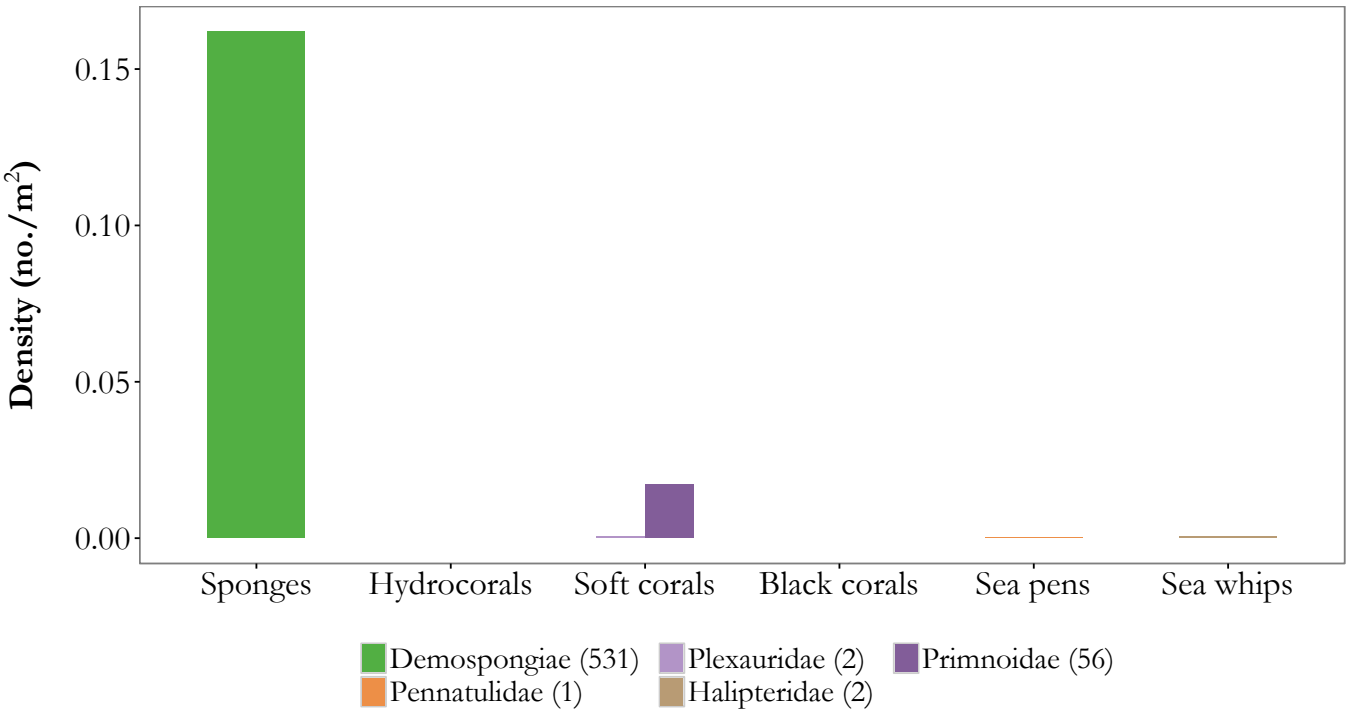
Substrate Composition



Images

Vertical Habitat Summary





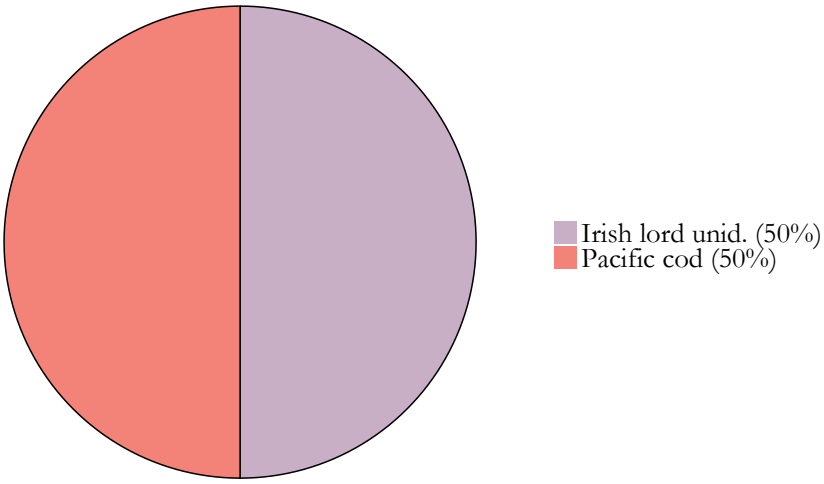
Summary - description of transect

Transect 2012-87: Primary substrate composition for this haul was low bedrock and sand. Over 80% of the secondary substrates were mixed coarse and pebble. Few fishes were identified in this transect with a majority (n = 14) identified as searchers/ronquils. As a result, fish density for this transect was very low (0.01 individuals/m^2). Demospongiae (0.16 individuals/m^2) and Primnoidae (0.02 individuals/m^2) were 99% of the structure-forming invertebrate density (0.18 individuals/m^2). Mean heights for Demospongiae and Primnoidae were 25 cm and 26 cm, respectively.

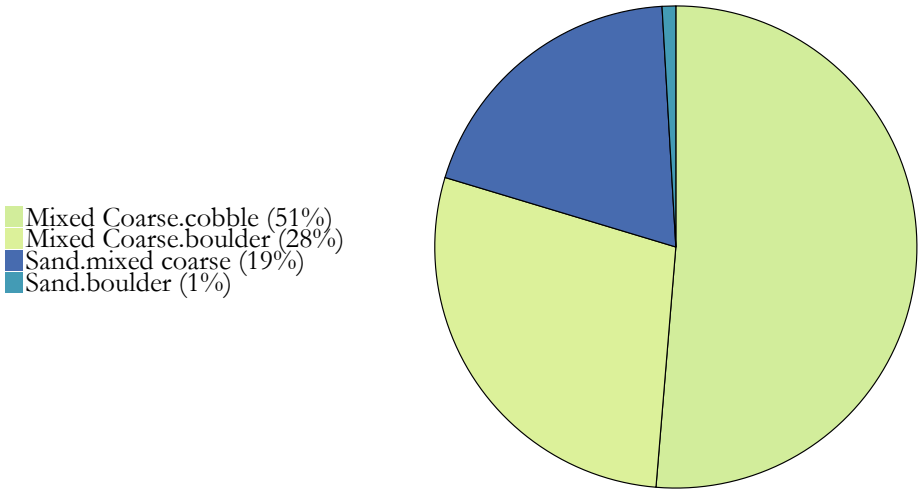
AREA: Samalga Pass to Seguam Pass — Transect 2012-88

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.72	-170.66	4,135	84	4.4

Fish and Crab Composition (n = 2)

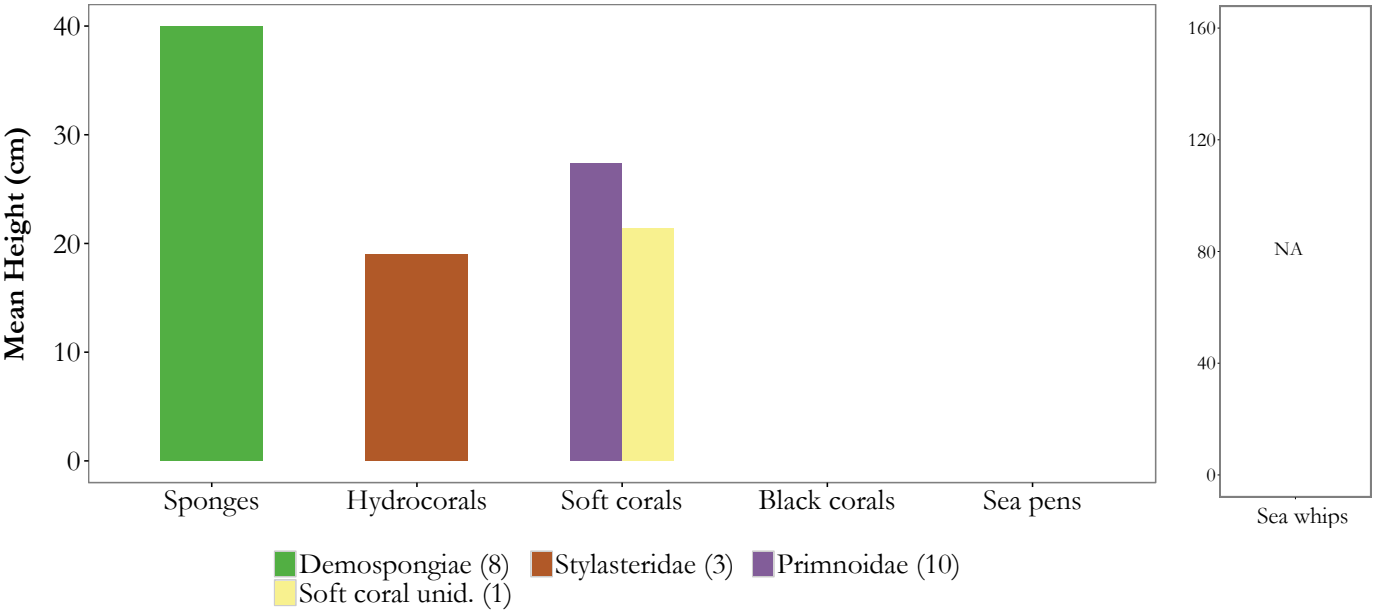


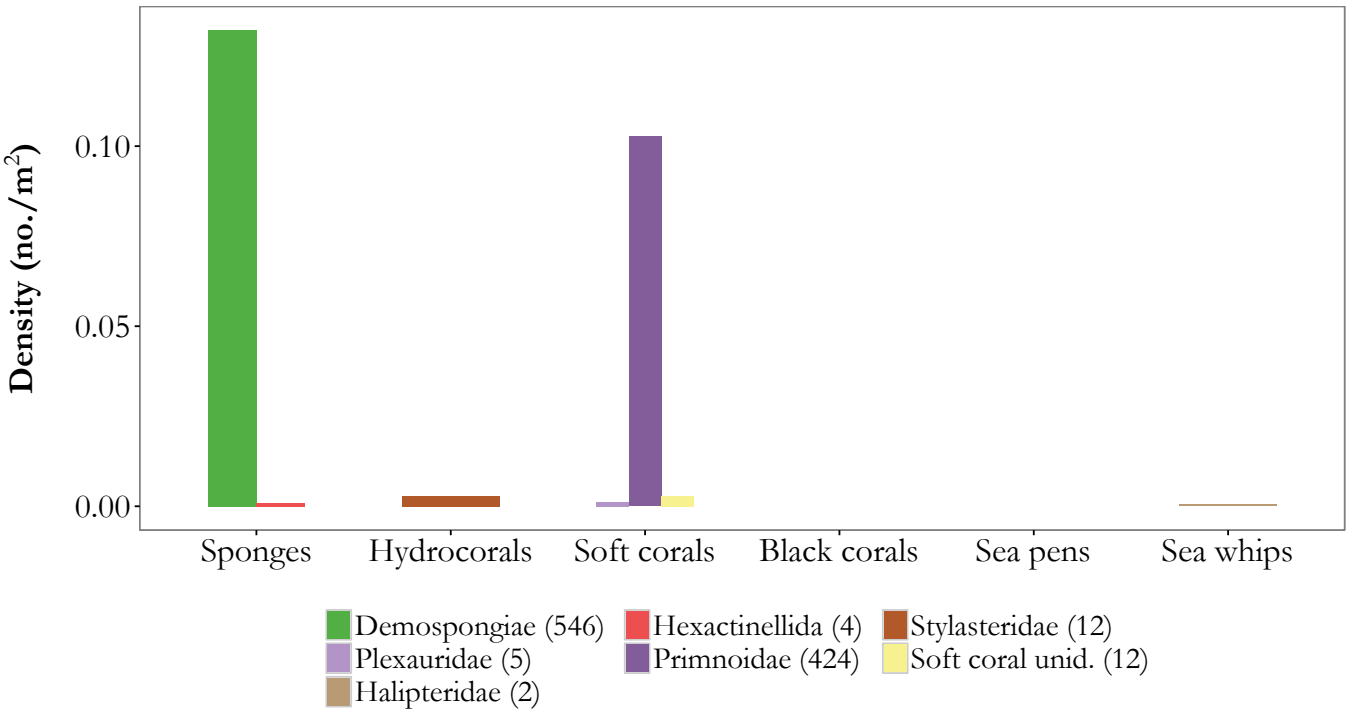
Substrate Composition



Images

Vertical Habitat Summary





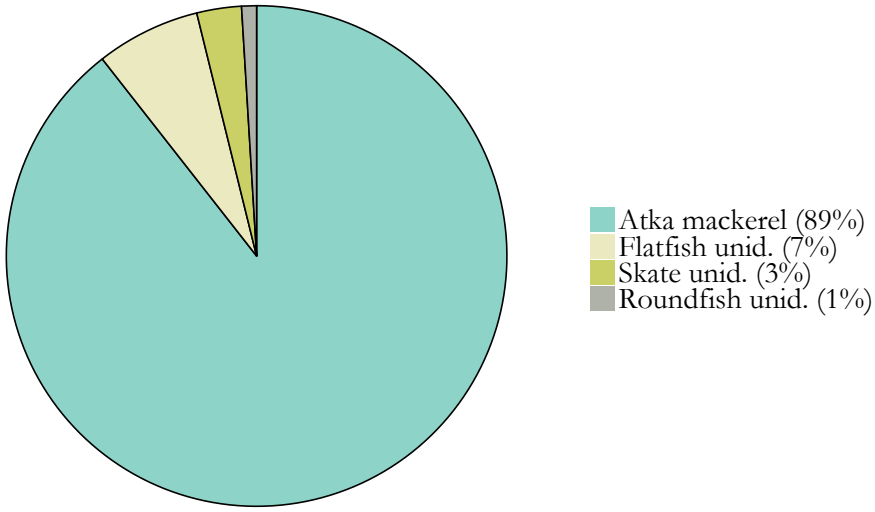
Summary - description of transect

Transect 2012-88: Primary substrates were 79% mixed coarse. Secondary substrates were mostly cobble and boulder. Only 2 fishes were identified in this transect: Irish lord and Pacific cod accounted for 100% of the observations. Overall fish density for this transect was low (< 0.01 individuals/m^2). Ninety-six percent of structure-forming invertebrate density (0.24 individuals/m^2) was identified as Demospongiae (0.13 individuals/m^2) and Primnoidae (0.10 individuals/m^2). Mean heights for Demospongiae, Stylasteridae, and Primnoidae were 40 cm, 19 cm, and 27 cm, respectively.

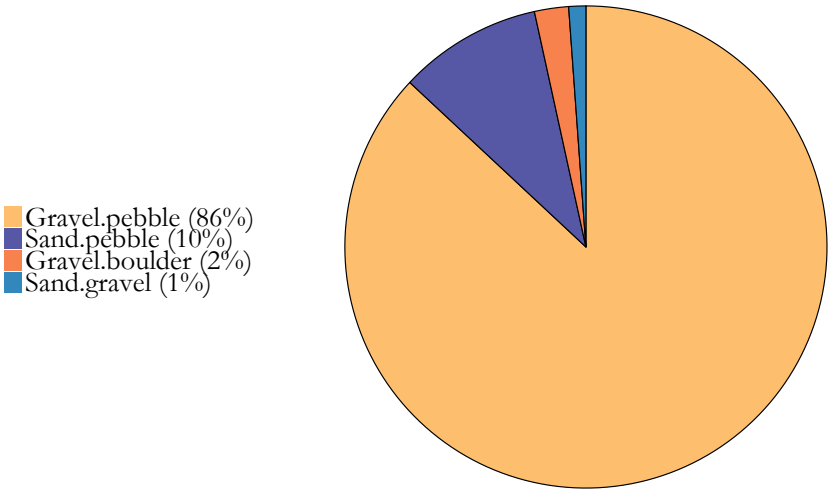
AREA: Samalga Pass to Seguam Pass — Transect 2012-89

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.74	-170.58	3,342	111	3.6

Fish and Crab Composition (n = 104)

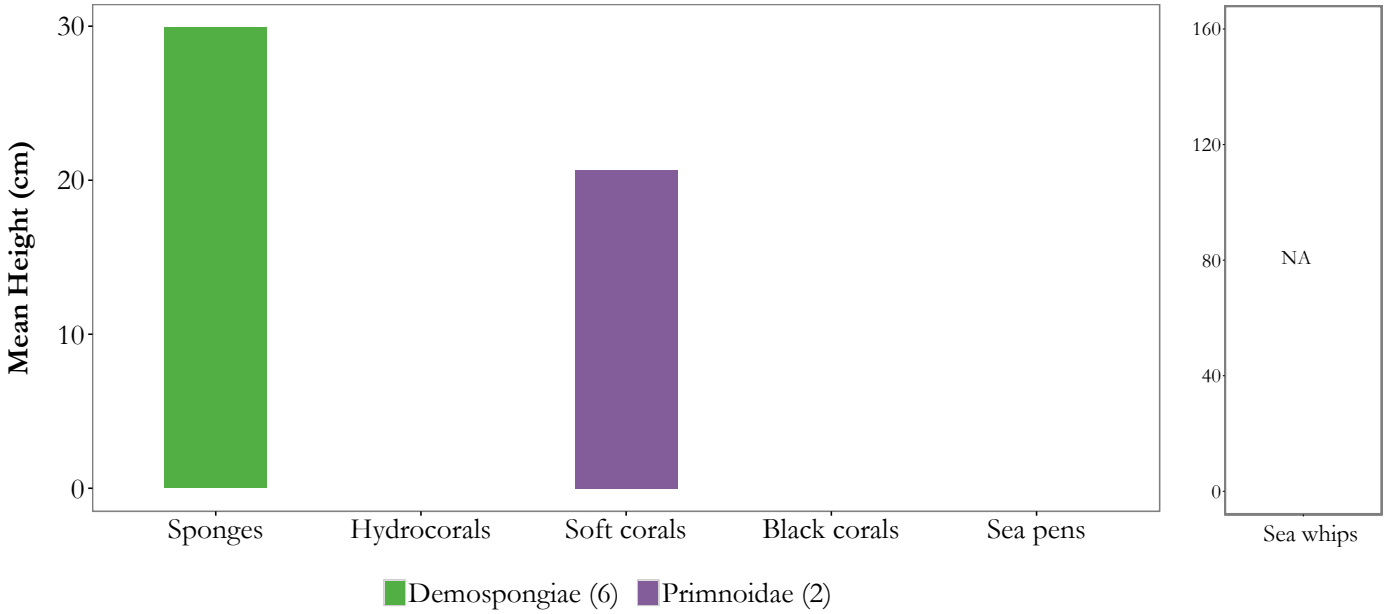


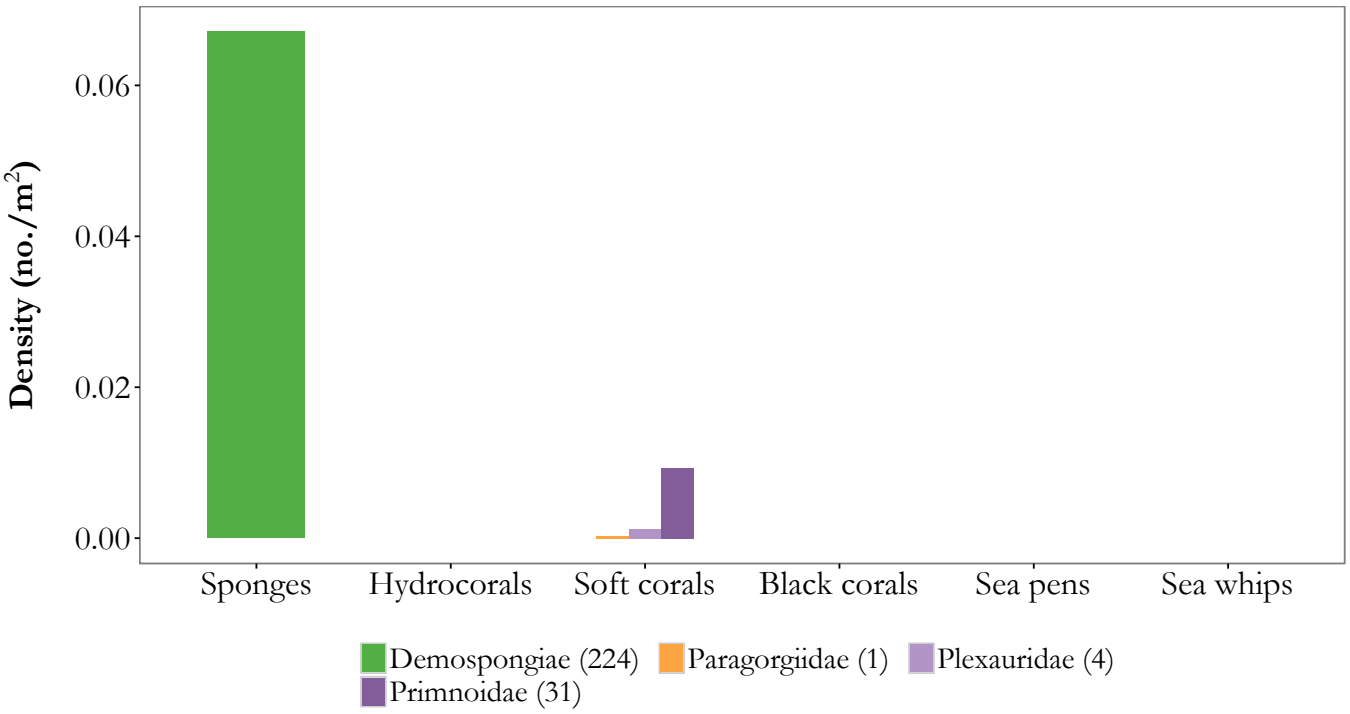
Substrate Composition



Images

Vertical Habitat Summary





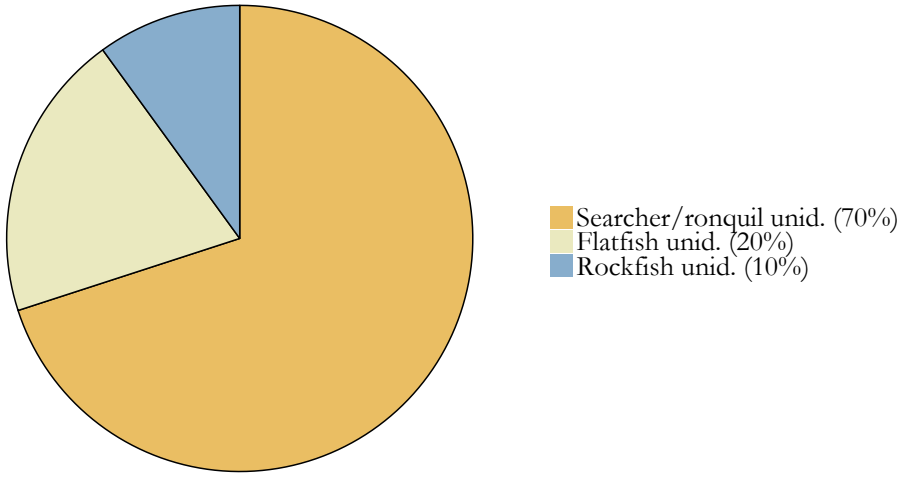
Summary - description of transect

Transect 2012-89: Primary substrates consisted of gravel and sand. Secondary substrates were mostly pebble with a few boulders and some cobble. Atka mackerel was 89% of the fish density (0.03 individuals/m^2). Structure-forming invertebrate density was 0.08 individuals/m^2. Demospongiae (0.07 individuals/m^2) comprised 86% of the density. Mean heights were calculated for Demospongiae (30 cm) and Primnoidae (21 cm).

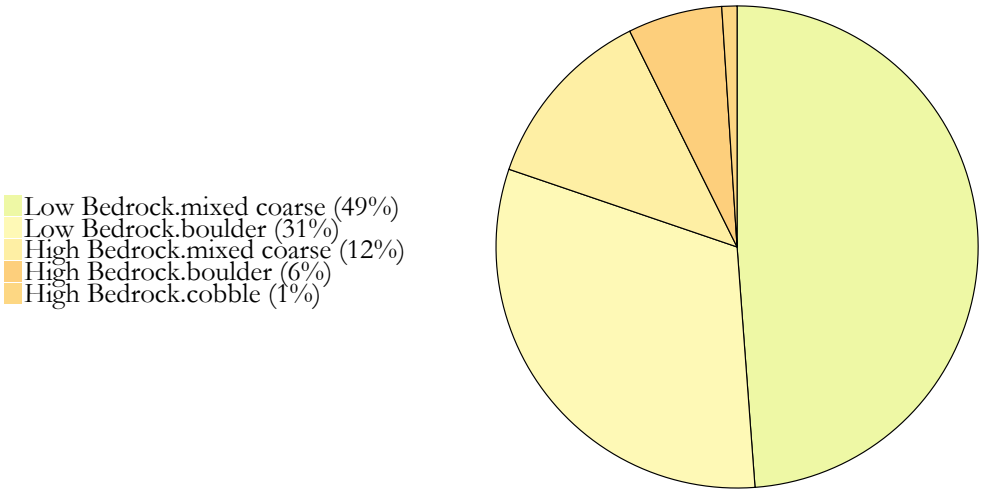
AREA: Samalga Pass to Seguam Pass — Transect 2012-90

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.58	-170.61	2,529	96	5.1

Fish and Crab Composition (n = 20)

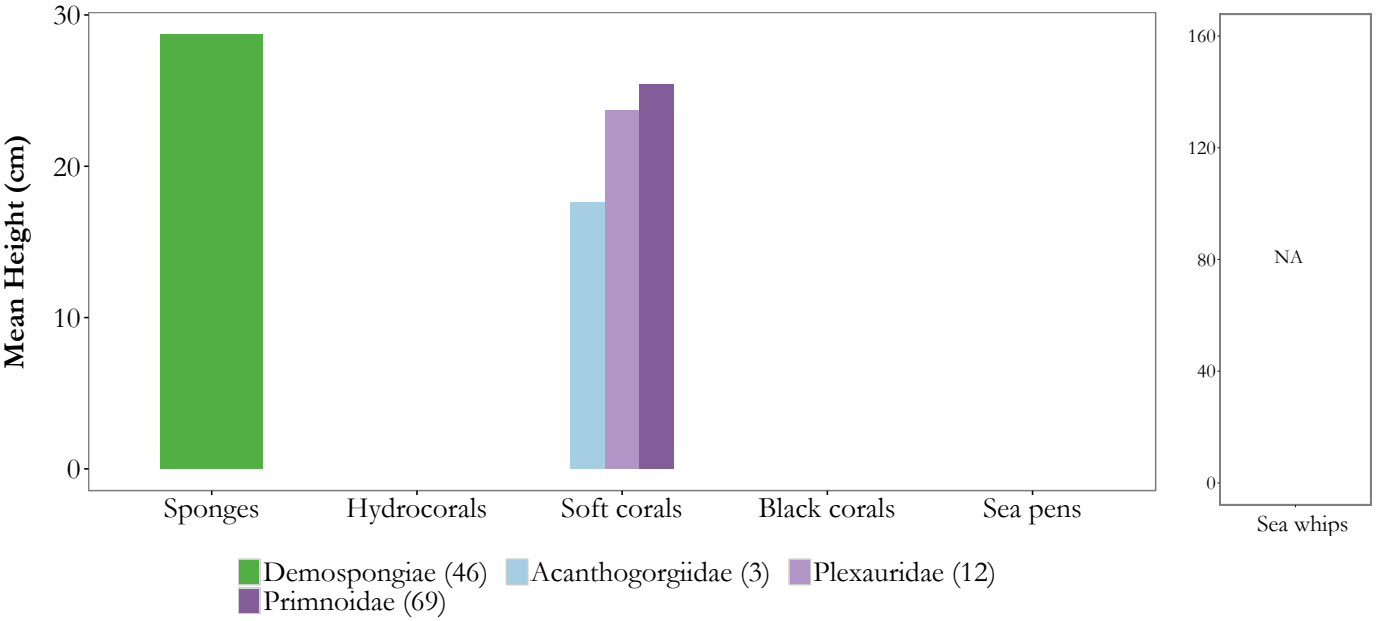


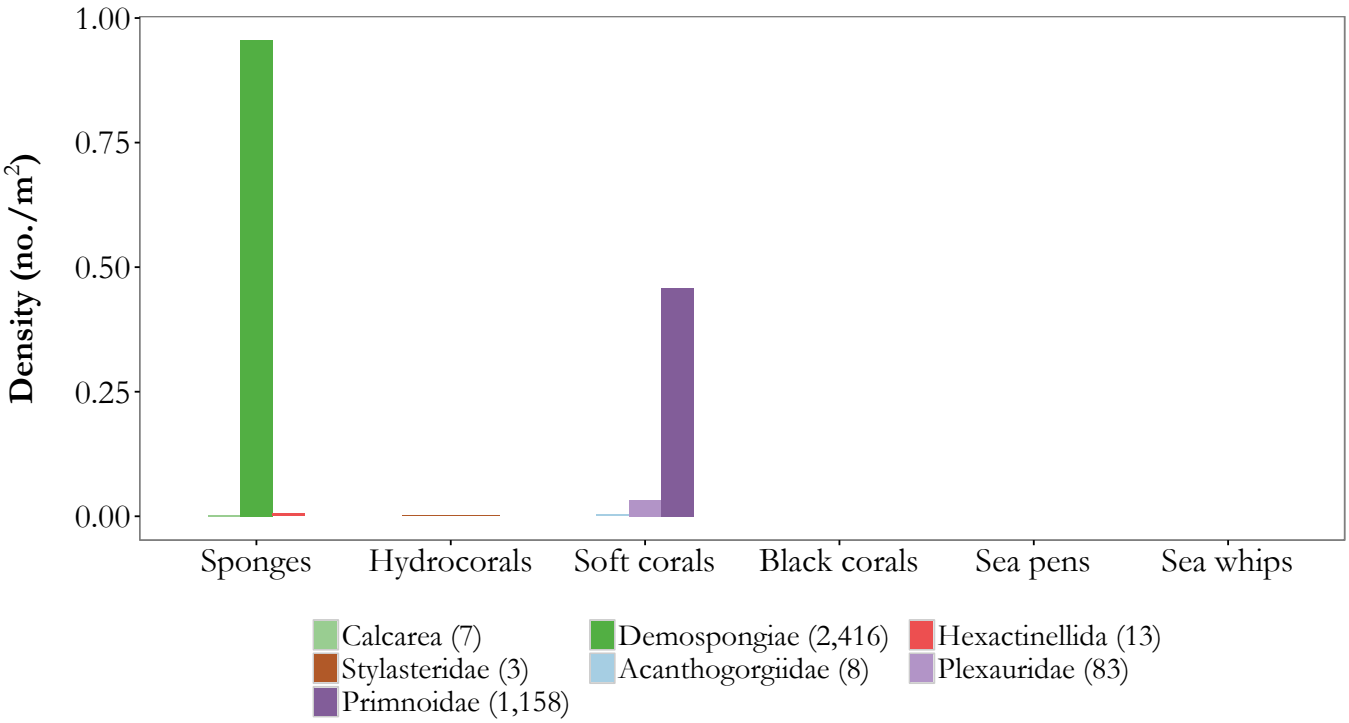
Substrate Composition



Images

Vertical Habitat Summary





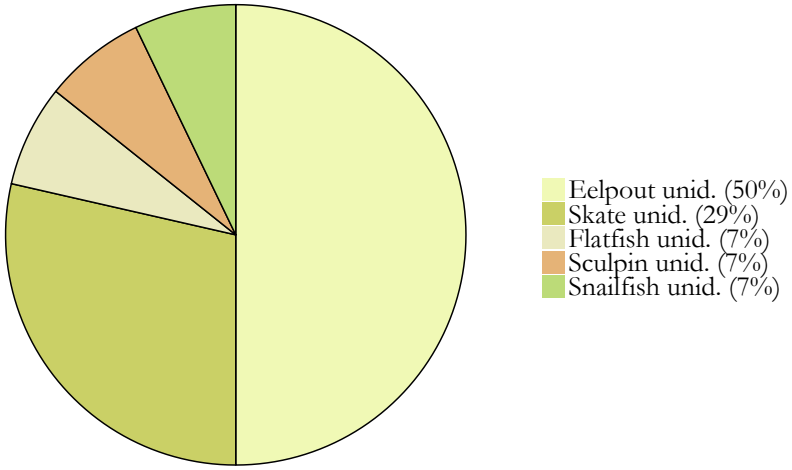
Summary - description of transect

Transect 2012-90: Primary substrates were low bedrock and high bedrock. Secondary substrates were mostly mixed coarse and boulder. Searchers/ronquils (n = 14) accounted for 70% of the fish density. Structure-forming invertebrate density was 1.46 individuals/m^2. Demospongiae was the most abundant at 0.96 individuals/m^2. Primnoidae was the second most abundant (0.49 individuals/m^2). Calcarea, Stylasteridae, and Acanthogorgiidae all had densities < 0.01 individuals/m^2. Mean heights were calculated for Demospongiae (29 cm), Acanthogorgiidae (18 cm), Plexauridae (24 cm), and. Primnoidae (25 cm), respectively.

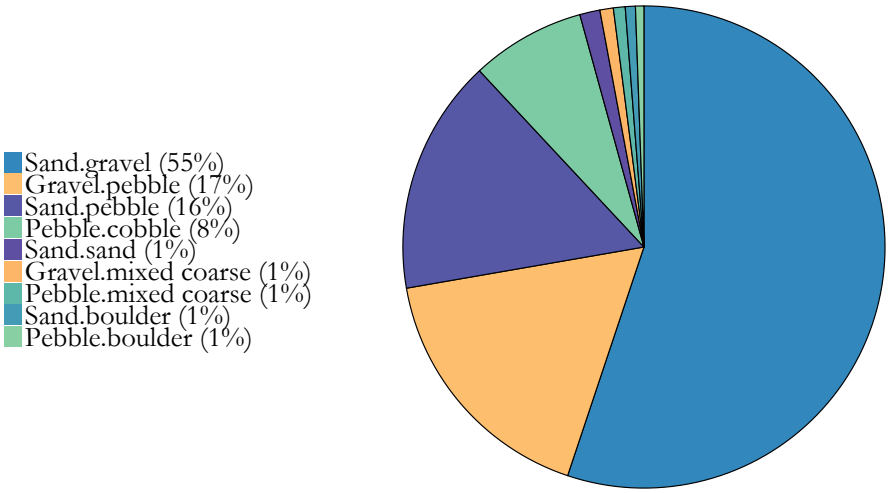
AREA: Samalga Pass to Seguam Pass — Transect 2012-91

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.59	-170.35	1,275	370	3.8

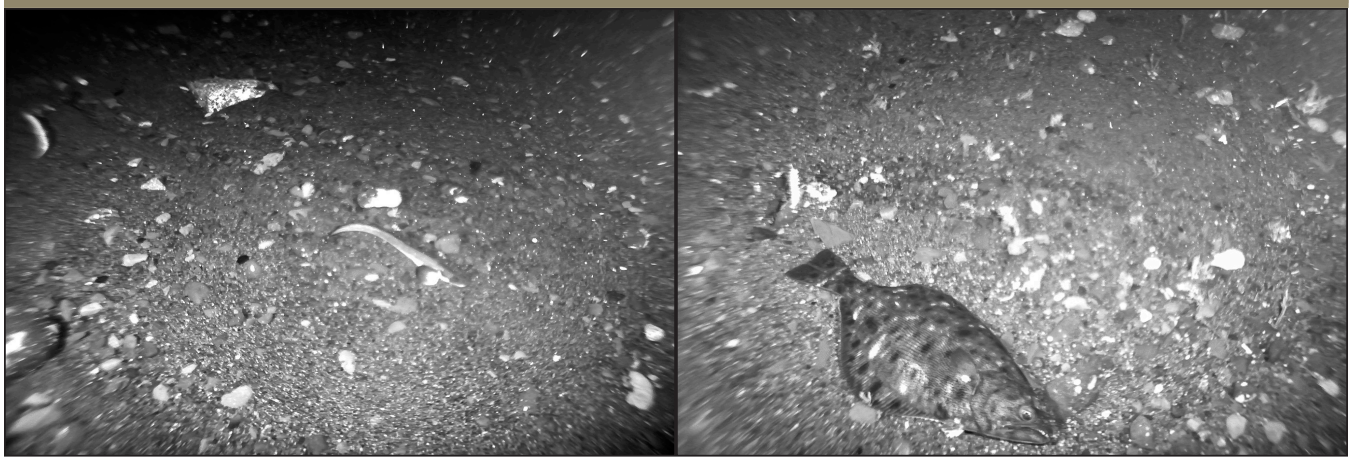
Fish and Crab Composition (n = 14)



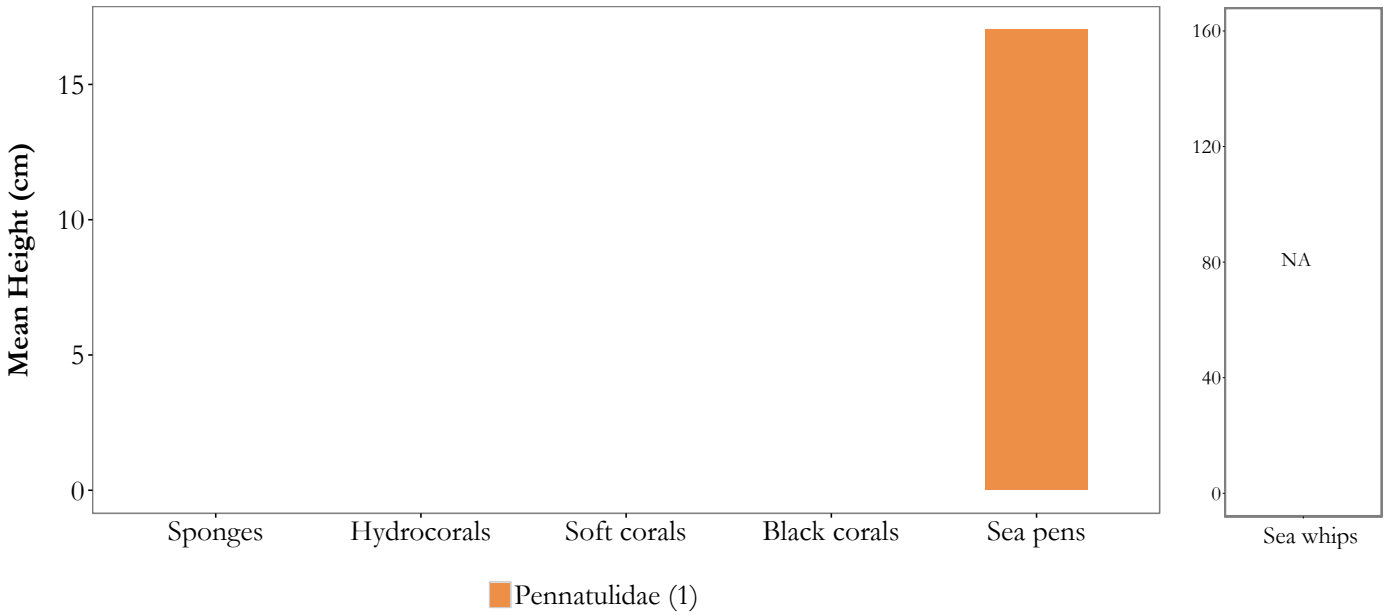
Substrate Composition

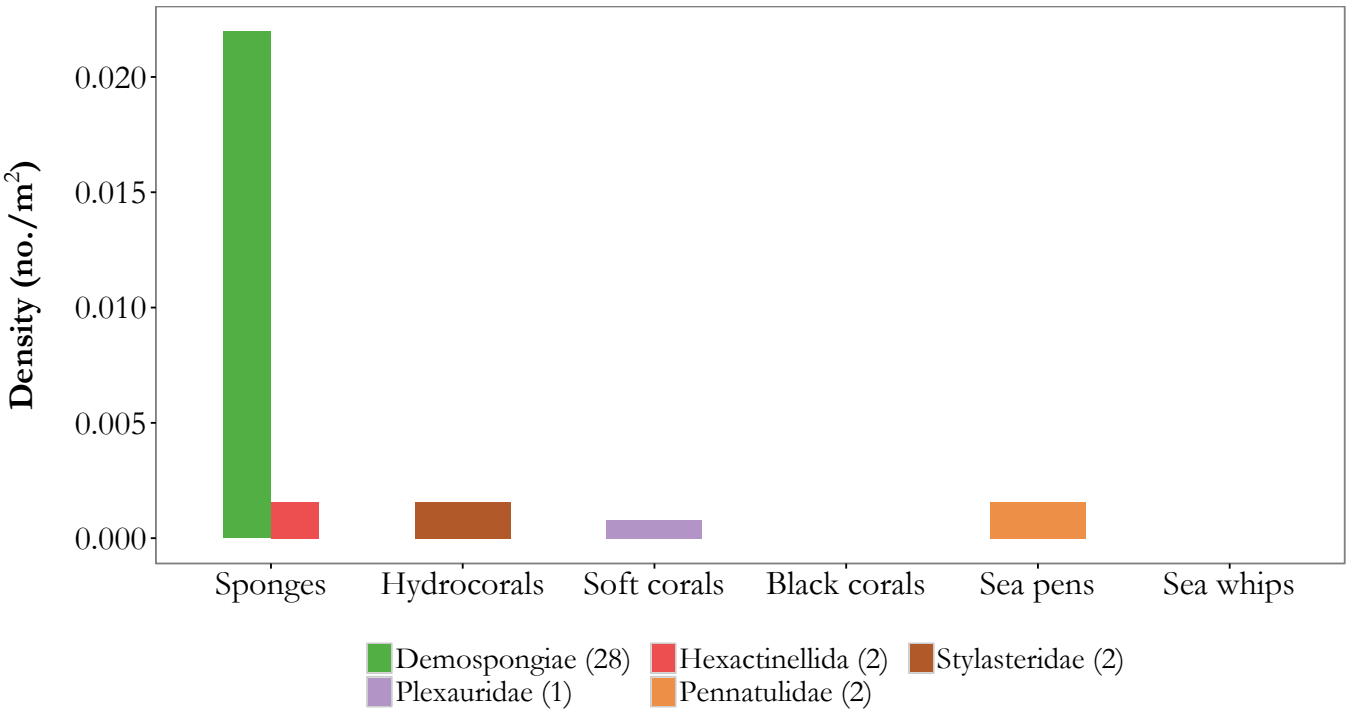


Images



Vertical Habitat Summary





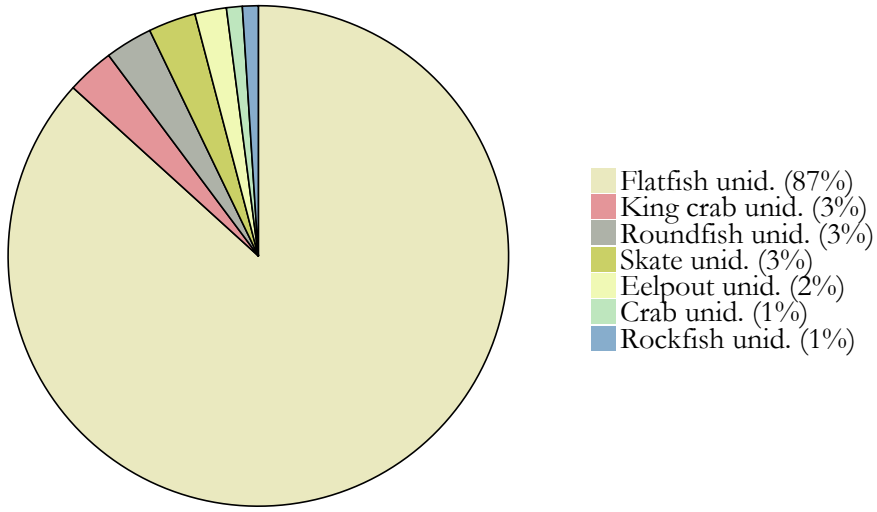
Summary - description of transect

Transect 2012-91: Primary and secondary substrates were very diverse for this transect. A majority of the primary substrate was sand. Secondary substrates ranged from sand to gravel, pebble, mixed coarse and boulders. Fish density was low overall, 0.01 individuals/m^2, with only 14 individuals identified. Similarly, structure-forming invertebrate density was only 0.03 individuals/m^2. One sea pen was measured at 17 cm.

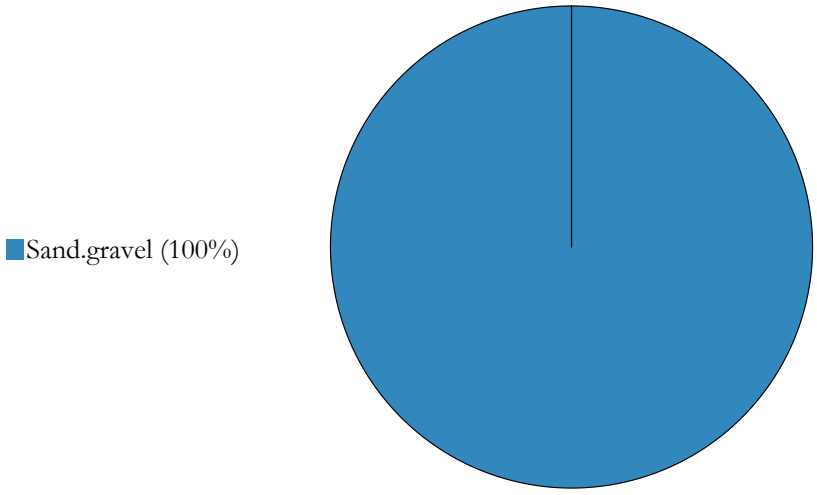
AREA: Samalga Pass to Seguam Pass — Transect 2012-92

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.57	-170.14	1,874	257	4.1

Fish and Crab Composition (n = 98)



Substrate Composition



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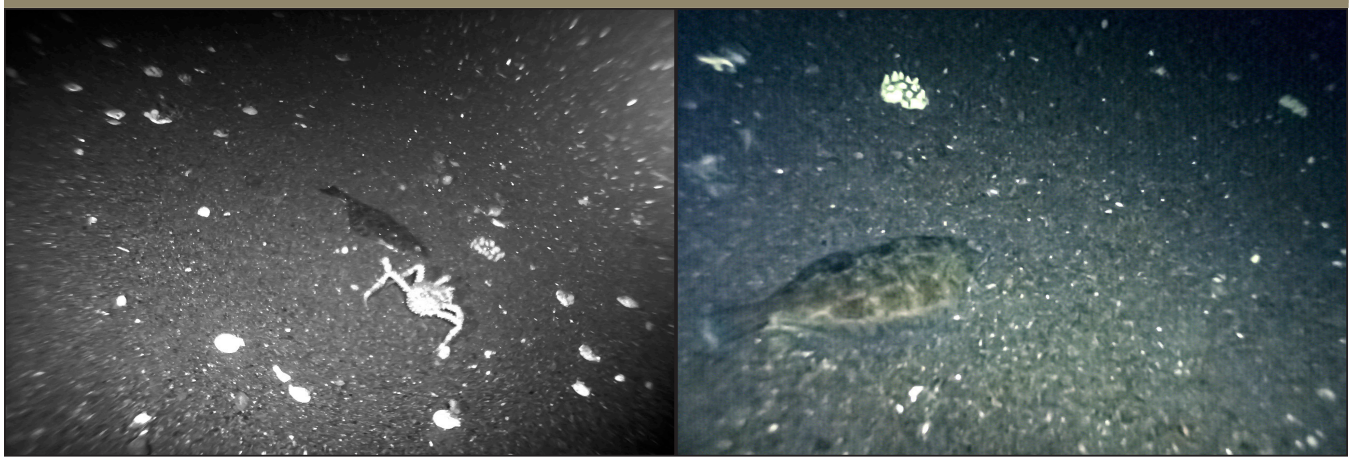
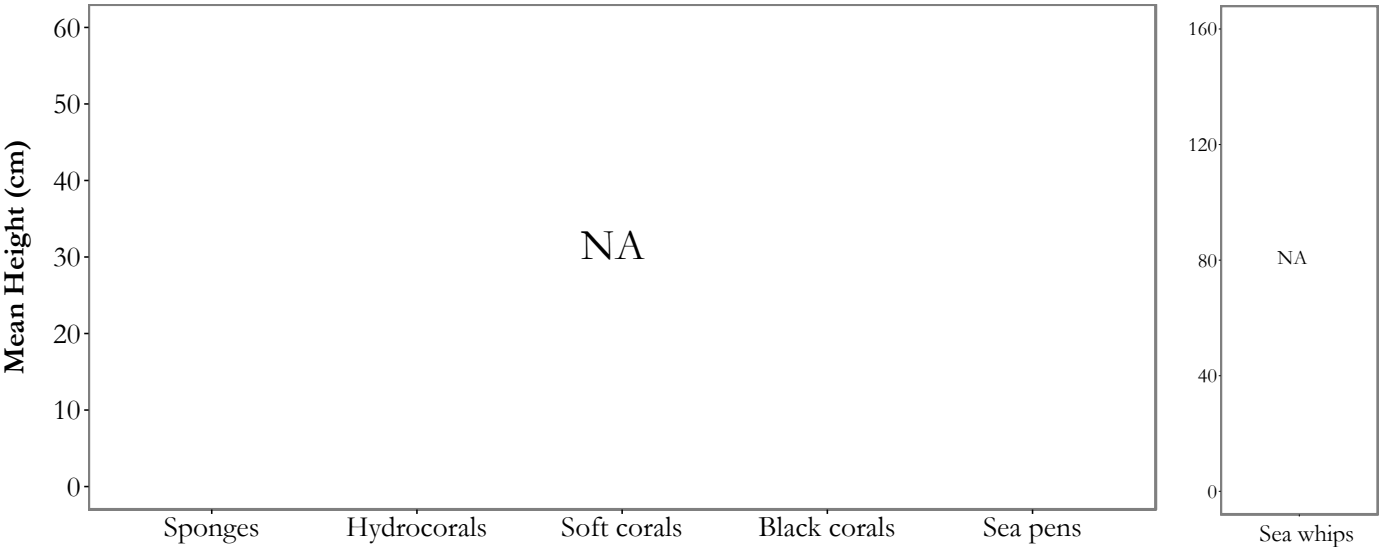
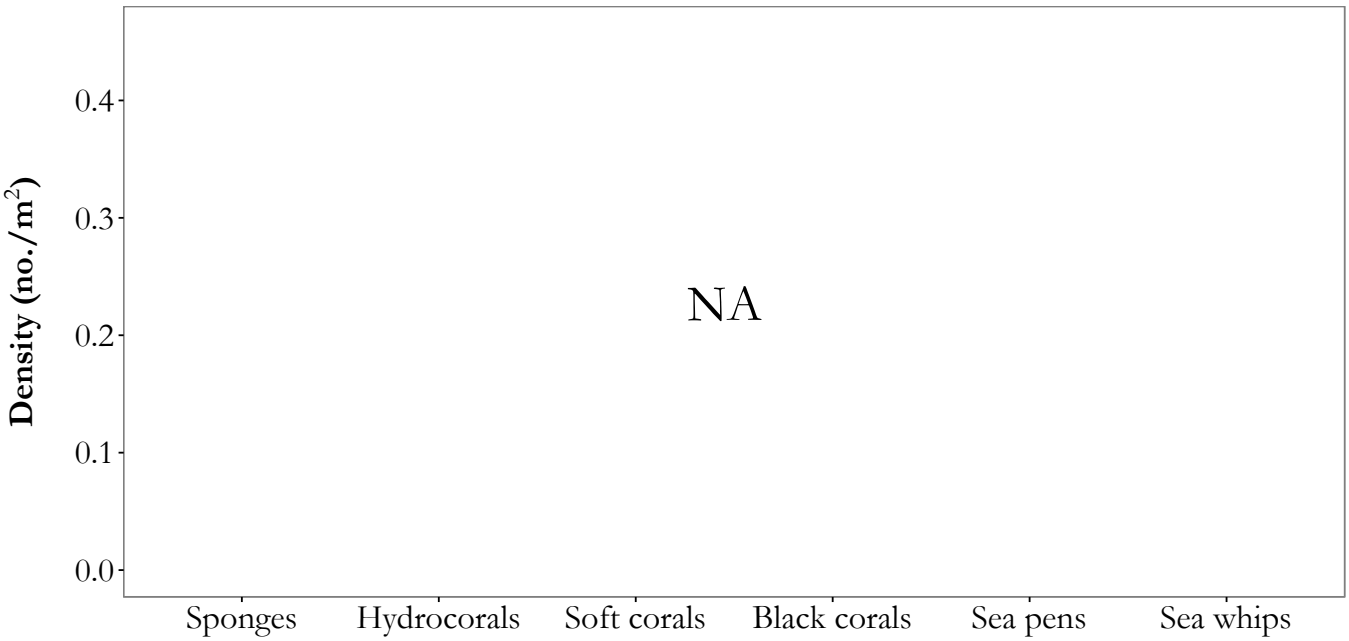


Vertical Habitat Summary





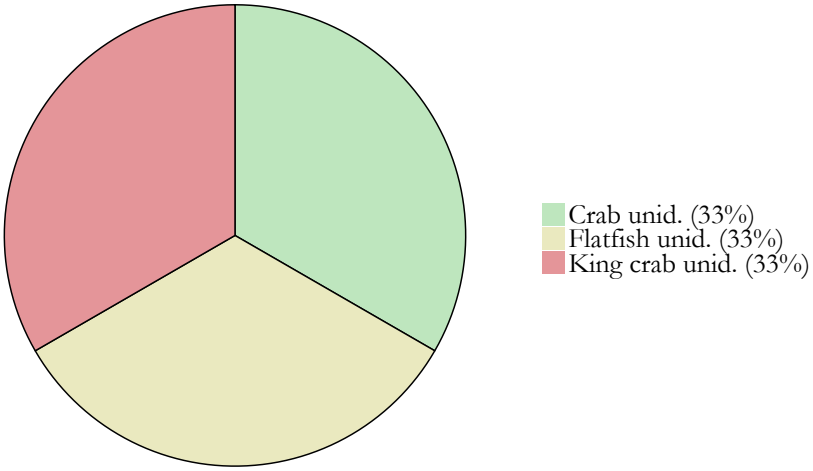
Summary - description of transcect

Transect 2012-92: Primary and secondary substrates consisted of sand and gravel. Ninety-eight fishes and crabs were observed with flatfishes (n = 85) accounting for 87% of the fish and crab density (0.05 individuals/m^2). No structure-forming invertebrates were identified.

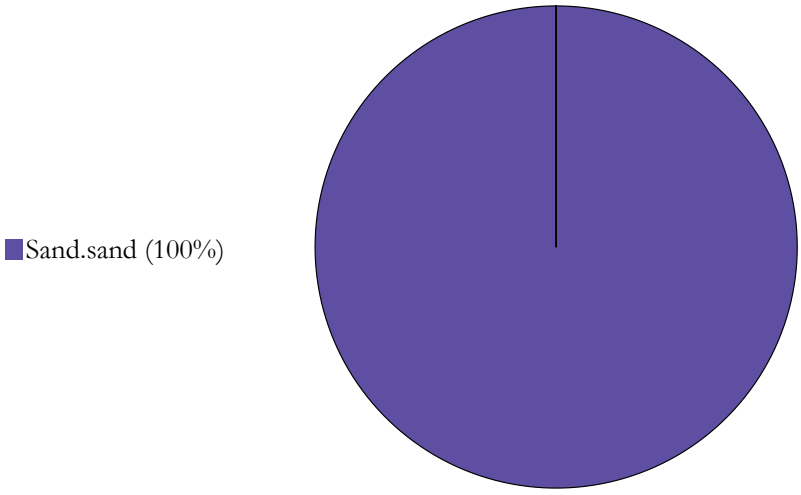
AREA: Samalga Pass to Seguam Pass — Transect 2012-93

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.49	-170.01	708	226	4.7

Fish and Crab Composition (n = 3)

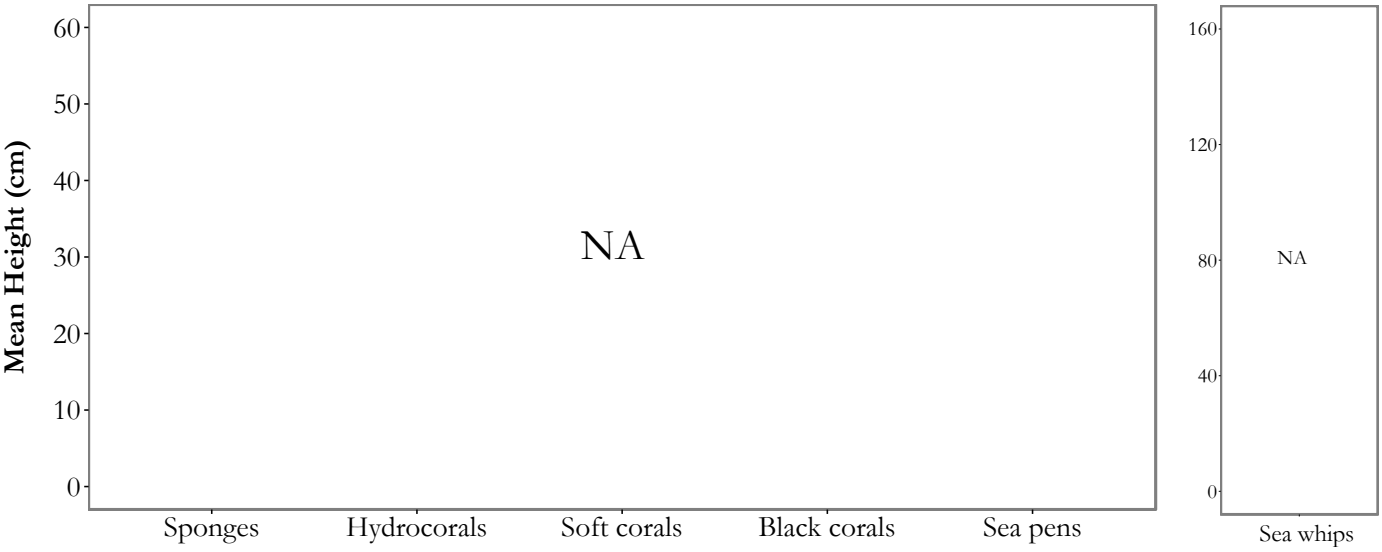


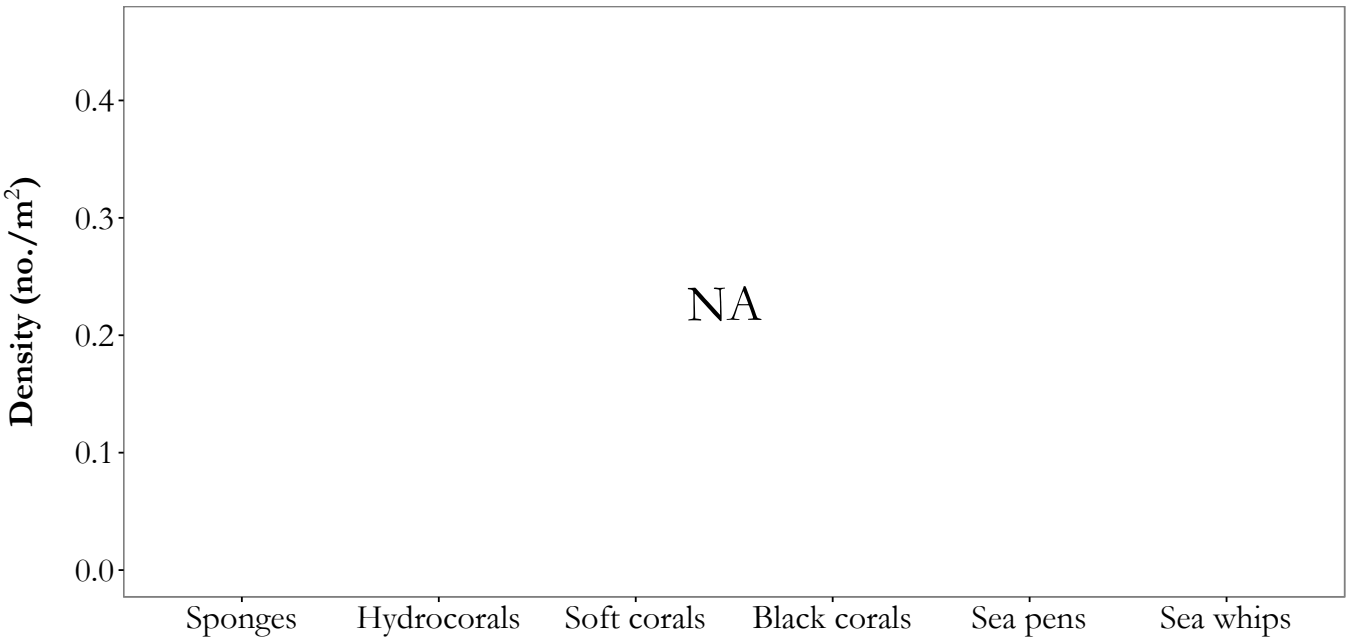
Substrate Composition



Images

Vertical Habitat Summary





Summary - description of transect

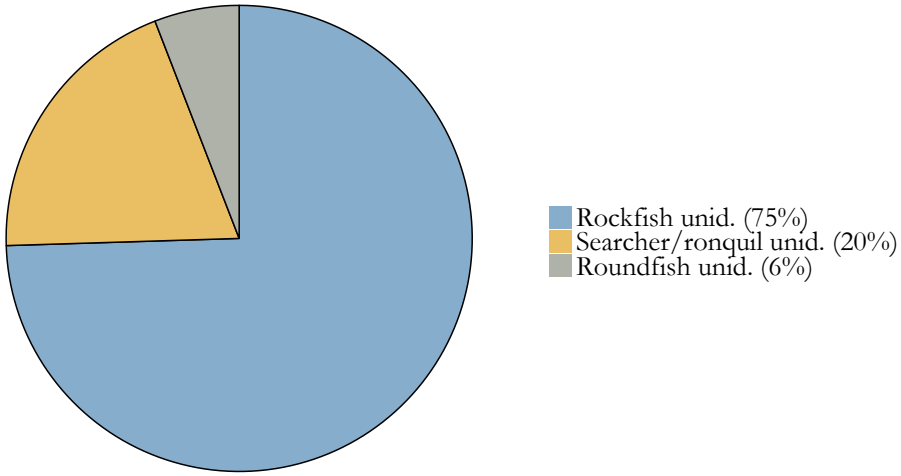
Transect 2012-93: Primary and secondary substrates consisted of sand. Only two crabs and one fish were identified in this transect resulting in a very low density of < 0.01 individuals/m^2. No structure-forming invertebrates were identified.

AREA: Samalga Pass to Seguam Pass — Transect *2012-94

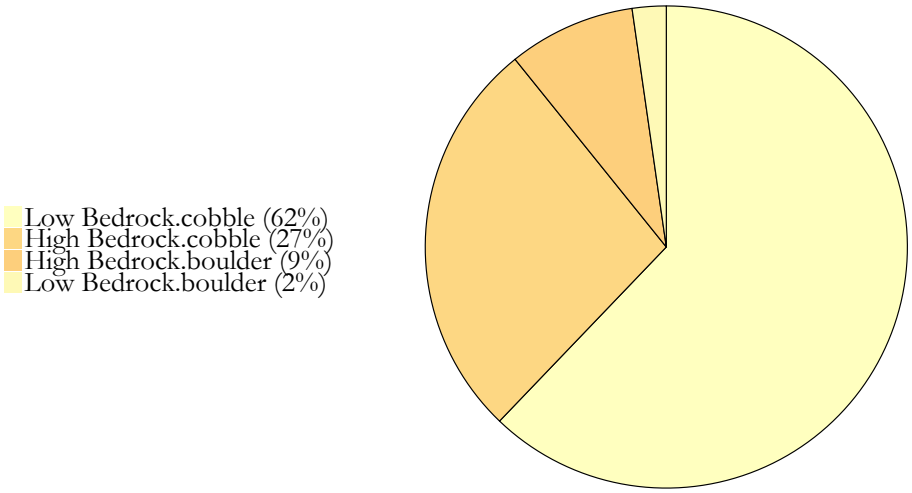
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.53	-169.77	2,192	170	4.8

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 51)



Substrate Composition

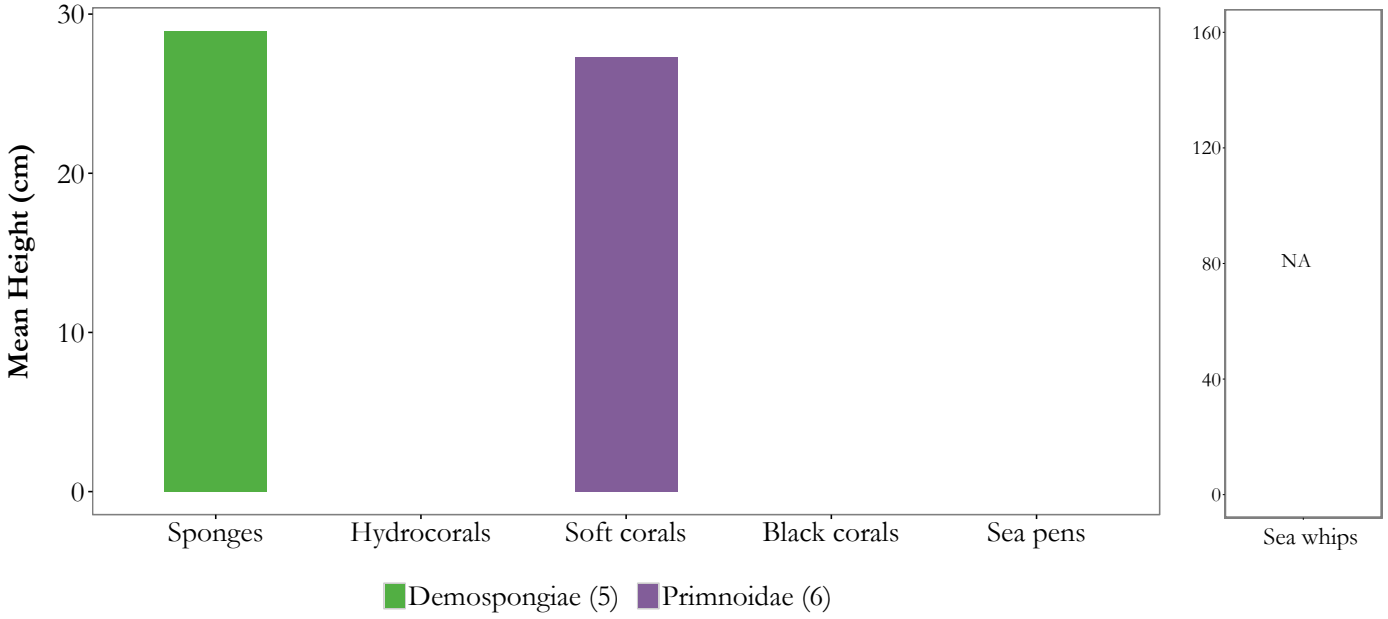


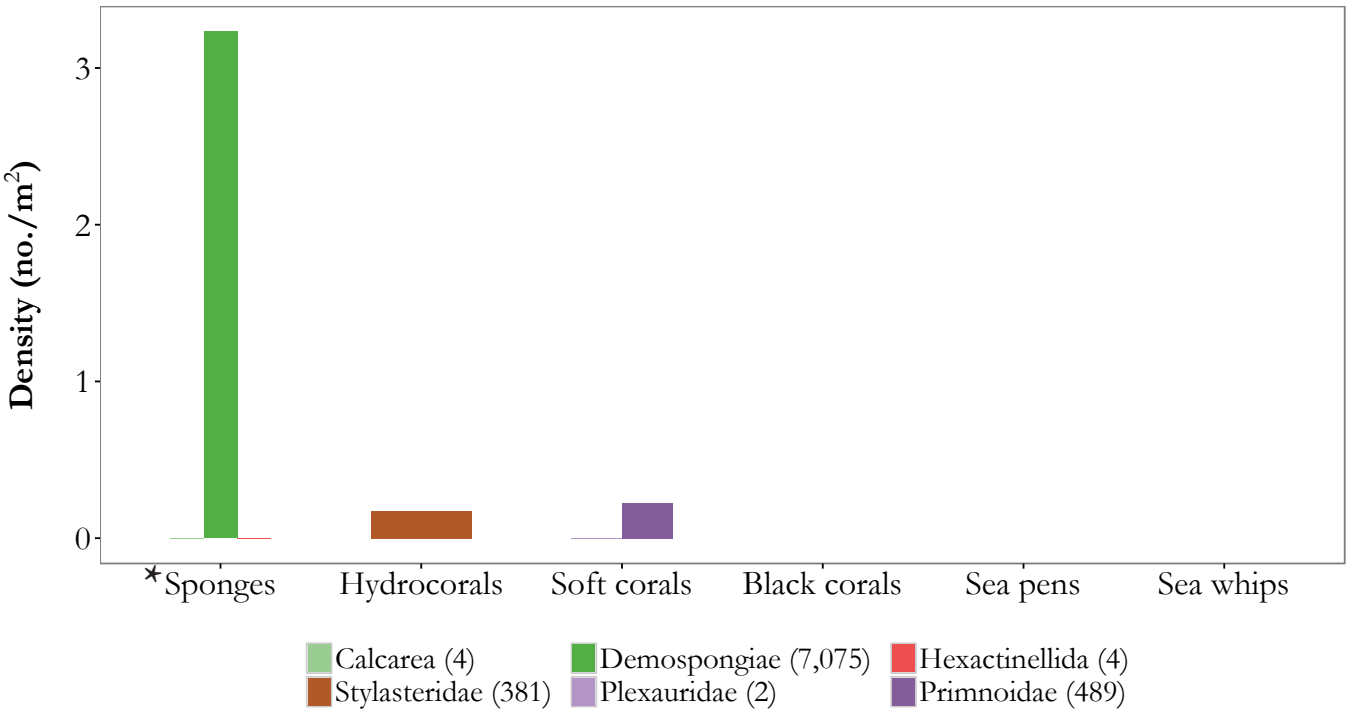
Images

AREA: Samalga Pass to Seguam Pass Transect *2012-94

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





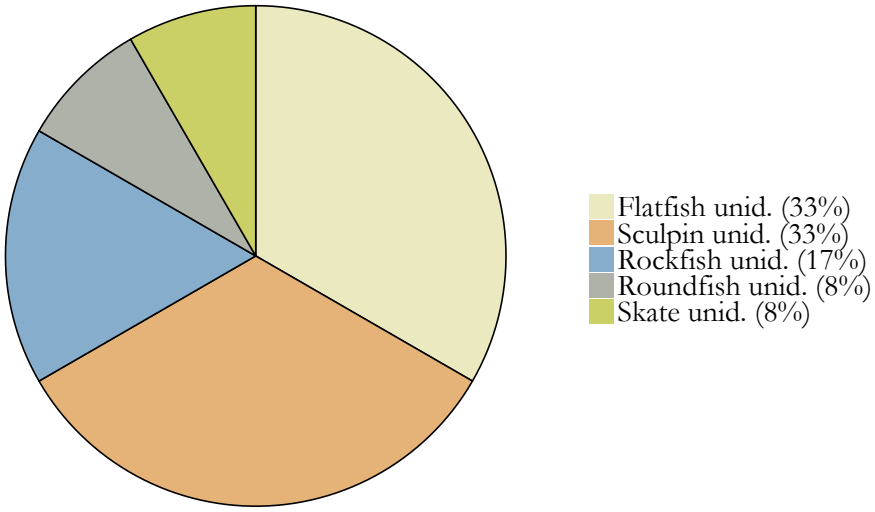
Summary - description of transect

Transect 2012-94: Primary and secondary substrates consisted of bedrock, cobble and boulder. Rockfishes (0.02 individuals/m^2) accounted 75% of the fish density. Demospongiae density was very high (3.23 individuals/m^2) and accounted for 89% of the structure-forming invertebrates. Mean height for the five Demospongiae measured was 29 cm. Six Primnoidae were measured with a mean of 27 cm.

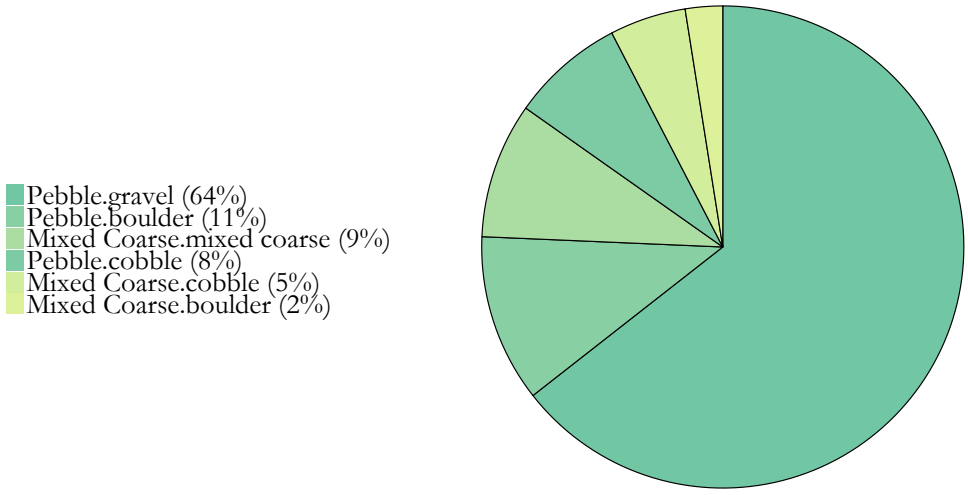
AREA: Samalga Pass to Seguam Pass — Transect 2012-95

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.52	-169.77	1,588	194	4.8

Fish and Crab Composition (n = 12)

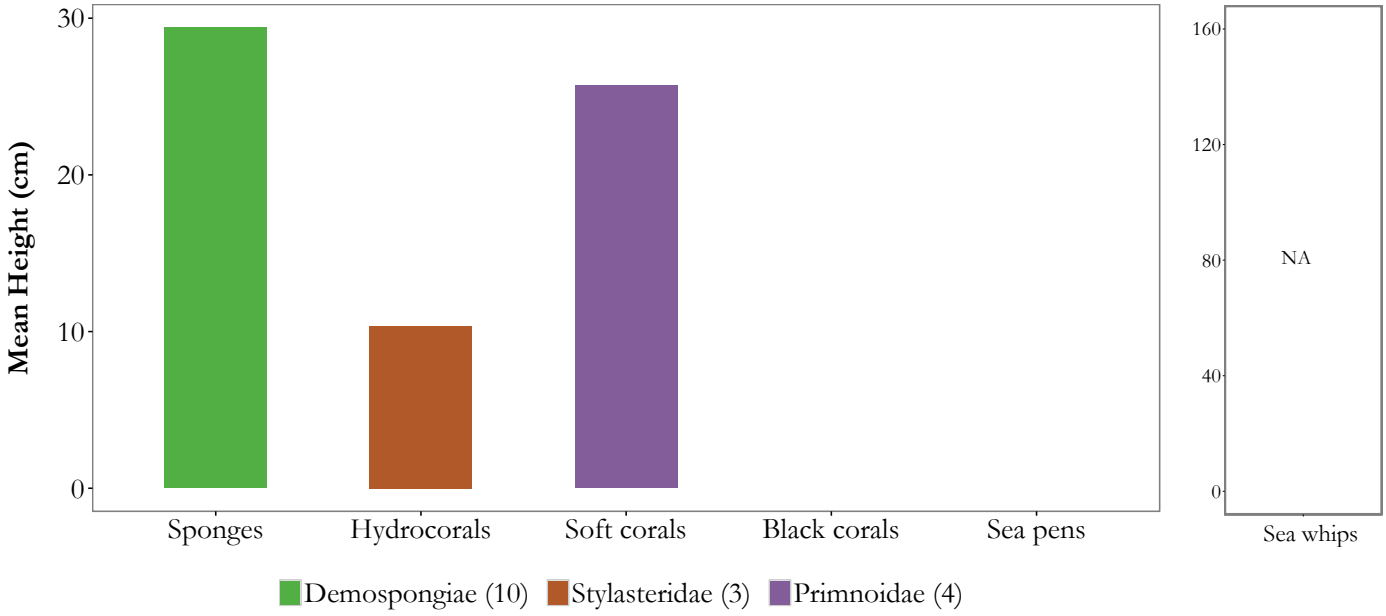


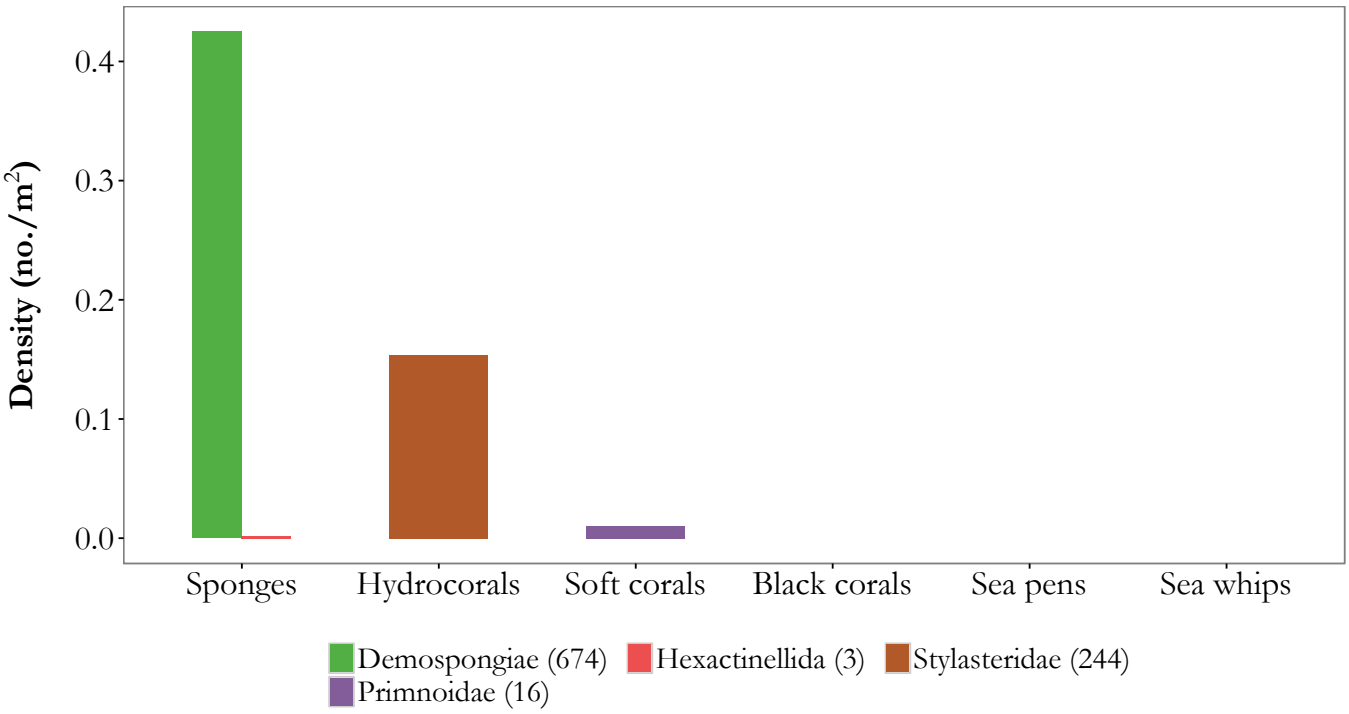
Substrate Composition



Images

Vertical Habitat Summary





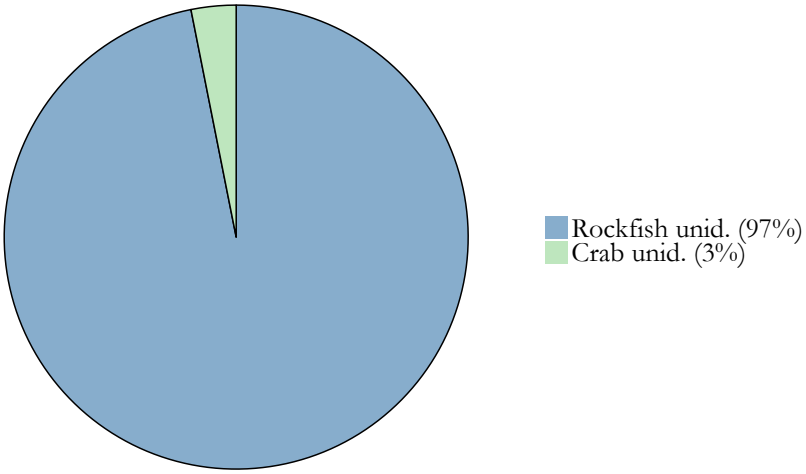
Summary - description of transect

Transect 2012-95: Primary and secondary substrates for 75% of the haul were pebble/gravel and pebble/boulder. Only 12 fishes were identified in this transect. As a result, species density for the transect was very low (0.01 individuals/m^2). Seventy-two percent (0.42 individuals/m^2) of the structure-forming invertebrates were Demospongiae. Stylasteridae contributed 26% (0.15 individuals/m^2) to the invertebrate density. Mean heights were calculated for Demospongiae (29 cm), Stylasteridae (10 cm), and Primnoidae (26 cm).

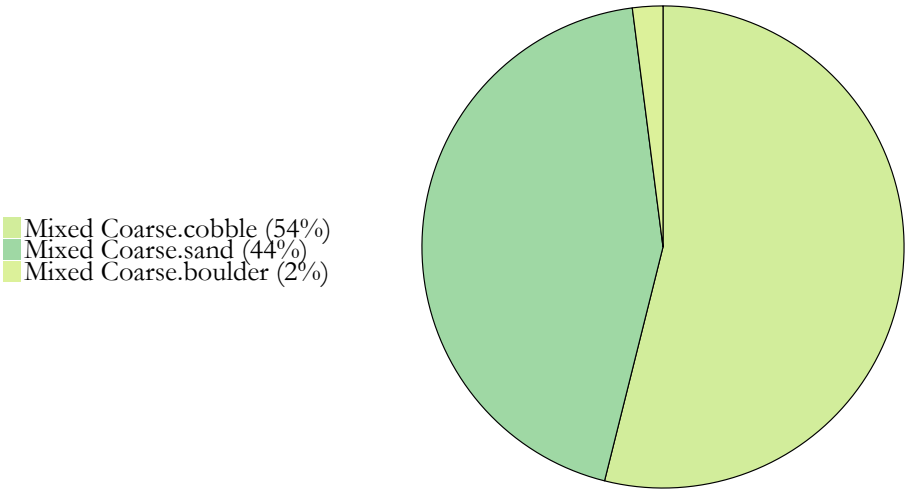
AREA: Samalga Pass to Seguam Pass — Transect 2012-96

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.50	-169.68	763	244	4.7

Fish and Crab Composition (n = 32)

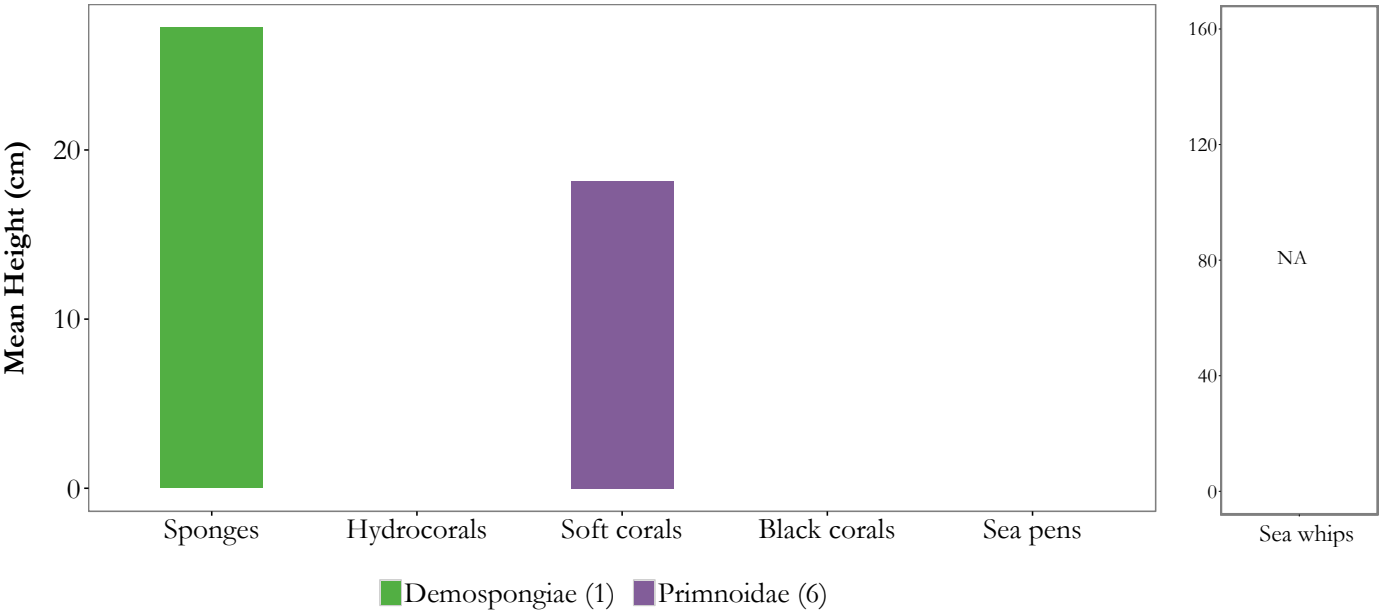


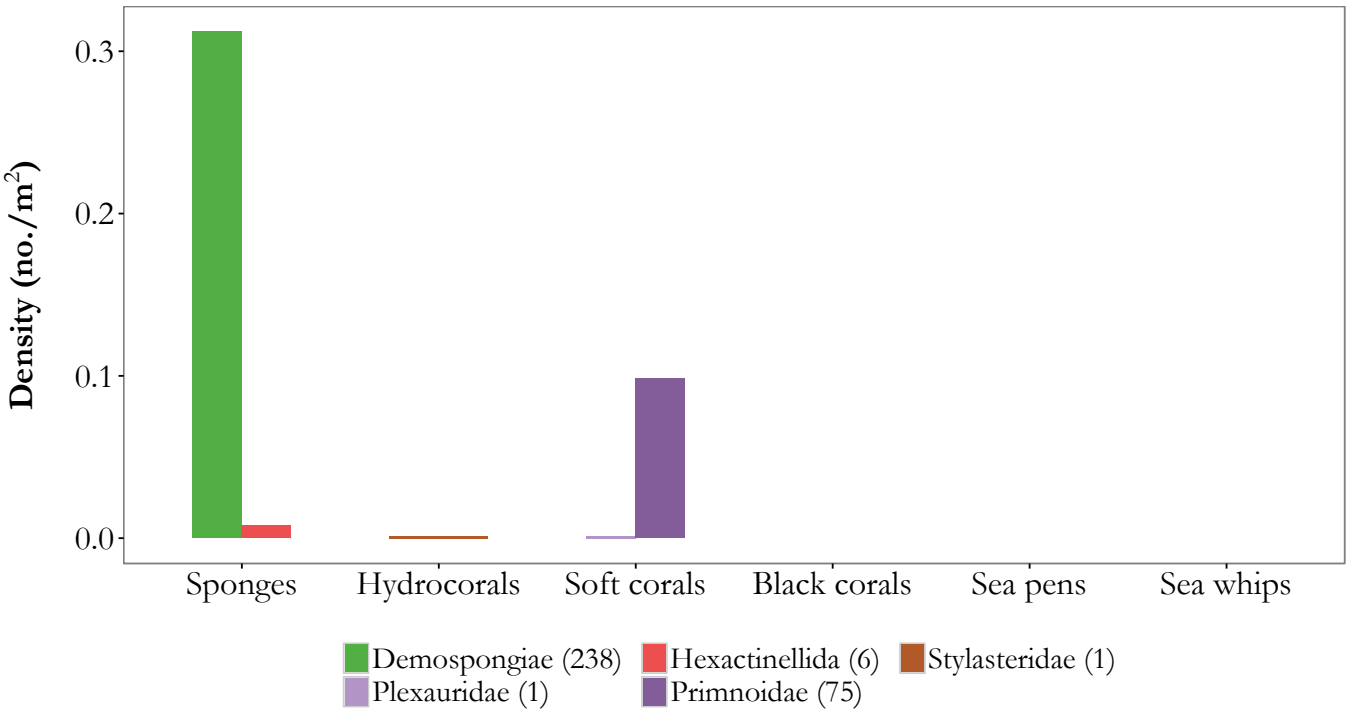
Substrate Composition



Images

Vertical Habitat Summary





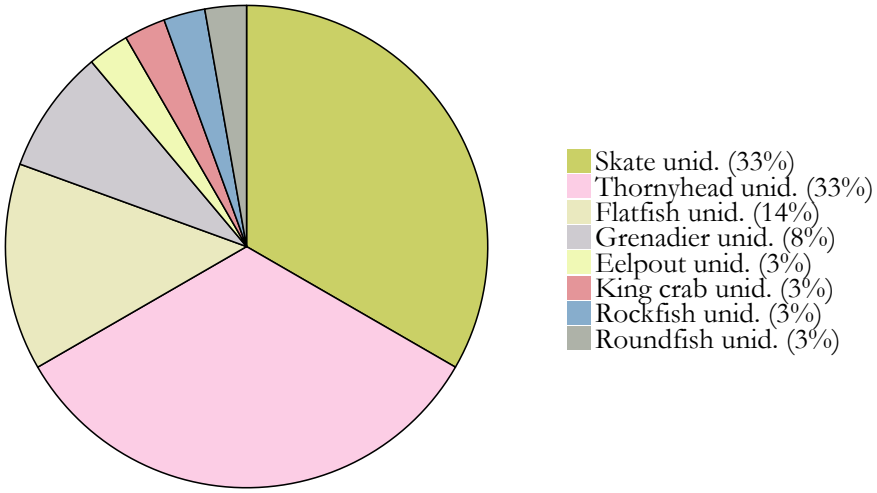
Summary - description of transect

Transect 2012-96: Primary and secondary substrates for 98% of the haul were mixed coarse/cobble and mixed coarse/sand. The remaining substrate consisted of mixed coarse with boulders. Rockfishes comprised 97% of the fish and crab density (0.04 individuals/m^2). Demospongiae and Primnoidae densities (0.31 and 0.10 individuals/m^2) dominated the structure-forming invertebrates. Mean height for the six Primnoidae measured was 18 cm.

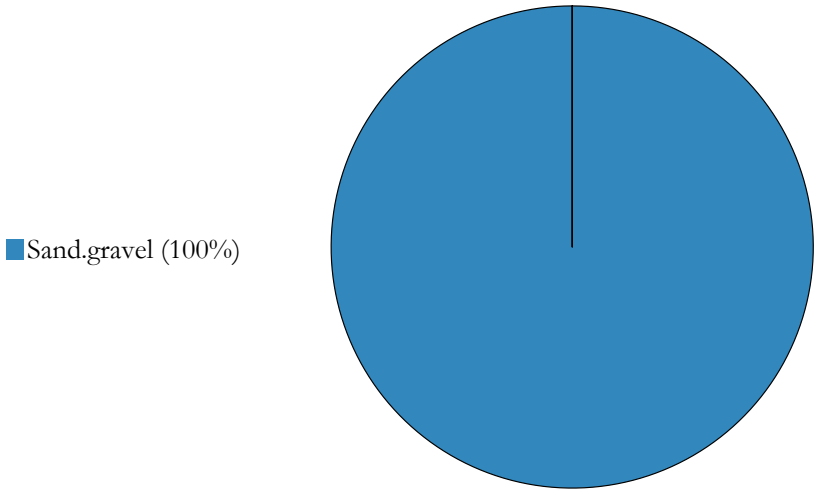
AREA: Samalga Pass to Seguam Pass — Transect 2012-97

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/27/2012	52.43	-169.61	1,594	393	4.1

Fish and Crab Composition (n = 36)

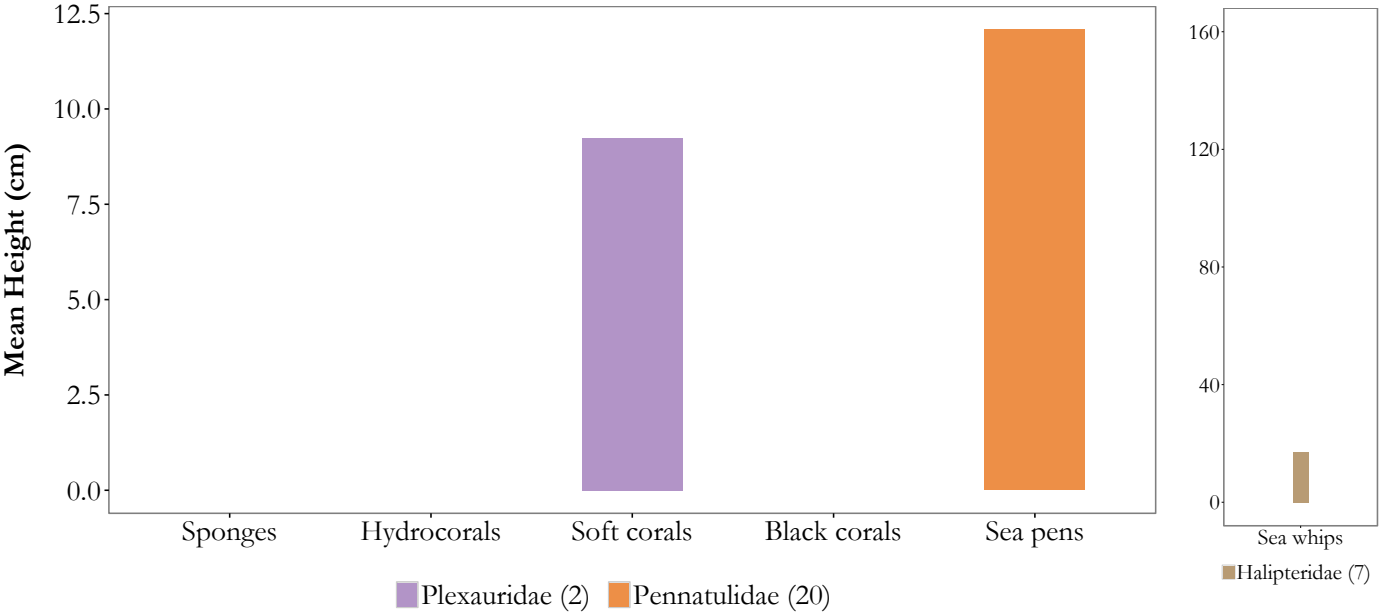


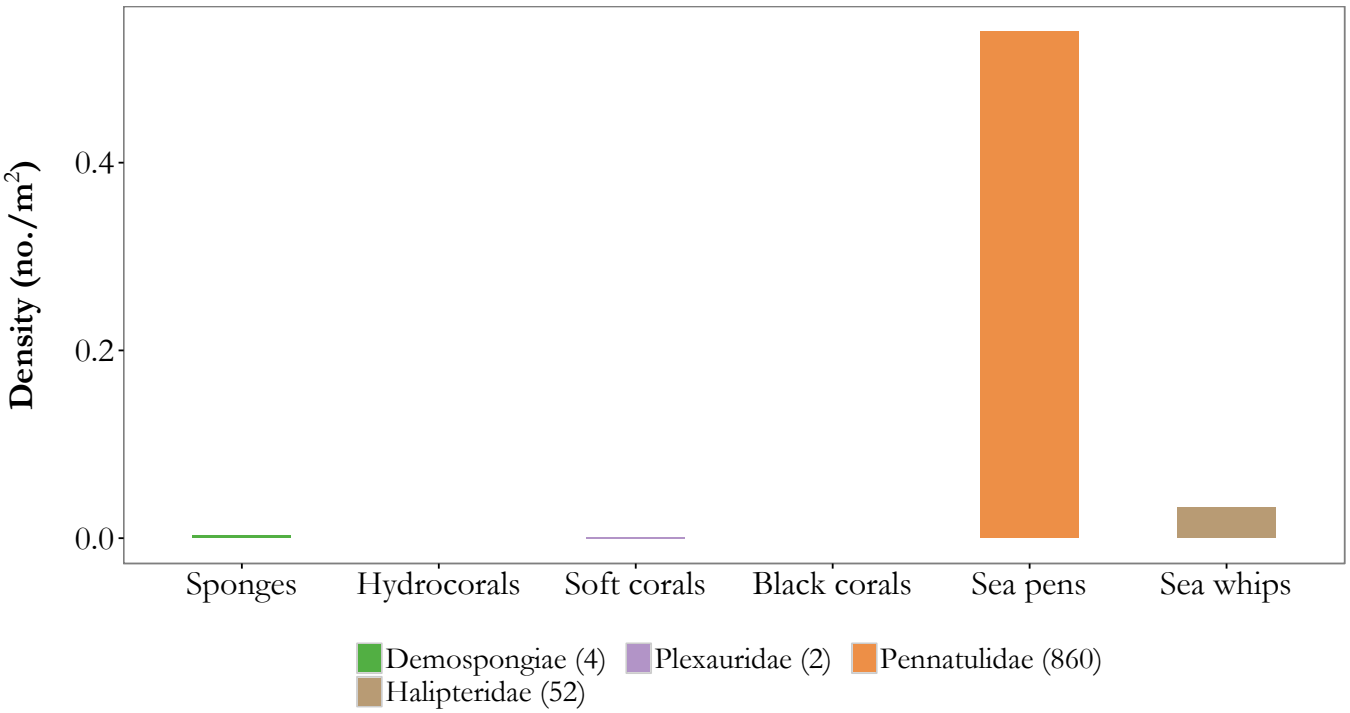
Substrate Composition



Images

Vertical Habitat Summary





Summary - description of transect

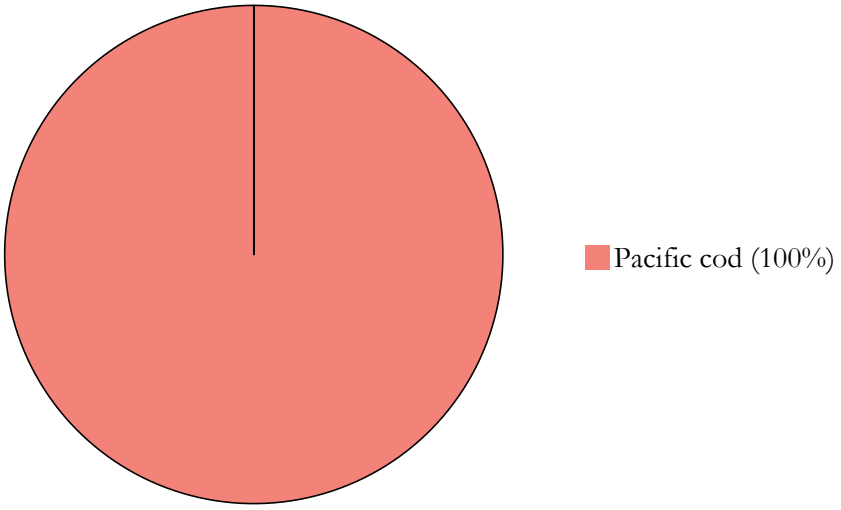
Transect 2012-97: Primary and secondary substrates consisted of sand and gravel. Seven fish taxa and one crab were identified for an overall density of 0.02 individuals/m^2. Pennatulidae density (0.54 individuals/m^2) was the second highest of the survey and the highest density for Pennatulidae west of Samalga Pass. Halipteridae density was 0.03 individuals/m^2. Mean heights were calculated for Plexauridae (9 cm), Pennatulidae (12 cm), and Halipteridae (17 cm).

AREA: Samalga Pass to Seguam Pass — Transect *2014-5

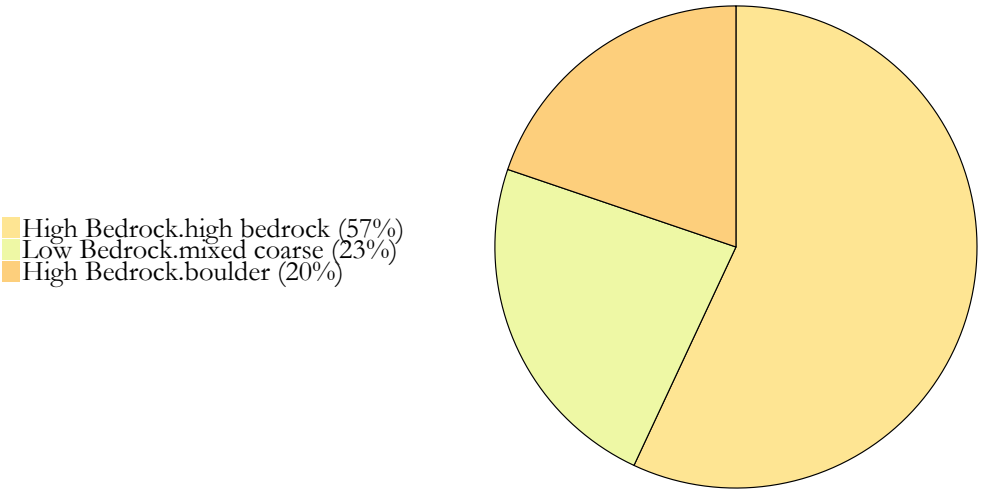
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/22/2014	52.92	-169.57	905	80	4.3

*Area of high coral or sponge density (> 1.0 individuals/m^2)

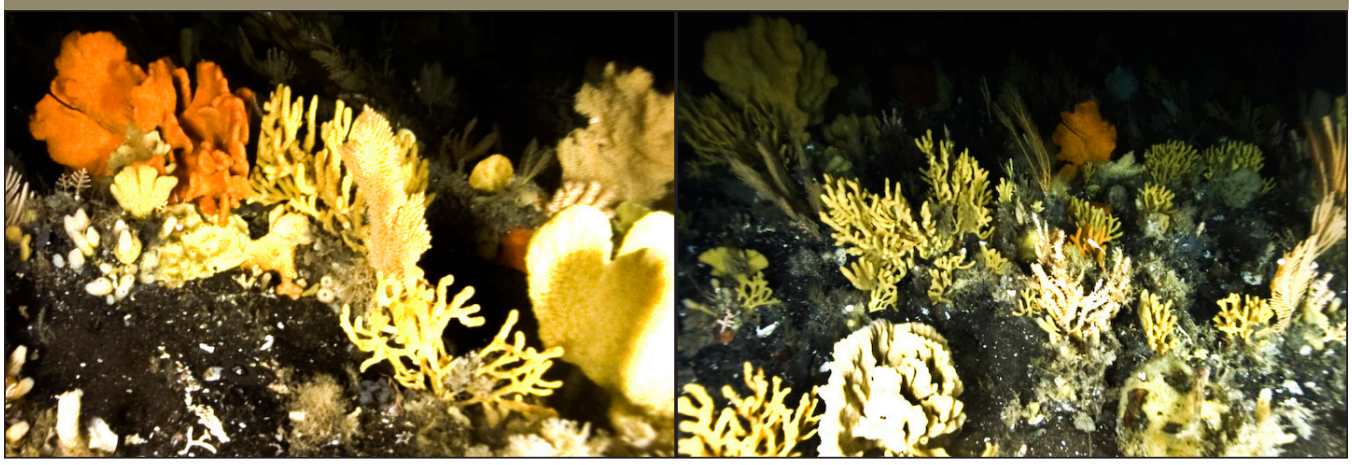
Fish and Crab Composition (n = 1)



Substrate Composition



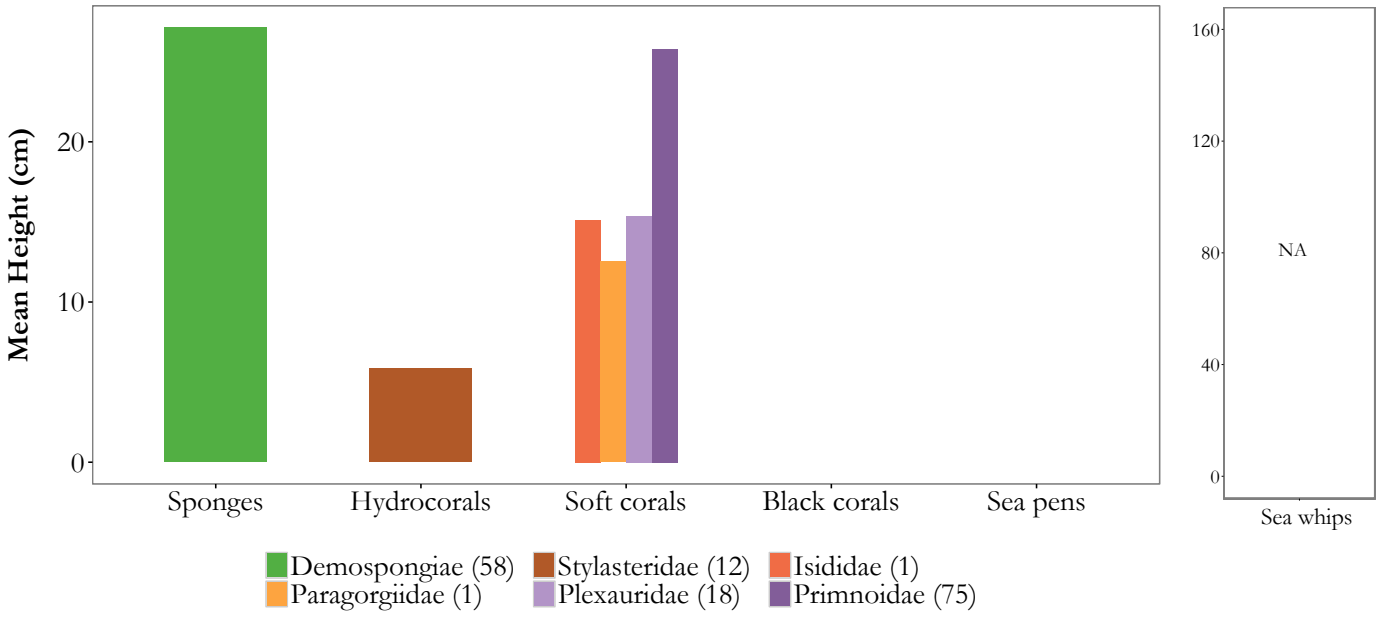
Images

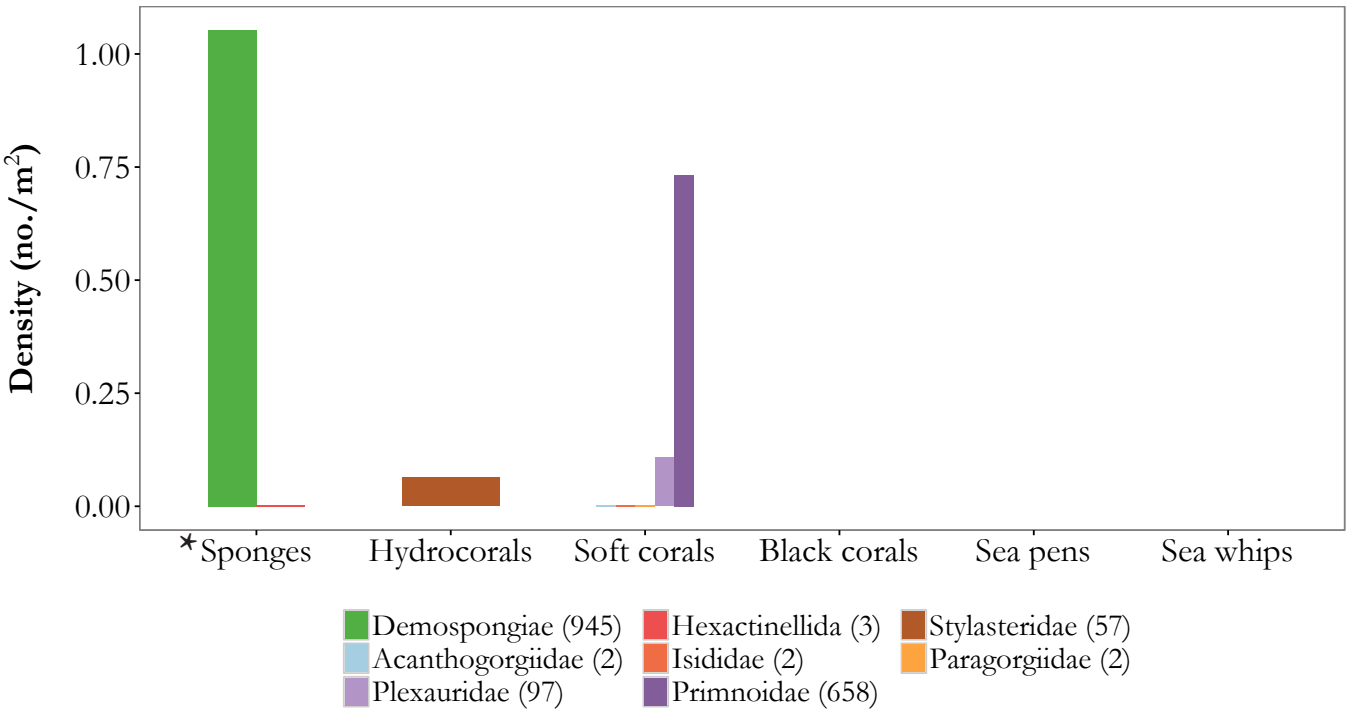


AREA: Samalga Pass to Seguam Pass Transect *2014-5

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

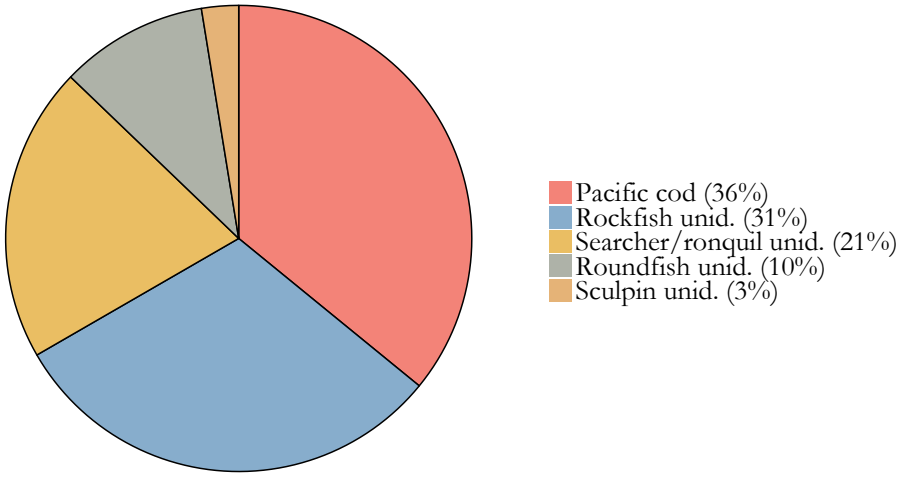
Transect 2014-5: Primary and secondary substrates consisted of bedrock, mixed coarse and boulders. Only one Pacific cod was identified. No other fishes or crabs were observed. Coral diversity was higher on this transect. Five coral families (Acanthogorgiidae, Isididae, Paragorgiidae, Plexauridae, and Primnoidae) were observed with a combined density of 0.85 individuals/m^2. Demospongiae comprised most of the remaining invertebrate density at 1.05 individuals/m^2. Mean heights ranged from 6 cm for Stylasteridae to 27 cm for Demospongiae.

AREA: Samalga Pass to Seguam Pass — Transect *2014-6

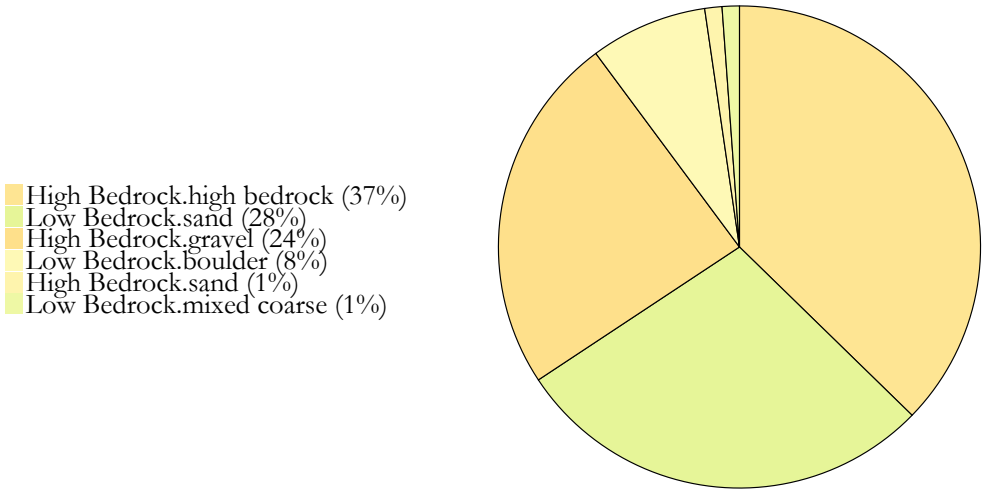
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/22/2014	53.03	-169.55	513	88	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

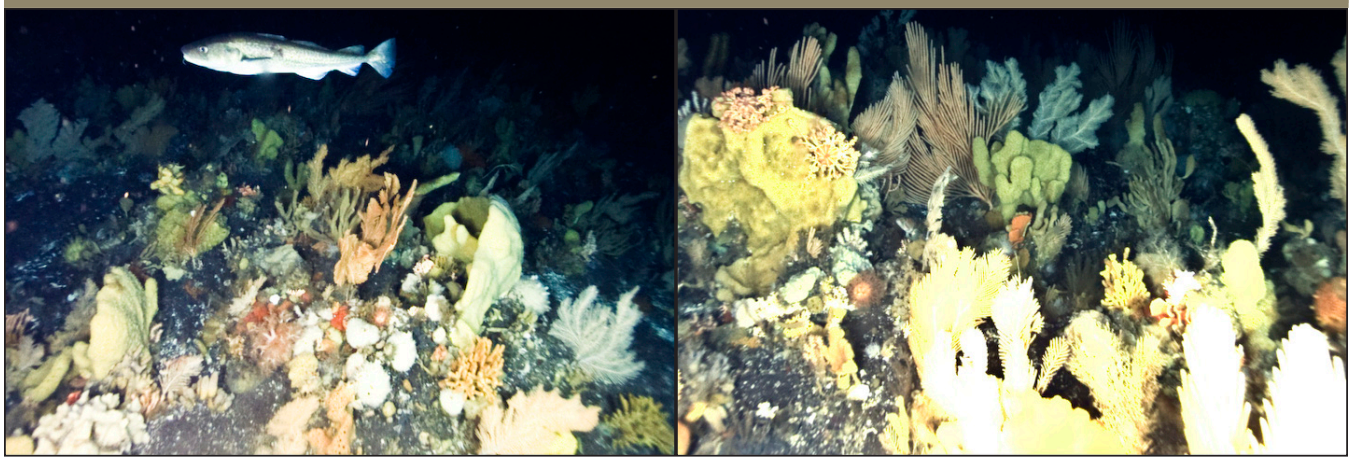
Fish and Crab Composition (n = 39)



Substrate Composition

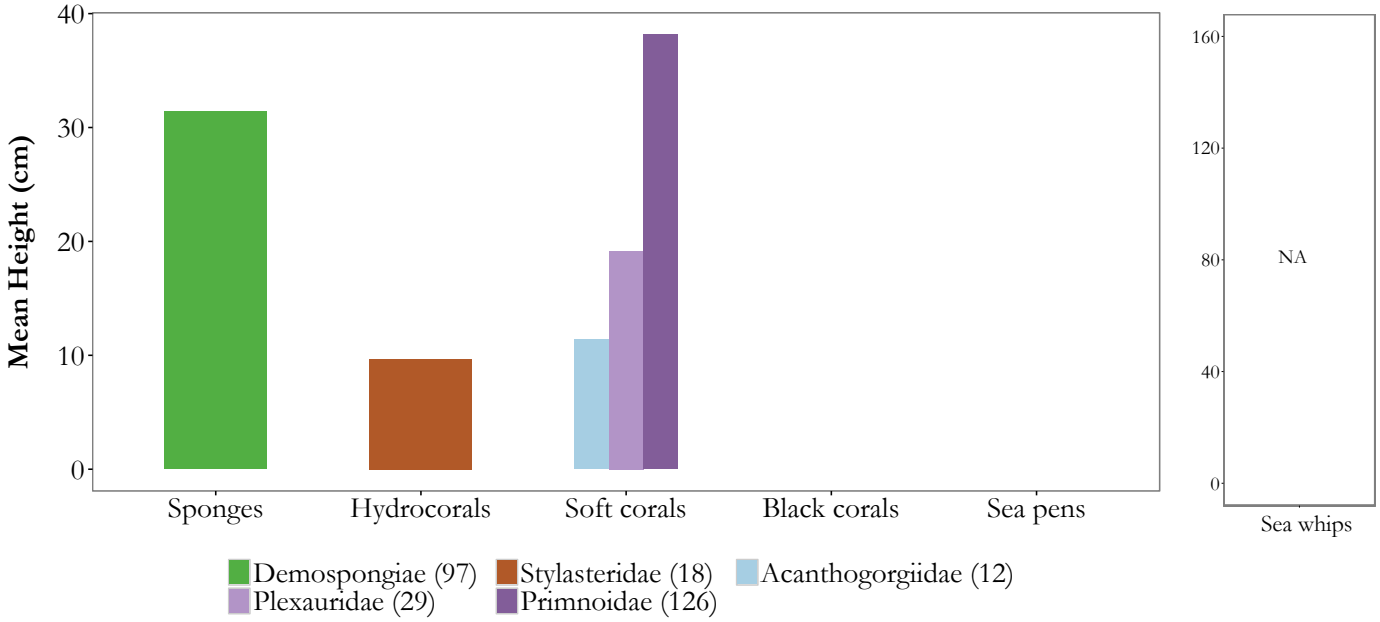


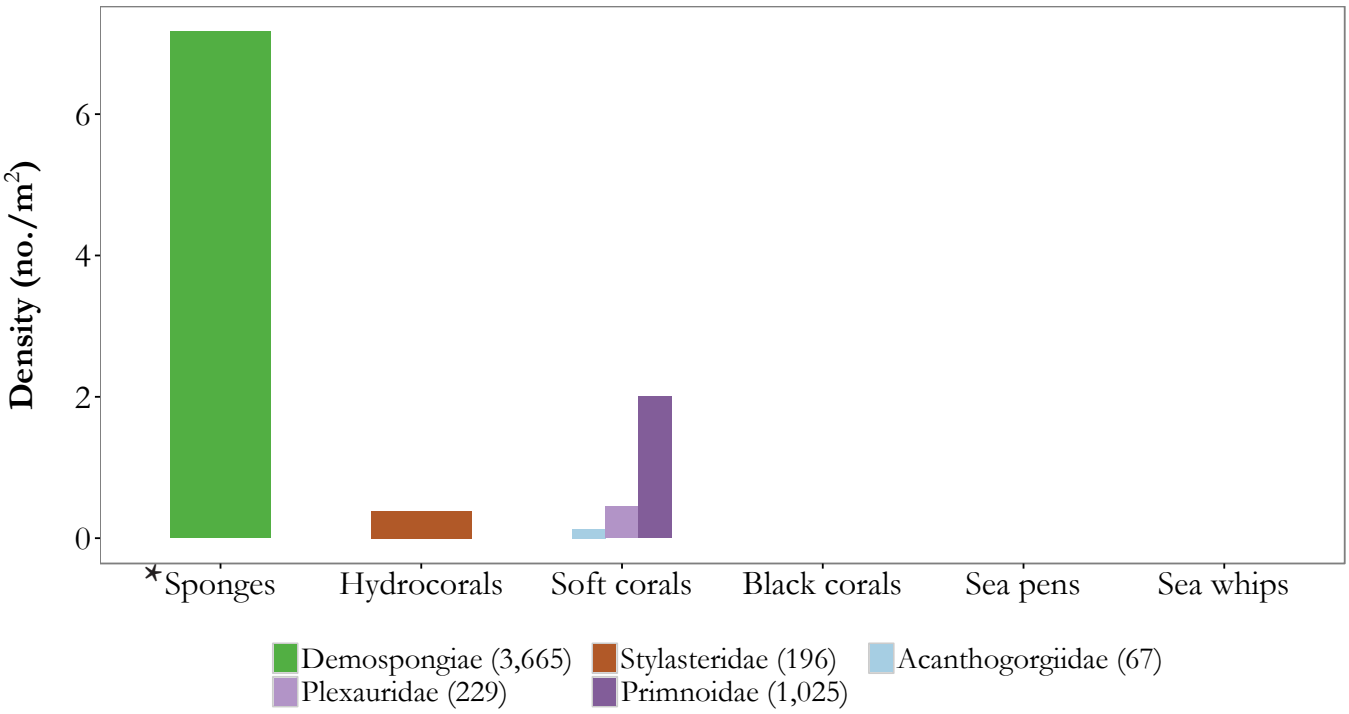
Images



Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





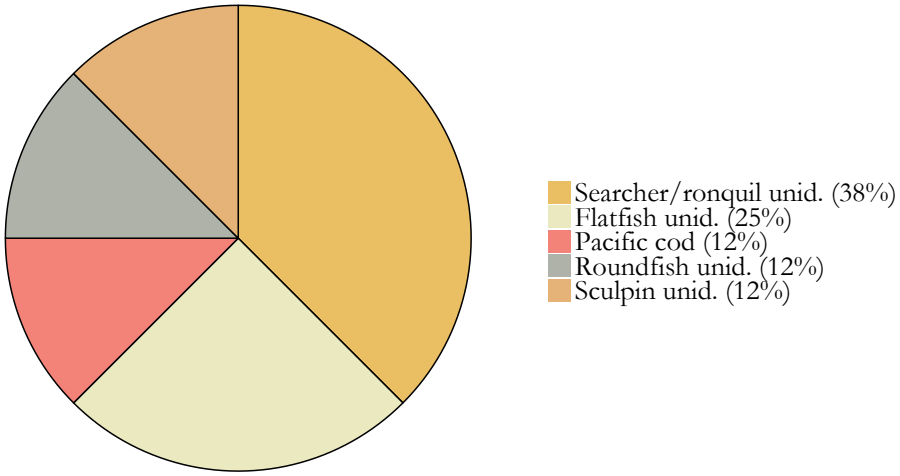
Summary - description of transect

Transect 2014-6: Primary and secondary substrates consisted largely of bedrock and gravel. Fish density (0.08 individuals/m^2) was mostly composed of Pacific cod, rockfishes, and searchers/ronquils. Structure-forming invertebrates were composed of sponges, and hydrocorals, and corals. Demospongiae dominated the community with a density of 7.17 individuals/m^2. Primnoidae were the next most abundant at 2.00 individuals/m^2. Mean heights were calculated for Demospongiae (31 cm), Stylasteridae (10 cm), Acanthogorgiidae (11 cm), Plexauridae (19 cm), and Primnoidae (38 cm).

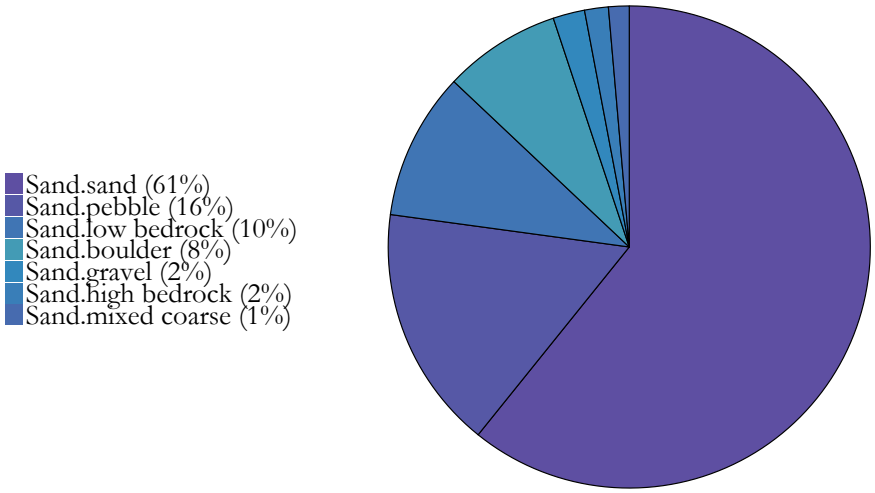
AREA: Samalga Pass to Seguam Pass — Transect 2014-7

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/22/2014	53.00	-169.79	955	82	4.1

Fish and Crab Composition (n = 8)



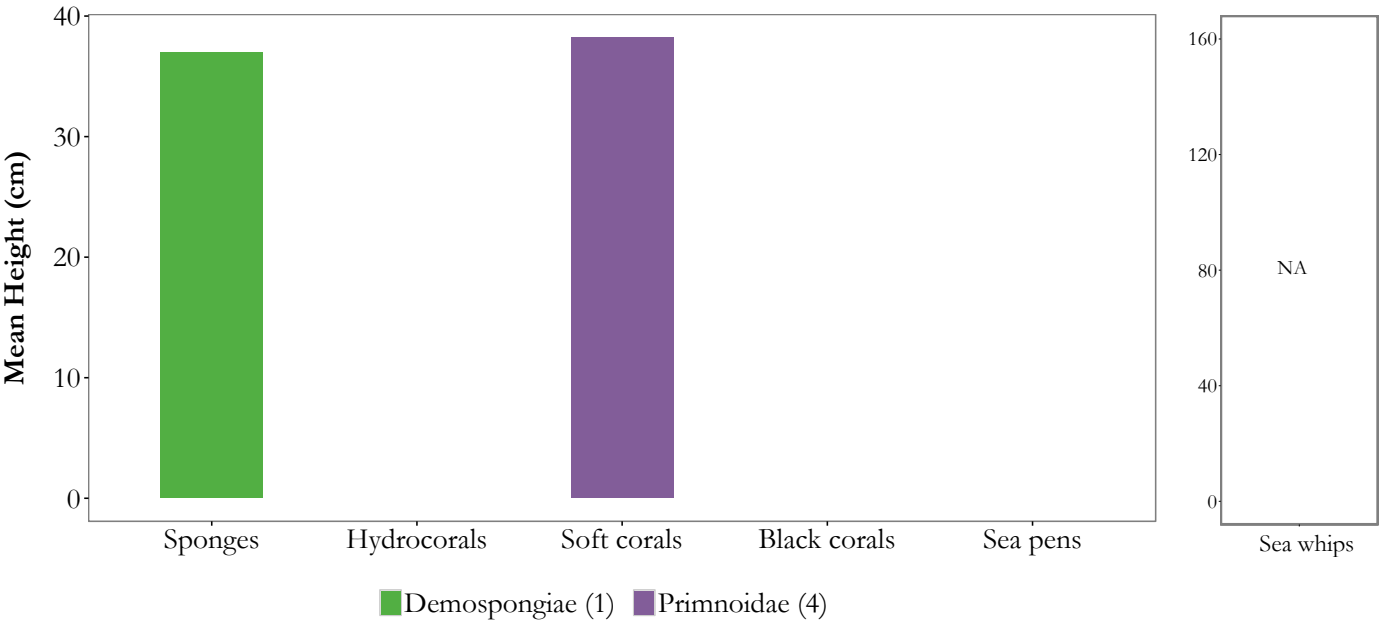
Substrate Composition

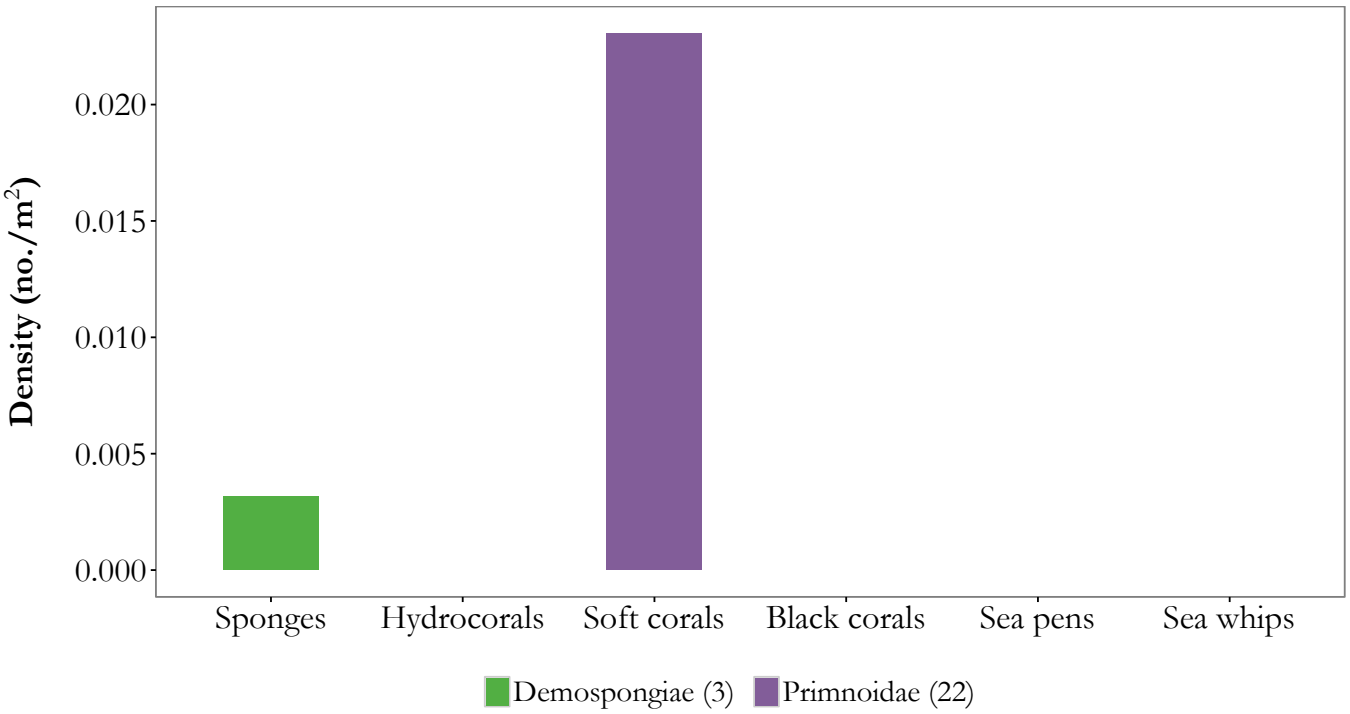


Images

AREA: Samalga Pass to Seguam Pass Transect 2014-7

Vertical Habitat Summary





Summary - description of transect

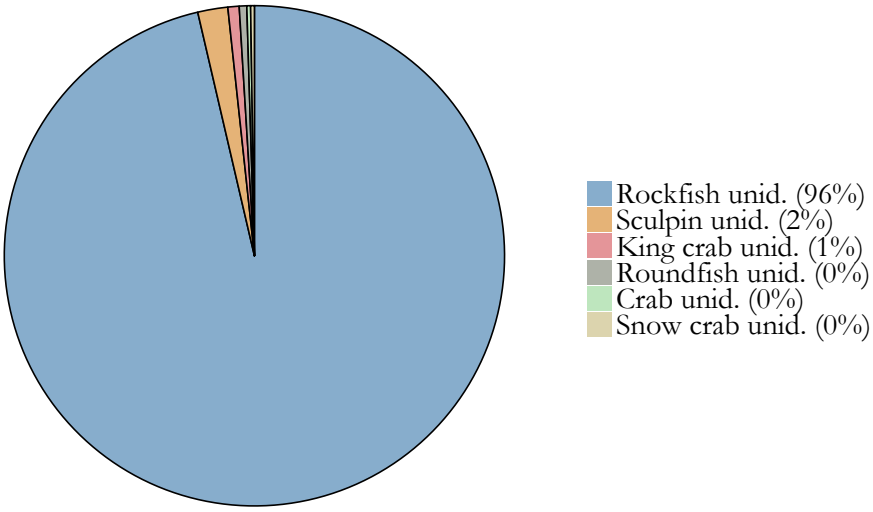
Transect 2014-7: Primary substrate for this transect was 100% sand. Secondary substrates were a diverse mixture of sand, pebble, mixed coarse, bedrock, gravel, and boulder. Fish density was low overall (0.01 individuals/m^2). Only eight individuals were identified. Coral and sponge density was also low (0.03 individuals/m^2). Primnoidae mean height was 38 cm.

AREA: Samalga Pass to Seguam Pass — Transect *2014-8

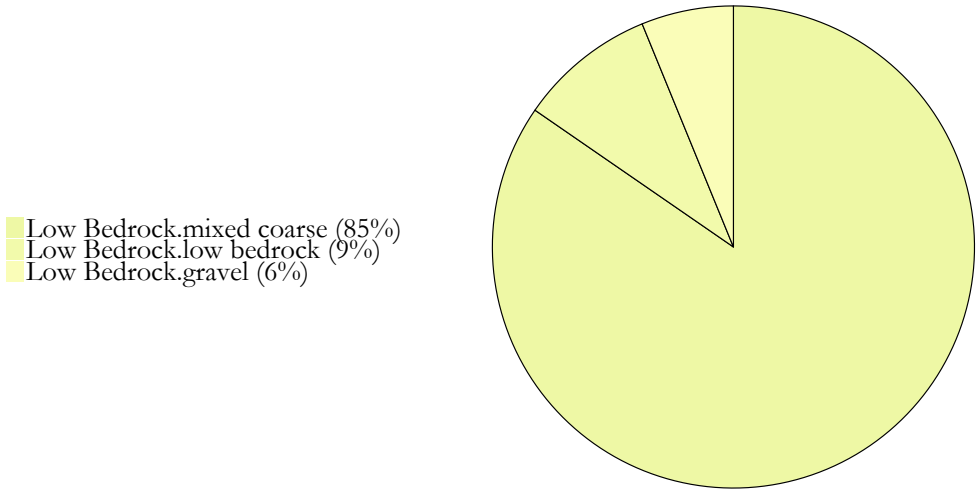
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/23/2014	52.86	-171.17	3,430	214	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

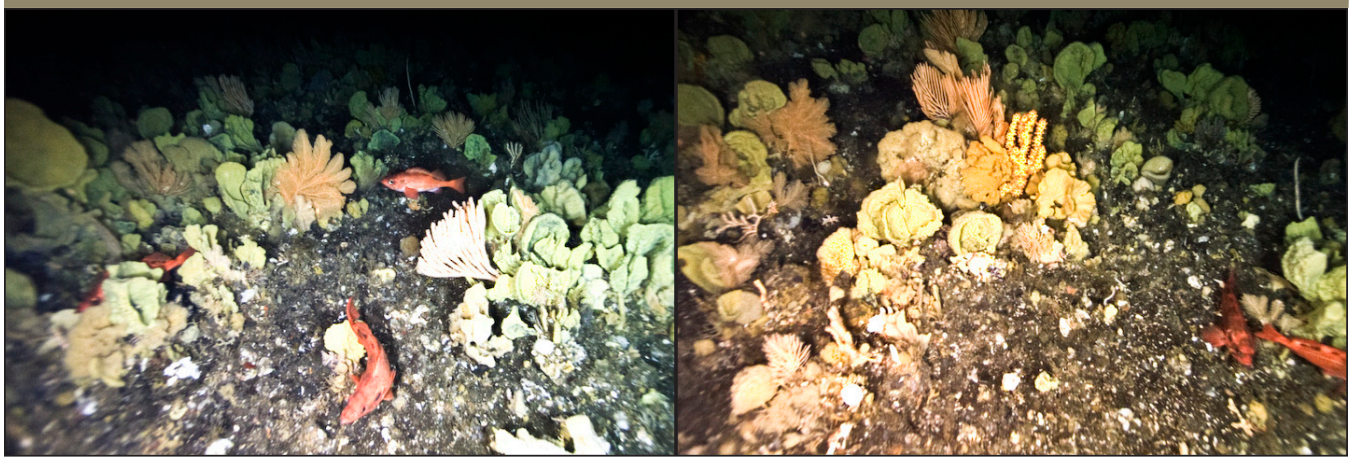
Fish and Crab Composition (n = 412)



Substrate Composition



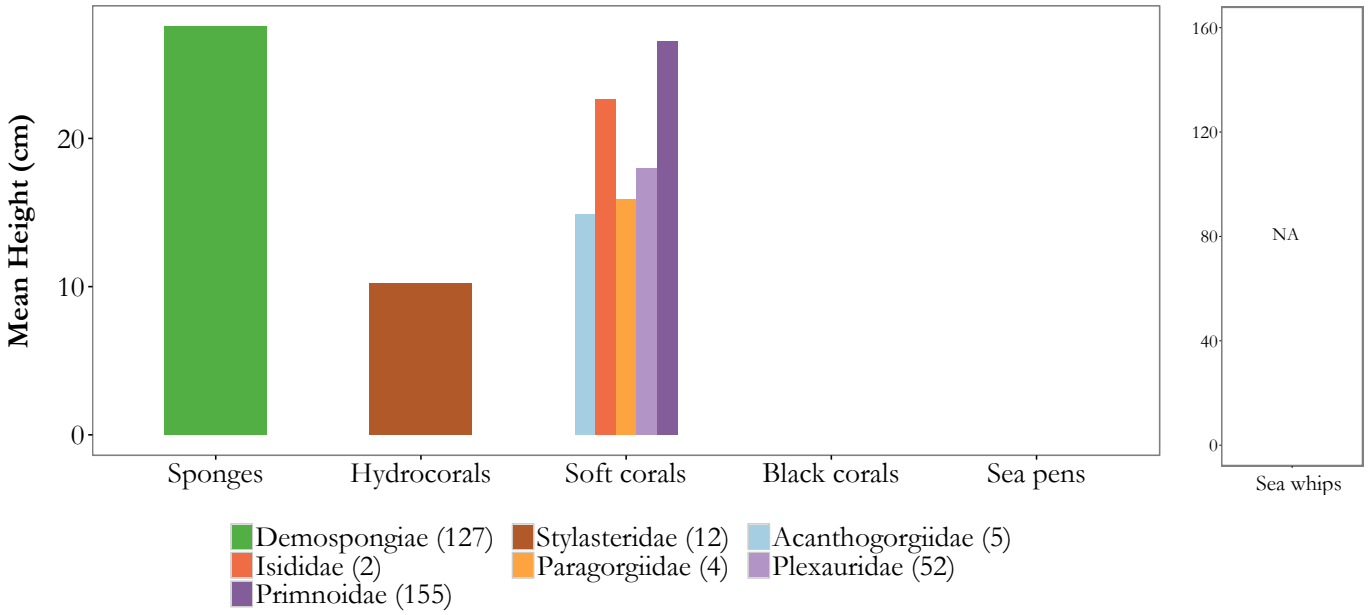
Images

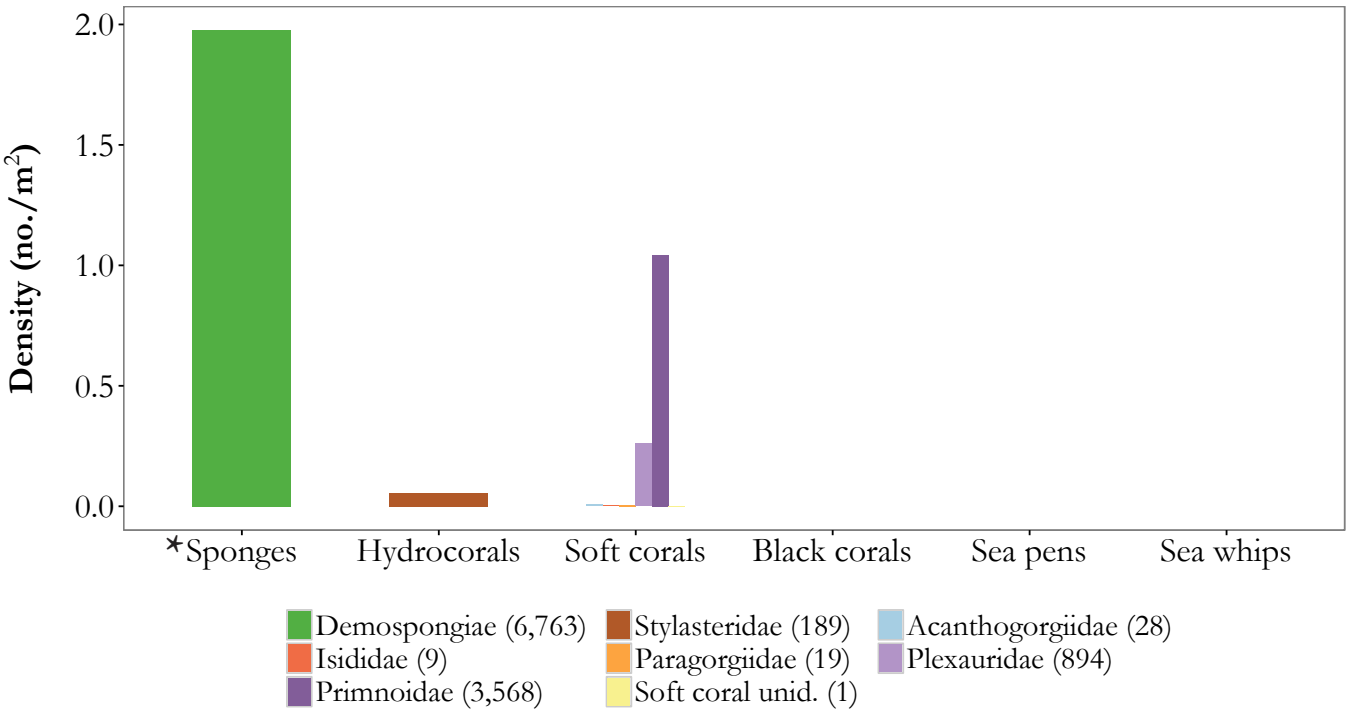


AREA: Samalga Pass to Seguam Pass Transect *2014-8

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

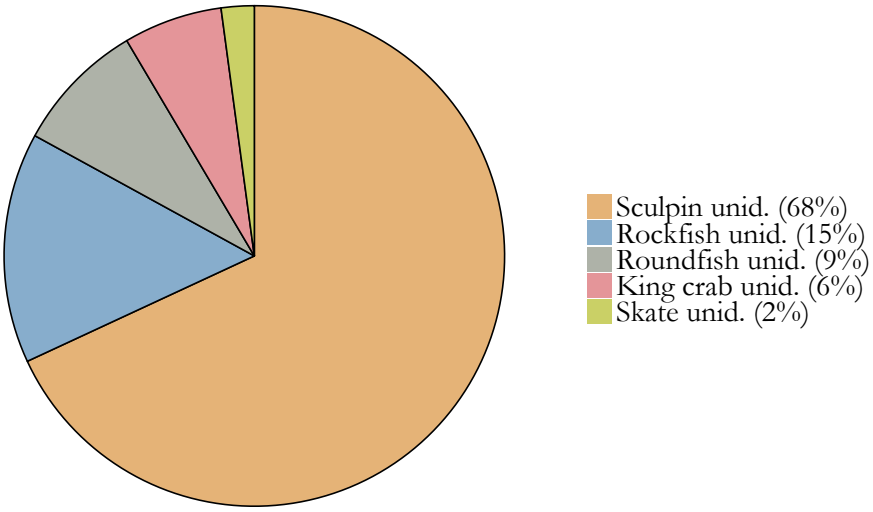
Transect 2014-8: Primary and secondary substrates consisted largely of low bedrock and mixed coarse. Rockfishes (n = 397) were 96% of the fish and crab density (0.12 individuals/m^2). Sponges, hydrocorals, and corals were all present. Five families and one order of corals were identified for a combined density of 1.32 individuals/m^2. Demospongiae density (1.98 individuals/m^2) accounted for almost 60% of the total structure-forming invertebrates. Mean heights ranged from 10 cm for Stylasteridae to 28 cm for Demospongiae.

AREA: Samalga Pass to Seguam Pass — Transect *2014-9

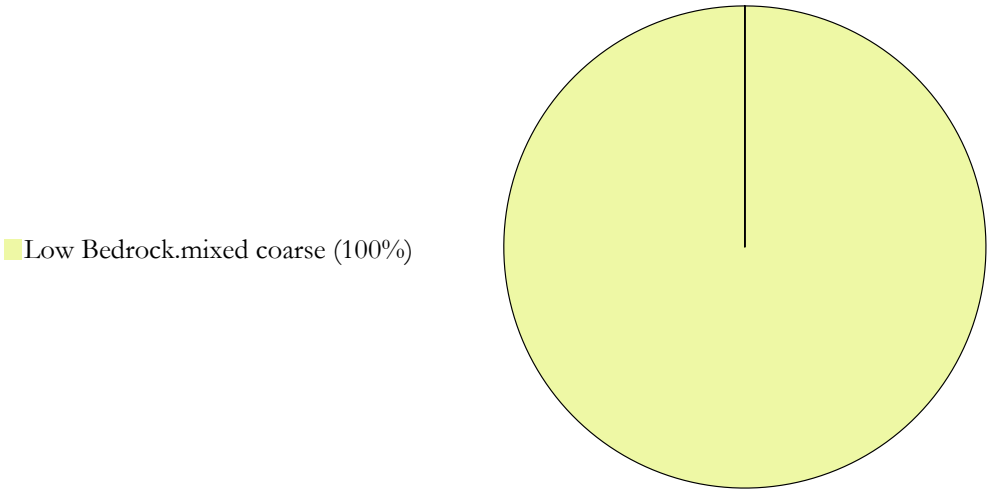
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/23/2014	52.90	-171.29	1,846	243	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 47)



Substrate Composition



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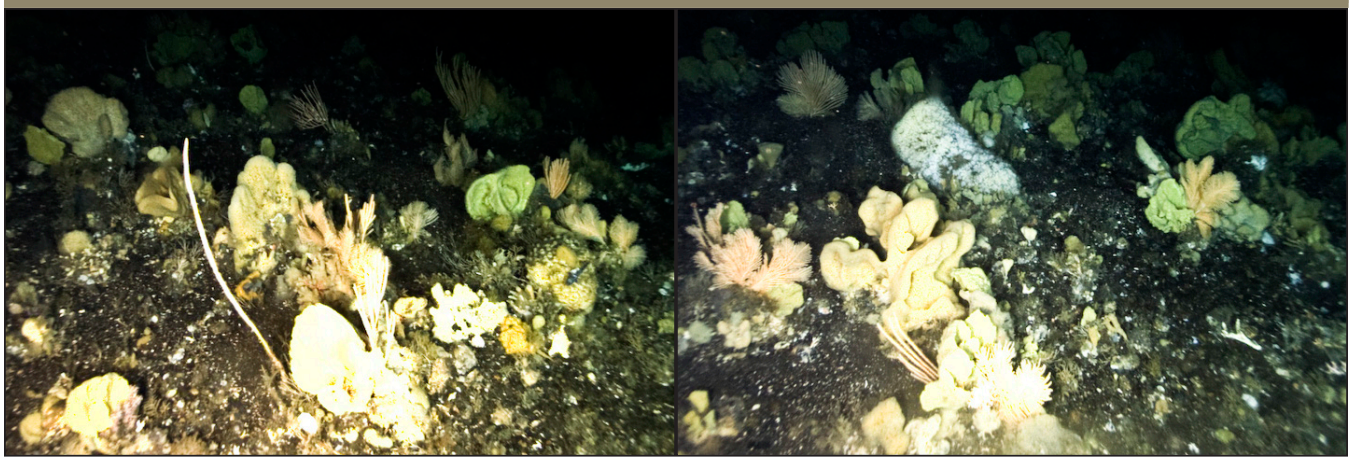
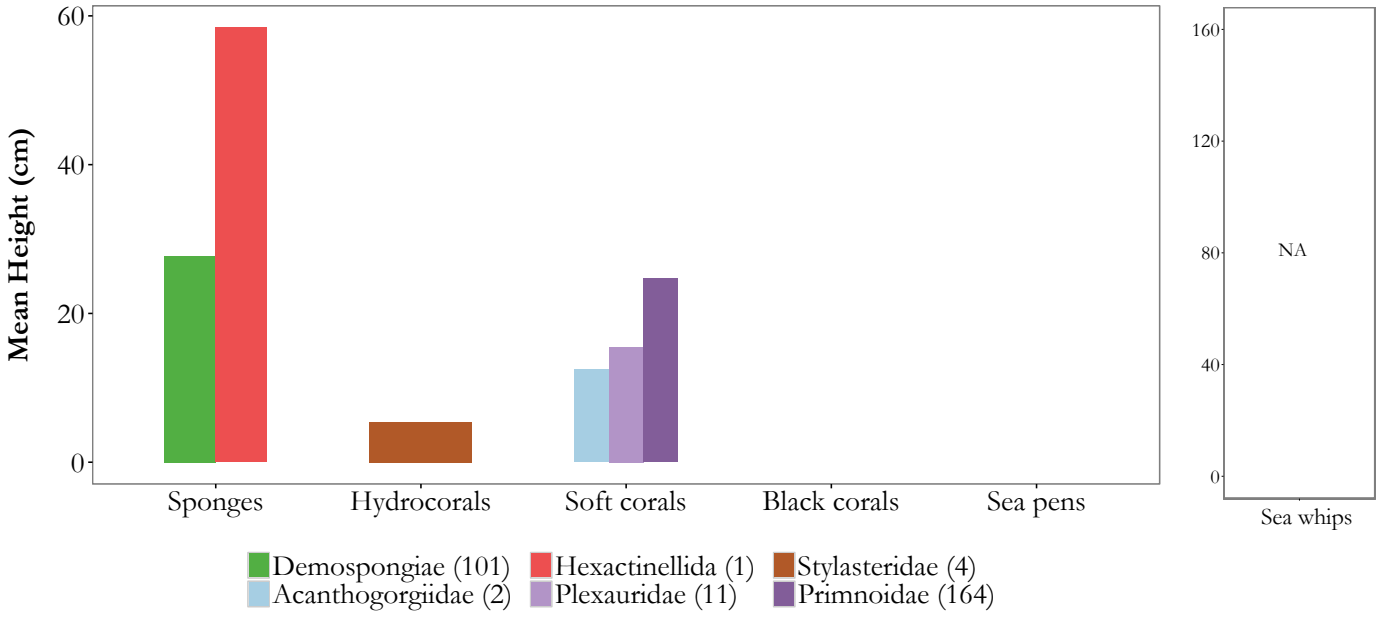
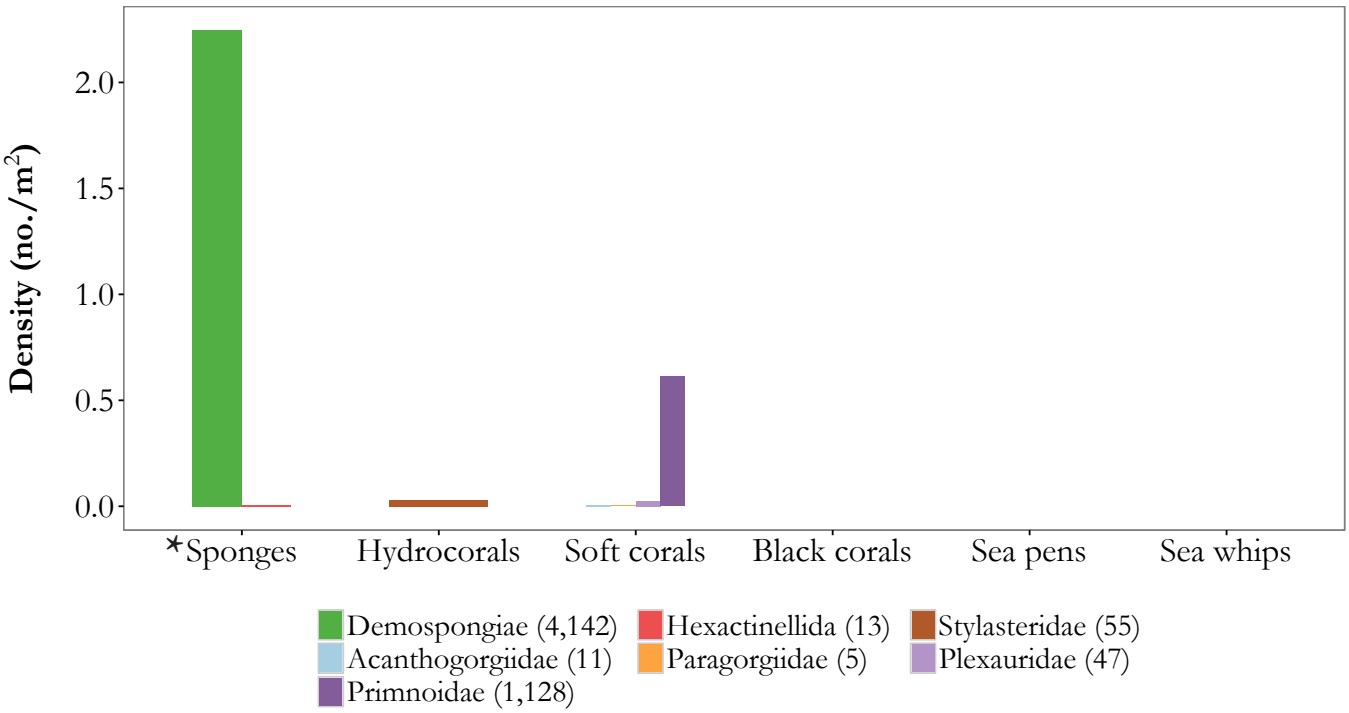


AREA: Samalga Pass to Seguam Pass Transect *2014-9

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

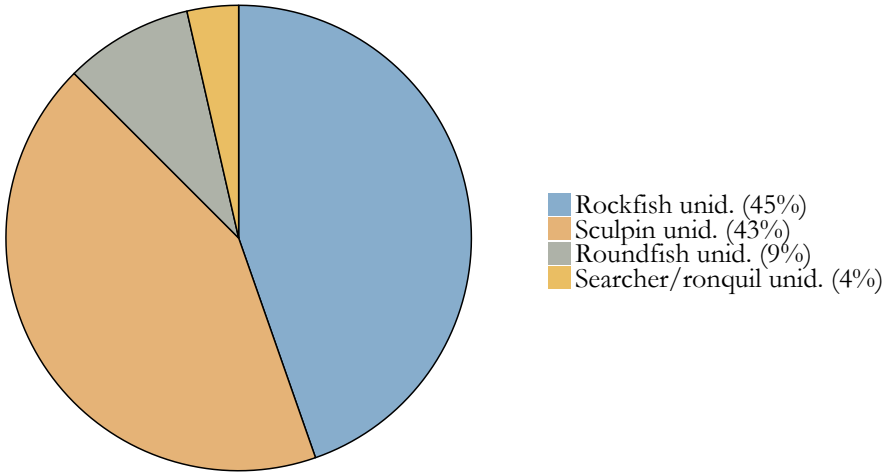
Transect 2014-9: Primary and secondary substrates consisted of low bedrock and mixed coarse. Few fishes were identified in this transect with a majority (32) identified as sculpins. Total fish density was low (0.03 individuals/m^2). Structure-forming invertebrates consisted of mostly Demospongiae (2.25 individuals/m^2) and Primnoidae (0.61 individuals/m^2). The tallest organism was a Hexactinellida at 58 cm. Mean heights for Demospongiae and Primnoidae were 28 cm and 25 cm, respectively.

AREA: Samalga Pass to Seguam Pass — Transect *2014-10

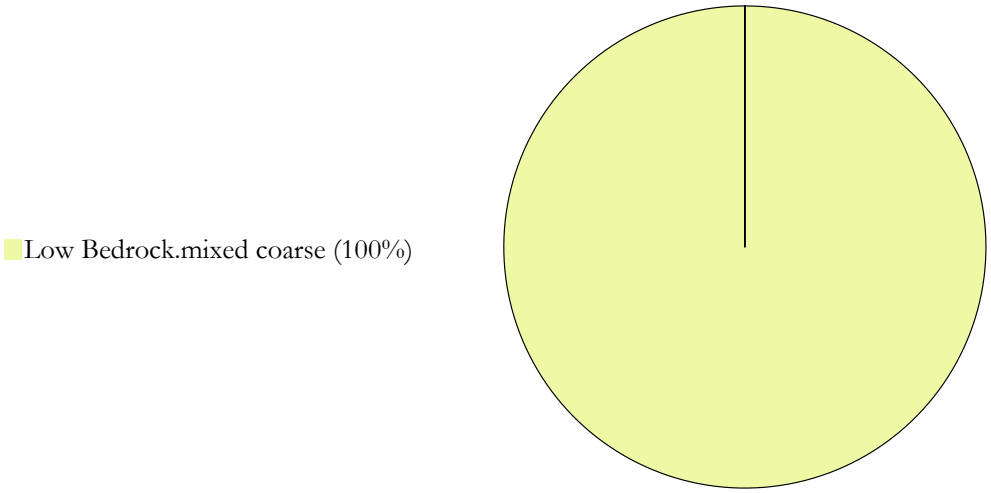
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/23/2014	52.83	-171.36	793	170	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

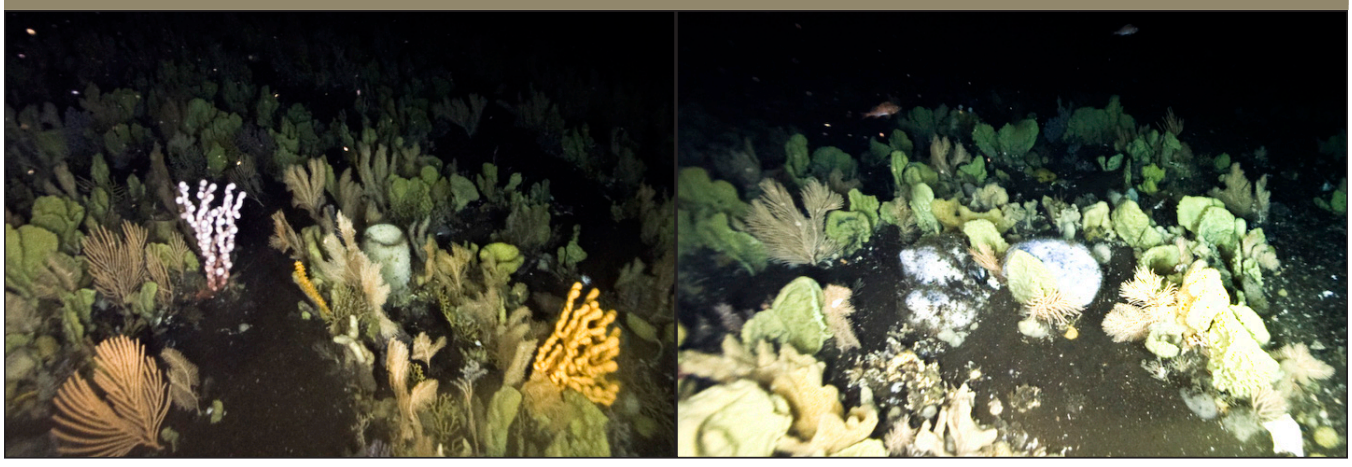
Fish and Crab Composition (n = 56)



Substrate Composition



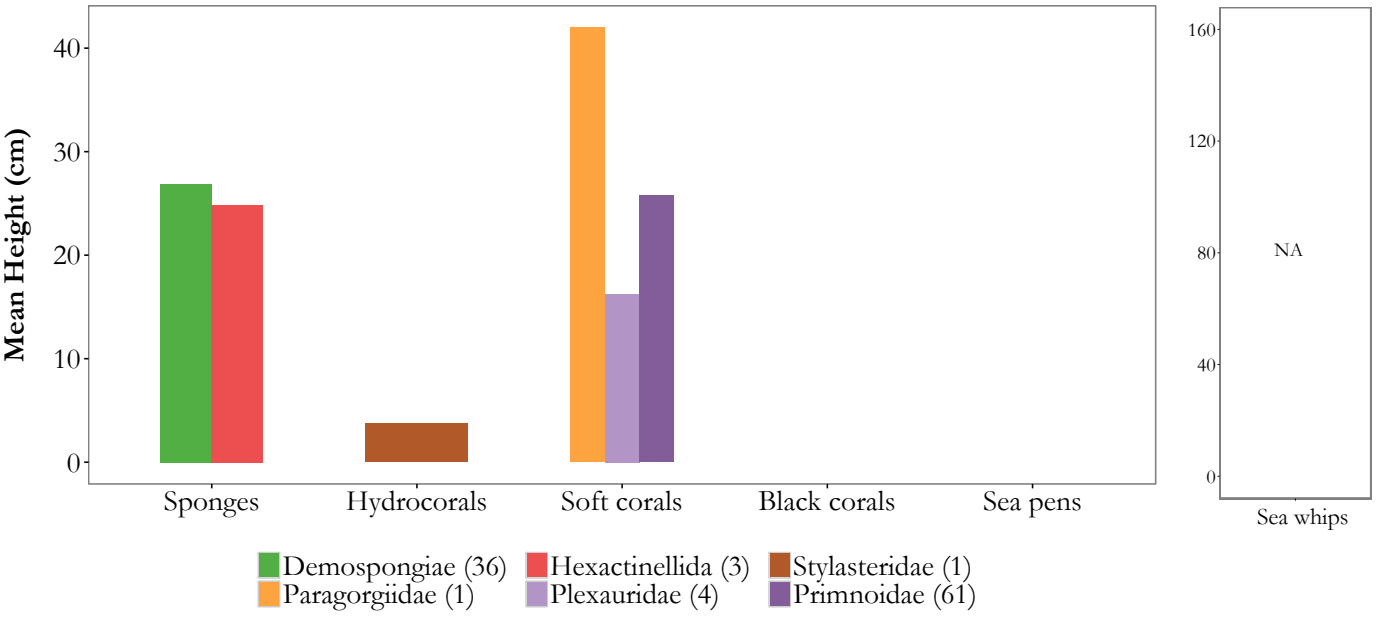
Images

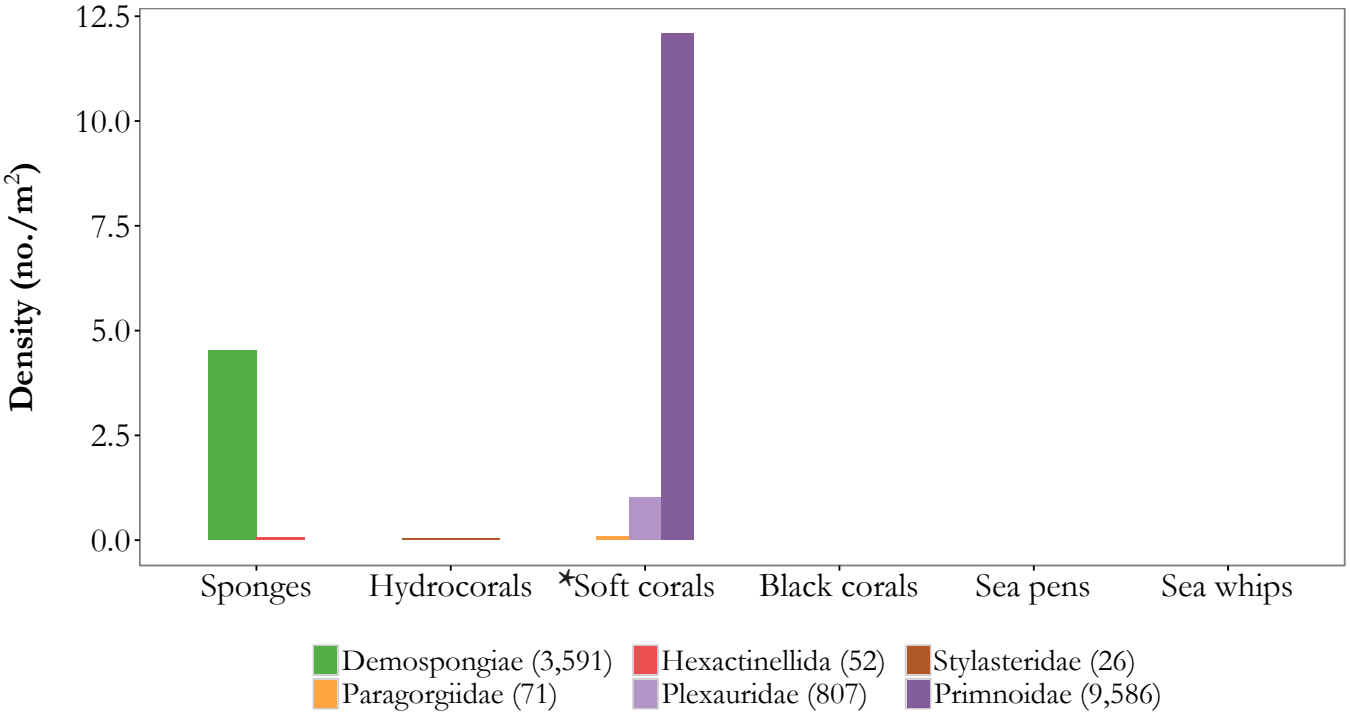


AREA: Samalga Pass to Seguam Pass Transect *2014-10

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

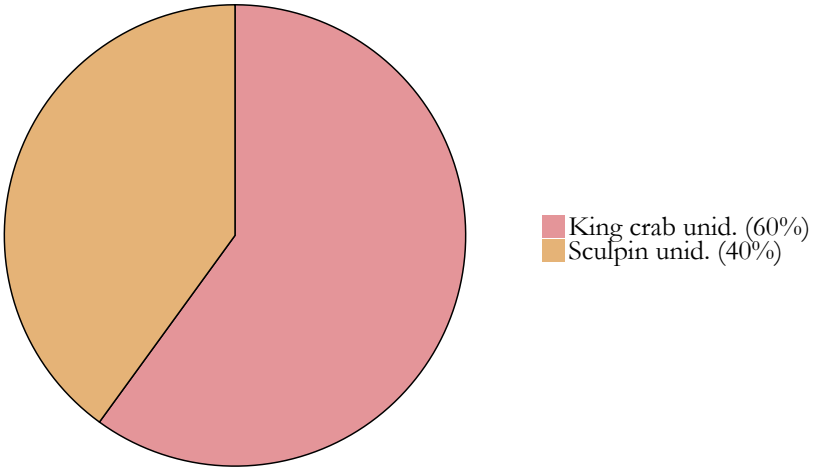
Transect 2014-10: Primary and secondary substrates consisted of low bedrock and mixed coarse. Rockfishes (0.03 individuals/m^2) and sculpins (0.03 individuals/m^2) comprised 88% of the fish density. Structure-forming invertebrate habitat was dominated by Primnoidae (12.08 individuals/m^2). This was the highest Primnoidae density of the survey. Overall density of structure-forming invertebrates was 17.81 individuals/m^2. Demospongiae contributed 4.53 individuals/m^2 to the density. Heights ranged from 4 cm for Stylasteridae to 42 cm for Paragorgiidae.

AREA: Samalga Pass to Seguam Pass — Transect *2014-11

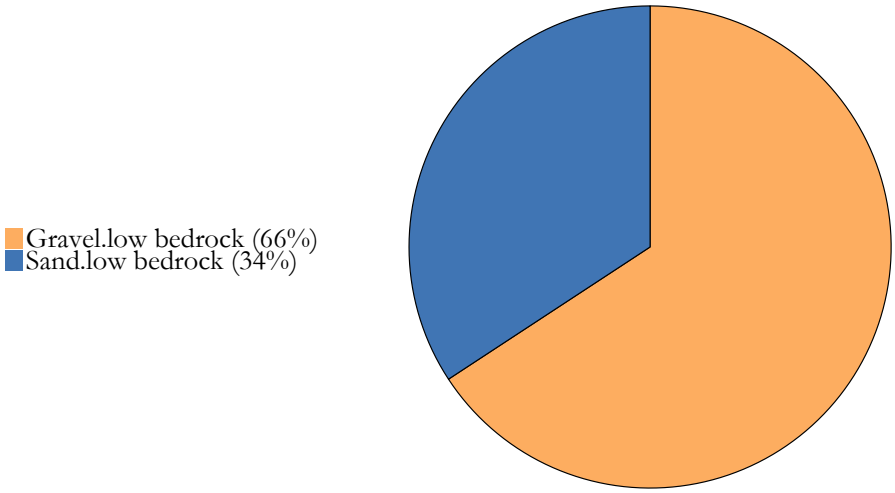
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/23/2014	52.78	-171.56	400	193	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 5)



Substrate Composition

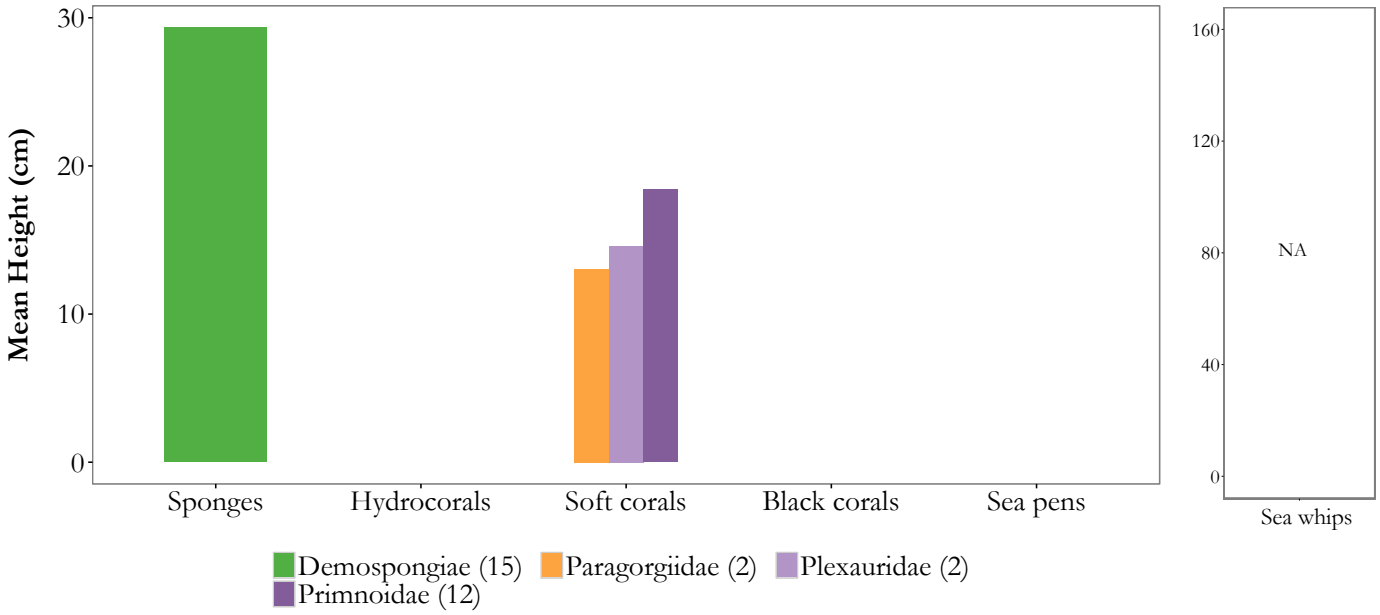


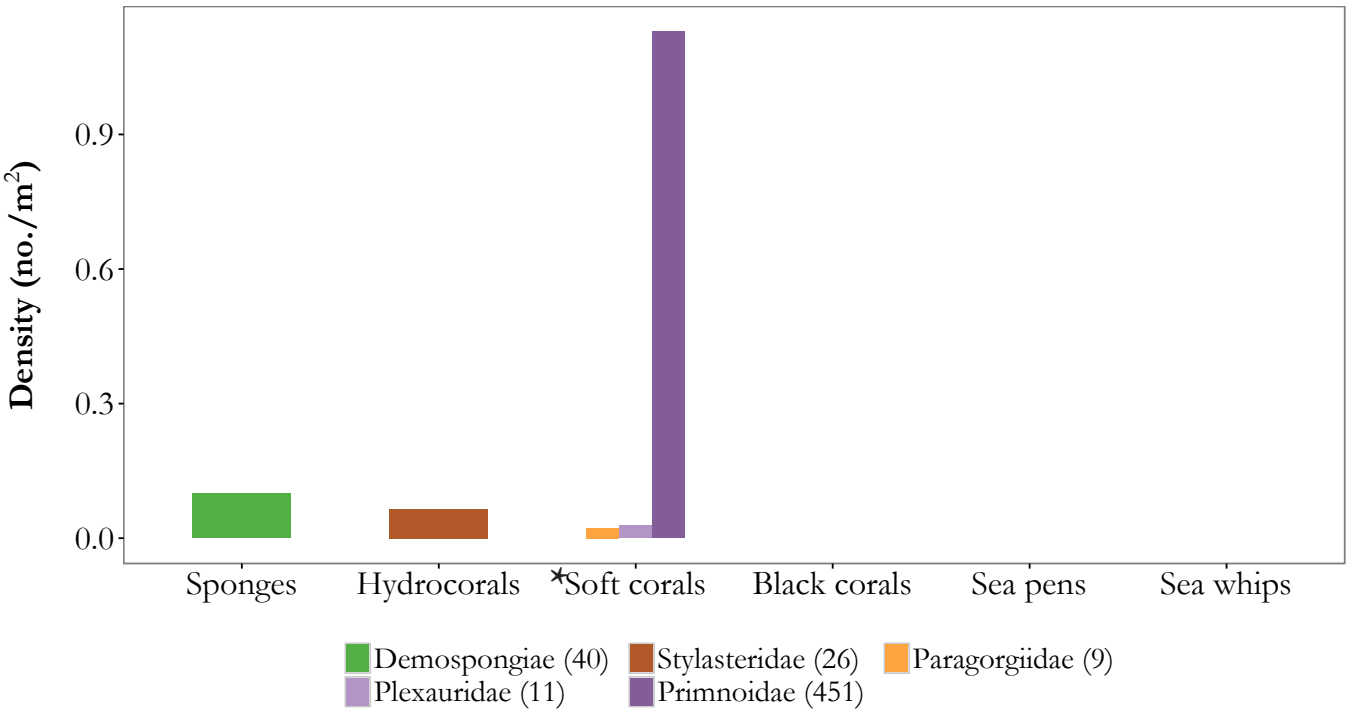
Images

AREA: Samalga Pass to Seguam Pass Transect *2014-11

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

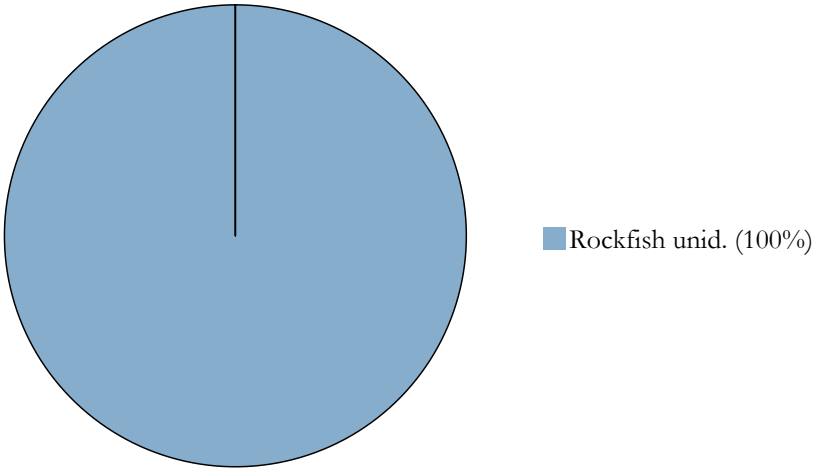
Transect 2014-11: Primary and secondary substrates were gravel, low bedrock, and sand. Only two sculpins and three king crabs were identified in this transect. Overall fish and crab density was low (0.01 individuals/m^2). Sponge, coral, and hydrocoral density was 1.34 individuals/m^2. Primnoidae density was 84% (1.13 individuals/m^2) of the structure-forming invertebrate density. Mean heights were calculated for Demospongiae (29 cm), Paragorgiidae (13 cm), Plexauridae (15 cm), and Primnoidae (18 cm).

AREA: Samalga Pass to Seguam Pass — Transect *2014-12

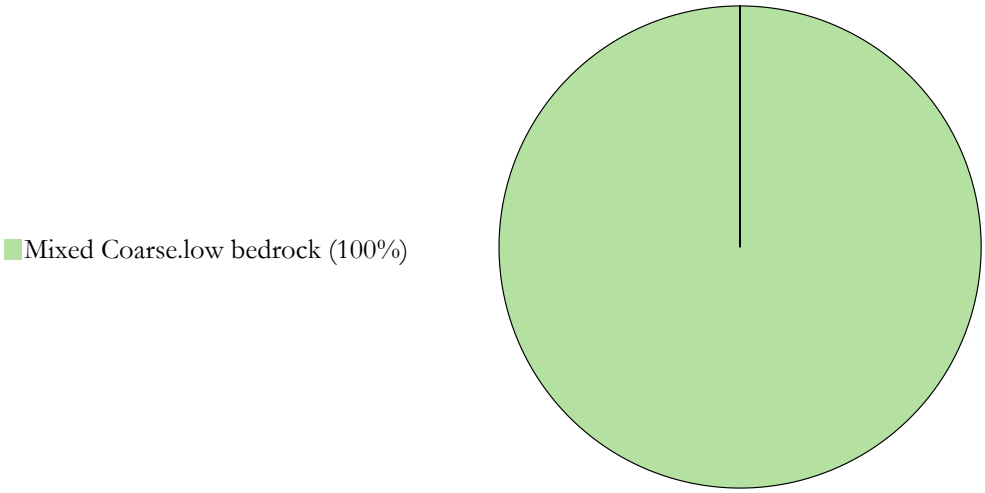
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/23/2014	52.78	-171.26	1,555	147	4.1

*Area of high coral or sponge density (> 1.0 individuals/m^2)

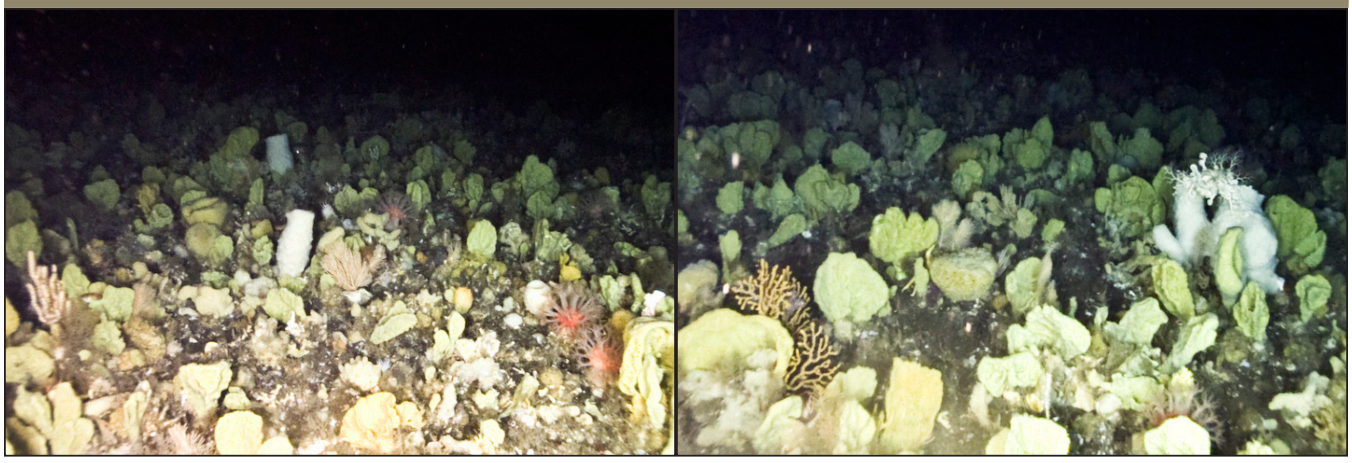
Fish and Crab Composition (n = 84)



Substrate Composition



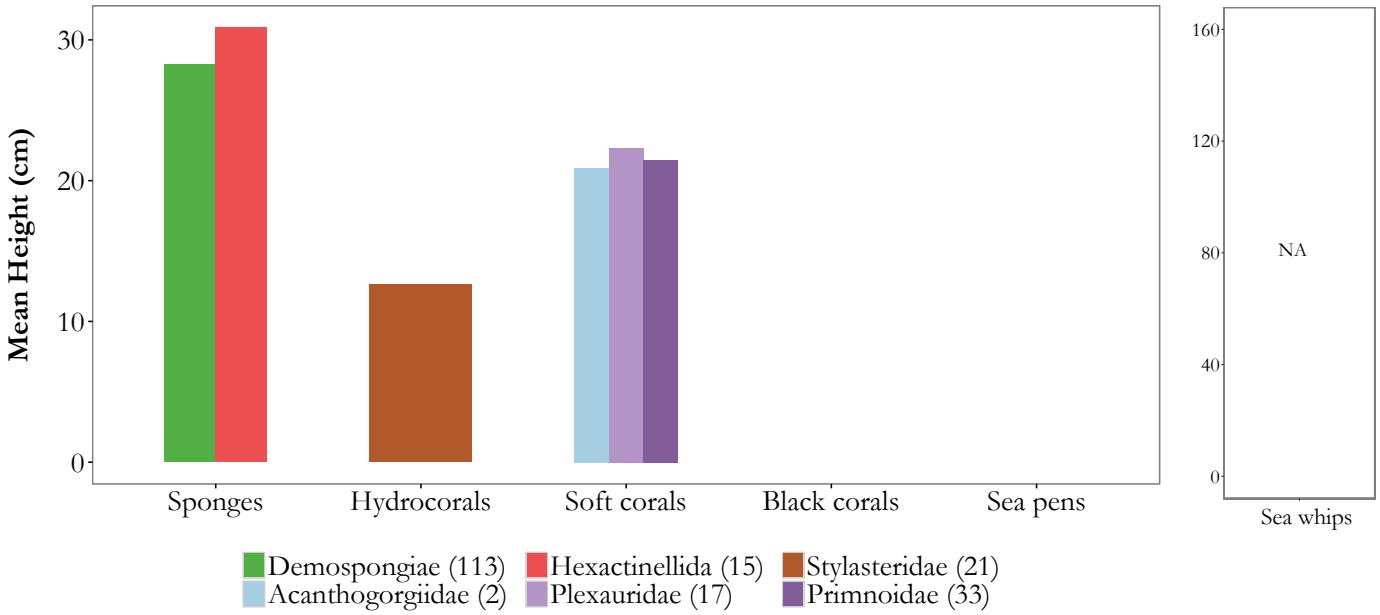
Images

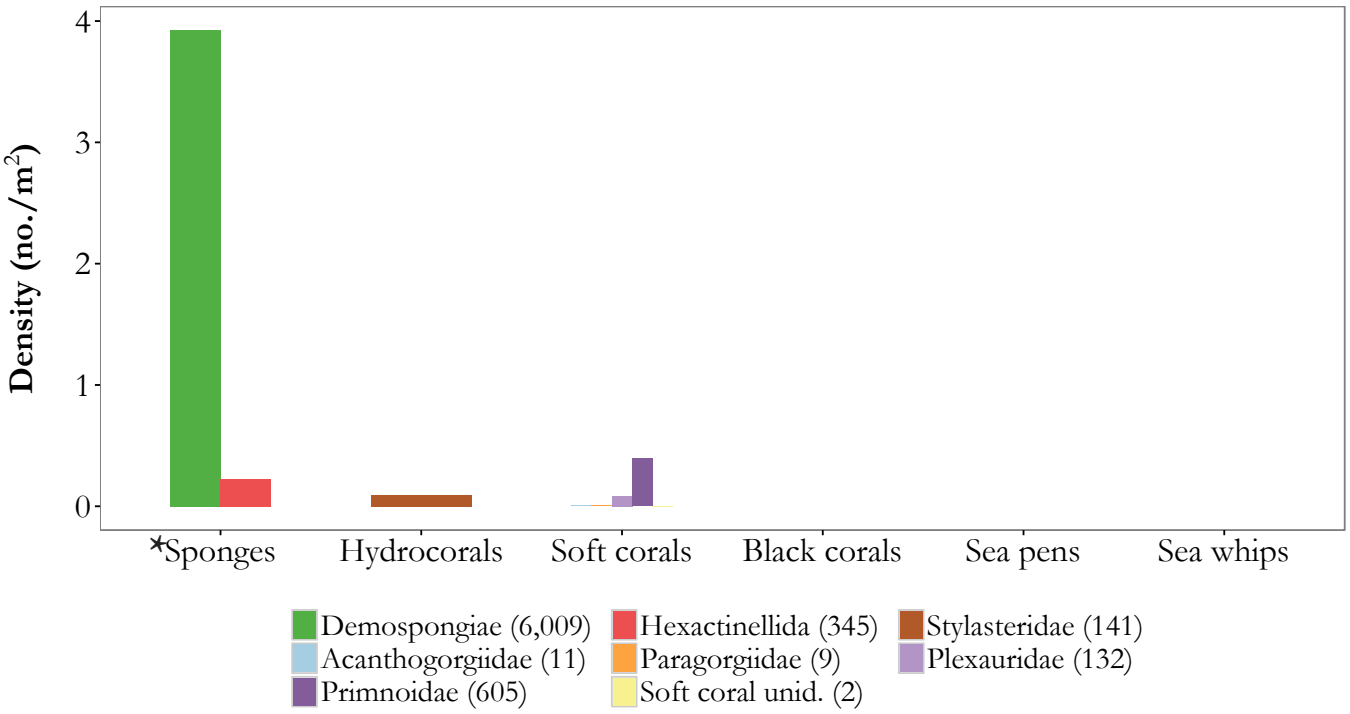


AREA: Samalga Pass to Seguam Pass Transect *2014-12

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





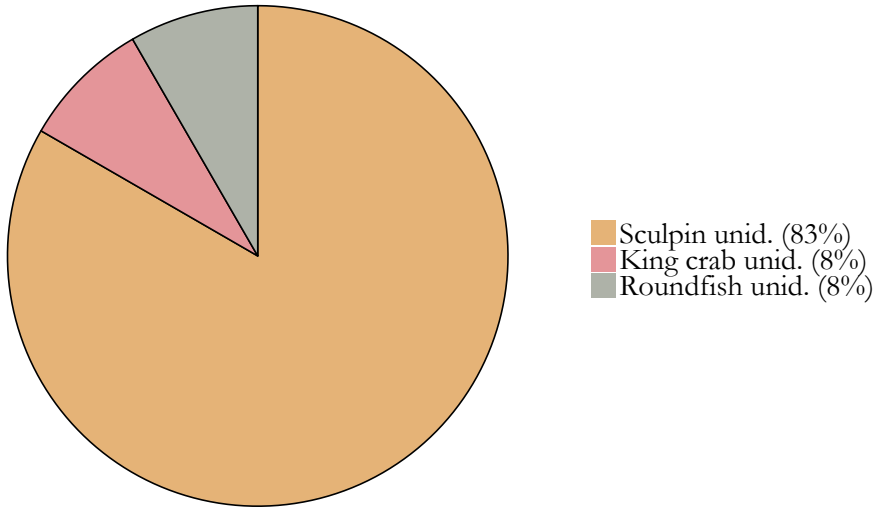
Summary - description of transect

Transect 2014-12: Primary and secondary substrates consisted of mixed coarse and low bedrock. Rockfishes accounted for 100% of the fish density (0.05 individuals/m^2). Sponge, coral, and hydrocoral density was 4.74 individuals/m^2 of which Demospongiae were the most abundant (3.92 individuals/m^2). Demospongiae mean height was 28 cm, while Hexactinellida mean height was approximately 31 cm. Mean heights were also calculated for Stylasteridae (13 cm), Acanthogorgiidae (21 cm), Plexauridae (22 cm), and Primnoidae (21 cm).

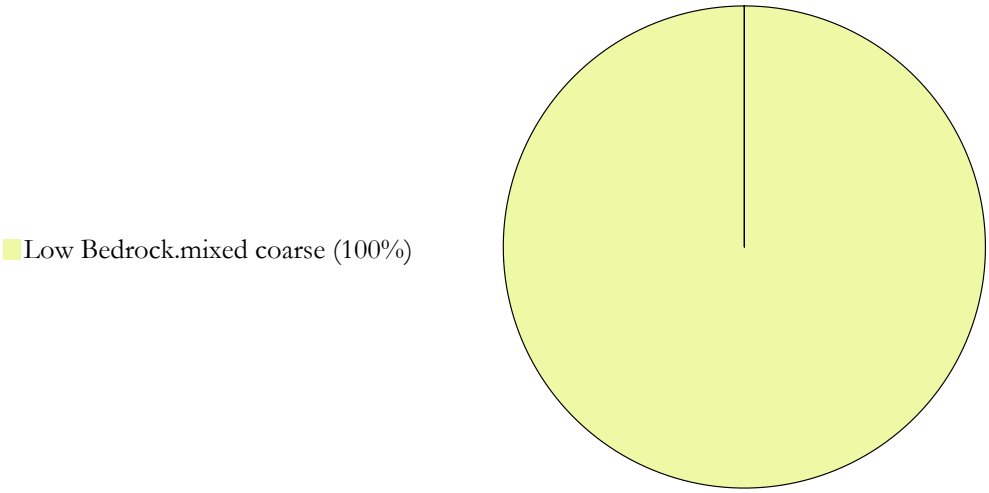
AREA: Samalga Pass to Seguam Pass — Transect 2014-13

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/23/2014	52.78	-171.19	326	189	4.1

Fish and Crab Composition (n = 12)

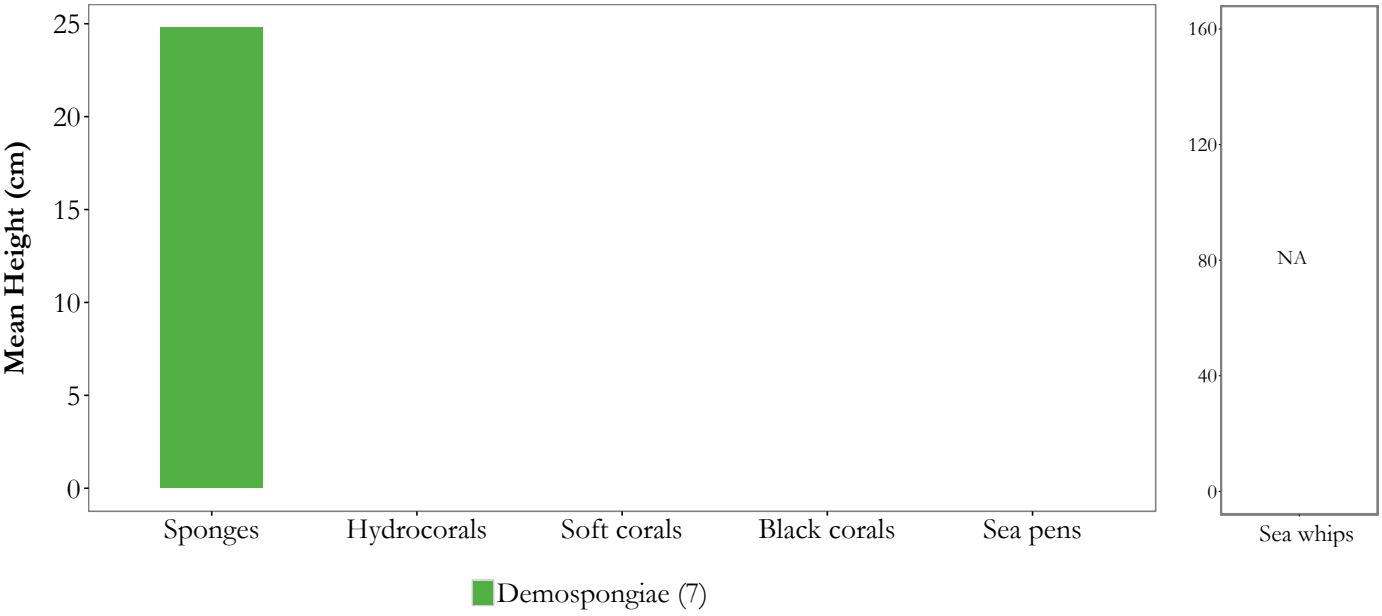


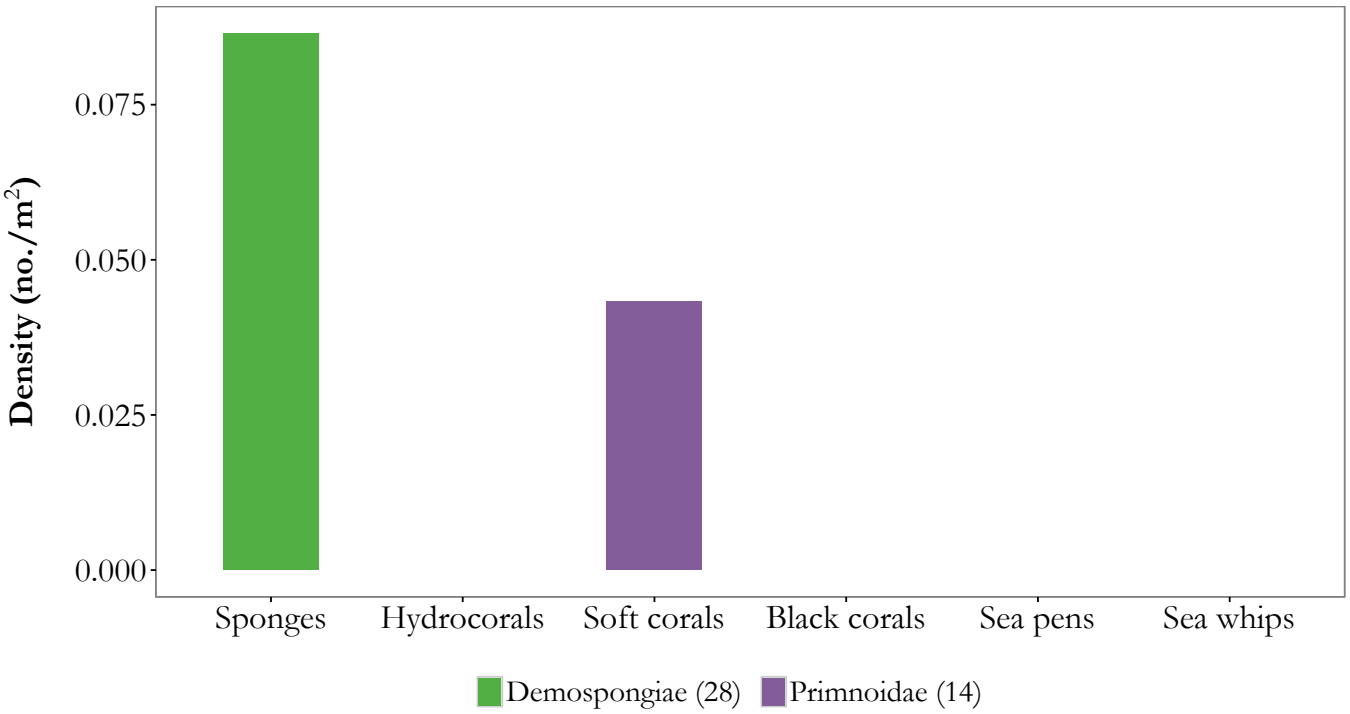
Substrate Composition



Images

Vertical Habitat Summary





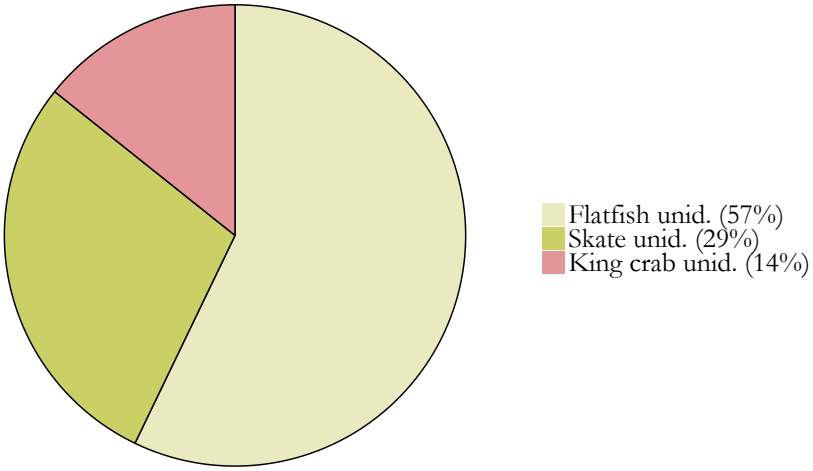
Summary - description of transect

Transect 2014-13: Primary and secondary substrates consisted of low bedrock and mixed coarse. Only 12 fishes and crabs were identified in this transect: 10 sculpins, one roundfish, and one king crab. As a result, species density for this transect was very low (0.04 individuals/m^2). Structure-forming invertebrate habitat consisted of Demospongiae (0.09 individuals/m^2) and Primnoidae (0.04 individuals/m^2). Seven Demospongiae were measured for a mean height of 25 cm.

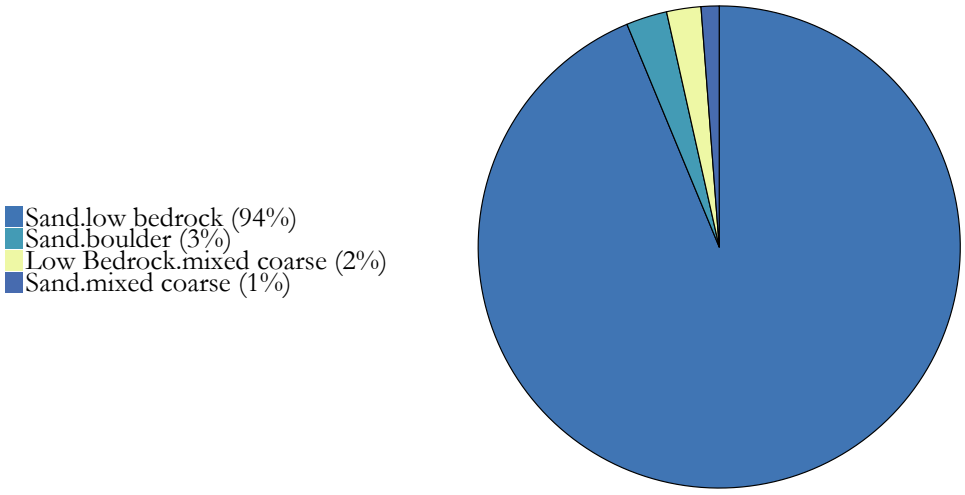
AREA: Samalga Pass to Seguam Pass — Transect 2014-14

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/23/2014	52.61	-171.20	965	495	3.5

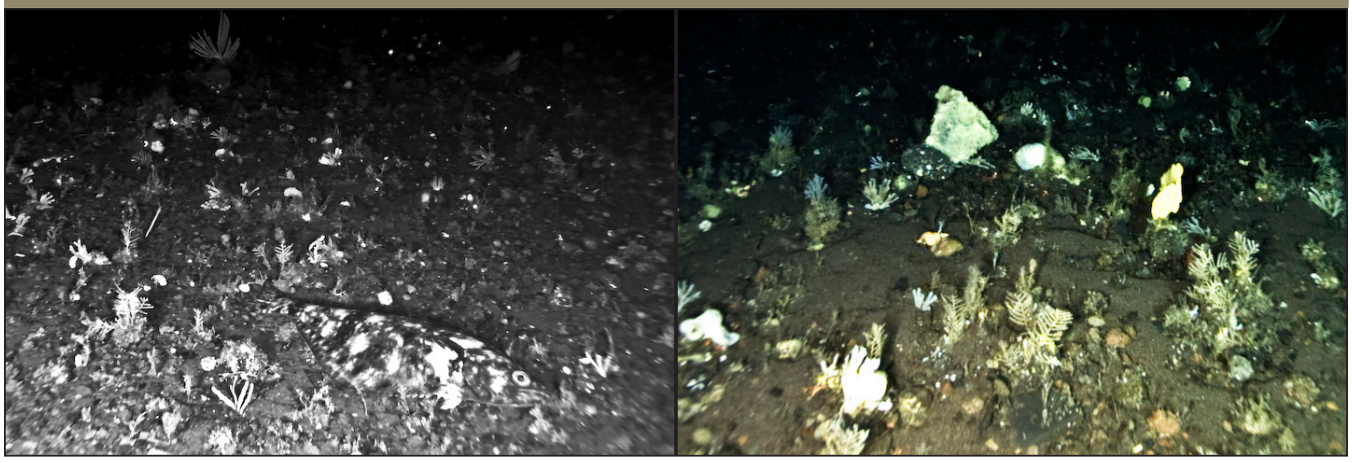
Fish and Crab Composition (n = 7)



Substrate Composition

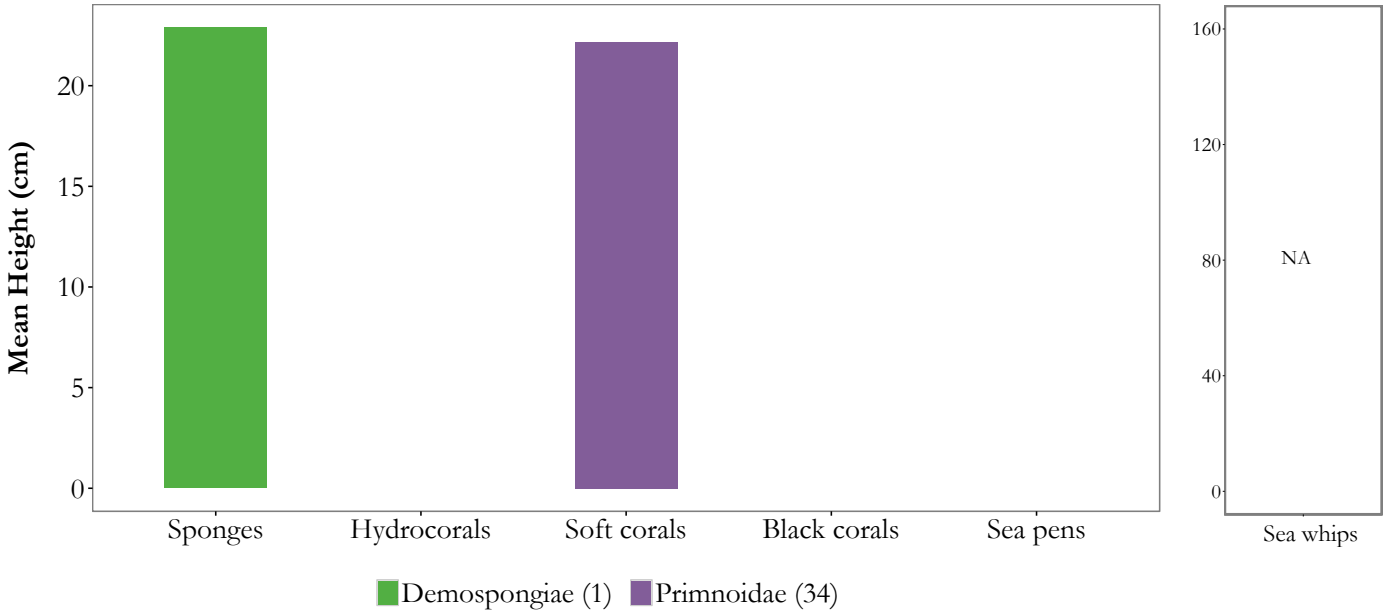


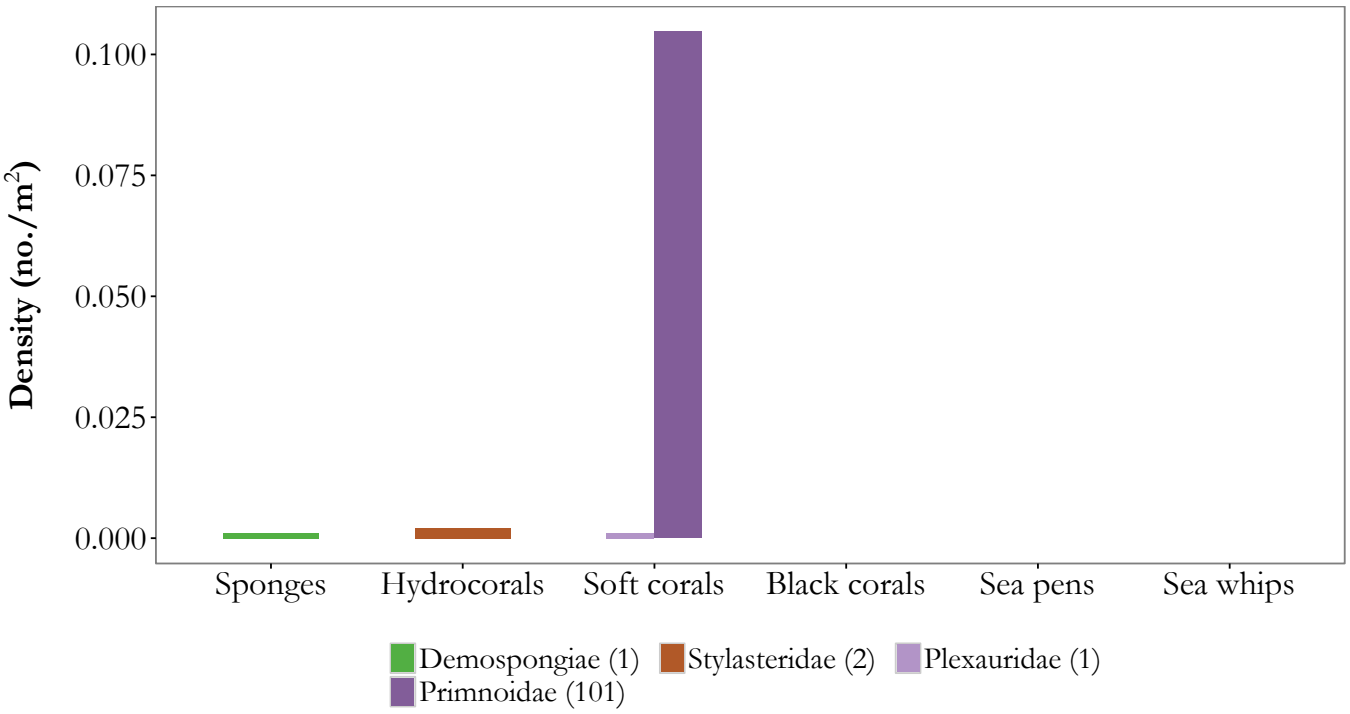
Images



AREA: Samalga Pass to Seguam Pass Transect 2014-14

Vertical Habitat Summary





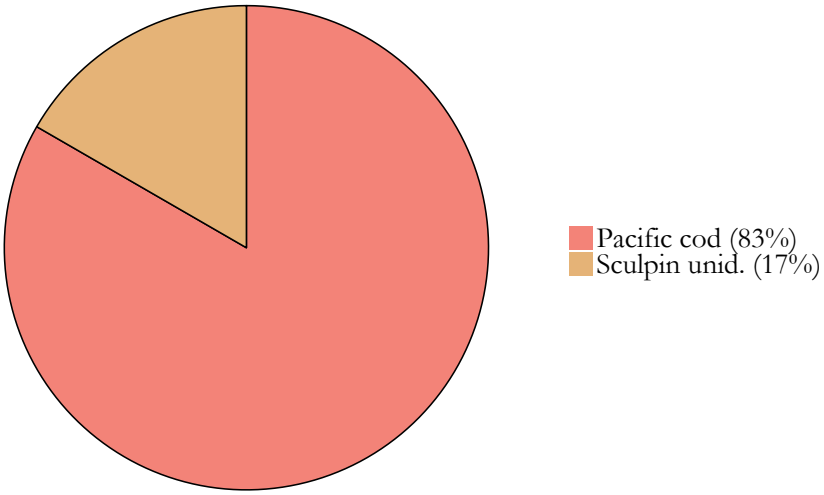
Summary - description of transect

Transect 2014-14: Primary and secondary substrates consisted largely of sand and low bedrock. Only six fishes and one king crab were identified in this transect. Overall fish and crab density for this transect was low (0.01 individuals/m^2). Primnoidae (0.10 individuals/m^2) accounted for 96% of the structure-forming invertebrates. Mean height for Primnoidae was 22 cm.

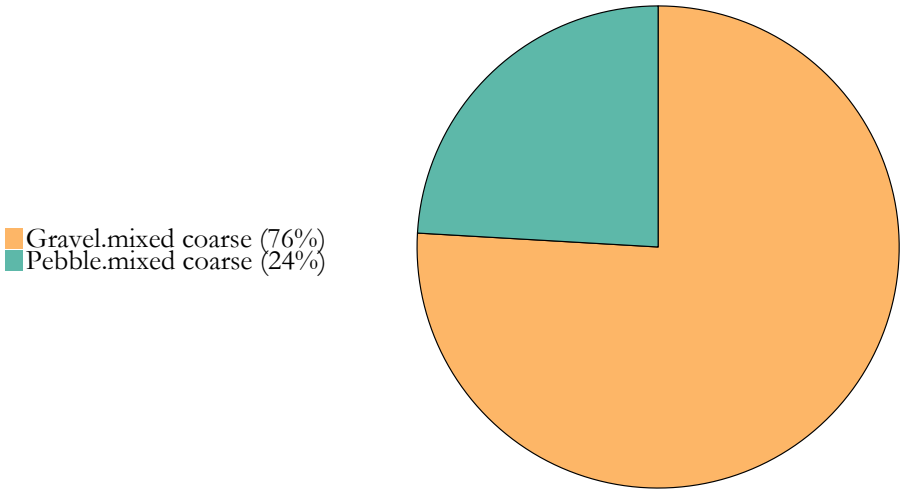
AREA: Samalga Pass to Seguam Pass — Transect 2014-15

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/24/2014	52.45	-172.50	2,313	125	4.3

Fish and Crab Composition (n = 6)



Substrate Composition



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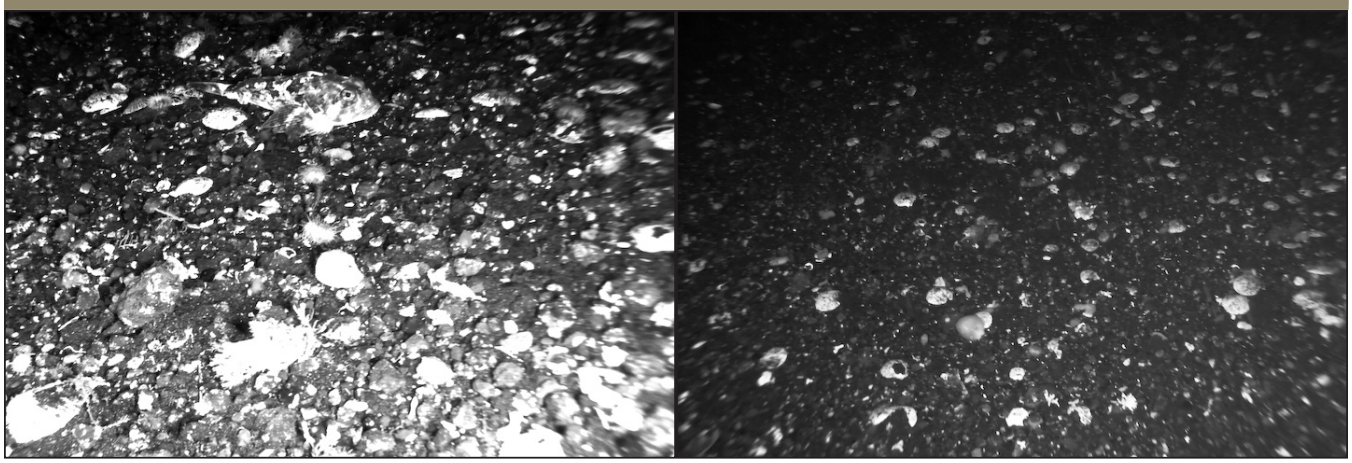
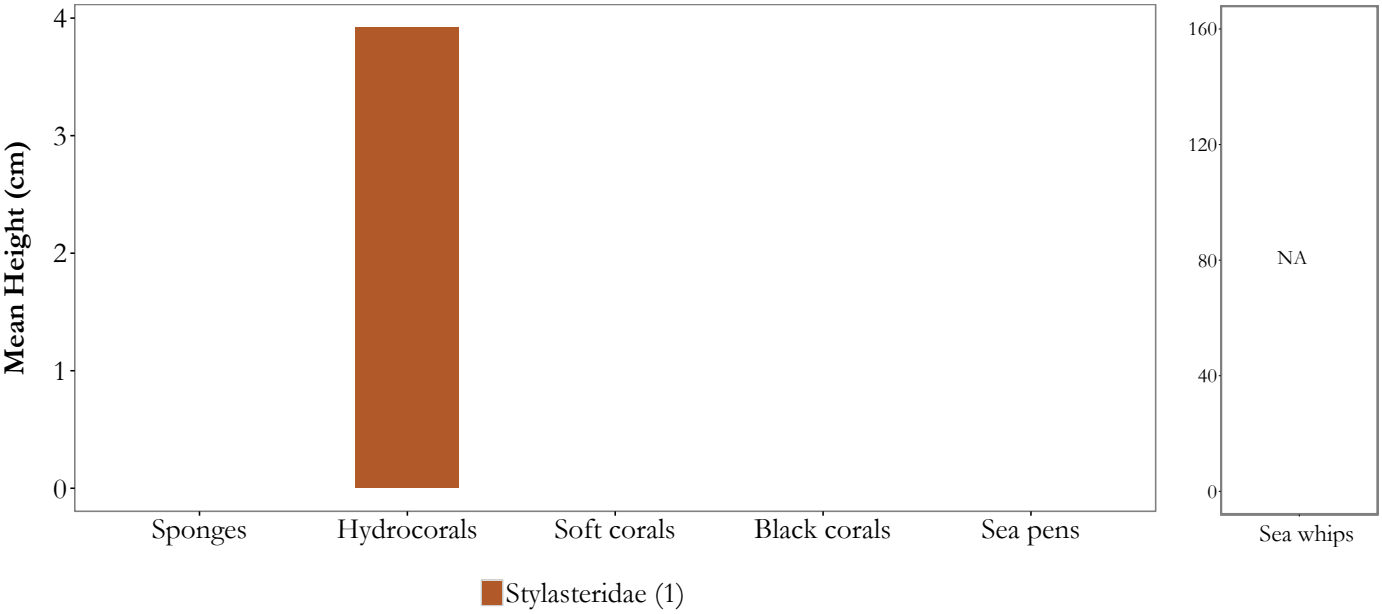
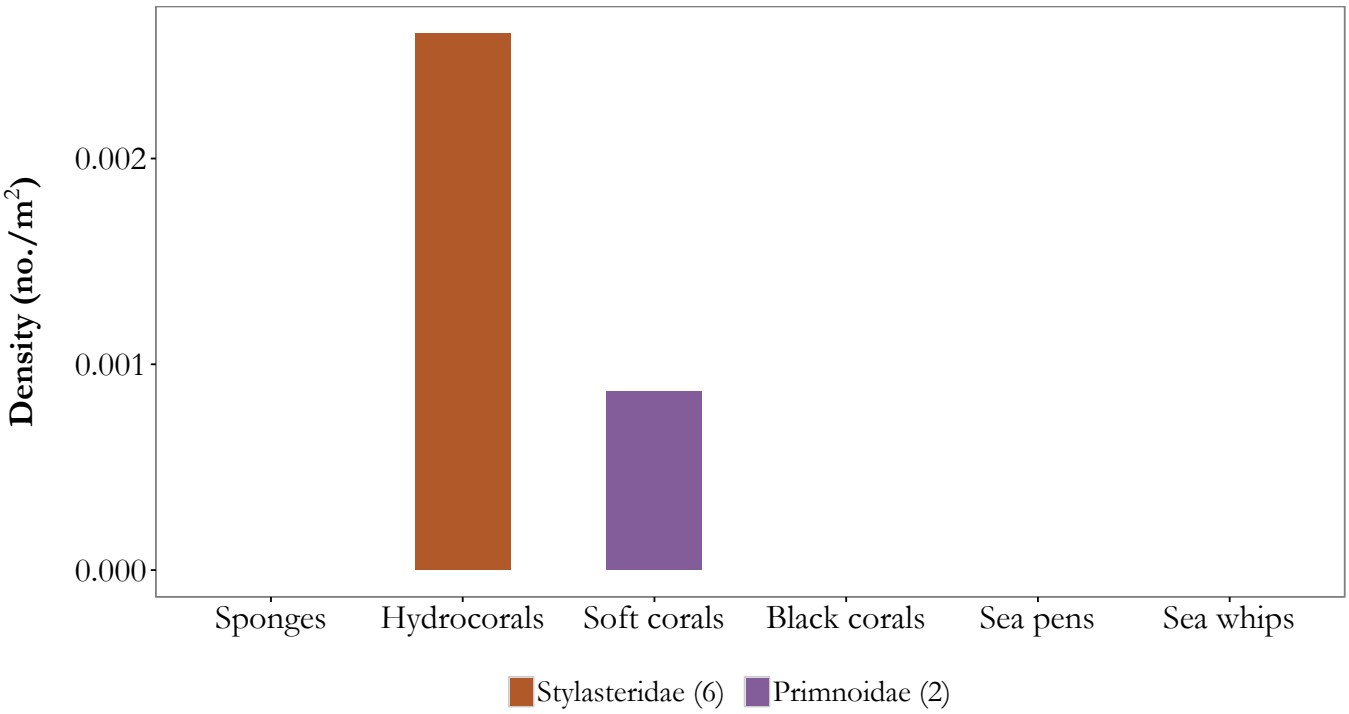


Vertical Habitat Summary





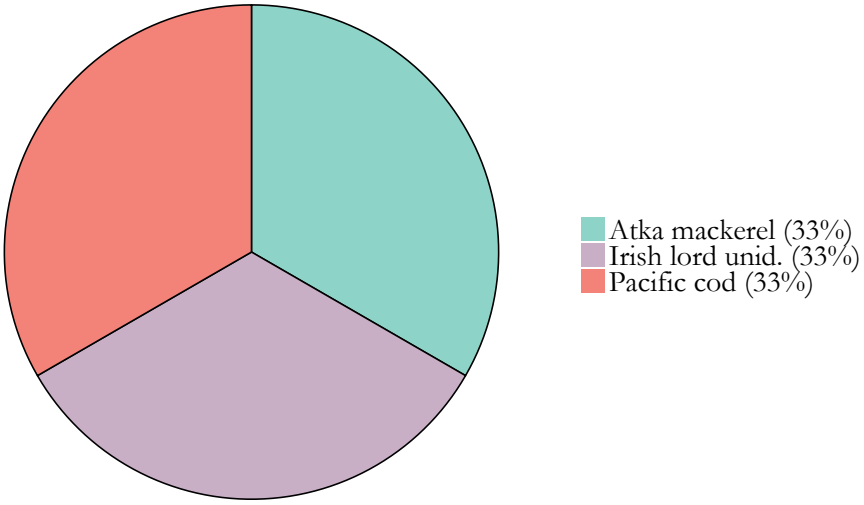
Summary - description of transect

Transect 2014-15: Primary and secondary substrates consisted largely of gravel and mixed coarse. Only six fishes were identified: five Pacific cod and one sculpin. Density of structure-forming invertebrates was very low (< 0.01 individuals/m^2). Only one Stylasteridae was measured at 4 cm.

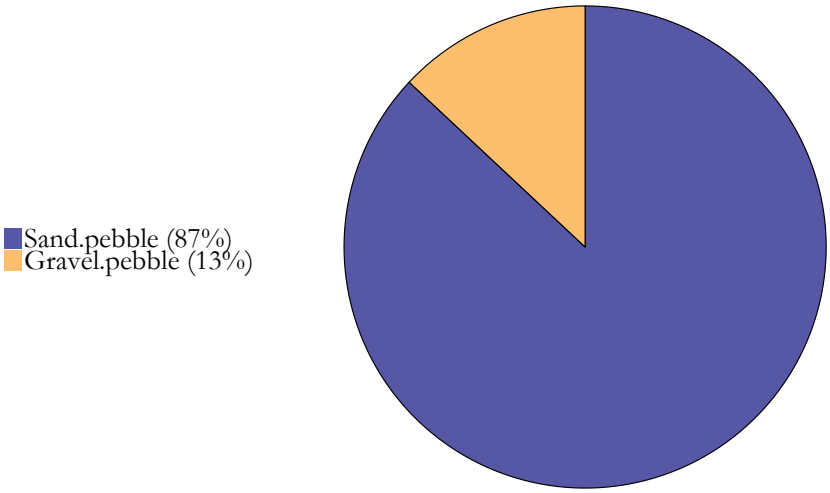
AREA: Samalga Pass to Seguam Pass — Transect 2014-16

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/24/2014	52.45	-172.50	1,824	116	4.3

Fish and Crab Composition (n = 3)

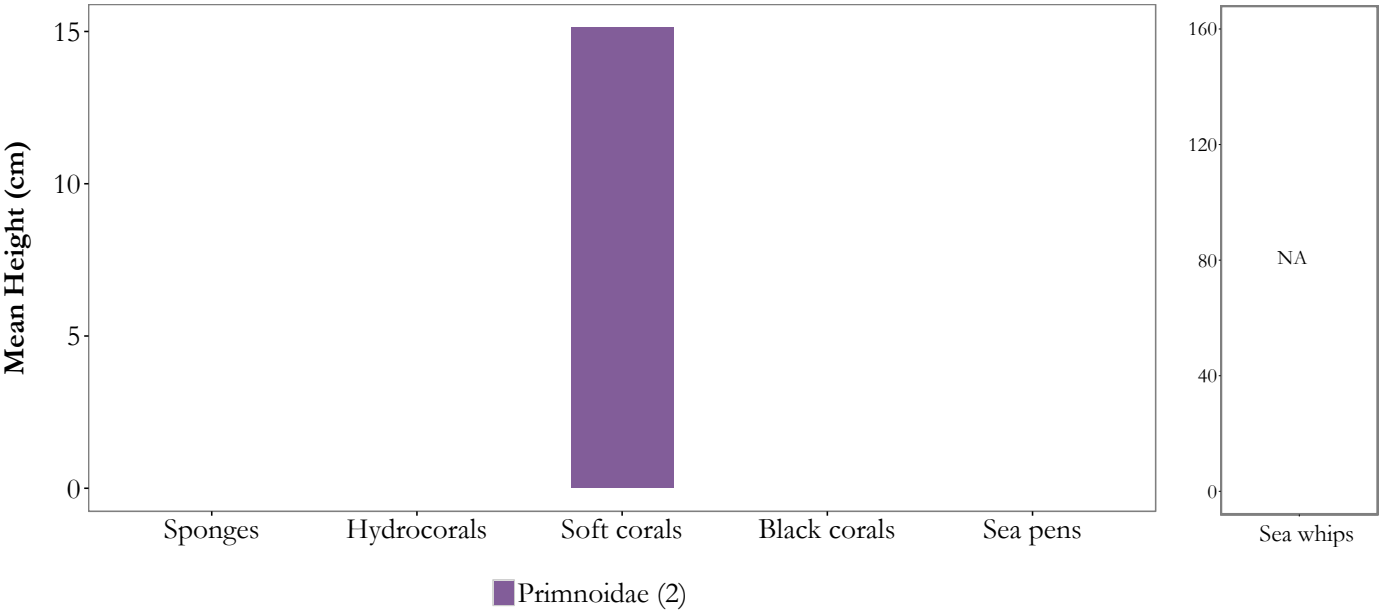


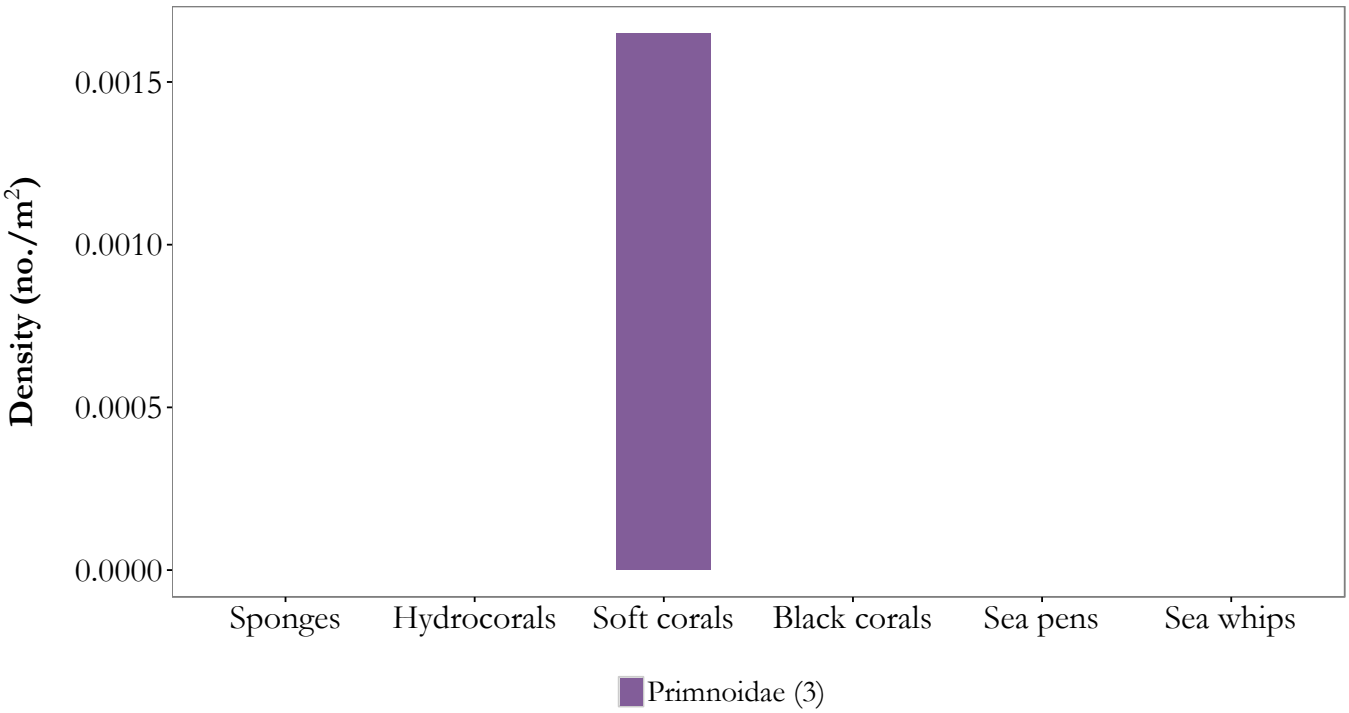
Substrate Composition



Images

Vertical Habitat Summary





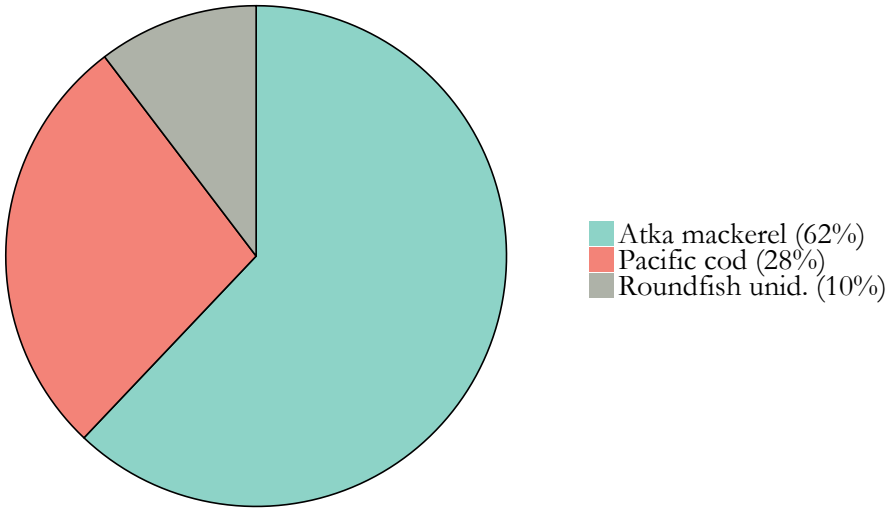
Summary - description of transect

Transect 2014-16: Primary and secondary substrates consisted largely of sand and pebble. Only three fishes were identified in this transect; Atka mackerel, Irish lord, and Pacific cod. Overall species density for this transect was low (< 0.01 individuals/m^2). Structure-forming invertebrate density was also low (< 0.01 individuals/m^2). Only three Primnoidae were observed and two were measured for a mean height of 15 cm.

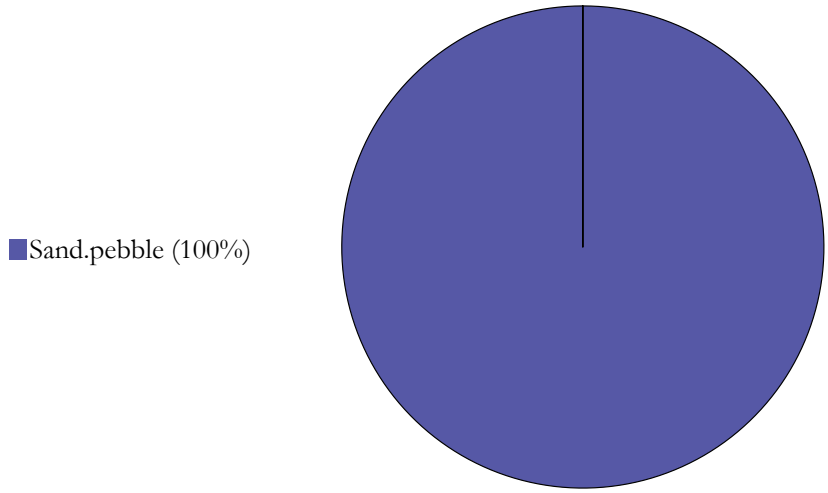
AREA: Samalga Pass to Seguam Pass — Transect 2014-17

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/24/2014	52.44	-172.50	1,368	111	4.4

Fish and Crab Composition (n = 29)

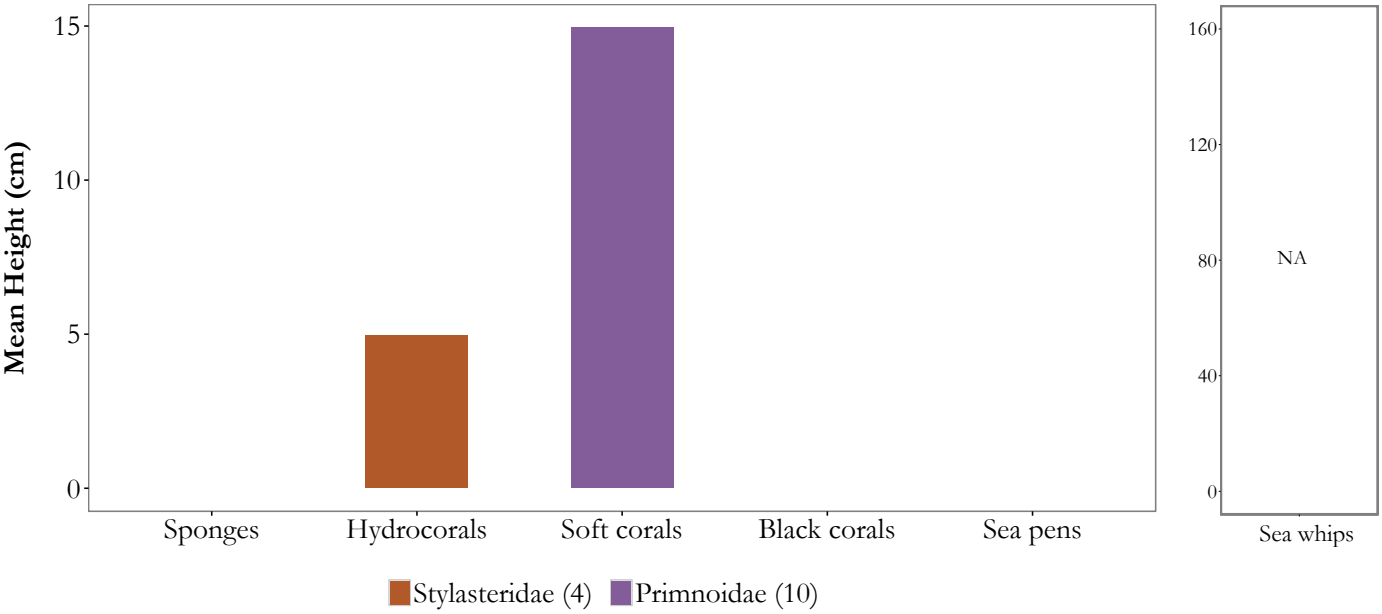


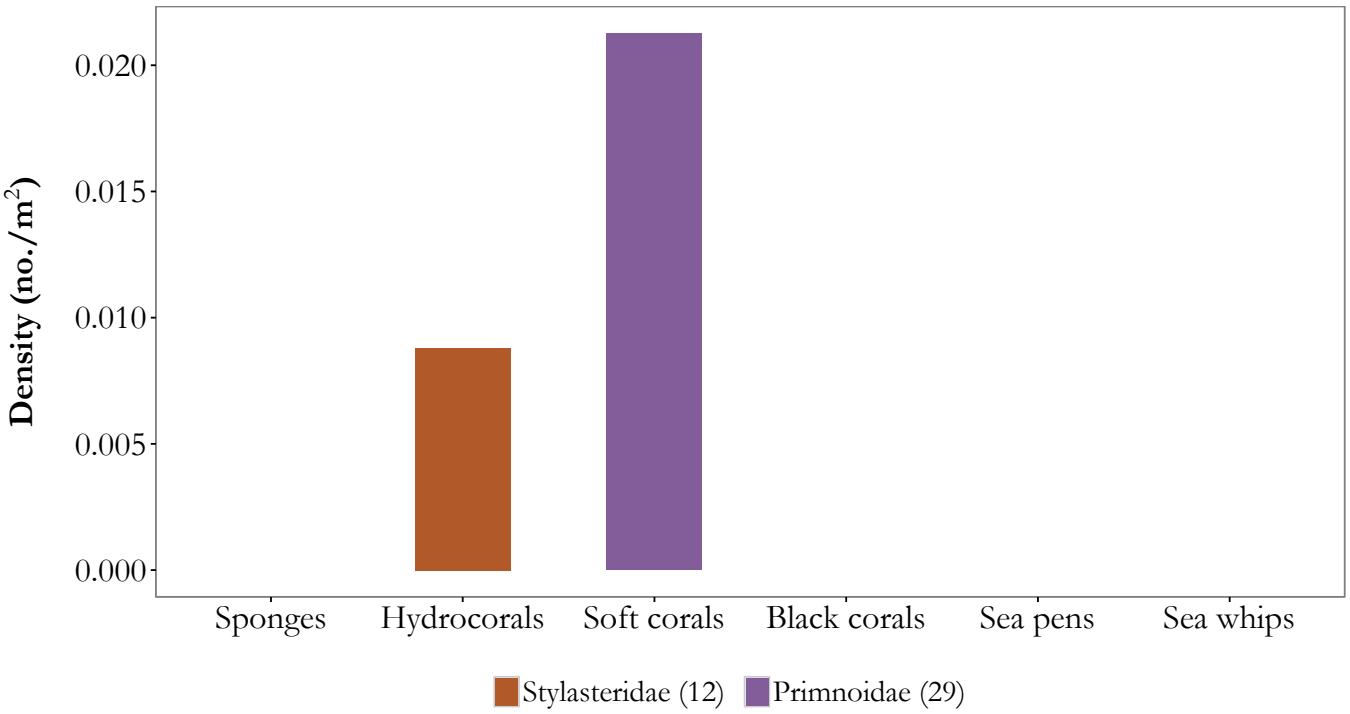
Substrate Composition



Images

Vertical Habitat Summary





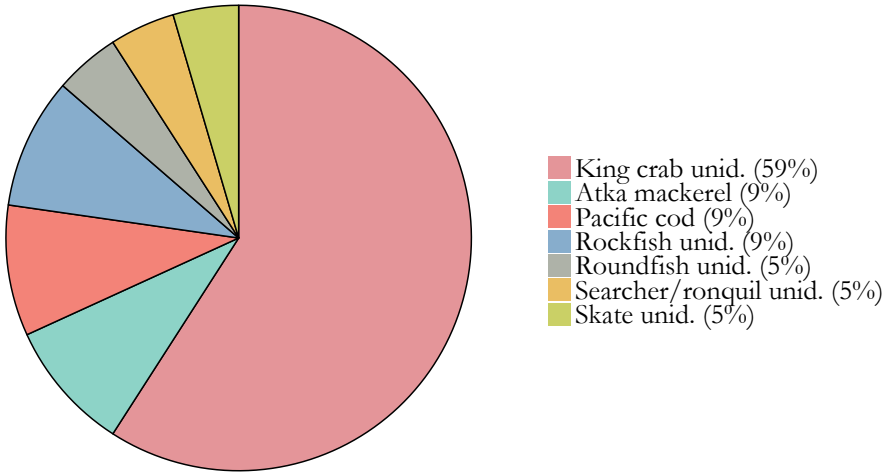
Summary - description of transect

Transect 2014-17: Primary and secondary substrates consisted of sand and pebble. Atka mackerel comprised 62% of the overall fish density (0.02 individuals/m^2). Primnoidae and Stylasteridae were the only structure-forming invertebrates identified resulting in a low-density overall density of 0.03 individuals/m^2. Mean heights were calculated for Stylasteridae (5 cm) and Primnoidae (15 cm).

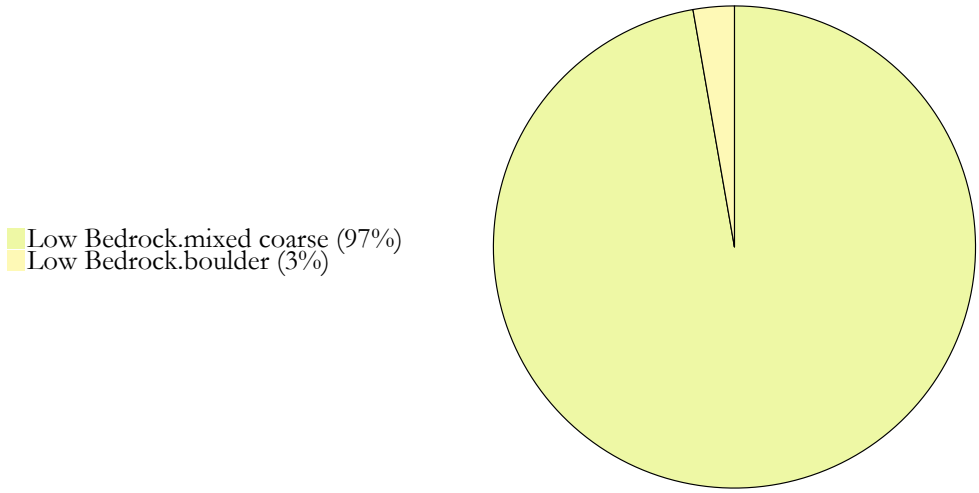
AREA: Samalga Pass to Seguam Pass — Transect 2014-18

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/24/2014	52.45	-172.35	1,994	144	4.1

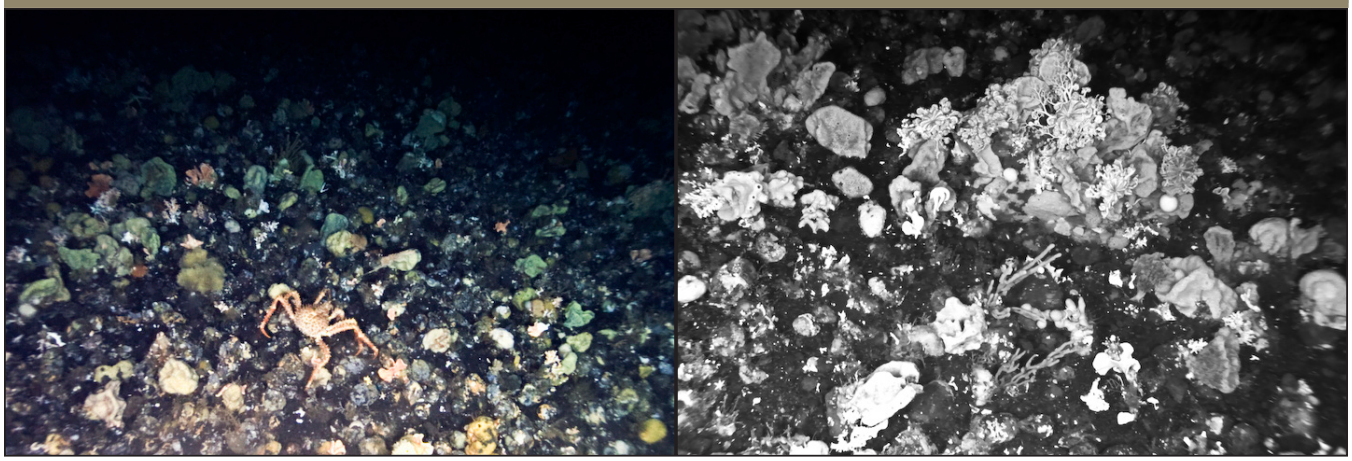
Fish and Crab Composition (n = 22)



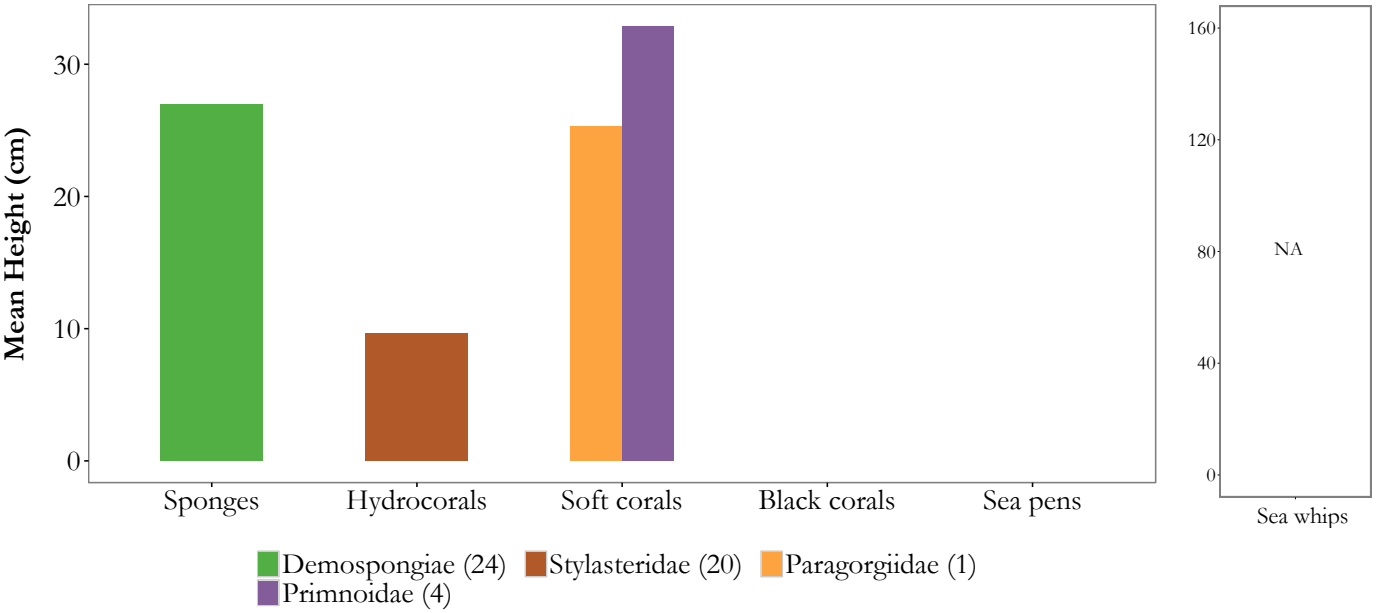
Substrate Composition

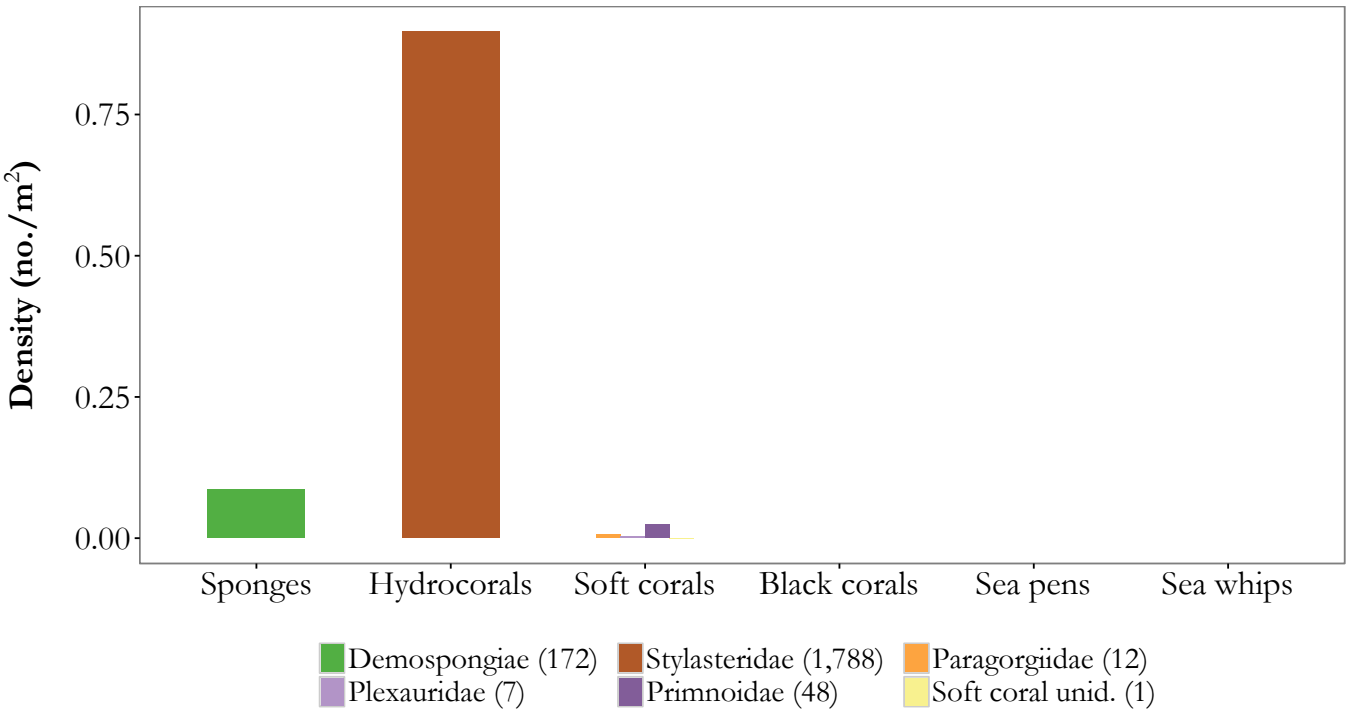


Images



Vertical Habitat Summary





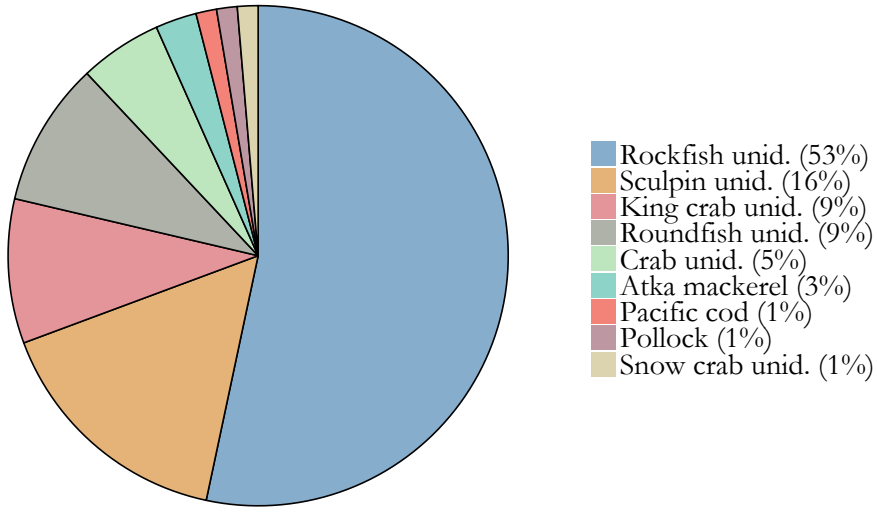
Summary - description of transect

Transect 2014-18: Primary and secondary substrates consisted largely of low bedrock/mixed coarse and a few instances of boulders. Of the 22 individuals of fishes and crabs identified, king crabs were the most abundant (< 0.01 individuals/m^2). Fish and crab density was low overall (0.01 individuals/m^2). Structure-forming invertebrate density (1.02 individuals/m^2) was mostly comprised of Stylasteridae (0.90 individuals/m^2). Mean heights were calculated for Demospongiae (27 cm), Stylasteridae (10 cm), Paragorgiidae (25 cm), and Primnoidae (33 cm).

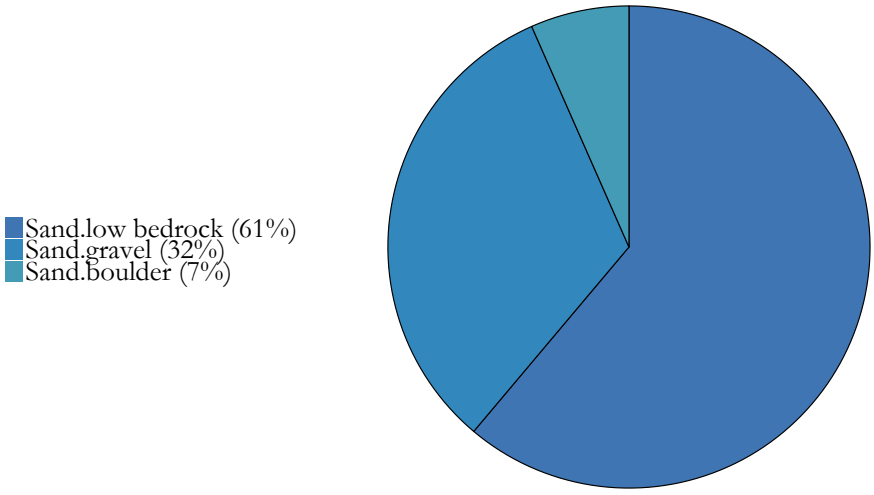
AREA: Samalga Pass to Seguam Pass — Transect 2014-19

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/24/2014	52.60	-172.37	1,794	224	4.0

Fish and Crab Composition (n = 75)



Substrate Composition



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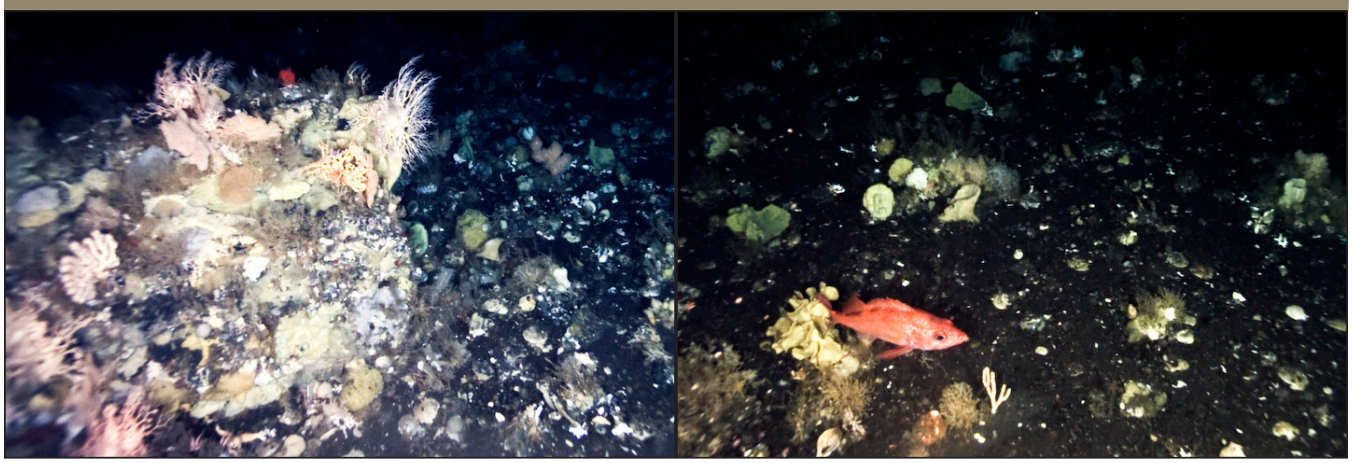
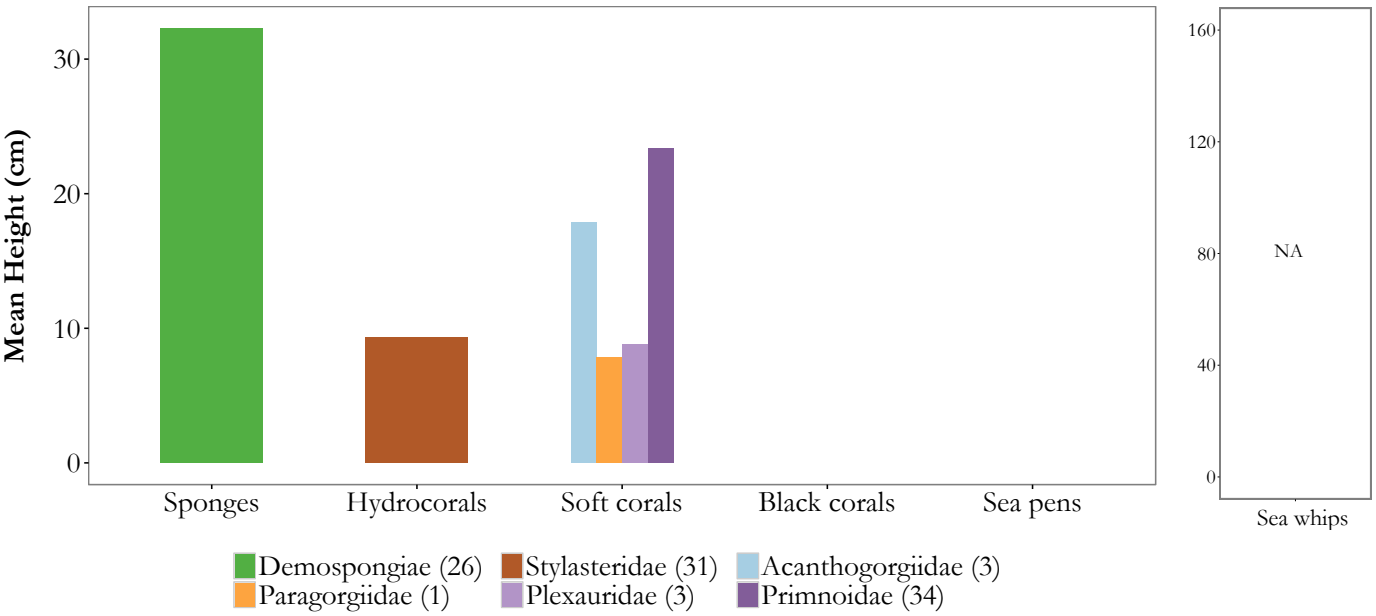
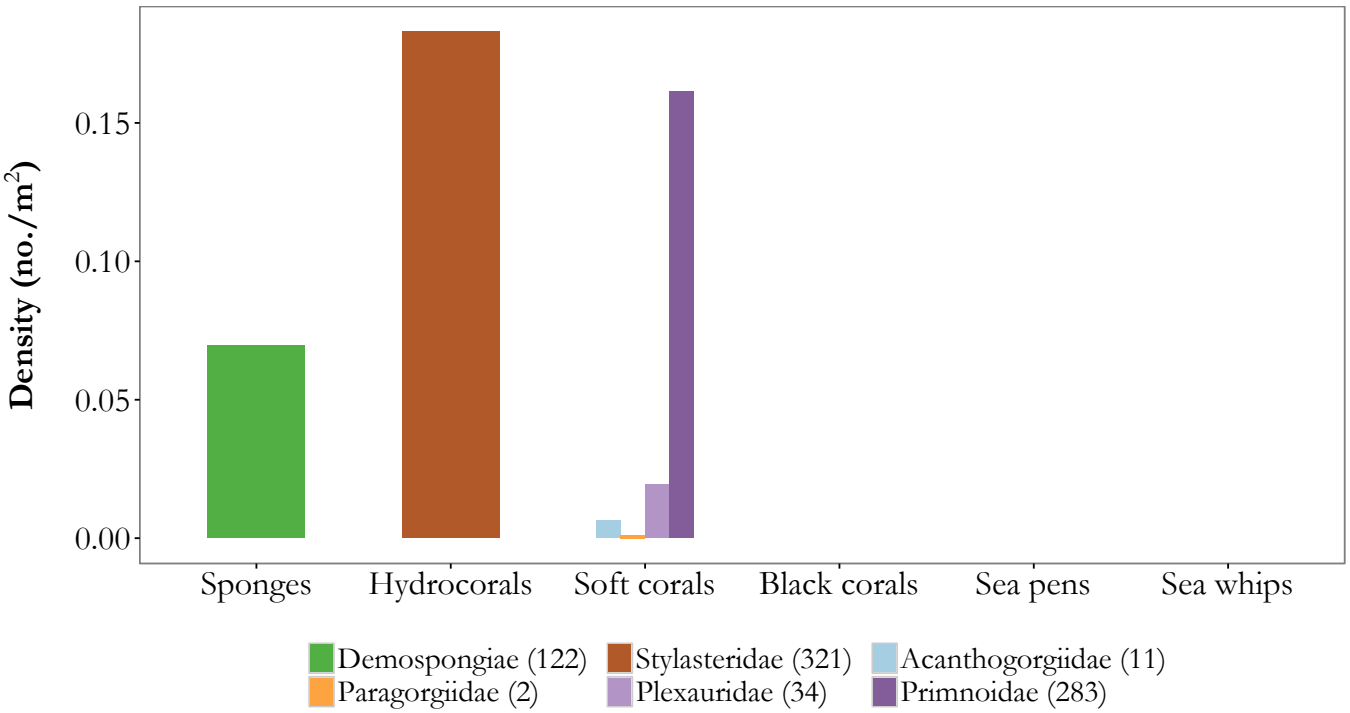


Vertical Habitat Summary





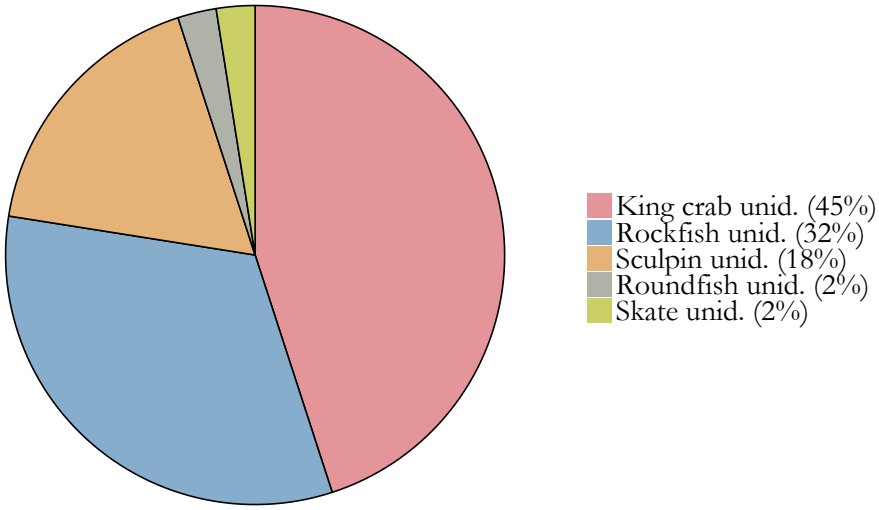
Summary - description of transect

Transect 2014-19: Primary and secondary substrates consisted primarily of sand with bedrock and gravel. Rockfishes comprised 53% of the fish and crab density (0.04 individuals/m^2). Stylasteridae comprised 42% of the structure-forming invertebrate density (0.44 individuals/m^2). Mean heights were calculated for Demospongiae (32 cm), Stylasteridae (9 cm), Acanthogorgiidae (18 cm), Paragorgiidae (8 cm), Plexauridae (9 cm), and Primnoidae (23 cm).

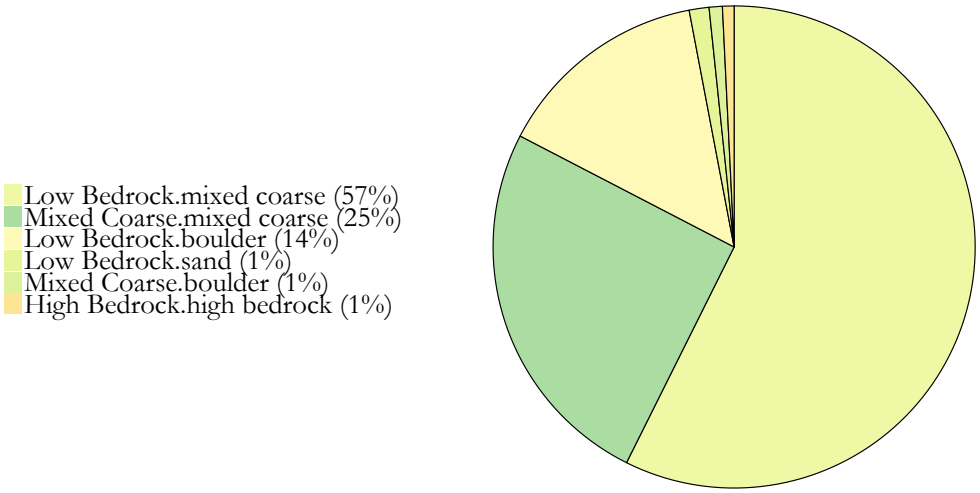
AREA: Samalga Pass to Seguam Pass — Transect 2014-99

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.62	-172.31	3,694	326	3.9

Fish and Crab Composition (n = 40)



Substrate Composition



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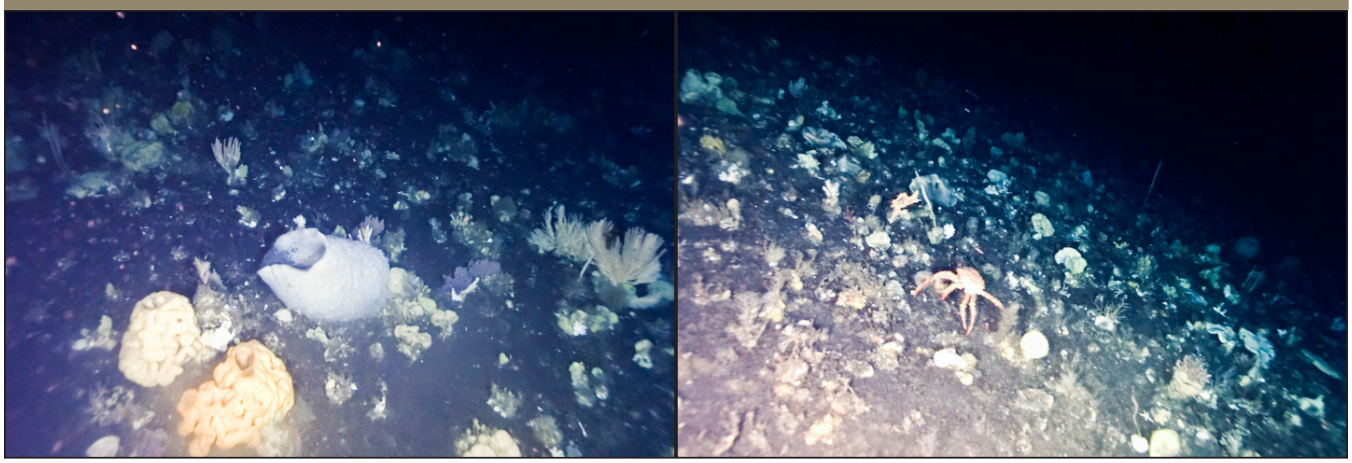
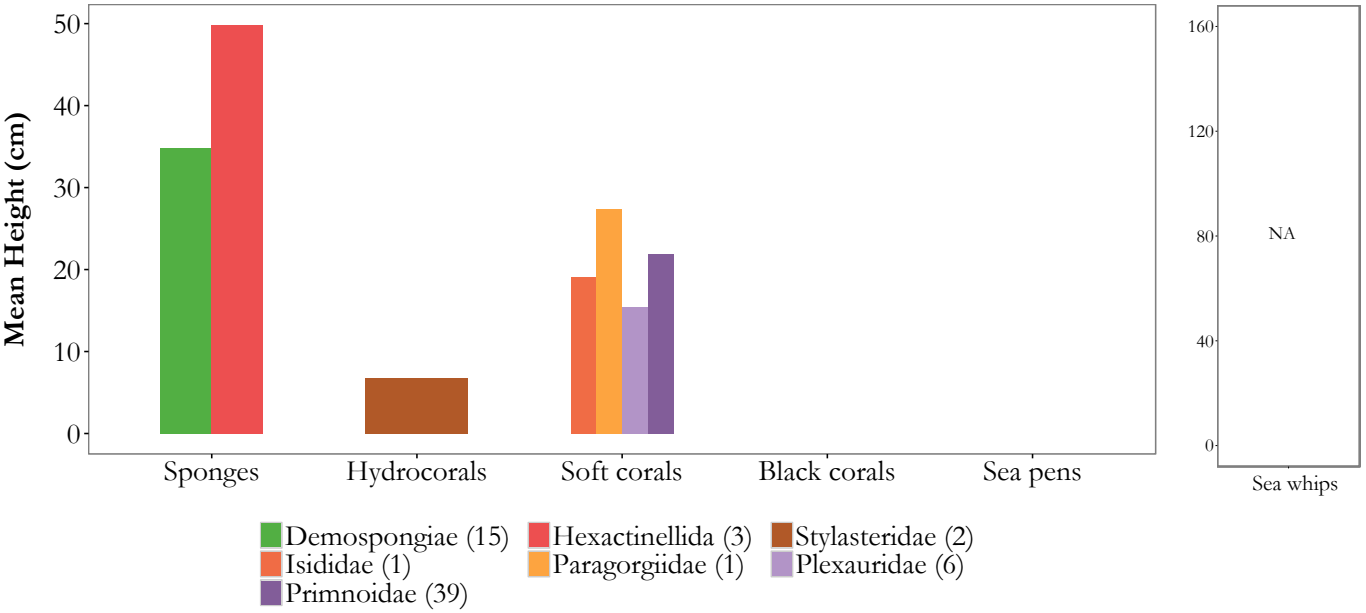
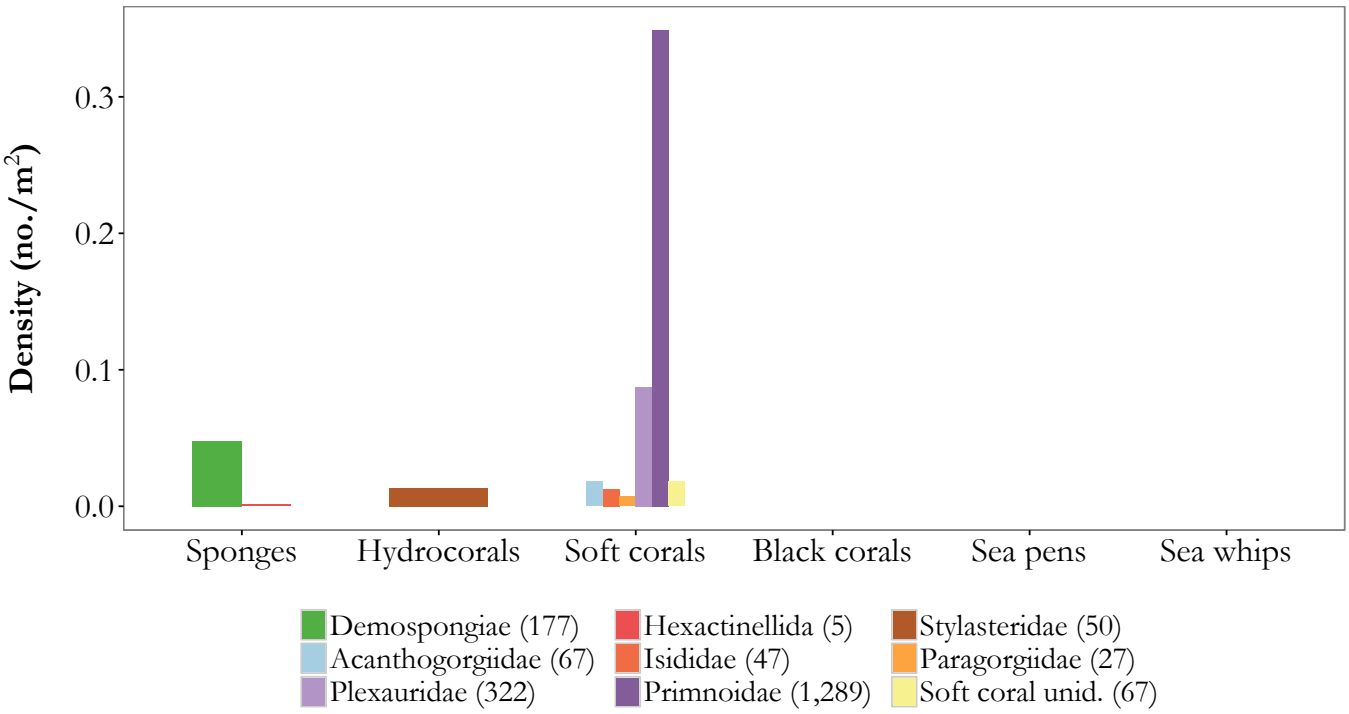


Vertical Habitat Summary





Summary - description of transect

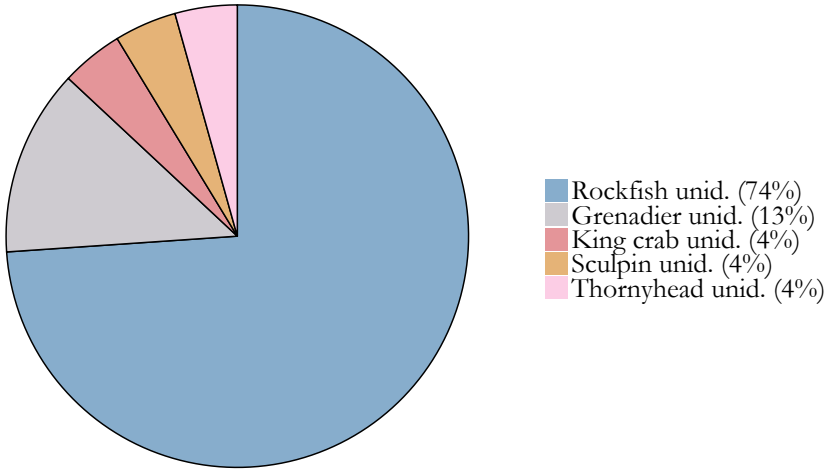
Transect 2014-99: Primary and secondary substrates were mostly low bedrock and mixed coarse. Fish and crab density was < 0.01 individuals/m^2. King crabs (n = 18) and rockfishes (n = 13) were 78% of the density. Structure-forming invertebrate density was 0.56 individuals/m^2 of which Primnoidae comprised 63% (0.35 individuals/m^2) of the individuals. Mean heights ranged from 7 cm for Stylasteridae to 50 cm for Hexactinellida.

AREA: Samalga Pass to Seguam Pass — Transect *2014-100

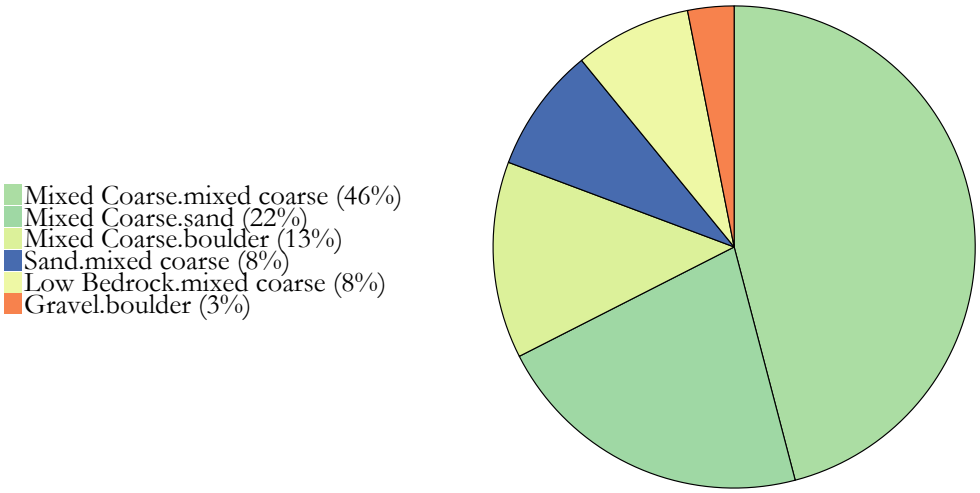
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.56	-172.17	1,464	372	3.8

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 23)



Substrate Composition



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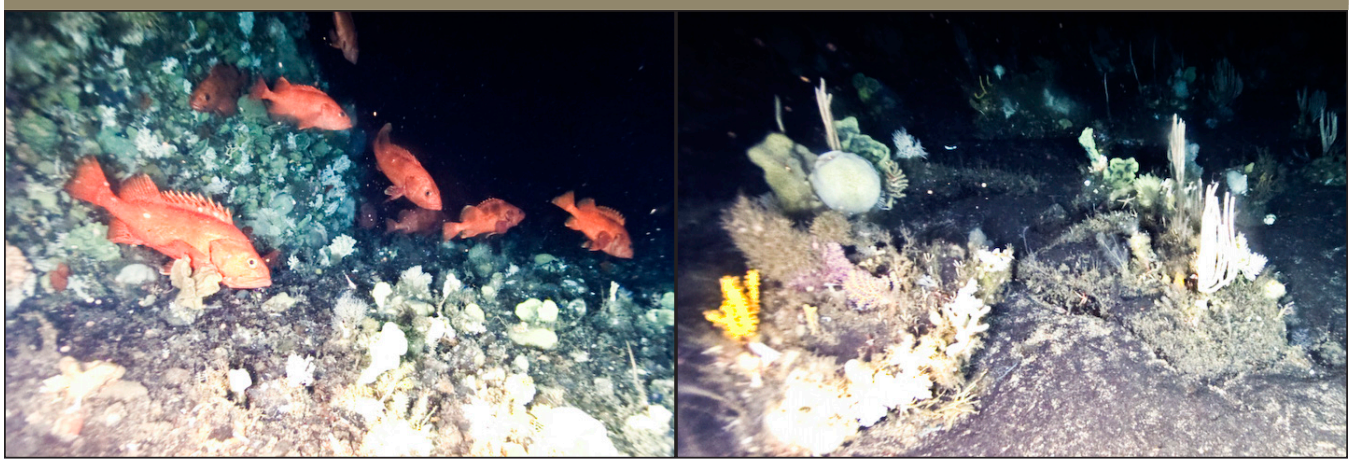
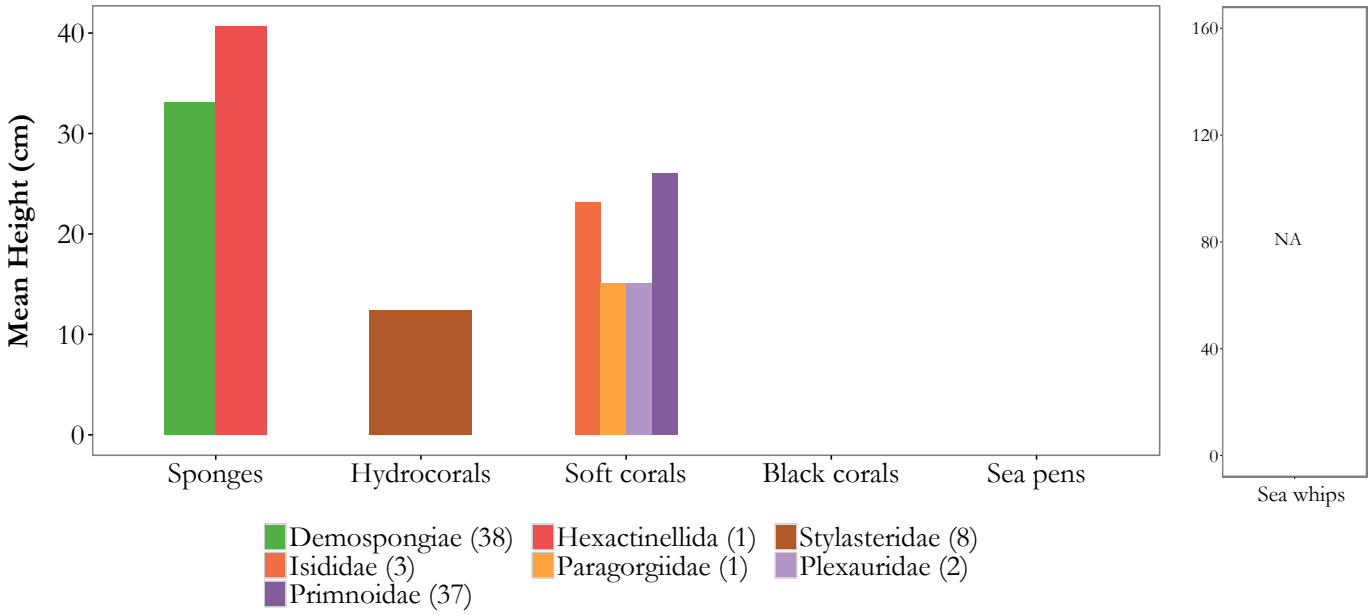
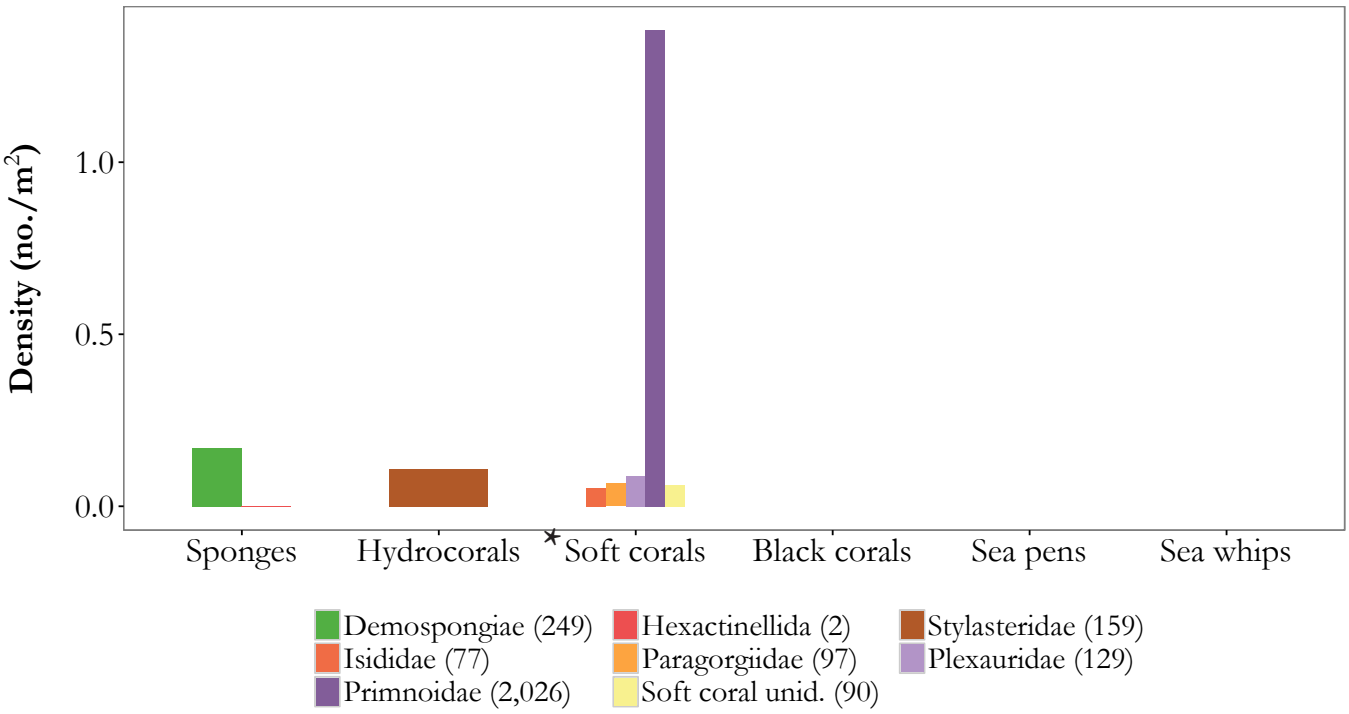


AREA: Samalga Pass to Seguam Pass Transect *2014-100

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





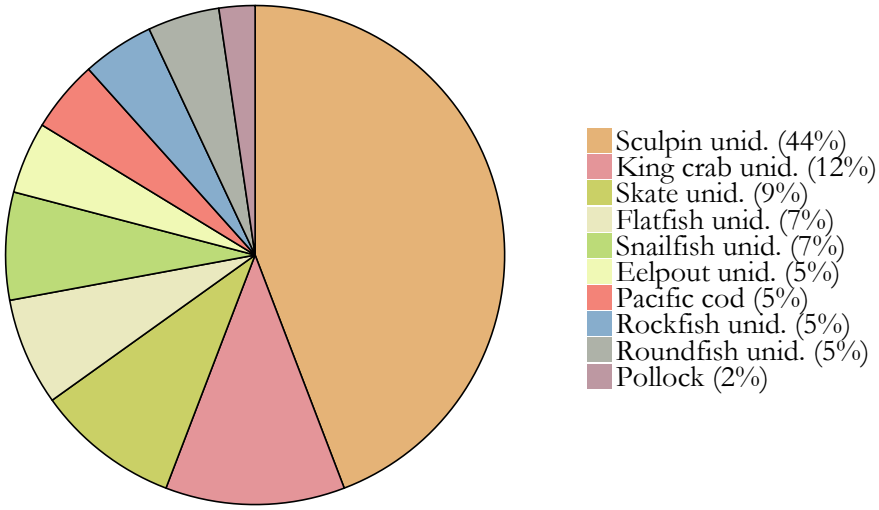
Summary - description of transect

Transect 2014-100: Primary and secondary substrates were diverse, varying between mixed coarse, sand, bedrock, and boulder. Fish and crab density was 0.02 individuals/m^2 of which rockfishes were 74% of the density. Structure-forming invertebrate density was 1.93 individuals/m^2. Primnoidae accounted for 72% (1.38 individuals/m^2) of the density. Mean heights ranged from 41 cm for Hexactinellida to 12 cm for Stylasteridae.

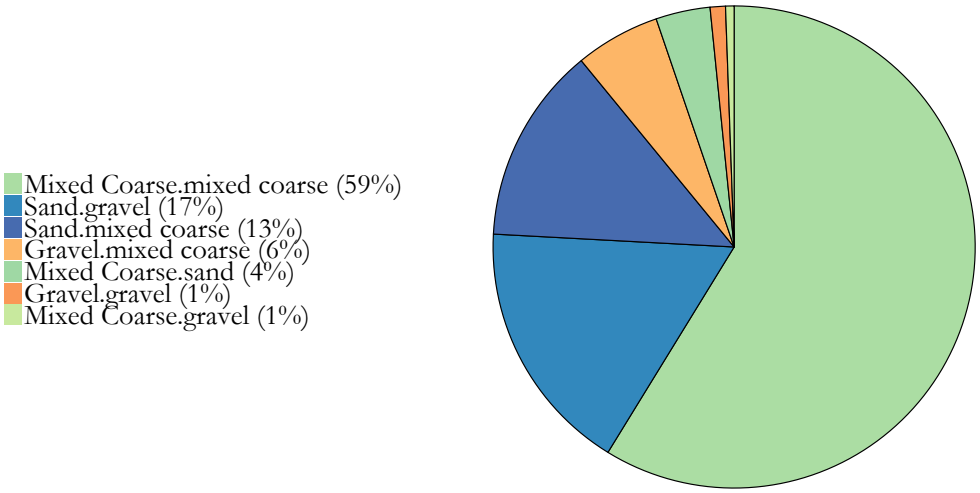
AREA: Samalga Pass to Seguam Pass — Transect 2014-101

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.47	-172.16	2,582	273	4.1

Fish and Crab Composition (n = 43)

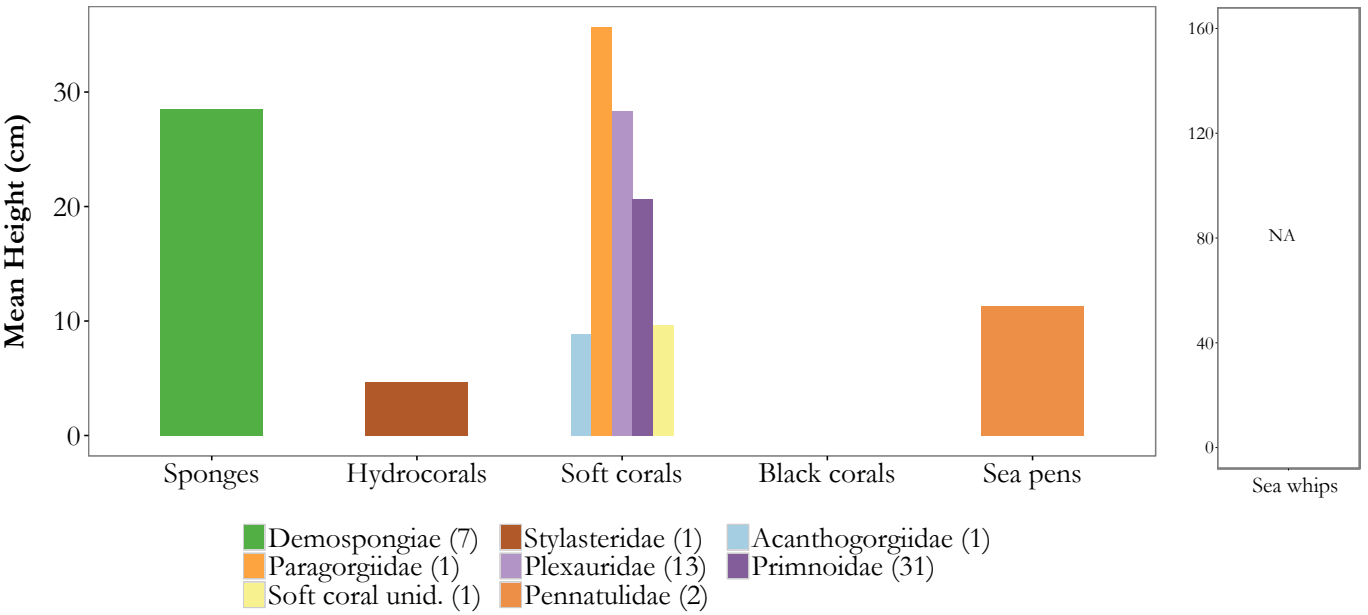


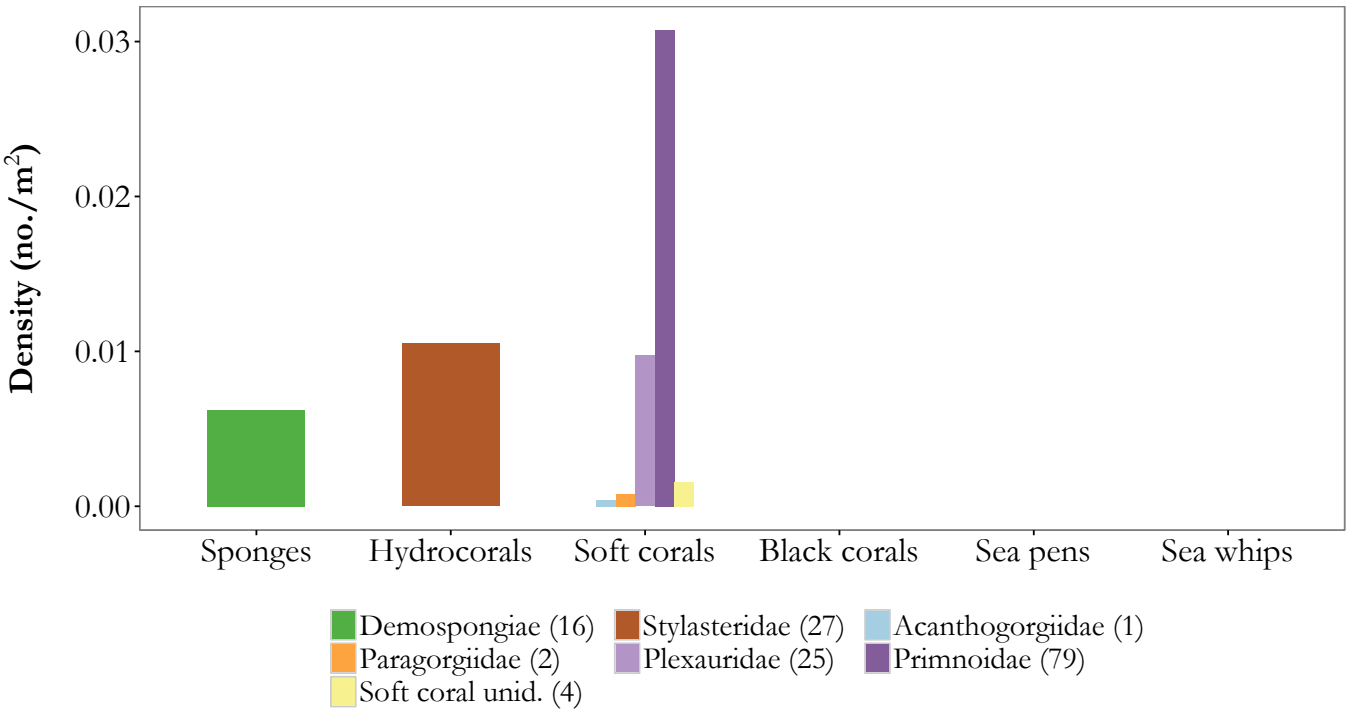
Substrate Composition



Images

Vertical Habitat Summary





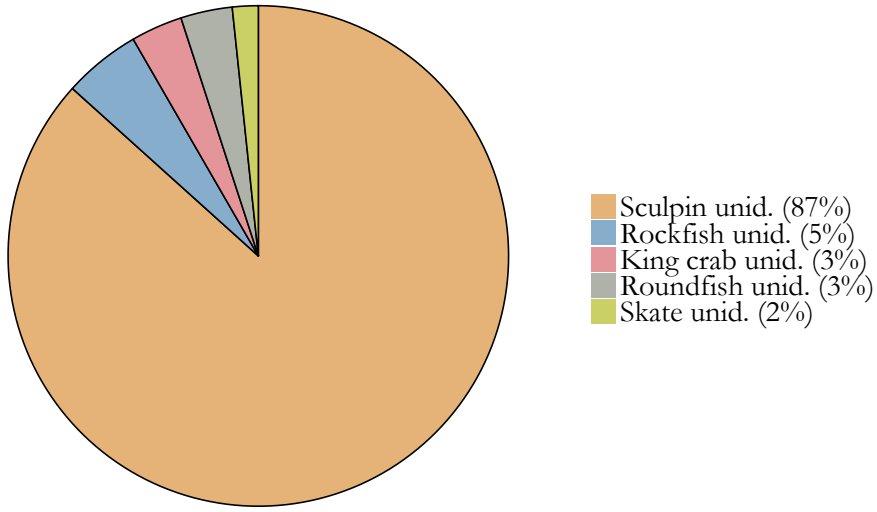
Summary - description of transect

Transect 2014-101: Primary and secondary substrates were over 60% mixed coarse with sand and gravel. Although fish and crab density was fairly low, 0.02 individuals/m^2, the composition was diverse. Ten taxa of fishes and crabs were identified, with sculpins (n = 19) being the most abundant. As with the fish and crab density, structure-forming invertebrate density was also low with Primnoidae (0.03 individuals/m^2), Stylasteridae (0.01 individuals/m^2), and Plexauridae (0.01 individuals/m^2) being the most abundant. Heights ranged from 5 cm for Stylasteridae to 36 cm for Paragorgiidae.

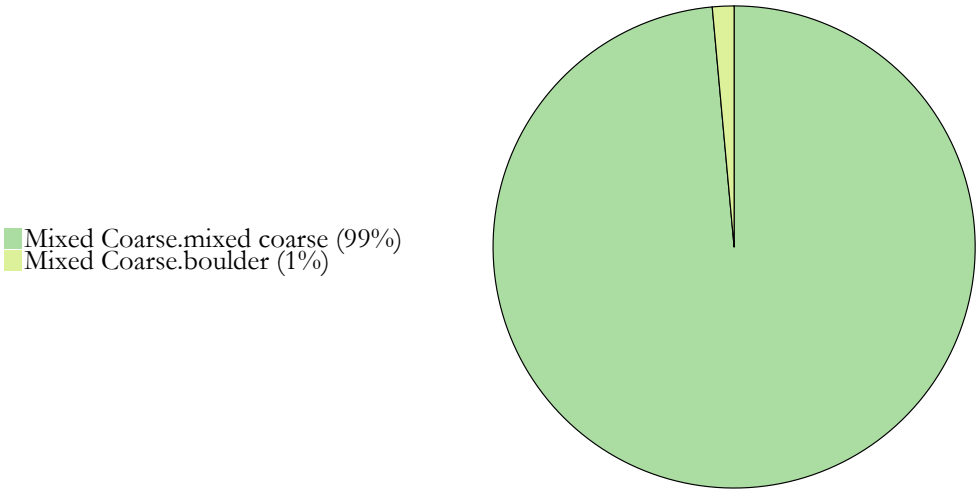
AREA: Samalga Pass to Seguam Pass — Transect 2014-102

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.48	-172.11	2,477	296	4.2

Fish and Crab Composition (n = 60)

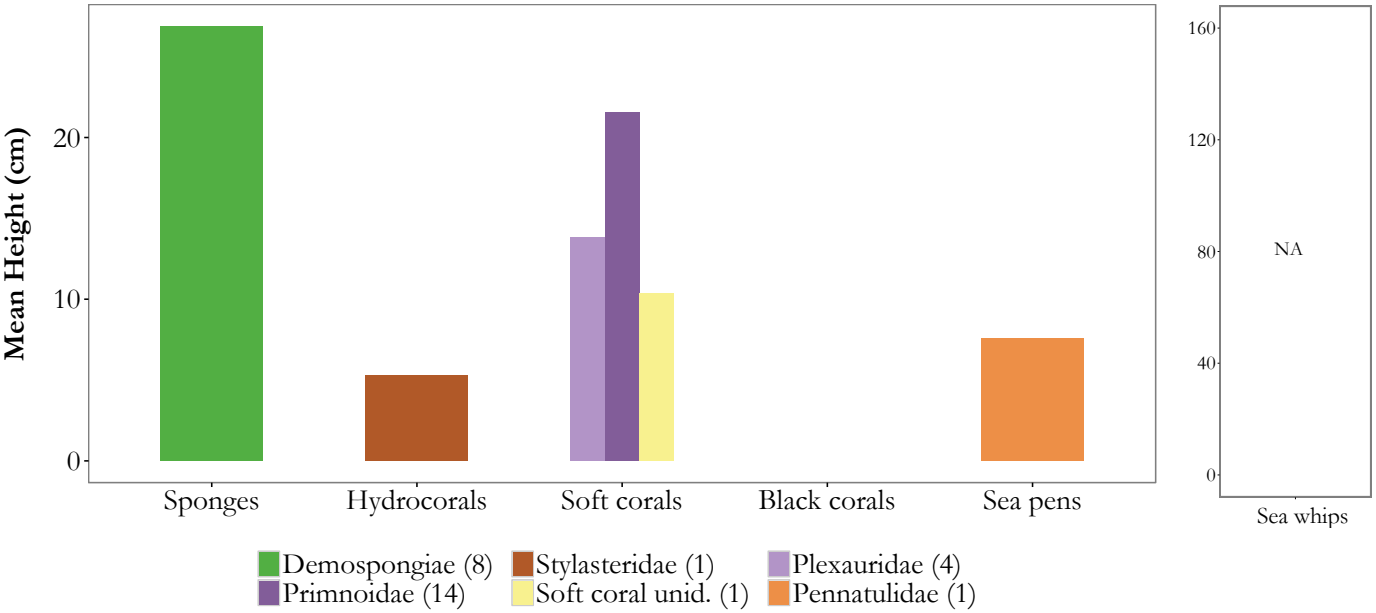


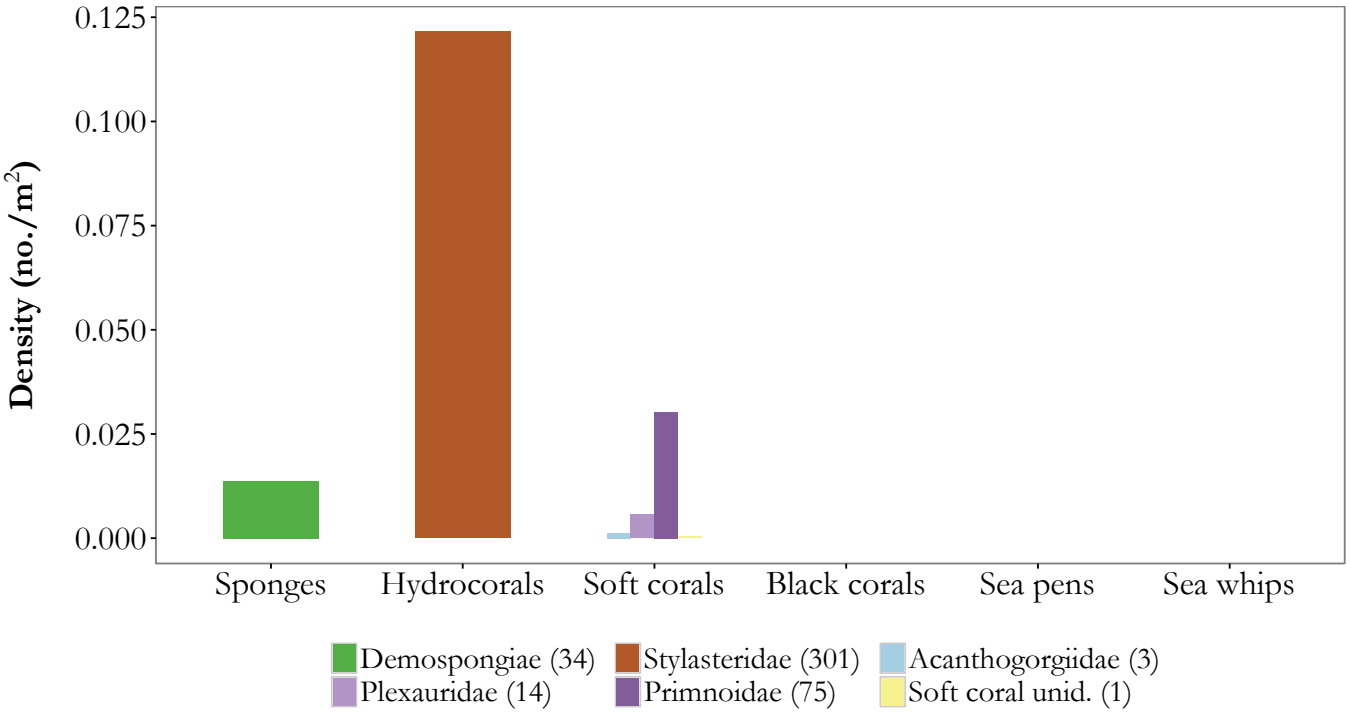
Substrate Composition



Images

Vertical Habitat Summary





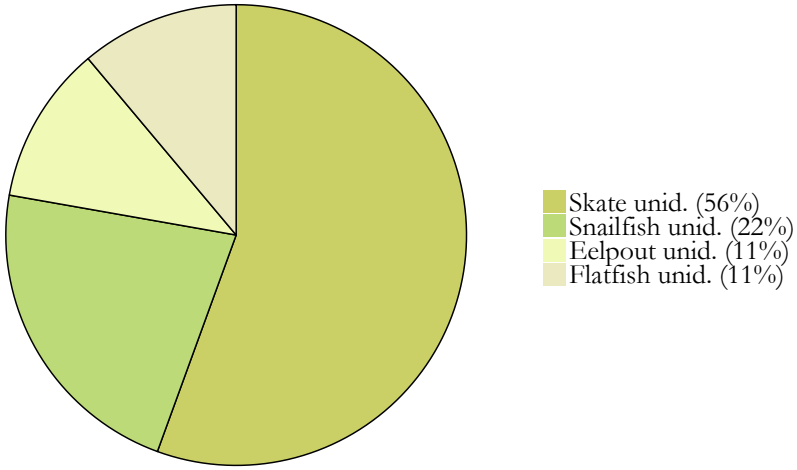
Summary - description of transect

Transect 2014-102: Primary and secondary habitat consisted almost entirely of mixed coarse. Sculpins (n = 52) accounted for 87% of the fish and crab density (0.02 individuals/m^2). Stylasteridae accounted for 70% of the structure-forming invertebrate density (0.17 individuals/m^2). Mean heights were calculated for Demospongiae (27 cm), Plexauridae (14 cm), and Primnoidae (22 cm).

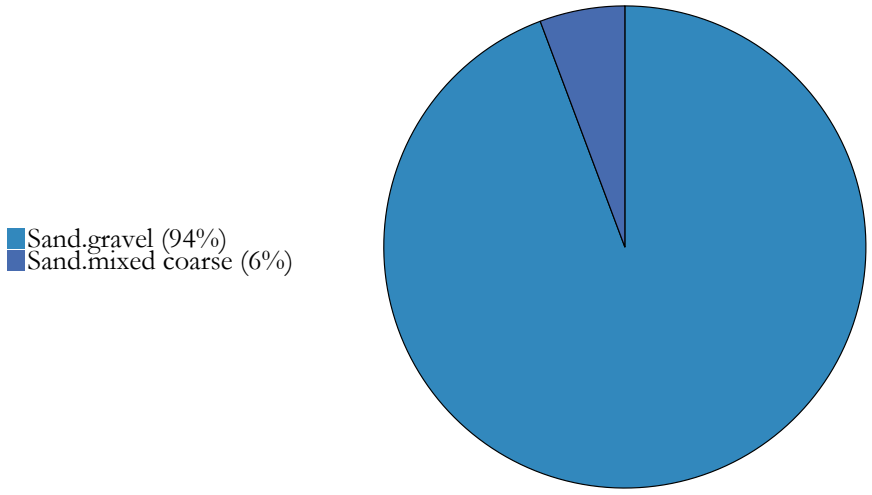
AREA: Samalga Pass to Seguam Pass — Transect 2014-103

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.37	-172.07	1,234	372	4.3

Fish and Crab Composition (n = 18)

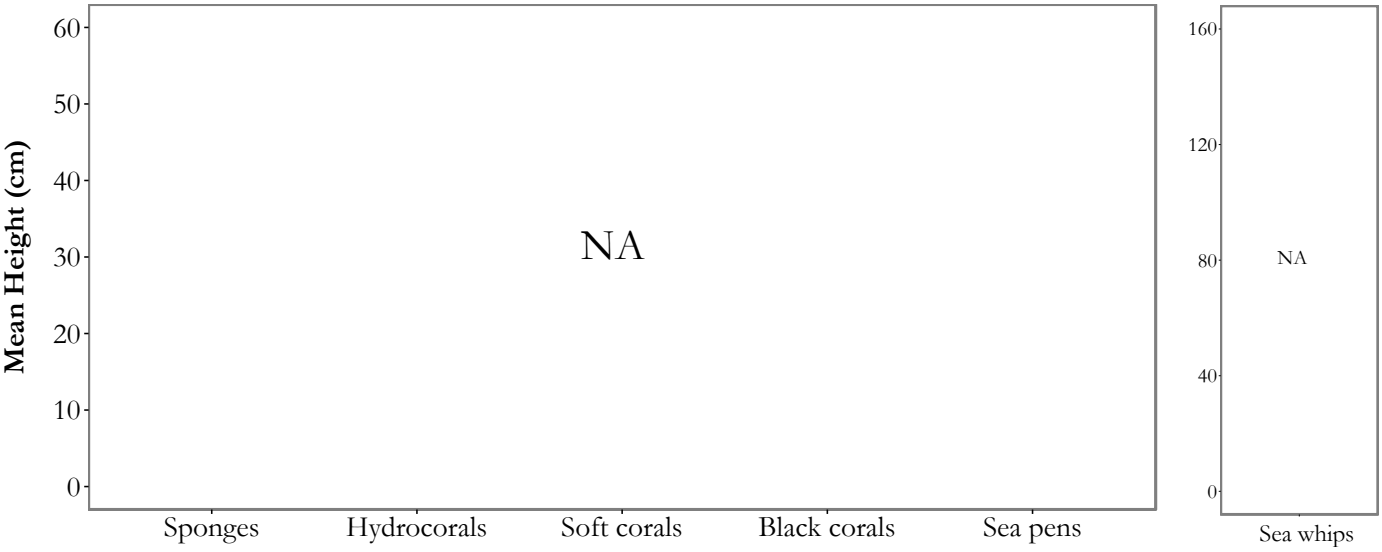


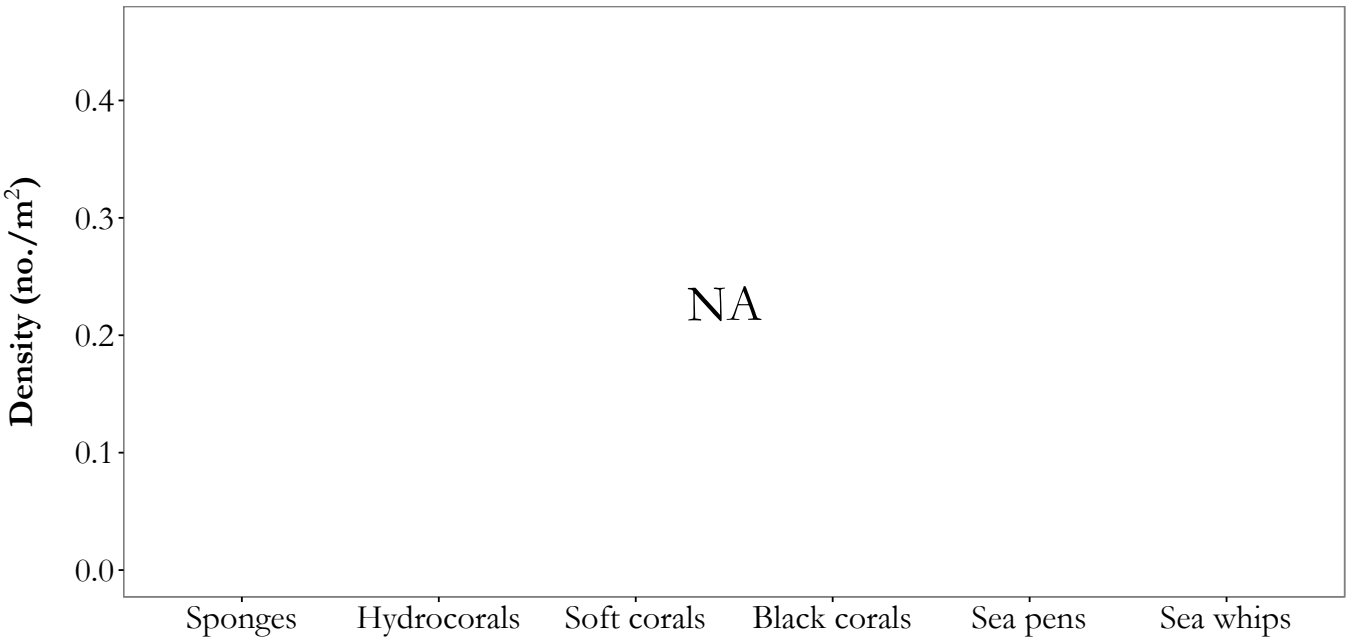
Substrate Composition



Images

Vertical Habitat Summary





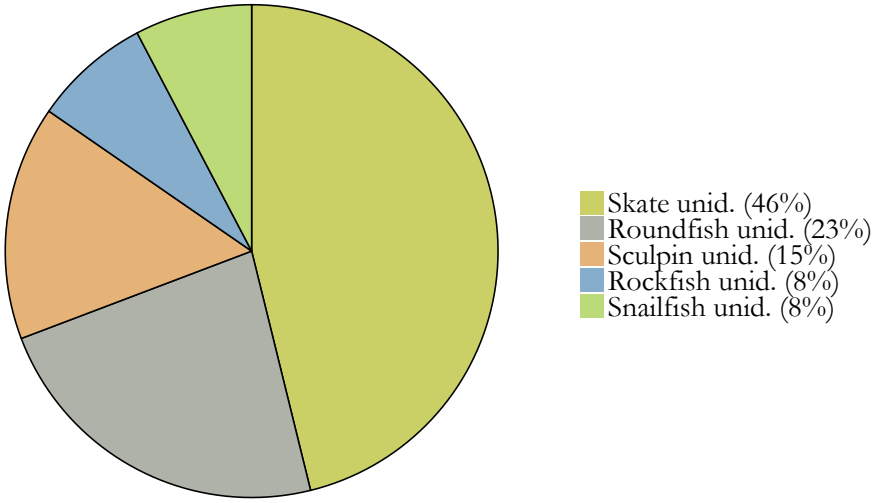
Summary - description of transcect

Transect 2014-103: Primary and secondary substrates consisted largely of sand and gravel. Fish density overall was low, 0.01 individuals/m^2, with skates being the most abundant (0.01 individuals/m^2). No structure-forming invertebrates were identified.

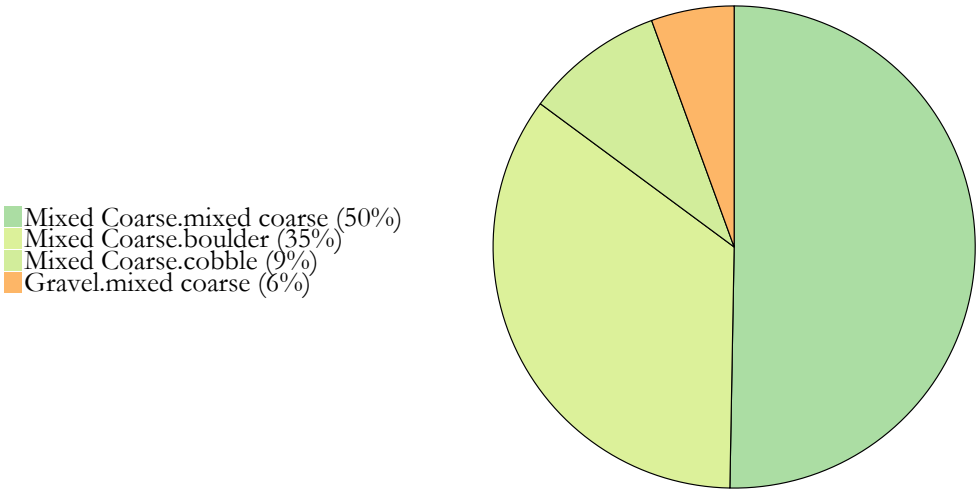
AREA: Samalga Pass to Seguam Pass — Transect 2014-104

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.24	-172.09	836	337	4.4

Fish and Crab Composition (n = 13)

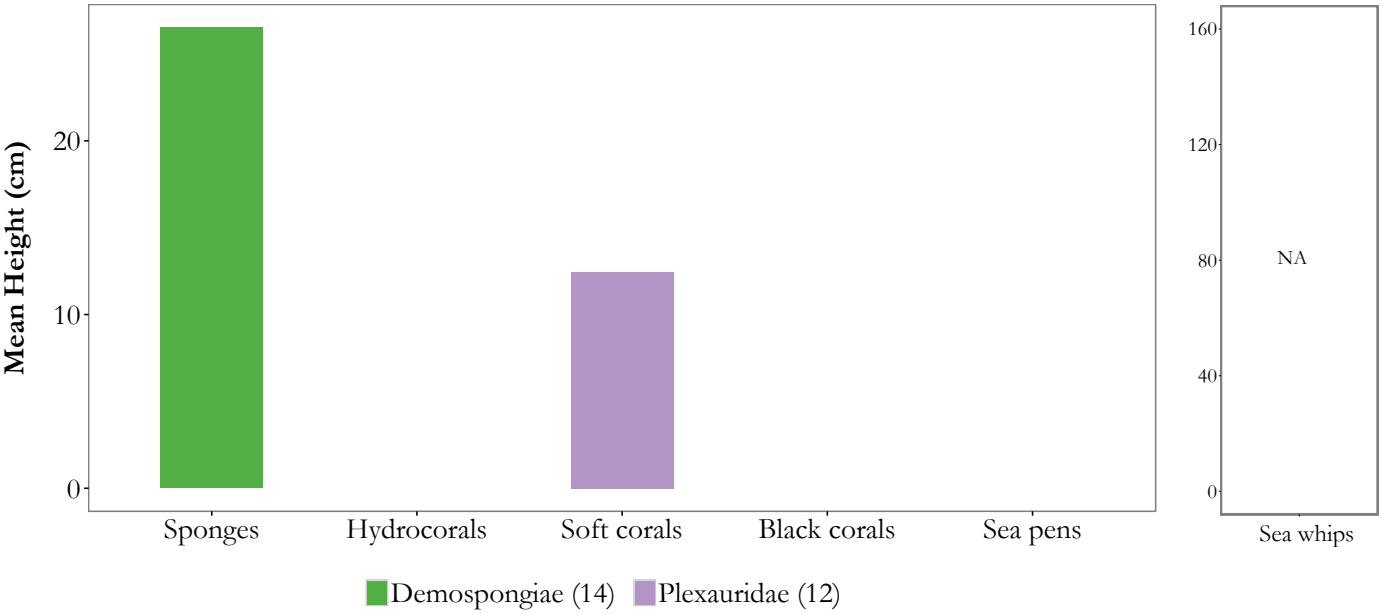


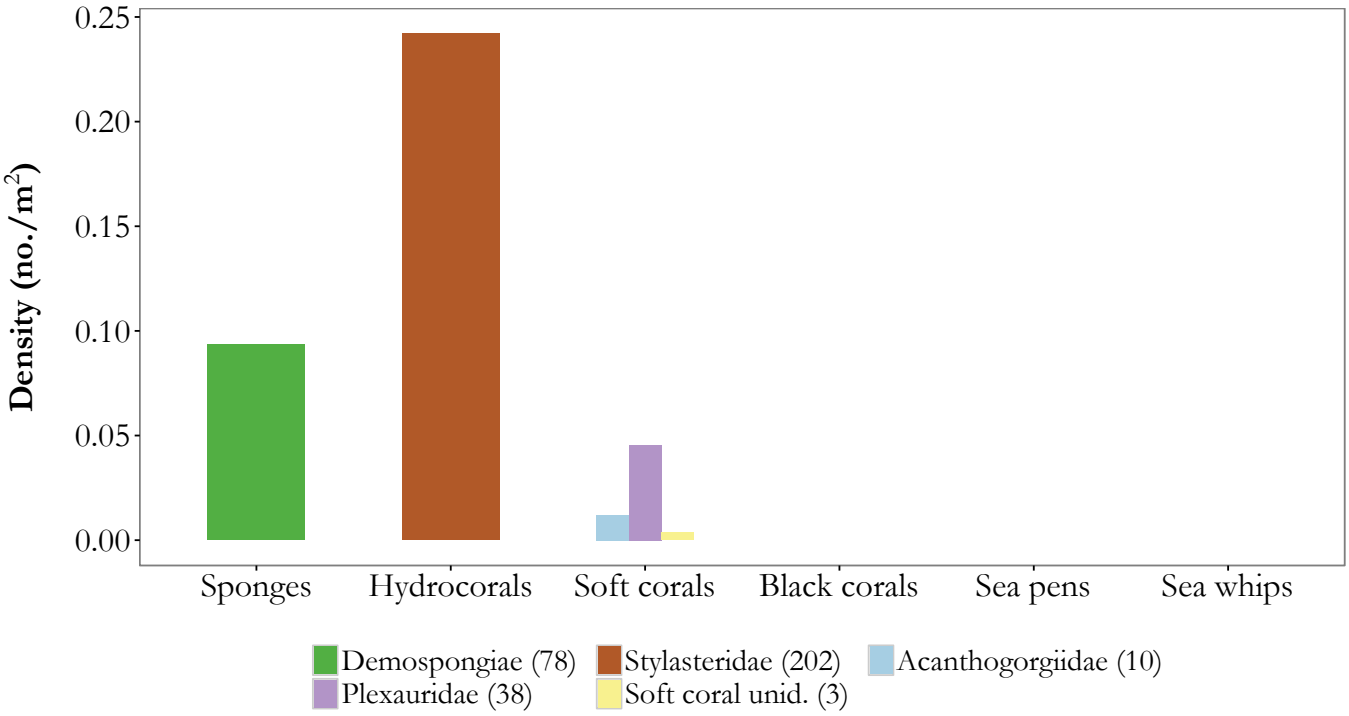
Substrate Composition



Images

Vertical Habitat Summary





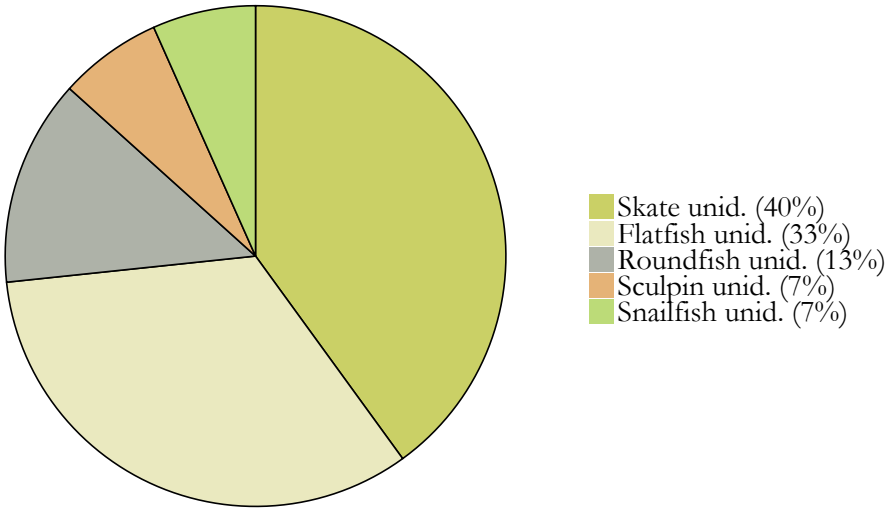
Summary - description of transect

Transect 2014-104: Primary and secondary substrates consisted largely of mixed coarse. Only 13 fishes were identified resulting in a low fish density of 0.02 individuals/m^2. Stylasteridae (0.24 individuals/m^2) and Demospongiae (0.09 individuals/m^2) comprised 85% of the structure-forming invertebrate density. Mean heights were calculated for Demospongiae (27 cm) and Plexauridae (12 cm).

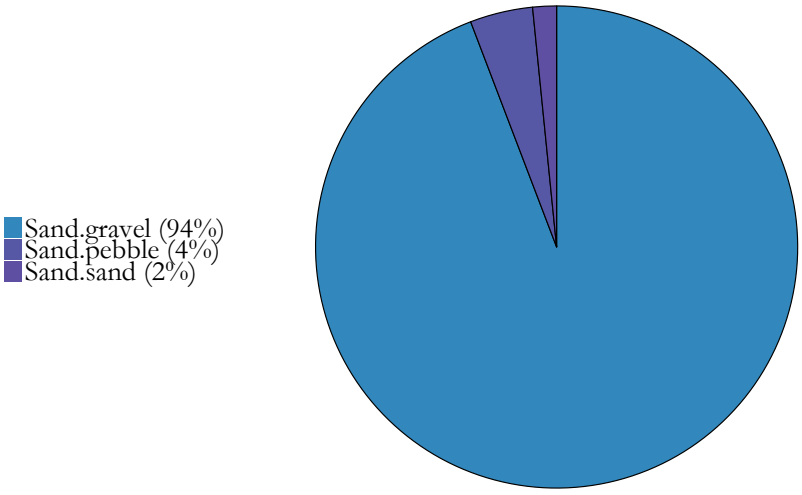
AREA: Samalga Pass to Seguam Pass — Transect 2014-105

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.12	-171.99	2,469	211	4.3

Fish and Crab Composition (n = 15)

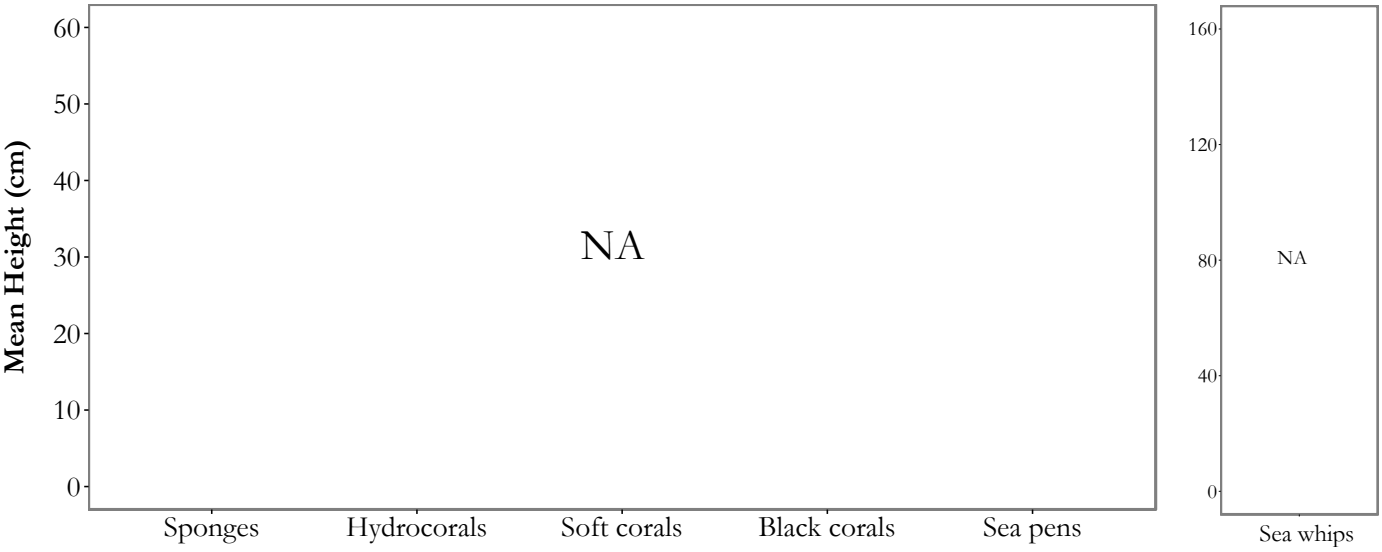


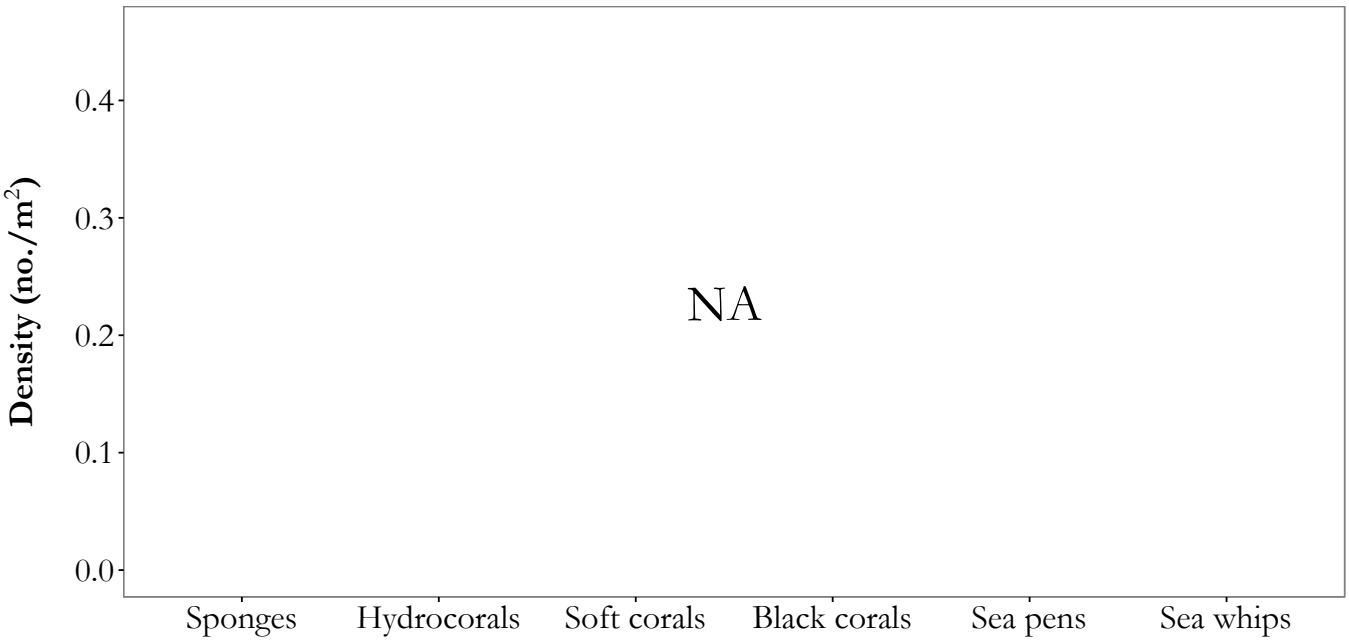
Substrate Composition



Images

Vertical Habitat Summary





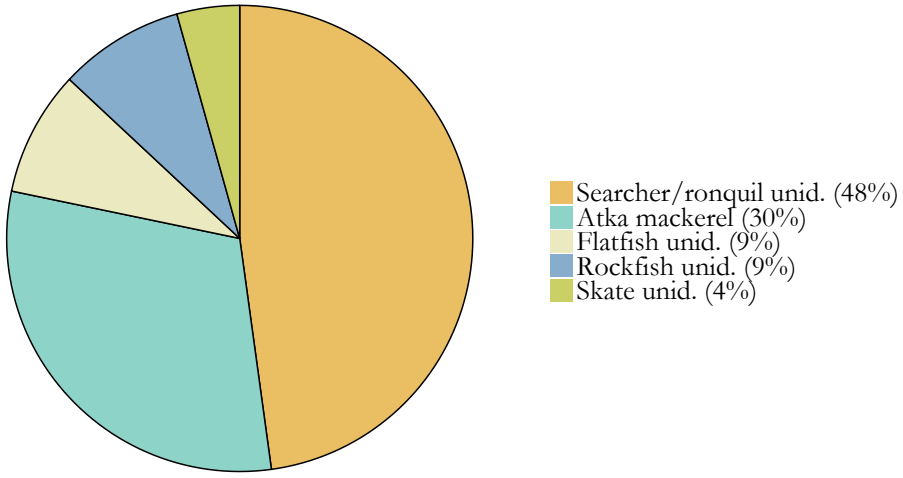
Summary - description of transect

Transect 2014-105: Primary and secondary substrates consisted largely of sand and gravel. Only 15 fishes were identified resulting in a density of 0.01 individuals/m^2. Skates (n = 6) and flatfishes (n = 5) accounted for 73% of the density. No structure-forming invertebrates were observed.

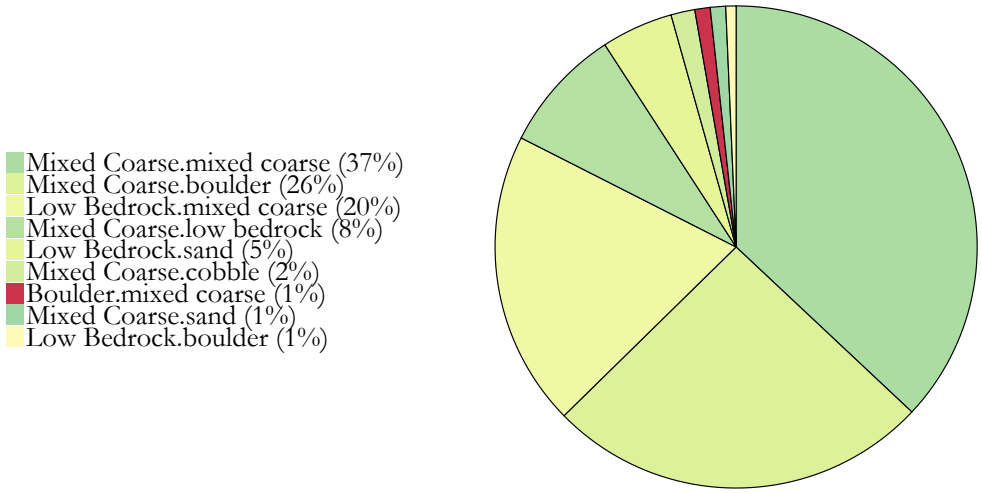
AREA: Samalga Pass to Seguam Pass — Transect 2014-106

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.09	-171.88	1,927	141	4.5

Fish and Crab Composition (n = 23)

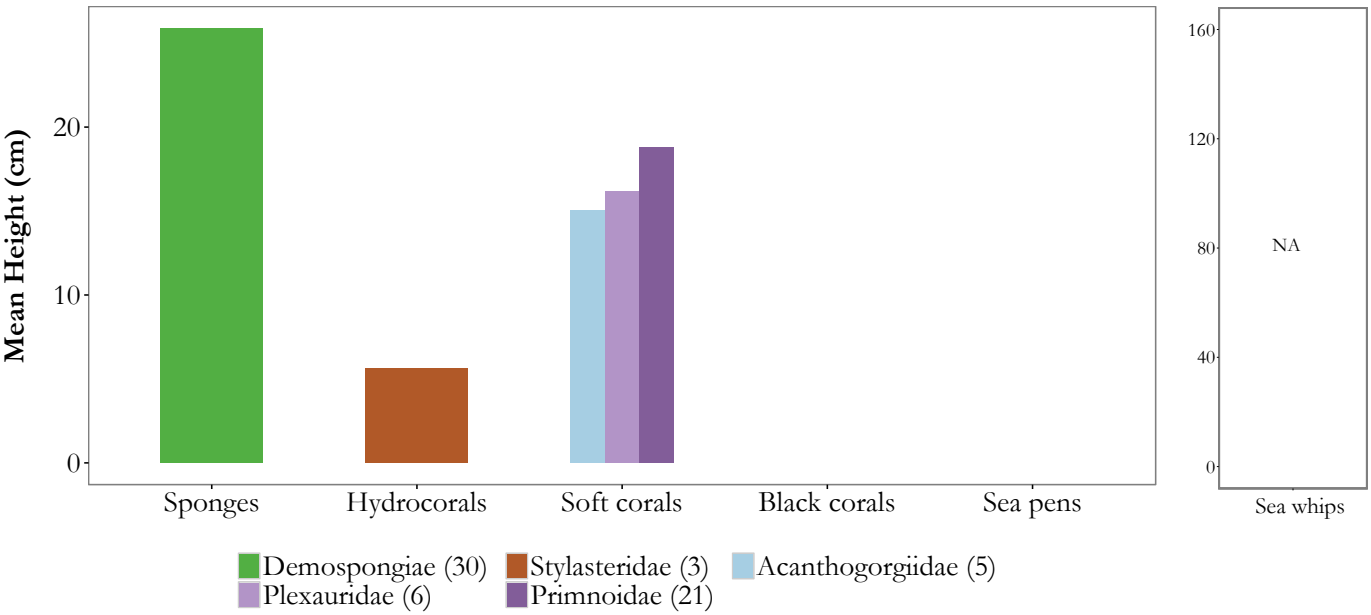


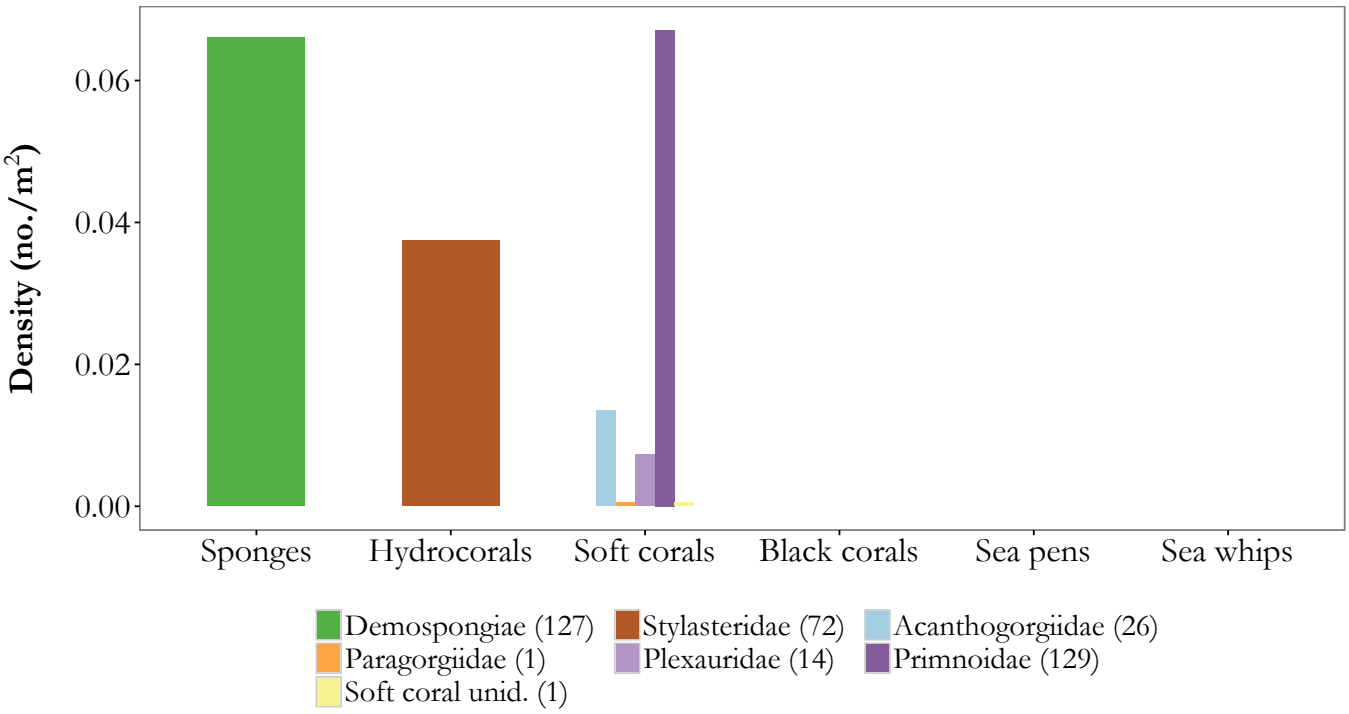
Substrate Composition



Images

Vertical Habitat Summary





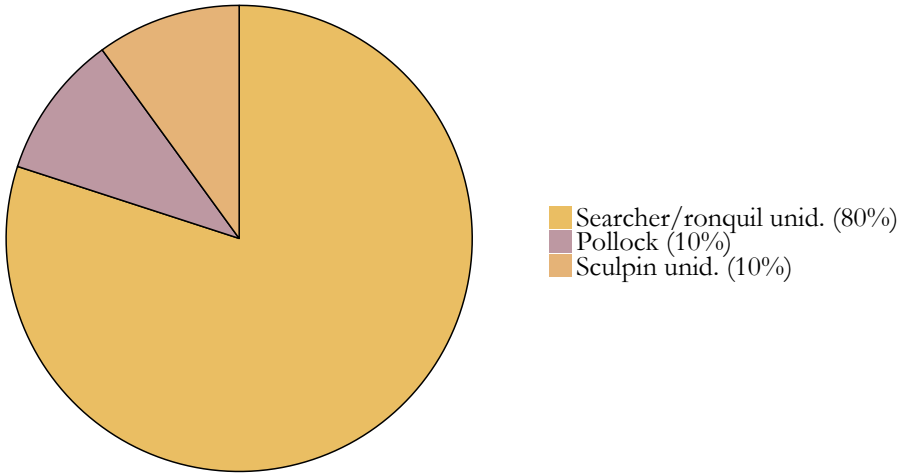
Summary - description of transect

Transect 2014-106: Almost 75% of the primary substrate consisted of mixed coarse. Secondary substrate was a mixture of sand, mixed coarse, boulder, cobble, and low bedrock. Overall fish density was low, 0.01 individuals/m^2, with searchers/ronquils (n = 11) being the most abundant. Primnoidae (0.07 individuals/m^2) and Demospongiae (0.07 individuals/m^2) were the most abundant structure-forming invertebrates. Mean heights were collected for Demospongiae (26 cm), Stylasteridae (6 cm), Acanthogorgiidae (15 cm), Plexauridae (16 cm), and Primnoidae (19 cm).

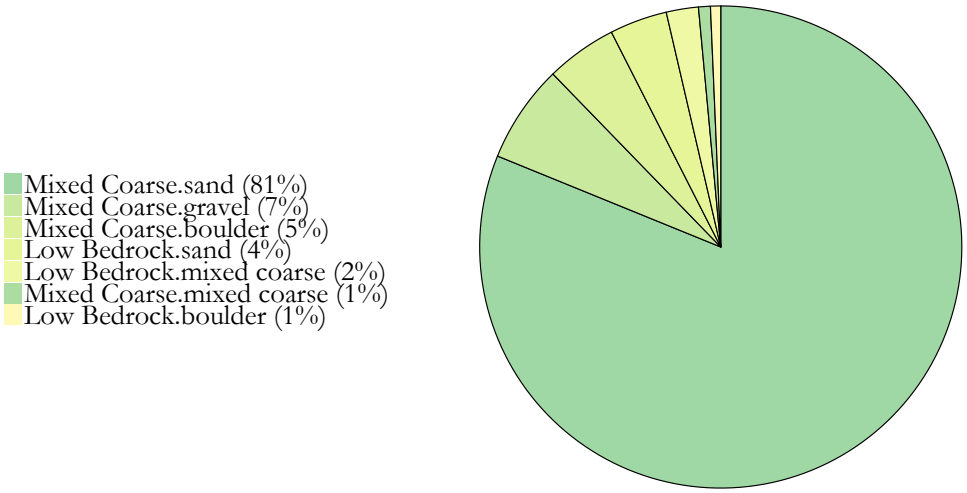
AREA: Samalga Pass to Seguam Pass — Transect 2014-107

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.09	-171.82	1,295	141	4.4

Fish and Crab Composition (n = 10)

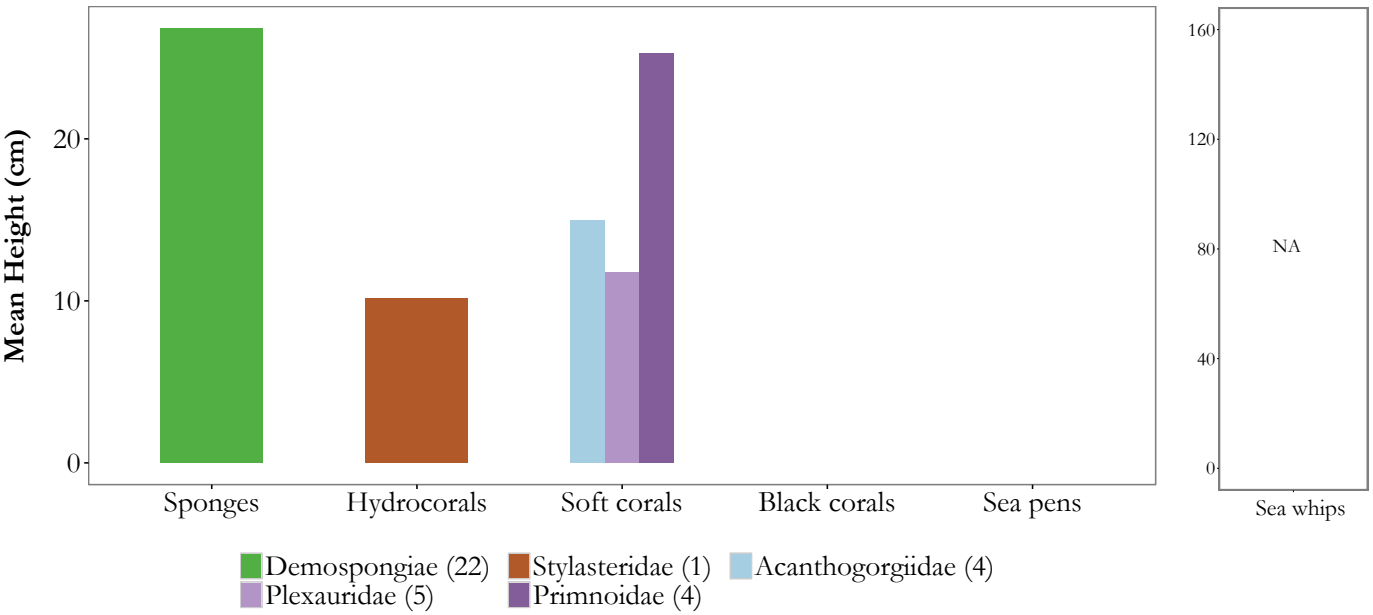


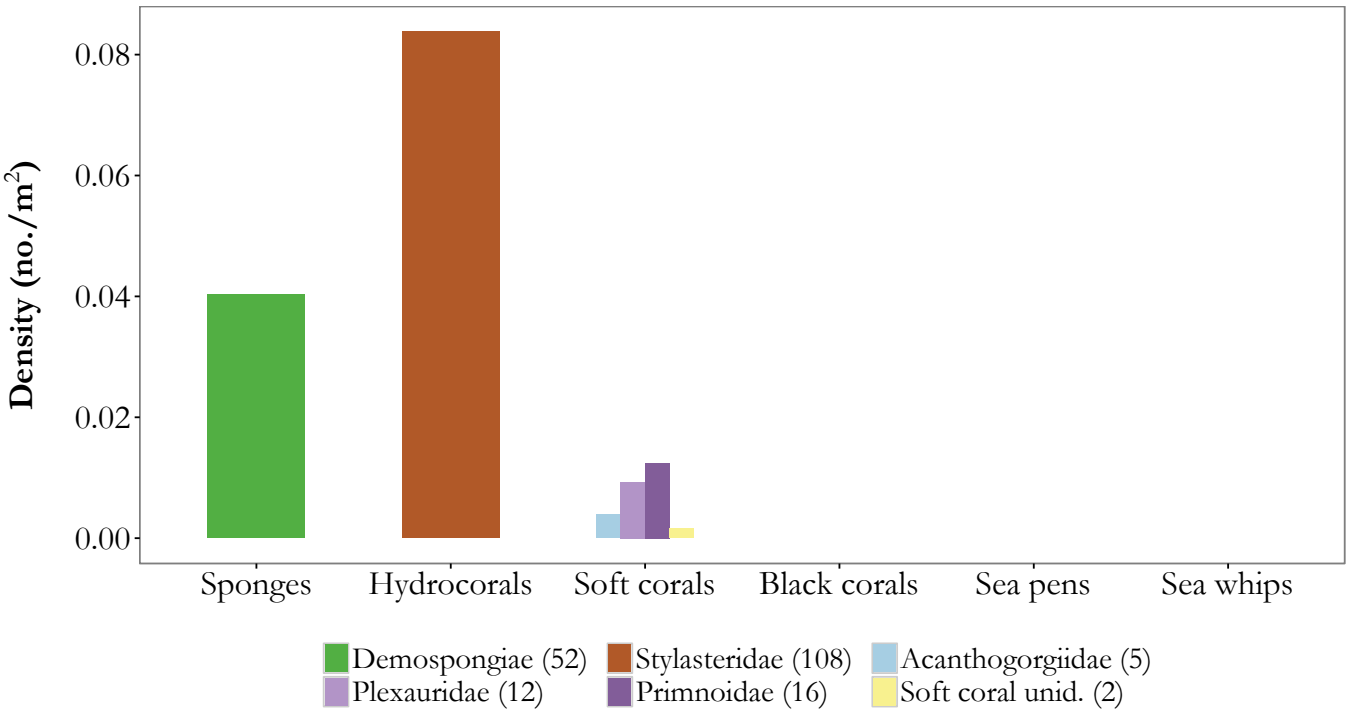
Substrate Composition



Images

Vertical Habitat Summary





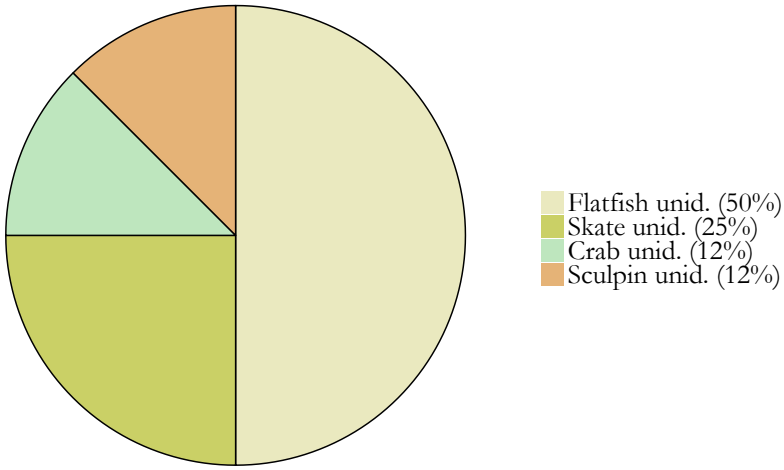
Summary - description of transect

Transect 2014-107: Primary and secondary substrates consisted largely of mixed coarse and sand. Only 10 fishes were identified; one walleye pollock, one sculpin, and eight searchers/ronquils. Fish density was only 0.01 individuals/m^2. Stylasteridae (0.08 individuals/m^2) and Demospongiae (0.04 individuals/m^2) comprised 83% of the structure-forming invertebrates. Mean heights ranged from 12 cm for Plexauridae to 27 cm for Demospongiae.

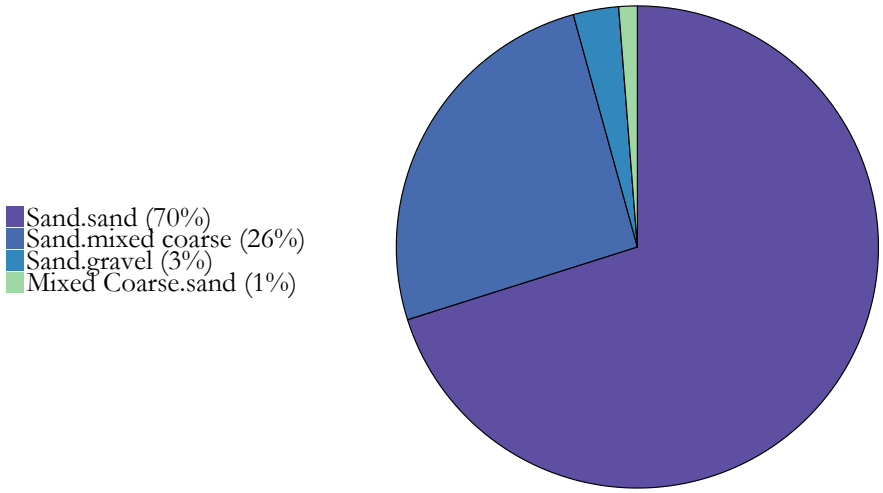
AREA: Samalga Pass to Seguam Pass — Transect 2014-108

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.08	-171.95	1,305	325	4.6

Fish and Crab Composition (n = 8)



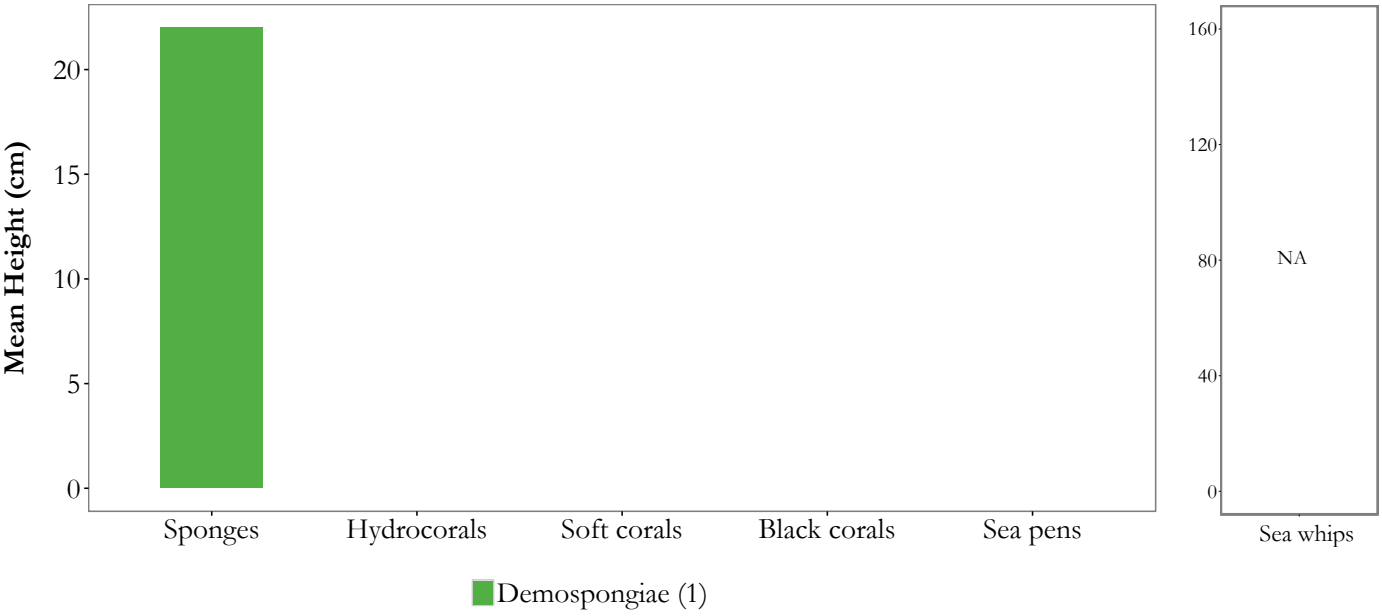
Substrate Composition

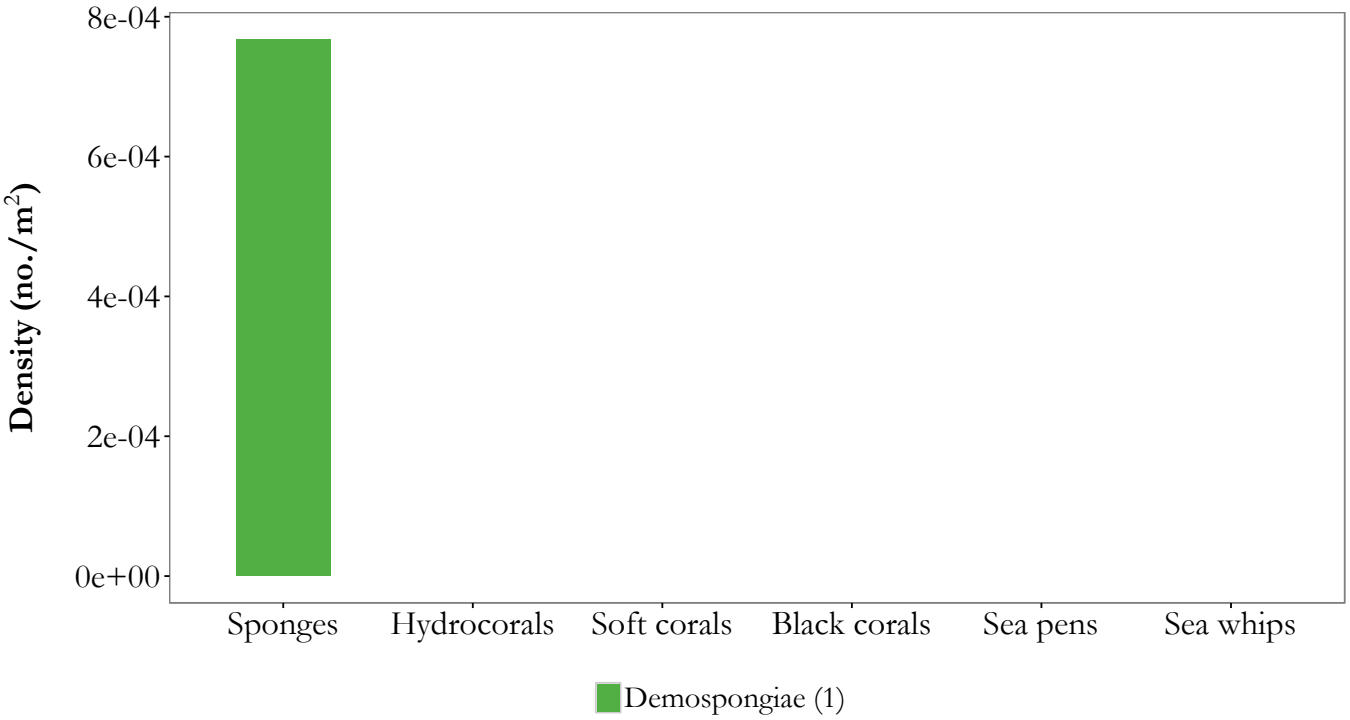


Images

AREA: Samalga Pass to Seguam Pass Transect 2014-108

Vertical Habitat Summary





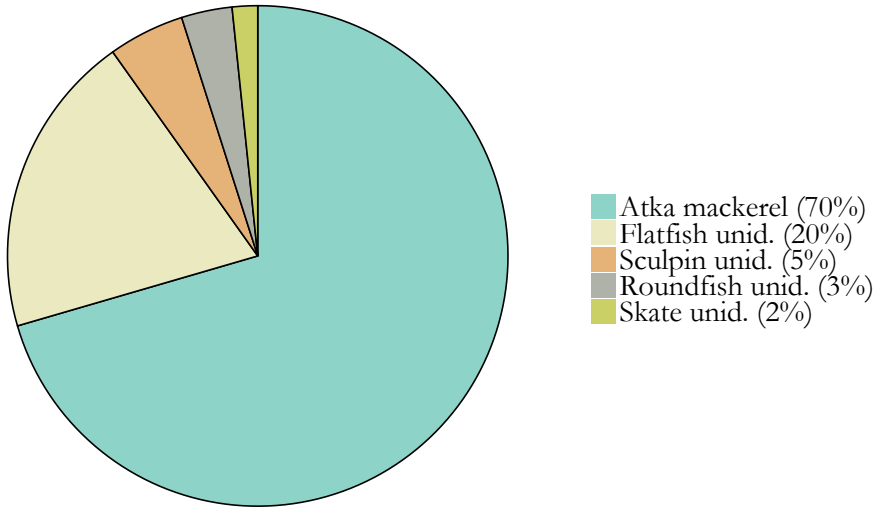
Summary - description of transect

Transect 2014-108: Primary and secondary substrates consisted of sand, mixed coarse, and gravel. Seven fishes and 1 crab were identified resulting in a density of 0.01 individuals/m^2. Only one Demospongiae was observed at a height of 22 cm.

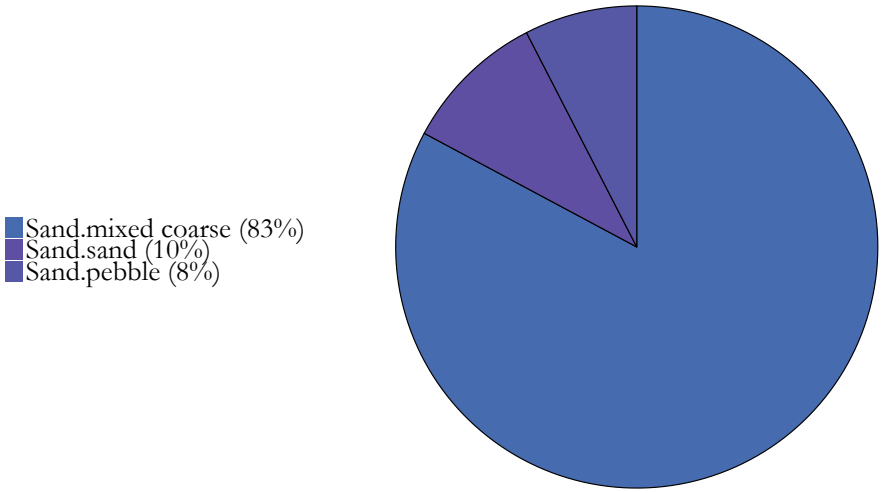
AREA: Samalga Pass to Seguam Pass — Transect 2014-109

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.09	-172.12	1,744	228	4.5

Fish and Crab Composition (n = 61)



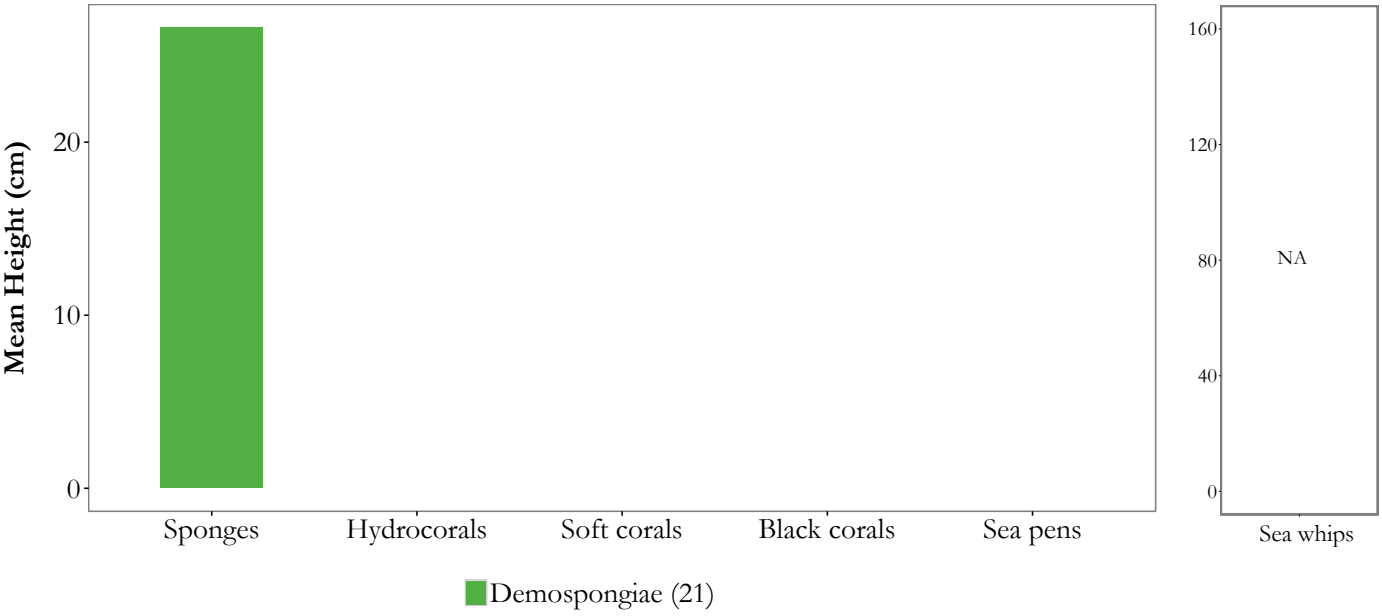
Substrate Composition

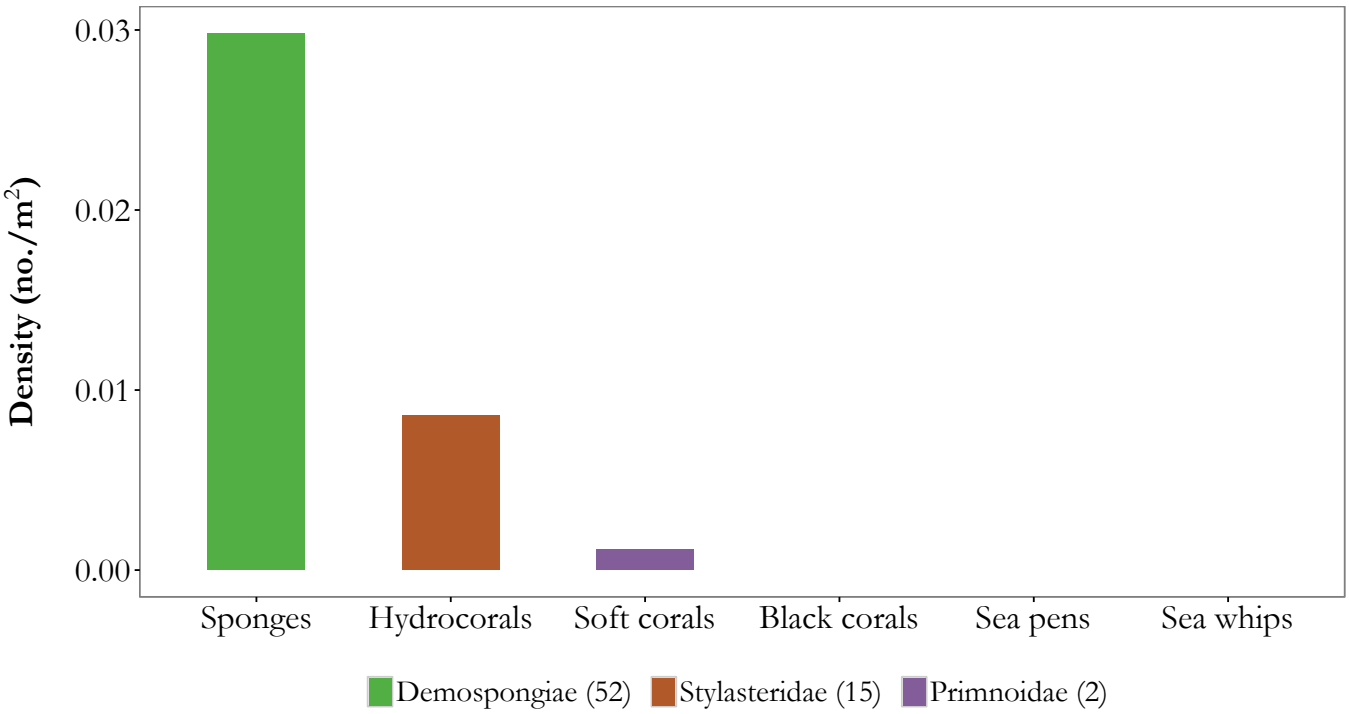


Images

AREA: Samalga Pass to Seguam Pass Transect 2014-109

Vertical Habitat Summary





Summary - description of transect

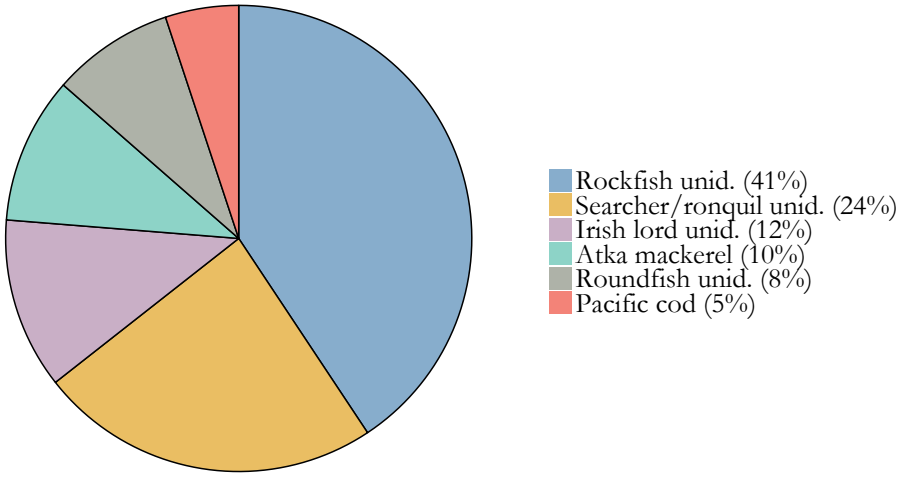
Transect 2014-109: Primary and secondary substrates consisted of sand, mixed coarse, and pebble. Atka mackerel (0.02 individuals/m^2) and flatfishes (0.01 individuals/m^2) comprised 90% of the fish density. Structure-forming invertebrate habitat consisted of Demospongiae (0.03 individuals/m^2), Stylasteridae (0.01 individuals/m^2), and Primnoidae (< 0.01 individuals/m^2). Twenty-one Demospongiae were measured for a mean height of 27 cm.

AREA: Samalga Pass to Seguam Pass — Transect *2014-110

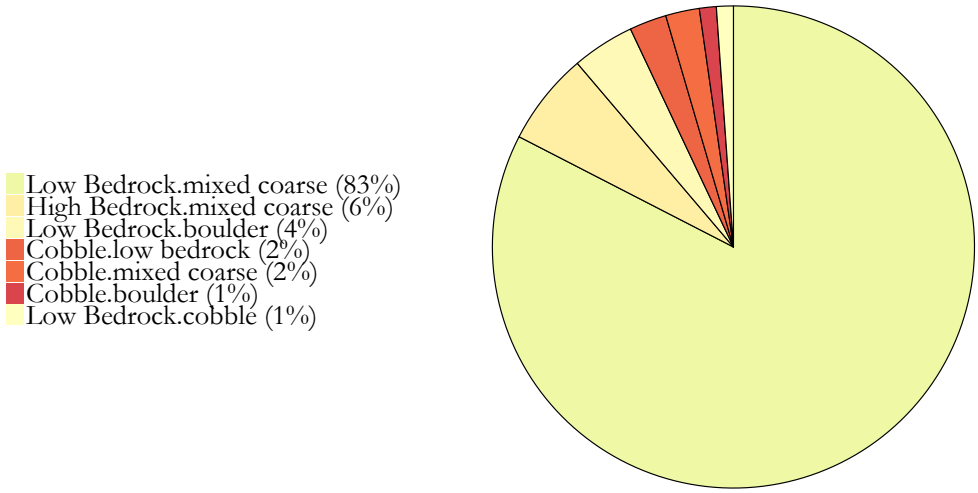
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/11/2014	52.04	-172.10	1,943	116	4.6

*Area of high coral or sponge density (> 1.0 individuals/m^2)

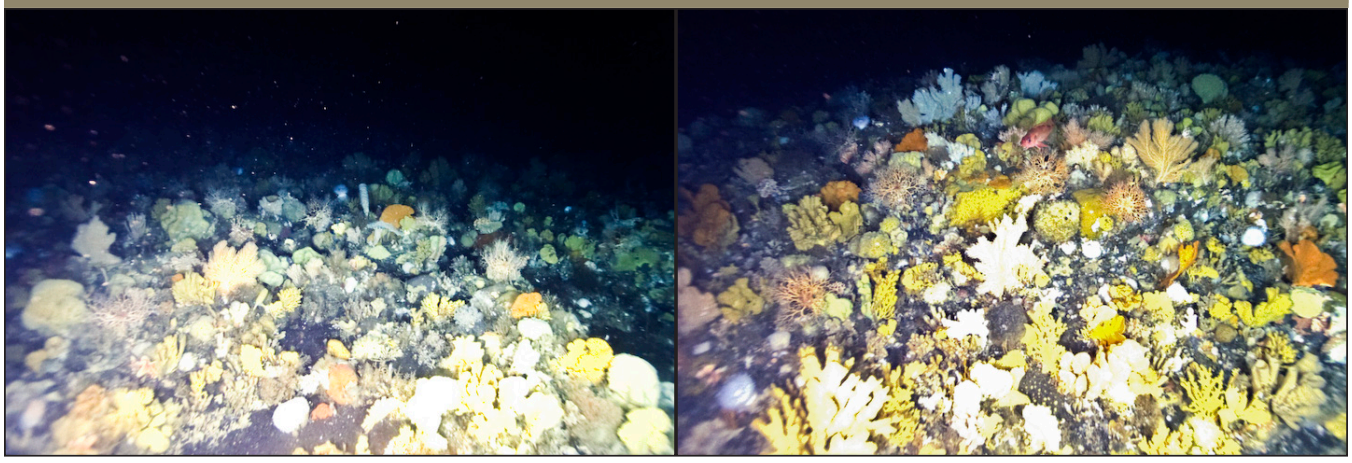
Fish and Crab Composition (n = 59)



Substrate Composition



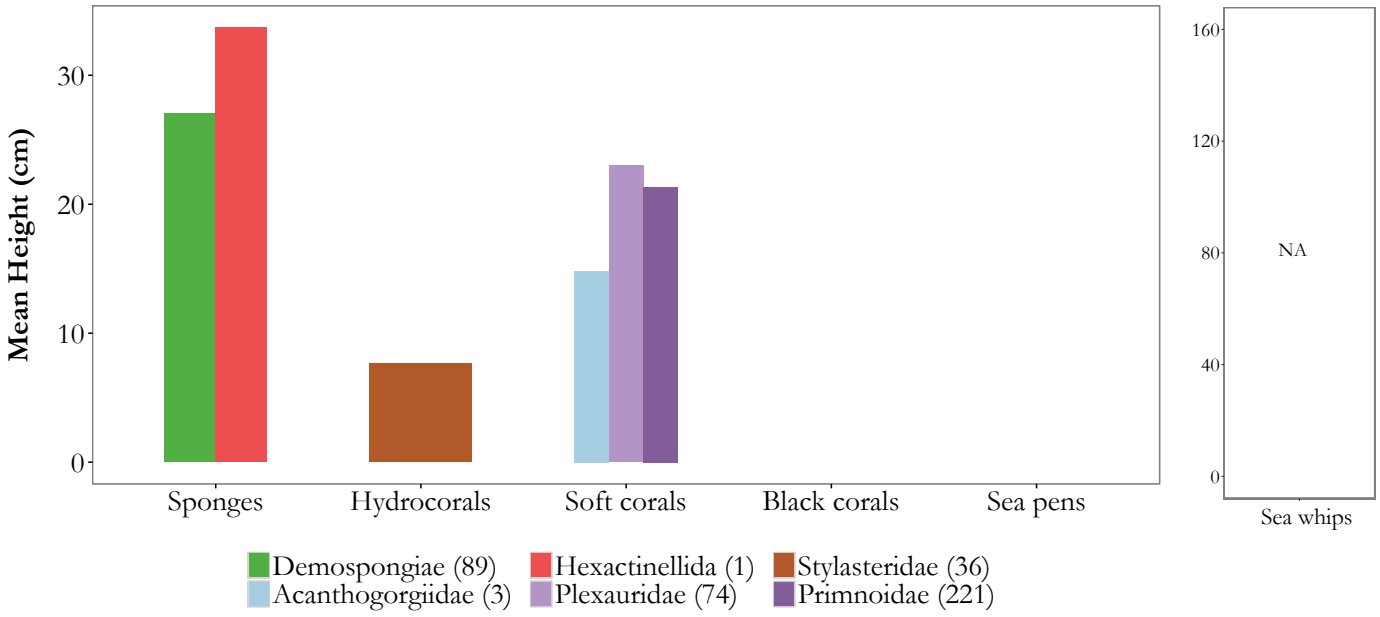
Images

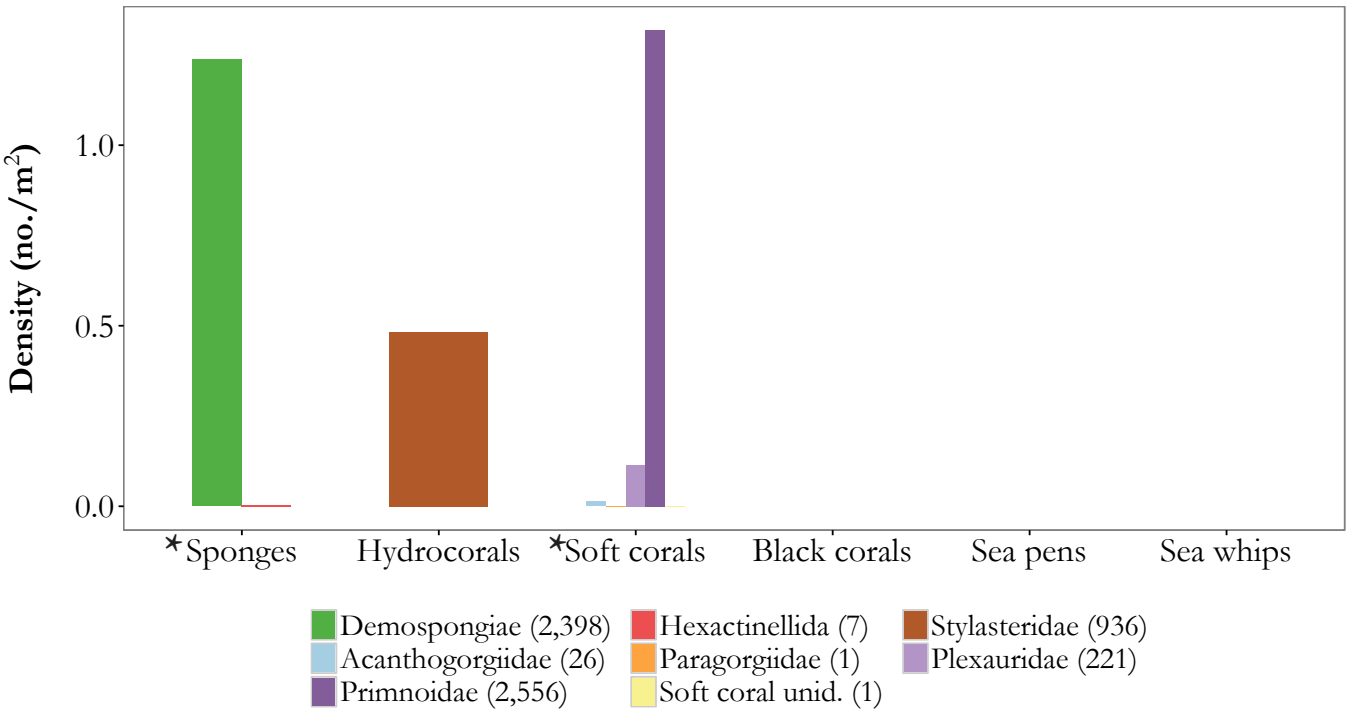


AREA: Samalga Pass to Seguam Pass Transect *2014-110

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

Transect 2014-110: Primary and secondary substrates for 83% of the haul were low bedrock and mixed coarse. Fish density was 0.03 individuals/m^2. Rockfishes (n = 24) and searchers/ronquils (n = 14) were the most abundant. Primnoidae (1.32 individuals/m^2) and Demospongiae (1.24 individuals/m^2) were the most abundant structure-forming invertebrates. Overall density was 3.17 individuals/m^2. Mean heights were collected for Hexactinellida (34), Demospongiae (27 cm), Stylasteridae (8 cm), Acanthogorgiidae (15 cm), Plexauridae (23 cm), and Primnoidae (21).

Seguam Pass to Amchitka Pass

Thirty-six transects were completed between Seguam Pass and Amchitka Pass. Depths ranged from 52 m to 866 m. Seventeen taxa of fishes and crabs were identified (Table 17). Vertical habitat was dominated by Demospongiae (Table 18). Heights ranged from 35 cm to 52 cm (Table 19).

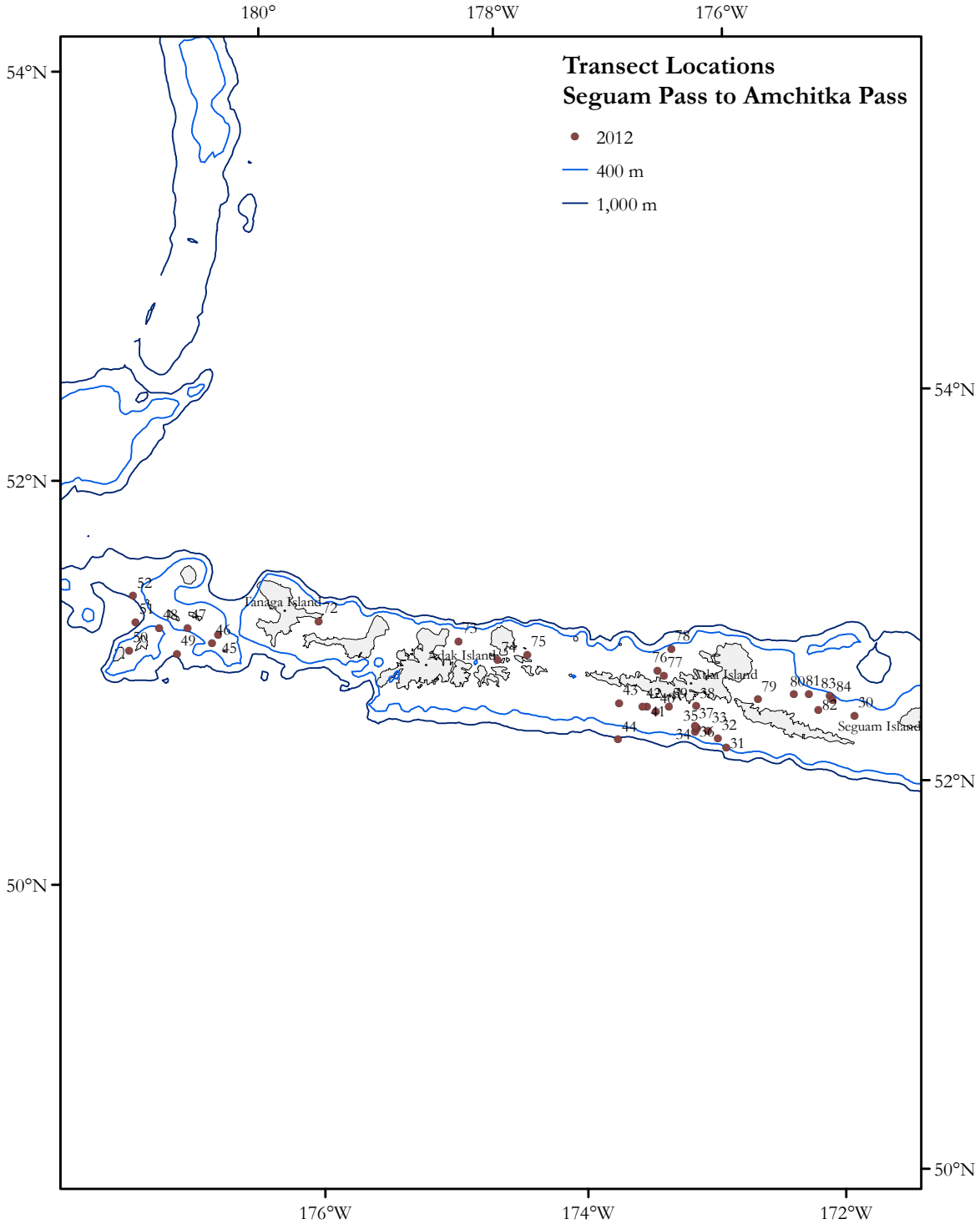


Figure 19. -- Survey transect locations, Pribilof Canyon.

SITE SUMMARY: Seguam Pass To Amchitka Pass

Amchitka Strait, referred to in this report as Amchitka Pass, is the third deepest pass in the Aleutian Archipelago with depths exceeding 700 m (Stabeno et. al 1999). Water flowing through Amchitka Pass and Amukta Pass to the east is the origin of the Aleutian North Slope current which becomes the Bering Slope current. Source of the flow through Amchitka Pass is mostly the Alaskan Stream.

Thirty-six transects were completed in this region (Fig. 19). Depths ranged from 52-866 m. The substrates between Seguam Pass and Amchitka Pass were over 50% sand. Bedrock and boulder were present in 40% of the remaining observations. (Table 16).

Seventeen taxa of fishes and crabs were identified (Table 17). Rockfishes were the most abundant taxa of fishes and crabs present.

Eleven taxa of corals, sponges, hydrocorals, sea pens, and sea whips were identified (Table 18). Sponges were the most abundant with Demospongiae (0.55 individuals/m^2) occurring at 35 of the 36 transects (Fig. 20).

Sponges were evenly distributed throughout the region (Fig. 20). Sea whips occurred at transects across the region but sea pens were more concentrated to the east (Fig. 21). Primnoidae and Plexauridae were abundant from east to west (Fig. 22). No Isididae were identified. Paragorgiidae and Acanthogorgiidae were only identified in the western transects (Fig. 23). Stylasteridae were found throughout the region (Fig. 24).

Heights ranged from 7 cm to 120 cm, with Demospongiae being the tallest vertical structure measured (Table 19). Mean heights ranged from 15 cm for Pennatulidae to 37 cm for Primnoidae and Demospongiae.

One high-density coral transect (2014-50) and four high density sponge stations (2012- 39, 41, 43, 46) occurred in the region between Seguam Pass and Amchitka Pass.

SITE SUMMARY: Seguam Pass To Amchitka Pass

Table 16. -- Summary of top 95% of primary and secondary substrates identified at 36 transects between Seguam Pass and Amchitka Pass.

Substrate	Minimum depth (m)	Maximum depth (m)	Number of hauls	Number of occurrences	Percent of occurrences
Sand.sand	42	880	29	16,285	50%
Sand.mud	47	814	3	1,798	5%
Sand.gravel	49	122	9	1,785	5%
Sand.boulder	39	872	19	1,632	5%
High Bedrock.high bedrock	54	116	9	1,250	4%
Sand.low bedrock	36	113	11	1,217	4%
Low Bedrock.mixed coarse	65	118	5	1,054	3%
Gravel.cobble	150	160	1	917	3%
Low Bedrock.sand	56	109	7	753	2%
Sand.high bedrock	56	112	7	724	2%
High Bedrock.gravel	77	85	5	590	2%
Low Bedrock.low bedrock	50	109	7	519	2%
Gravel.gravel	82	94	4	480	1%
Boulder.boulder	35	109	4	459	1%
Low Bedrock.boulder	34	115	10	388	1%
High Bedrock.low bedrock	57	101	4	325	1%
High Bedrock.boulder	56	116	6	311	1%
High Bedrock.mixed coarse	80	92	5	289	1%
Gravel.mixed coarse	67	94	3	278	1%

SITE SUMMARY: Seguam Pass To Amchitka Pass

Table 17. -- Summary of fishes and crabs identified at 36 transects between Seguam Pass and Amchitka Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Fishes				
Rockfish unid.	601	18	52-701	0.01
Atka mackerel	278	5	68-106	< 0.01
Grenadier unid.	133	6	52-866	< 0.01
Searcher/ronquil unid.	109	19	52-121	< 0.01
Eelpout unid.	102	8	110-866	< 0.01
Sculpin unid.	75	21	52-810	< 0.01
Roundfish unid.	74	22	52-701	< 0.01
Irish lord unid.	72	4	68-110	< 0.01
Flatfish unid.	68	21	52-440	< 0.01
Pacific cod	18	8	52-106	< 0.01
Snailfish unid.	13	3	440-810	< 0.01
Skate unid.	8	6	106-810	< 0.01
Walleye pollock	5	2	85-106	< 0.01
Thornyhead unid.	2	1	555-555	< 0.01
Crabs				
Crab unid.	16	8	105-866	< 0.01
Snow crab unid.	11	3	121-866	< 0.01
King crab unid.	10	4	309-810	< 0.01

SITE SUMMARY: Seguam Pass To Amchitka Pass

Table 18. -- Summary of sponges, corals, Pennatulaceans, and hydrocorals identified at 36 transects between Seguam Pass and Amchitka Pass.

Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Sponges				
Demospongiae	22,798	35	52-866	0.55
Hexactinellida	71	17	52-866	< 0.01
Calcarea	4	2	56-97	< 0.01
Soft corals				
Primnoidae	7,452	22	52-866	0.14
Plexauridae	1,858	21	52-866	0.02
Paragorgiidae	121	3	56-106	< 0.01
Acanthogorgiidae	41	3	56-82	< 0.01
Soft coral unid.	3	2	85 101	< 0.01
Pennatulaceans				
Pennatulidae	411	15	56-155	0.01
Halipteridae	201	9	79-866	0.01
Hydrocorals				
Stylasteridae	337	13	56-866	0.01

Table 19. -- Summary of sponge, coral, Pennatulacean, and hydrocoral heights from transects completed between Seguam Pass and Amchitka Pass.

Species/Grouping	Number measured	Minimum height (cm)	Maximum height (cm)	Mean height (cm)
Sponges				
Demospongiae	777	20	120	37
Hexactinellida	13	20	36	26
Soft corals				
Primnoidae	924	7	115	37
Plexauridae	120	10	53	30
Paragorgiidae	4	16	52	29
Acanthogorgiidae	3	9	34	23
Soft coral unid.	2	23	43	33
Pennatulaceans				
Pennatulidae	65	7	24	15
Halipteridae	10	16	89	33
Hydrocorals				
Stylasteridae	8	11	28	20

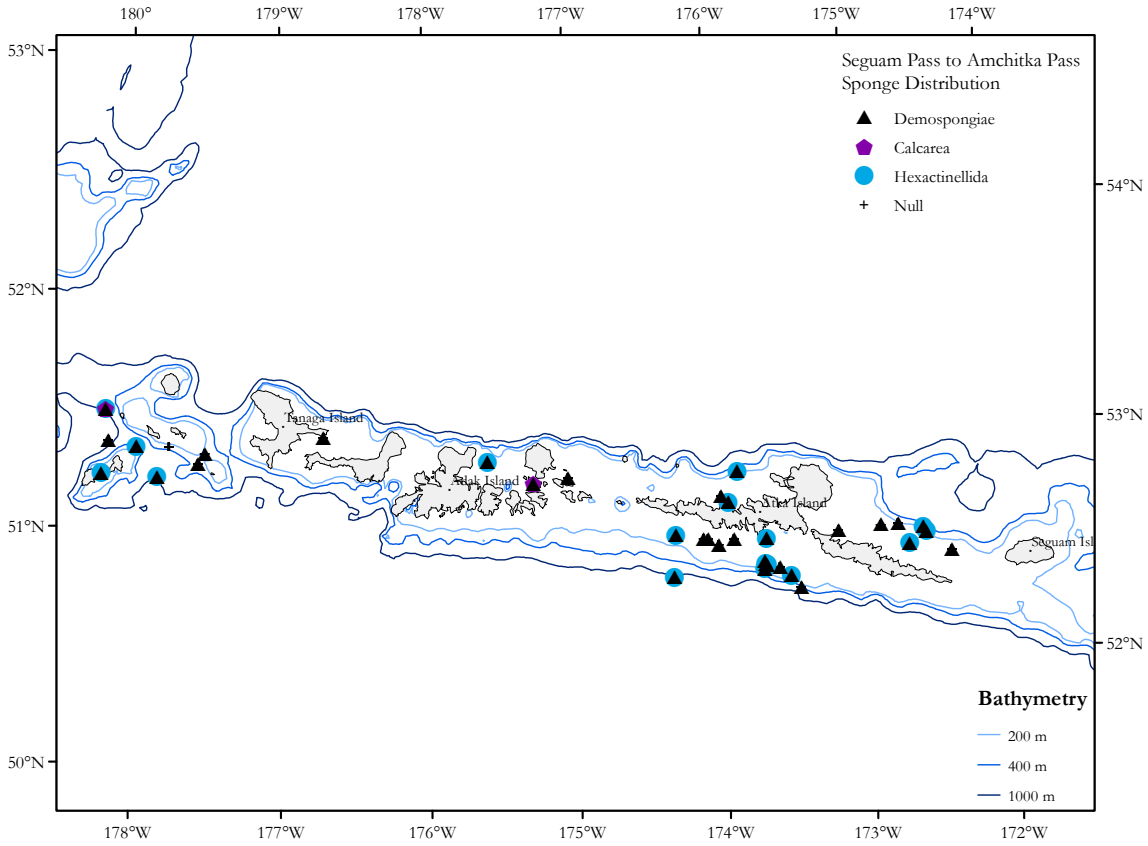


Figure 20. -- Sponge distribution, Seguam Pass to Amchitka Pass.

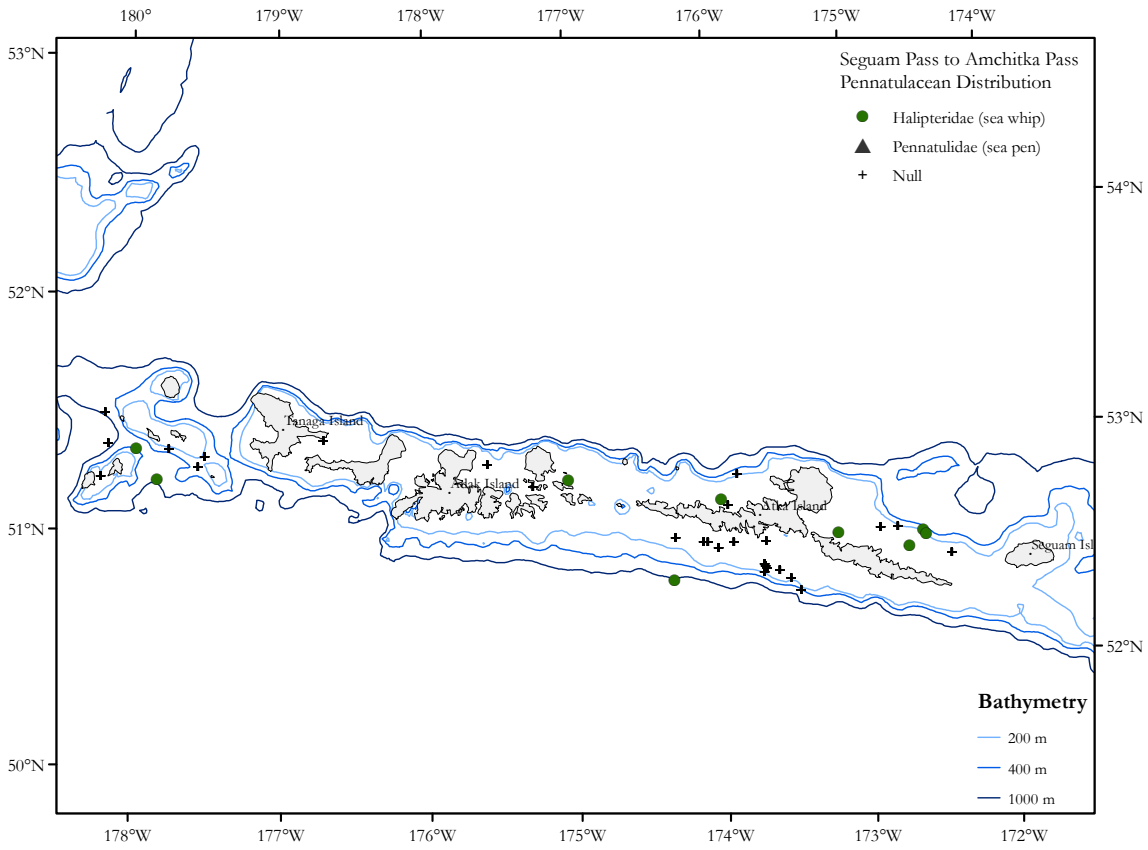


Figure 21. -- Pennatulacean distribution, Seguam Pass to Amchitka Pass.

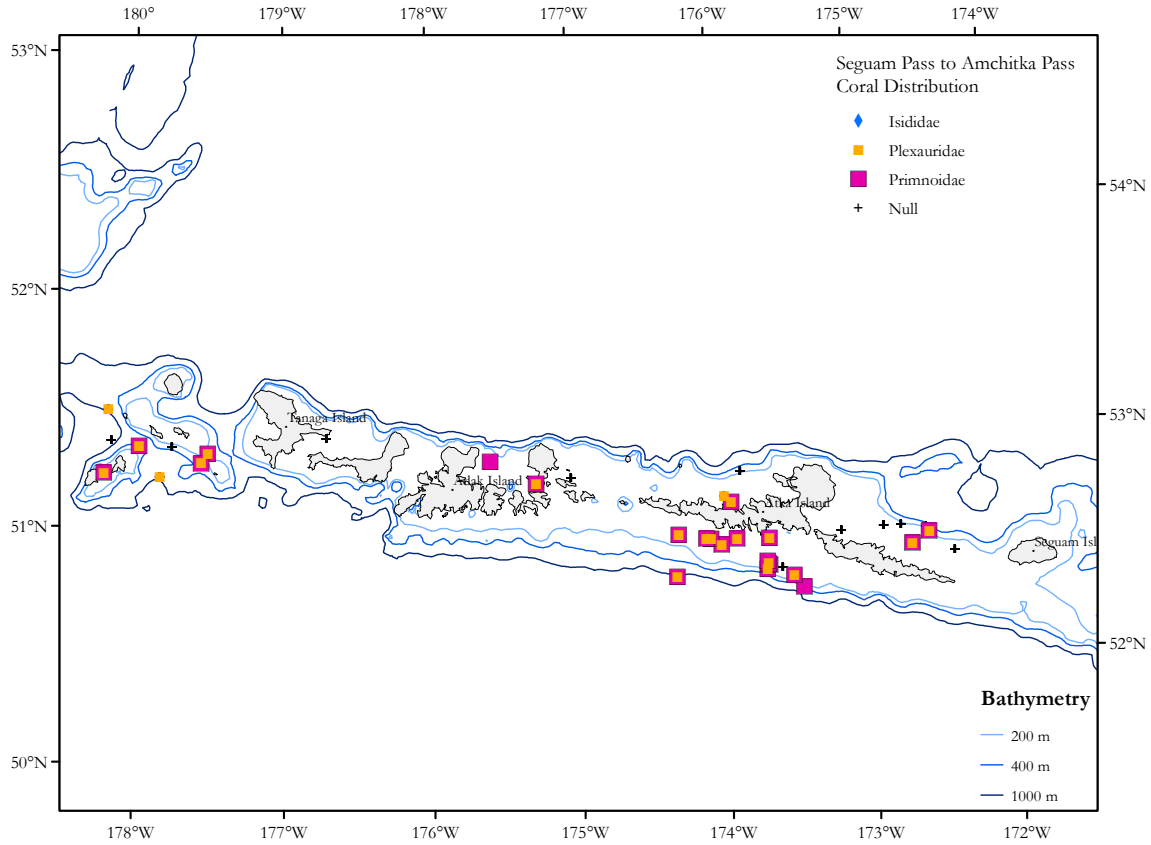


Figure 22. -- Isididae, Plexauridae, and Primnoidae distribution, Seguam Pass to Amchitka Pass.

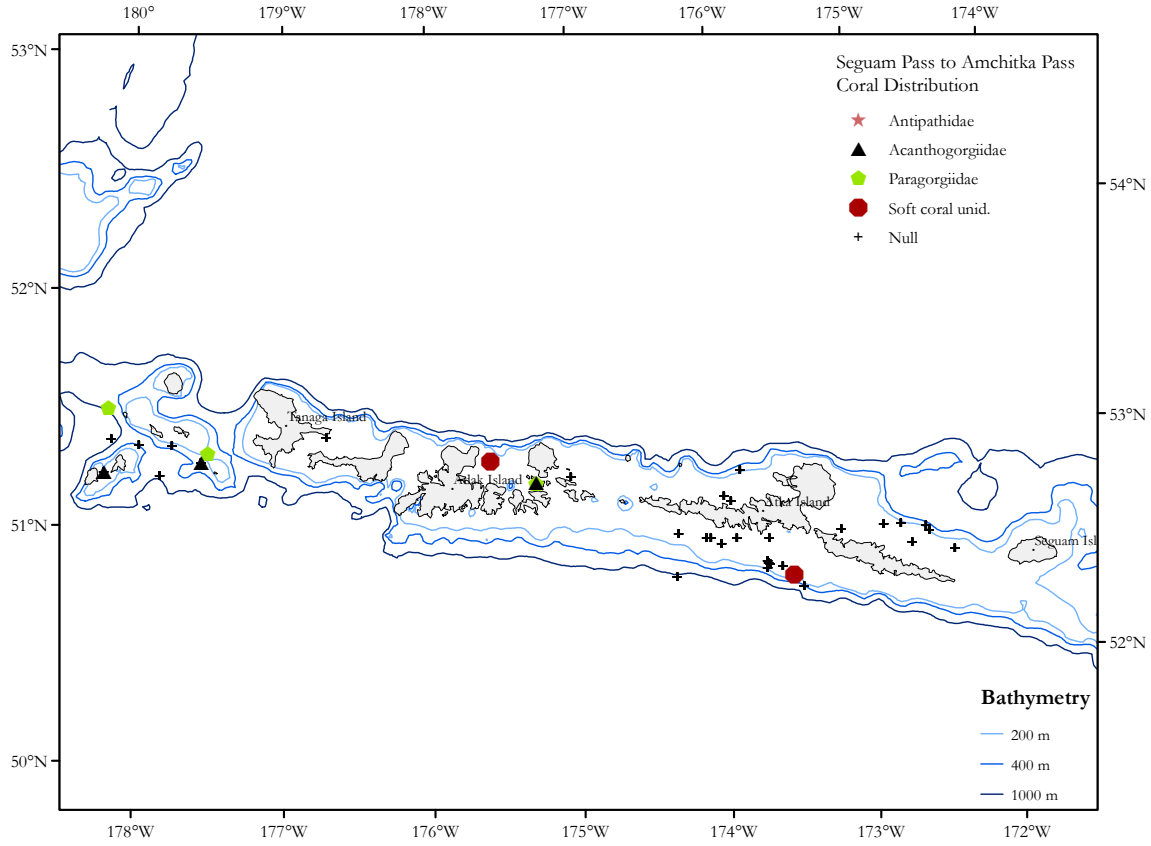


Figure 23. -- Antipathidae, Acanthogorgiidae, Paragorgiidae, and soft coral unidentified distribution, Seguam Pass to Amchitka Pass.

SITE SUMMARY: Seguam Pass To Amchitka Pass

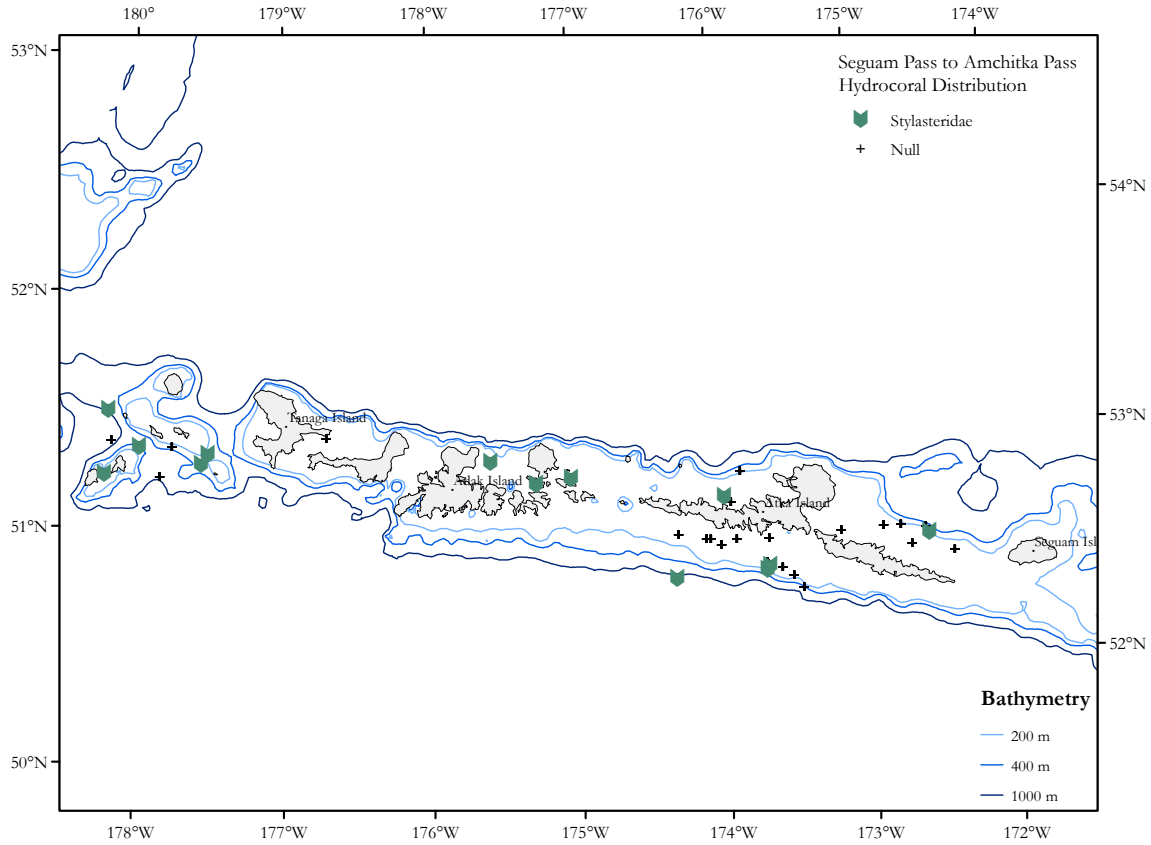
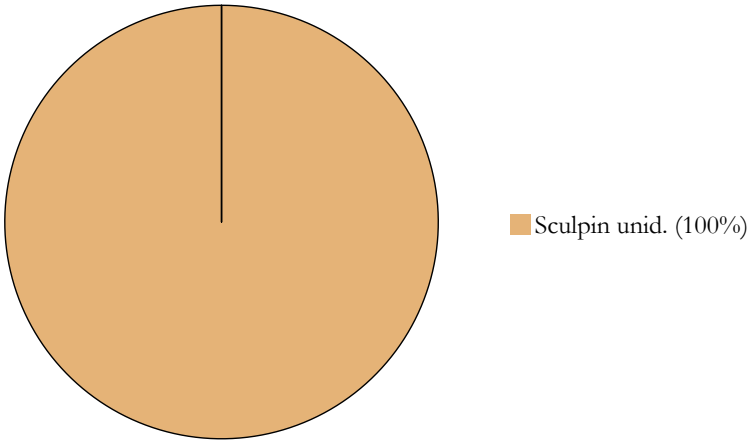


Figure 24. -- Hydrocoral distribution, Seguam Pass to Amchitka Pass.

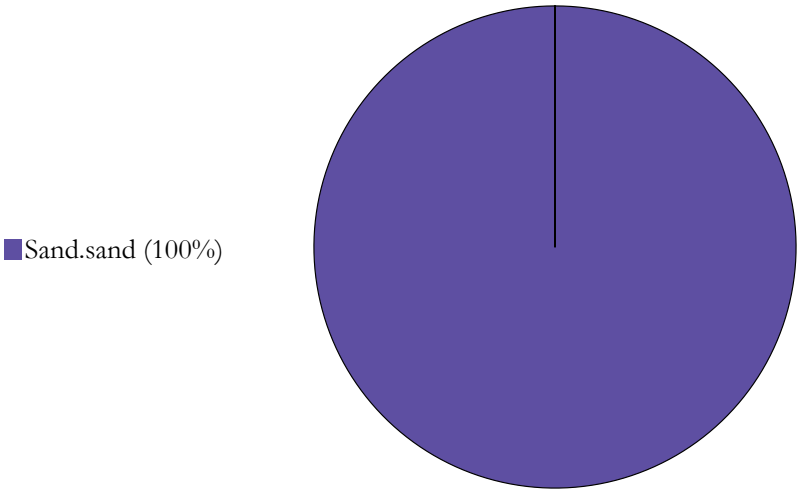
AREA: Seguam Pass To Amchitka Pass — Transect 2012-30

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/19/2012	52.23	-173.02	1,091	126	4.4

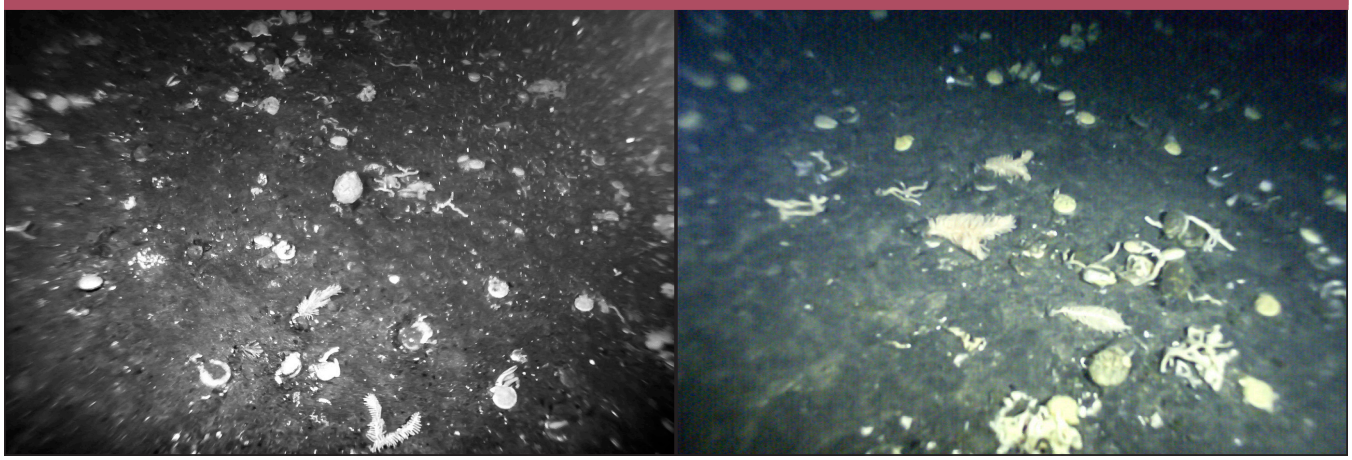
Fish and Crab Composition (n = 4)



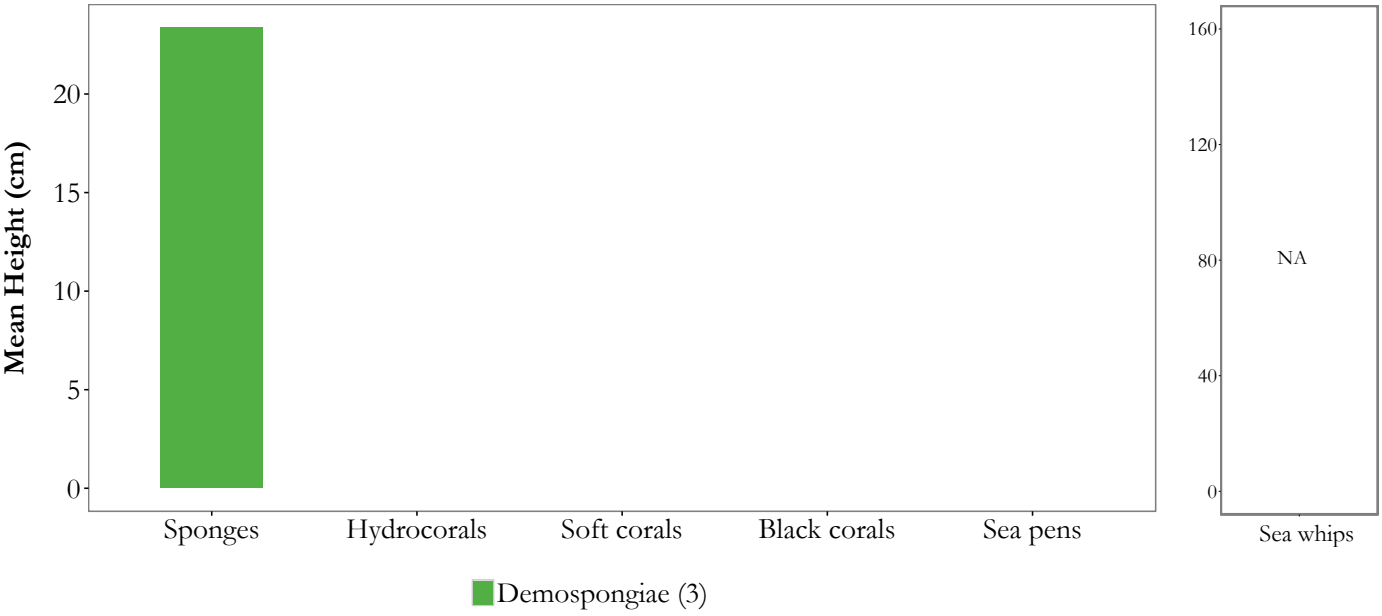
Substrate Composition

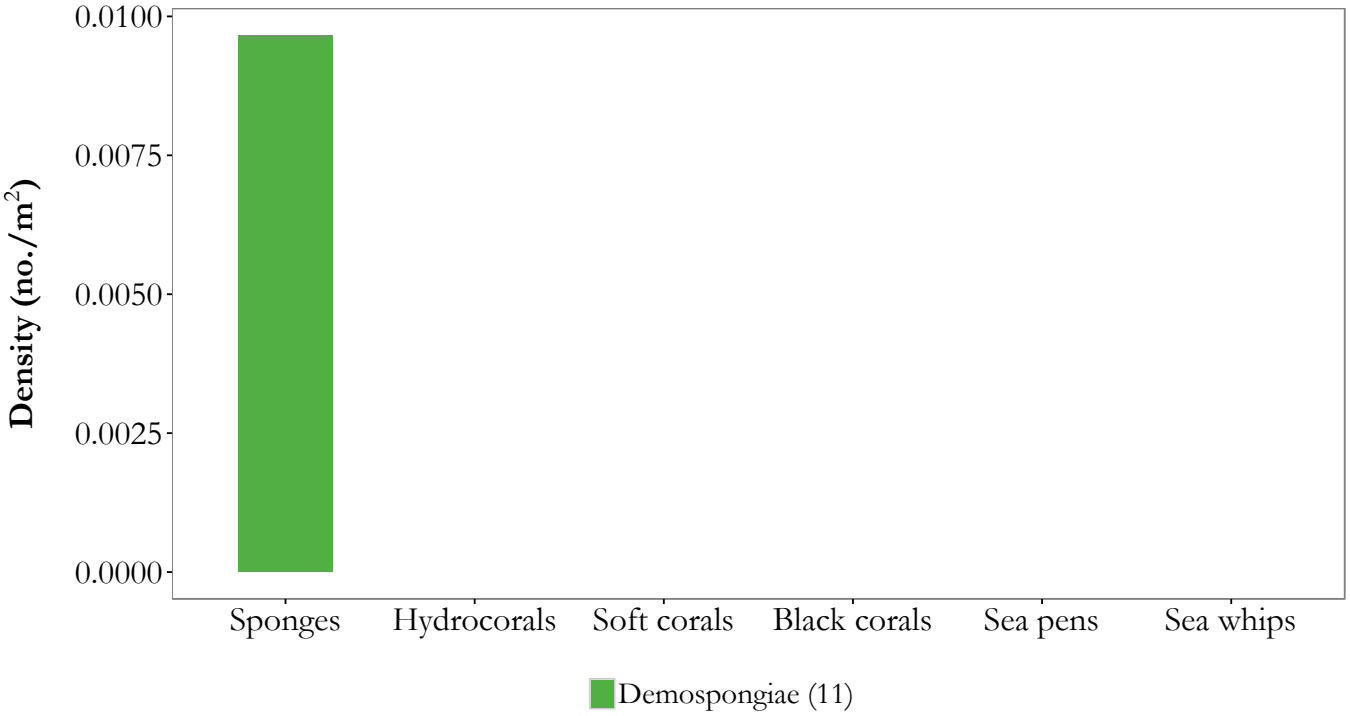


Images



Vertical Habitat Summary





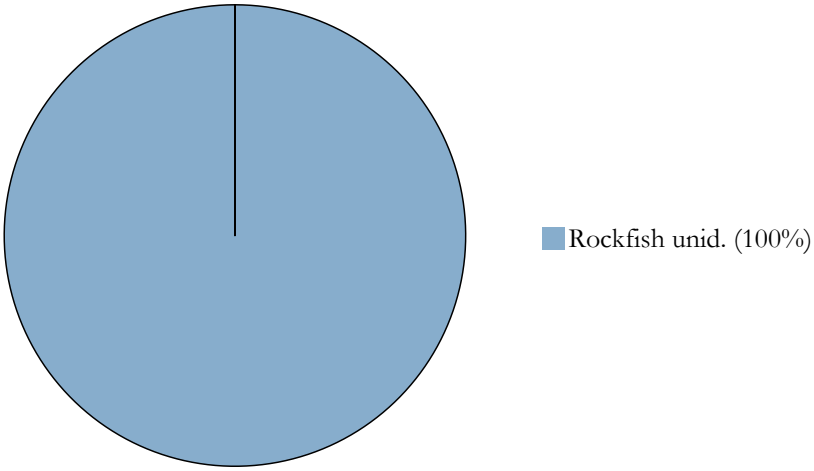
Summary - description of transect

Transect 2012-30: Primary and secondary substrates consisted entirely of sand. Only four sculpins were identified in this transect accounting for a low fish density of < 0.01 individuals/m^2. Demospongiae density was low (0.01 individuals/m^2). Mean height for the three individuals measured was 23 cm. No corals, sea whips, sea pens, or hydrocorals were observed.

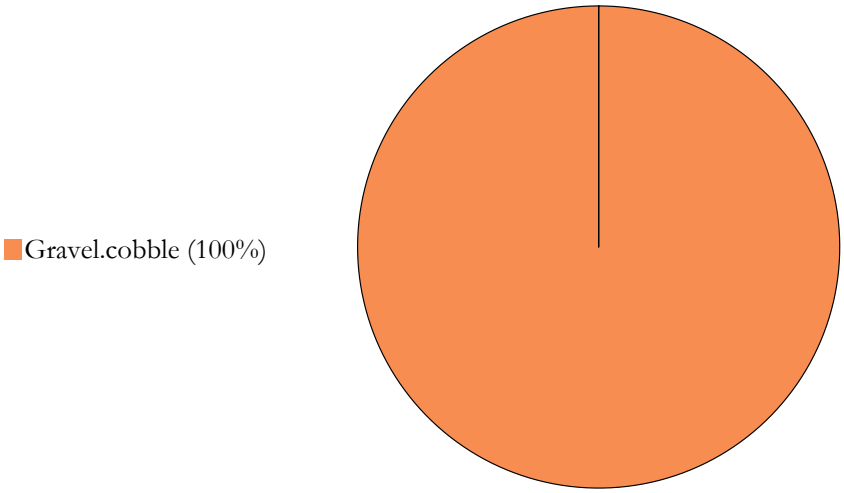
AREA: Seguam Pass To Amchitka Pass — Transect 2012-31

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.87	-173.99	1,567	155	5.2

Fish and Crab Composition (n = 4)



Substrate Composition



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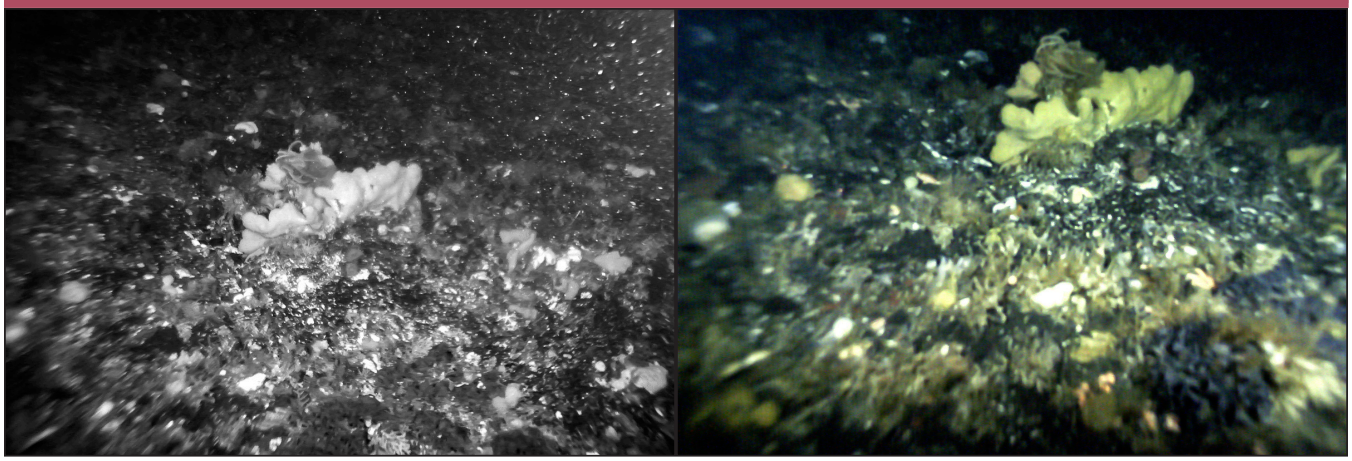
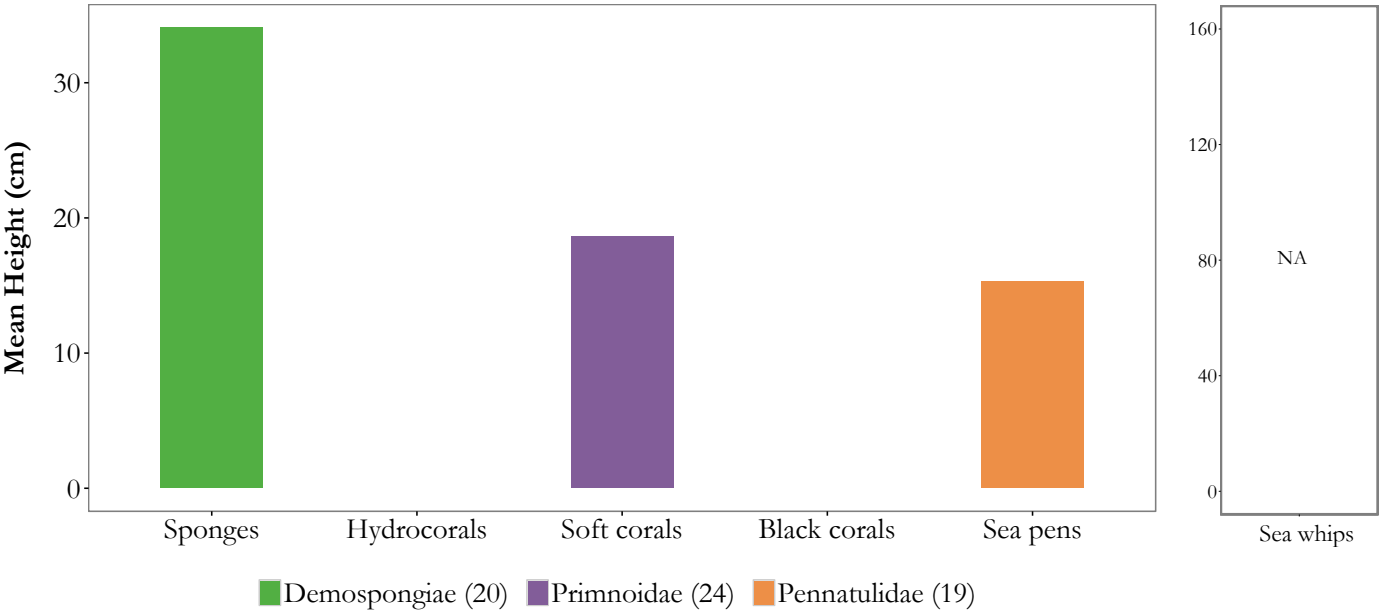
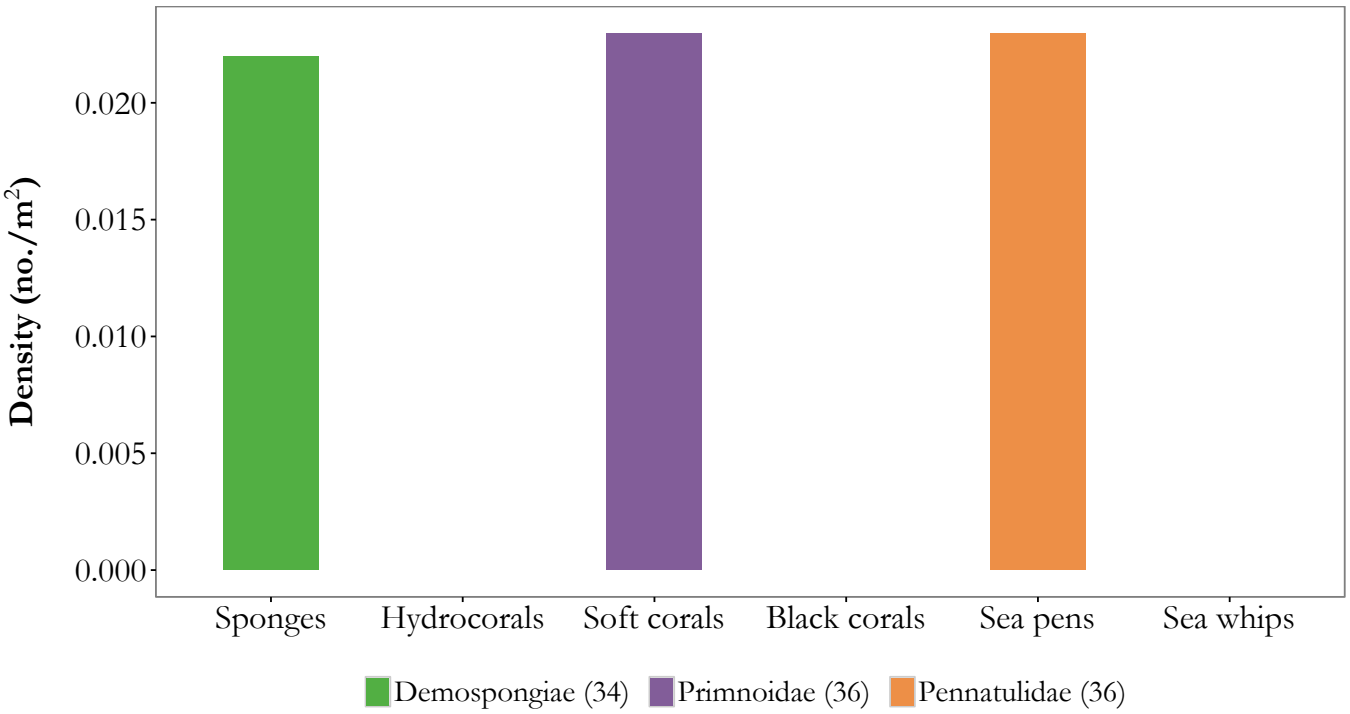


Vertical Habitat Summary





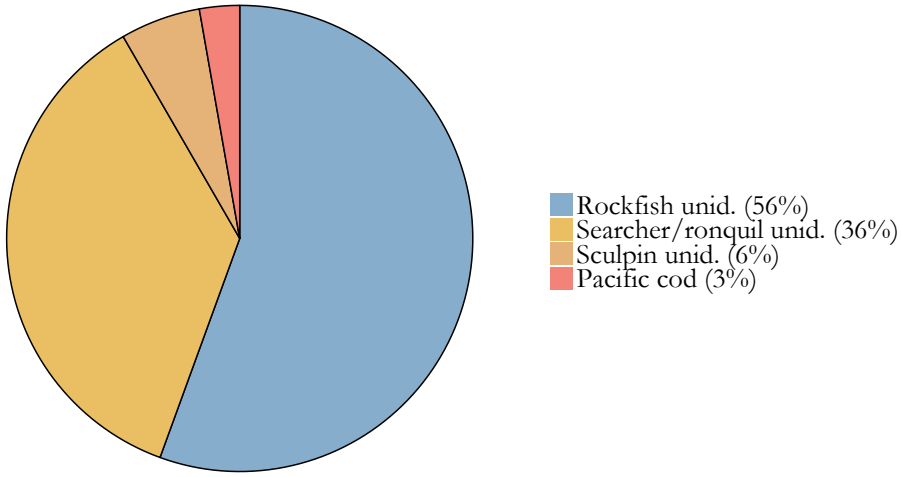
Summary - description of transect

Transect 2012-31: Primary and secondary substrates consisted of gravel and cobble. Only four rockfishes were identified in this transect accounting for a low fish density of < 0.01 individuals/m^2. Structure-forming invertebrate density (0.07 individuals/m^2) was evenly distributed between Demospongiae, Primnoidae, and Pennatulidae. Mean heights were 34 cm, 19 cm, and 15 cm, respectively.

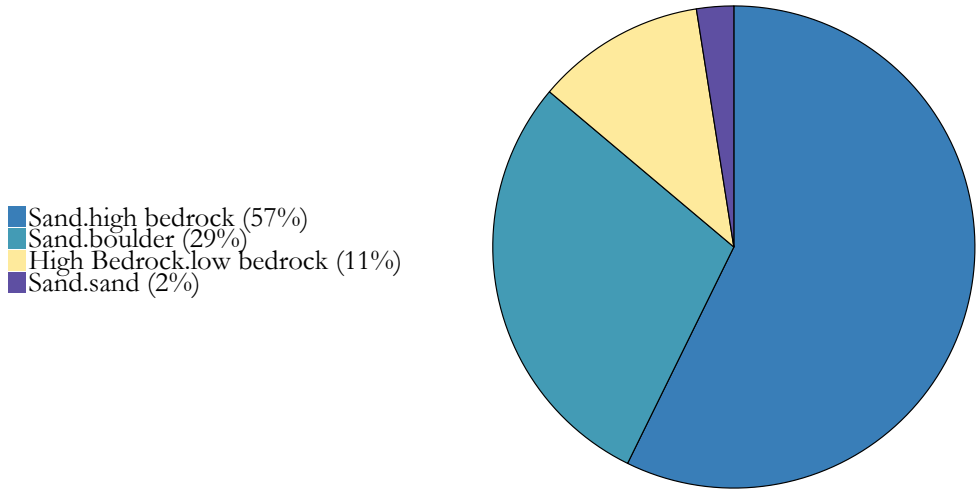
AREA: Seguam Pass To Amchitka Pass — Transect 2012-32

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.91	-174.09	2,015	101	5.1

Fish and Crab Composition (n = 36)

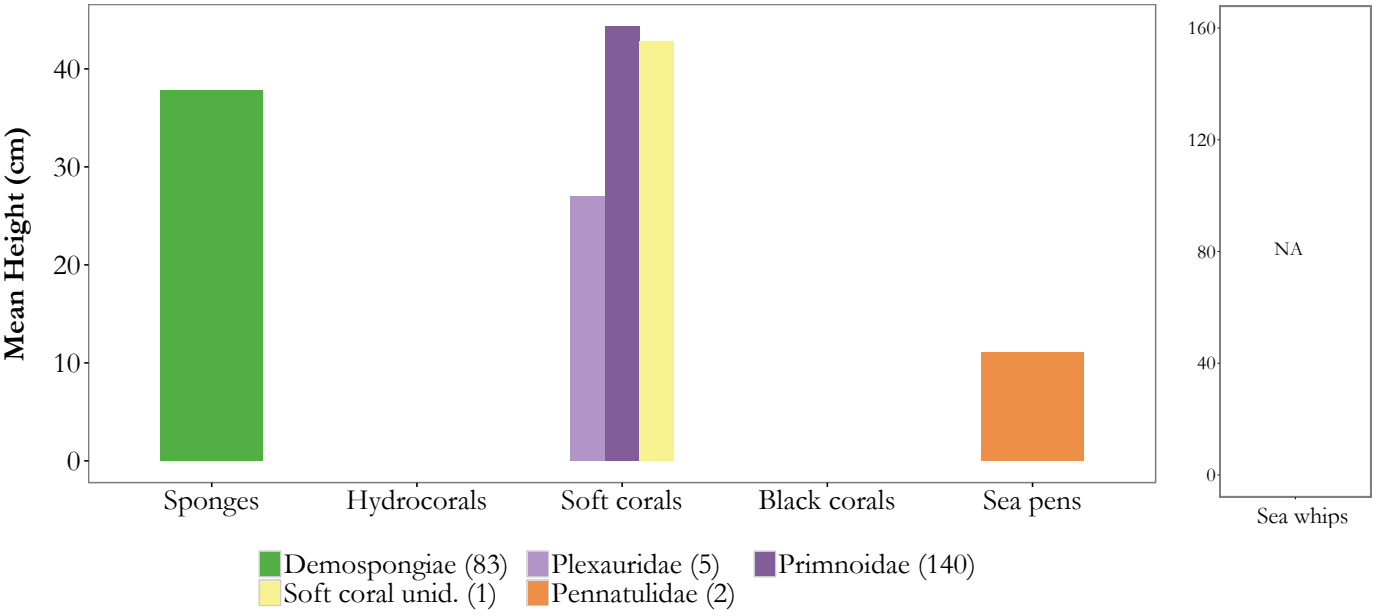


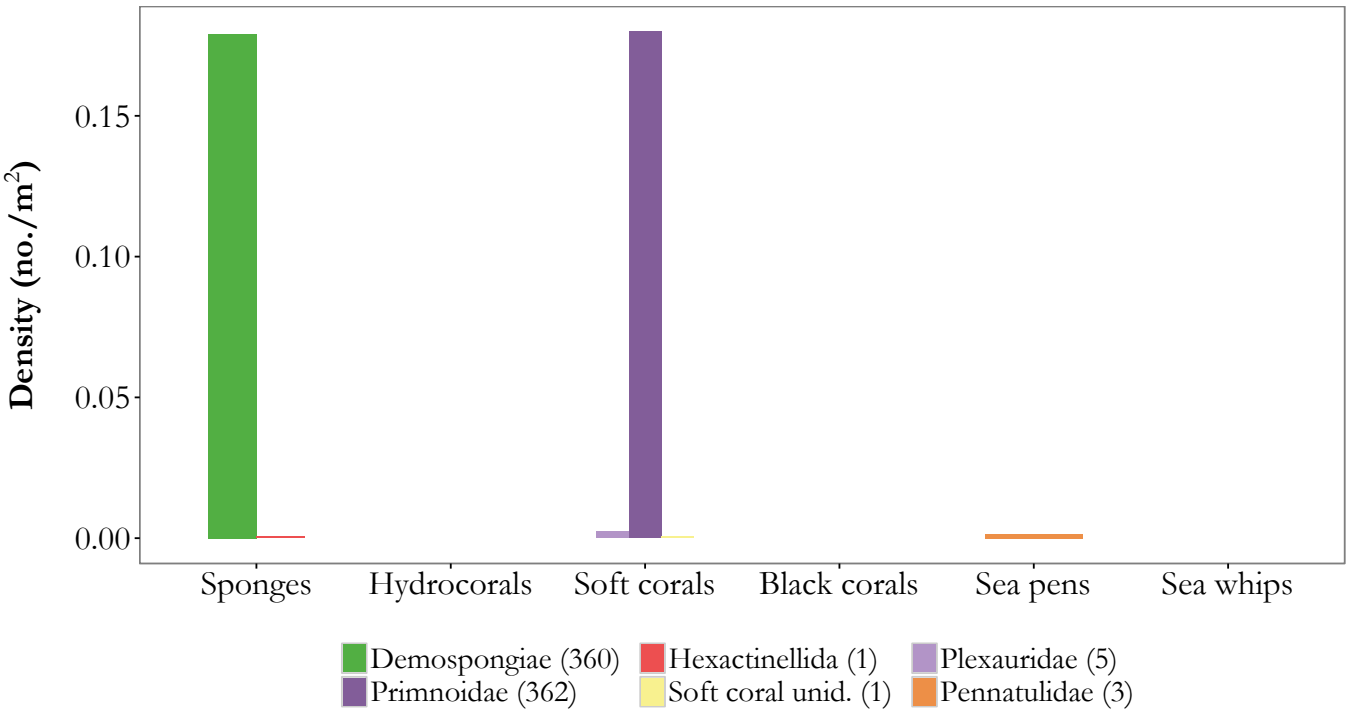
Substrate Composition



Images

Vertical Habitat Summary





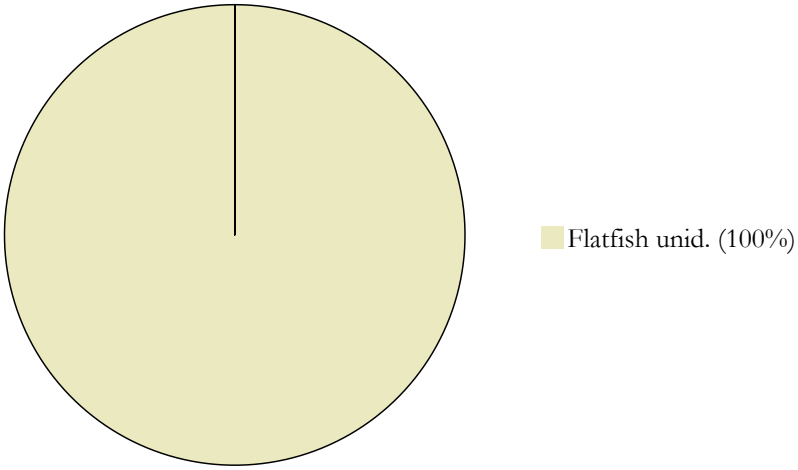
Summary - description of transect

Transect 2012-32: Primary and secondary substrates were largely sand and high bedrock or boulder. Few fishes were identified in this transect (n = 36) with a majority (n = 33) identified as rockfishes or searchers/ronquils. Total fish density was 0.02 individuals/m^2. Demospongiae (0.18 individuals/m^2) and Primnoidae (0.18 individuals/m^2) made up 98% of the structure-forming invertebrate habitat. Mean heights were calculated for Demospongiae (38 cm), Plexauridae (27 cm), Primnoidae (44 cm), and Pennatulidae (11 cm).

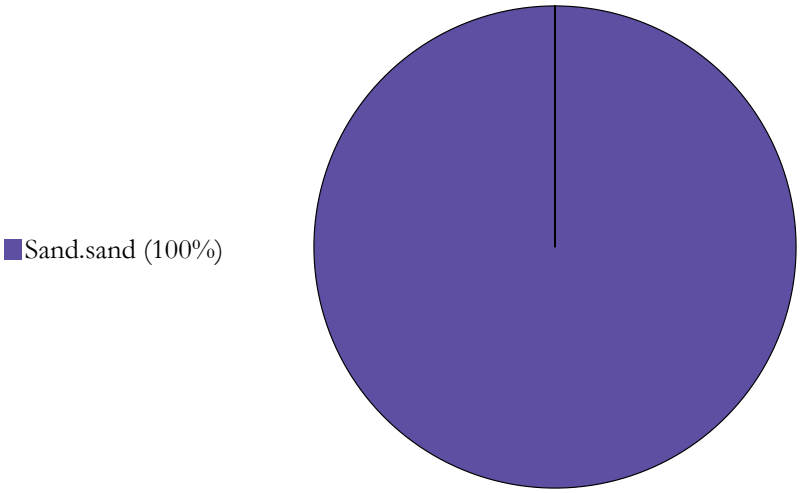
AREA: Seguam Pass To Amchitka Pass — Transect 2012-33

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.93	-174.18	1,248	104	5.0

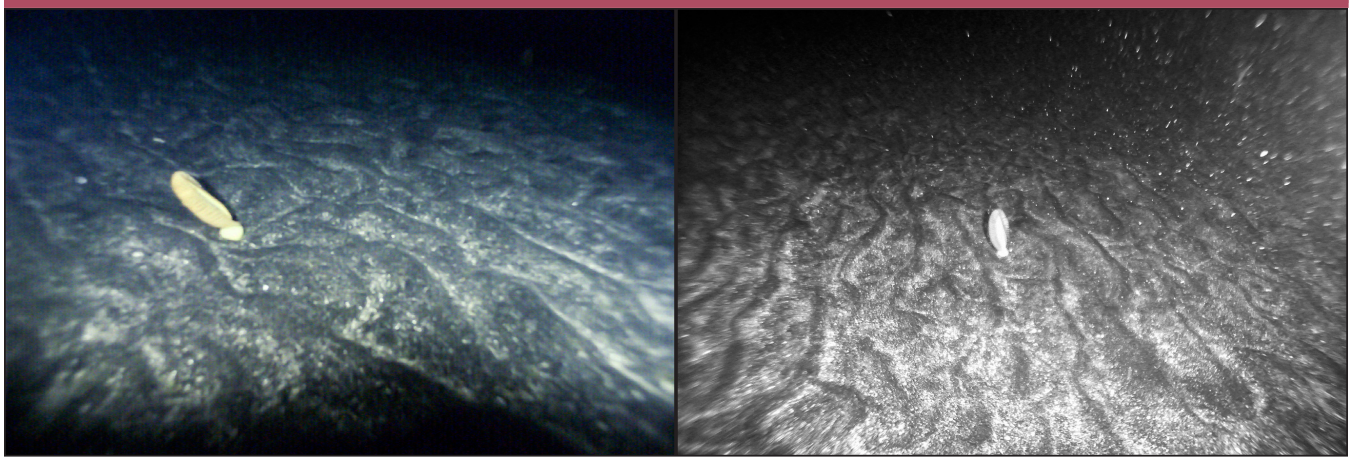
Fish and Crab Composition (n = 2)



Substrate Composition

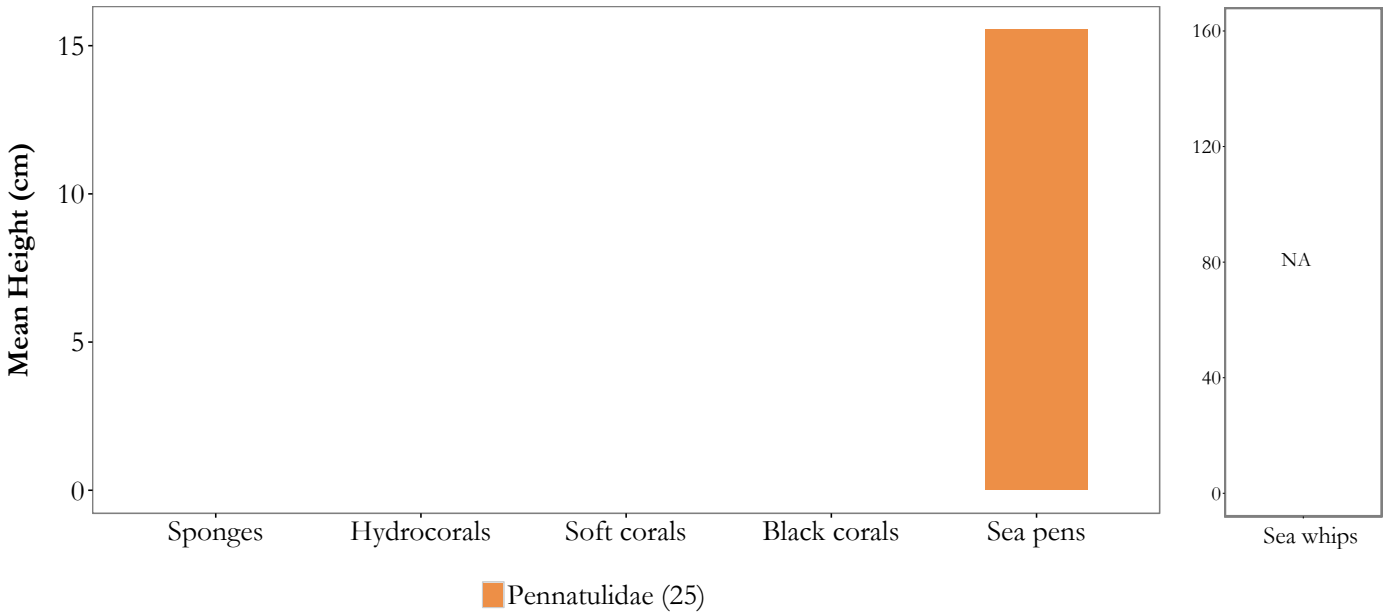


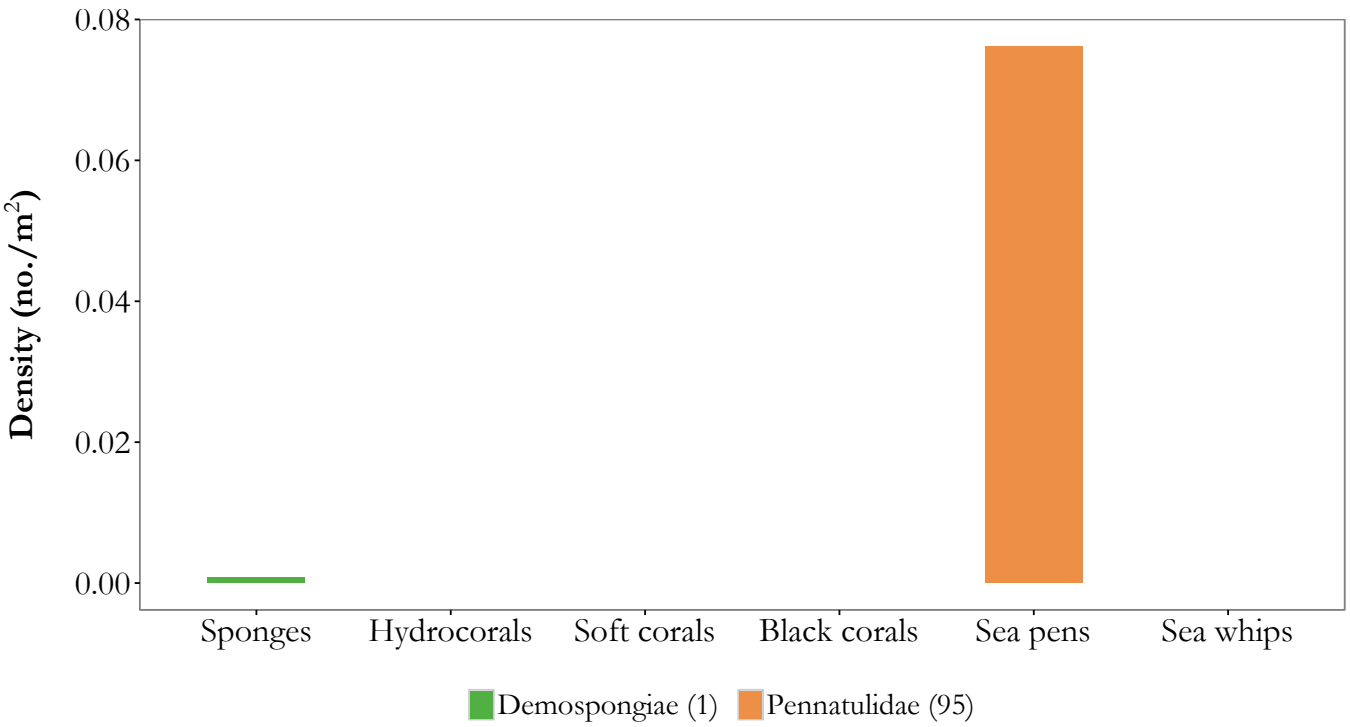
Images



AREA: Seguam Pass To Amchitka Pass Transect 2012-33

Vertical Habitat Summary





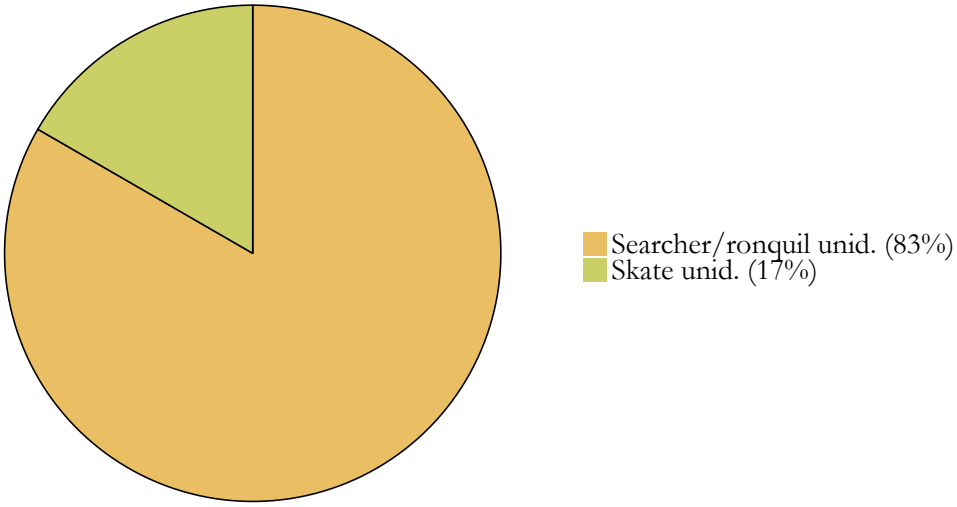
Summary - description of transect

Transect 2012-33: Primary and secondary substrates consisted entirely of sand. Only two flatfish were identified for a very low fish density of < 0.01 individuals/m^2. Pennatulidae (0.08 individuals/m^2) comprised 99% of the structure-forming invertebrate density. Mean height for 25 Pennatulidae was 16 cm.

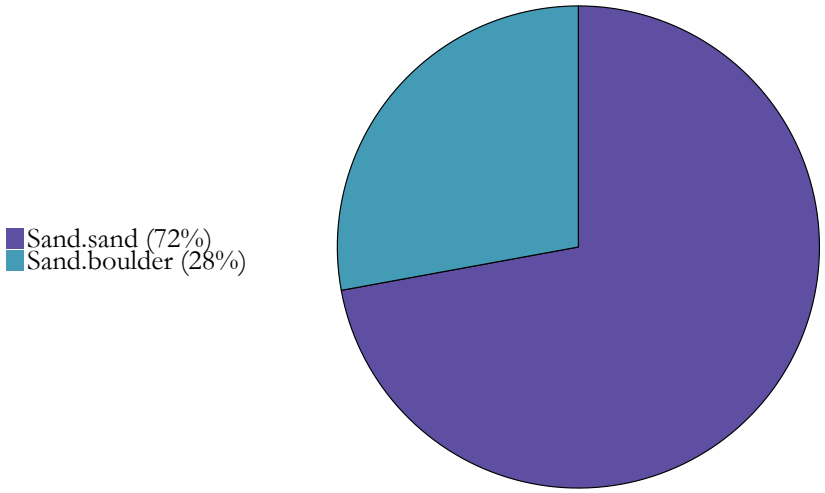
AREA: Seguam Pass To Amchitka Pass — Transect 2012-34

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.90	-174.29	1,916	117	4.9

Fish and Crab Composition (n = 6)

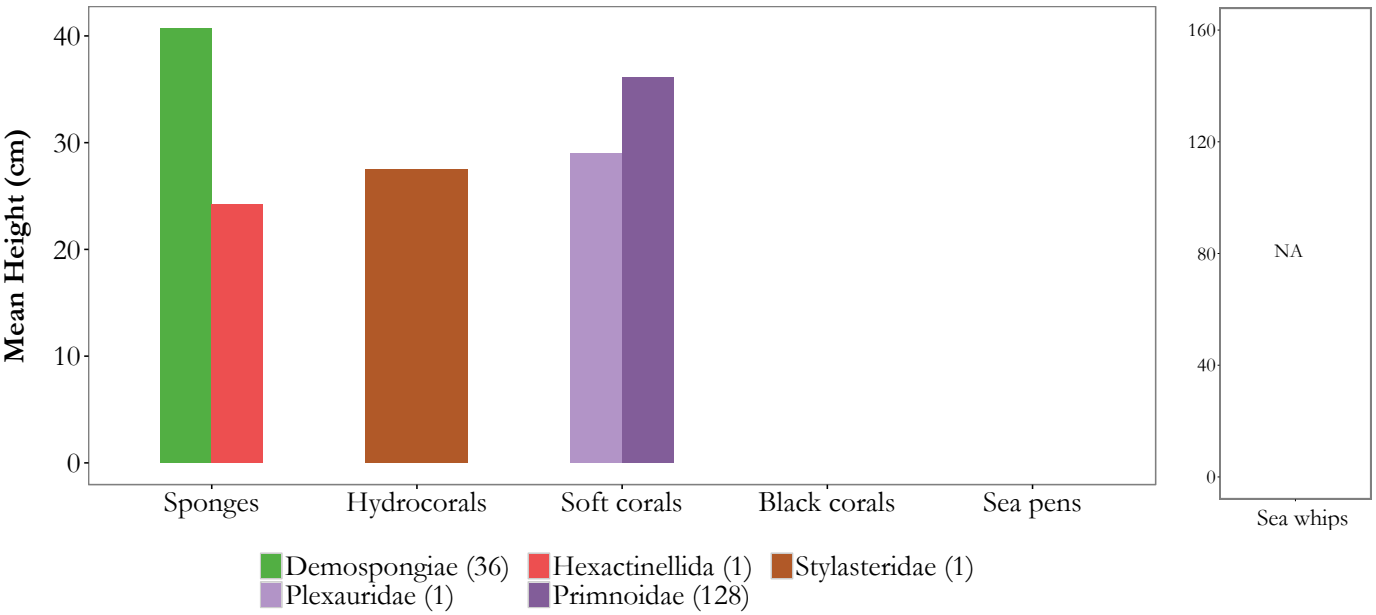


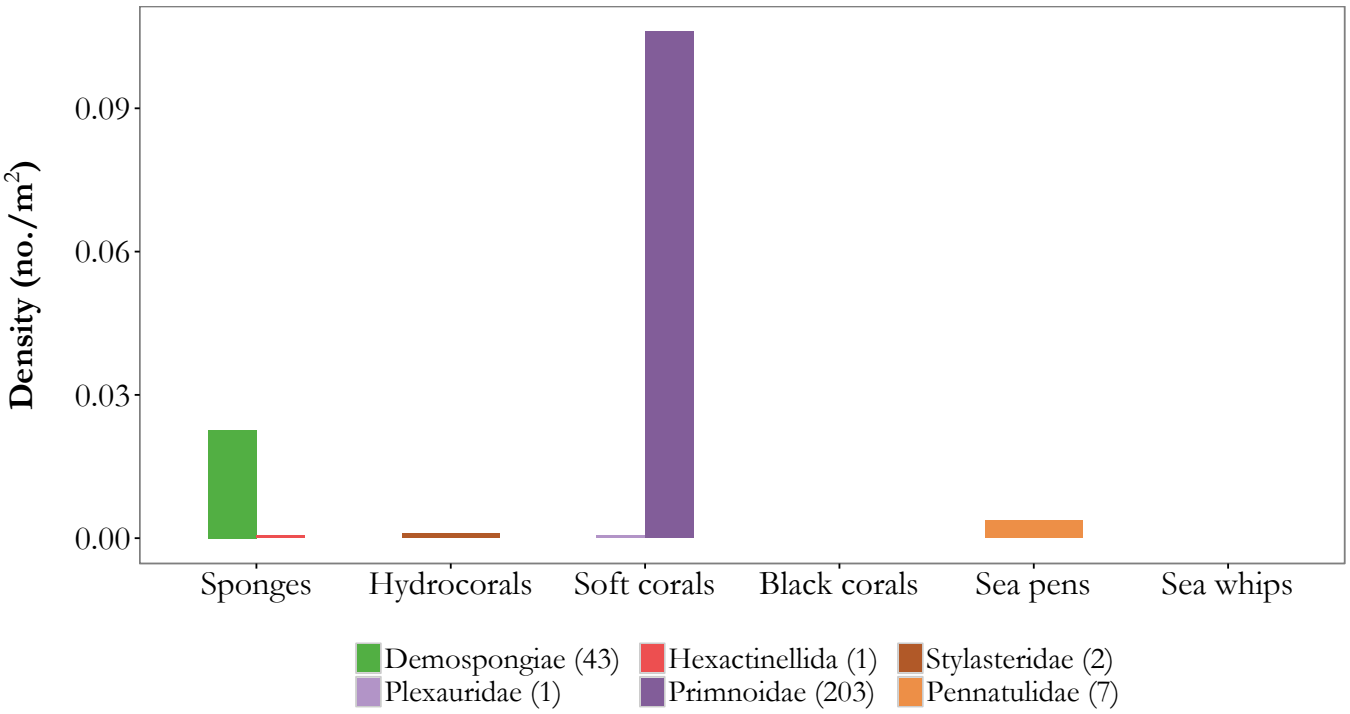
Substrate Composition



Images

Vertical Habitat Summary





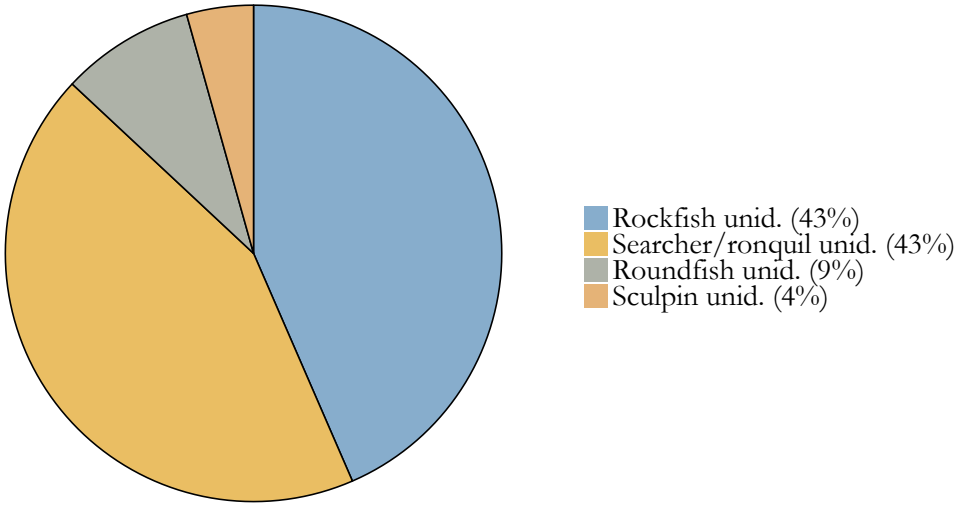
Summary - description of transect

Transect 2012-34: Primary and secondary substrates consisted of sand and boulder. Searcher/ronquils and skates accounted for 100% of the fishes observed. Species density was low overall (< 0.01 individuals/m^2). Primnoidae (0.11 individuals/m^2) were the most abundant structure-forming invertebrates. Mean heights were calculated for Demospongiae (41 cm) and Primnoidae (36 cm).

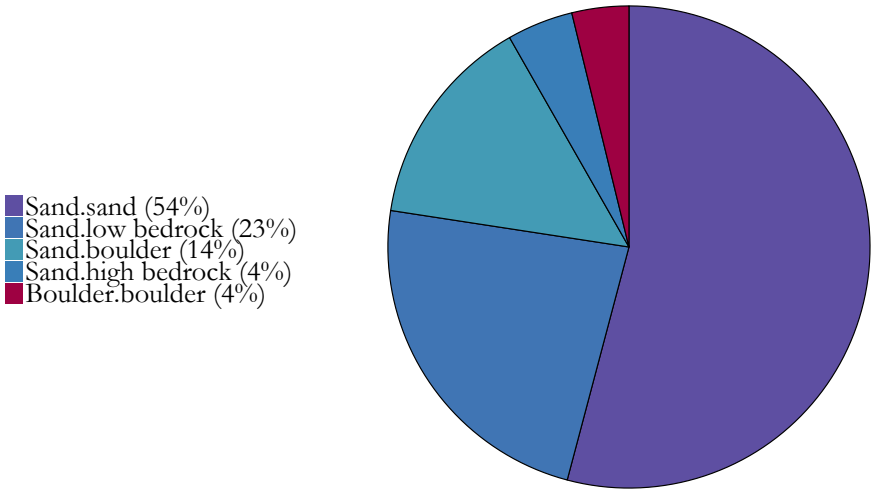
AREA: Seguam Pass To Amchitka Pass — Transect 2012-35

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.92	-174.28	1,754	110	4.9

Fish and Crab Composition (n = 23)

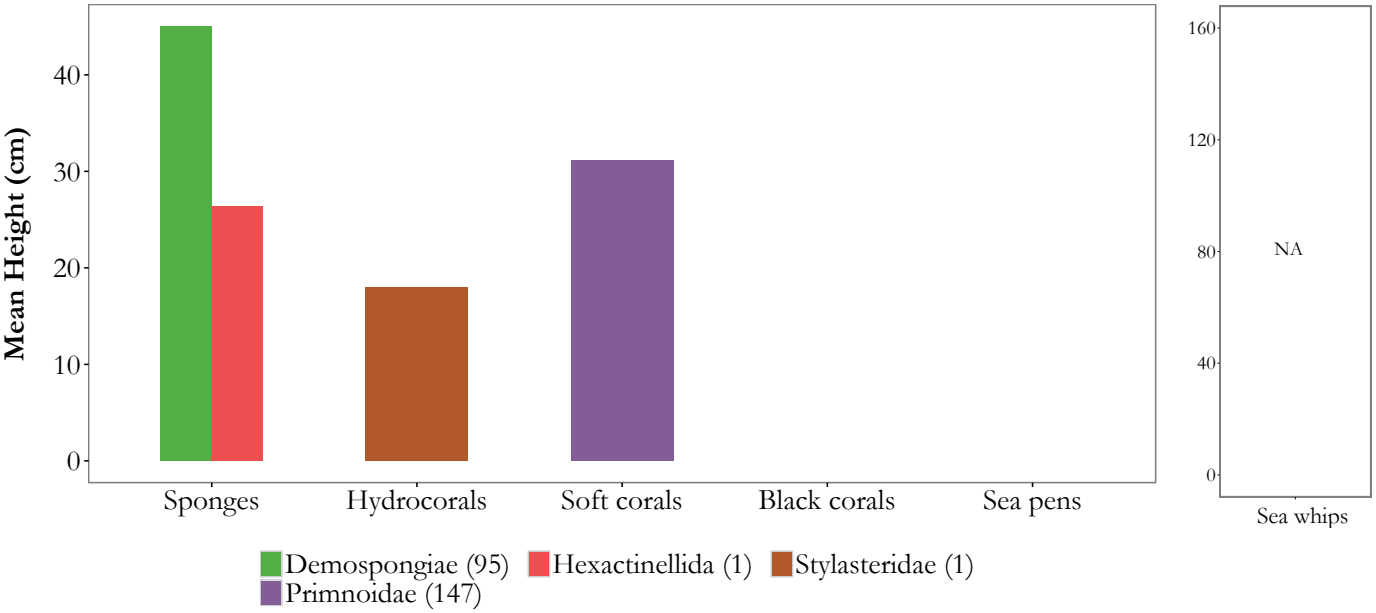


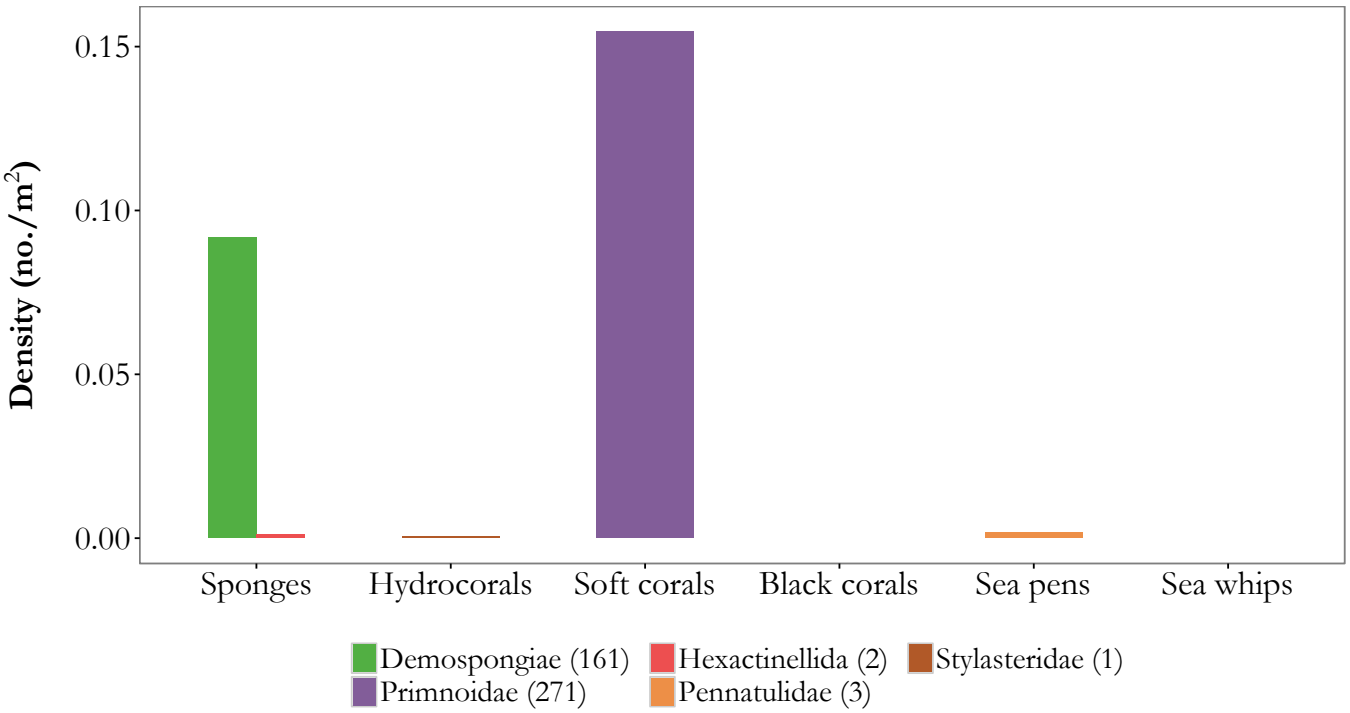
Substrate Composition



Images

Vertical Habitat Summary





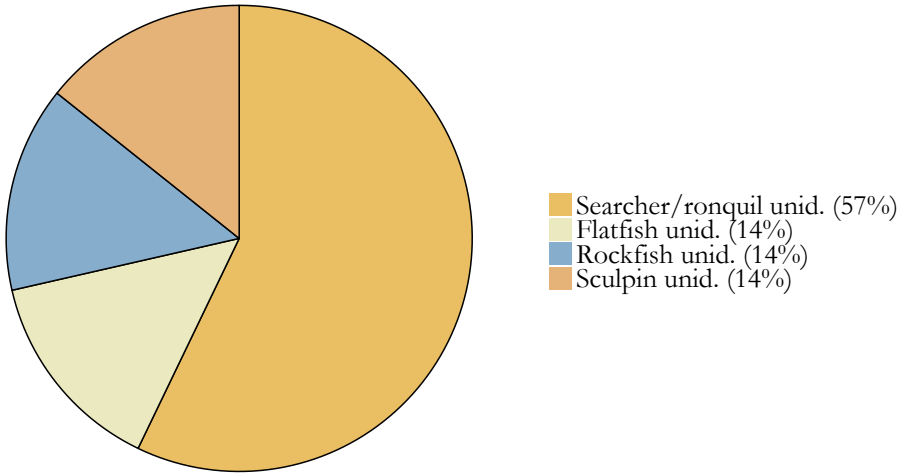
Summary - description of transect

Transect 2012-35: Primary and secondary substrates consisted largely of sand and bedrock. Rockfishes and searchers/ronquils comprised over 86% of the fish density (0.01 individuals/m^2). Primnoidae and Demospongiae accounted for 99% of the structure-forming invertebrate density (0.25 individuals/m^2). Multiple measurements were collected from Demospongiae and Primnoidae. Correspondingly, mean heights were 45 cm and 31 cm, respectively.

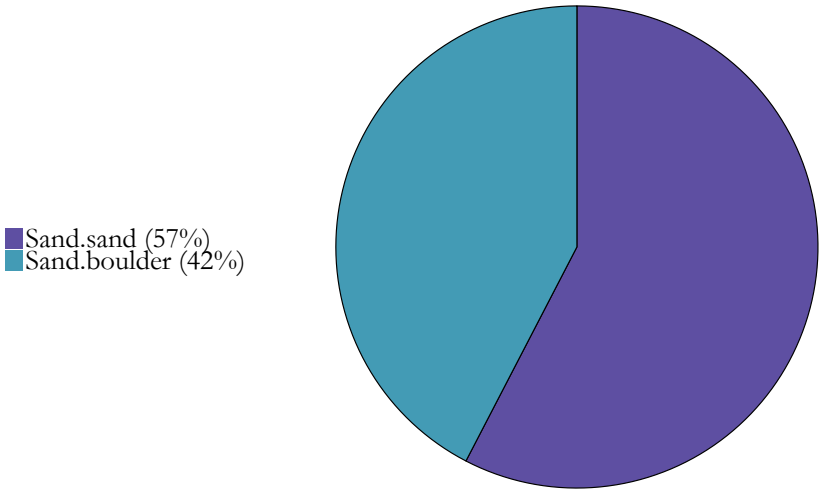
AREA: Seguam Pass To Amchitka Pass — Transect 2012-36

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.92	-174.29	1,511	110	5.0

Fish and Crab Composition (n = 14)

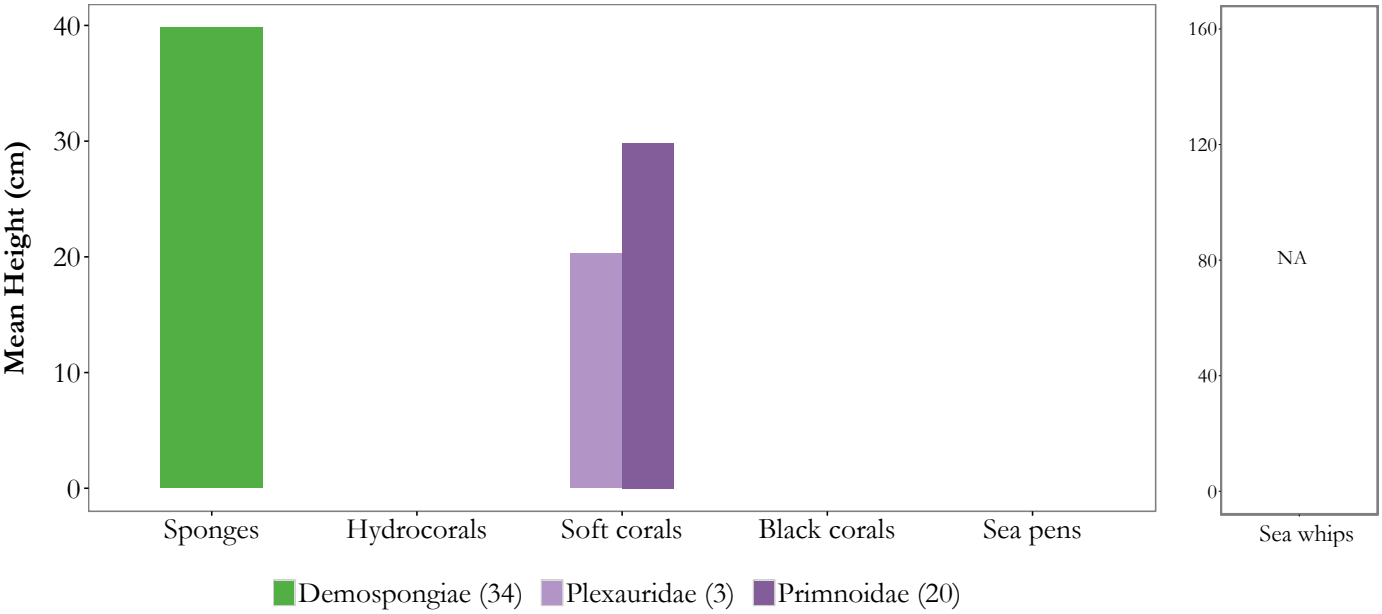


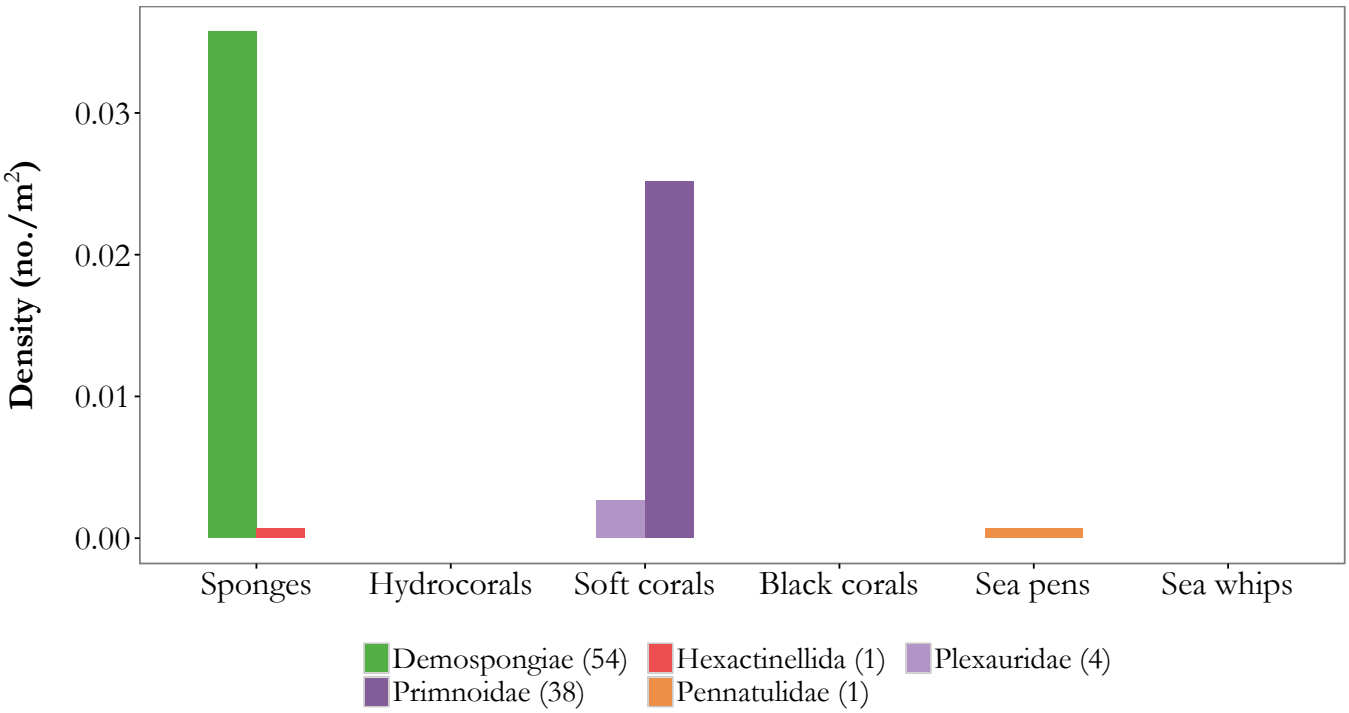
Substrate Composition



Images

Vertical Habitat Summary





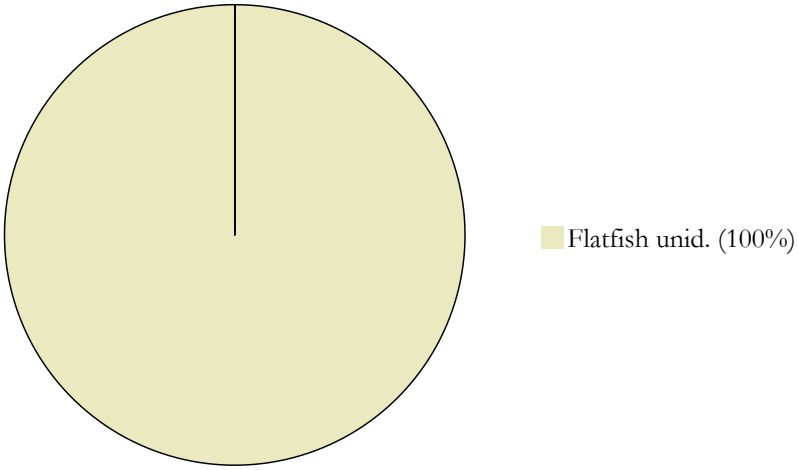
Summary - description of transect

Transect 2012-36: Primary and secondary substrates consisted of sand and boulder. Fish density for this transect was low, 0.01 individuals/m^2. Searcher/ronquils represented (n = 8) represented 57% of the density. Demospongiae (0.04 individuals/m^2) and Primnoidae (0.03 individuals/m^2) comprised 94% of the structure-forming invertebrate density. Mean heights for Demospongiae, Plexauridae, and Primnoidae were 40 cm, 20 cm, and 30 cm, respectively.

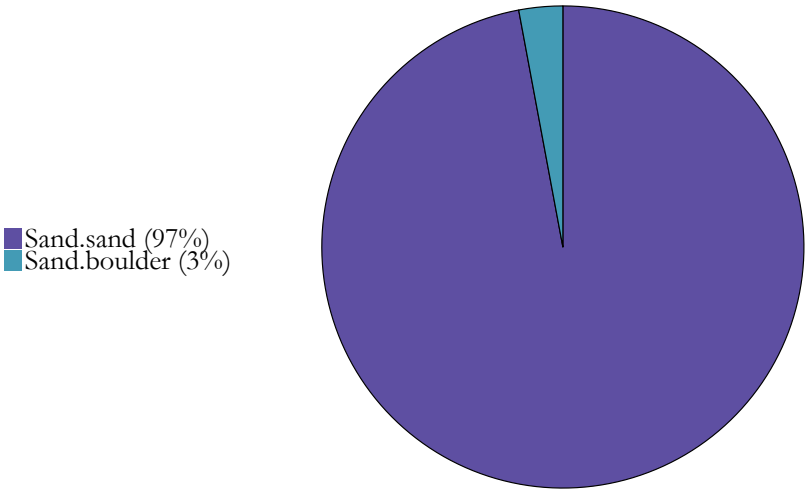
AREA: Seguam Pass To Amchitka Pass — Transect 2012-37

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.93	-174.30	1,612	110	5.2

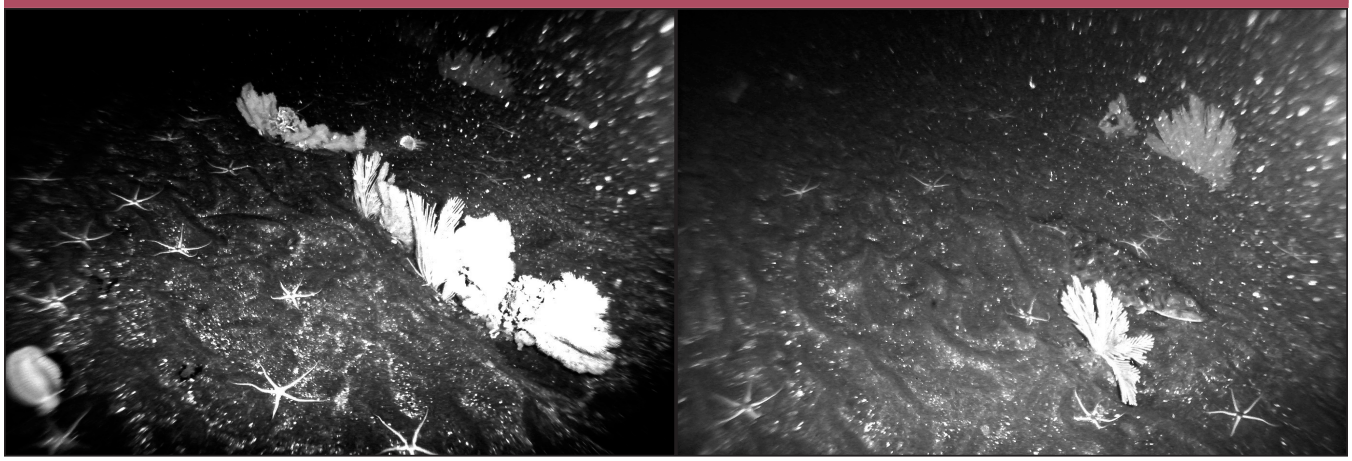
Fish and Crab Composition (n = 3)



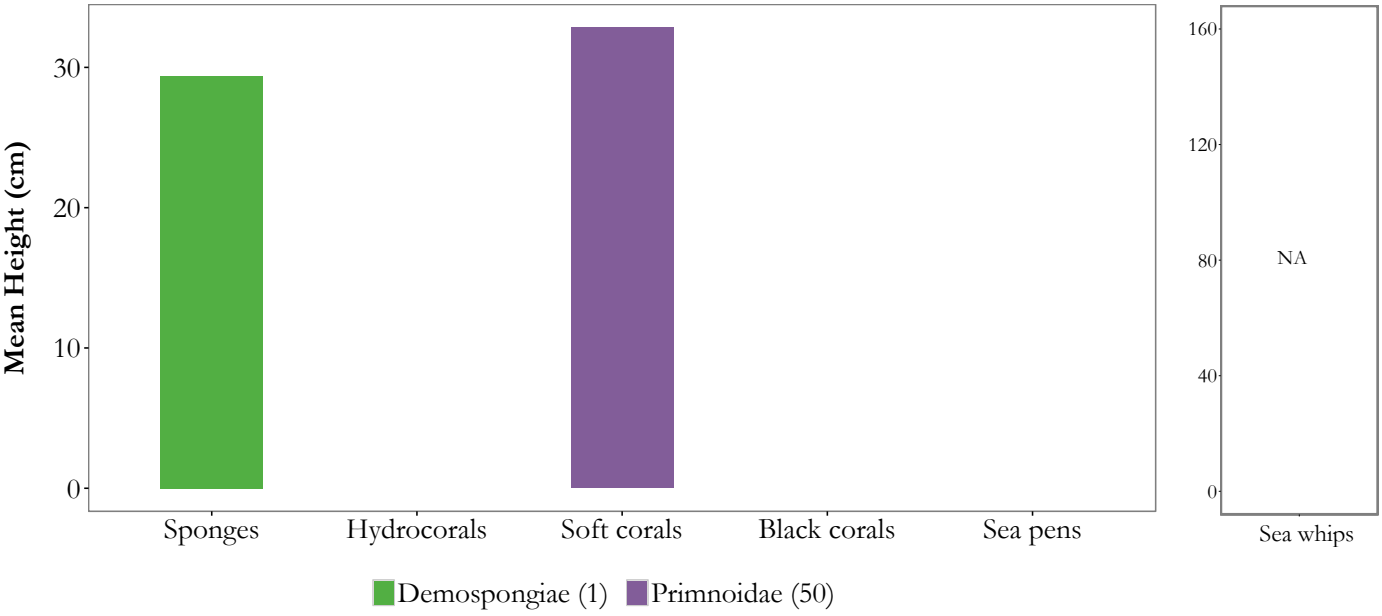
Substrate Composition

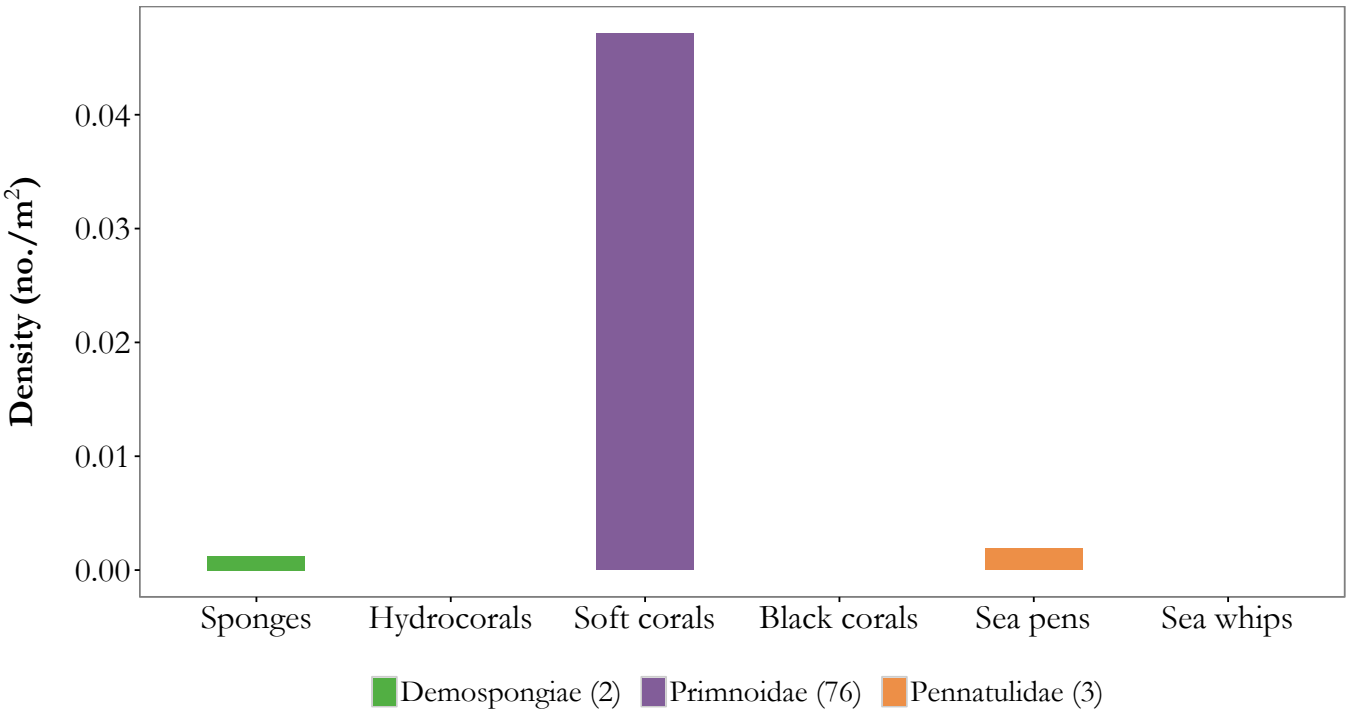


Images



Vertical Habitat Summary





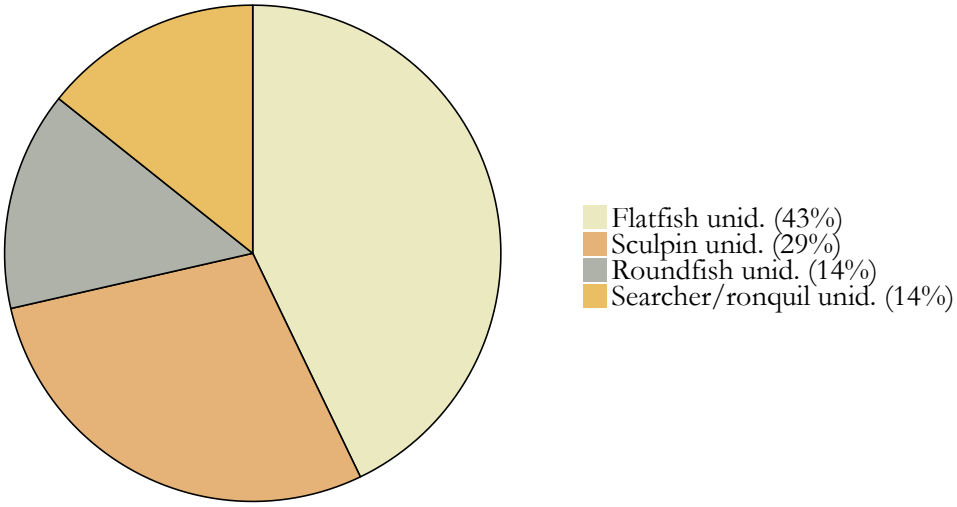
Summary - description of transect

Transect 2012-37: Primary and secondary substrates consisted of sand and boulder. Only three flatfishes were identified resulting in a low fish density (< 0.01 individuals/m^2). Structure-forming invertebrate density was also low, 0.05 individuals/m^2, of which Primnoidae were 95% of the observations. Mean height for Primnoidae was 33 cm.

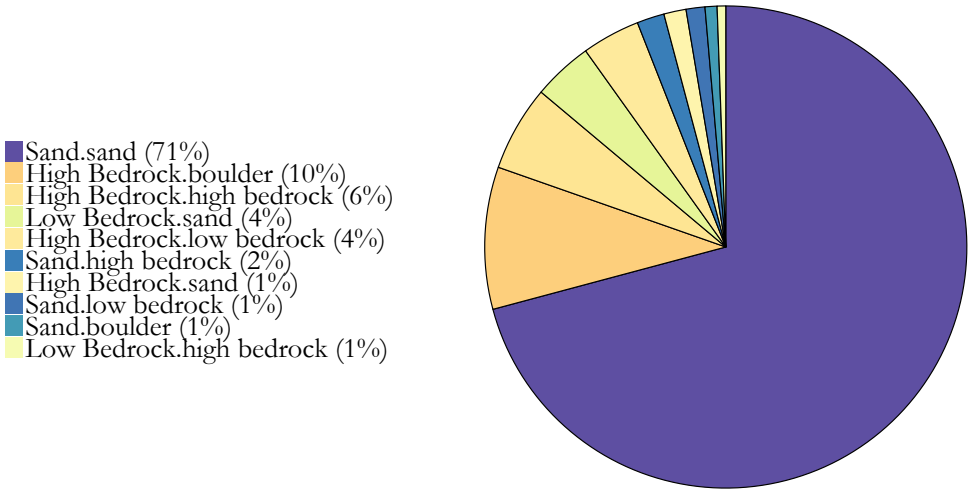
AREA: Seguam Pass To Amchitka Pass — Transect 2012-38

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	52.03	-174.34	1,904	58	5.8

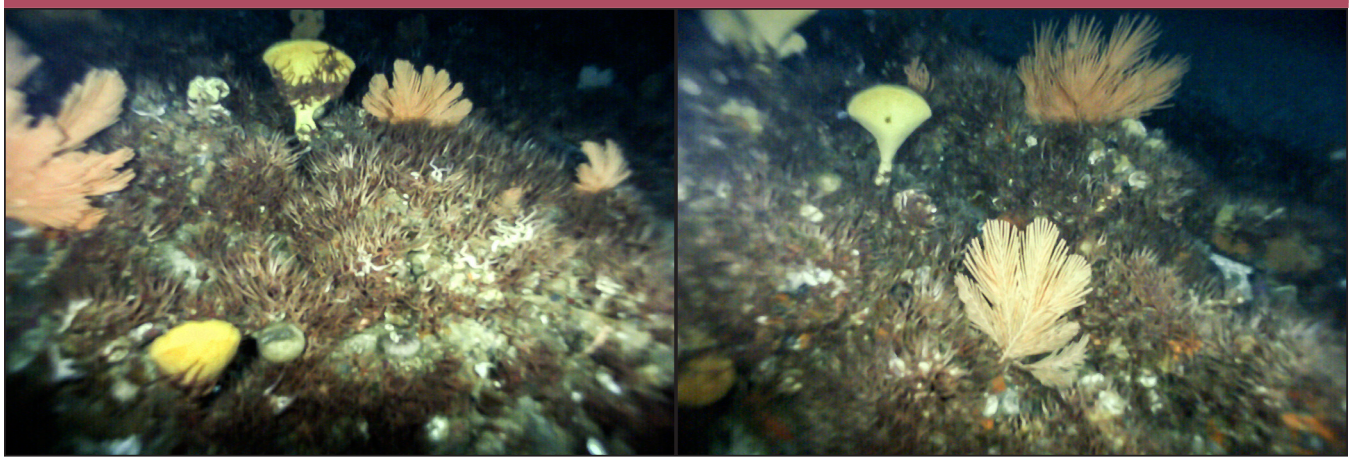
Fish and Crab Composition (n = 7)



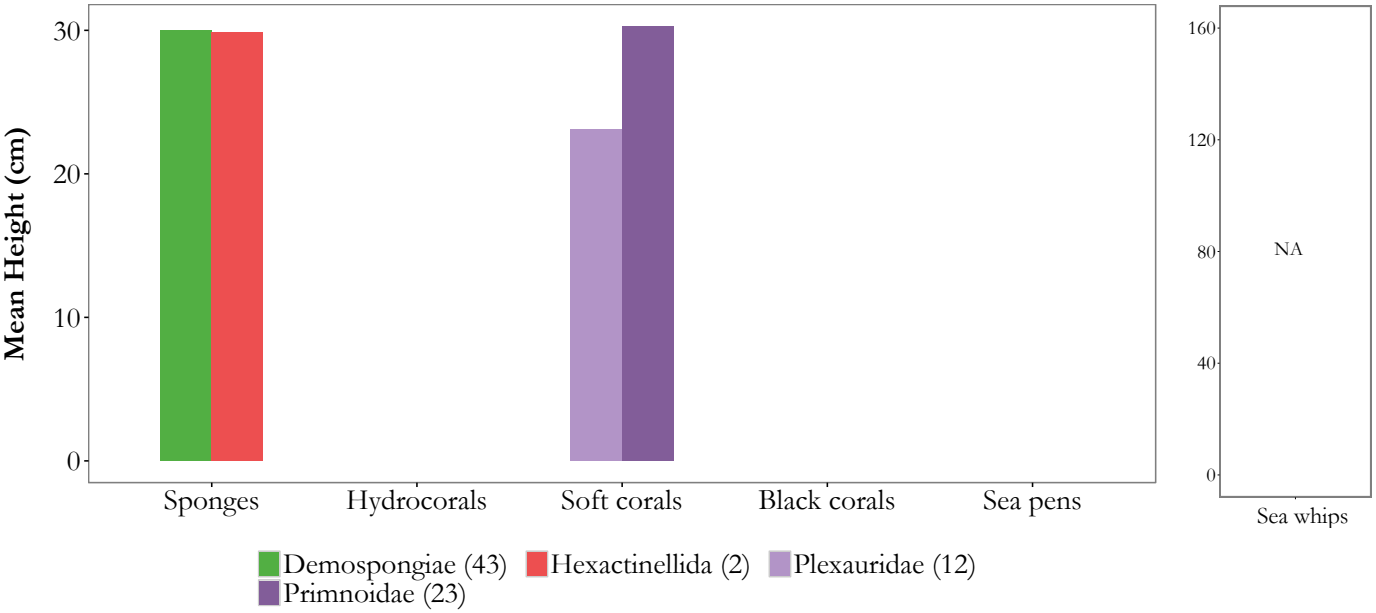
Substrate Composition

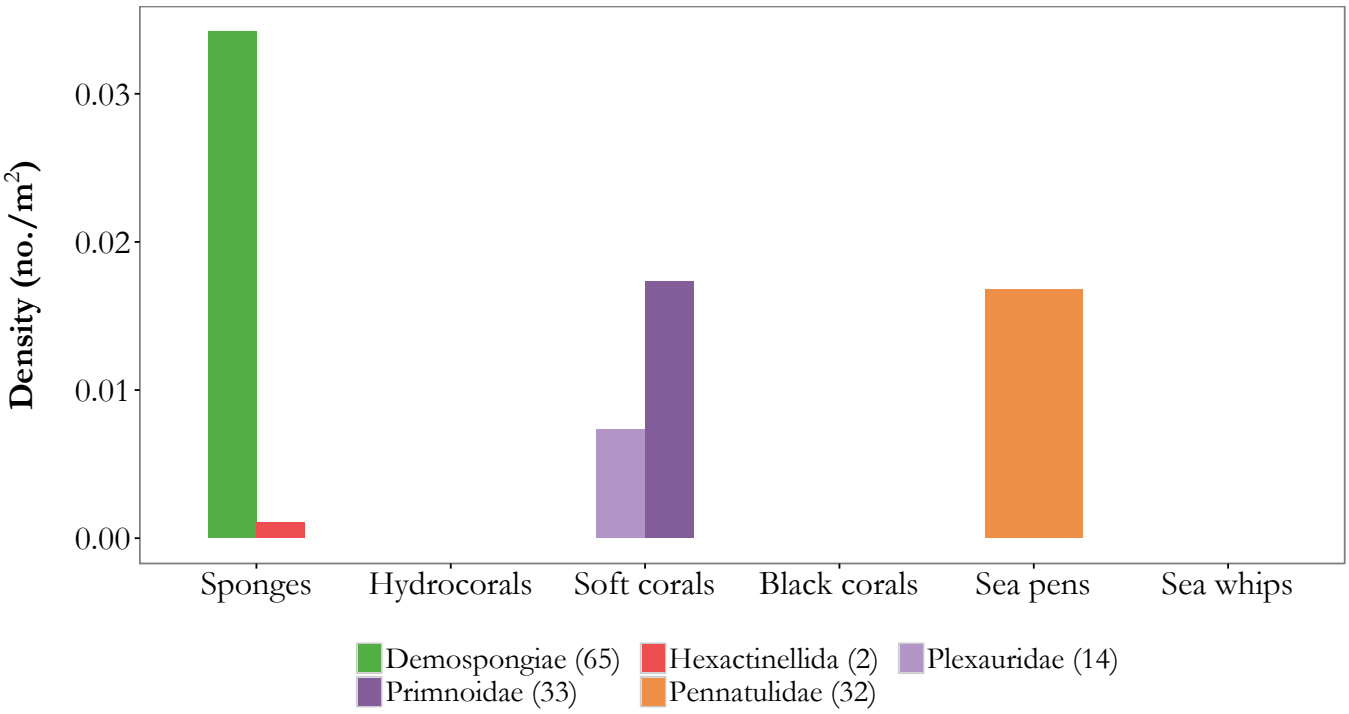


Images



Vertical Habitat Summary





Summary - description of transect

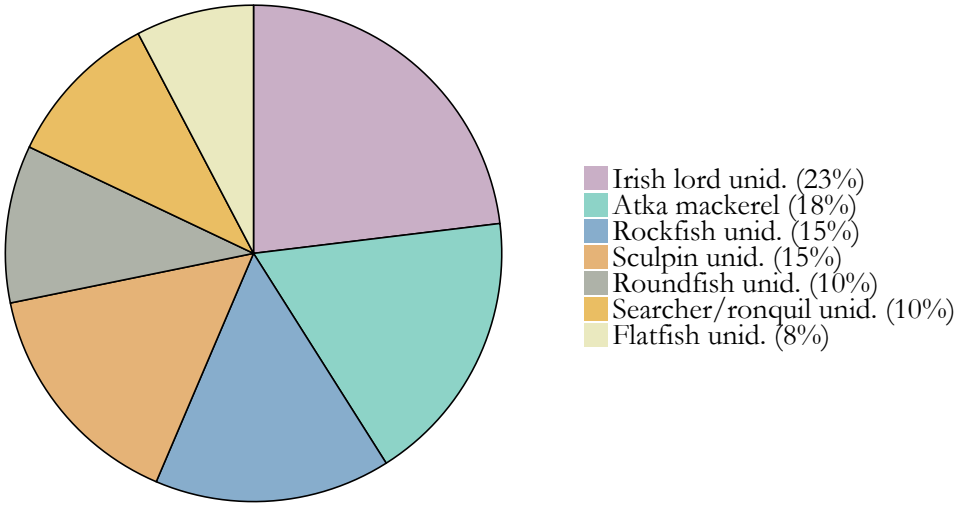
Transect 2012-38: Over 70% of the primary and secondary substrate consisted of sand. All but < 1% of the remaining substrates contained either high or low bedrock. Fish density was < 0.01 individuals/m^2. Available structure-forming invertebrate consisted of Demospongiae (0.03 individuals/m^2), Primnoidae (0.02 individuals/m^2), Pennatulidae (0.02 individuals/m^2), Plexauridae (0.01 individuals/m^2), and Hexactinellida (< 0.01 individuals/m^2). Mean heights ranged from 23 cm to 30 cm.

AREA: Seguam Pass To Amchitka Pass Transect

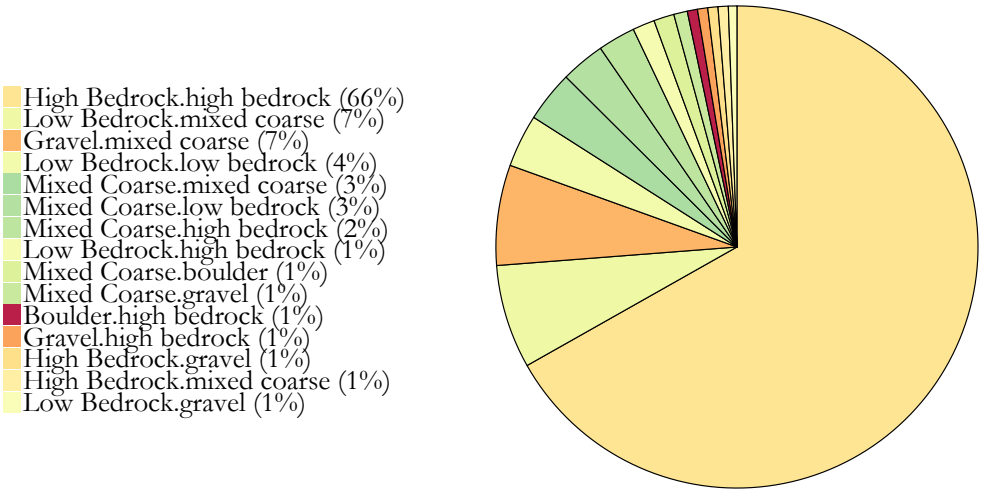
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)

*Area of high coral or sponge density (> 1.0 individuals/m^2)

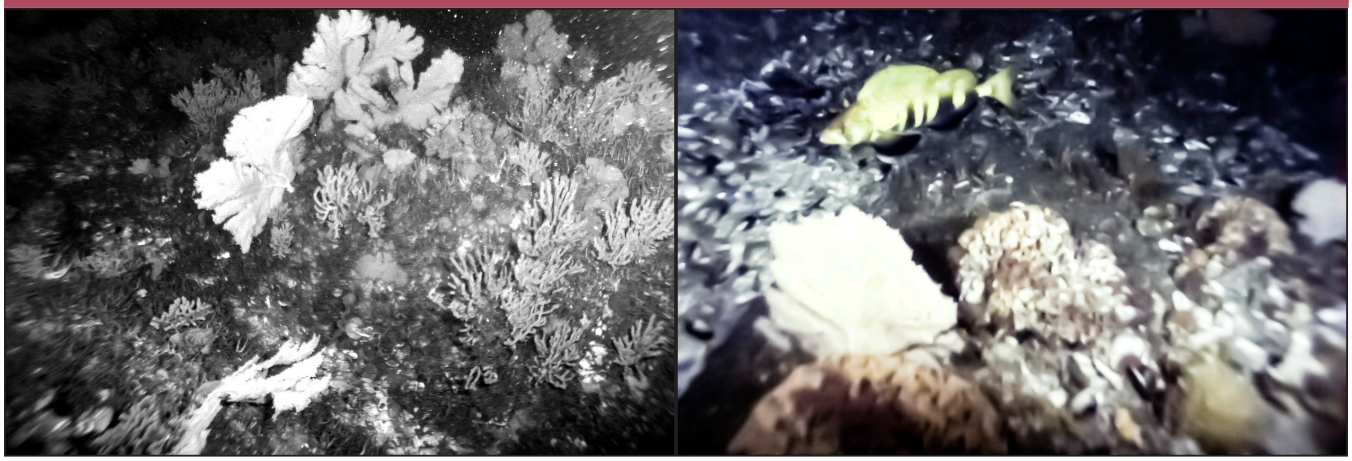
Fish and Crab Composition (n = 39)



Substrate Composition



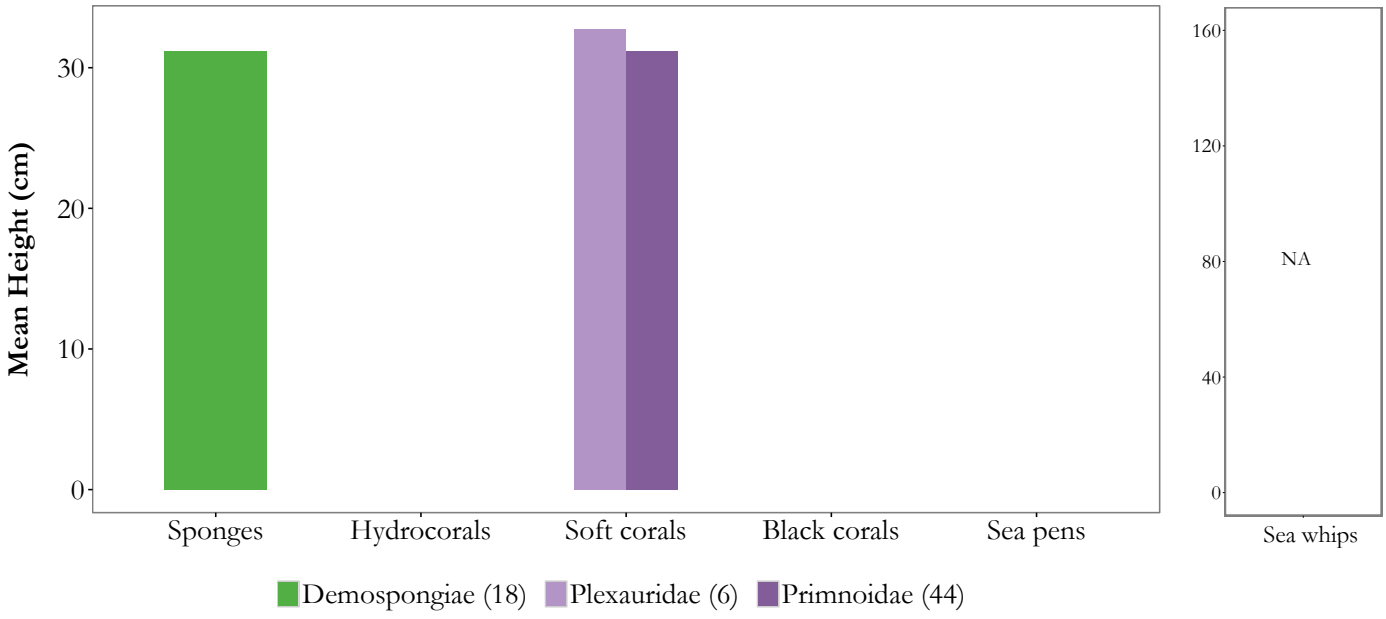
Images

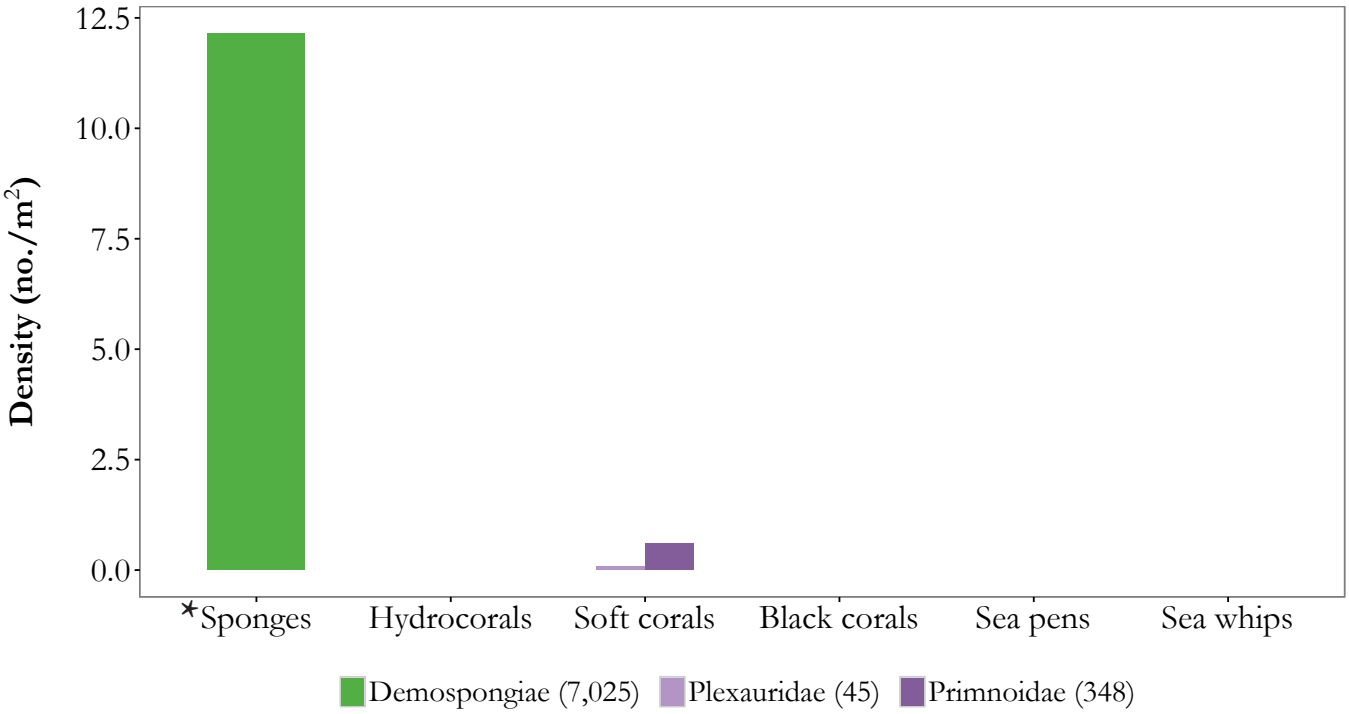


AREA: Seguam Pass To Amchitka Pass Transect

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





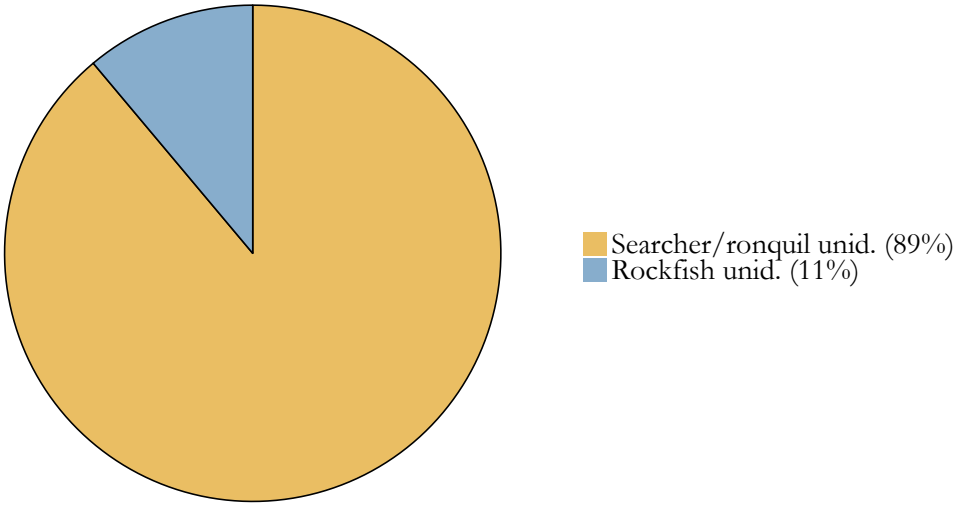
Summary - description of transect

Transect 2012-39: Primary and secondary substrates were some of the most diverse of any transect. Eighteen combinations of substrates were identified. Over 75% of the substrates contained bedrock. Seven taxa of fishes were identified, with a density of 0.07 individuals/m^2. Demospongiae density (12.15 individuals/m^2) was the highest of the survey. The remaining structure-forming invertebrates were comprised of Plexauridae (0.08 individuals/m^2) and Primnoidae (0.60 individuals/m^2). Mean heights for Demospongiae, Plexauridae, and Primnoidae were 31 cm, 33 cm, and 31 cm, respectively.

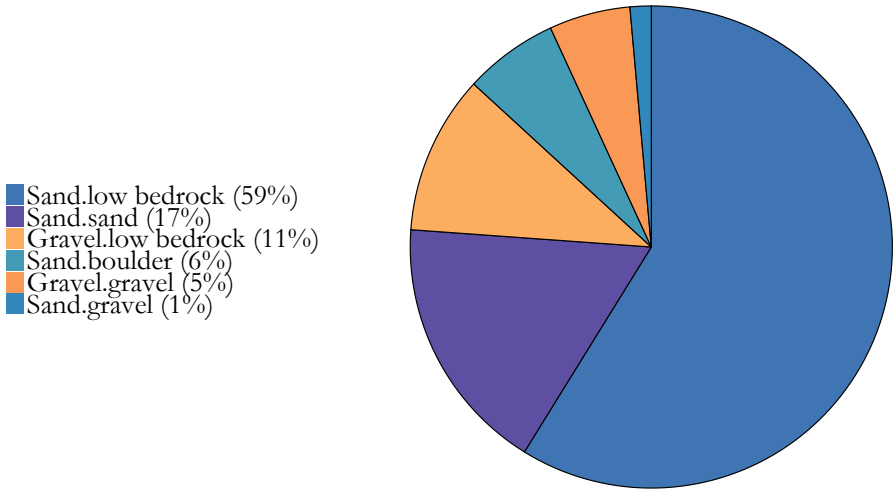
AREA: Seguam Pass To Amchitka Pass — Transect 2012-40

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.94	-174.66	1,847	95	5.6

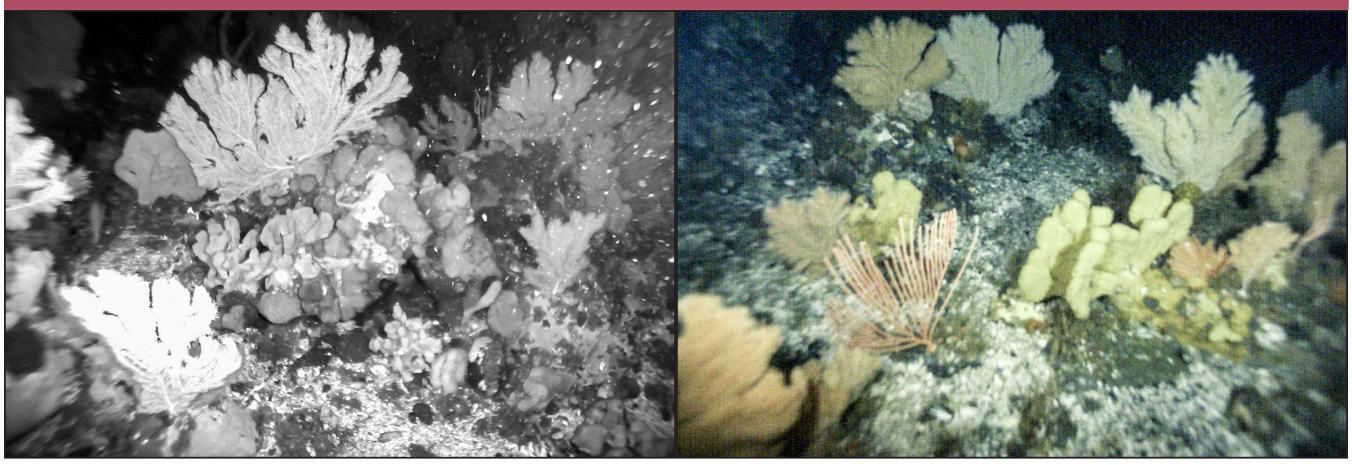
Fish and Crab Composition (n = 9)



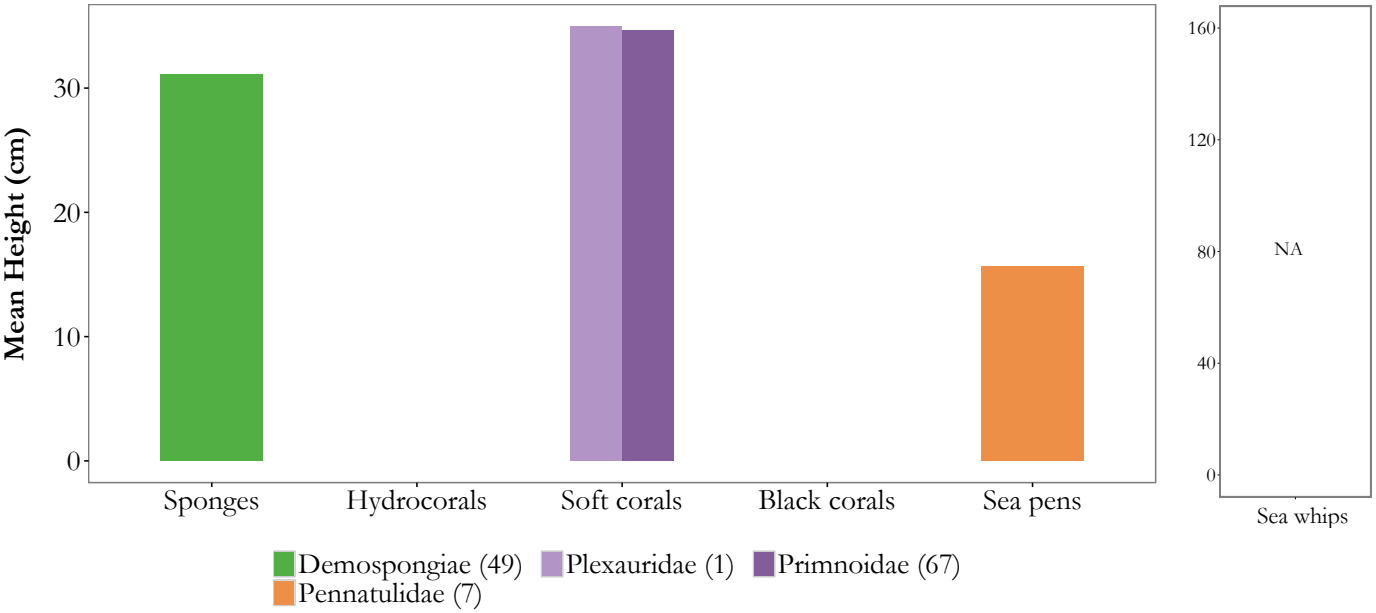
Substrate Composition

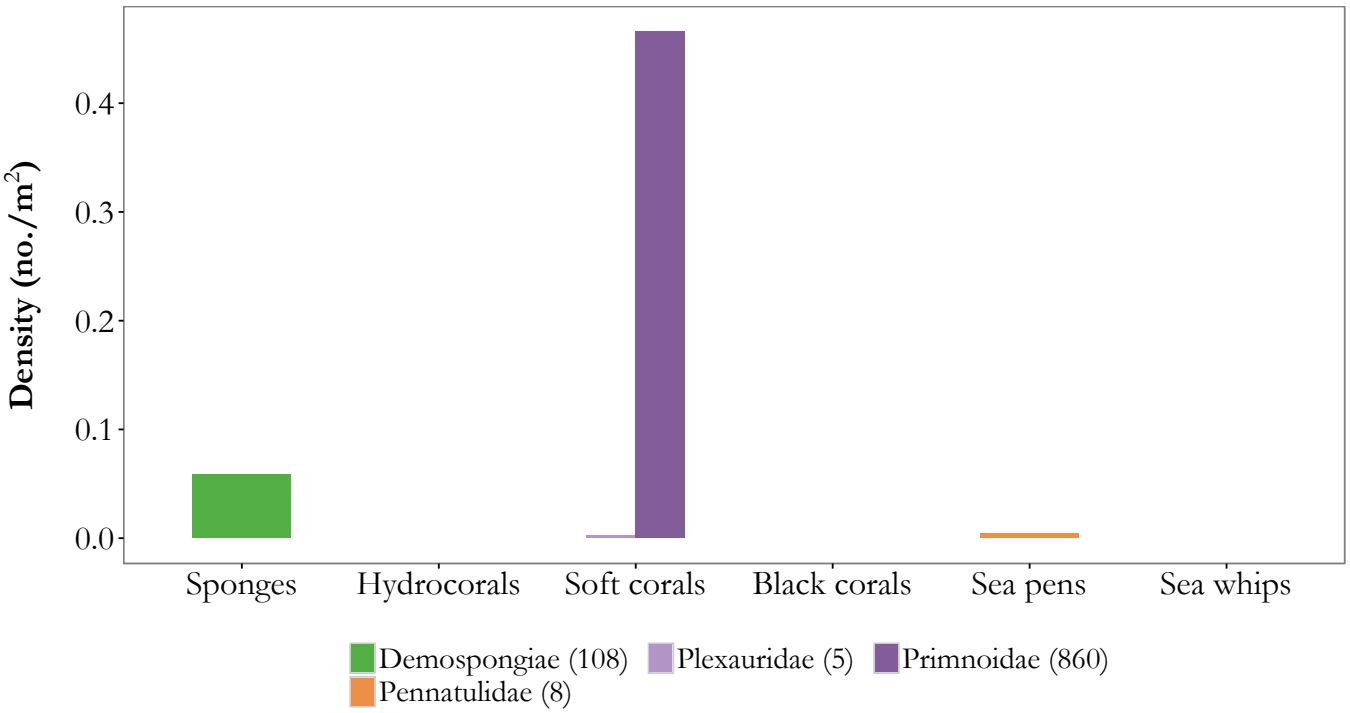


Images



Vertical Habitat Summary





Summary - description of transect

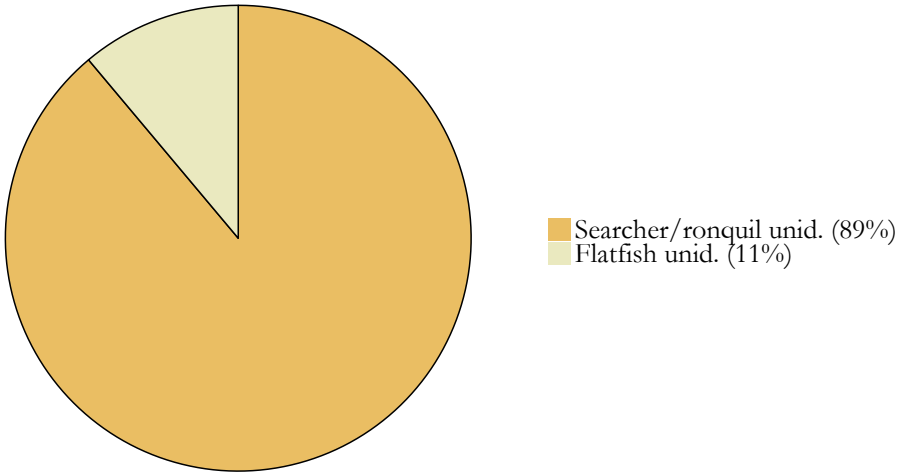
Transect 2012-40: Primary and secondary substrates were mostly sand, low bedrock and gravel. Only nine fishes were identified; one rockfish and eight searchers/ronquils. Fish density was < 0.01 individuals/m^2. A majority (88%) of the structure-forming invertebrates were Primnoidae (0.47 individuals/m^2). Mean heights for Demospongiae, Primnoidae, and Pennatulidae were 31 cm, 35 cm, and 16 cm, respectively.

AREA: Seguam Pass To Amchitka Pass — Transect *2012-41

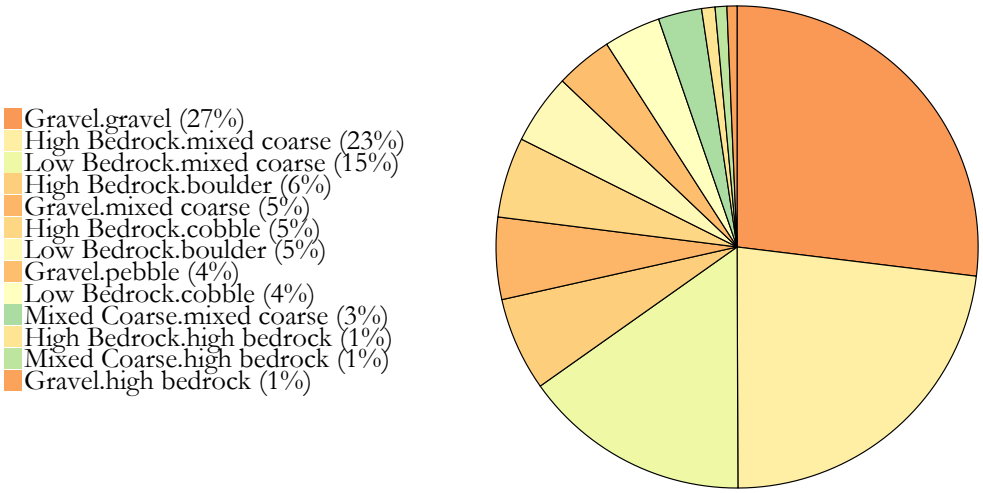
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.95	-174.75	1,051	91	5.6

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 9)



Substrate Composition

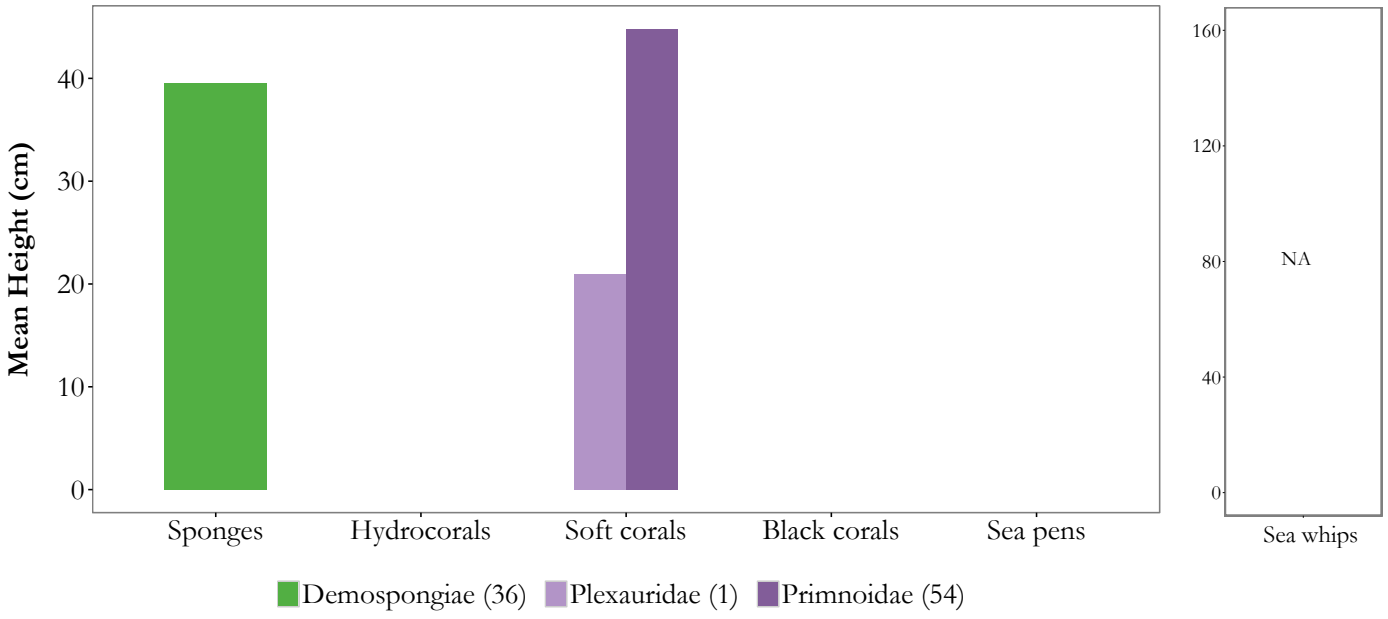


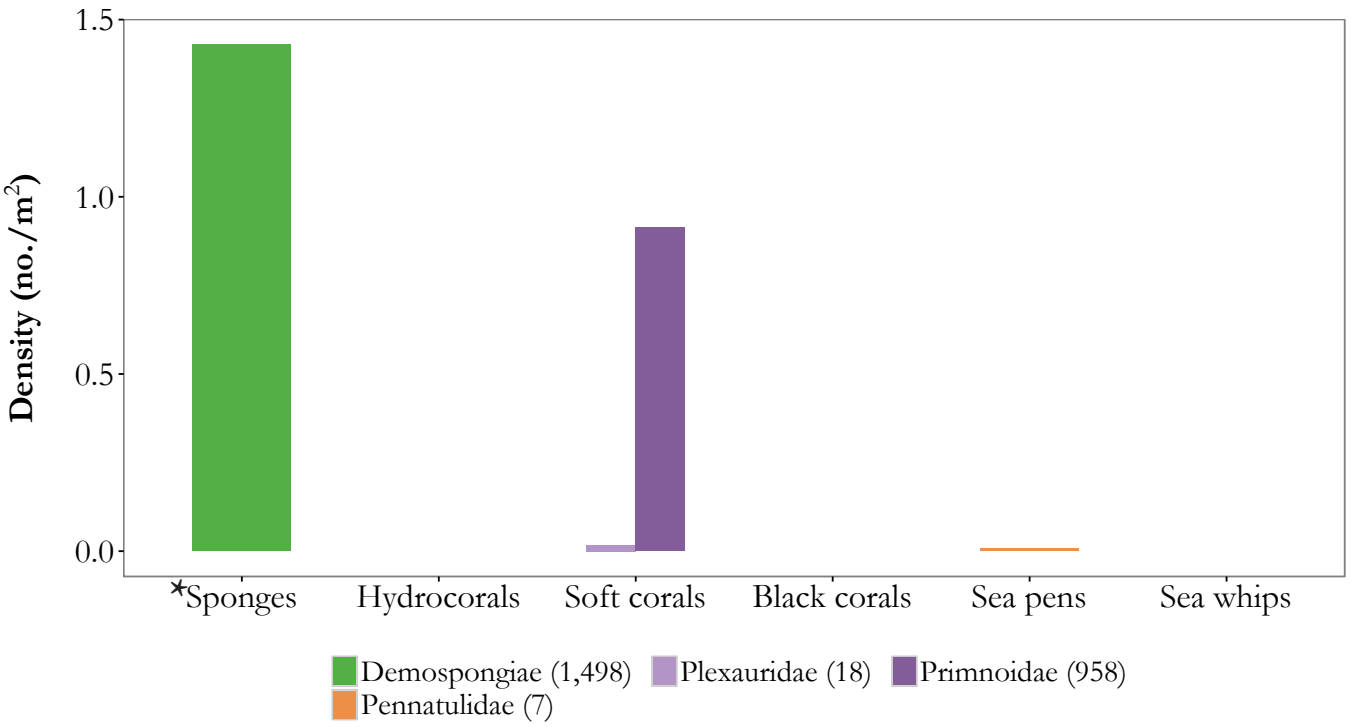
Images

AREA: Seguam Pass To Amchitka Pass Transect *2012-41

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





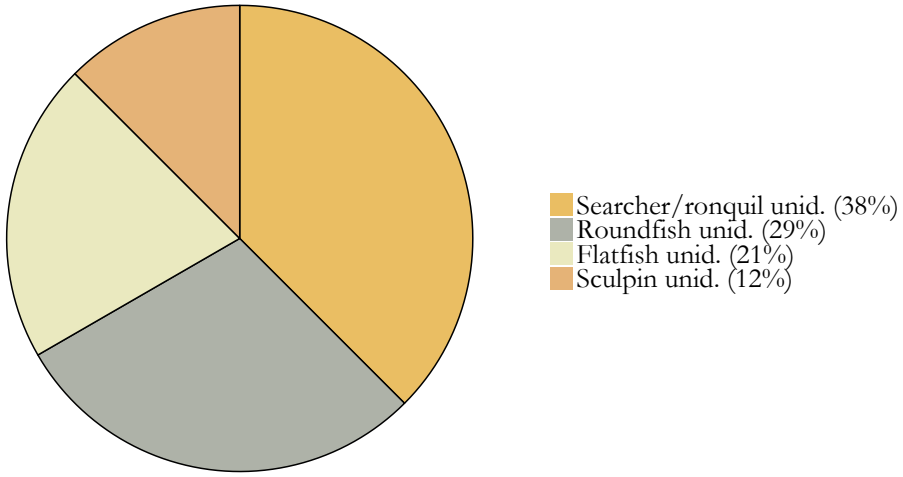
Summary - description of transect

Transect 2012-41: Substrate composition for this transect was very diverse. Of the 14 combinations of primary and secondary substrates identified, gravel, bedrock, and mixed coarse were the most frequently observed. Fish density was low (< 0.01 individuals/m^2). Structure-forming invertebrates consisted of Demospongiae (1.43 individuals/m^2), Pennatulidae (0.01 individuals/m^2), Plexauridae (0.02 individuals/m^2), and Primnoidae (0.91 individuals/m^2). Mean lengths were calculated for Demospongiae (40 cm) and Primnoidae (45 cm).

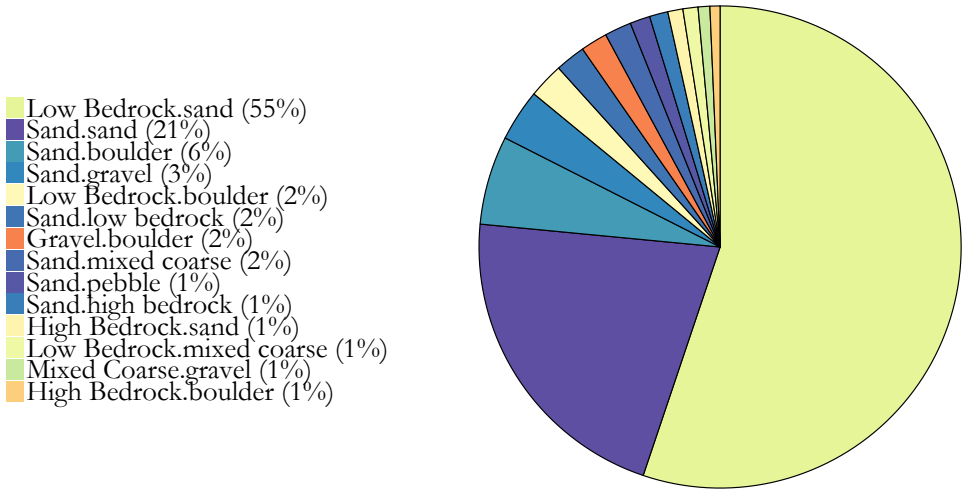
AREA: Seguam Pass To Amchitka Pass — Transect 2012-42

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.94	-174.78	1,750	94	5.6

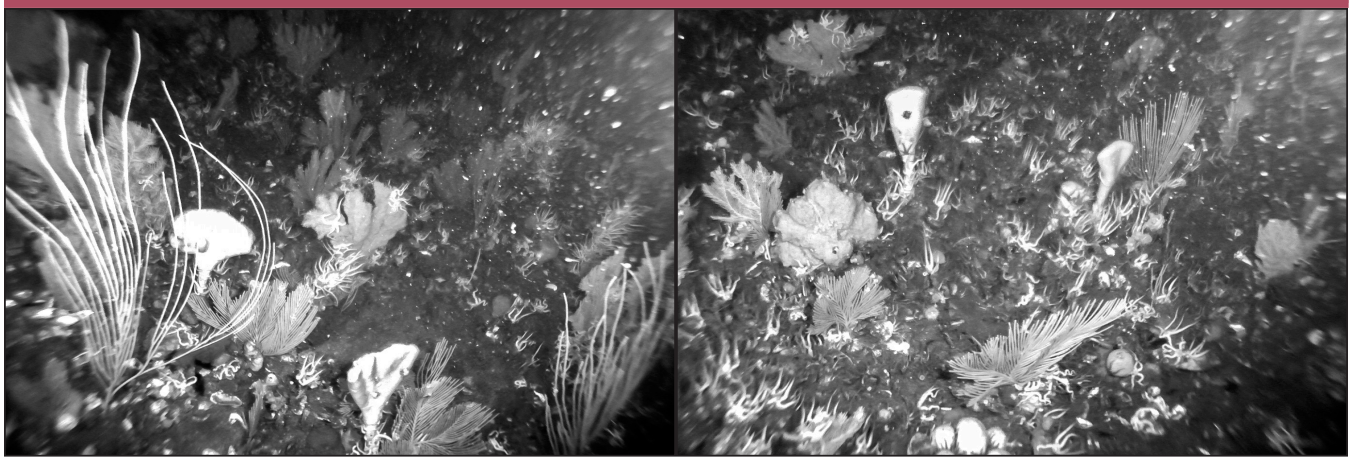
Fish and Crab Composition (n = 24)



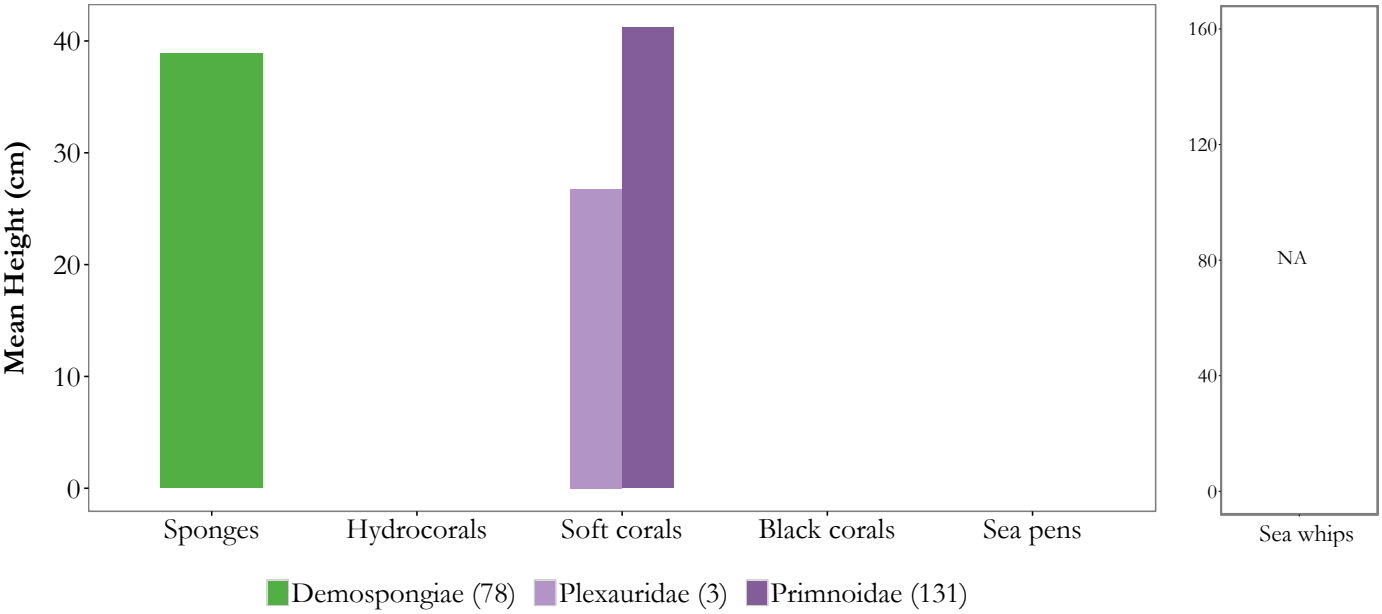
Substrate Composition

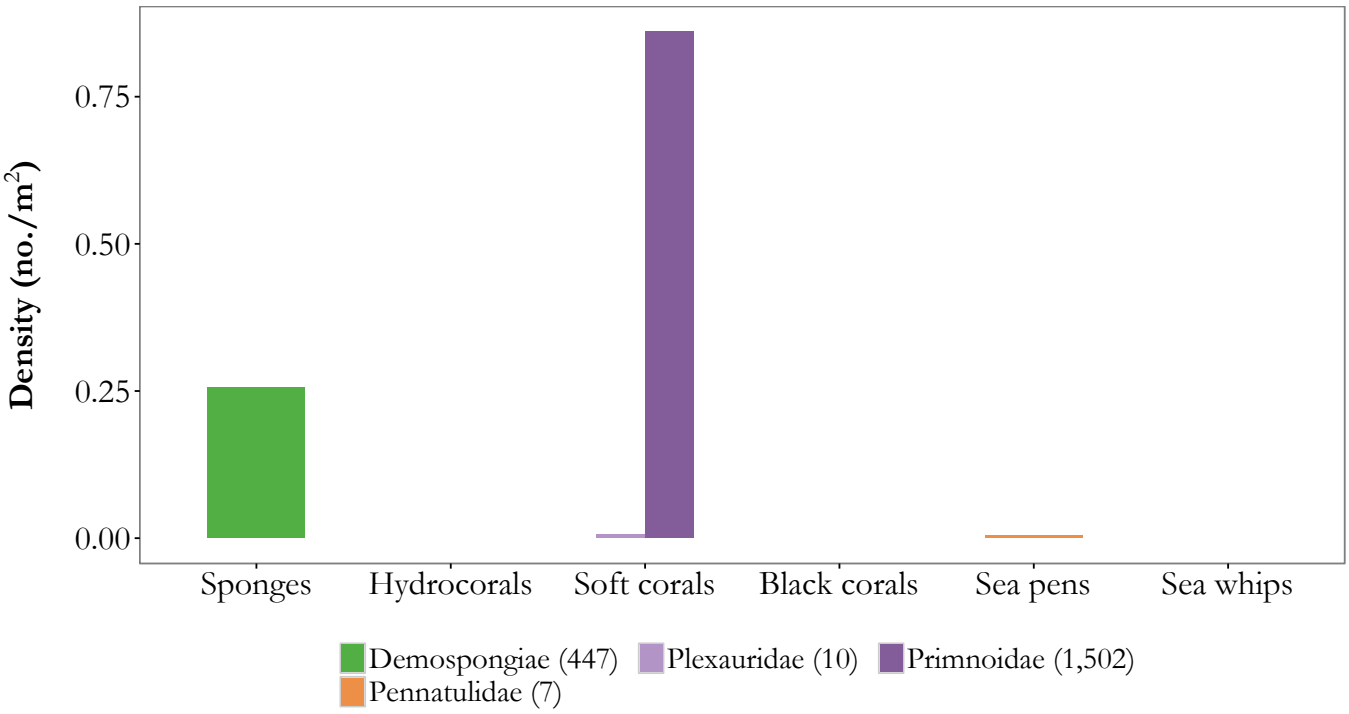


Images



Vertical Habitat Summary





Summary - description of transect

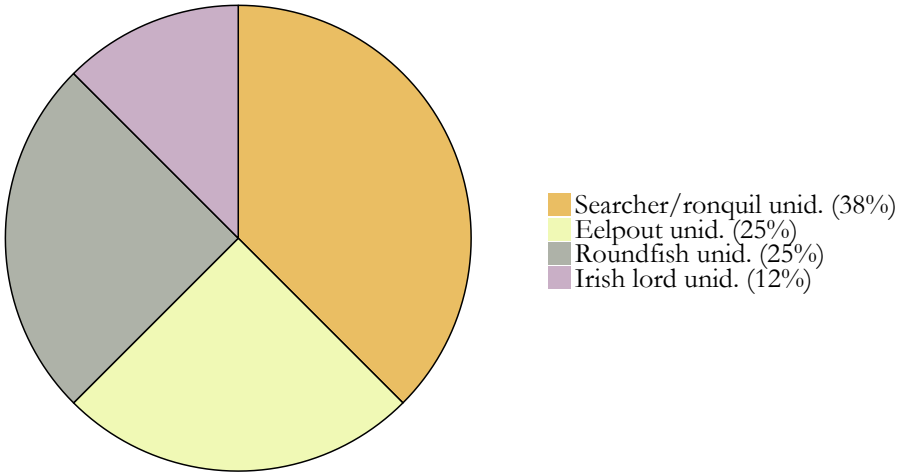
Transect 2012-42: Substrate composition for this transect was very diverse. Primary and secondary substrates were largely (70%) low bedrock and sand. The remaining 30% were fairly evenly distributed between 17 other classifications. Overall fish abundance was relatively low (0.01 individuals/m^2). Primnoidae dominated the structure-forming invertebrate density (0.86 individuals/m^2). Demospongiae and Primnoidae mean heights were 39 cm and 41 cm. Plexauridae mean height was considerably lower, 27 cm.

AREA: Seguam Pass To Amchitka Pass — Transect *2012-43

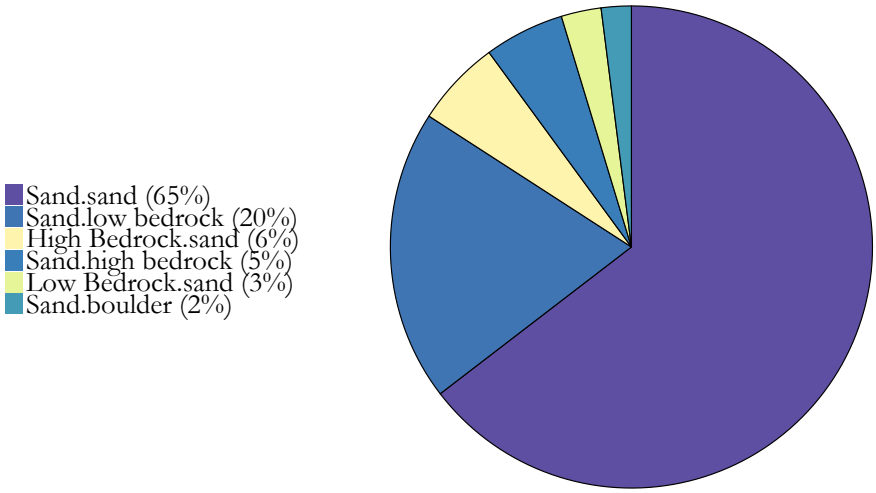
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.92	-174.98	983	110	5.1

*Area of high coral or sponge density (> 1.0 individuals/m^2)

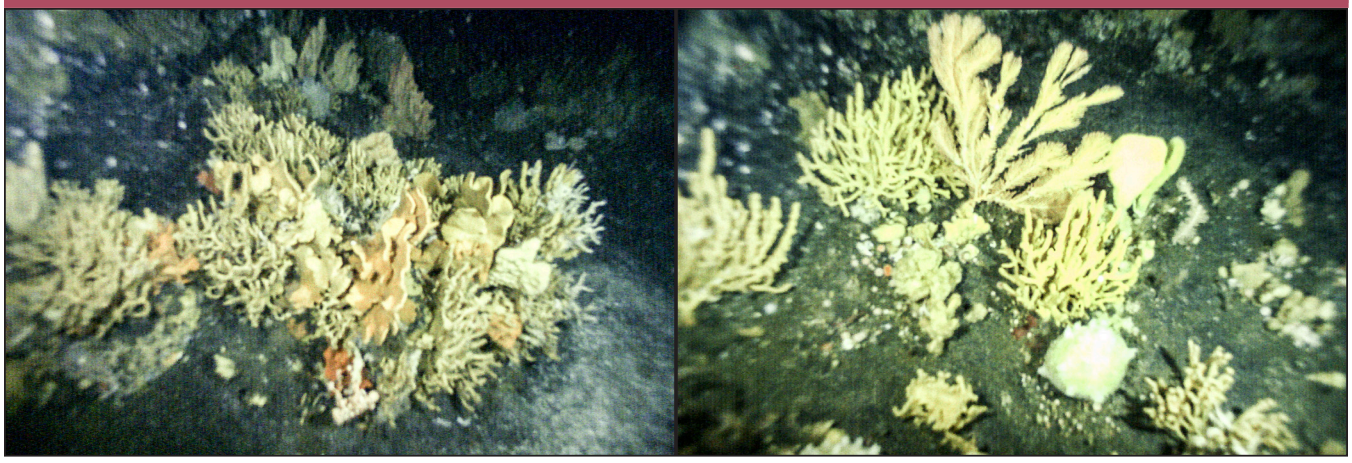
Fish and Crab Composition (n = 8)



Substrate Composition



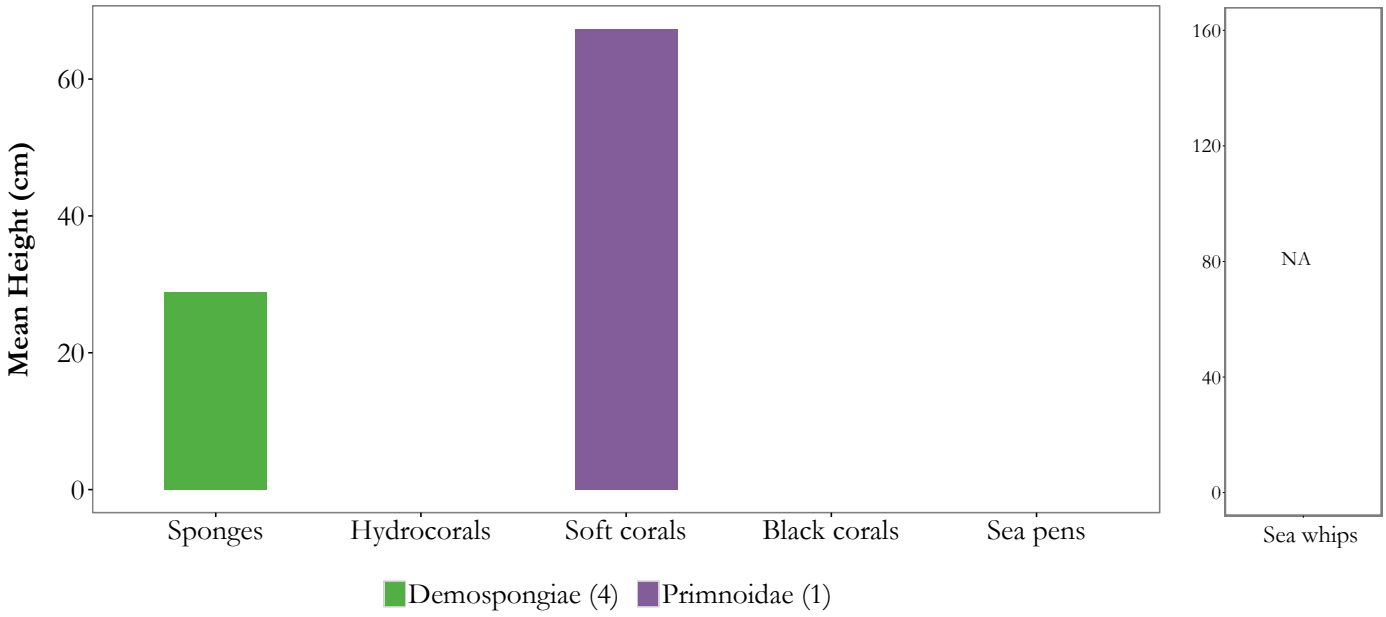
Images

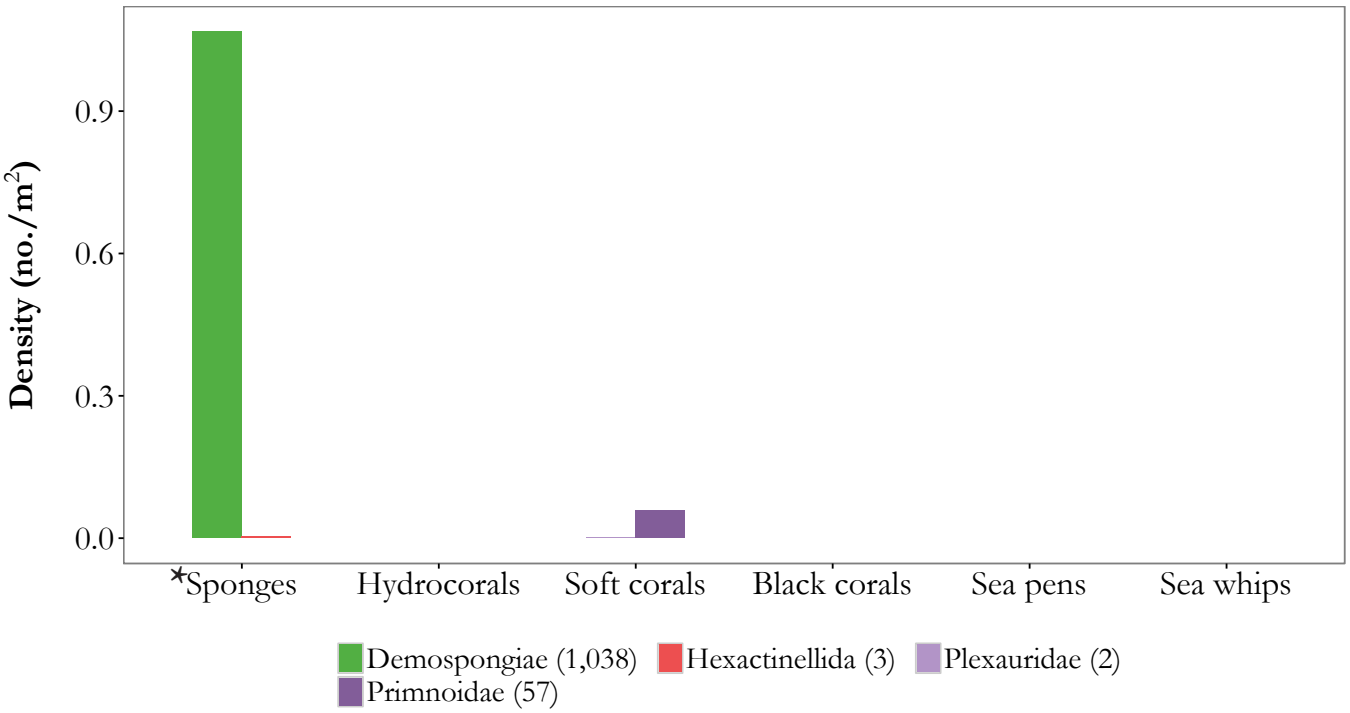


AREA: Seguam Pass To Amchitka Pass Transect *2012-43

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





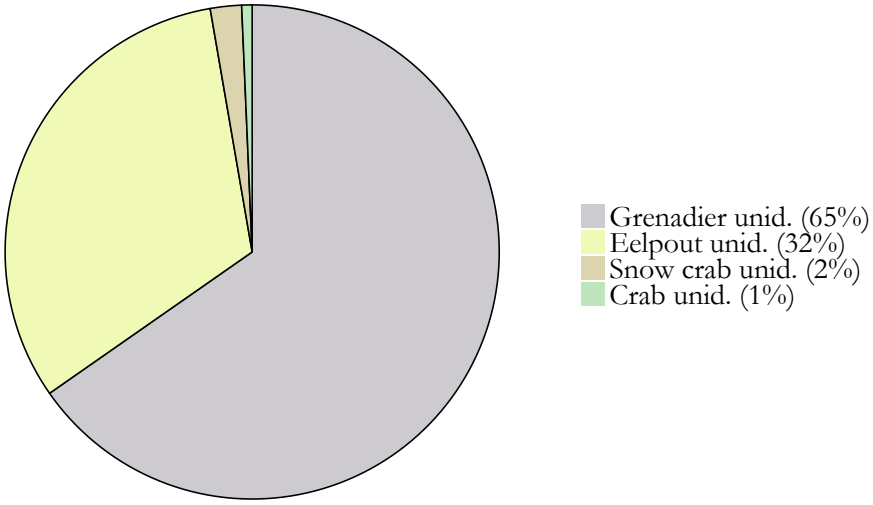
Summary - description of transect

Transect 2012-43: Primary and secondary substrates consisted of sand and low bedrock. Fish density was low (0.01 individuals/m^2). Structure-forming invertebrate density was 1.13 individuals/m^2 with 94% consisting of Demospongiae. Mean height was calculated for 4 Demospongiae at 29 cm.

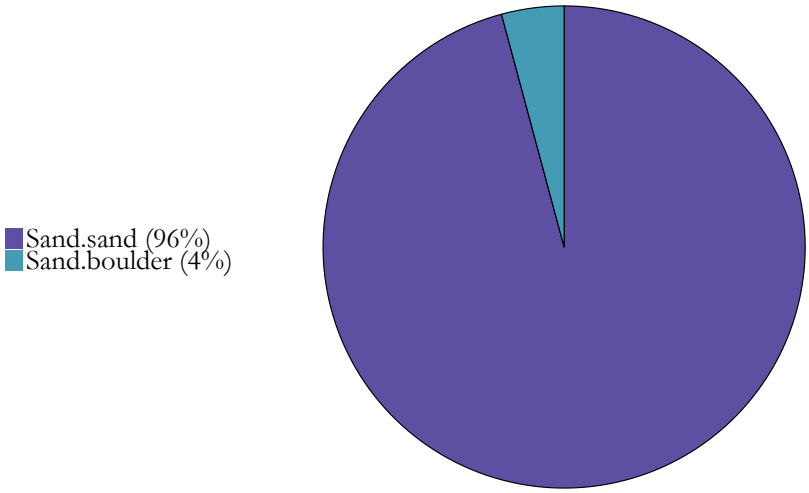
AREA: Seguam Pass To Amchitka Pass — Transect 2012-44

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/20/2012	51.74	-174.89	1,033	866	3.4

Fish and Crab Composition (n = 147)



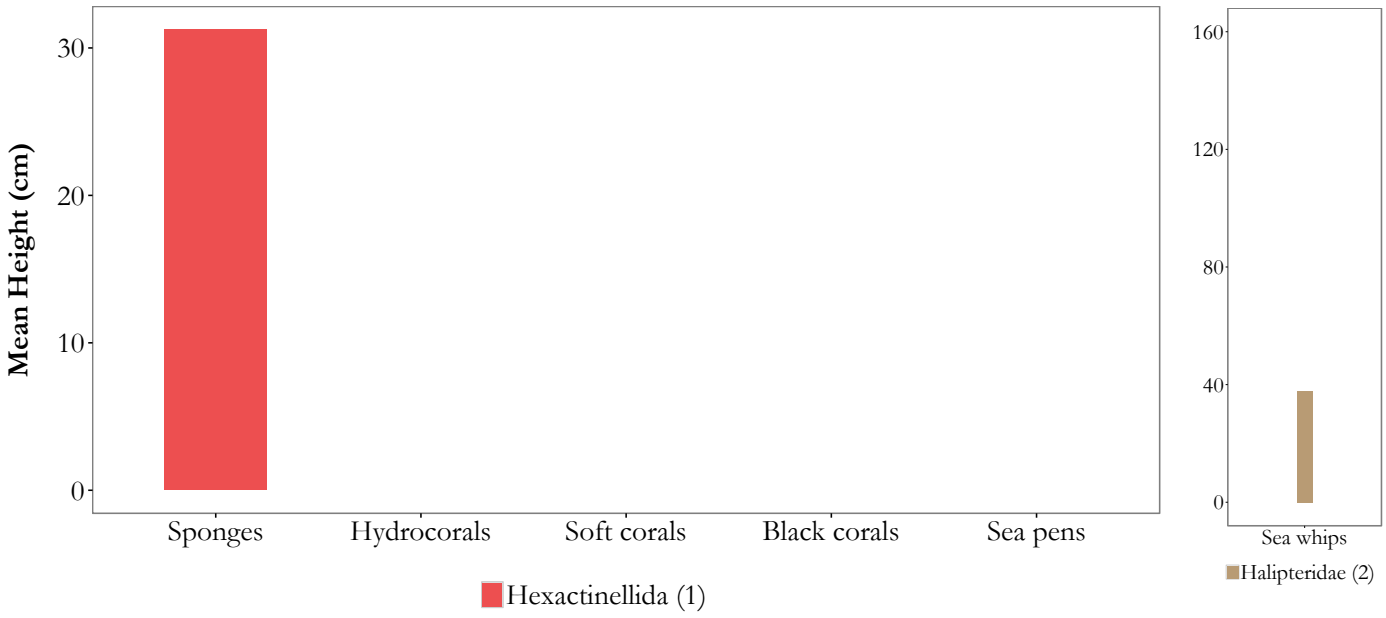
Substrate Composition

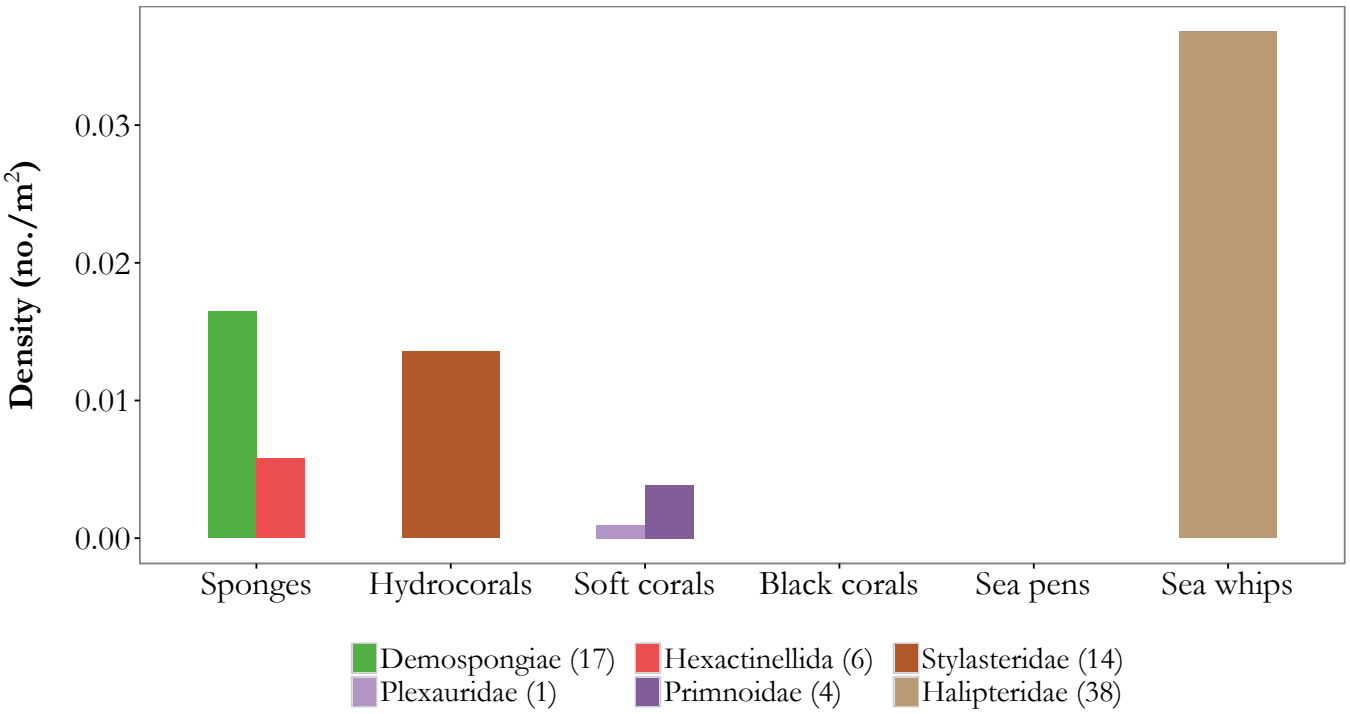


Images

AREA: Seguam Pass To Amchitka Pass Transect 2012-44

Vertical Habitat Summary





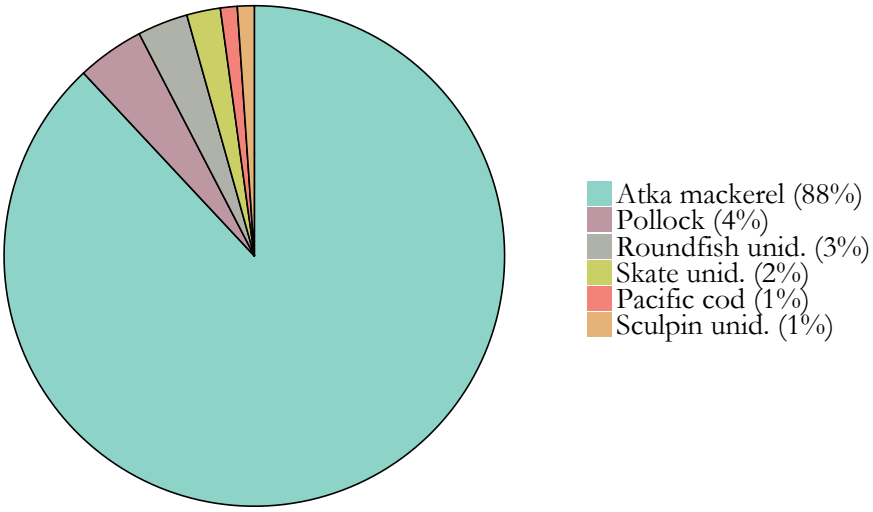
Summary - description of transect

Transect 2012-44: Primary and secondary substrates consisted of sand and a few boulders. Species abundance (n = 147) was dominated by grenadiers and eelpouts, with smaller counts of crab. Fish and crab density was 0.14 individuals/m^2. Demospongiae density was low (0.03 individuals/m^2). Halipteridae comprised 48% of the structure-forming invertebrate density, 0.04 individuals/m^2.

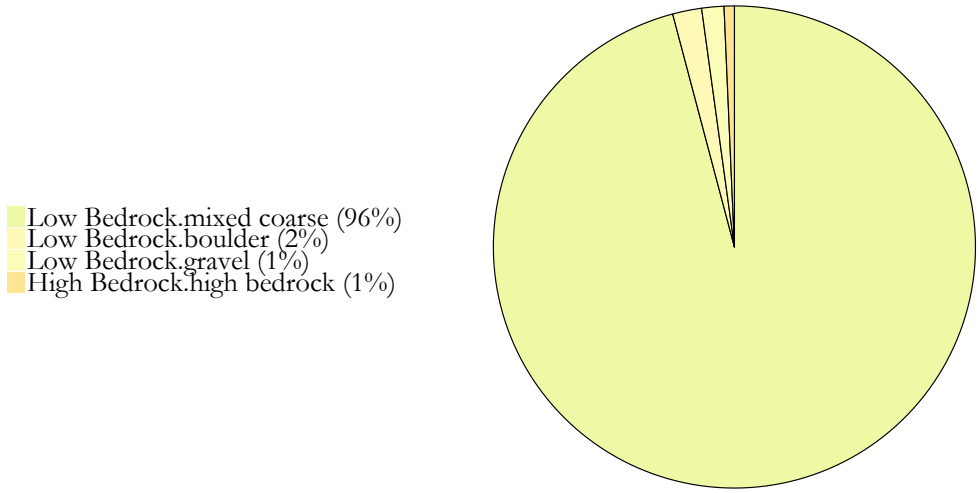
AREA: Seguam Pass To Amchitka Pass — Transect 2012-45

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/21/2012	51.55	-178.39	4,096	106	4.9

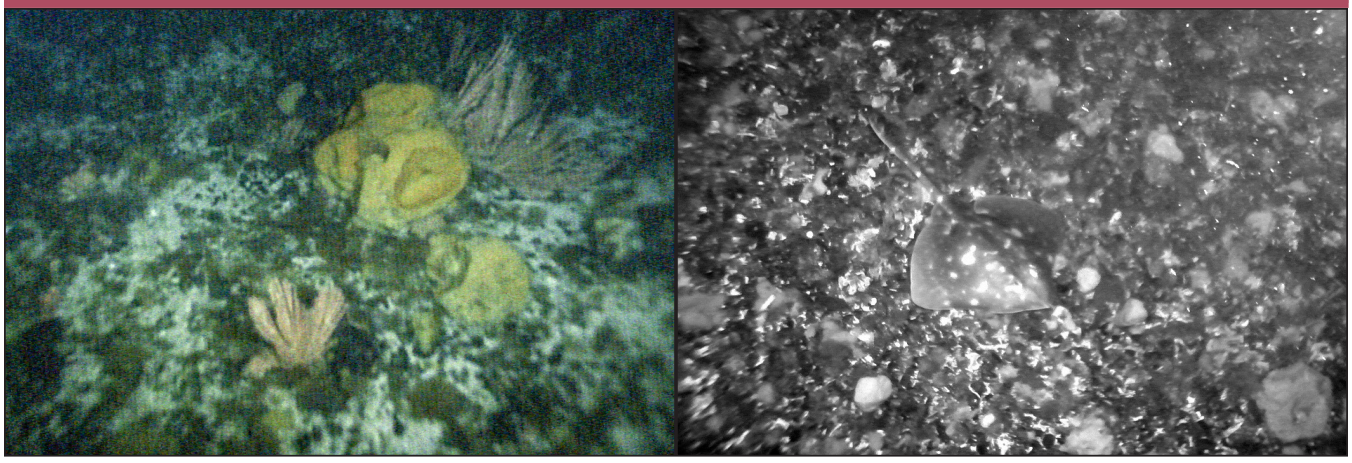
Fish and Crab Composition (n = 92)



Substrate Composition

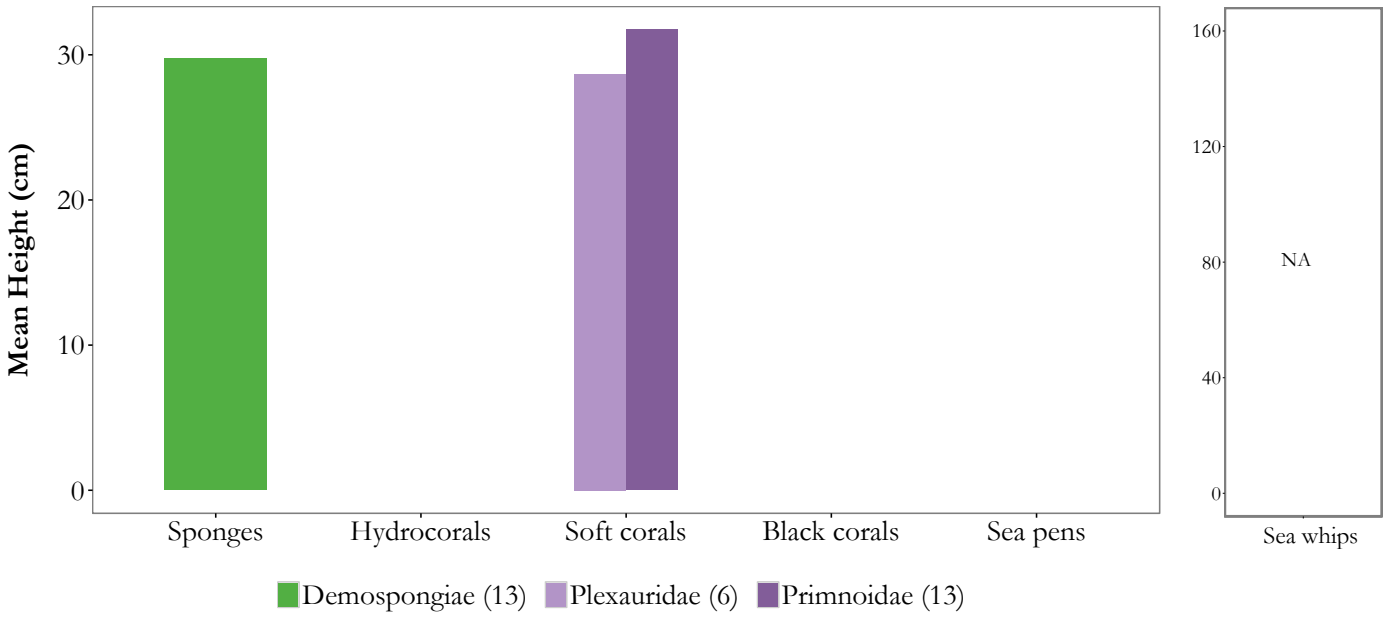


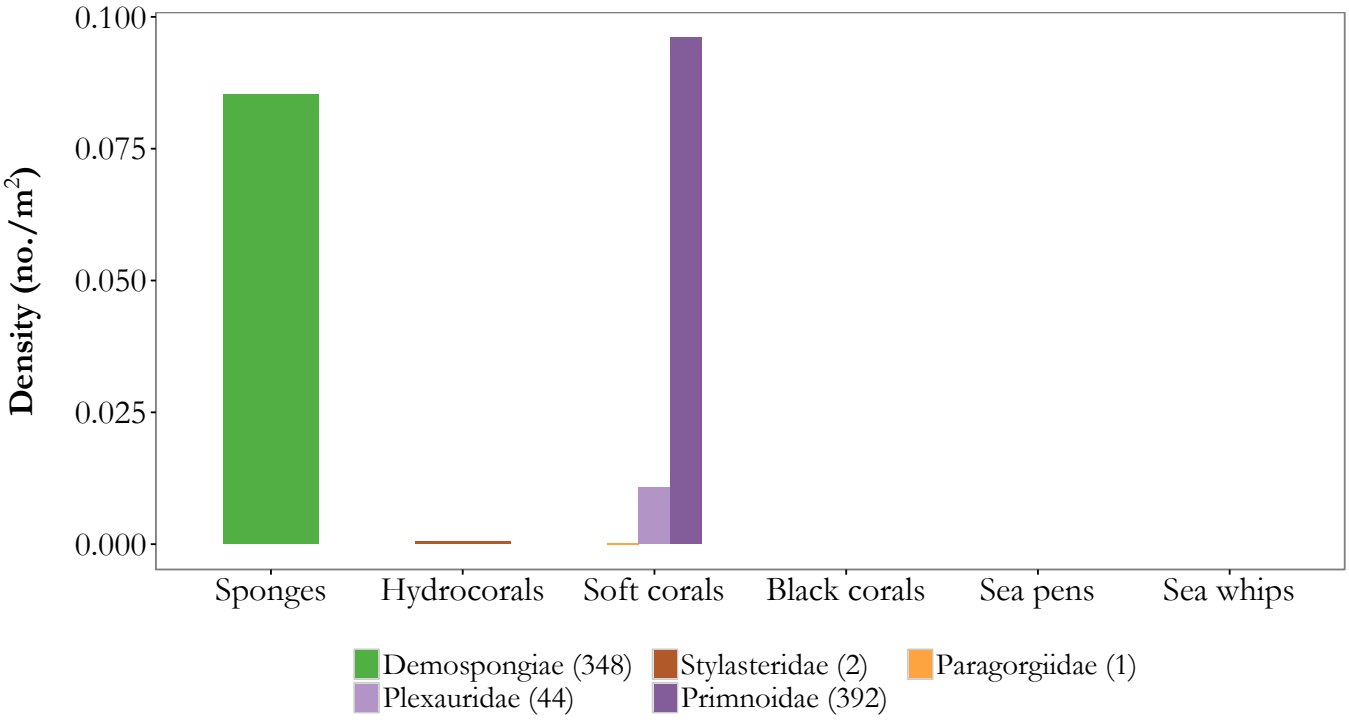
Images



AREA: Seguam Pass To Amchitka Pass Transect 2012-45

Vertical Habitat Summary





Summary - description of transect

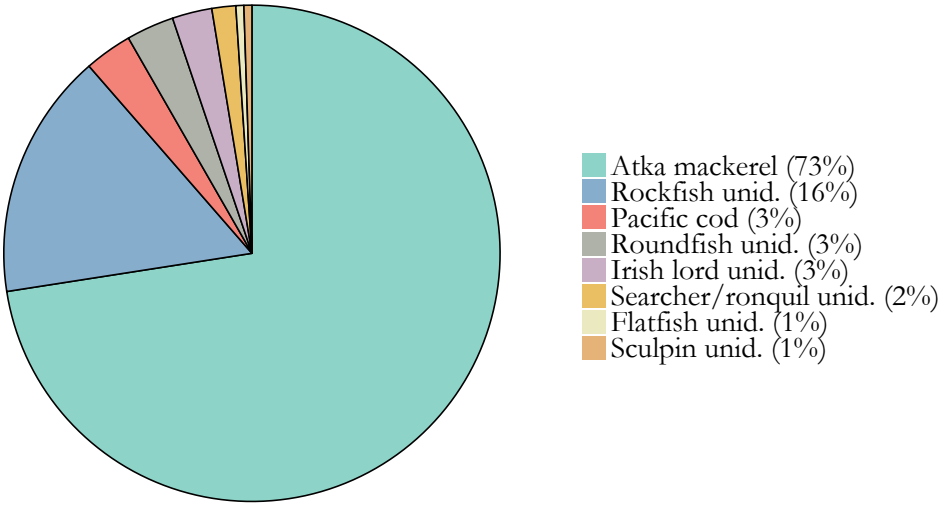
Transect 2012-45: Primary and secondary substrates were largely bedrock and mixed coarse. Overall fish density was low (0.02 individuals/m^2). Atka mackerel (n = 81) accounted for 88% of the fish density. Demospongiae (0.09 individuals/m^2) and Primnoidae (0.10 individuals/m^2) accounted for 94% of the structure-forming invertebrates. Mean heights for Demospongiae, Plexauridae, and Primnoidae were 30 cm, 29 cm, and 32 cm, respectively.

AREA: Seguam Pass To Amchitka Pass — Transect *2012-46

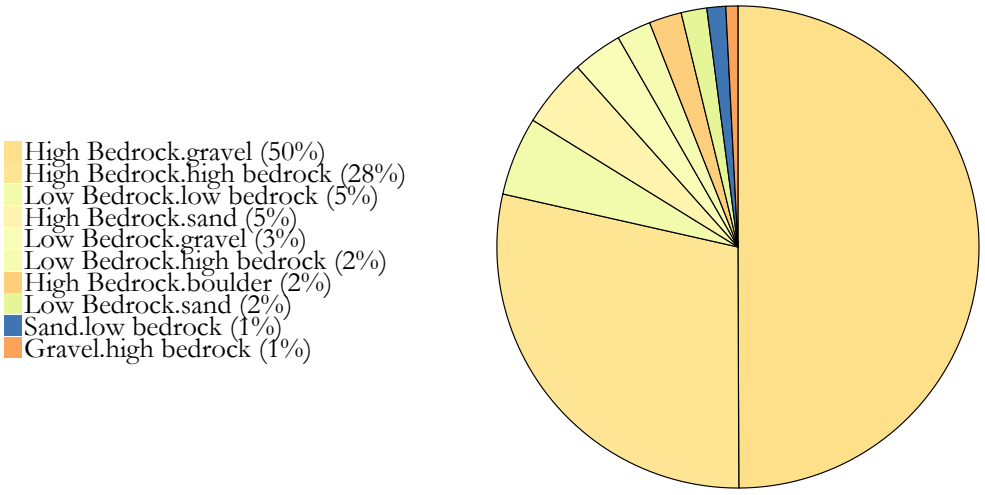
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/21/2012	51.50	-178.41	3,579	80	4.5

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 193)



Substrate Composition

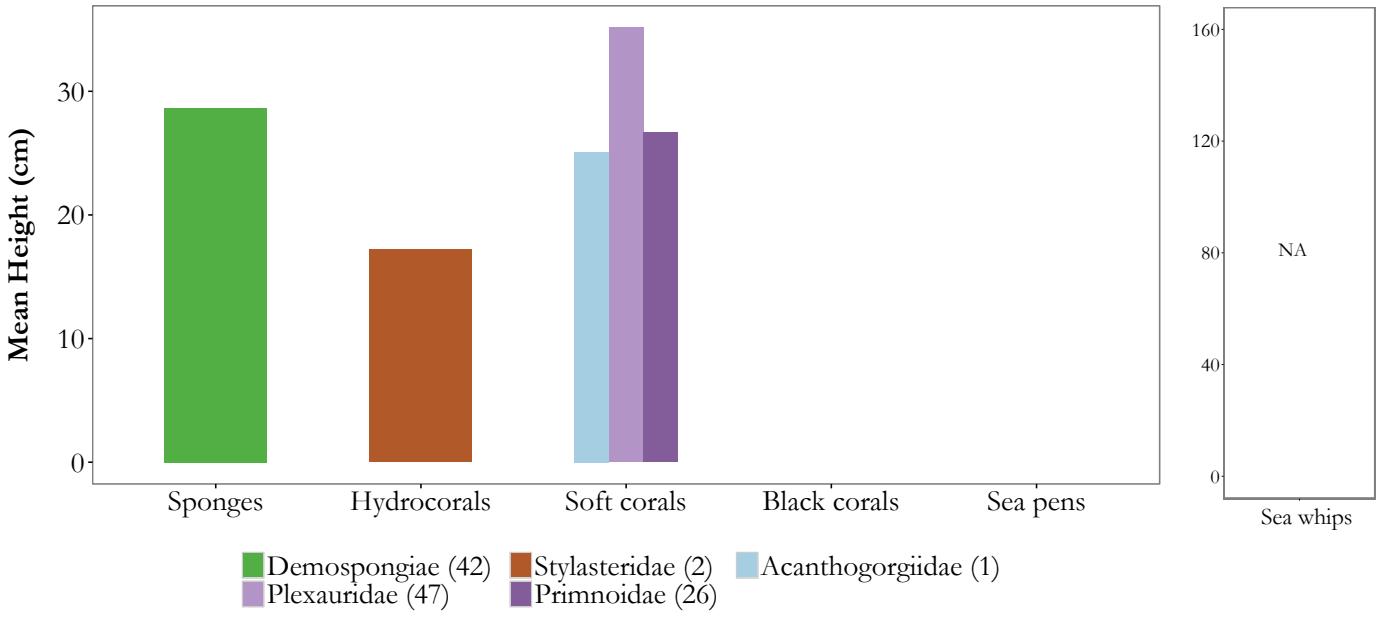


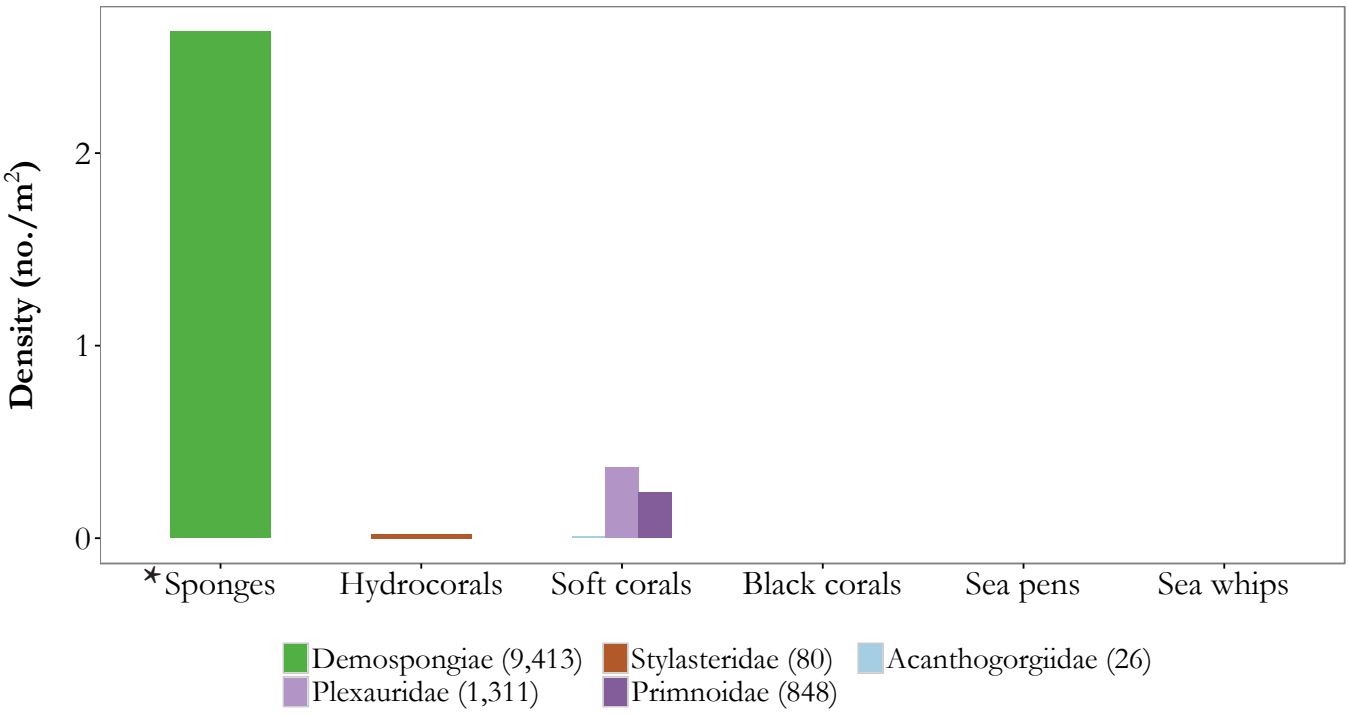
Images

AREA: Seguam Pass To Amchitka Pass Transect *2012-46

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





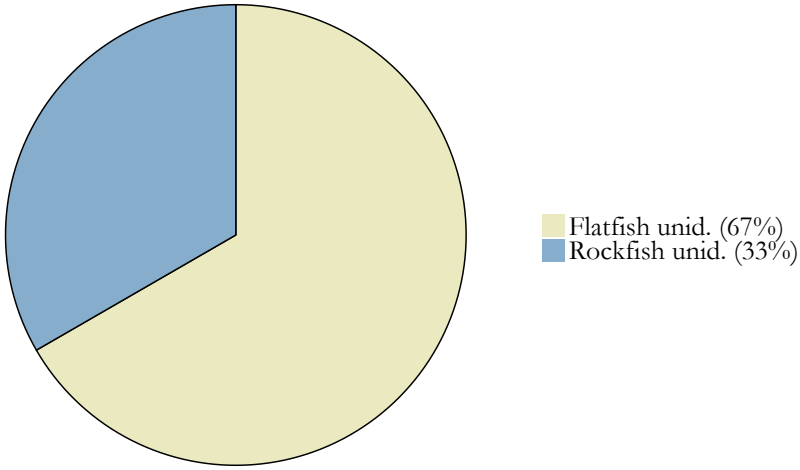
Summary - description of transect

Transect 2012-46: Primary and secondary substrates consisted largely of bedrock and gravel. Atka mackerel (n = 140) was the most abundant fish taxa identified consisting of 73% of the fish density (0.05 individuals/m^2). Unidentified rockfishes were the next most abundant, 0.01 individuals/m^2. Structure-forming invertebrates consisted largely of Demospongiae (2.63 individuals/m^2). Plexauridae (0.36 individuals/m^2) were more abundant than Primnoidae (0.24 individuals/m^2). Mean heights ranged from 17 cm for Stylasteridae to 35 cm for Plexauridae.

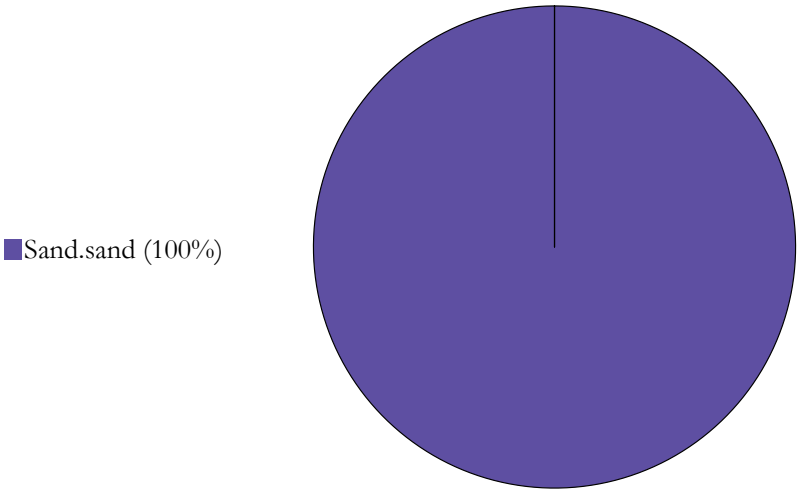
AREA: Seguam Pass To Amchitka Pass — Transect 2012-47

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/21/2012	51.52	-178.65	1,393	104	5.1

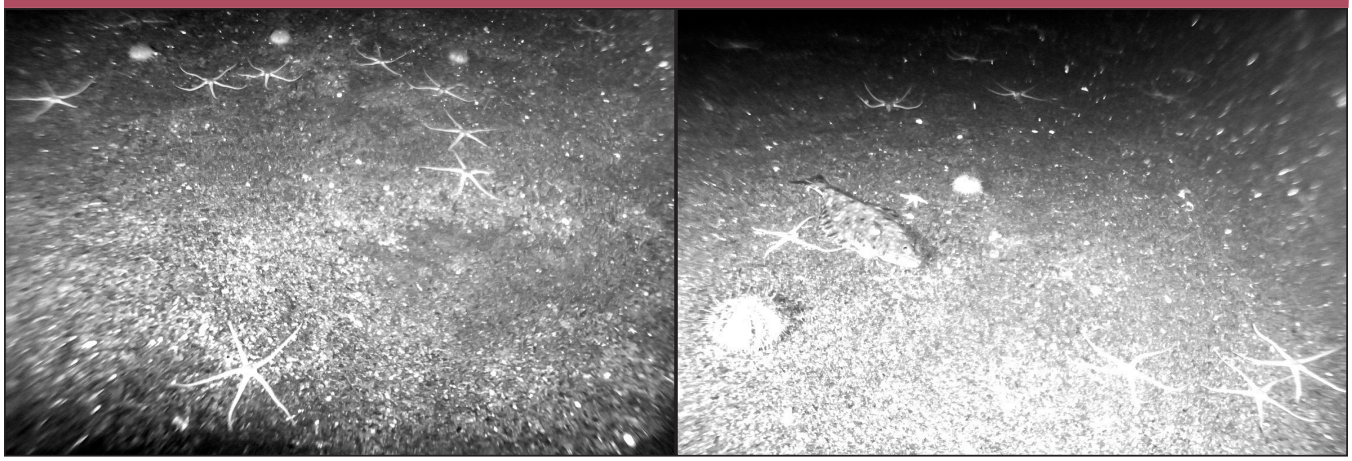
Fish and Crab Composition (n = 3)



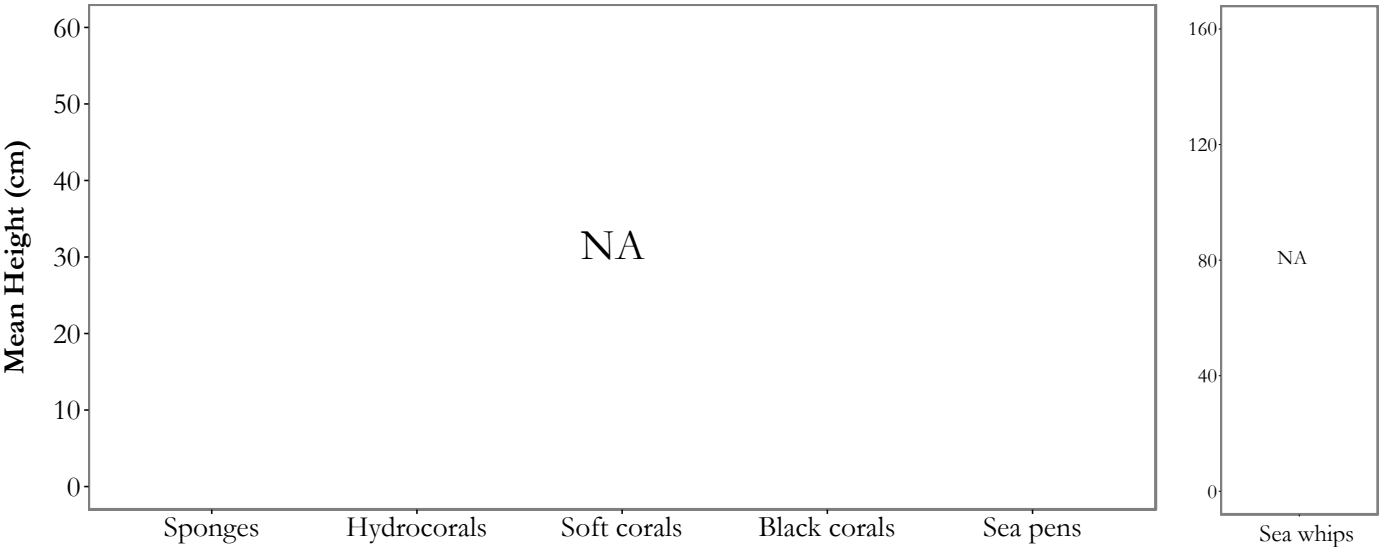
Substrate Composition

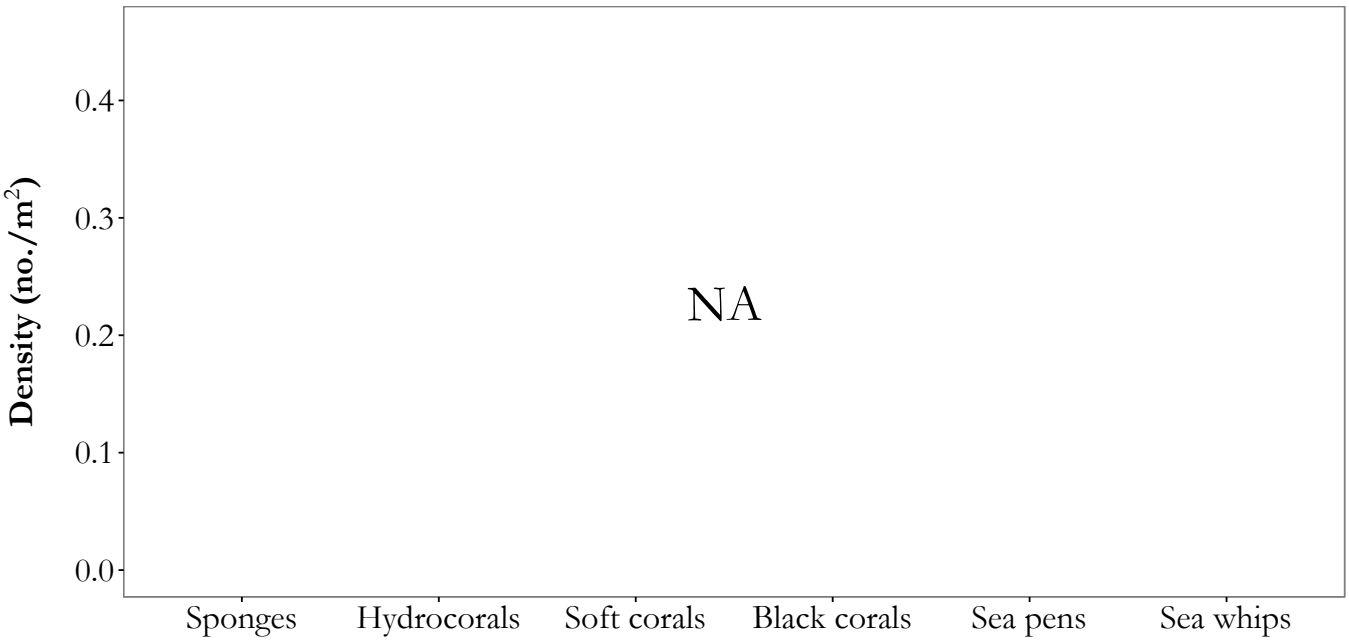


Images



Vertical Habitat Summary





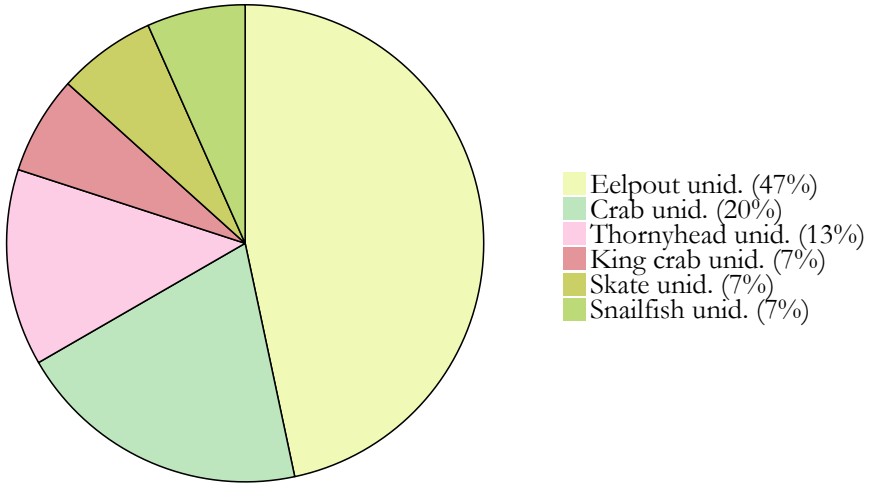
Summary - description of transcect

Transect 2012-47: Primary and secondary substrates consisted entirely of sand. Only three fishes were identified in this transect; flatfishes and rockfishes accounted for 100% of the individuals counted. Overall species density for this transect was low (< 0.01 individuals/m^2). No sponges, hydrocorals, corals, sea pens, or sea whips were identified.

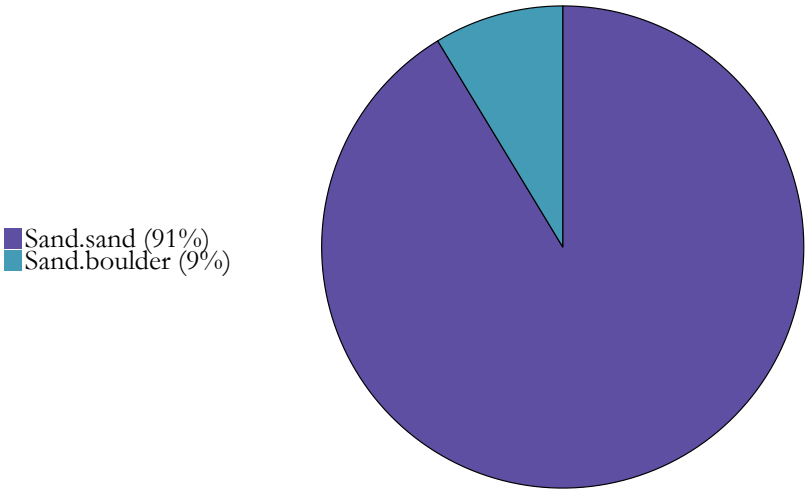
AREA: Seguam Pass To Amchitka Pass — Transect 2012-48

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/21/2012	51.47	-178.87	540	555	3.7

Fish and Crab Composition (n = 15)

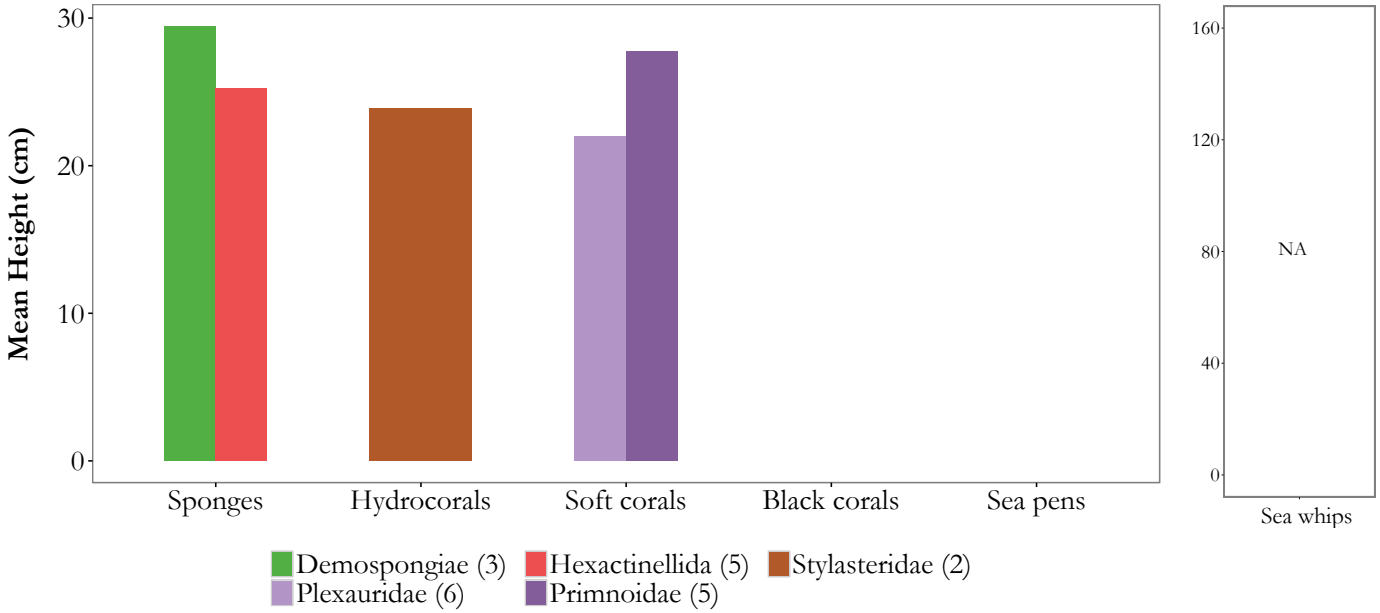


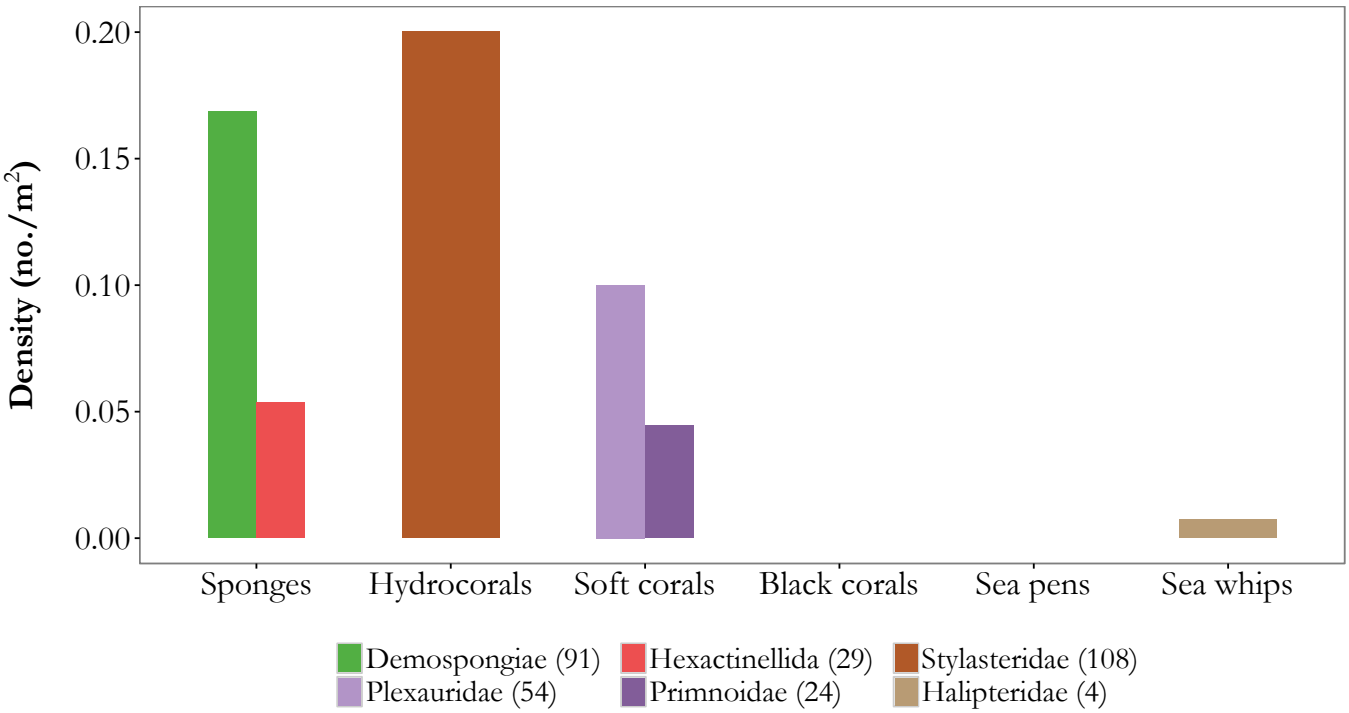
Substrate Composition



Images

Vertical Habitat Summary





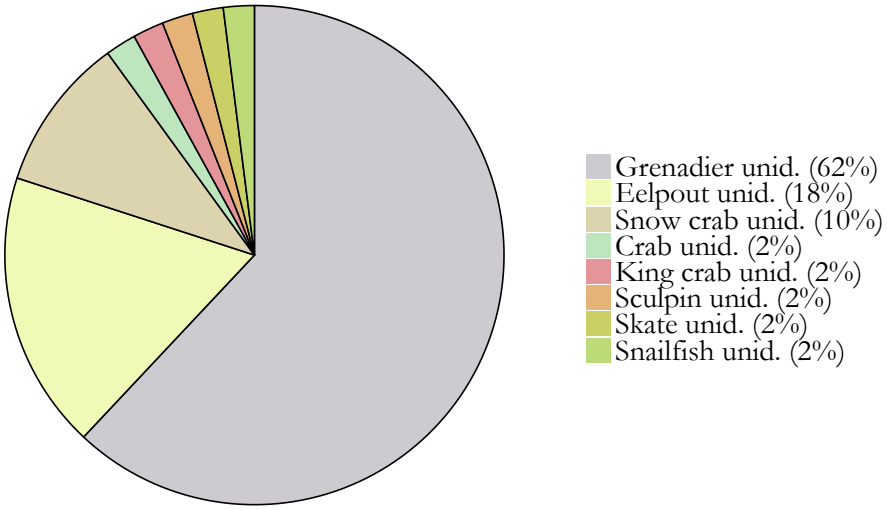
Summary - description of transect

Transect 2012-48: Primary and secondary substrates consisted of sand and boulder. Fish and crab density were low, 0.03 individuals/m^2. Eelpouts (0.01 individuals/m^2) were the most abundant fish taxa identified. Stylasteridae (0.20 individuals/m^2) were the most abundant structure-forming invertebrates followed by Demospongiae (0.17 individuals/m^2). Mean heights ranged from 22 cm to 29 cm with Stylasteridae being the shortest and Demospongiae being the tallest.

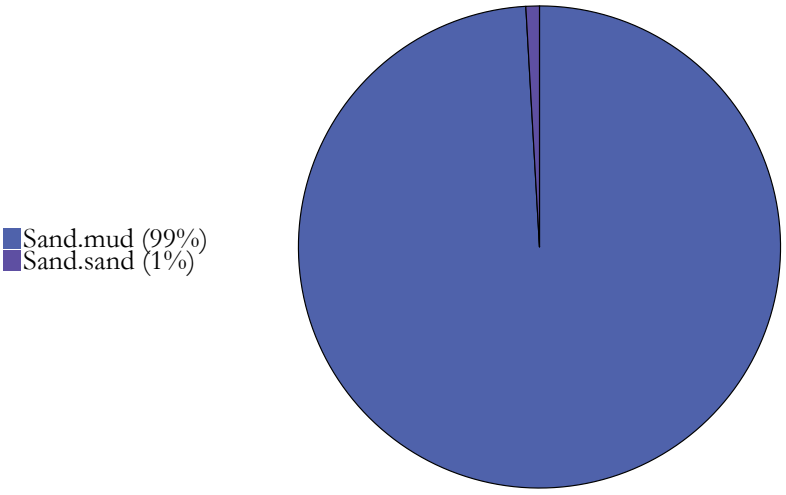
AREA: Seguam Pass To Amchitka Pass — Transect 2012-49

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/21/2012	51.38	-178.65	1,281	810	3.2

Fish and Crab Composition (n = 50)

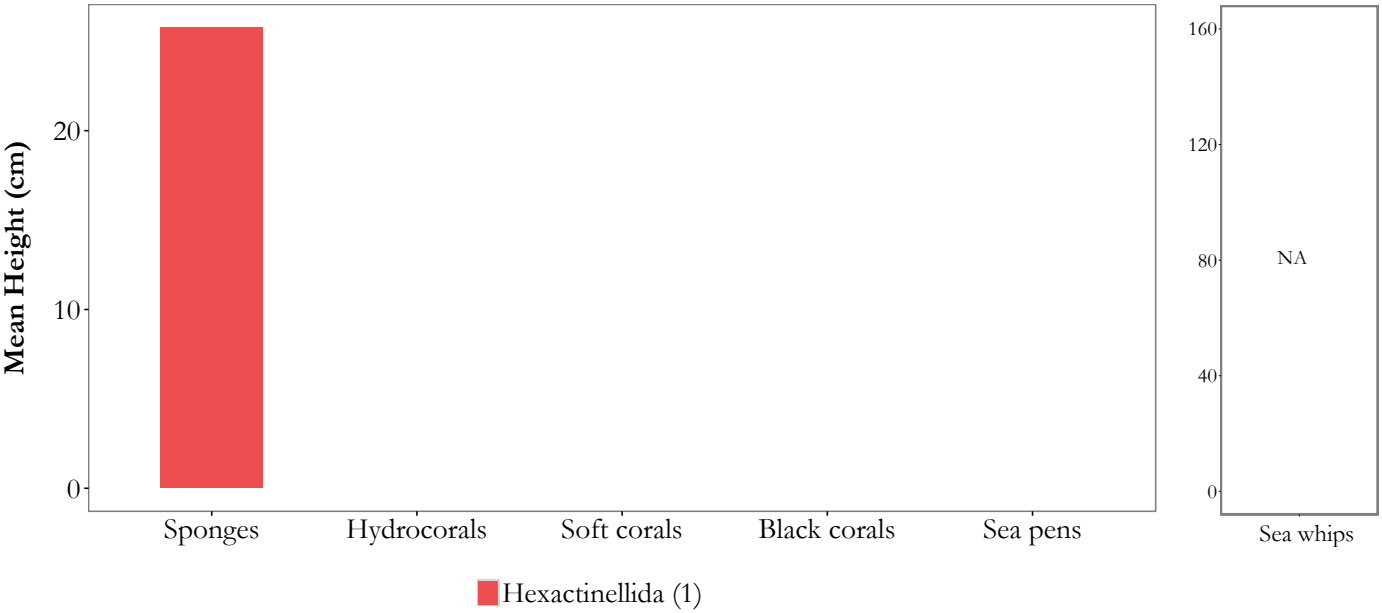


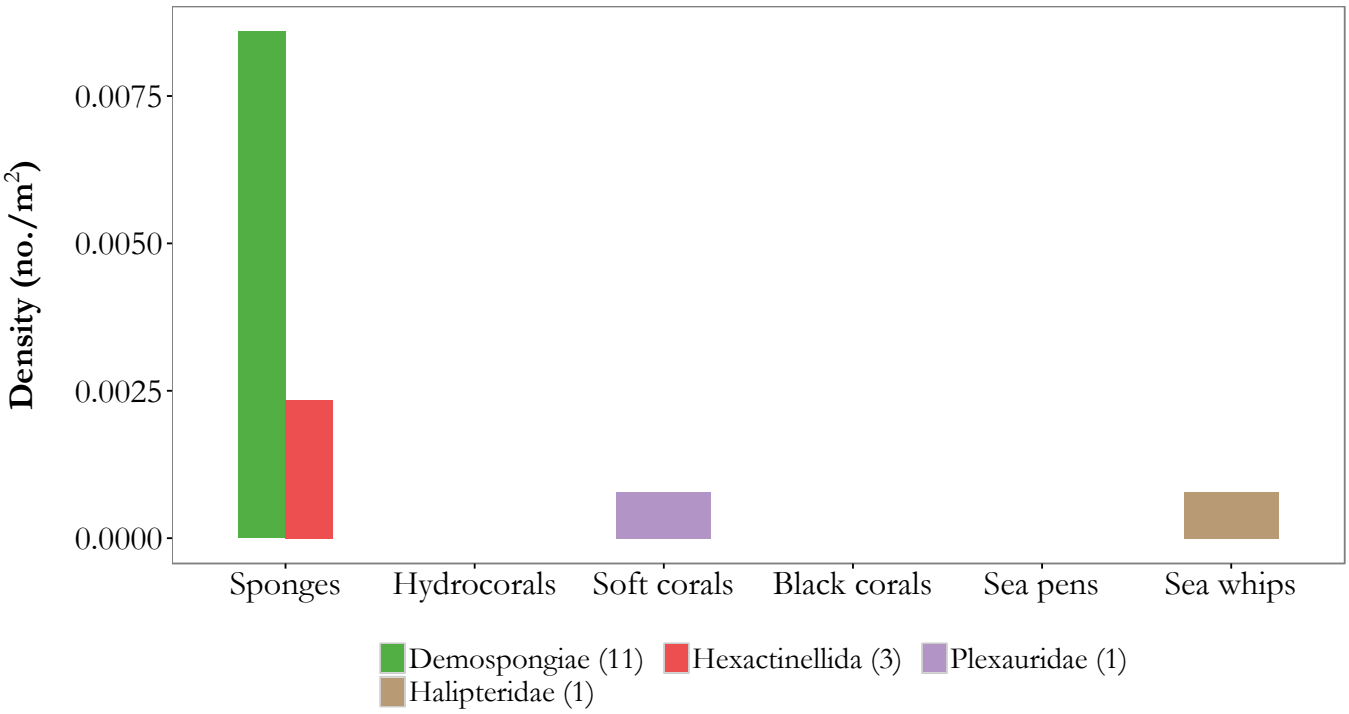
Substrate Composition



Images

Vertical Habitat Summary





Summary - description of transect

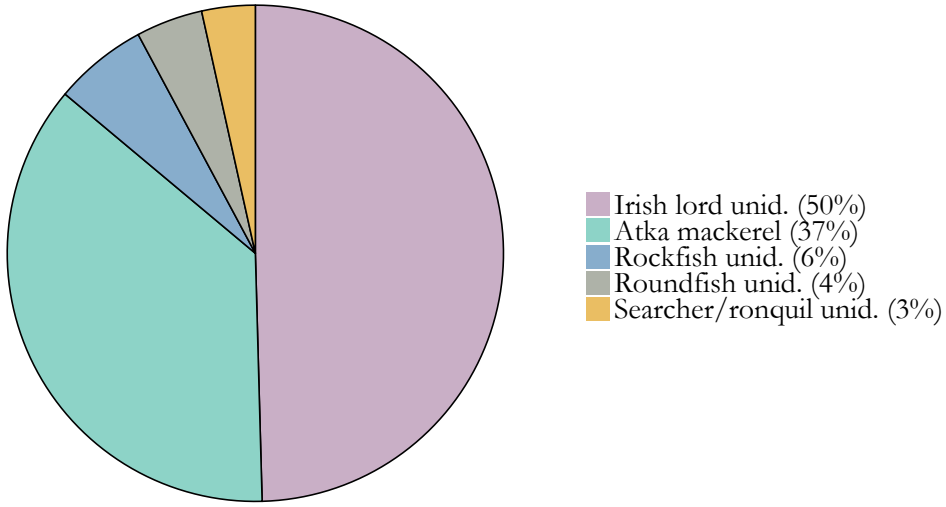
Transect 2012-49: Primary and secondary substrates consisted of sand and mud. Fifty fishes and crabs were identified on this transect of which 31 (0.04 individuals/m^2) were grenadiers. Available structure-forming invertebrates consisted of sponges, corals, and sea whips. Overall density was low (0.01 individuals/m^2). Only 1 Hexactinellida was measured at 26 cm.

AREA: Seguam Pass To Amchitka Pass — Transect *2012-50

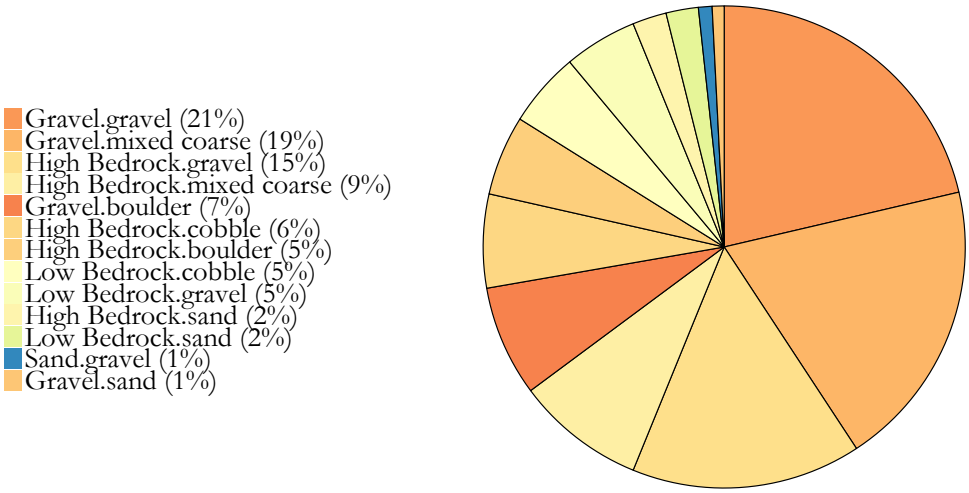
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/21/2012	51.30	-179.03	1,213	82	5.4

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 115)



Substrate Composition

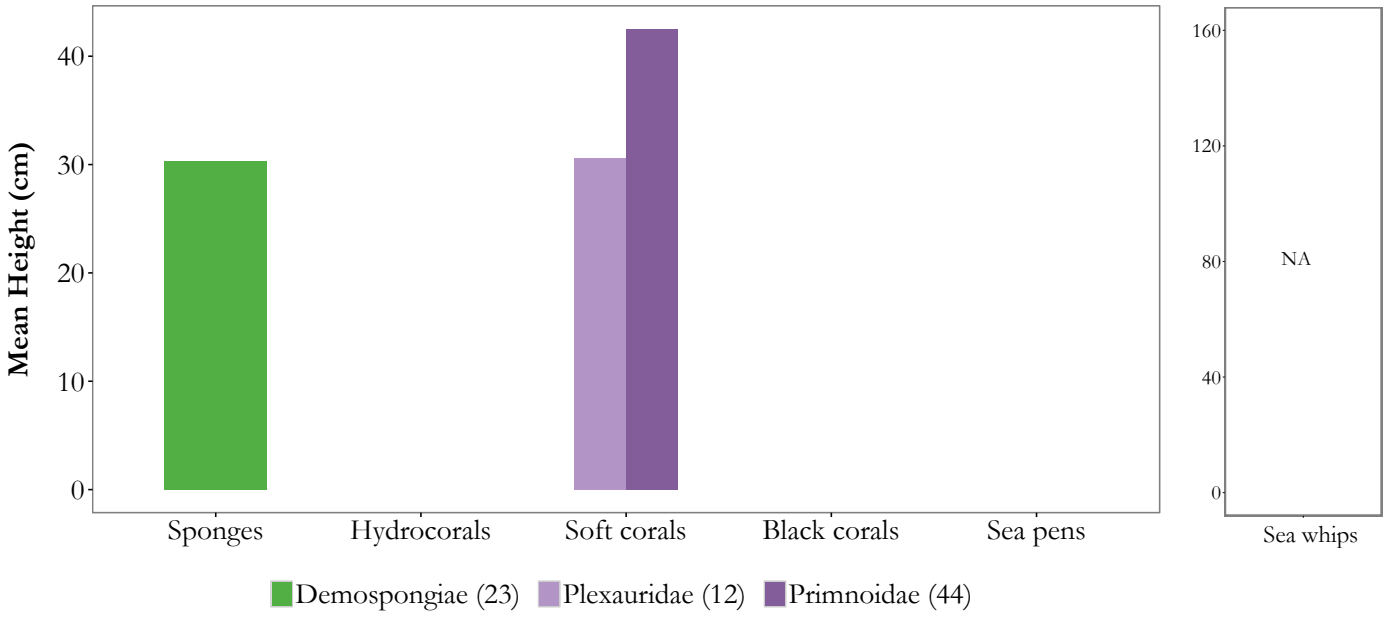


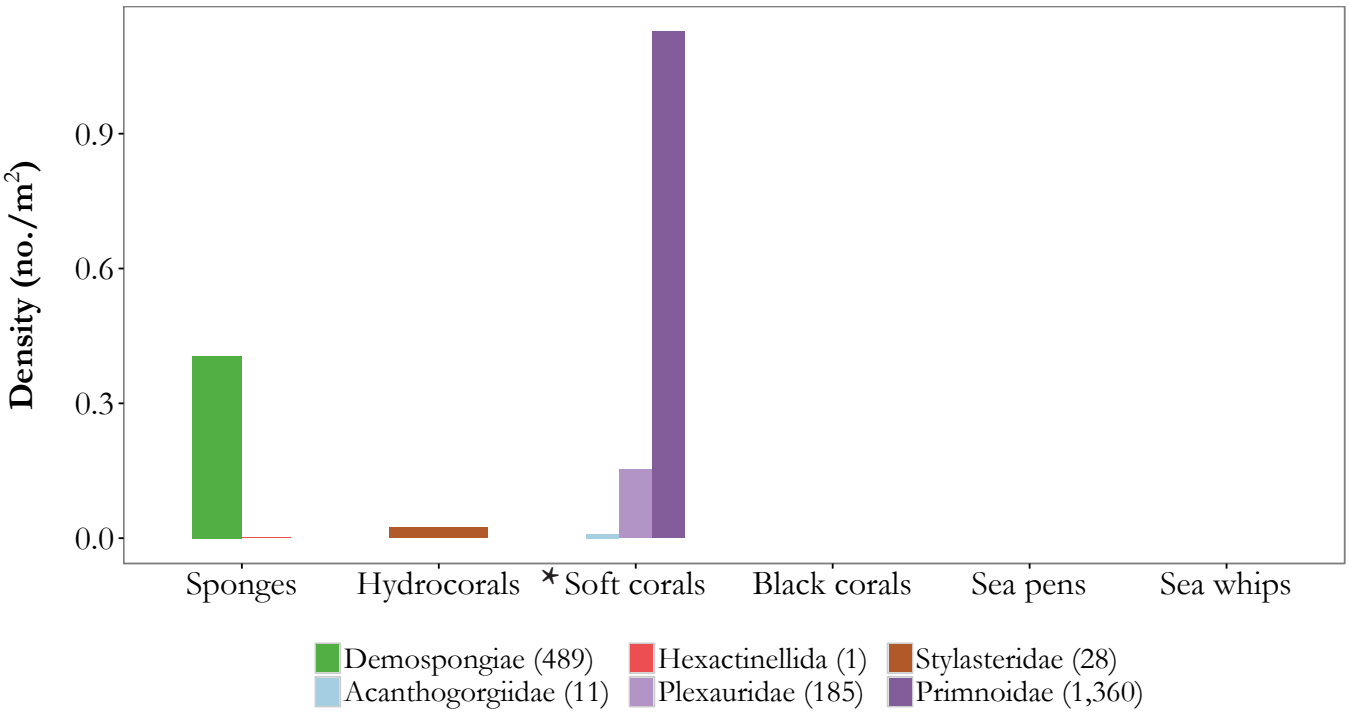
Images

AREA: Seguam Pass To Amchitka Pass Transect *2012-50

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





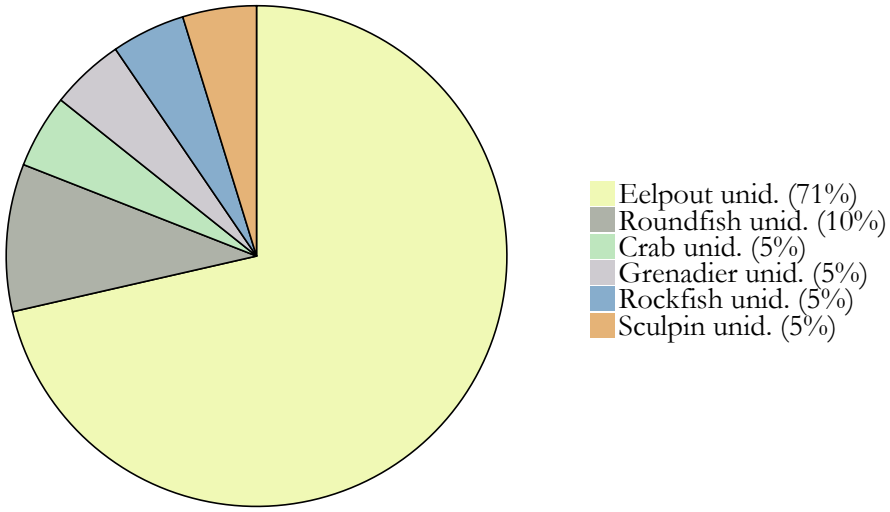
Summary - description of transect

Transect 2012-50: Primary and secondary substrates consisted of gravel, bedrock, and mixed coarse. Fish density (0.10 individuals/m^2) was fairly evenly distributed between Atka mackerel and Irish lords, with smaller counts of roundfishes, rockfishes and searchers/ronquils. Structure-forming invertebrate density was 1.72 individuals/m^2 of which Primnoidae were 66% (1.13 individuals/m^2). Demospongiae were the next most abundant (0.41 individuals/m^2). Mean heights for Demospongiae, Plexauridae, and Primnoidae were 30 cm, 31 cm, and 43 cm, respectively.

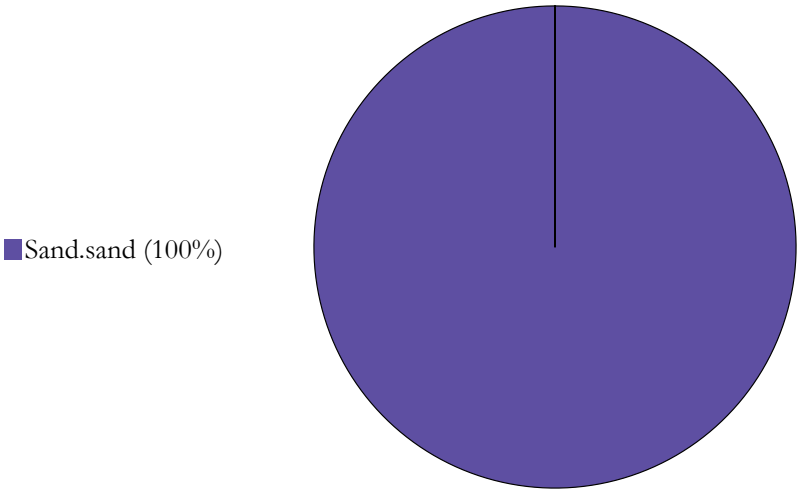
AREA: Seguam Pass To Amchitka Pass — Transect 2012-51

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/21/2012	51.45	-179.07	526	701	3.1

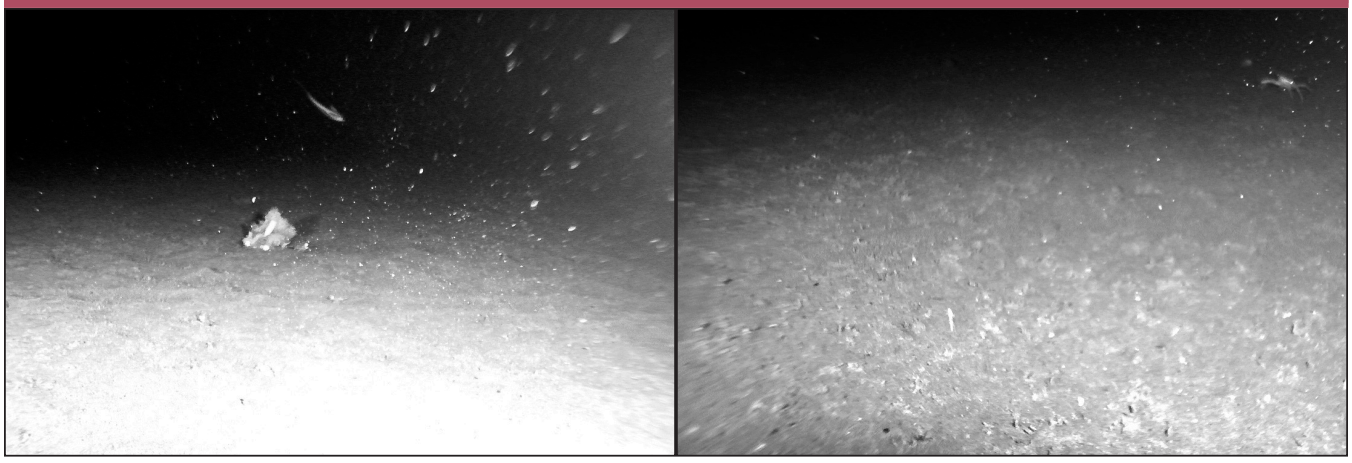
Fish and Crab Composition (n = 21)



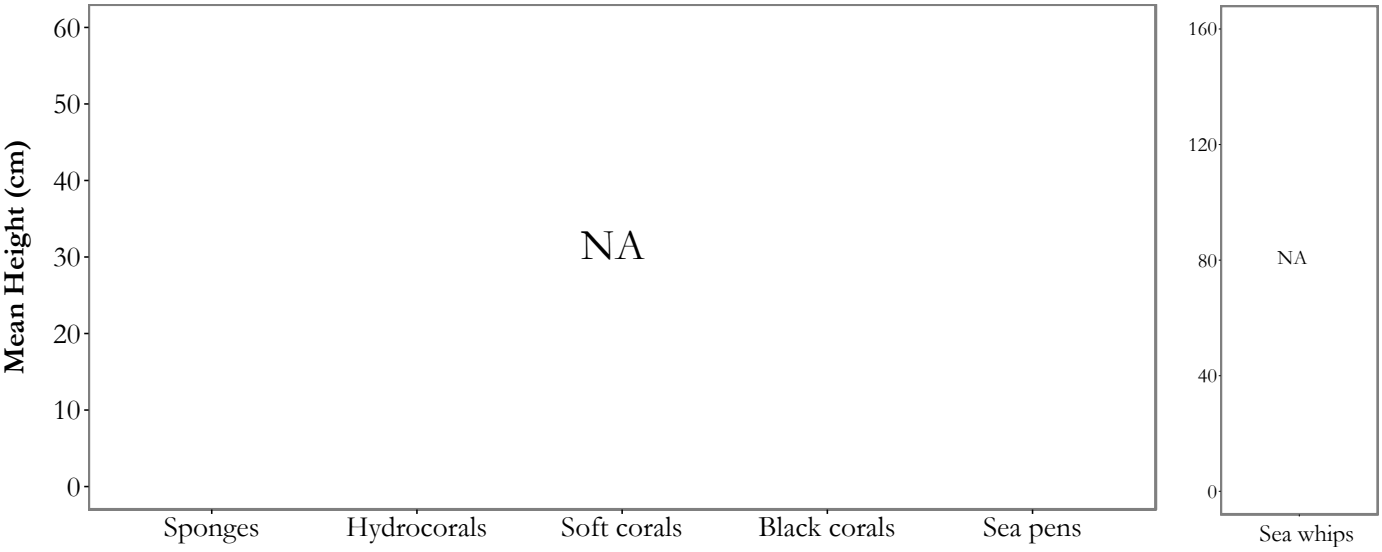
Substrate Composition

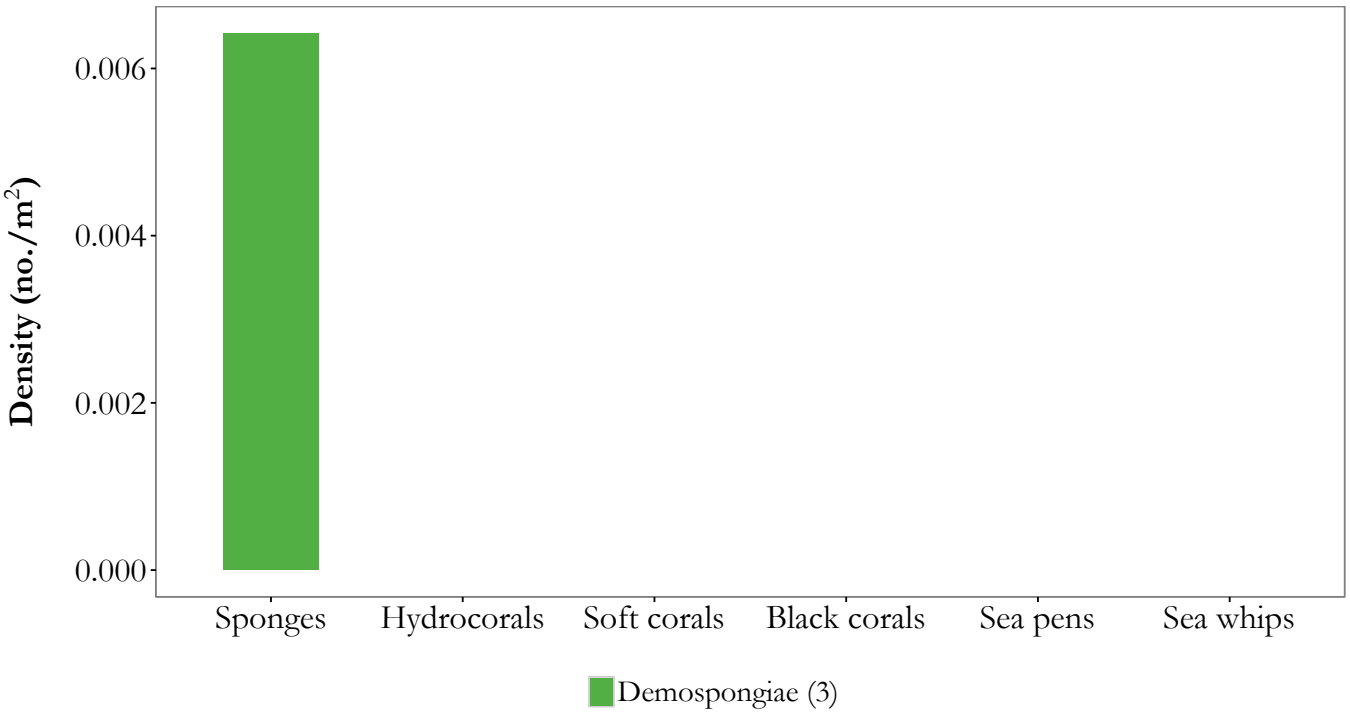


Images



Vertical Habitat Summary





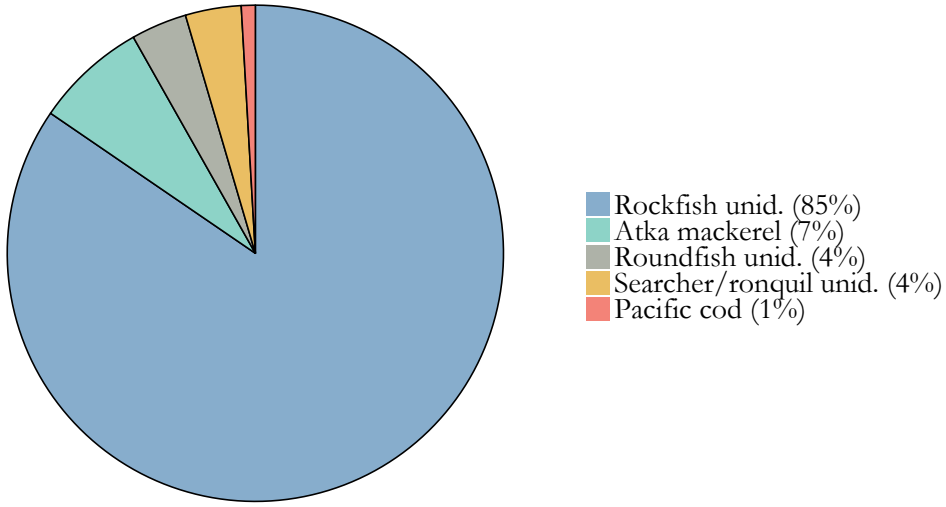
Summary - description of transect

Transect 2012-51: Primary and secondary substrates consisted entirely of sand. A majority of the fish and crab density (0.04 individuals/m^2) was eelpouts (71%). Only 3 Demospongiae were identified for a density of 0.01 individuals/m^2. No height measurements were taken.

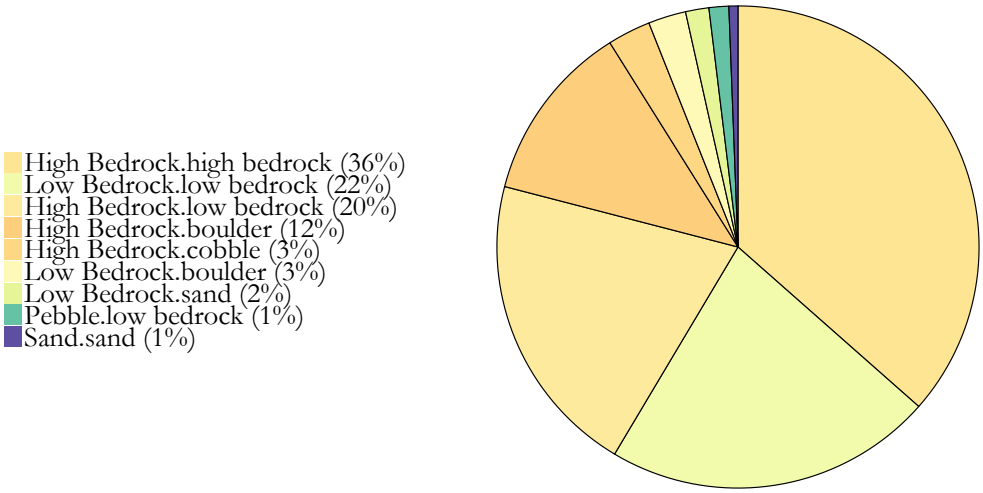
AREA: Seguam Pass To Amchitka Pass — Transect 2012-52

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/21/2012	51.58	-179.17	3,796	97	4.4

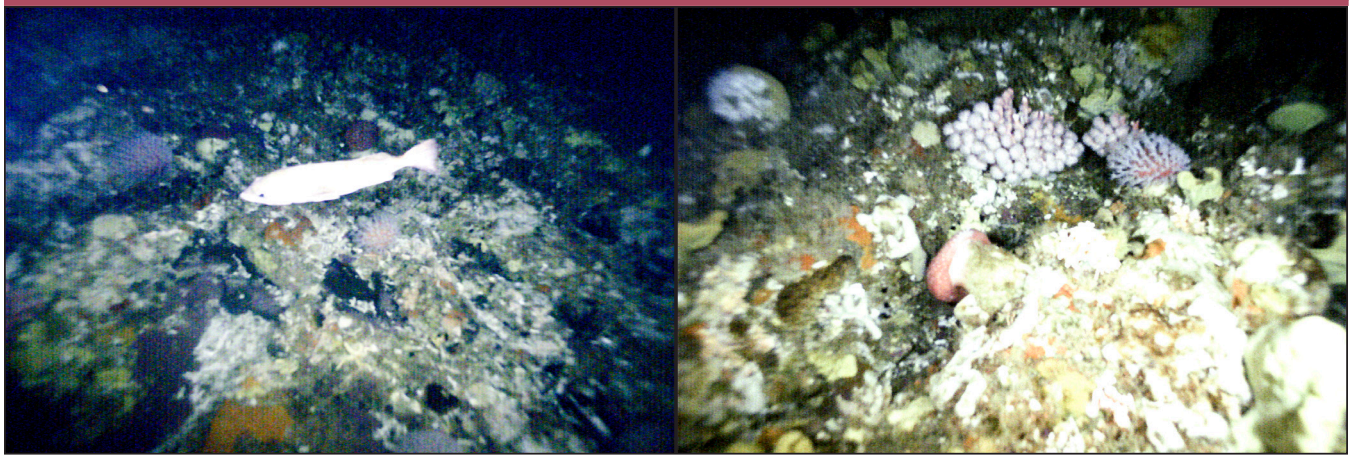
Fish and Crab Composition (n = 110)



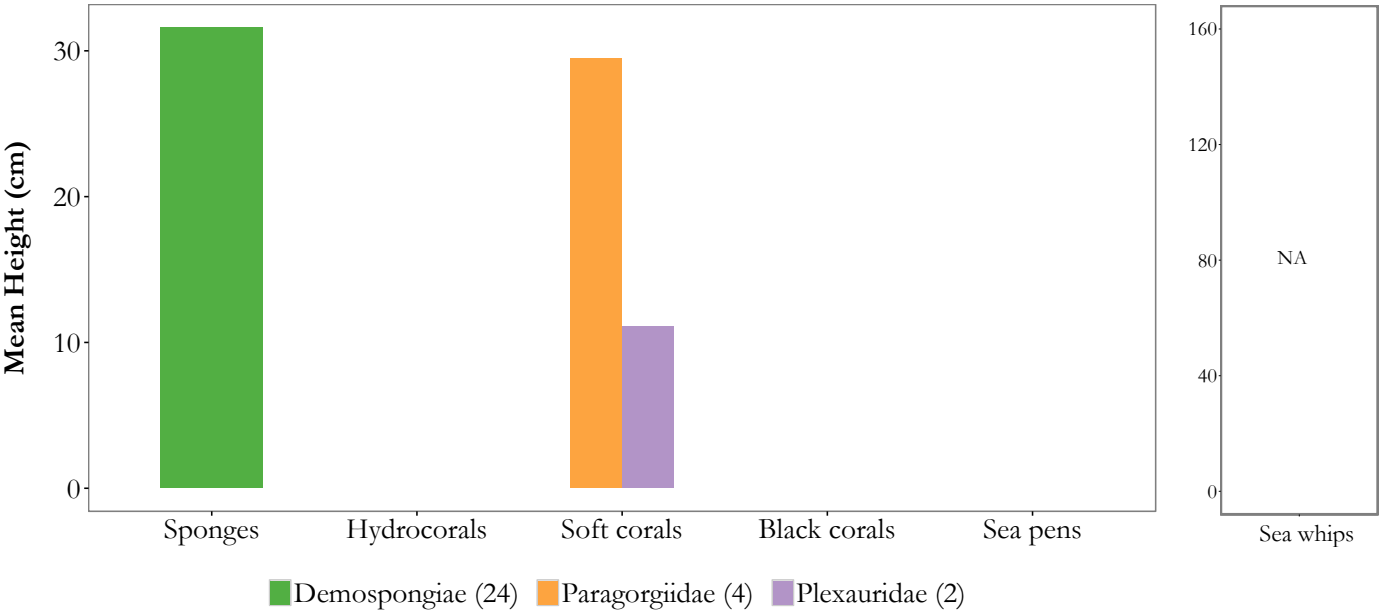
Substrate Composition

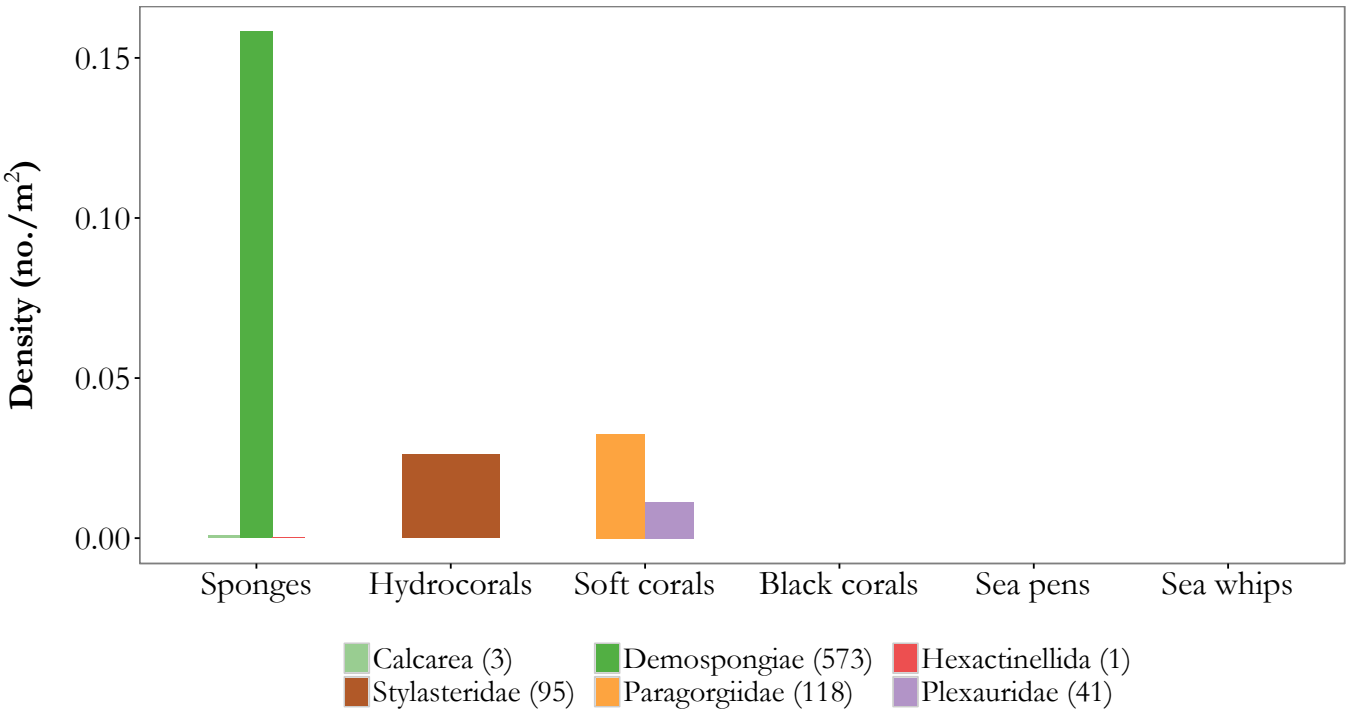


Images



Vertical Habitat Summary





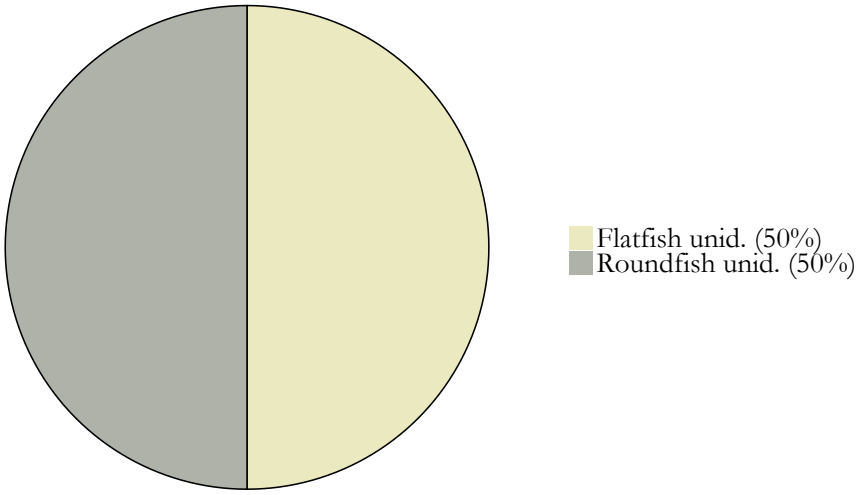
Summary - description of transect

Transect 2012-52: Substrate composition for this haul was very diverse. Almost 97% of the observations consisted of bedrock for the primary substrate. Fourteen combinations of primary and secondary substrates were identified. Rockfishes (n = 93) accounted for 85% of the fish density. Demospongiae dominated the structure-forming invertebrate community with a density of 0.16 individuals/m^2. Total invertebrate density was 0.23 individuals/m^2. Mean heights for Demospongiae, Paragorgiidae, and Plexauridae were 32 cm, 29 cm, and 11 cm, respectively.

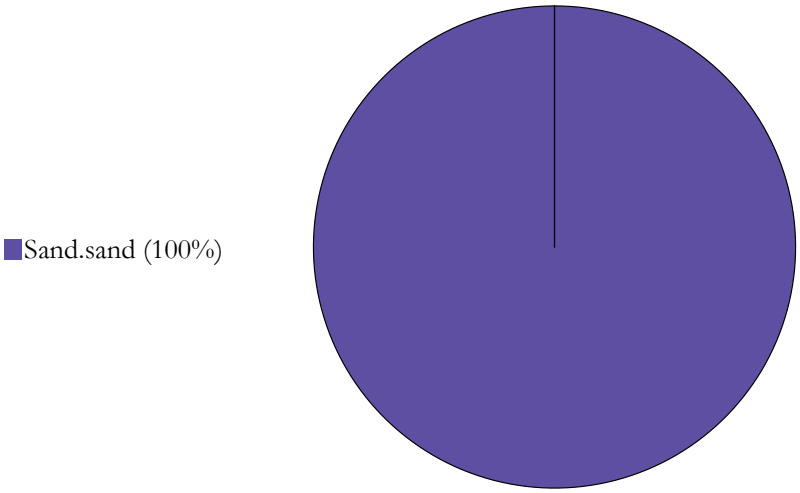
AREA: Seguam Pass To Amchitka Pass — Transect 2012-72

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/25/2012	51.81	-177.63	1,079	165	4.8

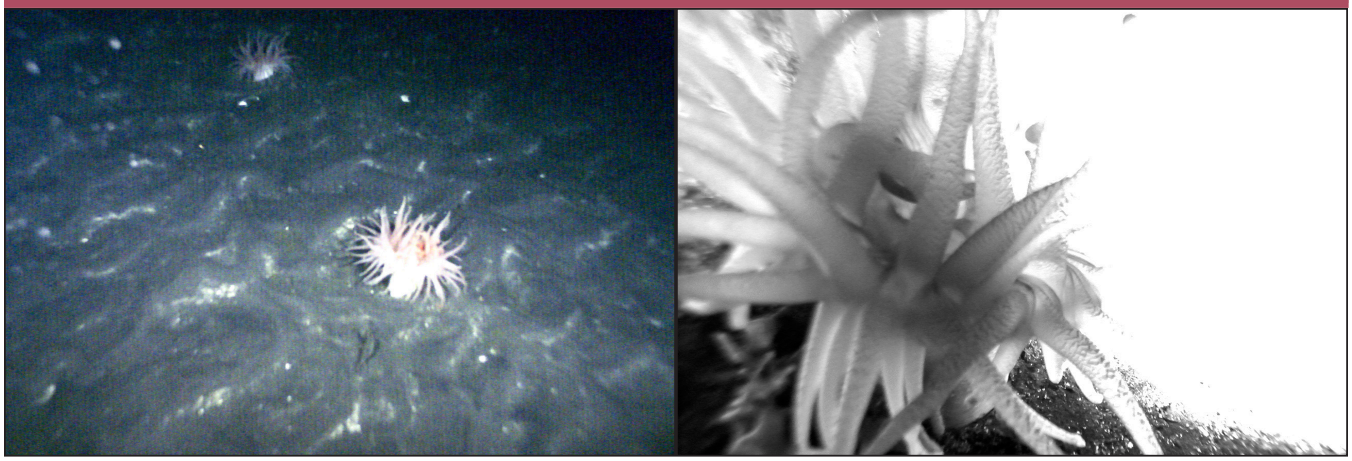
Fish and Crab Composition (n = 2)



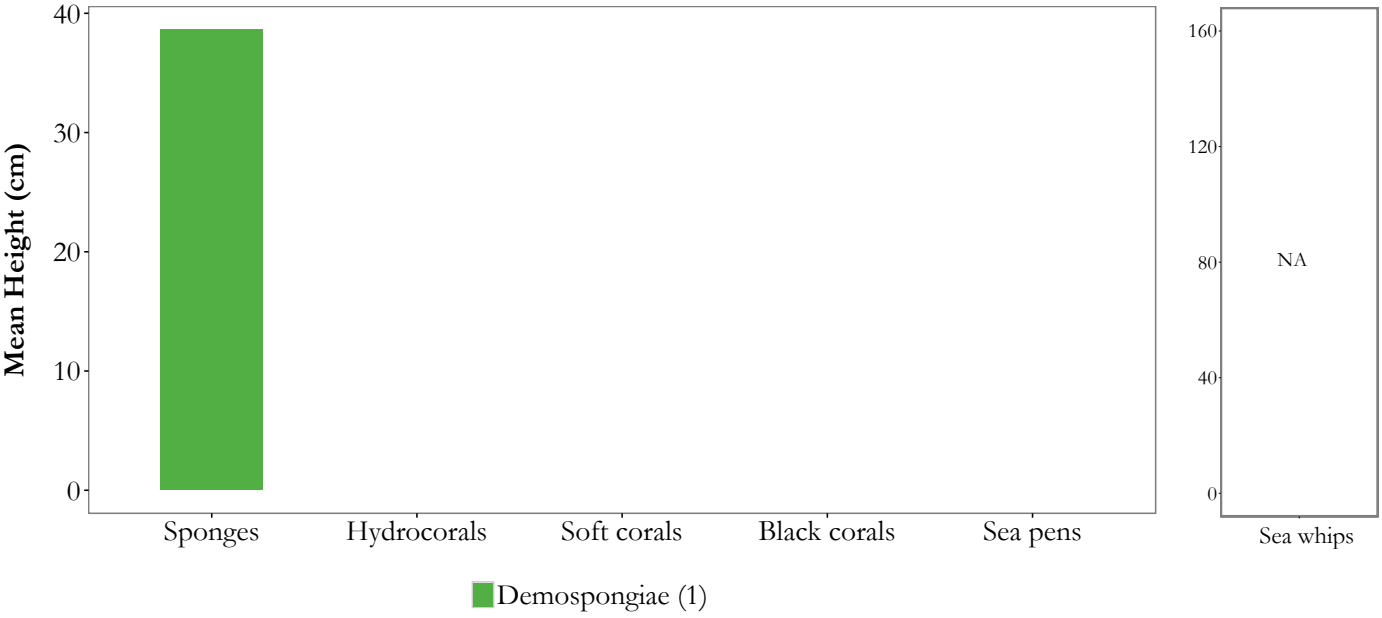
Substrate Composition

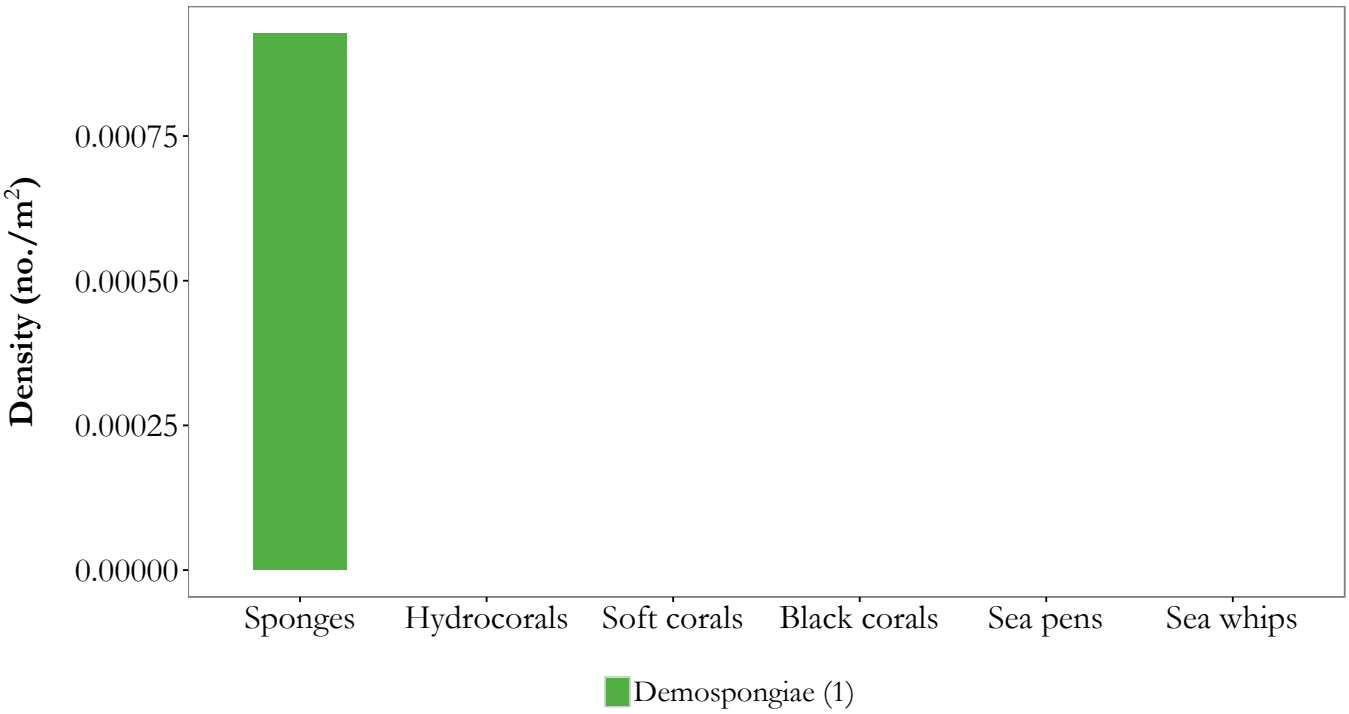


Images



Vertical Habitat Summary





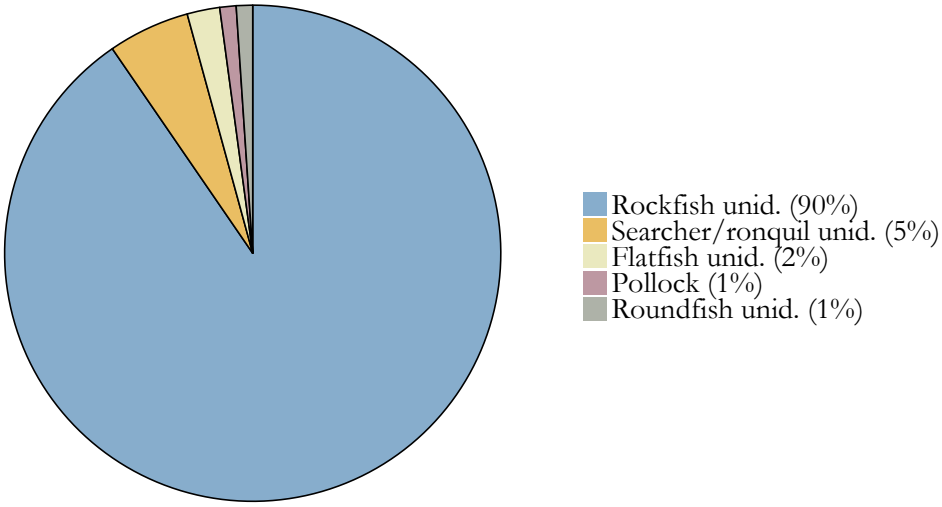
Summary - description of transect

Transect 2012-72: Primary and secondary substrates consisted entirely of sand. Only two fishes and one Demospongiae were identified.

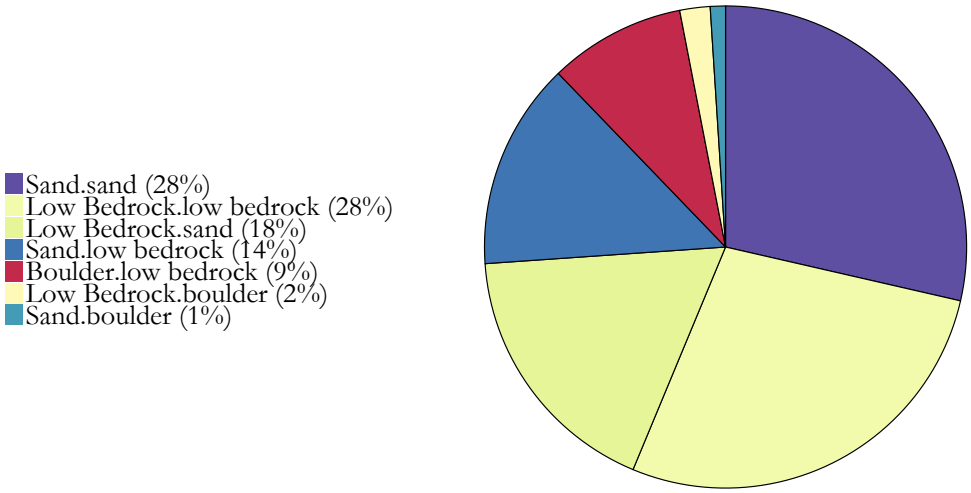
AREA: Seguam Pass To Amchitka Pass — Transect 2012-73

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/25/2012	51.96	-176.45	1,254	85	5.4

Fish and Crab Composition (n = 94)

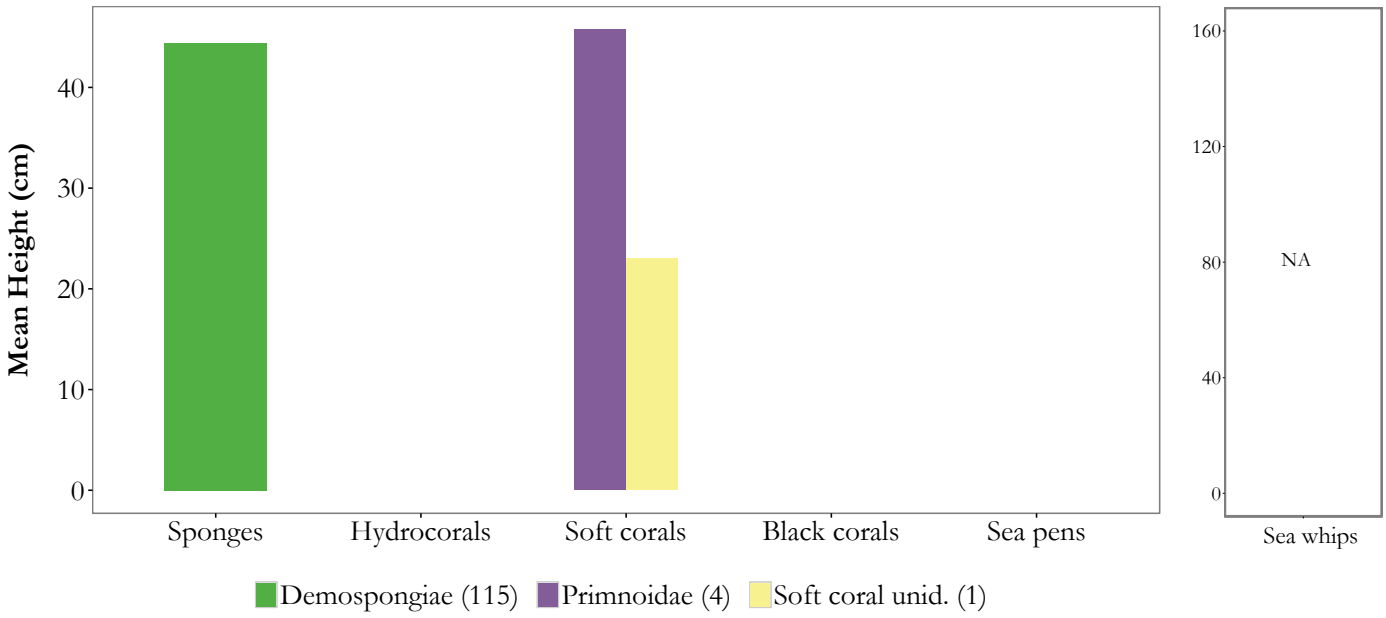


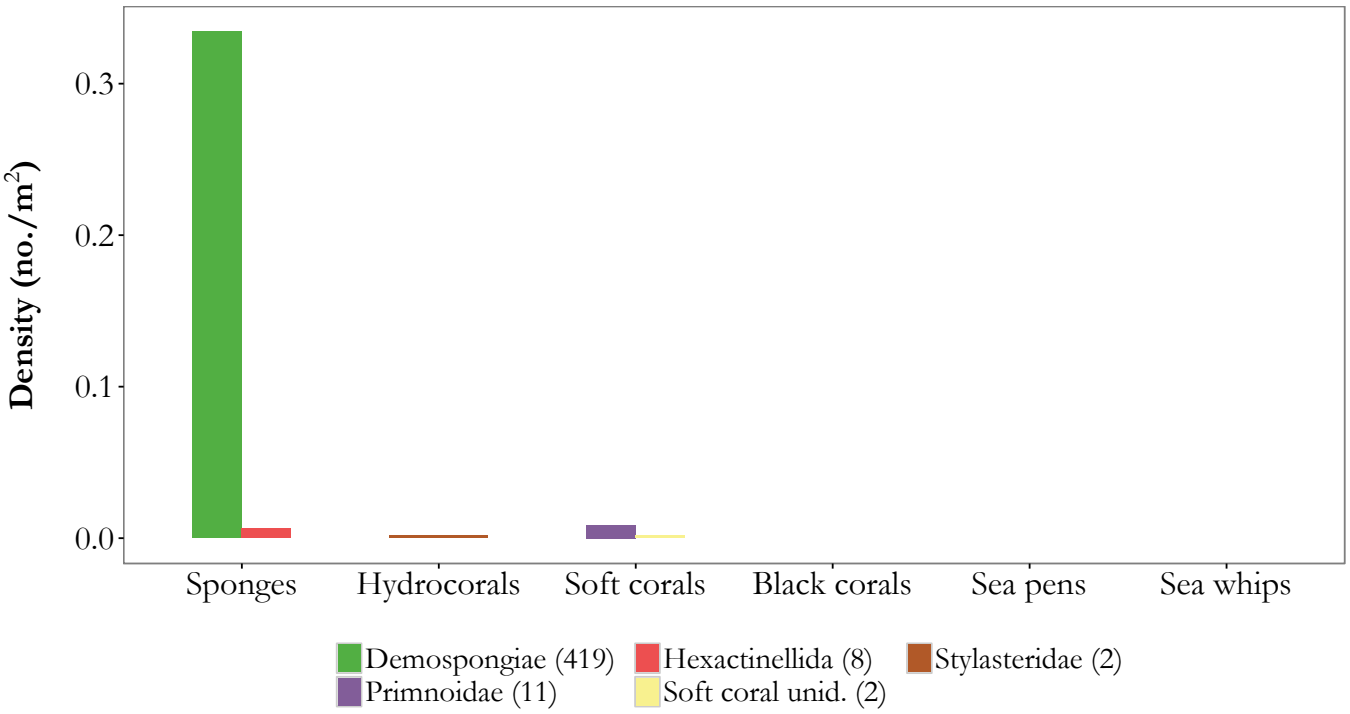
Substrate Composition



Images

Vertical Habitat Summary





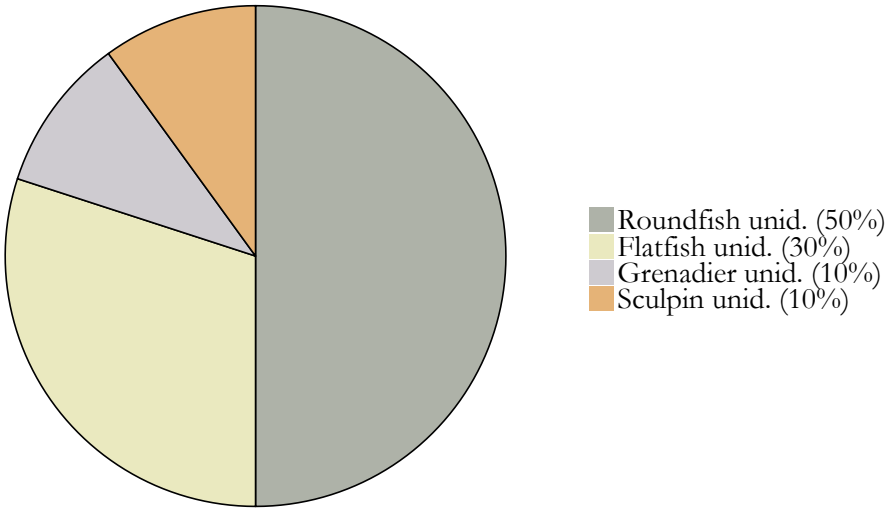
Summary - description of transect

Transect 2012-73: Primary and secondary substrates for 87% of the haul were bedrock or sand. Fish density (0.07 individuals/m^2) was 90% rockfishes. Demospongiae (0.33 individuals/m^2) were 95% of the structure-forming invertebrate density (0.35 individuals/m^2). Mean heights for Demospongiae and Primnoidae were 55 cm and 46 cm, respectively.

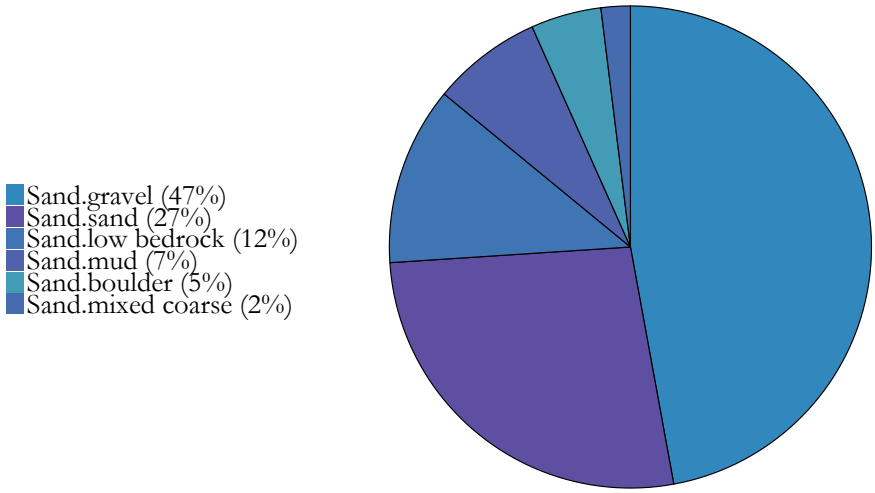
AREA: Seguam Pass To Amchitka Pass — Transect 2012-74

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/25/2012	51.93	-176.08	1,690	56	5.9

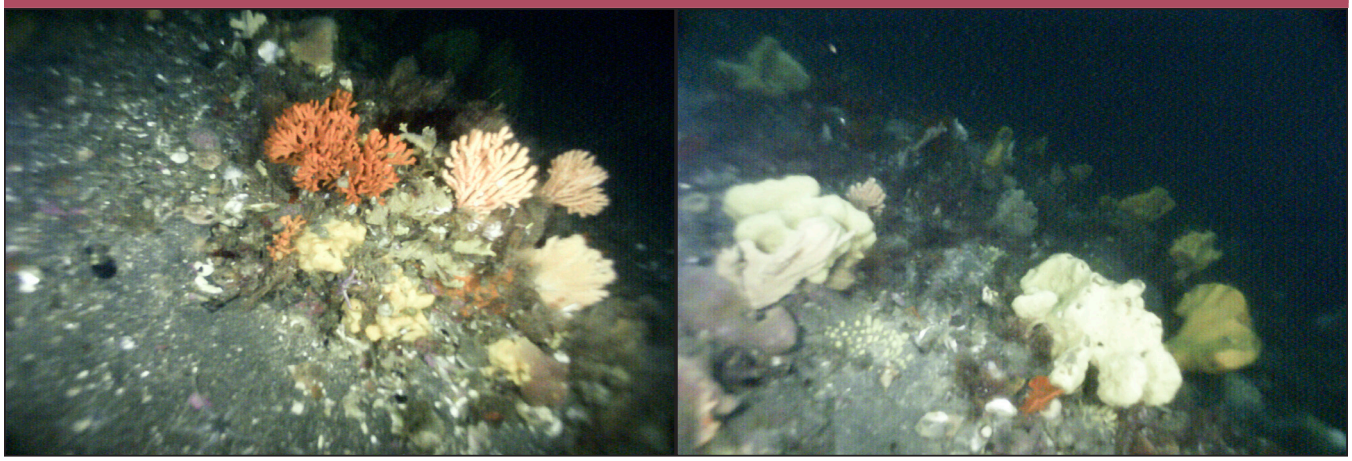
Fish and Crab Composition (n = 10)



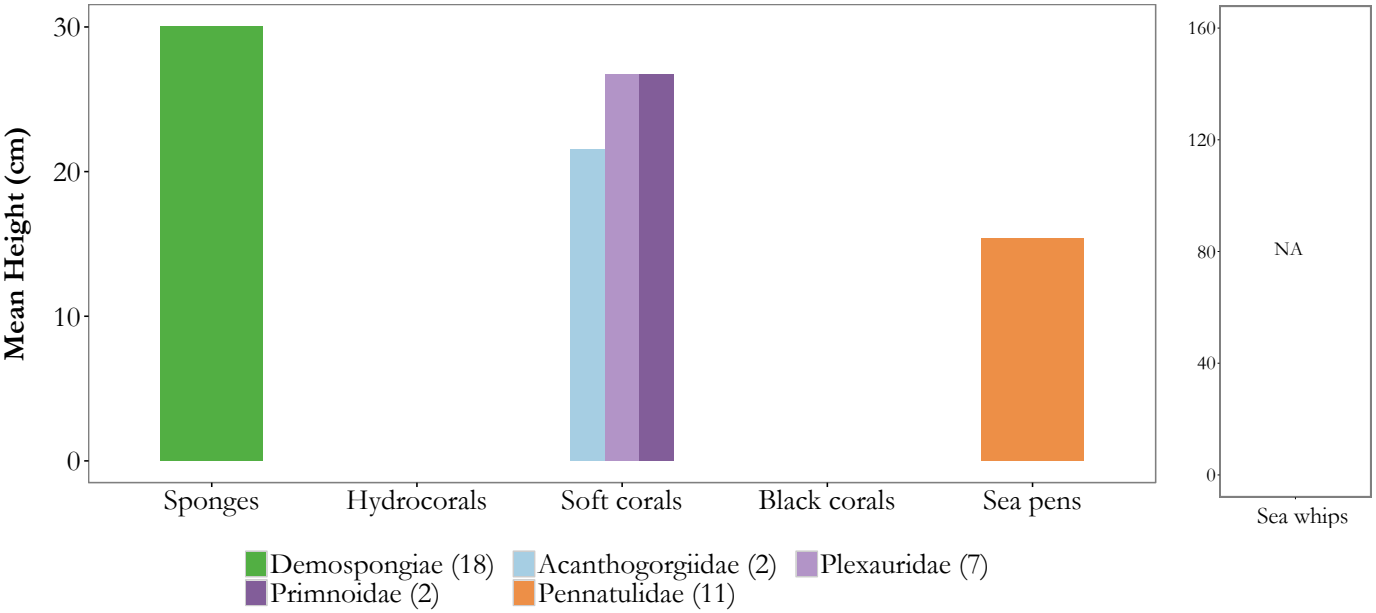
Substrate Composition

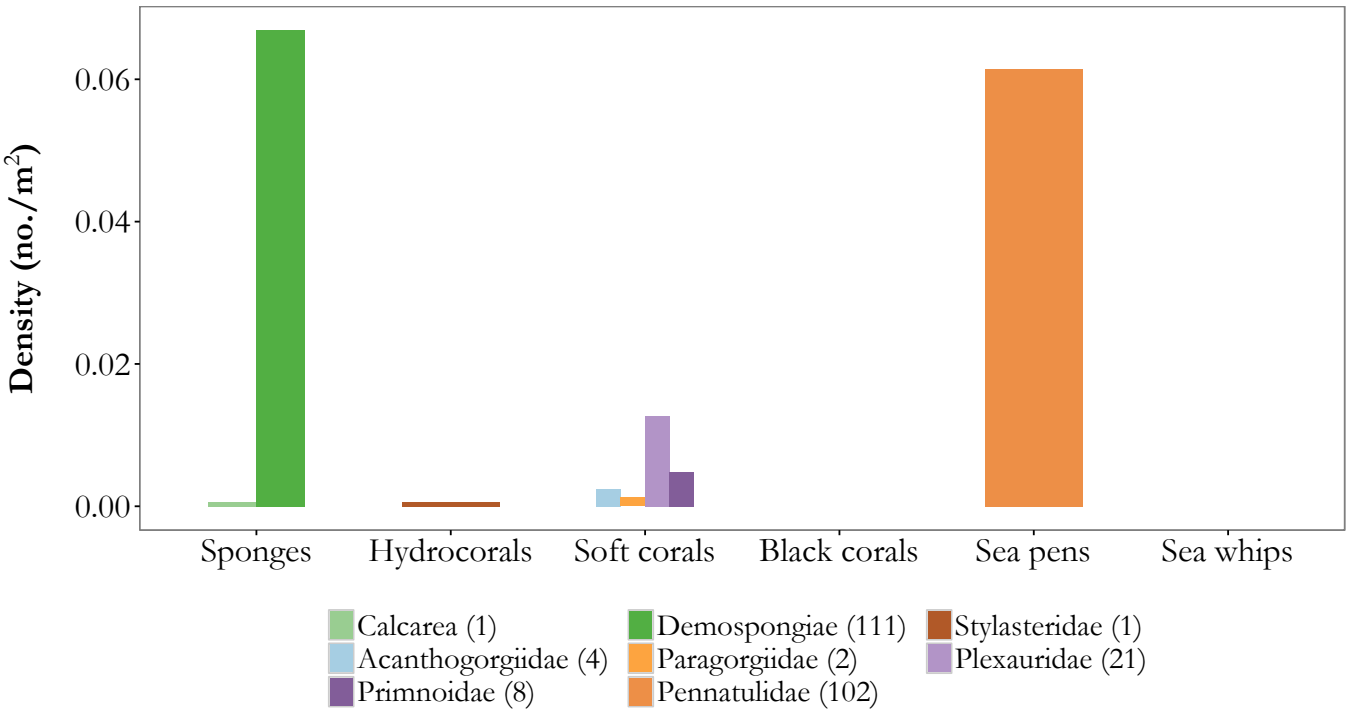


Images



Vertical Habitat Summary





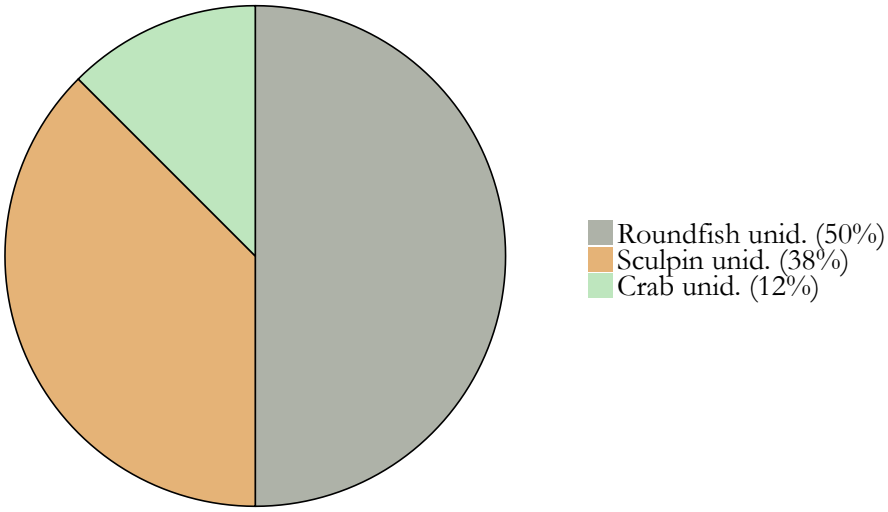
Summary - description of transect

Transect 2012-74: Primary substrate for 99% of the haul was sand. Secondary substrates were more diverse; gravel, sand, low bedrock, mud, boulder, and mixed coarse. Only 10 fishes were identified. Fish density overall was low, 0.01 individuals/m^2. Pennatulidae (0.06 individuals/m^2) and Demospongiae (0.07 individuals/m^2) comprised 85% of the available structure-forming invertebrates. Mean heights were calculated for Demospongiae (30 cm), Acanthogorgiidae (22 cm), Plexauridae (27 cm), Primnoidae (27 cm), and Pennatulidae (15 cm).

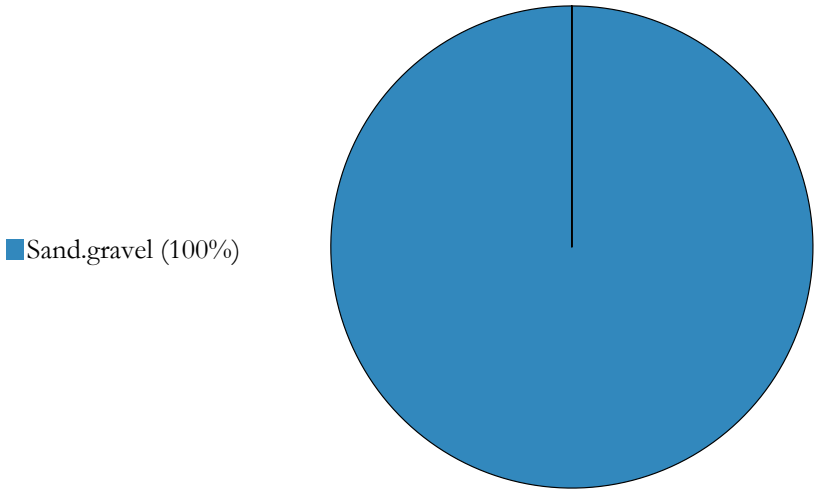
AREA: Seguam Pass To Amchitka Pass — Transect 2012-75

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/25/2012	52.01	-175.86	848	109	5.0

Fish and Crab Composition (n = 8)



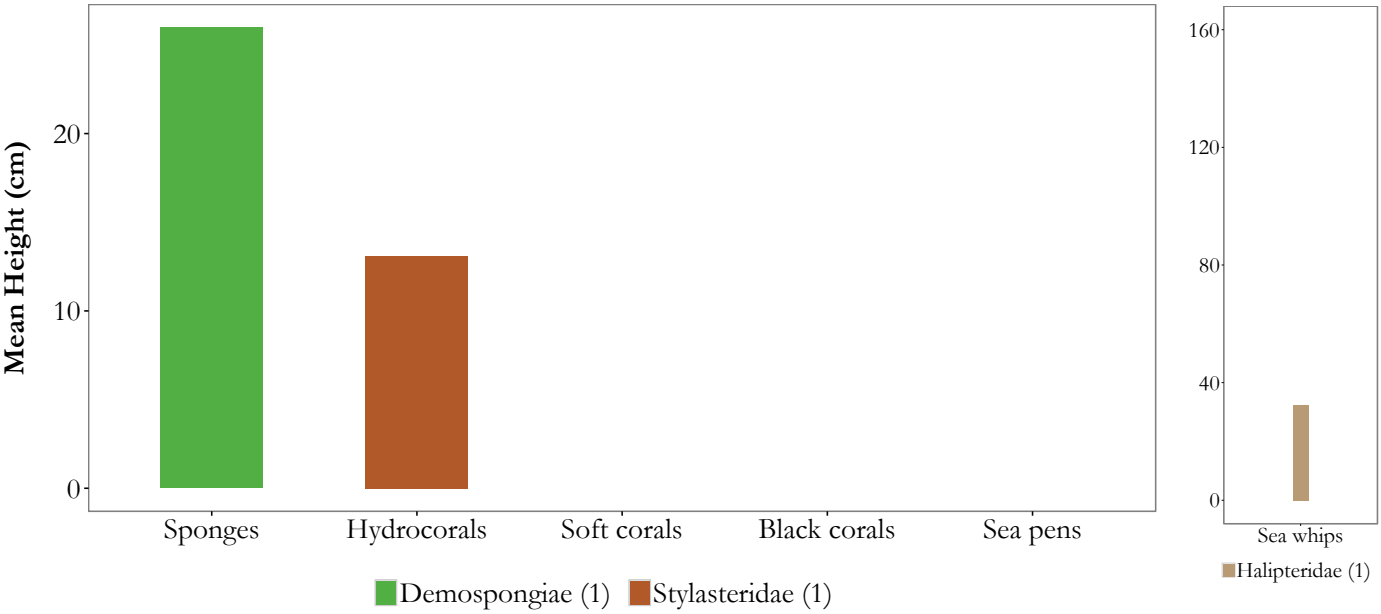
Substrate Composition

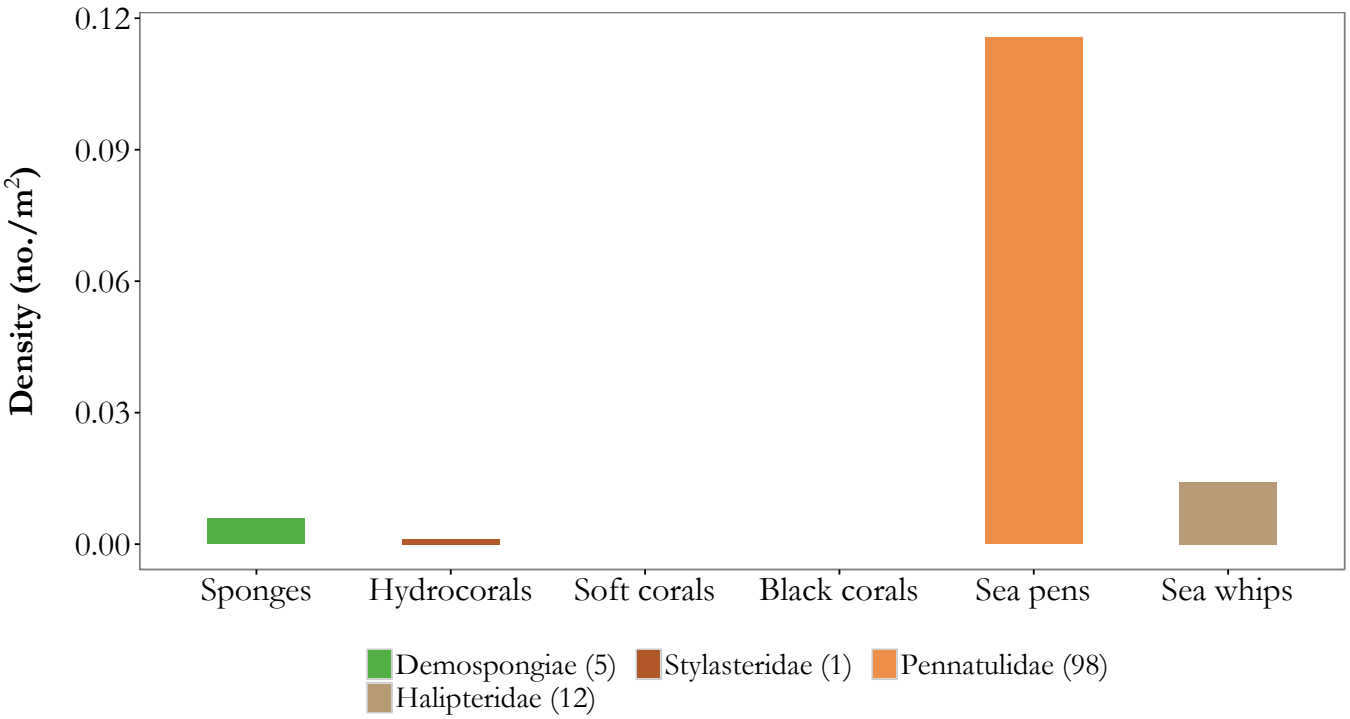


Images

AREA: Seguam Pass To Amchitka Pass Transect 2012-75

Vertical Habitat Summary





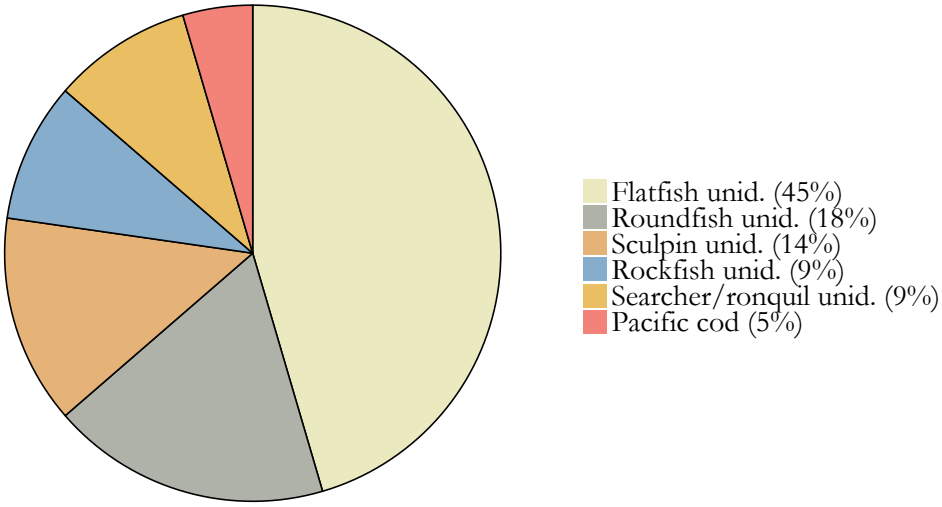
Summary - description of transect

Transect 2012-75: Primary and secondary substrates were sand and gravel. One crab and seven fishes were identified for a density of 0.01 individuals/m^2. Pennatulidae (0.12 individuals/m^2) were 84% of the structure-forming invertebrates. Height measurements for Demospongiae, Stylasteridae, and Halipteridae, were 26 cm, 13 cm, and 32 cm, respectively.

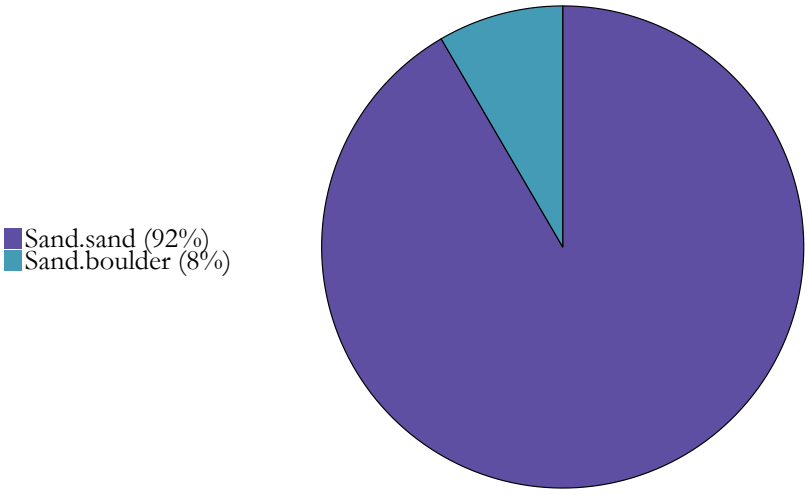
AREA: Seguam Pass To Amchitka Pass — Transect 2012-76

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.15	-174.75	1,577	86	5.7

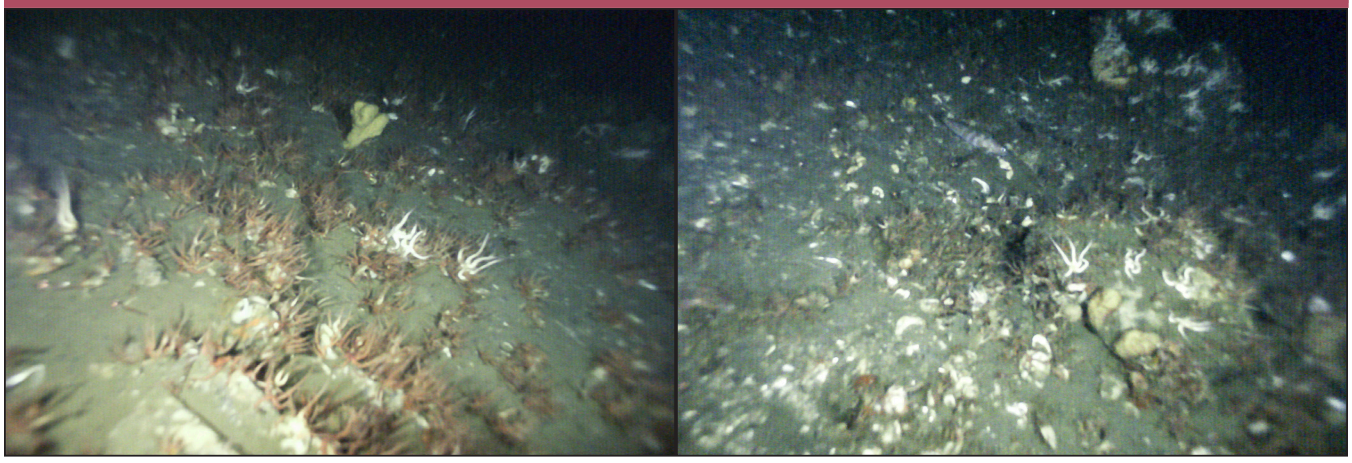
Fish and Crab Composition (n = 22)



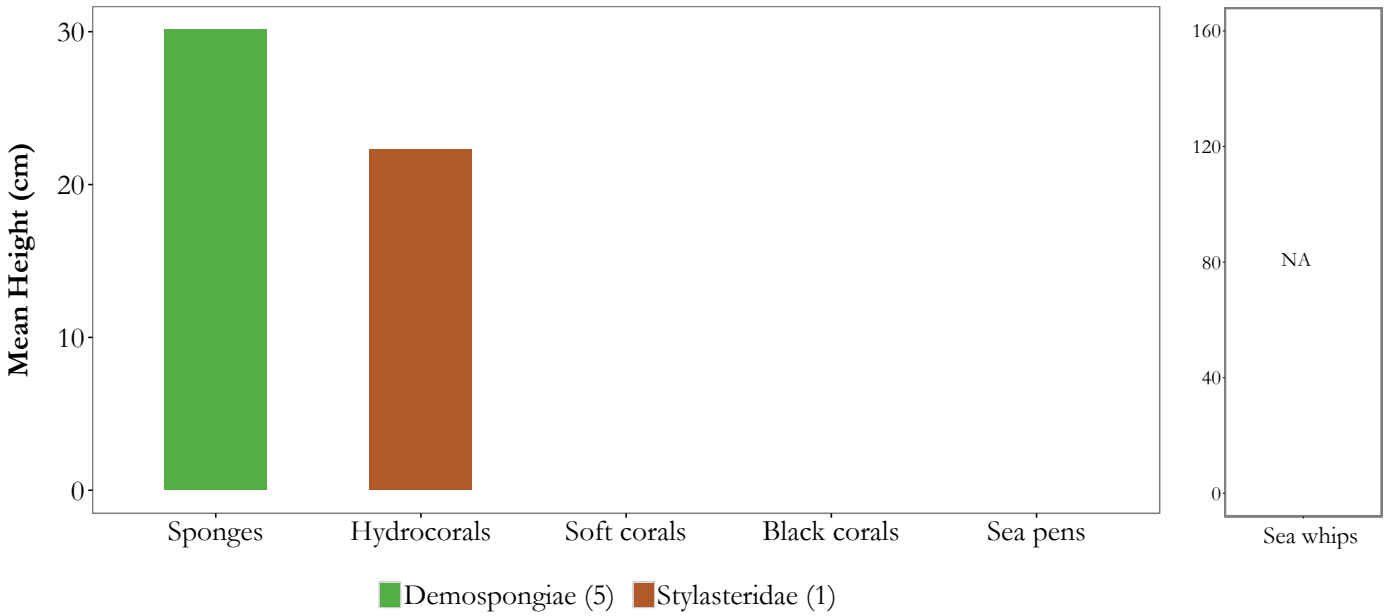
Substrate Composition

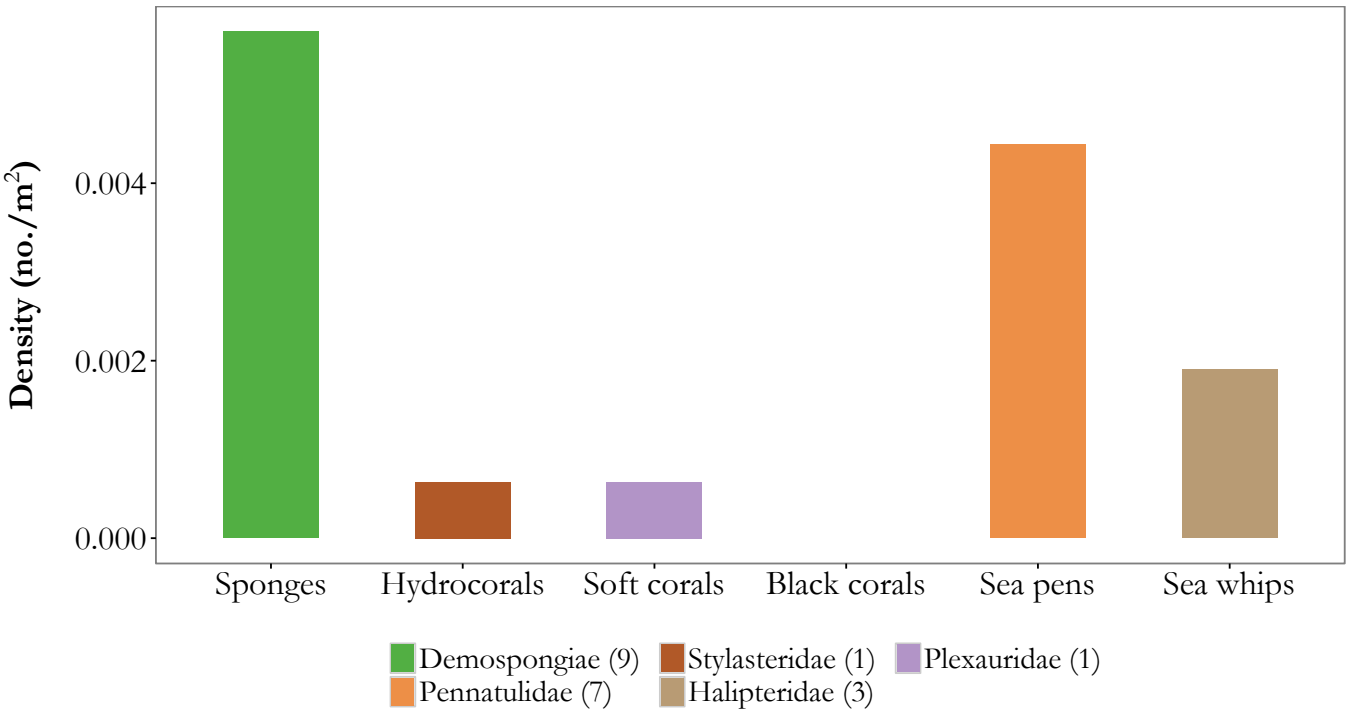


Images



Vertical Habitat Summary





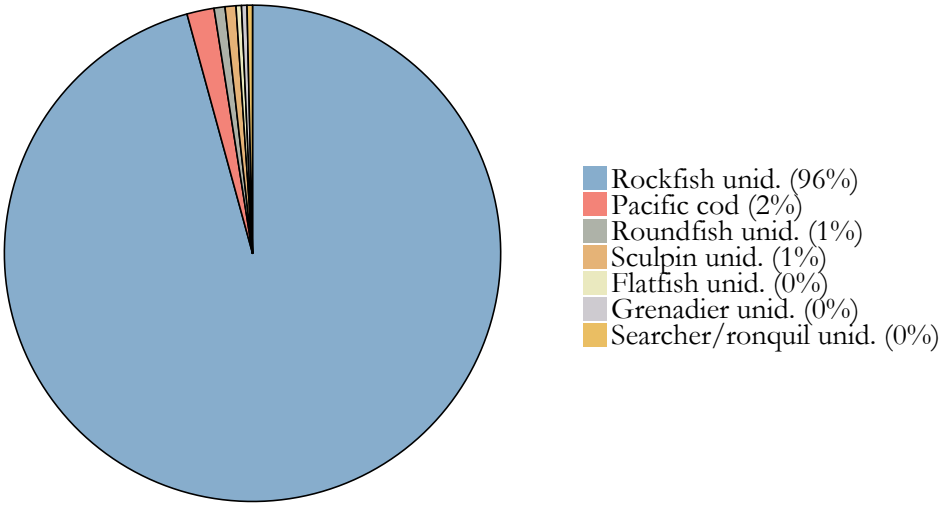
Summary - description of transect

Transect 2012-76: Primary and secondary substrates consisted largely of sand. Flatfishes (0.01 individuals/m^2) were 45% of the fish density. Roundfishes (n = 4) and sculpins (n = 3) were the next most abundant. Structure-forming invertebrate density was 45% Demospongiae (0.01 individuals/m^2) and 35% Pennatulidae (< 0.01 individuals/m^2). Mean height for Demospongiae was 30 cm.

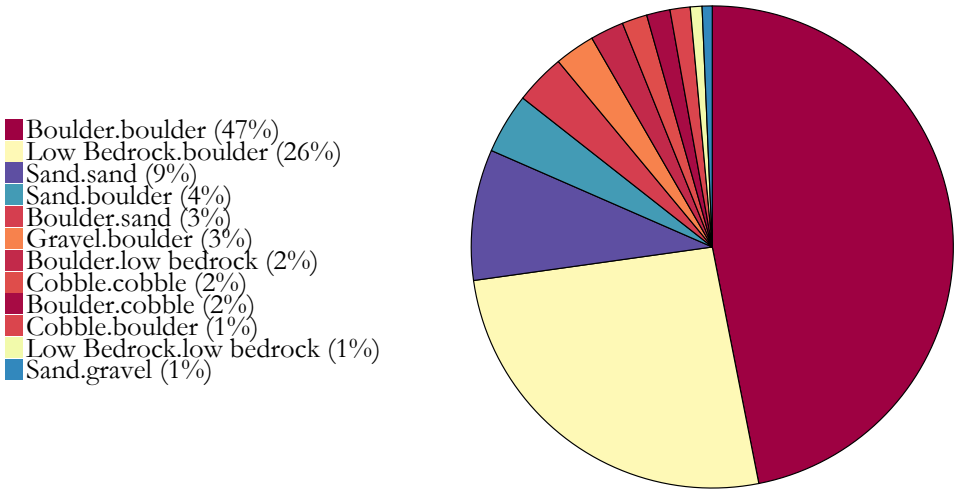
AREA: Seguam Pass To Amchitka Pass — Transect 2012-77

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.14	-174.69	995	52	6.6

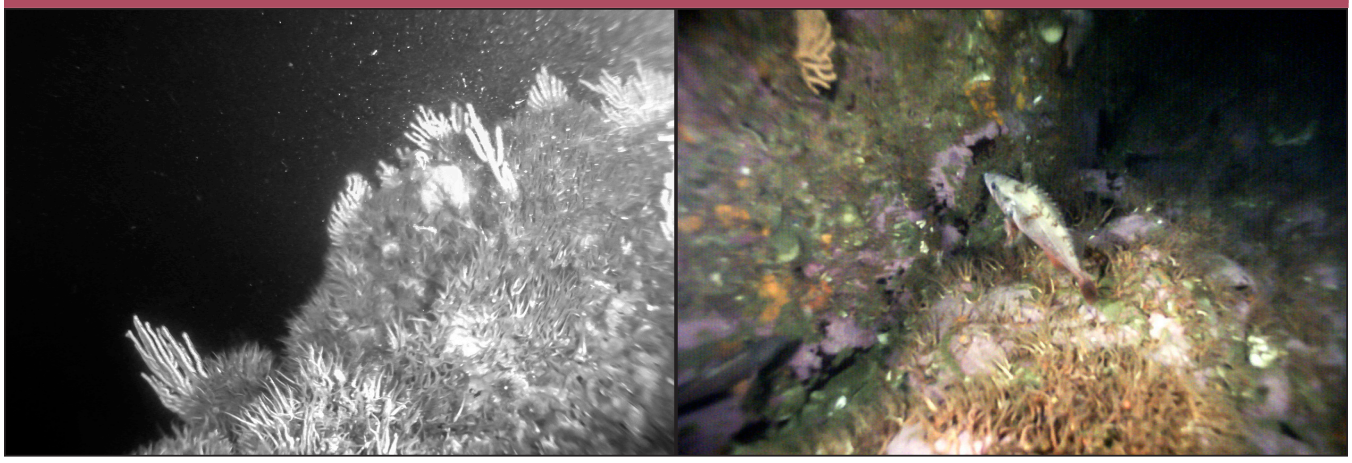
Fish and Crab Composition (n = 282)



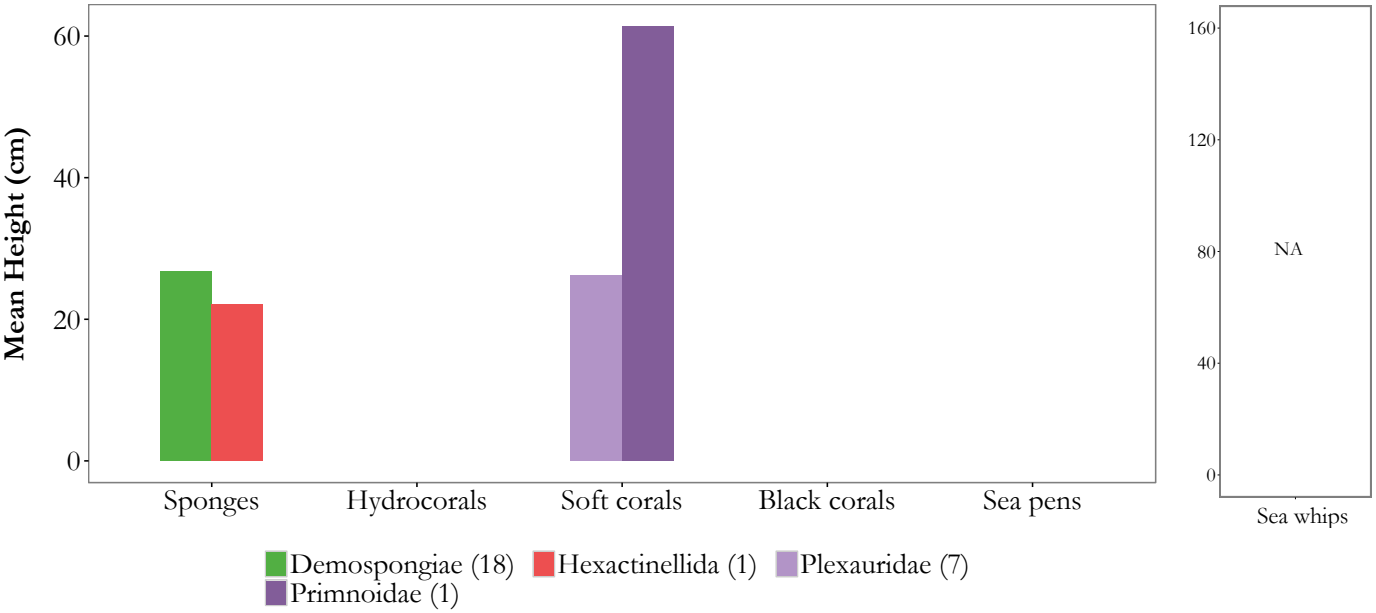
Substrate Composition

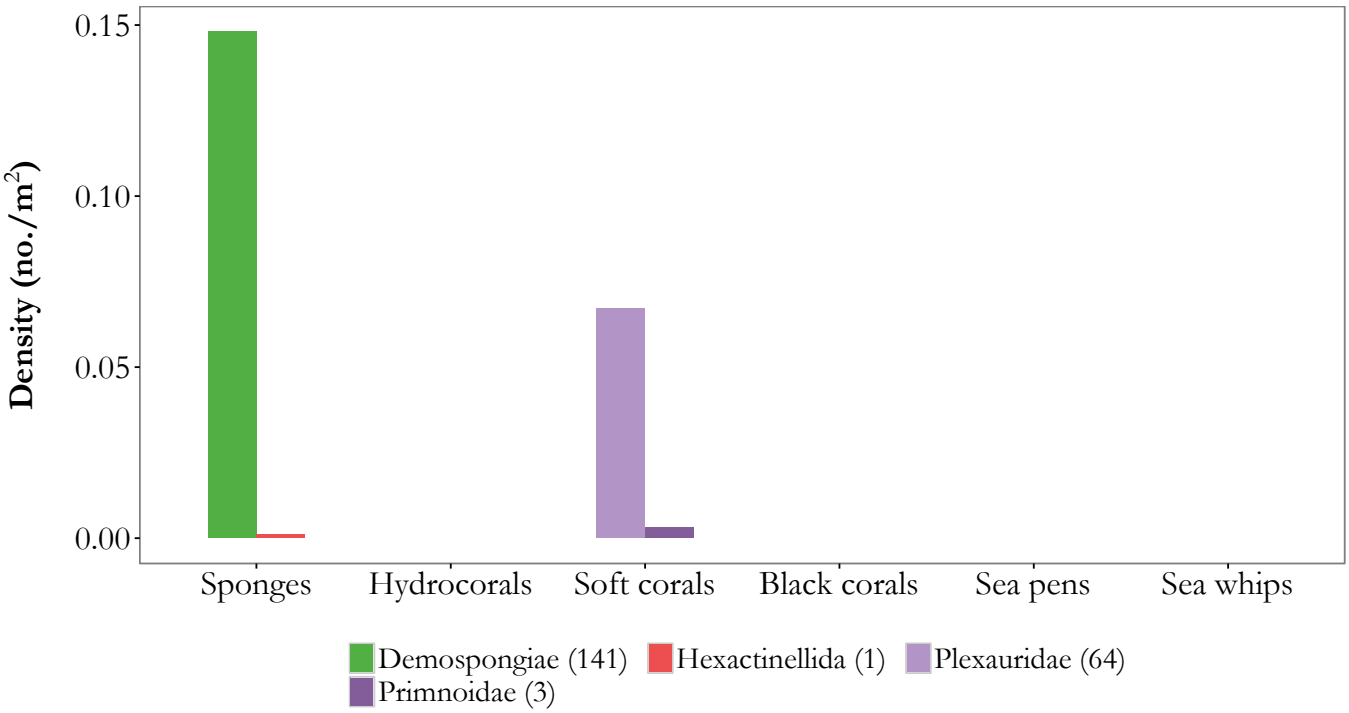


Images



Vertical Habitat Summary





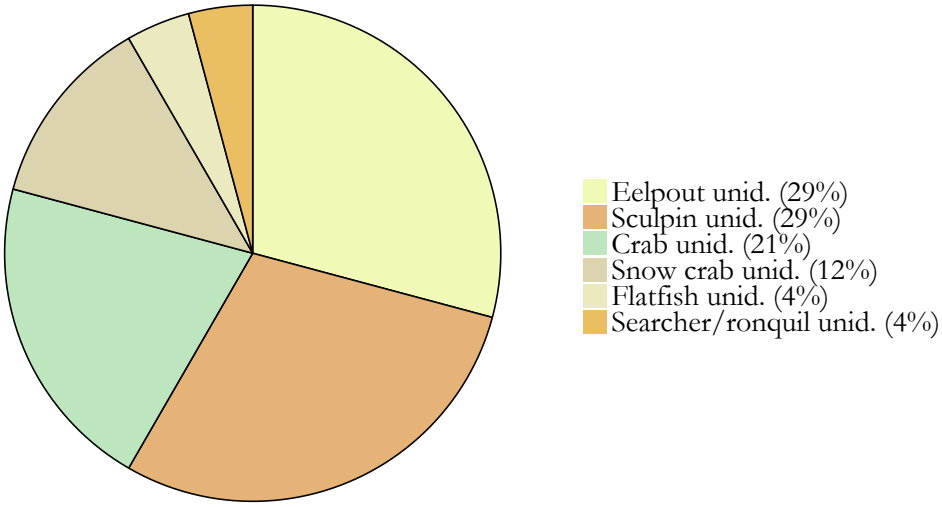
Summary - description of transect

Transect 2012-77: Primary and secondary substrates were mostly boulder and low bedrock. Rockfishes (n = 270) accounted for 96% of the fish density (0.30 individuals/m^2). Demospongiae (0.15 individuals/m^2) accounted for 67% of the structure-forming invertebrates. Plexauridae (0.07 individuals/m^2) accounted for 31%. Mean heights were calculated for Demospongiae (27 cm) and Plexauridae (26 cm).

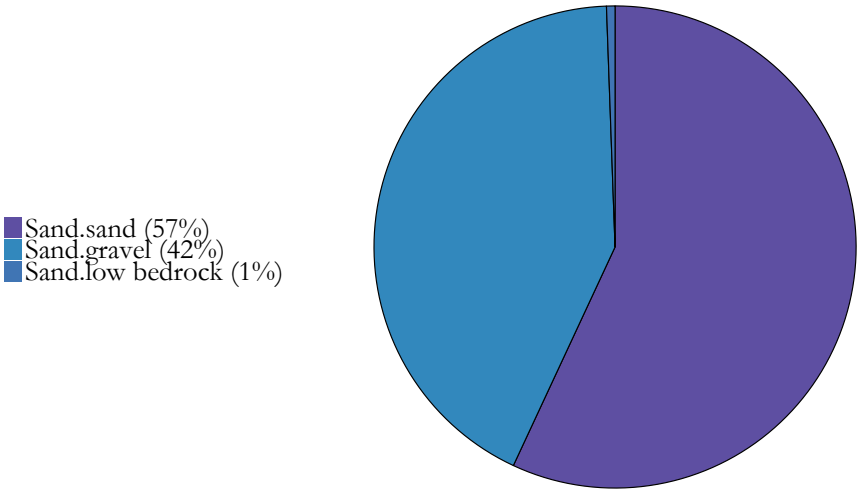
AREA: Seguam Pass To Amchitka Pass — Transect 2012-78

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.28	-174.70	837	121	4.7

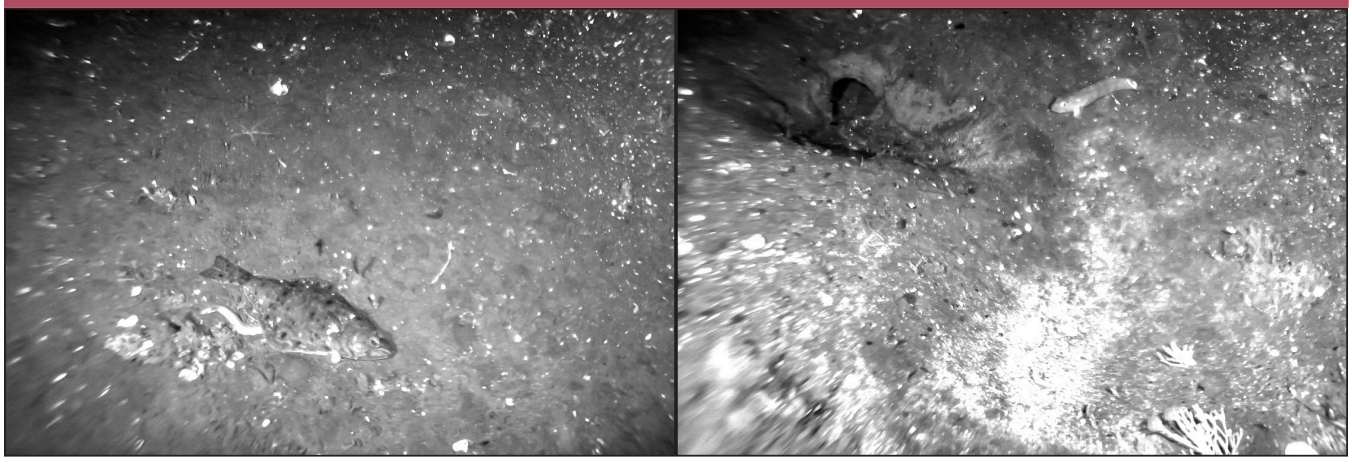
Fish and Crab Composition (n = 24)



Substrate Composition

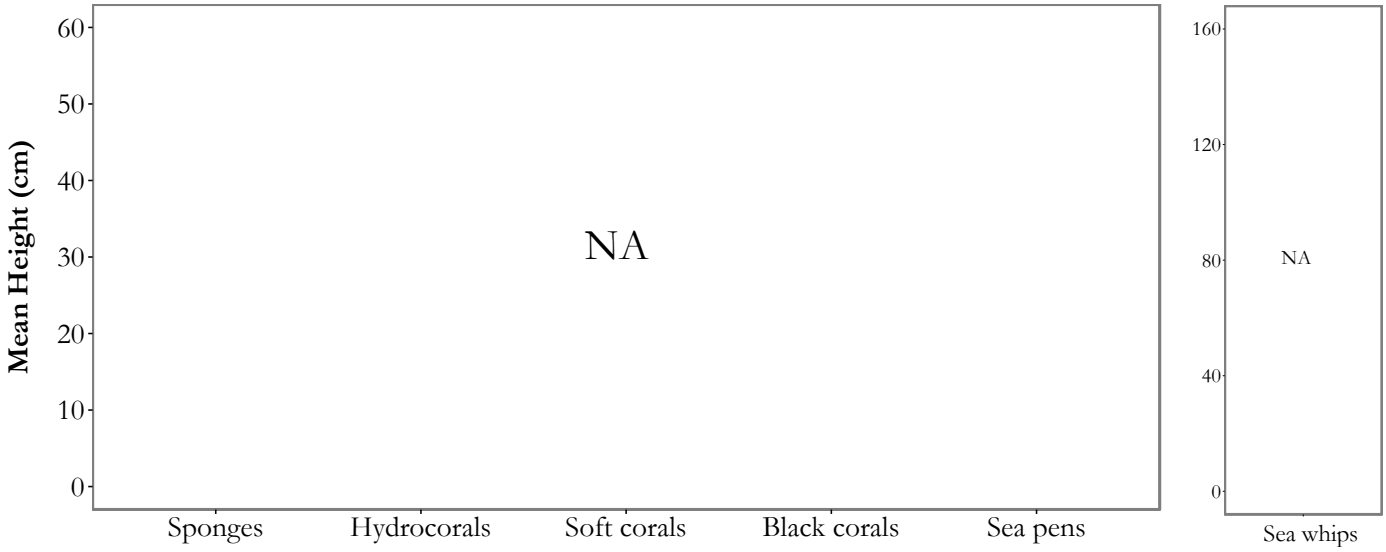


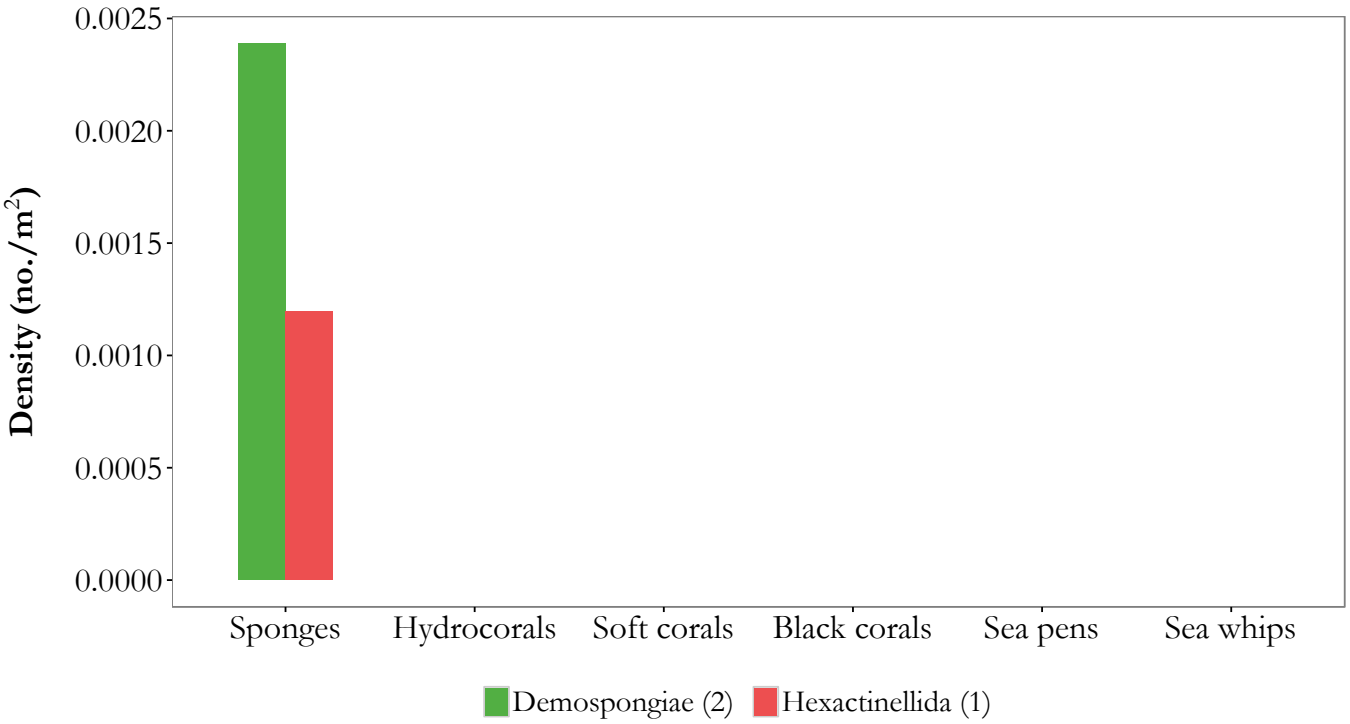
Images



AREA: Seguam Pass To Amchitka Pass Transect 2012-78

Vertical Habitat Summary





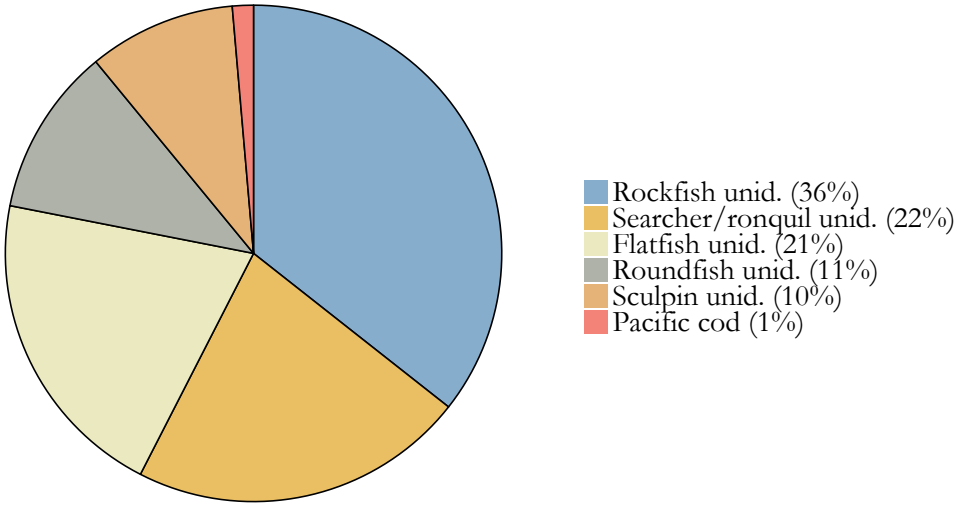
Summary - description of transect

Transect 2012-78: Primary and secondary substrates consisted of sand, gravel, and low bedrock. Fish and crab density was low overall (0.03 individuals/m^2). Only three sponges were identified for a total density of < 0.01 individuals/m^2. No hydrocorals,corals, sea pens, or sea whips were observed.

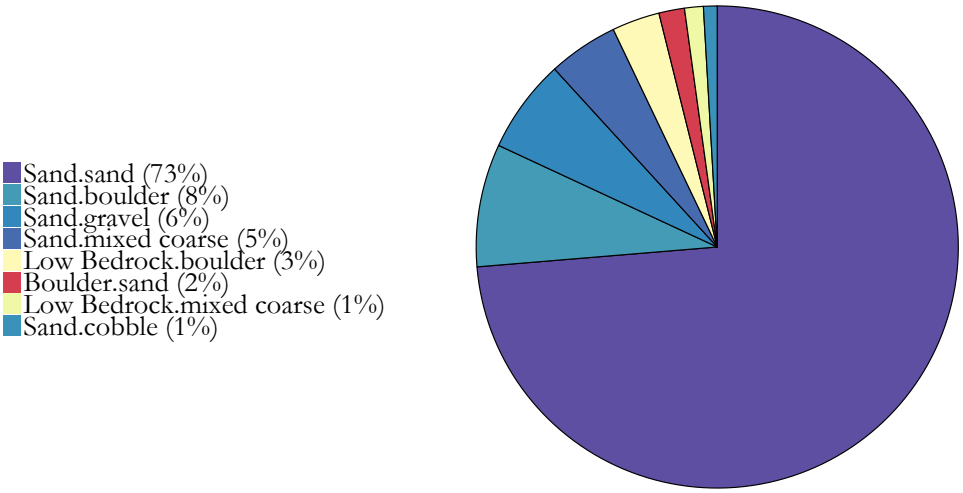
AREA: Seguam Pass To Amchitka Pass — Transect 2012-79

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.17	-173.86	1,343	79	5.7

Fish and Crab Composition (n = 73)



Substrate Composition



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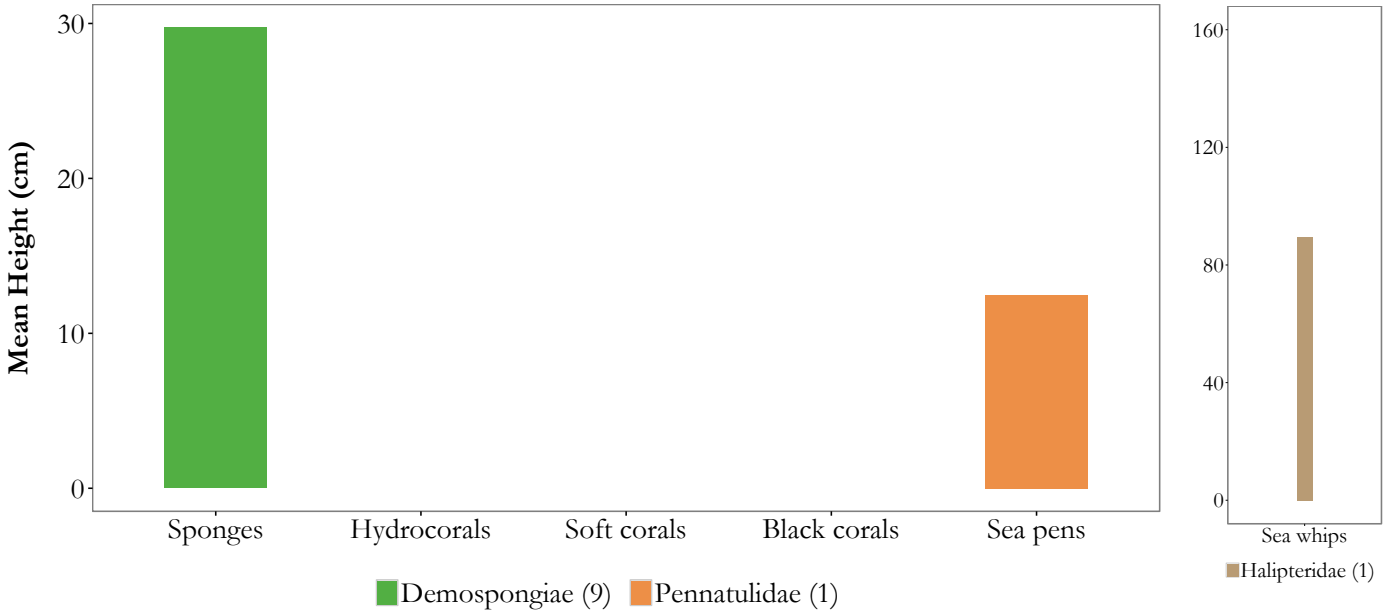
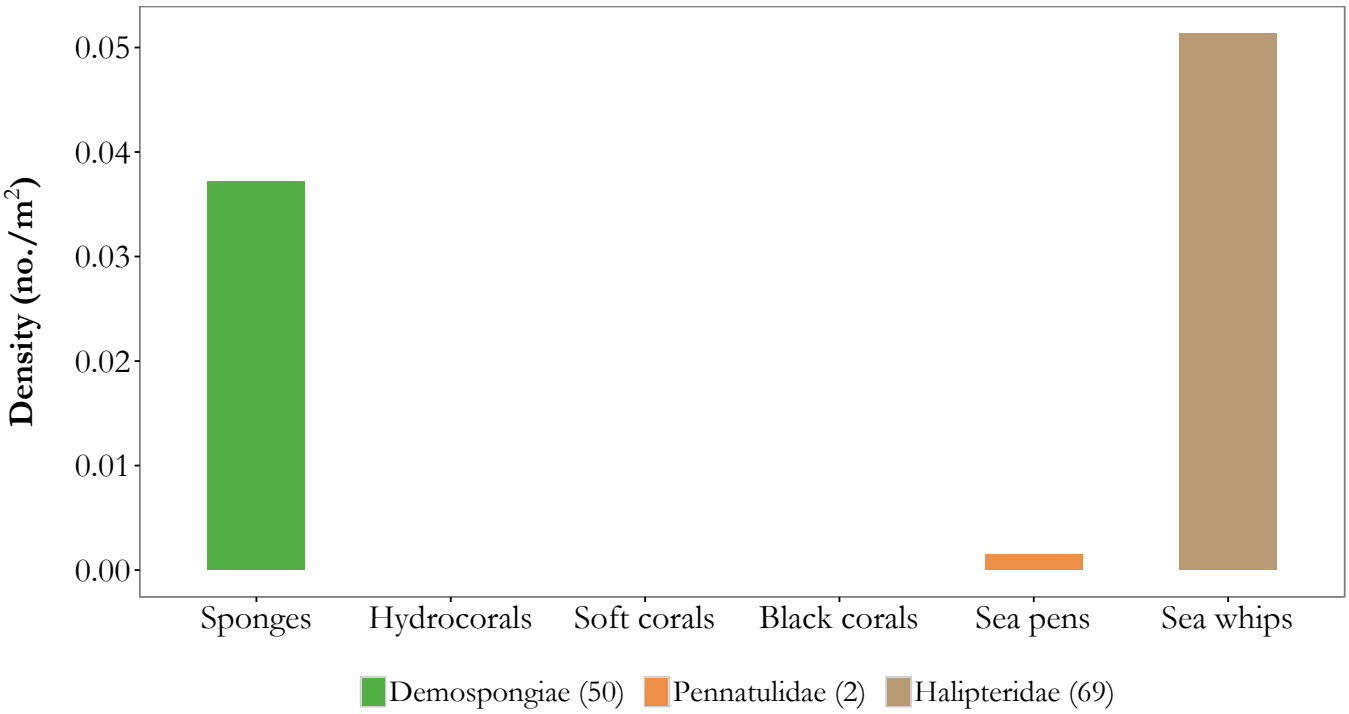
Vertical Habitat Summary





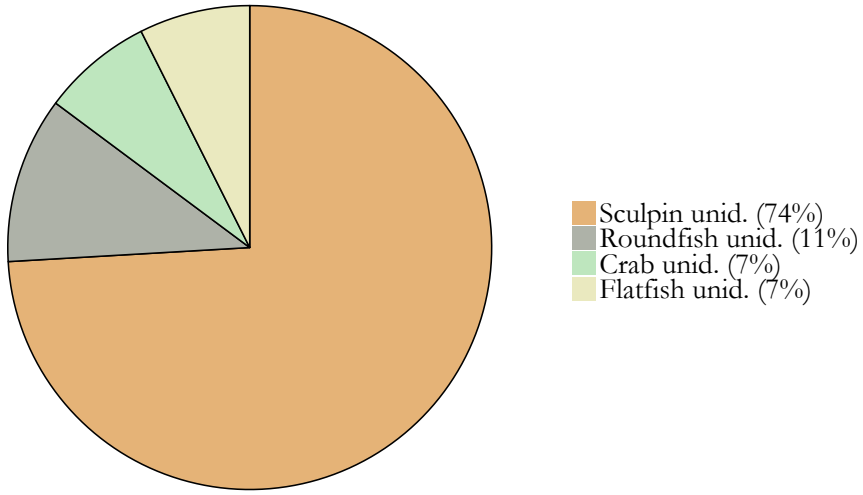
Summary - description of transect

Transect 2012-79: Primary and secondary substrates consisted largely of sand. Rockfishes (n = 26), searchers/ronquils (n = 16), and flatfishes (n = 15) comprised 79% of the fish density (0.05 individuals/m^2). Structure-forming invertebrate habitat was largely comprised of Demospongiae (0.04 individuals/m^2) and Halipteridae (0.05 individuals/m^2). Mean height calculated for nine Demospongiae was 30 cm.

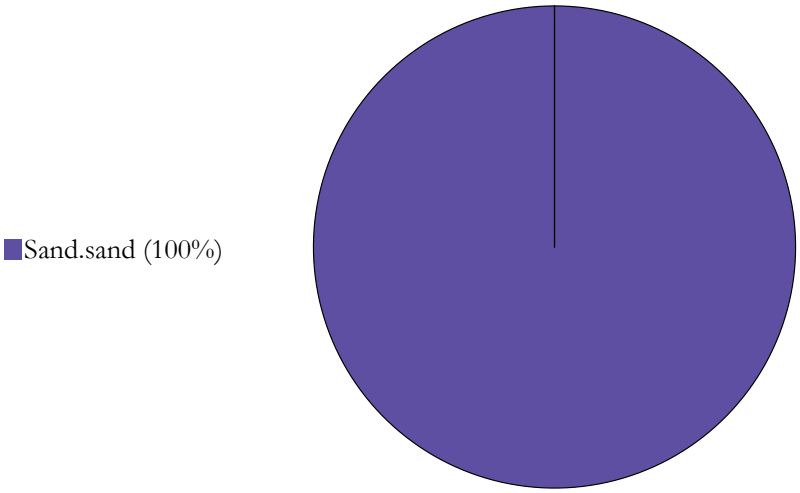
AREA: Seguam Pass To Amchitka Pass — Transect 2012-80

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.25	-173.57	649	105	5.3

Fish and Crab Composition (n = 27)

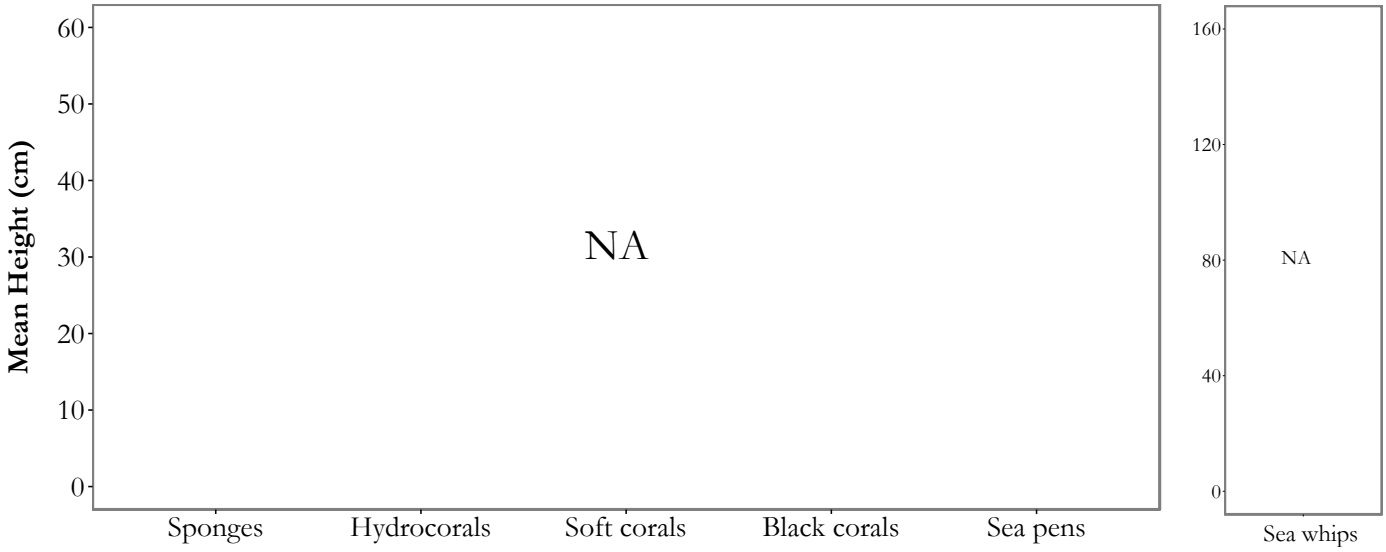


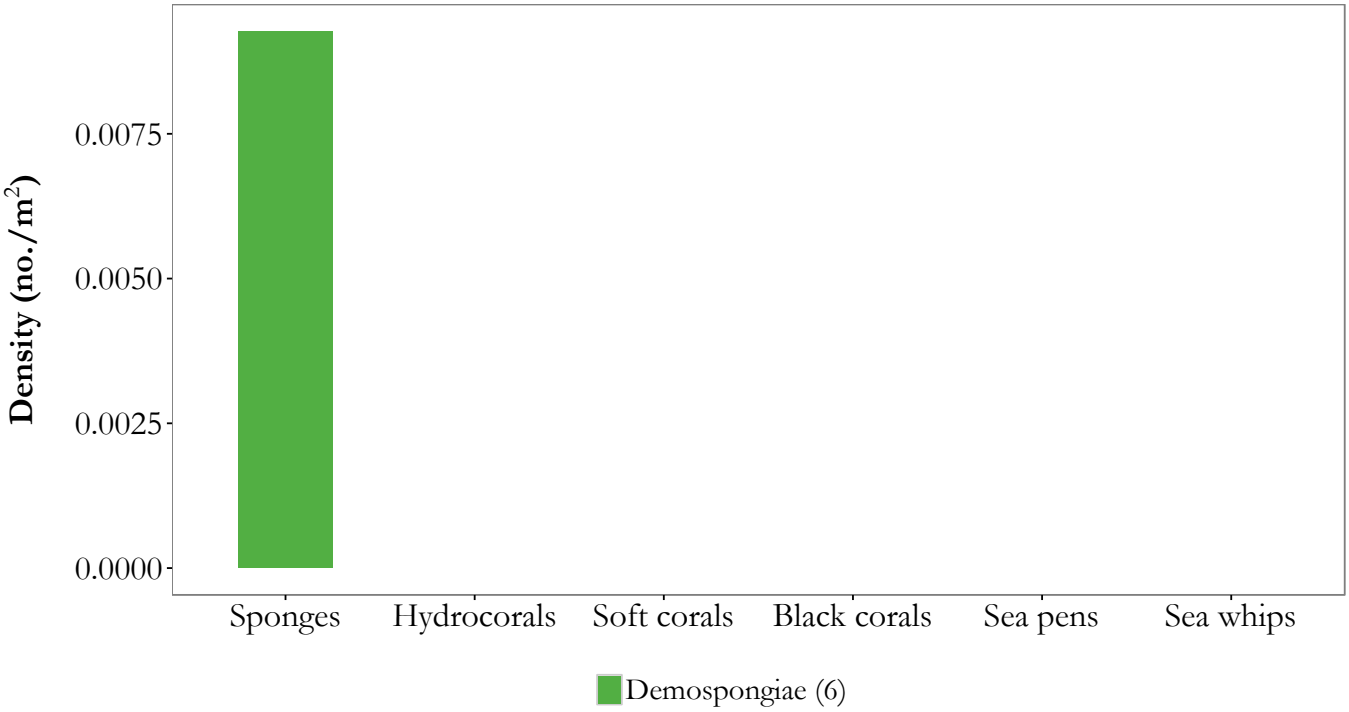
Substrate Composition



Images

Vertical Habitat Summary





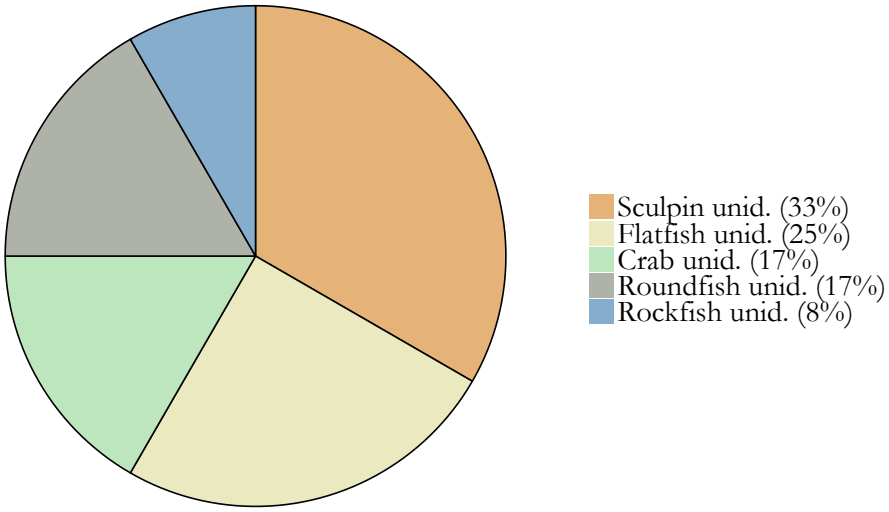
Summary - description of transect

Transect 2012-80: Primary and secondary substrates consisted entirely of sand. Sculpins (n = 20) accounted for 74% of the fishes identified. Species density was low overall (0.04 individuals/m²). Only six Demospongiae were identified. No other sponges, hydrocorals, corals, sea pens, or sea whips were identified.

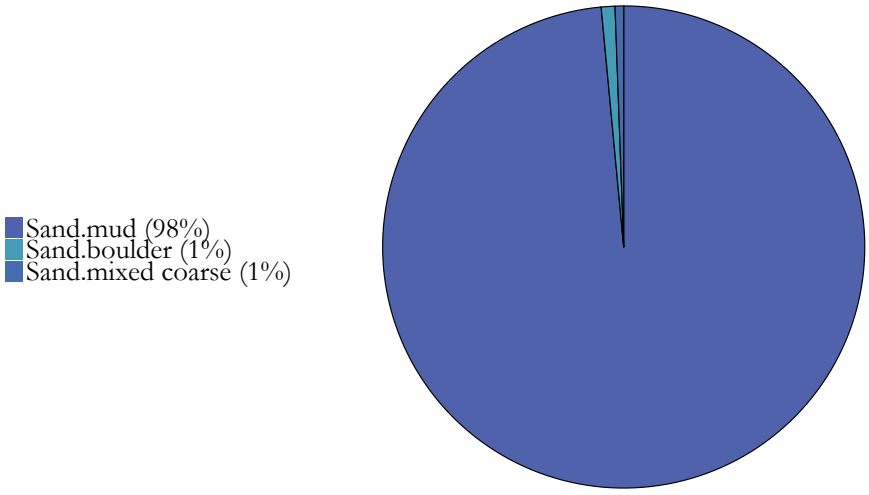
AREA: Seguam Pass To Amchitka Pass — Transect 2012-81

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.27	-173.45	831	124	3.8

Fish and Crab Composition (n = 12)



Substrate Composition



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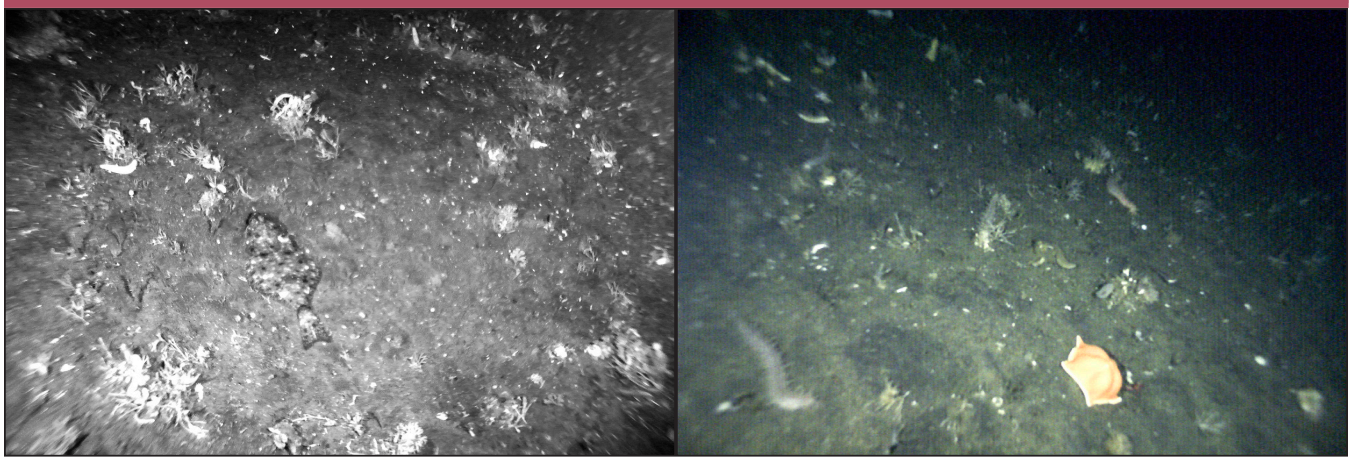
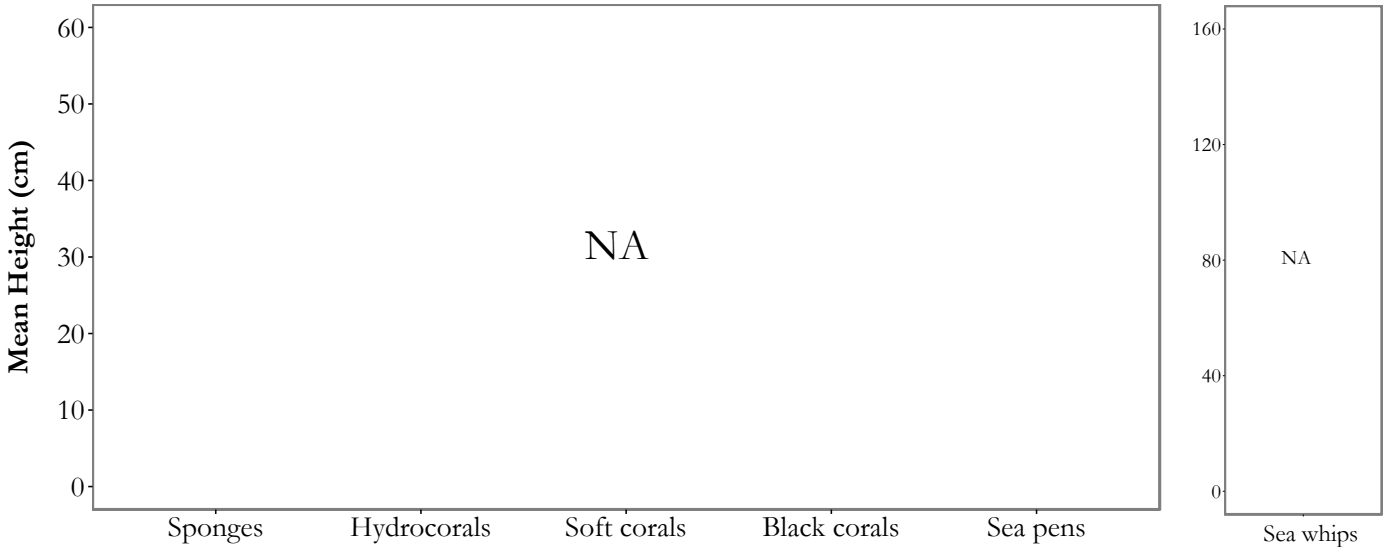
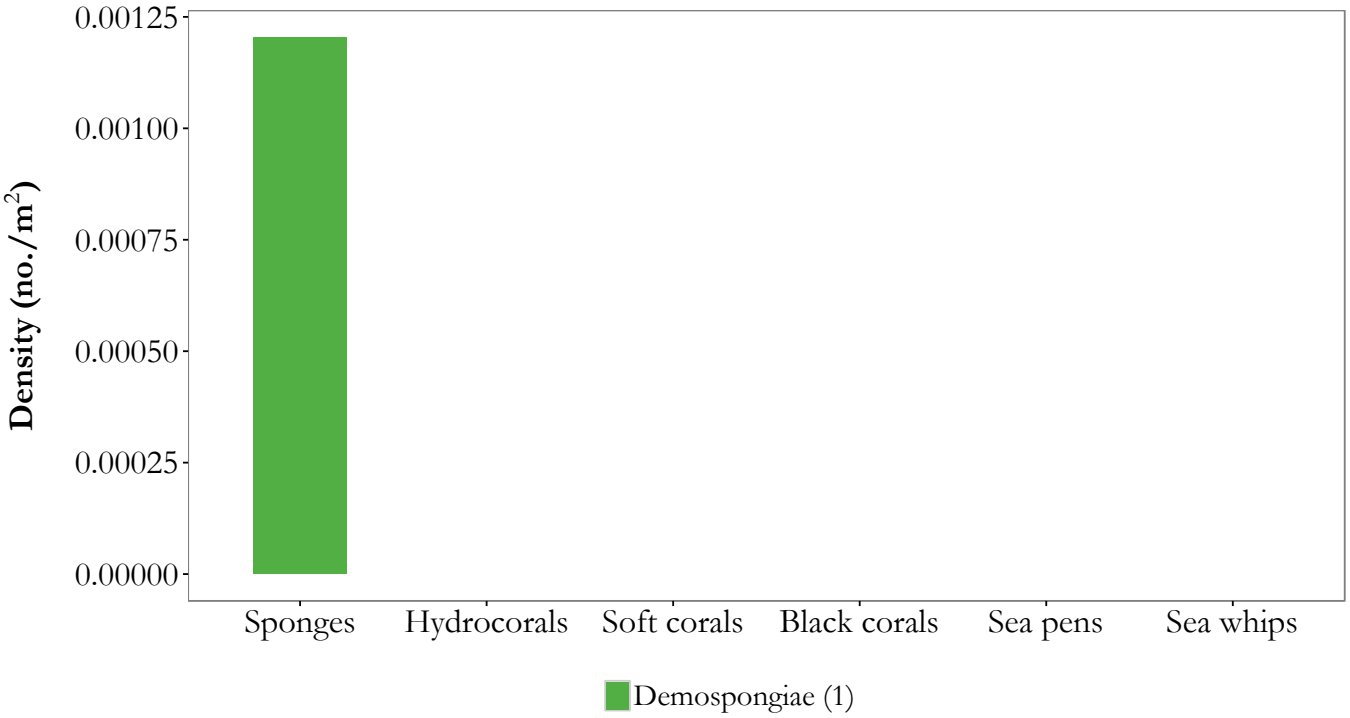


Vertical Habitat Summary





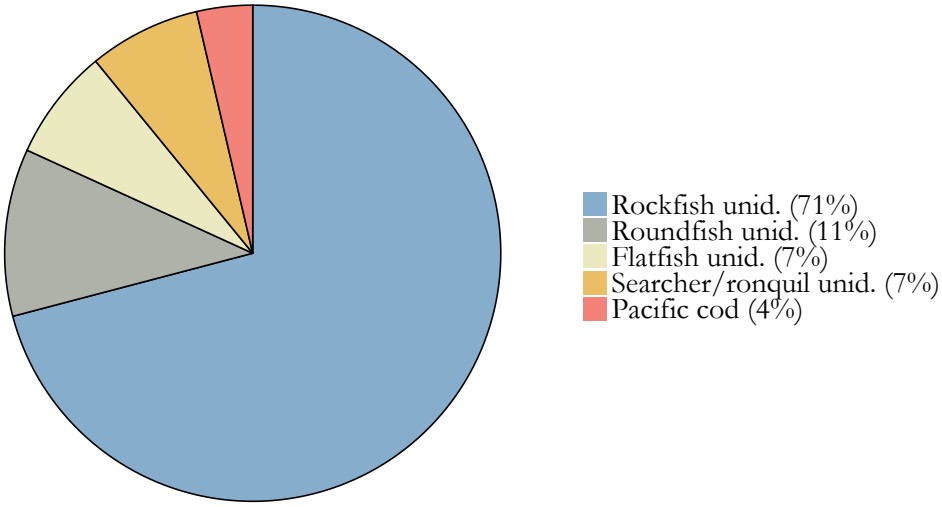
Summary - description of transect

Transect 2012-81: Primary and secondary substrates consisted largely of sand and mud. Two crabs and 10 fishes were identified for a combined density of 0.01 individuals/m^2. Only one Demospongiae was identified. No other sponges, hydrocorals, corals, sea pens, or sea whips were identified.

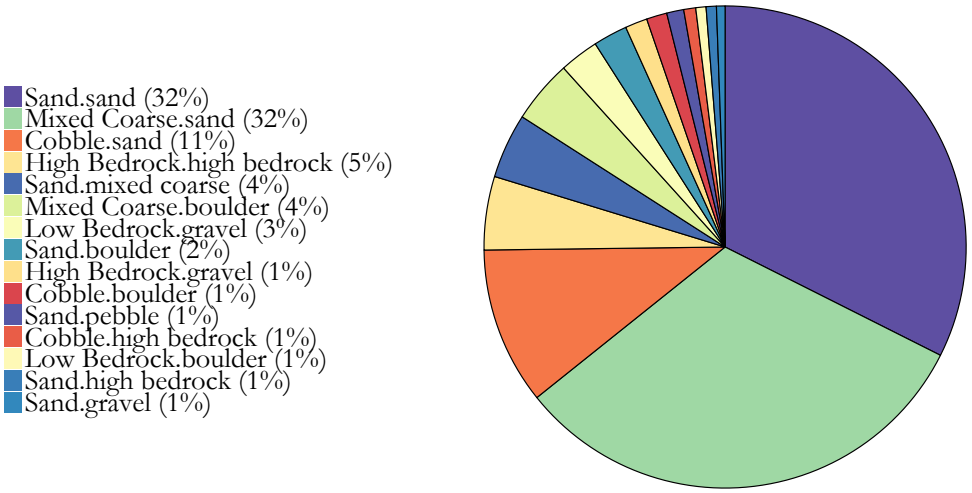
AREA: Seguam Pass To Amchitka Pass — Transect 2012-82

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.20	-173.33	1,143	90	4.9

Fish and Crab Composition (n = 55)



Substrate Composition



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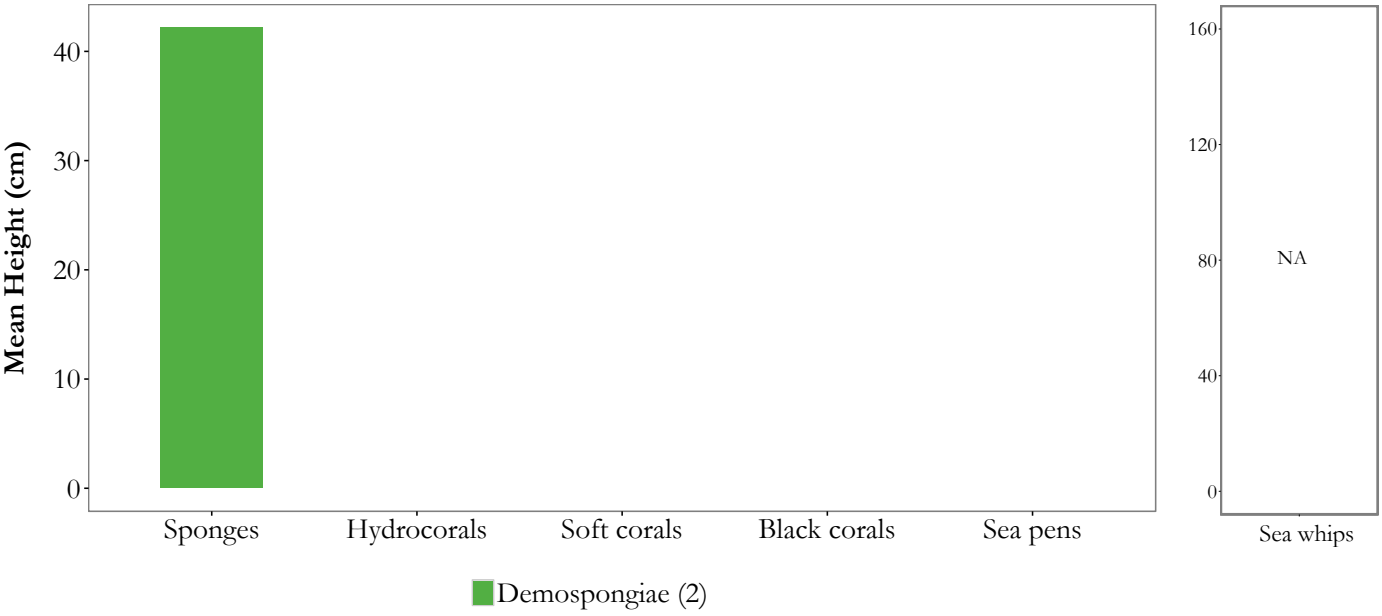
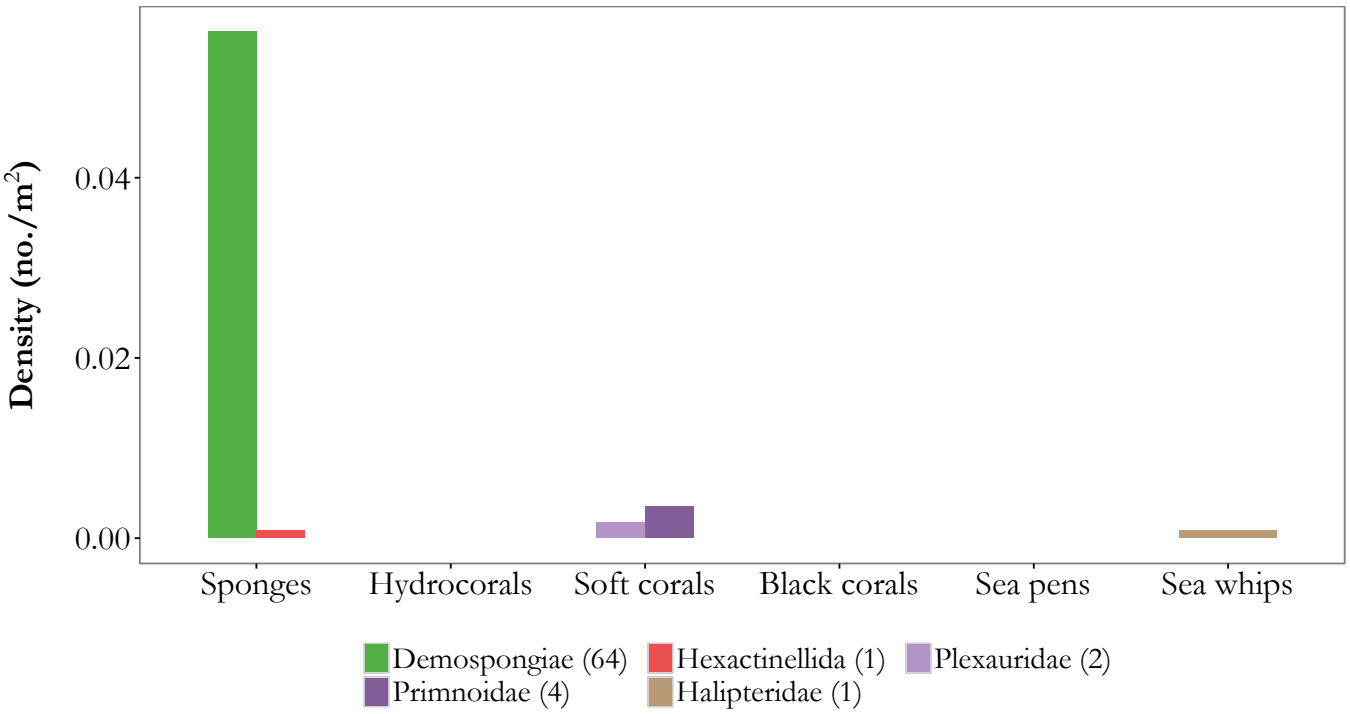
AREA: Seguam Pass To Amchitka Pass Transect 2012-82

Vertical Habitat Summary





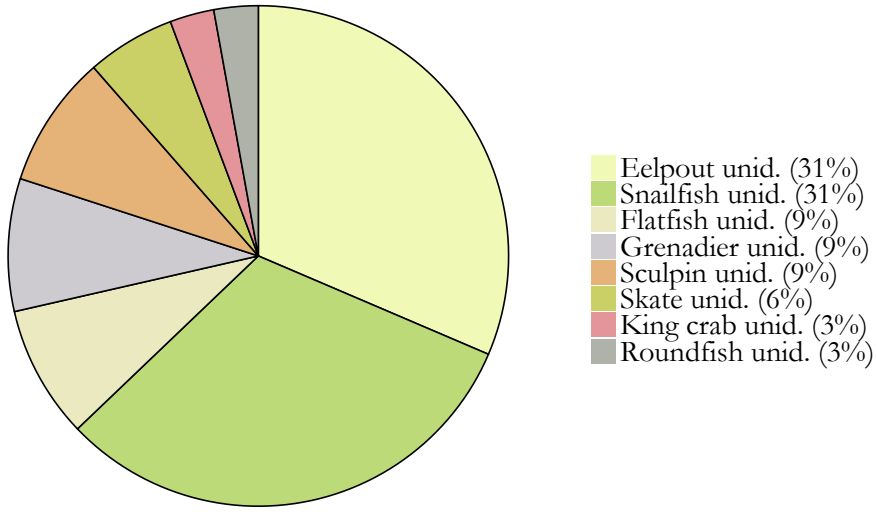
Summary - description of transect

Transect 2012-82: A total of 16 different substrates were classified. Primary and secondary substrates consisted largely of sand and mixed coarse. Rockfishes (0.03 individuals/m^2) accounted for 71% of the fish density (0.05 individuals/m^2). Demospongiae accounted for 89% of the structure-forming invertebrates (0.06 individuals/m^2). Mean height for the two individual Demospongiae was 42 cm.

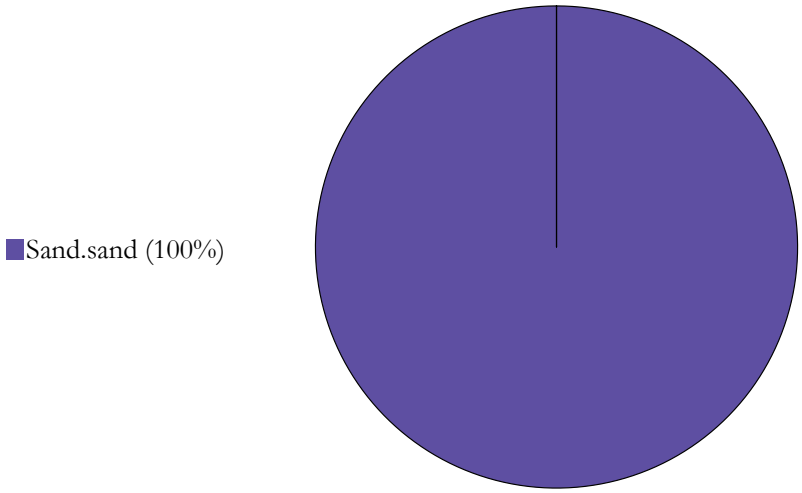
AREA: Seguam Pass To Amchitka Pass — Transect 2012-83

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.29	-173.27	937	440	3.7

Fish and Crab Composition (n = 35)



Substrate Composition



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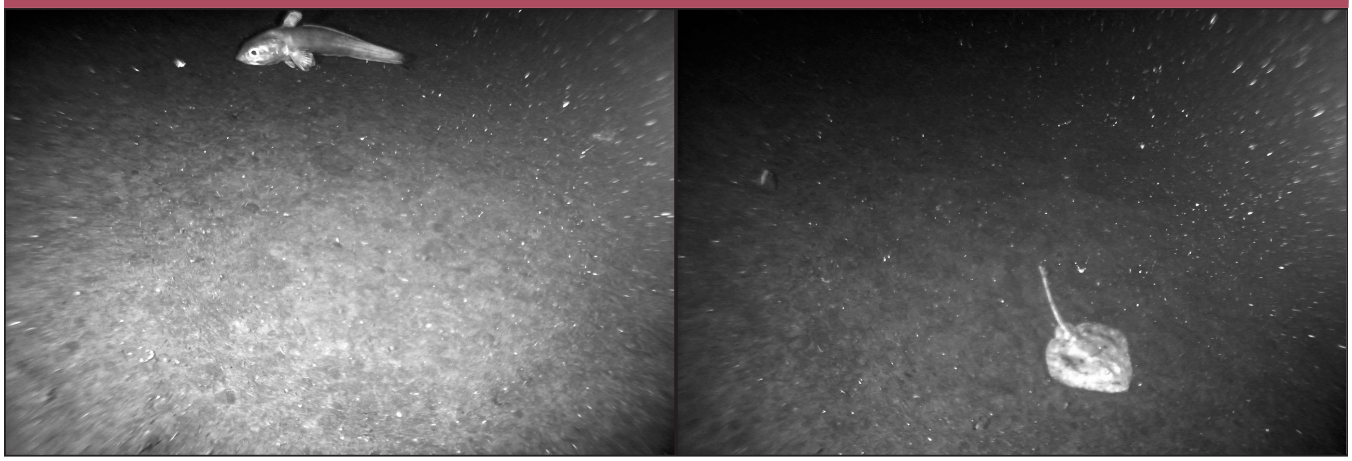
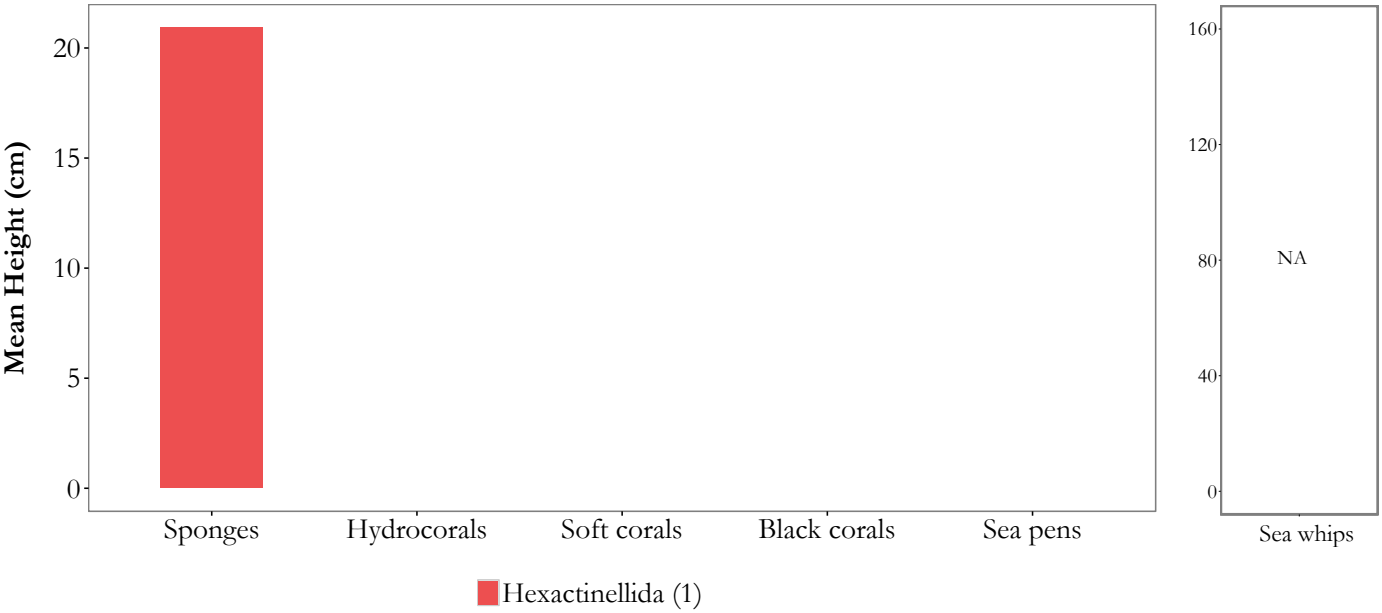


Vertical Habitat Summary



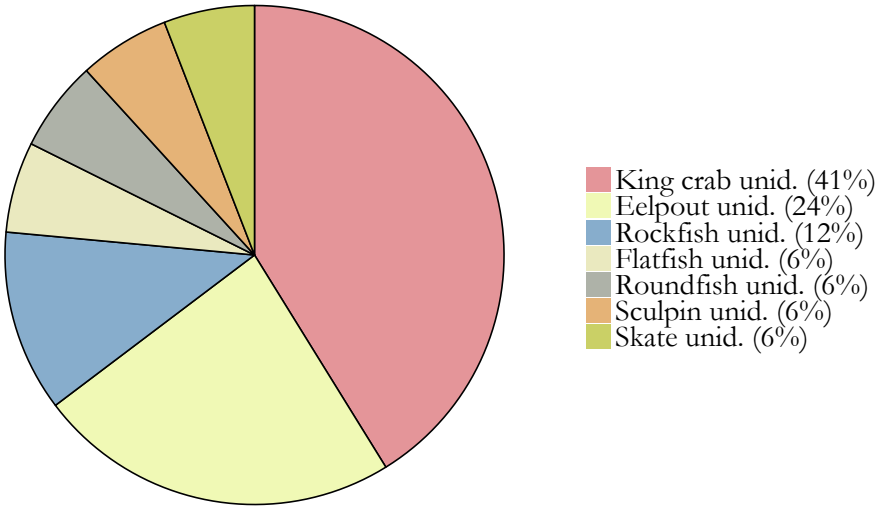
Summary - description of transect

Transect 2012-83: Primary and secondary substrates consisted entirely of sand. Few fishes were identified in this transect (n = 34) with a majority (62%) identified as eelpouts or snailfishes. One king crab was observed. Fish and crab density was 0.04 individuals/m^2. Structure-forming invertebrate density was 0.01 individuals/m^2.

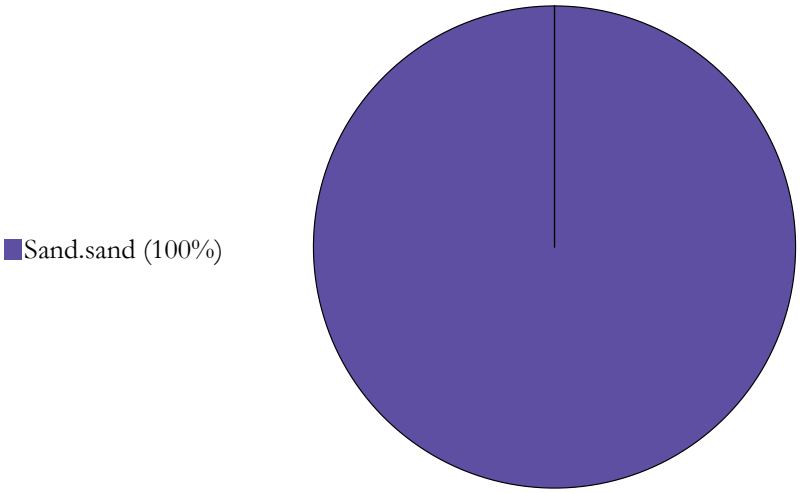
AREA: Seguam Pass To Amchitka Pass — Transect 2012-84

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/26/2012	52.28	-173.24	833	309	3.9

Fish and Crab Composition (n = 17)



Substrate Composition



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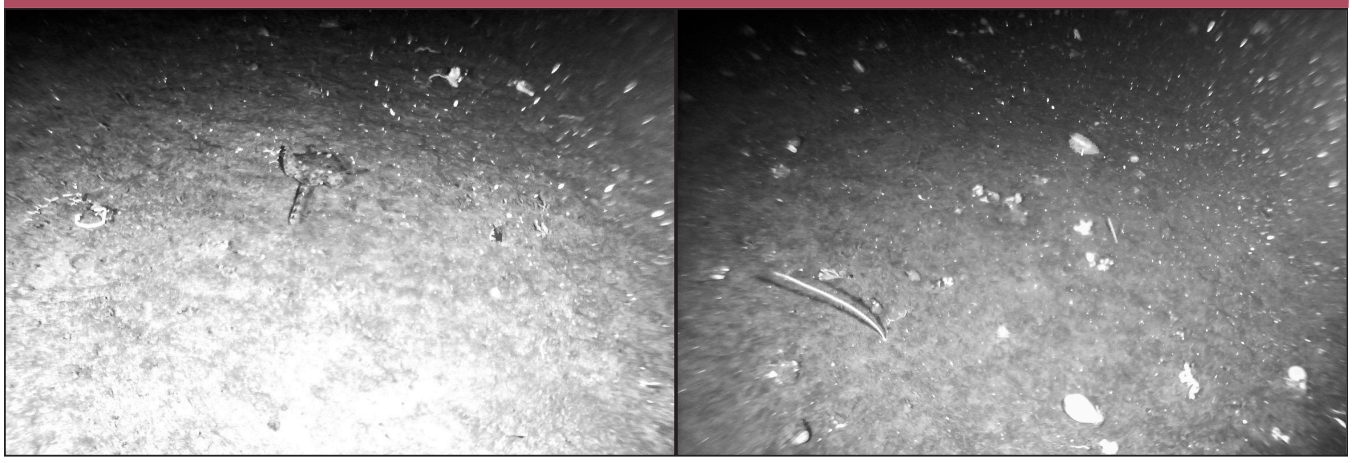
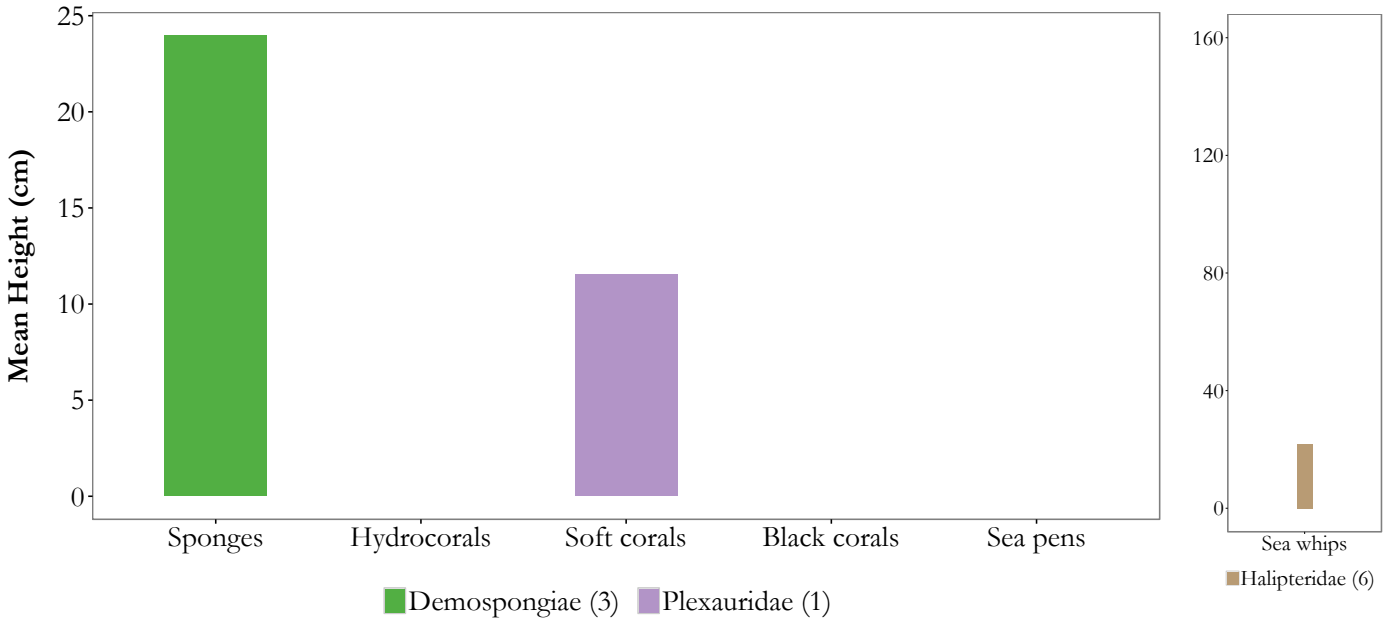
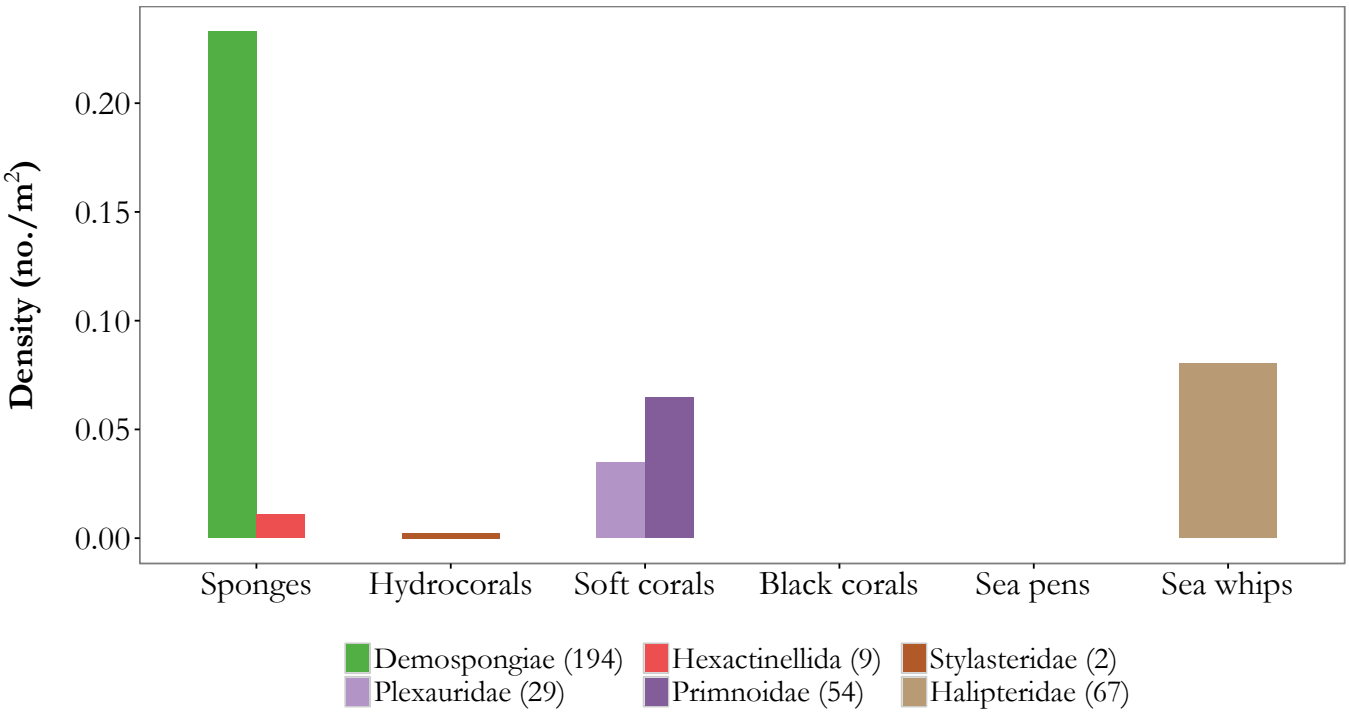


AREA: Seguam Pass To Amchitka Pass Transect 2012-84

Vertical Habitat Summary





Summary - description of transect

Transect 2012-84: Primary and secondary substrates consisted entirely of sand. King crabs accounted for 41% (0.01 individuals/m^2) of the fish and crab density. Structure-forming invertebrate density was 0.43 individuals/m^2. Sponges accounted for 55% of the density. Mean heights for Demospongiae and Halipteridae were 24 cm and 22 cm, respectively.

Amchitka Pass to Buldir Pass

Twenty-four transects were completed between Amchitka Pass and Buldir Pass. Depths ranged from 47 m to 595 m. Fourteen taxa of fishes and crabs were identified (Table 21). Vertical habitat was dominated by Primnoidae (Table 22). Heights ranged from 7 cm to 125 cm (Table 23).

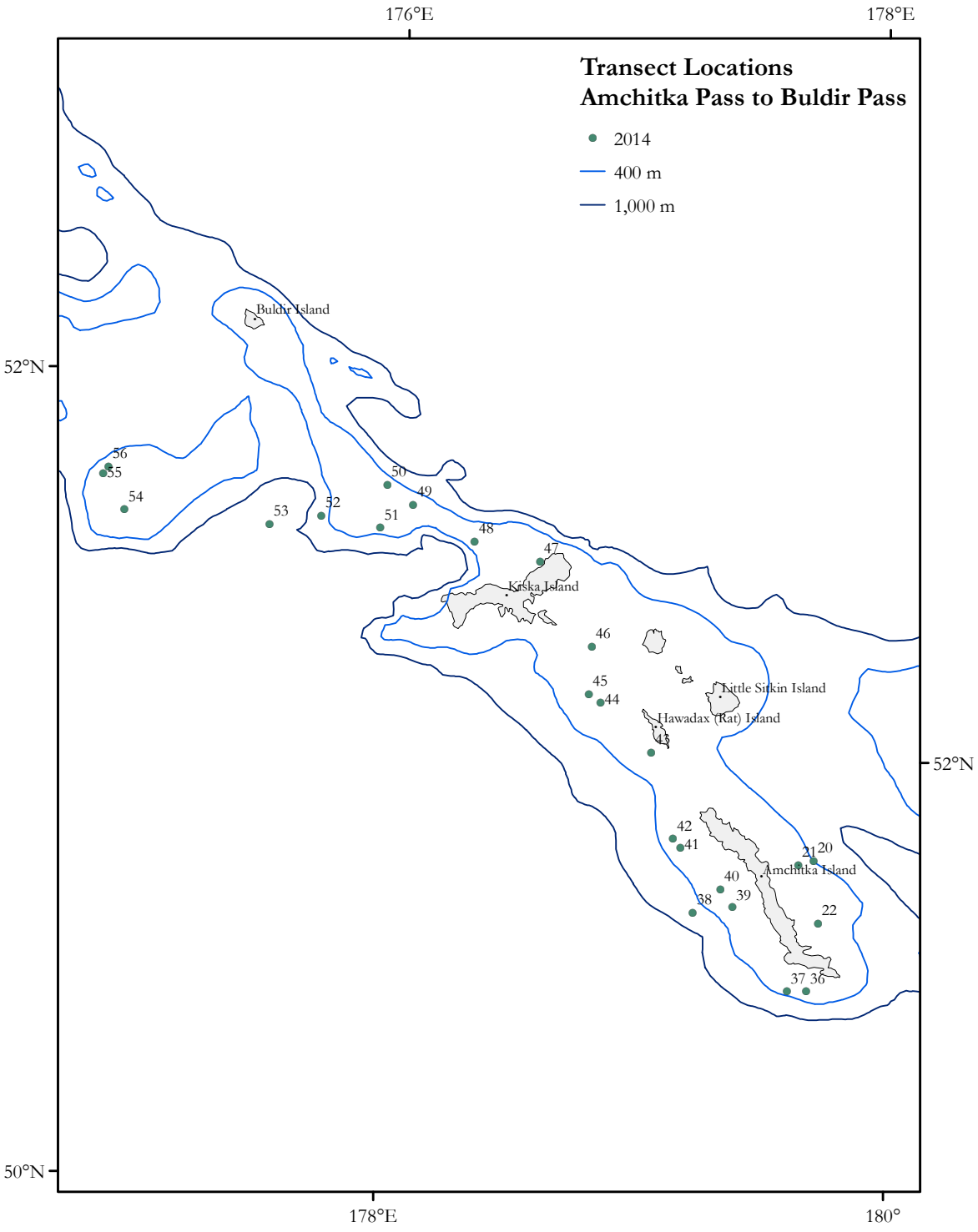


Figure 25. -- Survey transect locations, Amchitka Pass to Buldir Pass.

SITE SUMMARY: Amchitka Pass to Buldir Pass

Amchitka Pass is third deepest pass and Buldir Pass is the second widest pass in the Aleutian chain (Ezer and Oey 2003).

Between Amchitka Pass and Buldir Pass twenty-four transects were successfully completed. (Fig. 25). Transect depths ranged from 47 m to 595 m. Bedrock was a major component of both primary and secondary substrates (Table 20). Sand and mixed coarse were the next most frequently observed substrates.

Fourteen taxa of fishes and crabs were observed in the region between Amchitka Pass and Buldir Pass (Table 21). Rockfishes were 79% (0.06 individuals/m^2)of the fishes and crabs observed. Atka mackerel and searchers/ronquils were the next most abundant with densities of 0.01 and < 0.01 individuals/m^2, respectively.

Eleven taxa of structure-forming invertebrates were identified. Primnoidae dominated the vertical invertebrate habitat with a density of 1.47 individuals/m^2, the highest Primnoidae density of the survey (Table 22). Demospongiae density was 0.80 individuals/m^2. No Halipteridae were observed.

Heights for all taxa ranged from 3 cm to 125 cm with Primnoidae being the tallest (Table 23). Mean heights ranged from 14 cm for Stylasteridae 43 cm for Primnoidae.

All three orders of sponges were observed. Demospongiae were present at every transect and Hexactinellids at 15 of 24 (Fig. 26). Pennatulidae occurred at 50% of the transects (Fig. 27).Of the corals, Primnoidae and Plexauridae were present at every transect (Figs. 28) and Acanthogorgiidae was present at 10 of 24 stations (Fig. 29). Stylasteridae were evenly distributed throughout the region, occurring at 23 of 24 transects (Fig. 30).

Thirteen high density coral transects (2014- 22, 36, 37, 39, 40, 41, 42, 48, 49, 50, 51, 52, 56) and eight high density sponge stations (2014- 36, 37, 39, 40, 41, 48, 52, 56) occurred in the region between Amchitka Pass and Buldir Pass.

SITE SUMMARY: Amchitka Pass to Buldir Pass

Table 20. -- Summary of top 95% of primary and secondary substrates identified at 24 transects from Amchitka Pass to Buldir Pass.

Substrate	Minimum depth (m)	Maximum depth (m)	Number of hauls	Number of occurrences	Percent of occurrences
High Bedrock.high bedrock	71	121	16	3,923	18%
Sand.low bedrock	94	497	10	2,345	11%
High Bedrock.boulder	82	107	7	1,676	8%
Mixed Coarse.low bedrock	77	129	12	1,414	7%
Sand.gravel	96	121	9	1,191	6%
High Bedrock.mixed coarse	81	122	11	1,161	5%
Low Bedrock.mixed coarse	82	256	12	998	5%
Low Bedrock.sand	94	254	6	935	4%
Mixed Coarse.mixed coarse	84	132	9	929	4%
Sand.boulder	37	495	9	892	4%
Mixed Coarse.boulder	77	121	11	732	3%
Low Bedrock.low bedrock	82	121	12	601	3%
Sand.sand	46	109	8	575	3%
Mixed Coarse.high bedrock	82	121	10	486	2%
Sand.pebble	106	113	1	386	2%
Sand.high bedrock	94	112	6	365	2%
Boulder.cobble	47	48	1	292	1%
Low Bedrock.gravel	99	112	3	265	1%
Gravel.low bedrock	84	121	6	260	1%
High Bedrock.gravel	98	109	4	218	1%
Low Bedrock.boulder	92	118	7	204	1%
Gravel.mixed coarse	75	121	4	187	< 1%
Boulder.mixed coarse	87	121	4	175	< 1%
Boulder.high bedrock	47	101	4	171	< 1%

SITE SUMMARY: Amchitka Pass to Buldir Pass

Table 21. -- Summary of fishes and crabs identified at 24 transects between Amchitka Pass and Buldir Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Fishes				
Rockfish unid.	2,294	22	47-595	0.06
Atka mackerel	277	5	47-118	0.01
Searcher/ronquil unid.	98	15	84-233	< 0.01
Roundfish unid.	95	19	47-494	< 0.01
Pacific cod	37	10	47-119	< 0.01
Flatfish unid.	26	4	47-119	< 0.01
Grenadier unid.	18	2	327-595	< 0.01
Thornyhead unid.	17	2	233-595	< 0.01
Irish lord unid.	11	6	47-119	< 0.01
Skate unid.	10	6	47-595	< 0.01
Sculpin unid.	9	7	47-327	< 0.01
Walleye pollock	1	1	107-107	< 0.01
Crabs				
King crab unid.	14	2	327-595	< 0.01
Crab unid.	2	2	212-595	< 0.01

Table 22. -- Summary of sponges, corals, Pennatulaceans, and hydrocorals identified at 24 transects between Amchitka Pass and Buldir Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Sponges				
Demospongiae	27,074	24	47-595	0.80
Hexactinellida	464	15	80-595	0.02
Calcarea	7	3	107-595	< 0.01
Soft corals				
Primnoidae	65,375	24	47-595	1.47
Plexauridae	13,173	24	47-595	0.34
Acanthogorgiidae	518	17	84-327	0.01
Isididae	511	4	47-595	0.02
Paragorgiidae	8	2	80-595	< 0.01
Soft coral unid.	8	1	595-595	< 0.01
Pennatulaceans				
Pennatulidae	86	12	47-119	< 0.01
Hydrocorals				
Stylasteridae	9,538	23	80-595	0.34

SITE SUMMARY: Amchitka Pass to Buldir Pass

Table 23. -- Summary of sponge, coral, Pennatulacean, and hydrocoral heights from 24 transects between Amchitka Pass and Buldir Pass.

Species/Grouping	Number measured	Minimum height(cm)	Maximum height (cm)	Mean height (cm)
Sponges				
Demospongiae	1,637	20	119	34
Hexactinellida	90	20	61	32
Calcarea	1	27	27	27
Soft corals				
Primnoidae	1,412	7	125	43
Plexauridae	462	5	86	31
Isididae	57	12	65	30
Acanthogorgiidae	53	10	57	22
Soft coral unid.	1	27	27	27
Pennatulaceans				
Pennatulidae	15	16	25	20
Hydrocorals				
Stylasteridae	503	3	67	14

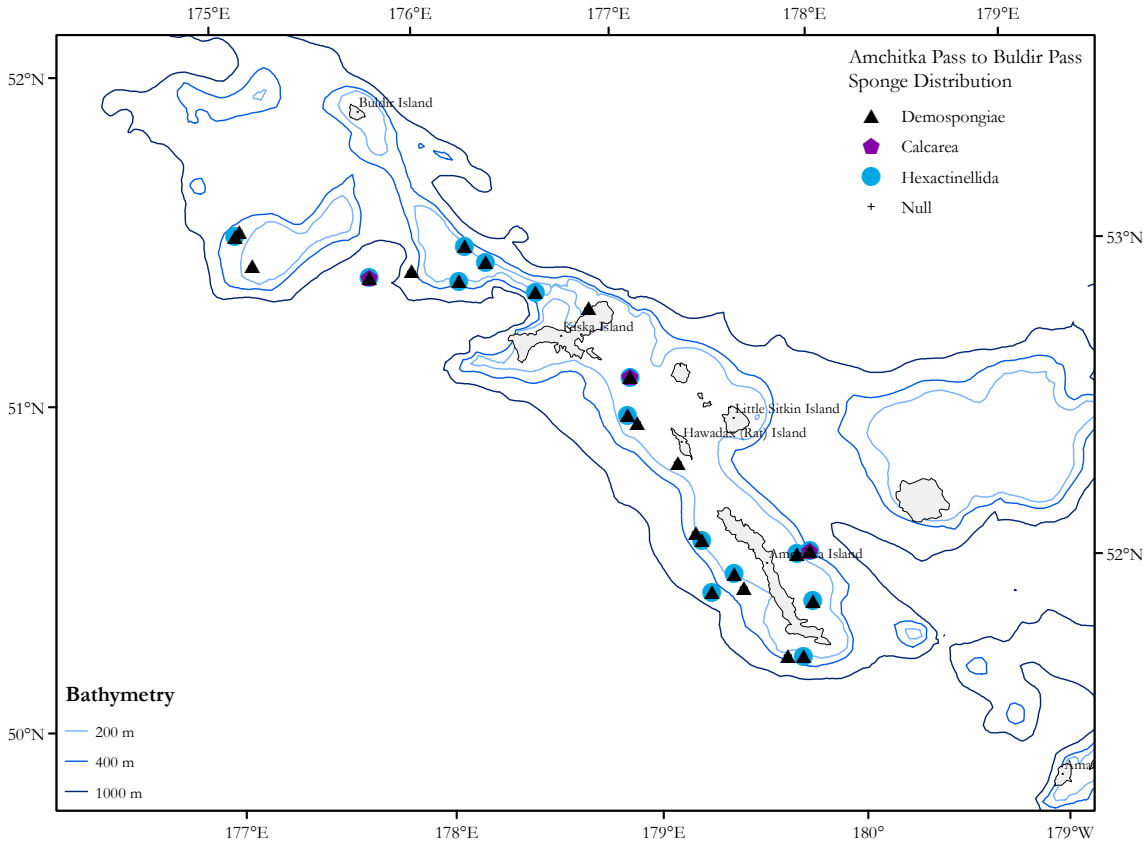


Figure 26. -- Sponge distribution, Amchitka Pass to Buldir Pass.

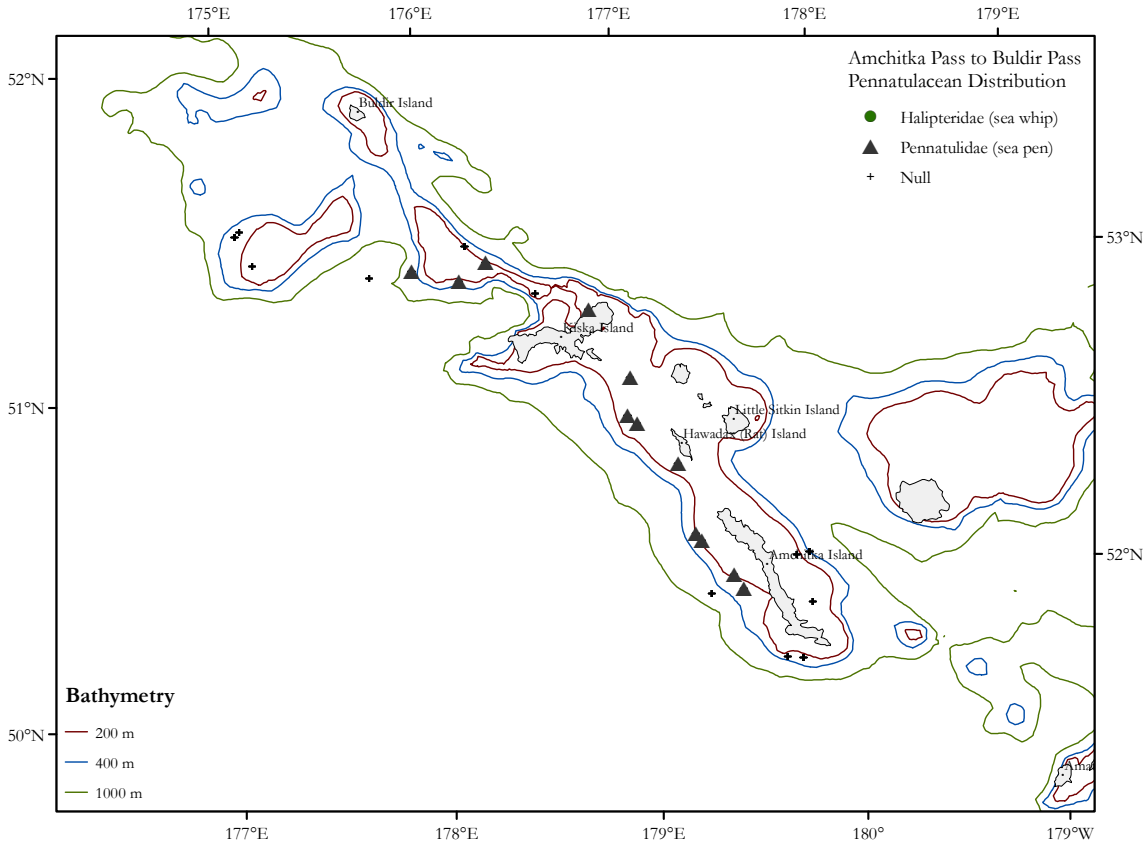


Figure 27. -- Pennatulacean distribution, Amchitka Pass to Buldir Pass.

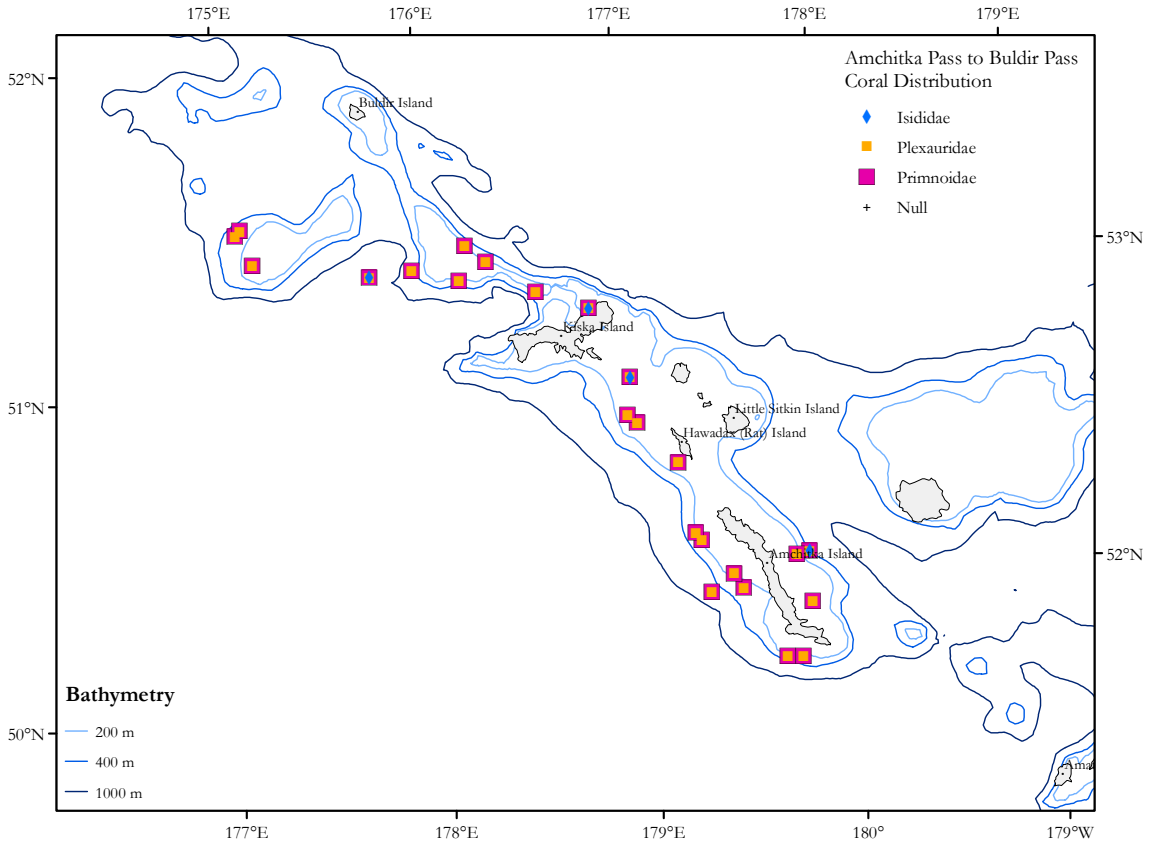


Figure 28. -- Isididae, Plexauridae, and Primnoidae distribution, Amchitka Pass to Buldir Pass.

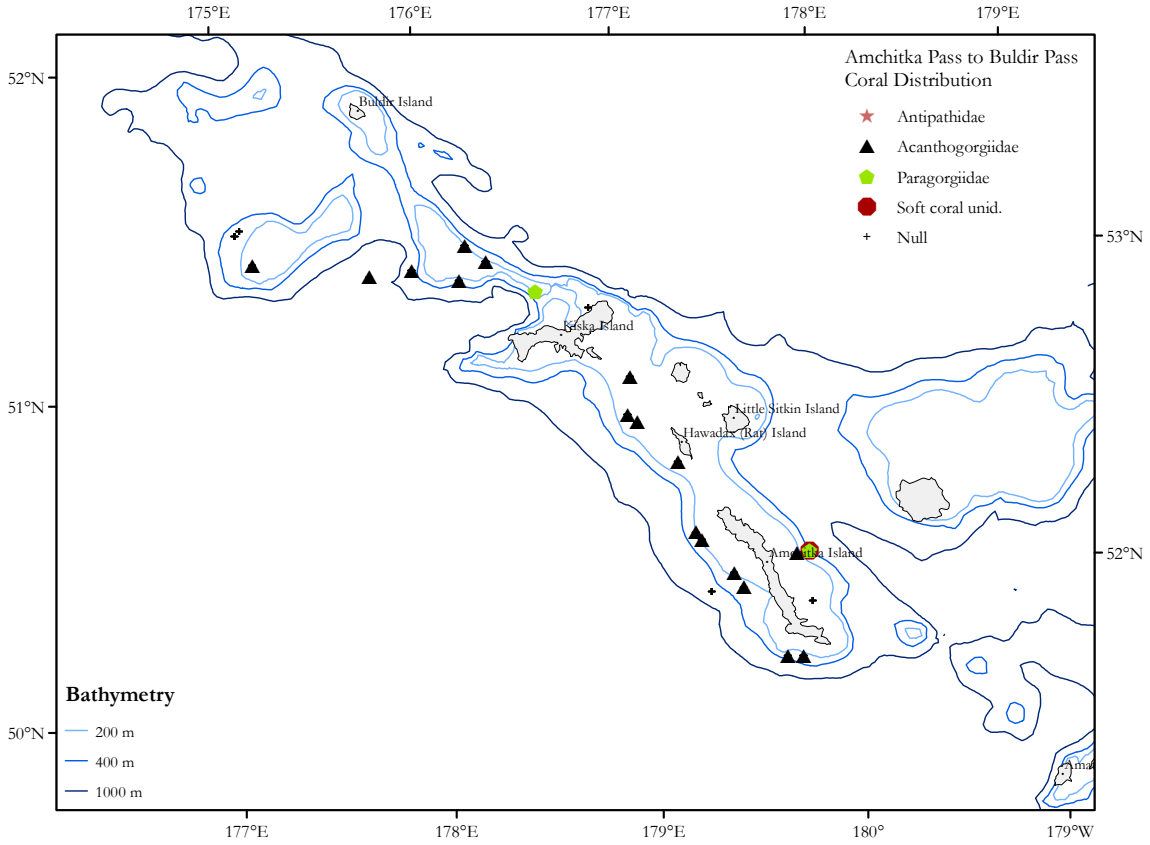


Figure 29. -- Antipathidae, Acanthogorgiidae, Paragorgiidae, and soft coral unidentified distribution, Amchitka Pass to Buldir Pass.

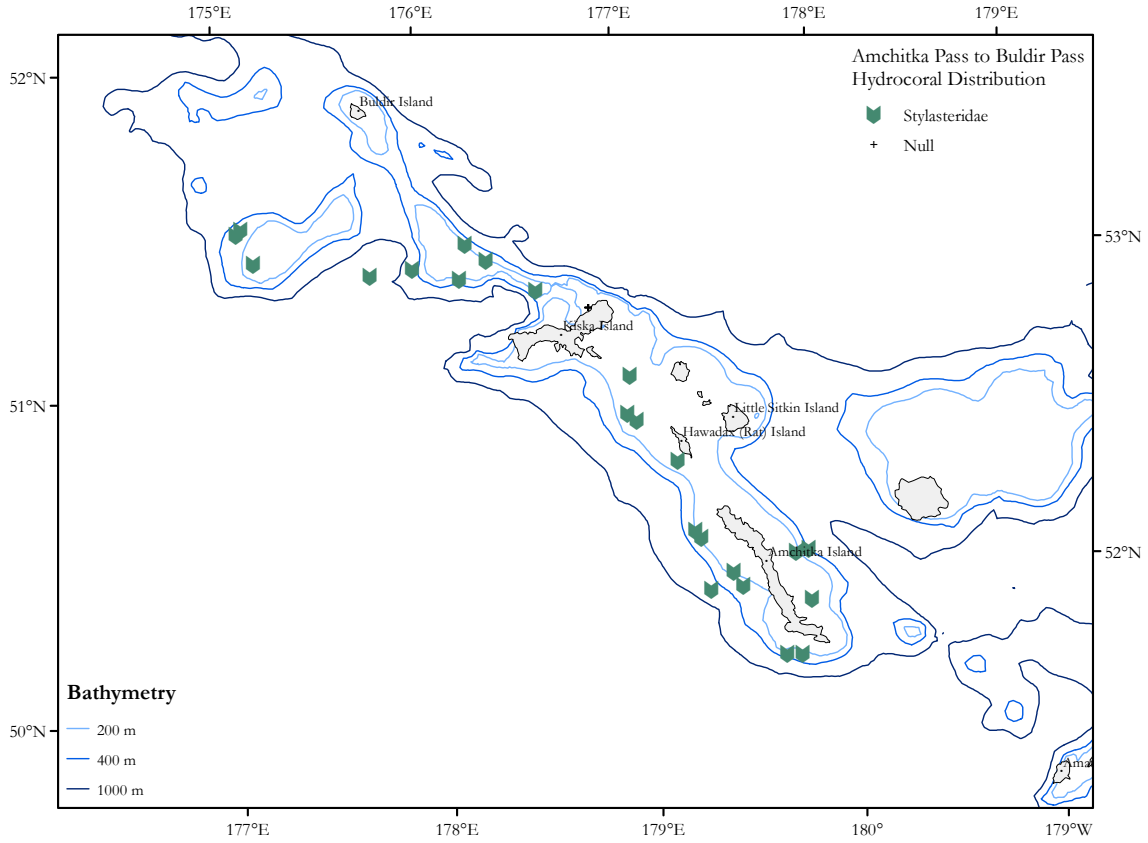
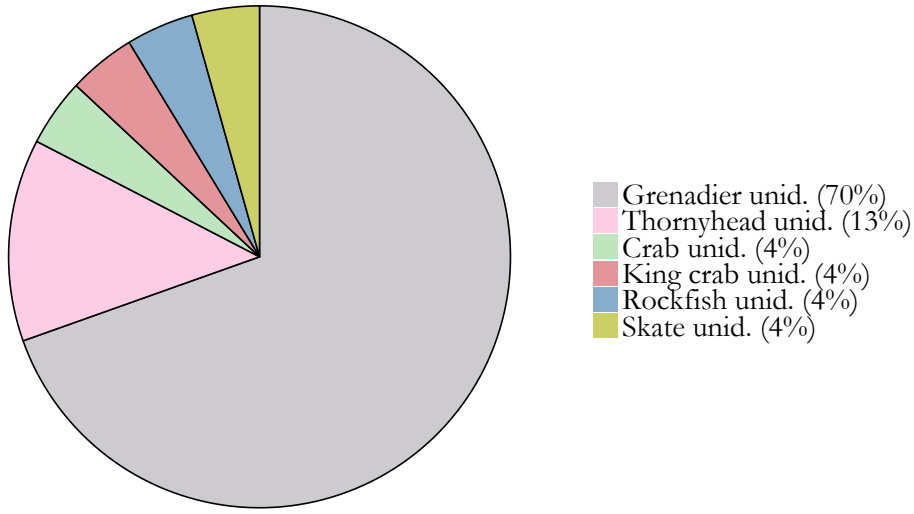


Figure 30. -- Hydrocoral distribution, Amchitka Pass to Buldir Pass.

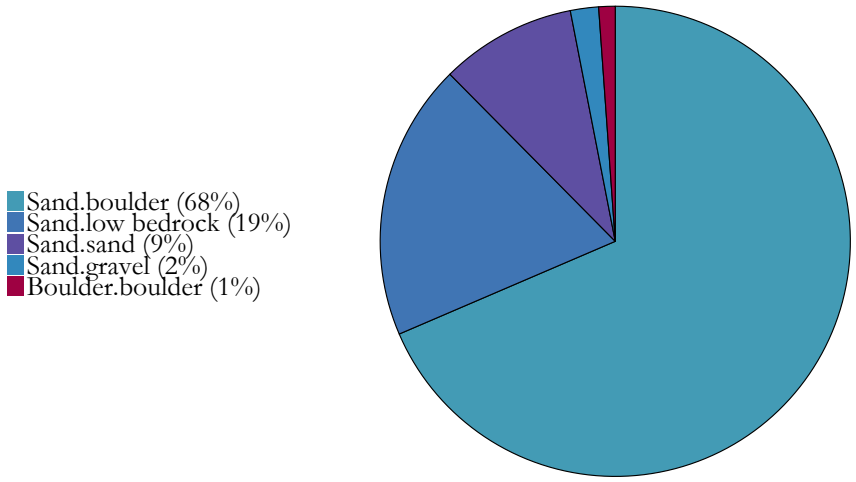
AREA: Amchitka Pass To Buldir Pass — Transect 2014-20

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/27/2014	51.64	179.17	1,064	595	3.3

Fish and Crab Composition (n = 23)

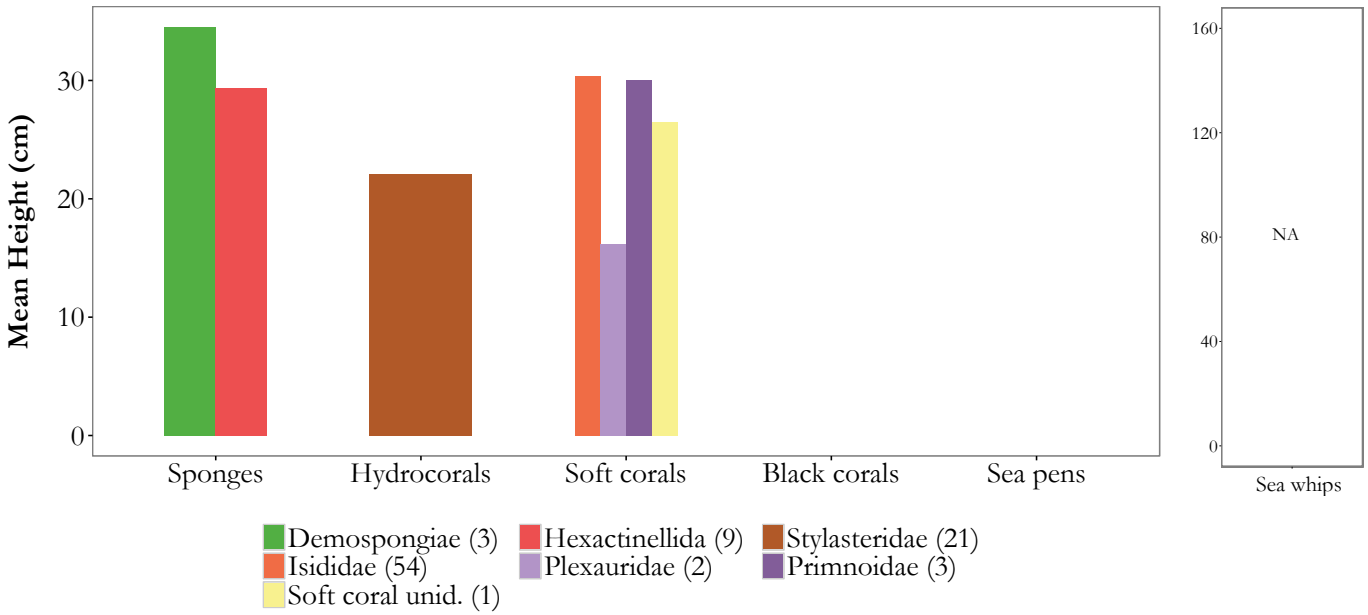


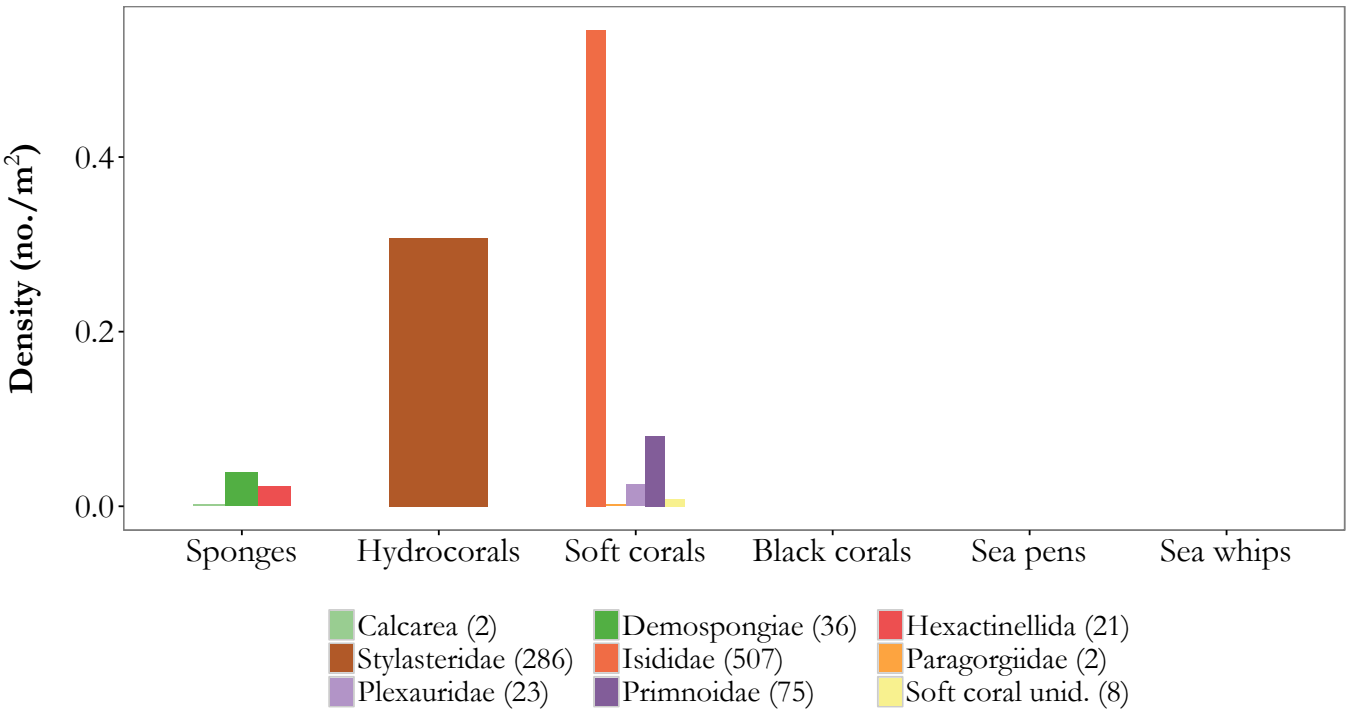
Substrate Composition



Images

Vertical Habitat Summary





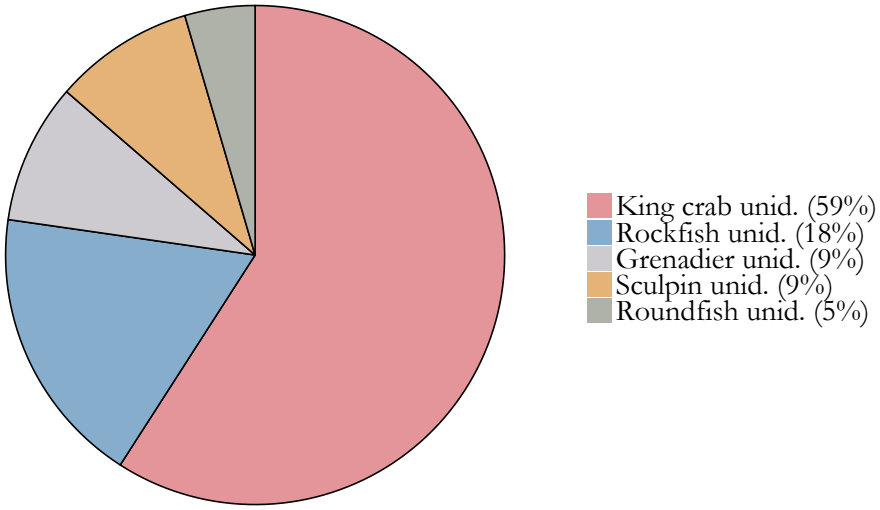
Summary - description of transect

Transect 2014-20: Primary and secondary substrates consisted largely of sand and boulder. Grenadiers (n = 16; 0.02 individuals/m^2) accounted for 70% of the fish and crab density. Structure-forming invertebrates were diverse; all reported taxa were represented except Pennatulidae and Halipteridae. Isididae was the most abundant (0.55 individuals/m^2). Total density for structure-forming invertebrates was 1.03 individuals/m^2. Mean heights ranged from 16 cm to 35 cm with Plexauridae being the shortest and Demospongiae being the tallest.

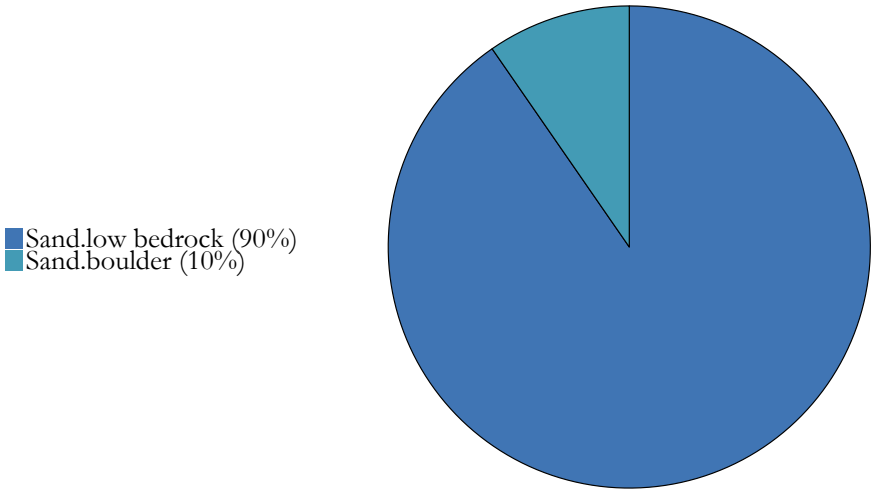
AREA: Amchitka Pass To Buldir Pass — Transect 2014-21

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/27/2014	51.61	179.11	1,241	327	3.7

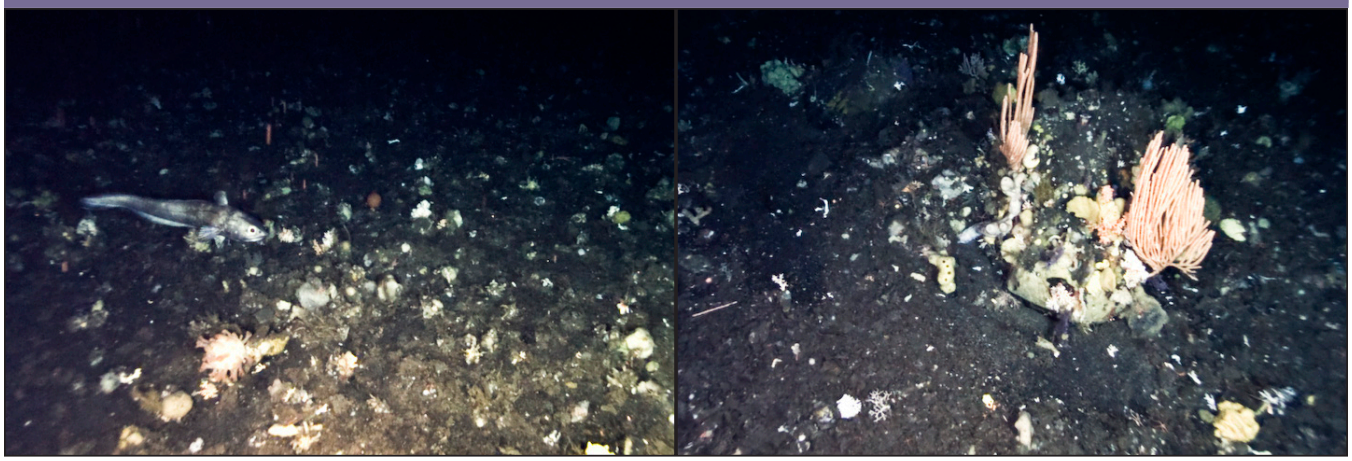
Fish and Crab Composition (n = 22)



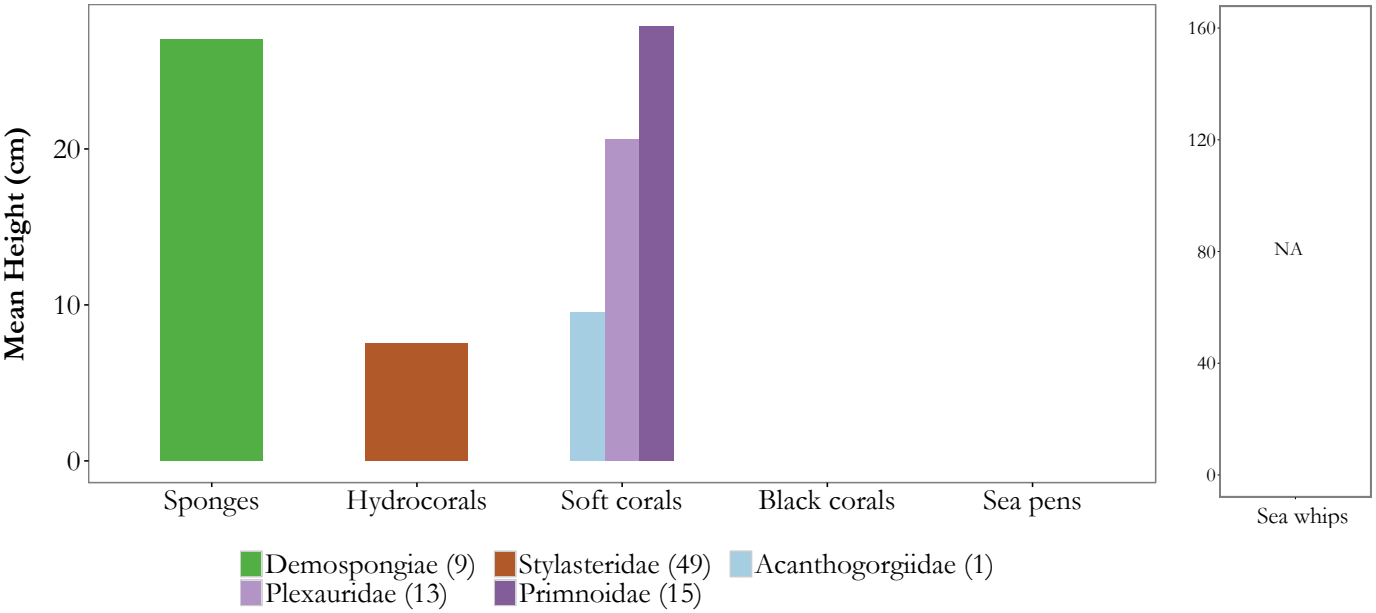
Substrate Composition

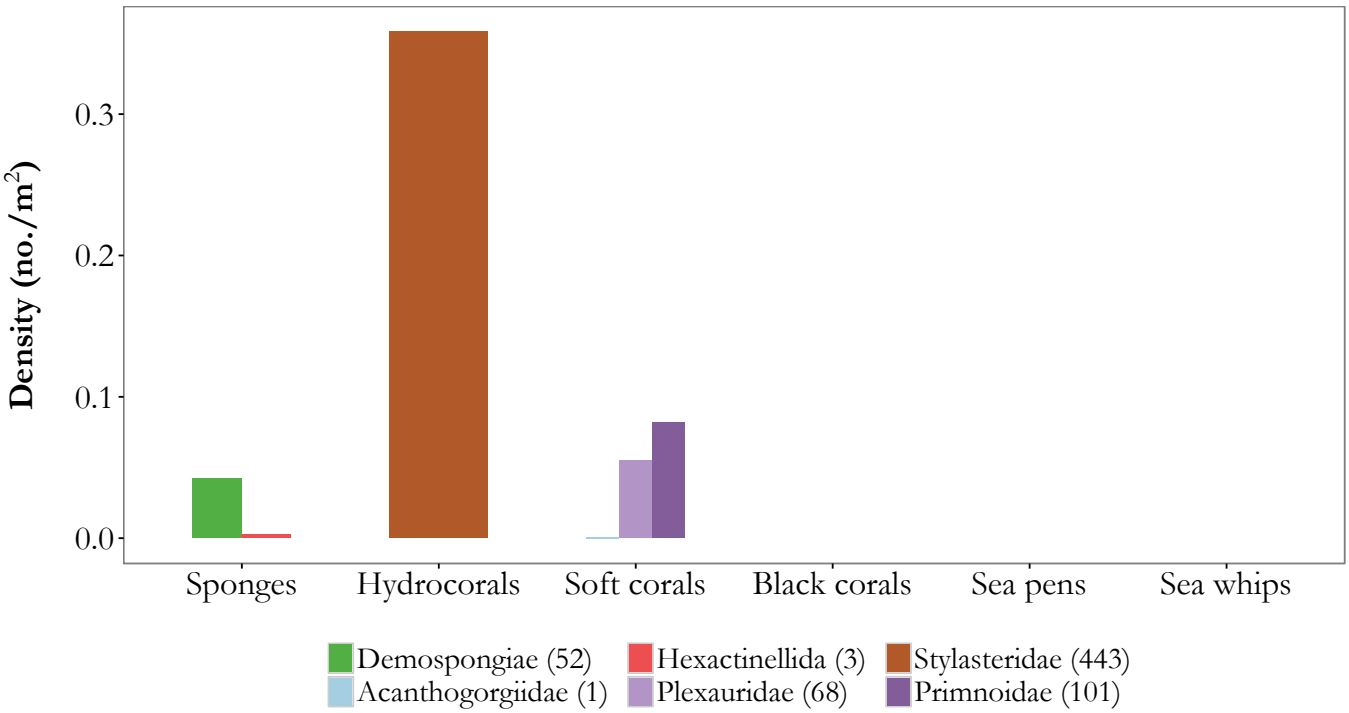


Images



Vertical Habitat Summary





Summary - description of transect

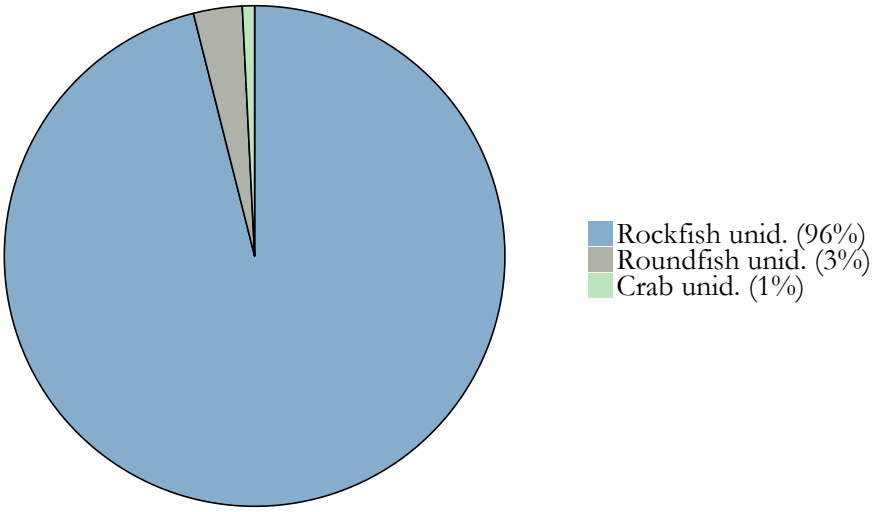
Transect 2014-21: Primary and secondary substrates consisted largely of sand and low bedrock. King crabs (0.01 individuals/m^2) were the most abundant of the fishes and crabs identified. Stylasteridae (n = 443) comprised 66% of the structure-forming invertebrate density (0.54 individuals/m^2). Mean heights for Demospongiae, Stylasteridae, Plexauridae, Primnoidae, and were 27 cm, 8 cm, 21 cm, and 28 cm, respectively.

AREA: Amchitka Pass To Buldir Pass — Transect *2014-22

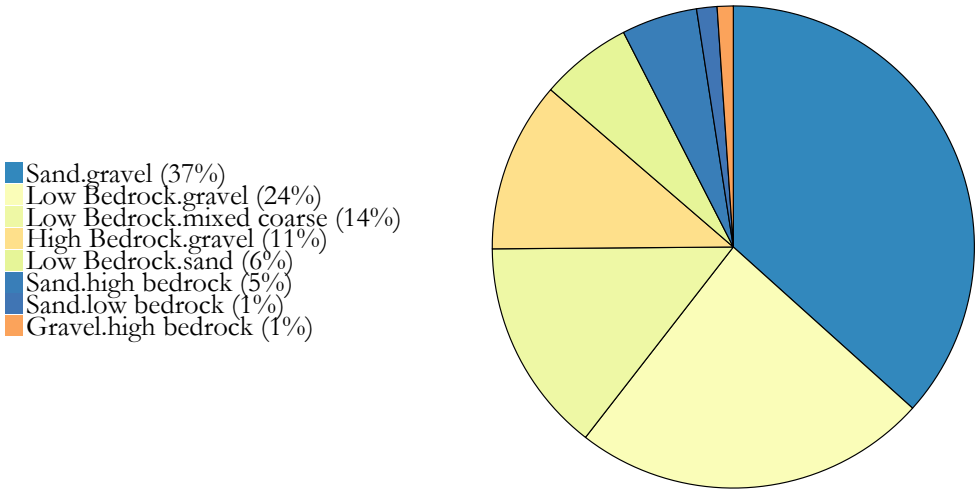
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/27/2014	51.48	179.29	3,074	212	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 127)



Substrate Composition

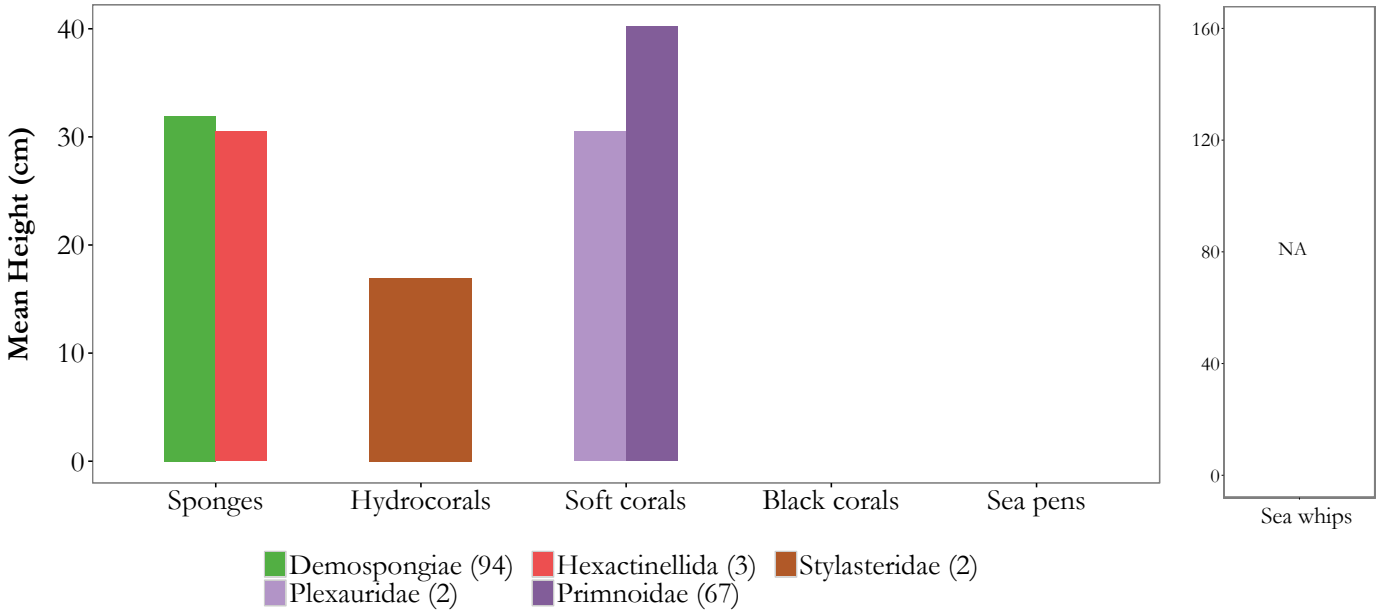


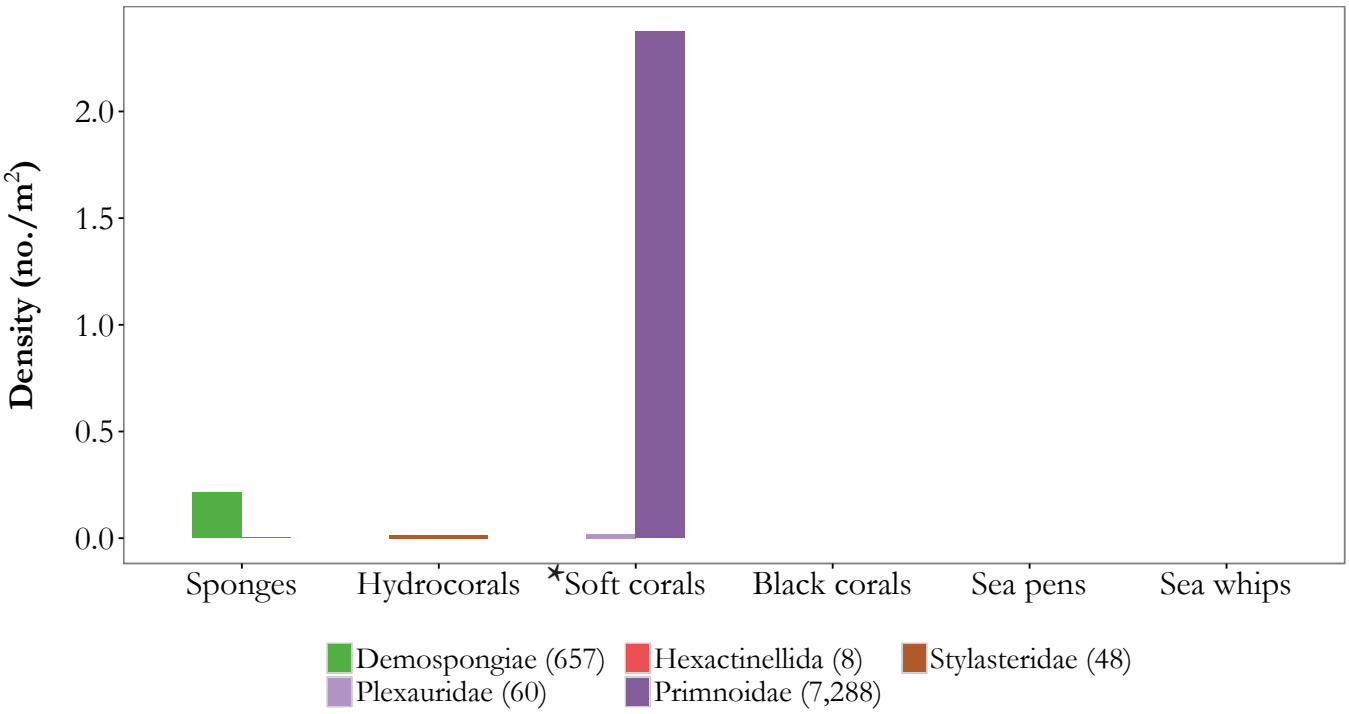
Images

AREA: Amchitka Island To Buldir Island Transect *2014-22

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

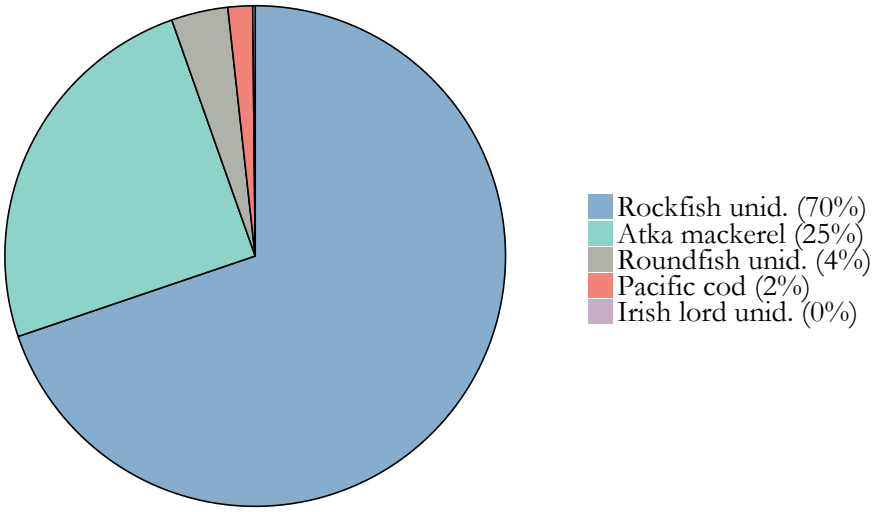
Transect 2014-22: Primary and secondary substrates consisted largely of sand and bedrock. Rockfishes (n = 122) were 96% of the fish and crab density (0.04 individuals/m^2). Overall density of structure-forming invertebrates was 2.63 individuals/m^2 of which Primnoidae comprised 90%. The tallest vertical structure was a Primnoidae measuring 125 cm. Mean heights for Demospongiae, Hexactinellida, Stylasteridae, Plexauridae, and Primnoidae were 32 cm, 30 cm, 17 cm, 31 cm, and 40 cm, respectively.

AREA: Amchitka Pass To Buldir Pass — Transect *2014-36

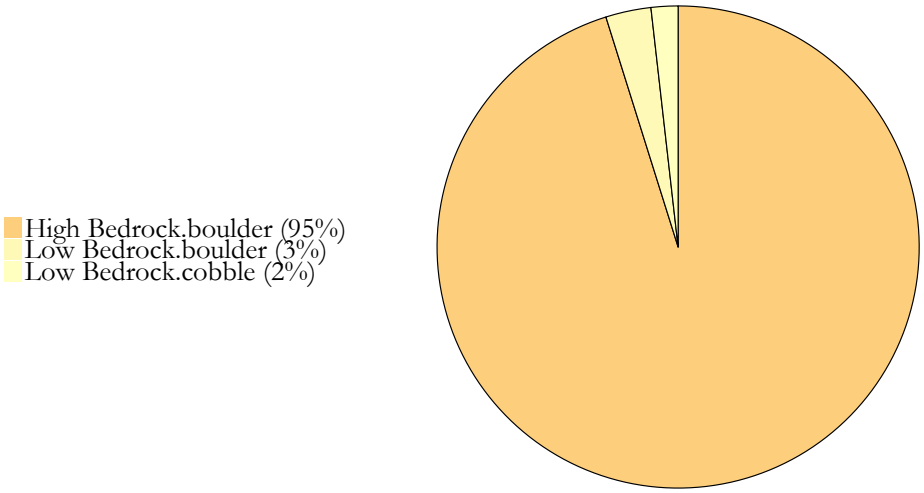
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.30	179.36	1,527	99	4.2

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 629)



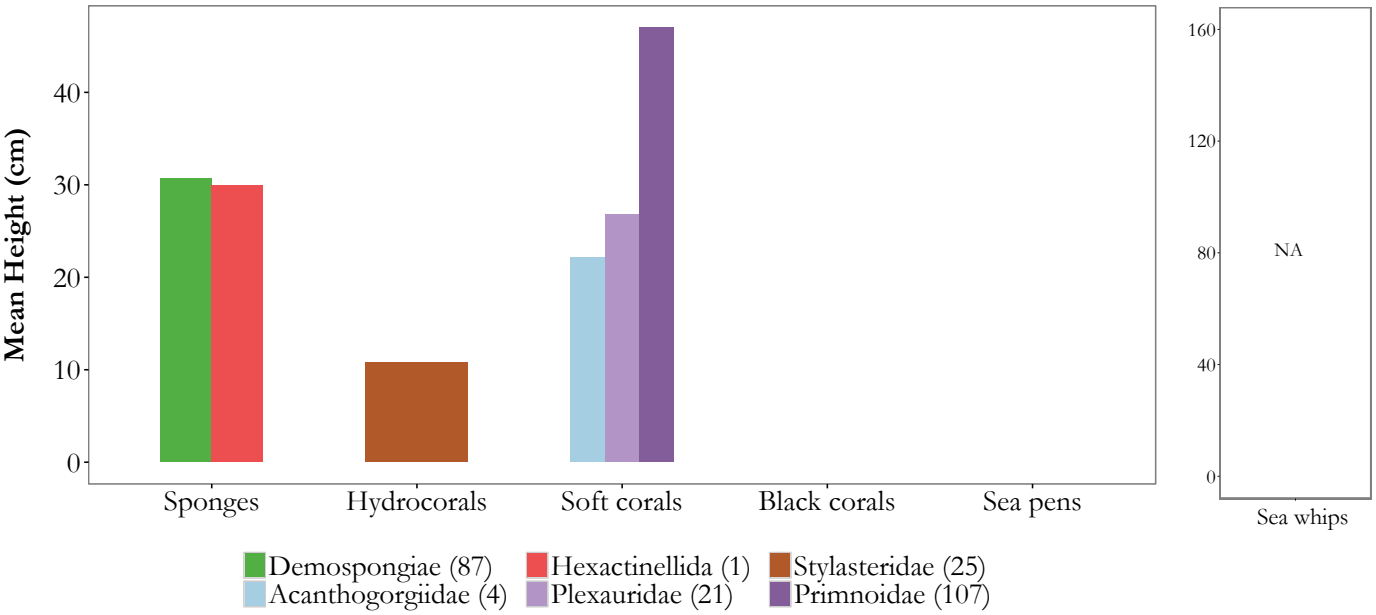
Substrate Composition

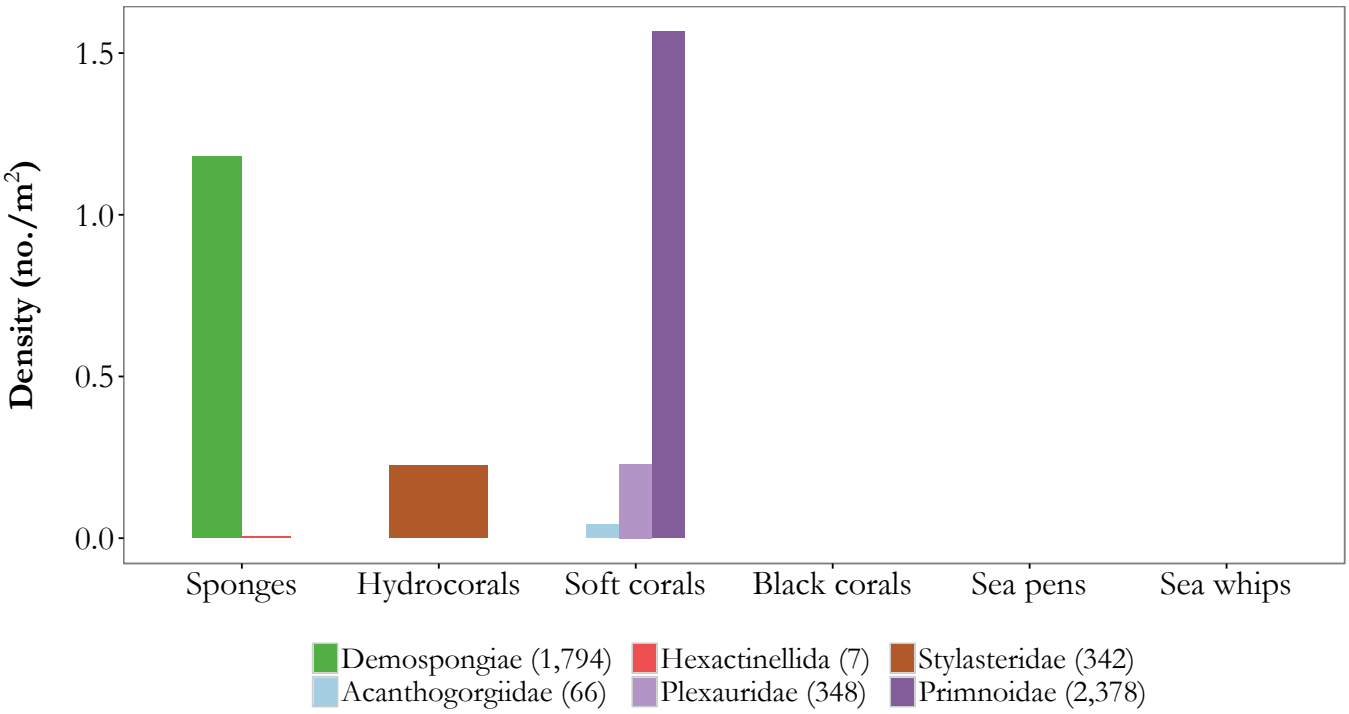


Images

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

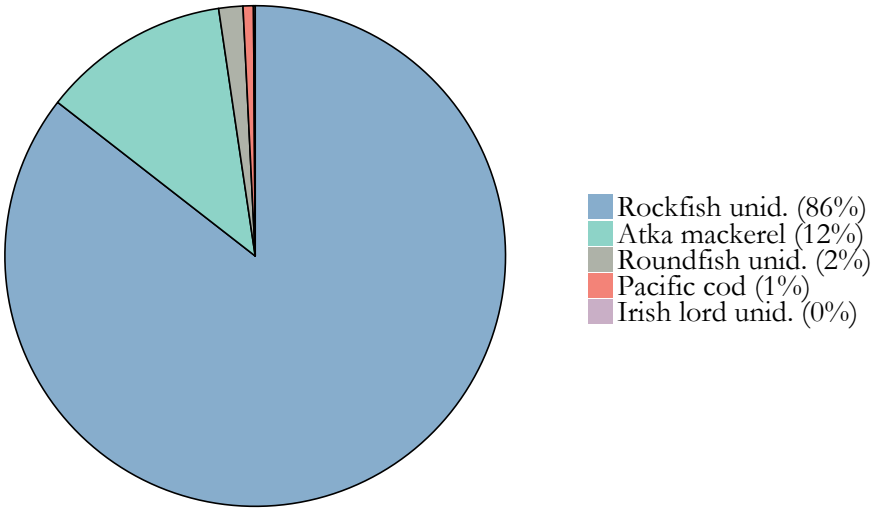
Transect 2014-36: Primary and secondary substrates consisted largely of bedrock and boulders. Rockfishes (n = 439) and Atka mackerel (n = 156) accounted for 95% of the fish density (0.41 individuals/m^2). Primnoidae (1.57 individuals/m^2) and Demospongiae (1.18 individuals/m^2) comprised 84% of the available structure-forming invertebrates (3.25 individuals/m^2). Mean heights were calculated for Demospongiae (31 cm), Stylasteridae (11 cm), Acanthogorgiidae (22 cm), Plexauridae (27 cm), Primnoidae (47 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-37

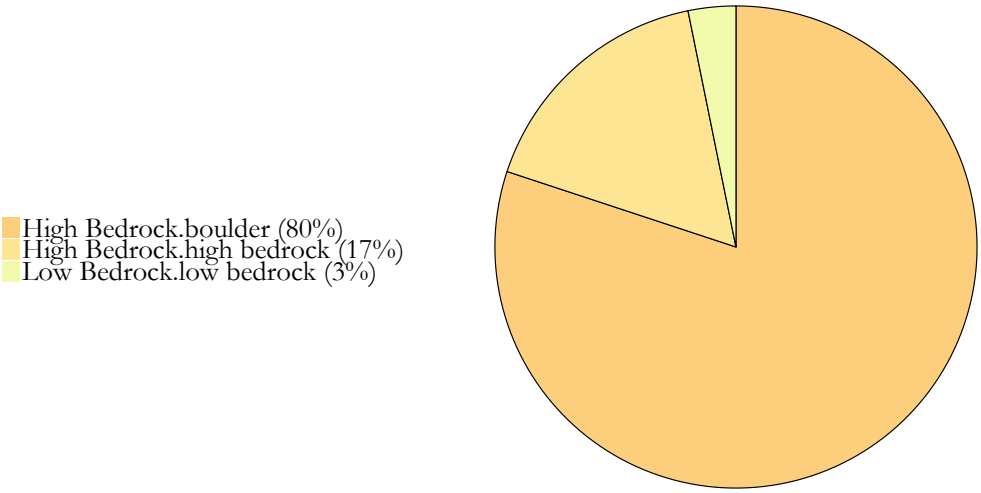
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.28	179.28	1,166	98	4.2

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 898)



Substrate Composition

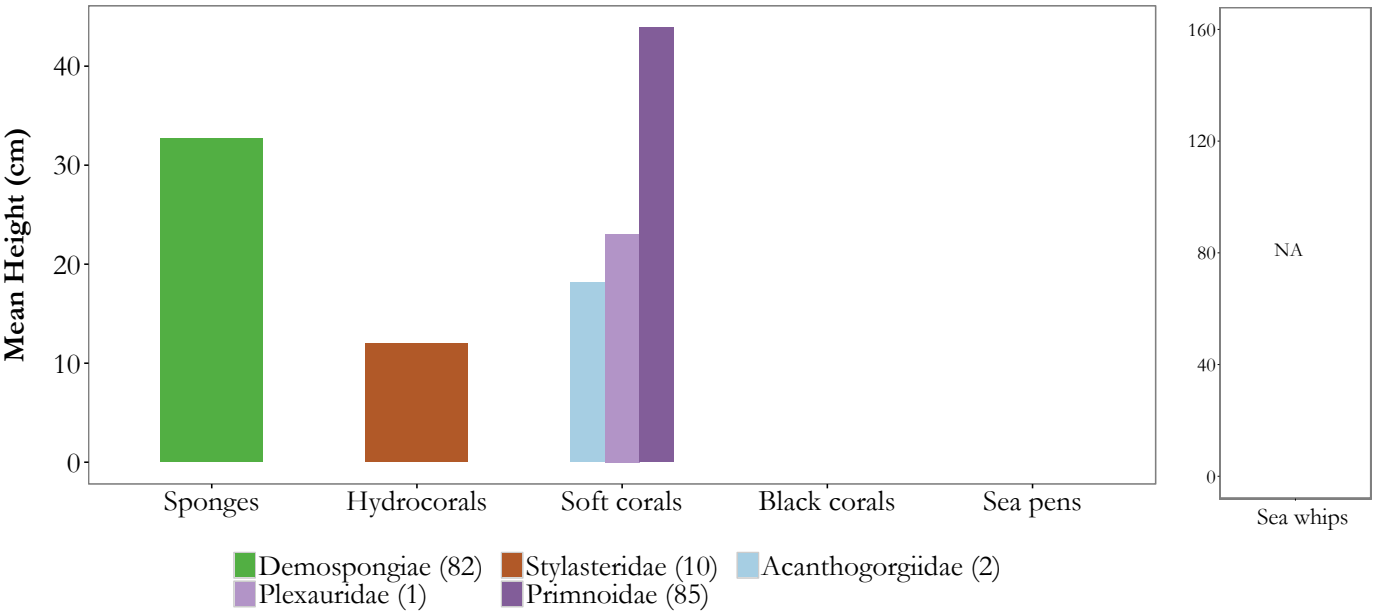


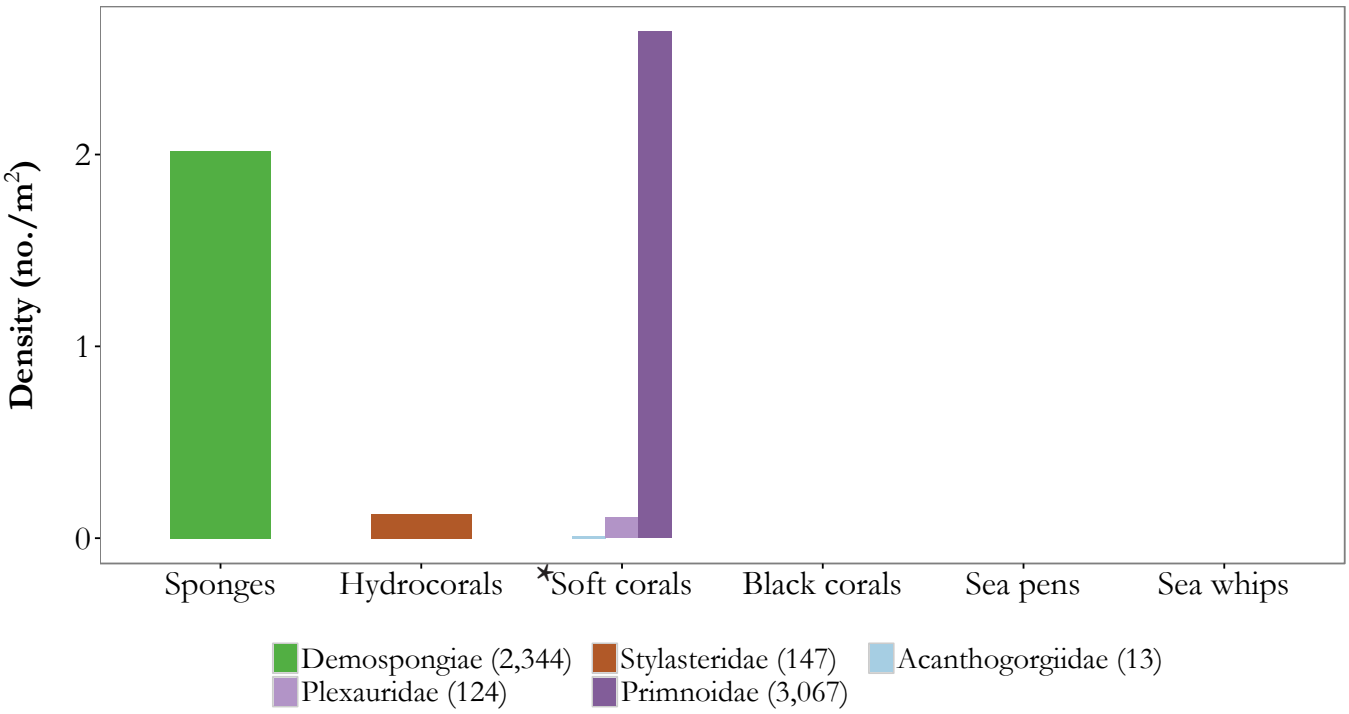
Images

AREA: Amchitka Island To Buldir Island Transect *2014-37

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





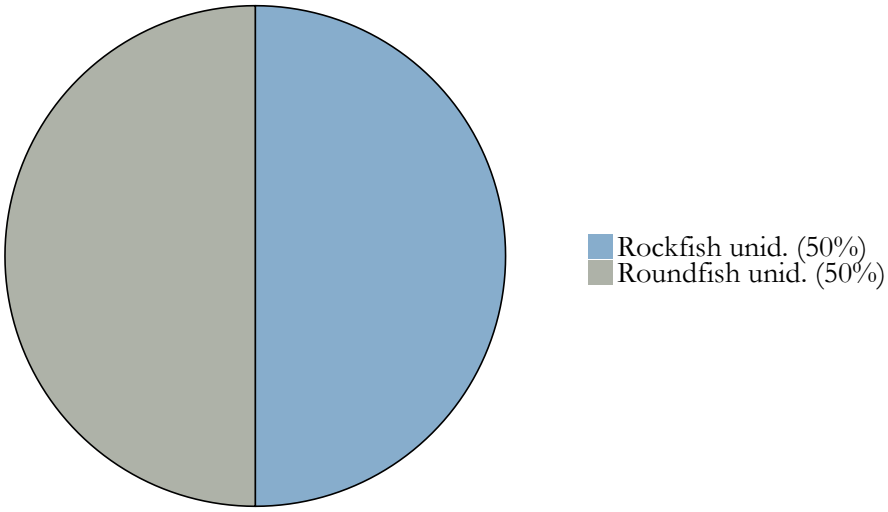
Summary - description of transect

Transect 2014-37: Primary and secondary substrates consisted of bedrock and boulder. Rockfishes (n = 769) and Atka mackerel (n = 109) accounted for 98% of the fish density (0.77 individuals/m^2). Structure-forming invertebrates were largely comprised of Demospongiae and Primnoidae with densities of 2.02 individuals/m^2 and 2.64 individuals/m^2, respectively. Mean heights for Demospongiae, Stylasteridae, Acanthogorgiidae, and Primnoidae were 18 cm, 33 cm, 44 cm, and 12 cm, respectively.

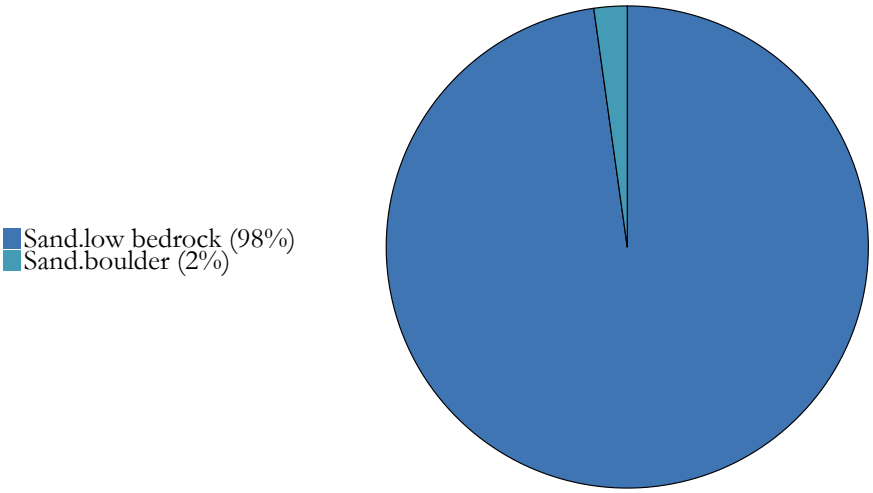
AREA: Amchitka Pass To Buldir Pass — Transect 2014-38

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.38	178.77	660	494	3.3

Fish and Crab Composition (n = 4)

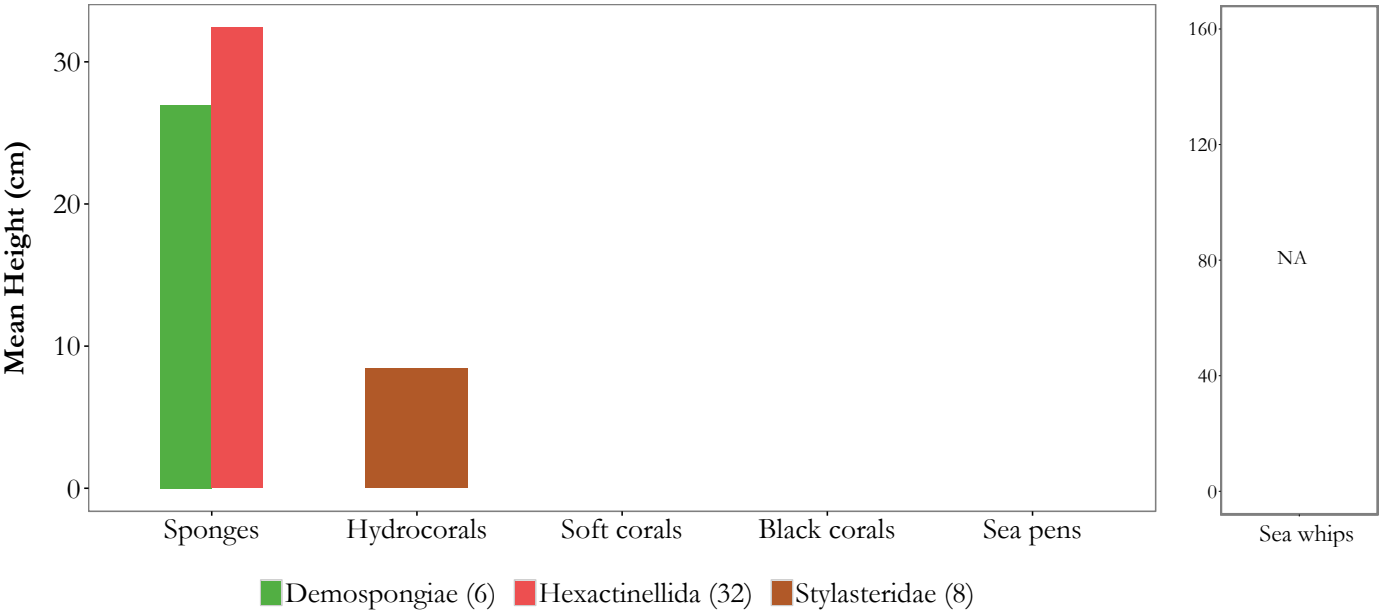


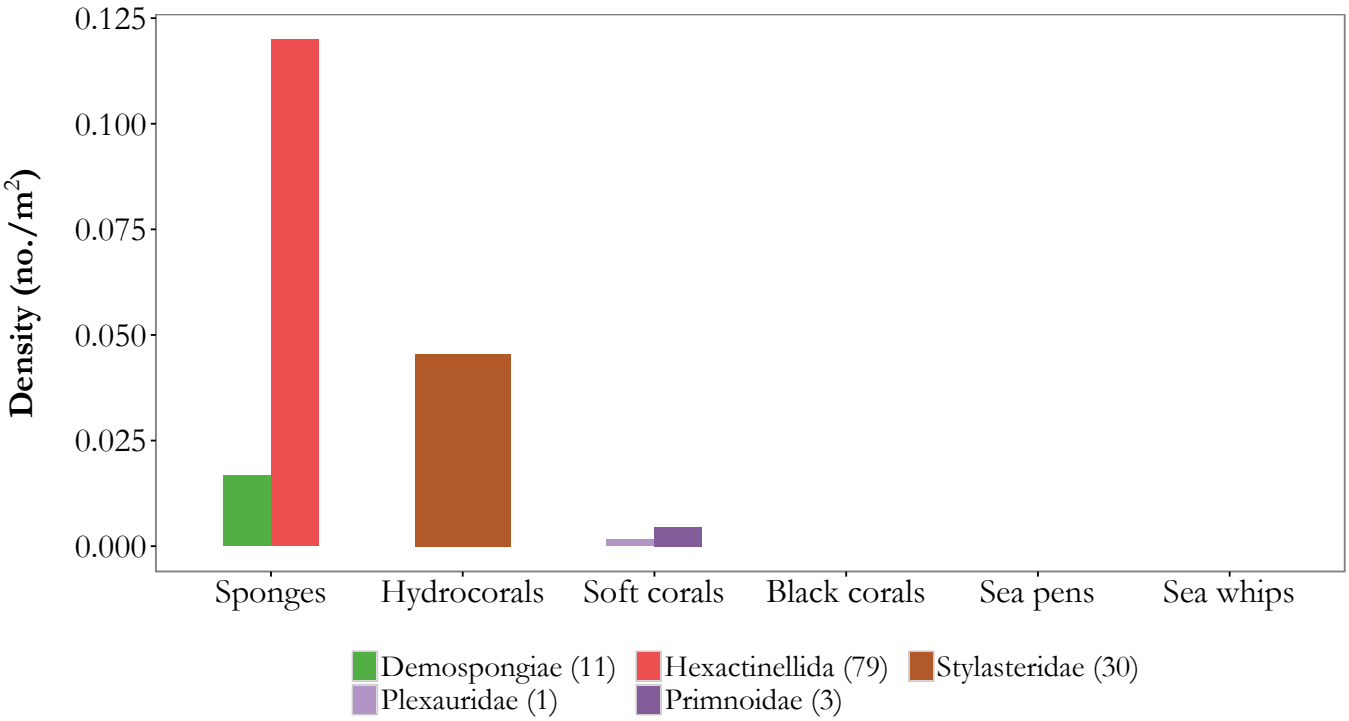
Substrate Composition



Images

Vertical Habitat Summary





Summary - description of transect

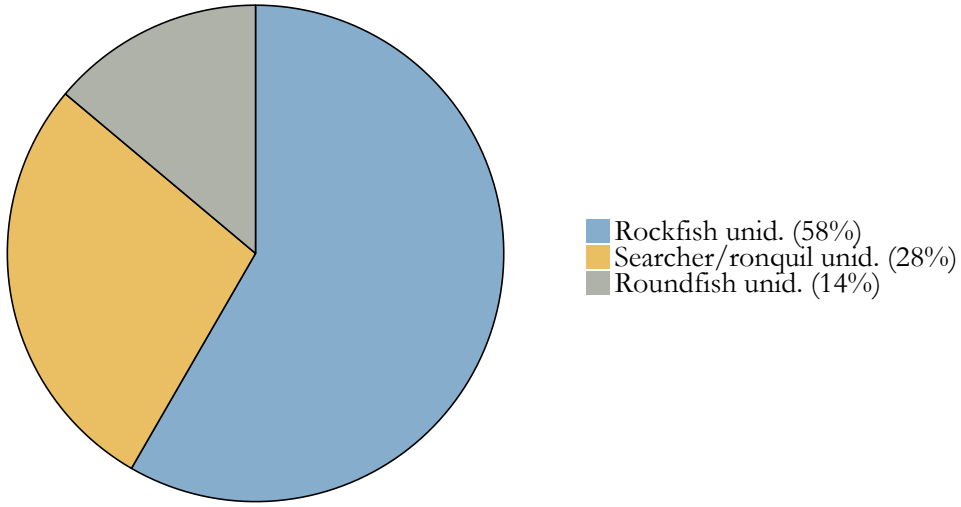
Transect 2014-38: Primary and secondary substrates consisted largely of sand and bedrock. Only four fishes were identified in this transect; two roundfishes and two rockfishes accounted for 100% of the species seen. Overall fish density for this transect was low (0.01 individuals/m^2). Hexactinellida were the most abundant (0.12 individuals/m^2) of the sponges, corals, and hydrocorals. Overall density for the structure-forming invertebrates was 0.19 individuals/m^2. Mean heights were calculated for Demospongiae (27 cm), Stylasteridae (8 cm), and Hexactinellida (32 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-39

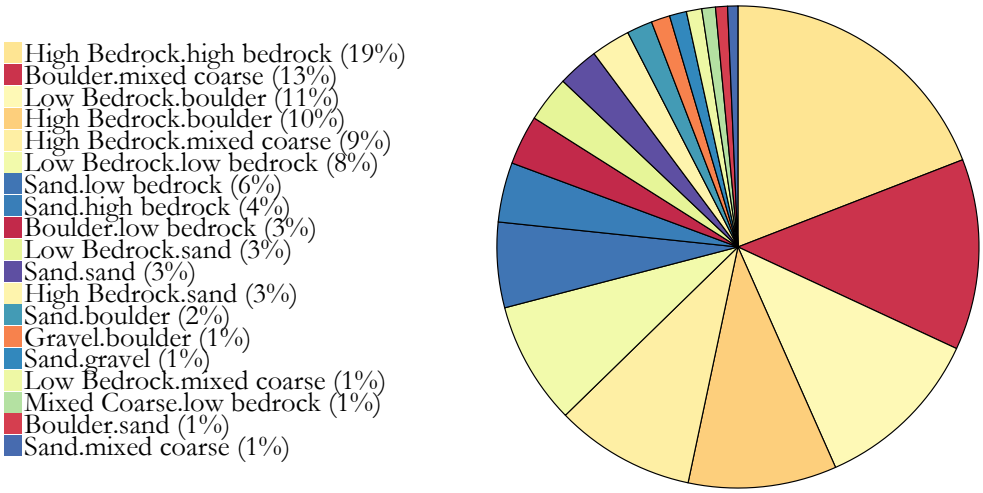
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.43	178.92	1,142	96	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 36)



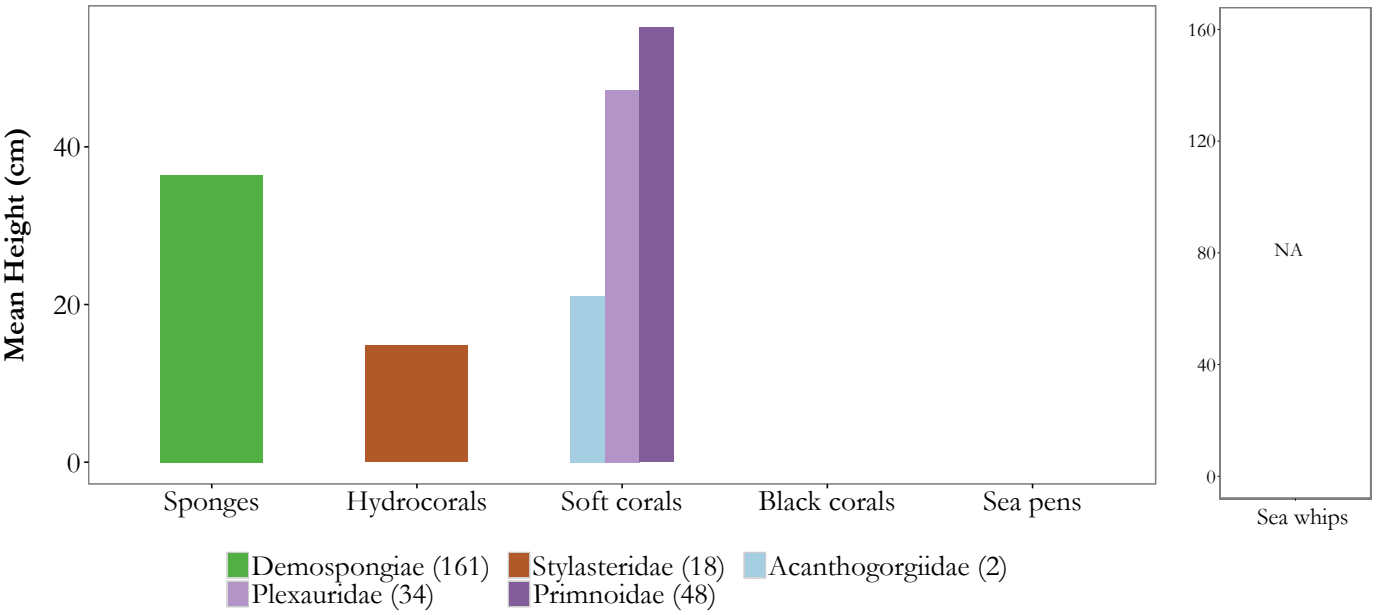
Substrate Composition

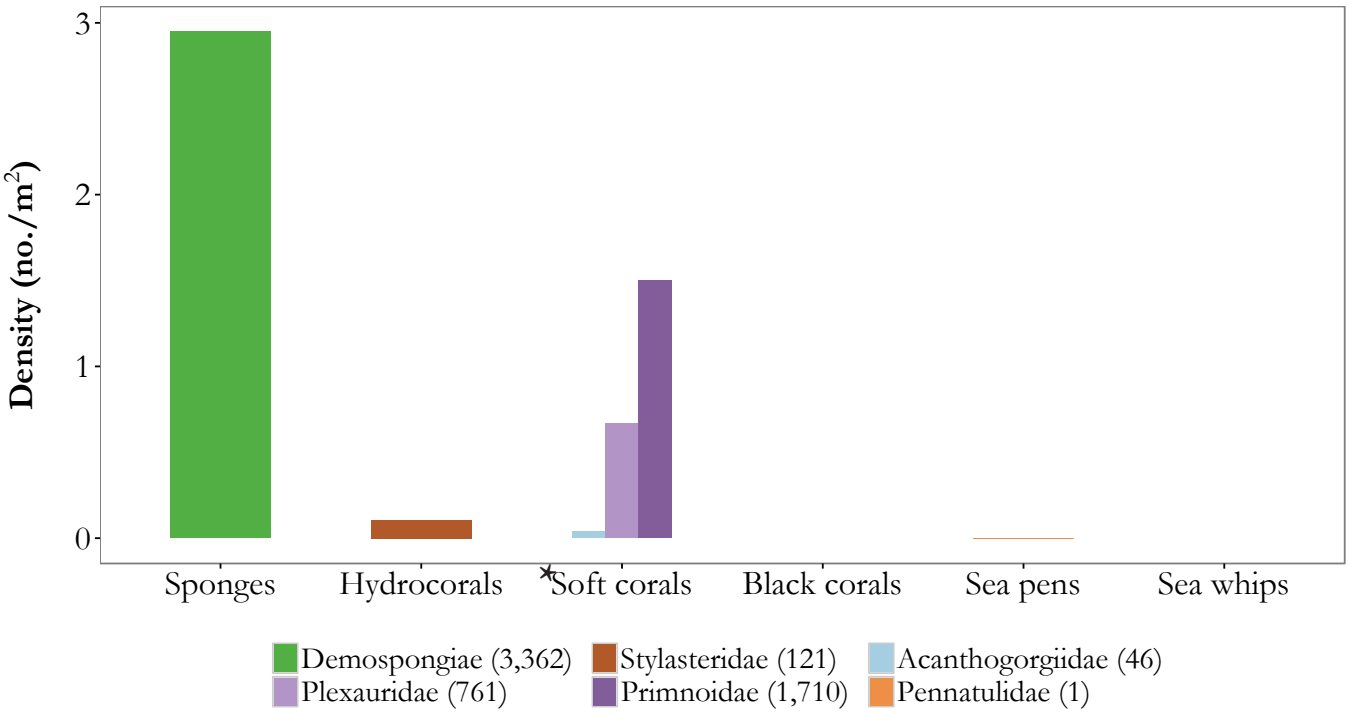


Images

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

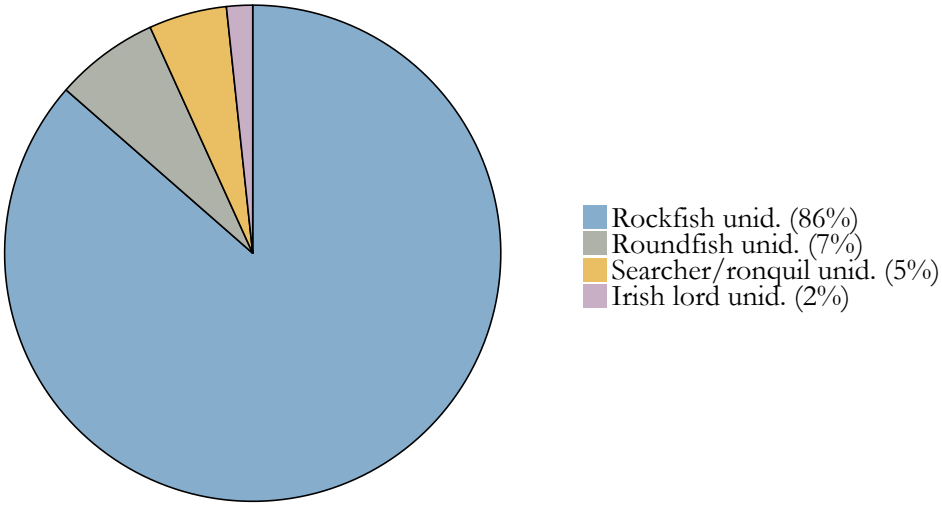
Transect 2014-39: Twenty-one combinations of primary and secondary substrates were identified on this transect. Bedrock and boulder comprised 81% of the primary substrates. Rockfishes (n = 21) and searchers/ronquils (n = 10) comprised 86% of the fish density (0.03 individuals/m^2). Structure-forming invertebrate density was 5.26 individuals/m^2 of which Demospongiae were 56% and Primnoidae were 29%. Mean heights were calculated for Demospongiae (36 cm), Stylasteridae (15 cm), Acanthogorgiidae (21 cm), Plexauridae (47 cm), and Primnoidae (55 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-40

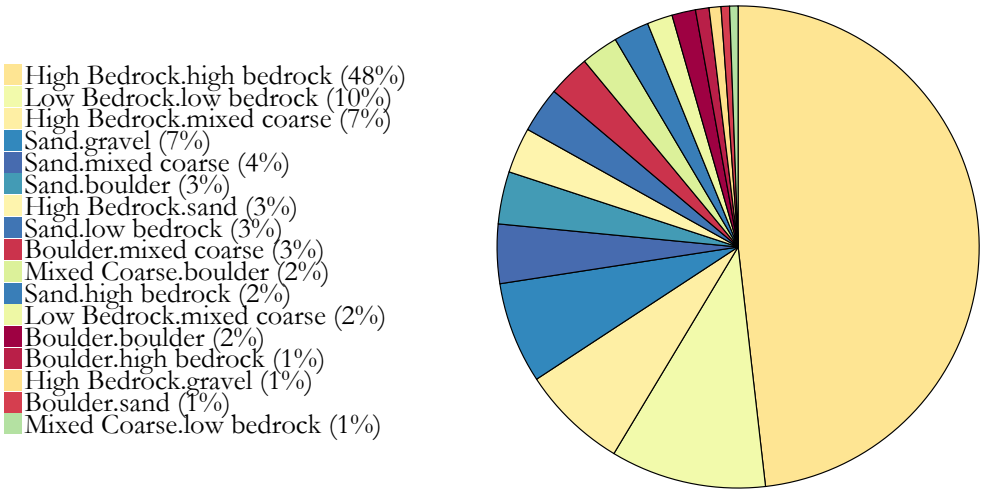
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.46	178.84	1,592	104	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

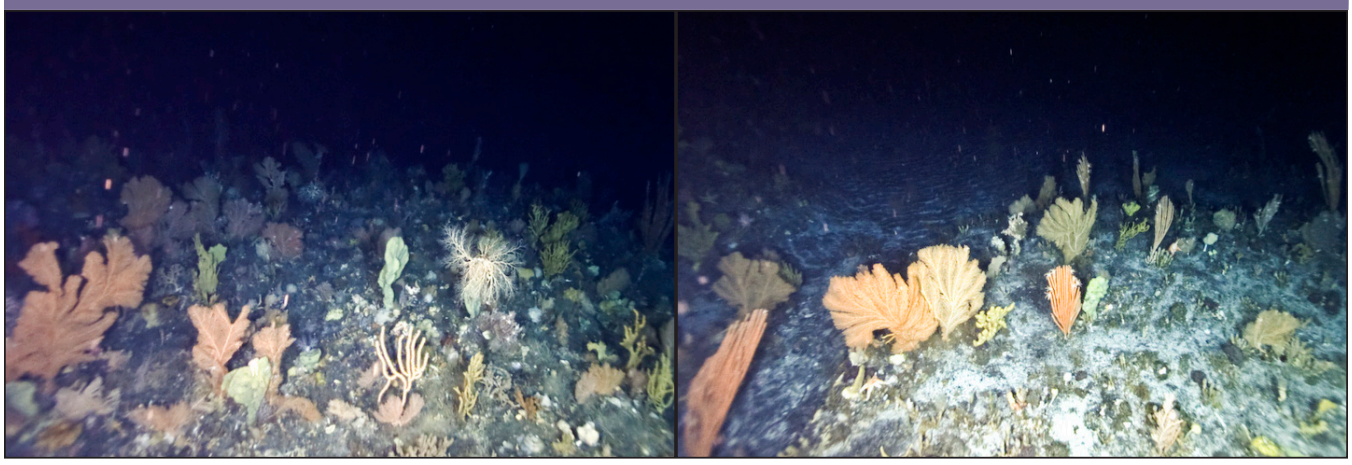
Fish and Crab Composition (n = 59)



Substrate Composition



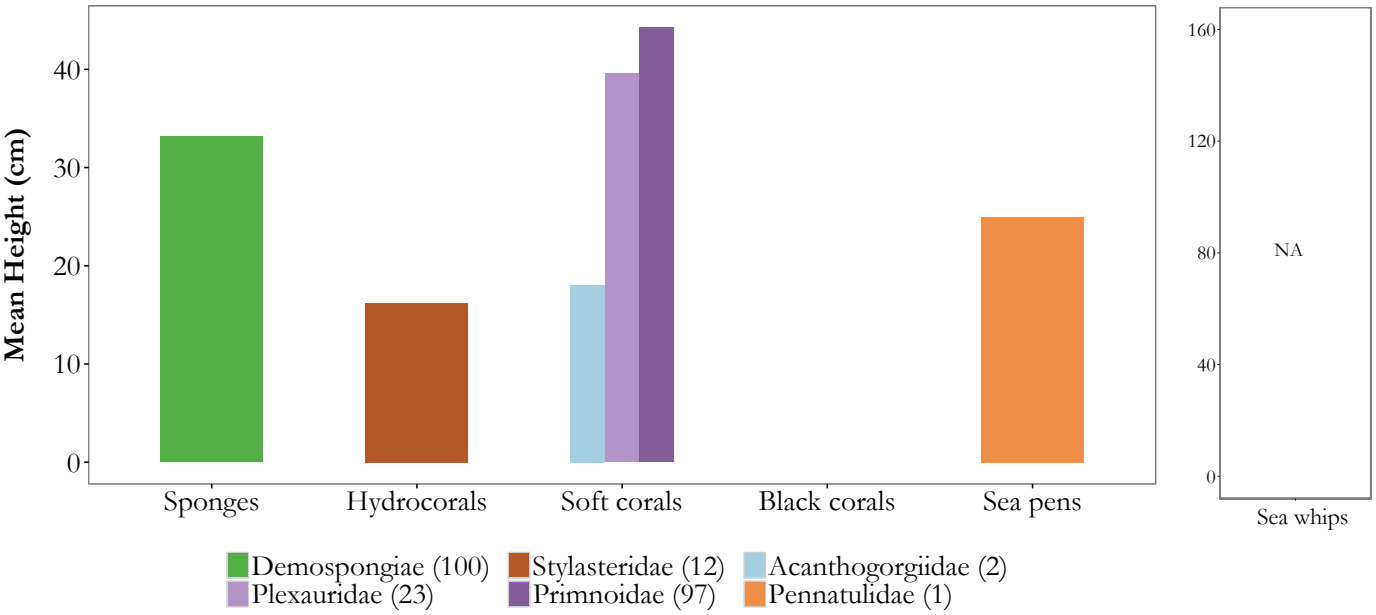
Images

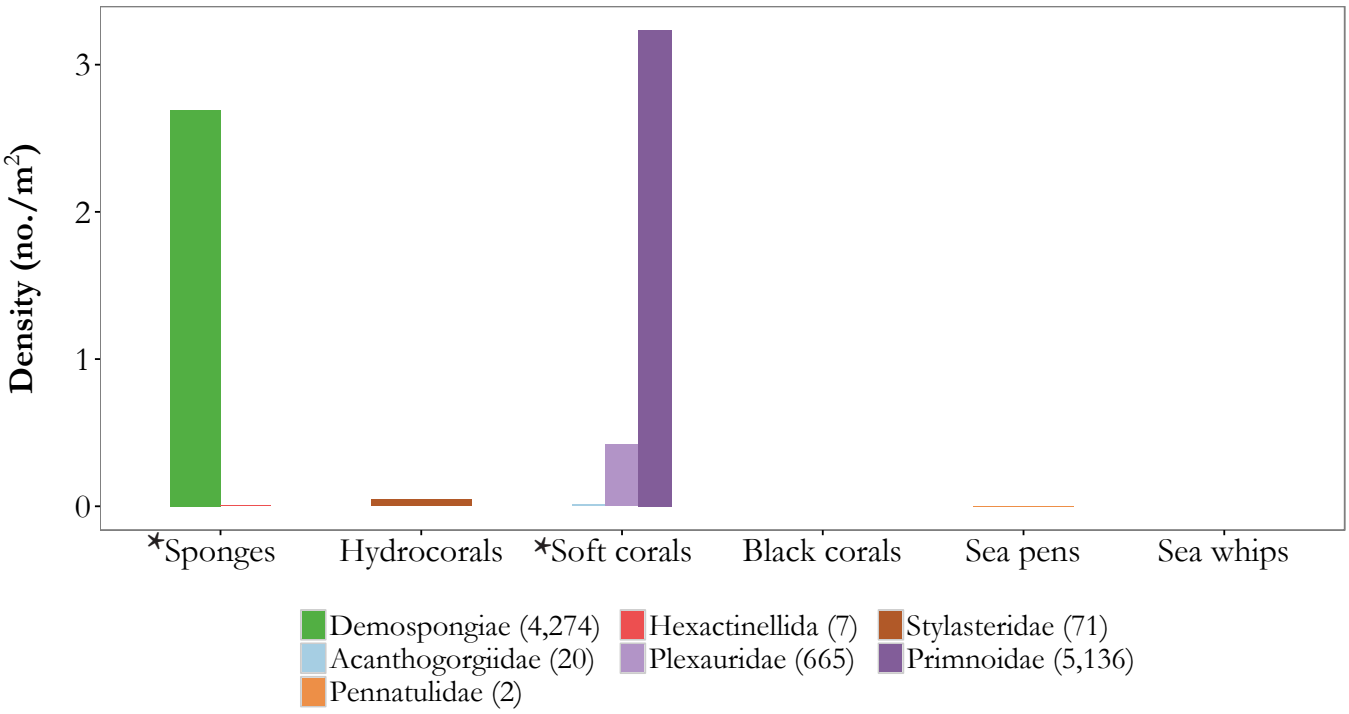


AREA: Amchitka Island To Buldir Island — Transect *2014-40

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

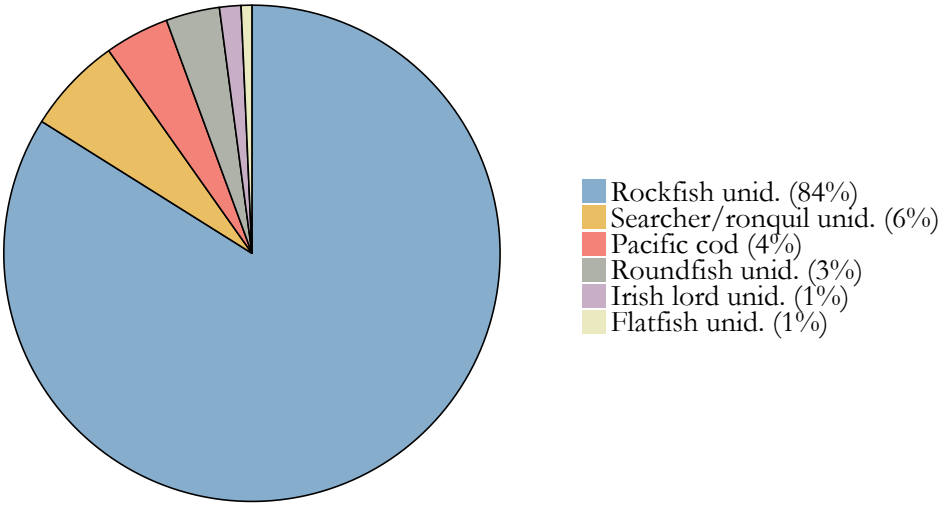
Transect 2014-40: Nineteen combinations of primary and secondary substrates were identified on this transect. Bedrock and boulder comprised 77% of the primary substrates. Rockfishes (n = 51) were 86% of the fish density (0.04 individuals/m^2). Demospongiae and Primnoidae were 92% of the structure-forming invertebrate density (6.41 individuals/m^2). Mean heights for Demospongiae (33 cm), Stylasteridae (16 cm), Acanthogorgiidae (18 cm), Plexauridae (40 cm), and Primnoidae (44 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-41

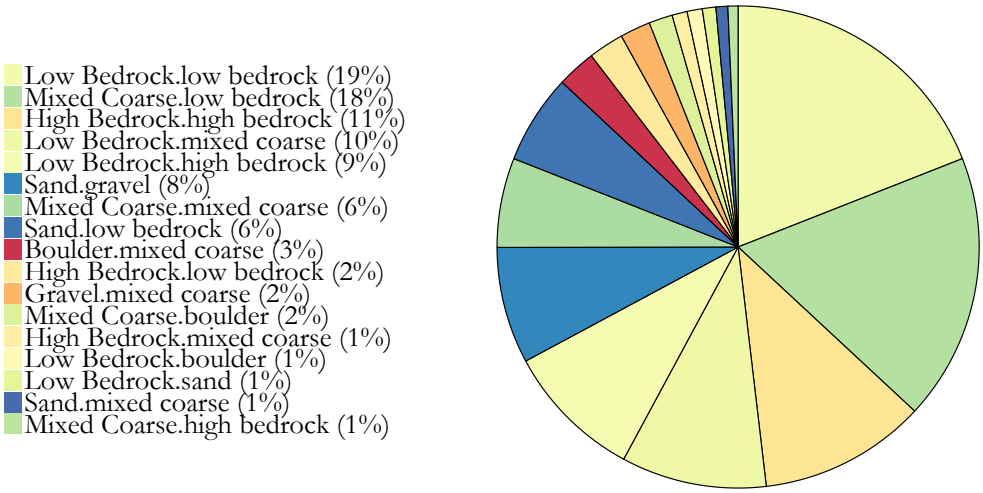
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.53	178.61	2,041	119	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 143)



Substrate Composition

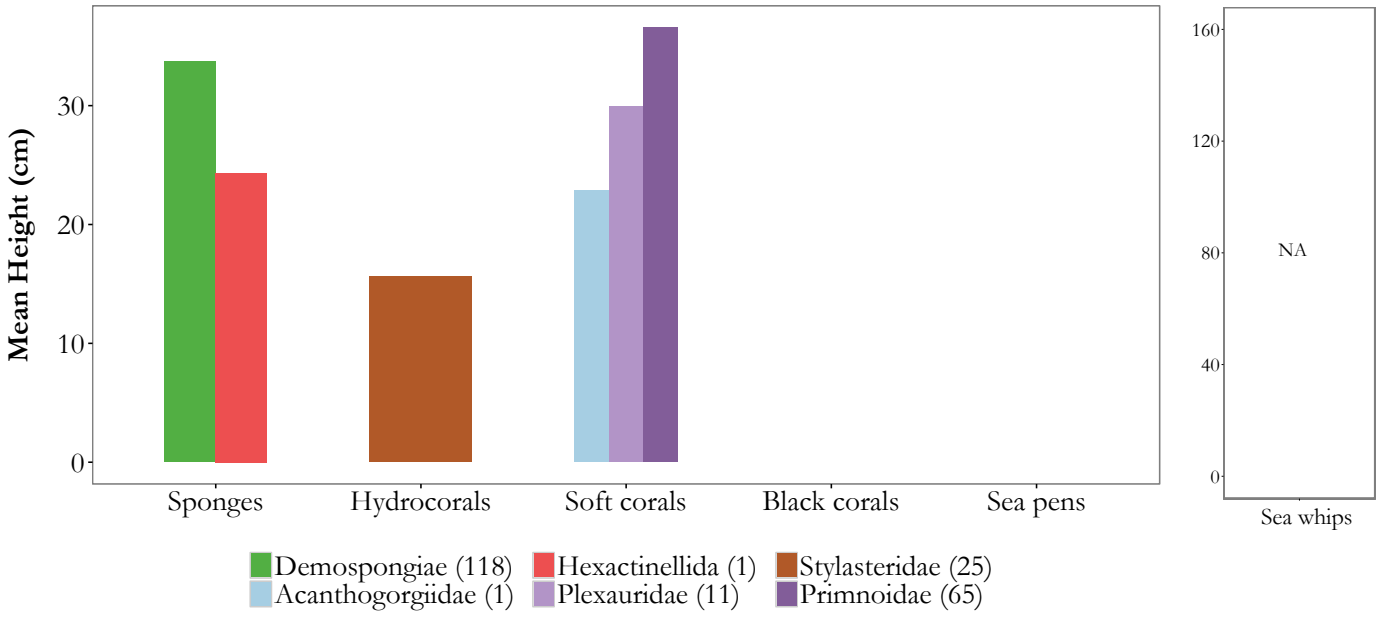


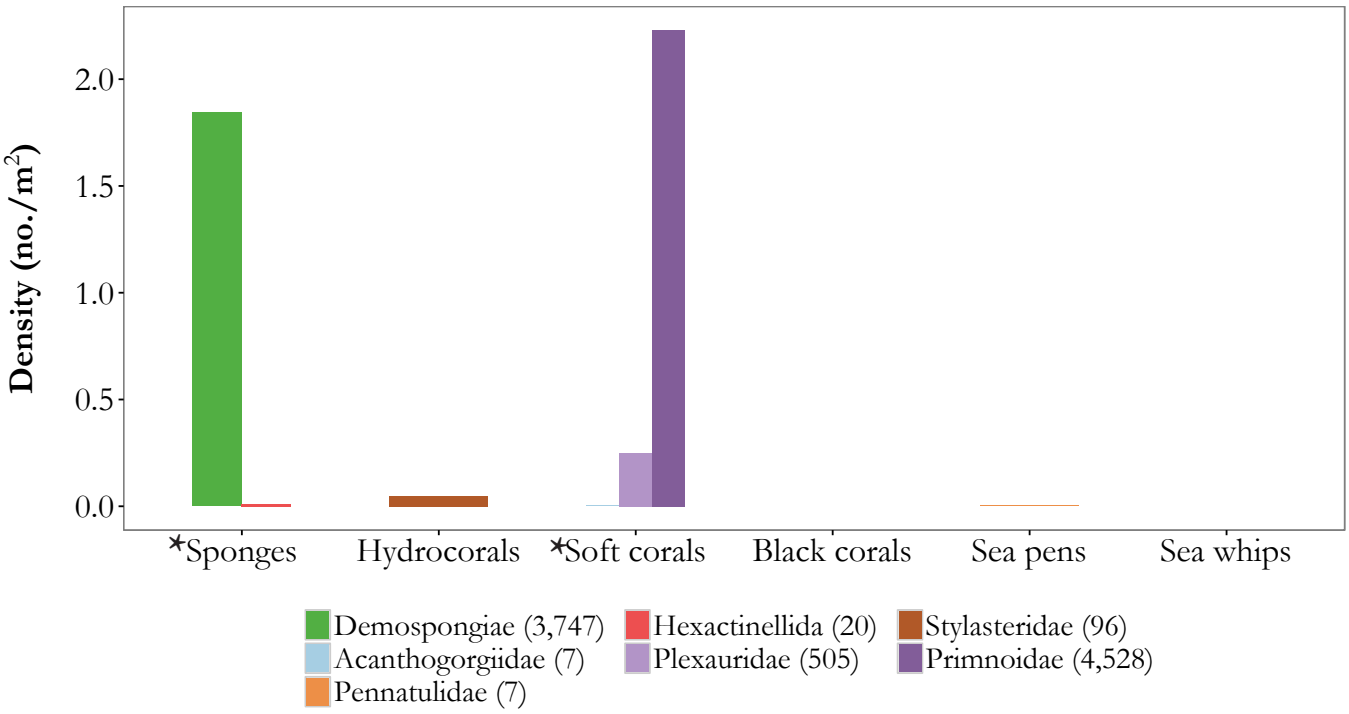
Images

AREA: Amchitka Island To Buldir Island Transect *2014-41

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

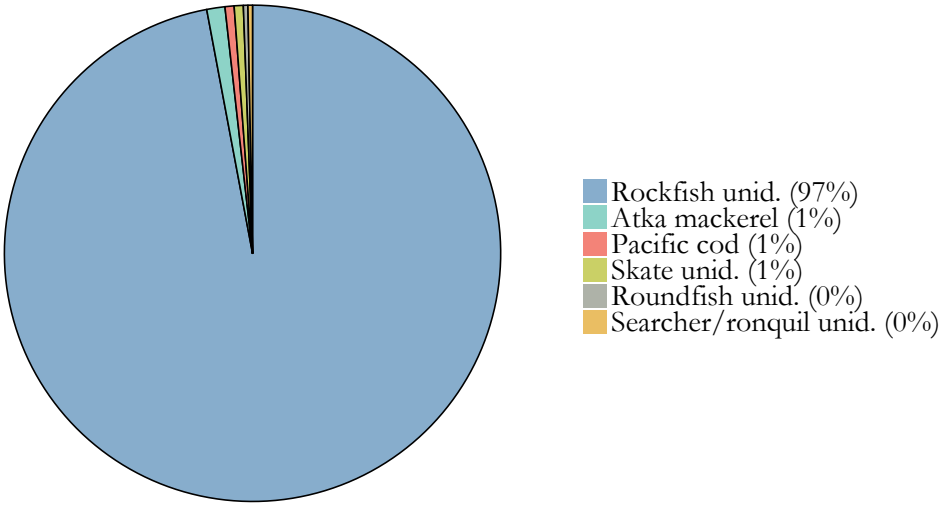
Transect 2014-41: Eighteen combinations of primary and secondary substrates were identified on this transect. Bedrock and mixed coarse comprised 80% of the primary substrates. Rockfishes (n = 120) were 84% of the fish density (0.07 individuals/m^2). Demospongiae (1.84 individuals/m^2) and Primnoidae (2.23 individuals/m^2) were 94% of the structure-forming invertebrate density (4.34 individuals/m^2). Mean heights were calculated for Demospongiae (34 cm), Stylasteridae (16 cm), Plexauridae (30 cm), and Primnoidae (37 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-42

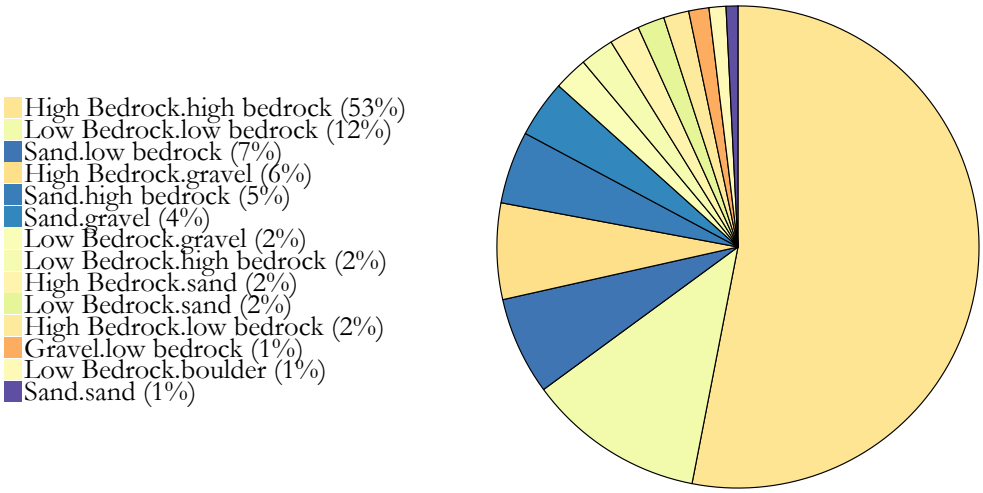
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.54	178.56	2,560	108	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 338)



Substrate Composition

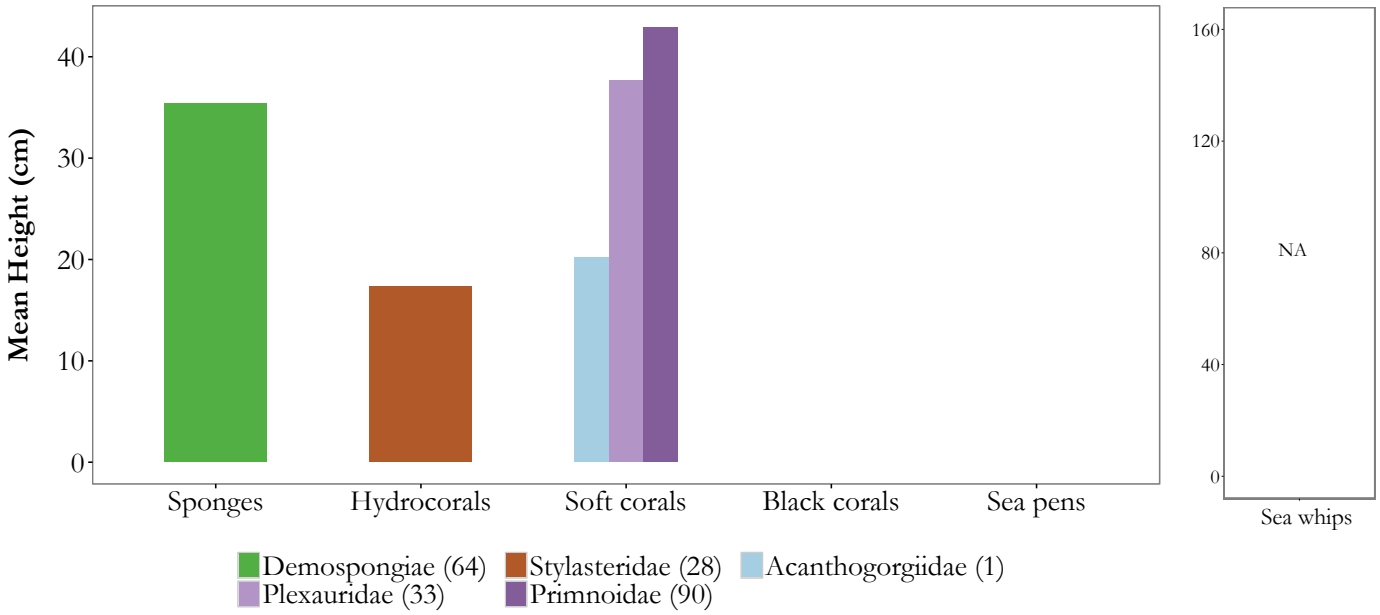


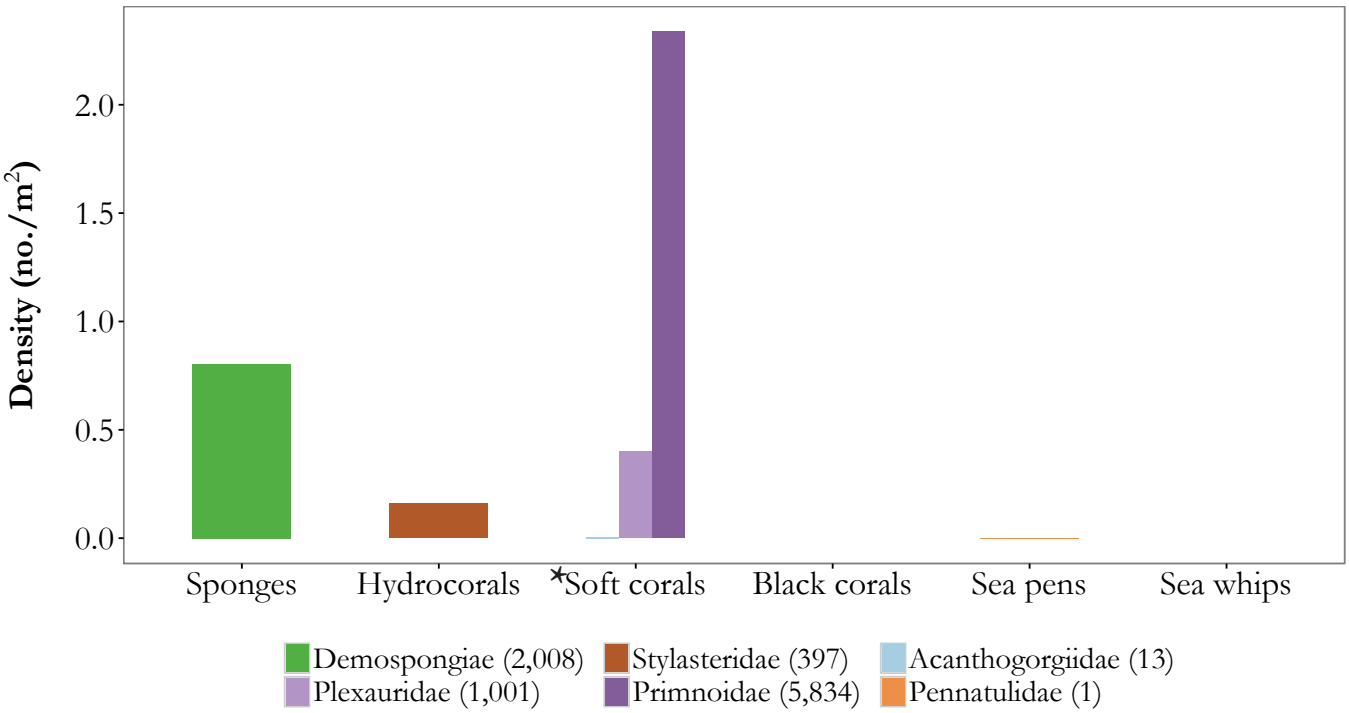
Images

AREA: Amchitka Island To Buldir Island Transect *2014-42

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





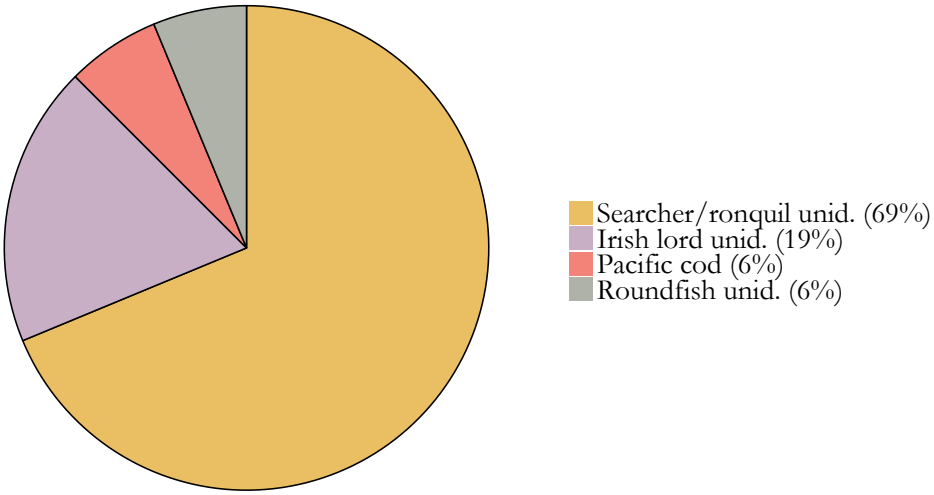
Summary - description of transect

Transect 2014-42: Primary and secondary substrates consisted largely of bedrock. Rockfishes (n = 328) were 97% of the fish density (0.14 individuals/m^2). Demospongiae (0.80 individuals/m^2), Primnoidae (2.34 individuals/m^2) and Plexauridae (0.40 individuals/m^2) were 96% of the structure-forming invertebrate density (3.71 individuals/m^2). Mean heights for Demospongiae, Stylasteridae, Plexauridae, and Primnoidae, and were 35 cm, 17 cm, 38 cm, and 43 cm, respectively.

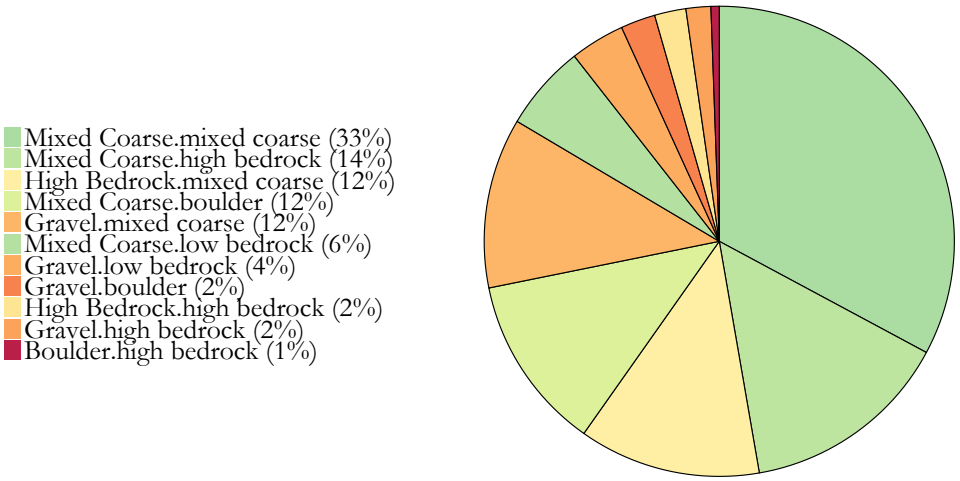
AREA: Amchitka Pass To Buldir Pass — Transect 2014-43

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.73	178.32	793	85	4.0

Fish and Crab Composition (n = 16)

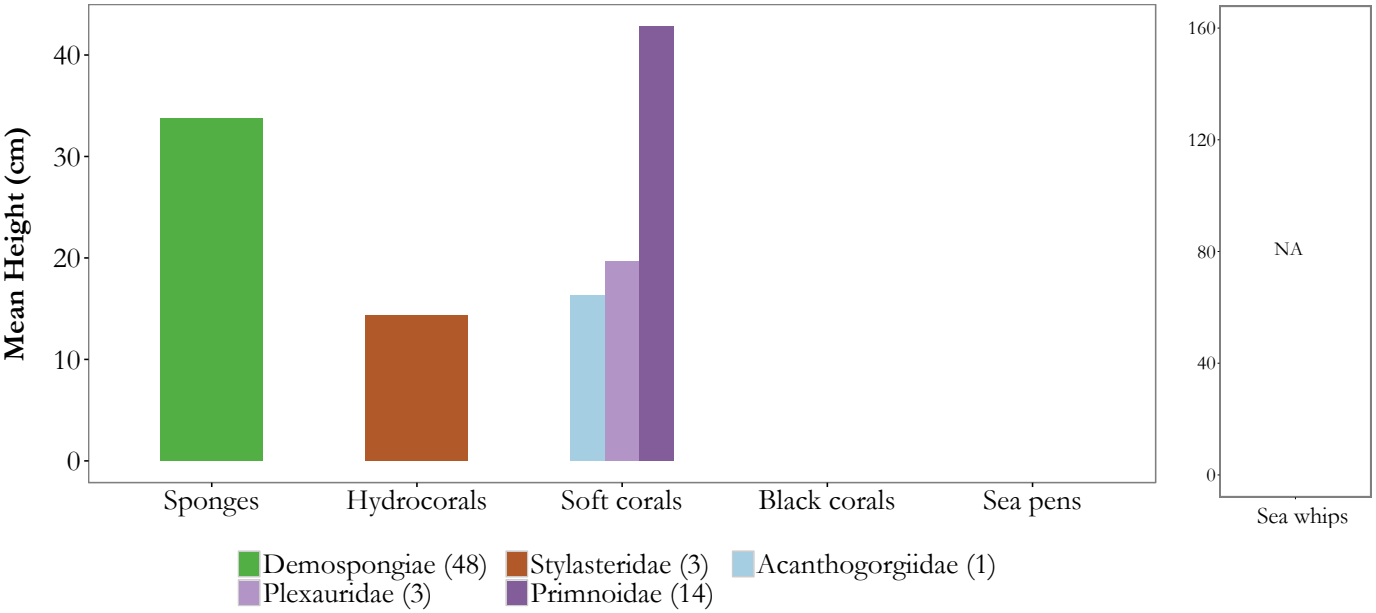


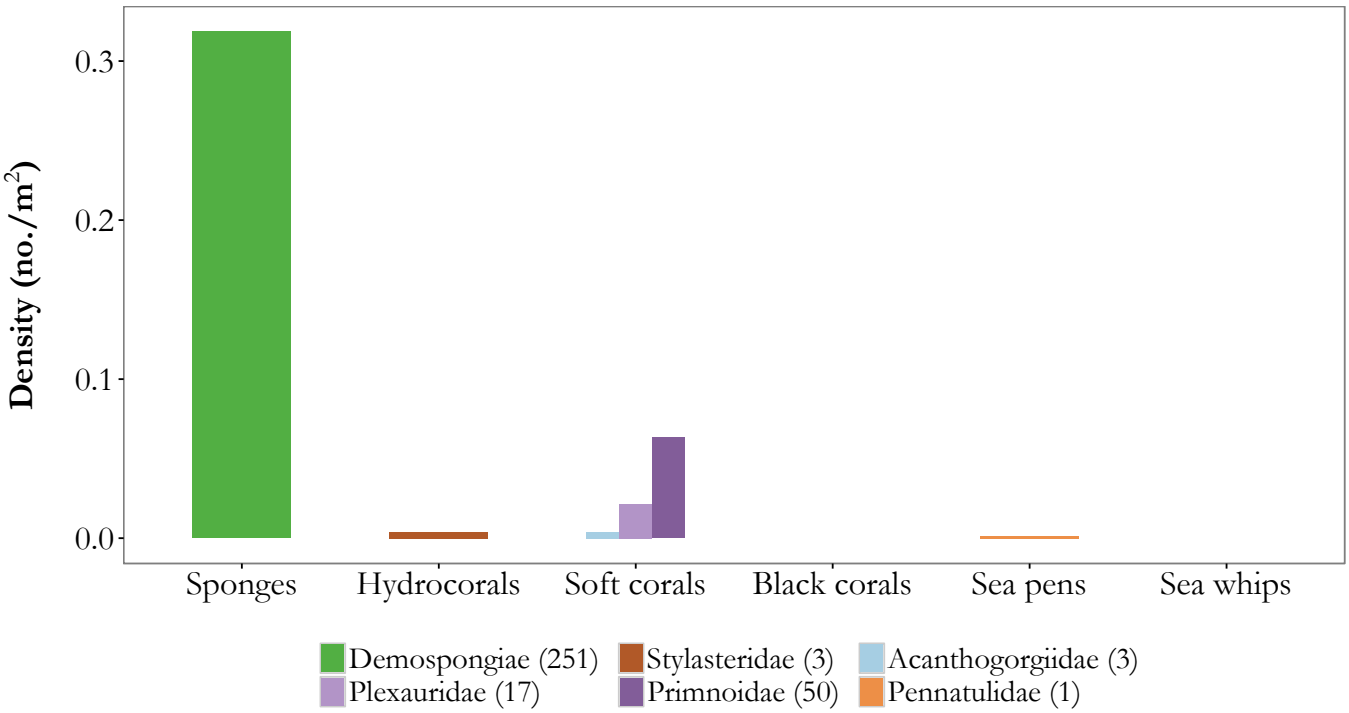
Substrate Composition



Images

Vertical Habitat Summary





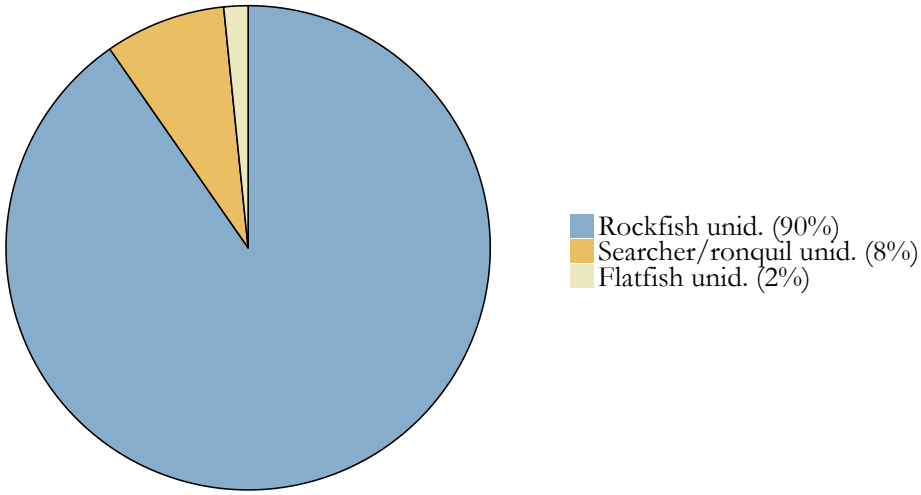
Summary - description of transect

Transect 2014-43: Primary and secondary substrates were mostly mixed coarse bedrock and gravel. Fish density was low for this transect (0.02 individuals/m^2). Only 16 fishes were identified of which 11 were searchers/ronquils. Structure-forming invertebrate density was also low (0.41 individuals/m^2). Demospongiae (0.32 individuals/m^2) accounted for 77% of the density. Mean heights for Demospongiae, Stylasteridae, Plexauridae, Primnoidae, were 34 cm, 14 cm, 20 cm, and 43 cm, respectively.

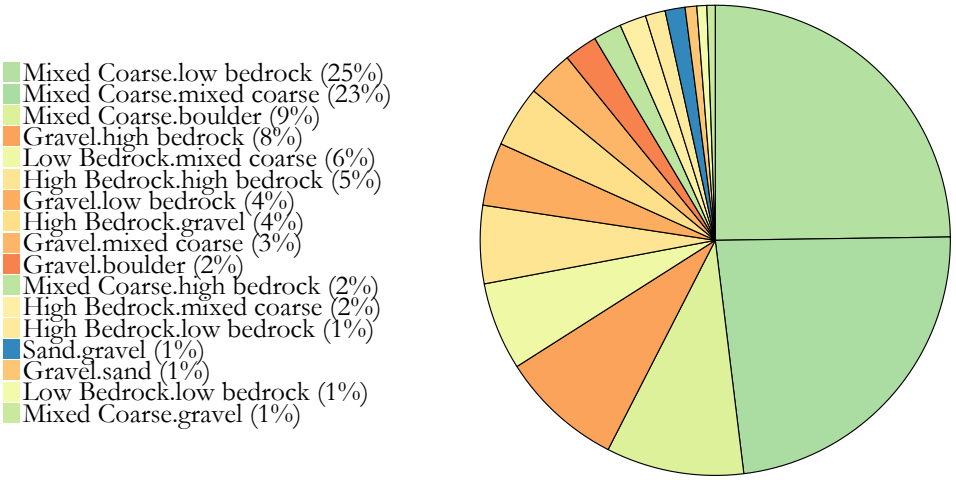
AREA: Amchitka Pass To Buldir Pass — Transect 2014-44

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.80	178.03	2,950	100	4.0

Fish and Crab Composition (n = 62)

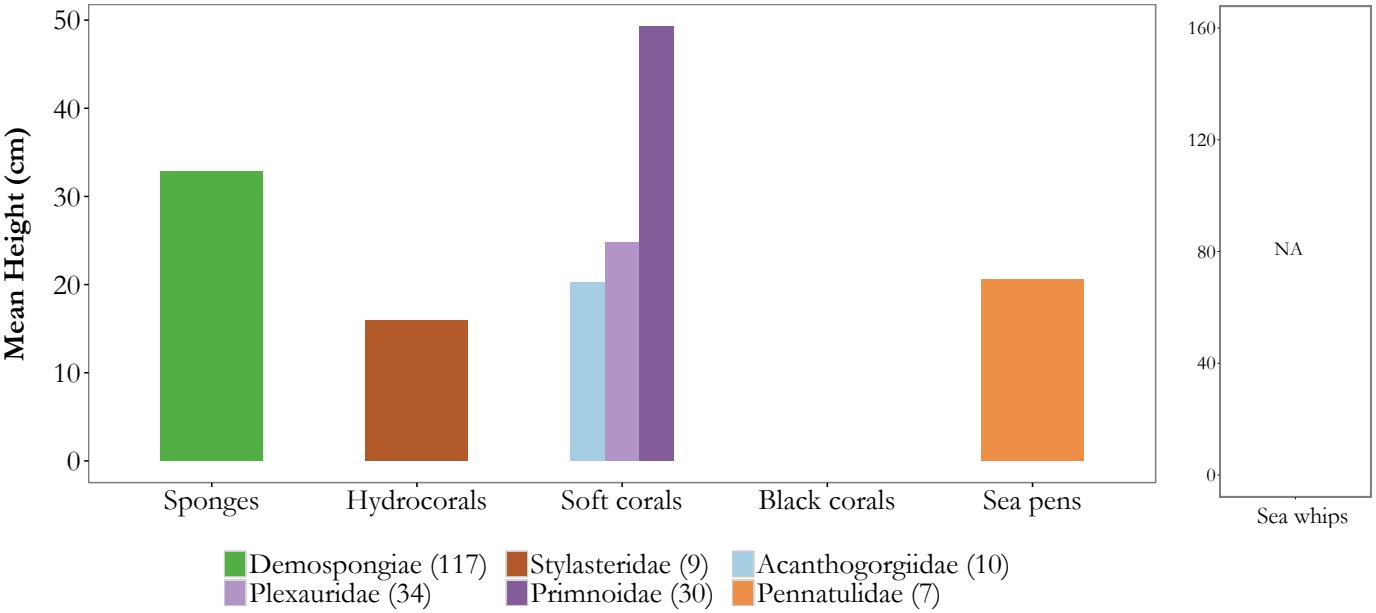


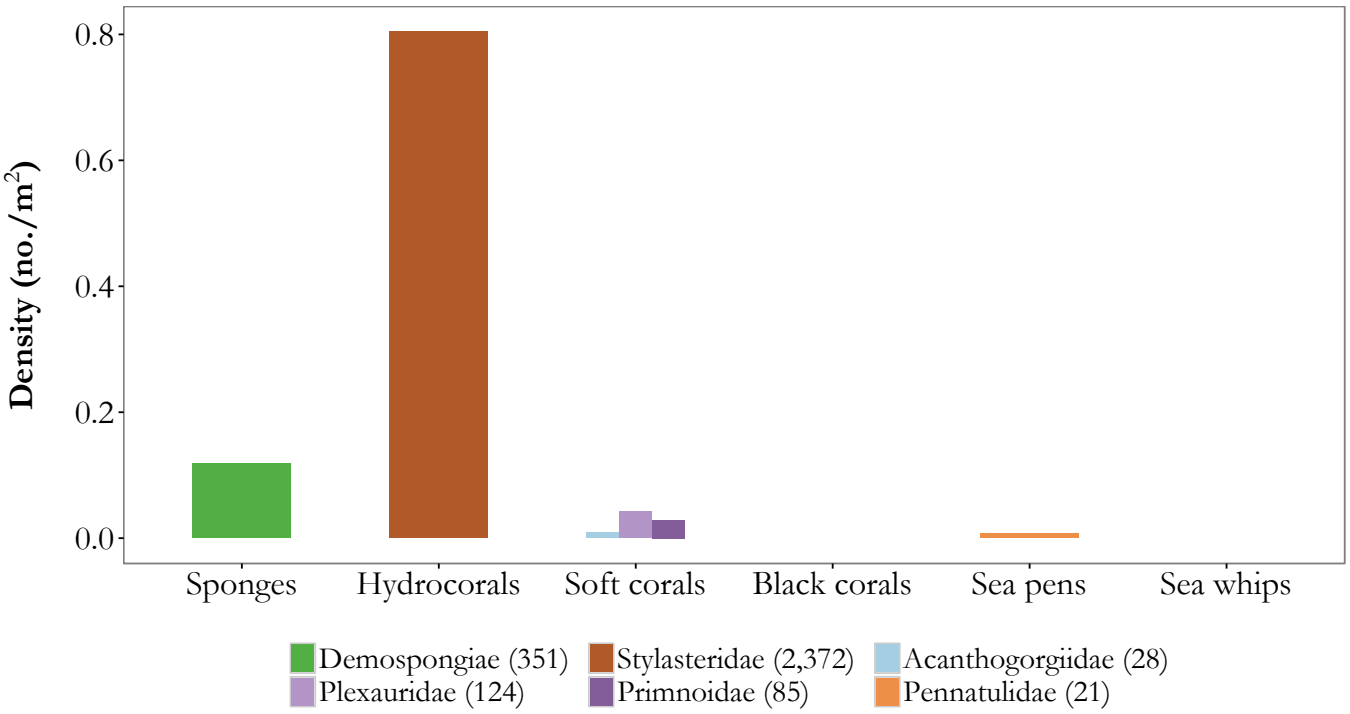
Substrate Composition



Images

Vertical Habitat Summary





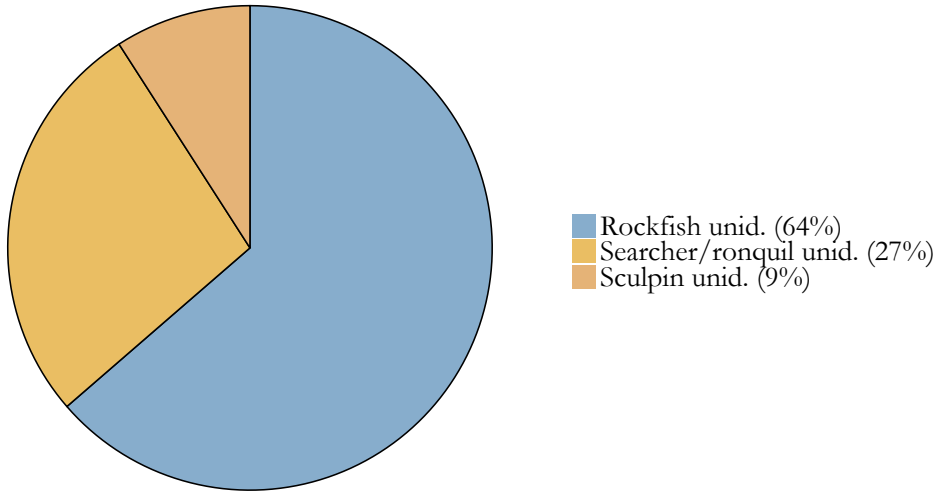
Summary - description of transect

Transect 2014-44: Twenty combinations of primary and secondary substrates were identified on this transect. Mixed coarse comprised almost 60% of the primary substrates. Bedrock and boulder were present in over 50% of the classifications. Rockfishes (n = 56) were observed most frequently. Fish density was low (0.02 individuals/m^2). Stylasteridae were the most abundant structure-forming invertebrates (0.80 individuals/m^2). Mean heights were calculated for Acanthogorgiidae (20 cm), Demospongiae (33 cm), Pennatulidae (21 cm), Stylasteridae (16 cm), Plexauridae (25 cm), and Primnoidae (49 cm).

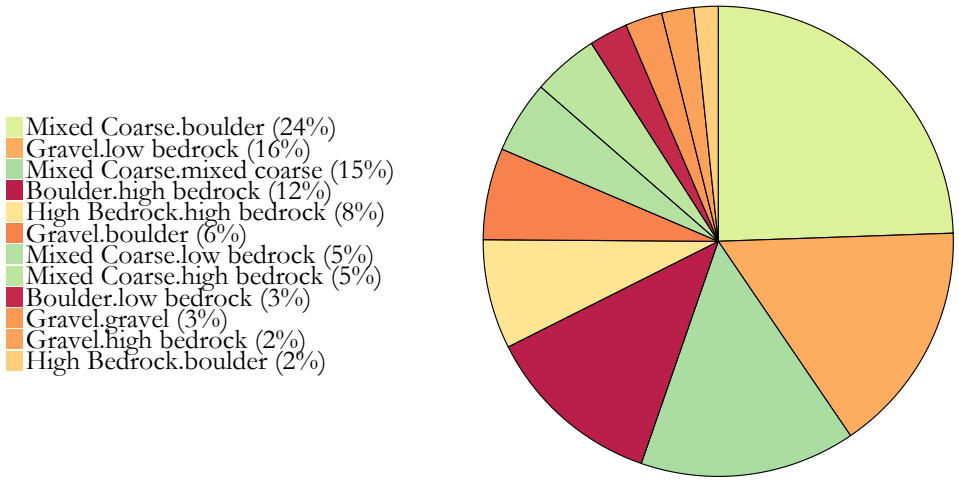
AREA: Amchitka Pass To Buldir Pass — Transect 2014-45

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.81	177.97	415	99	3.9

Fish and Crab Composition (n = 11)

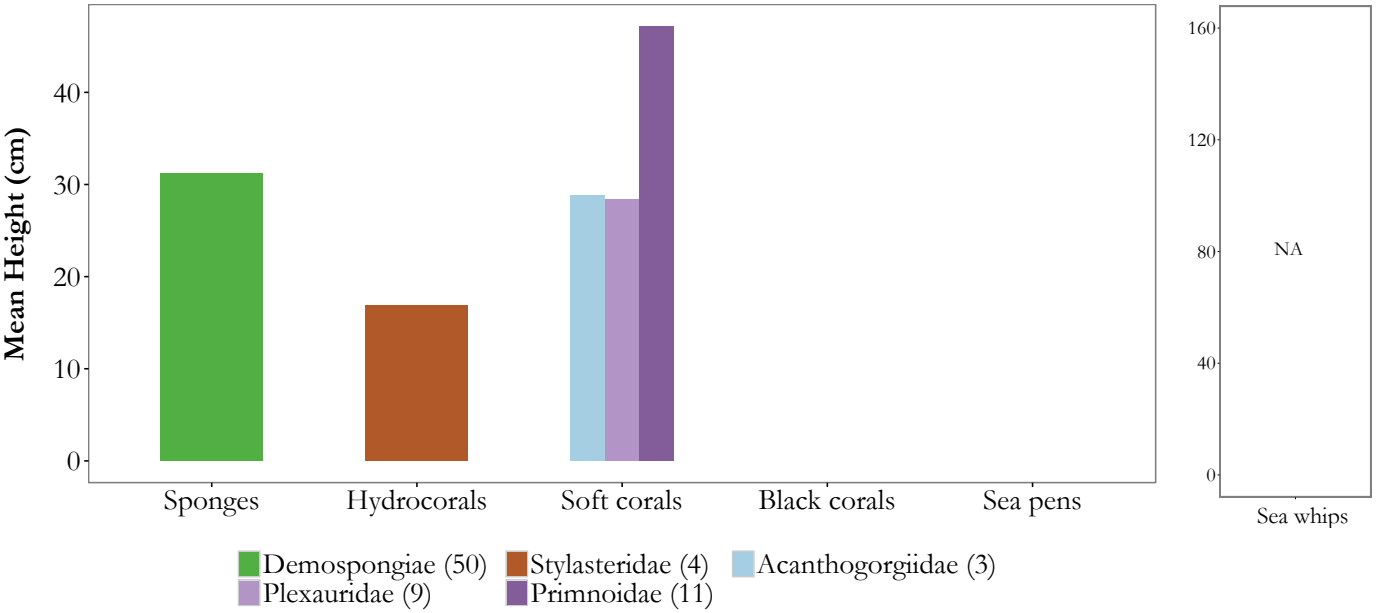


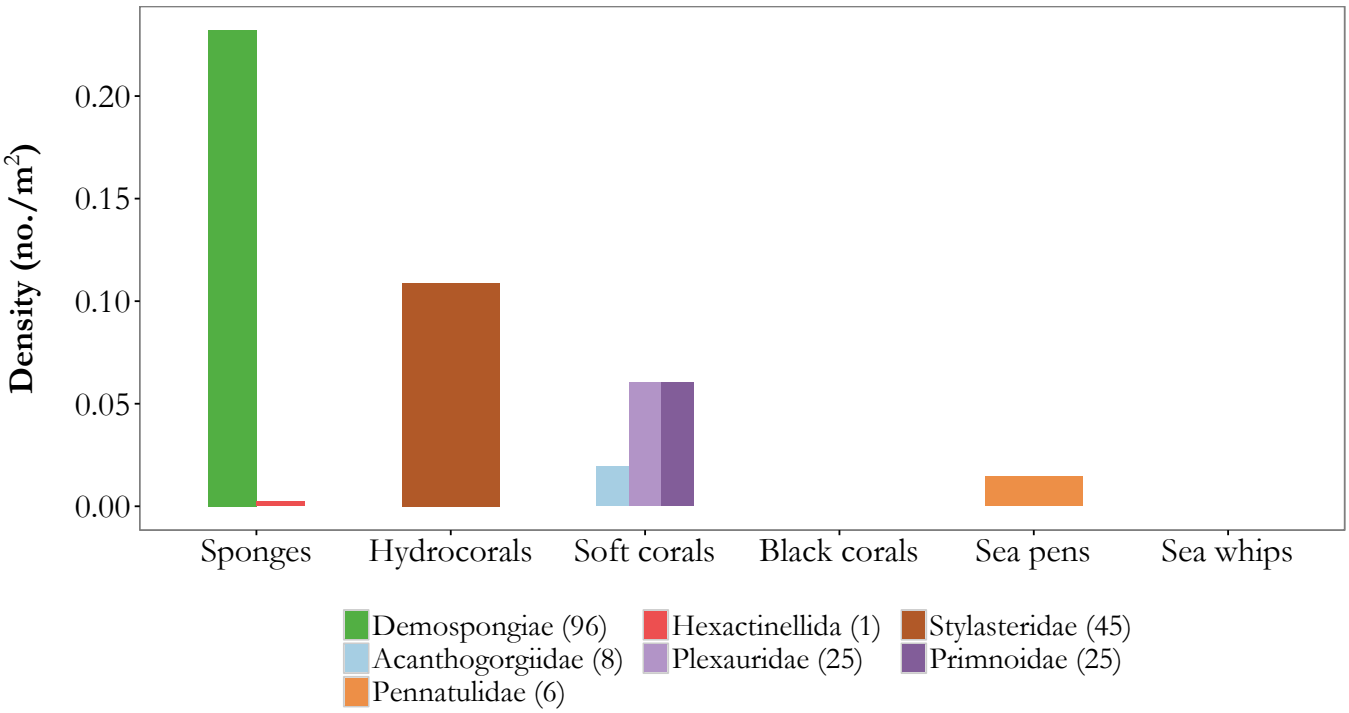
Substrate Composition



Images

Vertical Habitat Summary





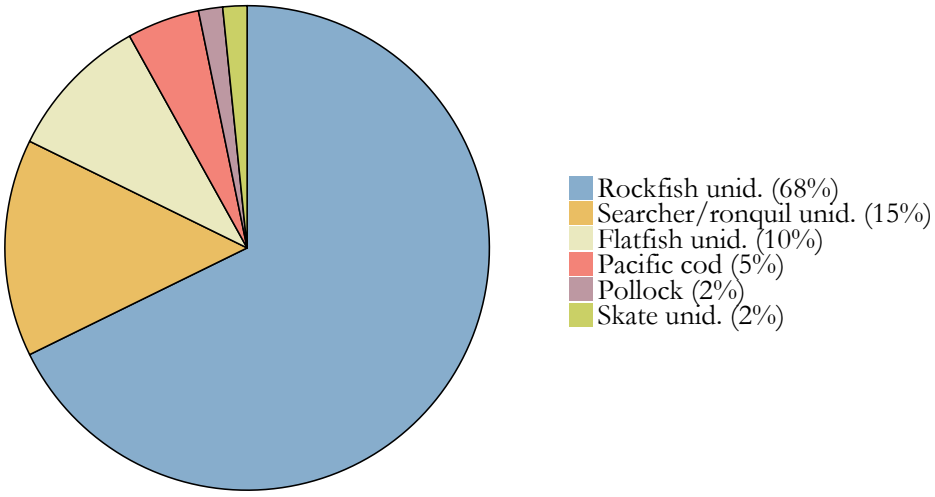
Summary - description of transect

Transect 2014-45: Mixed coarse and gravel accounted for 76% of the primary substrates in this transect. Few fishes were identified in this transect (n = 11) with a majority (64%) identified as rockfish. Overall fish density was low (0.03 individuals/m^2). Structure-forming invertebrate density was 0.50 individuals/m^2. Demospongiae accounted for 47% of the density. Mean heights were calculated for Acanthogorgiidae (29 cm), Demospongiae (31 cm), Stylasteridae (17 cm), Plexauridae (28 cm), and Primnoidae (47 cm).

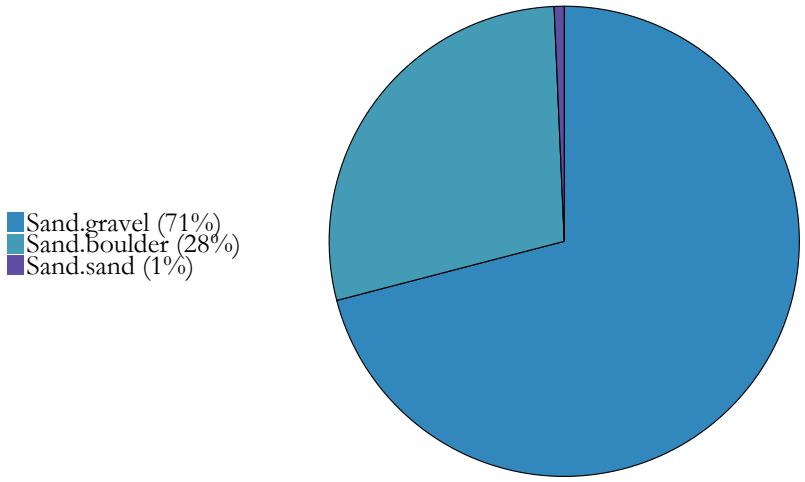
AREA: Amchitka Pass To Buldir Pass — Transect 2014-46

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/3/2014	51.93	177.89	3,149	107	3.9

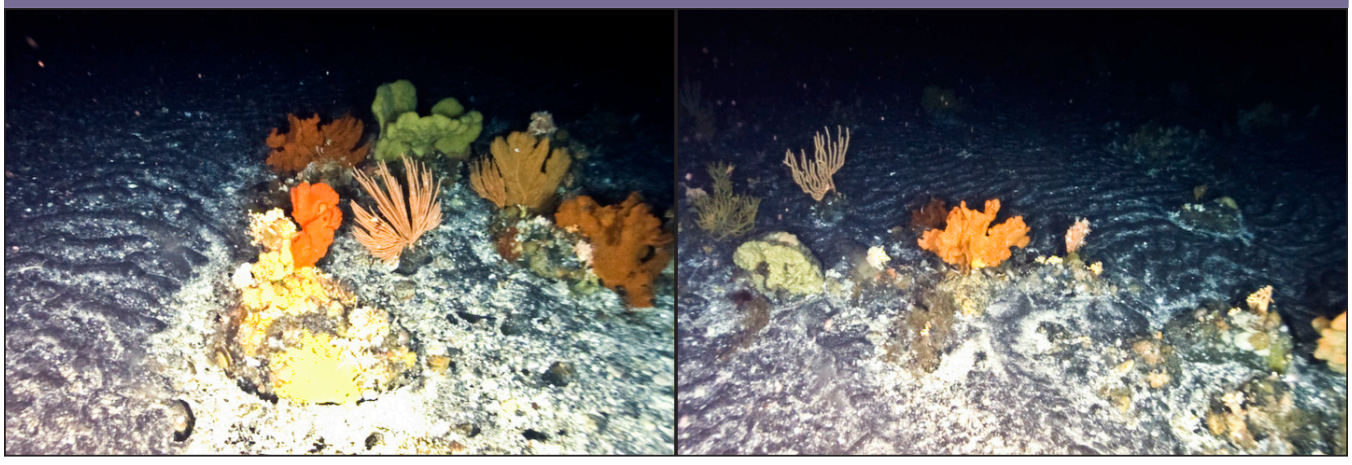
Fish and Crab Composition (n = 62)



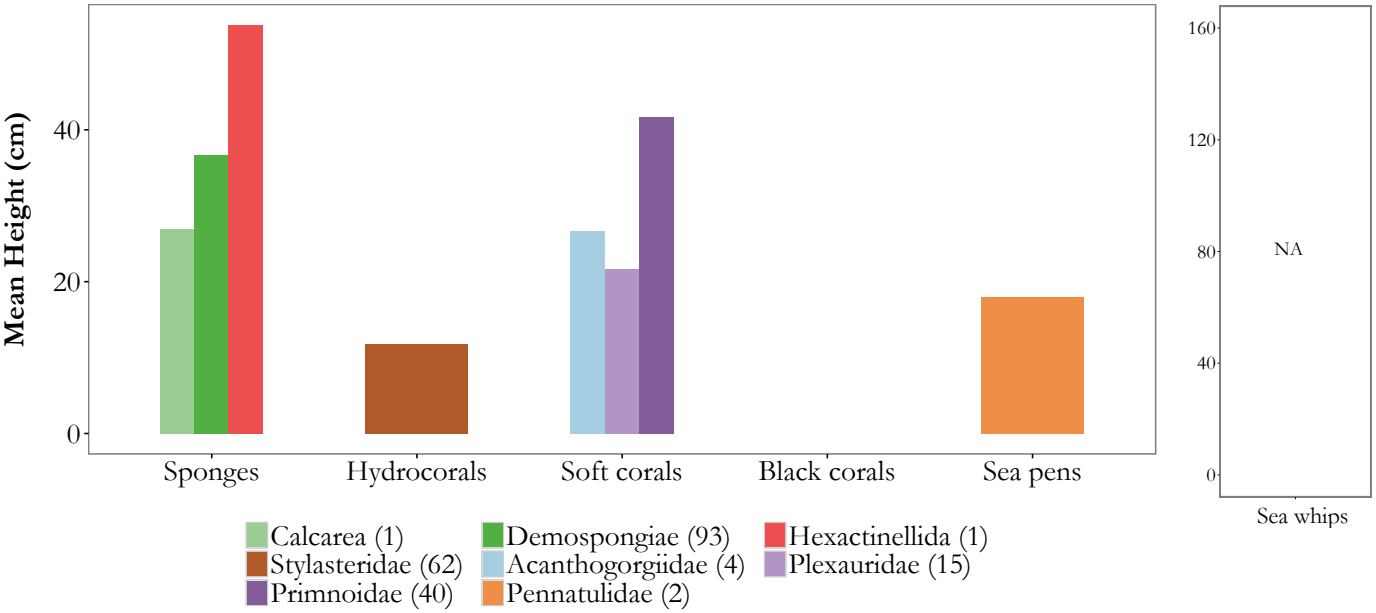
Substrate Composition

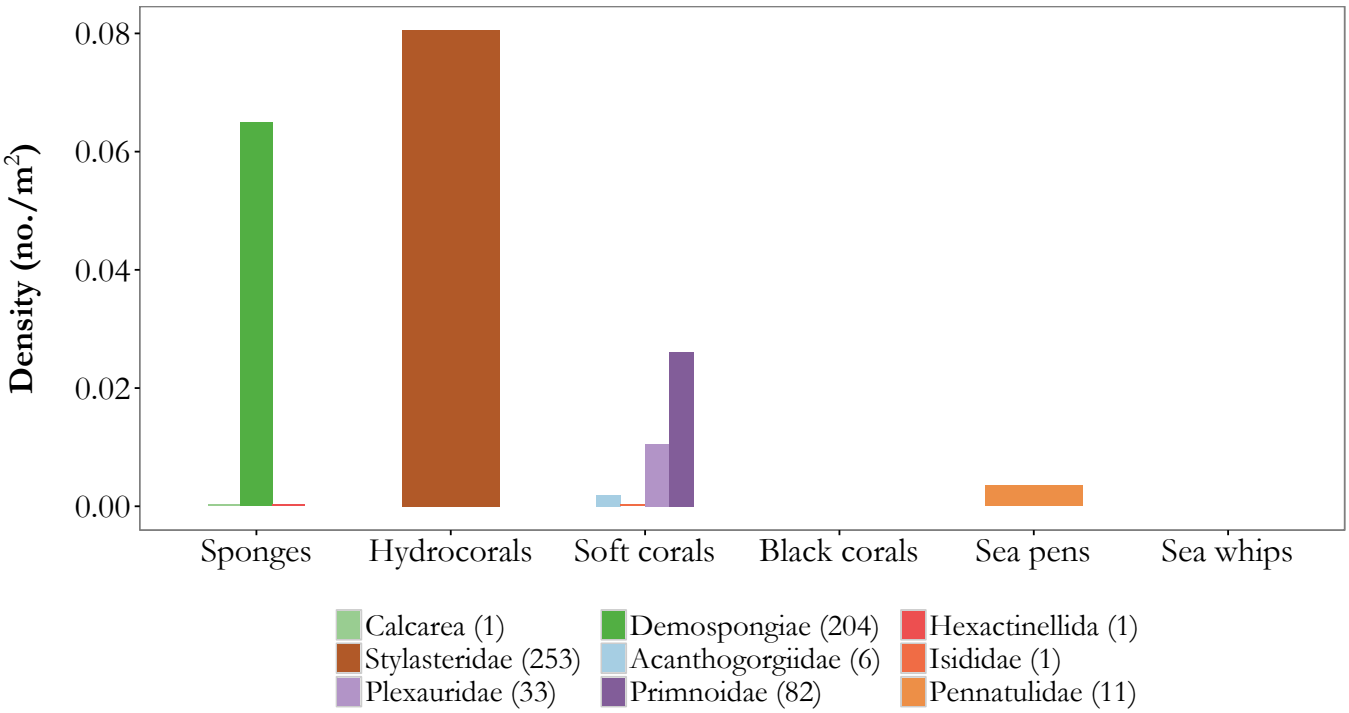


Images



Vertical Habitat Summary





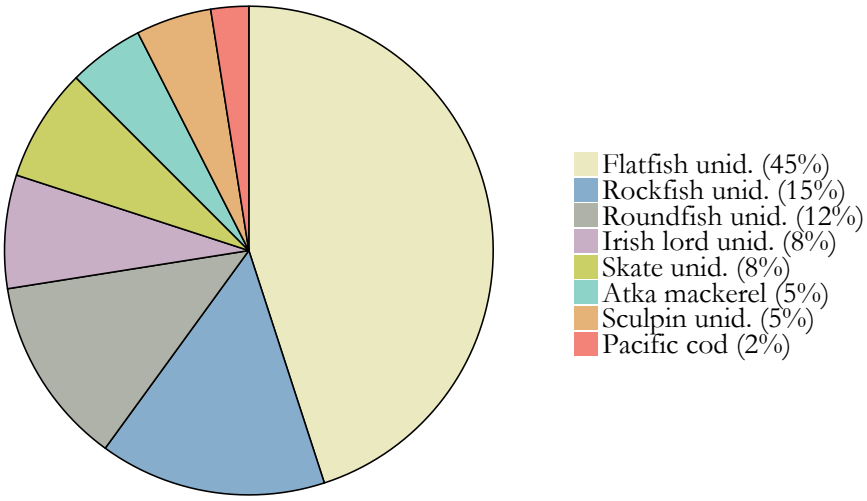
Summary - description of transect

Transect 2014-46: Primary and secondary substrates consisted of sand, gravel, and boulder. Fish density was low for this transect (0.02 individuals/m^2). Rockfishes (n = 42) accounted for 68% of the fish density. Structure-forming invertebrate density was 0.19 individuals/m^2. Stylasteridae accounted for 43% while Demospongiae were approximately 34% of the total density. Mean heights were calculated for Demospongiae (37 cm), Stylasteridae (12 cm), Acanthogorgiidae (27 cm), Plexauridae (22 cm), Primnoidae (42 cm), and Pennatulidae (18 cm).

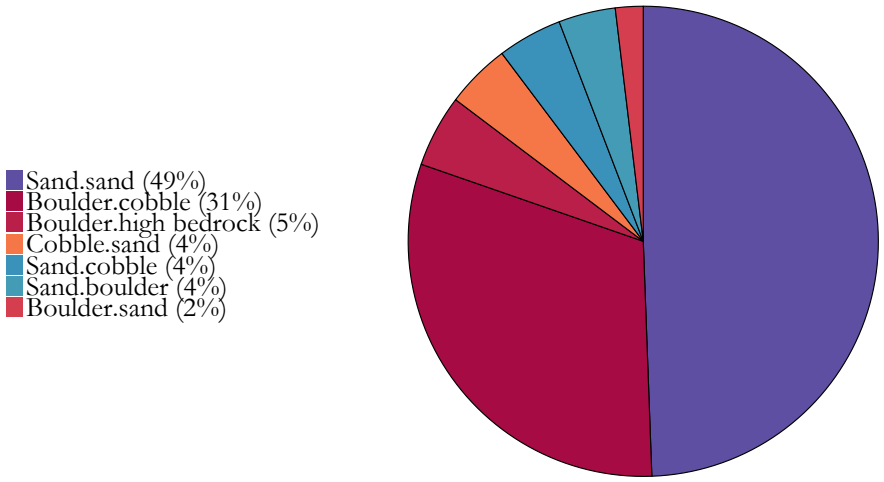
AREA: Amchitka Pass To Buldir Pass — Transect 2014-47

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	52.09	177.53	822	47	4.2

Fish and Crab Composition (n = 40)

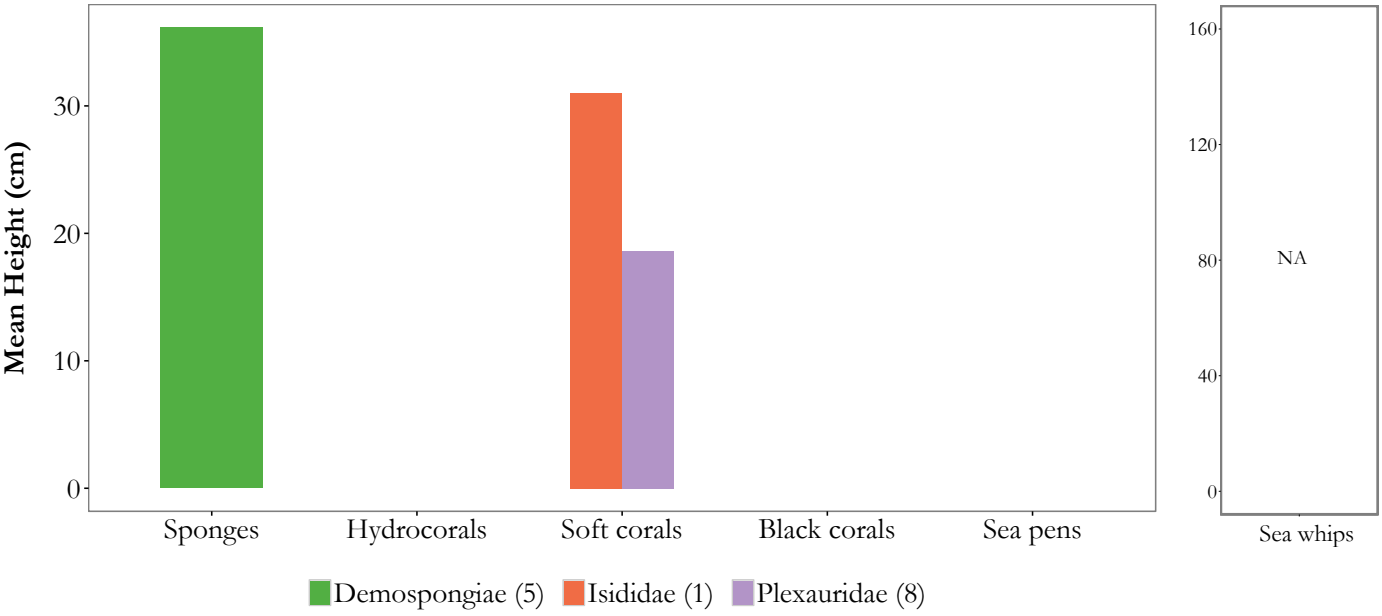


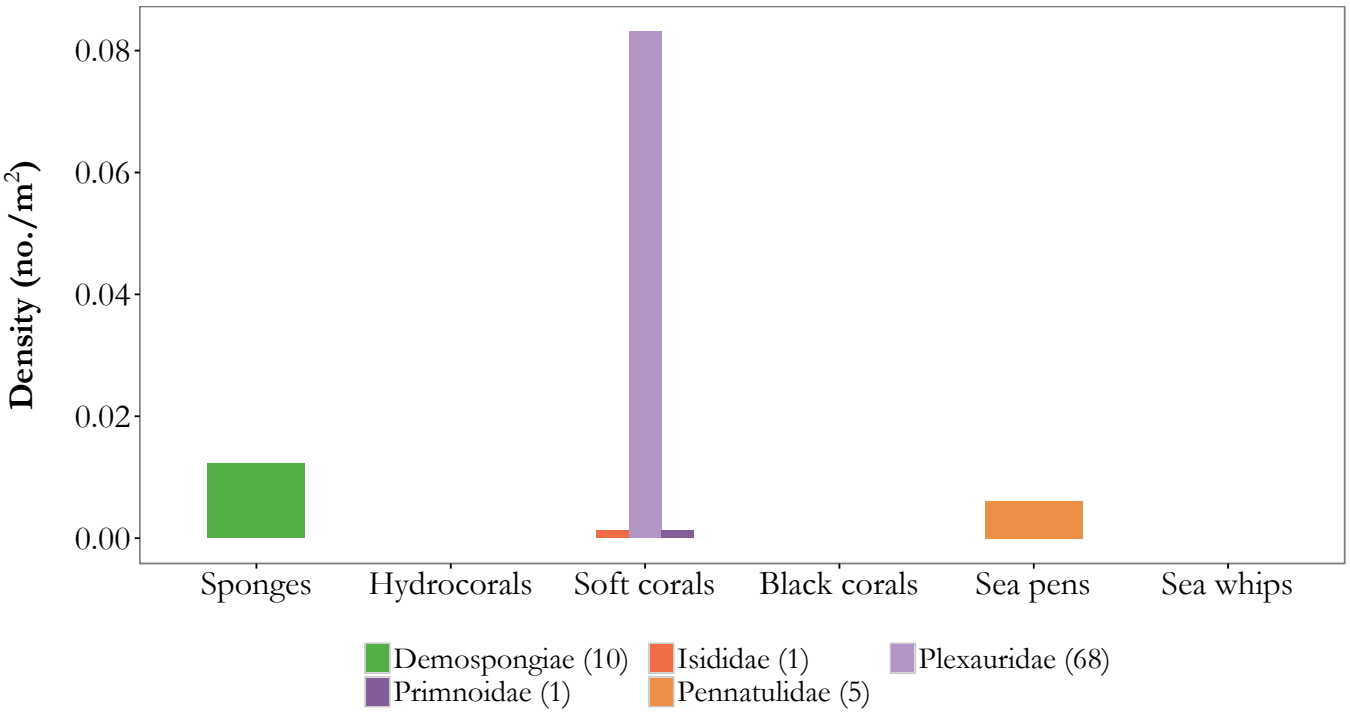
Substrate Composition



Images

Vertical Habitat Summary





Summary - description of transect

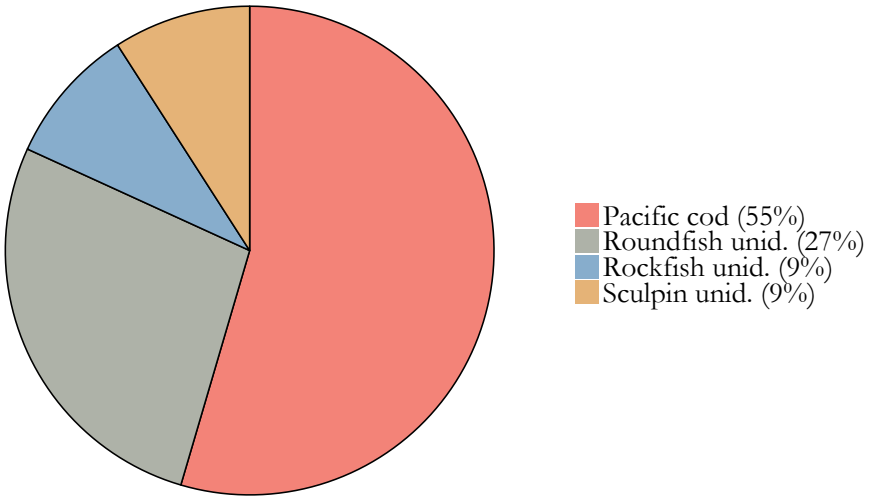
Transect 2014-47: Primary and secondary substrates consisted of sand, boulder, and cobble. Total fish density was low (0.05 individuals/m^2) but diverse; eight species or taxa were identified. Almost half (n = 18) of the individuals identified were flatfishes. Structure-forming invertebrate density was also low (0.10 individuals/m^2). Plexauridae (n = 68) accounted for 80% of the density. Mean heights were calculated for Demospongiae (36 cm) and Plexauridae (19 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-48

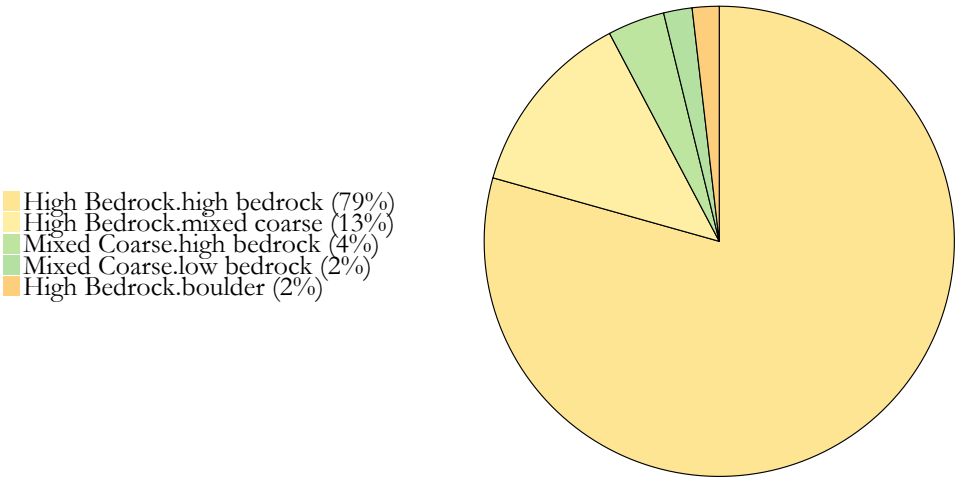
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	52.06	177.23	922	80	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 11)



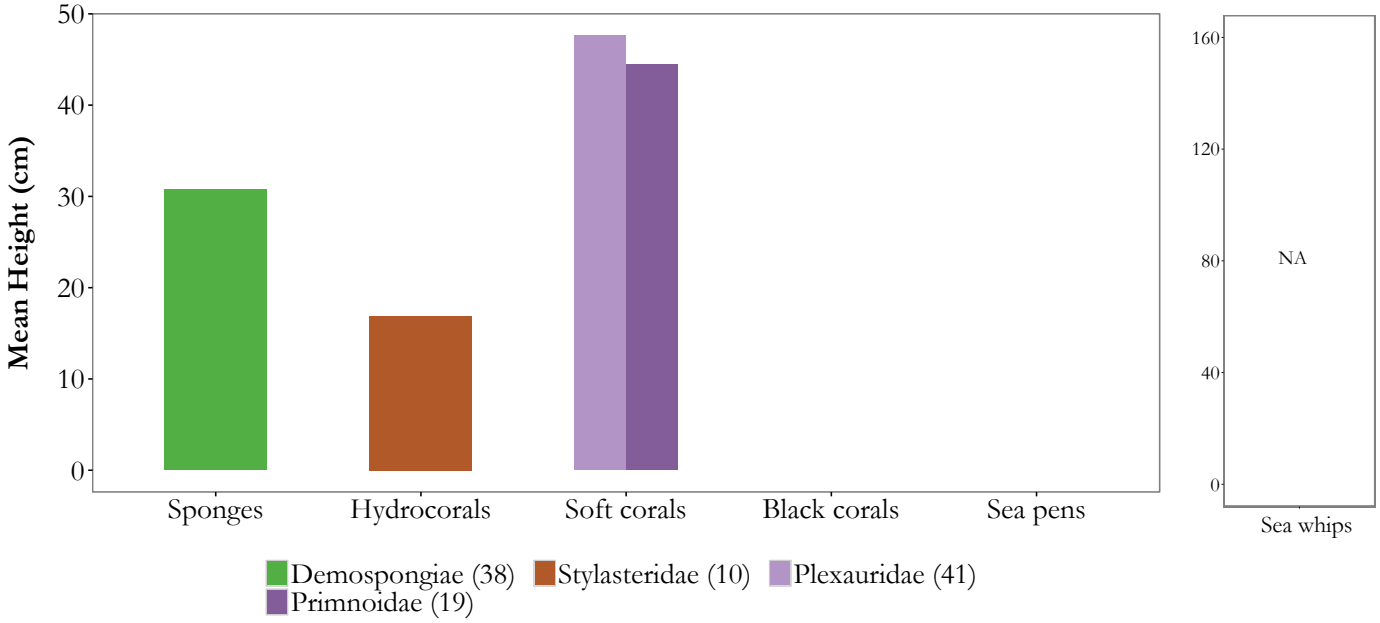
Substrate Composition

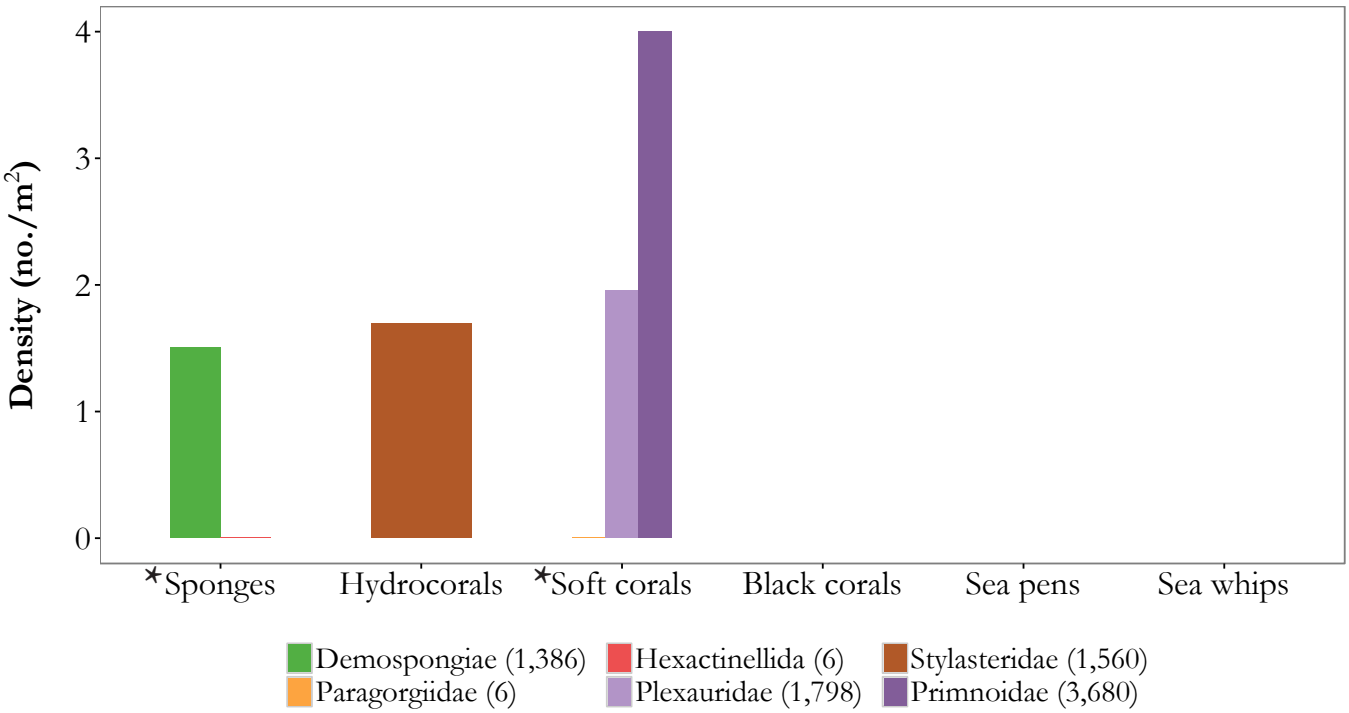


Images

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m²)





Summary - description of transect

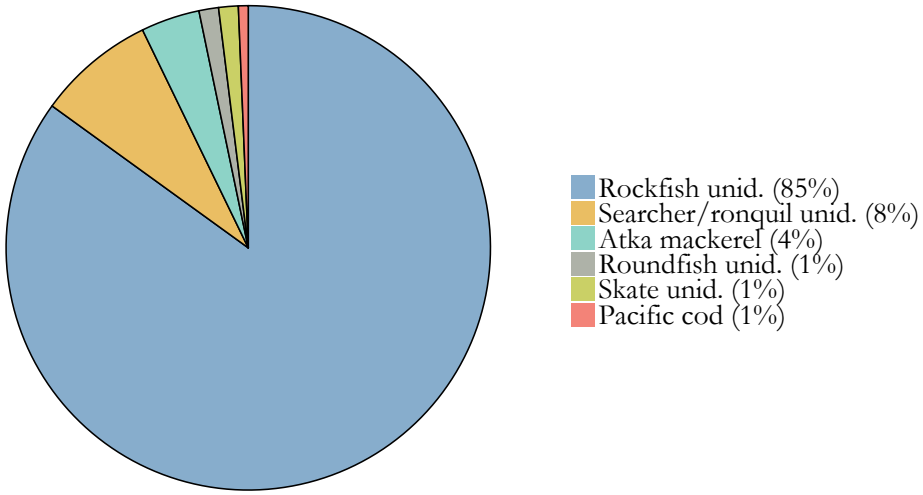
Transect 2014-48: Primary and secondary substrates consisted largely of bedrock. Few fishes were identified in this transect (n = 11) with a majority (55%) identified as Pacific cod. Structure-forming invertebrate density was high (9.17 individuals/m²). Corals were 83% of the species composition. Primnoidae (4.00 individuals/m²) accounted for 44% of the total density while Plexauridae, Stylasteridae, and Demospongiae were 21%, 18%, and 16%, respectively. Mean heights were calculated for Demospongiae (31 cm), Stylasteridae (38 cm), Plexauridae (48 cm), and Primnoidae (44 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-49

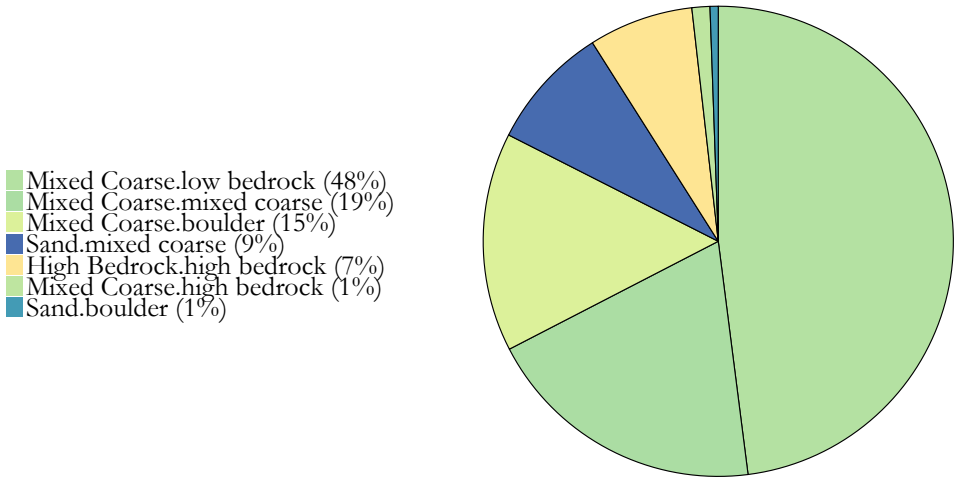
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	52.08	176.92	2,323	118	3.8

*Area of high coral or sponge density (> 1.0 individuals/m^2)

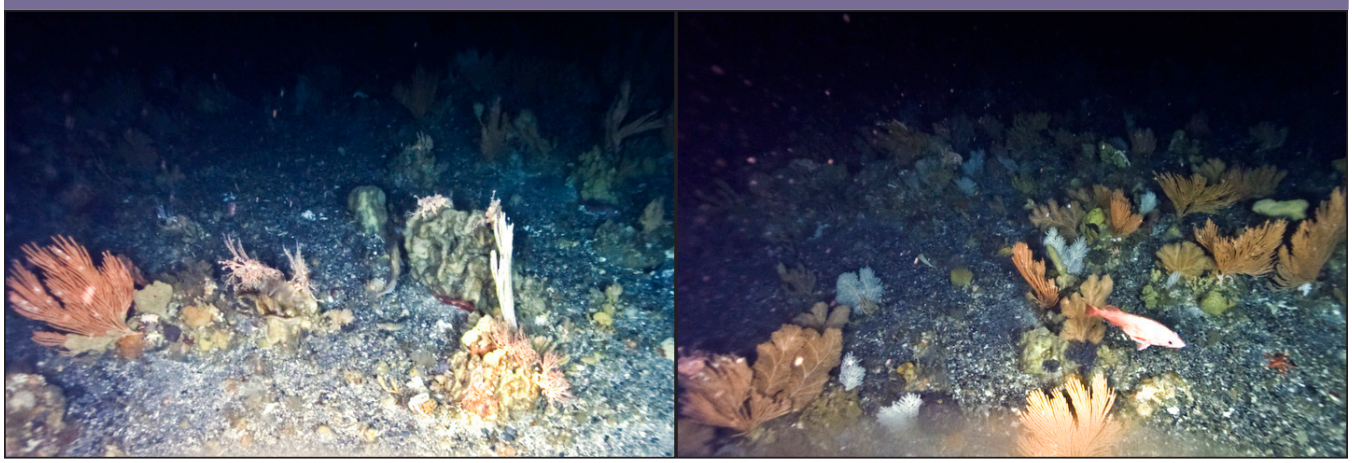
Fish and Crab Composition (n = 153)



Substrate Composition



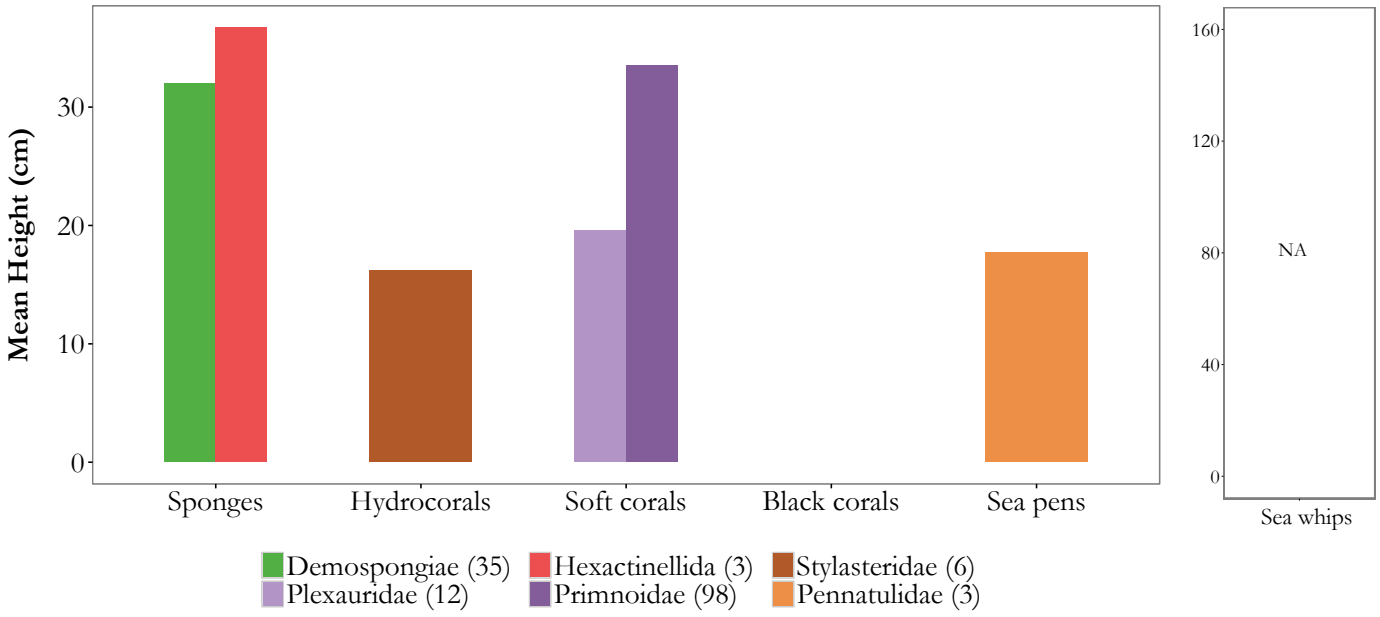
Images

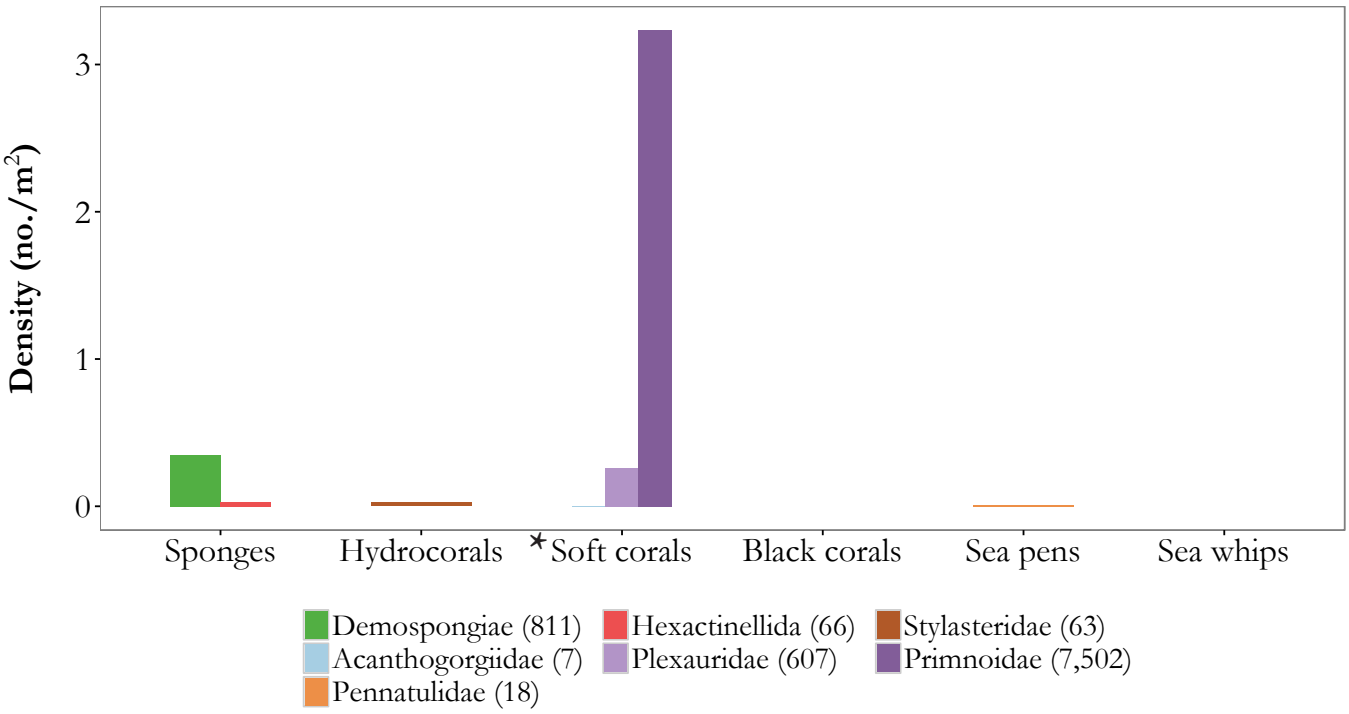


AREA: Amchitka Island To Buldir Island Transect *2014-49

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

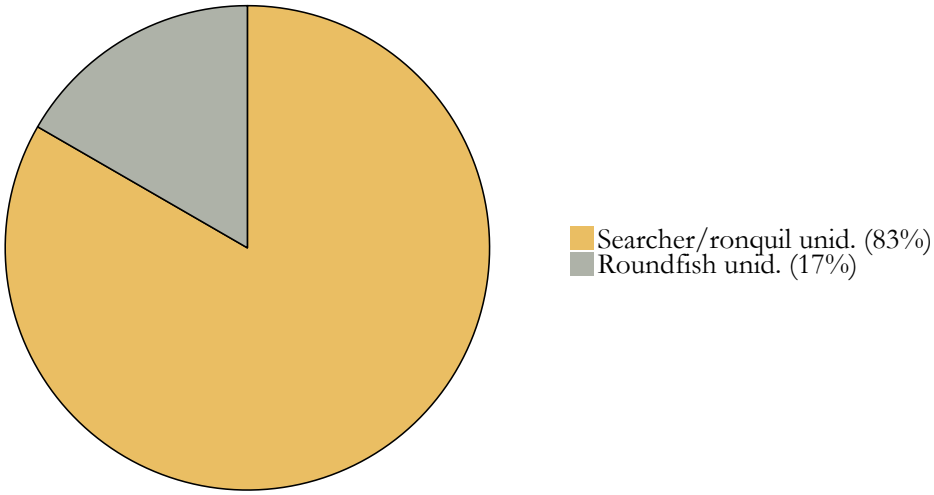
Transect 2014-49: Eighty-four percent of the primary substrate consisted of mixed coarse. Secondary substrates were a mixture of bedrock, mixed coarse, and boulders. Rockfishes (n = 130) were 85% of the fish density (0.07 individuals/m^2). Structure-forming invertebrate density was 3.91 individuals/m^2. Primnoidae (3.23 individuals/m^2) accounted for 83% of the total density. Mean heights were calculated for Demospongiae (32 cm), Hexactinellida (37 cm), Stylasteridae (16 cm), Plexauridae (20 cm), Primnoidae (34 cm), and Pennatulidae (18 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-50

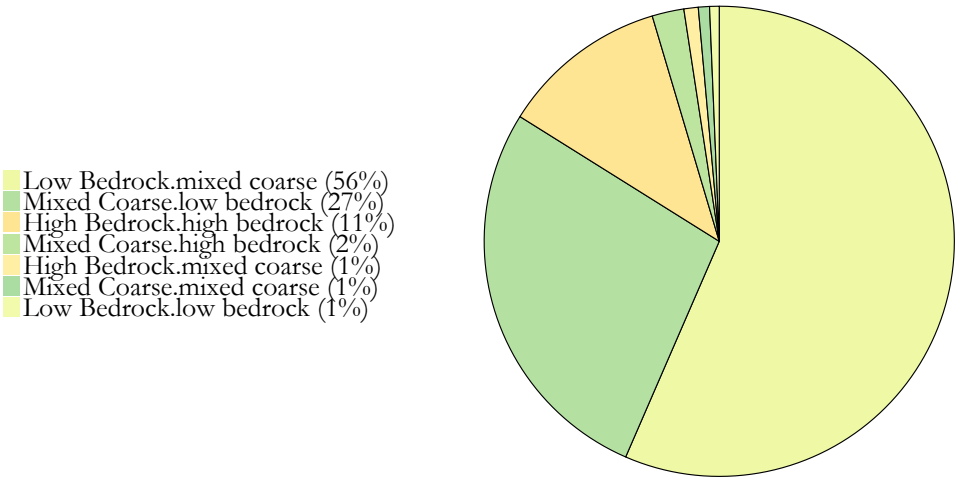
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	52.10	176.77	1,837	90	3.8

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 6)



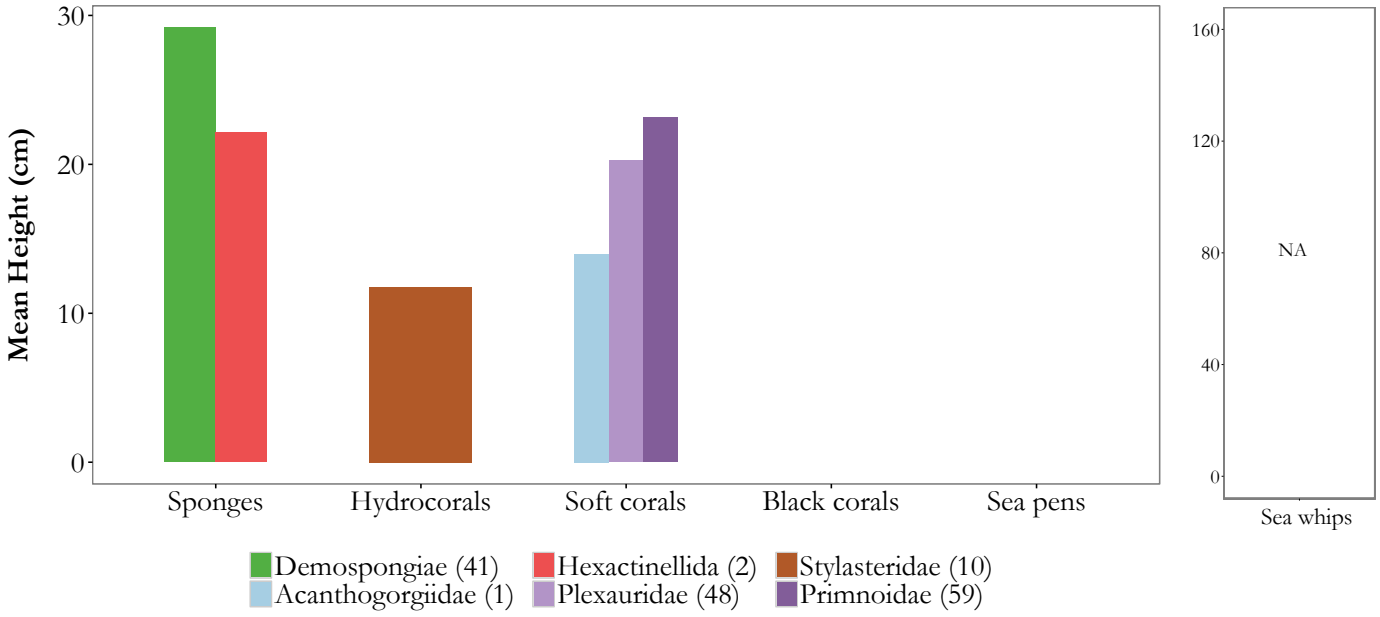
Substrate Composition

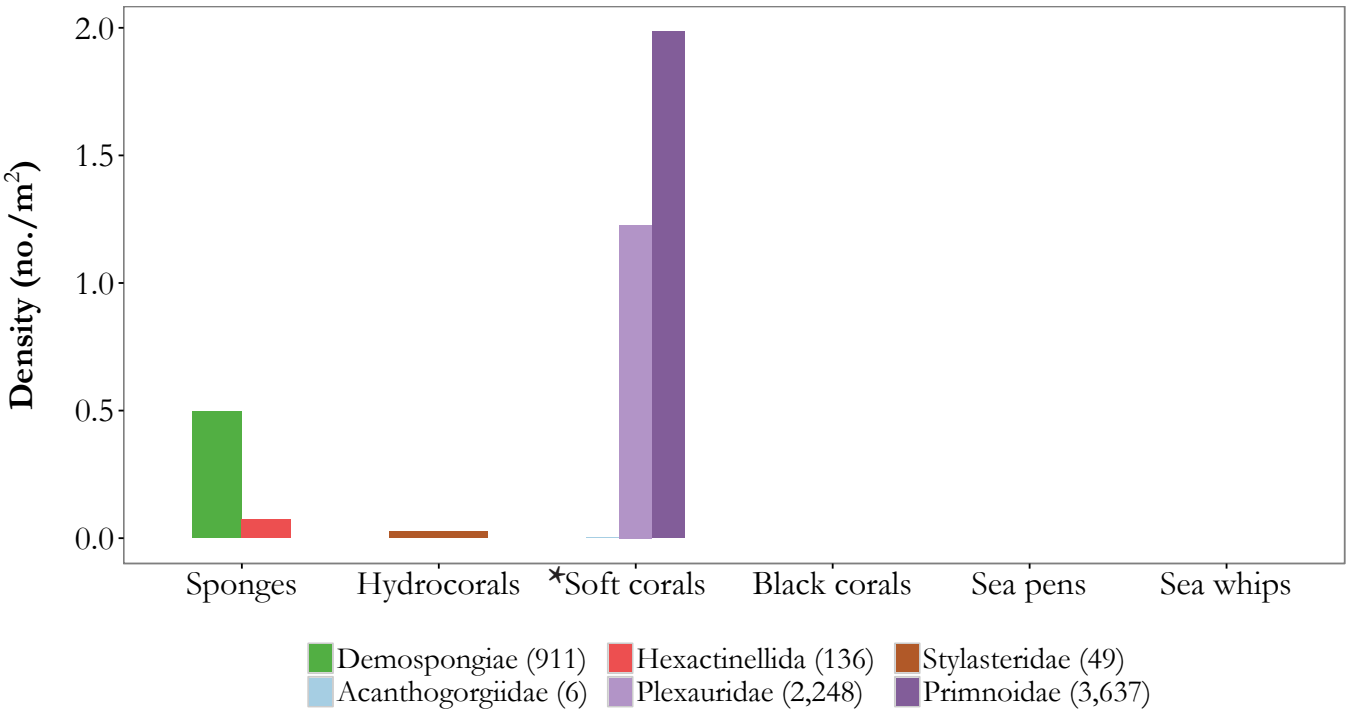


Images

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

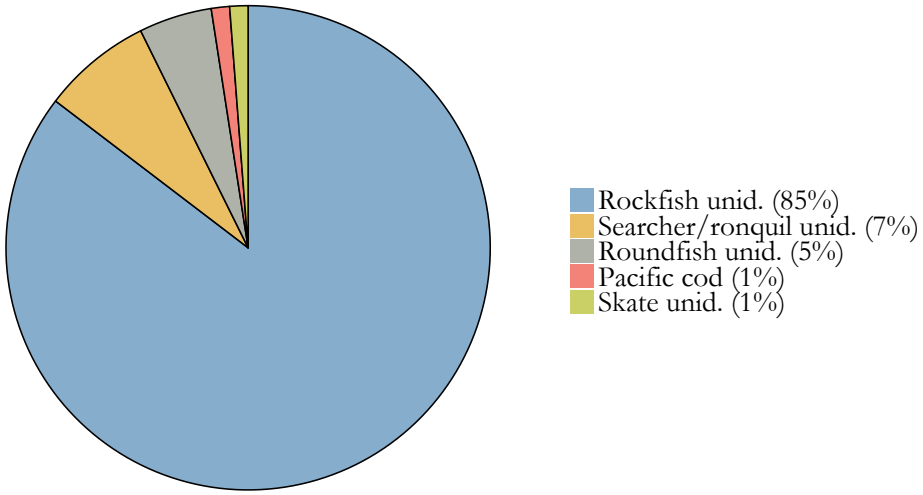
Transect 2014-50: Bedrock accounted for 69% of the primary substrate and mixed coarse accounted for the remaining 31%. Six searchers/ronquils and one roundfish accounted for 100% of the fishes seen. Species density was low overall (< 0.01 individuals/m^2). Structure-forming invertebrates consisted of corals (3.2 individuals/m^2), sponges (0.57 individuals/m^2) and hydrocorals (0.3 individuals/m^2). Plexauridae and Primnoidae composed 84% of the species composition. Mean heights were calculated for Demospongiae (29 cm), Hexactinellida (22 cm), Stylasteridae (12 cm), Plexauridae (20 cm), and Primnoidae (23 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-51

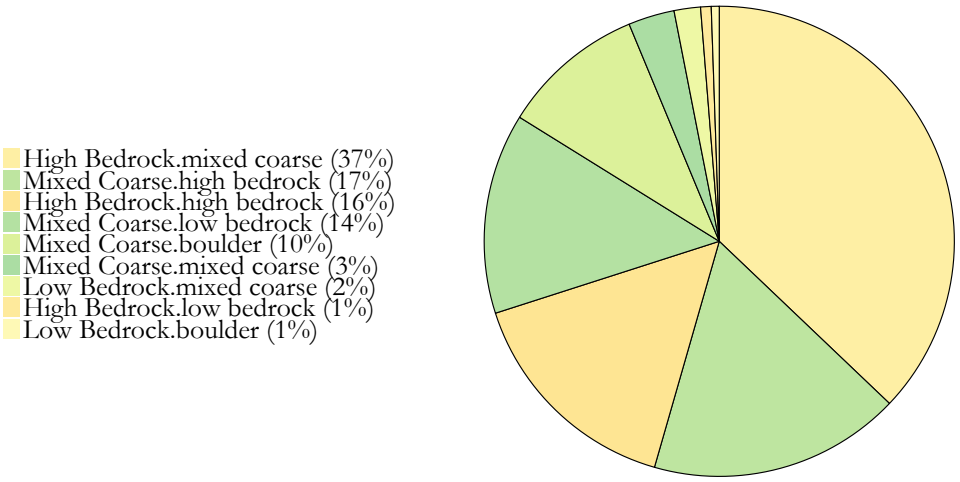
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	51.99	176.83	3,669	105	3.8

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 82)



Substrate Composition

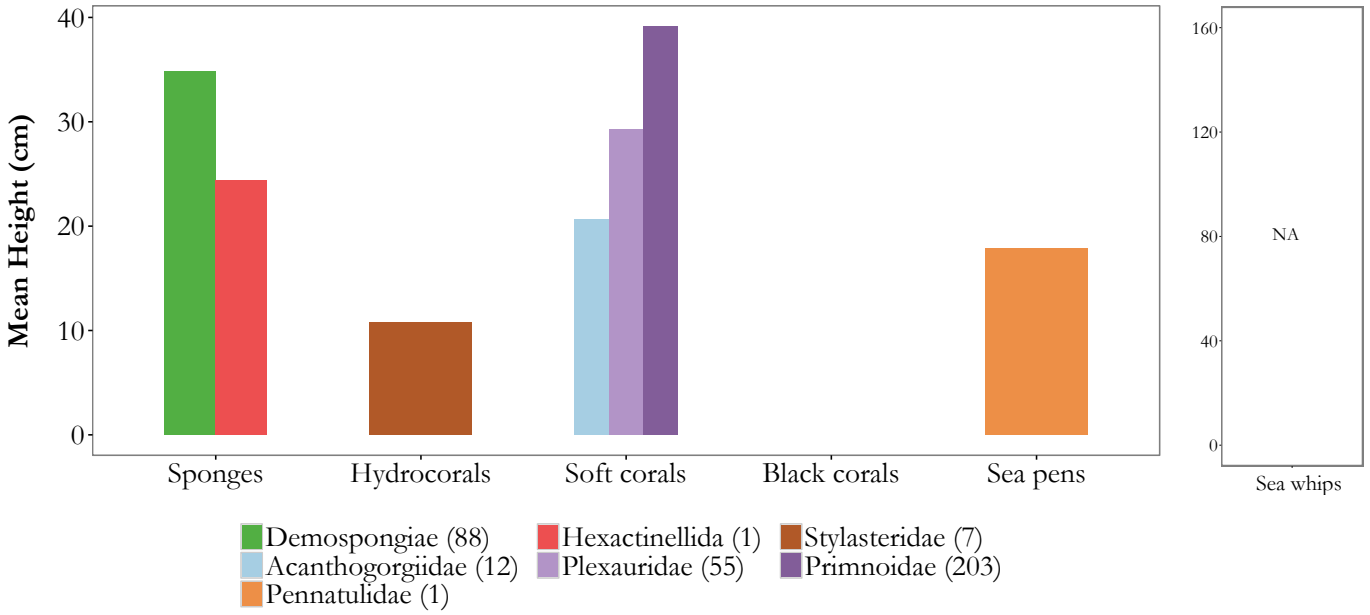


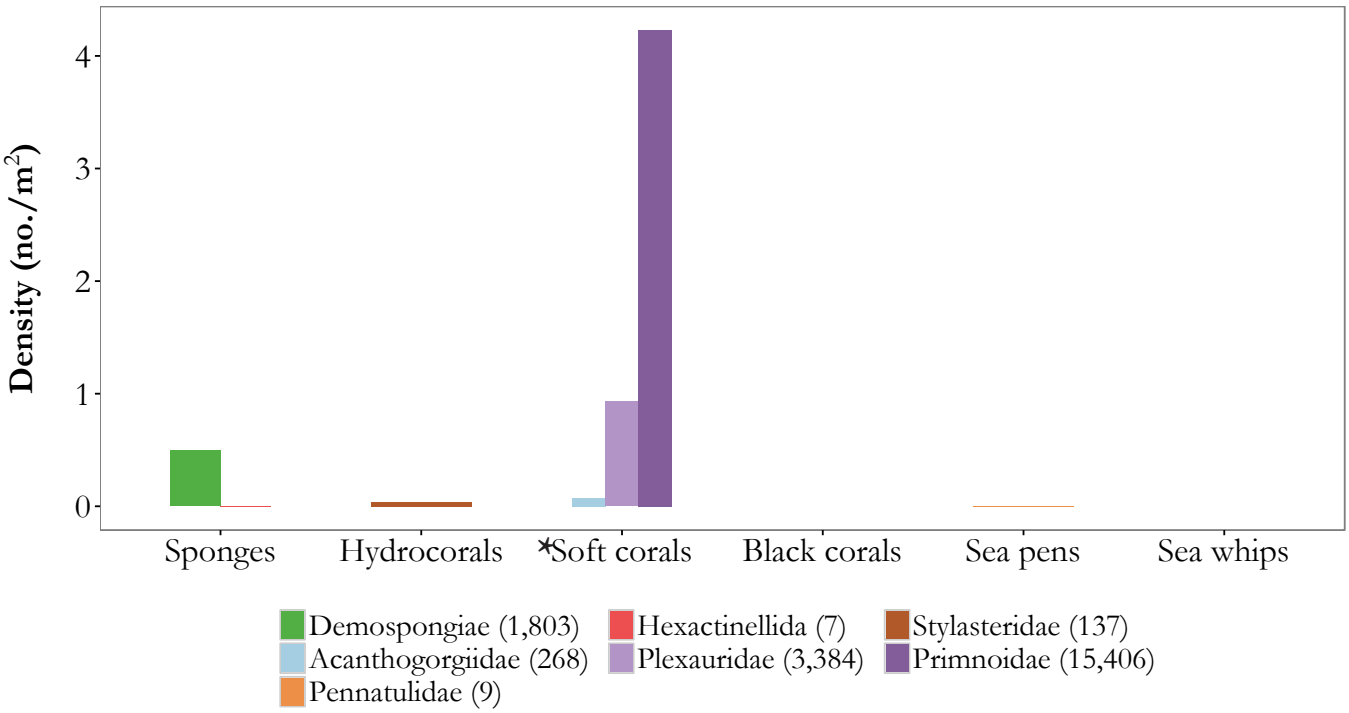
Images

AREA: Amchitka Island To Buldir Island — Transect *2014-51

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

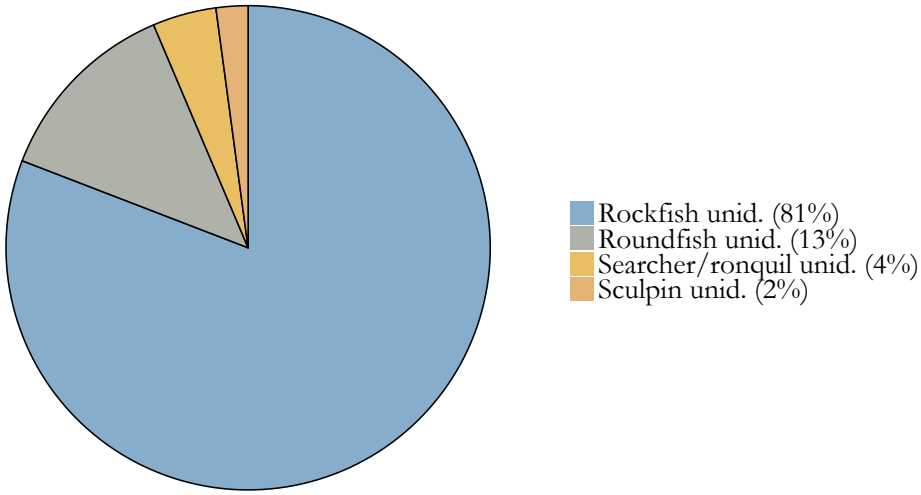
Transect 2014-51: Bedrock accounted for 87% of the primary and secondary substrates. Rockfishes (n = 70) were 85% of the fish density (0.02 individuals/m^2). Structure-forming invertebrate density was 5.77 individuals/m^2. Primnoidae had a density of 4.23 individuals/m^2 and accounted for 73% of the total density. Mean heights were calculated for Acanthogorgiidae (12 cm), Demospongiae (35 cm), Stylasteridae (7 cm), Plexauridae (29 cm), and Primnoidae (39 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-52

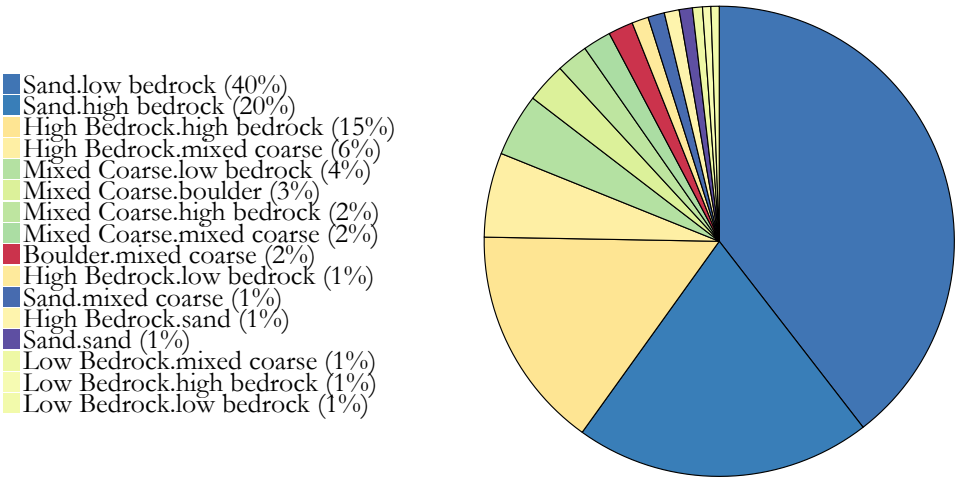
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	51.95	176.57	857	100	3.8

*Area of high coral or sponge density (> 1.0 individuals/m^2)

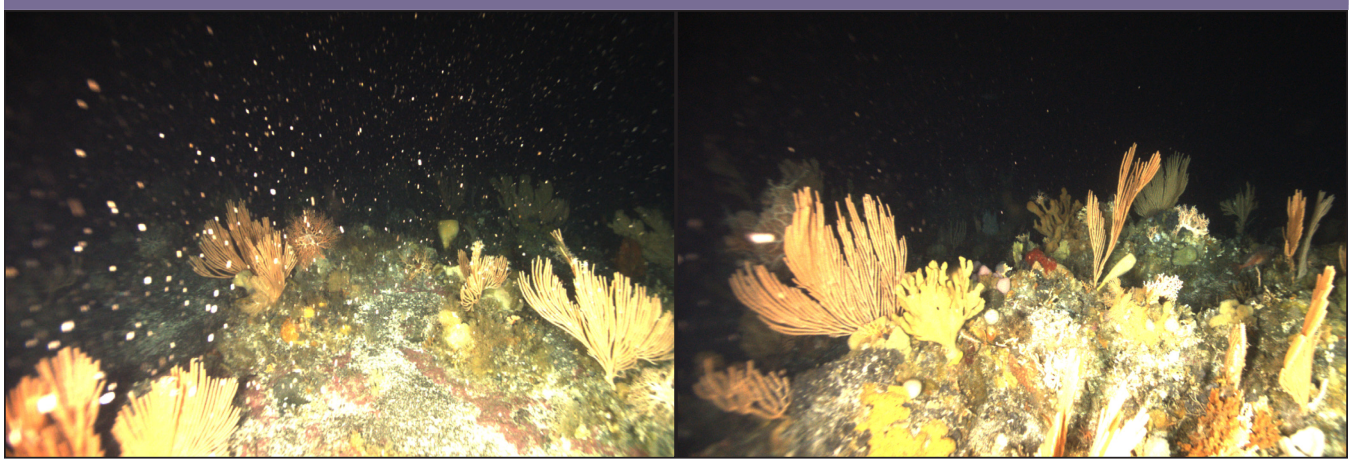
Fish and Crab Composition (n = 47)



Substrate Composition



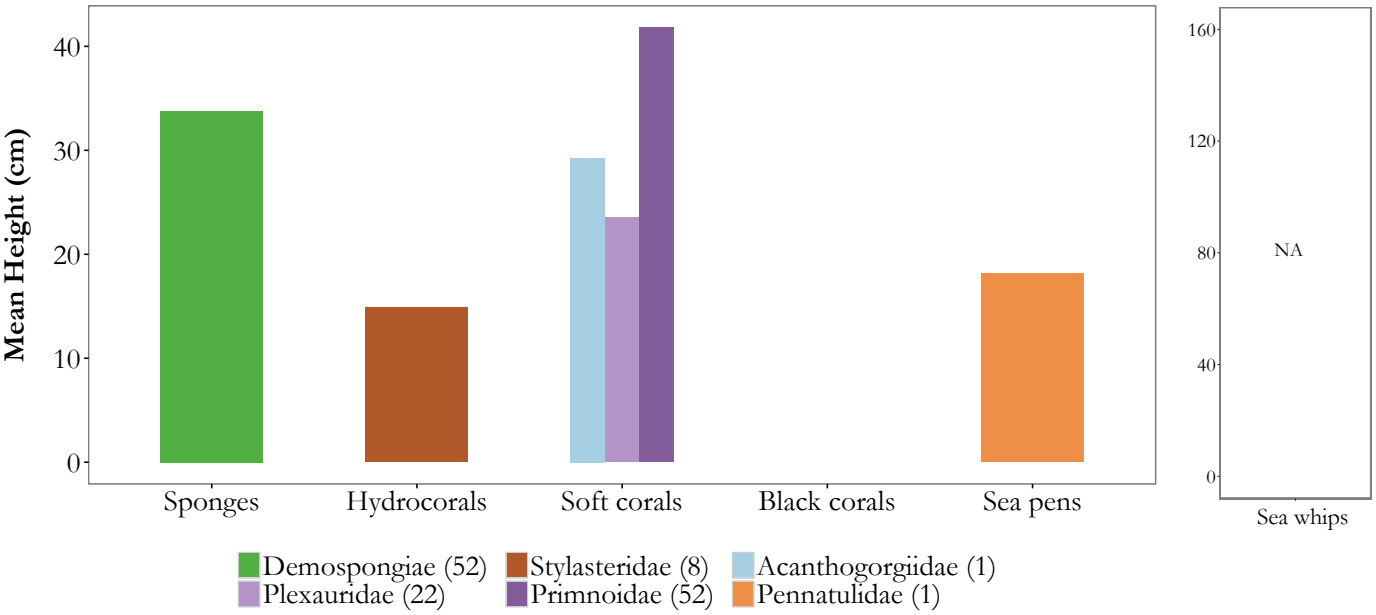
Images

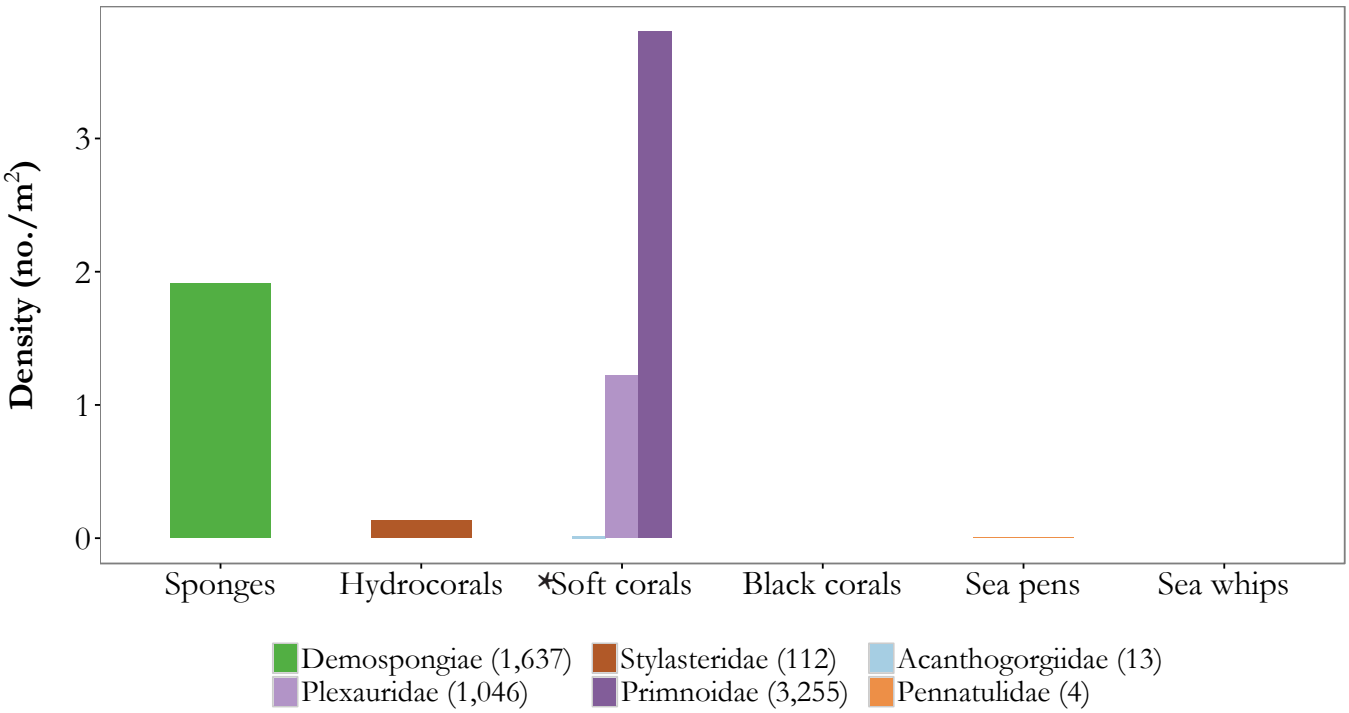


AREA: Amchitka Island To Buldir Island Transect *2014-52

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





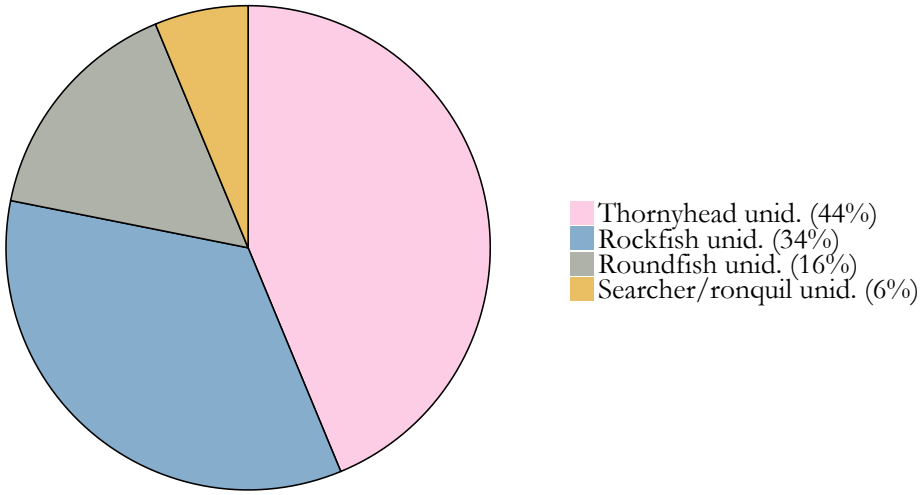
Summary - description of transect

Transect 2014-52: Substrate composition for this haul was very diverse. Almost 60% of the substrate consisted of sand (primary) and bedrock (secondary). Rockfishes (n = 38) were 81% of the fish density (0.05 individuals/m^2). Primnoidae (3.80 individuals/m^2) and Plexauridae (1.22 individuals/m^2) were 71% of the structure-forming invertebrates (7.09 individuals/m^2). Demospongiae density was 1.91 individuals/m^2. Mean heights were calculated for Demospongiae (34 cm), Stylasteridae (15 cm), Plexauridae (24 cm), and Primnoidae (42 cm).

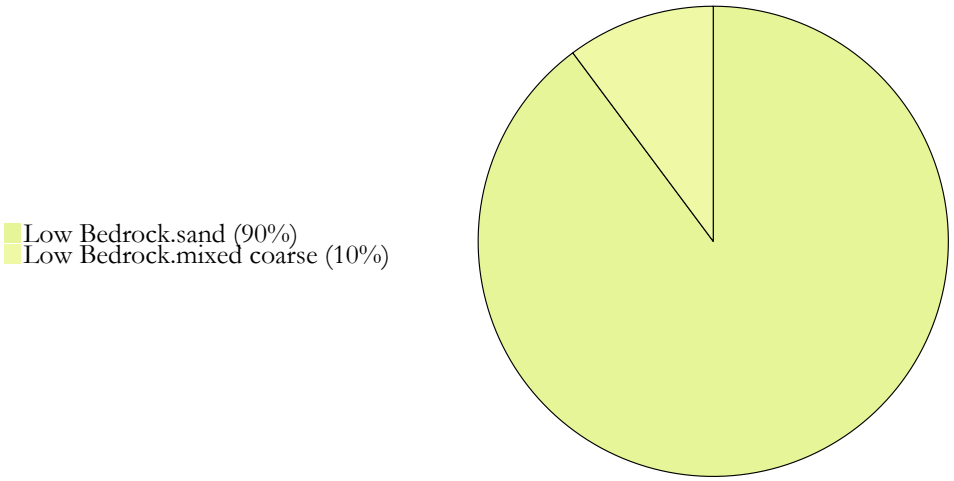
AREA: Amchitka Pass To Buldir Pass — Transect 2014-53

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	51.87	176.38	1,239	233	3.7

Fish and Crab Composition (n = 32)

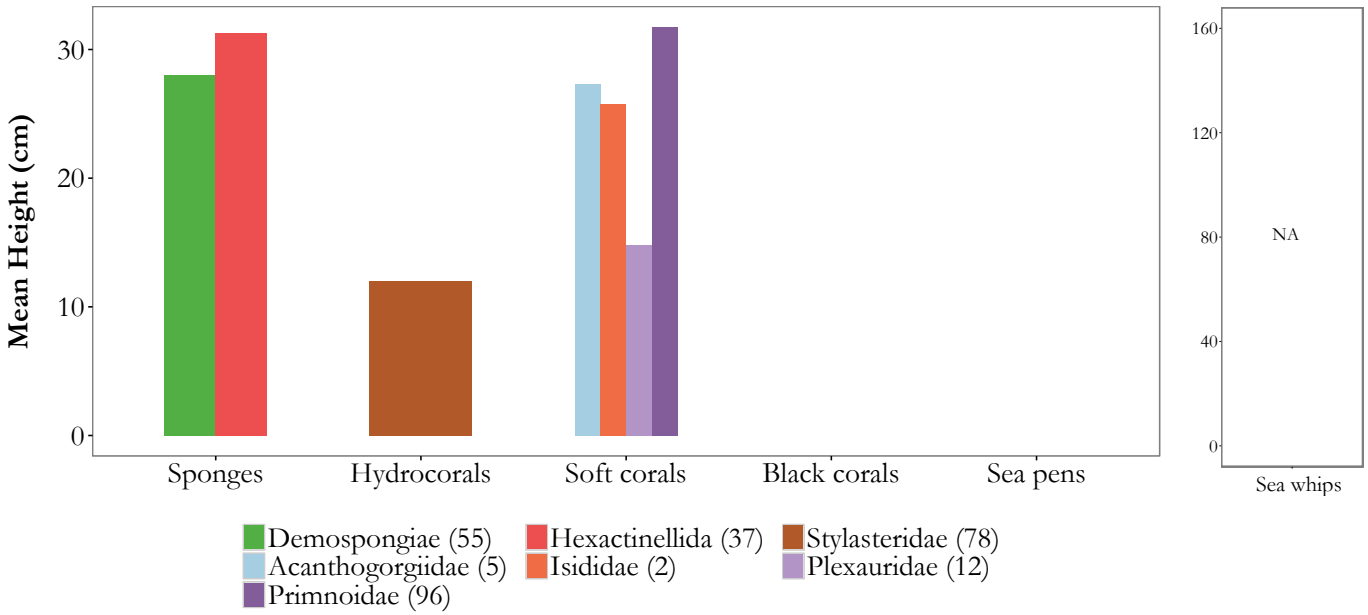


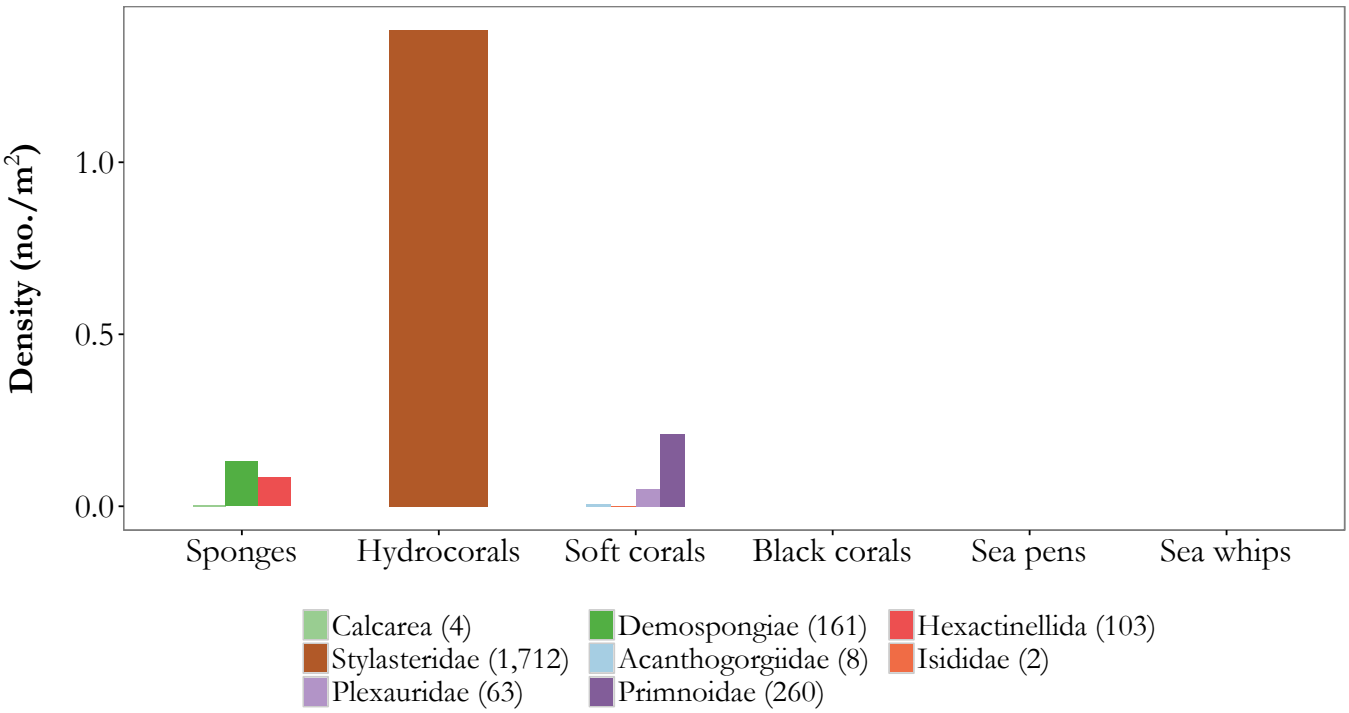
Substrate Composition



Images

Vertical Habitat Summary





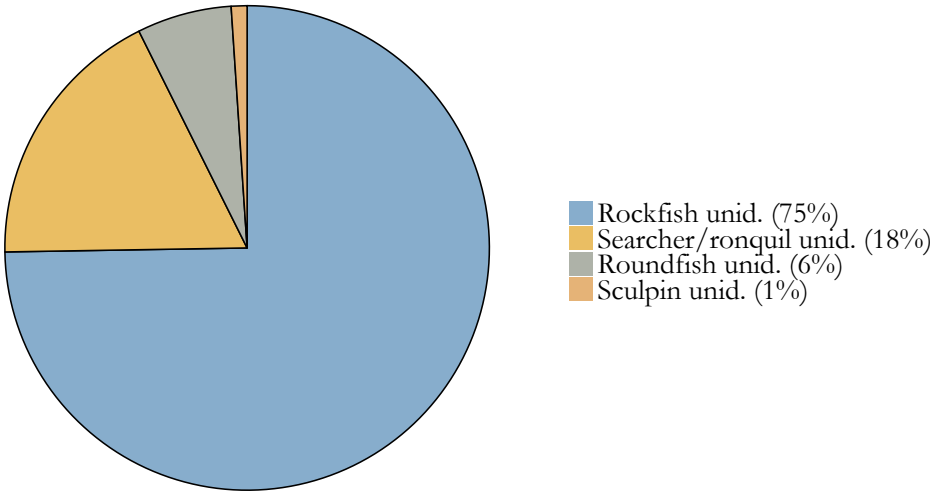
Summary - description of transect

Transect 2014-53: Primary and secondary substrates consisted largely of low bedrock and sand. Thornyheads and rockfishes accounted for 78% of the species seen. Fish density was low overall (0.03 individuals/m^2). Structure-forming invertebrate density was 1.87 individuals/m^2. Stylasteridae accounted for 74% (1.38 individuals/m^2) of the total density while Primnoidae were approximately 11% (0.21 individuals/m^2). Mean heights were calculated for Demospongiae (28 cm), Hexactinellida (31 cm), Stylasteridae (12 cm), Acanthogorgiidae (27 cm), Isididae 26, Plexauridae (15 cm), and Primnoidae (32 cm).

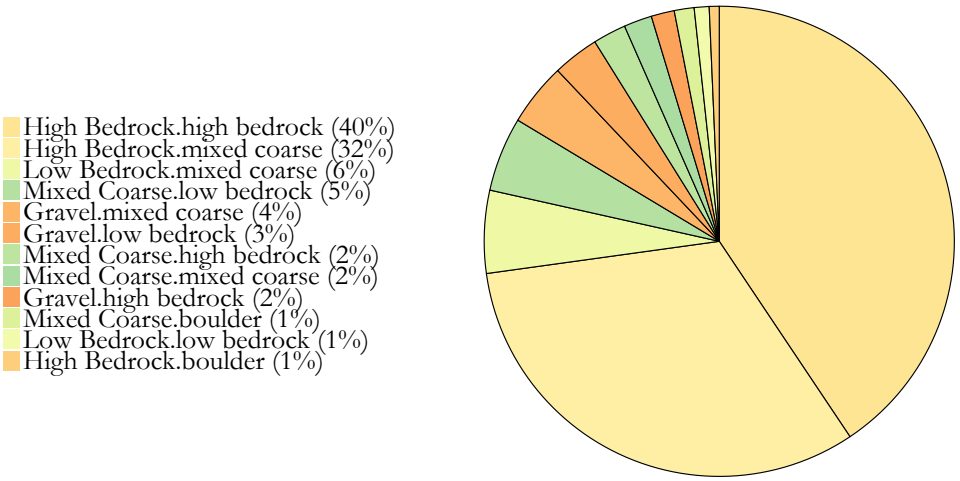
AREA: Amchitka Pass To Buldir Pass — Transect 2014-54

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	51.73	175.78	2,735	84	4.0

Fish and Crab Composition (n = 95)



Substrate Composition



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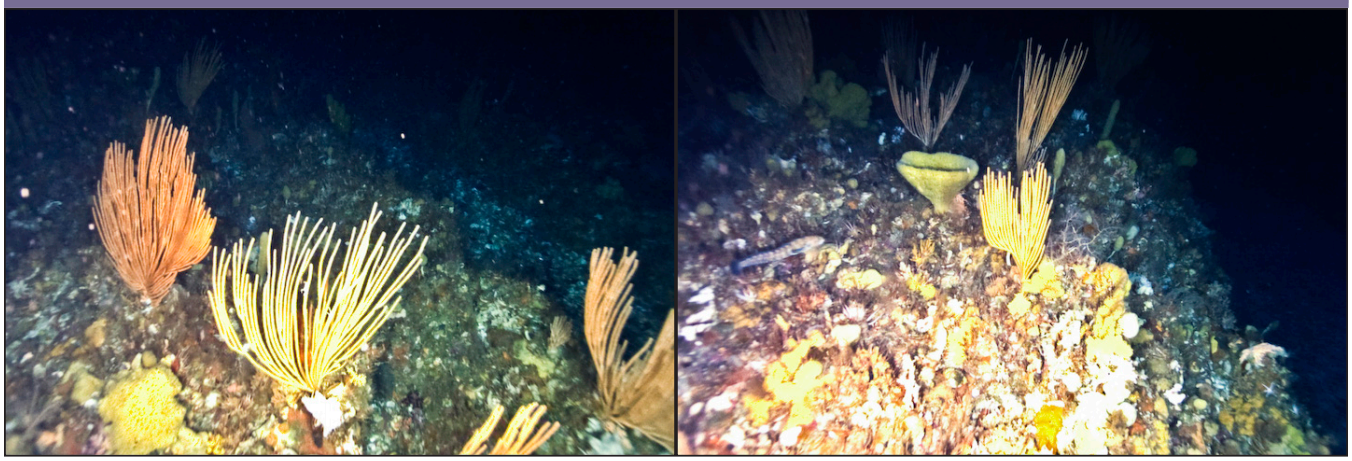
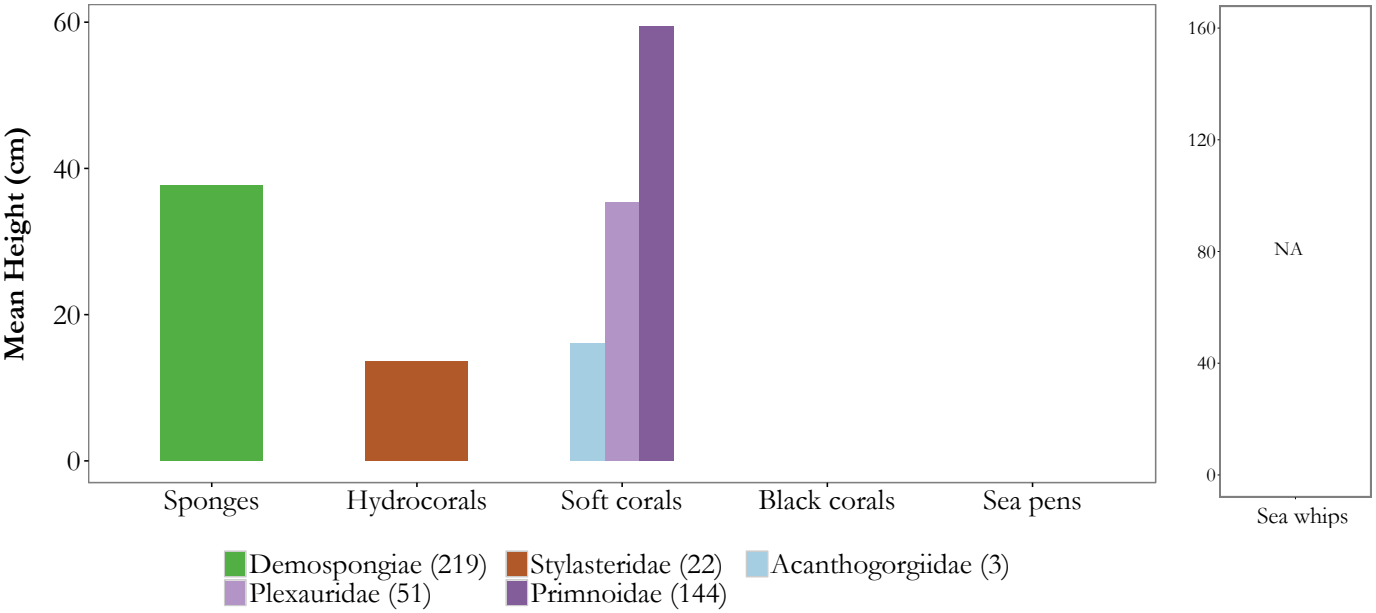
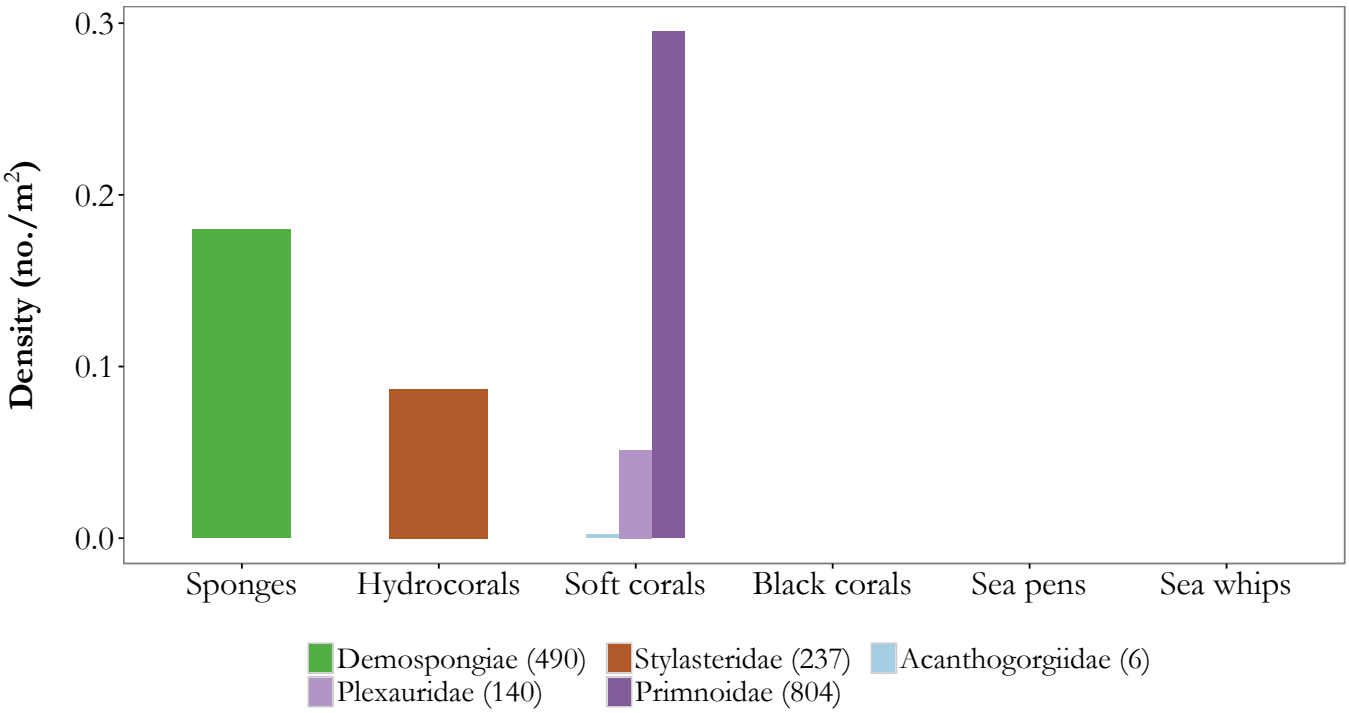


Vertical Habitat Summary





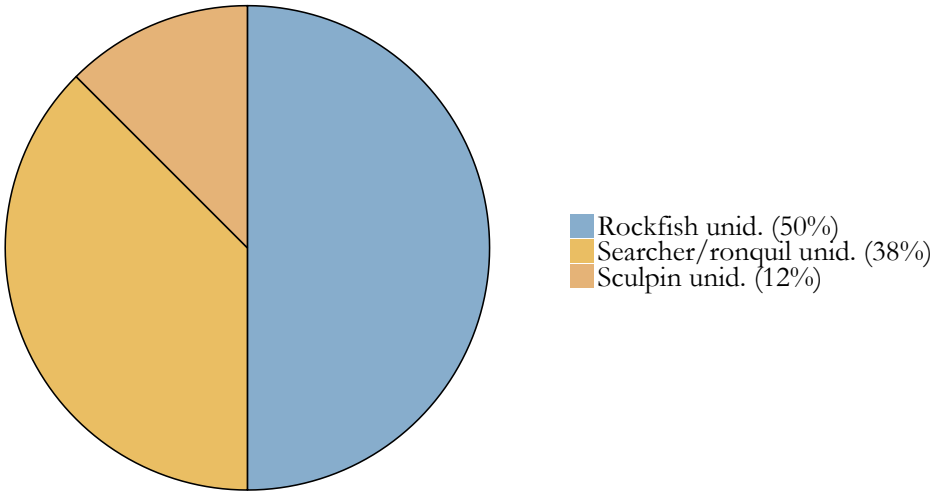
Summary - description of transect

Transect 2014-54: Substrate composition for this haul was very diverse. Primary and secondary substrates for 72% of the haul were high bedrock and mixed coarse. Fish density for this transect was 0.03 individuals/m^2. Rockfishes (n = 71) accounted for 75% of the fish density. Structure-forming invertebrate density was 0.62 individuals/m^2. Primnoidae accounted for 48% of the total density while Demospongiae were approximately 29%. Mean heights were calculated for Demospongiae (38 cm), Stylasteridae (14 cm), Acanthogorgiidae (16 cm), Plexauridae (35 cm), and Primnoidae (59 cm).

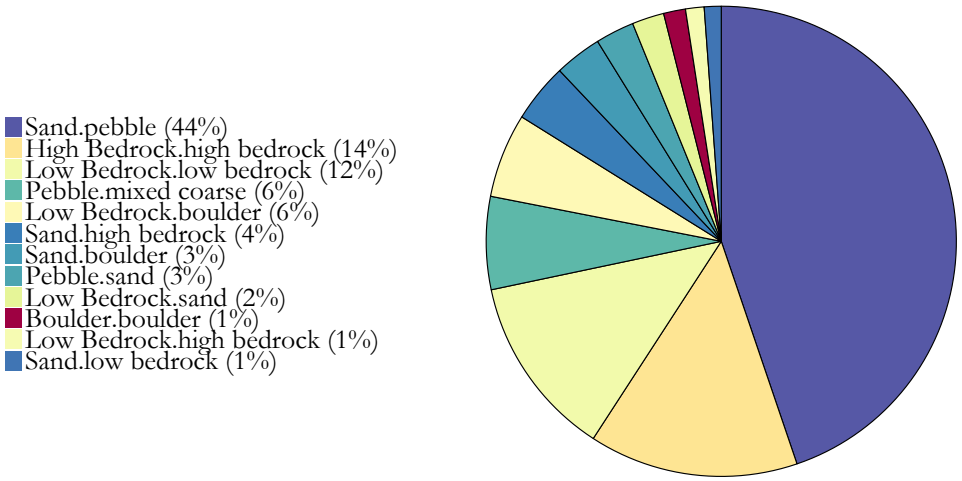
AREA: Amchitka Pass To Buldir Pass — Transect 2014-55

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	51.79	175.62	1,467	110	3.9

Fish and Crab Composition (n = 8)



Substrate Composition



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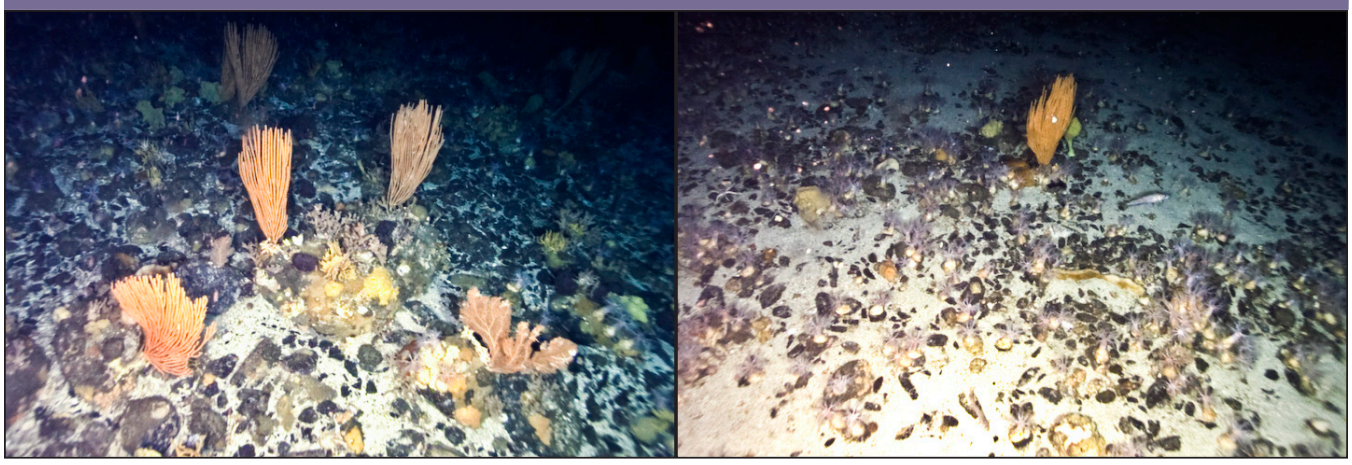
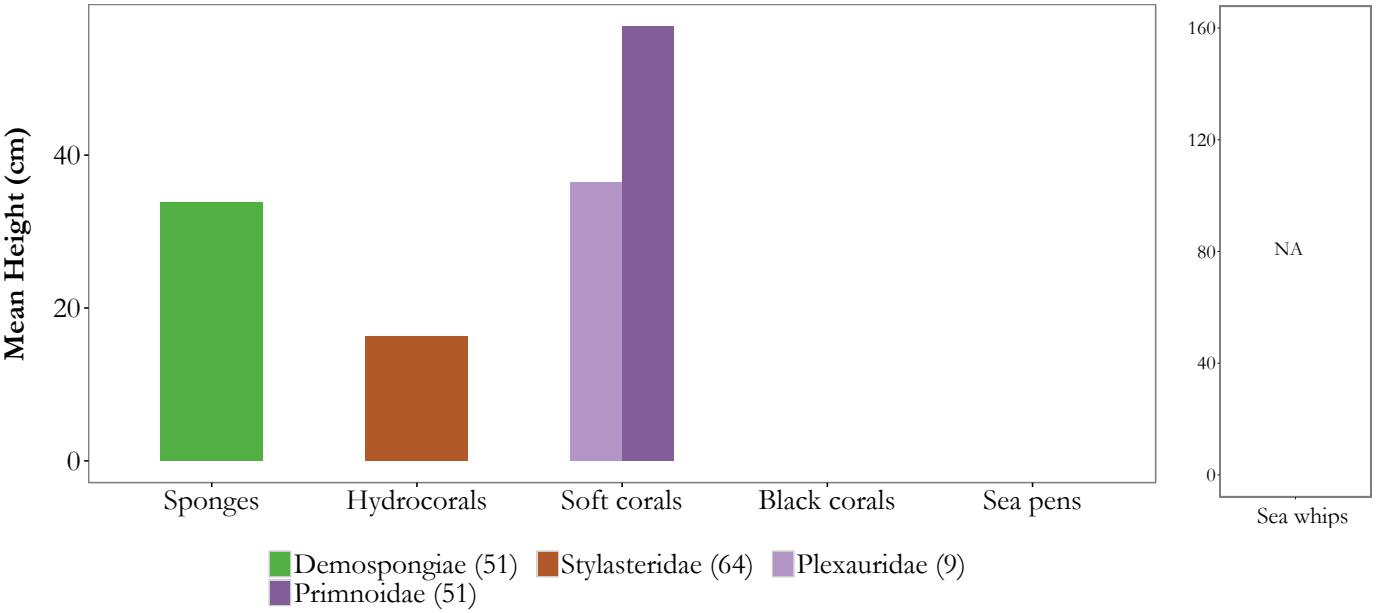
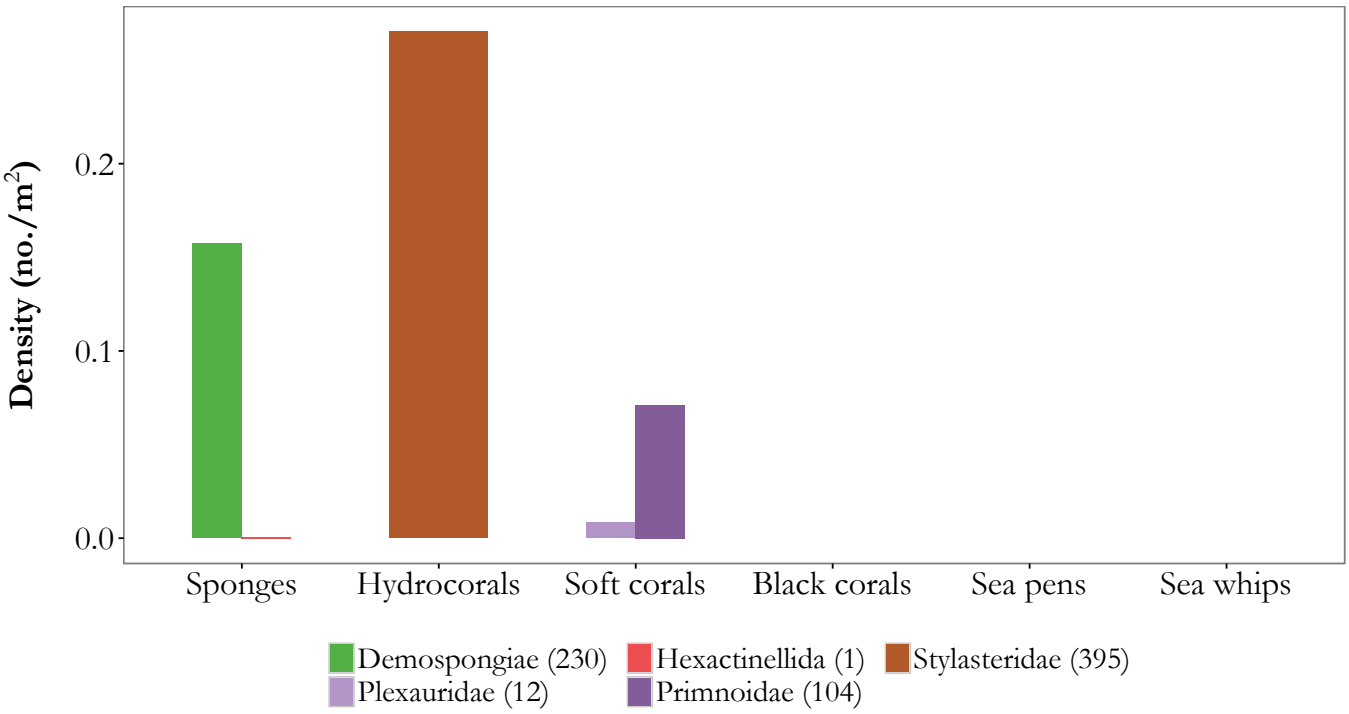


Vertical Habitat Summary





Summary - description of transect

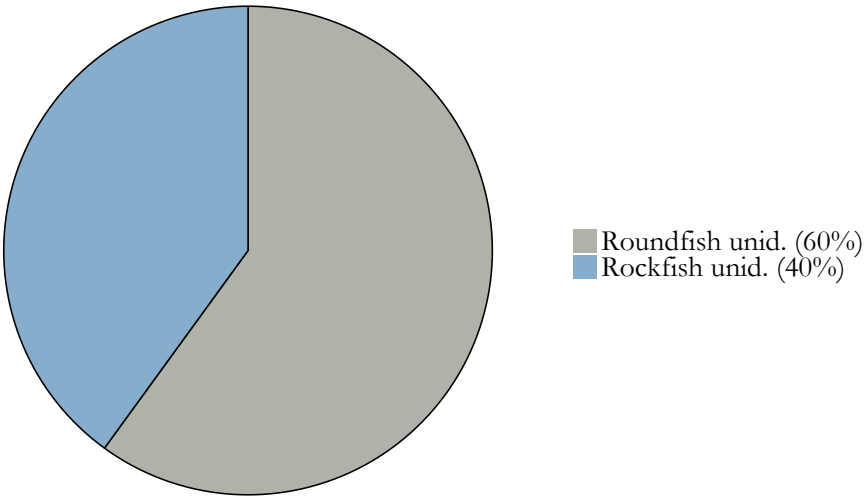
Transect 2014-55: Substrate composition for this haul was very diverse. Primary substrates varied between sand, pebble, bedrock, and boulder. Only eight fishes were identified in this transect, as a result, species density for this transect was very low (0.01 individuals/m^2). Structure-forming invertebrate density was 0.51 individuals/m^2. Stylasteridae (0.27 individuals/m^2) accounted for 53% of this density while Demospongiae (0.16 individuals/m^2) were approximately 31%. Mean heights were calculated for Demospongiae (34 cm), Stylasteridae (16 cm), Plexauridae (36 cm), and Primnoidae (57 cm).

AREA: Amchitka Pass To Buldir Pass — Transect *2014-56

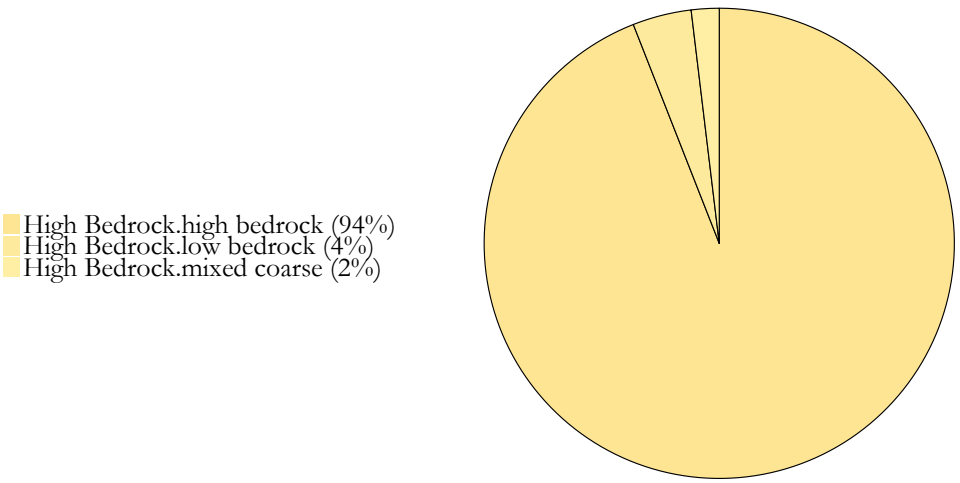
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/4/2014	51.81	175.63	315	106	3.9

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 5)



Substrate Composition



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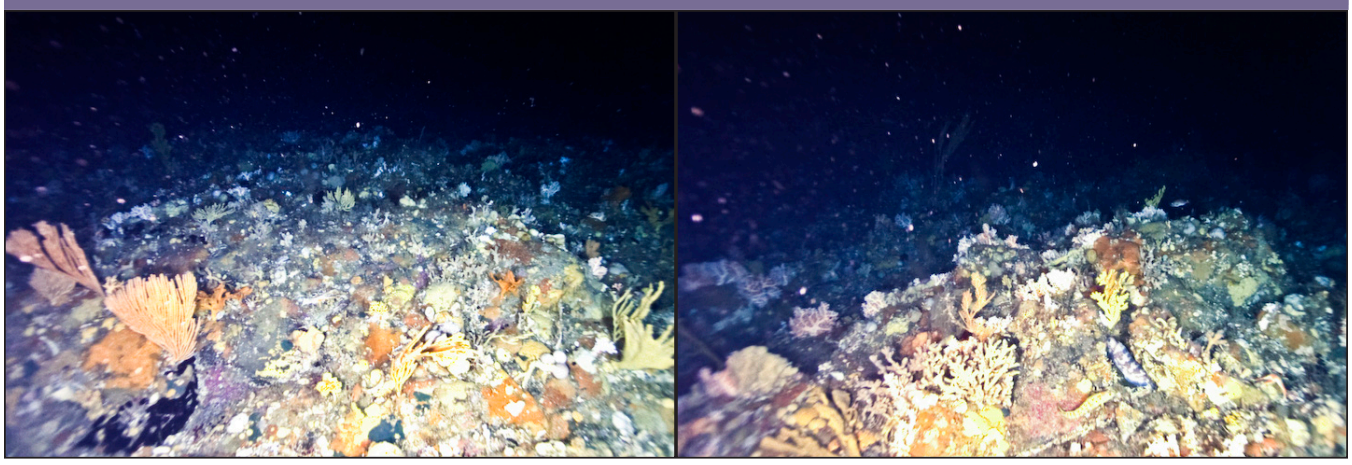
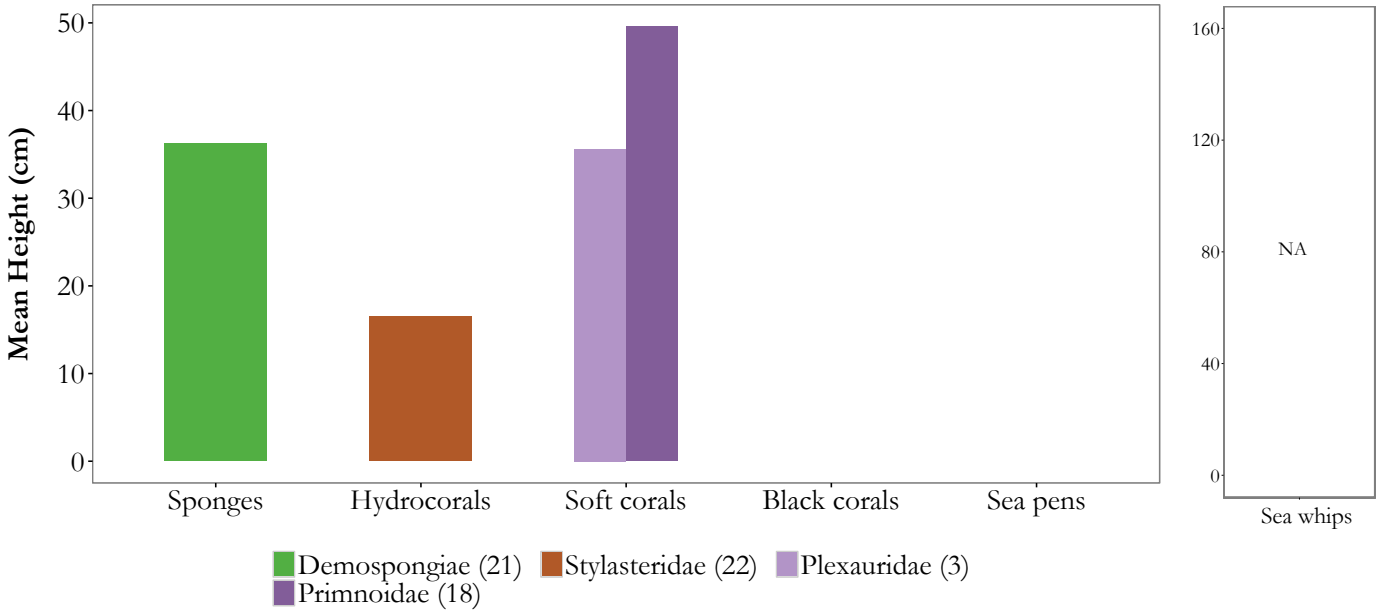
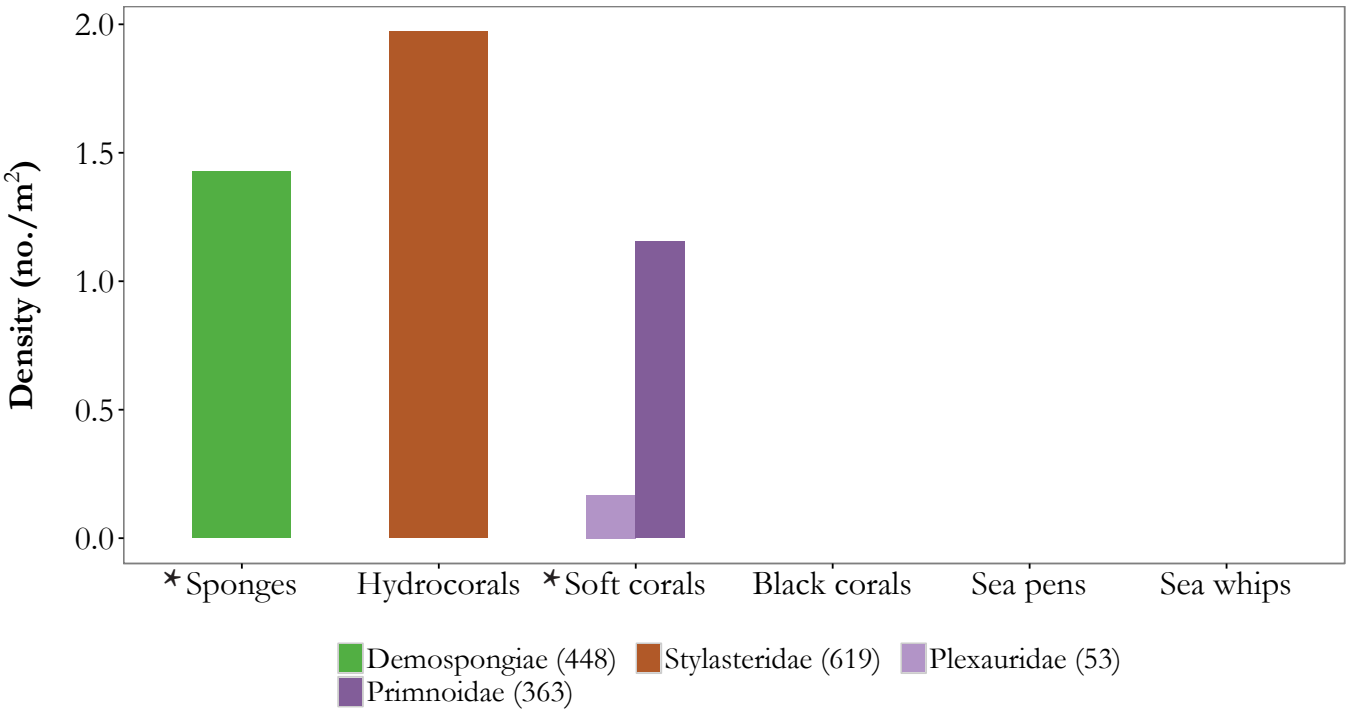


AREA: Amchitka Island To Buldir Island Transect *2014-56

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

Transect 2014-56: Primary and secondary substrates consisted largely of bedrock. Rockfishes and roundfishes (n = 5) accounted for 100% of the fishes observed. Species density was low overall (0.02 individuals/m^2). Structure-forming invertebrates consisted of Demospongiae (1.43 individuals/m^2), Plexauridae (0.17 individuals/m^2), Primnoidae (1.15 individuals/m^2), and Stylasteridae (1.97 individuals/m^2). Mean heights were calculated for Demospongiae (36 cm), Stylasteridae (17 cm), Plexauridae (36 cm), and Primnoidae (50 cm).

Buldir Pass to Near Pass

Forty-two transects were completed between Buldir Pass and Near Pass. Depths ranged from 57 m to 576 m. Sixteen taxa of fishes and crabs were identified (Table 25). Vertical habitat was dominated by Demospongiae (Table 26). Heights ranged from 20 cm to 143 cm (Table 27).

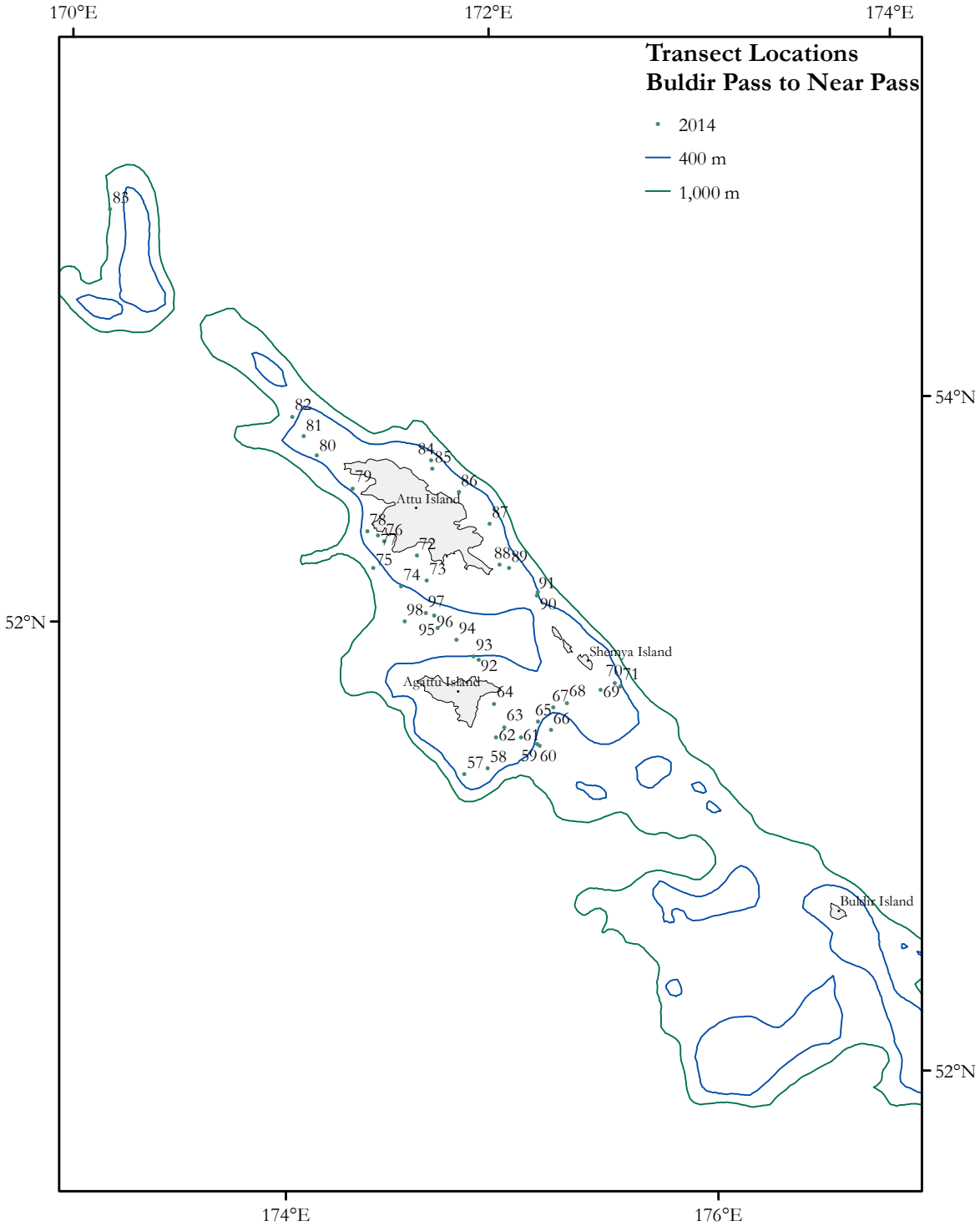


Figure 31. -- Survey transect locations, Buldir Pass to Near Pass.

SITE SUMMARY: Buldir Pass to Near Pass

In this report Near Strait is referred to as Near Pass. Buldir Pass to Near Pass was the most western region of the survey (Fig. 28). Waters flowing north through Near Pass combine with the westward flowing water of the Bering Slope Current to create the Kamchatka Current, one of three distinct current systems of the Aleutian Island (Stabeno et. al 1999). Near Pass is one of three passes (Amchitka Pass and Kamchatka Pass) which extends deeper than 700 m. The Near Islands, including Attu and Agattu islands, are the western most islands of the Aleutian archipelago. The Semichi Islands are a smaller subset of islands in the Near Island group.

Forty-two transects were completed in depths of 53 m to 579 m (Fig. 31). Sand was present as the primary substrate over 70% of the time (Table 24). High bedrock and boulder occurred as primary substrate for 10% of the observations.

Rockfishes outnumbered all other taxa of fishes and crabs (Table 25).

Demospongiae dominated the structure-forming invertebrate density (0.25 individuals/m^2). (Table 26). Stylasteridae were the second most abundant structure-forming invertebrates with a density of 0.13 individuals/m^2.

Structure-forming invertebrate mean heights ranged from 13 to 110 cm with Halipteridae being the tallest (Table 27).

Sponges were present at 40 transects (Fig. 32). Calcarea was only identified at one transect south of Attu. Hexactinellida occurred at more transects to the north. Hexactinellida occurred more frequently at the northwest transects with the exception of one transect south of Agattu Island. Demospongiae occurred throughout the region. Sea pens and sea whips co-occurred at one transect south of Shemya Island (Fig. 33). Sea whips were present at 6 transects while sea pens were present at 10 transects, and they co-occurred at one. Coral distribution was patchy (Figs. 34-35). No Isididae or Antipathidae were identified. Plexauridae and Primnoidae were distributed around Attu Island and south of Agattu Island. Six transects in the pass between Agattu and Attu Island had no coral or Stylasteridae identified (Figs. 31-33). Stylasteridae were observed west of Attu Island and south of Agattu Island but not in the pass between the islands (Fig. 36).

Four high density sponge stations (2014- 58, 73, 77, 88) occurred in the region between Buldir Pass and Near Pass. No high density coral transects.

SITE SUMMARY: Buldir Pass to Near Pass

Table 24. -- Summary of top 95% of primary and secondary substrates identified at 42 transects between Buldir Pass and Near Pass.

Substrate	Minimum depth (m)	Maximum depth (m)	Number of hauls	Number of occurrences	Percent of occurrences
Sand.sand	71	579	29	14,342	39%
Sand.gravel	53	573	15	4,608	13%
Sand.mixed coarse	55	218	15	3,009	8%
Sand.mud	117	506	4	2,634	7%
Sand.boulder	72	484	17	2,310	6%
High Bedrock.high bedrock	64	129	8	1,389	4%
Sand.pebble	78	581	5	1,330	4%
Mixed Coarse.sand	82	97	5	1,019	3%
Mixed Coarse.boulder	60	101	6	819	2%
High Bedrock.boulder	61	129	5	707	2%
Boulder.sand	66	104	4	481	1%
Low Bedrock.low bedrock	55	128	4	448	1%
Low Bedrock.mixed coarse	64	127	6	422	1%
High Bedrock.mixed coarse	64	128	6	378	1%
Cobble.sand	67	90	2	375	1%
Mixed Coarse.high bedrock	64	129	6	375	1%
Sand.low bedrock	91	135	7	262	< 1%

SITE SUMMARY: Buldir Pass to Near Pass

Table 25. -- Summary of fishes and crabs identified at 42 transects between Buldir Pass and Near Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Fishes				
Rockfish unid.	1,041	15	65-216	0.02
Atka mackerel	137	6	56-126	< 0.01
Searcher/ronquil unid.	115	16	71-134	< 0.01
Roundfish unid.	89	28	71-576	< 0.01
Flatfish unid.	83	17	56-134	< 0.01
Thornyhead unid.	61	3	216-485	< 0.01
Grenadier unid.	29	2	485-576	< 0.01
Pacific cod	26	11	80-134	< 0.01
Sculpin unid.	25	11	78-134	< 0.01
Skate unid.	7	5	56-129	< 0.01
Eelpout unid.	5	2	124-140	< 0.01
Snailfish unid.	4	1	576-576	< 0.01
Irish lord unid.	2	1	56-56	< 0.01
Crabs				
Snow crab unid.	**12**	**7**	**71-128**	**< 0.01**
Crab unid.	**8**	**5**	**71-134**	**< 0.01**
King crab unid.	3	2	216-485	< 0.01

SITE SUMMARY: Buldir Pass to Near Pass

Table 26. -- Summary of sponges, corals, Pennatulaceans, and hydrocorals identified at 42 transects between Buldir Pass and Near Pass.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Sponges				
Demospongiae	17,810	31	56-576	0.25
Hexactinellida	53	8	94-576	< 0.01
Calcarea	3	1	106-106	< 0.01
Soft corals				
Plexauridae	542	16	56-134	0.01
Primnoidae	478	11	65-576	0.01
Paragorgiidae	110	11	88-134	< 0.01
Acanthogorgiidae	74	2	65-97	< 0.01
Pennatulaceans				
Pennatulidae	240	10	80-119	0.01
Halipteridae	103	6	87-576	< 0.01
Hydrocorals				
Stylasteridae	7,836	10	65-576	0.13

Table 27. -- Summary of sponge, coral, Pennatulacean, and hydrocoral heights from 42 transects between Buldir Pass and Near Pass.

Species/Grouping	Number measured	Minimum height (cm)	Maximum height (cm)	Mean height (cm)
Sponges				
Demospongiae	413	20	143	30
Hexactinellida	15	21	43	28
Soft corals				
Plexauridae	72	10	88	29
Primnoidae	46	6	101	47
Paragorgiidae	15	22	116	66
Acanthogorgiidae	14	14	30	21
Pennatulaceans				
Pennatulidae	60	5	33	16
Halipteridae	28	23	209	110
Hydrocorals				
Stylasteridae	53	5	37	13

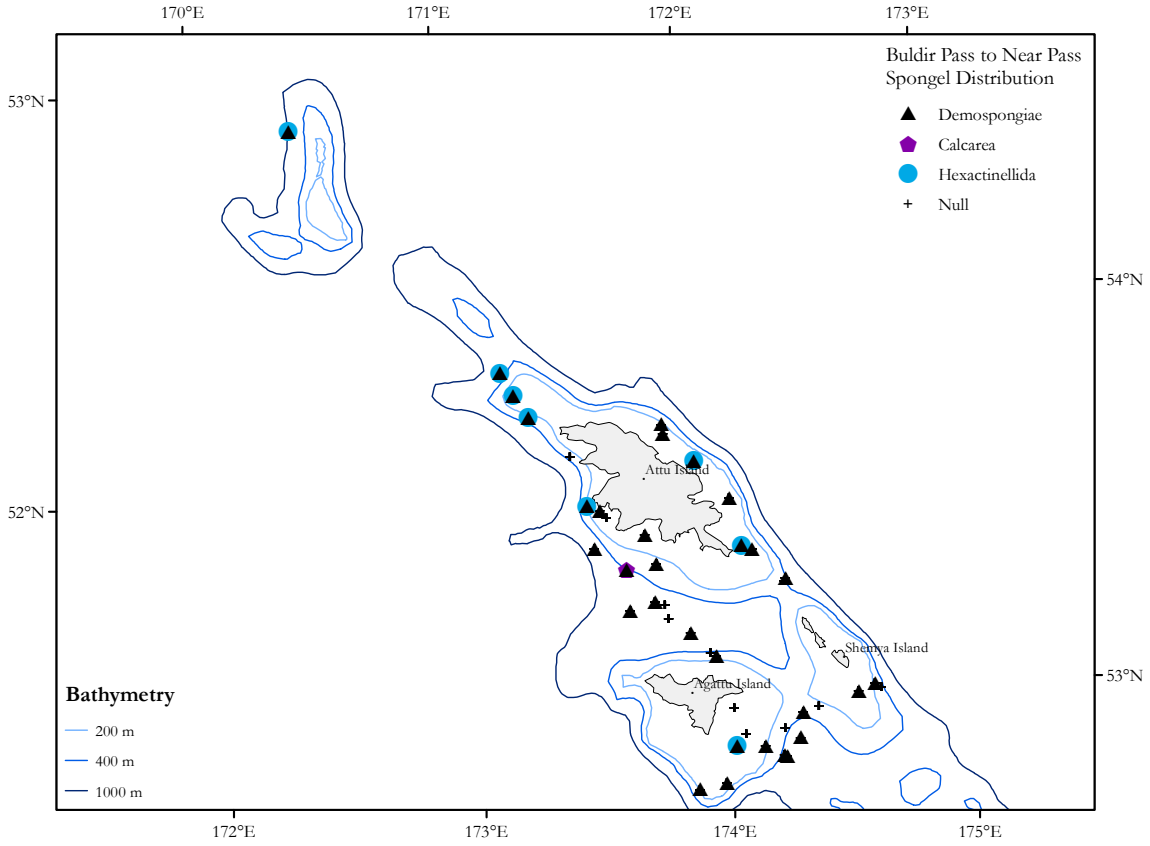


Figure 32. -- Sponge distribution, Buldir Pass to Near Pass.

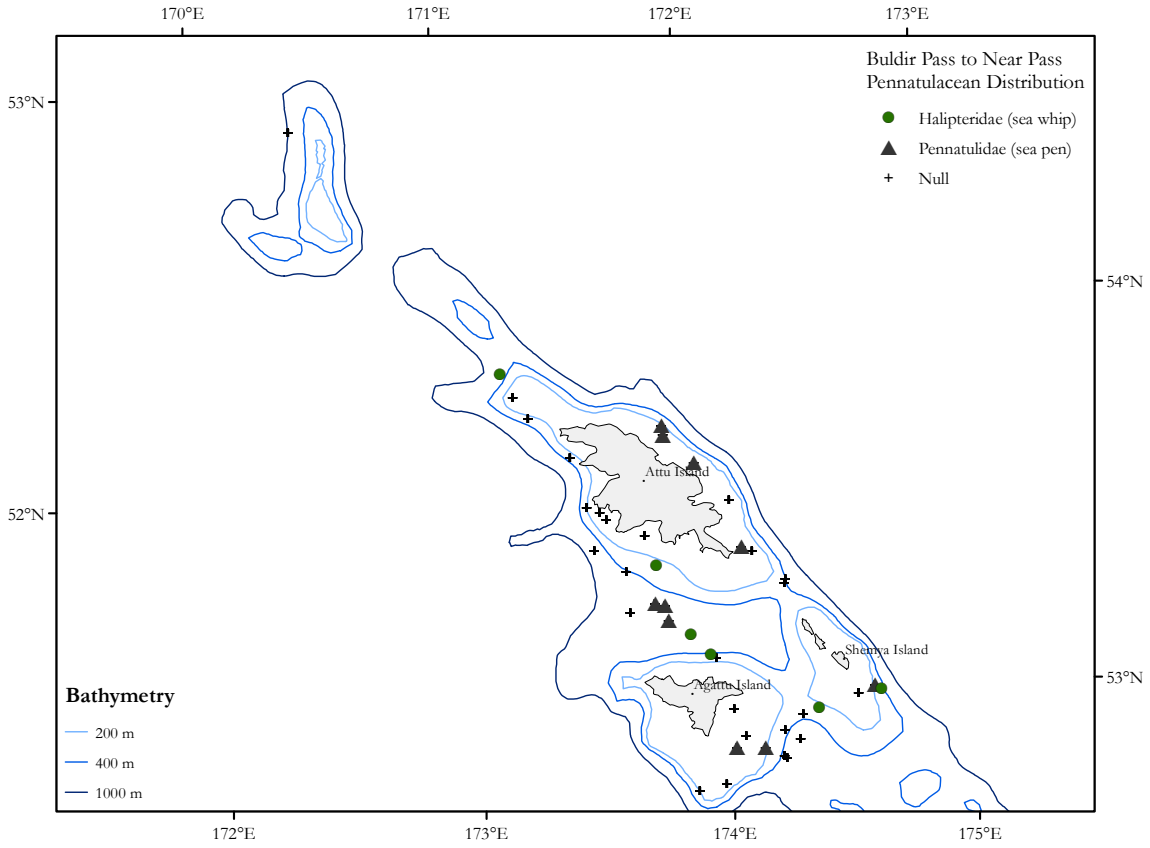


Figure 33. -- Pennatulacean distribution, Buldir Pass to Near Pass.

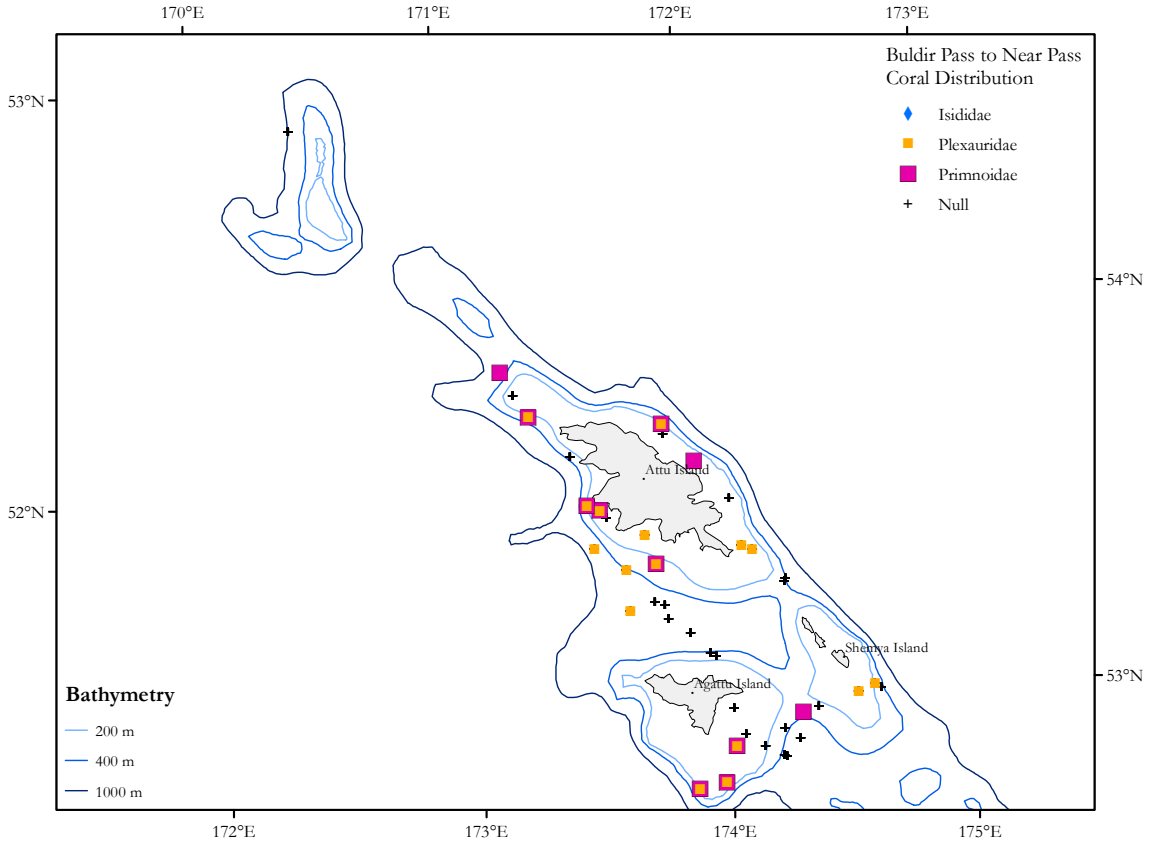


Figure 34. -- Isididae, Plexauridae, and Primnoidae distribution, Buldir Pass to Near Pass.

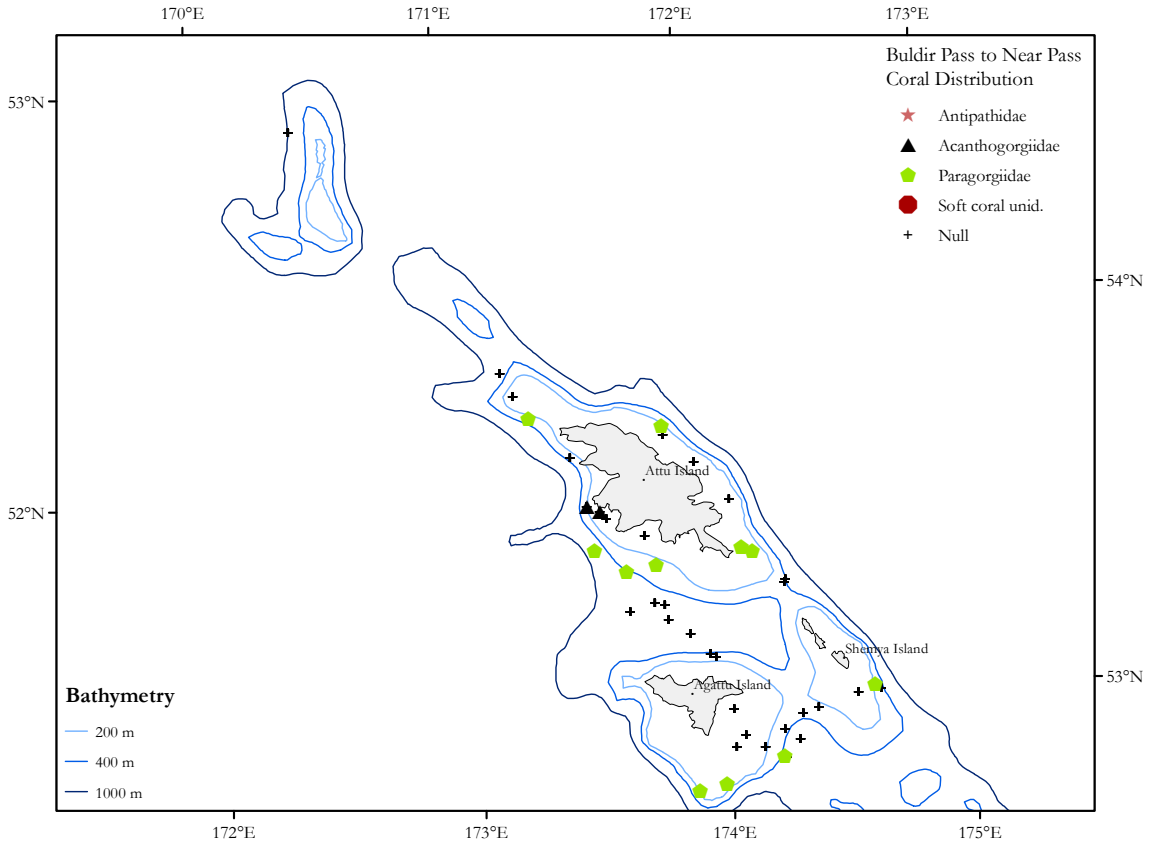


Figure 35. -- Antipathidae, Acanthogorgiidae, Paragorgiidae, and soft coral unidentified distribution, Buldir Pass to Near Pass.

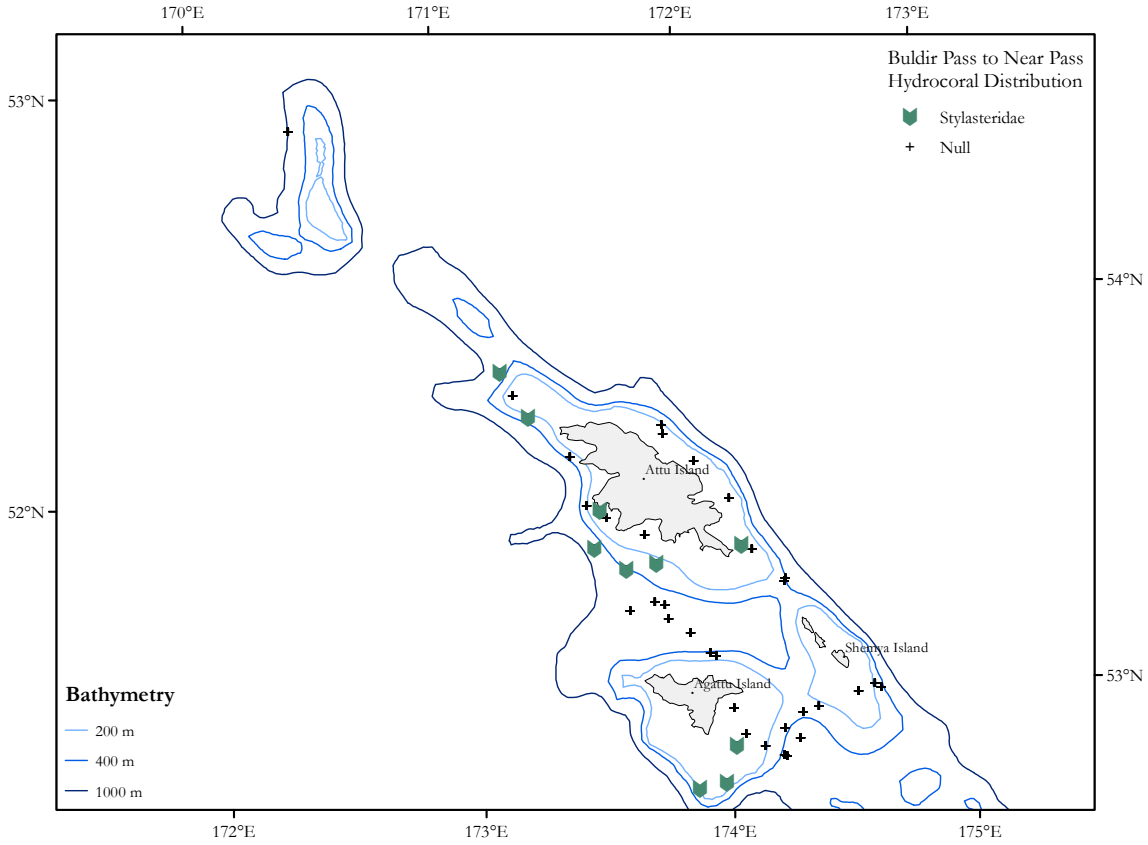
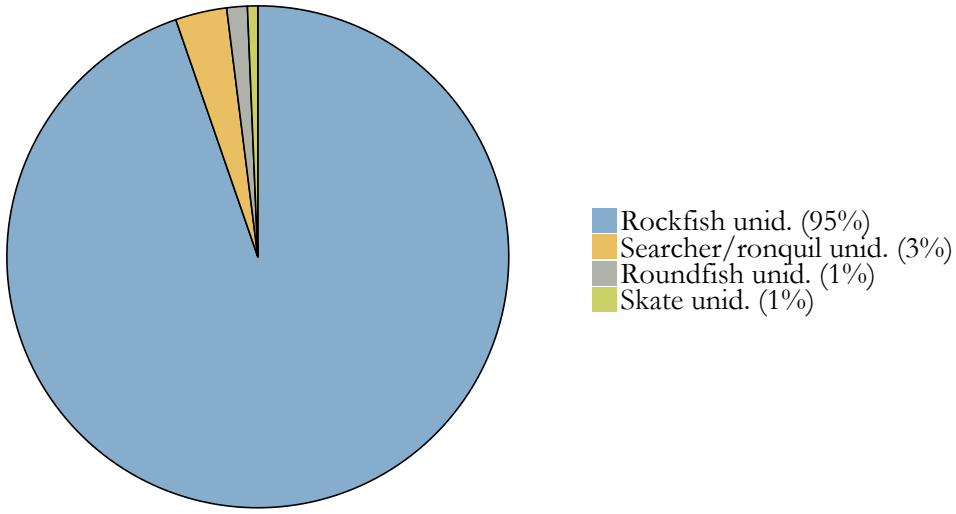


Figure 36. -- Hydrocoral distribution, Buldir Pass to Near Pass.

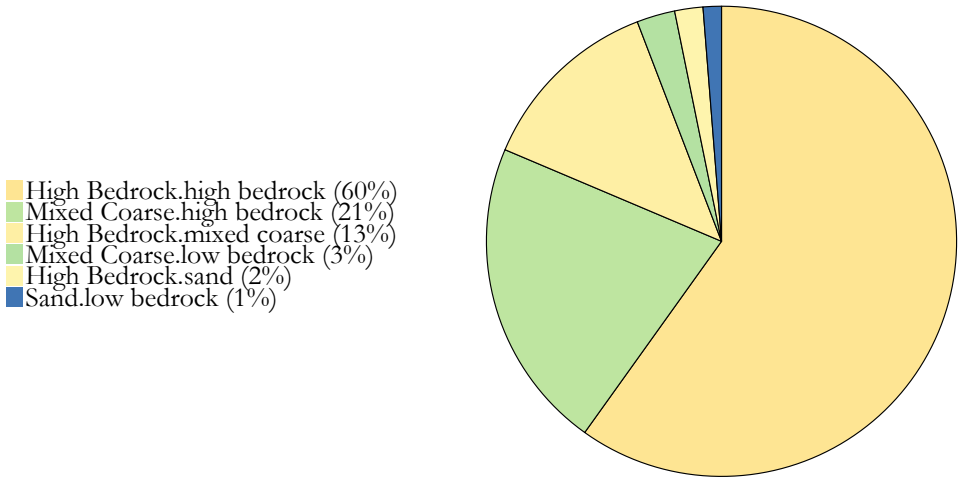
AREA: Buldir Pass To Near Pass — Transect 2014-57

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.20	173.81	940	96	3.3

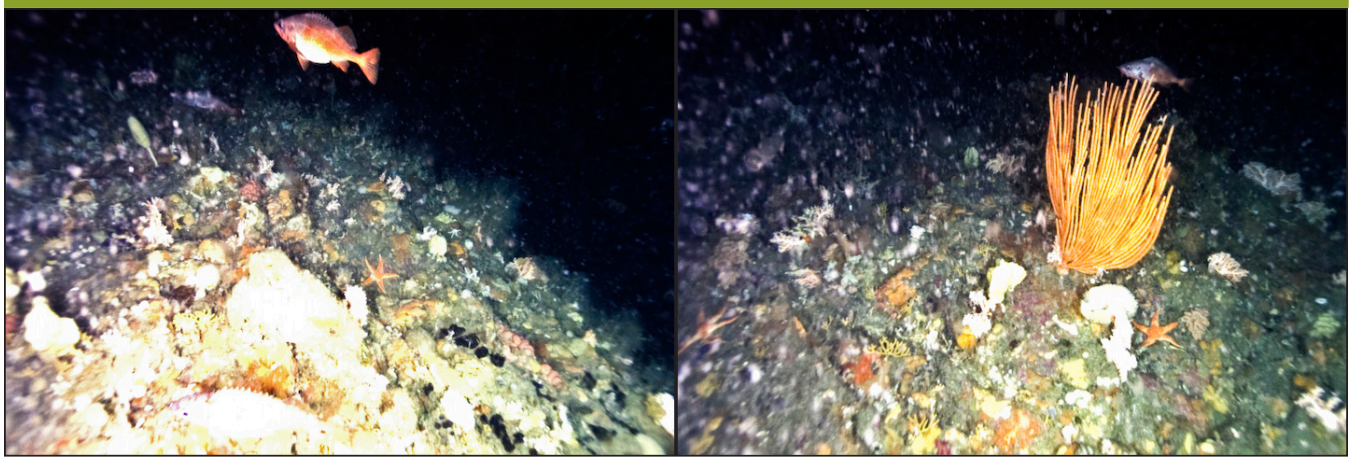
Fish and Crab Composition (n = 151)



Substrate Composition

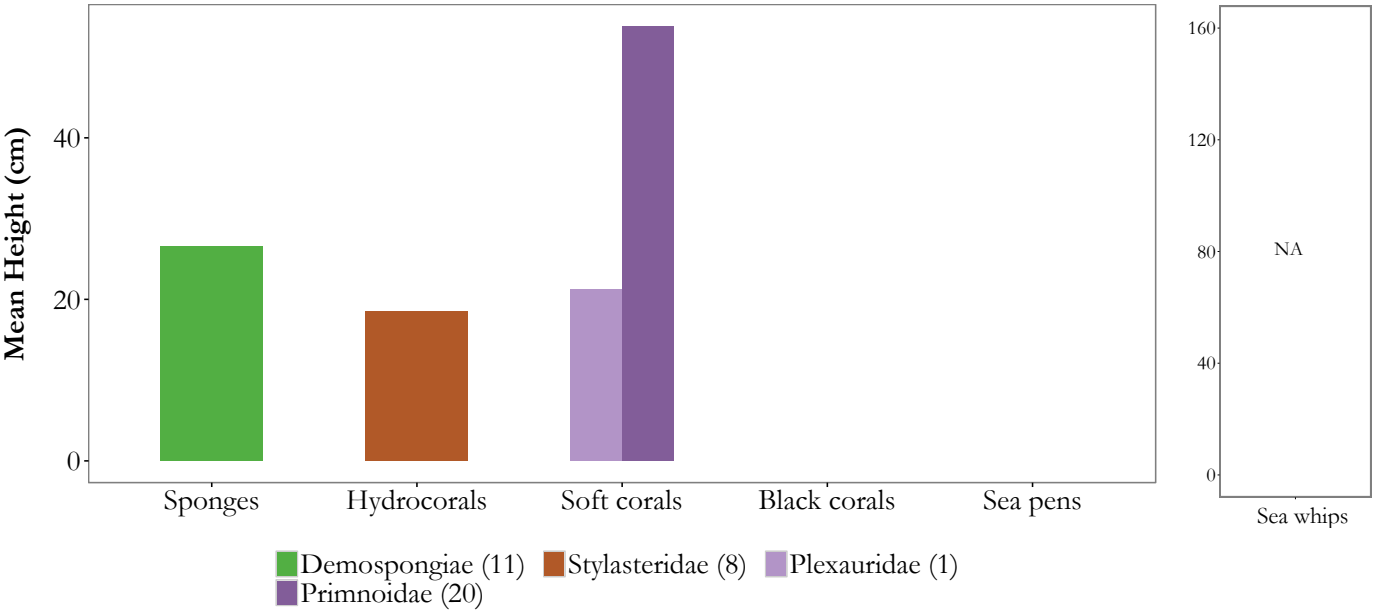


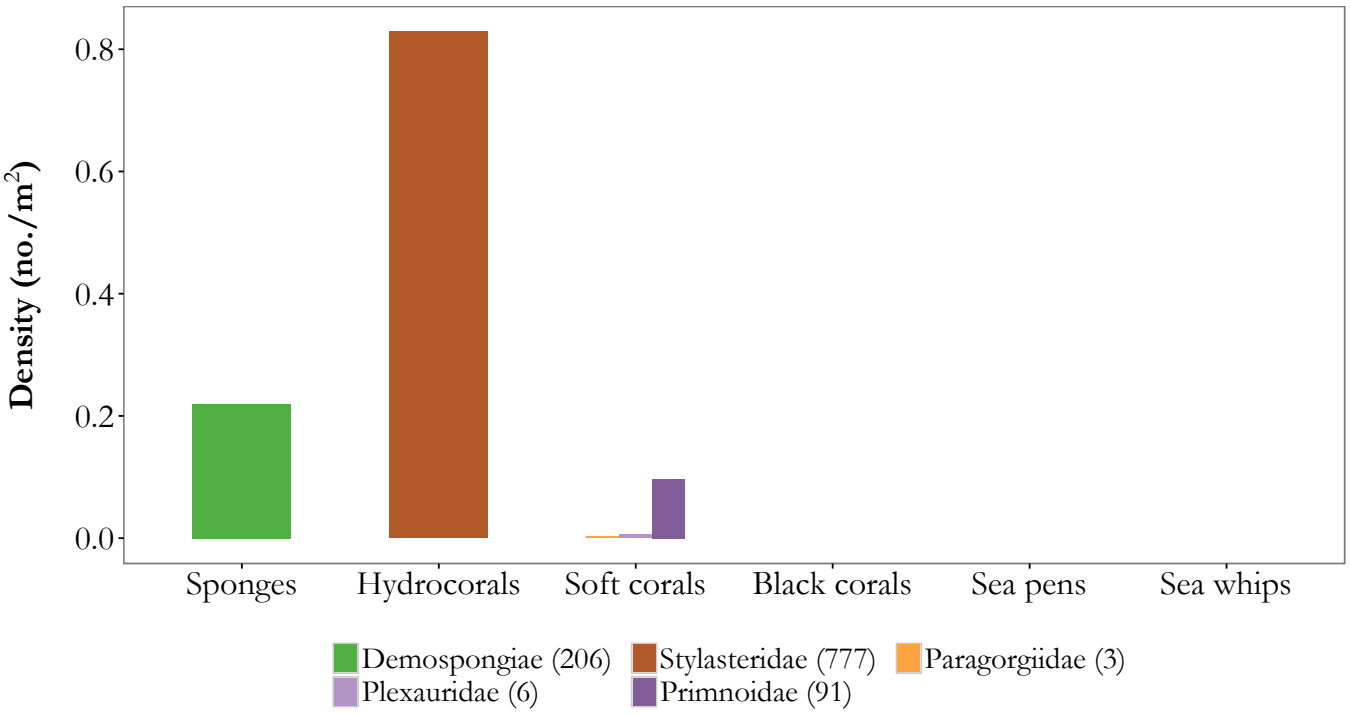
Images



AREA: Buldir Pass To Near Pass Transect 2014-57

Vertical Habitat Summary





Summary - description of transect

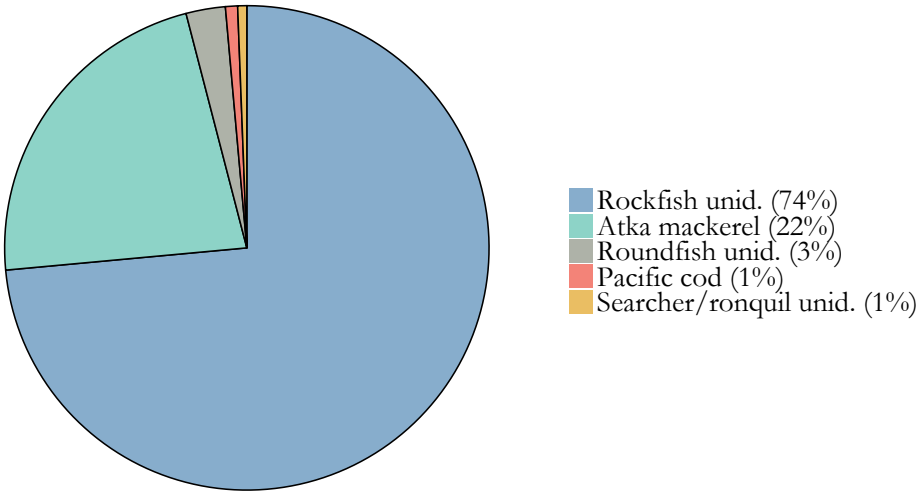
Transect 2014-57: Primary and secondary substrates consisted largely of bedrock and mixed coarse. Rockfishes (n = 143) were 95% of the fish density (0.16 individuals/m^2). Stylasteridae (0.83 individuals/m^2) accounted for 72% of the structure-forming invertebrates (1.15 individuals/m^2). Mean heights were calculated for Demospongiae (27 cm), Stylasteridae (19 cm), and Primnoidae (54 cm).

AREA: Buldir Pass To Near Pass — Transect *2014-58

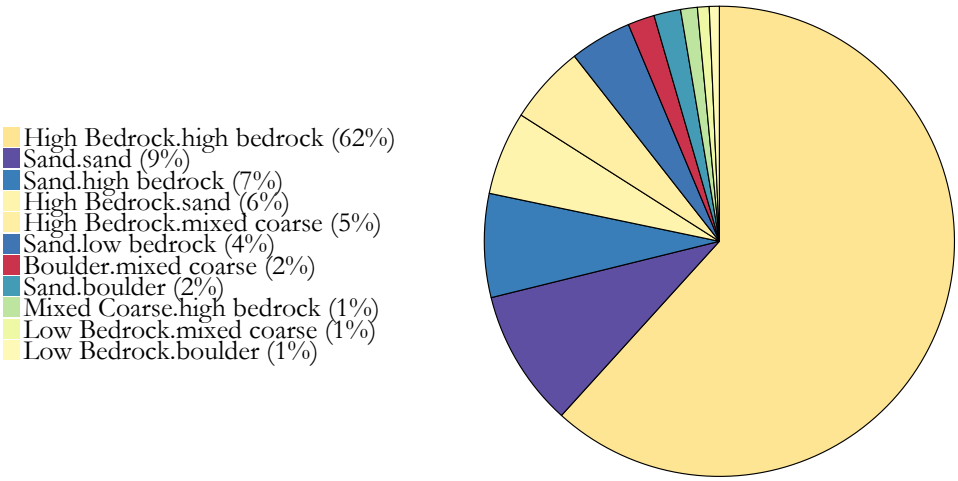
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.25	173.91	1,296	103	3.5

*Area of high coral or sponge density (> 1.0 individuals/m^2)

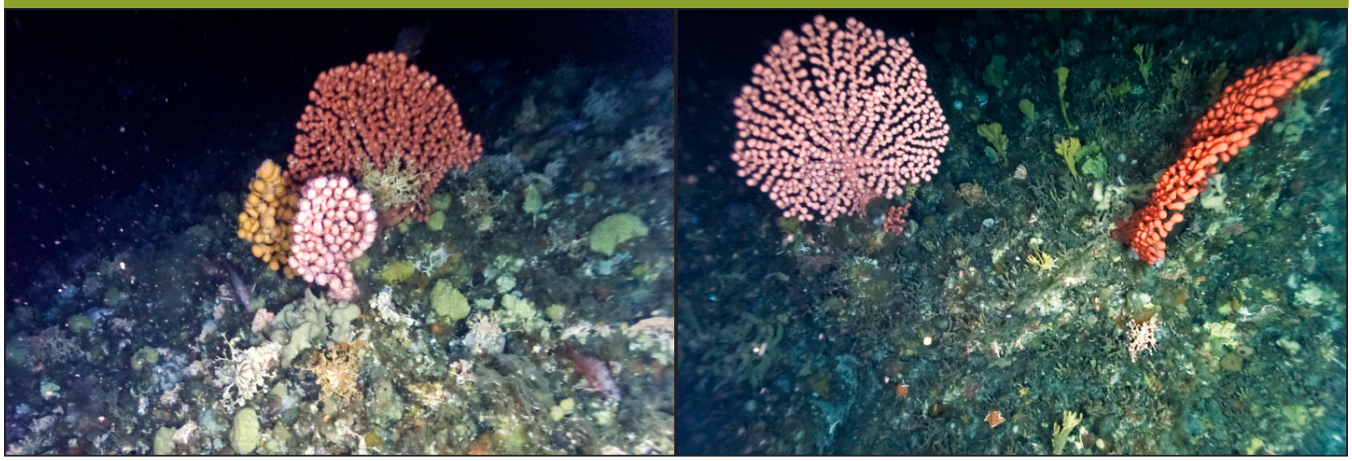
Fish and Crab Composition (n = 495)



Substrate Composition



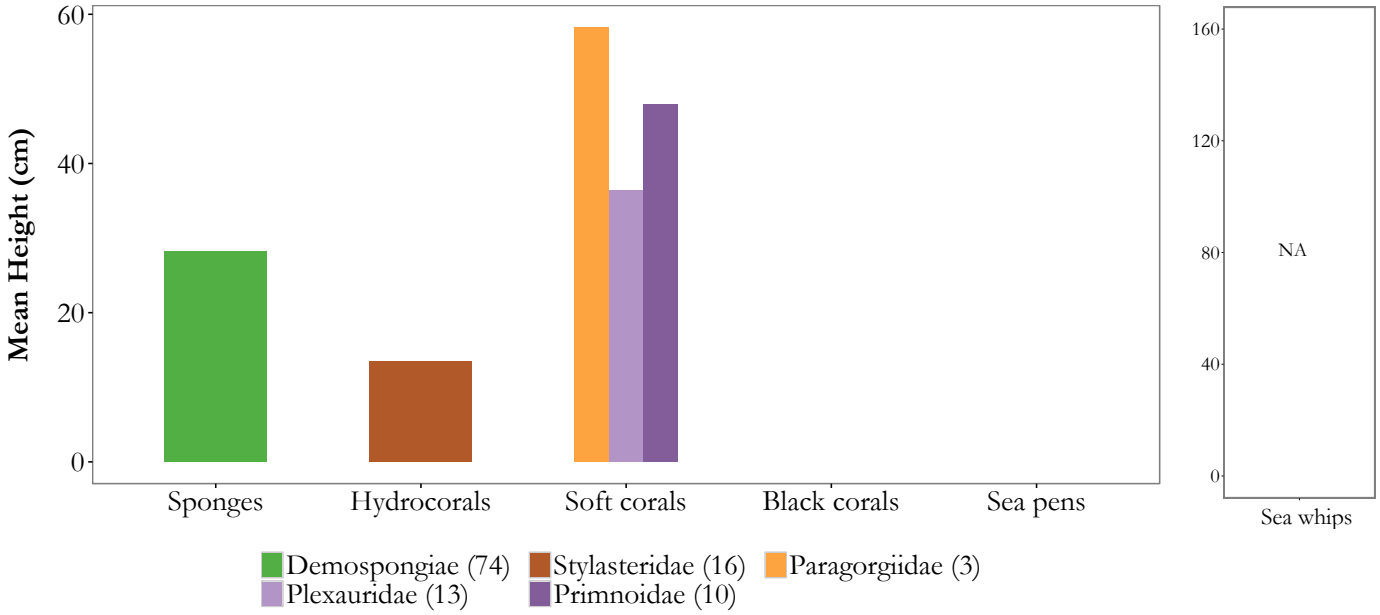
Images

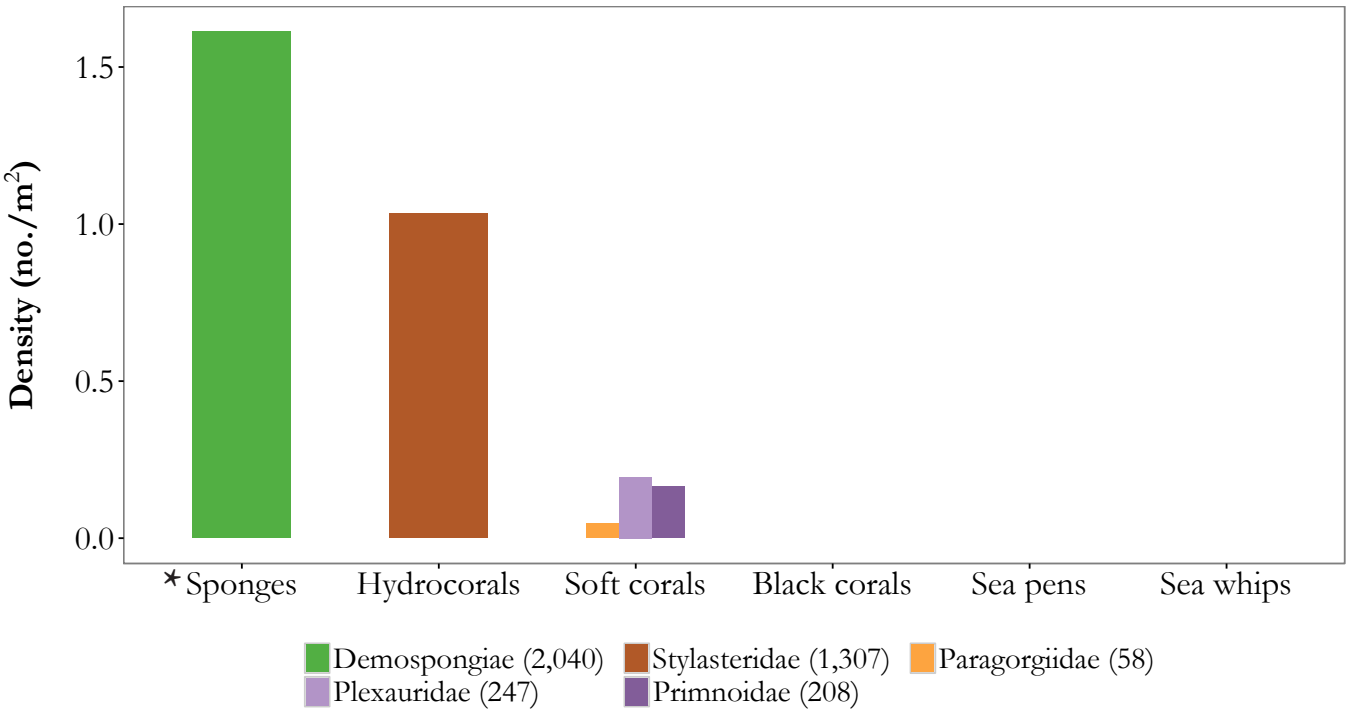


AREA: Buldir Pass To Near Pass Transect *2014-58

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





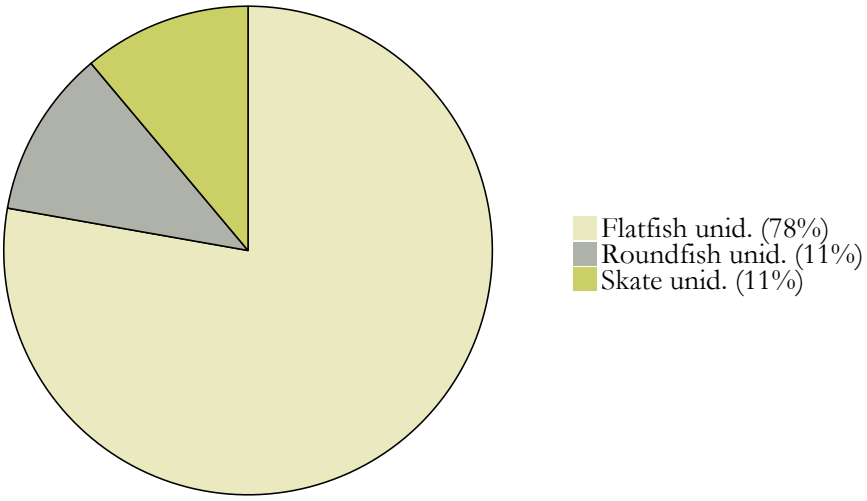
Summary - description of transect

Transect 2014-58: Primary and secondary substrates consisted largely of bedrock. Rockfishes (n = 364) and Atka mackerel (n = 111) were 96% of the fish density (0.39 individuals/m^2). Demospongiae (1.61 individuals/m^2) and Stylasteridae (1.03 individuals/m^2) comprised 87% of the structure-forming invertebrates. Mean heights were calculated for Demospongiae (28 cm), Stylasteridae (13 cm), Paragorgiidae (58), Plexauridae (36 cm), and Primnoidae (48 cm).

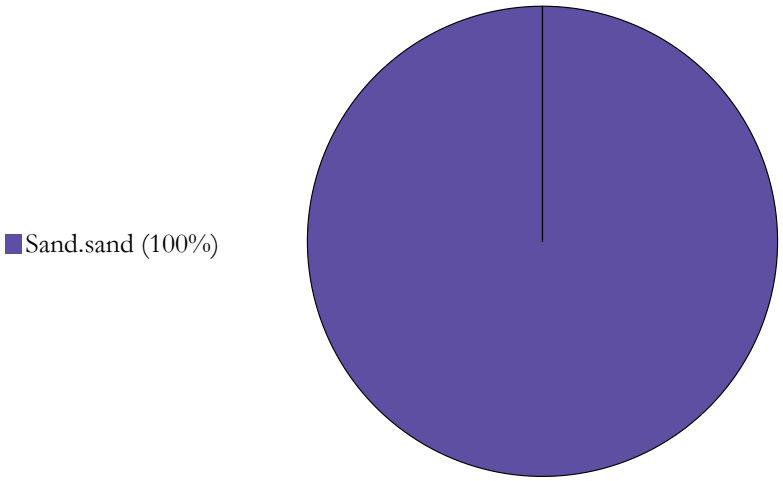
AREA: Buldir Pass To Near Pass — Transect 2014-59

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.40	174.10	734	129	3.5

Fish and Crab Composition (n = 9)



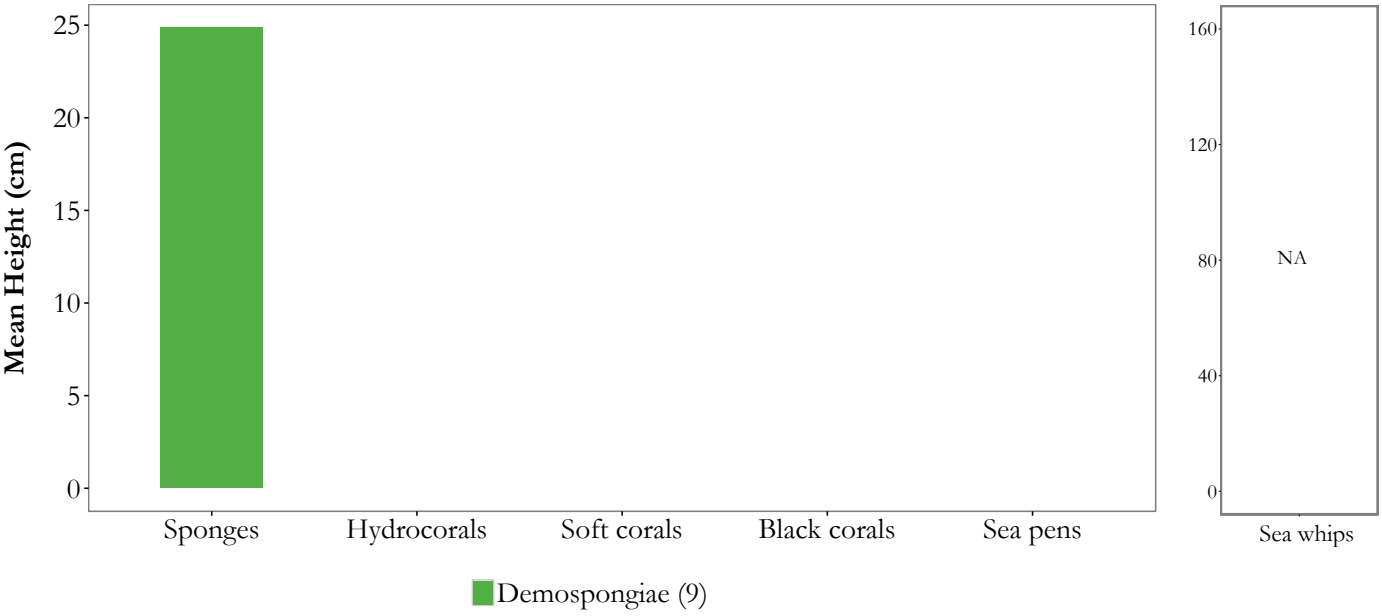
Substrate Composition

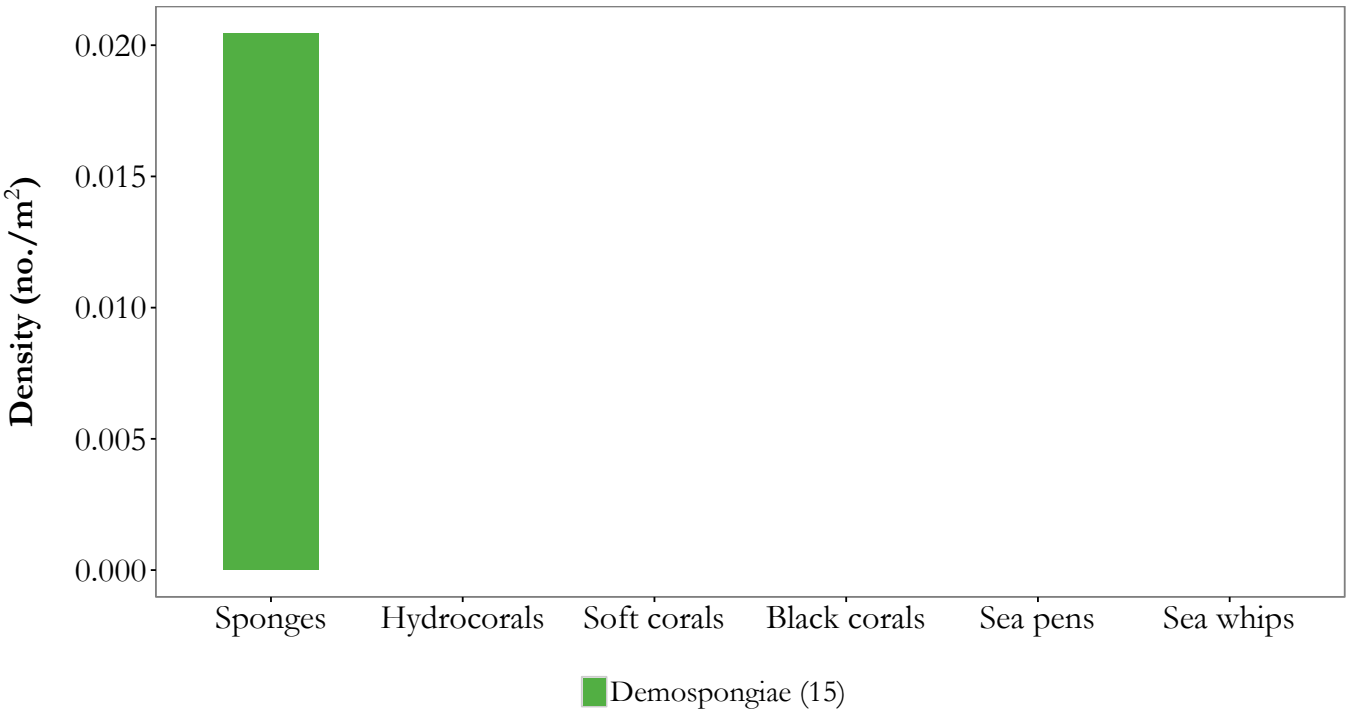


Images

AREA: Buldir Pass To Near Pass Transect 2014-59

Vertical Habitat Summary





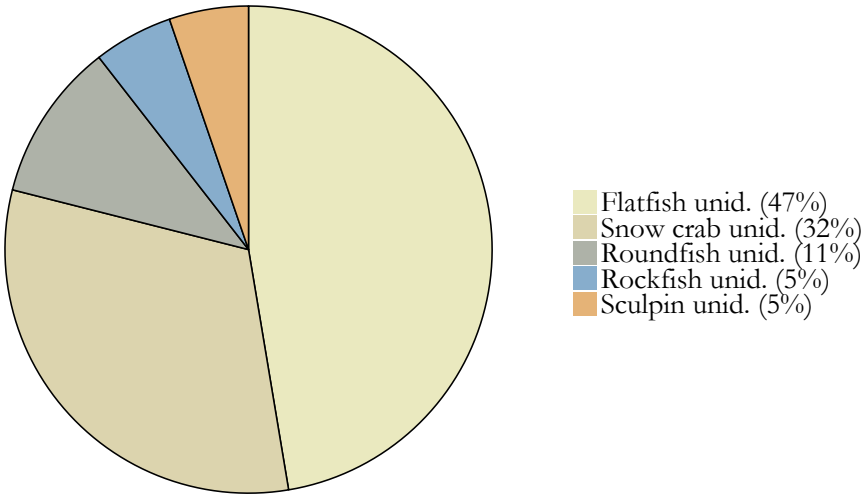
Summary - description of transect

Transect 2014-59: Primary and secondary substrates consisted entirely of sand. Fish density was low for this transect (0.01 individuals/m^2). Flatfishes were the most abundant, n = 7. Structure-forming invertebrate density was very low (0.02 individuals/m^2), only 15 Demospongiae were identified. A mean height of 25 cm was calculated for 15 individuals.

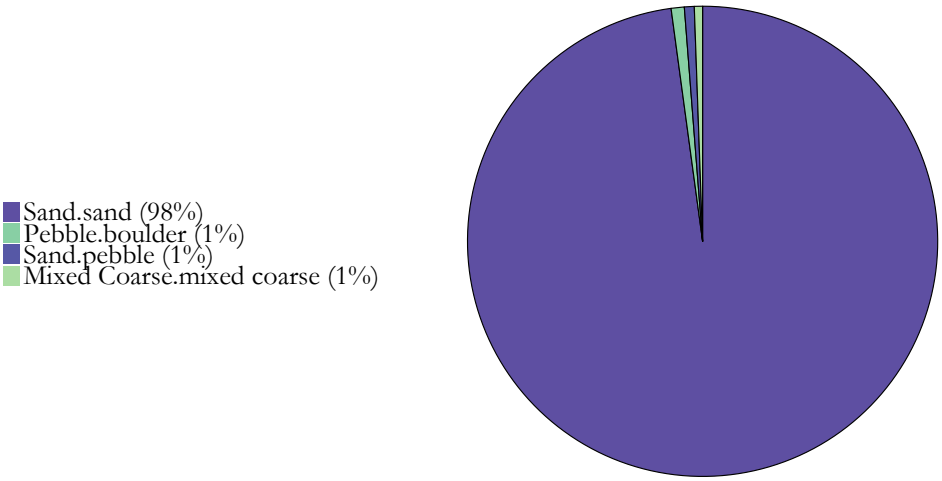
AREA: Buldir Pass To Near Pass — Transect 2014-60

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.40	174.08	1,165	128	3.5

Fish and Crab Composition (n = 19)



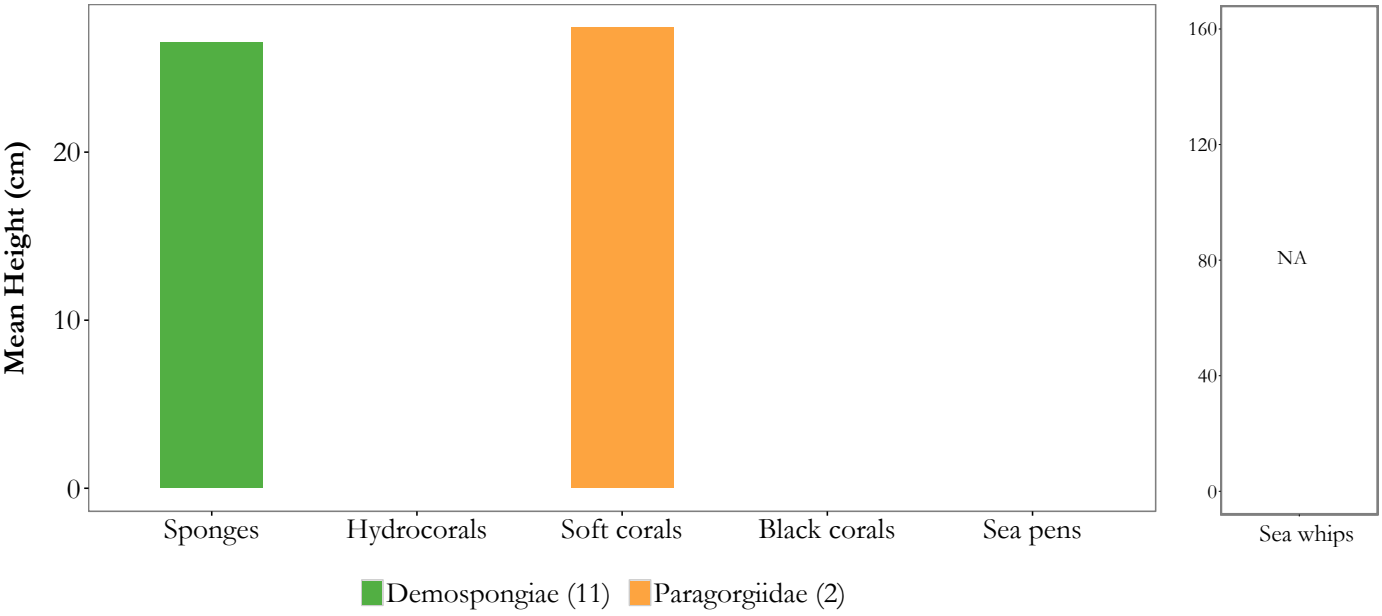
Substrate Composition

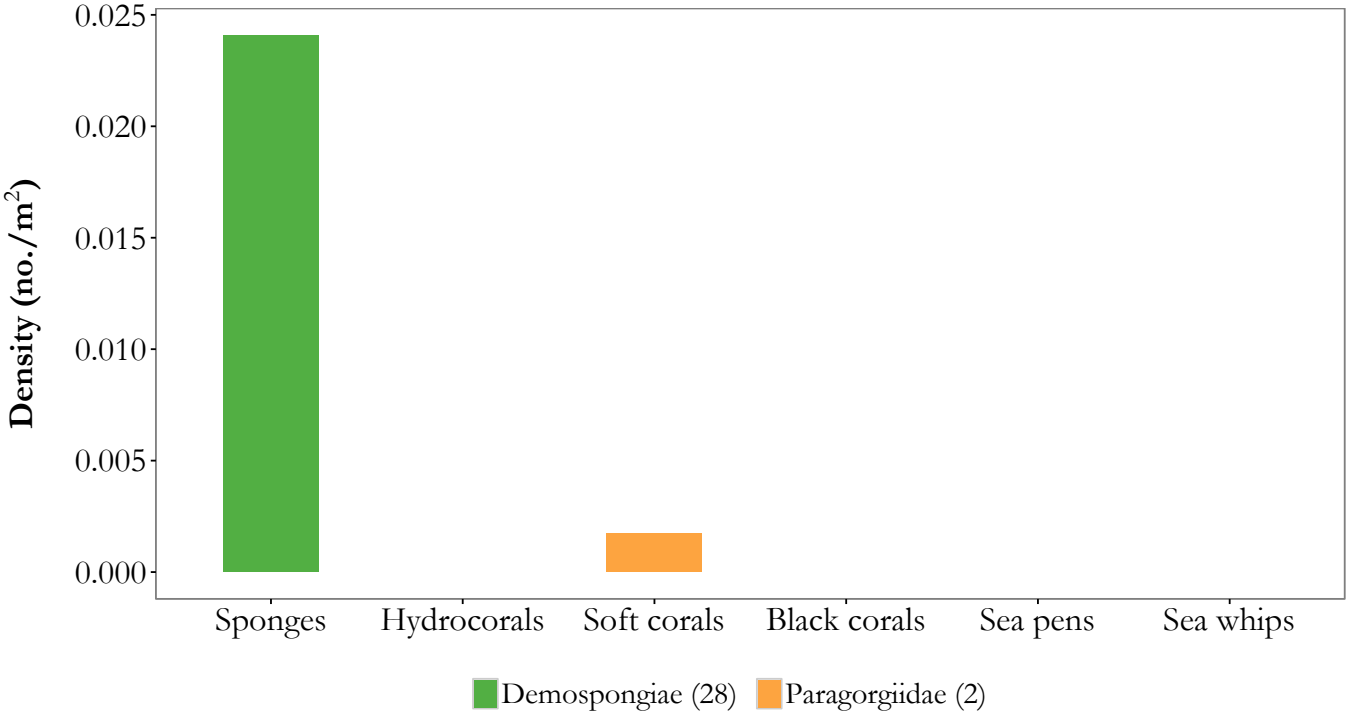


Images

AREA: Buldir Pass To Near Pass Transect 2014-60

Vertical Habitat Summary





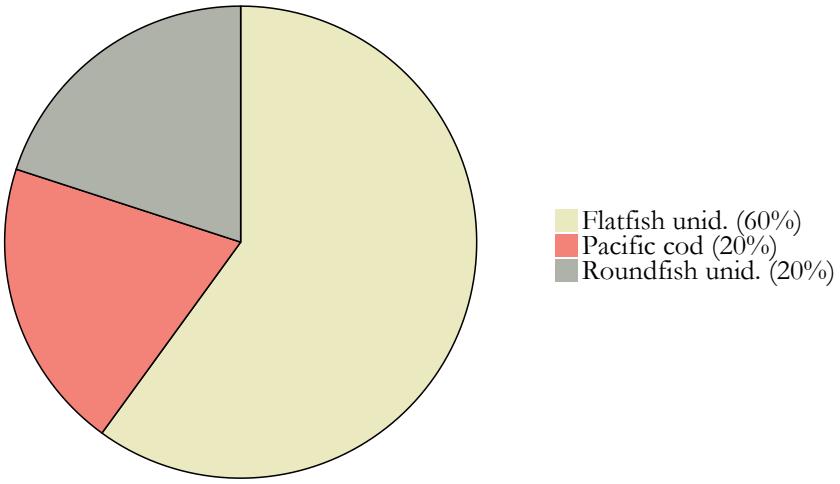
Summary - description of transect

Transect 2014-60: Primary and secondary substrates consisted largely of sand. Thirteen fishes and six crabs were identified resulting in a of density of 0.02 individuals/m^2. Demospongiae (0.02 individuals/m^2) and Paragorgiidae (< 0.01 individuals/m^2) were the only sponges or corals identified. Structure-forming invertebrate density was low (0.03 individuals/m^2). Mean height for 11 Demospongiae was 27 cm.

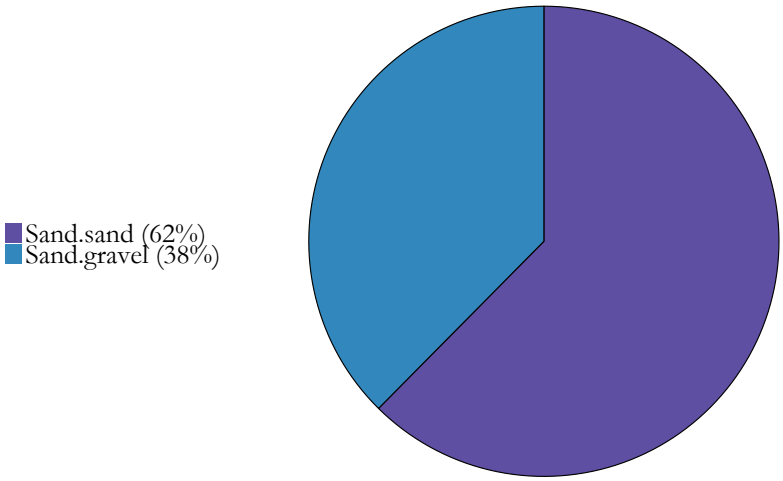
AREA: Buldir Pass To Near Pass — Transect 2014-61

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.40	173.99	700	119	3.2

Fish and Crab Composition (n = 5)



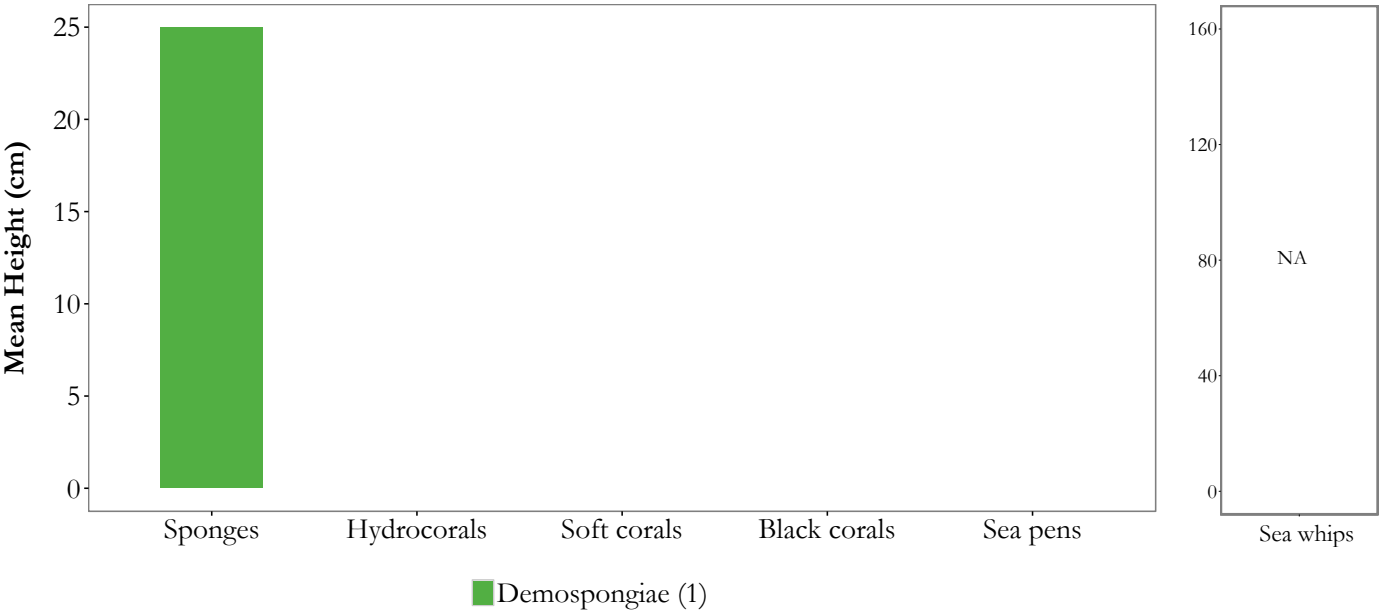
Substrate Composition

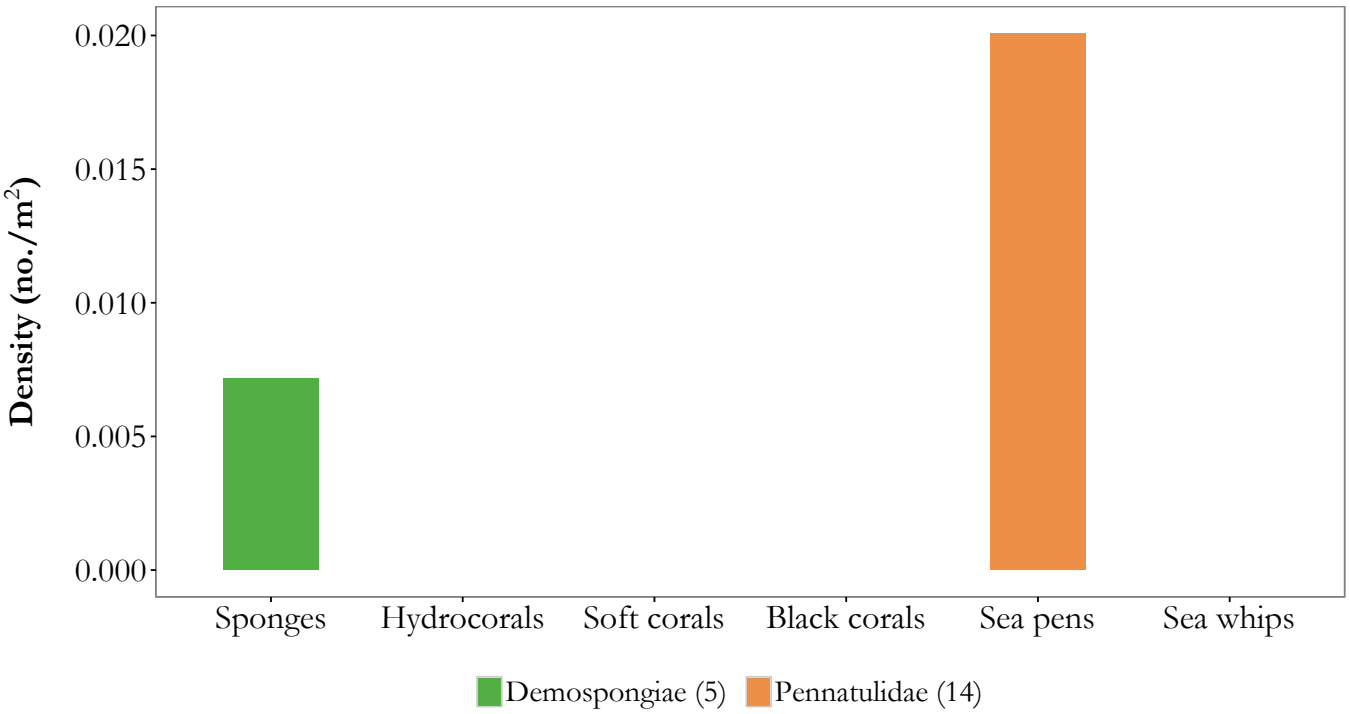


Images

AREA: Buldir Pass To Near Pass Transect 2014-61

Vertical Habitat Summary





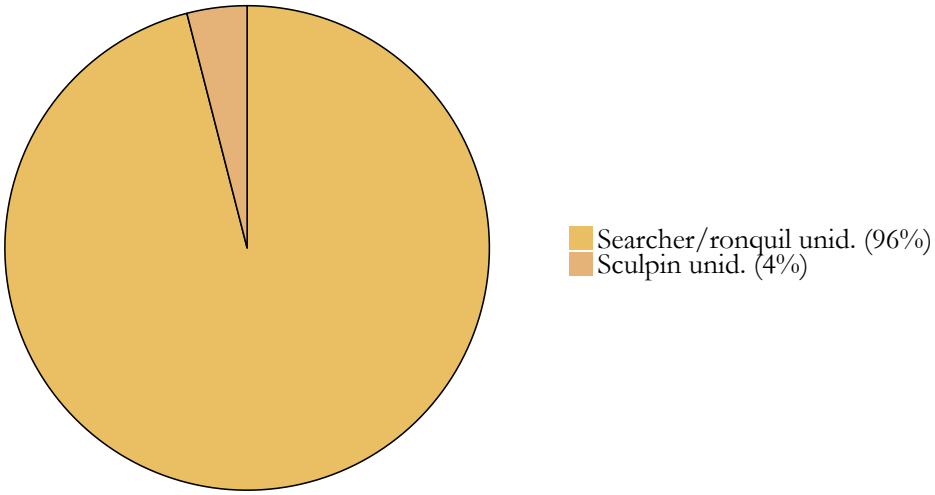
Summary - description of transect

Transect 2014-61: Primary and secondary substrates consisted of sand and gravel. Flatfishes, roundfishes, and Pacific cod accounted for 100% of the fishes identified. Species density was low overall (0.01 individuals/m^2). Structure-forming invertebrate density was very low, only 0.03 individuals/m^2. Fourteen Pennatulidae and 5 Demospongiae were identified.

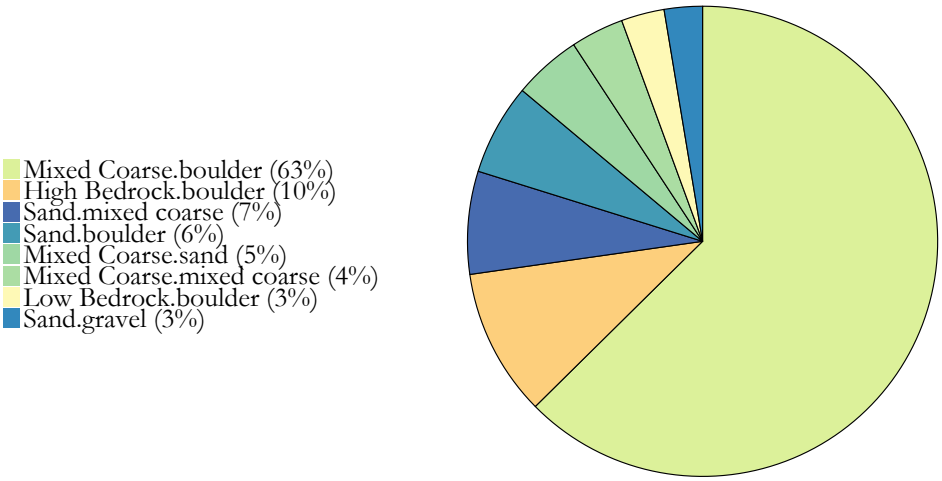
AREA: Buldir Pass To Near Pass — Transect 2014-62

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.36	173.87	1,688	96	3.1

Fish and Crab Composition (n = 25)



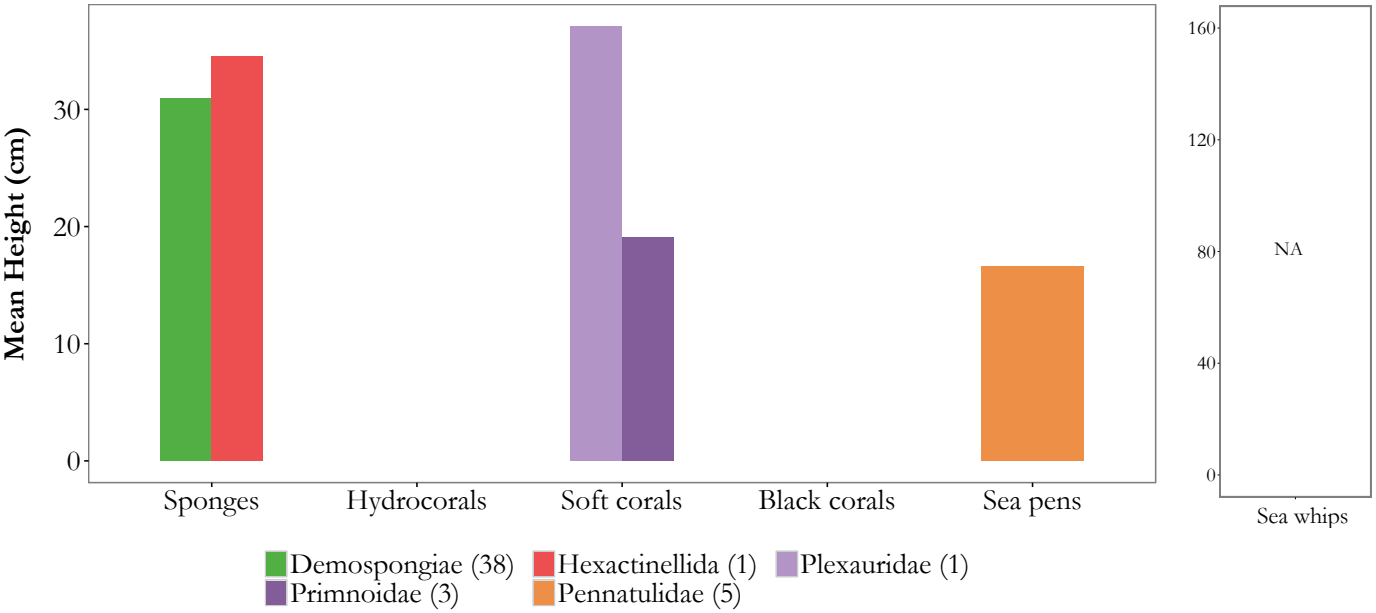
Substrate Composition

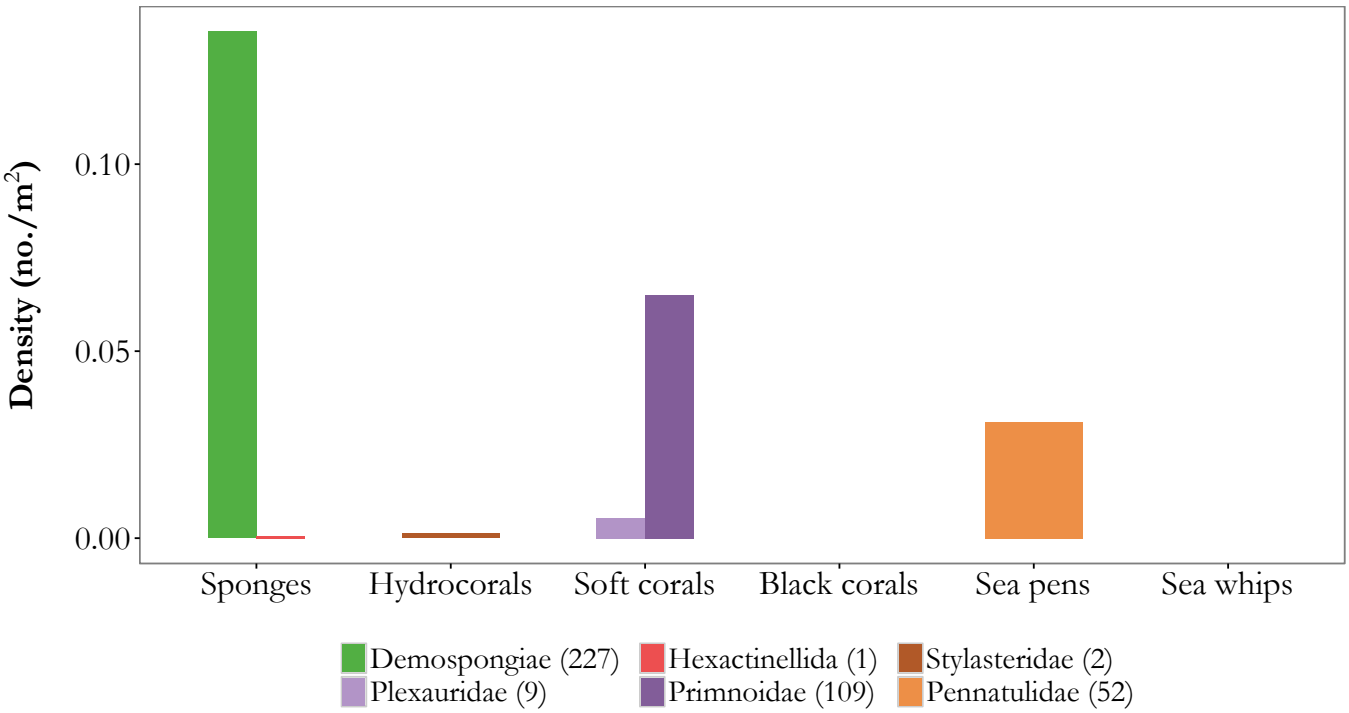


Images

AREA: Buldir Pass To Near Pass Transect 2014-62

Vertical Habitat Summary





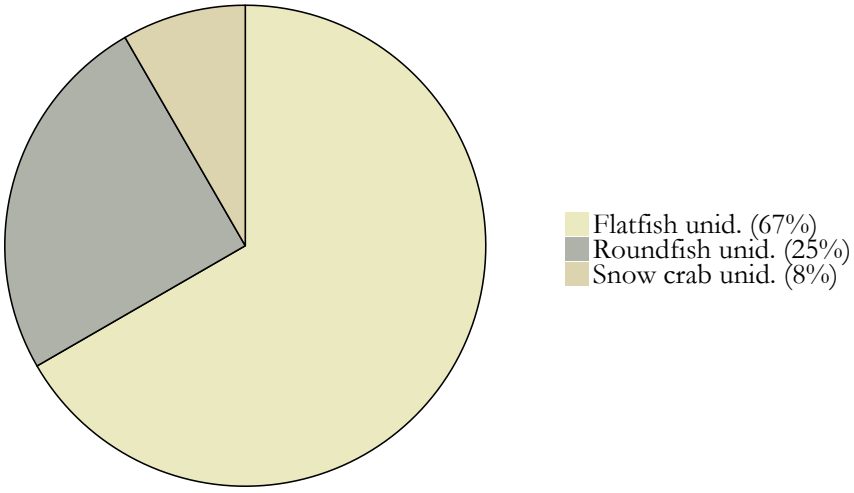
Summary - description of transect

Transect 2014-62: Primary and secondary substrates consisted largely of mixed coarse, boulder, and high bedrock. Fish and crab density was low overall (0.01 individuals/m^2). Searchers/ronquils and sculpins accounted for 100% of the species seen. Demospongiae (0.14 individuals/m^2) and Primnoidae (0.07 individuals/m^2) comprised 84% of the structure-forming invertebrates. Mean heights were calculated for Demospongiae (31 cm), Primnoidae (19 cm), and Pennatulidae (17 cm).

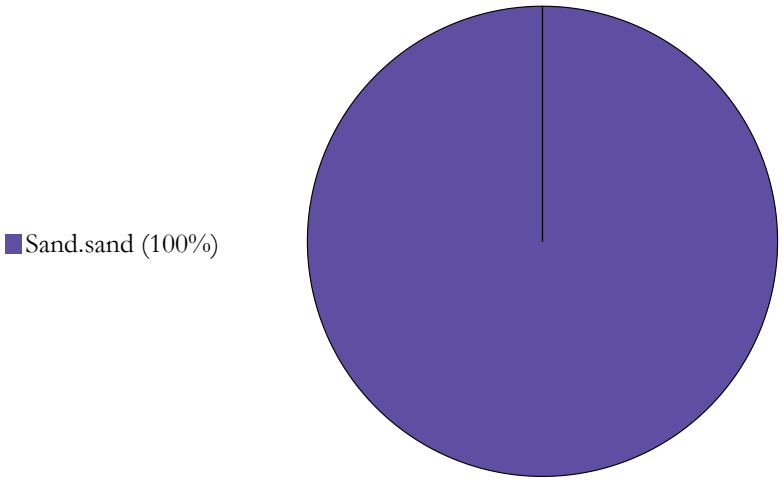
AREA: Buldir Pass To Near Pass — Transect 2014-63

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.40	173.88	946	113	3.2

Fish and Crab Composition (n = 12)



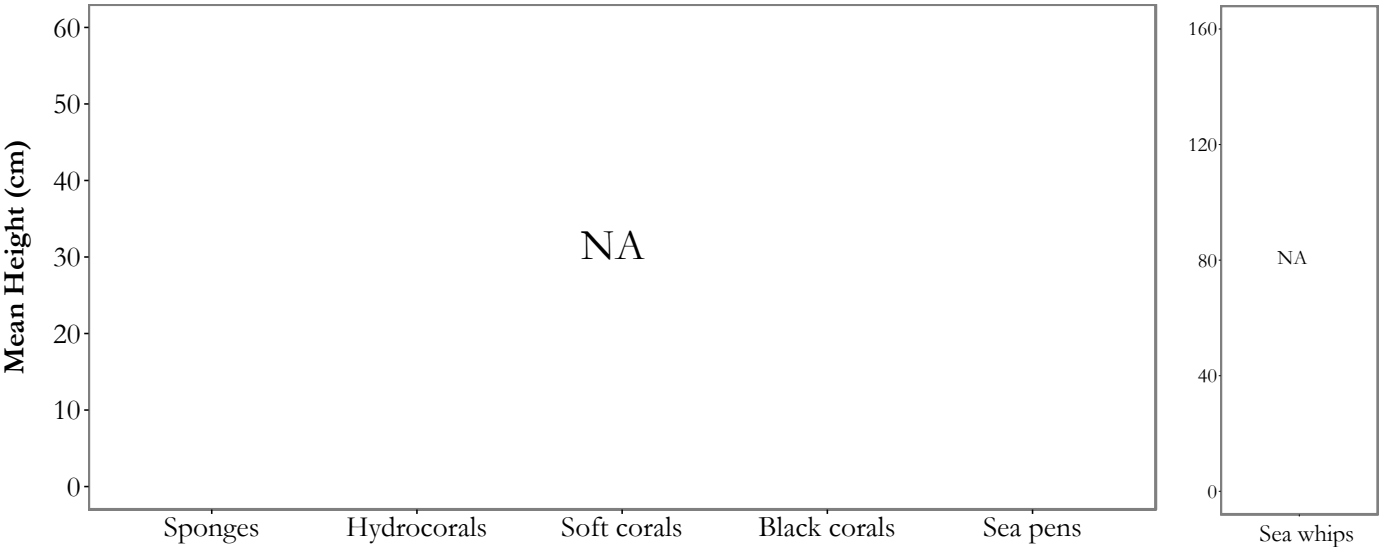
Substrate Composition

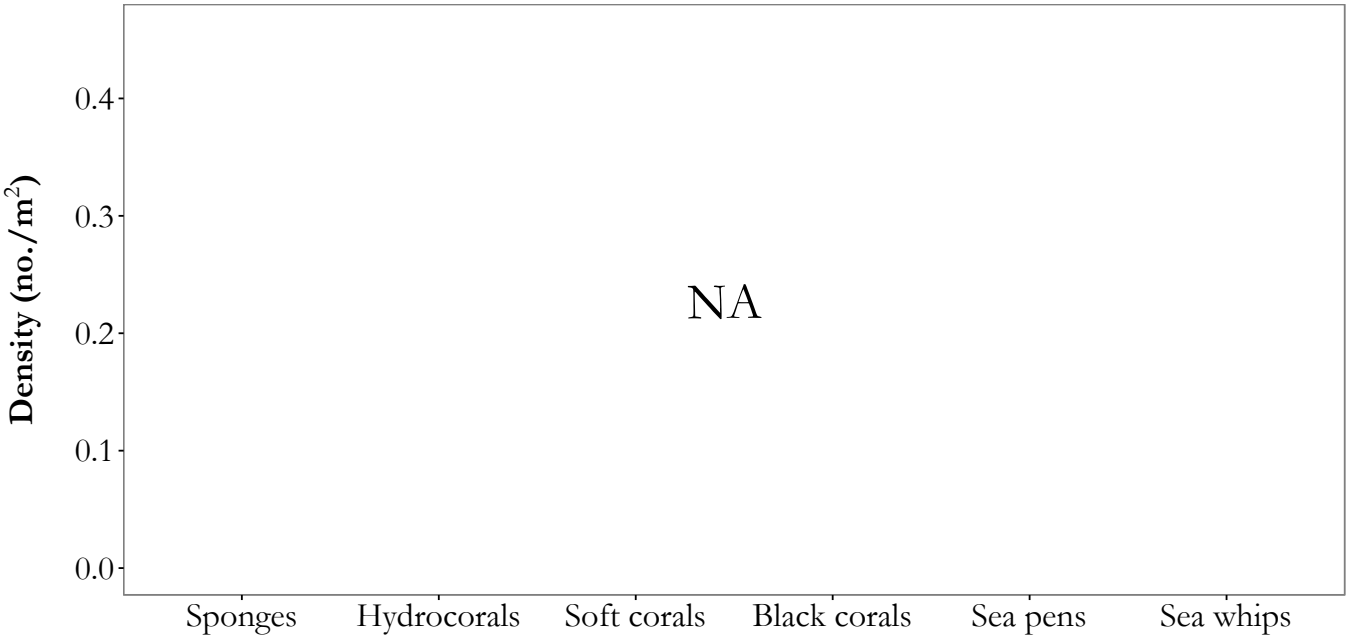


Images

AREA: Buldir Pass To Near Pass Transect 2014-63

Vertical Habitat Summary





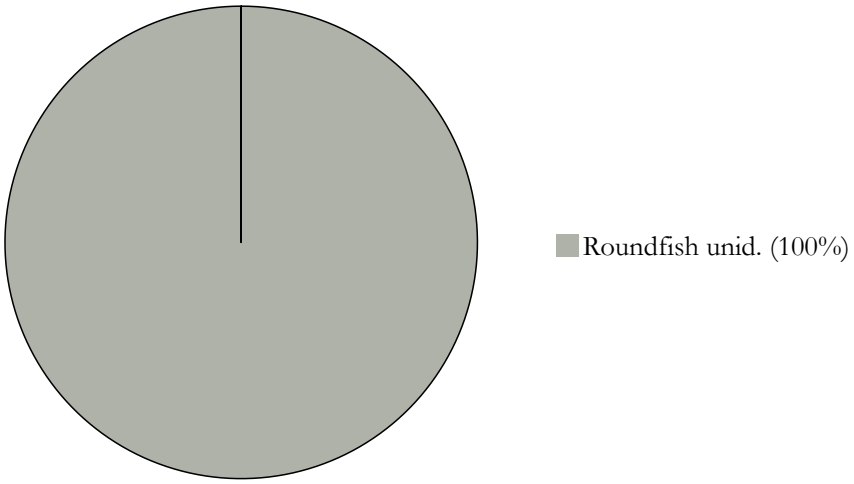
Summary - description of transect

Transect 2014-63: Primary and secondary substrates consisted entirely of sand. Only 12 fishes and crabs were identified in this transect; unidentified flatfishes, roundfishes, and snow crabs accounted for 100% of the species seen. Overall fish and crab density for this transect was low (0.01 individuals/m^2). No corals, sponges, sea whips, sea pens, or hydrocorals were observed.

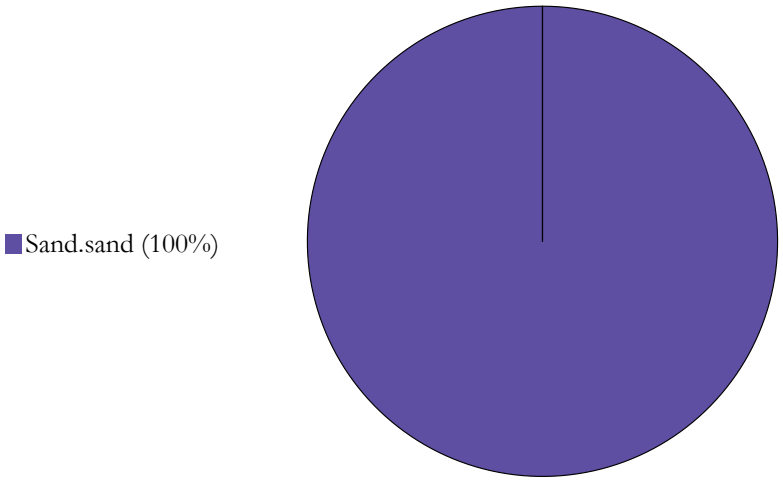
AREA: Buldir Pass To Near Pass — Transect 2014-64

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.45	173.78	259	75	3.4

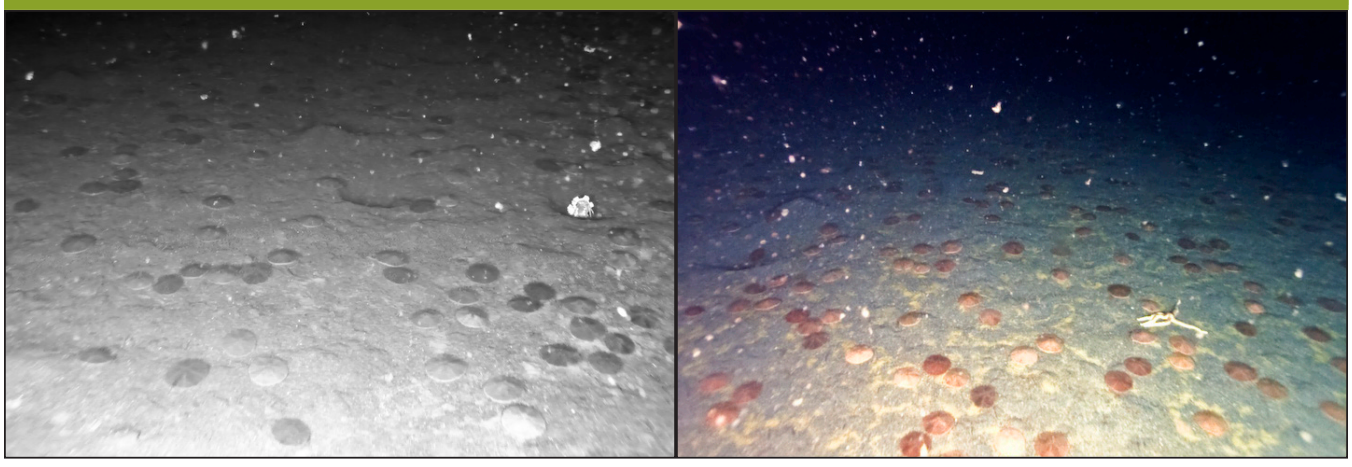
Fish and Crab Composition (n = 1)



Substrate Composition

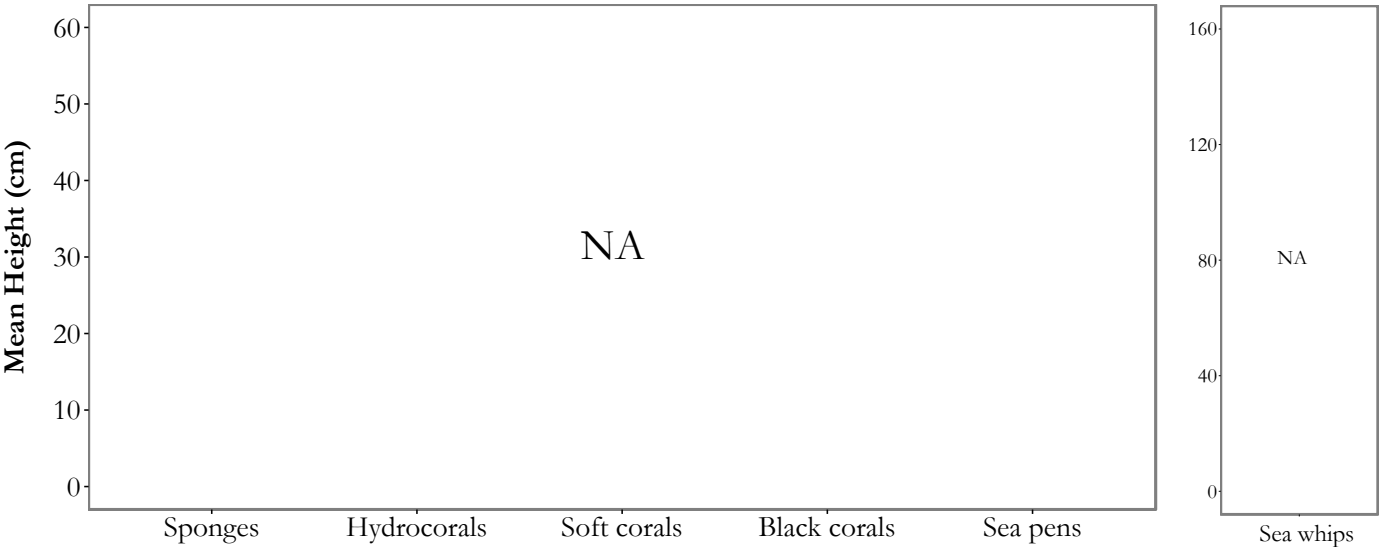


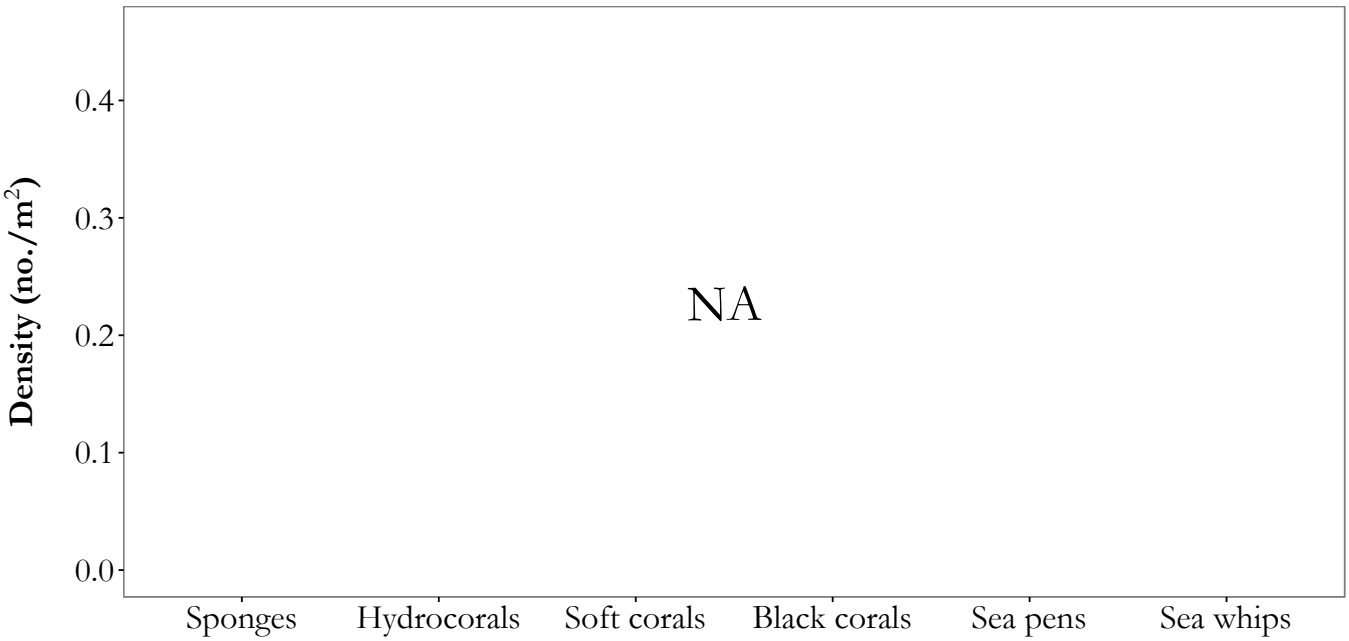
Images



AREA: Buldir Pass To Near Pass Transect 2014-64

Vertical Habitat Summary





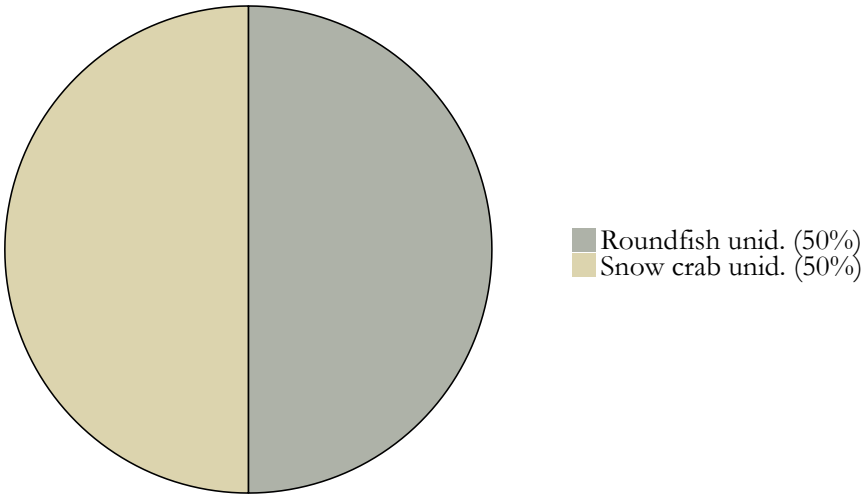
Summary - description of transect

Transect 2014-64: Primary and secondary substrates consisted entirely of sand. Only one fish was identified. No corals, sponges, sea whips, sea pens, or hydrocorals were observed.

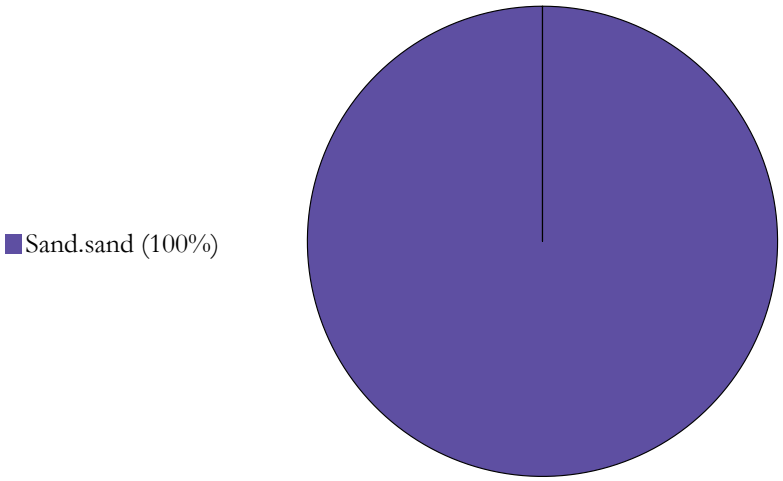
AREA: Buldir Pass To Near Pass — Transect 2014-65

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.47	174.03	137	125	3.1

Fish and Crab Composition (n = 2)

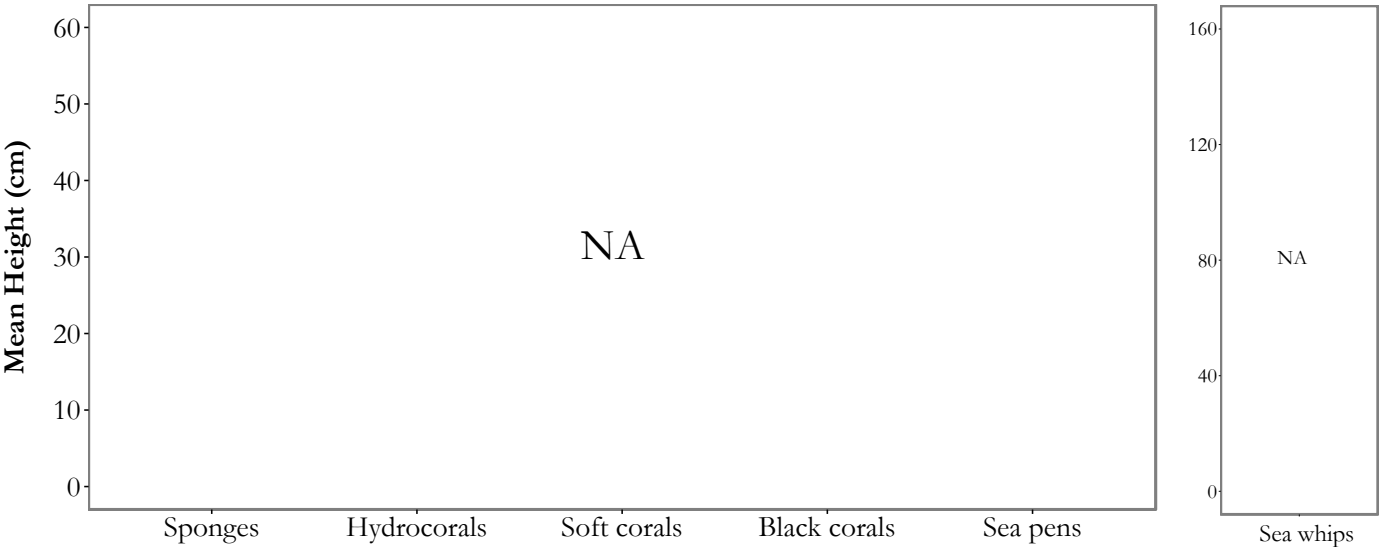


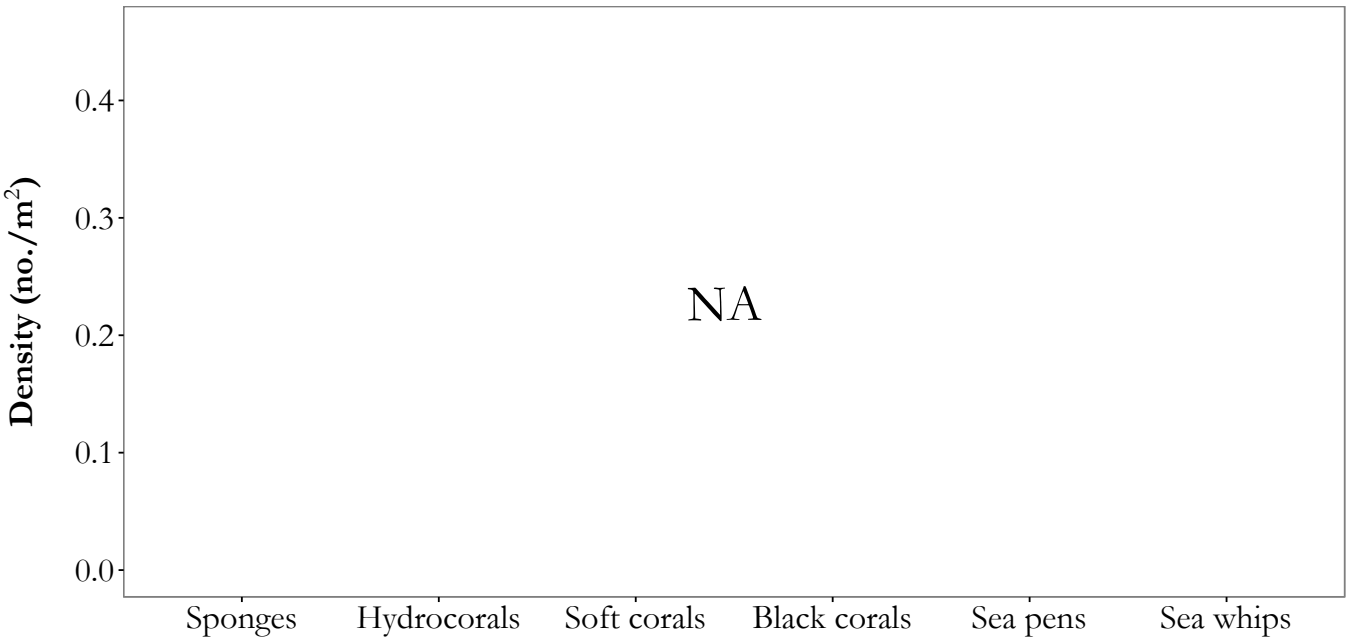
Substrate Composition



Images

Vertical Habitat Summary





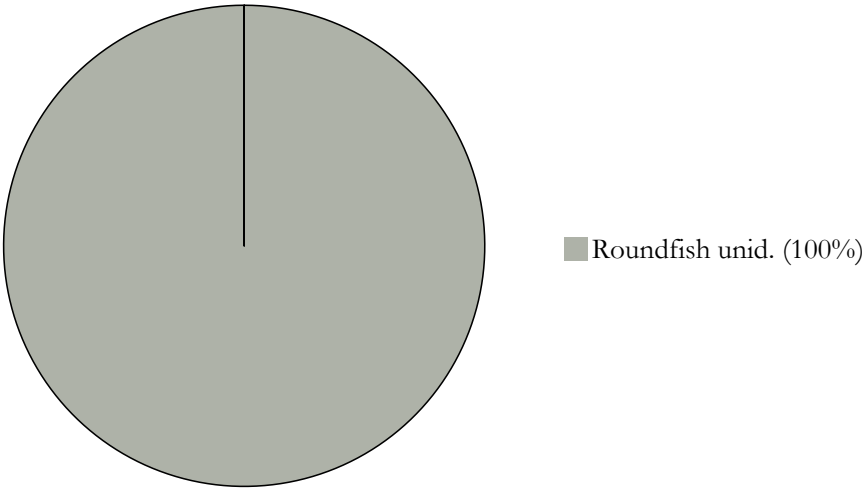
Summary - description of transect

Transect 2014-65: Primary and secondary substrates consisted entirely of sand. Only one fish and one crab were identified. No corals, sponges, sea whips, sea pens, or hydrocorals were observed.

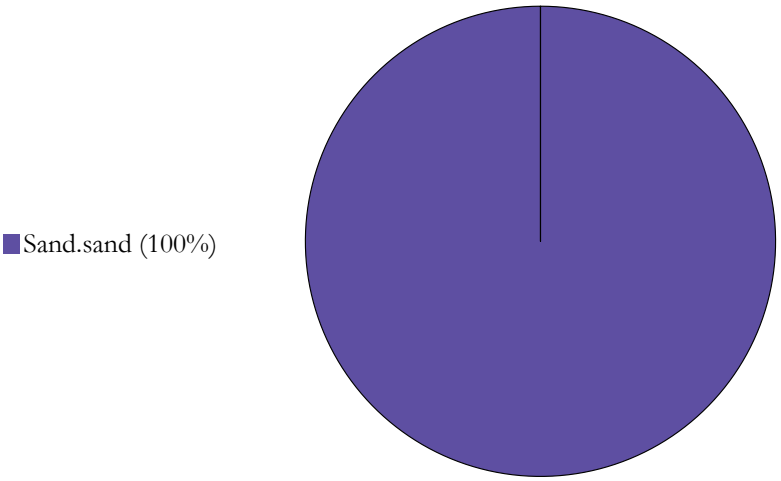
AREA: Buldir Pass To Near Pass — Transect 2014-66

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.46	174.11	80	116	3.0

Fish and Crab Composition (n = 2)



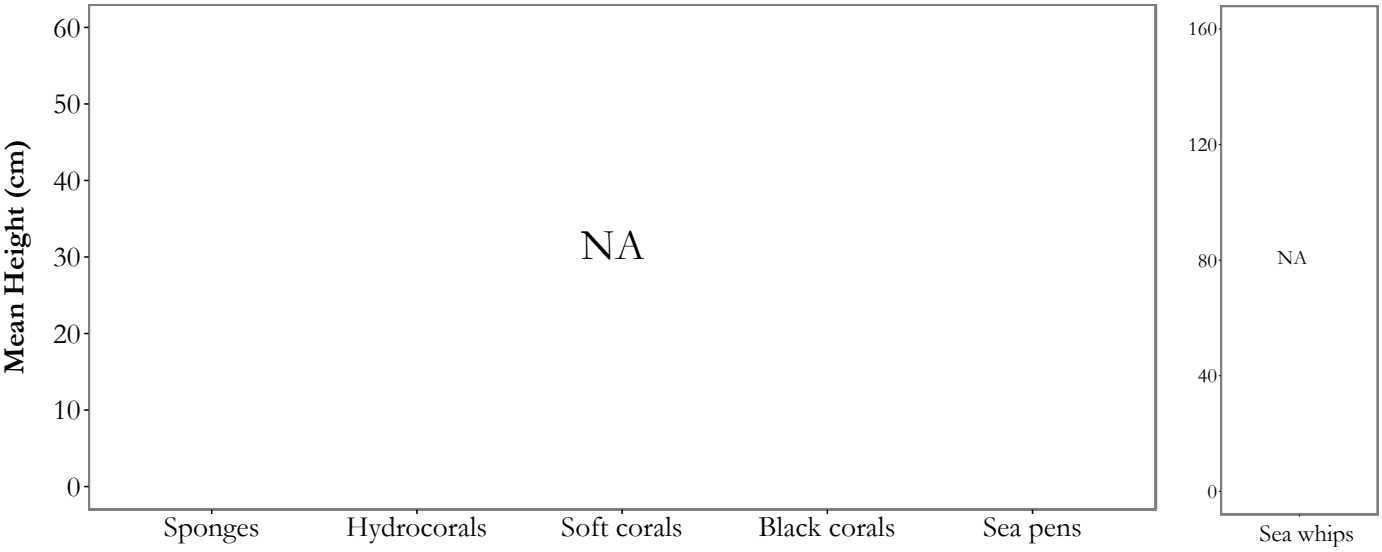
Substrate Composition

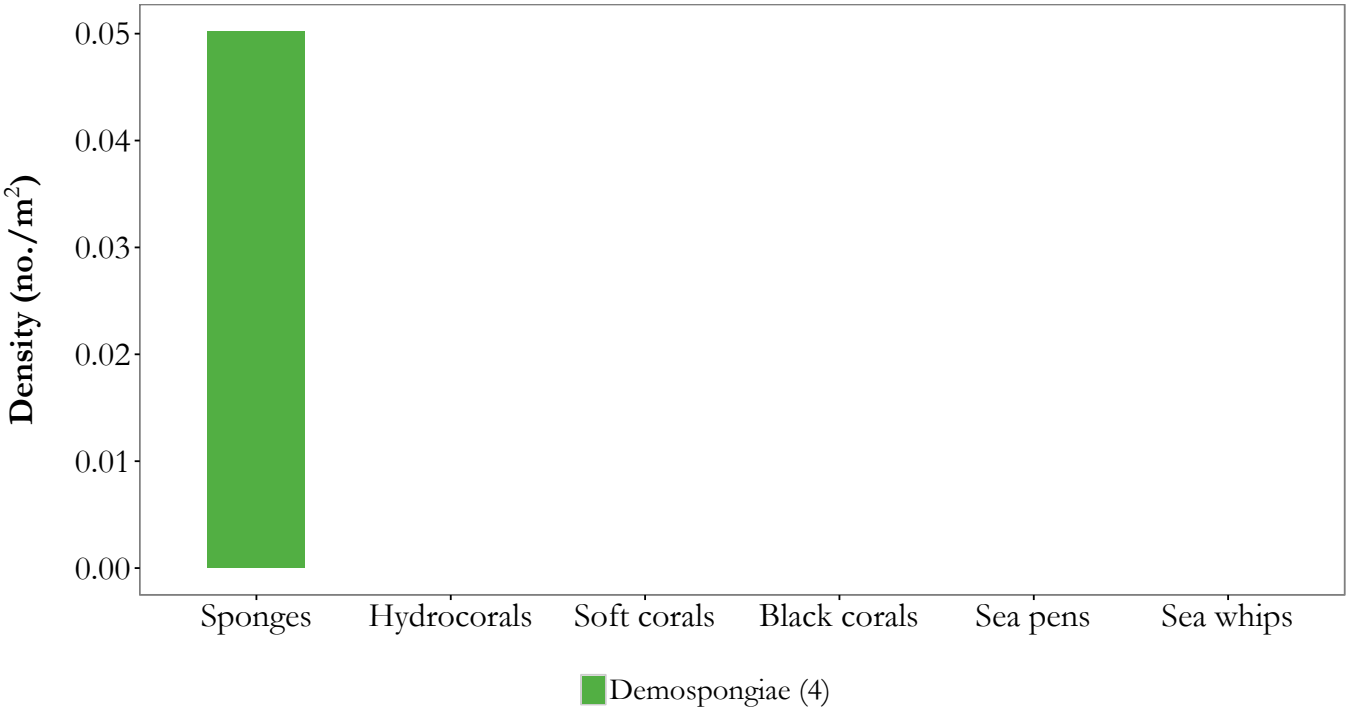


Images

AREA: Buldir Pass To Near Pass Transect 2014-66

Vertical Habitat Summary





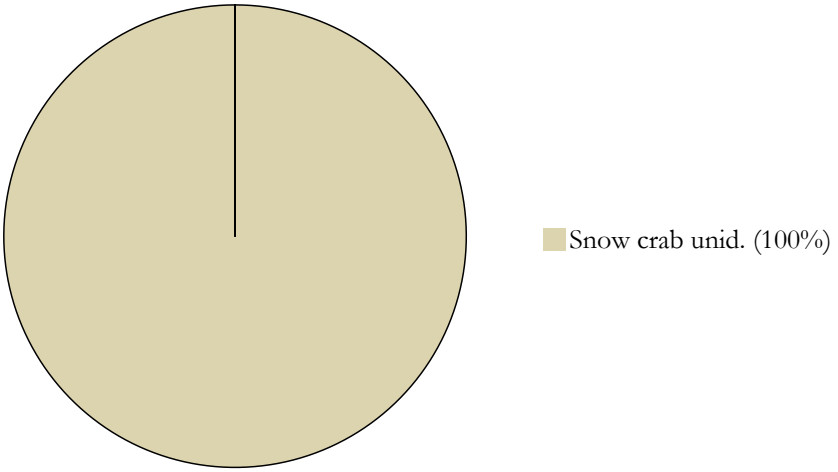
Summary - description of transect

Transect 2014-66: Primary and secondary substrates consisted entirely of sand. Only two fishes were identified. Demospongiae (n = 4) were the only structure-forming invertebrates identified. No corals, sea whips, sea pens, or hydrocorals were observed.

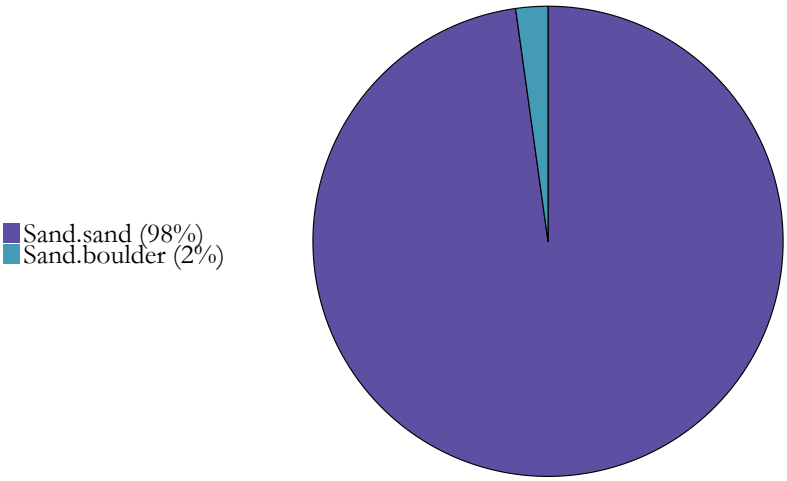
AREA: Buldir Pass To Near Pass — Transect 2014-67

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.53	174.07	375	120	3.1

Fish and Crab Composition (n = 1)



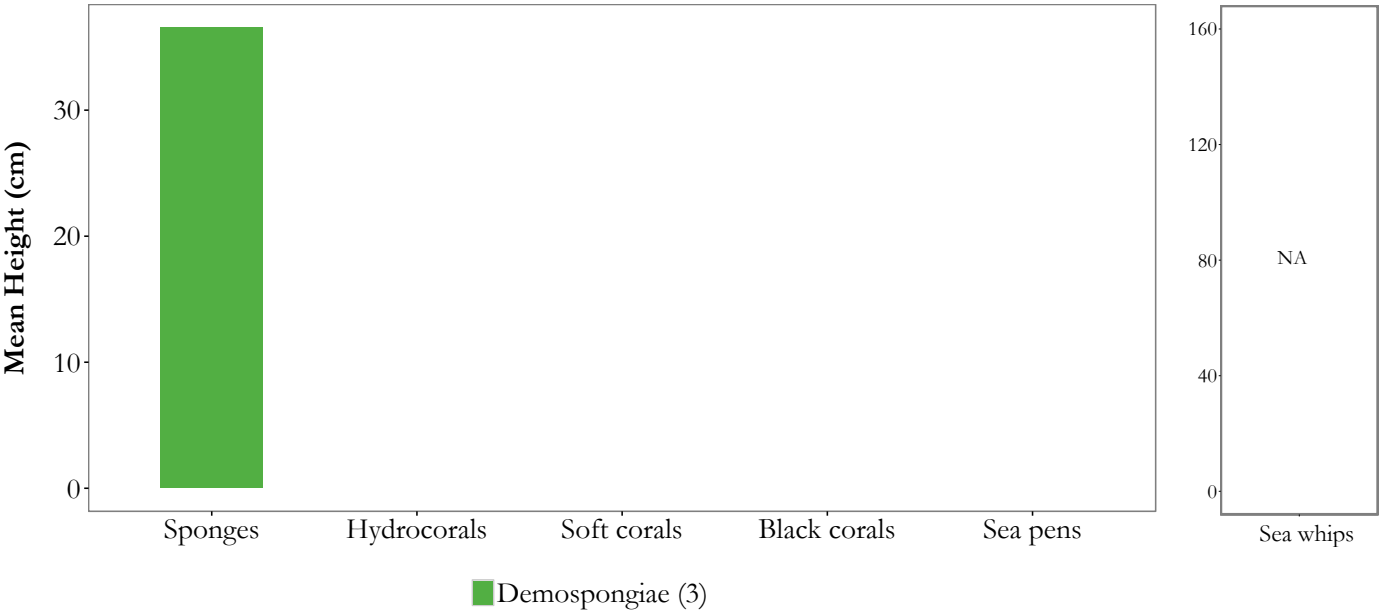
Substrate Composition

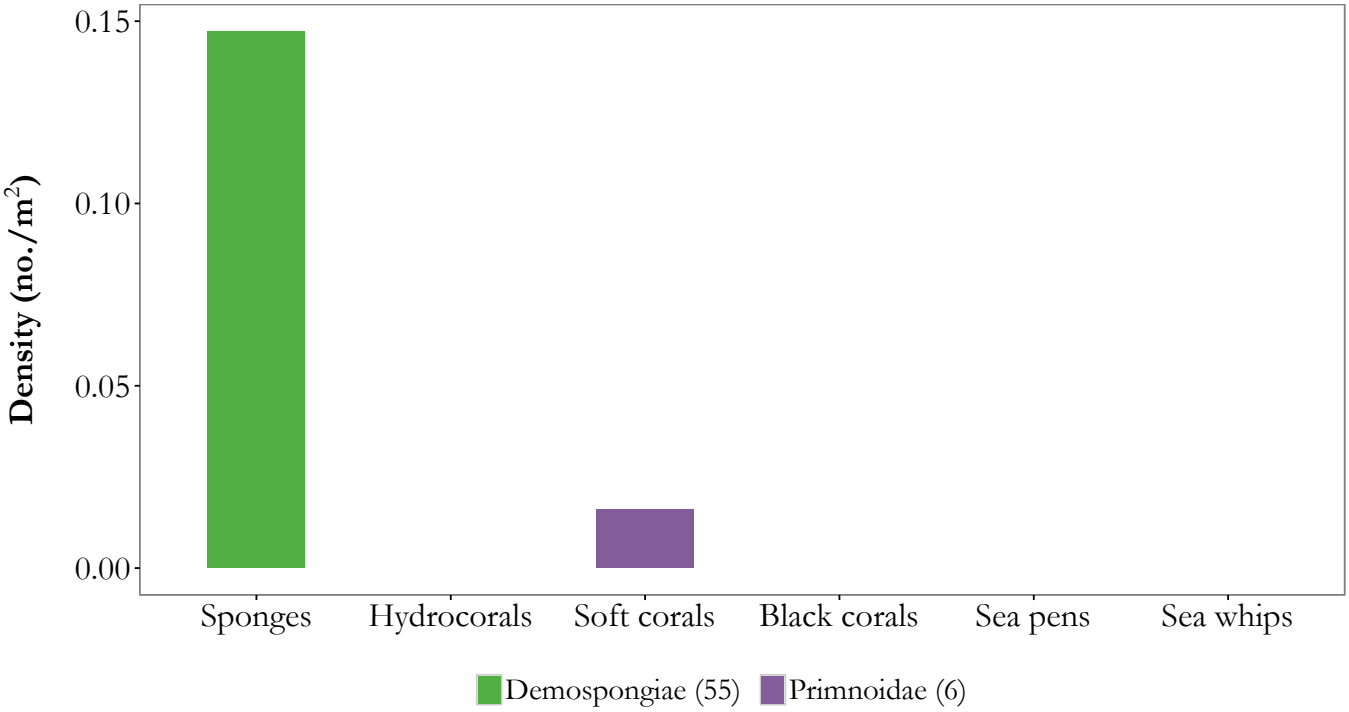


Images

AREA: Buldir Pass To Near Pass Transect 2014-67

Vertical Habitat Summary





Summary - description of transect

Transect 2014-67: Primary and secondary substrates consisted of sand and boulders. Only one crab was identified. Structure-forming invertebrate consisted of 55 Demospongiae and six Primnoidae resulting in a density of 0.16 individuals/m^2. Mean height for three Demospongiae was 37 cm.

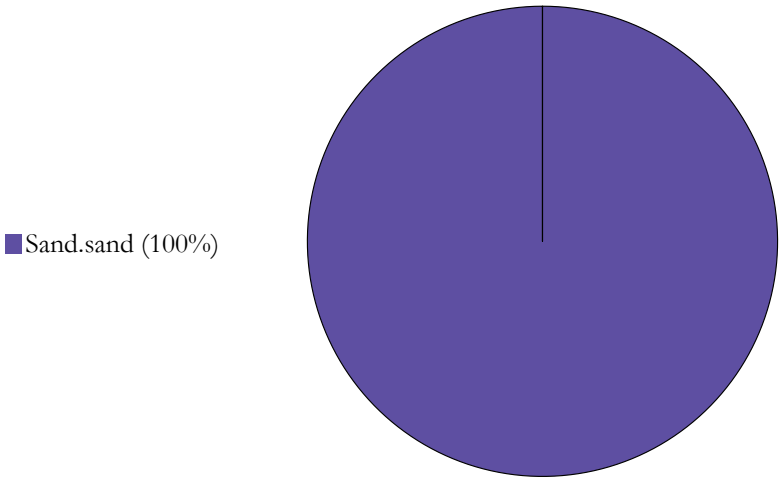
AREA: Buldir Pass To Near Pass — Transect 2014-68

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.57	174.12	504	120	3.0

Fish and Crab Composition

NA

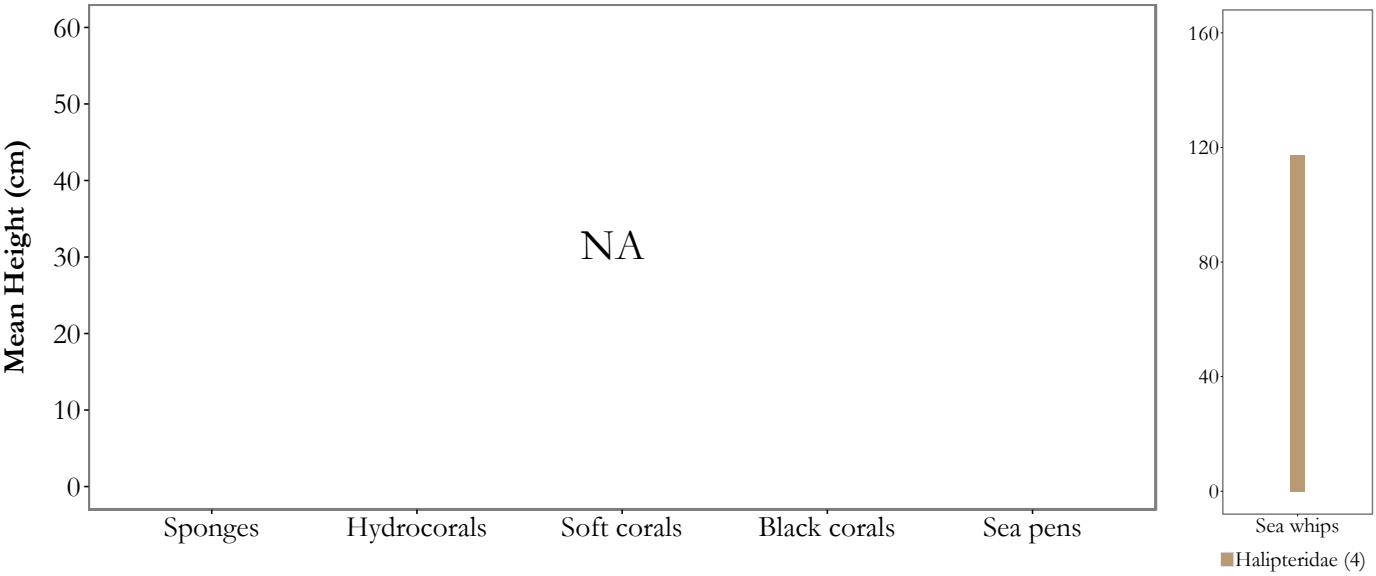
Substrate Composition

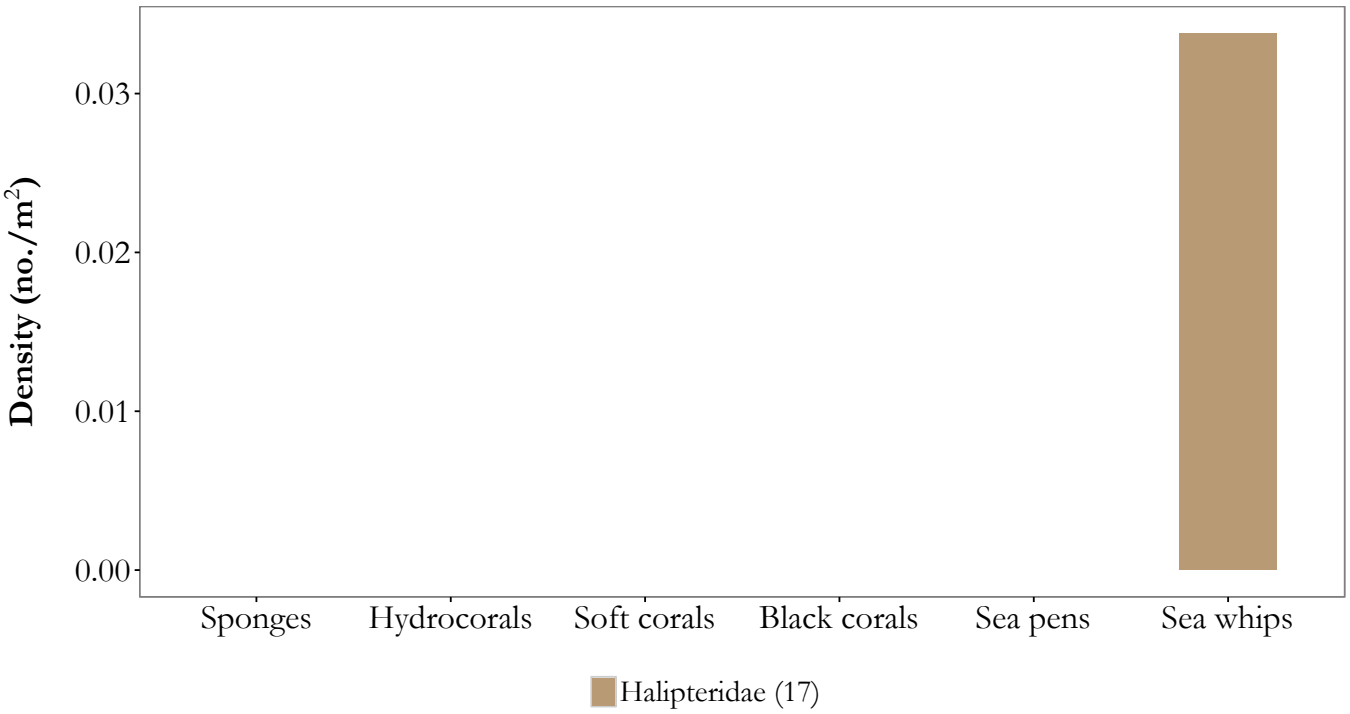


Images

AREA: Buldir Pass To Near Pass Transect 2014-68

Vertical Habitat Summary





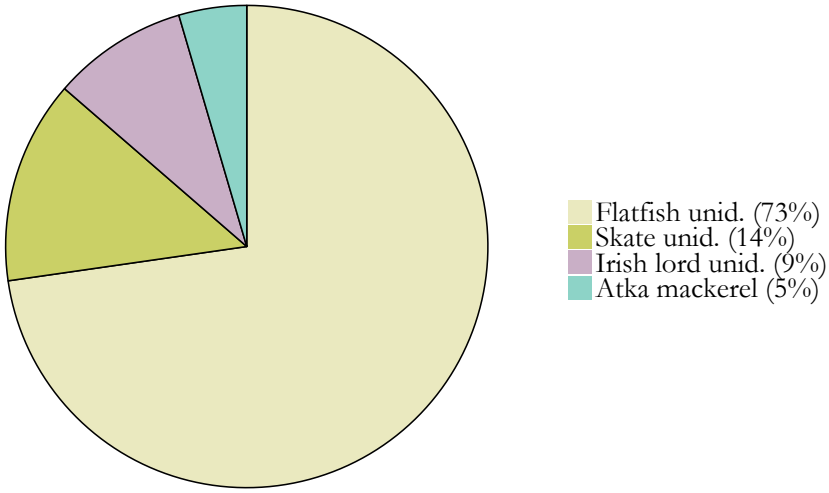
Summary - description of transect

Transect 2014-68: Primary and secondary substrates consisted entirely of sand. No fishes or crabs were identified on this transect. Structure-forming invertebrate habitat consisted entirely of Halipteridae. A mean of 117 cm was calculated for four individuals.

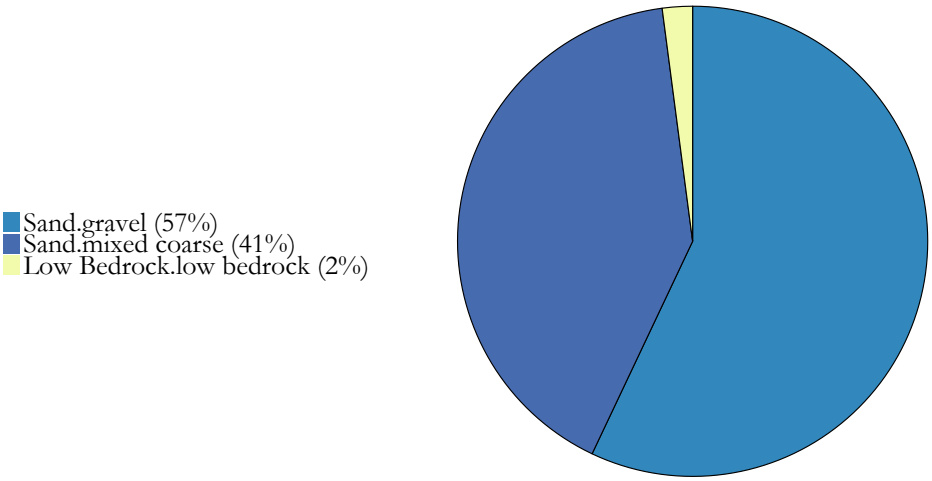
AREA: Buldir Pass To Near Pass — Transect 2014-69

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.66	174.25	1,130	56	3.3

Fish and Crab Composition (n = 22)



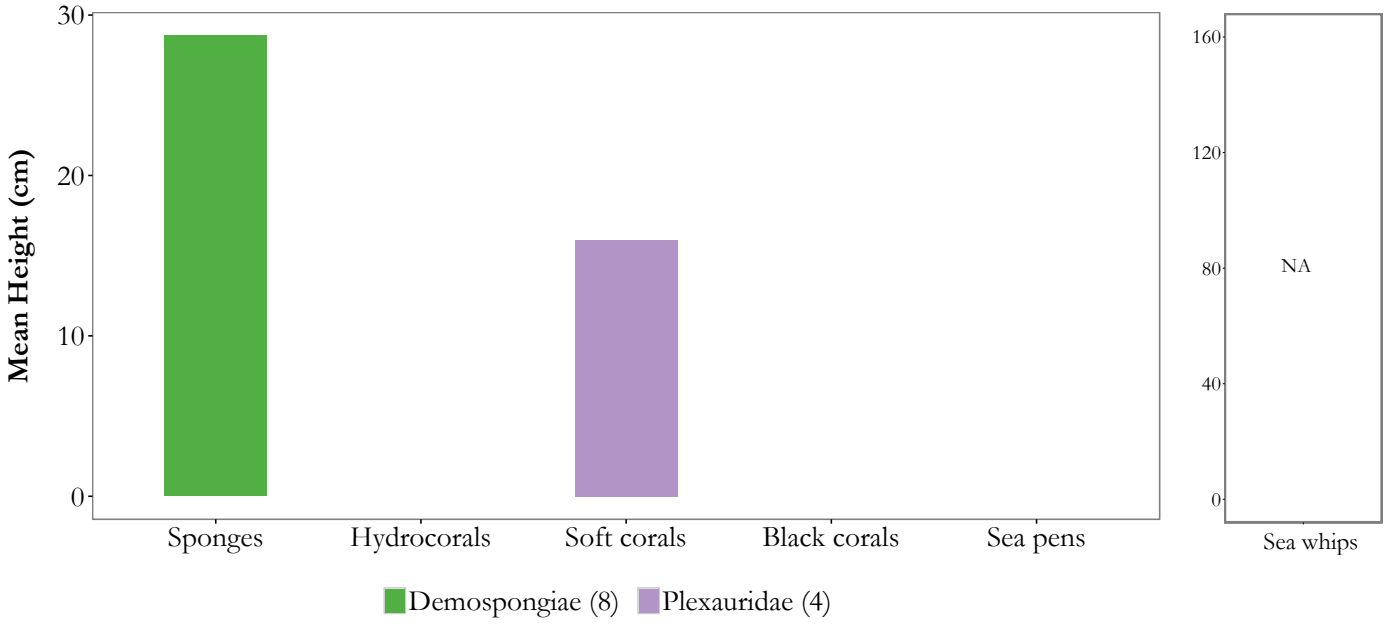
Substrate Composition

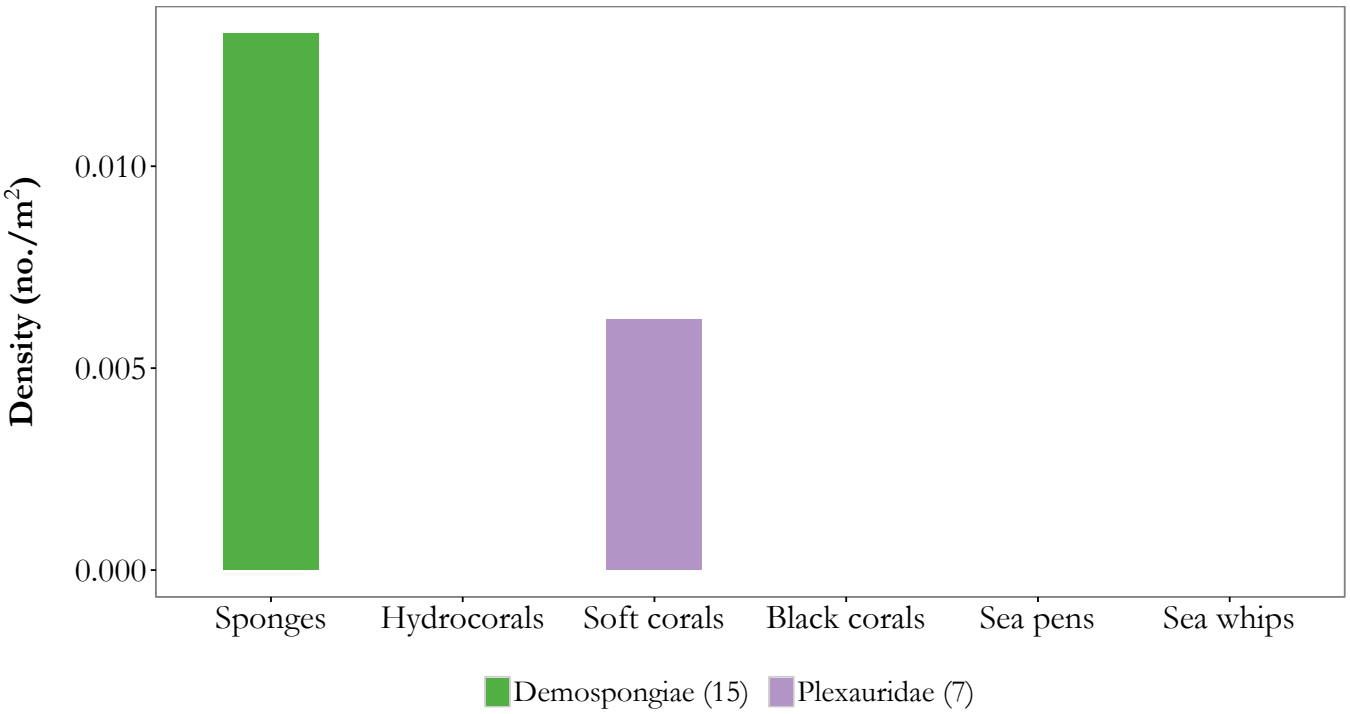


Images

AREA: Buldir Pass To Near Pass Transect 2014-69

Vertical Habitat Summary





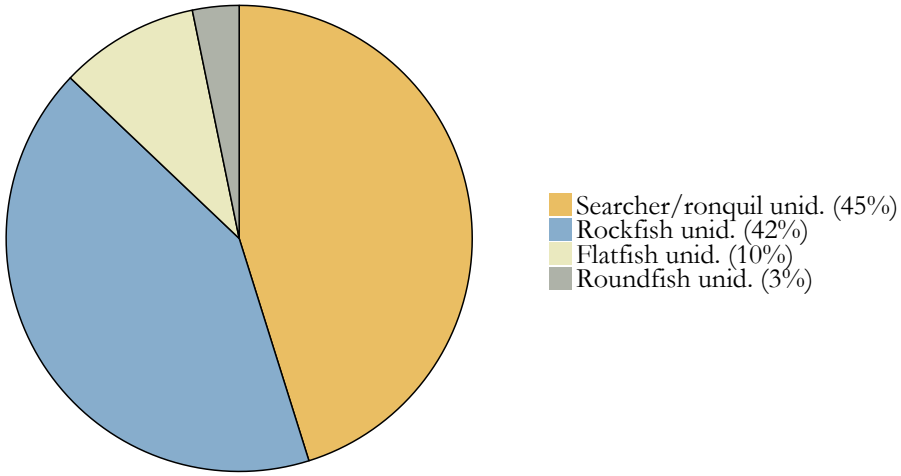
Summary - description of transect

Transect 2014-69: Primary and secondary substrates consisted largely of sand, gravel, and mixed coarse. Just over 2% of this transect was low bedrock. Flatfishes (0.01 individuals/m^2) were 73% of the fish and crab density. Demospongiae (0.01 individuals/m^2) and Plexauridae (0.01 individuals/m^2) were the only sponges or corals observed. Mean heights were 29 cm and 16 cm, respectively.

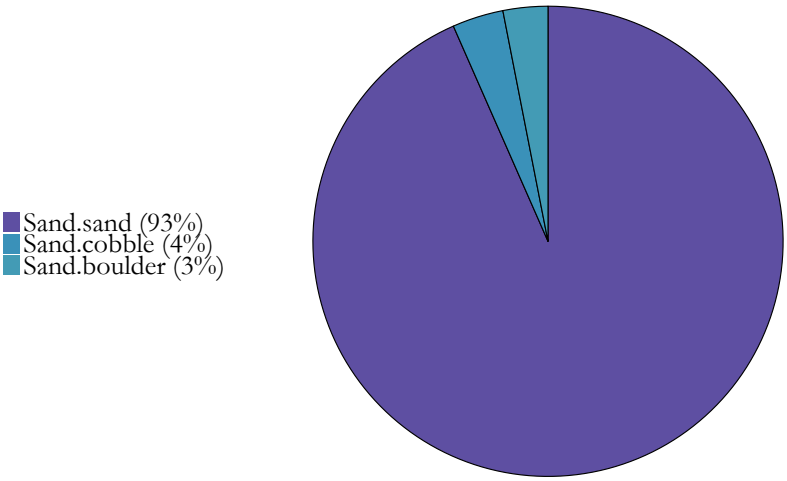
AREA: Buldir Pass To Near Pass — Transect 2014-70

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.70	174.30	1,115	116	3.2

Fish and Crab Composition (n = 31)



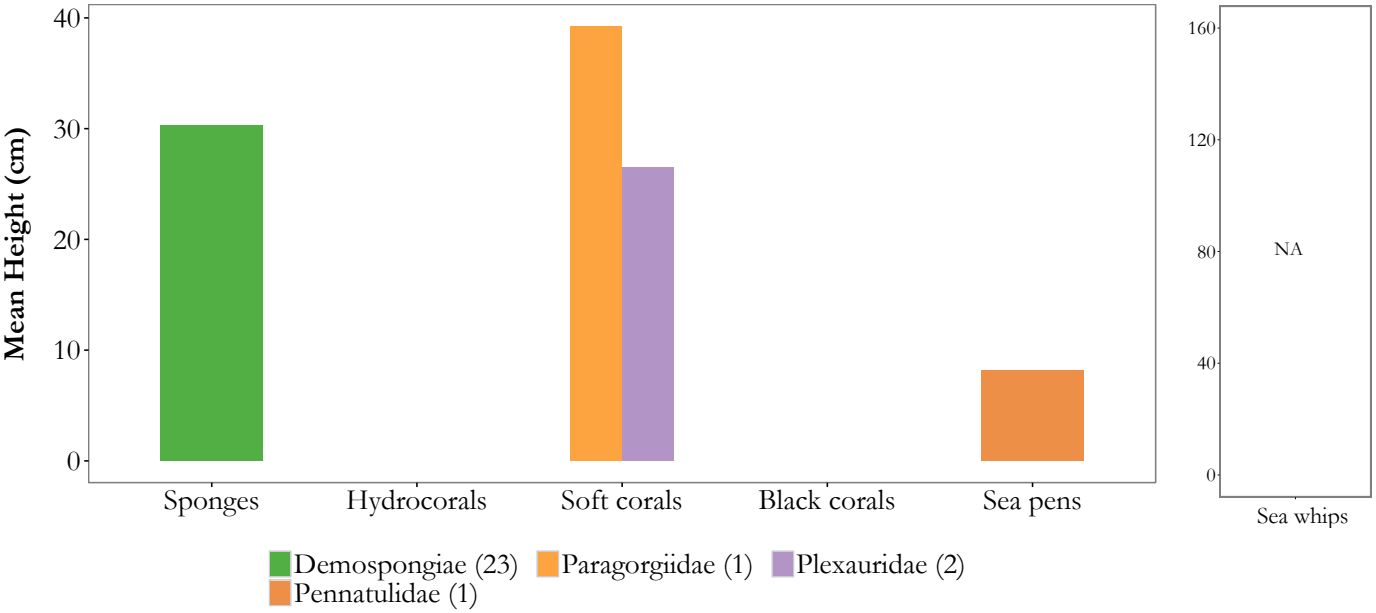
Substrate Composition

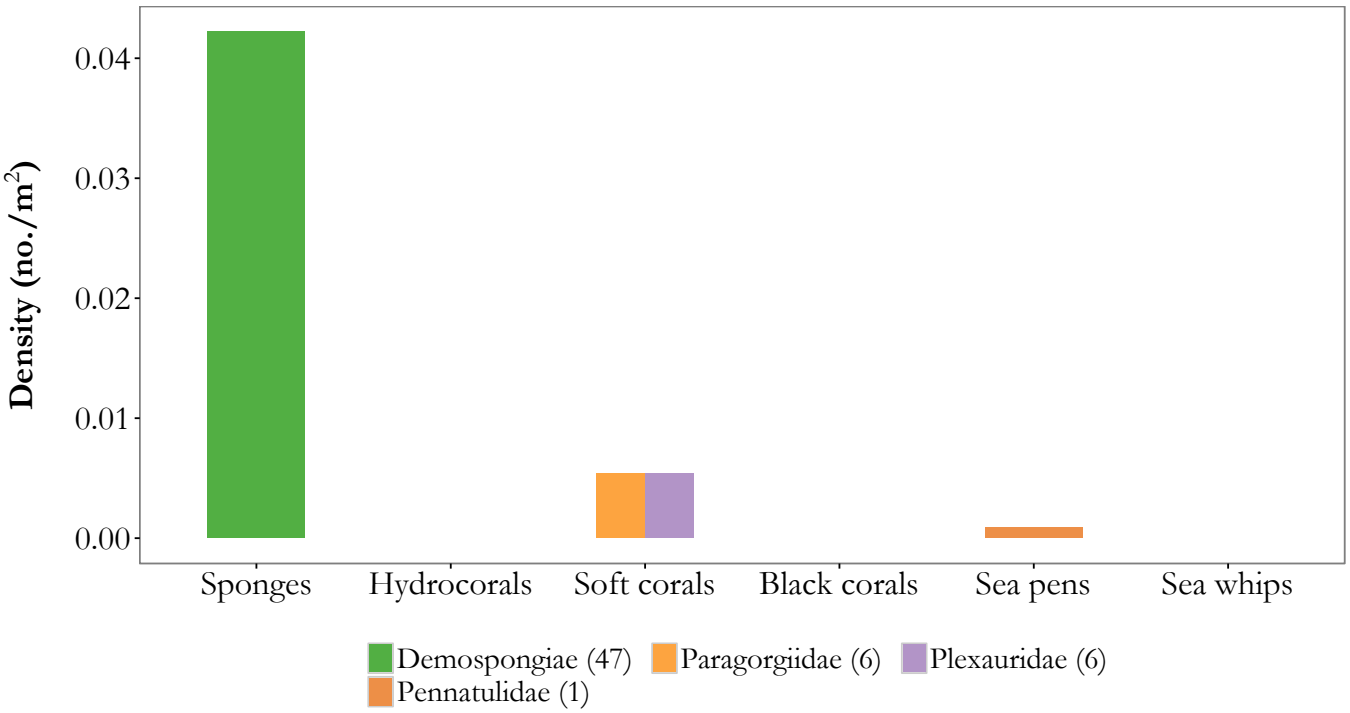


Images

AREA: Buldir Pass To Near Pass Transect 2014-70

Vertical Habitat Summary





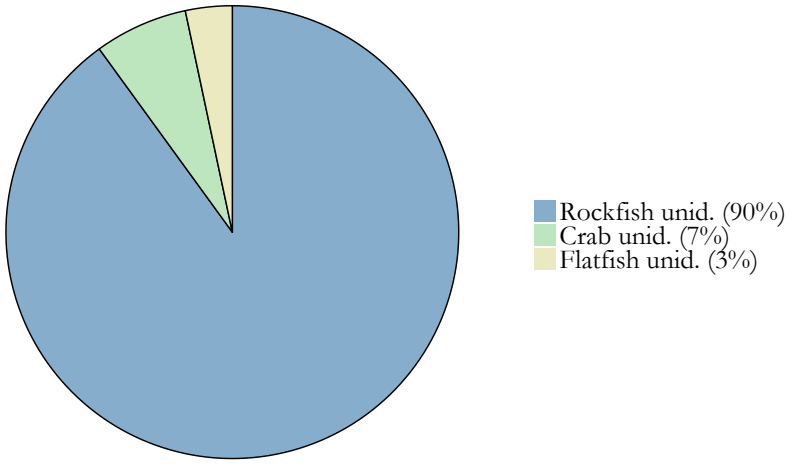
Summary - description of transect

Transect 2014-70: Primary and secondary substrates consisted largely of sand. Fish abundance (n = 31) was fairly evenly distributed between searchers/ronquils and rockfishes, with smaller counts of flatfishes and unidentified roundfishes. Fish density was 0.03 individuals/m^2. Demospongiae (0.04 individuals/m^2) were 78% of the structure-forming invertebrate habitat (0.05 individuals/m^2). Mean heights were calculated for Demospongiae (30 cm) and Plexauridae (26 cm).

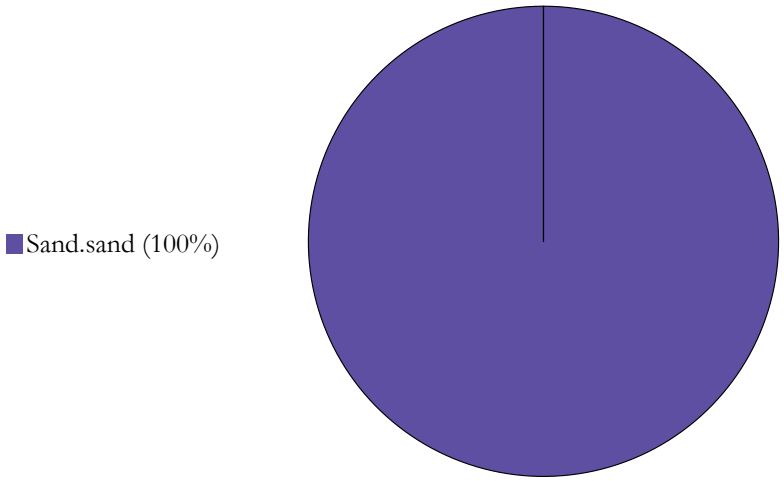
AREA: Buldir Pass To Near Pass — Transect 2014-71

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/5/2014	52.70	174.34	1,664	87	3.2

Fish and Crab Composition (n = 30)



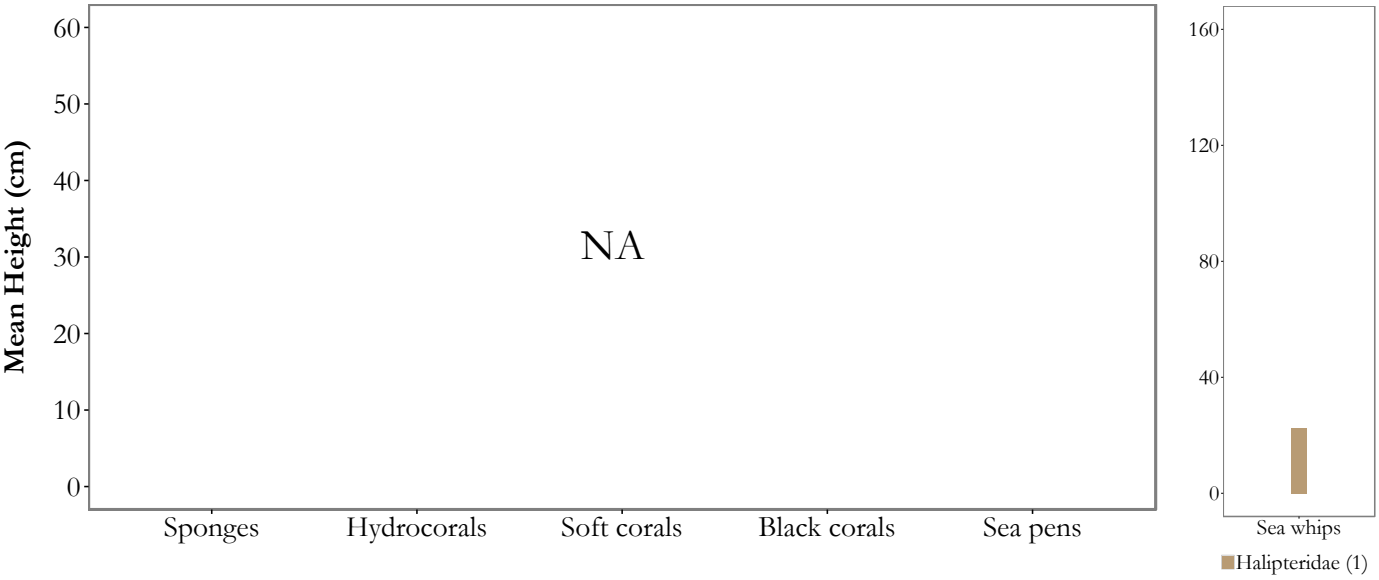
Substrate Composition

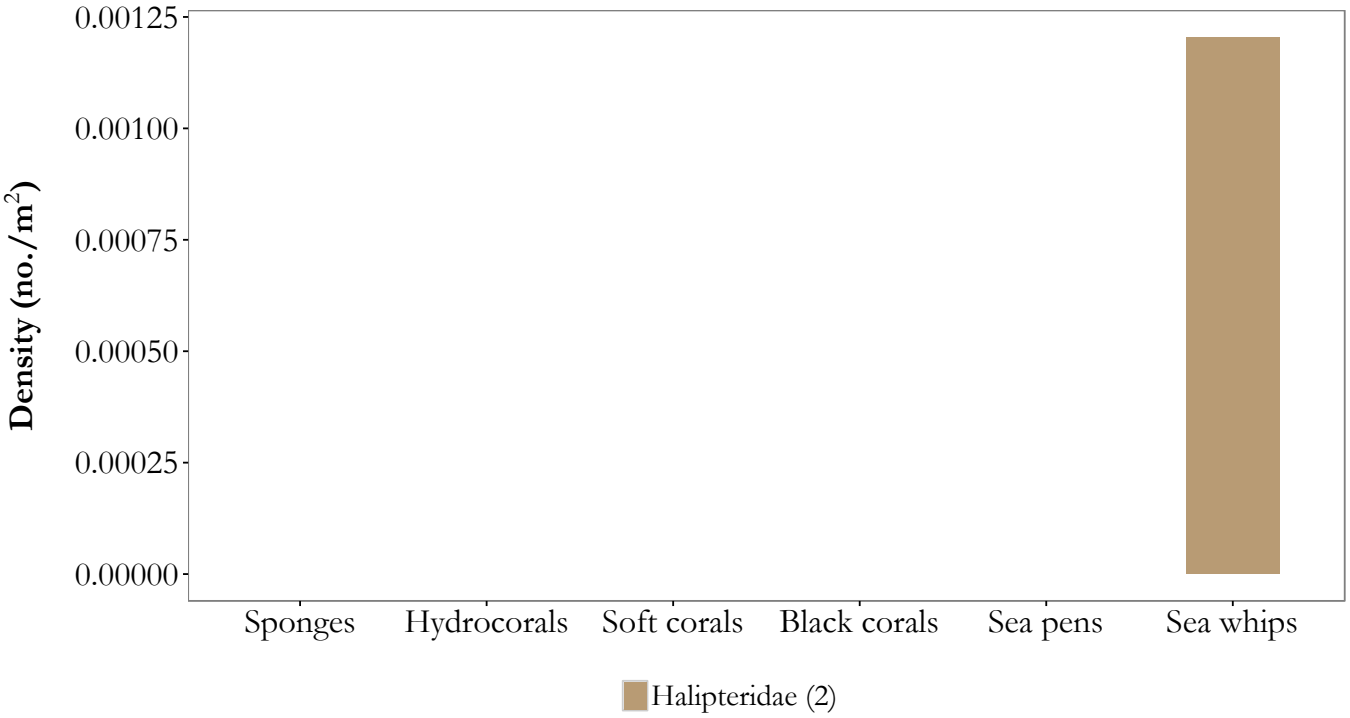


Images

AREA: Buldir Pass To Near Pass Transect 2014-71

Vertical Habitat Summary





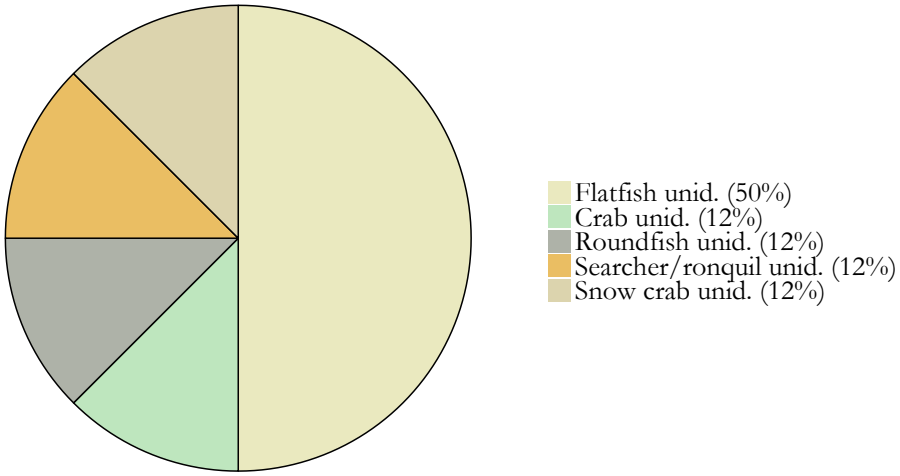
Summary - description of transect

Transect 2014-71: Primary and secondary substrates consisted entirely of sand. Few fishes were identified in this transect (n = 30) with a majority (90%) identified as rockfishes. Overall fish density was 0.02 individuals/m^2. Only two Halipteridae were identified. One was measured at 23 cm.

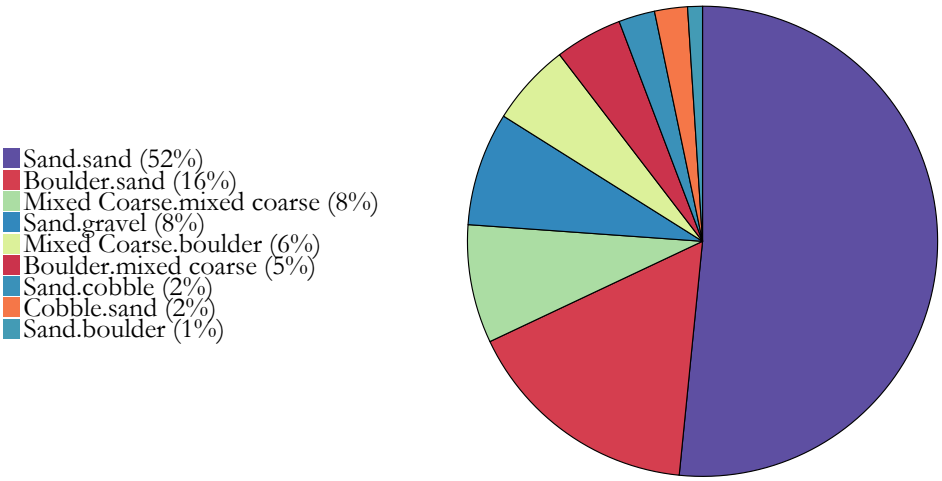
AREA: Buldir Pass To Near Pass — Transect 2014-72

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.77	173.04	1,171	71	3.5

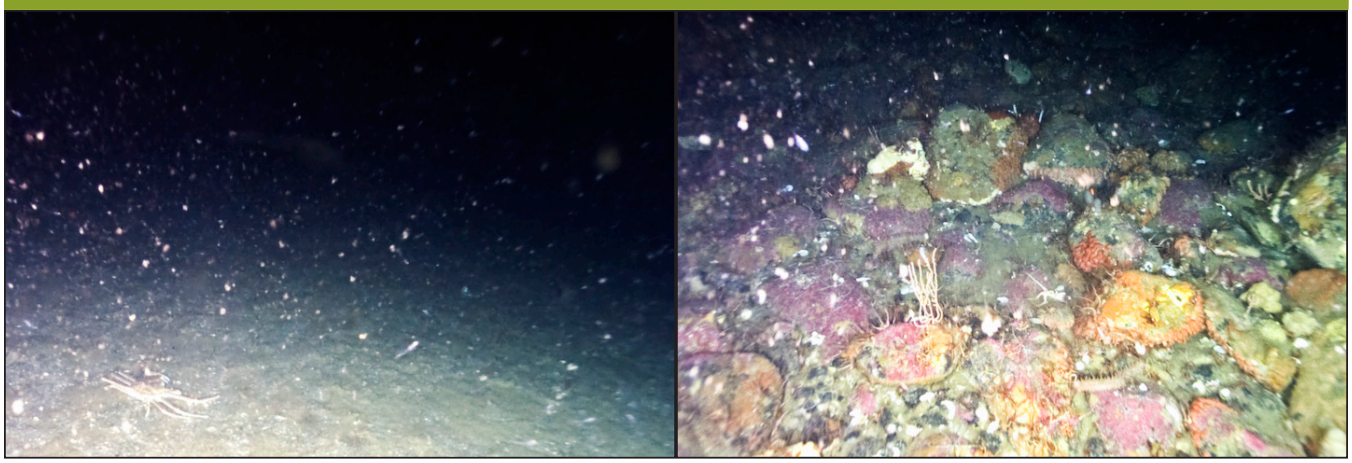
Fish and Crab Composition (n = 8)



Substrate Composition

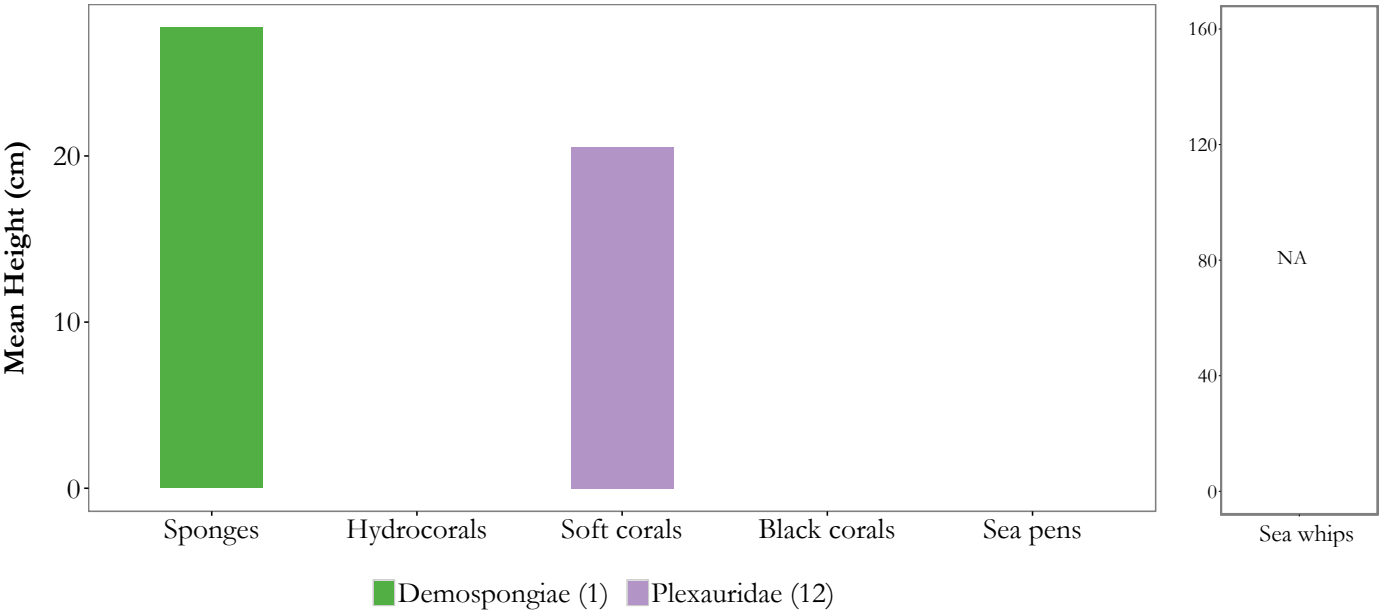


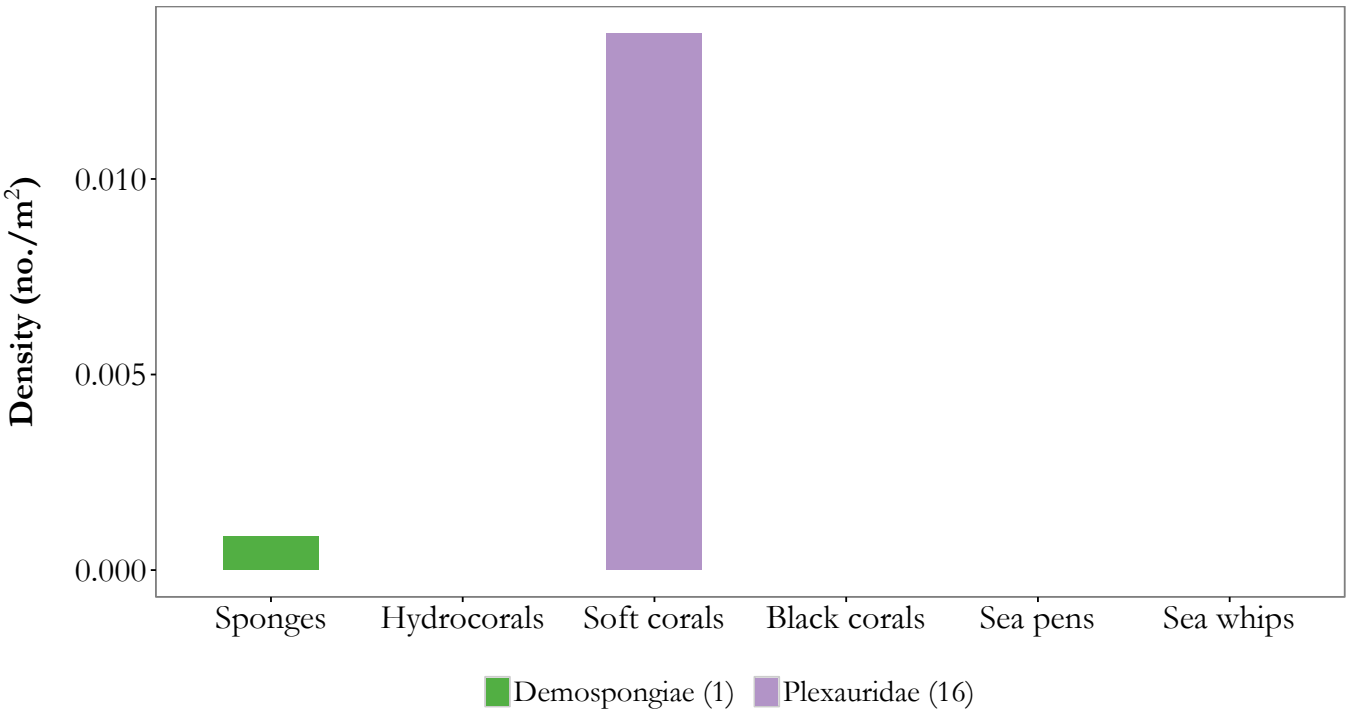
Images



AREA: Buldir Pass To Near Pass Transect 2014-72

Vertical Habitat Summary





Summary - description of transect

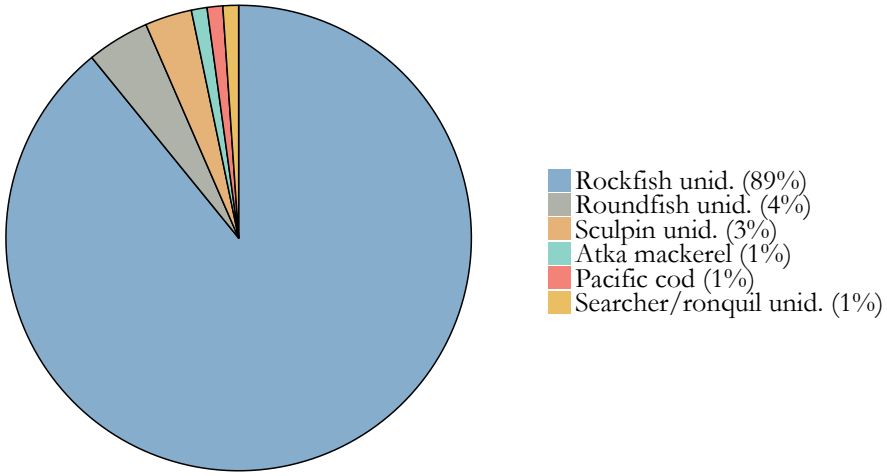
Transect 2014-72: Primary and secondary substrates consisted largely of sand and boulder. Fish and crab density was low (0.01 individuals/m^2) with only eight individuals identified. Structure-forming invertebrate habitat was also limited, 15 Plexauridae and one Demospongiae were observed. Mean height for Plexauridae was 21 cm.

AREA: Buldir Pass To Near Pass — Transect *2014-73

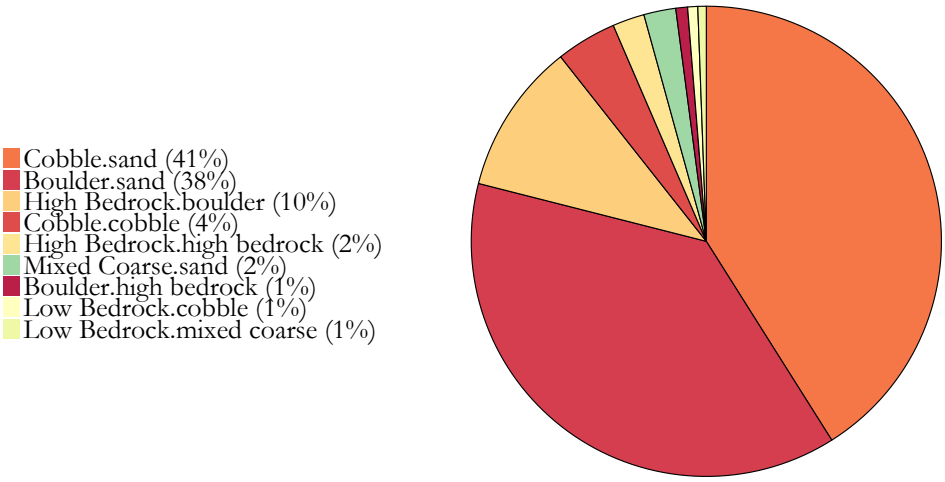
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.71	173.15	1,967	88	3.4

*Area of high coral or sponge density (> 1.0 individuals/m^2)

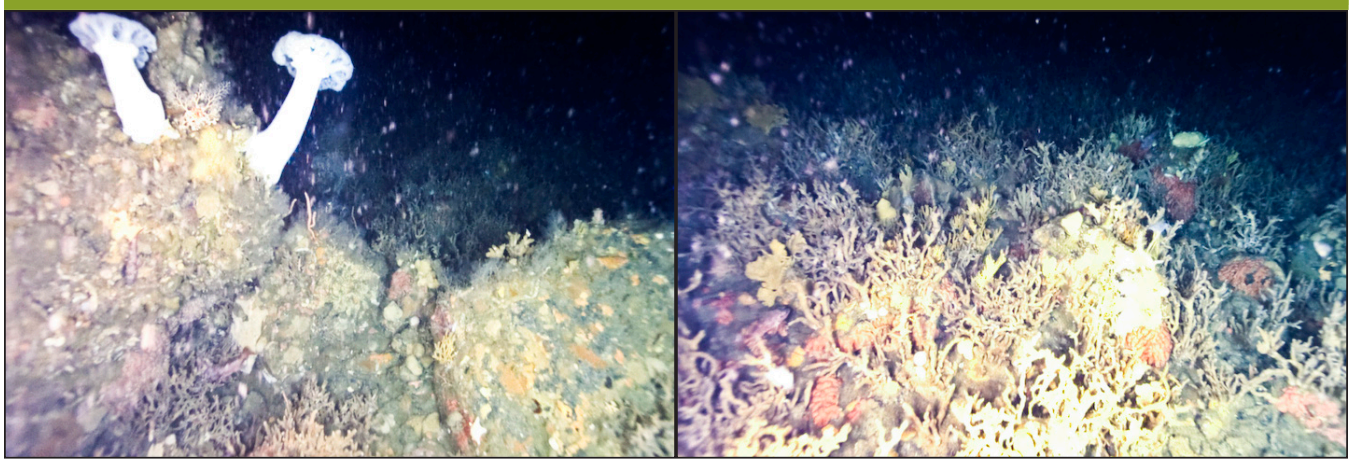
Fish and Crab Composition (n = 92)



Substrate Composition



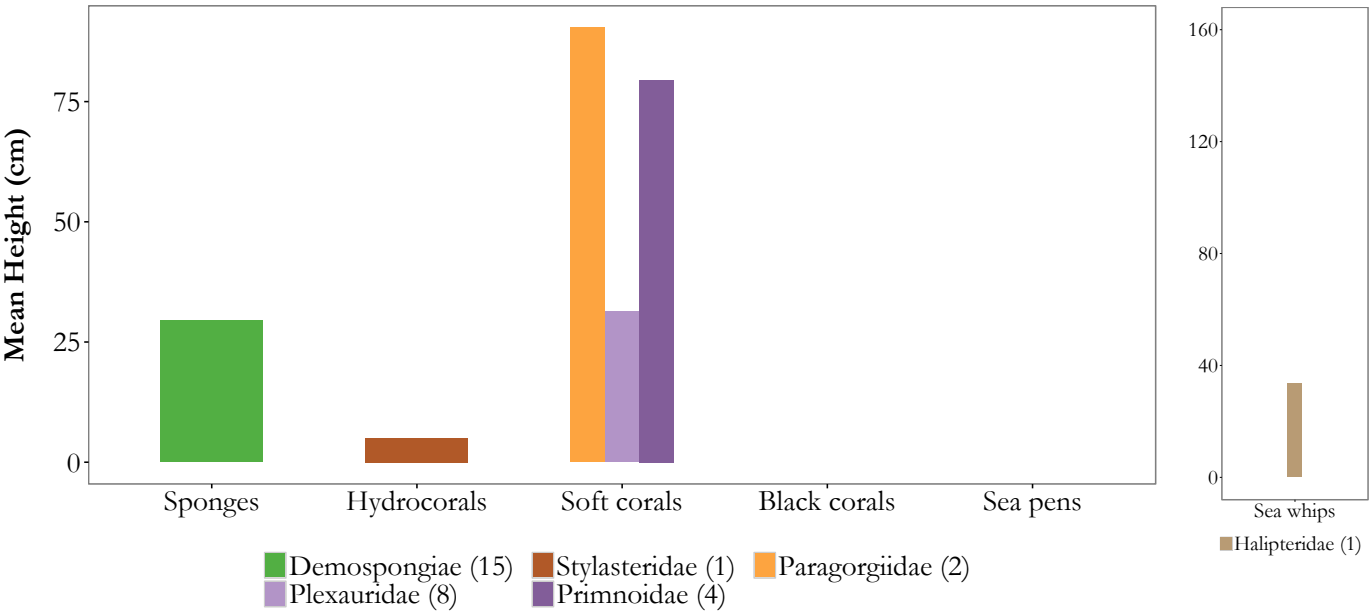
Images

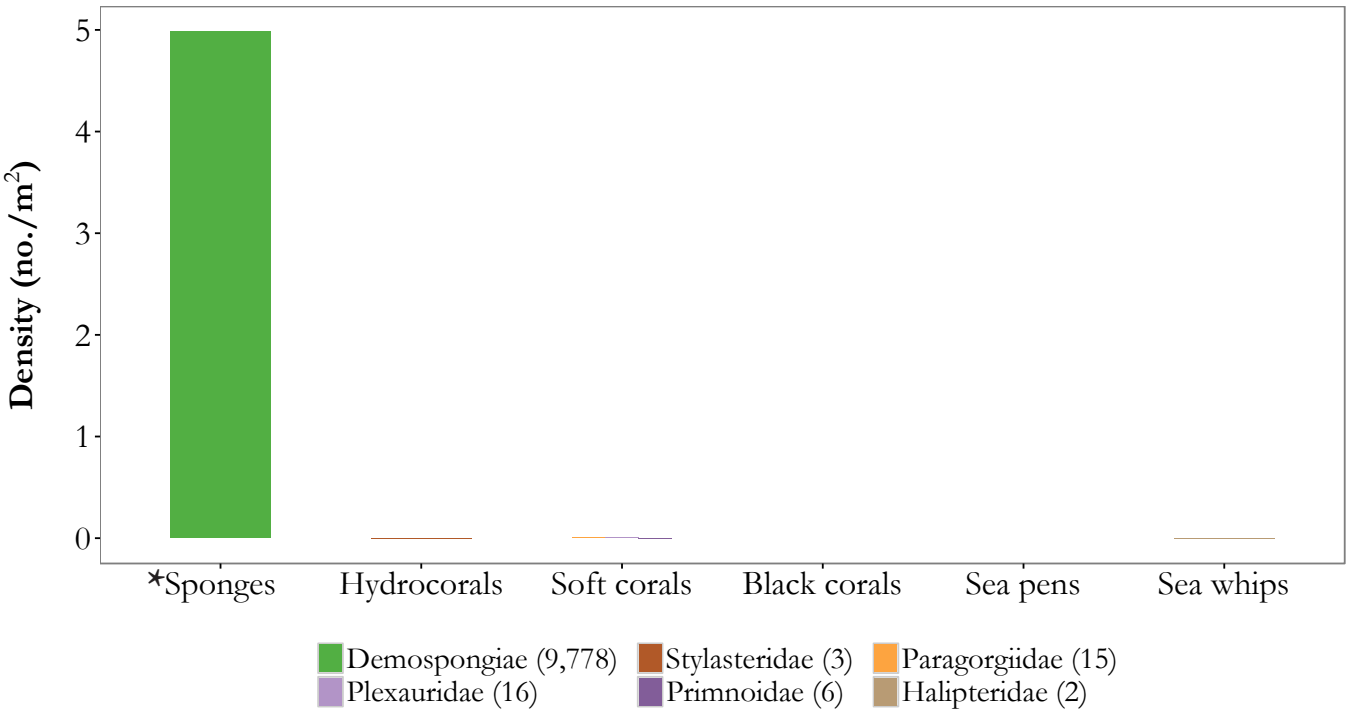


AREA: Buldir Pass To Near Pass Transect *2014-73

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





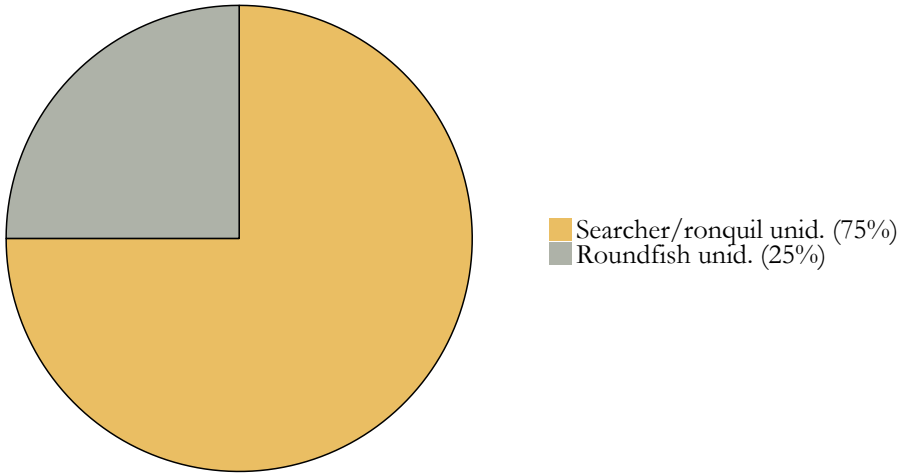
Summary - description of transect

Transect 2014-73: Substrate composition for this haul was very diverse. Almost 80% of the substrate consisted of cobble, sand and boulder. Another 10% of the substrate was bedrock and boulder. Rockfishes (0.04 individuals/m^2) outnumbered all other taxa observed accounting for 89% of the fish density. Demospongiae were very abundant, 4.98 individuals/m^2. More Demospongiae (n = 9,778) were identified on this transect than any other transect. Mean heights were calculated for Demospongiae (30 cm), Paragorgiidae, Plexauridae (31 cm), and (90 cm), Primnoidae (80 cm).

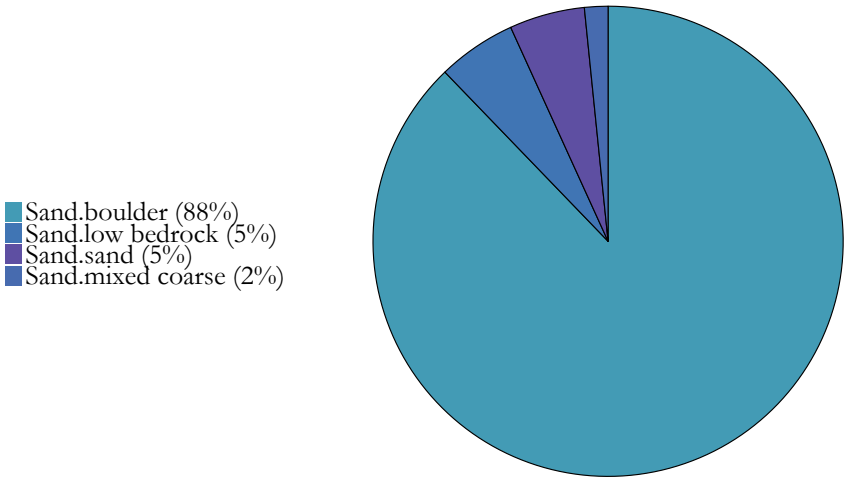
AREA: Buldir Pass To Near Pass — Transect 2014-74

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.65	173.04	2,055	106	3.4

Fish and Crab Composition (n = 12)

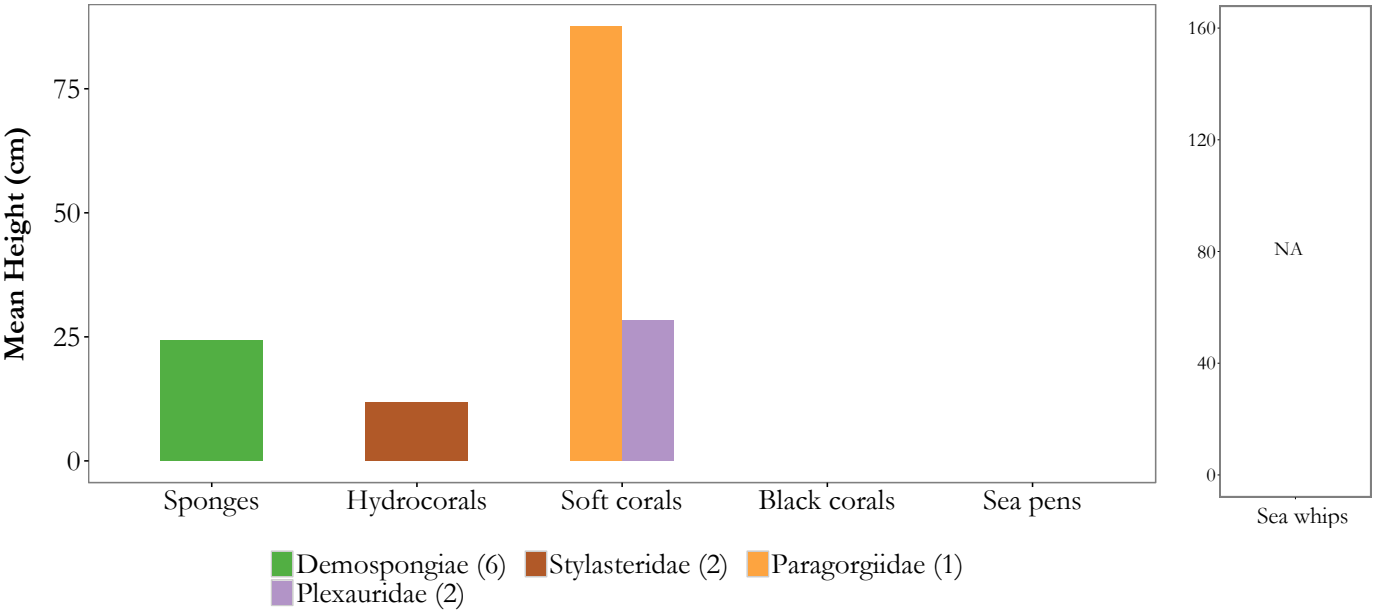


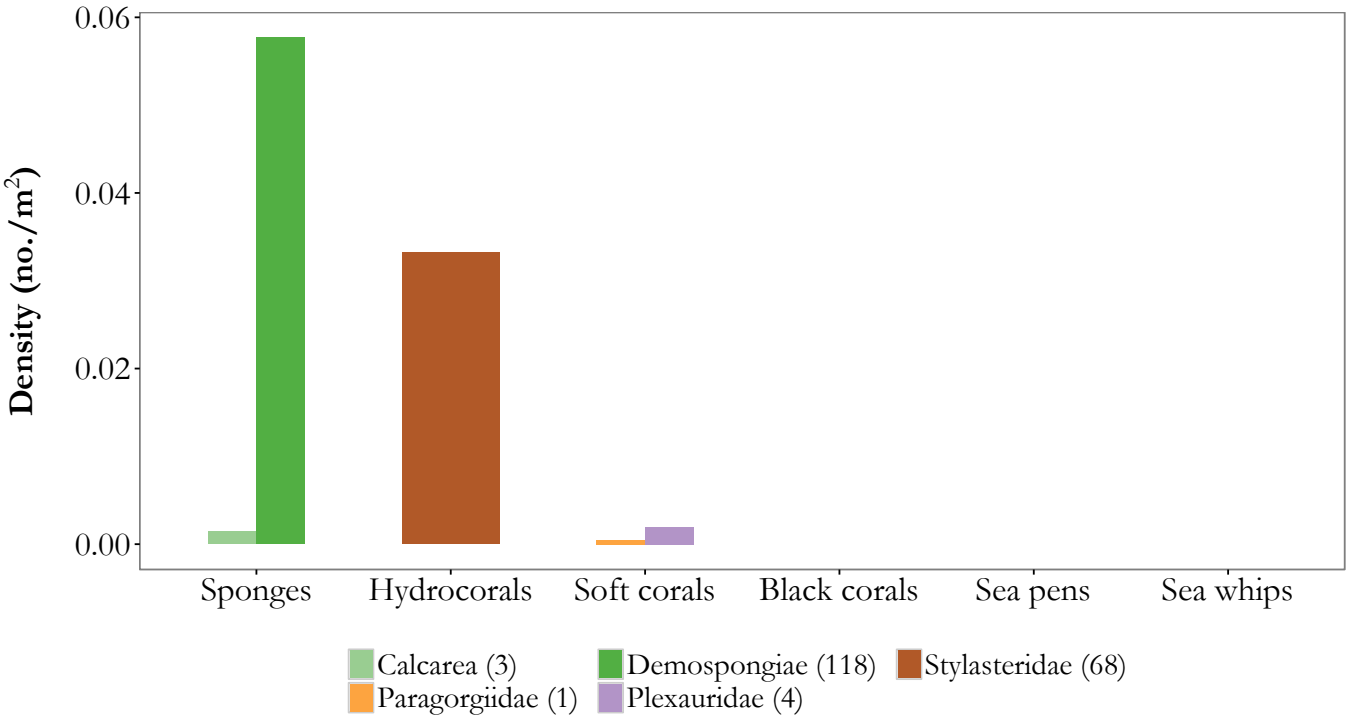
Substrate Composition



Images

Vertical Habitat Summary





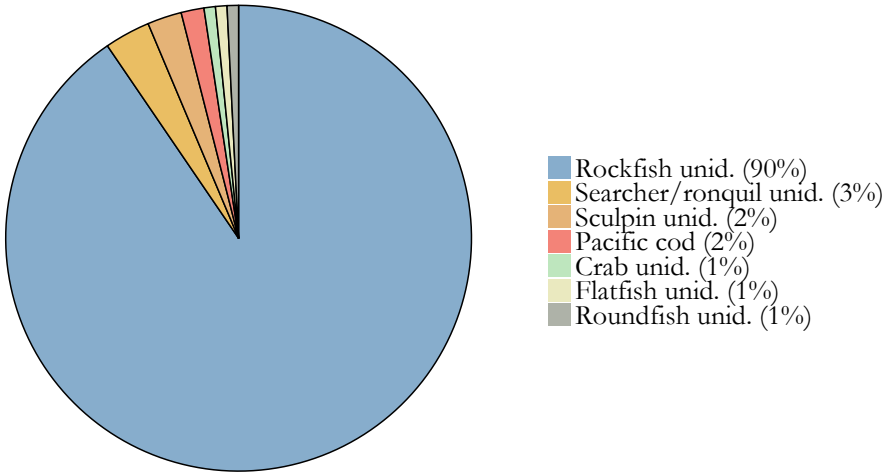
Summary - description of transect

Transect 2014-74: Primary and secondary substrates consisted largely of sand. Fish density was very low for this transect, 0.01 individuals/m^2. Structure-forming invertebrate habitat consisted largely of Demospongiae (0.06 individuals/m^2) and Stylasteridae (0.03 individuals/m^2). Mean heights were calculated for Demospongiae (24 cm), Stylasteridae (12 cm), and Plexauridae (28 cm).

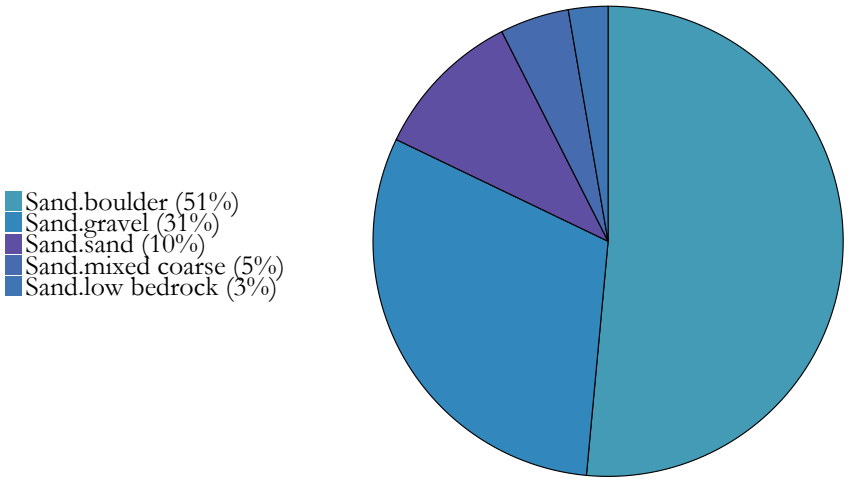
AREA: Buldir Pass To Near Pass — Transect 2014-75

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.66	172.86	1,860	134	3.6

Fish and Crab Composition (n = 126)



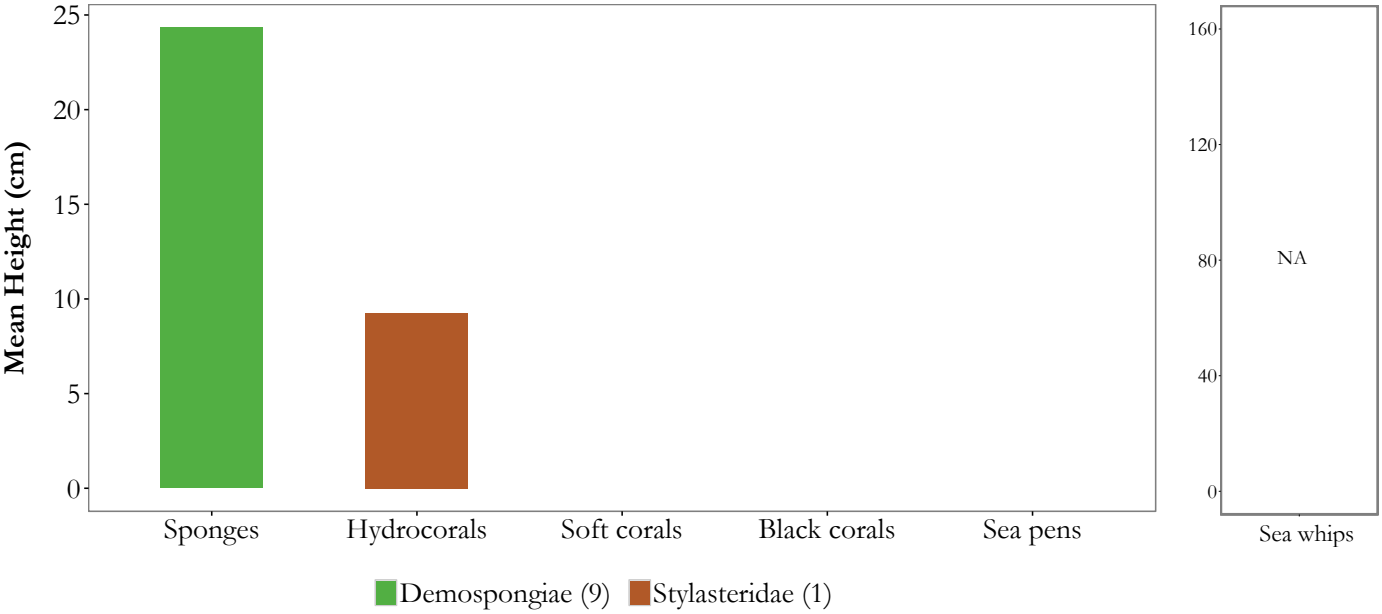
Substrate Composition

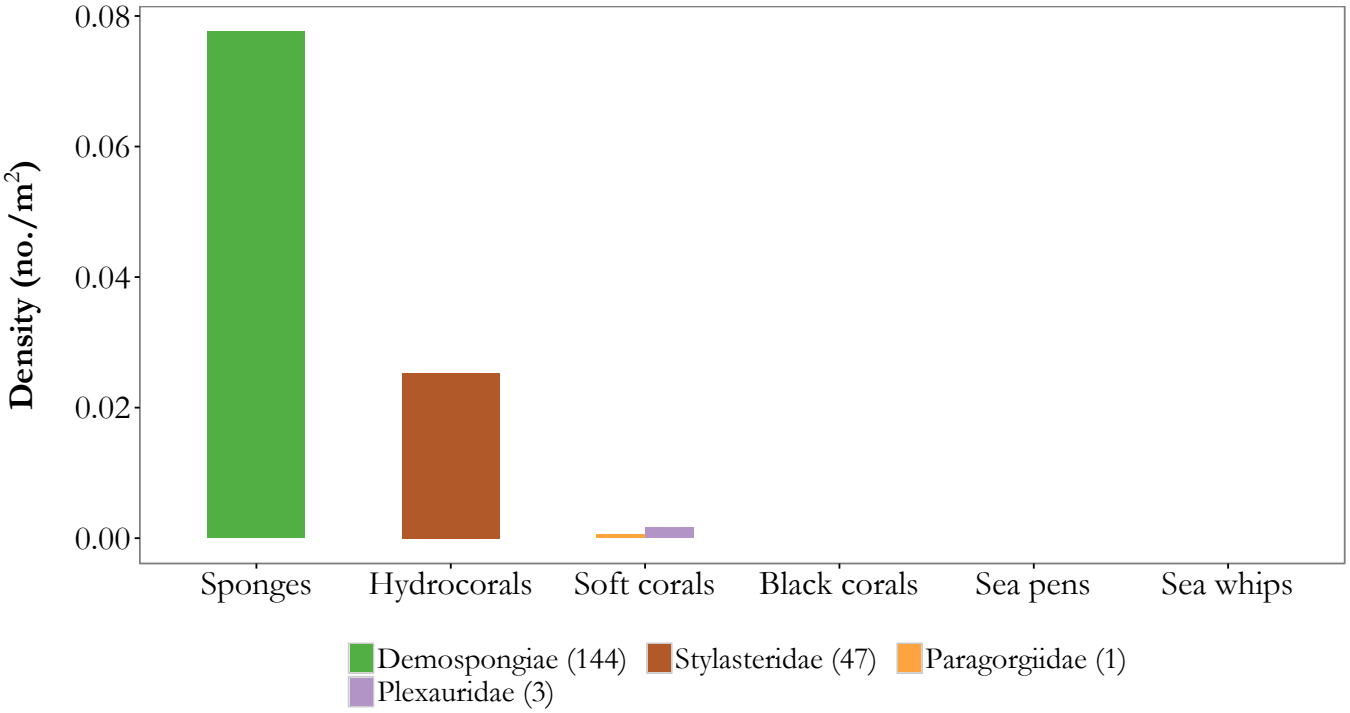


Images

AREA: Buldir Pass To Near Pass Transect 2014-75

Vertical Habitat Summary





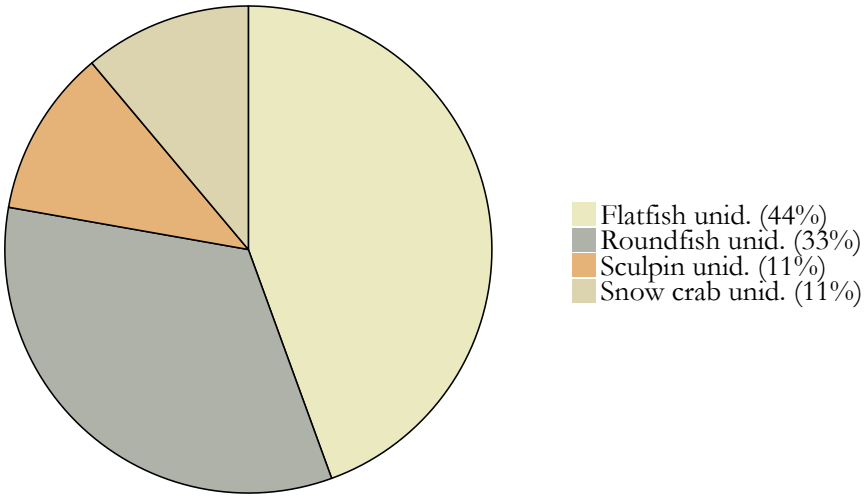
Summary - description of transect

Transect 2014-75: Primary and secondary substrates consisted largely of sand, boulder, and gravel. Rockfishes (n = 114; 0.06 individuals/m^2) dominated the fish and crab density, (0.07 individuals/m^2). Structure-forming invertebrate density was low (0.11 individuals/m^2). Demospongiae (0.08 individuals/m^2) accounted for 74% of the total density while Stylasteridae were 24%. Mean height for Demospongiae was 24 cm.

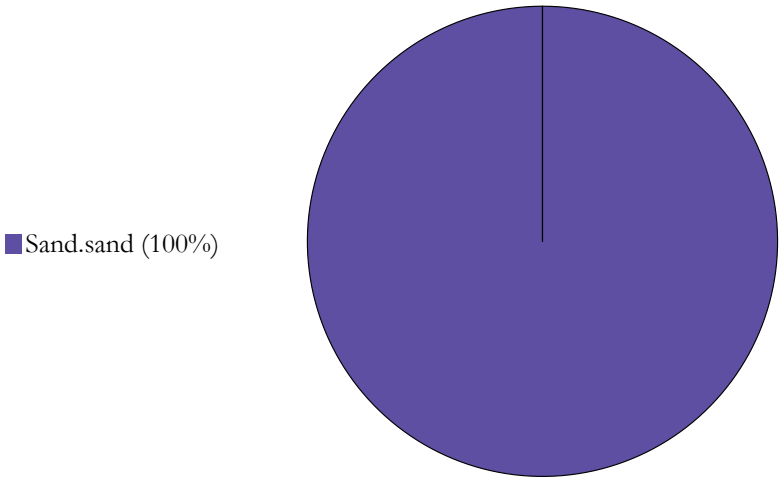
AREA: Buldir Pass To Near Pass — Transect 2014-76

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.75	172.84	1,649	78	3.4

Fish and Crab Composition (n = 9)



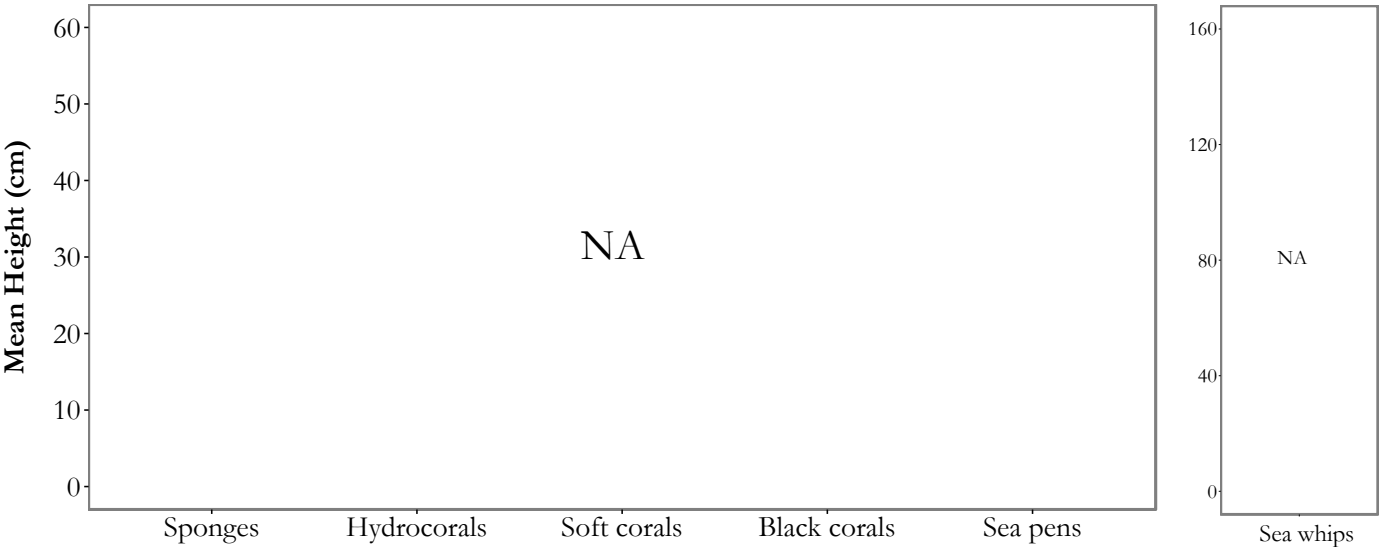
Substrate Composition

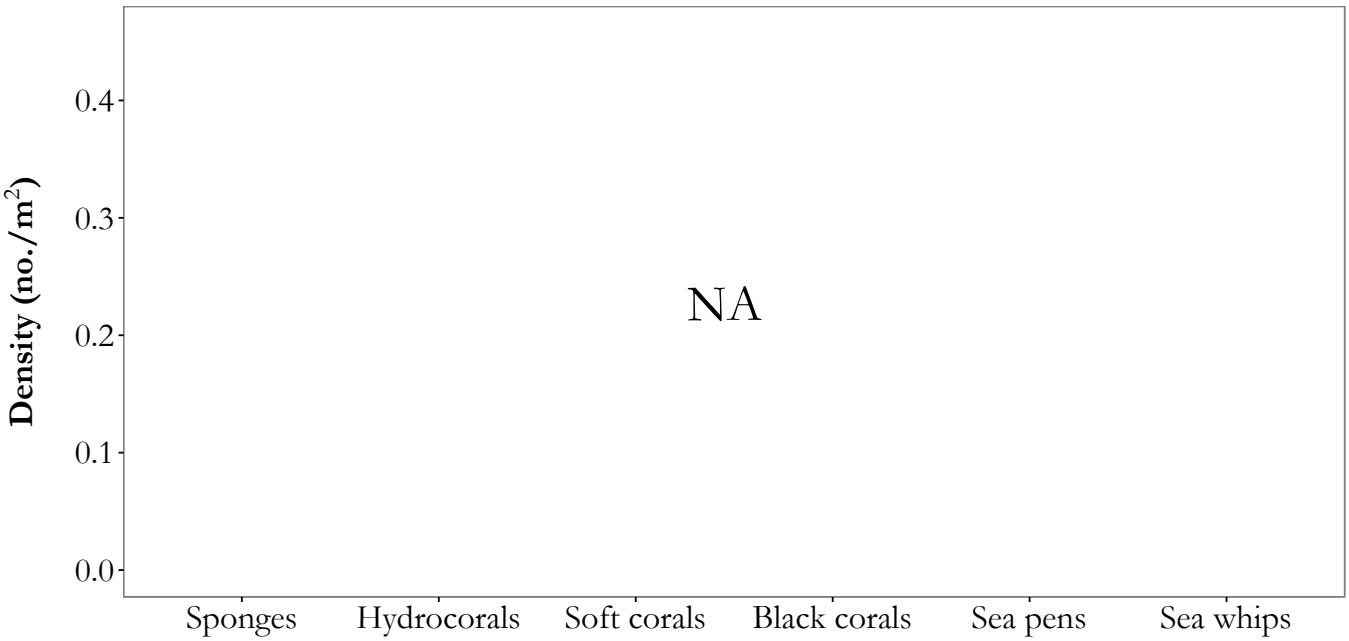


Images

AREA: Buldir Pass To Near Pass Transect 2014-76

Vertical Habitat Summary





Summary - description of transect

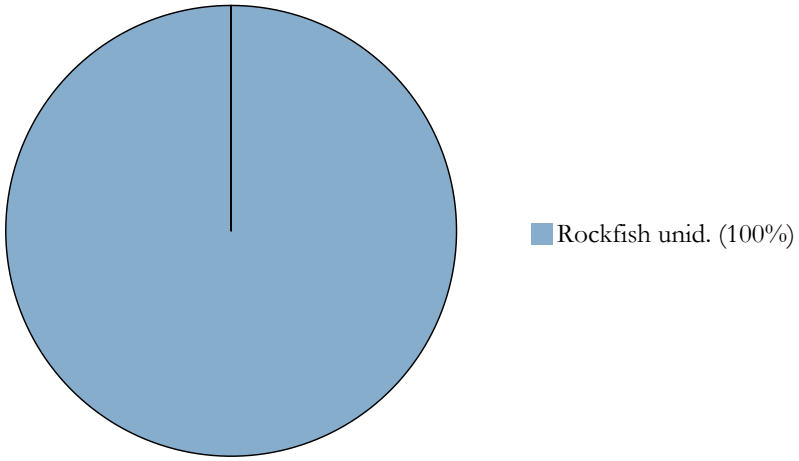
Transect 2014-76: Primary and secondary substrates consisted entirely of sand. Only eight fishes and one crab were identified in this transect. As a result, species density for the transect was very low (0.01 individuals/m^2). No corals, sponges, sea whips, sea pens, or hydrocorals were observed.

AREA: Buldir Pass To Near Pass — Transect *2014-77

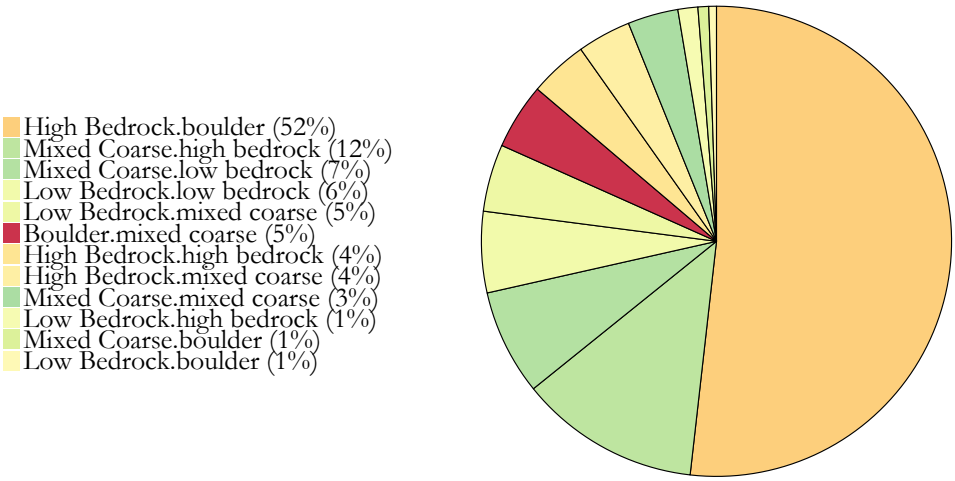
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.76	172.80	1,920	65	3.4

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 61)



Substrate Composition

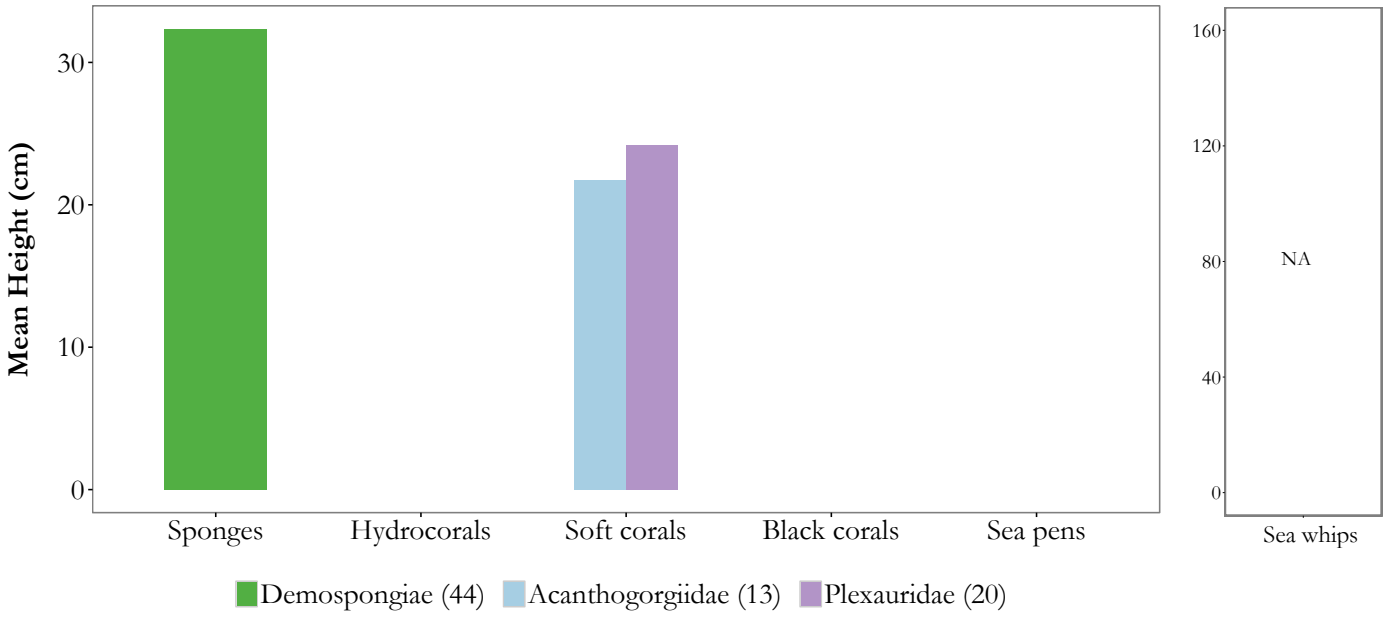


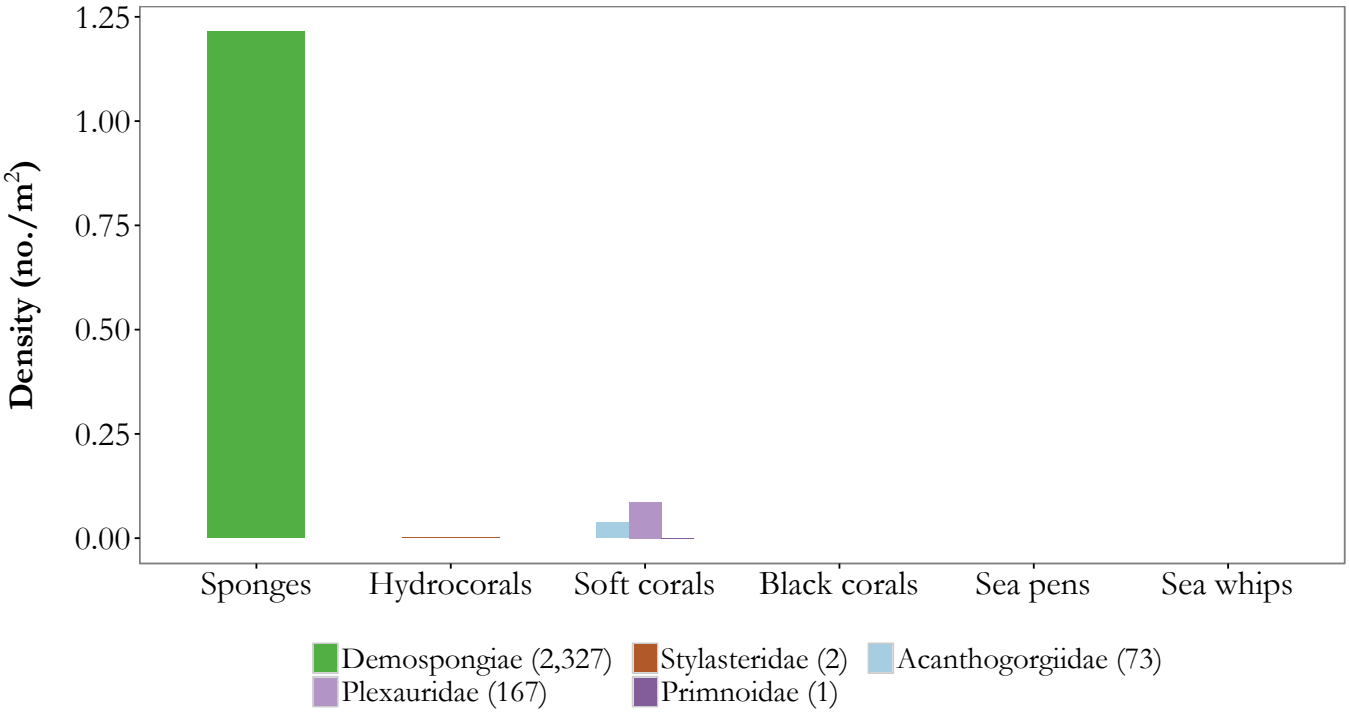
Images

AREA: Buldir Pass To Near Pass Transect *2014-77

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





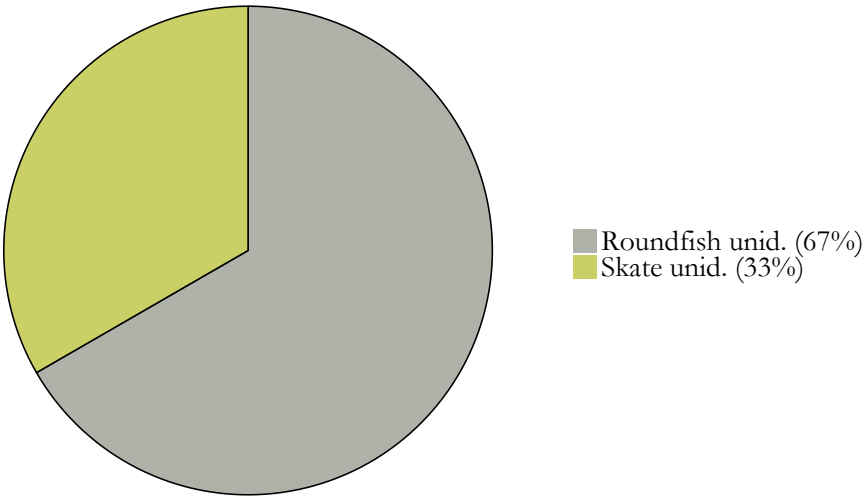
Summary - description of transect

Transect 2014-77: Bedrock, mixed coarse, and boulder accounted for all of the primary and secondary substrate. Rockfishes (0.03 individuals/m^2) were the only fishes identified. Demospongiae (1.21 individuals/m^2) accounted for 91% of the structure-forming invertebrates. Mean heights were calculated for Demospongiae (32 cm), Acanthogorgiidae (22 cm), and Plexauridae (24 cm).

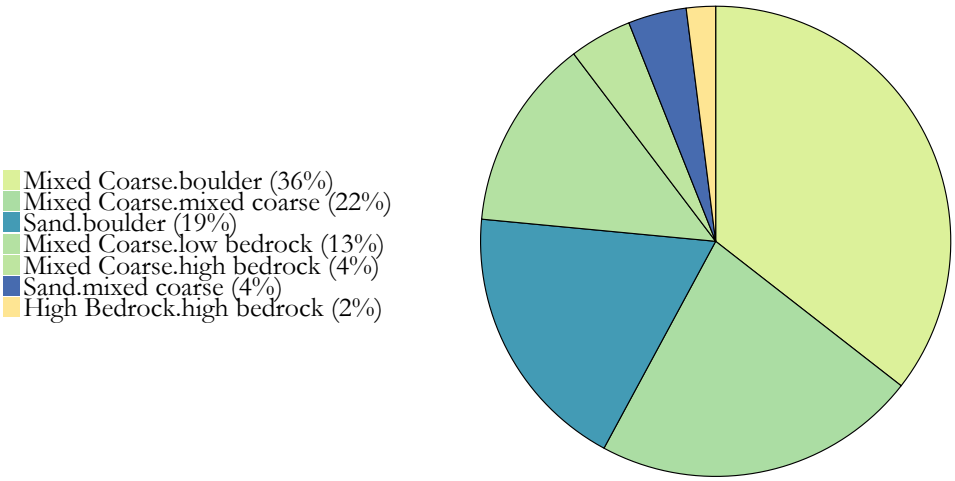
AREA: Buldir Pass To Near Pass — Transect 2014-78

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.76	172.74	1,242	97	3.4

Fish and Crab Composition (n = 3)



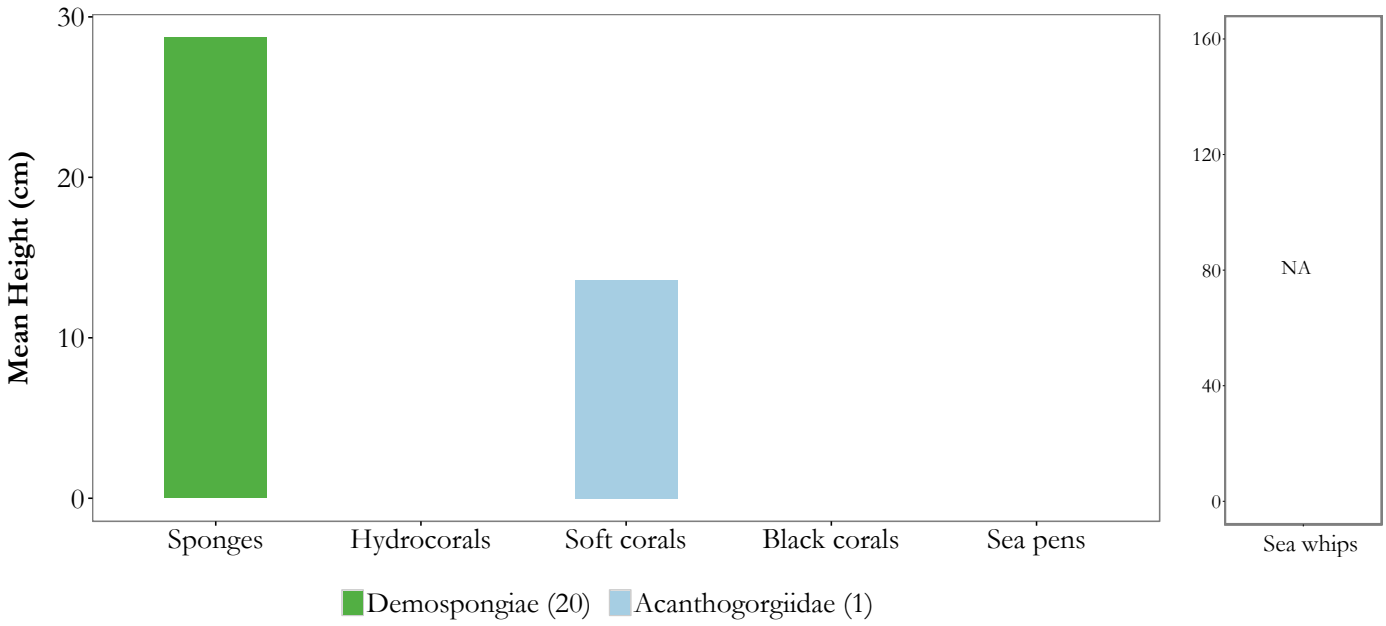
Substrate Composition

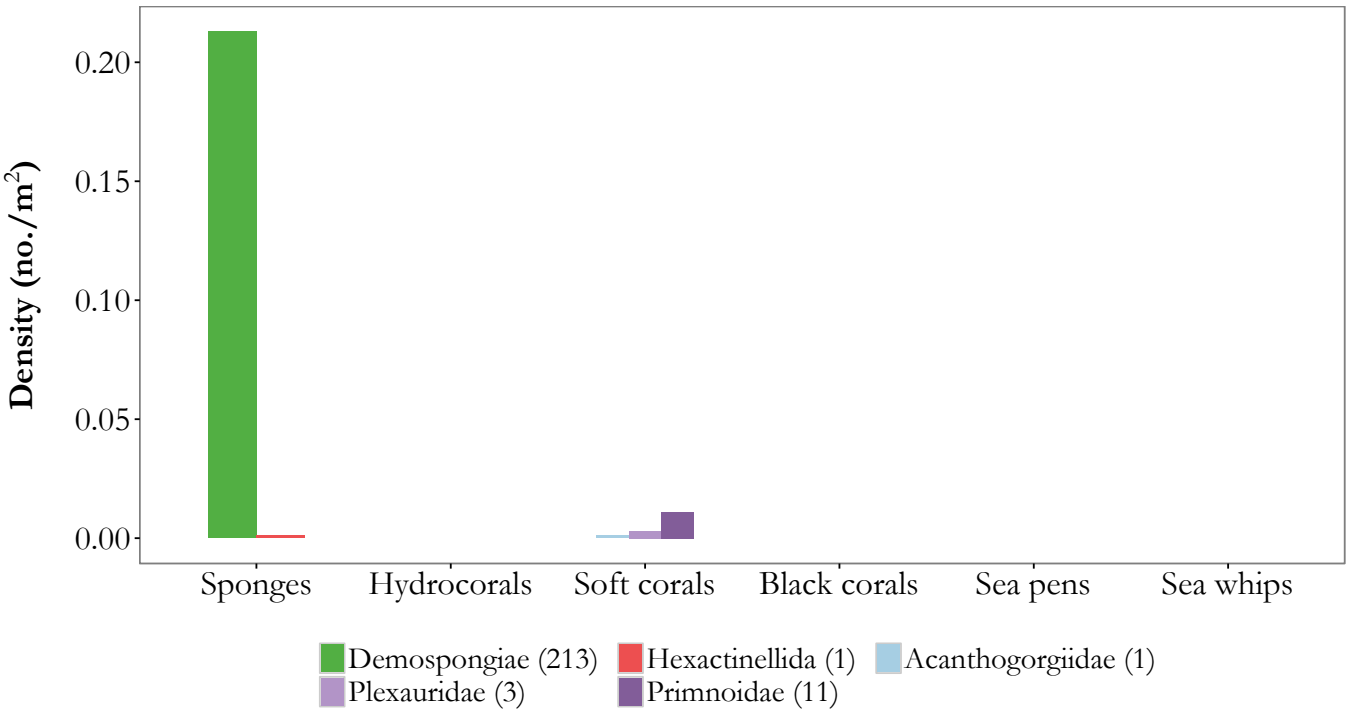


Images

AREA: Buldir Pass To Near Pass Transect 2014-78

Vertical Habitat Summary





Summary - description of transect

Transect 2014-78: Primary and secondary substrates consisted largely of mixed coarse and boulder. Only three fishes were identified in this transect; two flatfishes and one skate accounted for 100% of the species seen. Overall species density for this transect was low (< 0.01 individuals/m^2). Demospongiae (0.21 individuals/m^2) accounted for 91% of the structure-forming invertebrates. Mean height for Demospongiae was 29 cm.

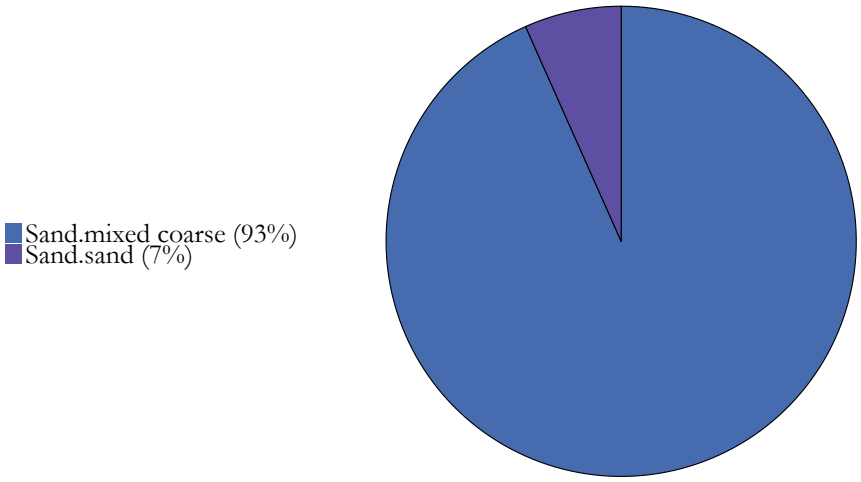
AREA: Buldir Pass To Near Pass — Transect 2014-79

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.86	172.56	1,068	111	3.5

Fish and Crab Composition

NA

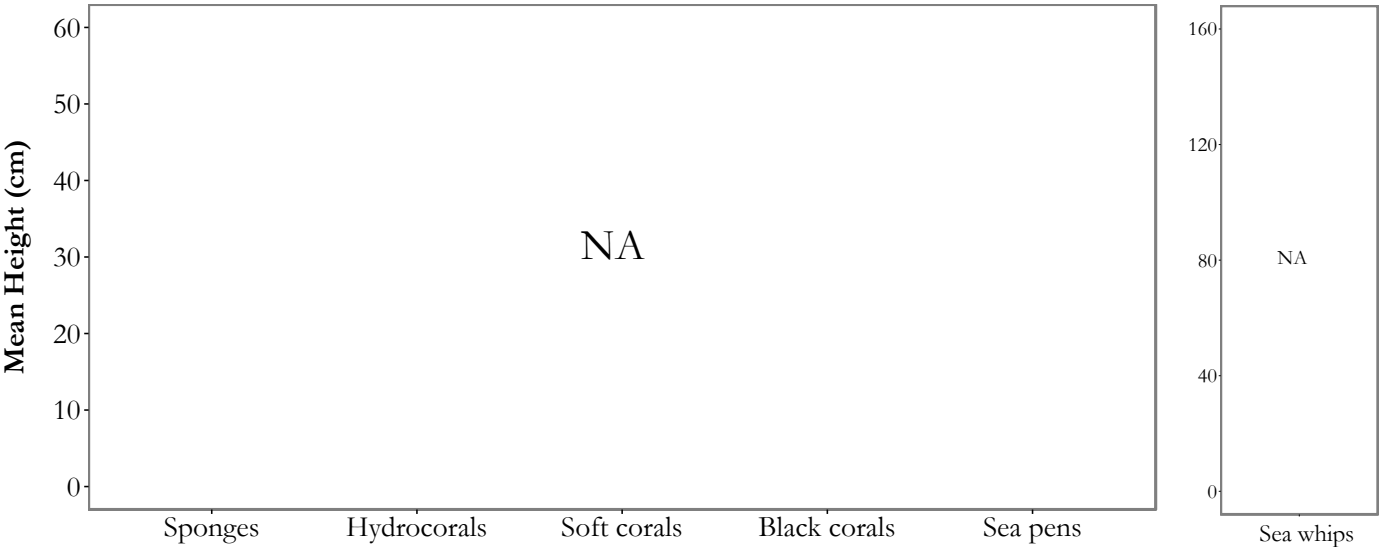
Substrate Composition

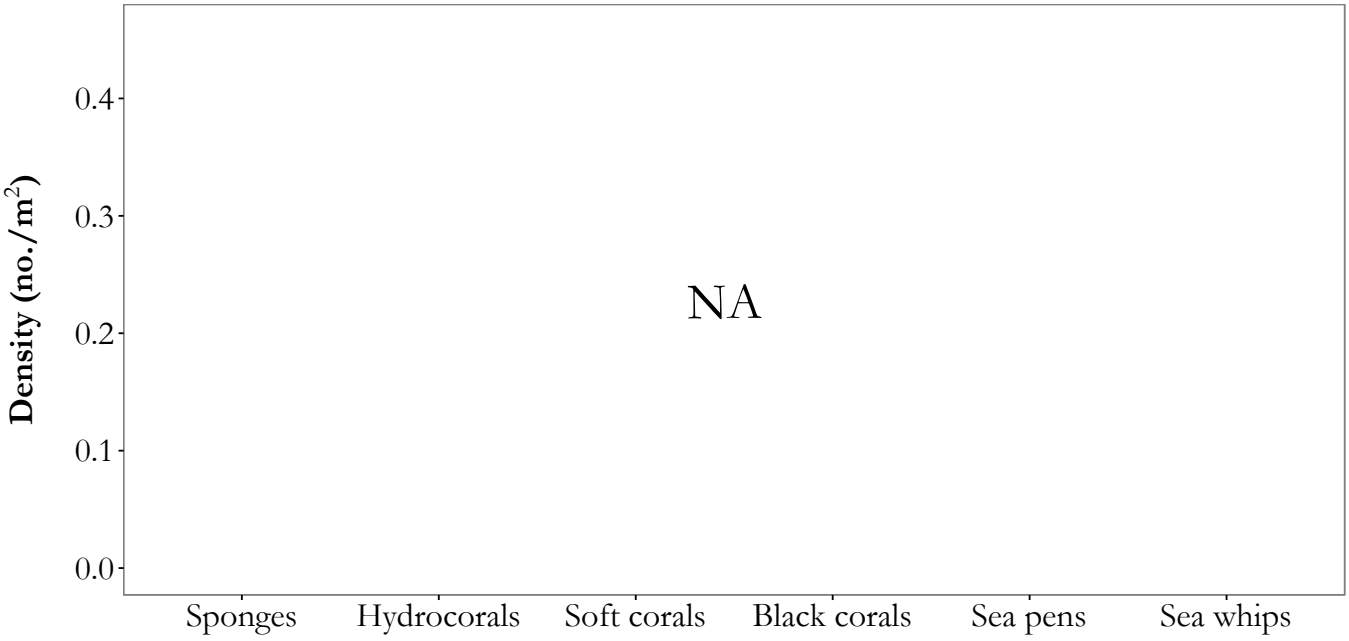


Images

AREA: Buldir Pass To Near Pass Transect 2014-79

Vertical Habitat Summary





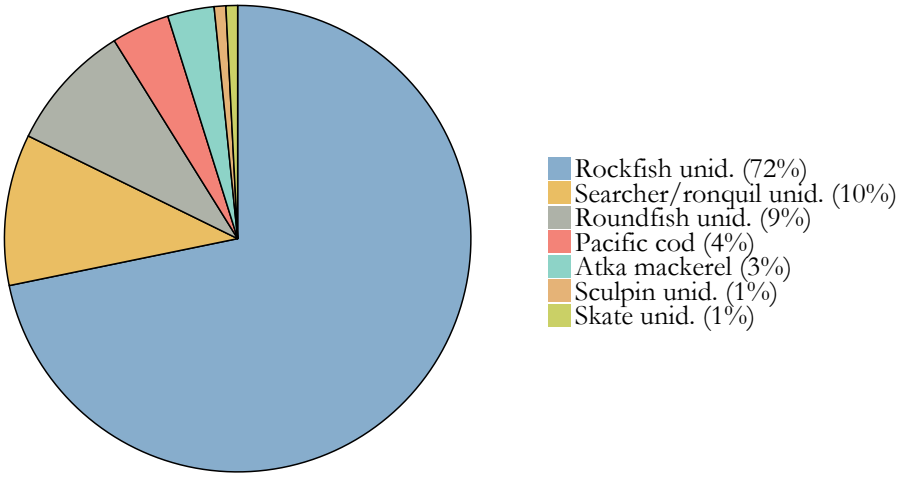
Summary - description of transect

Transect 2014-79: Primary and secondary substrates consisted largely of sand and mixed coarse. No fishes, crabs, sponges, hydrocorals, corals, sea pens, or sea whips were observed.

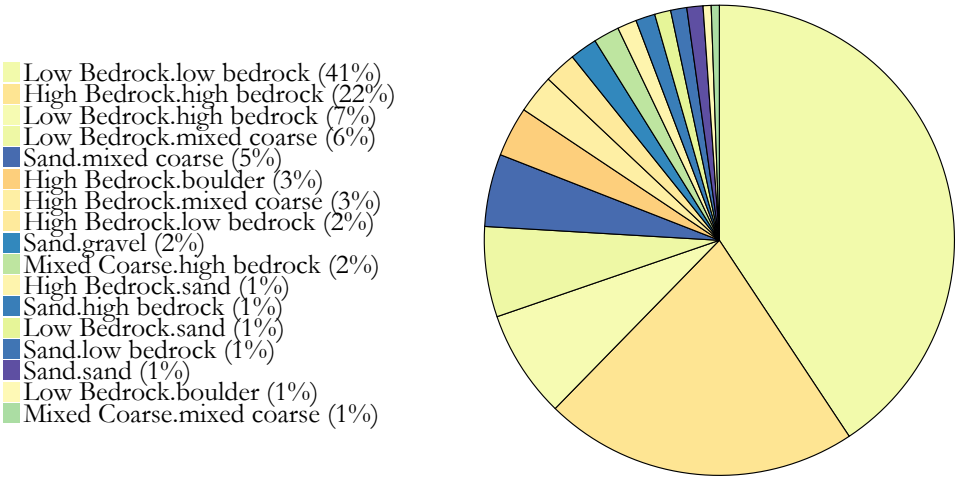
AREA: Buldir Pass To Near Pass — Transect 2014-80

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.90	172.30	1,578	126	3.7

Fish and Crab Composition (n = 124)



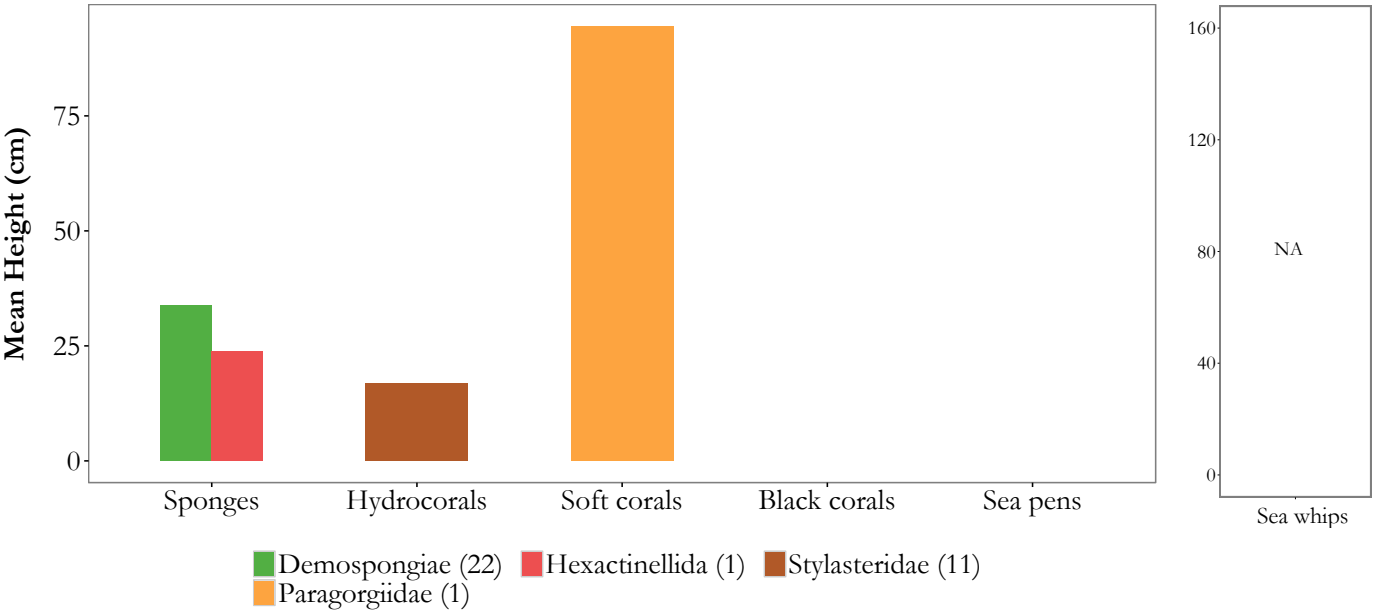
Substrate Composition

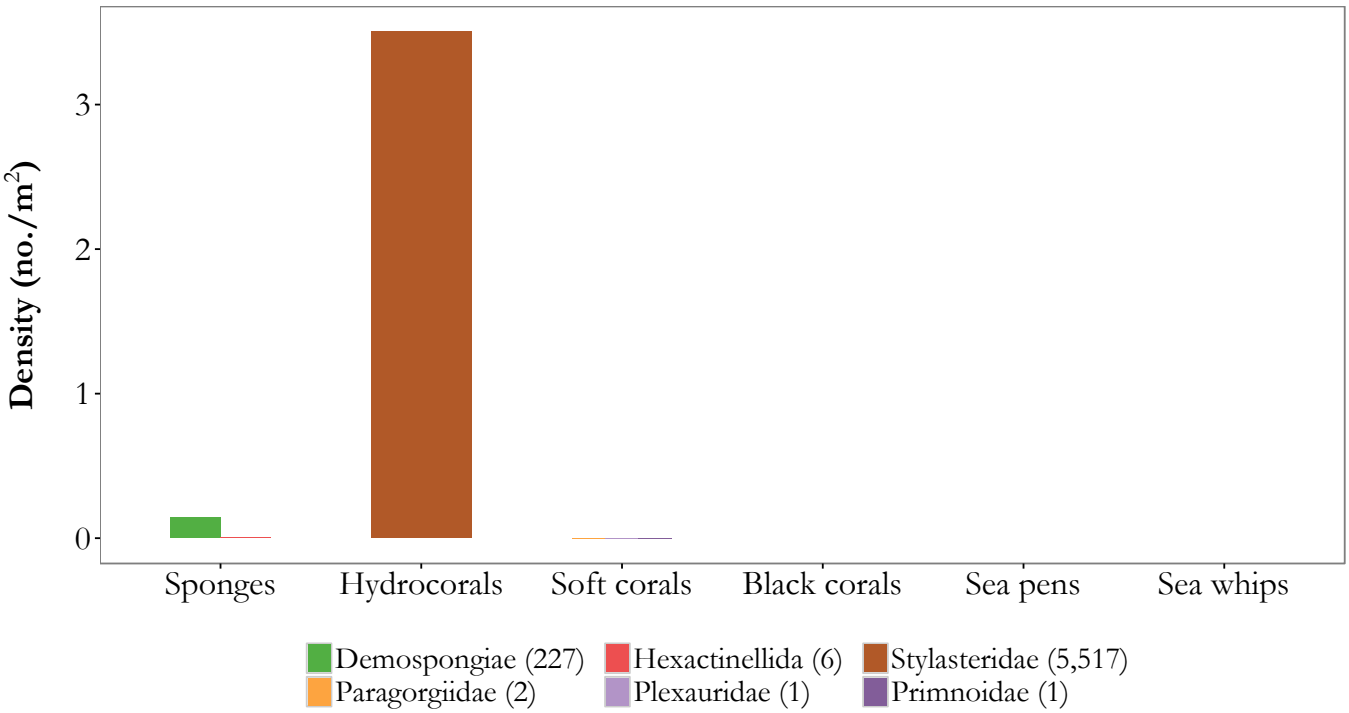


Images

AREA: Buldir Pass To Near Pass Transect 2014-80

Vertical Habitat Summary





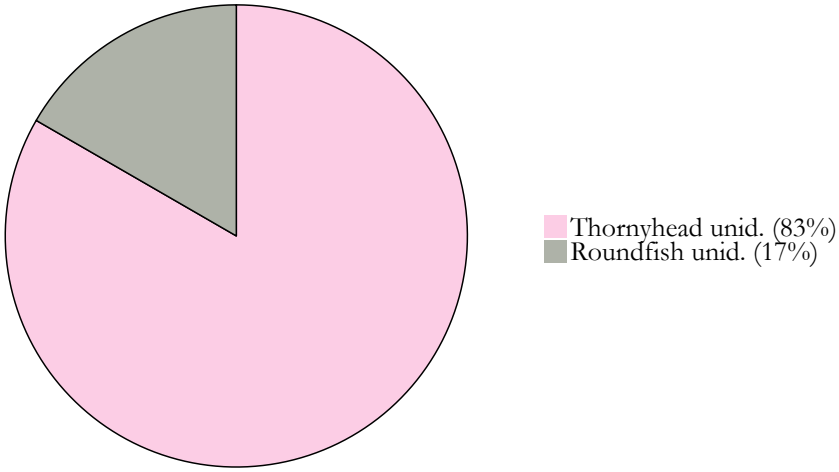
Summary - description of transect

Transect 2014-80: Substrate composition for this haul was very diverse. Bedrock accounted for a majority of the primary and secondary substrates. Eighteen combinations of substrates were identified. Fish density was 0.08 individuals/m^2, with rockfishes (n = 89) accounting for 72% of the density. Stylasteridae density (3.50 individuals/m^2) on this transect was the highest of the survey. Over 5,500 individuals were identified. Demospongiae (0.14 individuals/m^2) were the next most abundant structure-forming invertebrates. Mean heights were calculated for Demospongiae (34 cm) and Stylasteridae (17 cm).

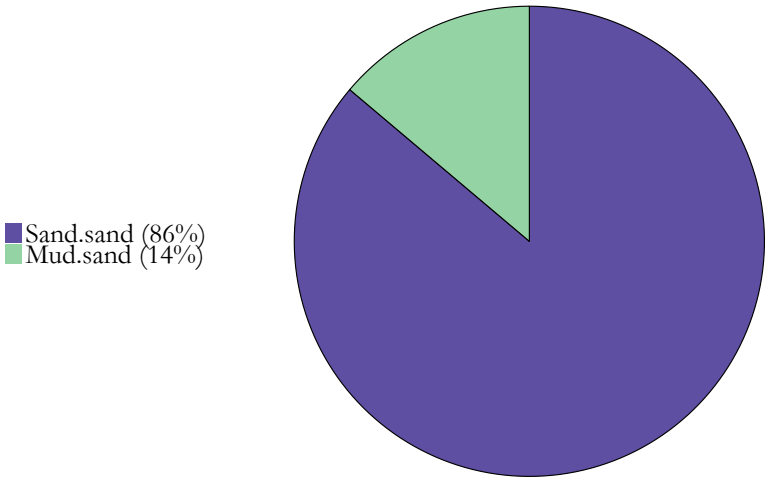
AREA: Buldir Pass To Near Pass — Transect 2014-81

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.93	172.19	875	389	3.8

Fish and Crab Composition (n = 12)



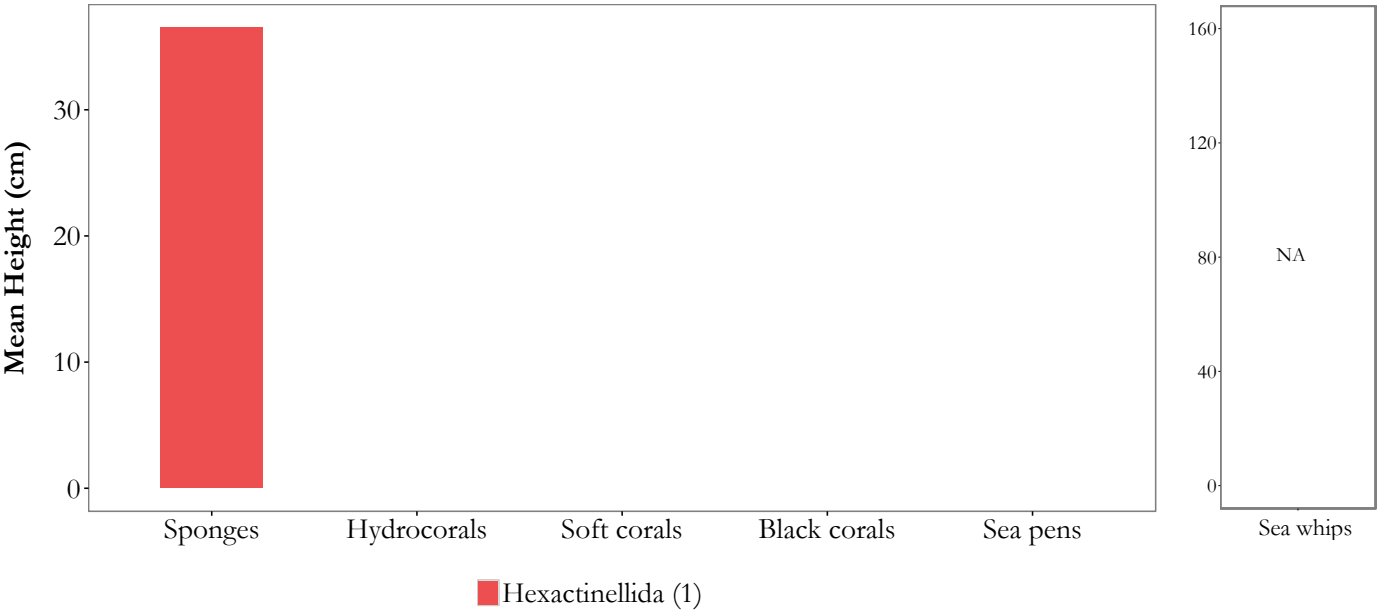
Substrate Composition

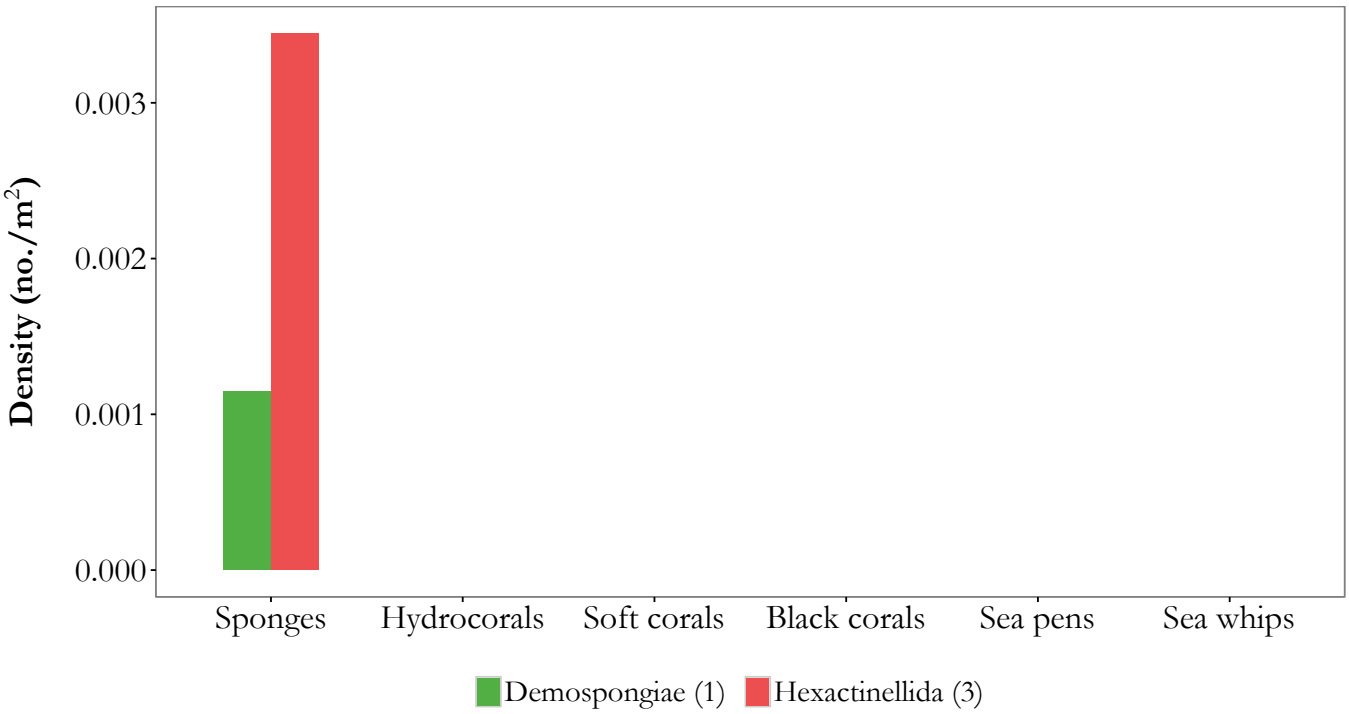


Images

AREA: Buldir Pass To Near Pass Transect 2014-81

Vertical Habitat Summary





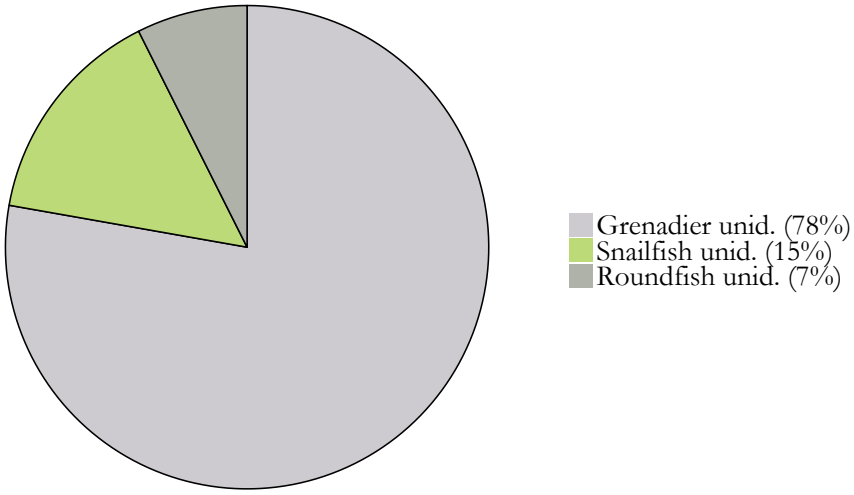
Summary - description of transect

Transect 2014-81: Primary and secondary substrates consisted entirely of sand and mud. Ten thornyheads and two unidentified fishes accounted for 100% of the total fish density (0.01 individuals/m^2). Sponges were the only structure-forming invertebrates identified. Hexactinellida and Demospongiae had a combined density of < 0.01 individuals/m^2. One Hexactinellida was measured at 37 cm.

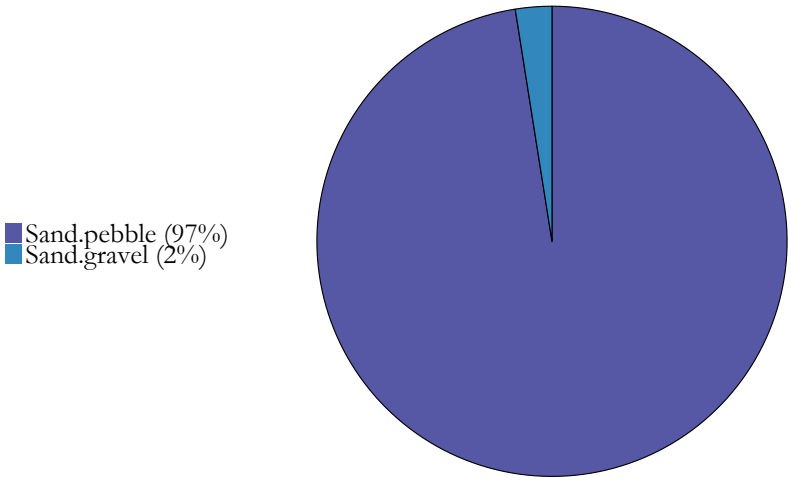
AREA: Buldir Pass To Near Pass — Transect 2014-82

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/6/2014	52.97	172.08	944	576	3.6

Fish and Crab Composition (n = 27)



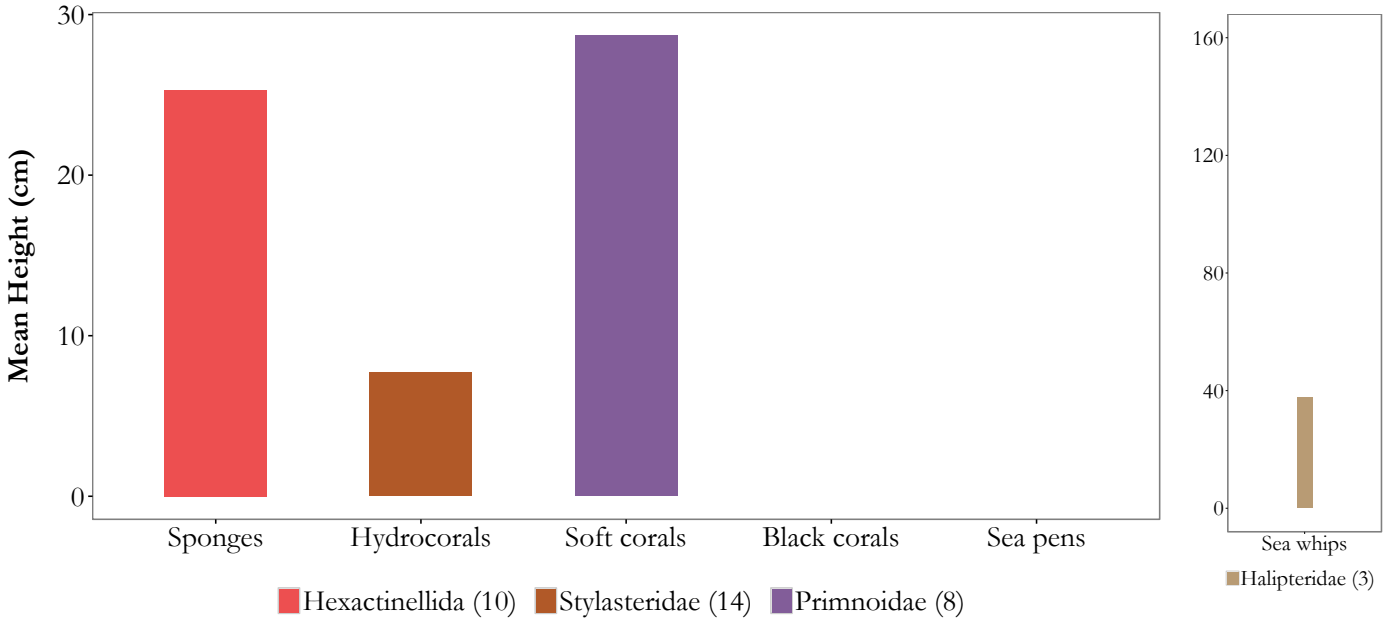
Substrate Composition

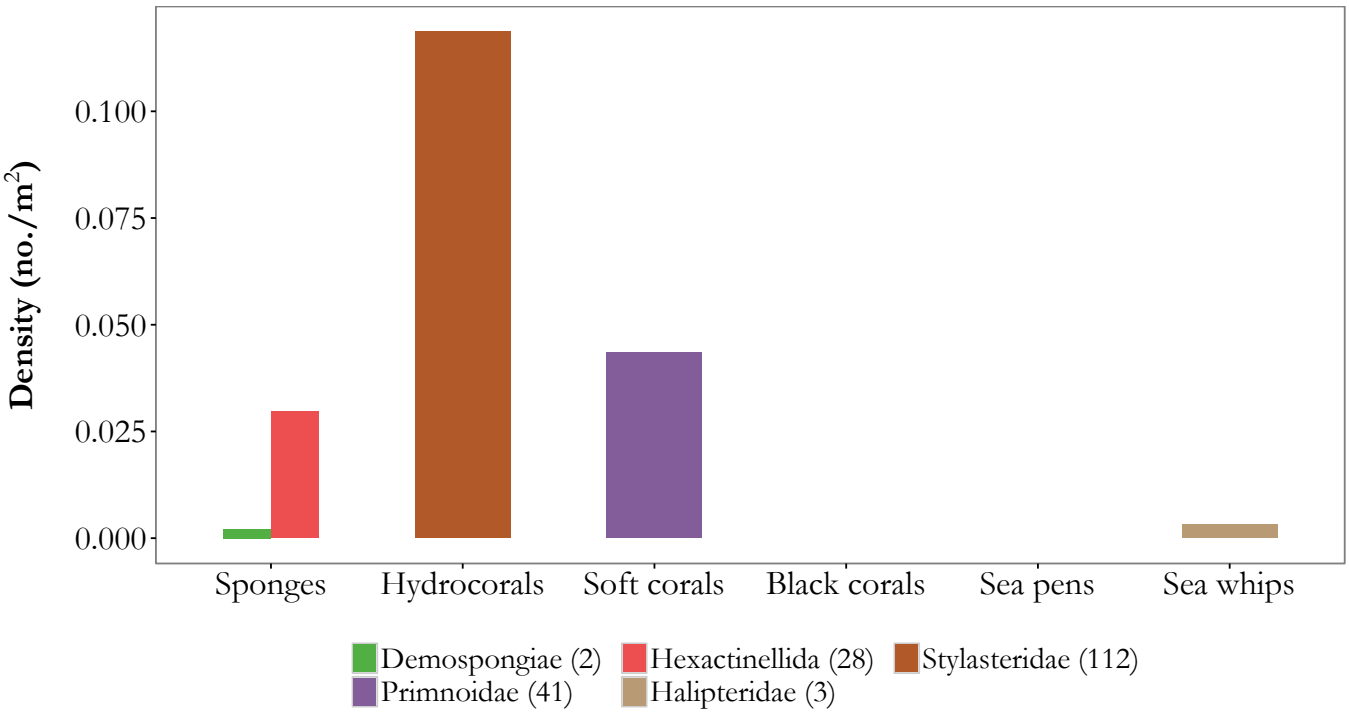


Images

AREA: Buldir Pass To Near Pass Transect 2014-82

Vertical Habitat Summary





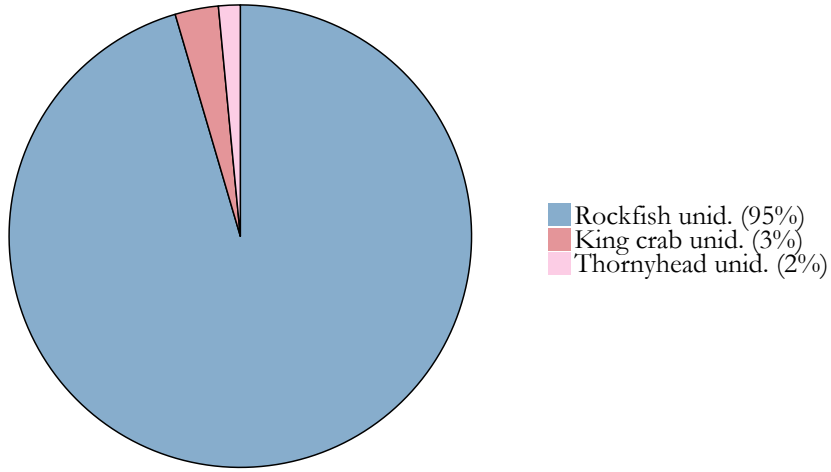
Summary - description of transect

Transect 2014-82: Primary and secondary substrates consisted largely of sand, pebble, and gravel. Grenadiers (n = 21) accounted for 78% of the overall fish density (0.03 individuals/m^2). Structure-forming invertebrates consisted largely of Stylasteridae (0.12 individuals/m^2), Primnoidae (0.04 individuals/m^2), and Hexactinellida (0.03 individuals/m^2). Overall density was 0.20 individuals/m^2. Mean heights were calculated for Hexactinellida (25 cm), Stylasteridae (8 cm), Primnoidae (29 cm), and Halipteridae (38 cm).

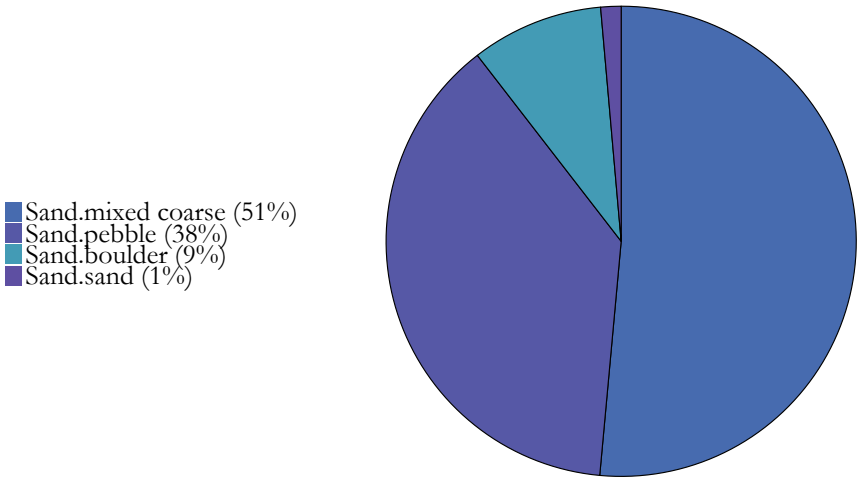
AREA: Buldir Pass To Near Pass — Transect 2014-83

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/7/2014	53.26	170.66	1,794	216	3.8

Fish and Crab Composition (n = 66)



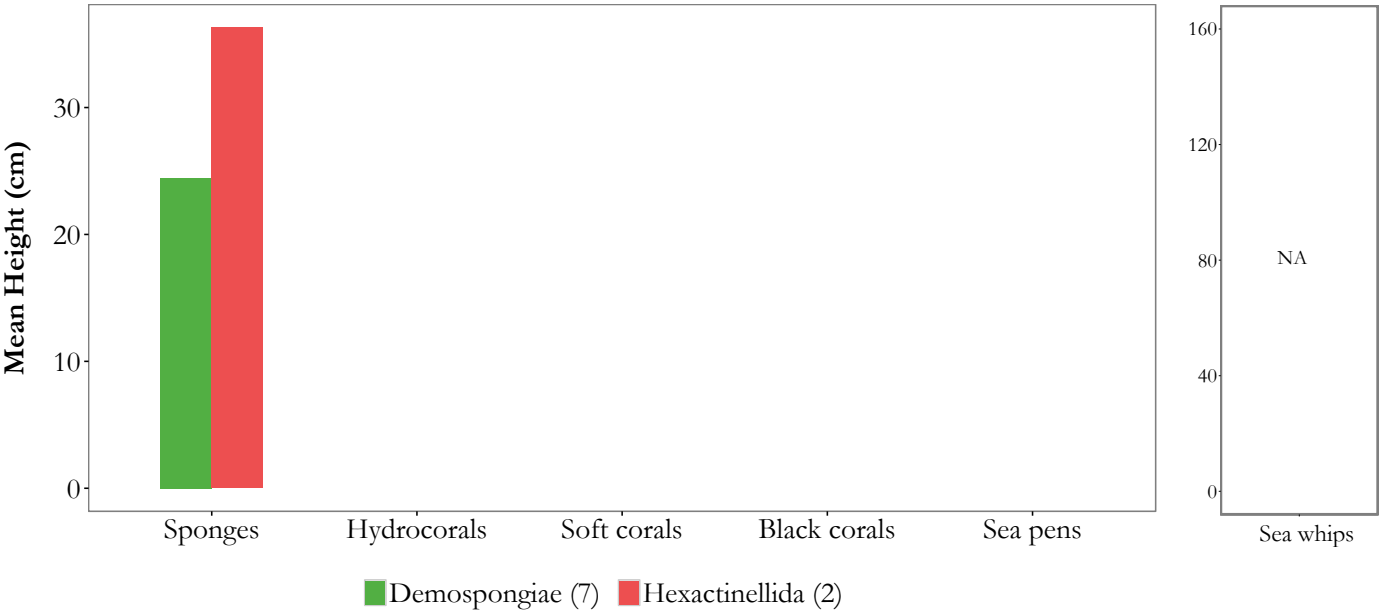
Substrate Composition

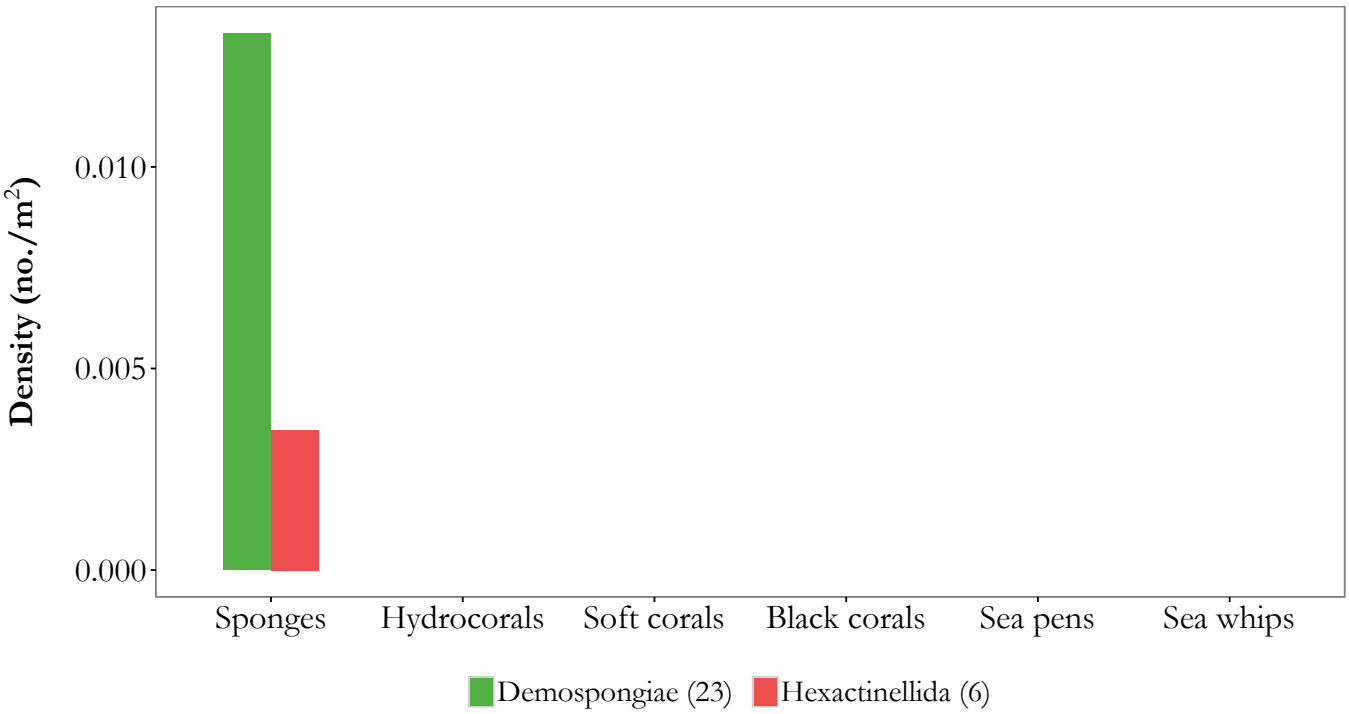


Images

AREA: Buldir Pass To Near Pass Transect 2014-83

Vertical Habitat Summary





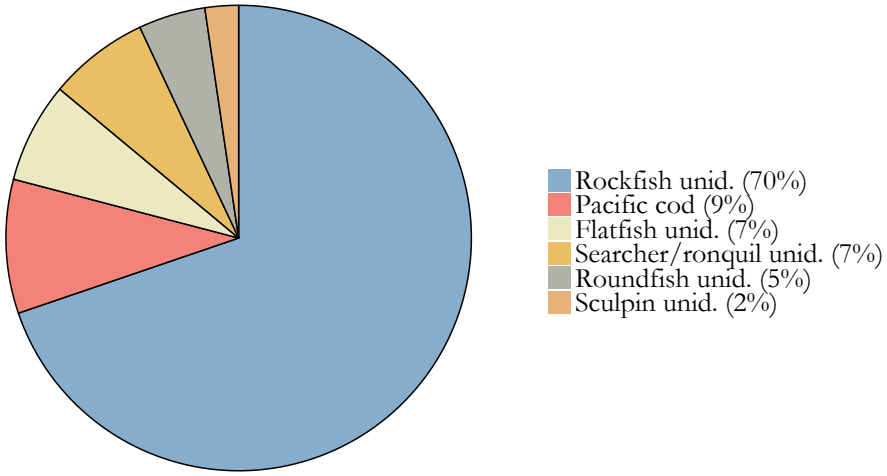
Summary - description of transect

Transect 2014-83: Primary and secondary substrates consisted of sand, mixed coarse and pebble. Fish and crab density (0.04 individuals/m^2) was dominated by rockfishes (95%). Two king crabs were identified. Demospongiae and Hexactinellida were the only structure-forming invertebrates observed. Mean heights were 24 cm for Demospongiae and 36 cm for Hexactinellida.

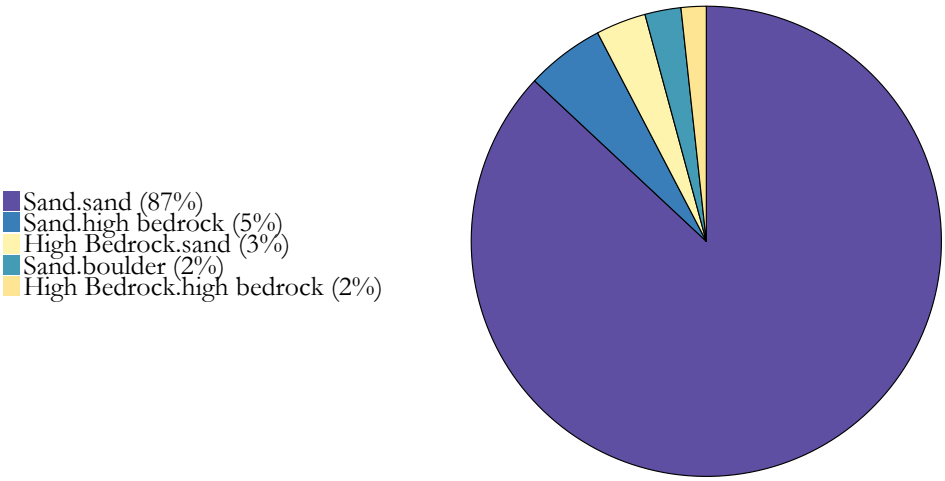
AREA: Buldir Pass To Near Pass — Transect 2014-84

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/7/2014	53.06	172.86	2,091	88	3.5

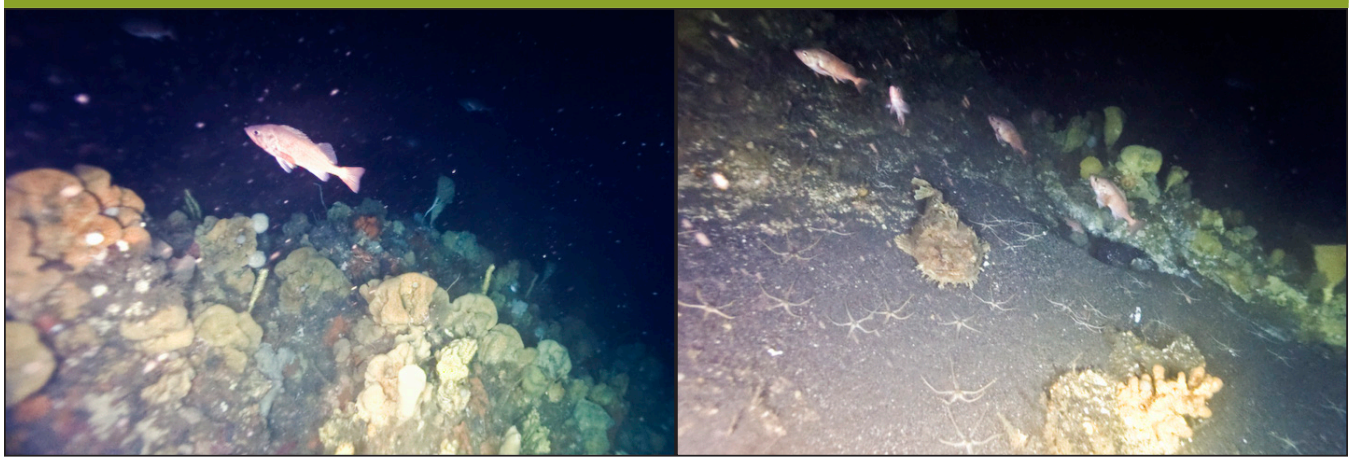
Fish and Crab Composition (n = 43)



Substrate Composition

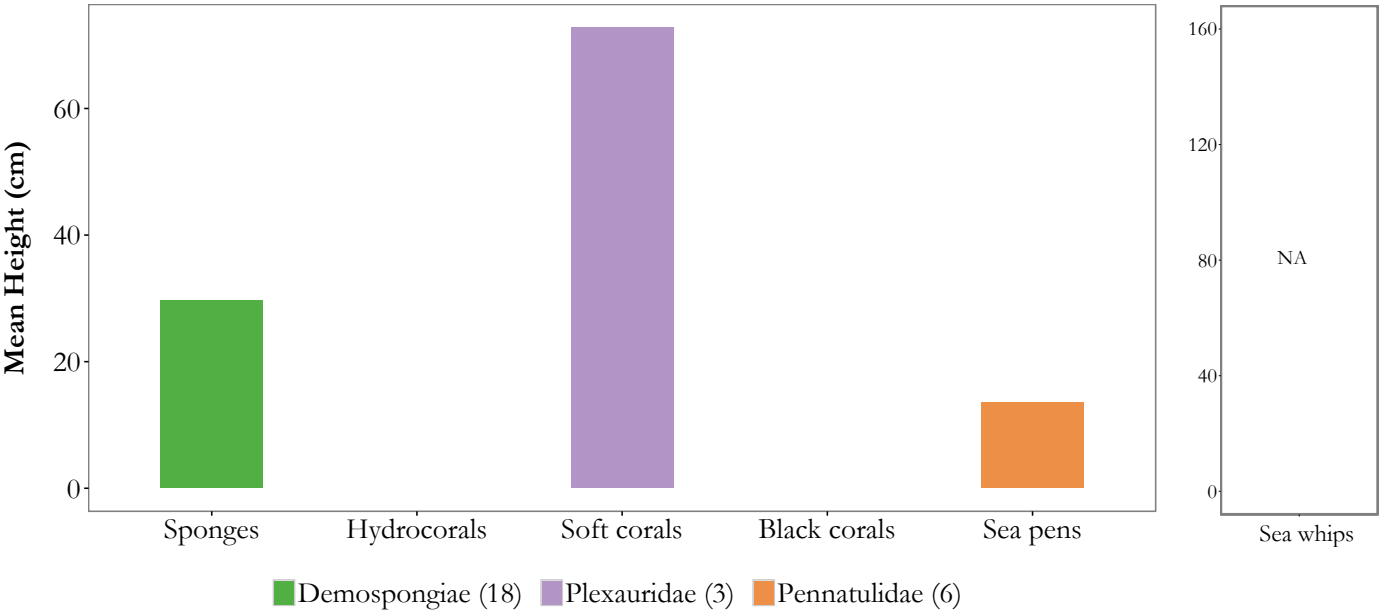


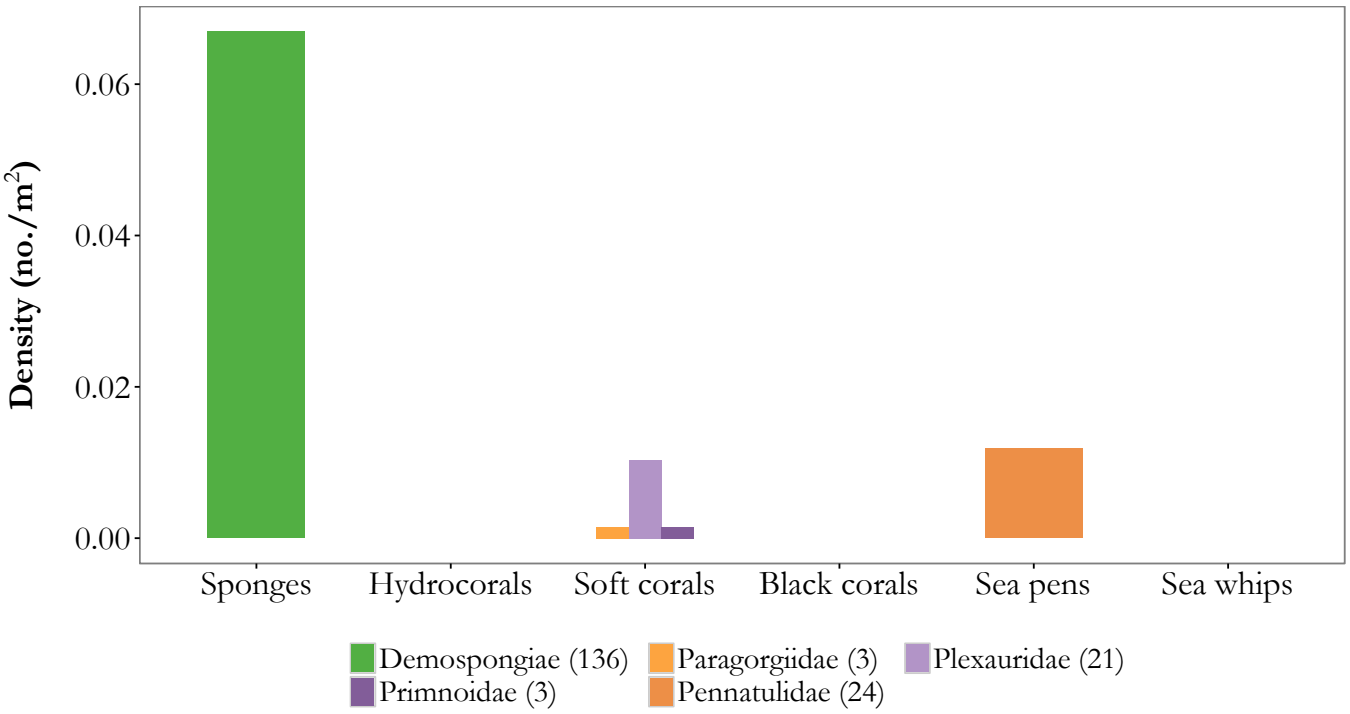
Images



AREA: Buldir Pass To Near Pass Transect 2014-84

Vertical Habitat Summary





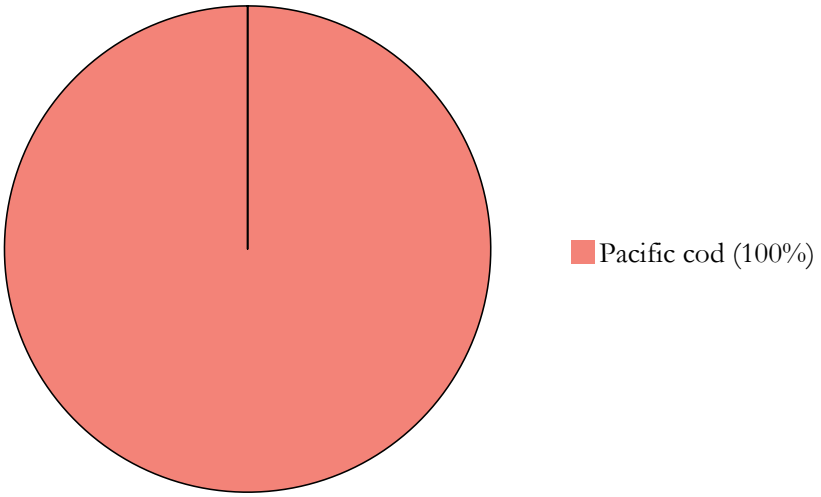
Summary - description of transect

Transect 2014-84: Primary and secondary substrates consisted almost entirely of sand. Fish density was low for this transect (0.02 individuals/m^2). Rockfishes (n = 30) accounted for 70% of the fish density. Demospongiae (0.07 individuals/m^2) accounted for 73% of the structure-forming invertebrate density (0.09 individuals/m^2). Mean heights were calculated for Demospongiae (30 cm), Plexauridae (73 cm), and Pennatulidae (14 cm).

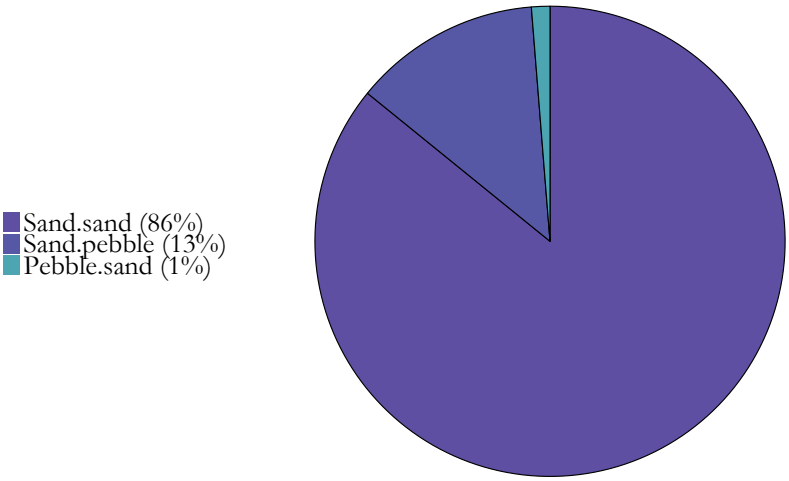
AREA: Buldir Pass To Near Pass — Transect 2014-85

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/7/2014	53.04	172.89	1,639	80	3.6

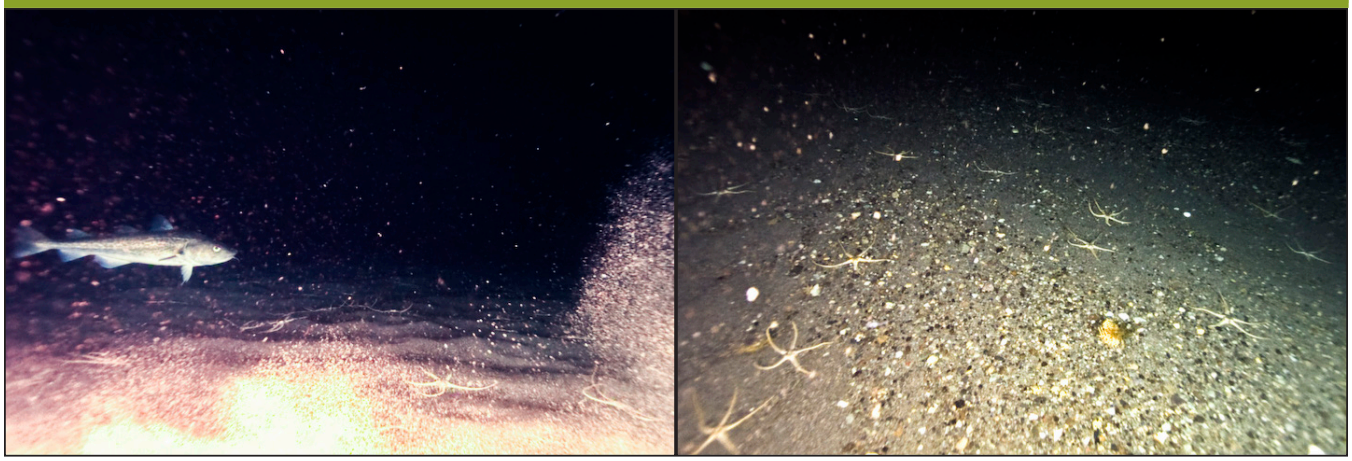
Fish and Crab Composition (n = 4)



Substrate Composition

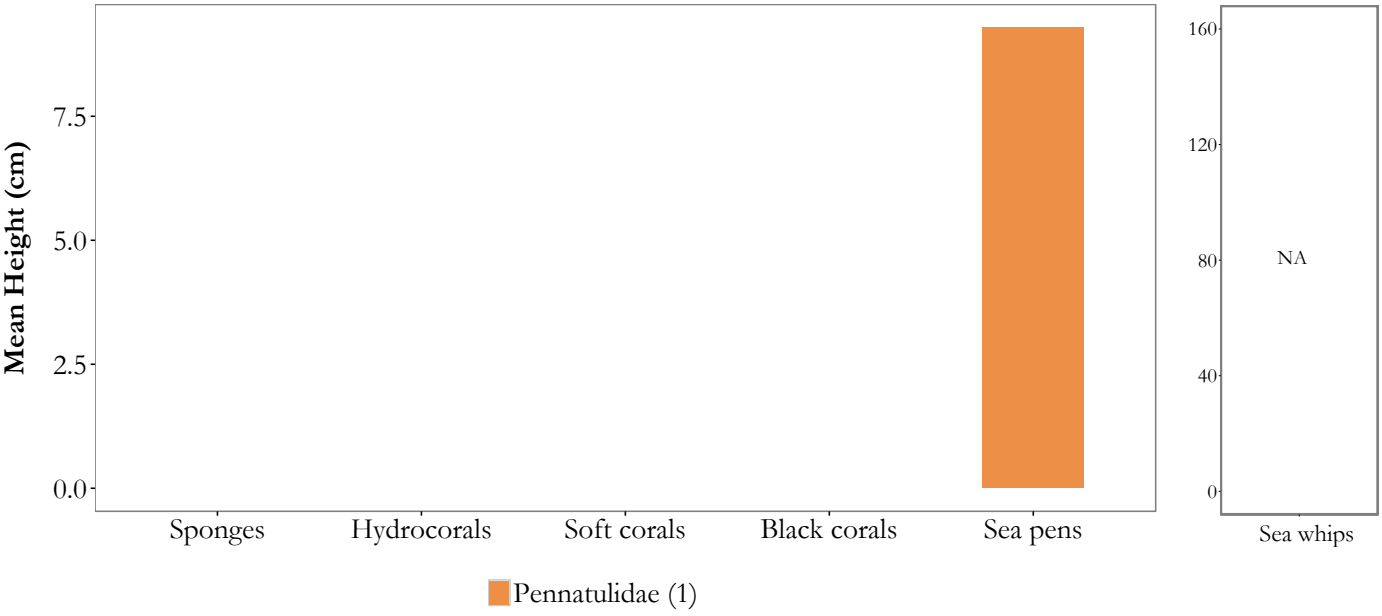


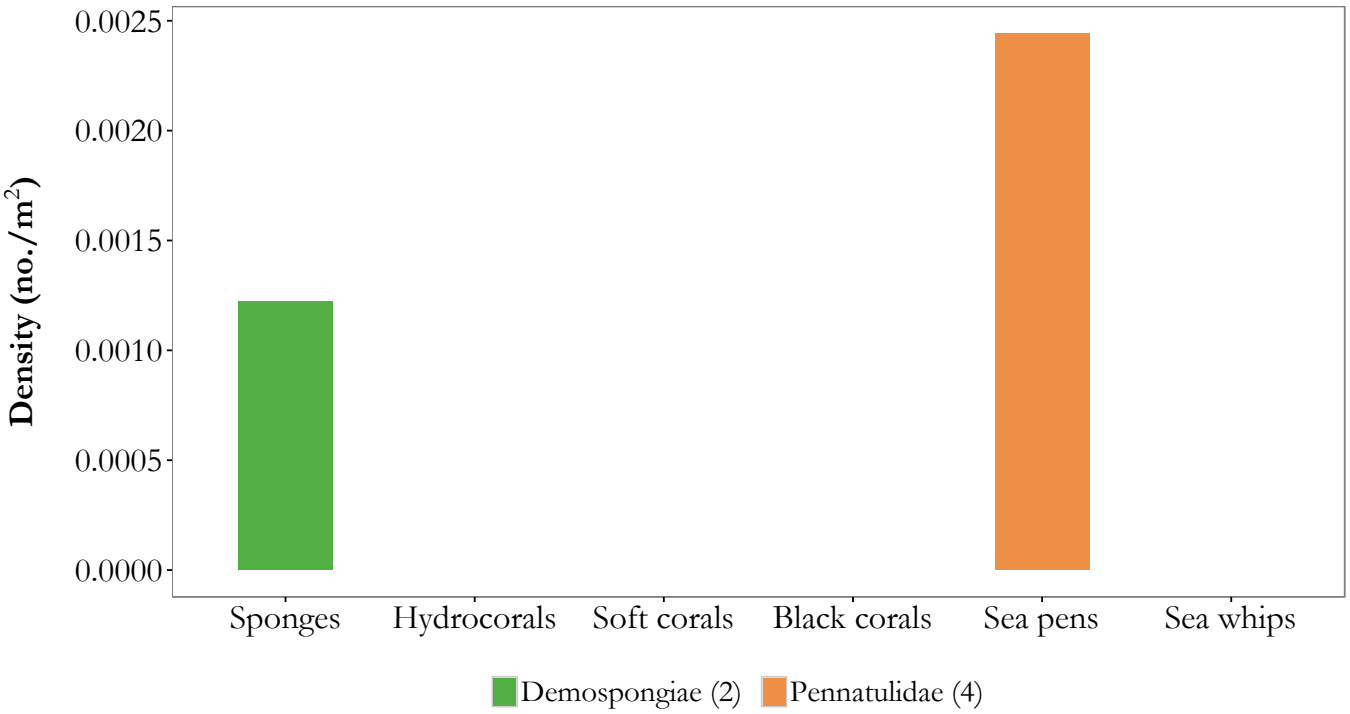
Images



AREA: Buldir Pass To Near Pass Transect 2014-85

Vertical Habitat Summary





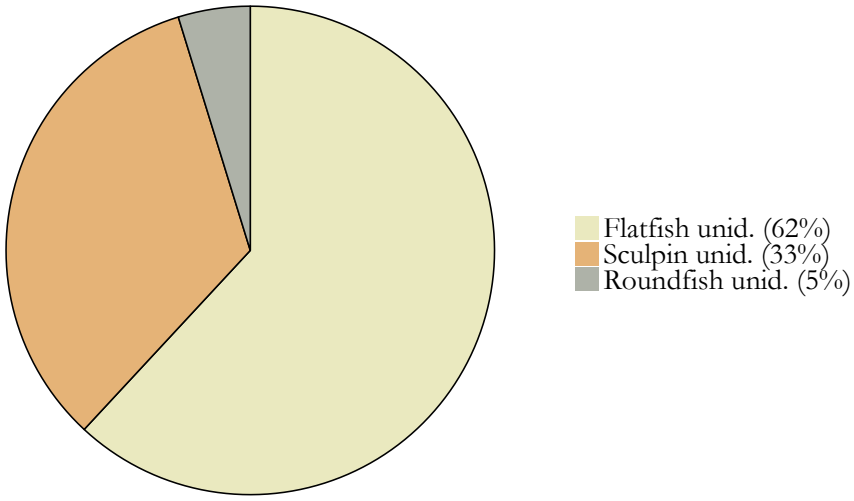
Summary - description of transect

Transect 2014-85: Primary and secondary substrates consisted almost entirely of sand and pebble. Only four Pacific cod were identified resulting is a fish density of < 0.01 individuals/m^2. Structure-forming invertebrate density was also low (< 0.01 individuals/m^2). Only four Pennatulidae and two Demospongiae were identified.

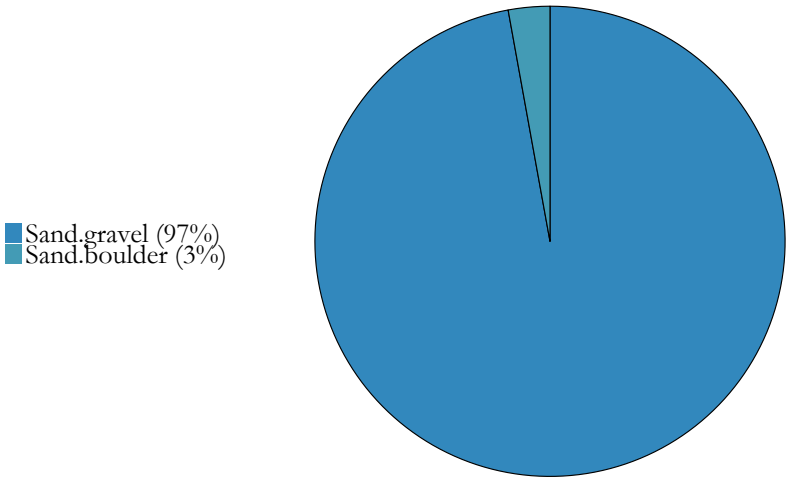
AREA: Buldir Pass To Near Pass — Transect 2014-86

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/7/2014	53.01	173.07	1,742	118	3.6

Fish and Crab Composition (n = 21)



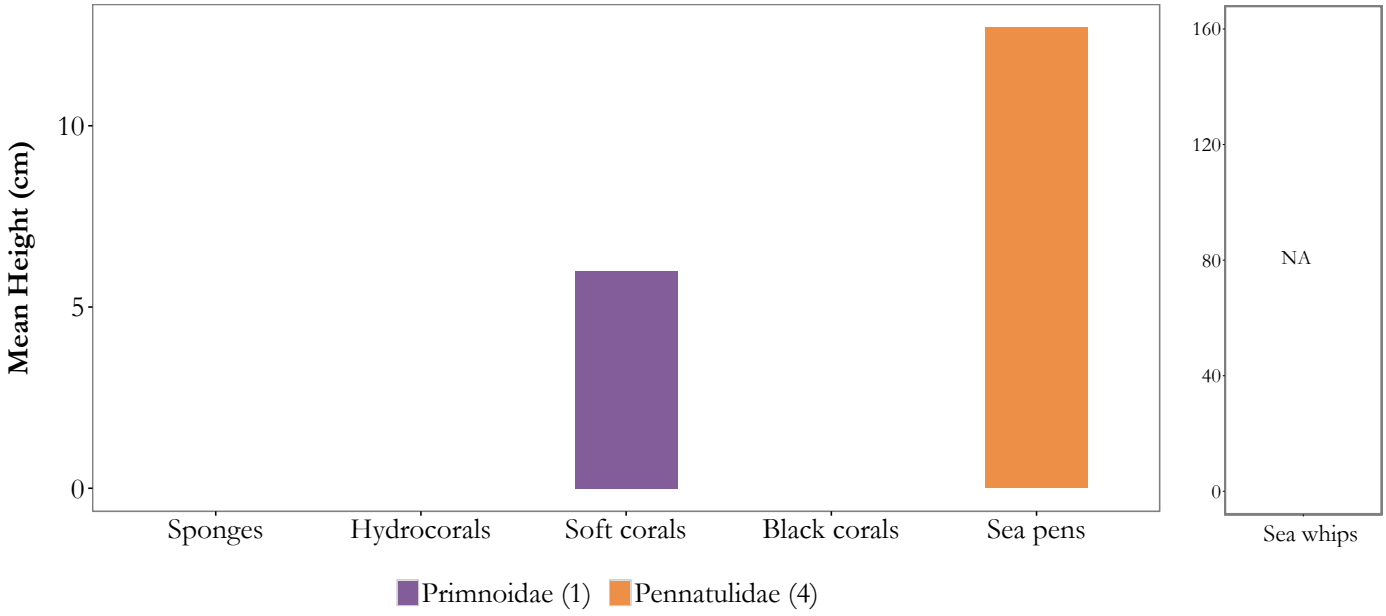
Substrate Composition

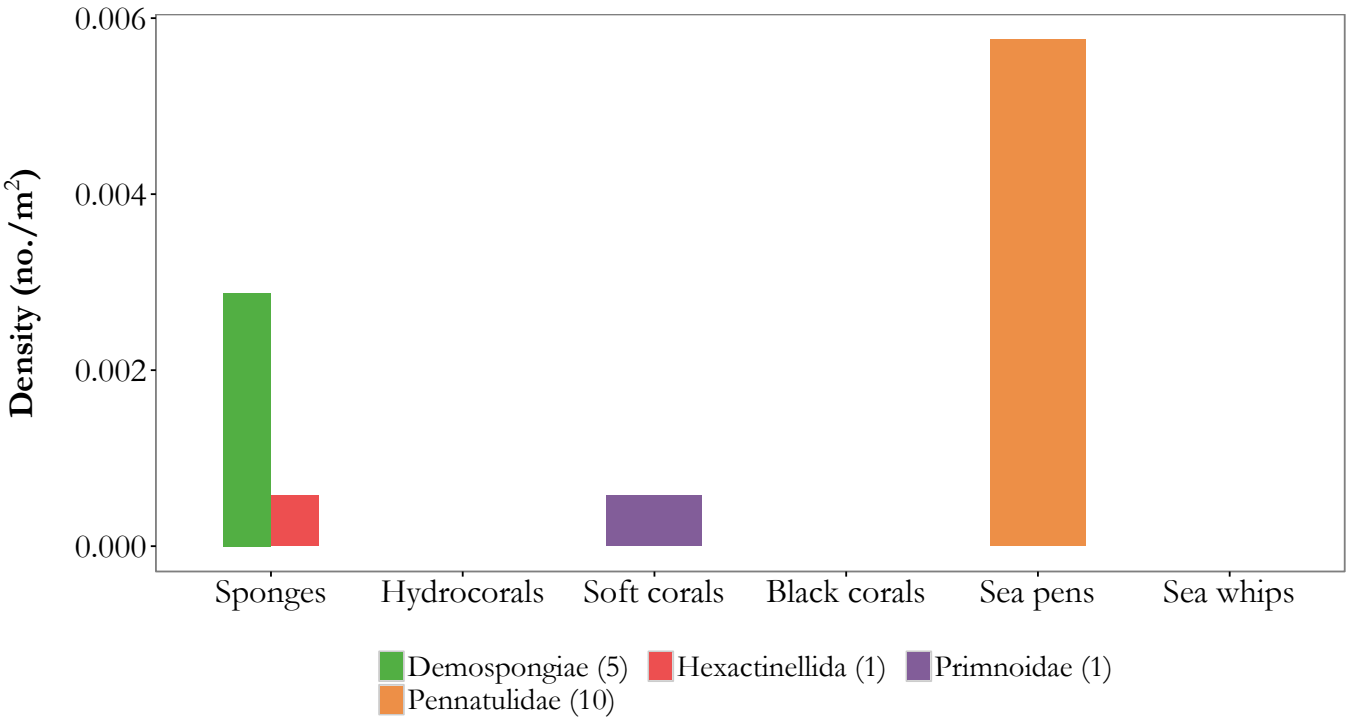


Images

AREA: Buldir Pass To Near Pass Transect 2014-86

Vertical Habitat Summary





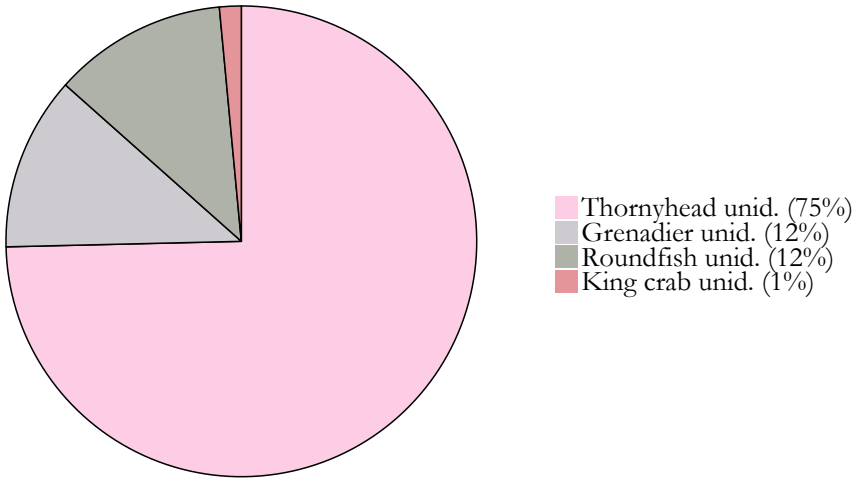
Summary - description of transect

Transect 2014-86: Primary and secondary substrates consisted of sand, gravel, and boulder. Flatfishes (n = 13) accounted for 62% of the overall fish density (0.01 individuals/m^2). Pennatulidae (n = 10) accounted for 59% of the structure-forming invertebrate density (0.01 individuals/m^2). Mean height for Pennatulidae was 13 cm.

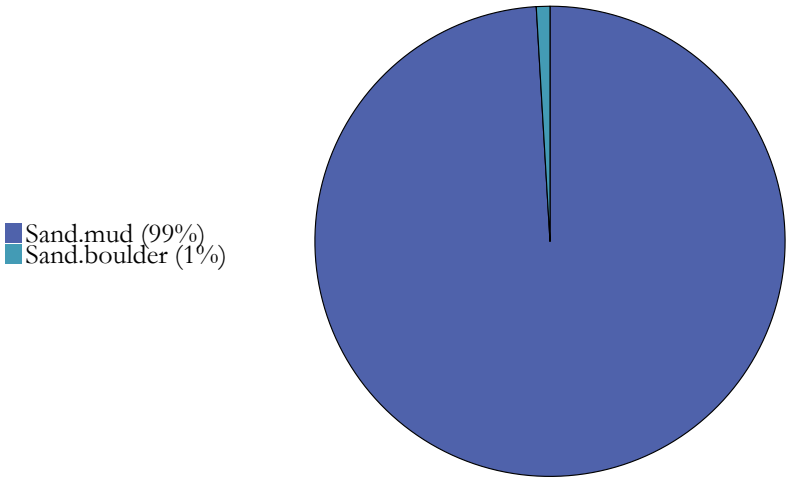
AREA: Buldir Pass To Near Pass — Transect 2014-87

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/7/2014	52.97	173.30	1,269	485	3.8

Fish and Crab Composition (n = 67)



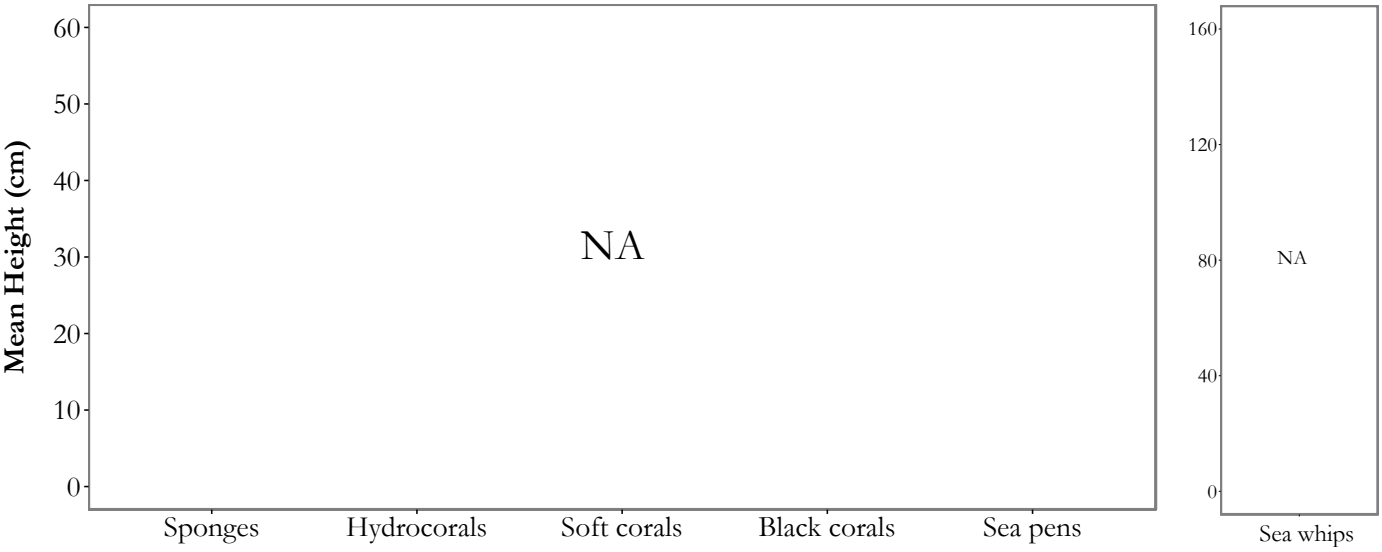
Substrate Composition

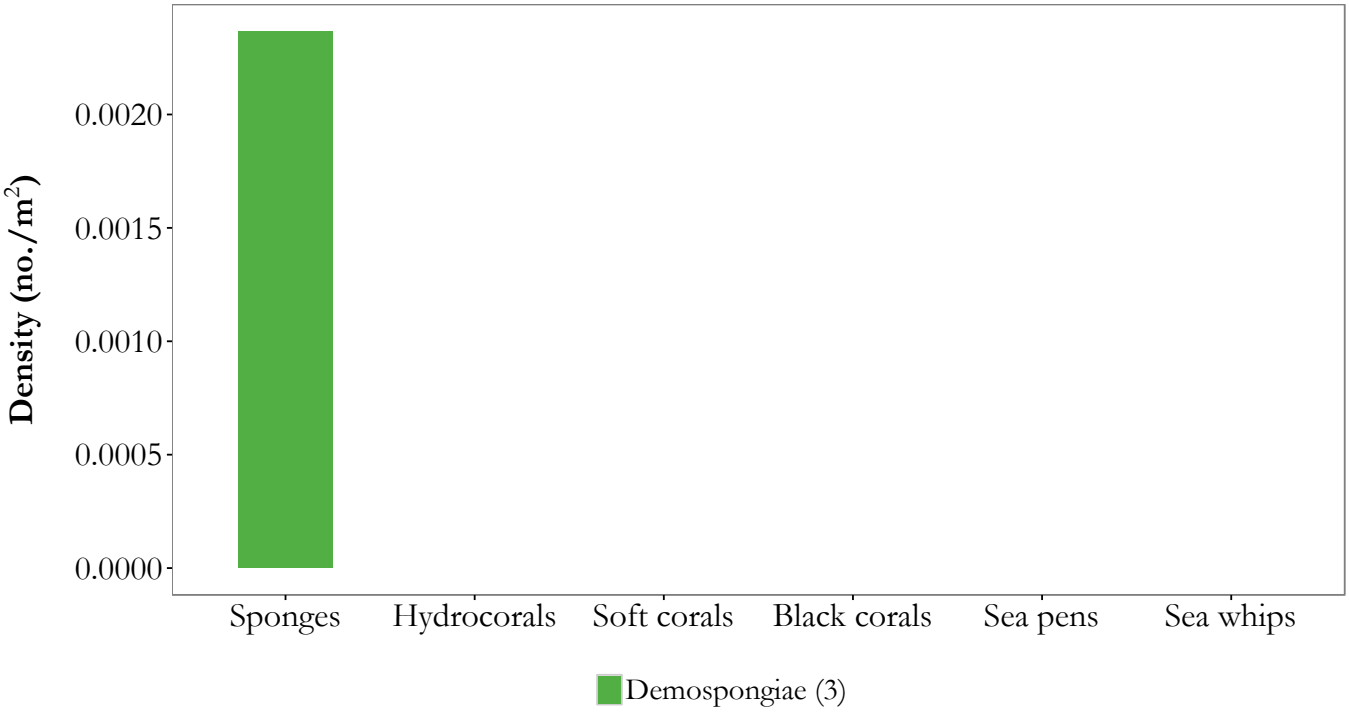


Images

AREA: Buldir Pass To Near Pass Transect 2014-87

Vertical Habitat Summary





Summary - description of transect

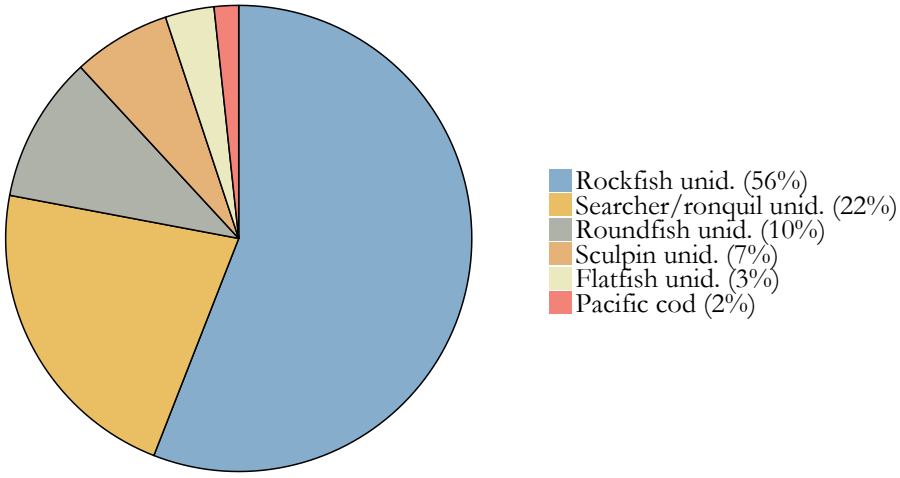
Transect 2014-87: Primary and secondary substrates consisted largely of sand and mud. Thornyheads (n = 50) accounted for 75% of the fish and crab density (0.05 individuals/m²). Only three Demospongiae were observed. No height measurements were taken.

AREA: Buldir Pass To Near Pass — Transect *2014-88

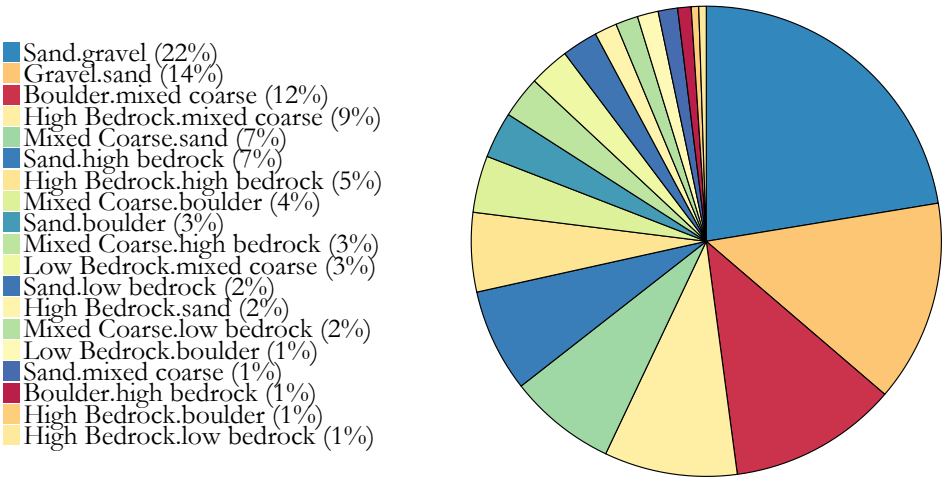
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/7/2014	52.87	173.45	1,818	94	3.6

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 59)



Substrate Composition

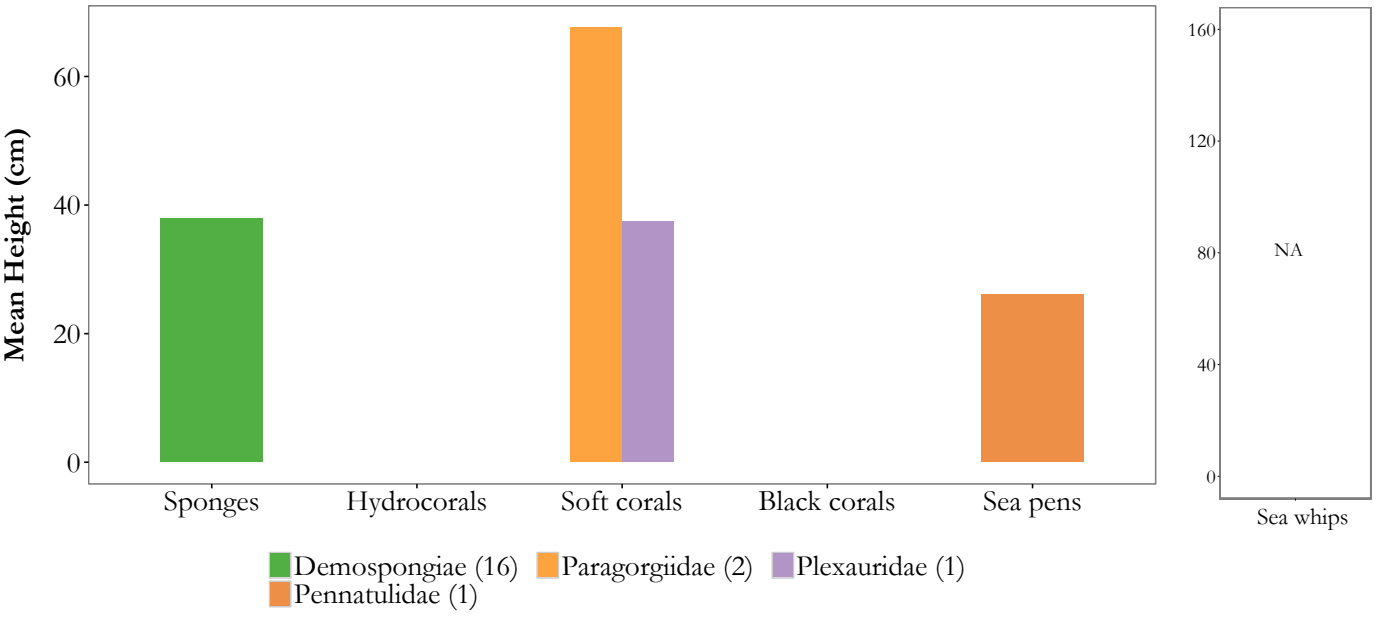


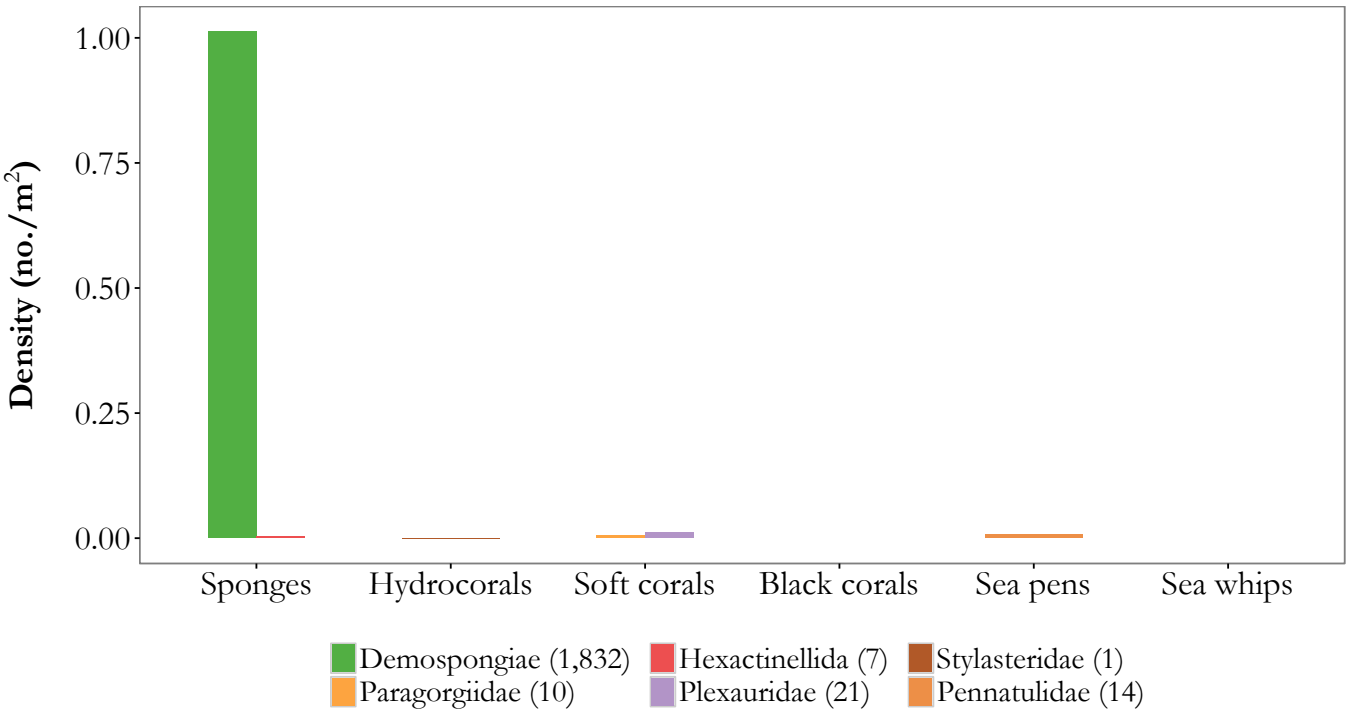
Images

AREA: Buldir Pass To Near Pass Transect *2014-88

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





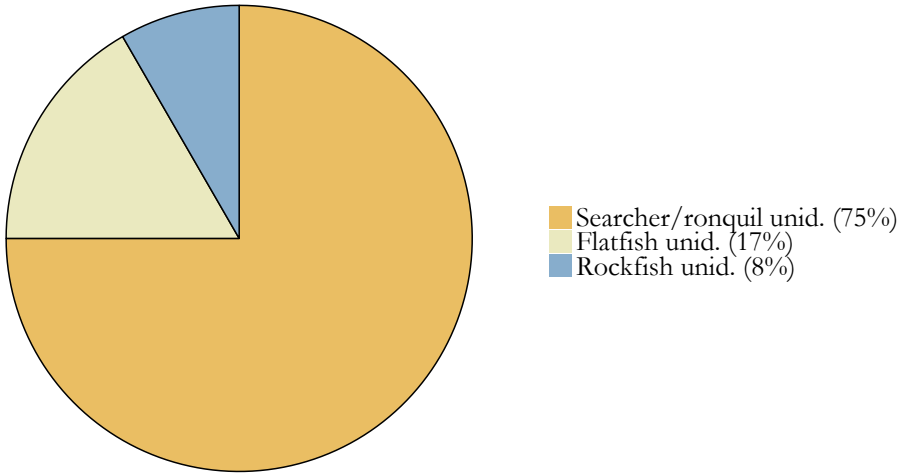
Summary - description of transect

Transect 2014-88: Twenty-two combinations of primary and secondary substrates were classified for this transect. Sand and mixed coarse were represented in over 50% of the primary and secondary substrates. Rockfishes and searchers/ronquils accounted for 78% of the fish density (0.03 individuals/m^2). Demospongiae (1.01 individuals/m^2) accounted for 97% of the structure-forming invertebrates. Mean heights were calculated for Demospongiae (38 cm) and Paragorgiidae (68 cm).

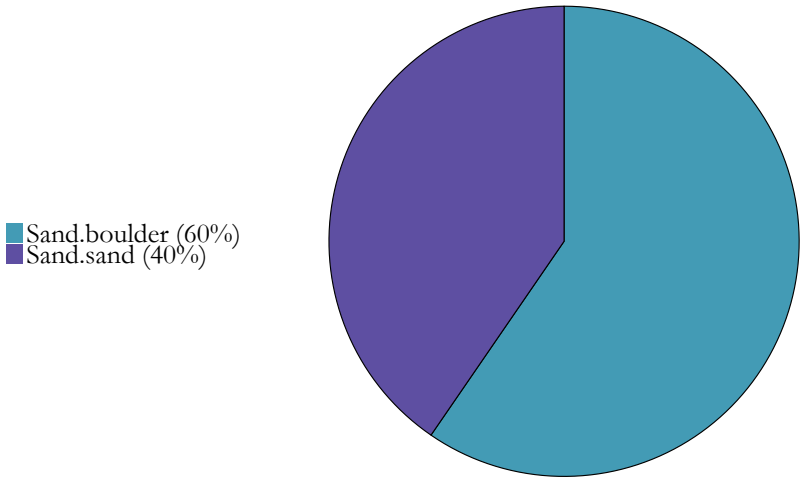
AREA: Buldir Pass To Near Pass — Transect 2014-89

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/7/2014	52.87	173.51	699	106	3.5

Fish and Crab Composition (n = 12)



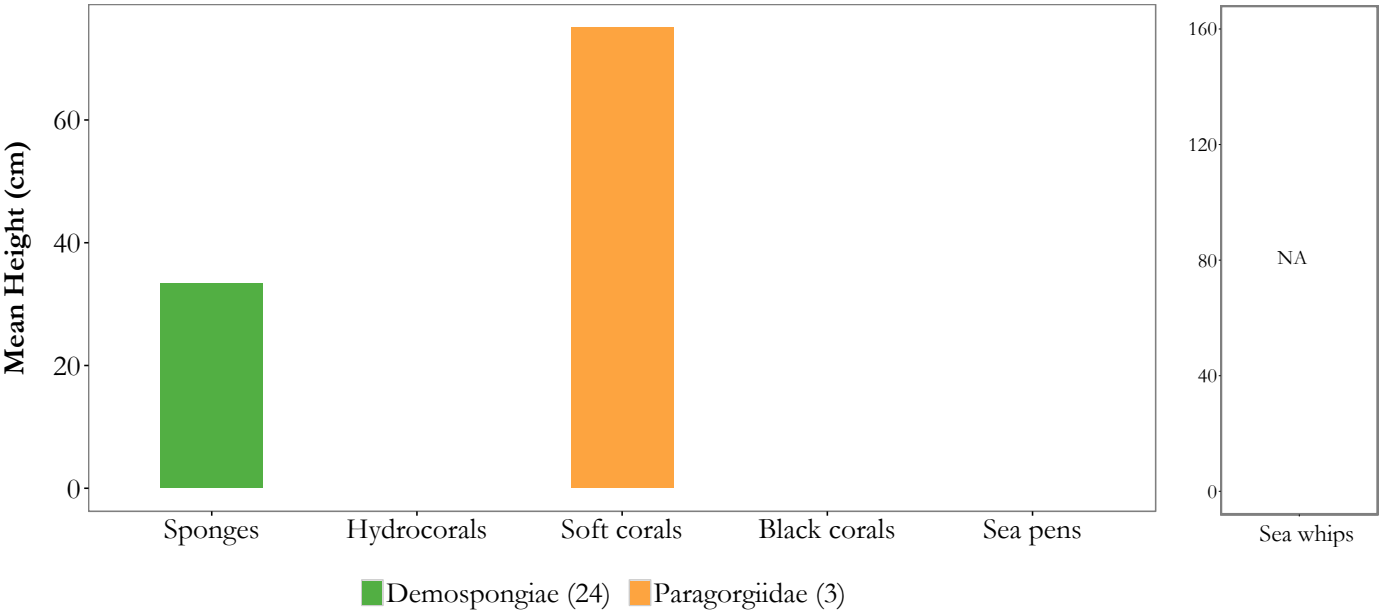
Substrate Composition

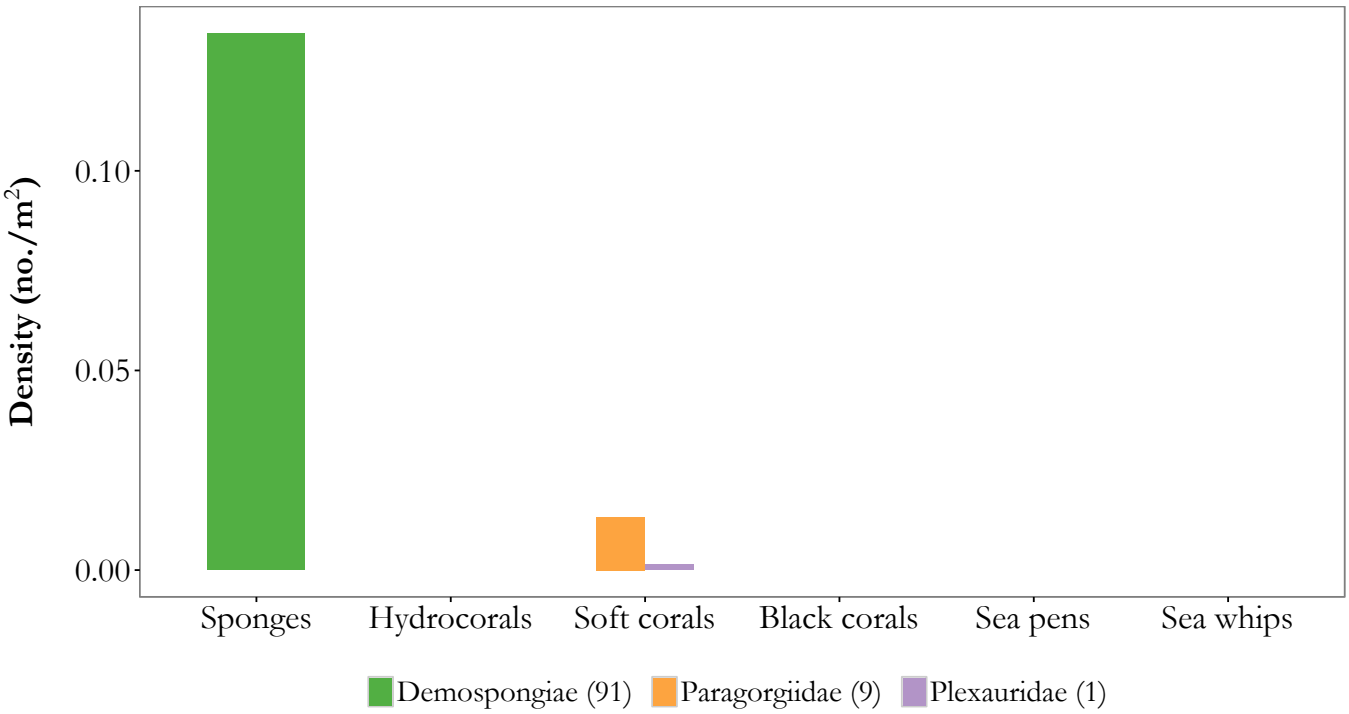


Images

AREA: Buldir Pass To Near Pass Transect 2014-89

Vertical Habitat Summary





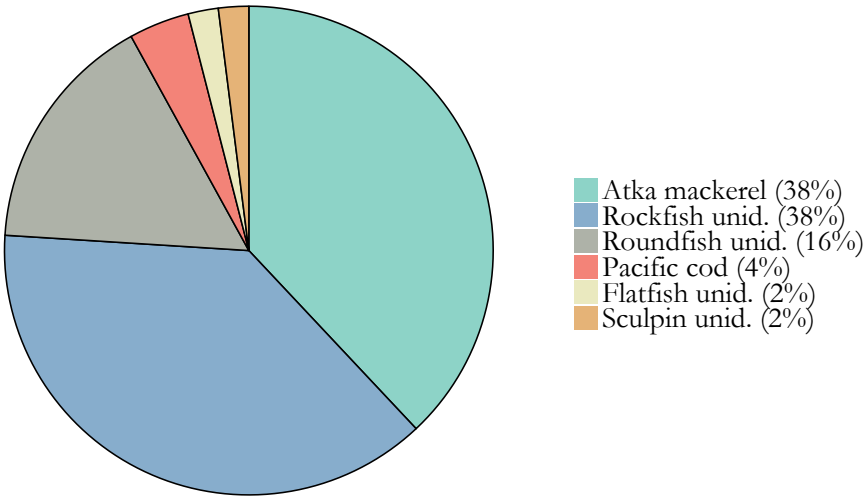
Summary - description of transect

Transect 2014-89: Primary and secondary substrates consisted of sand and boulder. Only three taxa of fishes were identified in this transect; searchers/ronquils, flatfishes, and rockfishes accounted for 100% of the taxa seen. Overall fish density for this transect was low (0.02 individuals/m^2). Demospongiae (0.13 individuals/m^2) accounted for 90% of the structure-forming invertebrates. Mean heights were calculated for Demospongiae (33 cm) and Paragorgiidae (75 cm).

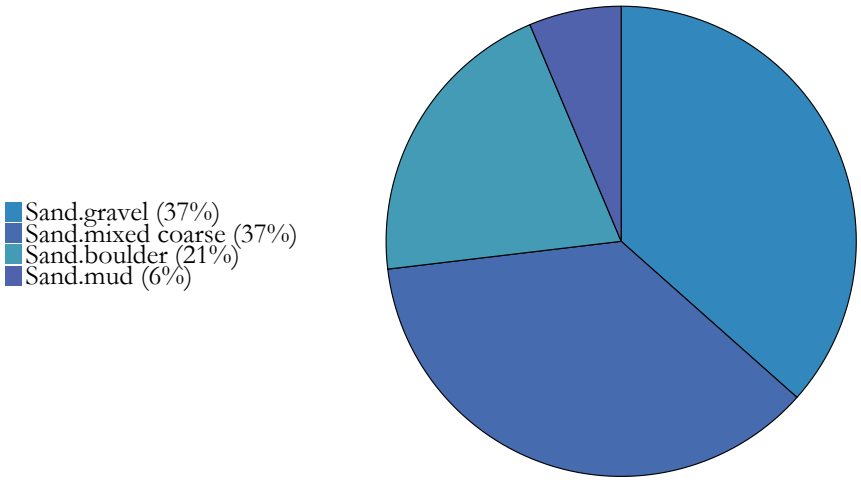
AREA: Buldir Pass To Near Pass — Transect 2014-90

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.85	173.71	1,638	118	3.5

Fish and Crab Composition (n = 50)



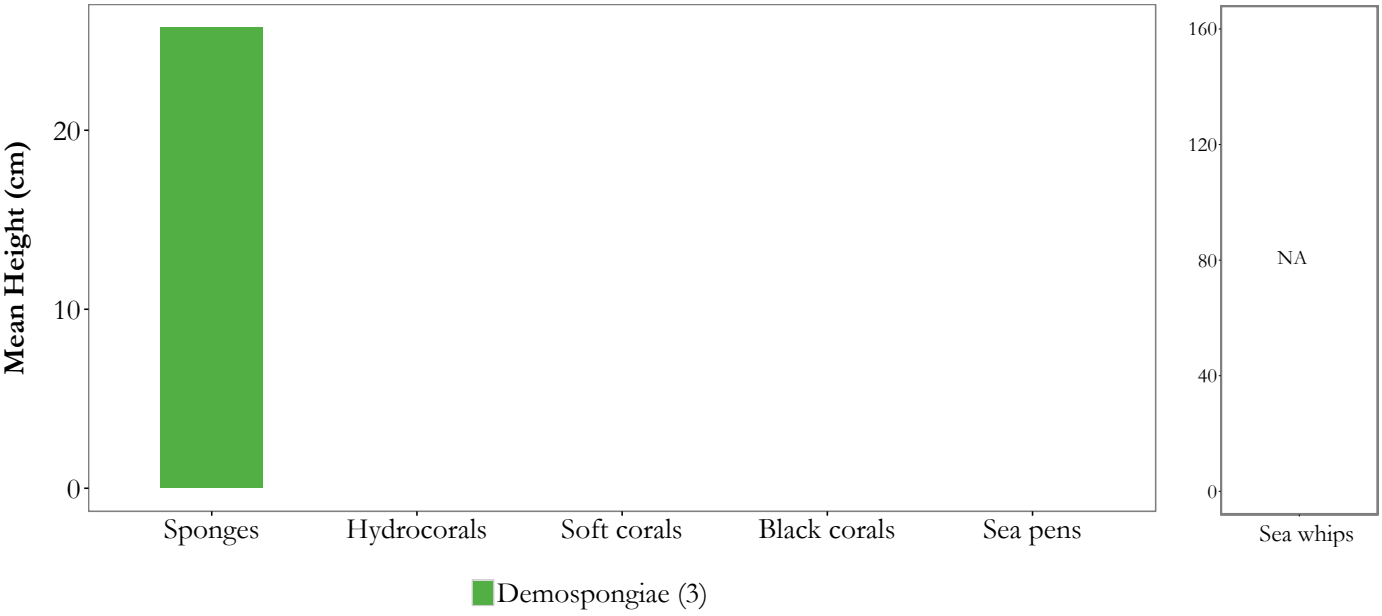
Substrate Composition

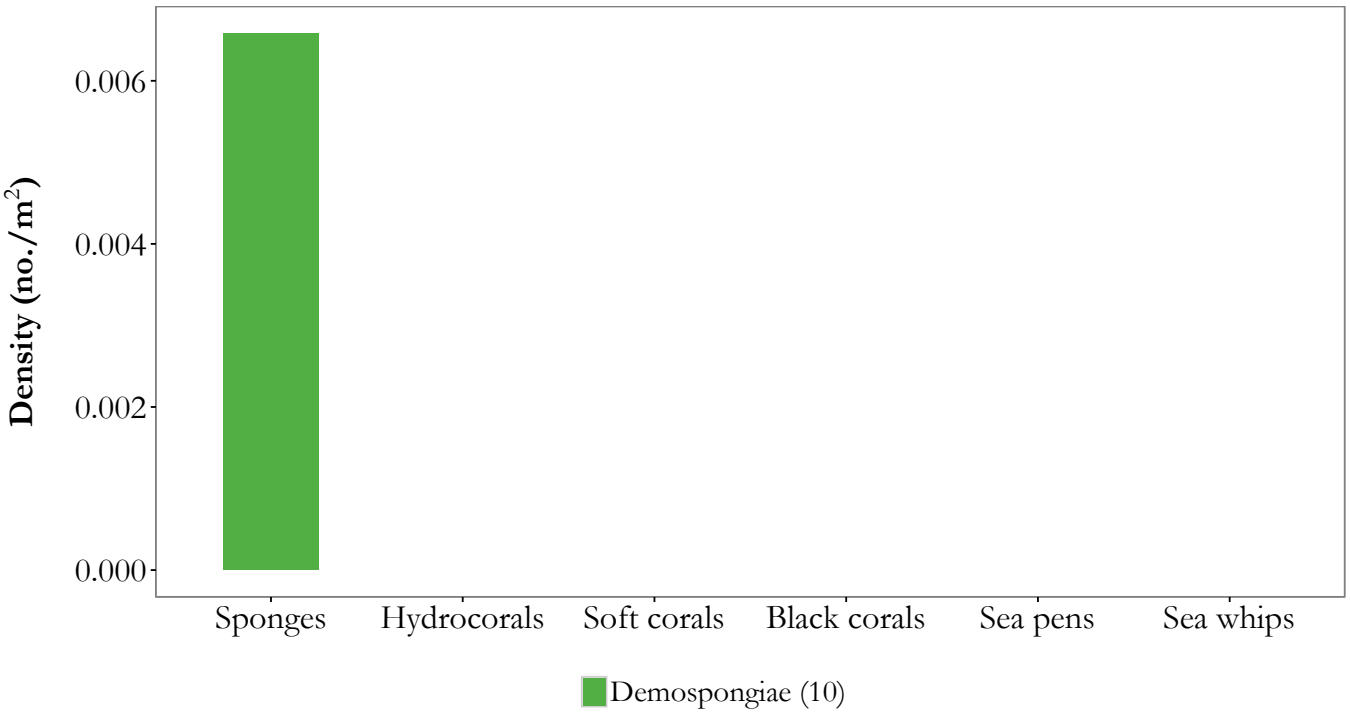


Images

AREA: Buldir Pass To Near Pass Transect 2014-90

Vertical Habitat Summary





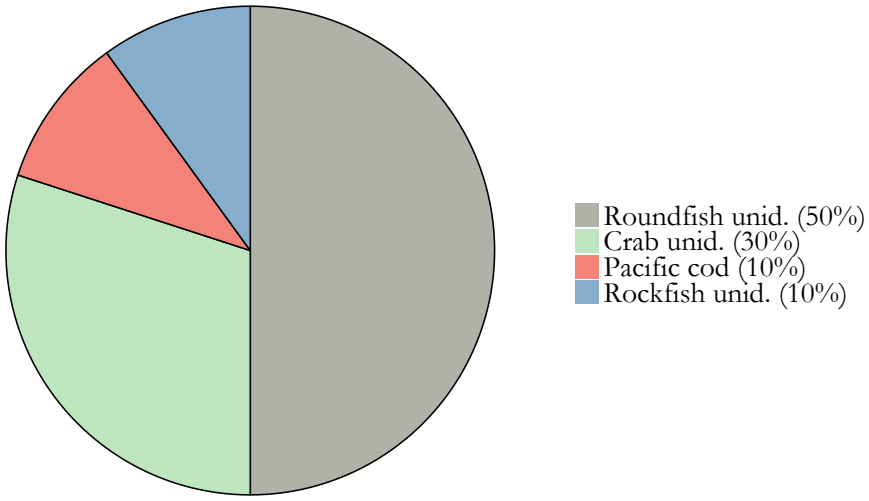
Summary - description of transect

Transect 2014-90: Primary and secondary substrates consisted largely of sand, gravel, mixed coarse, and boulder. Atka mackerel (n = 19) and rockfishes (n = 19) were the most abundant of the fishes identified. Overall fish density was 0.03 individuals/m^2. Only 10 Demospongiae were identified resulting in a density of 0.01 individuals/m^2. Mean height for three Demospongiae was 26 cm.

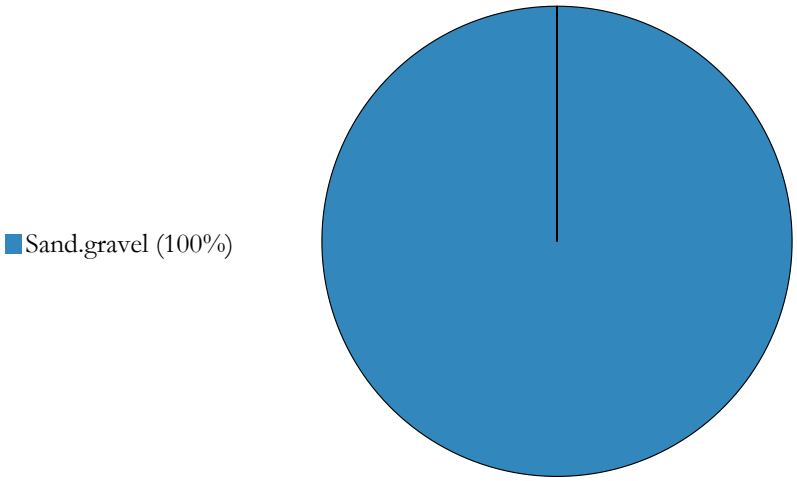
AREA: Buldir Pass To Near Pass — Transect 2014-91

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.84	173.71	1,462	116	3.5

Fish and Crab Composition (n = 10)



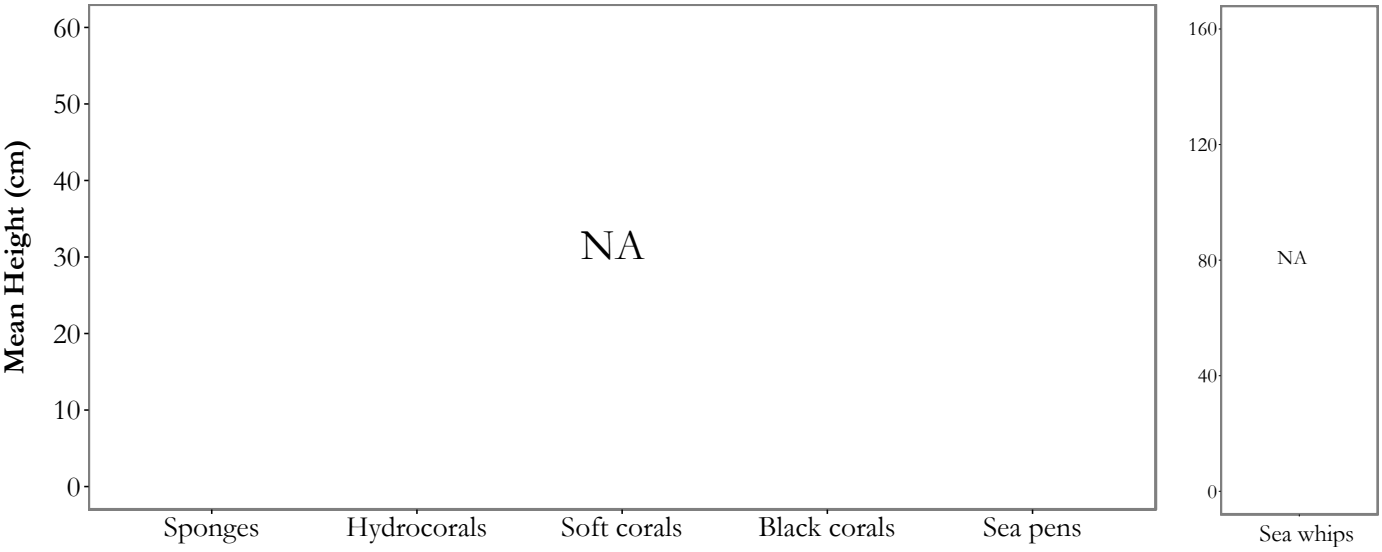
Substrate Composition

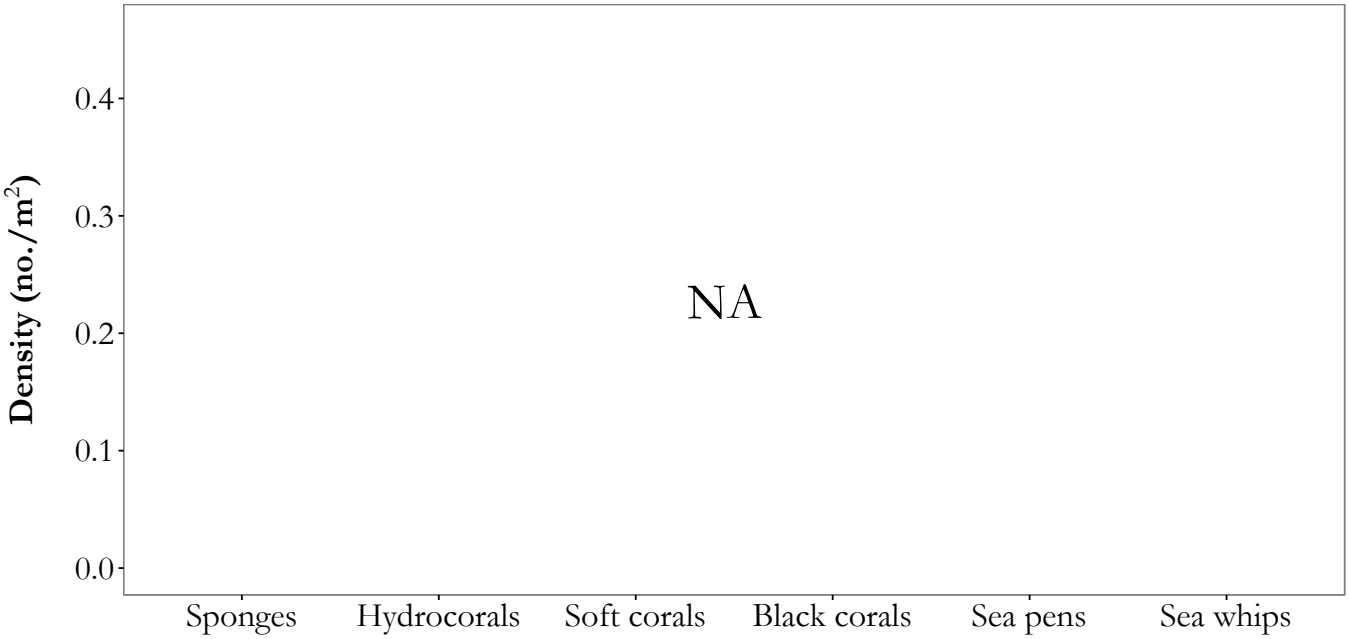


Images

AREA: Buldir Pass To Near Pass Transect 2014-91

Vertical Habitat Summary





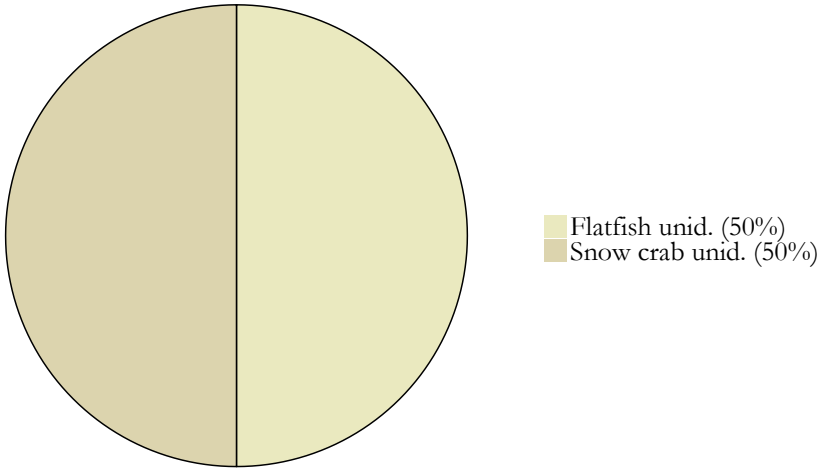
Summary - description of transect

Transect 2014-91: Primary and secondary substrates consisted entirely of sand and gravel. Unidentified roundfishes and crabs accounted for 80% of the observed taxa. Fish density was low overall (0.01 individuals/m^2). No corals, sponges, sea whips, sea pens, or hydrocorals were observed.

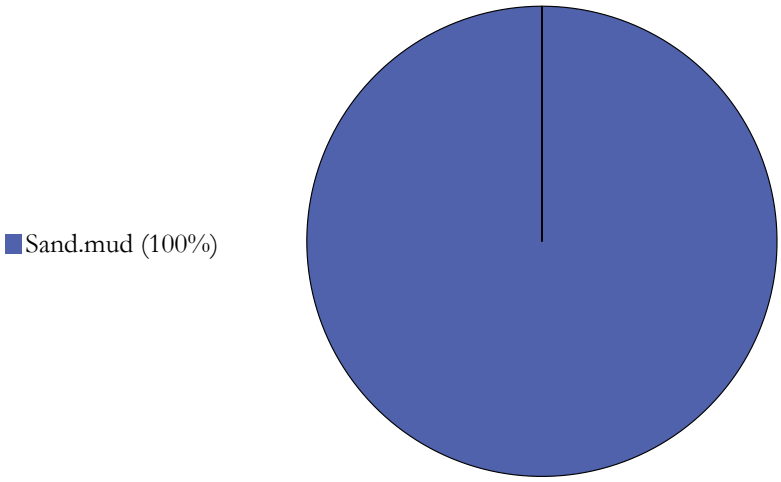
AREA: Buldir Pass To Near Pass — Transect 2014-92

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.56	173.59	1,513	126	3.2

Fish and Crab Composition (n = 2)



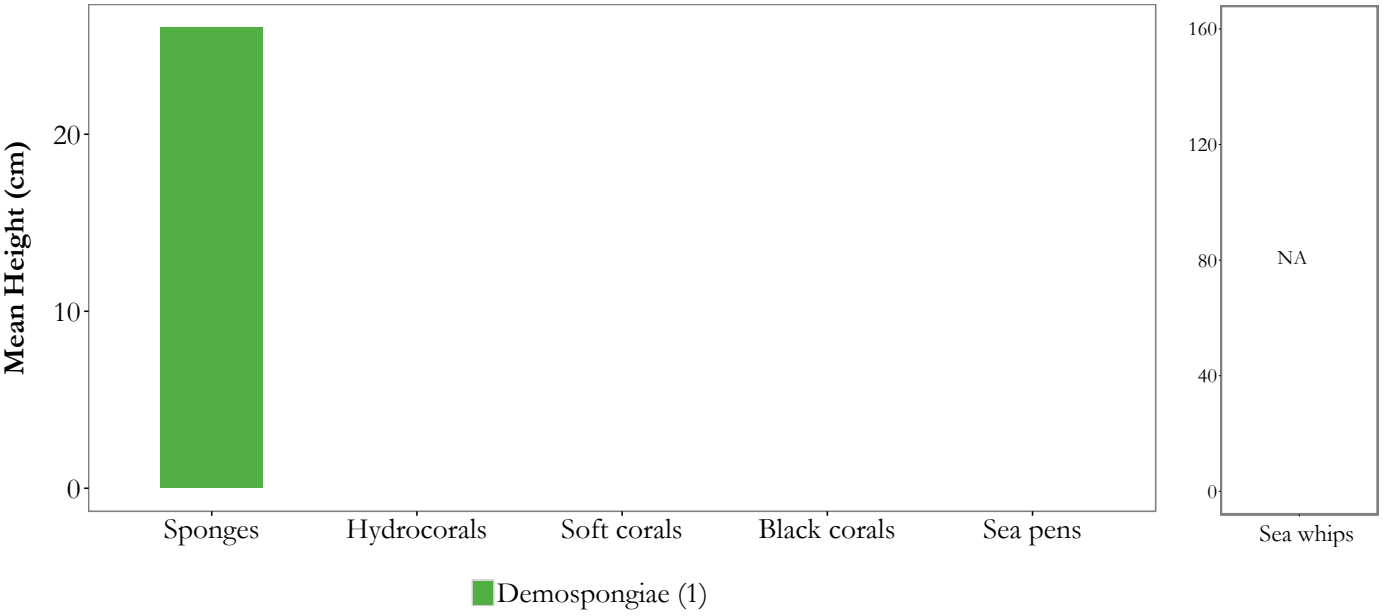
Substrate Composition

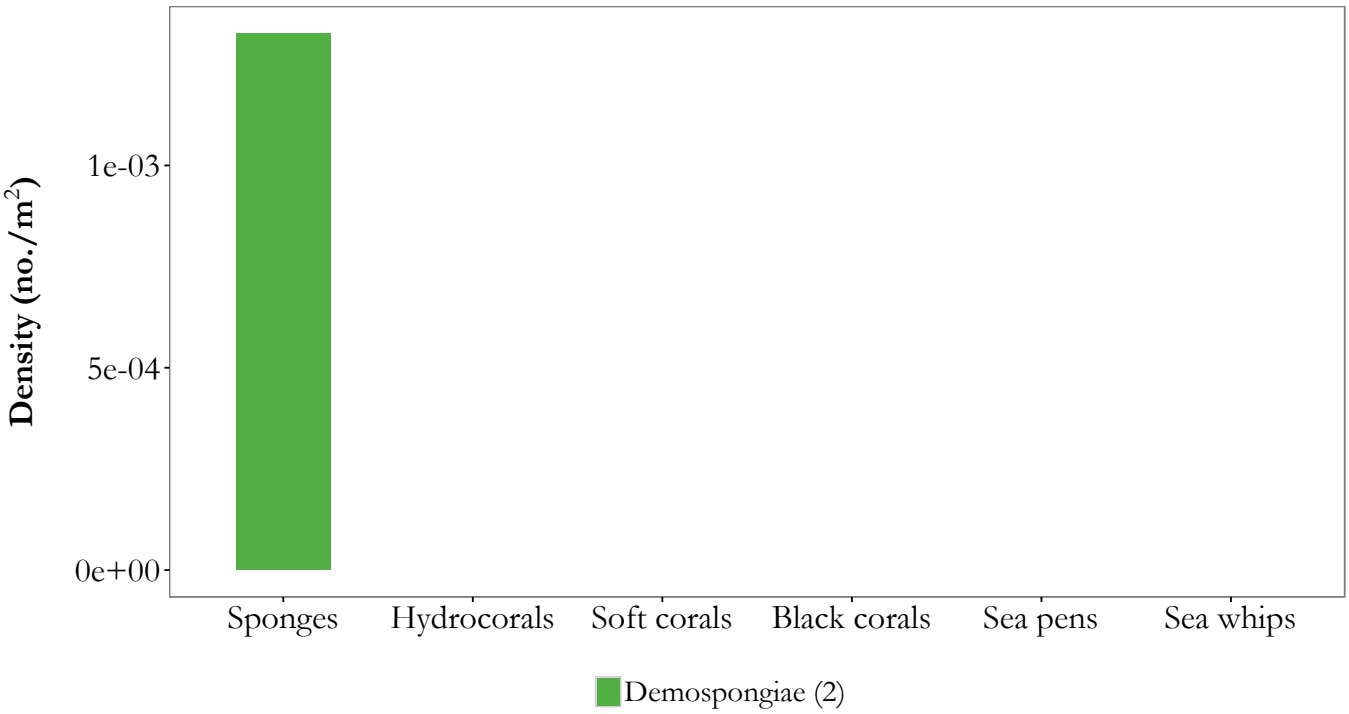


Images

AREA: Buldir Pass To Near Pass Transect 2014-92

Vertical Habitat Summary





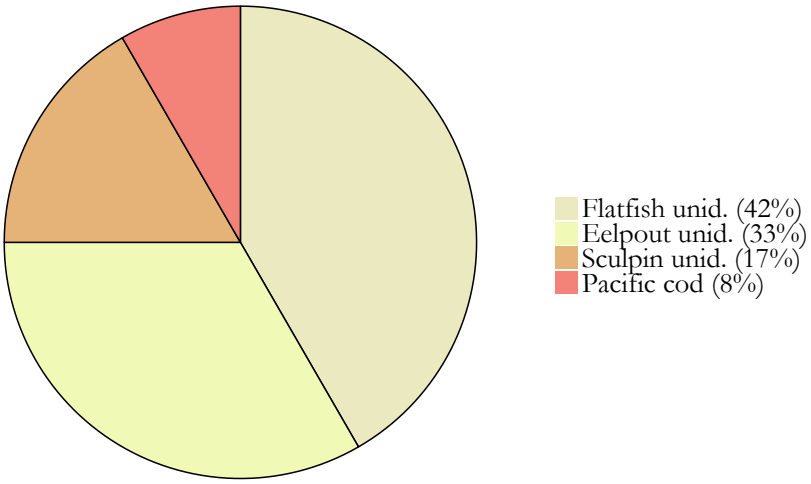
Summary - description of transect

Transect 2014-92: Primary and secondary substrates consisted entirely of sand and mud. One fish and one snow crab were identified. Only two Demospongiae were identified.

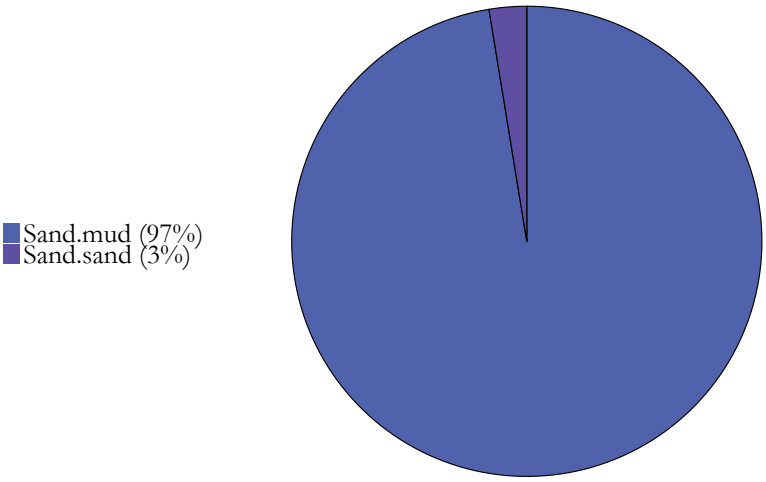
AREA: Buldir Pass To Near Pass — Transect 2014-93

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.56	173.56	1,429	124	3.1

Fish and Crab Composition (n = 12)



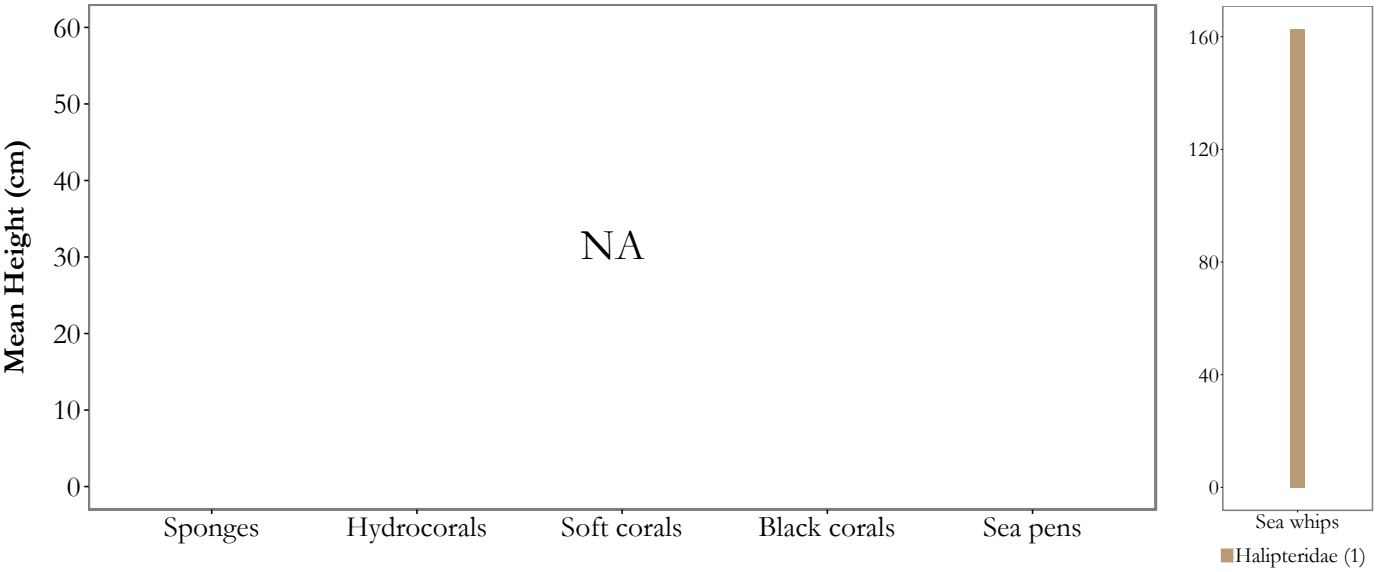
Substrate Composition

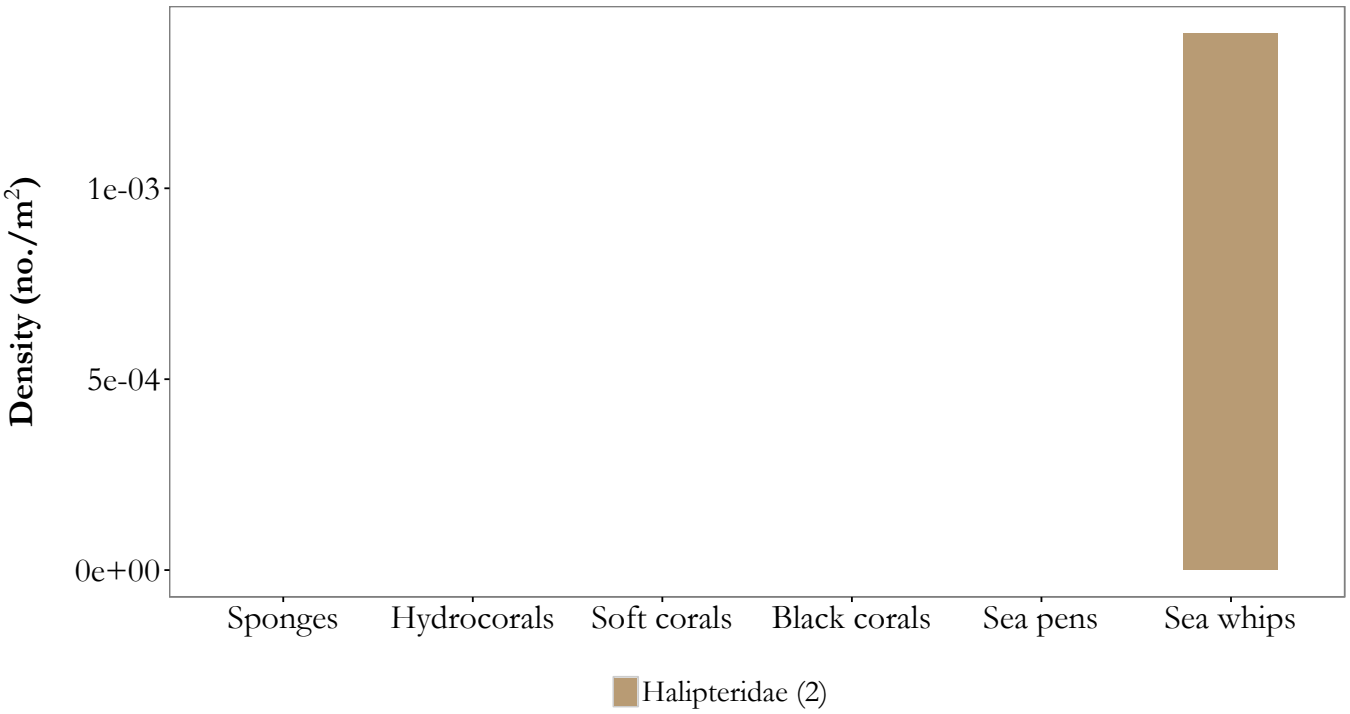


Images

AREA: Buldir Pass To Near Pass Transect 2014-93

Vertical Habitat Summary





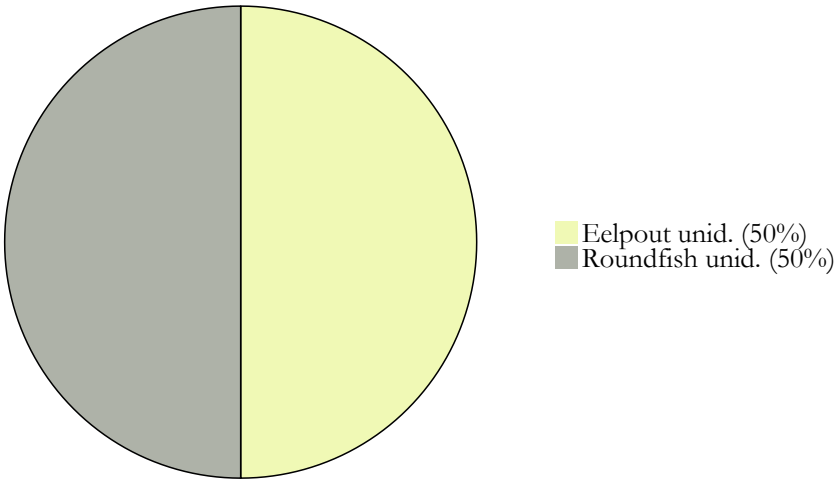
Summary - description of transcect

Transect 2014-93: Primary and secondary substrates consisted largely of sand and mud. Overall fish density was low (0.01 individuals/m^2), with flatfishes (n = 5) and eelpouts (n = 4) accounting for 76%. Only two Halipteridae were observed.

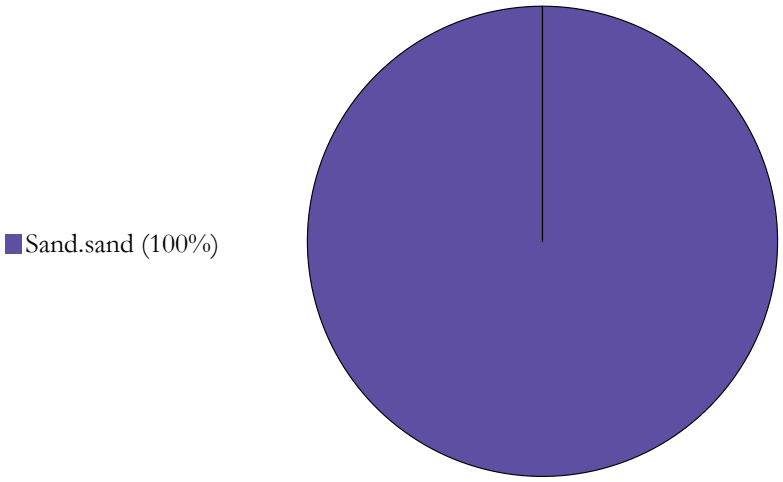
AREA: Buldir Pass To Near Pass — Transect 2014-94

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.58	173.44	1,287	140	3.1

Fish and Crab Composition (n = 2)



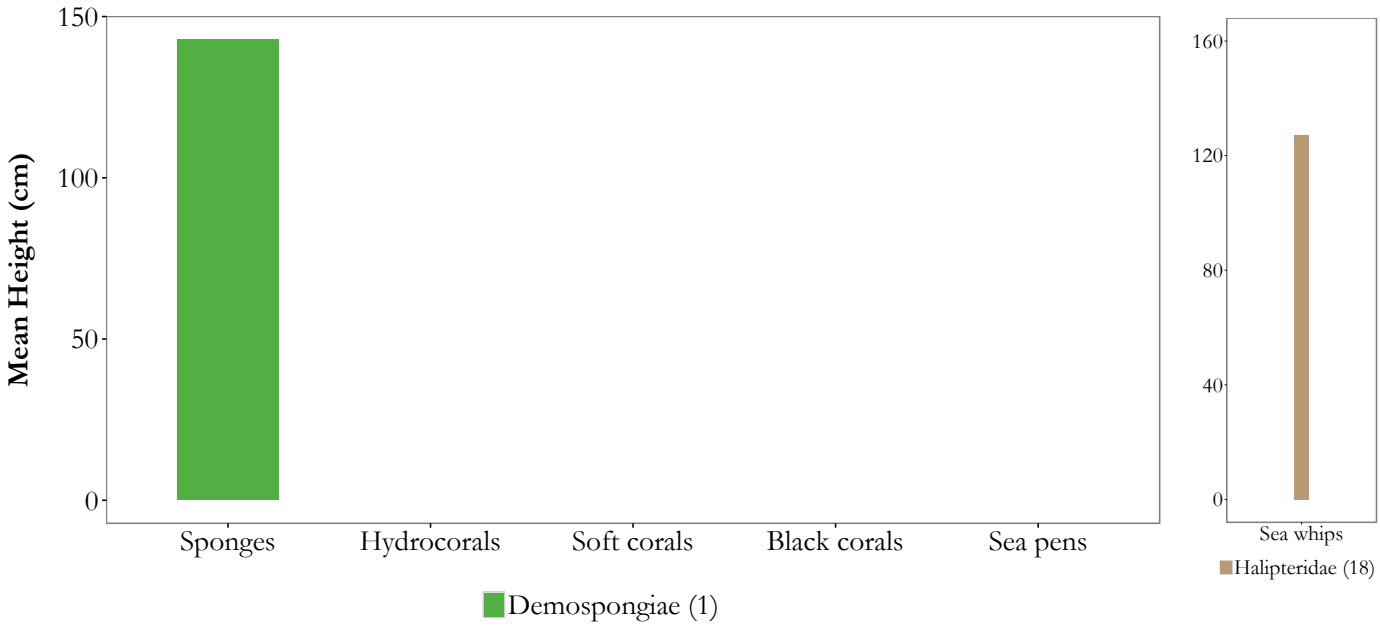
Substrate Composition

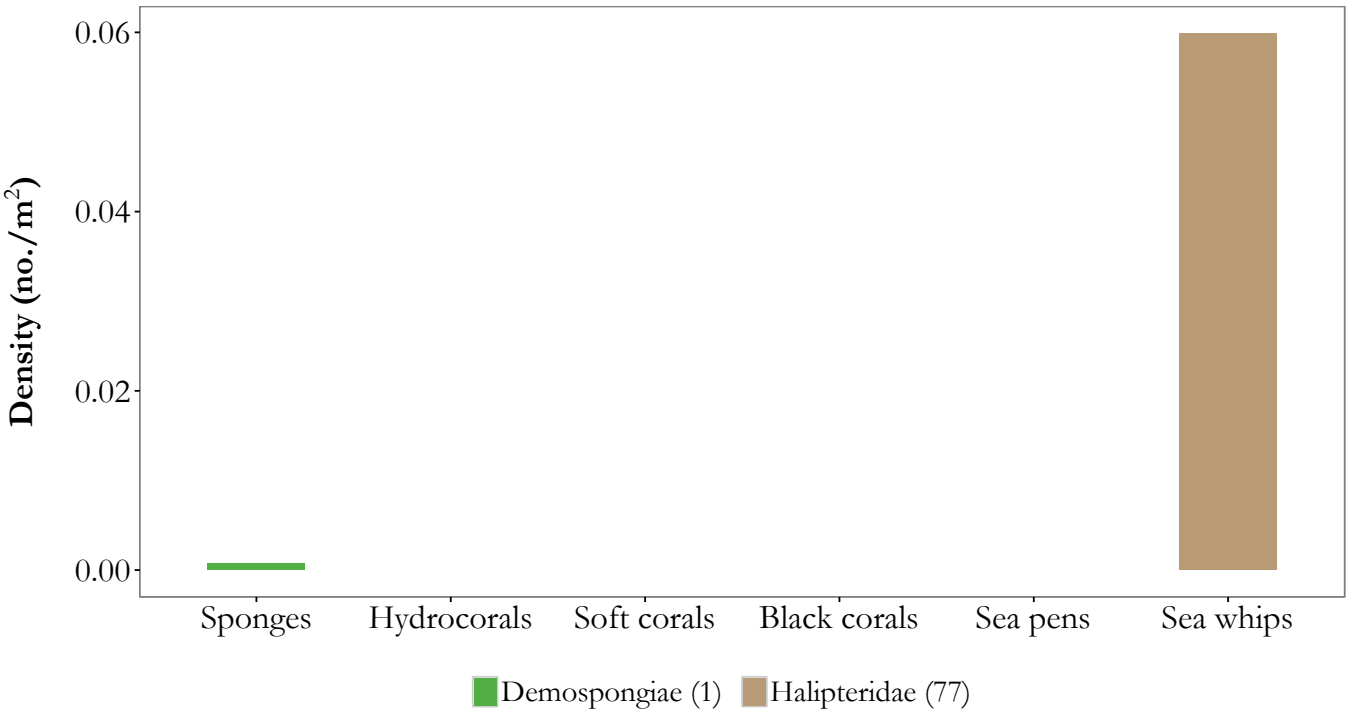


Images

AREA: Buldir Pass To Near Pass Transect 2014-94

Vertical Habitat Summary





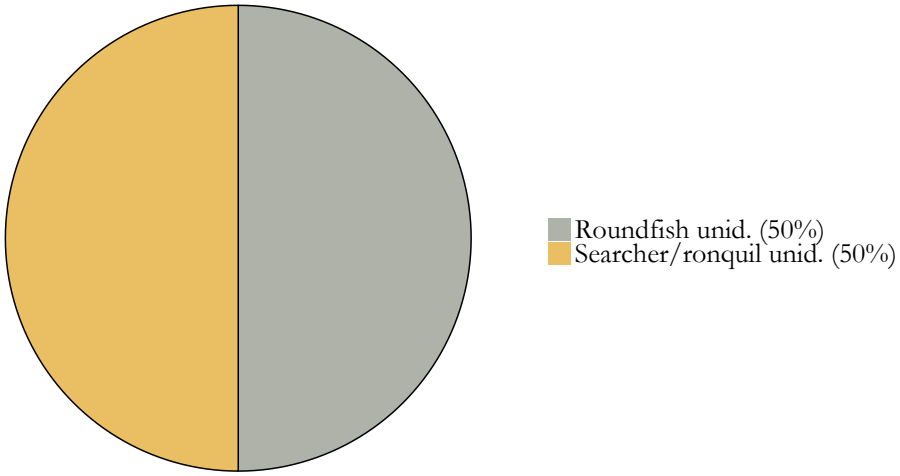
Summary - description of transect

Transect 2014-94: Primary and secondary substrates consisted entirely of sand. Only two fishes were identified in this transect; an unidentified roundfish and eelpout. Halipteridae accounted for 99% of the structure-forming invertebrates (0.06 individuals/m^2). Mean height for Halipteridae was 127 cm.

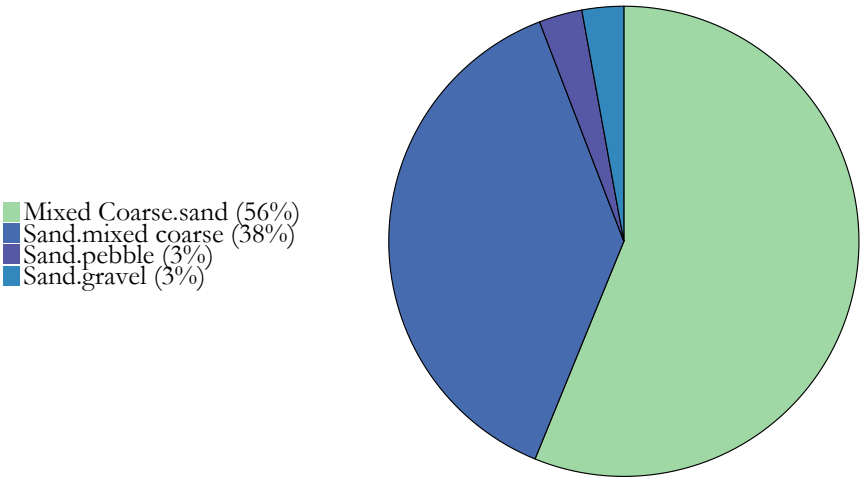
AREA: Buldir Pass To Near Pass — Transect 2014-95

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.59	173.32	913	85	3.2

Fish and Crab Composition (n = 2)



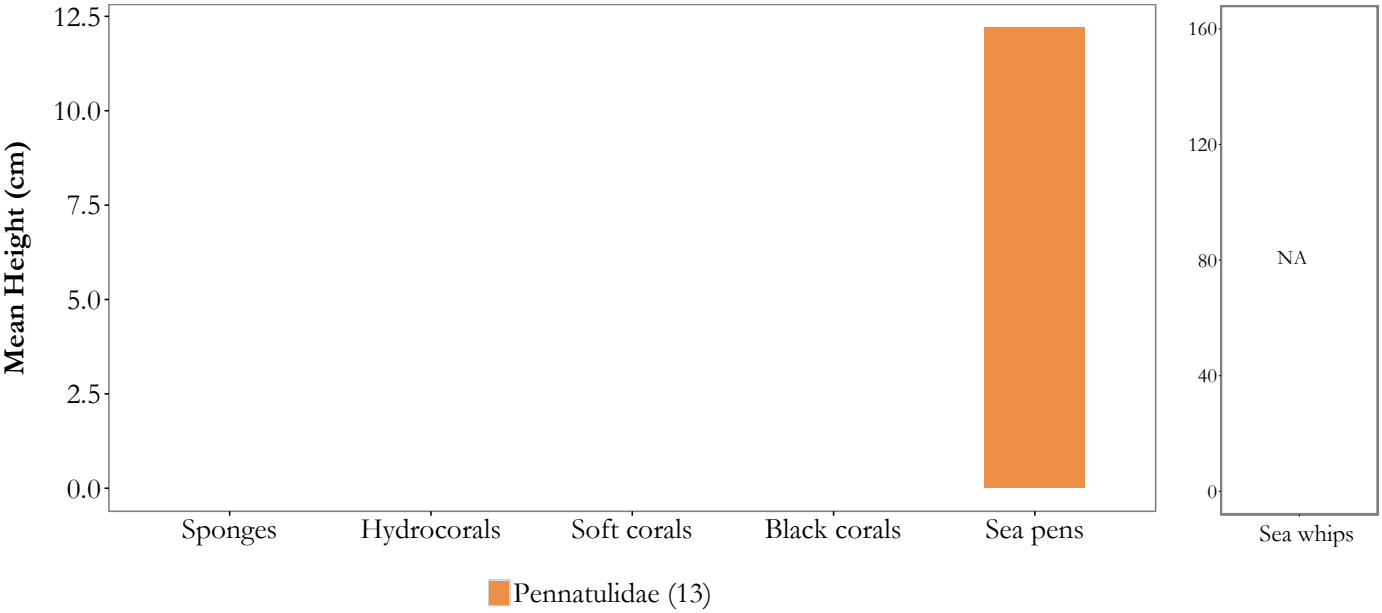
Substrate Composition

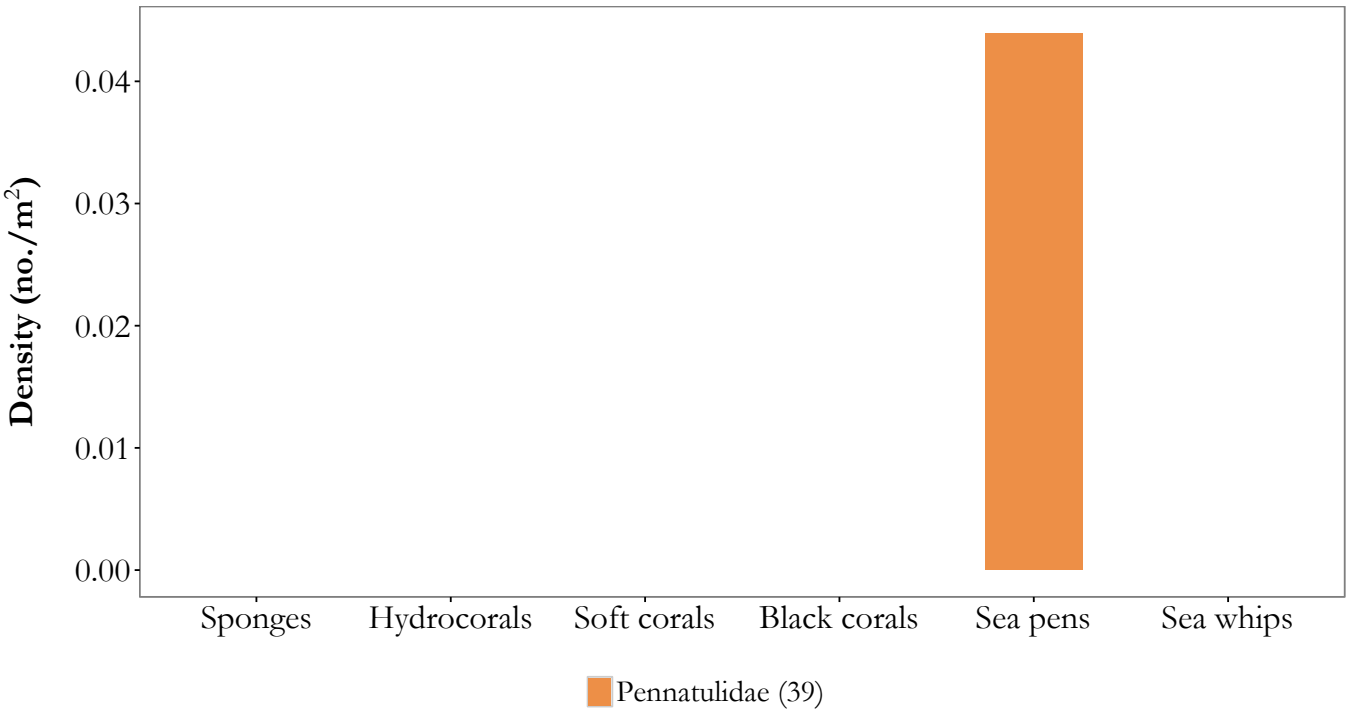


Images

AREA: Buldir Pass To Near Pass Transect 2014-95

Vertical Habitat Summary





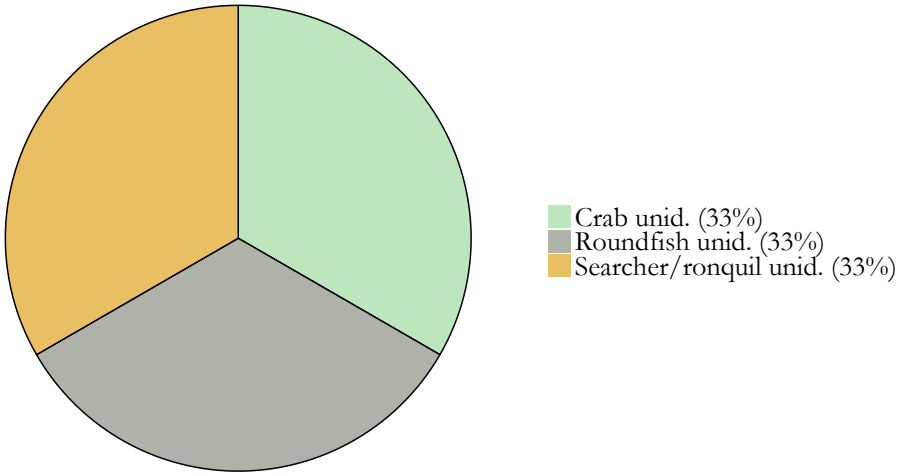
Summary - description of transect

Transect 2014-95: Primary and secondary substrates consisted largely of mixed coarse and sand. Fish density was low (< 0.01 individuals/m^2). Pennatulidae (0.04 individuals/m^2) were the only structure-forming invertebrates identified. Mean height was 12 cm, respectively.

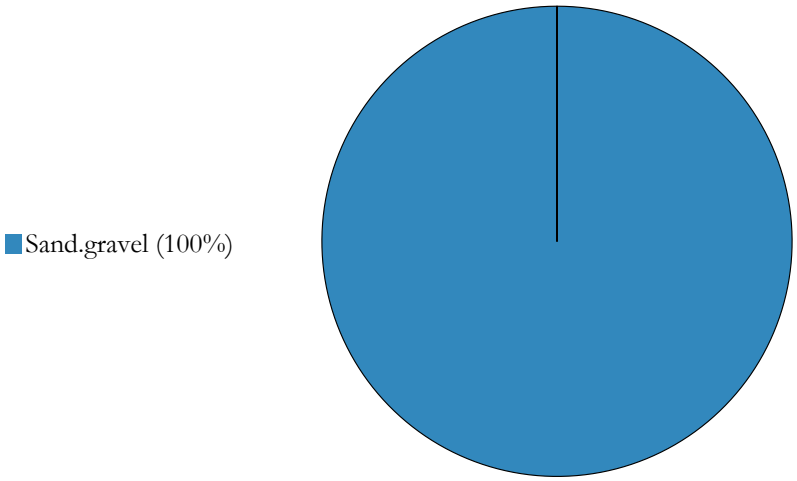
AREA: Buldir Pass To Near Pass — Transect 2014-96

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.62	173.27	949	86	3.4

Fish and Crab Composition (n = 3)



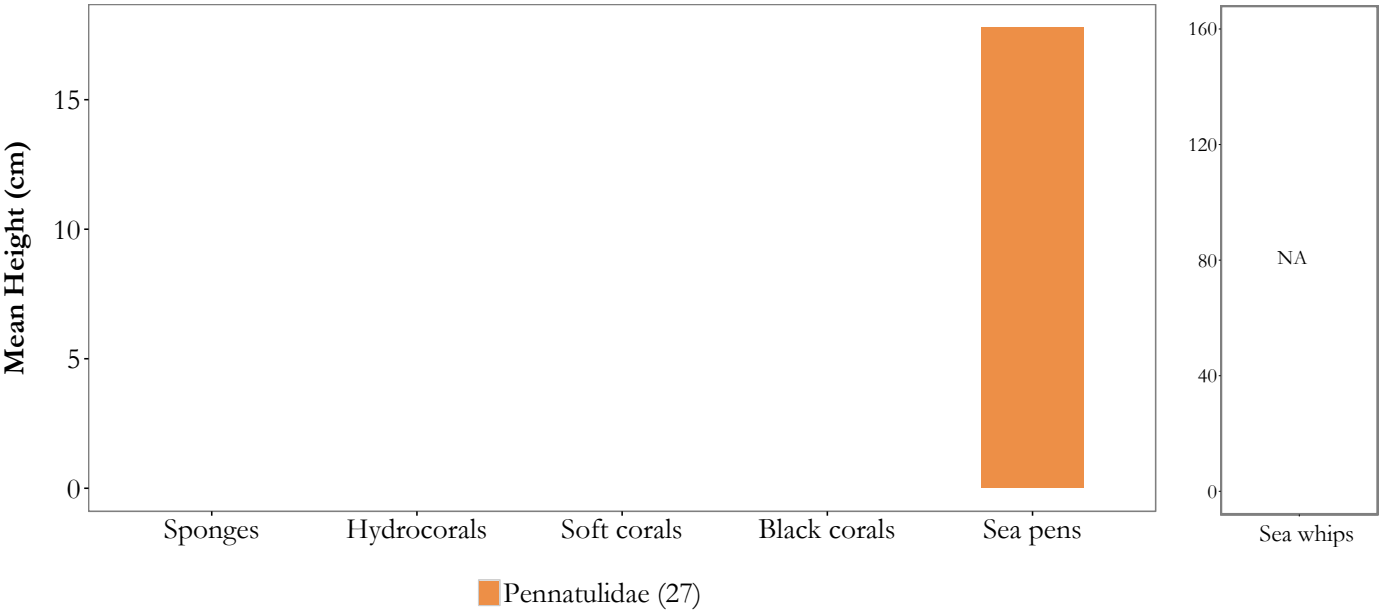
Substrate Composition

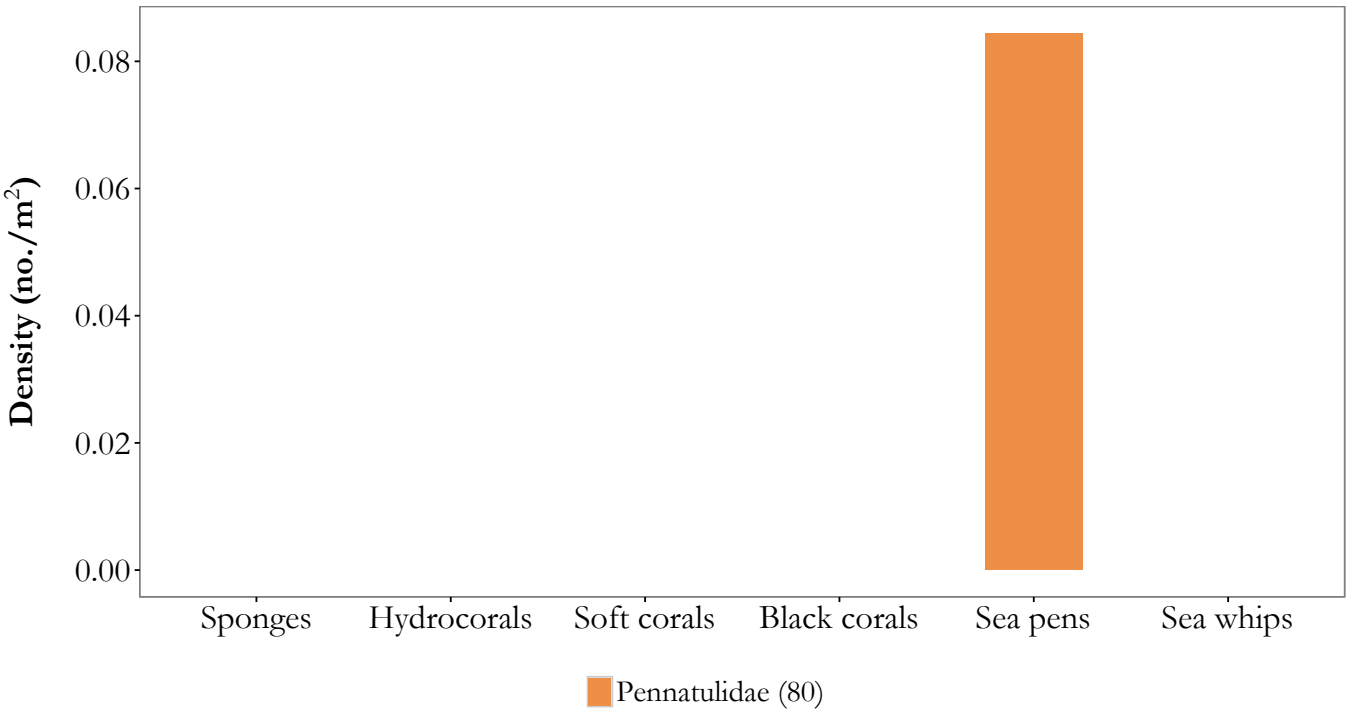


Images

AREA: Buldir Pass To Near Pass Transect 2014-96

Vertical Habitat Summary





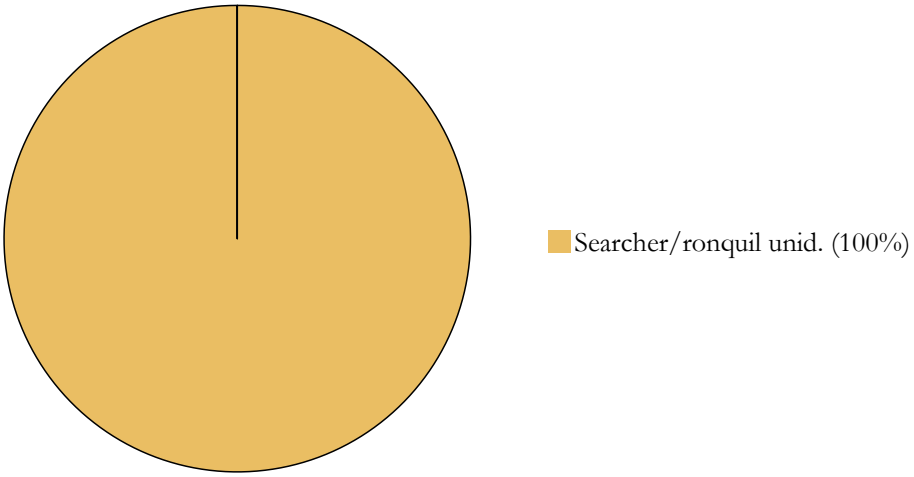
Summary - description of transect

Transect 2014-96: Primary and secondary substrates consisted of sand and gravel. Only two fishes and one crab were identified in this transect. Overall fish and crab density for this transect was low (< 0.01 individuals/m²). Available structure-forming invertebrate habitat consisted entirely of Pennatulidae (0.08 individuals/m²). Mean height was 18 cm, respectively.

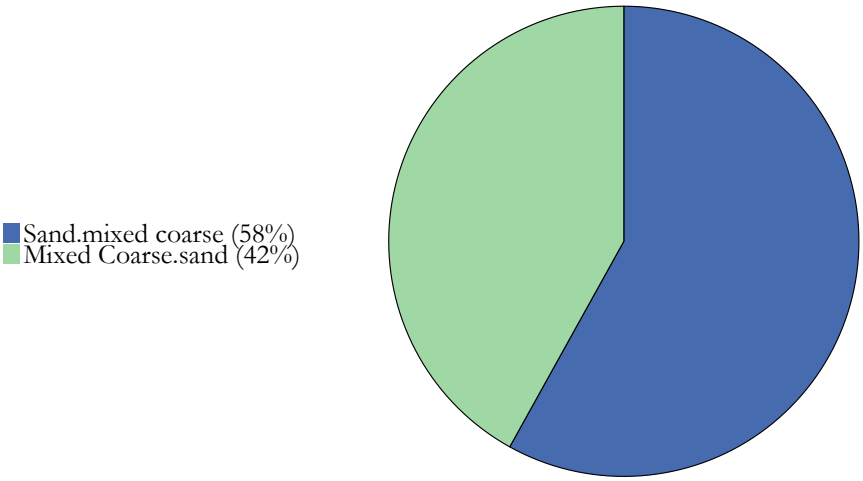
AREA: Buldir Pass To Near Pass — Transect 2014-97

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.61	173.23	1,030	82	NA

Fish and Crab Composition (n = 3)



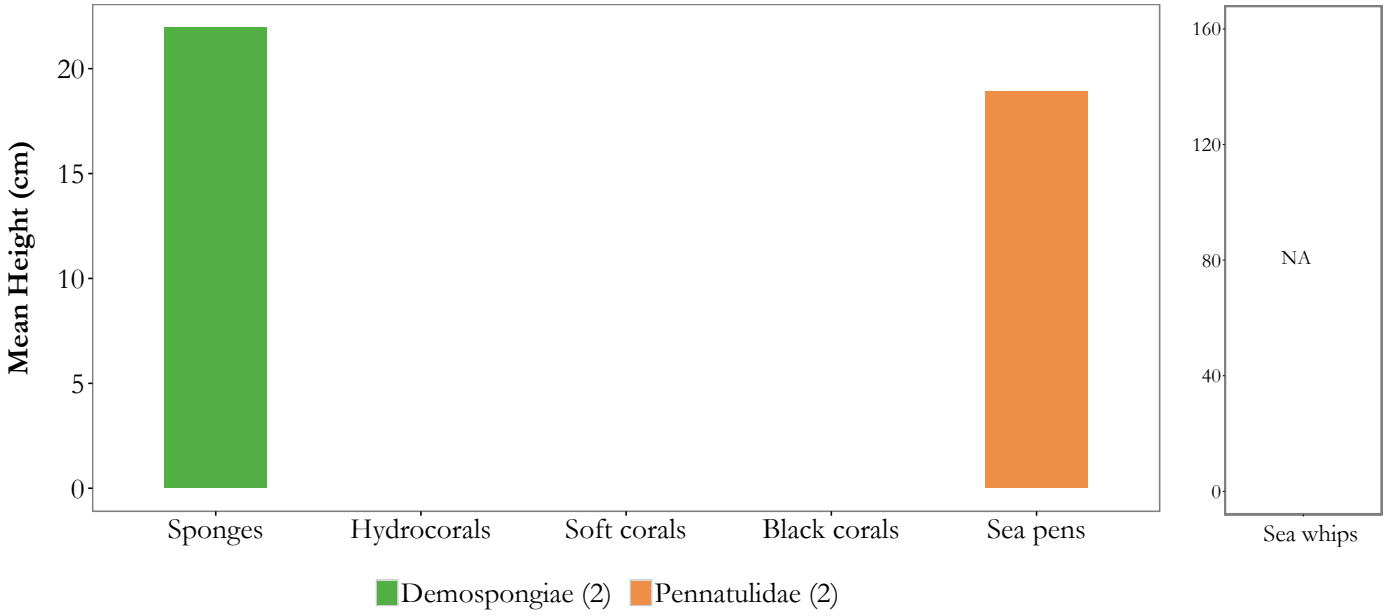
Substrate Composition

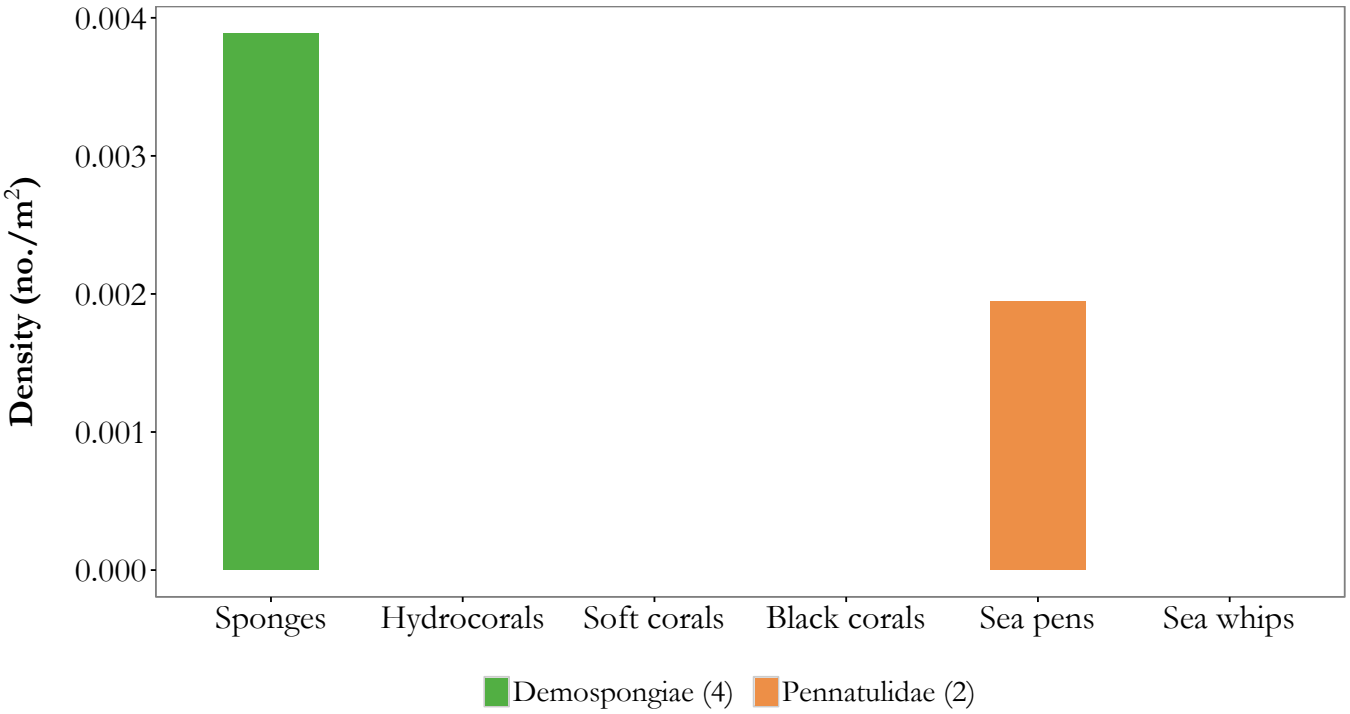


Images

AREA: Buldir Pass To Near Pass Transect 2014-97

Vertical Habitat Summary





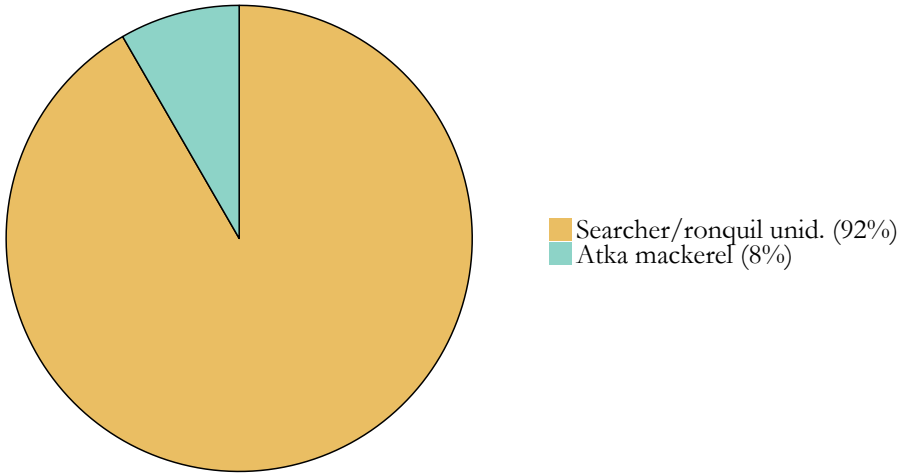
Summary - description of transect

Transect 2014-97: Primary and secondary substrates consisted largely of mixed coarse and sand. Fish density (< 0.01 individuals/m^2) consisted of three searchers/ronquils. Structure-forming invertebrate habitat consisted of four Demospongiae and two Pennatulidae, resulting in a density of 0.01 individuals/m^2. Mean heights were calculated for Demospongiae (22 cm) and Pennatulidae (19 cm).

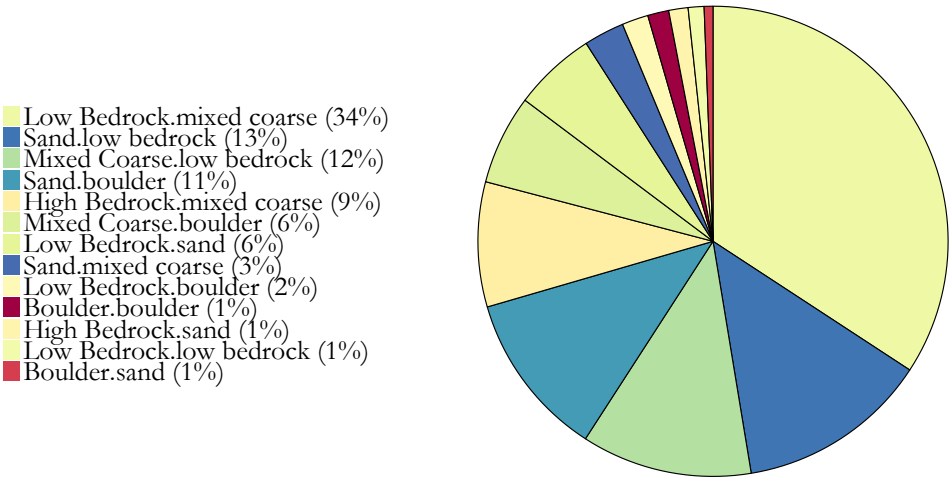
AREA: Buldir Pass To Near Pass — Transect 2014-98

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/8/2014	52.55	173.15	1,206	101	3.5

Fish and Crab Composition (n = 12)



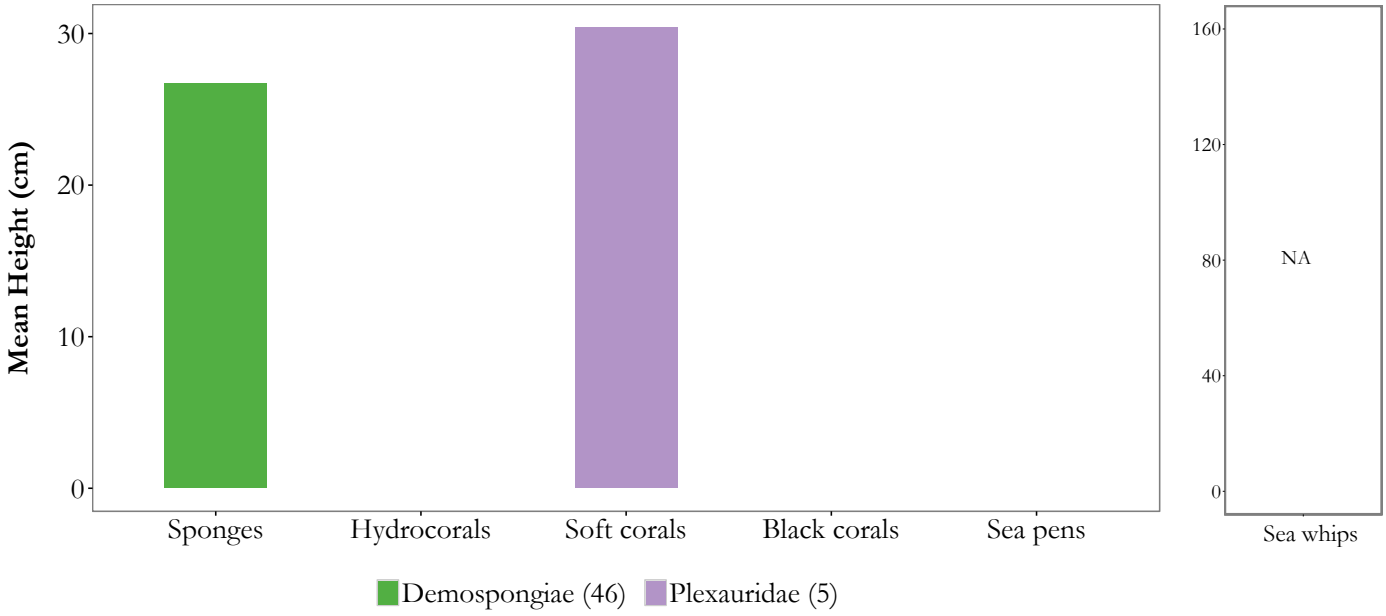
Substrate Composition

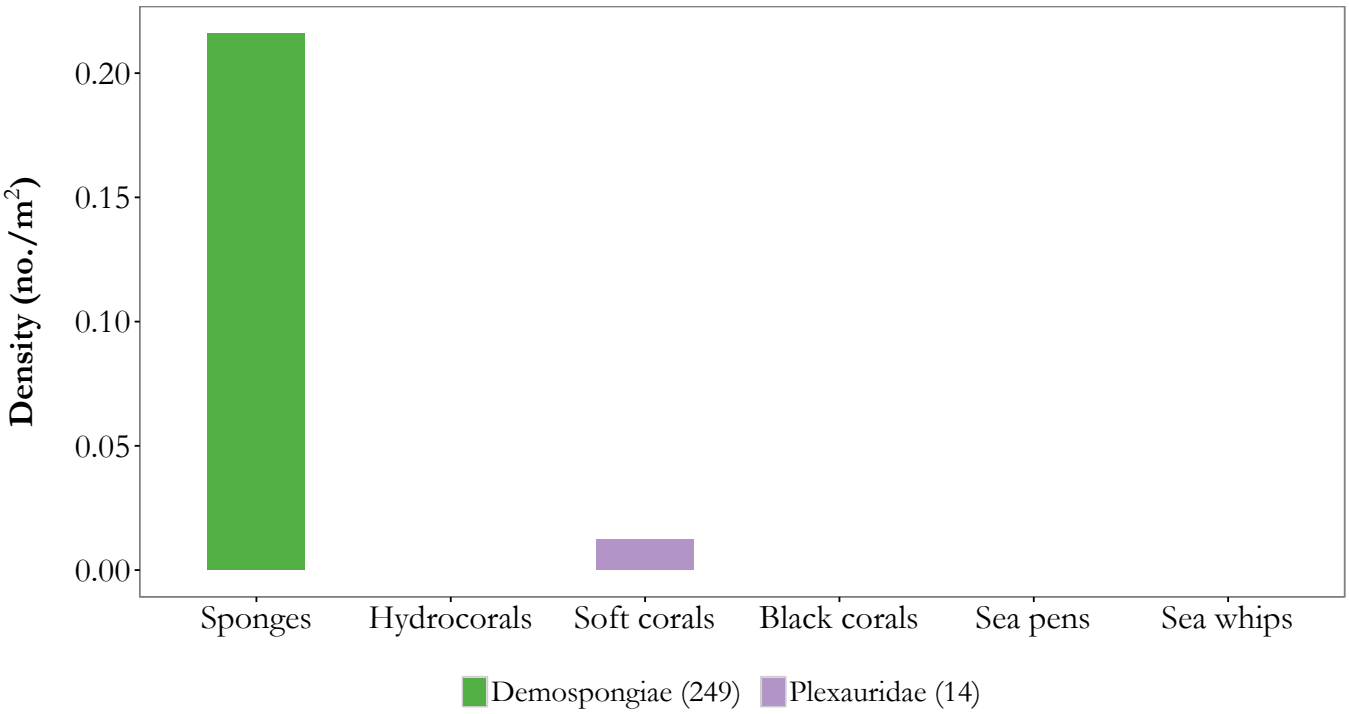


Images

AREA: Buldir Pass To Near Pass Transect 2014-98

Vertical Habitat Summary





Summary - description of transect

Transect 2014-98: Substrate composition for this haul was diverse. Bedrock accounted for a majority of the primary and secondary substrates. Fish density (0.01 individuals/m^2) consisted of 11 searchers/ronquils and one Atka mackerel. Demospongiae (0.22 individuals/m^2) dominated the structure-forming invertebrate habitat (0.23 individuals/m^2). Mean heights were calculated for Demospongiae (27 cm) and Plexauridae (30 cm).

Bowers Bank

Thirty-two transects were completed on Bowers Bank. Depths ranged from 63 m to 855 m. Sixteen taxa of fishes and crabs were identified (Table 29). Vertical habitat was dominated by Demospongiae (Table 30). Heights ranged from 20 cm to 111 cm (Table 31).

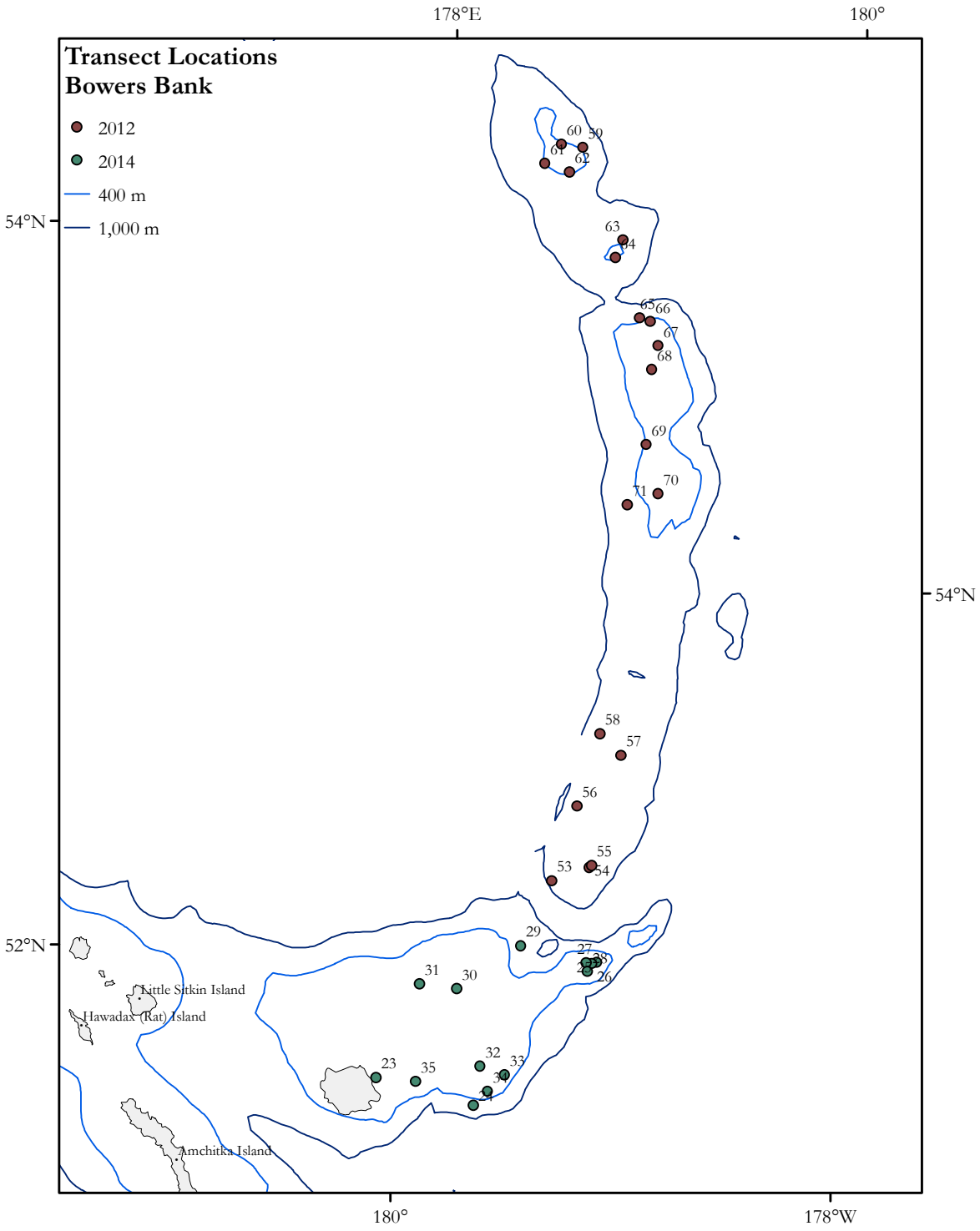


Figure 37. -- Survey transect locations, Bowers Bank.

SITE SUMMARY: Bowers Bank

Bowers Bank is a 700 km submarine ridge that runs northward and curves west from Petrel Bank, northeast of Amchitka Island. This unique and complex habitat provides the ideal conditions for cold-water corals and multiple species of rockfish. The Bowers Ridge Habitat Conservation Zone was established in 2005, prohibiting all mobile bottom contact gear in a 5,286 nautical miles (nmi) region.

Thirty-two survey transects were completed on Bowers Bank (Fig. 37). Sand comprised over 50% of the primary substrate, occurring at all depths (Table 28). Bedrock was present at shallower depths (88-284 m) just over 10% of the time.

Rockfishes were the most frequently observed fish group followed by grenadiers and searchers/ronquils (Table 29). Overall, 16 taxa of fishes and crabs were identified.

Primnoidae provided over 50% of the structure-forming invertebrates (Table 30). Transect 2014-28 had the second highest density of Primnoidae (5.41 individuals/m^2) of the survey. Demospongiae was the next most abundant taxa. Heights ranged from 4 cm to 125 cm with Primnoidae being the tallest (Table 31). Mean heights ranged from 13 cm for Pennatulidae to 32 cm for Demospongiae.

Demospongiae and Hexactinellida co-occurred at many of the transect (Fig. 38). Calcarea was only present at Transect 2014-35. Sea pens were only identified at transects in the southern half of the region (Fig. 39). Sea whips had a similar distribution with one exception, Transect 2012-61. All taxa of corals were identified on Bowers Bank (Figs. 38-39). Antipathidae was present at three transects (Fig. 39). Stylasteridae occurred to the north and south of Bowers Bank in the middle region (Fig. 42).

Two high density sponge stations (2014- 27, 67) and four high density coral stations (2014- 25, 27, 28, 35) occurred in on Bowers Bank.

SITE SUMMARY: Bowers Bank

Table 28 -- Summary of top 95% of primary and secondary substrates identified at 32 transects on Bowers Bank

Substrate	Minimum depth (m)	Maximum depth (m)	Number of hauls	Number of occurrences	Percent of occurrences
Sand.sand	131	856	17	12,898	46%
Sand.cobble	131	423	6	2,166	8%
Sand.gravel	103	243	6	2,106	8%
Sand.boulder	129	634	8	1,843	7%
Mixed Coarse.low bedrock	95	117	5	1,655	6%
Low Bedrock.mixed coarse	88	117	3	1,230	4%
Sand.low bedrock	103	284	2	904	3%
Gravel.mixed coarse	121	135	1	878	3%
Pebble.mixed coarse	60	65	1	837	3%
Mixed Coarse.mixed coarse	101	118	6	757	3%
Pebble.pebble	228	241	1	584	2%
Boulder.sand	132	428	3	563	2%
Boulder.cobble	360	381	1	292	1%

SITE SUMMARY: Bowers Bank

Table 29. -- Summary of fishes and crabs identified at 32 transects on Bowers Bank.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Fishes				
Rockfish unid.	384	16	63-424	0.01
Grenadier unid.	236	10	485-855	0.01
Searcher/ronquil unid.	186	7	102-142	< 0.01
Roundfish unid.	68	14	102-794	< 0.01
Thornyhead unid.	29	12	239-778	< 0.01
Sculpin unid.	21	8	104-387	< 0.01
Atka mackerel	19	5	63-116	< 0.01
Flatfish unid.	15	4	63-485	< 0.01
Eelpout unid.	14	3	634-794	< 0.01
Skate unid.	8	6	104-424	< 0.01
Snailfish unid.	7	3	116-778	< 0.01
Irish lord unid.	2	1	63-63	< 0.01
Pacific cod	1	1	116-116	< 0.01
Crabs				
King crab unid.	18	8	116-424	< 0.01
Snow crab unid.	6	5	126-745	< 0.01
Crab unid.	5	4	102-133	< 0.01

Table 30. -- Summary of sponges, corals, Pennatulaceans, and hydrocorals identified at 32 transects on Bowers Bank.

Species/Grouping	Number of occurrences	Number of transects with occurrences	Depth range (m)	Mean density (individuals/m^2)
Sponges				
Demospongiae	12,821	25	63-855	0.17
Hexactinellida	450	20	102-855	0.01
Calcarea	7	1	112-112	< 0.01
Soft corals				
Primnoidae	31,302	15	63-634	0.34
Plexauridae	1,381	11	63-424	0.02
Acanthogorgiidae	139	7	63-296	< 0.01
Paragorgiidae	7	2	116-249	< 0.01
Isididae	6	3	107-634	< 0.01
Soft coral unid.	3	1	188-188	< 0.01
Black corals				
Antipathidae	9	3	424-784	< 0.01
Pennatulaceans				
Pennatulidae	112	9	63-784	< 0.01
Halipteridae	52	7	332-855	< 0.01
Hydrocorals				
Stylasteridae	4,176	23	63-855	0.08

SITE SUMMARY: Bowers Bank

Table 31. -- Summary of sponge, coral, Pennatulacean, and hydrocoral heights from 32 transects on Bowers Bank.

Species/Grouping	Number measured	Minimum height (cm)	Maximum height (cm)	Mean height (cm)
Sponges				
Demospongiae	652	20	111	33
Hexactinellida	129	20	116	41
Soft corals				
Primnoidae	682	6	125	31
Plexauridae	109	9	59	27
Acanthogorgiidae	13	11	36	19
Paragorgiidae	6	7	24	18
Isididae	5	7	52	30
Black corals				
Antipathidae	3	10	29	19
Pennatulaceans				
Halipteridae	24	6	72	21
Pennatulidae	13	5	20	13
Hydrocorals				
Stylasteridae	215	4	60	17

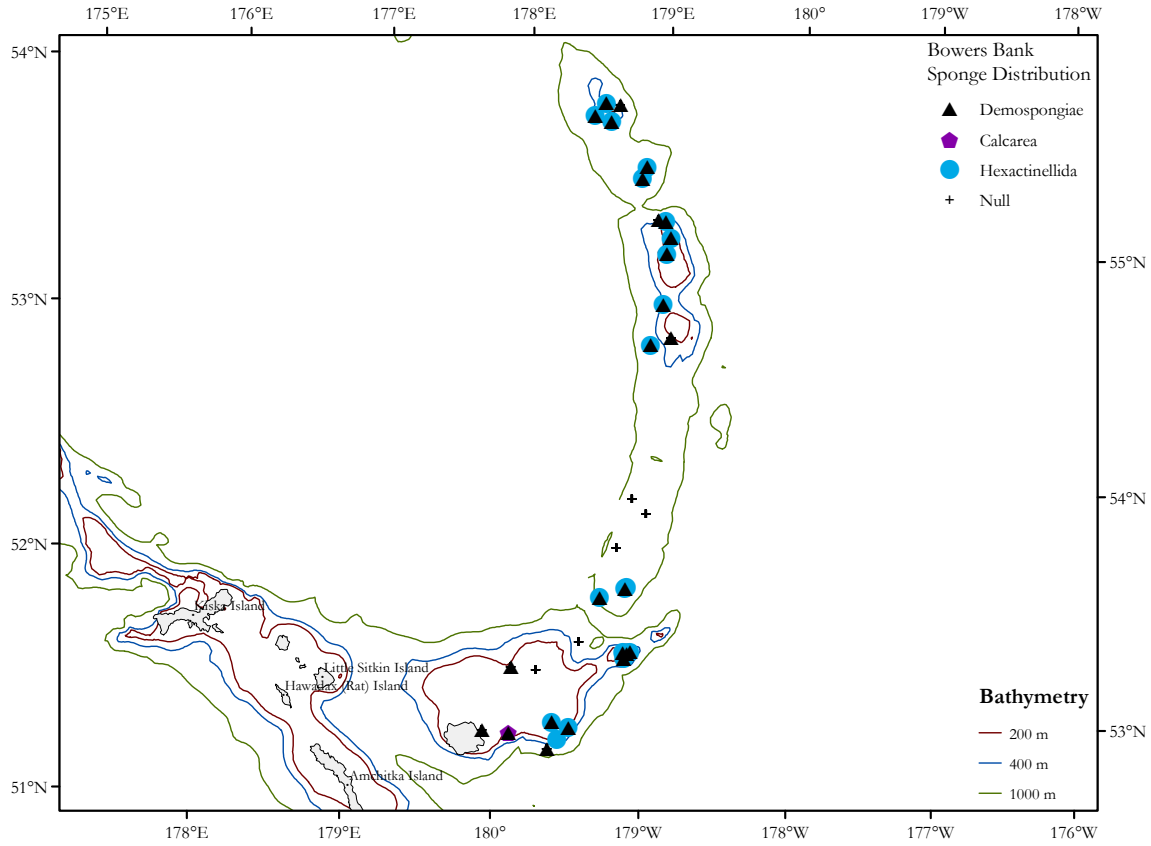


Figure 38. -- Sponge distribution, Bowers Bank.

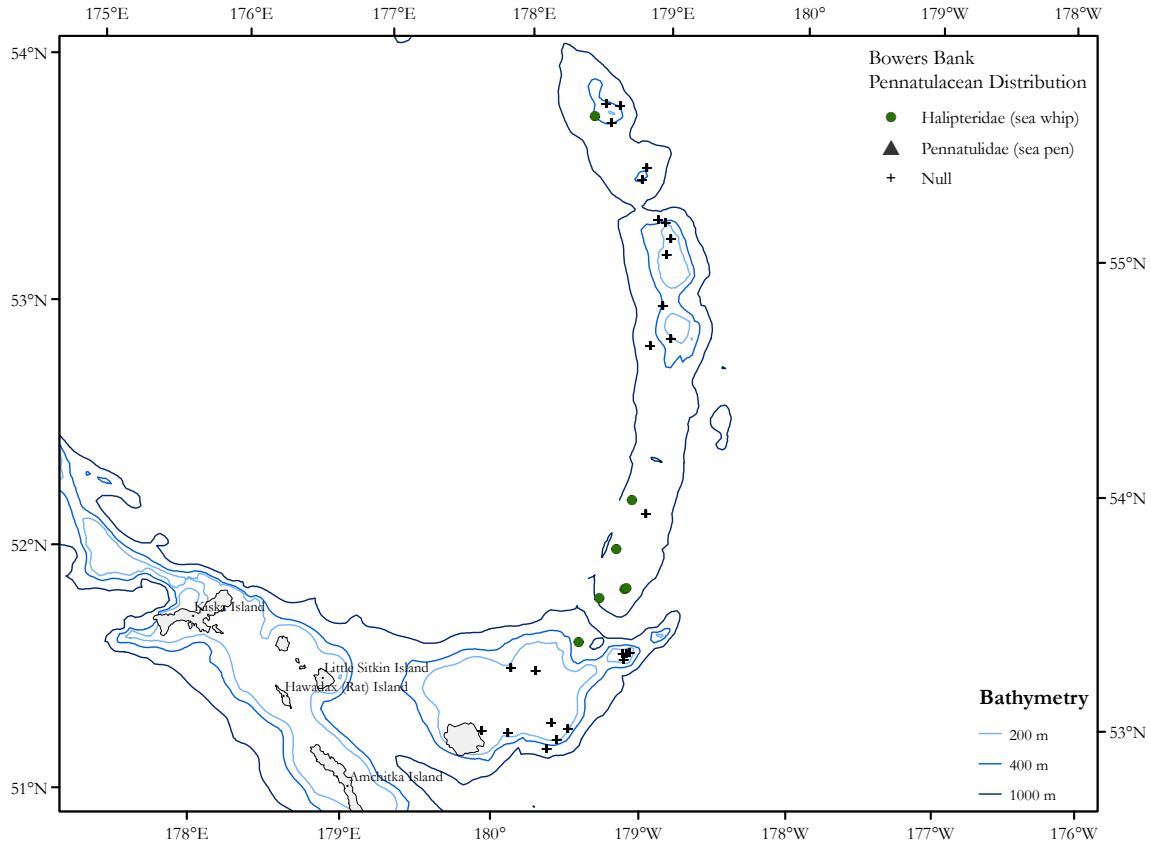


Figure 39. -- Pennatulacean distribution, Bowers Bank.

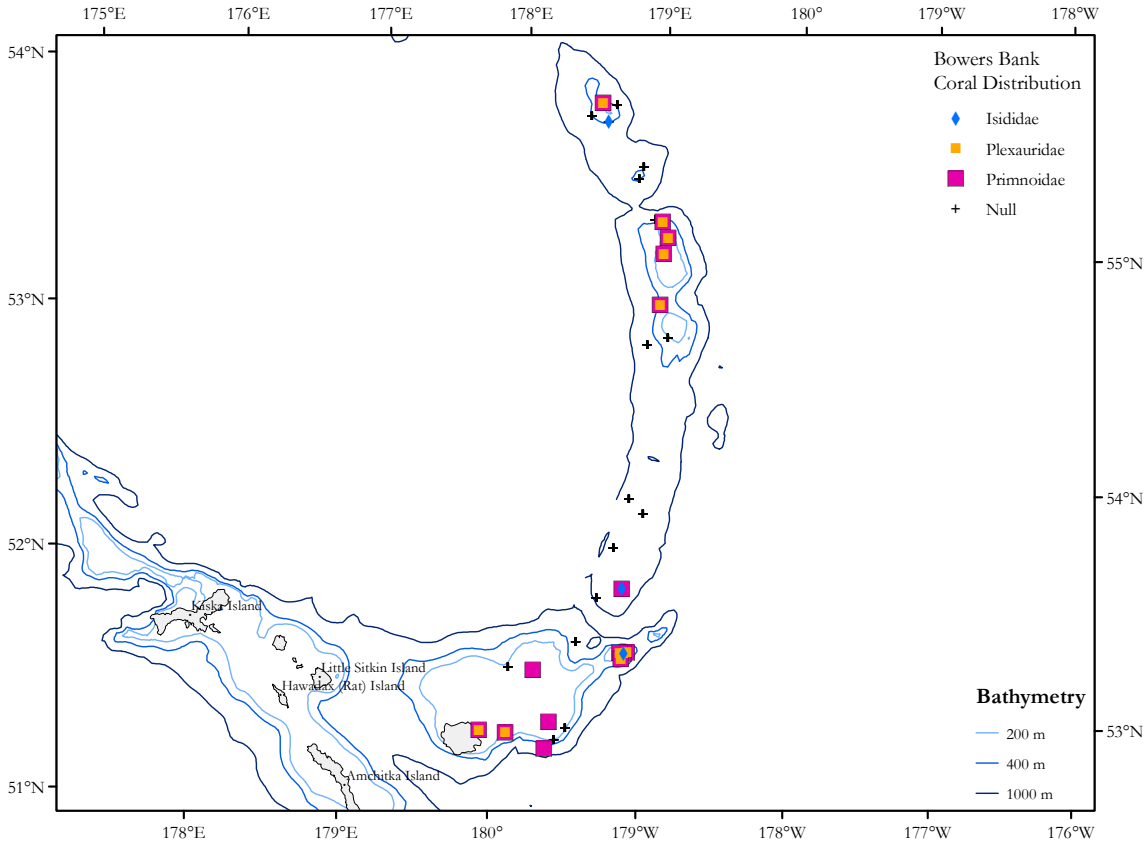


Figure 40. -- Isididae, Plexauridae, and Primnoidae distribution, Bowers Bank.

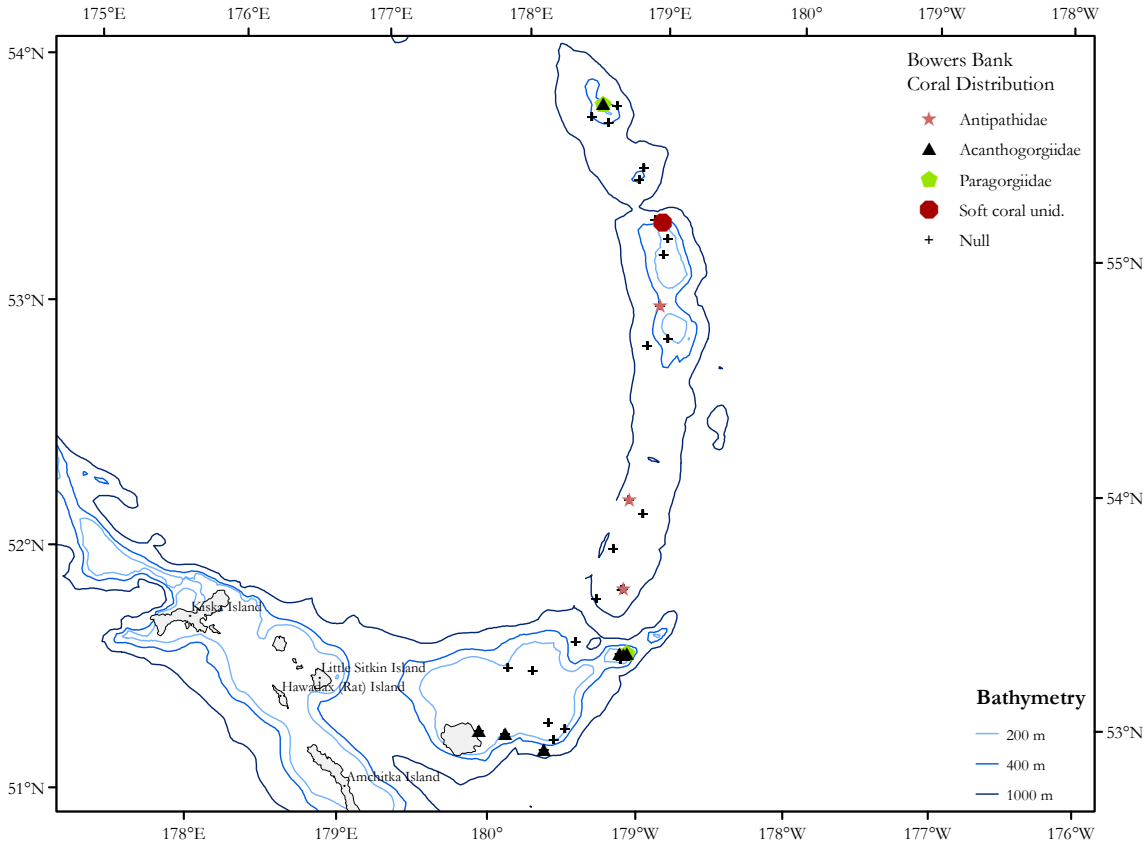


Figure 41. -- Antipathidae, Paragorgiidae, Acanthogorgiidae, and soft coral unidentified distribution, Bowers Bank.

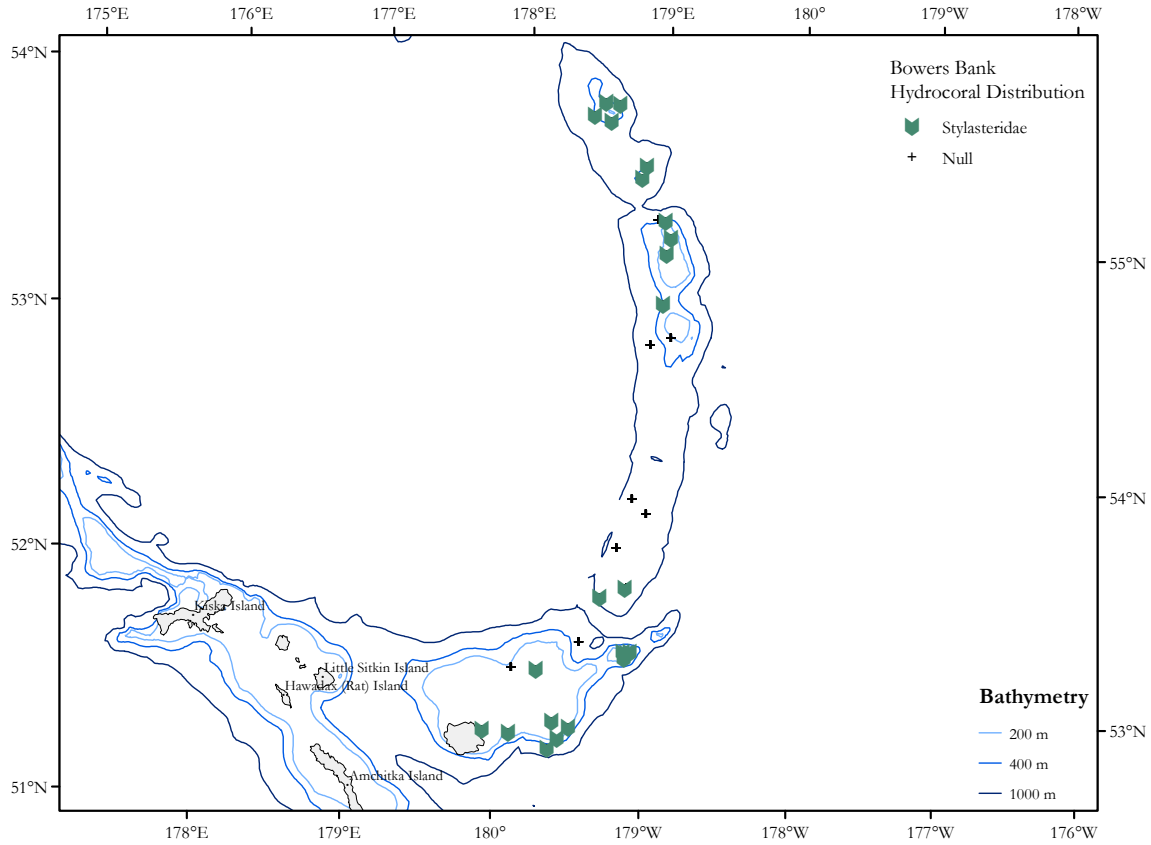
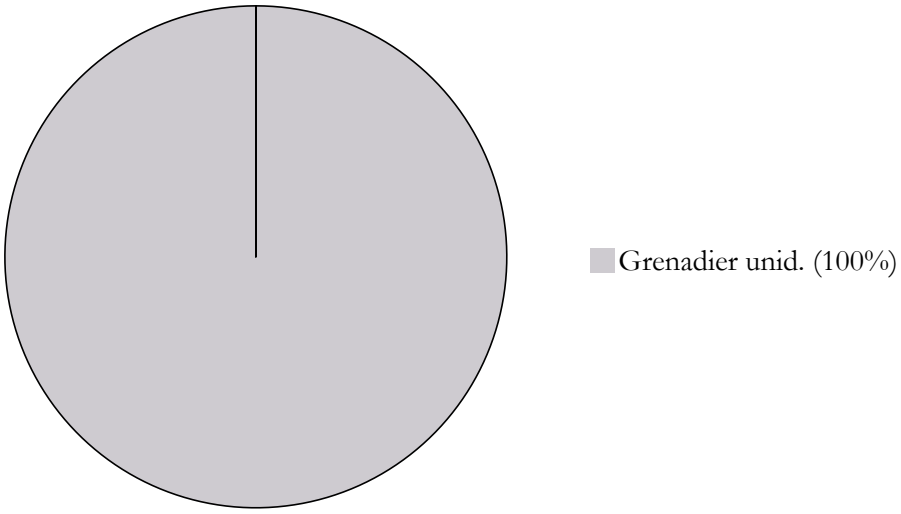


Figure 42. -- Hydrocoral distribution, Bowers Bank.

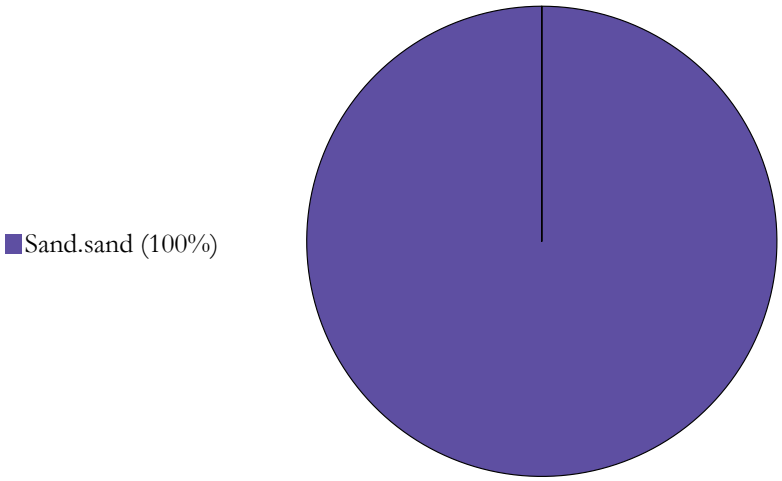
AREA: Bowers Bank — Transect 2012-53

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/22/2012	52.77	-179.85	782	855	3.1

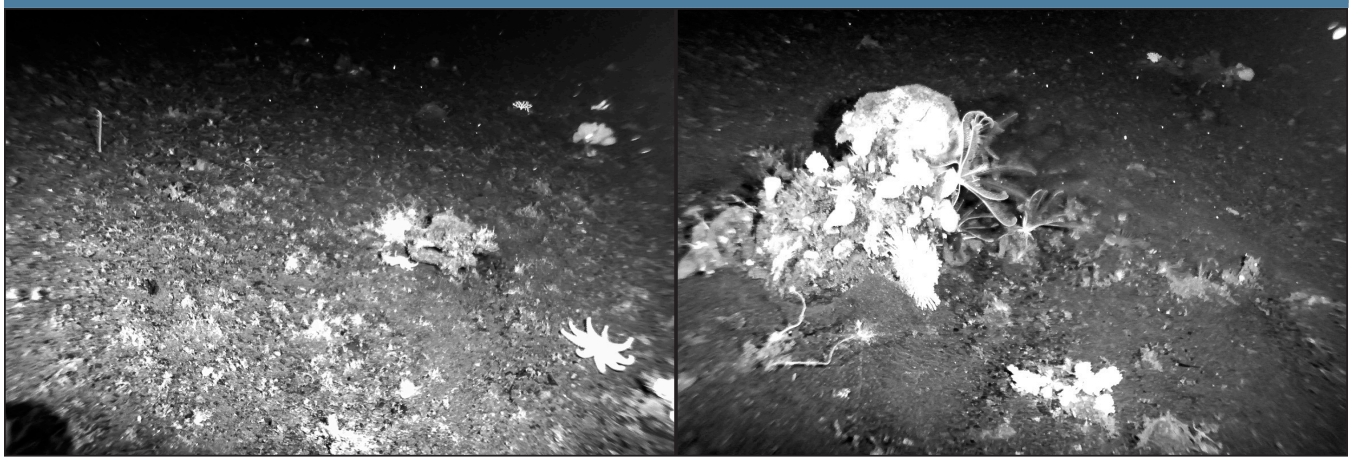
Fish and Crab Composition (n = 5)



Substrate Composition

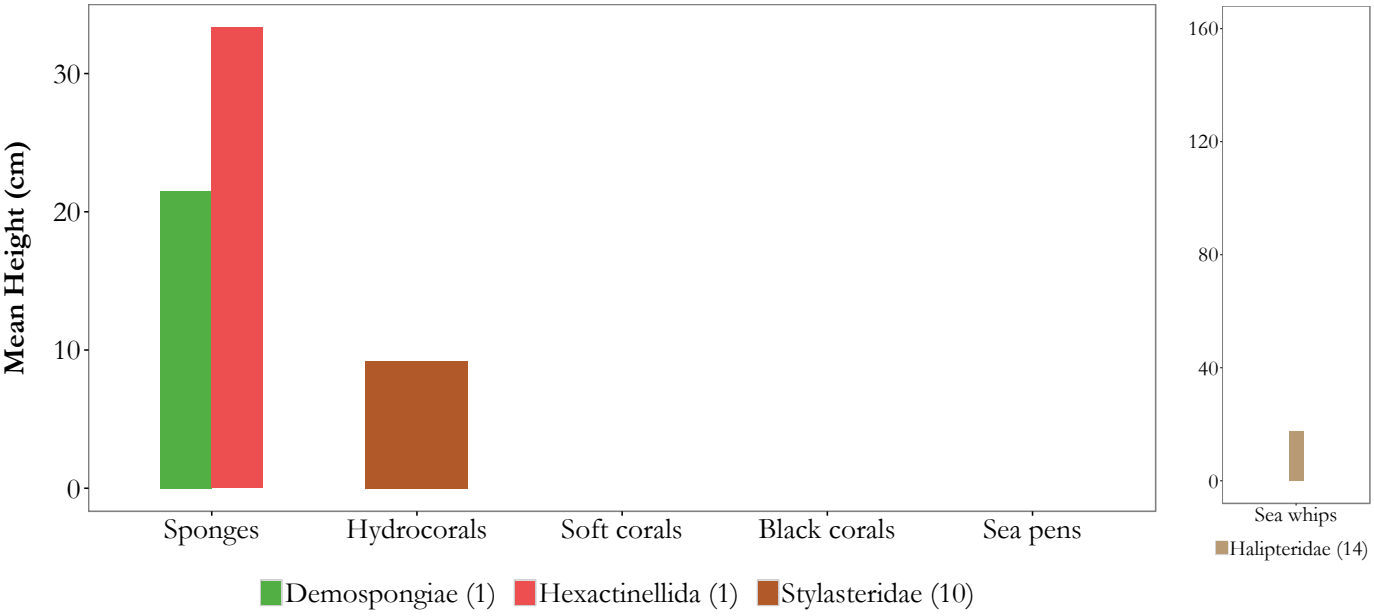


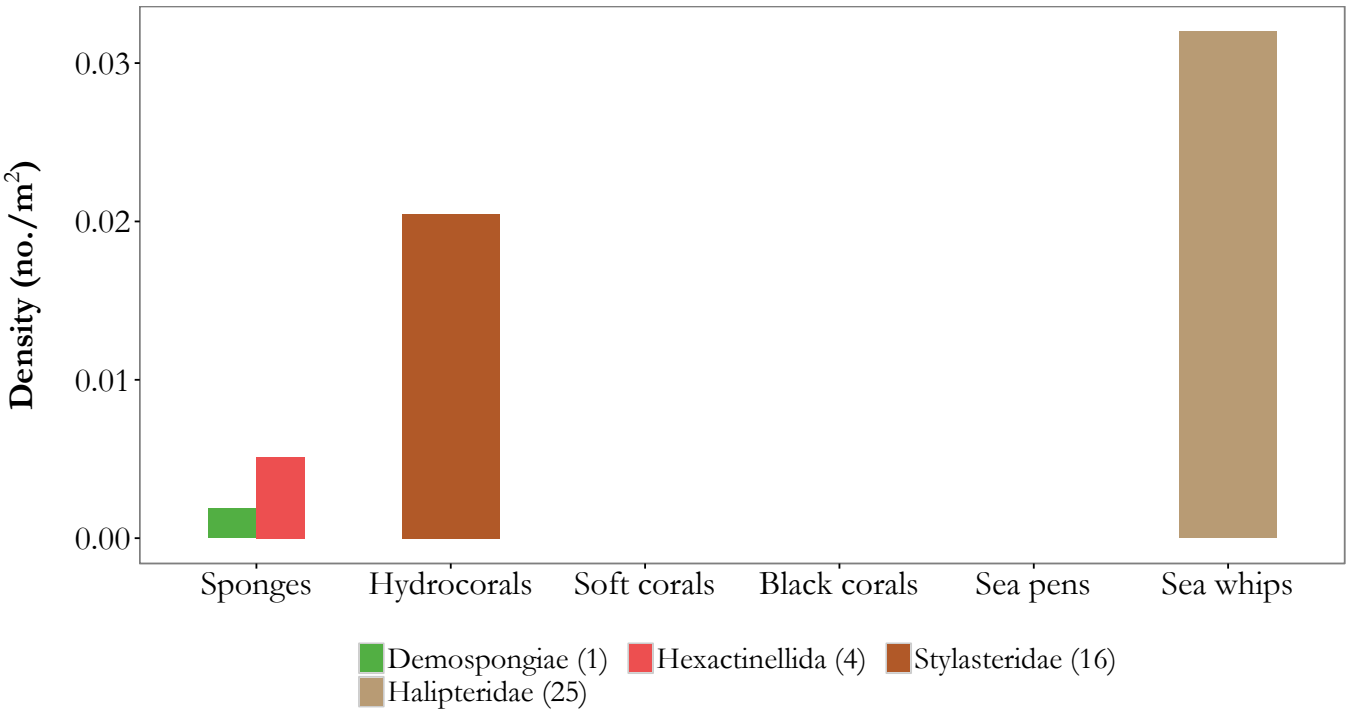
Images



AREA: Bowers Bank Transect 2012-53

Vertical Habitat Summary





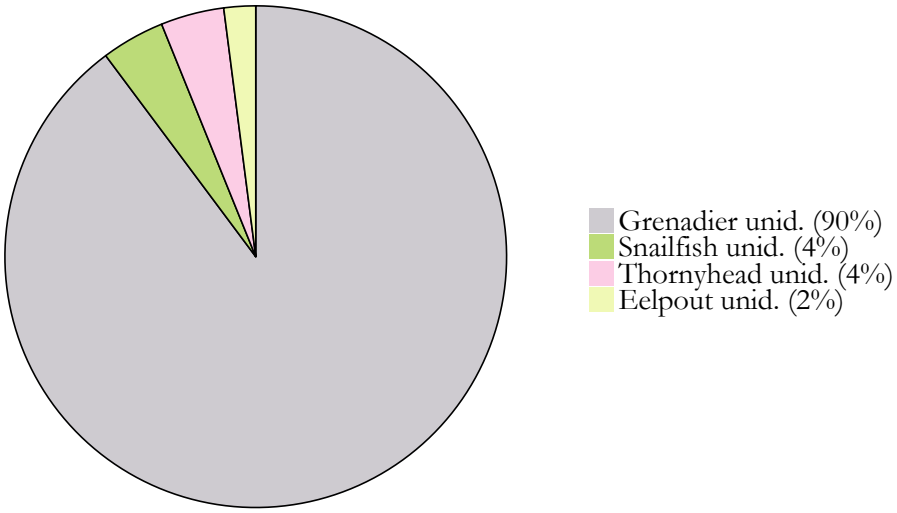
Summary - description of transect

Transect 2012-53: Primary and secondary substrates consisted entirely of sand. Five grenadiers were identified, resulting in a fish density of 0.01 individuals/m^2. Structure-forming invertebrate density (0.06 individuals/m^2) was comprised of Halipteridae, Stylasteridae, and sponges. Mean heights were calculated for Stylasteridae (9 cm) and Halipteridae (17 cm).

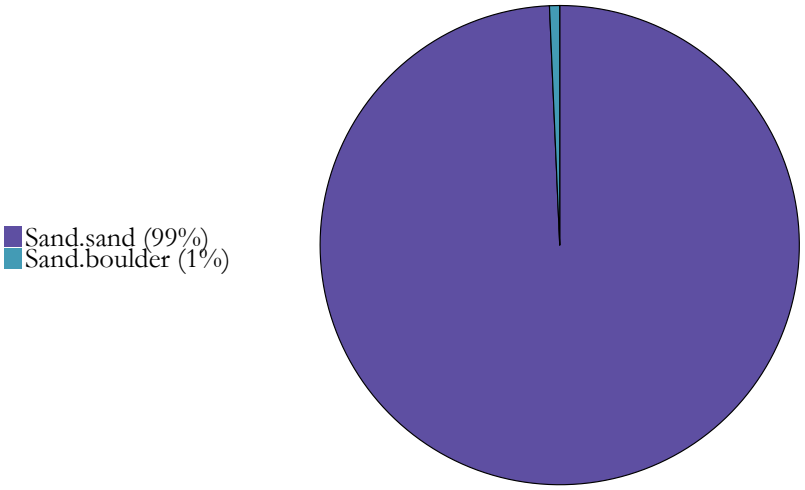
AREA: Bowers Bank — Transect 2012-54

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/22/2012	52.85	-179.70	784	634	3.5

Fish and Crab Composition (n = 49)



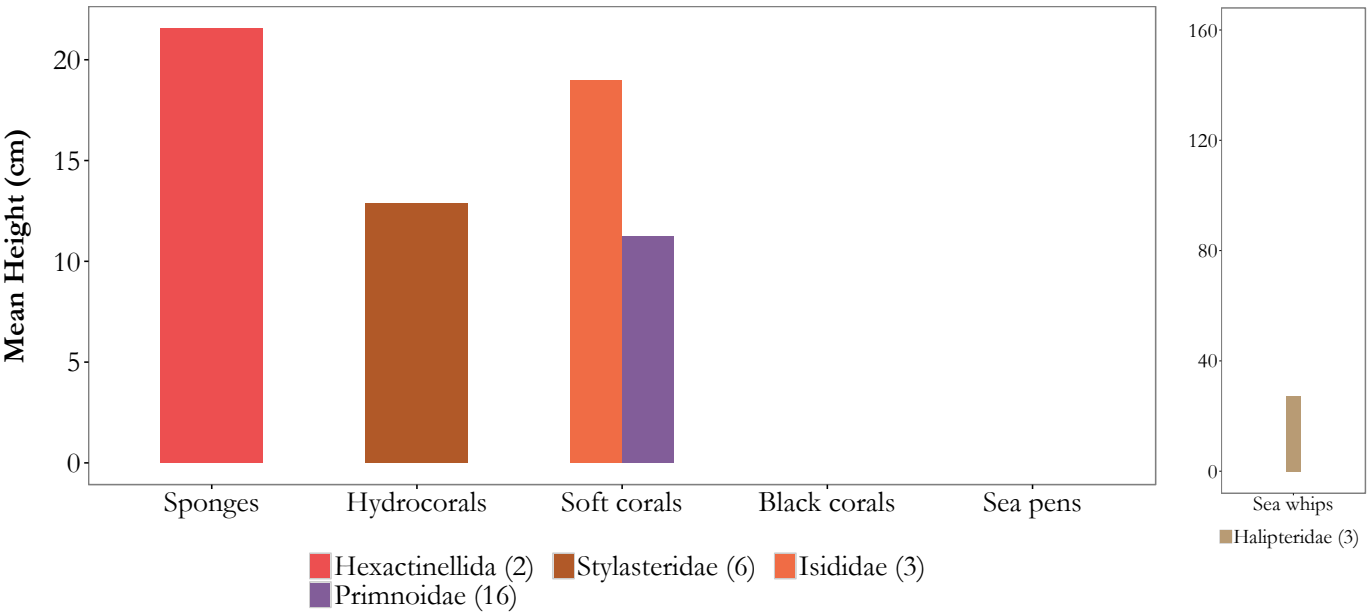
Substrate Composition

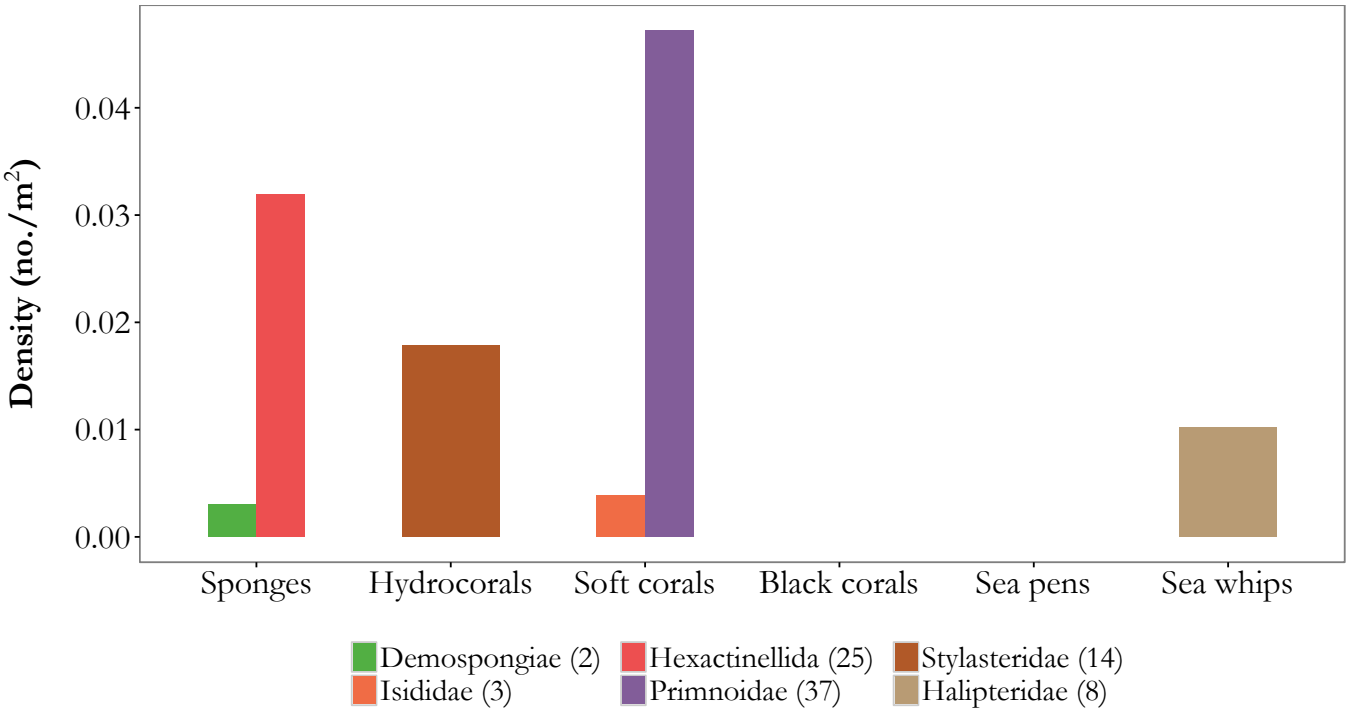


Images

AREA: Bowers Bank Transect 2012-54

Vertical Habitat Summary





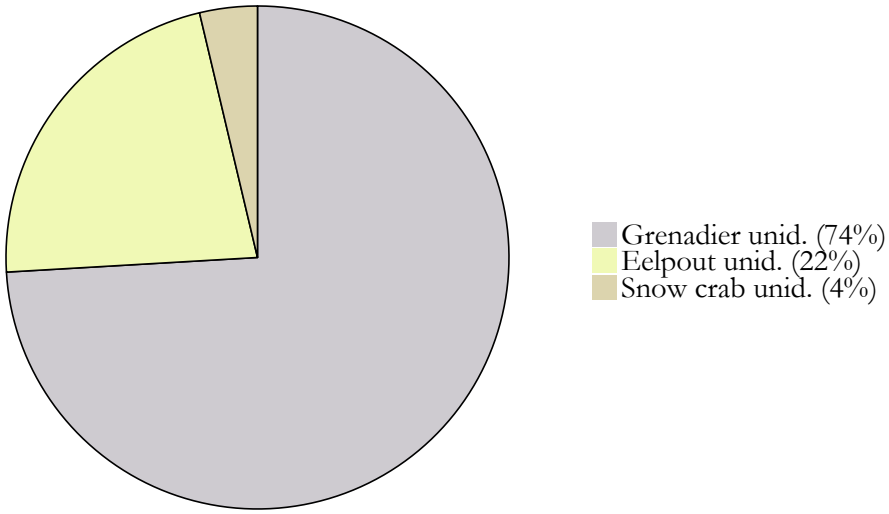
Summary - description of transect

Transect 2012-54: Primary and secondary substrates consisted of sand and a few boulders. Grenadiers (n = 44) dominated the overall fish density (0.06 individuals/m^2). Structure-forming invertebrate density was 0.11 individuals/m^2. Primnoidae accounted for 41% of the density while Hexactinellida were approximately 28%. Mean heights were collected for Hexactinellida (22 cm), Stylasteridae (13 cm), Isididae (19 cm), Primnoidae (11 cm), and Halipteridae (27 cm).

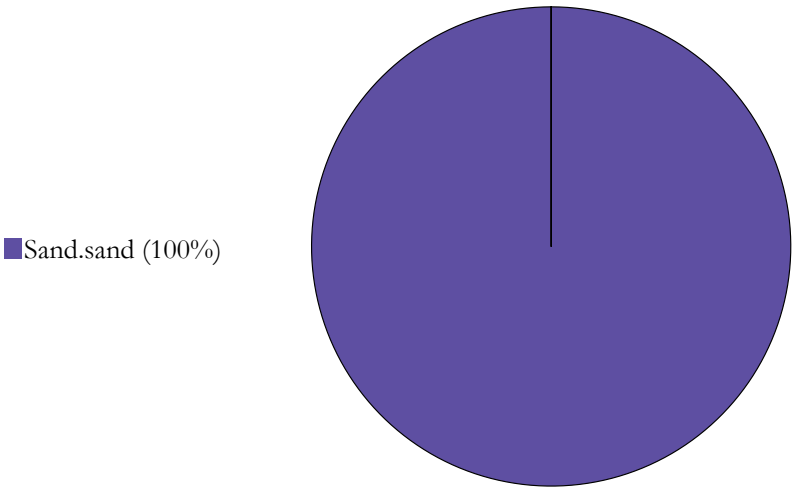
AREA: Bowers Bank — Transect 2012-55

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/22/2012	52.86	-179.69	670	635	3.5

Fish and Crab Composition (n = 54)



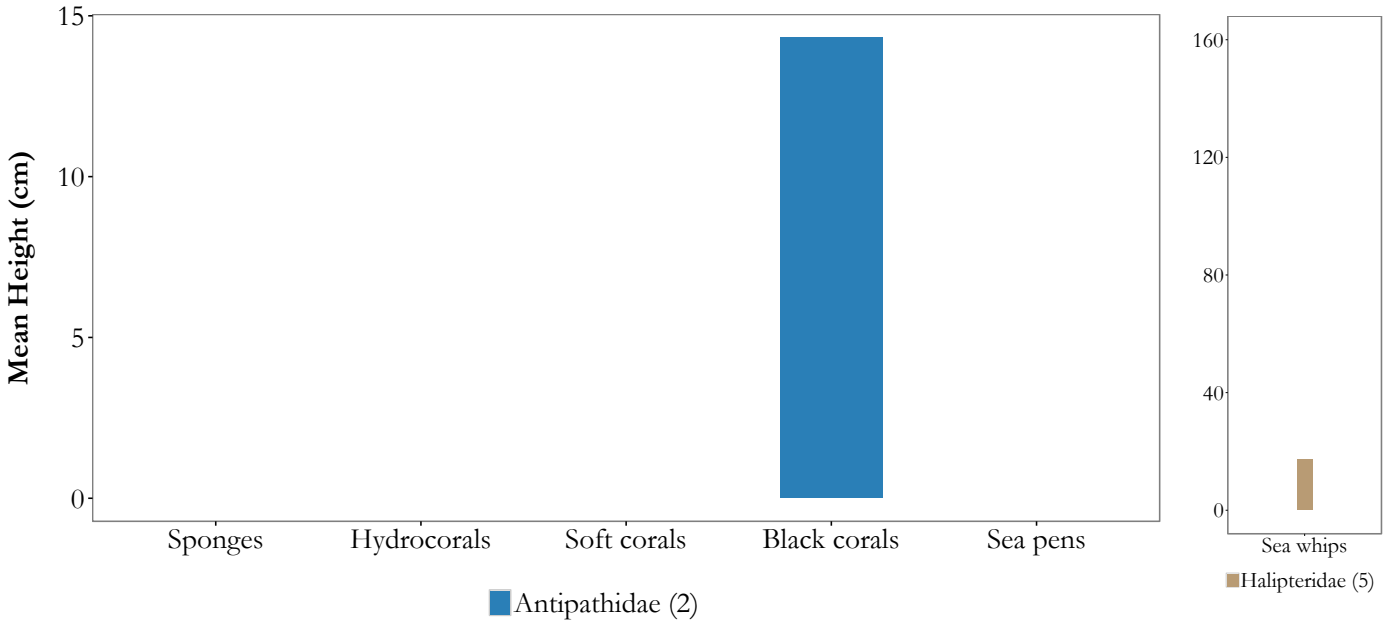
Substrate Composition

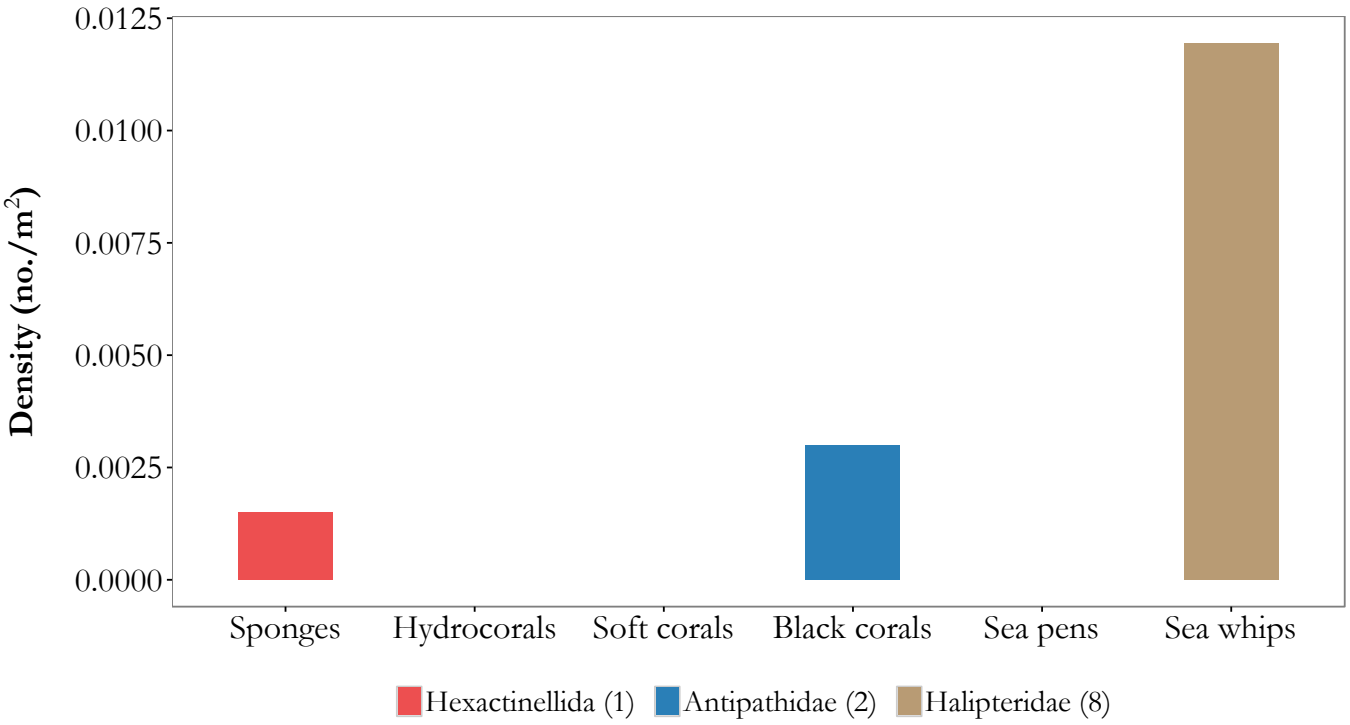


Images

AREA: Bowers Bank Transect 2012-55

Vertical Habitat Summary





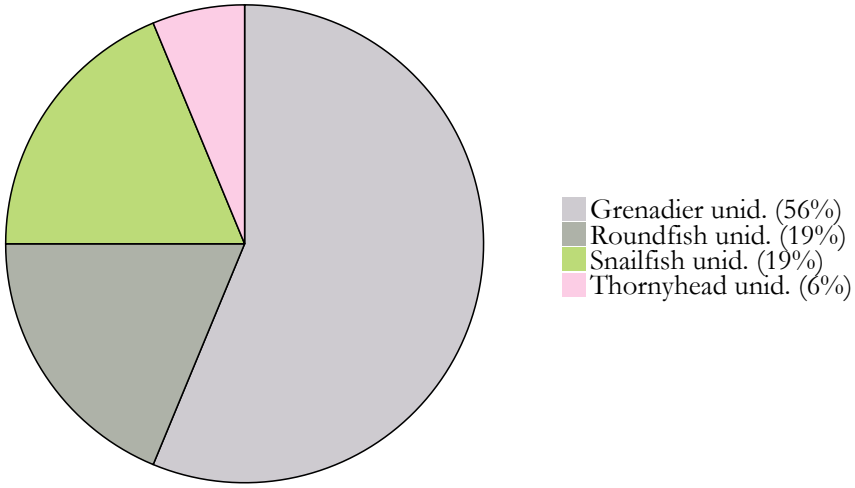
Summary - description of transect

Transect 2012-55: Primary and secondary substrates consisted of sand. Forty grenadiers, 12 eelpouts, and two snow crabs were identified resulting in a density of 0.08 individuals/m^2. Structure-forming invertebrates consisted of Halipteridae, Antipathidae, and Hexactinellida, for a density of 0.02 individuals/m^2. Mean heights were collected for Halipteridae (17 cm) and Antipathidae (14 cm).

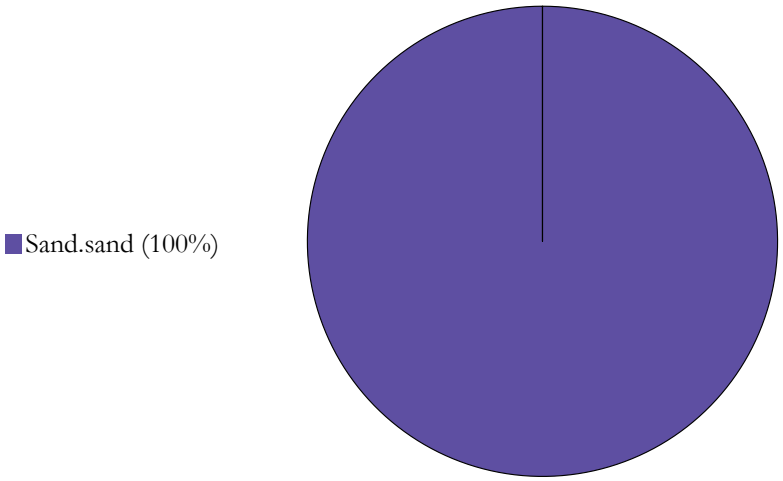
AREA: Bowers Bank — Transect 2012-56

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/22/2012	53.01	-179.87	736	778	3.2

Fish and Crab Composition (n = 16)



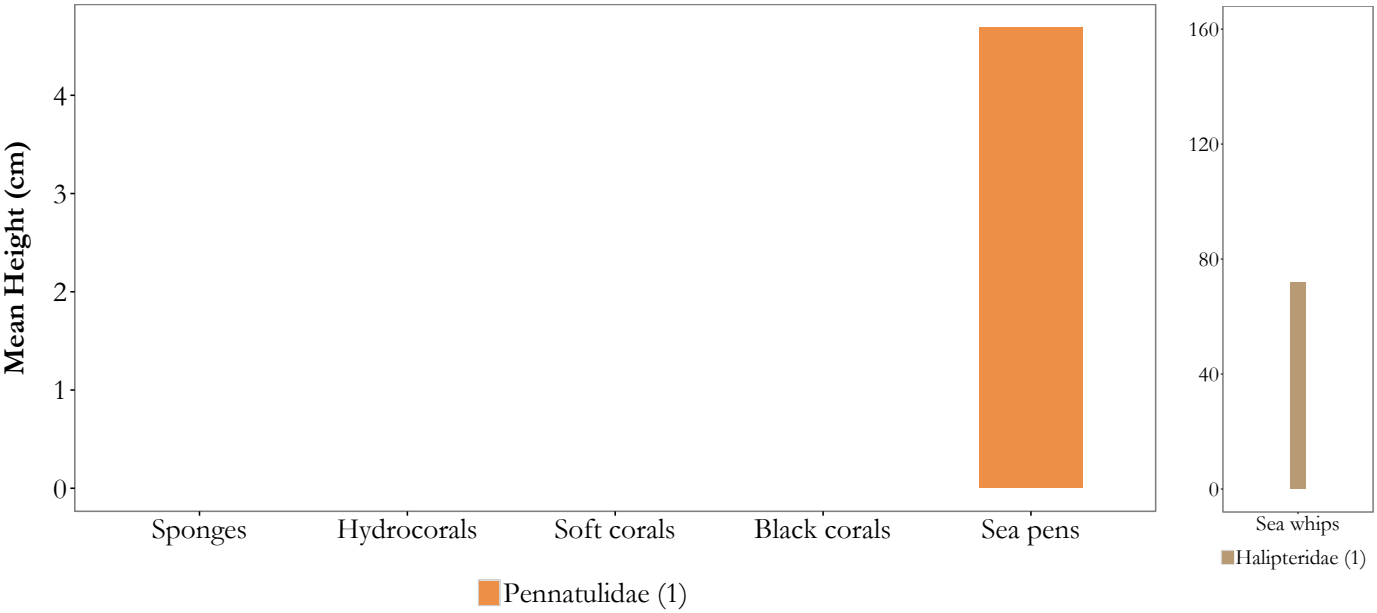
Substrate Composition

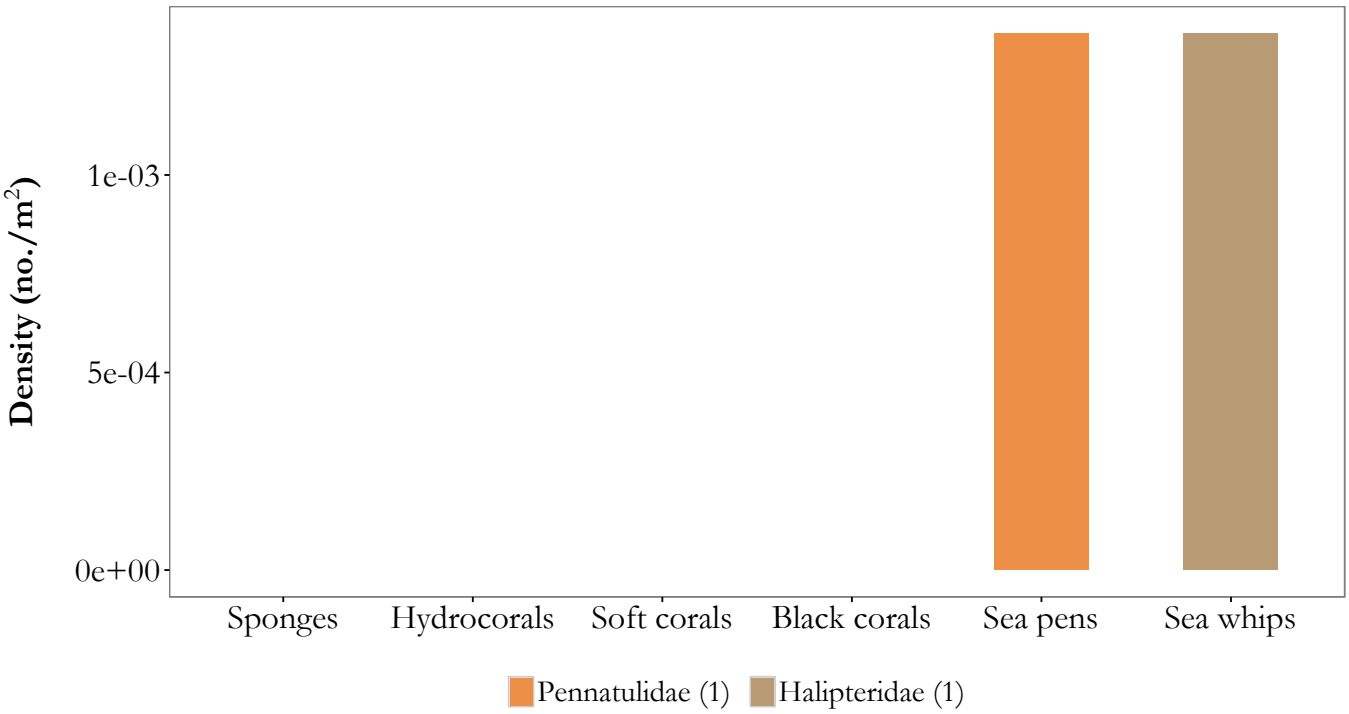


Images

AREA: Bowers Bank Transect 2012-56

Vertical Habitat Summary





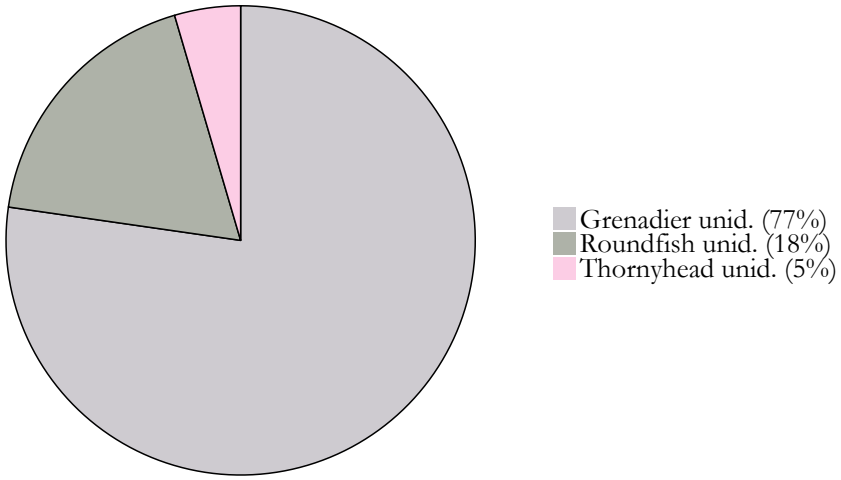
Summary - description of transect

Transect 2012-56: Primary and secondary substrates consisted of sand. Fish density was low for this transect (0.02 individuals/m^2). Grenadiers (n = 9) accounted for 56% of the fish density. Only one Halipteridae and one Pennatulidae were identified.

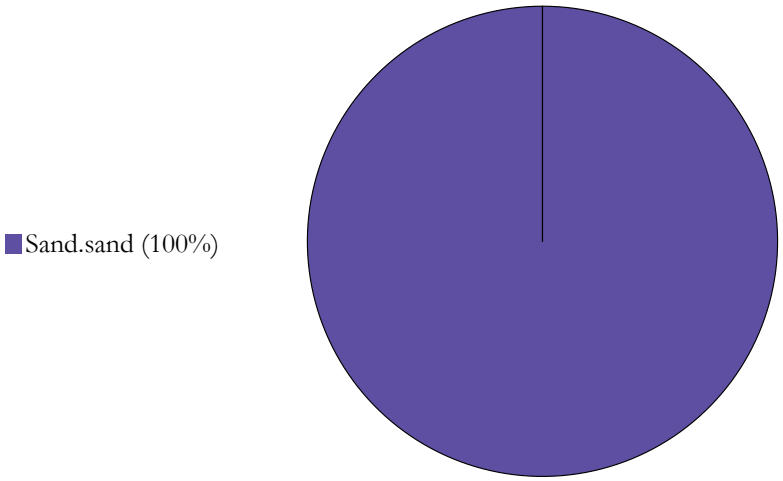
AREA: Bowers Bank — Transect 2012-57

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/22/2012	53.20	-179.77	1,458	601	3.4

Fish and Crab Composition (n = 22)



Substrate Composition



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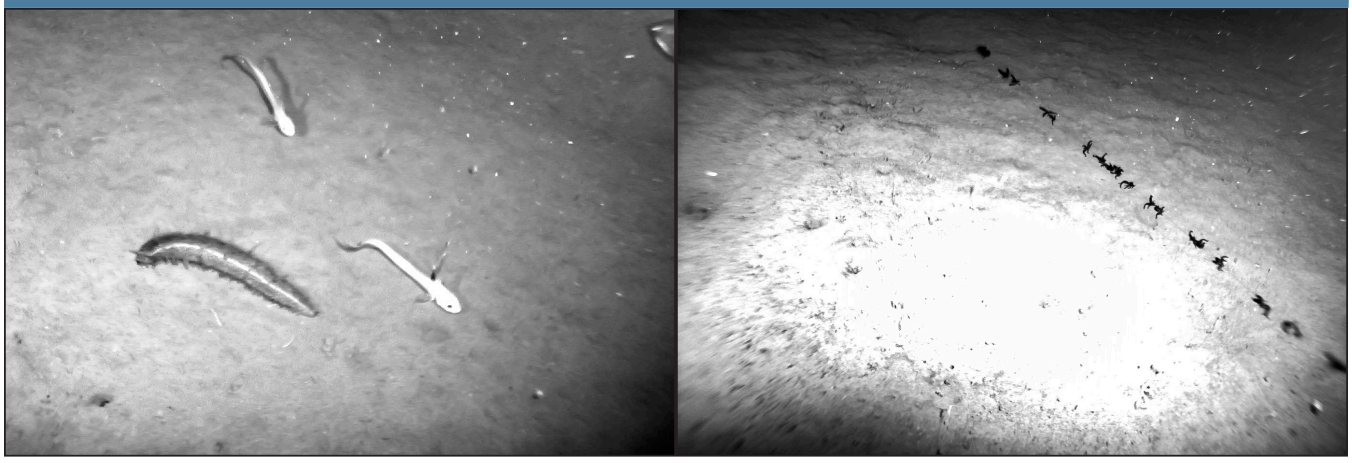
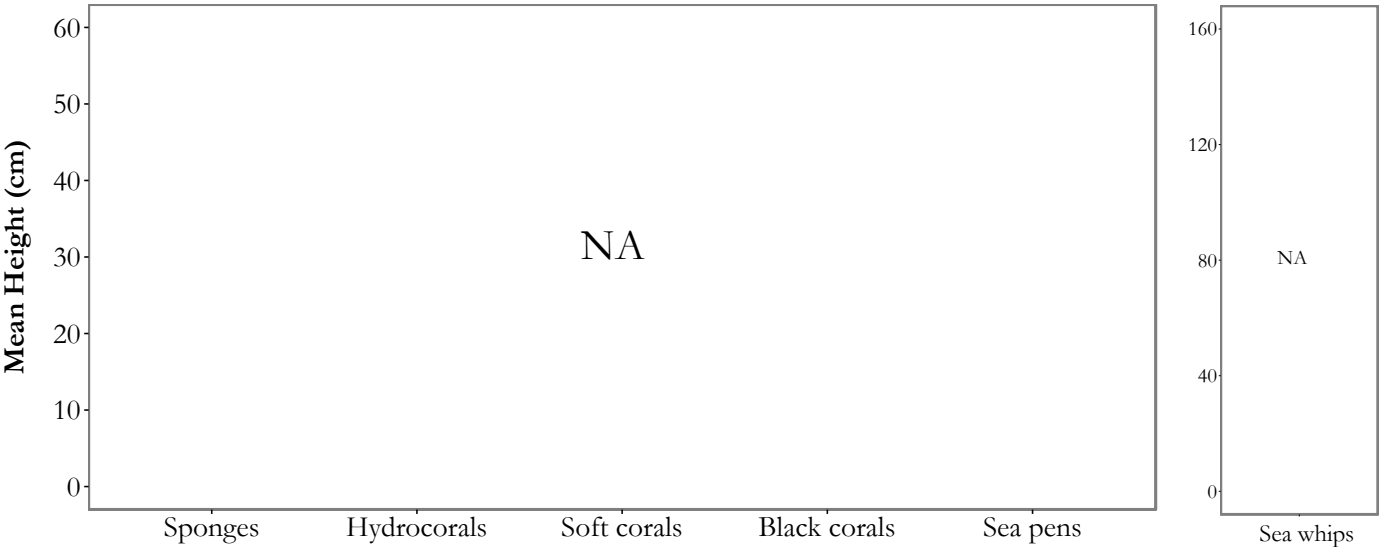
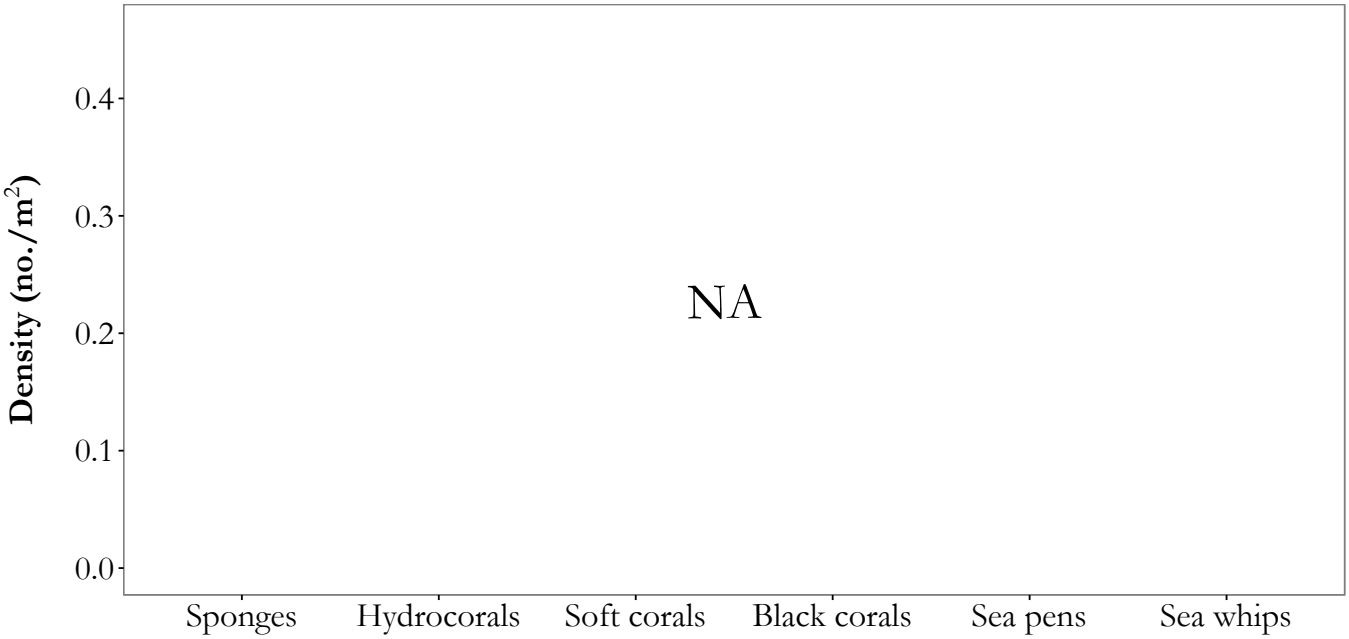


AREA: Bowers Bank Transect 2012-57

Vertical Habitat Summary





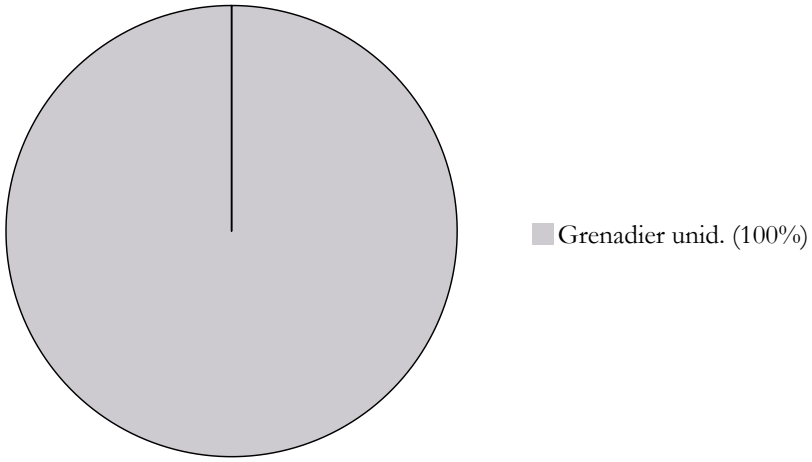
Summary - description of transect

Transect 2012-57: Primary and secondary substrates consisted of sand. Grenadiers (n = 17) accounted for 77% of the total fish density (0.02 individuals/m^2). No corals, sponges, sea whips, sea pens, or hydrocorals were observed. Evidence of fishing was observed in the form of discarded fishing line, see inset figure.

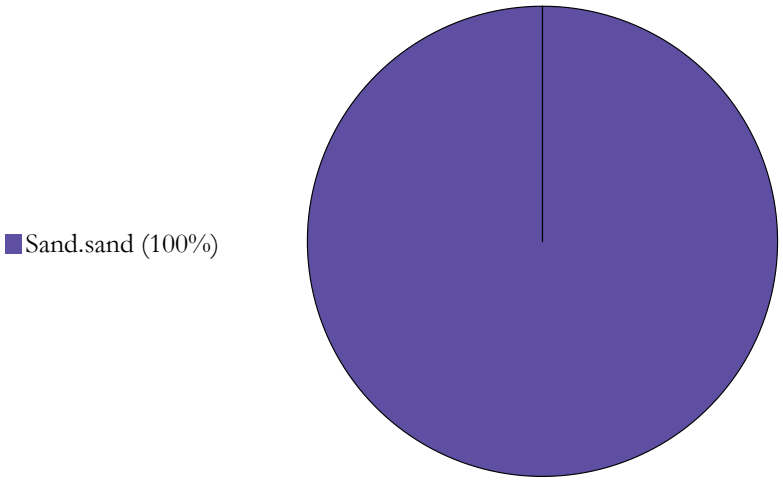
AREA: Bowers Bank — Transect 2012-58

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/22/2012	53.24	-179.91	1,144	784	3.3

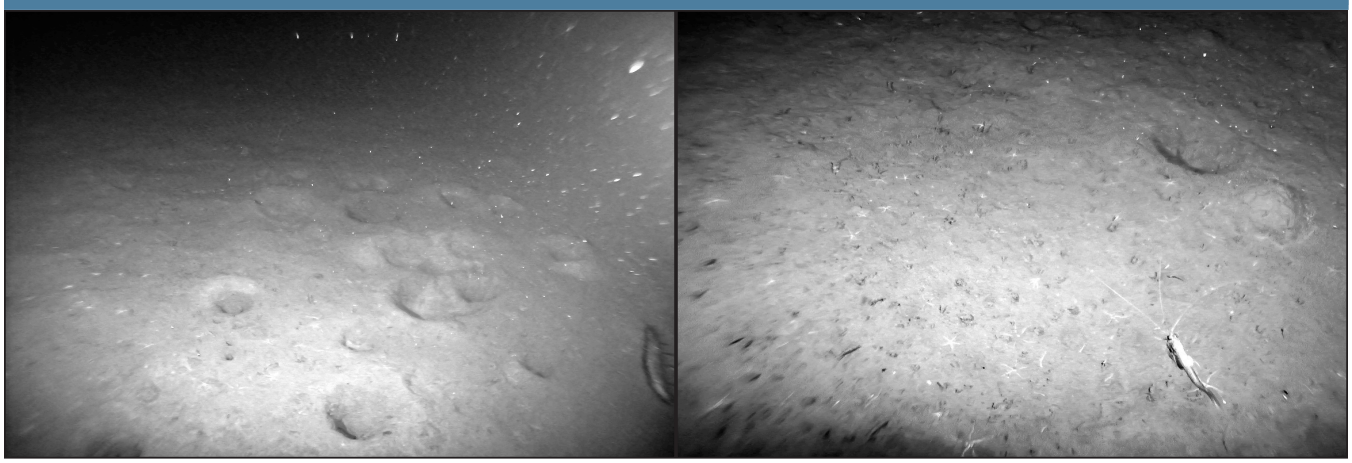
Fish and Crab Composition (n = 9)



Substrate Composition

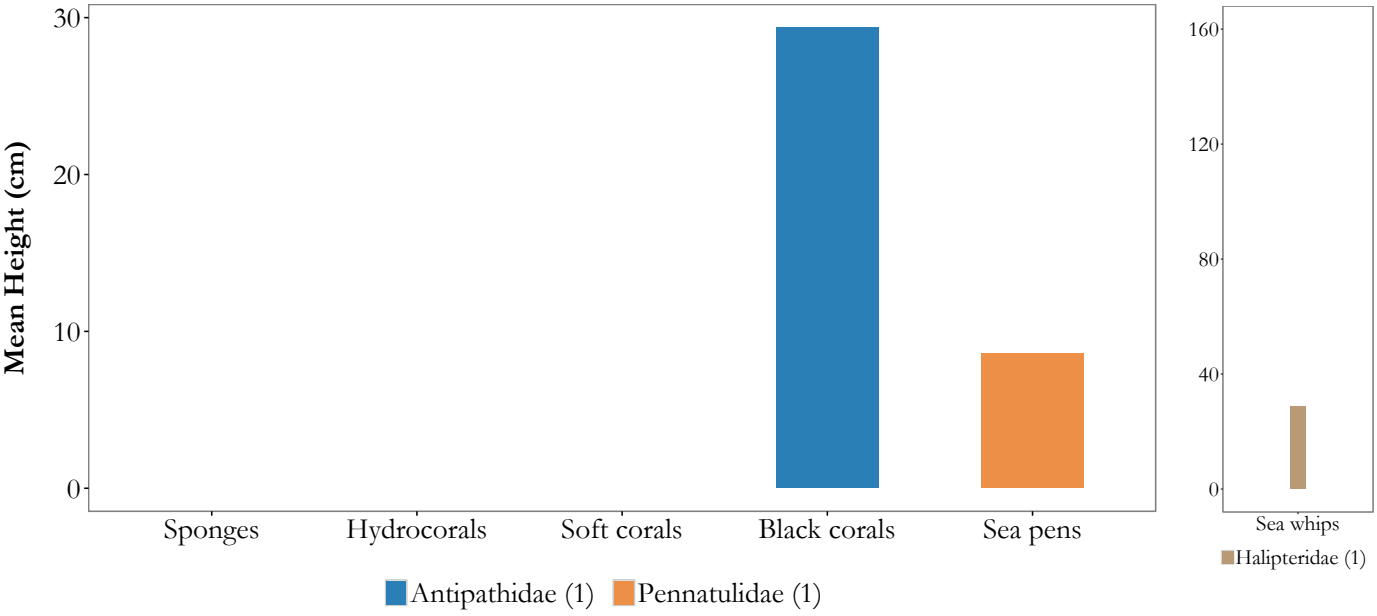


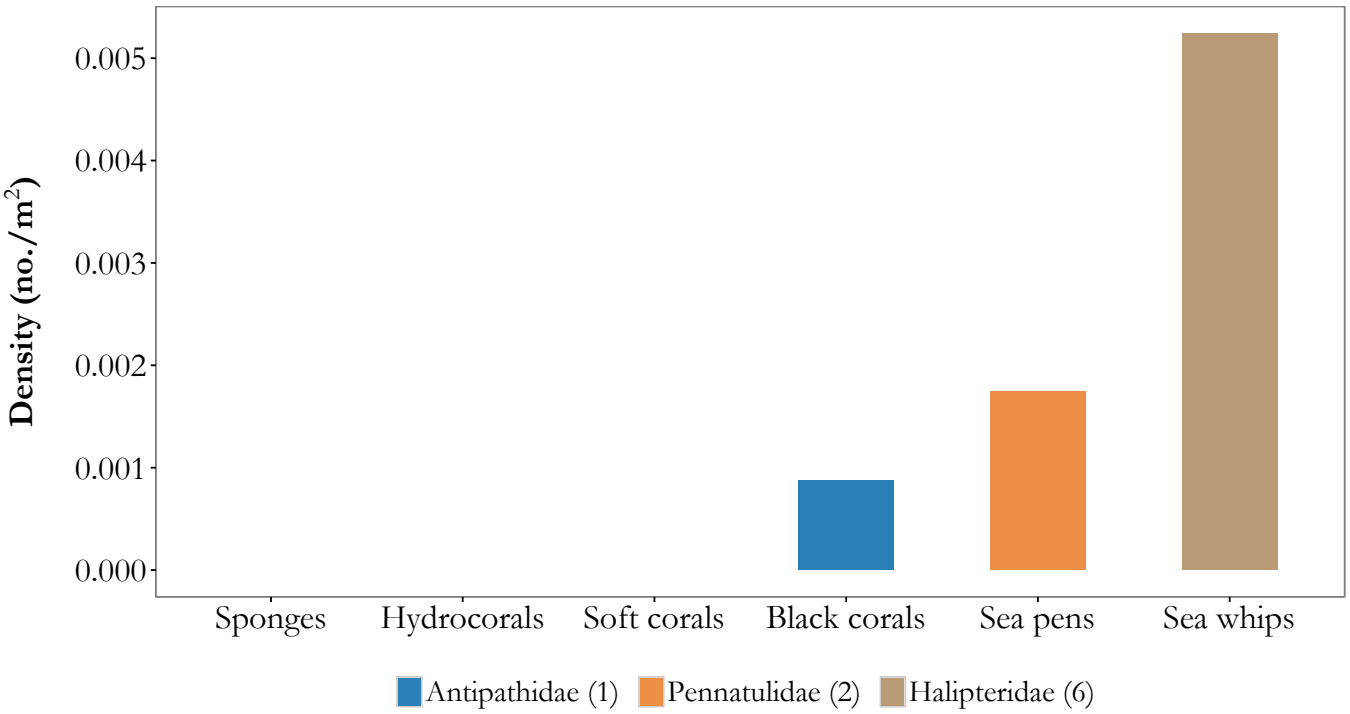
Images



AREA: Bowers Bank Transect 2012-58

Vertical Habitat Summary





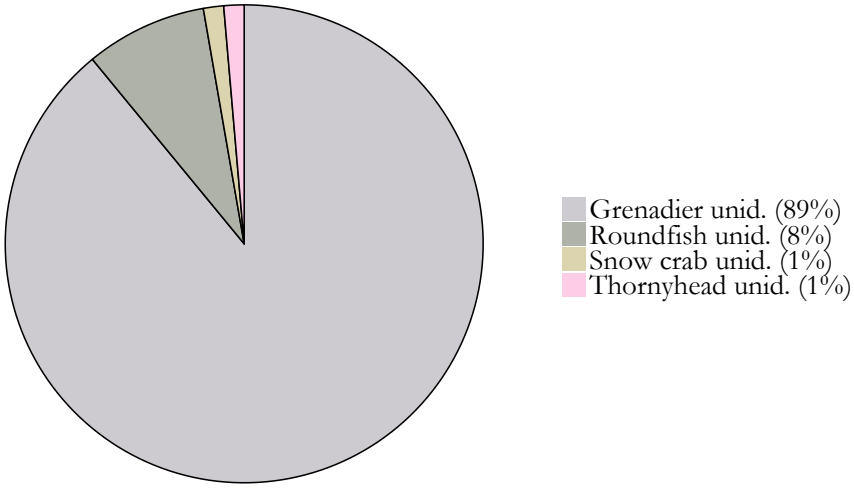
Summary - description of transect

Transect 2012-58: Primary and secondary substrates consisted of sand. Only nine Grenadiers were identified resulting in a low fish density of 0.01 individuals/m^2. Structure-forming invertebrate density was also low, 0.02 individuals/m^2.

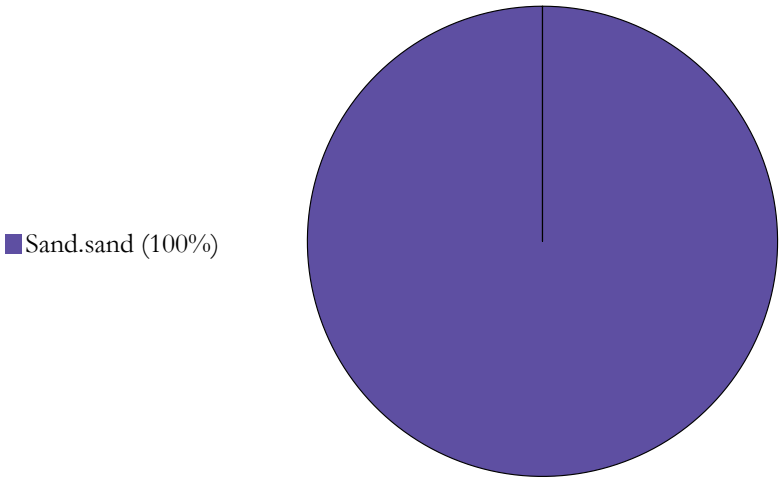
AREA: Bowers Bank — Transect 2012-59

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/23/2012	54.86	178.84	1,613	745	3.2

Fish and Crab Composition (n = 73)



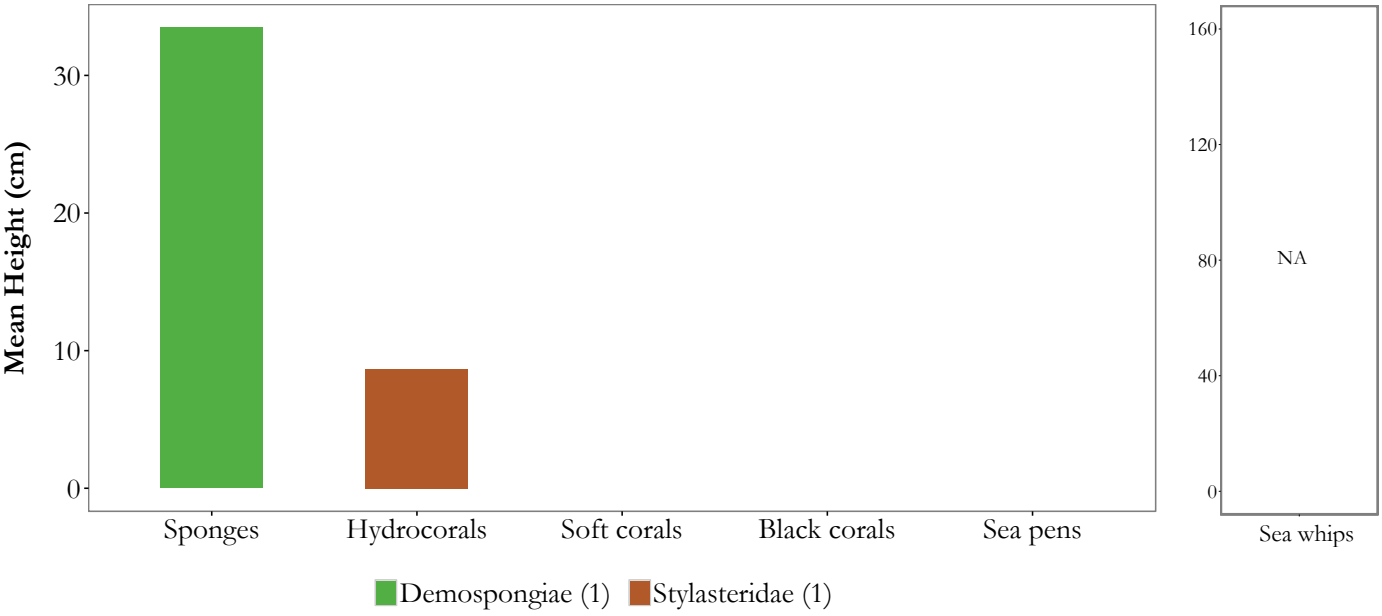
Substrate Composition

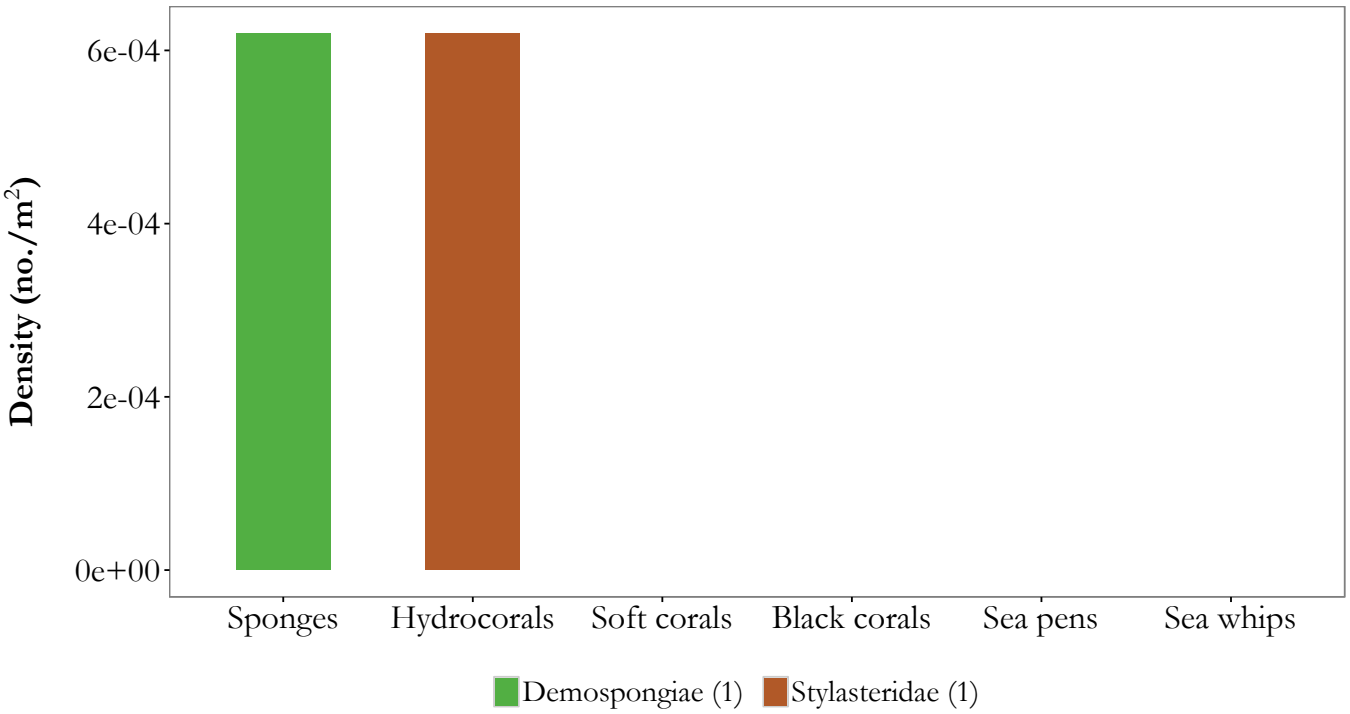


Images

AREA: Bowers Bank Transect 2012-59

Vertical Habitat Summary





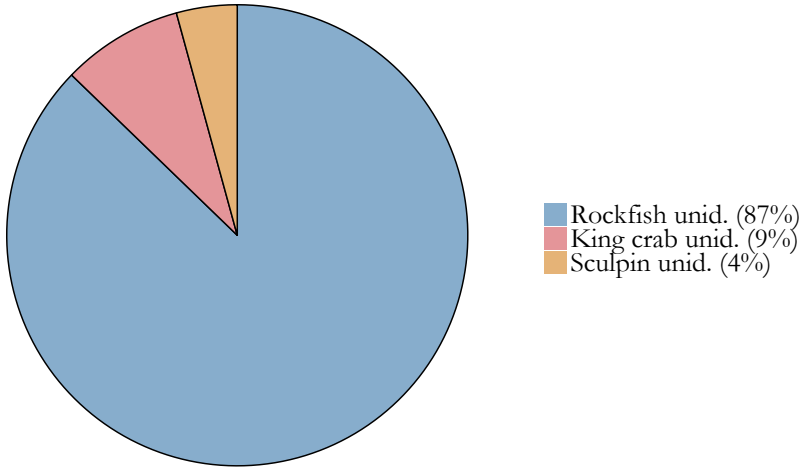
Summary - description of transect

Transect 2012-59: Primary and secondary substrates consisted of sand. Fish and crab density was 0.05 individuals/m^2 of which grenadiers comprised 89%. Structure-forming invertebrate habitat was minimal with only one Demospongiae and one Stylasteridae.

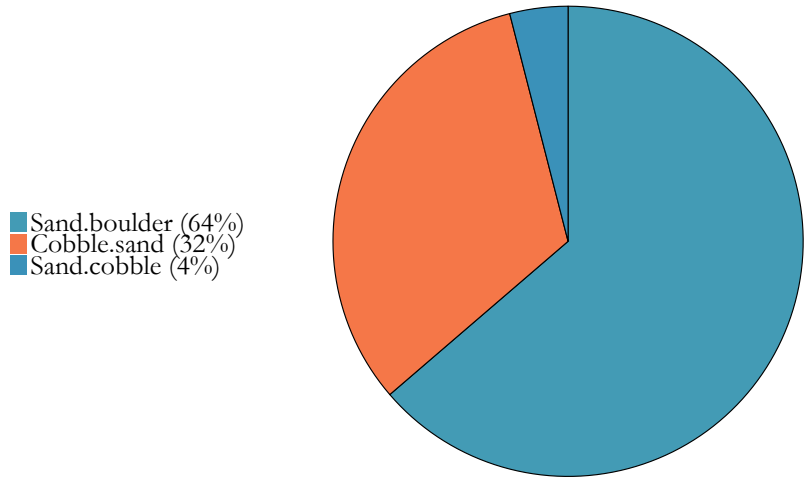
AREA: Bowers Bank — Transect 2012-60

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/23/2012	54.84	178.73	1,654	249	3.8

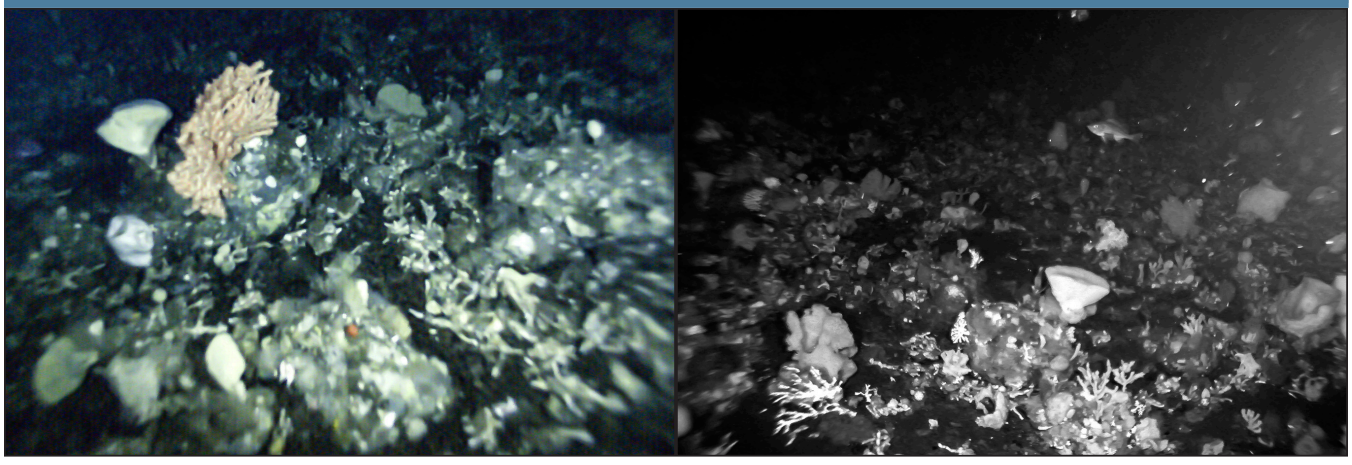
Fish and Crab Composition (n = 47)



Substrate Composition

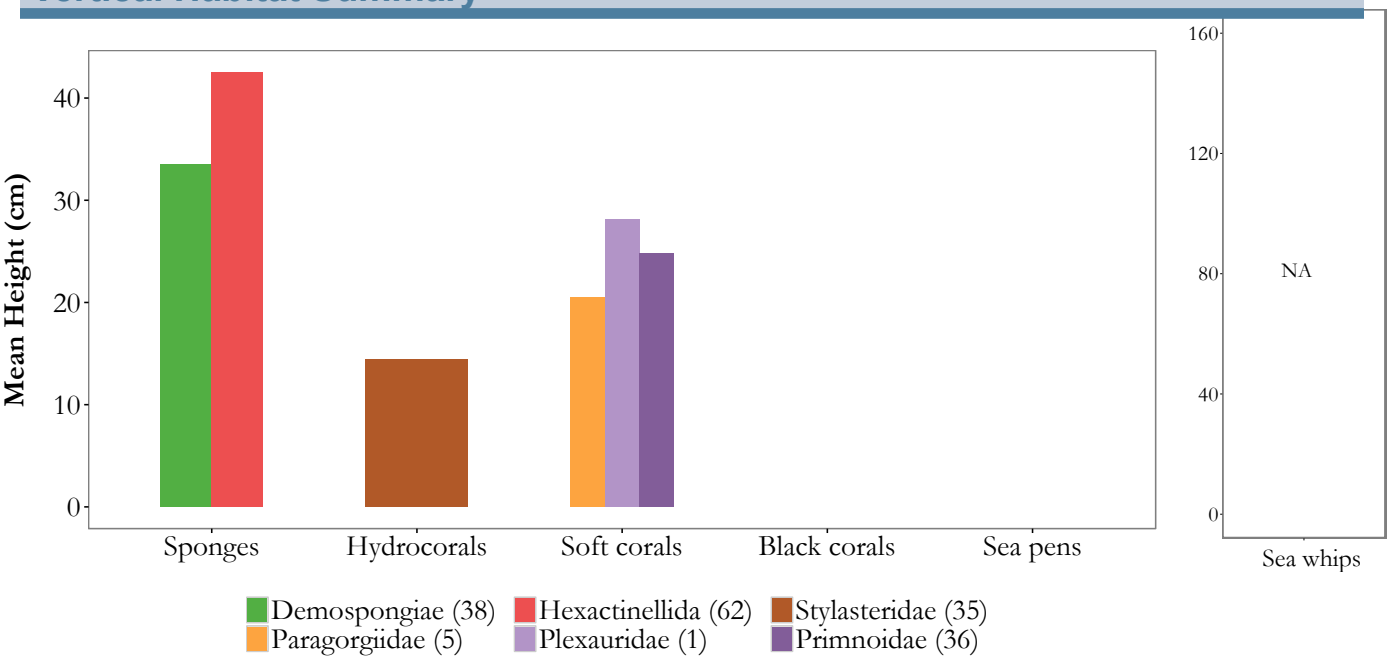


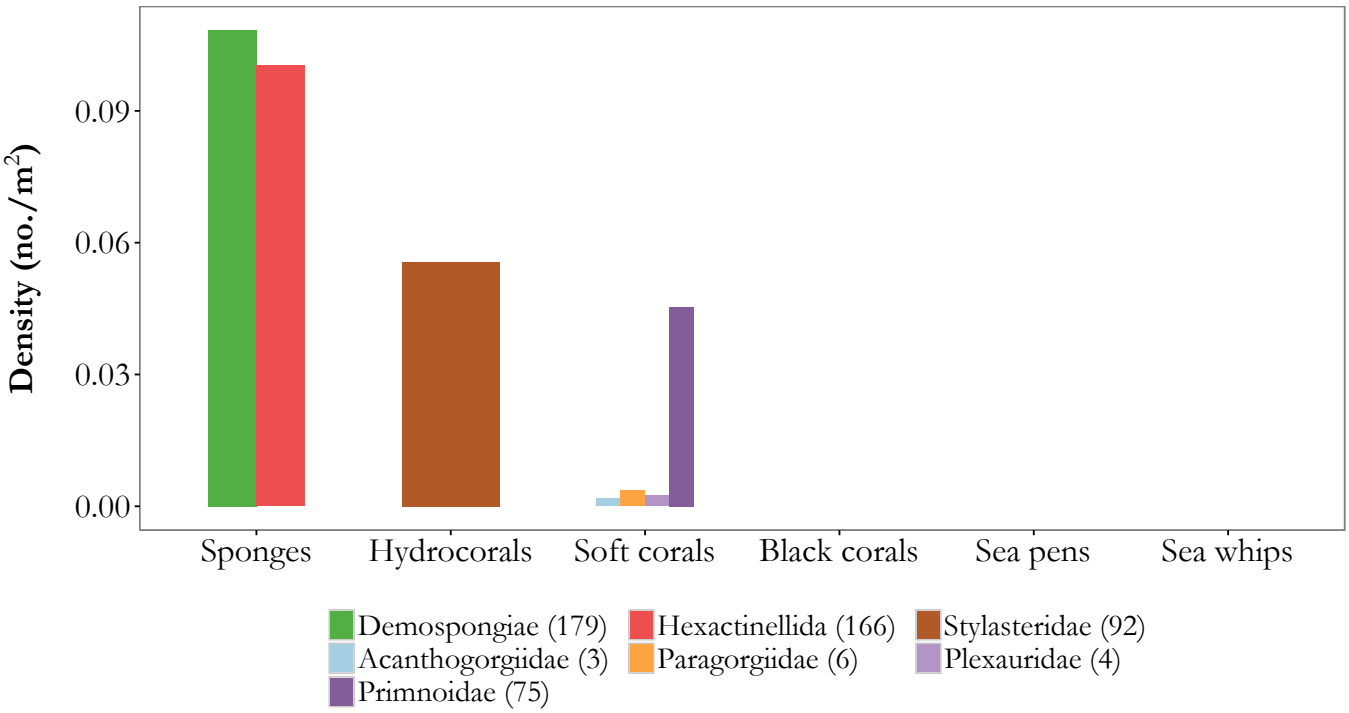
Images



AREA: Bowers Bank Transect 2012-60

Vertical Habitat Summary





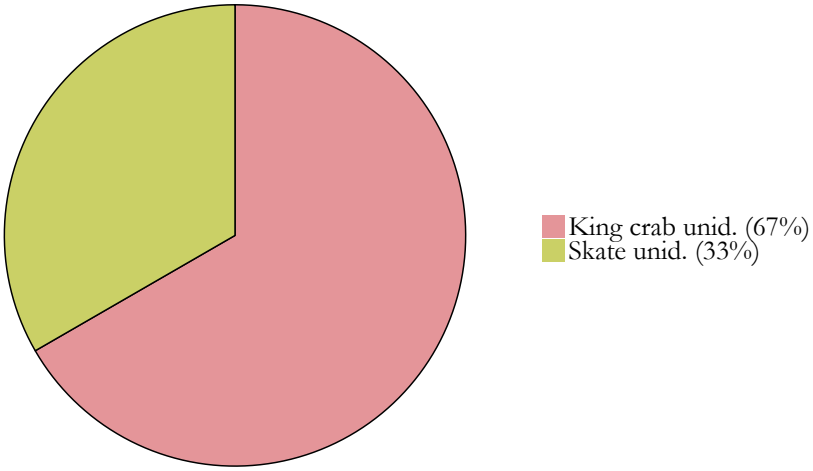
Summary - description of transect

Transect 2012-60: Primary and secondary substrates consisted of sand, boulder, and cobble. Rockfishes (n = 41) were 87% of the fish density (0.03 individuals/m^2). Structure-forming invertebrate density was 0.32 individuals/m^2. Sponges accounted for 66% (0.21 individuals/m^2) of the density. Mean heights were calculated for Demospongiae (33 cm), Hexactinellida (43 cm), Stylasteridae (14 cm), Paragorgiidae (21), and Primnoidae (25 cm).

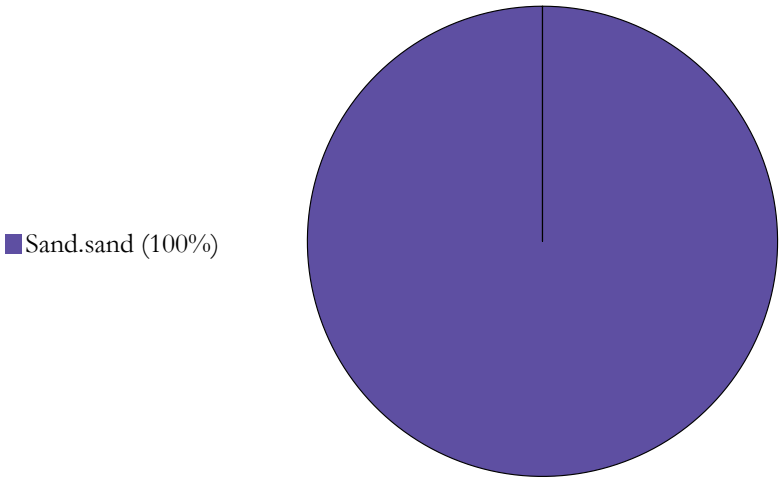
AREA: Bowers Bank — Transect 2012-61

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/23/2012	54.77	178.69	1,852	332	3.8

Fish and Crab Composition (n = 3)



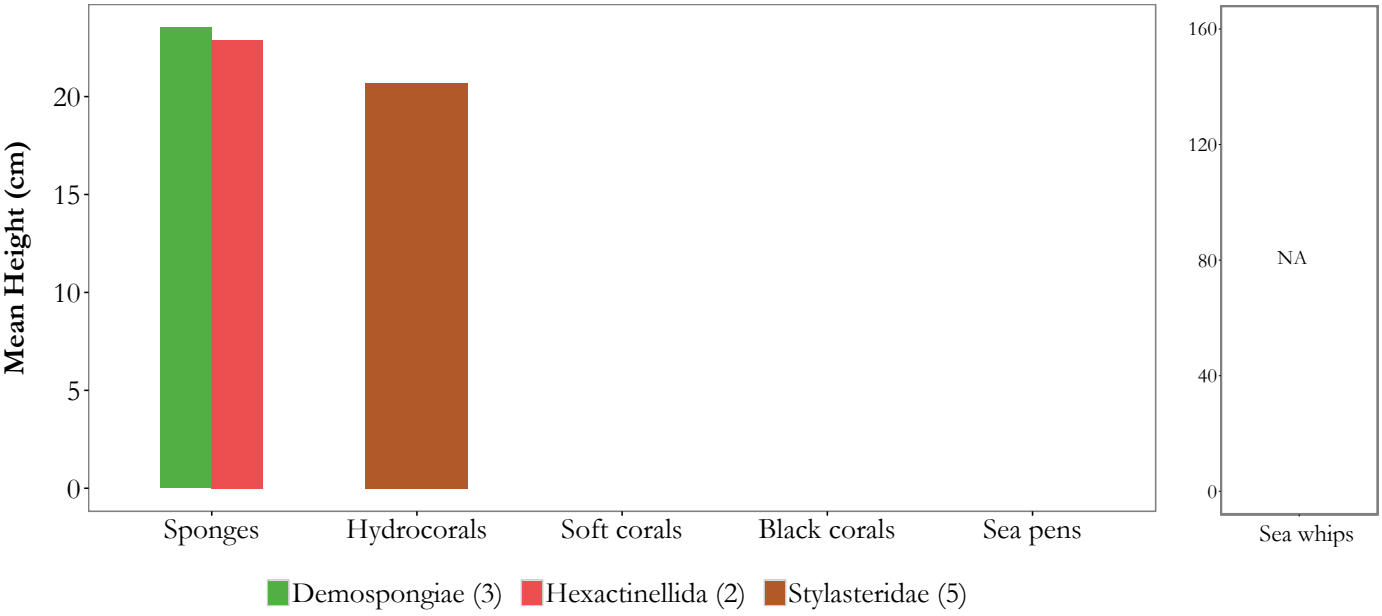
Substrate Composition

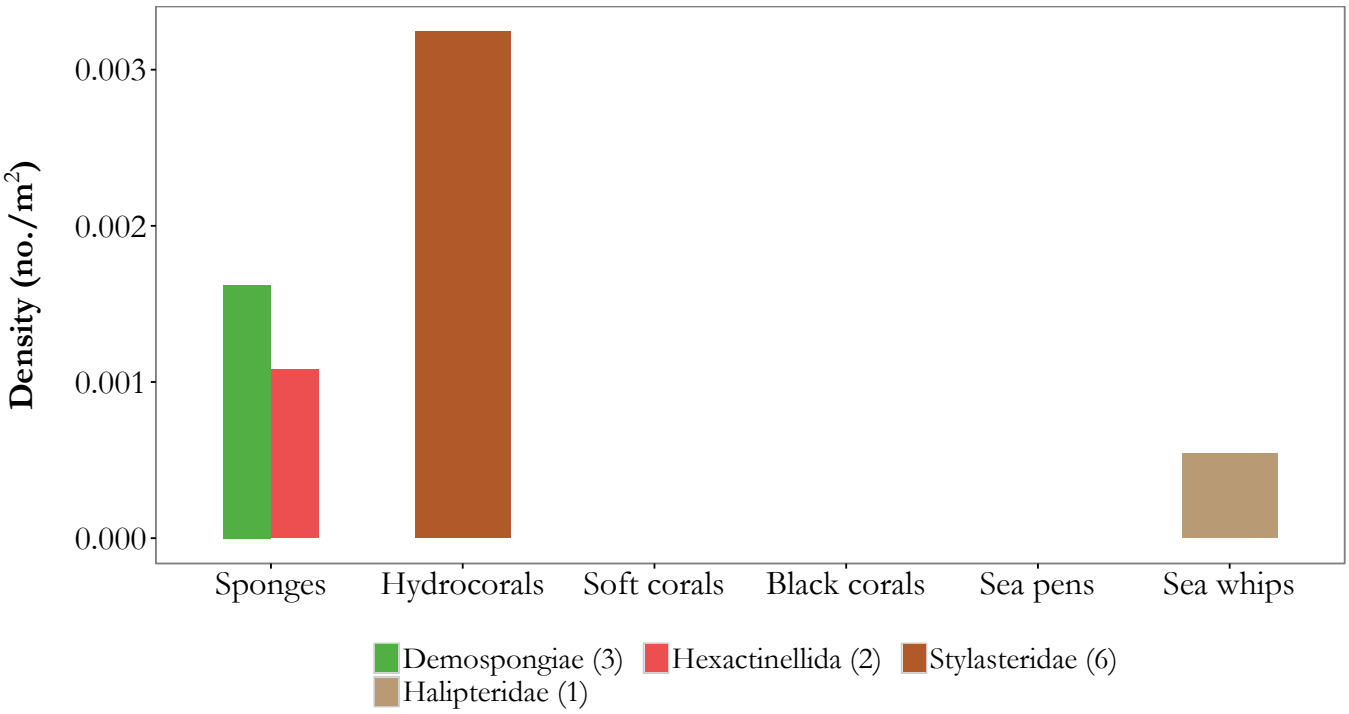


Images

AREA: Bowers Bank Transect 2012-61

Vertical Habitat Summary





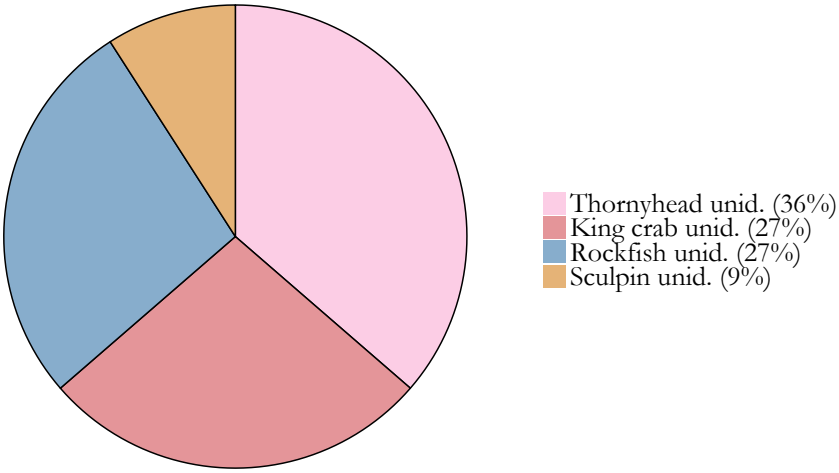
Summary - description of transect

Transect 2012-61: Primary and secondary substrates consisted entirely of sand. Fish and crab density was < 0.01 individuals/m^2. Structure-forming invertebrate density was only 0.01 individuals/m^2. Mean heights were calculated for Demospongiae (24 cm), Hexactinellida (23 cm), and Stylasteridae (21 cm).

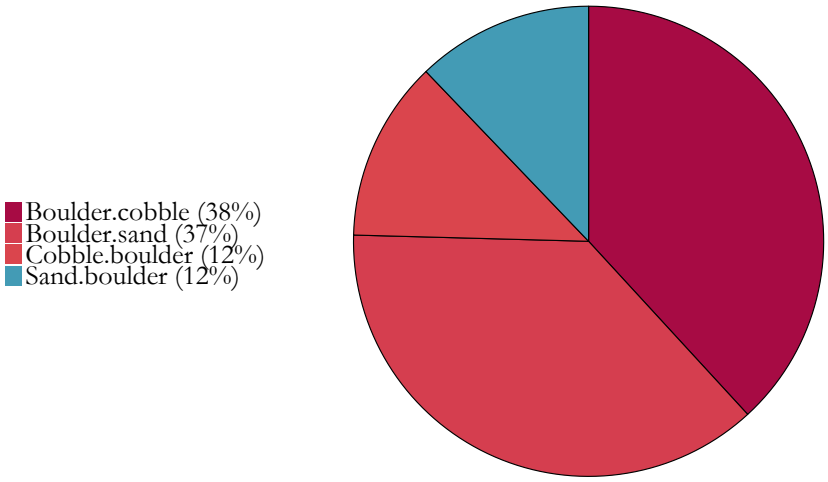
AREA: Bowers Bank — Transect 2012-62

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/23/2012	54.78	178.83	1,425	387	3.8

Fish and Crab Composition (n = 11)



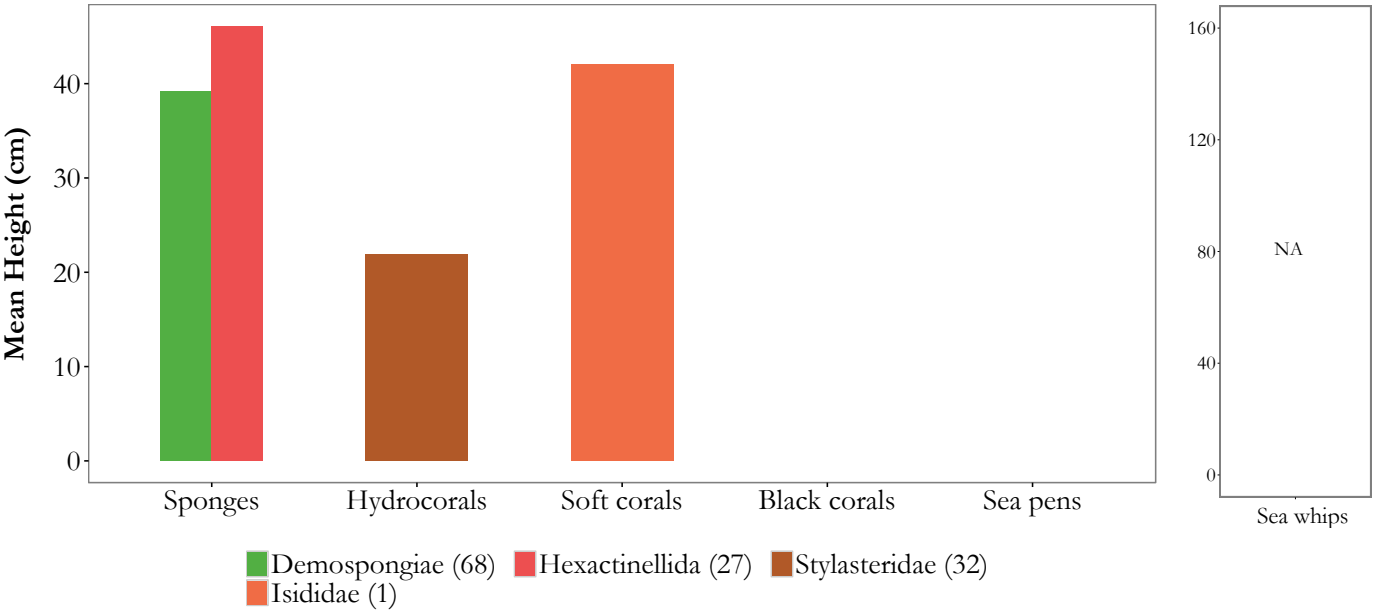
Substrate Composition

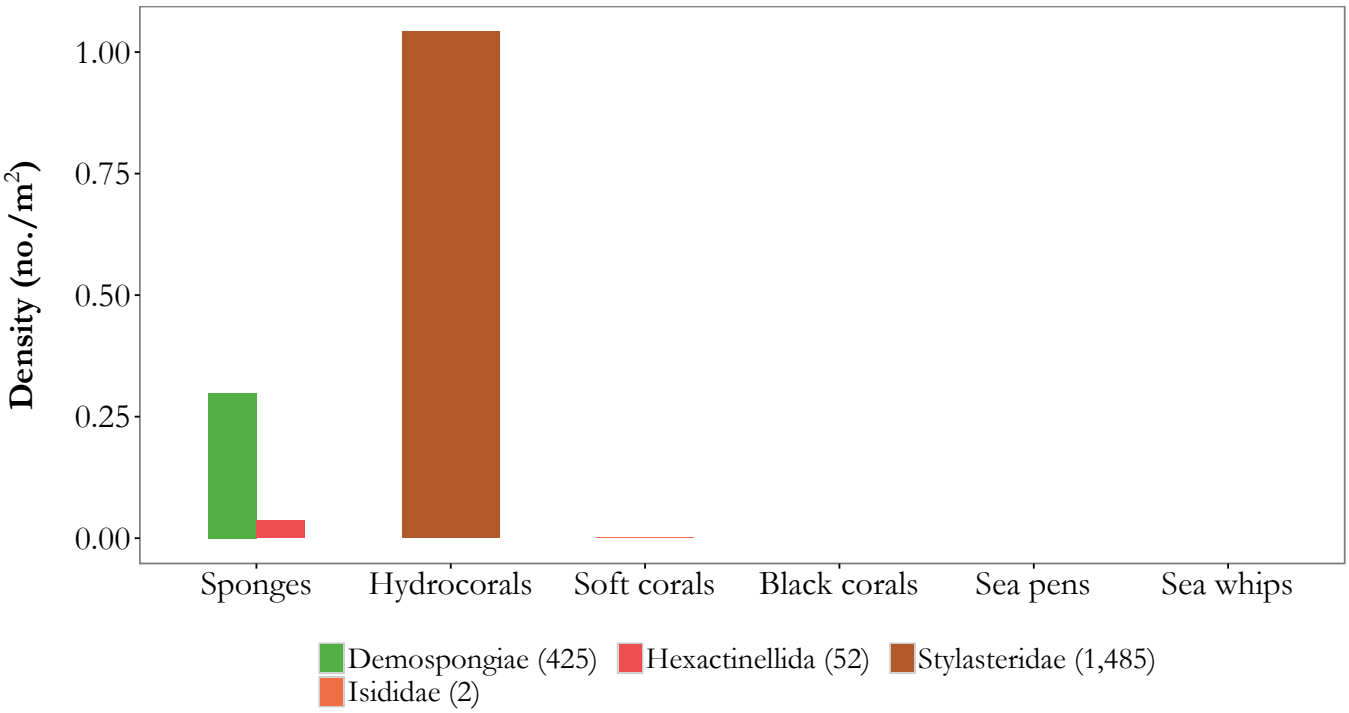


Images

AREA: Bowers Bank Transect 2012-62

Vertical Habitat Summary





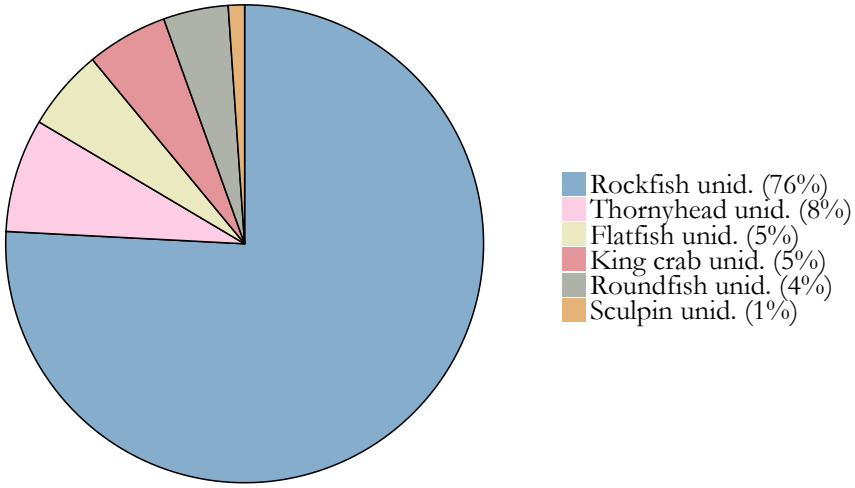
Summary - description of transect

Transect 2012-62: Primary and secondary substrates consisted of boulder, cobble, and sand. Fish and crab density was 0.01 individuals/m^2. Species composition was evenly distributed between thornyheads, rockfishes, and king crabs. Stylasteridae (1.04 individuals/m^2) dominated the structure-forming invertebrates (1.38 individuals/m^2). Mean heights were calculated for Demospongiae (39 cm), Hexactinellida (46 cm), and Stylasteridae (22 cm).

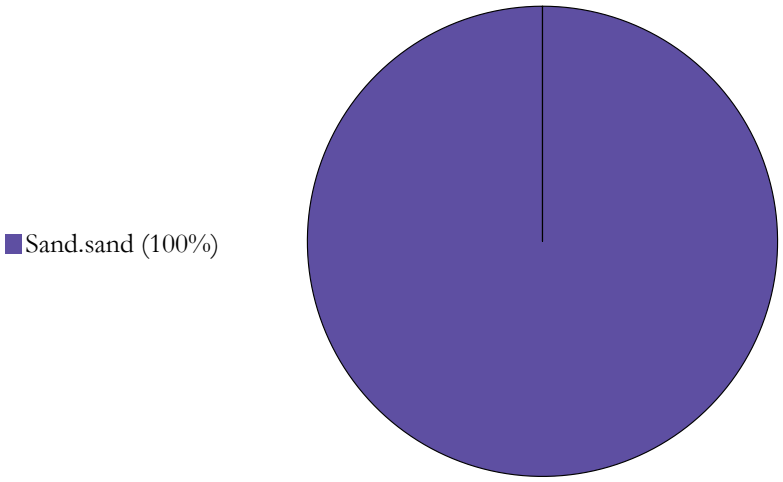
AREA: Bowers Bank — Transect 2012-63

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	54.65	179.22	1,484	307	3.8

Fish and Crab Composition (n = 91)



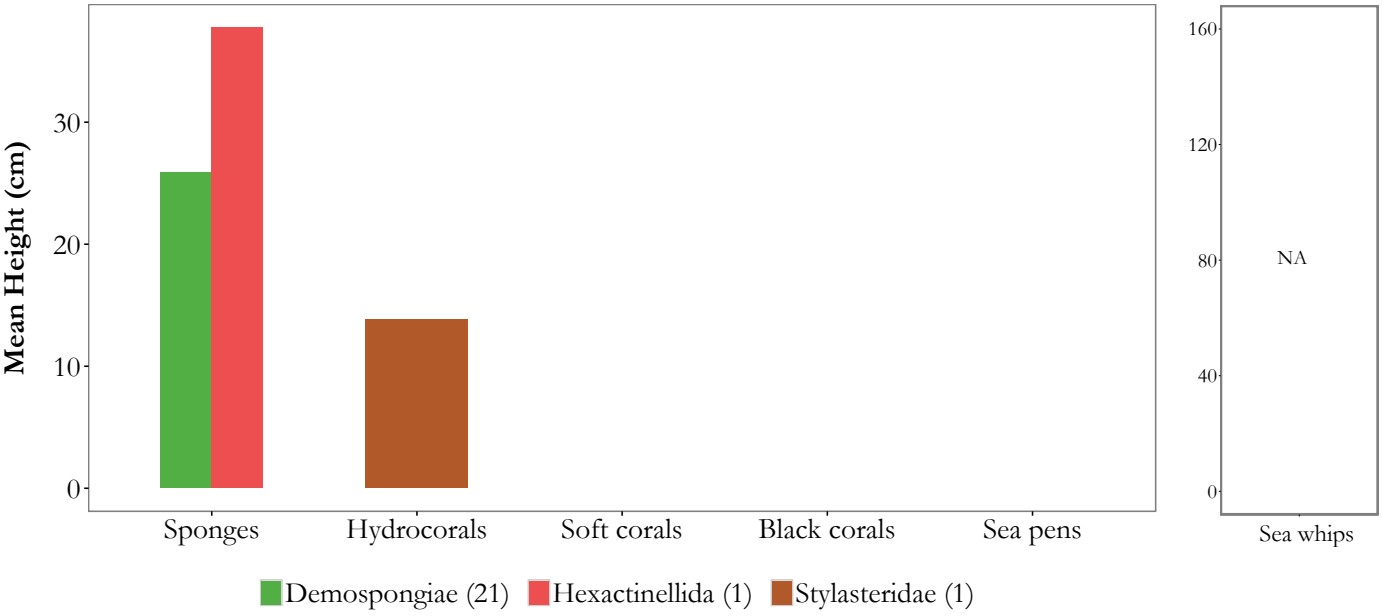
Substrate Composition

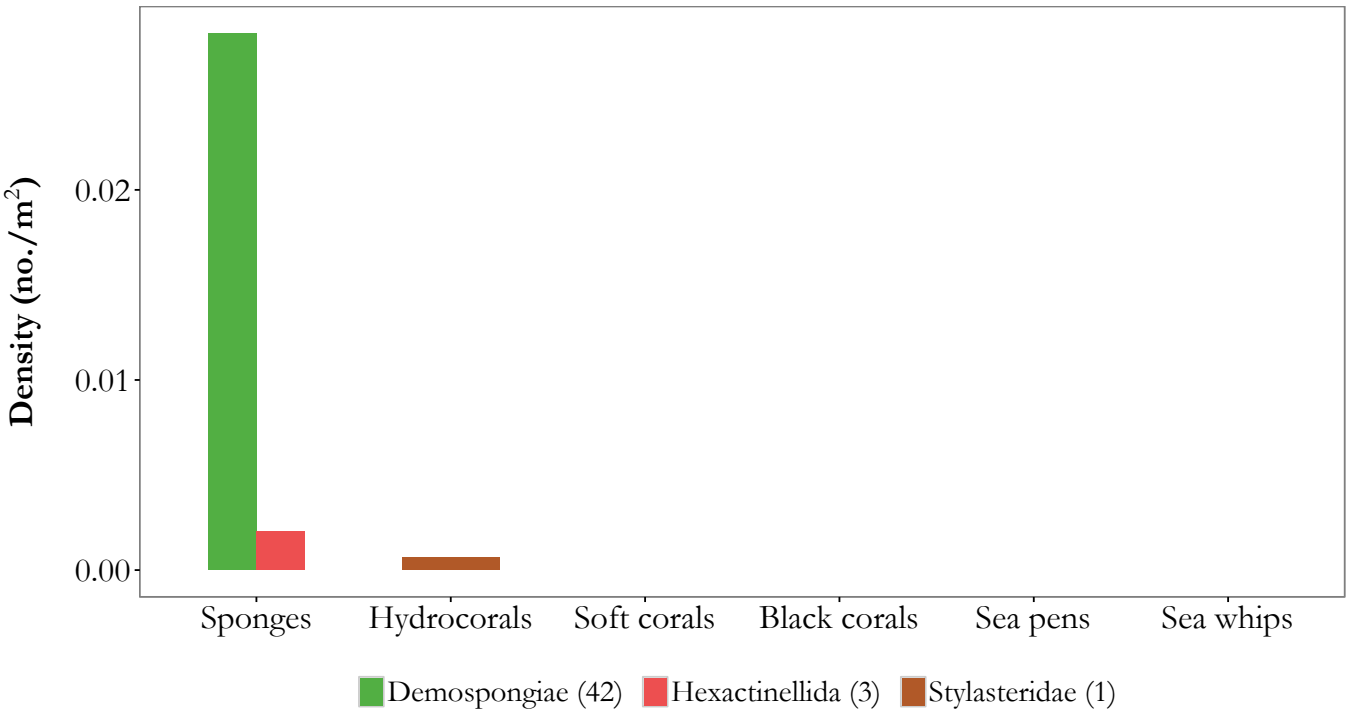


Images

AREA: Bowers Bank Transect 2012-63

Vertical Habitat Summary





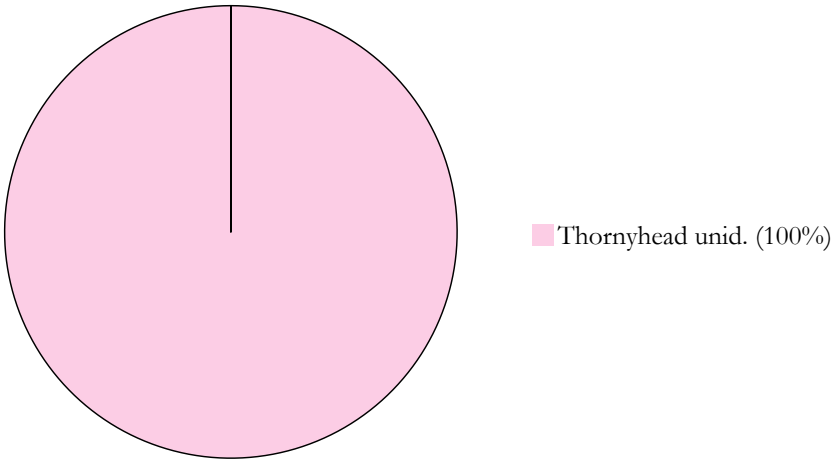
Summary - description of transect

Transect 2012-63: Primary and secondary substrates consisted entirely of sand. Rockfishes (n = 69) were 76% of the fish and crab density (0.06 individuals/m²). Demospongiae (n = 42) were 91% of the structure-forming invertebrate habitat (0.03 individuals/m²). Mean height for Demospongiae was 26 cm.

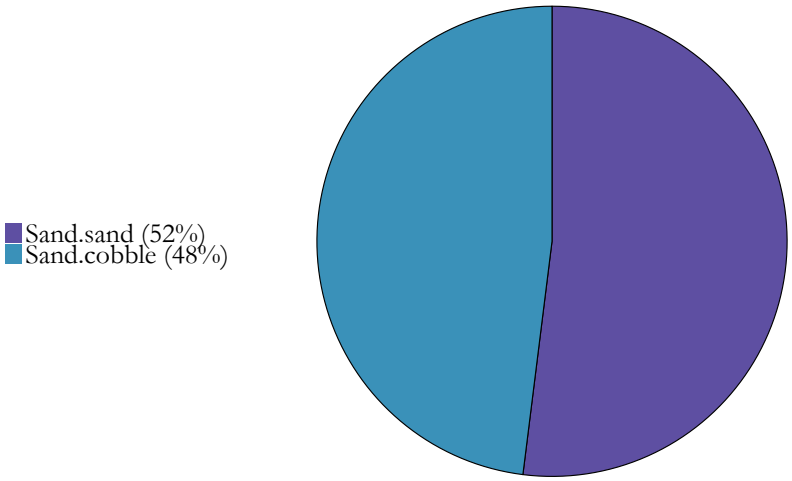
AREA: Bowers Bank — Transect 2012-64

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	54.59	179.22	1,822	299	NA

Fish and Crab Composition (n = 2)



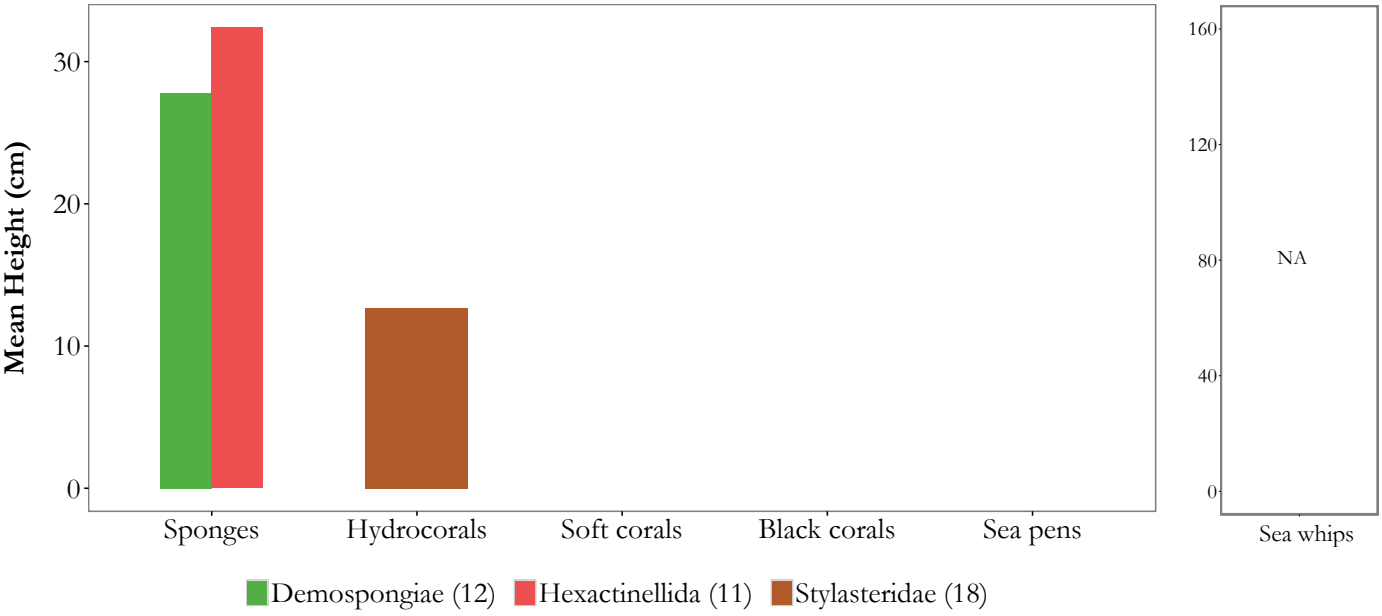
Substrate Composition

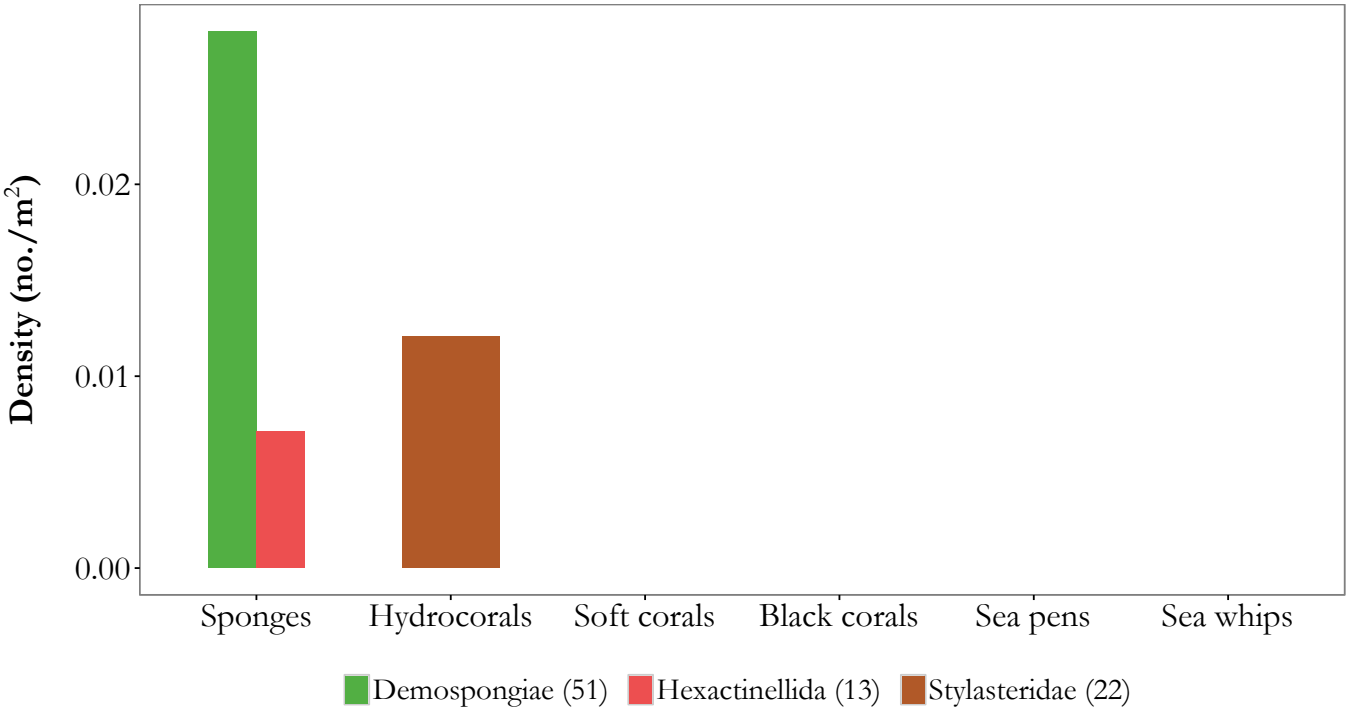


Images

AREA: Bowers Bank Transect 2012-64

Vertical Habitat Summary





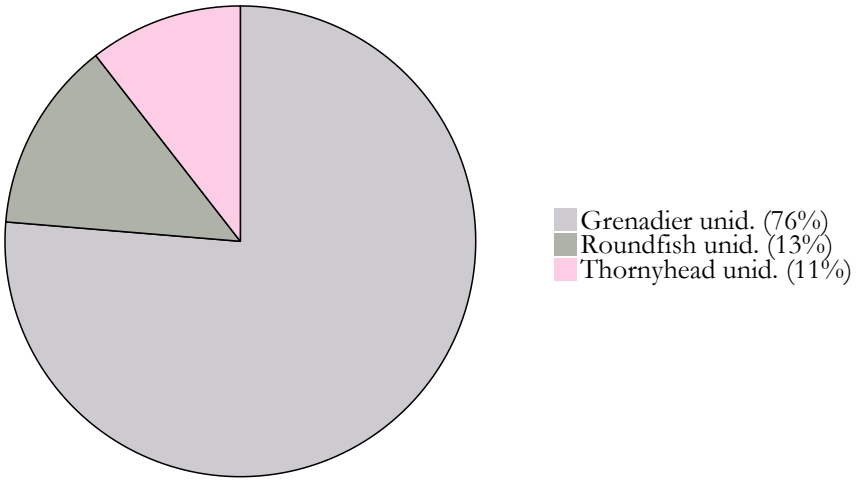
Summary - description of transect

Transect 2012-64: Primary and secondary substrates consisted of sand and cobble. Only two thornyheads were observed for a very low fish density of < 0.01 individuals/m^2. The density of structure-forming invertebrates was 0.05 individuals/m^2. Mean heights were collected for Demospongiae (28 cm), Hexactinellida (32 cm), and Stylasteridae (13 cm).

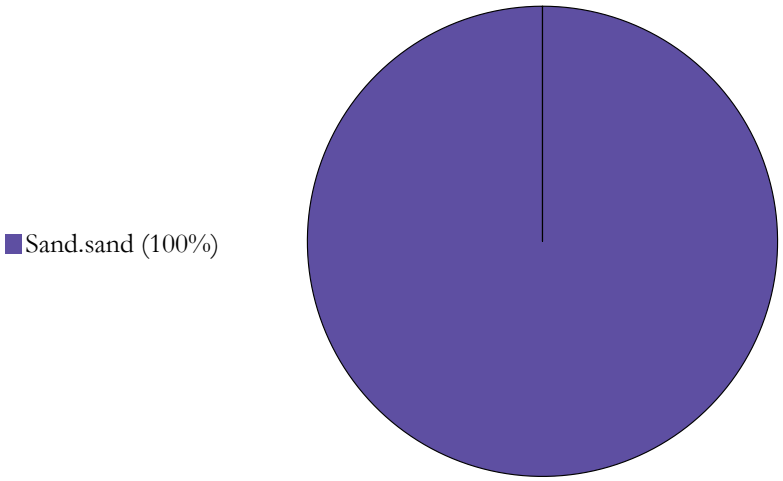
AREA: Bowers Bank — Transect 2012-65

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	54.45	179.46	1,217	680	3.4

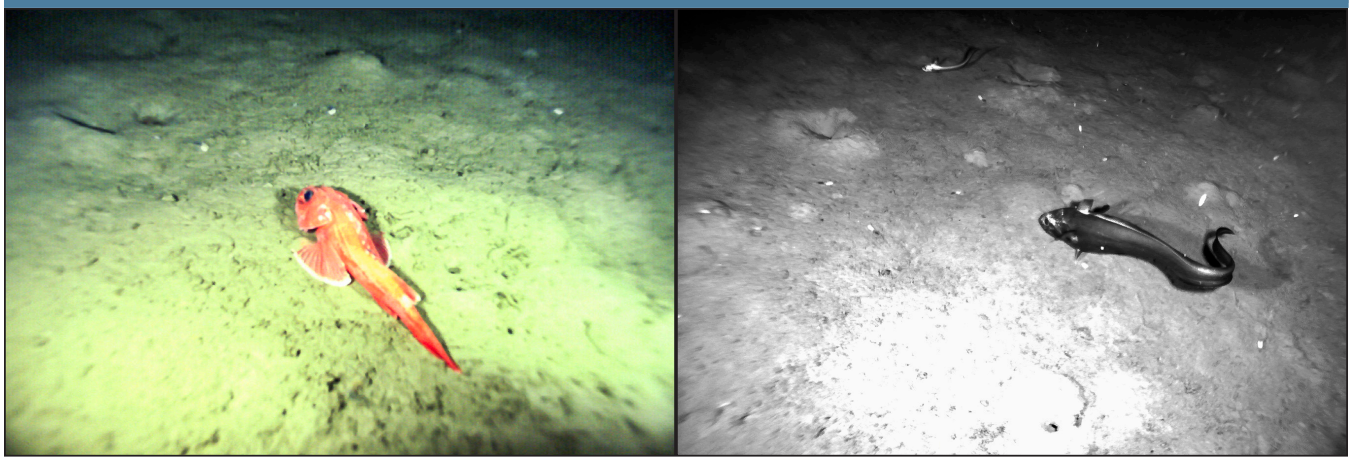
Fish and Crab Composition (n = 38)



Substrate Composition

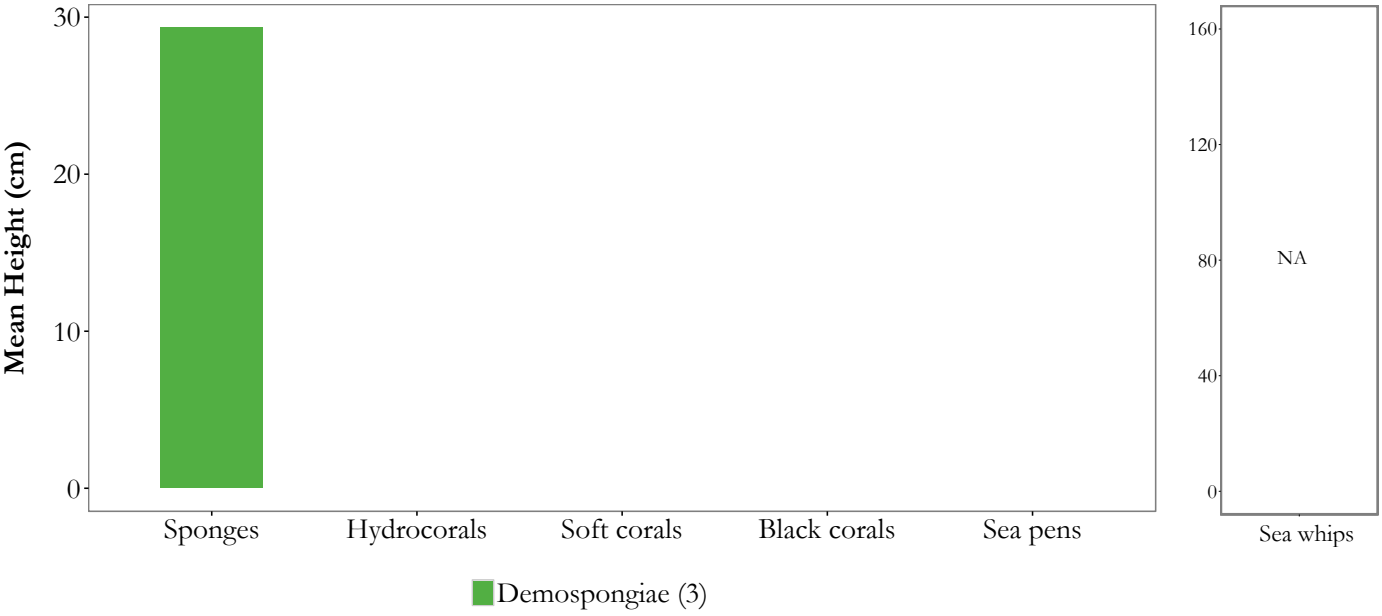


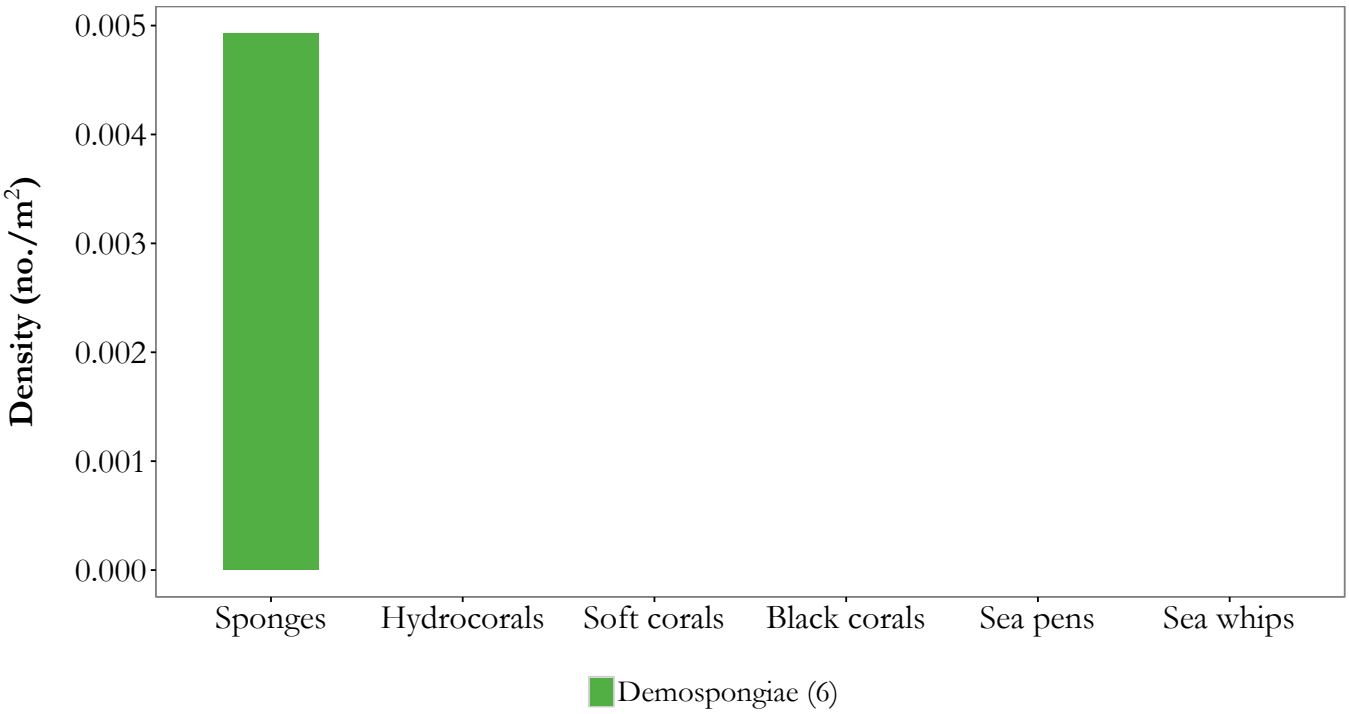
Images



AREA: Bowers Bank Transect 2012-65

Vertical Habitat Summary





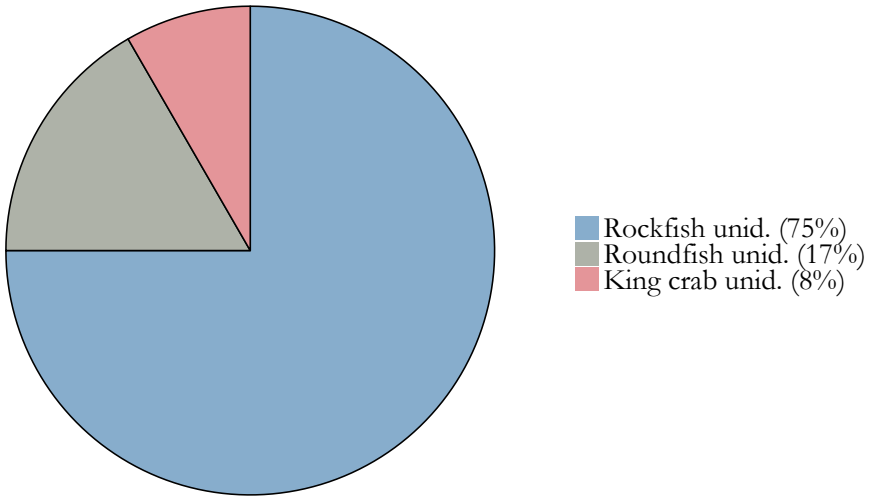
Summary - description of transect

Transect 2012-65: Primary and secondary substrates consisted entirely of sand. Grenadiers (n = 29) accounted for 76% of the fish density (0.03 individuals/m^2). Only 6 Demospongiae were identified for a density of < 0.01 individuals/m^2. Mean height for 3 individuals was 29 cm.

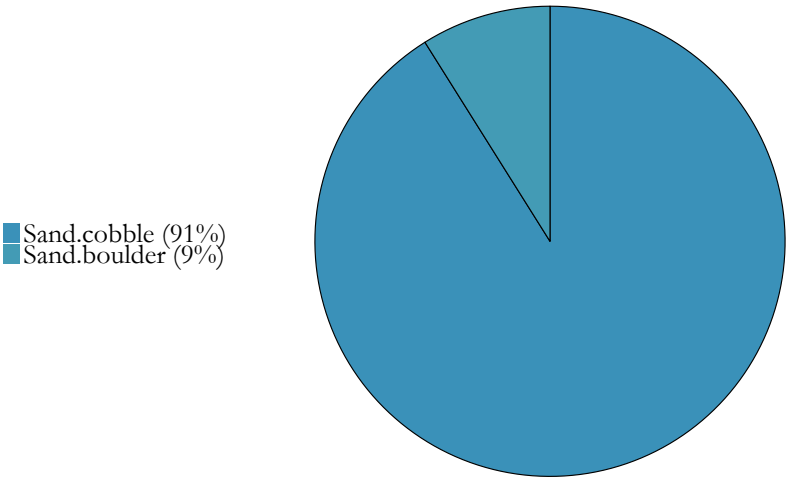
AREA: Bowers Bank — Transect 2012-66

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	54.46	179.52	797	188	3.5

Fish and Crab Composition (n = 12)



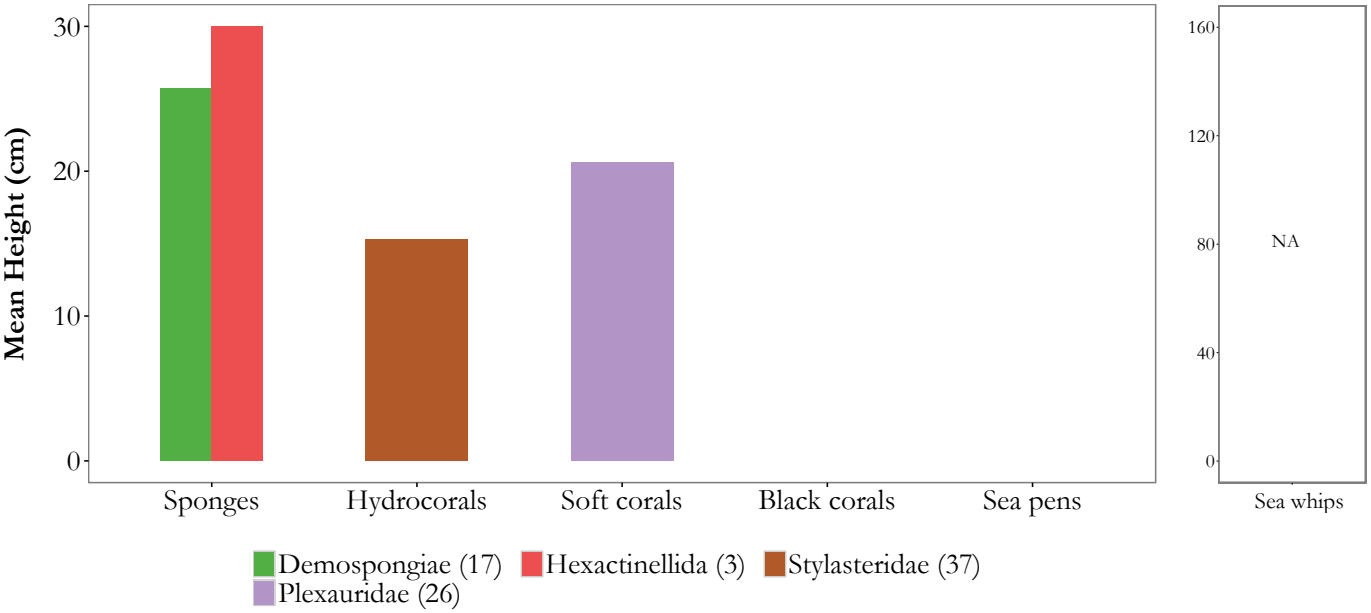
Substrate Composition

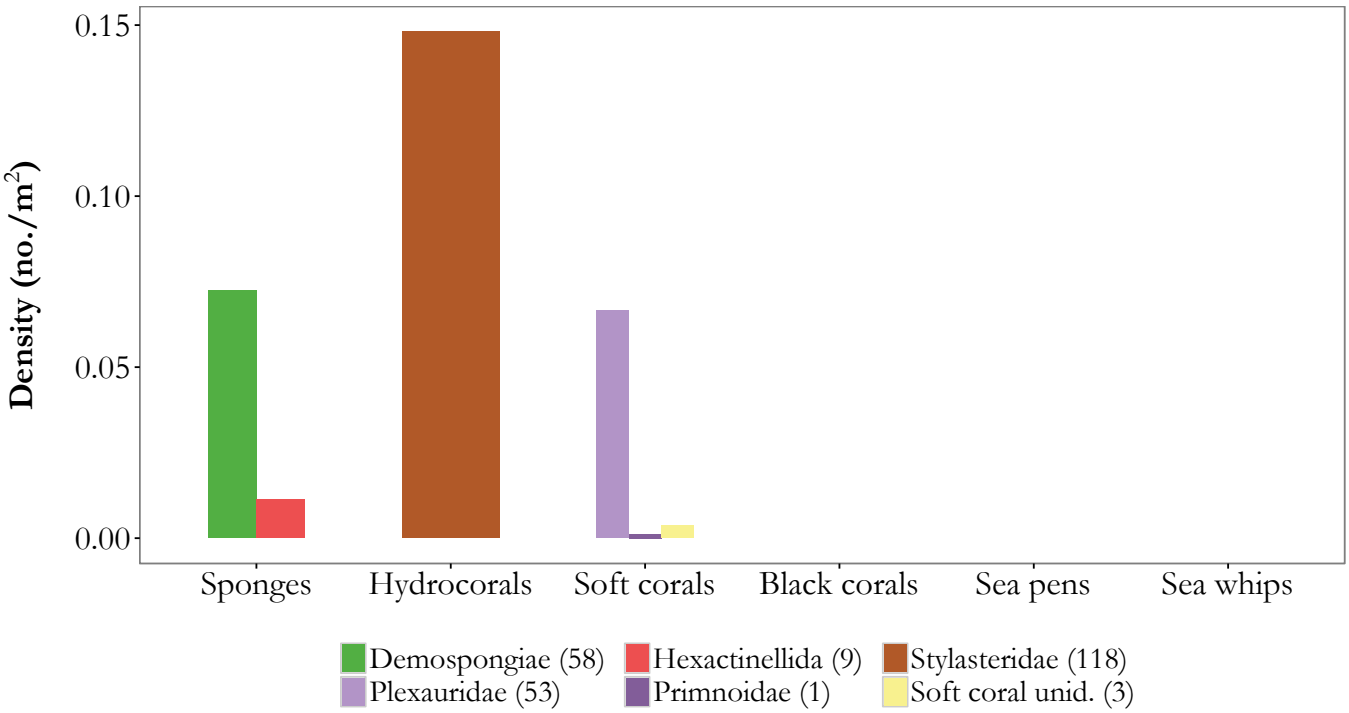


Images

AREA: Bowers Bank Transect 2012-66

Vertical Habitat Summary





Summary - description of transect

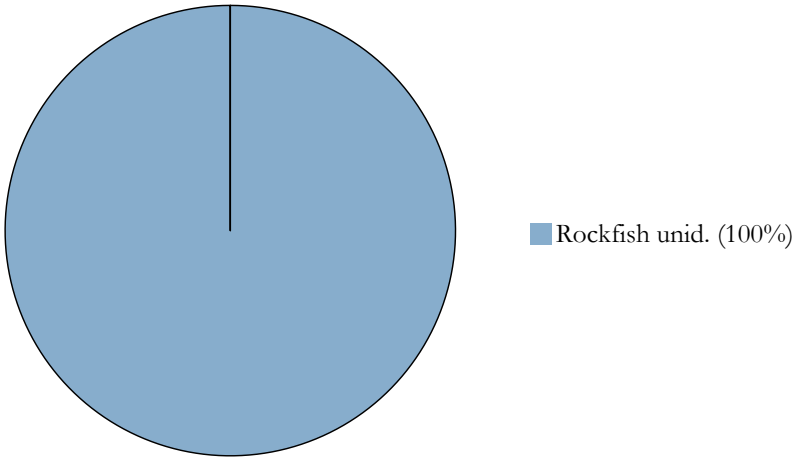
Transect 2012-66: Primary and secondary substrates consisted of sand, cobble, and boulder. Fish and crab density was 0.02 individuals/m^2. Structure-forming invertebrates were dominated by Stylasteridae (0.15 individuals/m^2). Overall density was 0.30 individuals/m^2. Mean heights were calculated for Demospongiae (26 cm), Hexactinellida (30 cm), Stylasteridae (15 cm), and Plexauridae (21 cm).

AREA: Bowers Bank — Transect *2012-67

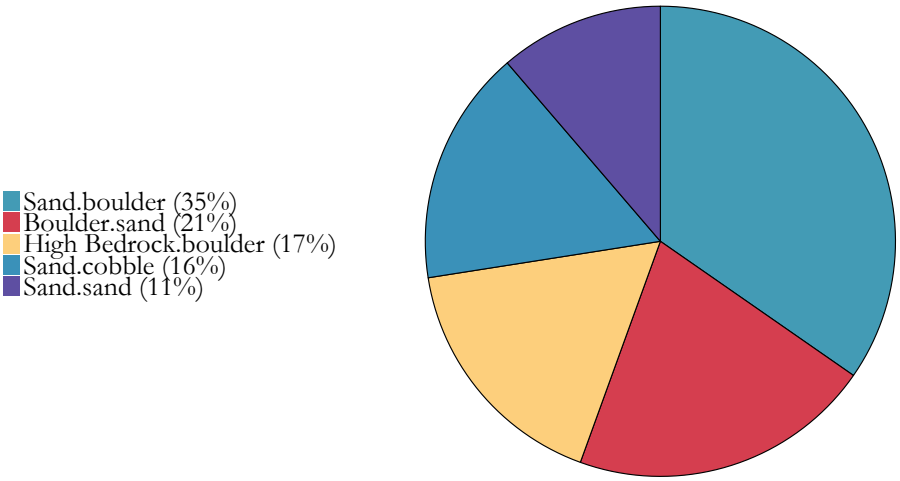
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	54.40	179.61	1,447	132	3.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

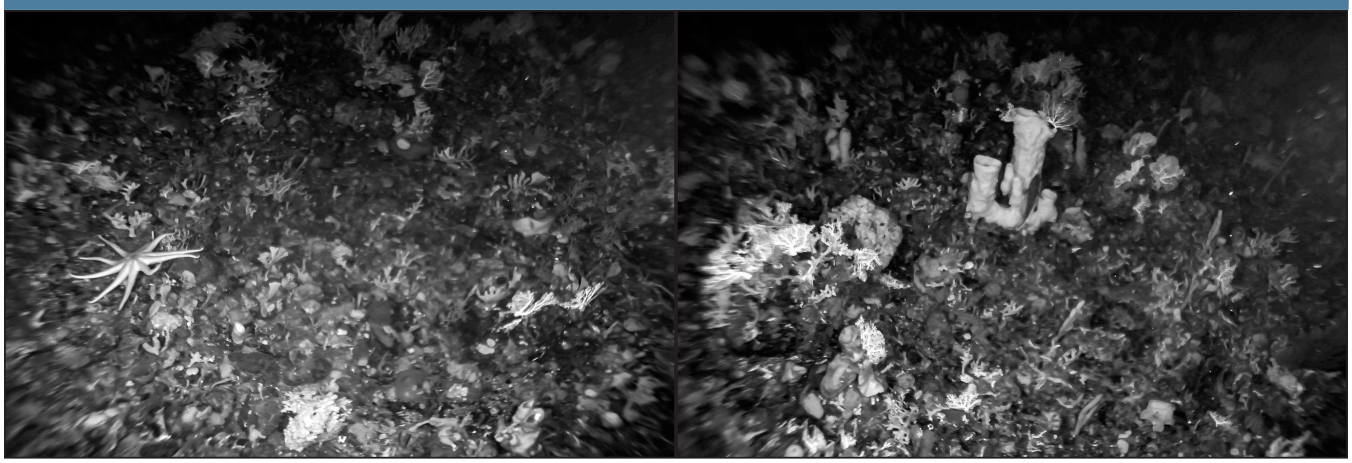
Fish and Crab Composition (n = 7)



Substrate Composition



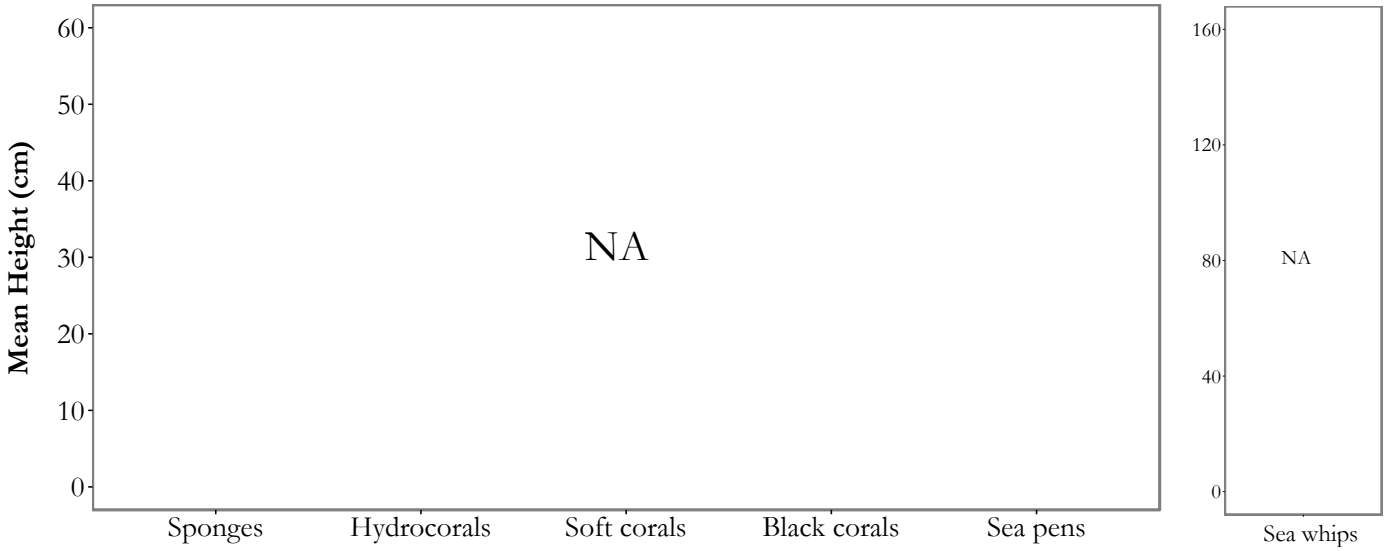
Images

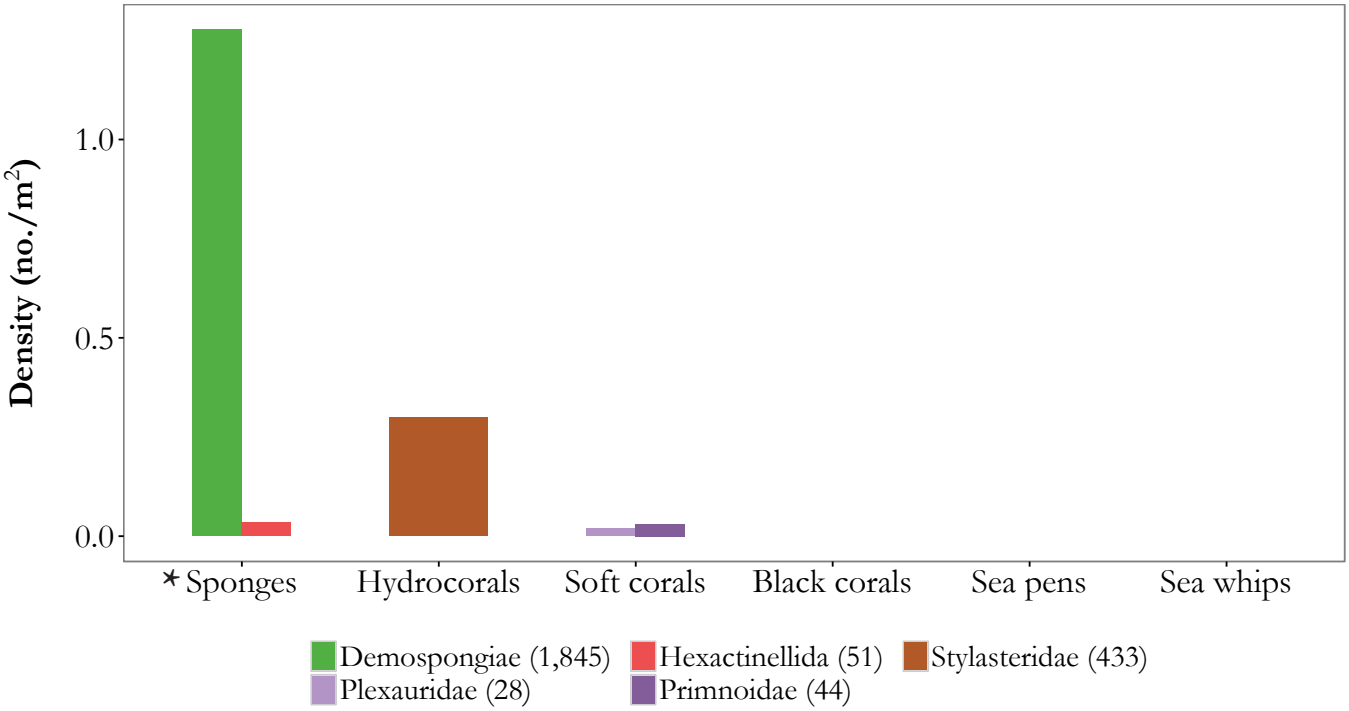


AREA: Bowers Bank — Transect *2012-67

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m²)





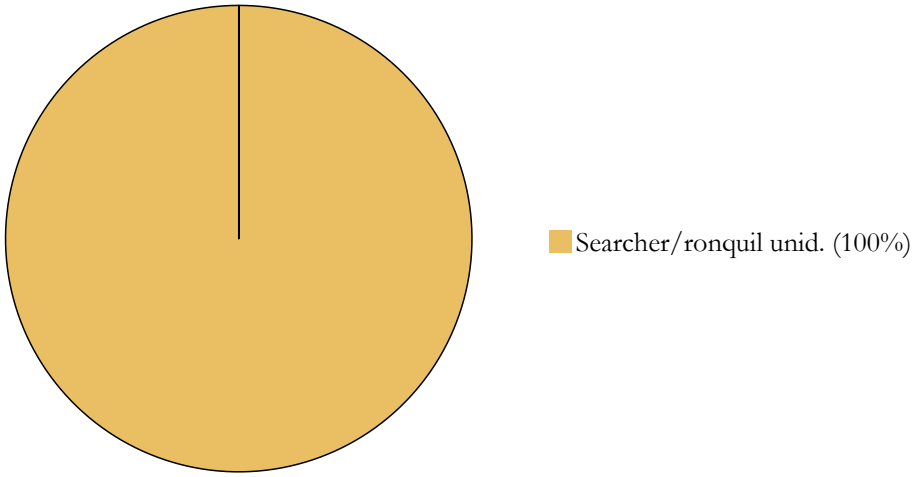
Summary - description of transect

Transect 2012-67: Primary and secondary substrates consisted of sand, boulder, bedrock, and cobble. Fish density was < 0.01 individuals/m². Available structure-forming invertebrate habitat was 77% Demospongiae (1.28 individuals/m²) and 18% Stylasteridae (0.30 individuals/m²). Overall structure-forming invertebrate density was 1.66 individuals/m². No height measurements were taken due to a malfunctioning camera.

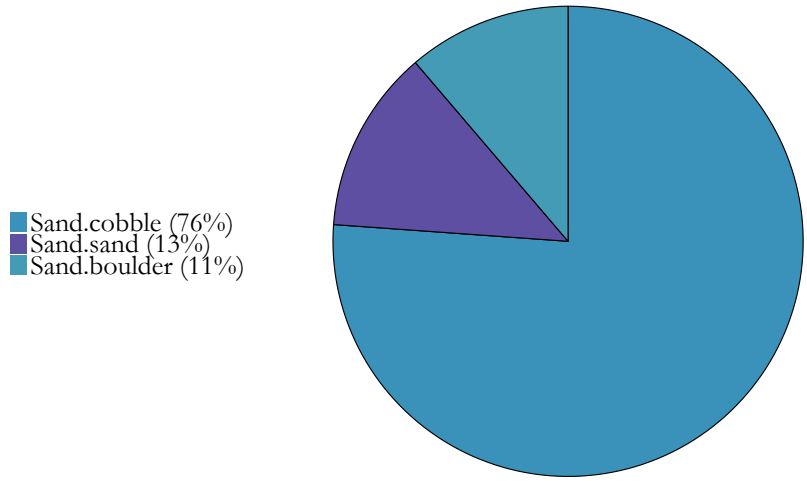
AREA: Bowers Bank — Transect 2012-68

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	54.32	179.62	1,251	142	2.8

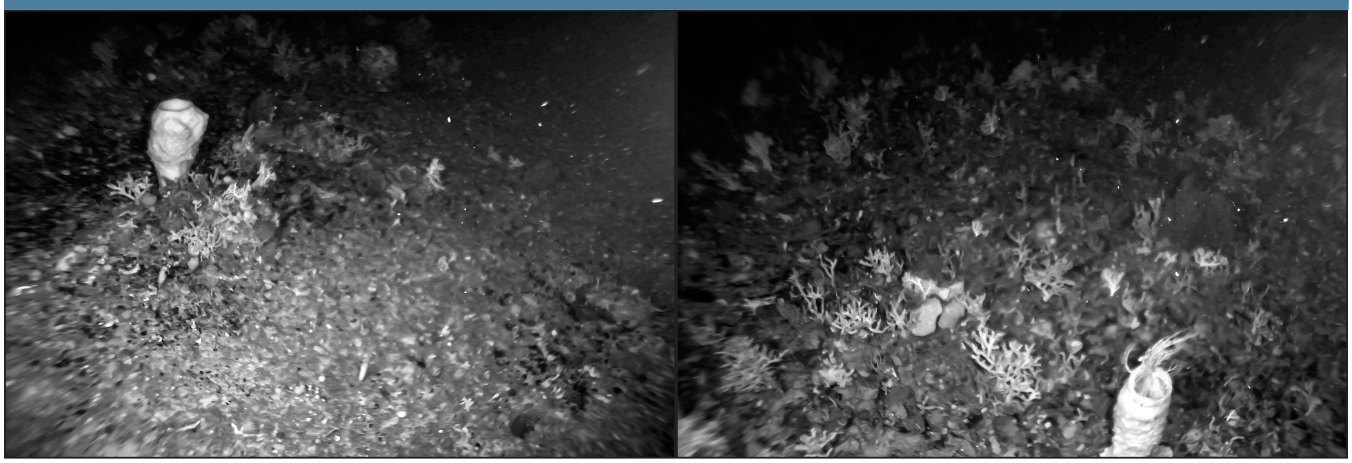
Fish and Crab Composition (n = 1)



Substrate Composition

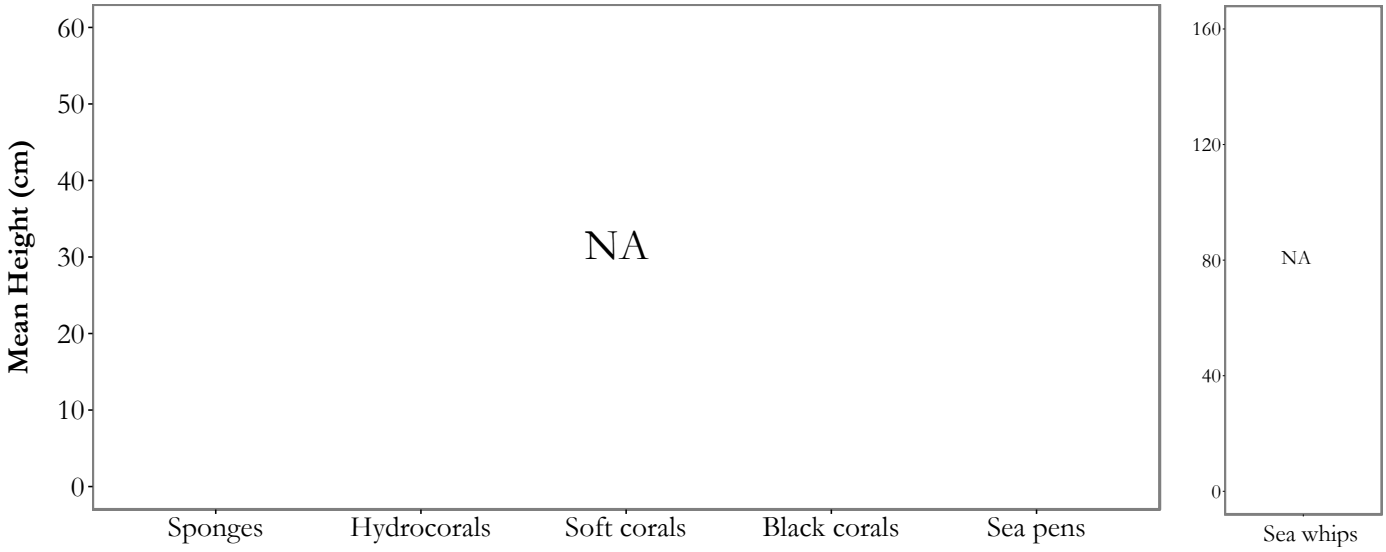


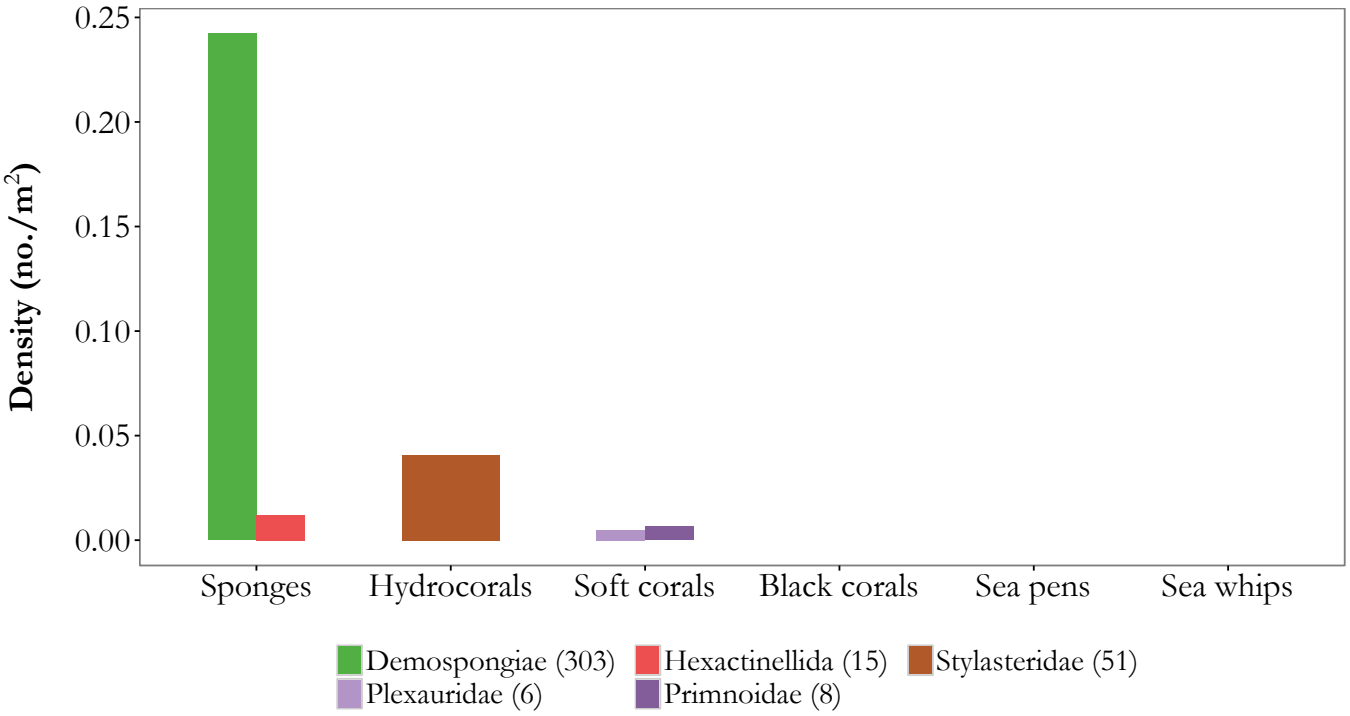
Images



AREA: Bowers Bank Transect 2012-68

Vertical Habitat Summary





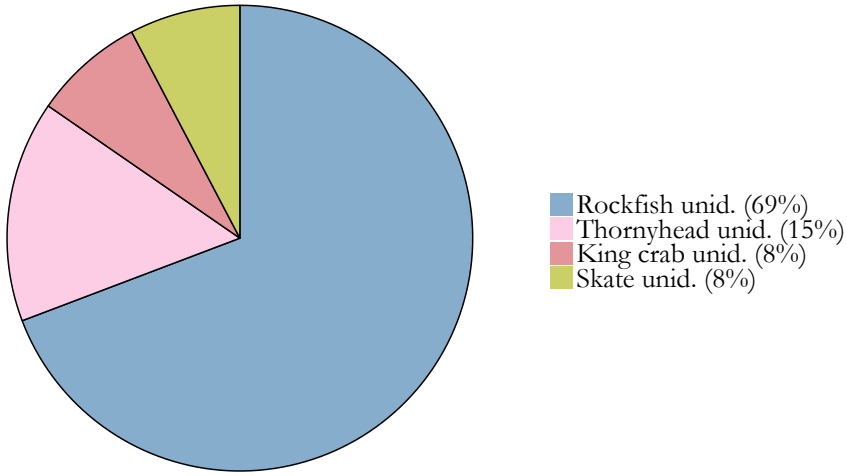
Summary - description of transect

Transect 2012-68: Primary and secondary substrates consisted of sand, cobble, and boulder. Only one fish was observed. Demospongiae were 79% of the structure-forming invertebrate density (0.31 individuals/m^2). No height measurements were taken due to a malfunctioning camera.

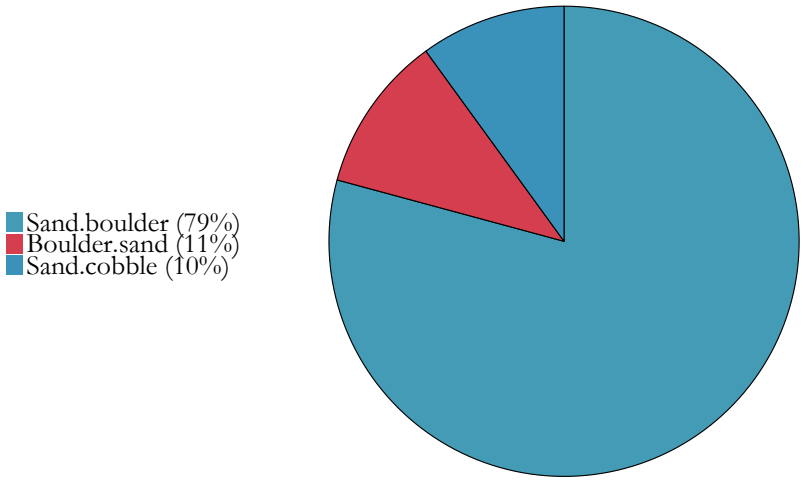
AREA: Bowers Bank — Transect 2012-69

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	54.11	179.75	2,018	424	3.8

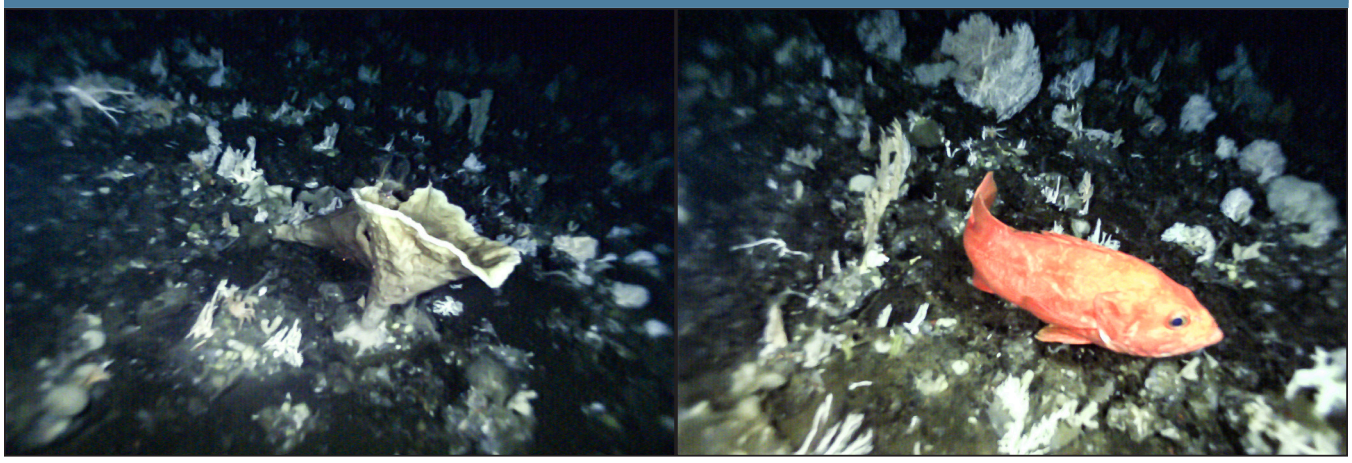
Fish and Crab Composition (n = 13)



Substrate Composition

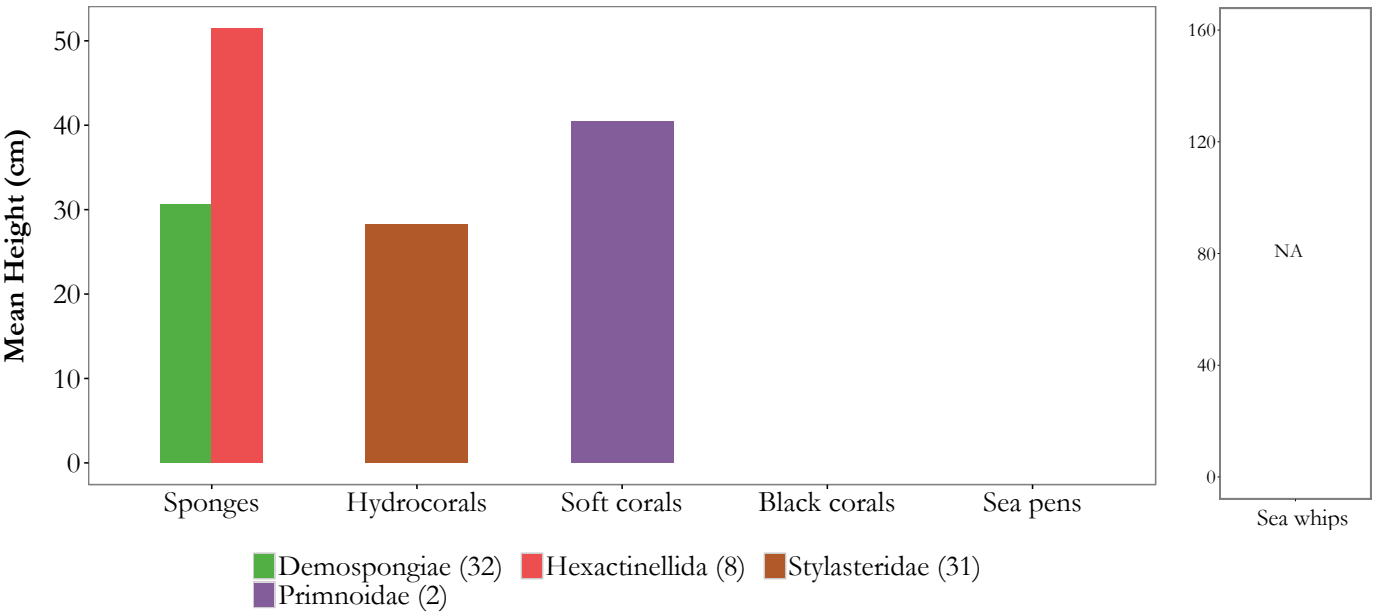


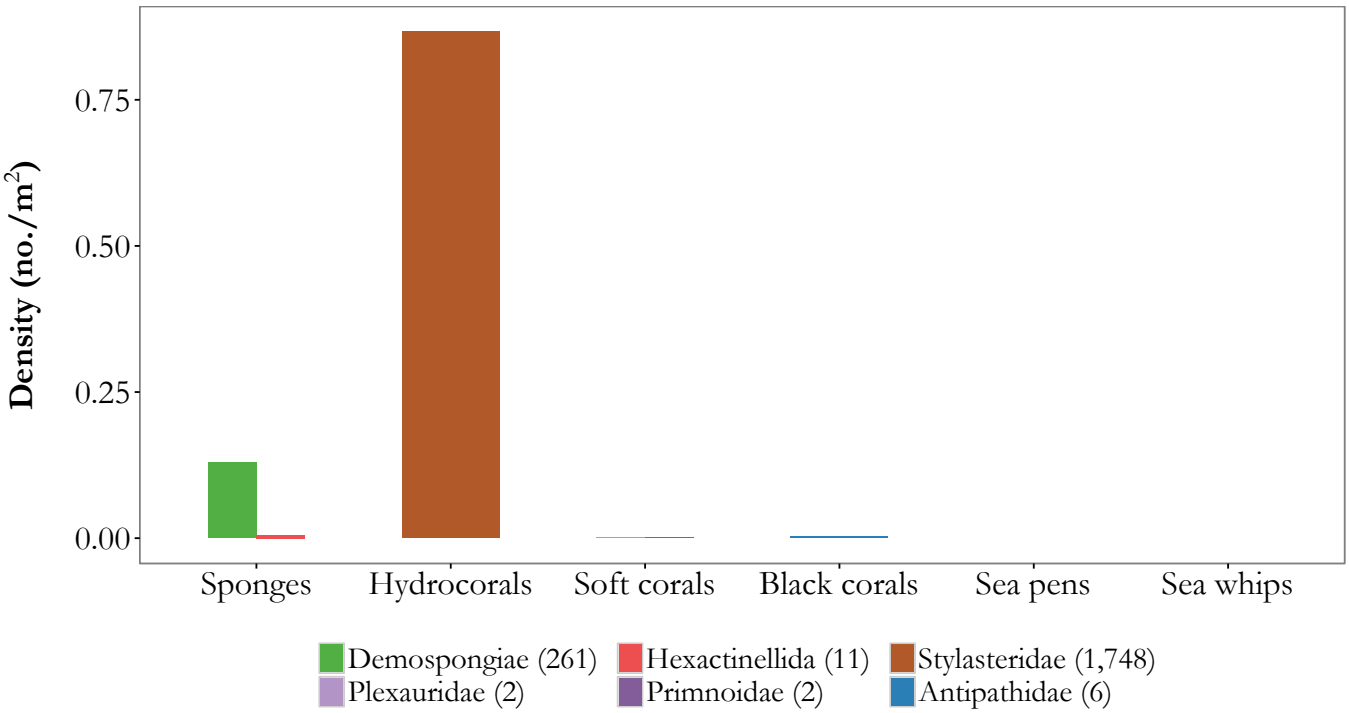
Images



AREA: Bowers Bank Transect 2012-69

Vertical Habitat Summary





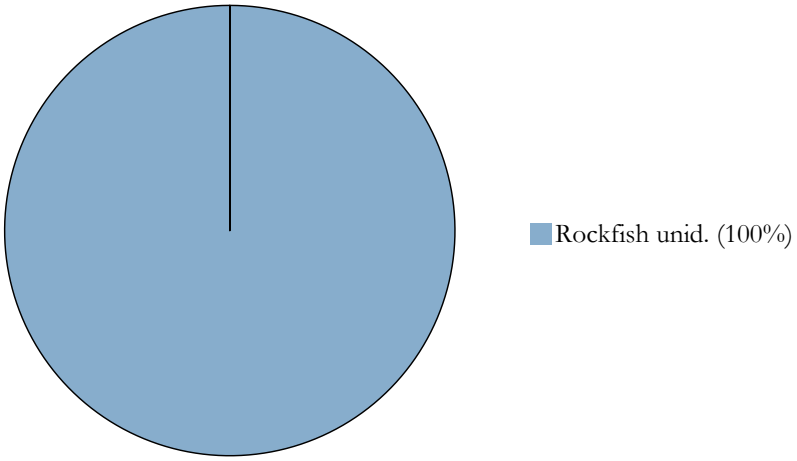
Summary - description of transect

Transect 2012-69: Primary and secondary substrates consisted of sand, boulder, and cobble. Fish and crab density was 0.01 individuals/m^2. Rockfishes (n = 9) were 69% of the density. Stylasteridae (0.87 individuals/m^2) accounted for 86% of the structure-forming invertebrates (1.01 individuals/m^2). Mean heights were calculated for Demospongiae (31 cm), Hexactinellida (51 cm), Stylasteridae (28 cm), and Primnoidae (40 cm).

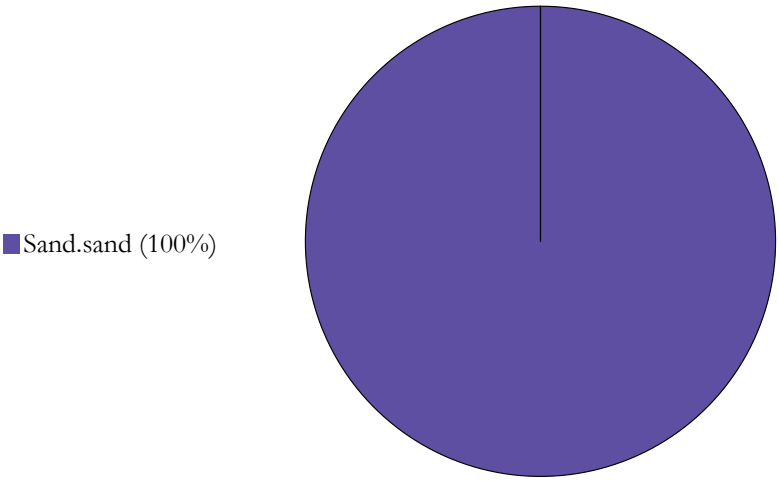
AREA: Bowers Bank — Transect 2012-70

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	53.98	179.90	1,513	282	3.8

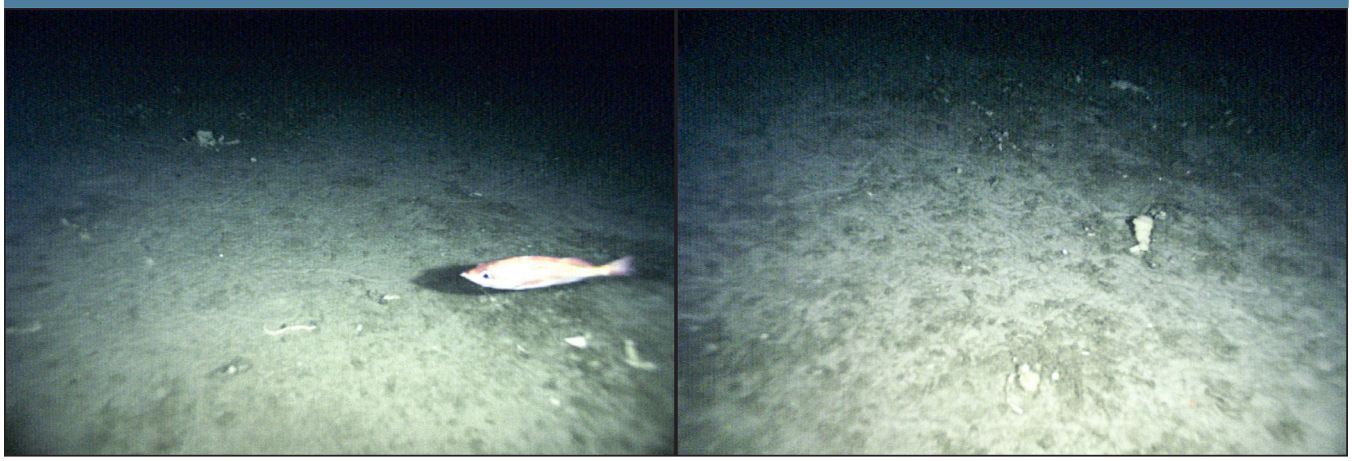
Fish and Crab Composition (n = 1)



Substrate Composition

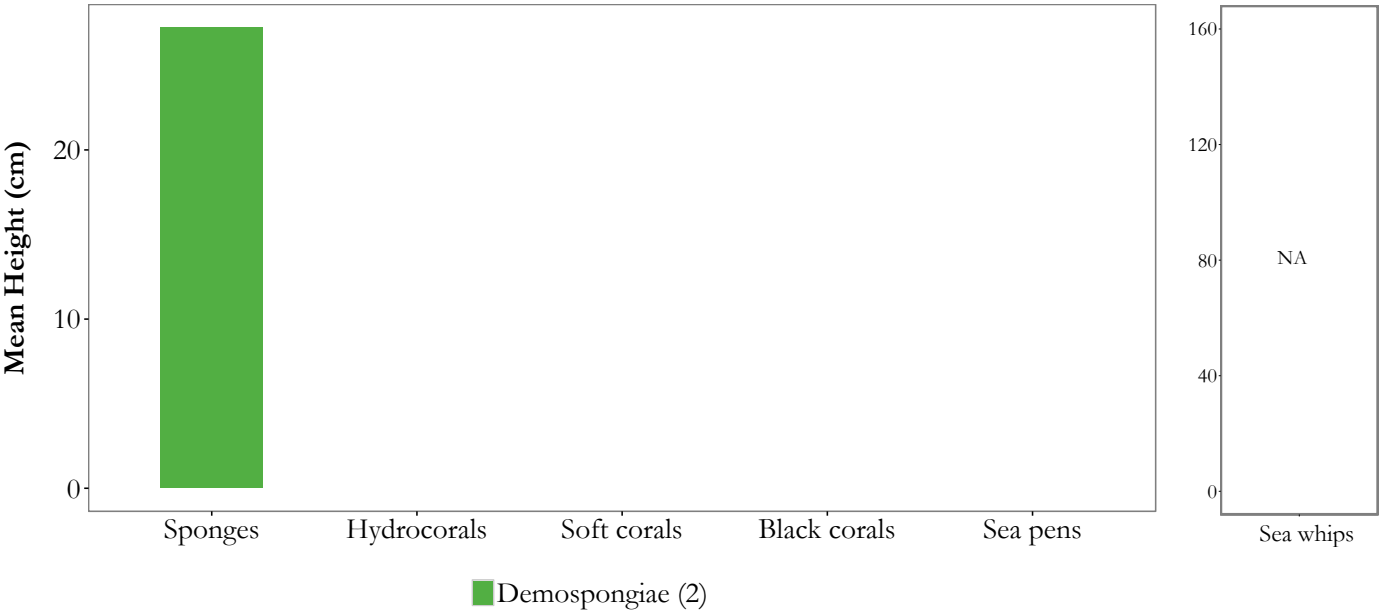


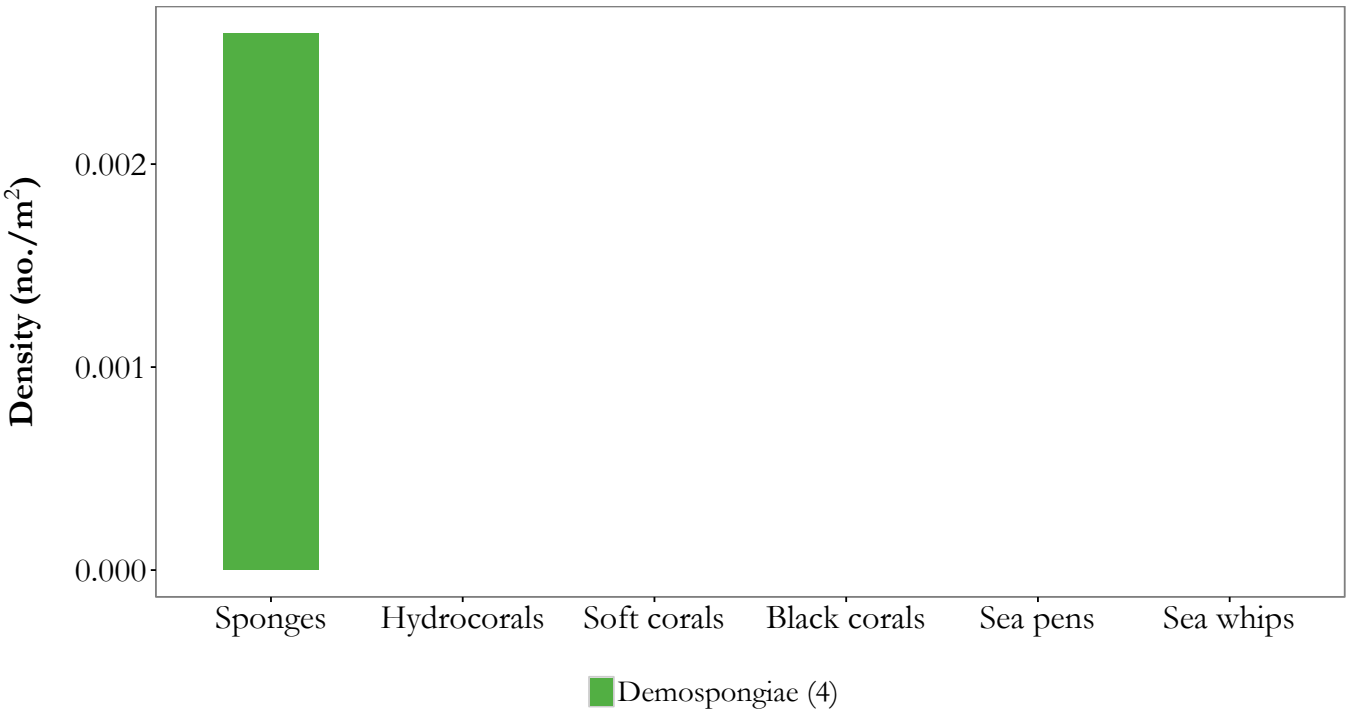
Images



AREA: Bowers Bank Transect 2012-70

Vertical Habitat Summary





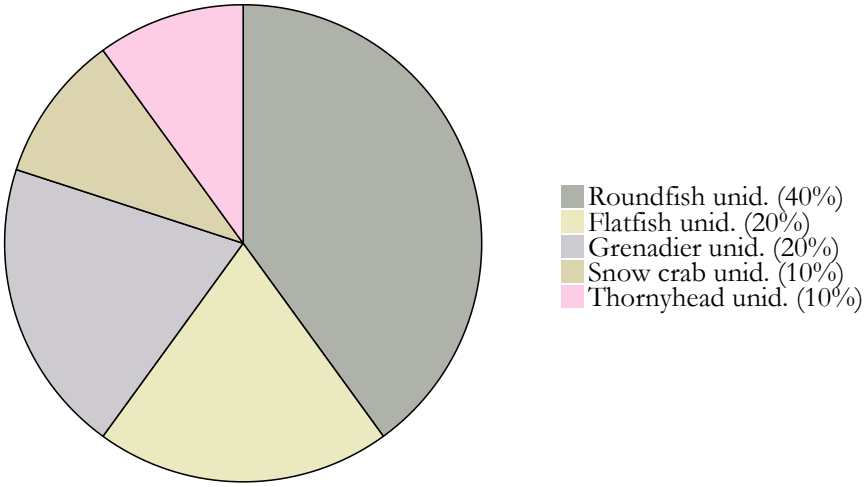
Summary - description of transcect

Transect 2012-70: Primary and secondary substrates consisted entirely of sand. Only one rockfish and four Demospongiae were identified. Mean height for two Demospongiae was 27 cm.

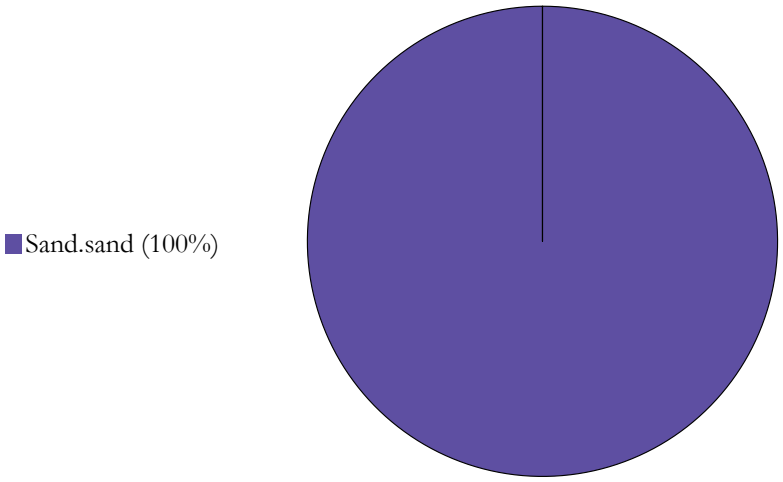
AREA: Bowers Bank — Transect 2012-71

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
8/24/2012	53.92	179.78	662	485	3.6

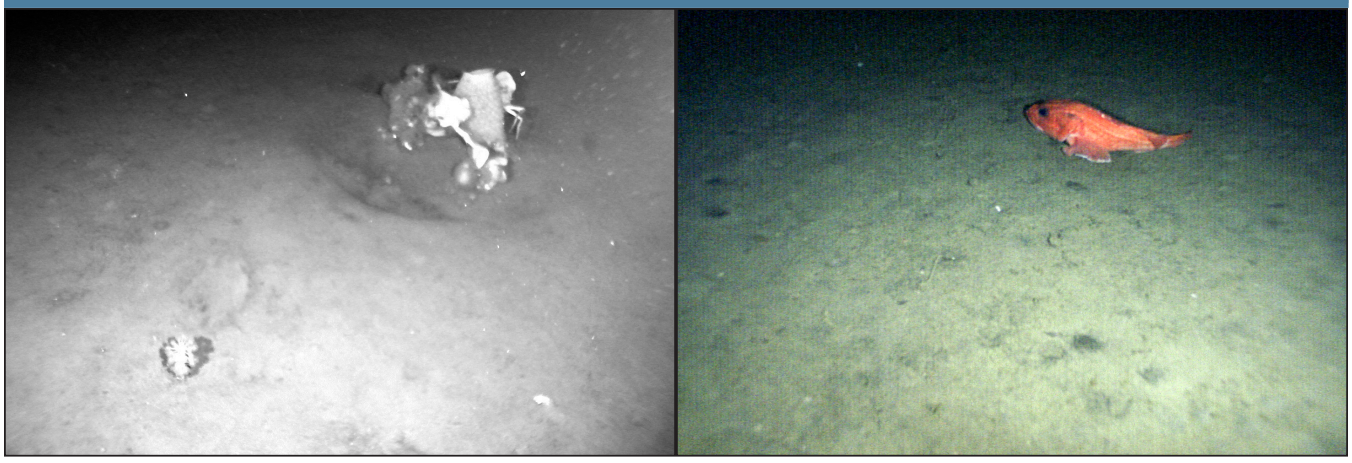
Fish and Crab Composition (n = 10)



Substrate Composition

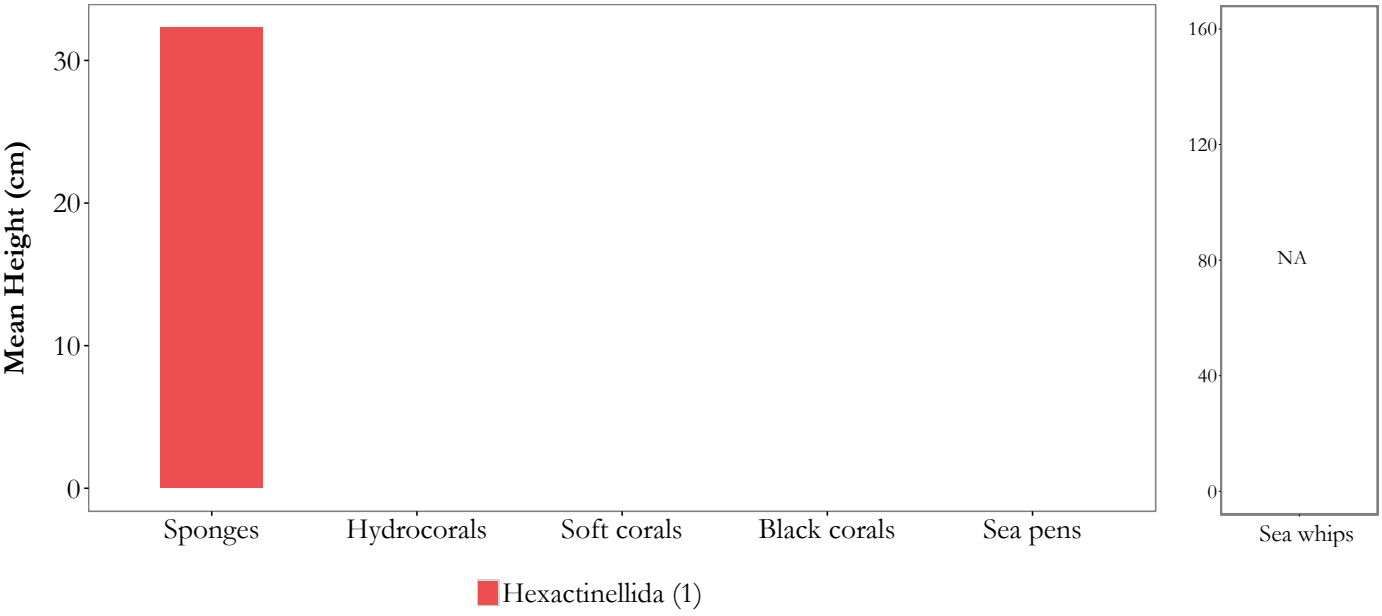


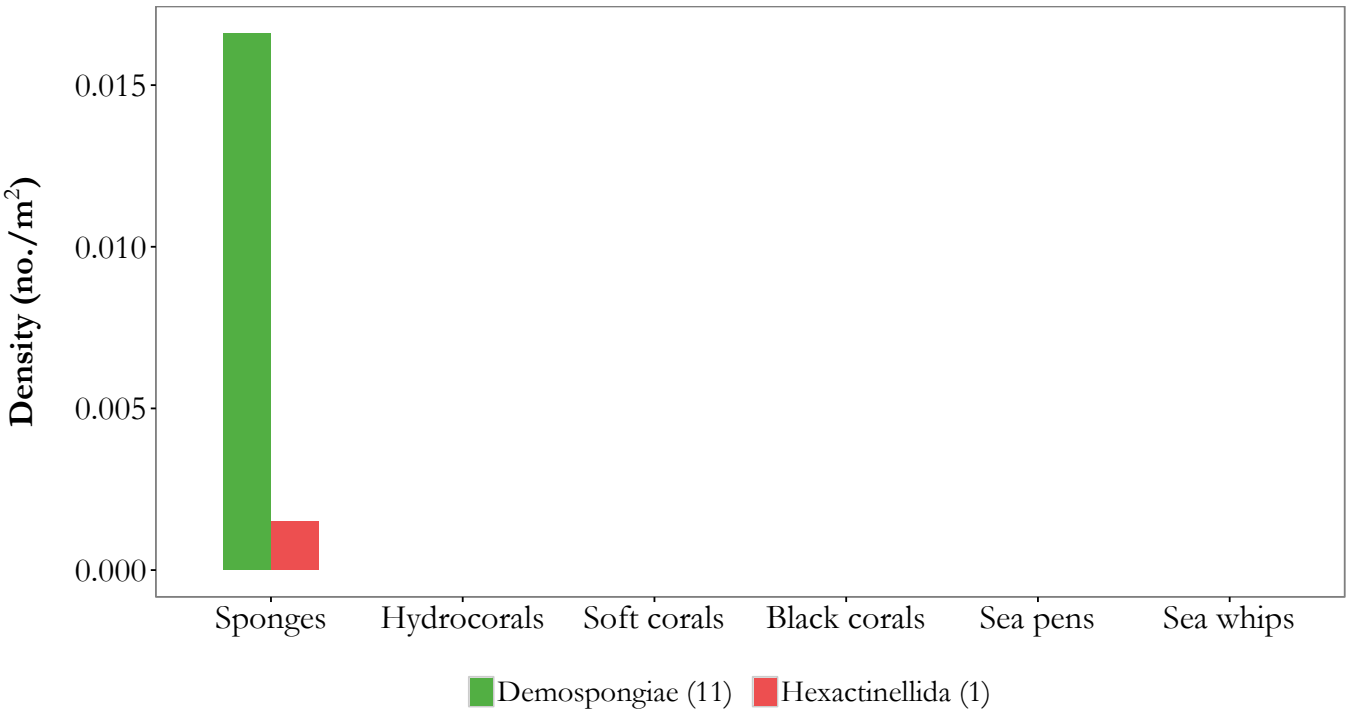
Images



AREA: Bowers Bank Transect 2012-71

Vertical Habitat Summary





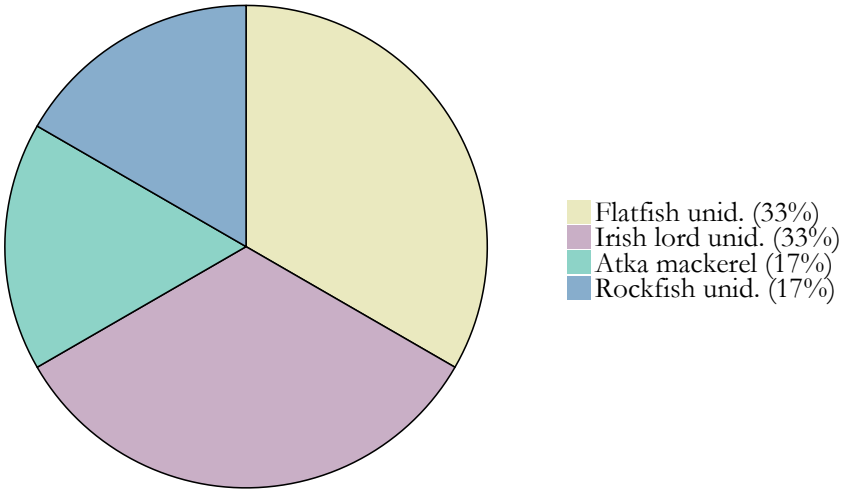
Summary - description of transect

Transect 2012-71: Primary and secondary substrates consisted entirely of sand. Fish and crab density was 0.02 individuals/m^2. Demospongiae (n = 11) were 92% of the structure-forming invertebrate habitat (0.02 individuals/m^2).

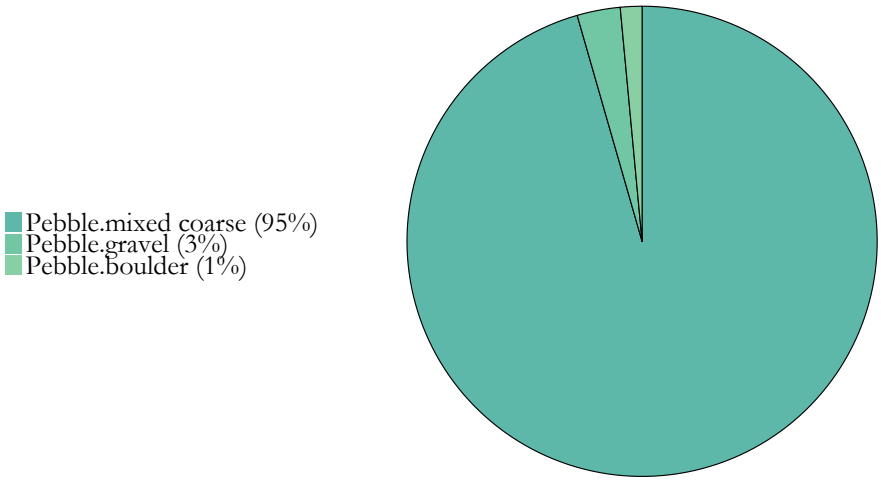
AREA: Bowers Bank — Transect 2014-23

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/28/2014	52.01	179.72	4,226	63	4.3

Fish and Crab Composition (n = 6)

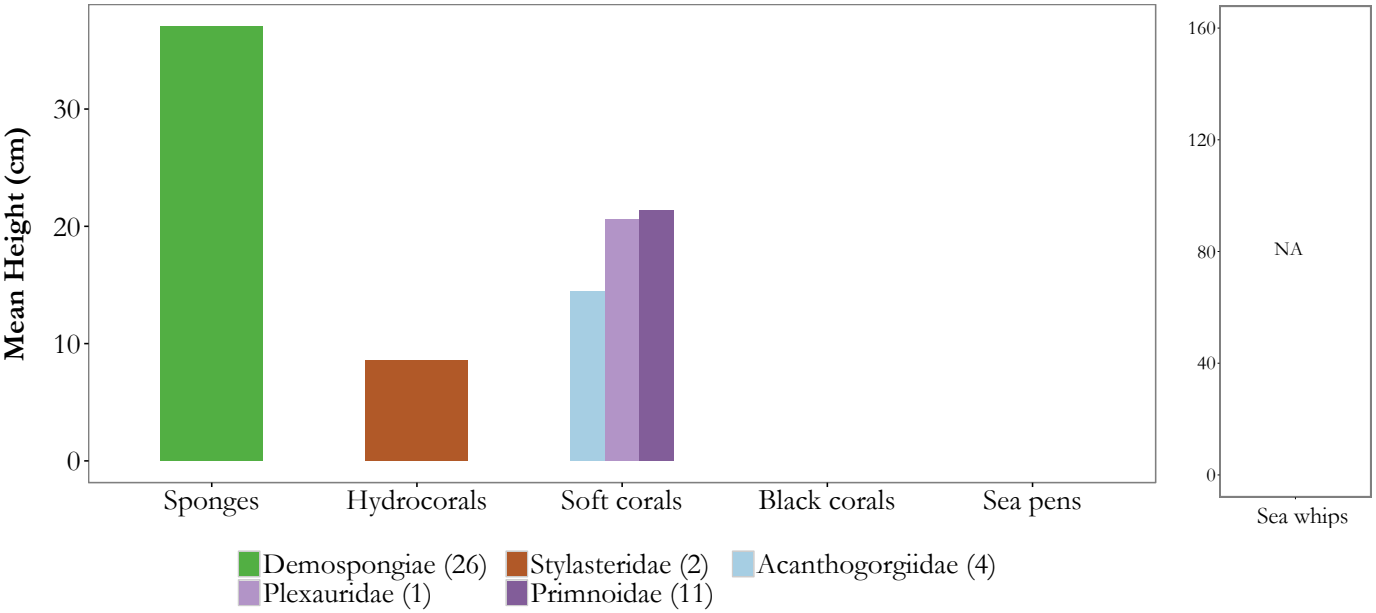


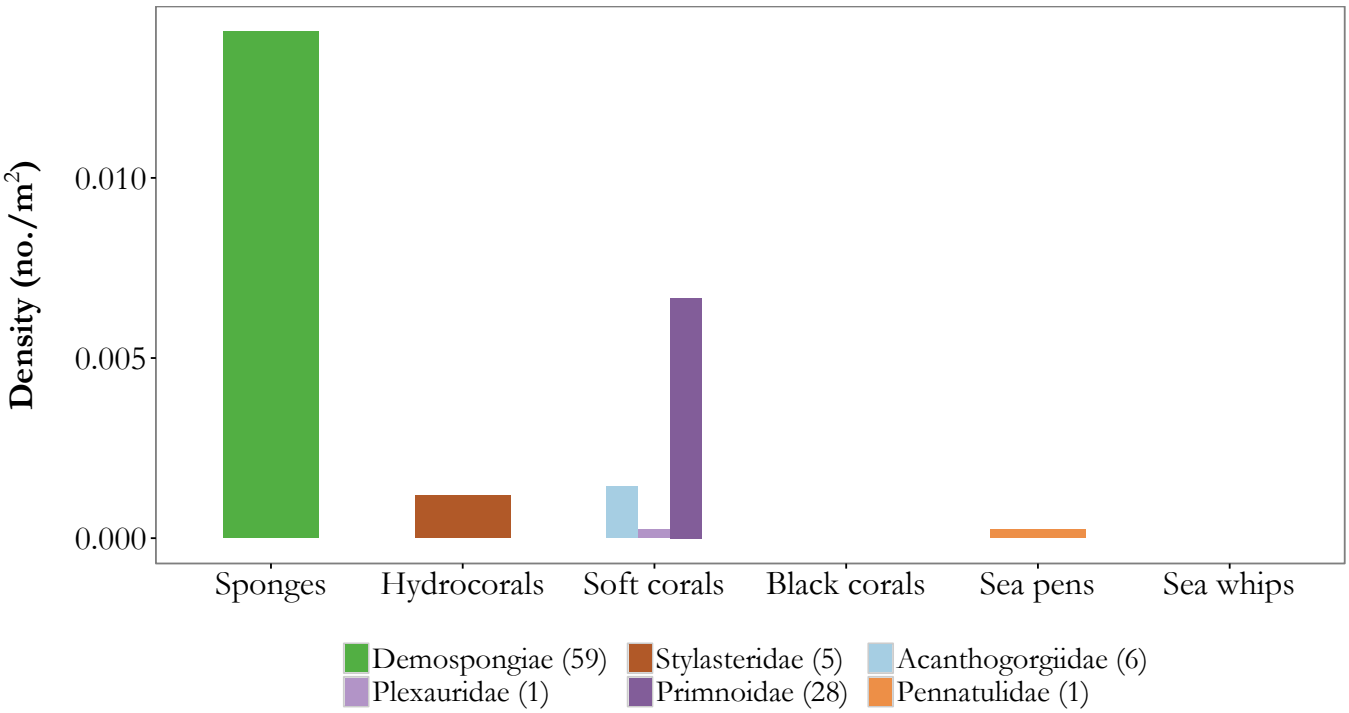
Substrate Composition



Images

Vertical Habitat Summary





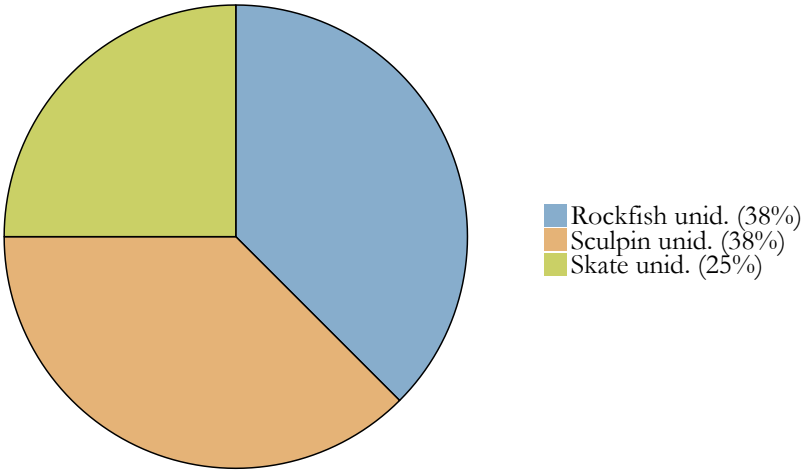
Summary - description of transect

Transect 2014-23: Primary and secondary substrates consisted of pebble, mixed coarse, gravel, and boulder. Fish density was low (< 0.01 individuals/m^2), and fairly evenly distributed between flatfishes, Irish lords, rockfishes, and Atka mackerel. Structure-forming invertebrates were mostly Demospongiae (0.01 individuals/m^2) and Primnoidae (< 0.01 individuals/m^2). Overall density was 0.02 individuals/m^2. Mean height was calculated for Demospongiae (37 cm), Stylasteridae (9 cm), Acanthogorgiidae (21 cm), and Primnoidae (21 cm), .

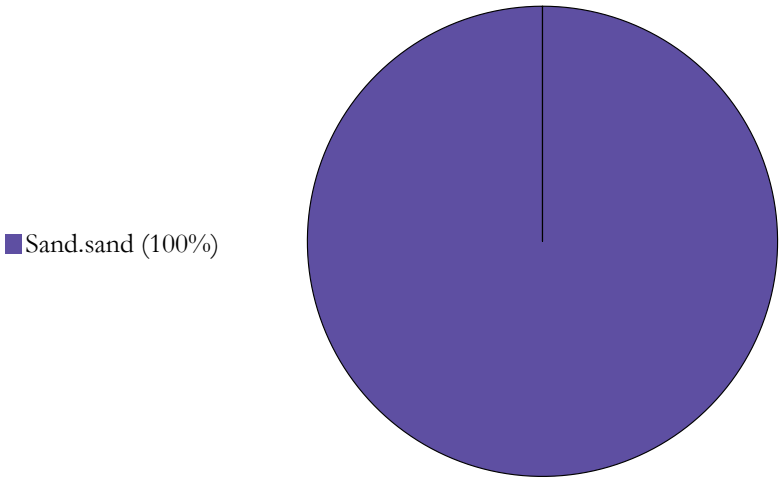
AREA: Bowers Bank — Transect 2014-24

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
4/28/2014	52.05	-179.79	675	296	4.1

Fish and Crab Composition (n = 8)

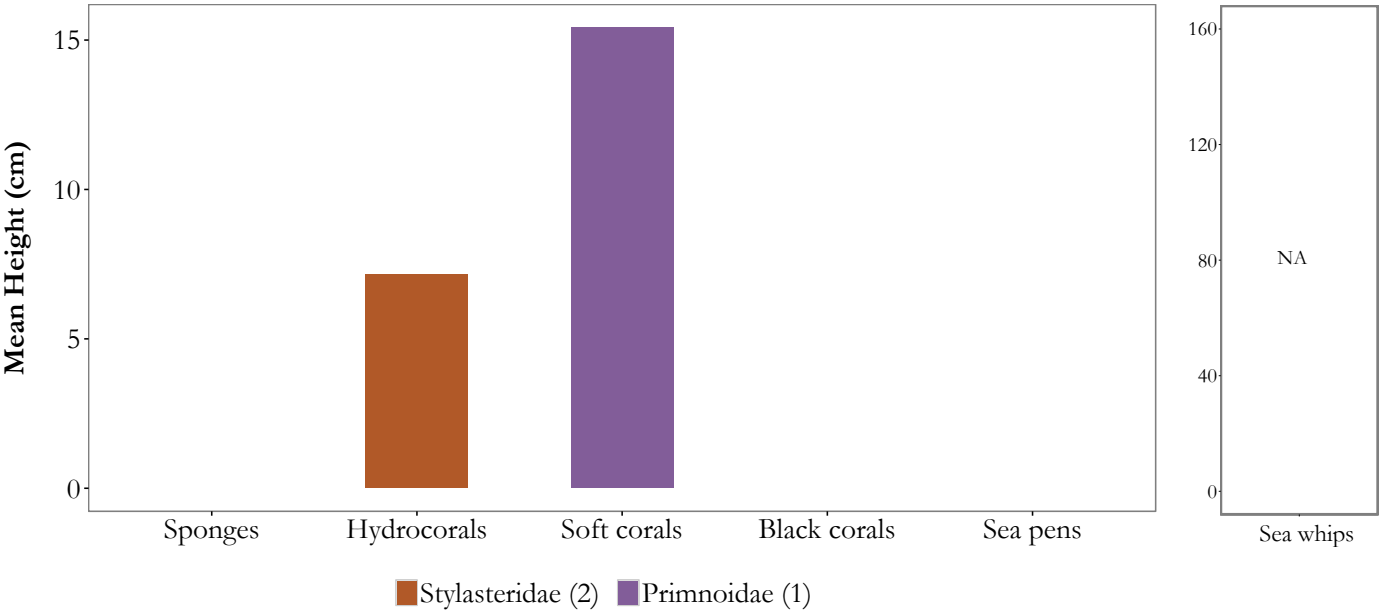


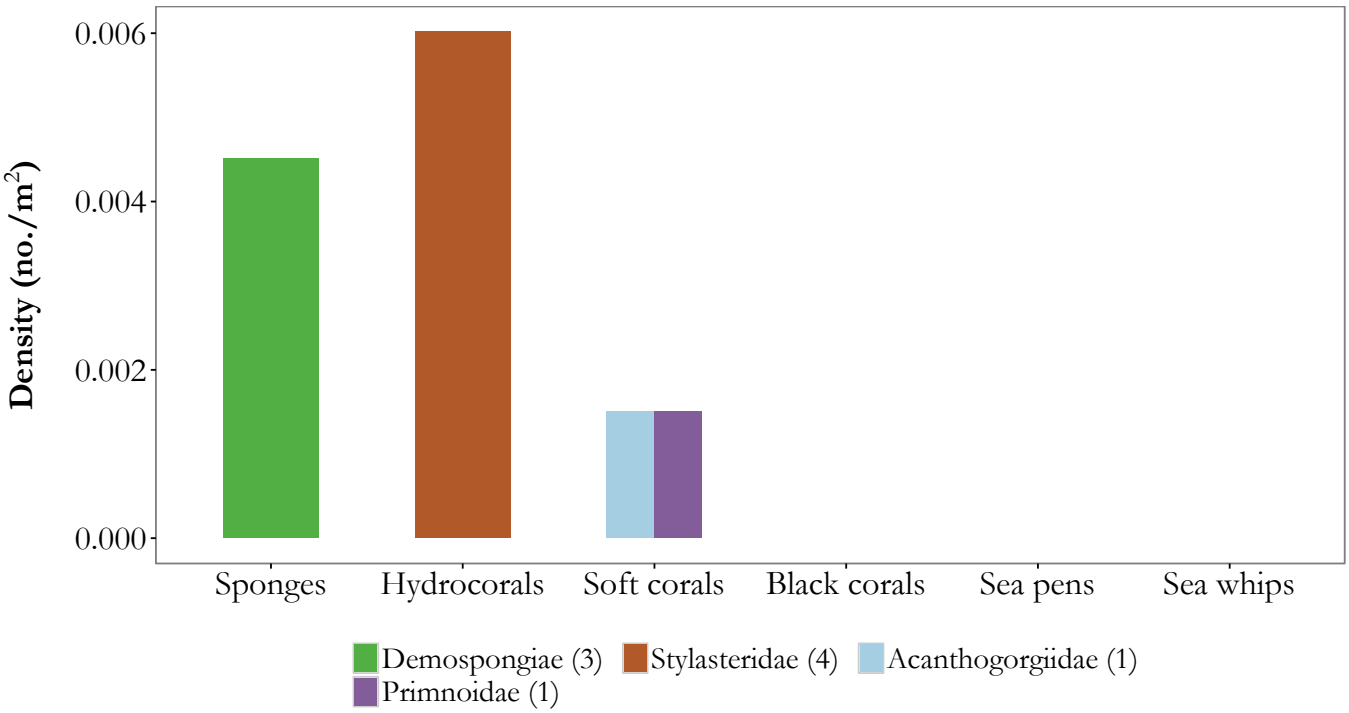
Substrate Composition



Images

Vertical Habitat Summary





Summary - description of transect

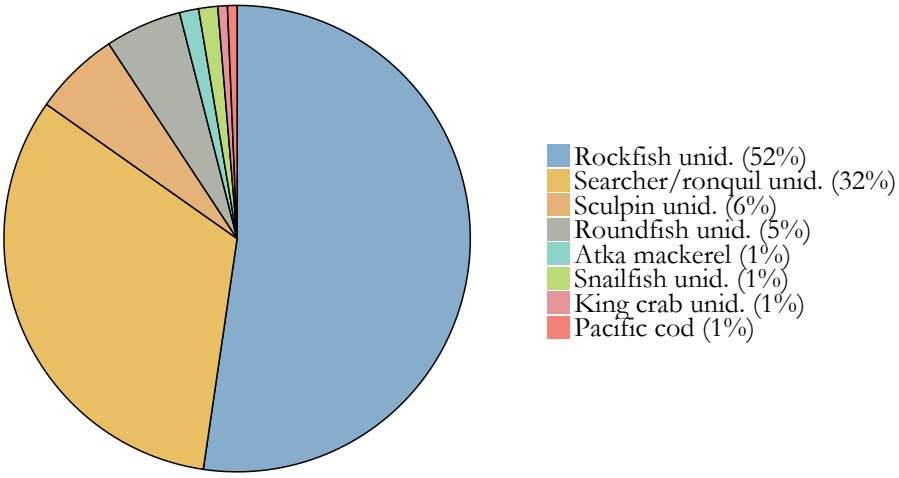
Transect 2014-24: Primary and secondary substrates consisted entirely of sand. Fish density was very low, 0.01 individuals/m^2. Structure-forming invertebrate density was also low (0.01 individuals/m^2). Mean height was calculated for Stylasteridae (7 cm).

AREA: Bowers Bank — Transect *2014-25

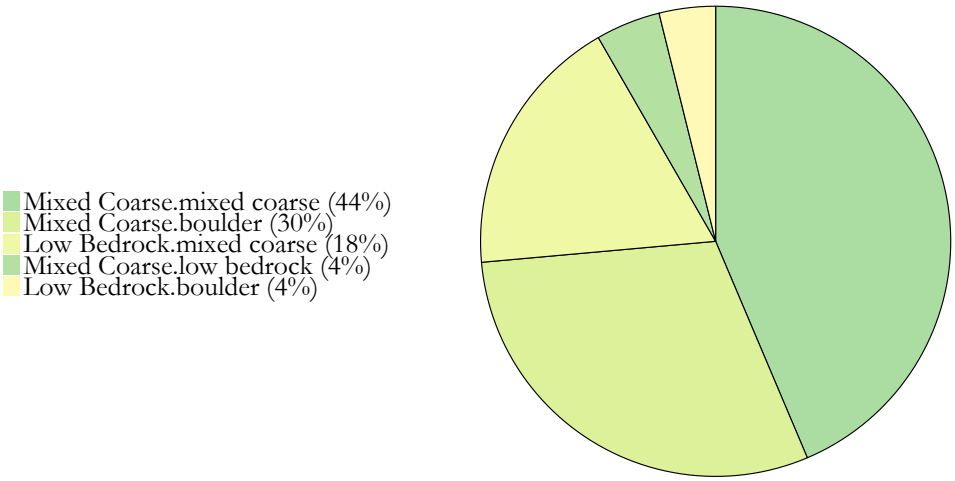
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.59	-179.49	2,042	116	3.9

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Fish and Crab Composition (n = 151)



Substrate Composition

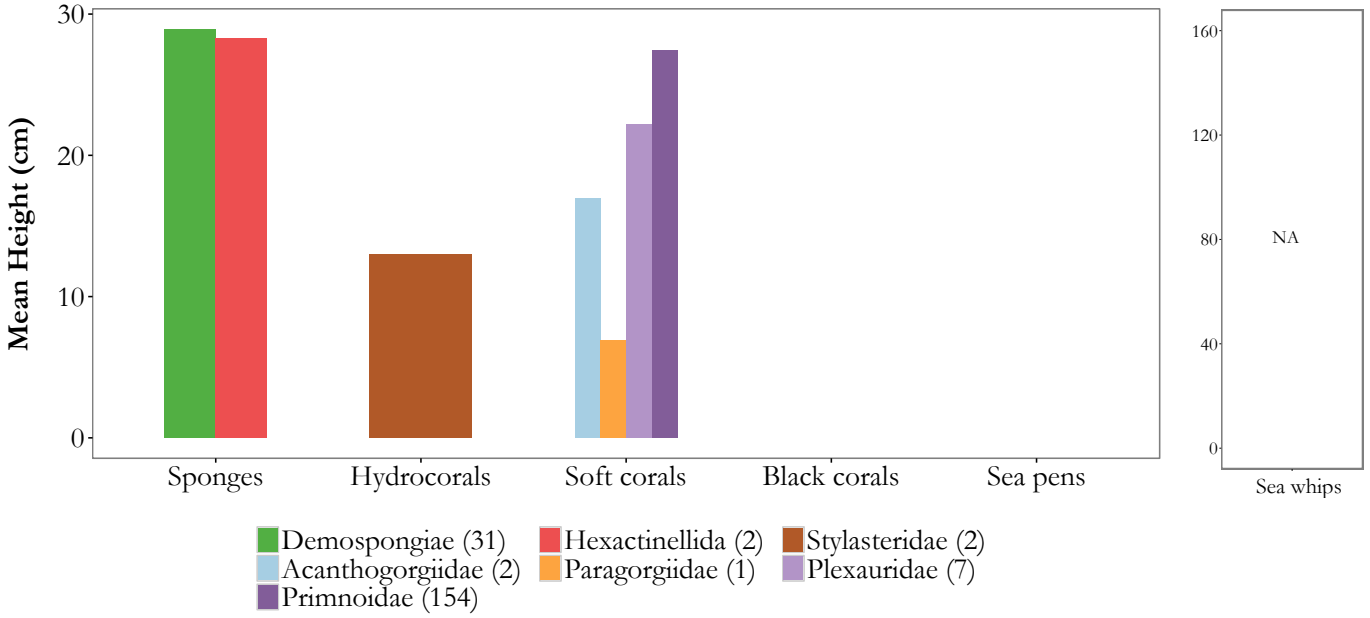


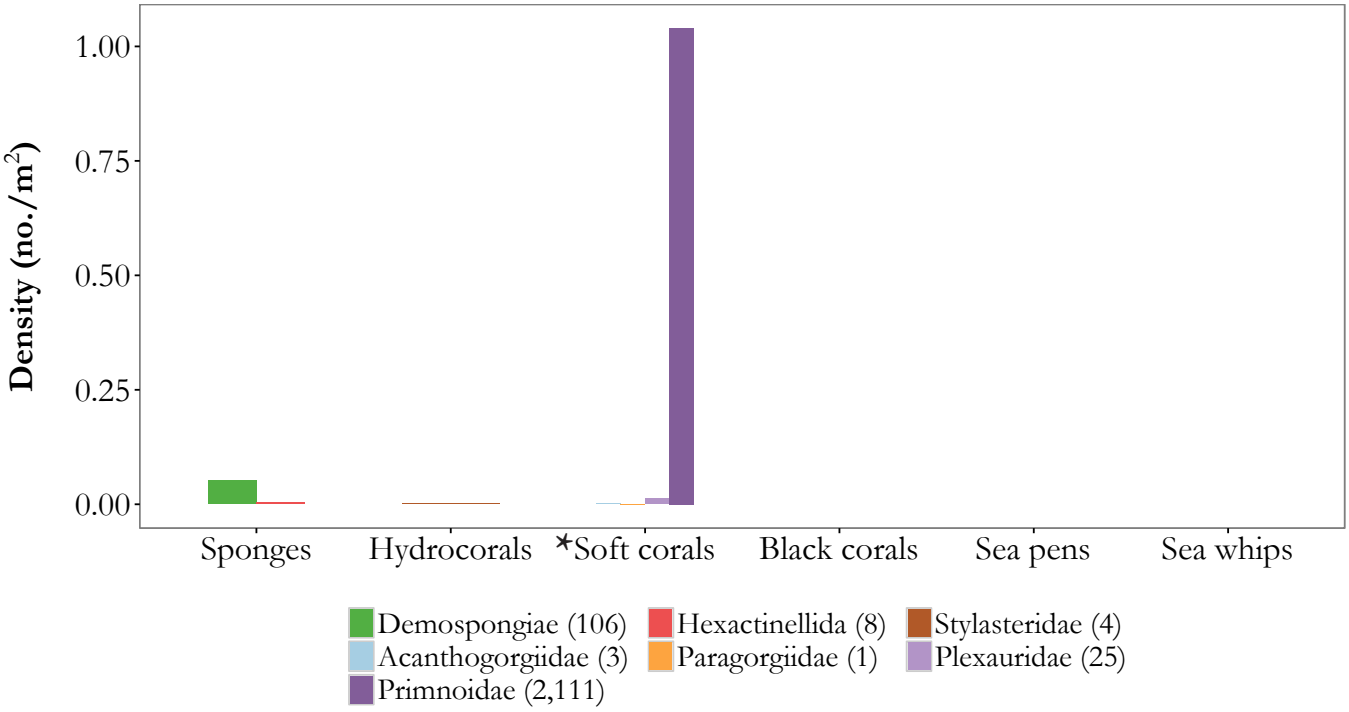
Images

AREA: Bowers Bank Transect *2014-25

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





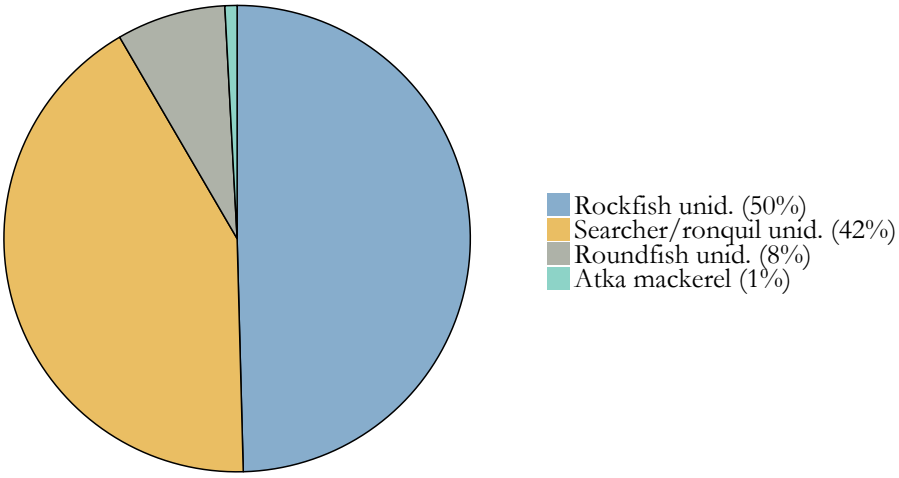
Summary - description of transect

Transect 2014-25: Primary and secondary substrates consisted largely of mixed coarse, boulder, and bedrock. Rockfishes (n = 79) and searchers/ronquils (n = 49) outnumbered all other fish and crab taxa. Overall fish and crab density was 0.07 individuals/m^2. Primnoidae numbered over 2,000 individuals for a density of 1.04 individuals/m^2. Total density for structure-forming invertebrates was 1.11 individuals/m^2. Mean heights were calculated for Demospongiae (29 cm), Hexactinellida (28 cm), Stylasteridae (13 cm), Acanthogorgiidae (17 cm), Plexauridae (22 cm), and Primnoidae (27 cm).

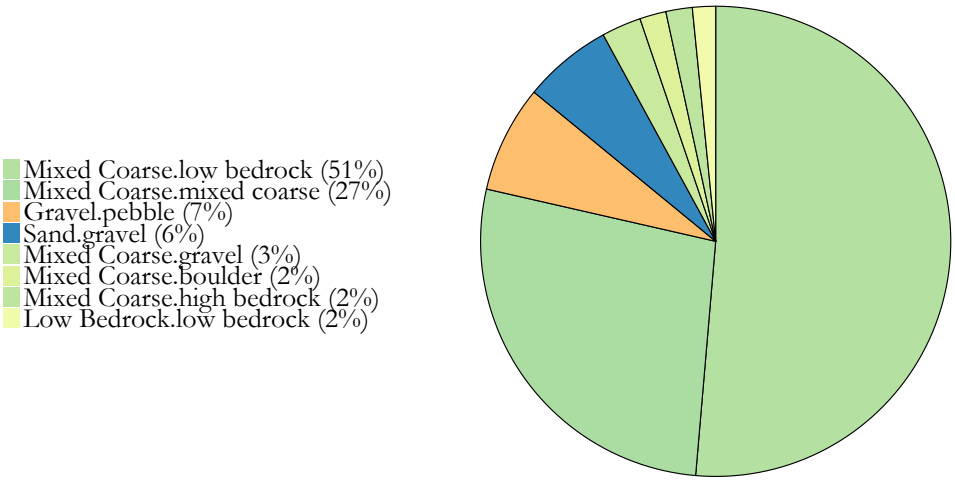
AREA: Bowers Bank — Transect 2014-26

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.58	-179.51	2,926	107	4.0

Fish and Crab Composition (n = 119)



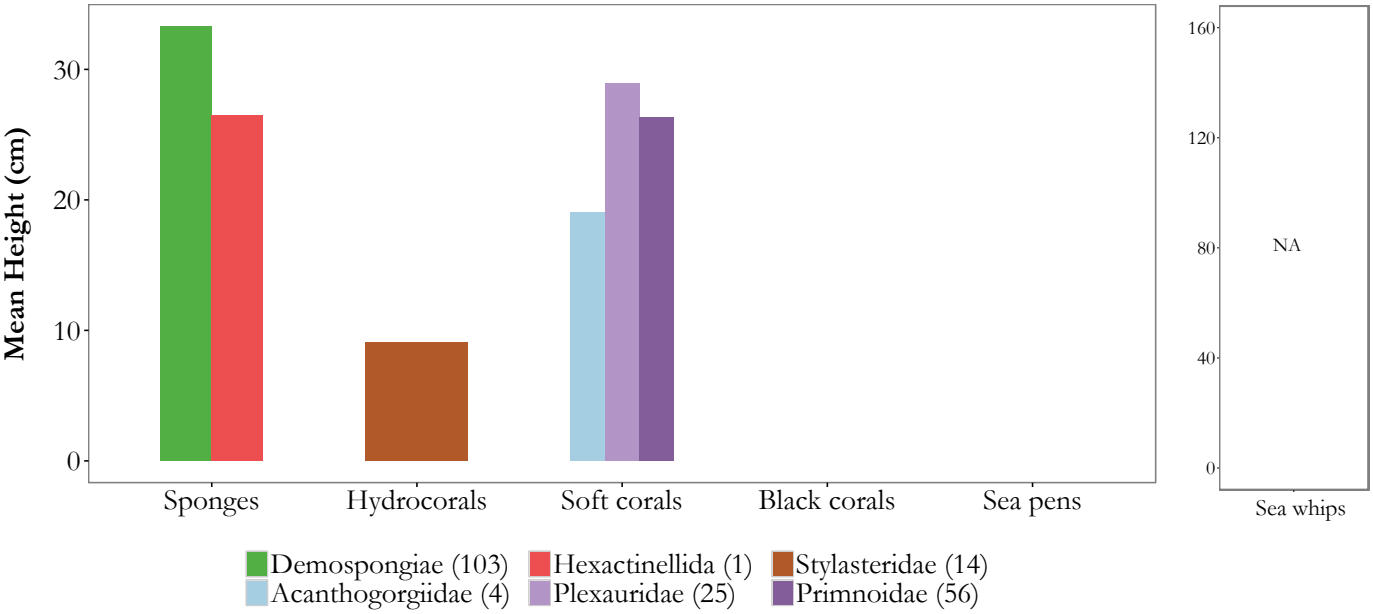
Substrate Composition

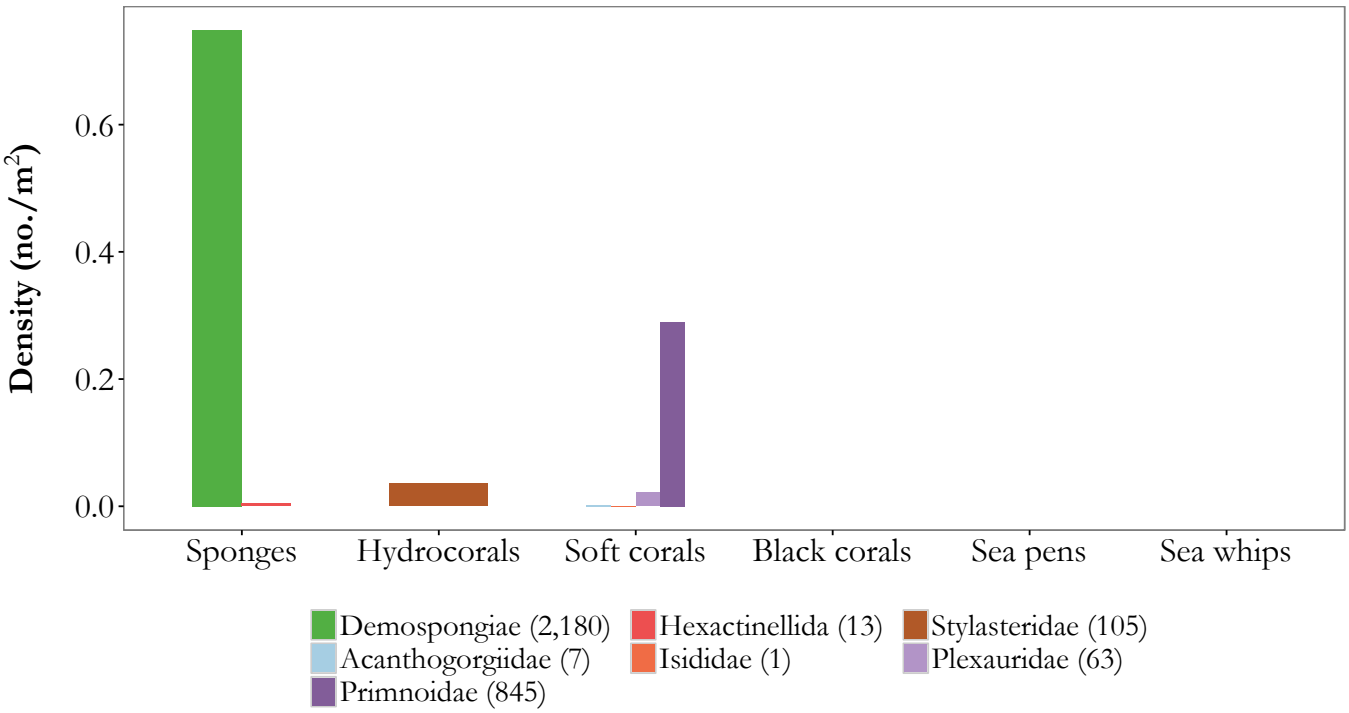


Images

AREA: Bowers Bank Transect 2014-26

Vertical Habitat Summary





Summary - description of transect

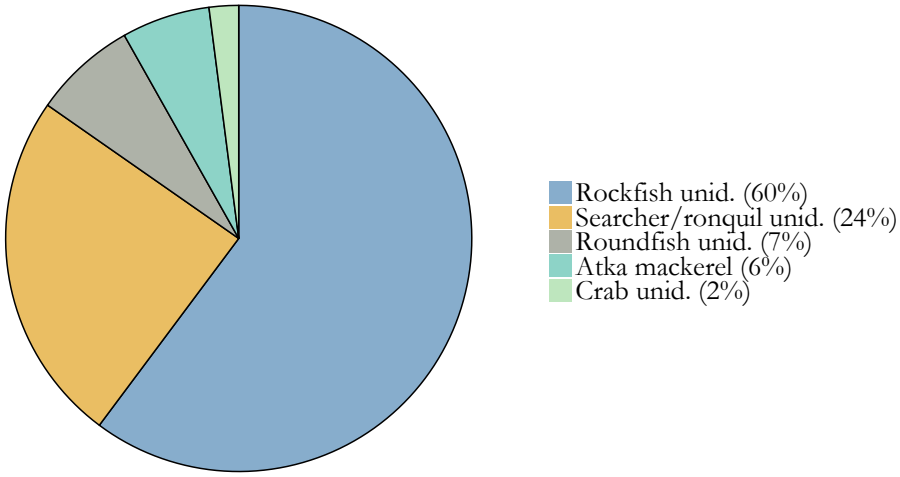
Transect 2014-26: Primary and secondary substrates were a combination of mixed coarse, bedrock, gravel, pebble, and boulder. Rockfishes (n = 59) and searchers/ronquils (n = 50) comprised 92% of the fish density (0.04 individuals/m^2). Structure-forming invertebrate density was 1.10 individuals/m^2 of which Demospongiae accounted for 68%. Mean heights were calculated for Demospongiae (33 cm), Stylasteridae (9 cm), Acanthogorgiidae (19 cm), Plexauridae (29 cm), and Primnoidae (26 cm).

AREA: Bowers Bank — Transect *2014-27

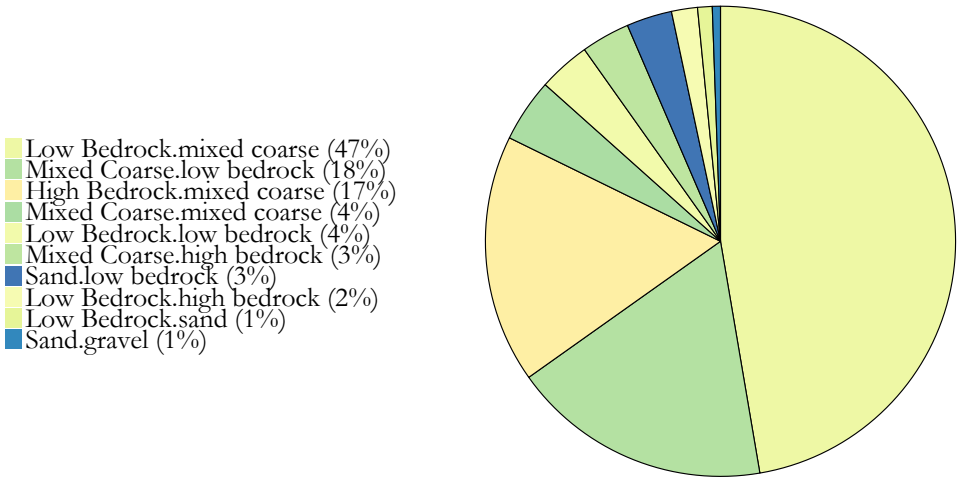
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.58	-179.54	3,153	102	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

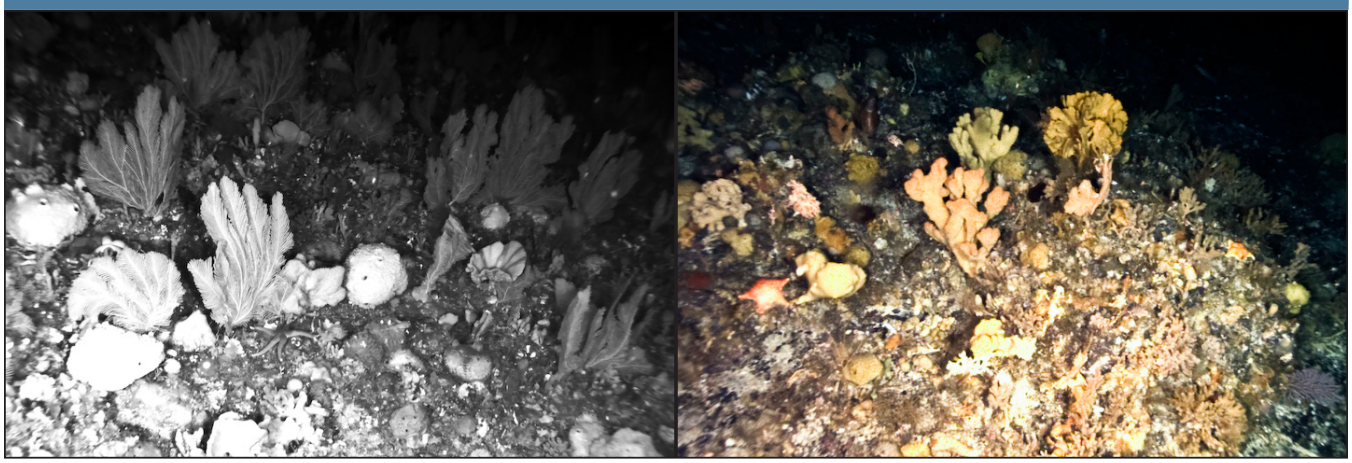
Fish and Crab Composition (n = 98)



Substrate Composition



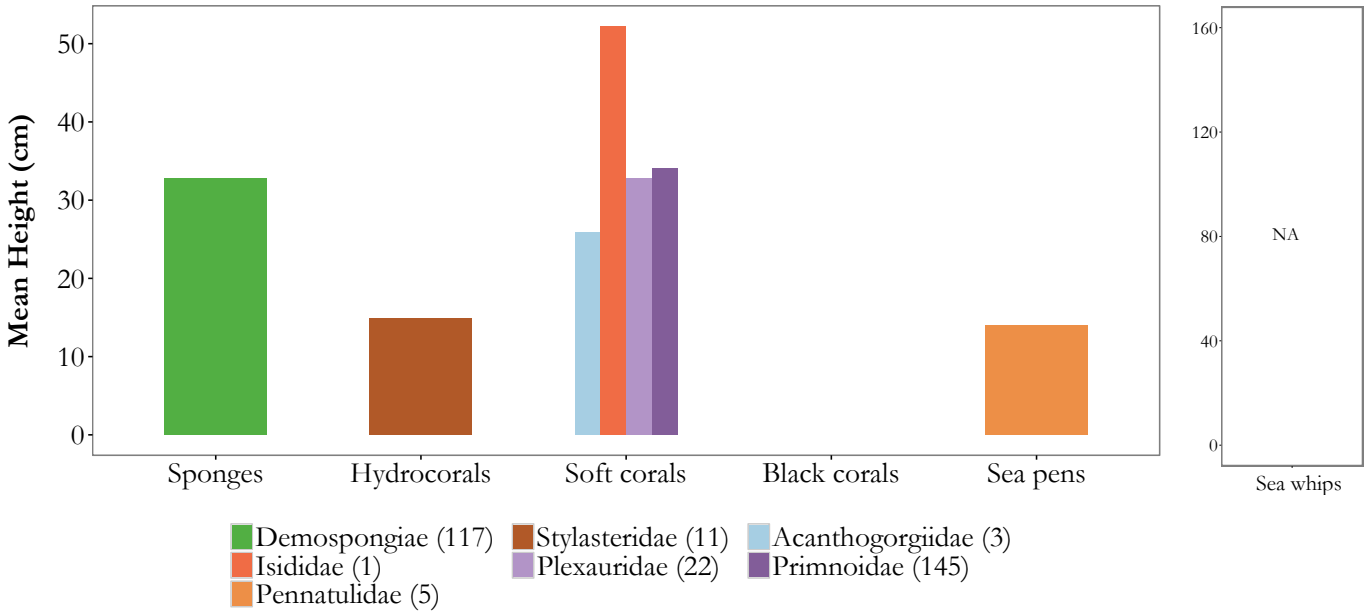
Images

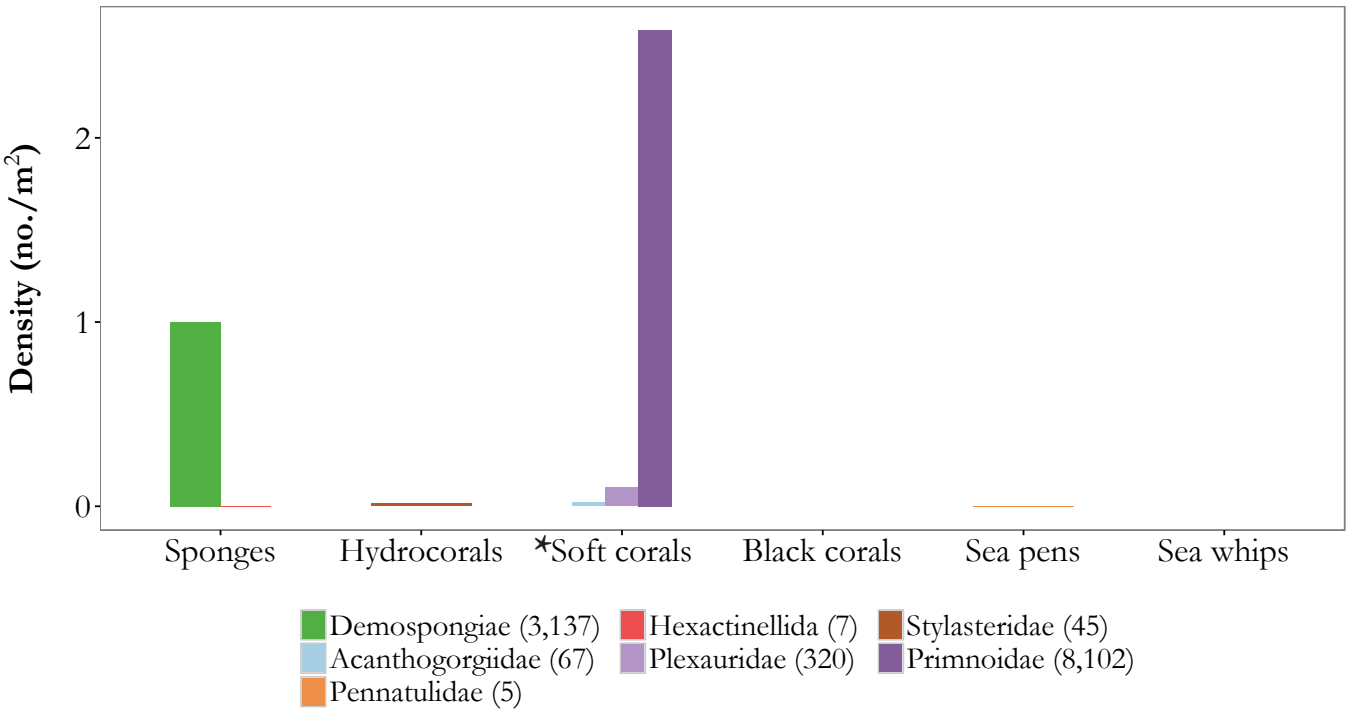


AREA: Bowers Bank Transect *2014-27

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

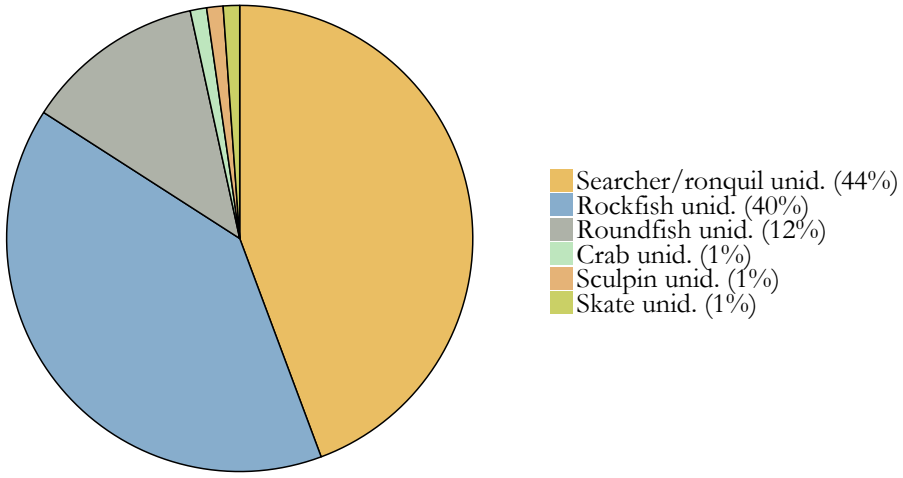
Transect 2014-27: Over 90% of the primary and secondary substrates consisted of bedrock. Rockfishes and searchers/ronquils accounted for 84% of the fish and crab density (0.03 individuals/m^2). Structure-forming invertebrate density was 3.73 individuals/m^2. Primnoidae (2.58 individuals/m^2) accounted for 69% of the available invertebrate, while Demospongiae (1.00 individuals/m^2) accounted for 27%. Mean heights were calculated for Demospongiae (33 cm), Stylasteridae (15 cm), Acanthogorgiidae (26 cm), Plexauridae (33 cm), Primnoidae (34 cm), and Pennatulidae (14 cm).

AREA: Bowers Bank — Transect *2014-28

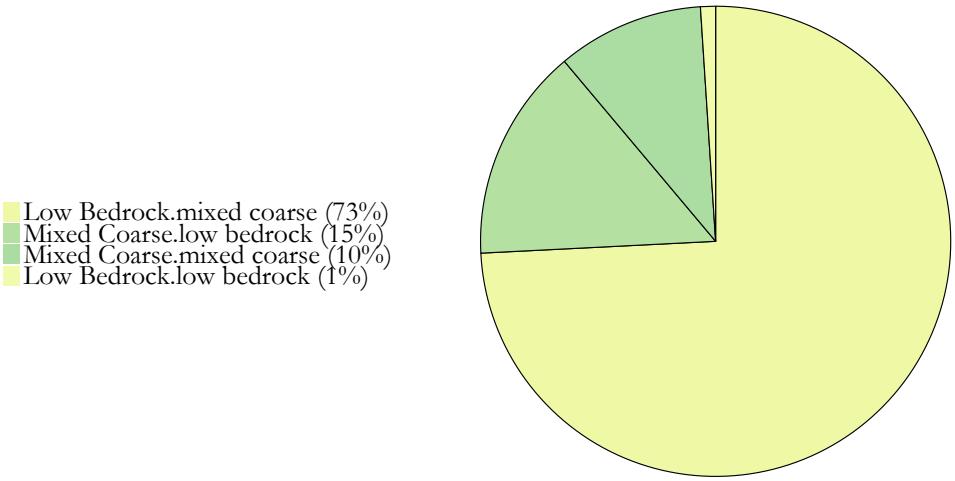
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.56	-179.51	2,937	104	4.0

*Area of high coral or sponge density (> 1.0 individuals/m^2)

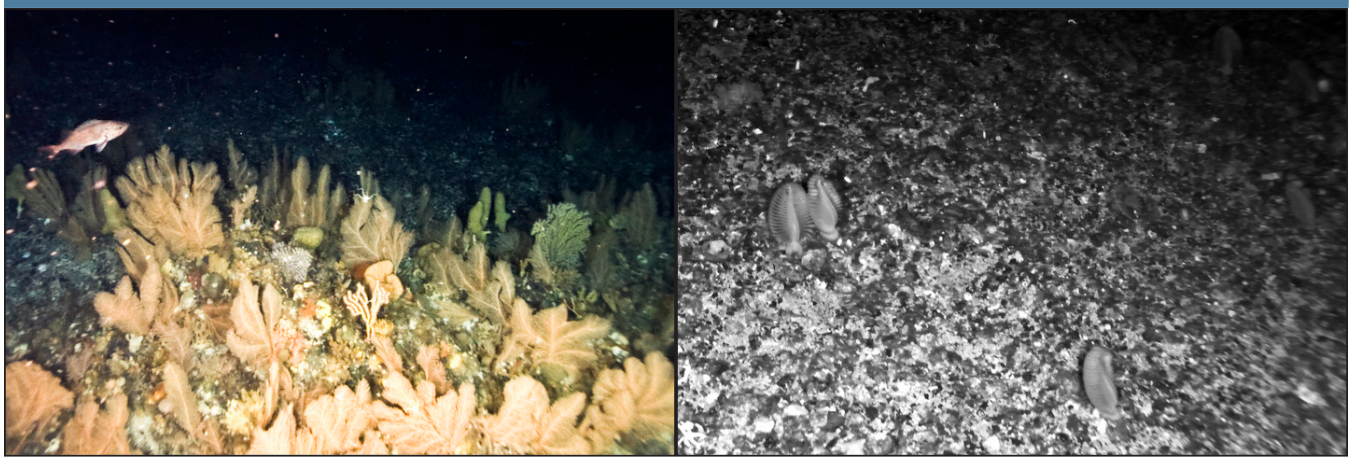
Fish and Crab Composition (n = 88)



Substrate Composition



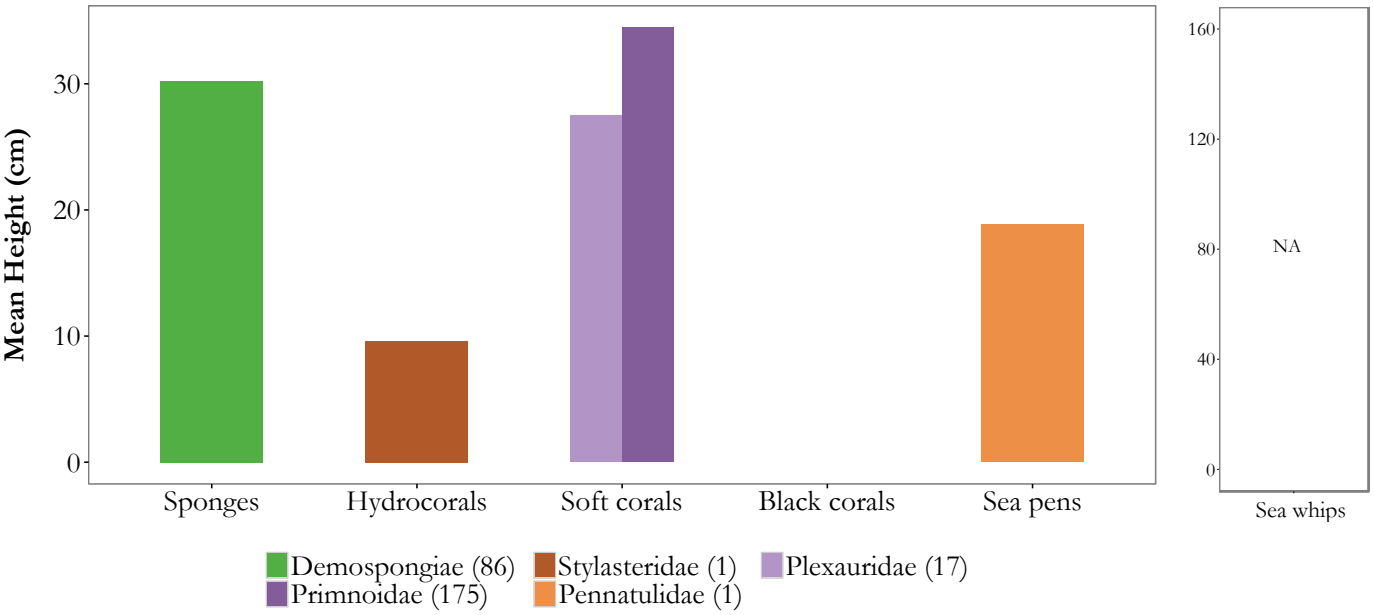
Images

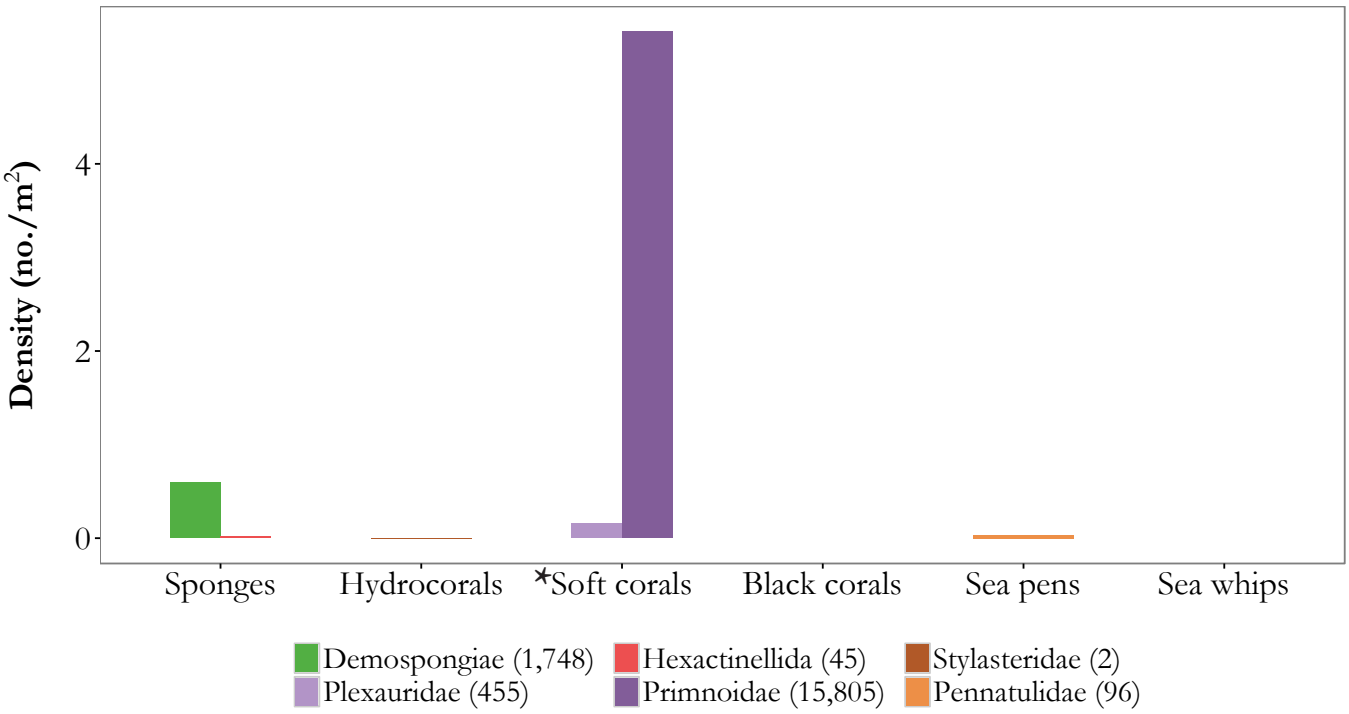


AREA: Bowers Bank — Transect *2014-28

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





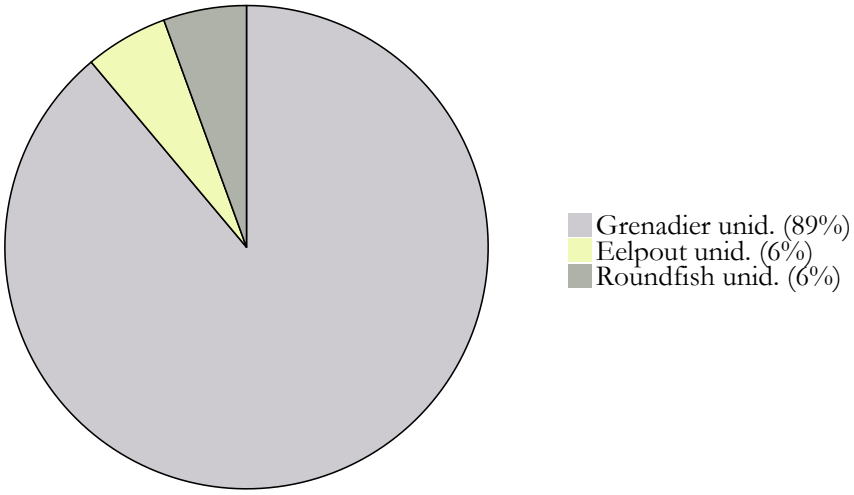
Summary - description of transect

Transect 2014-28: Primary and secondary substrates consisted largely of bedrock and mixed coarse. Searchers/ronquils (n = 39) and rockfishes (n = 35) accounted for 88% of the fish and crab density (0.03 individuals/m^2). Primnoidae density (5.41 individuals/m^2) accounted for 87% of the structure-forming invertebrates identified. It was also the second highest Primnoidae density of the survey. Mean heights were calculated for Demospongiae (30 cm), Plexauridae (27 cm), and Primnoidae (34 cm).

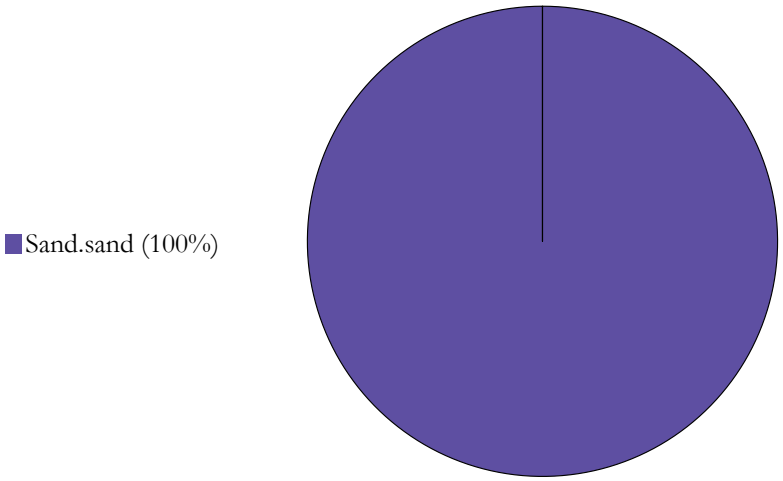
AREA: Bowers Bank — Transect 2014-29

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.55	-179.87	559	794	3.1

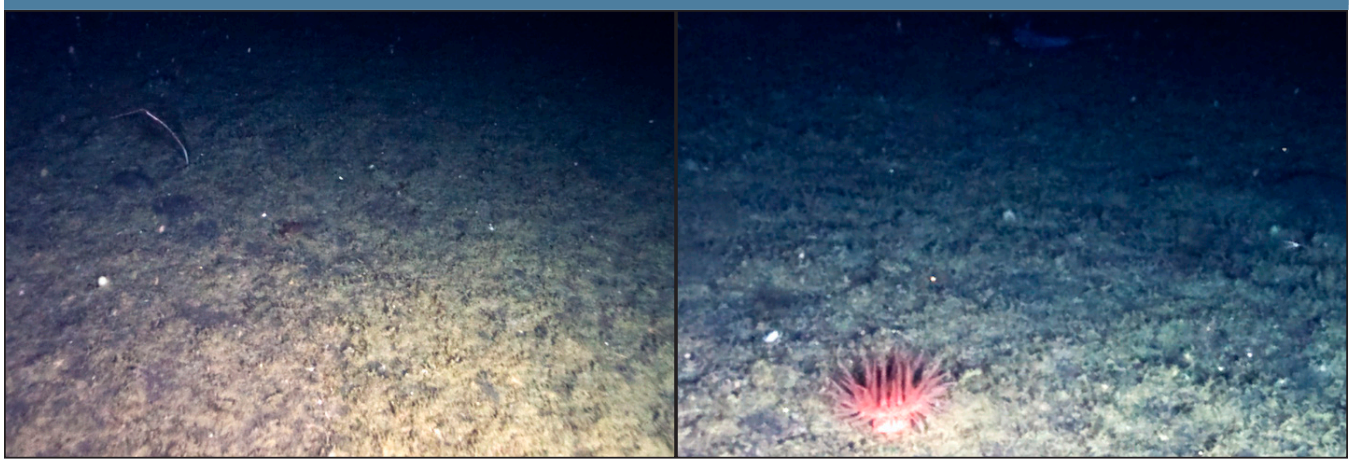
Fish and Crab Composition (n = 18)



Substrate Composition

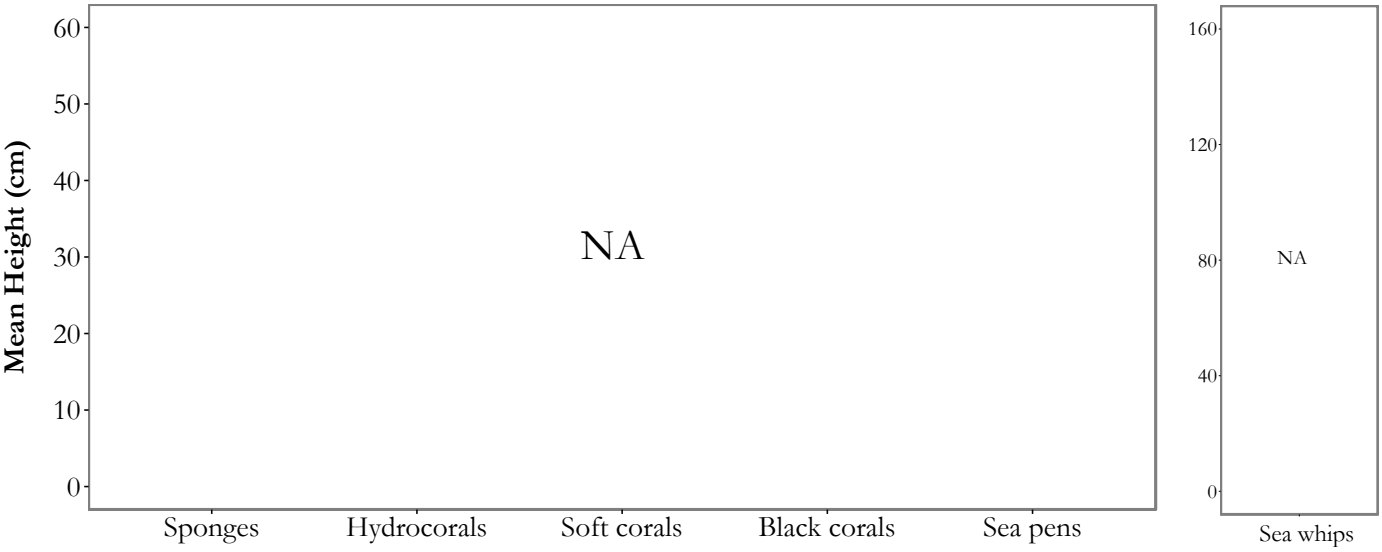


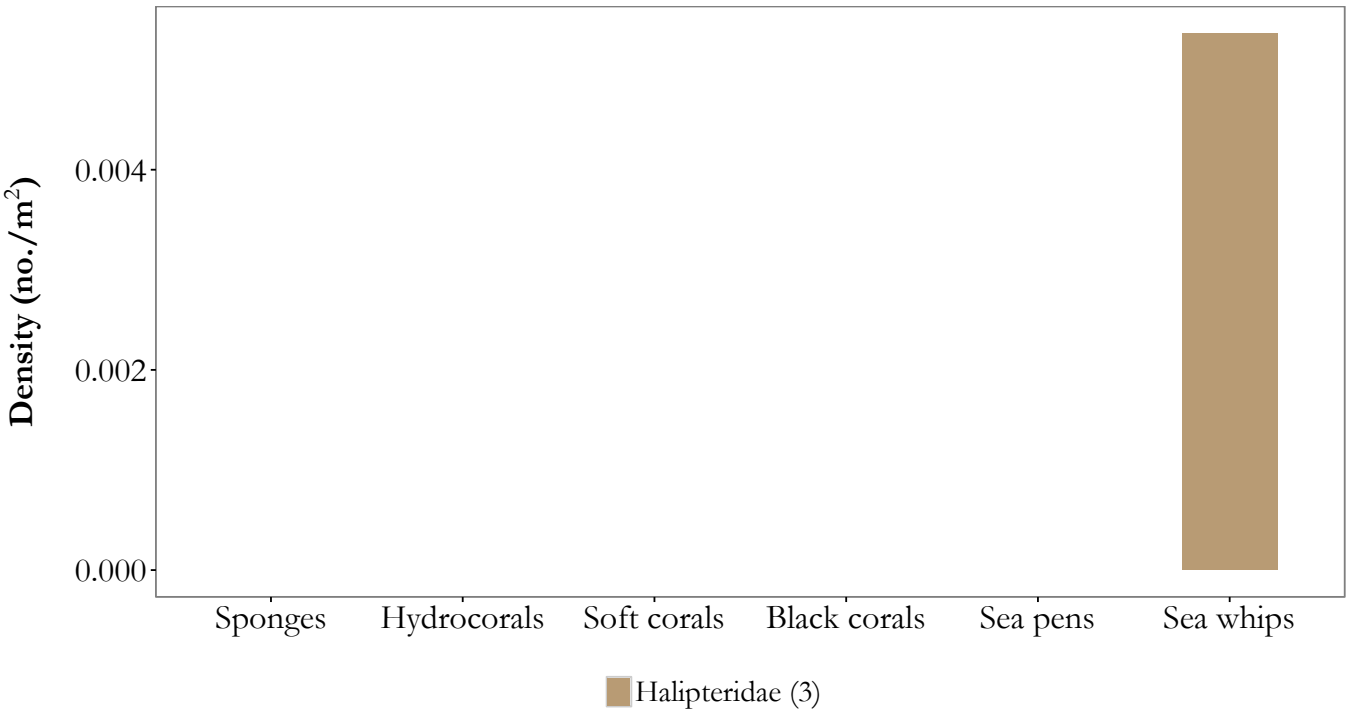
Images



AREA: Bowers Bank Transect 2014-29

Vertical Habitat Summary





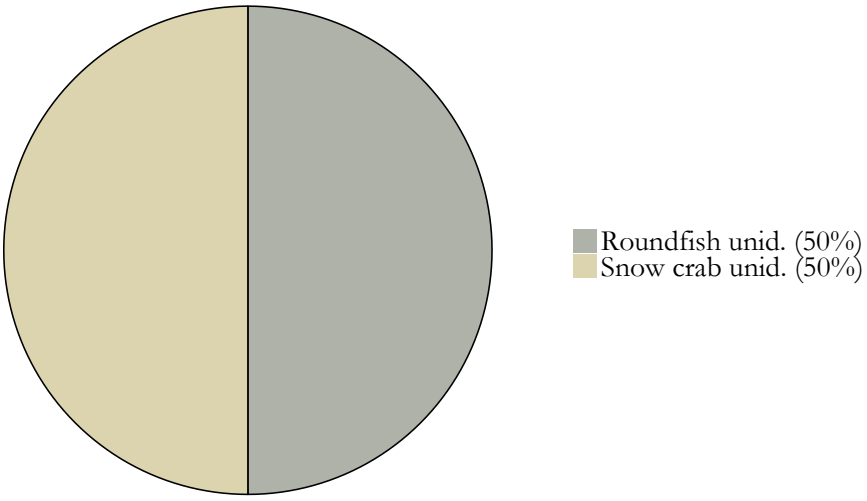
Summary - description of transcect

Transect 2014-29: Primary and secondary substrates consisted entirely of sand. Only 3 fish taxa were identified in this transect: grenadiers, eelpouts , and unidentified roundfishes. As a result, fish density for the transect was very low (0.03 individuals/m^2). Halipteridae was the only structure-forming invertebrates identified.

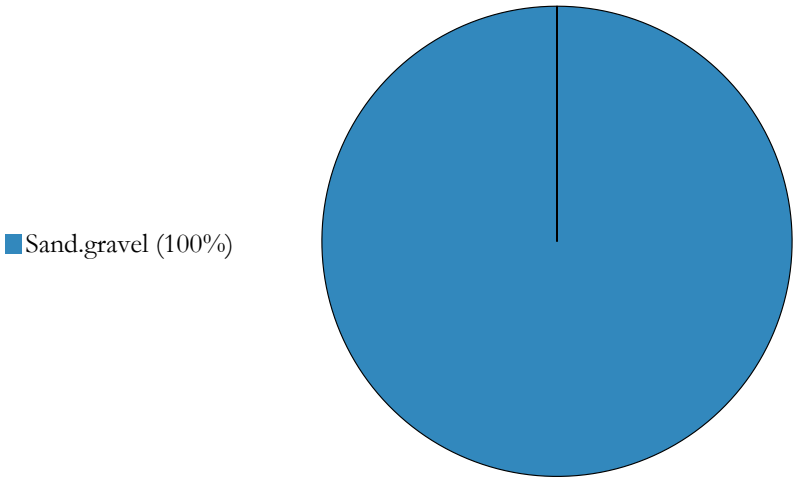
AREA: Bowers Bank — Transect 2014-30

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.36	179.92	978	126	4.2

Fish and Crab Composition (n = 2)



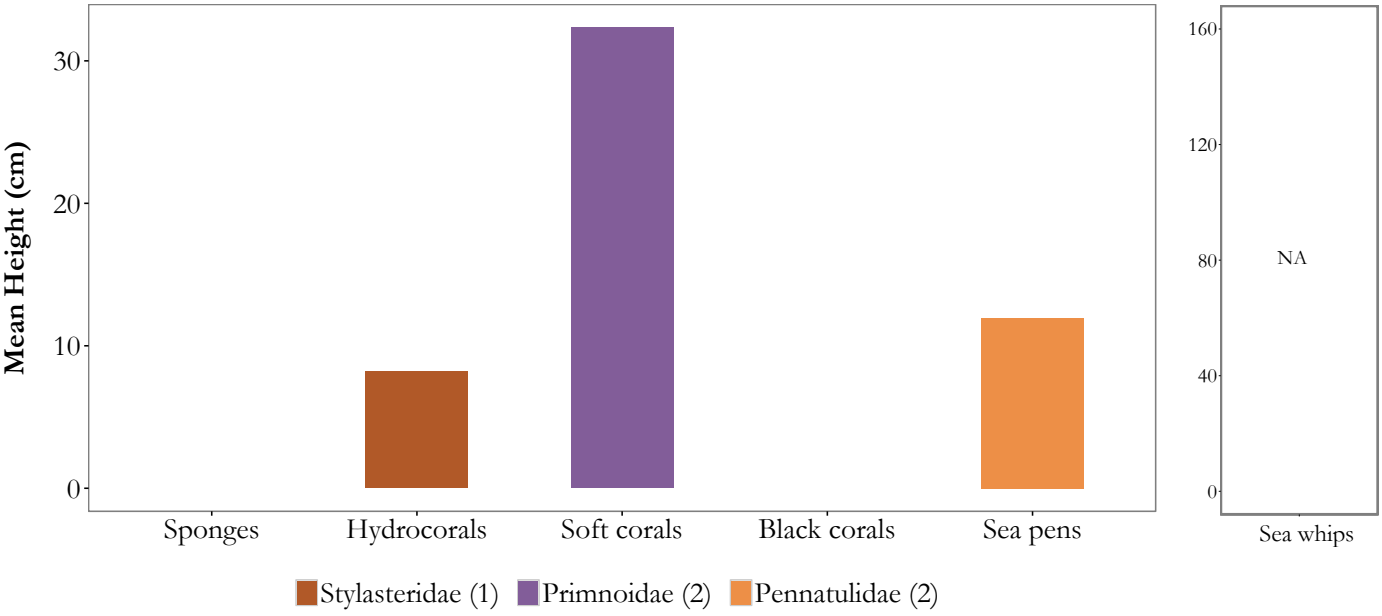
Substrate Composition

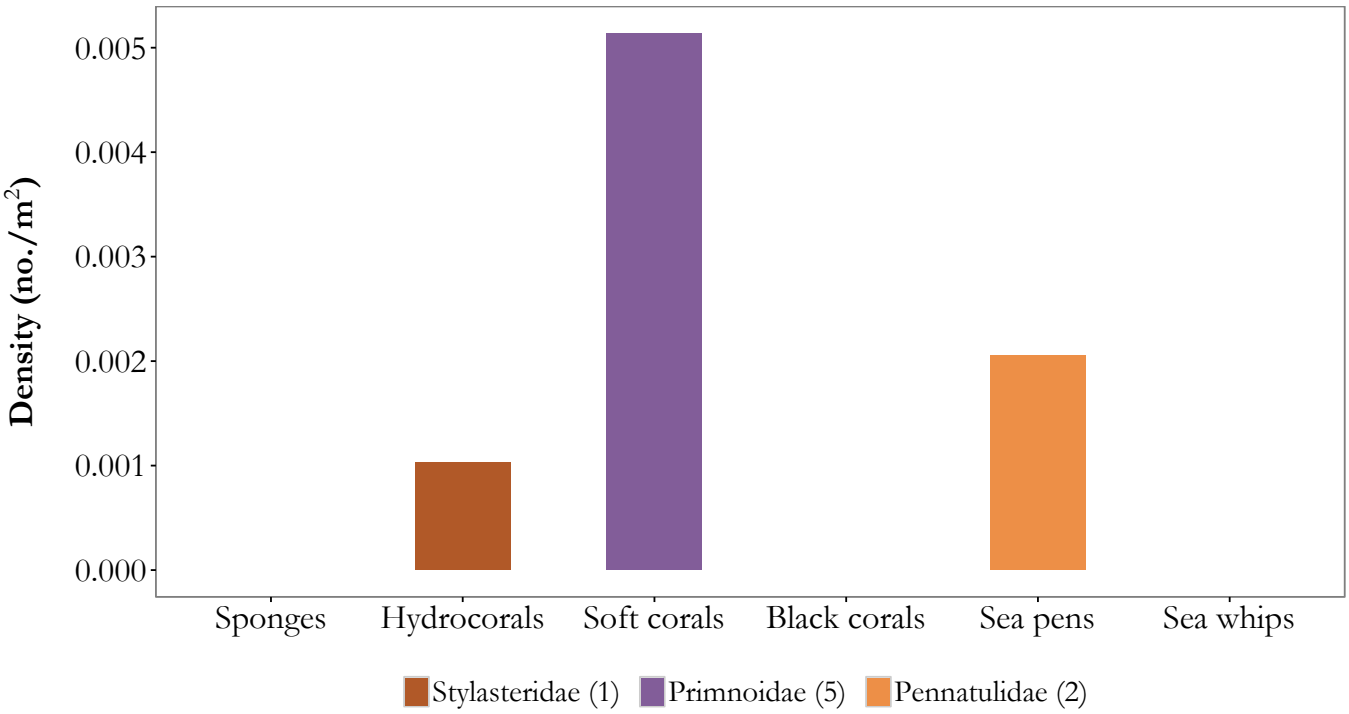


Images

AREA: Bowers Bank Transect 2014-30

Vertical Habitat Summary



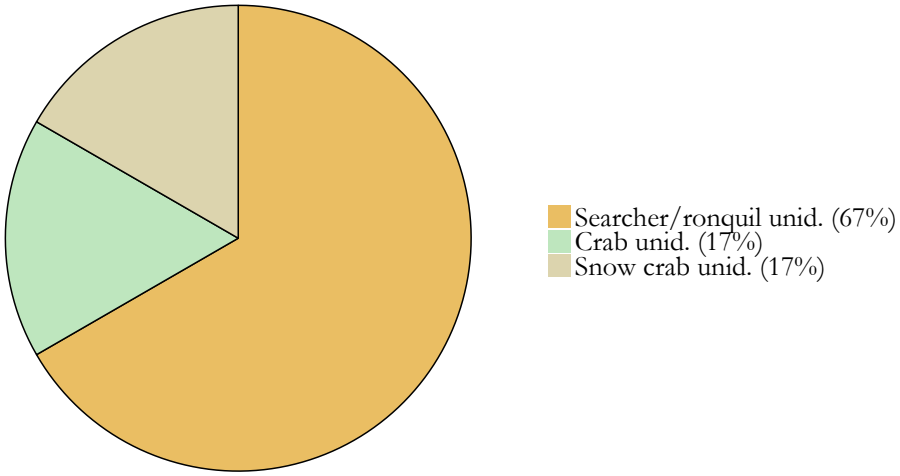


Summary - description of transect

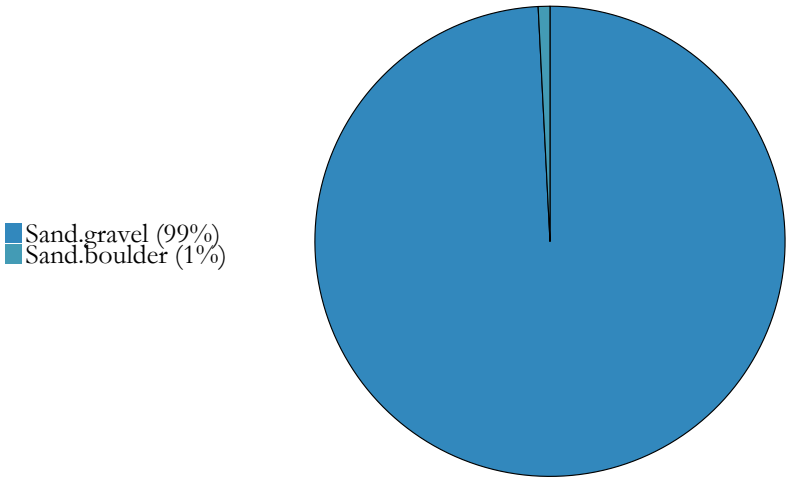
Transect 2014-30: Primary and secondary substrates consisted entirely of sand and gravel. Only one fish and one crab were identified resulting in a density of < 0.01 individuals/m^2. Structure-forming invertebrate density was 0.01 individuals/m^2. Mean heights were calculated for Primnoidae (32 cm) and Pennatulidae (12 cm).

AREA: Bowers Bank			Transect	2014-31
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.33	179.74	1,026	133	4.2

Fish and Crab Composition (n = 6)



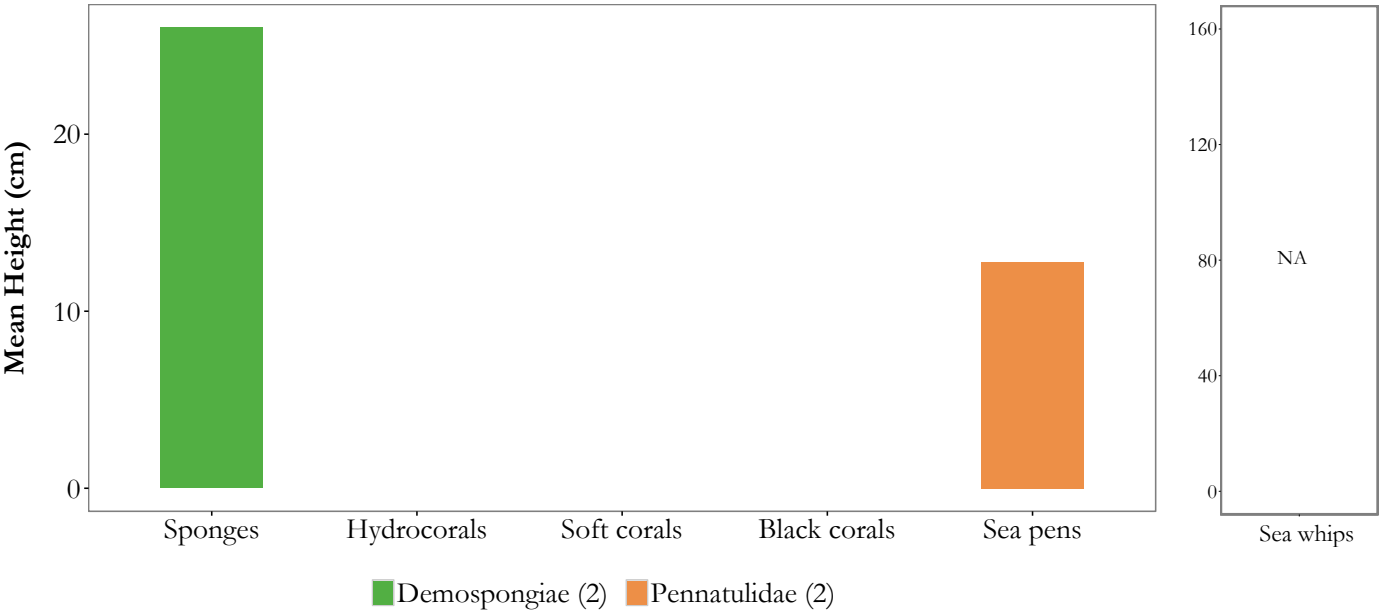
Substrate Composition

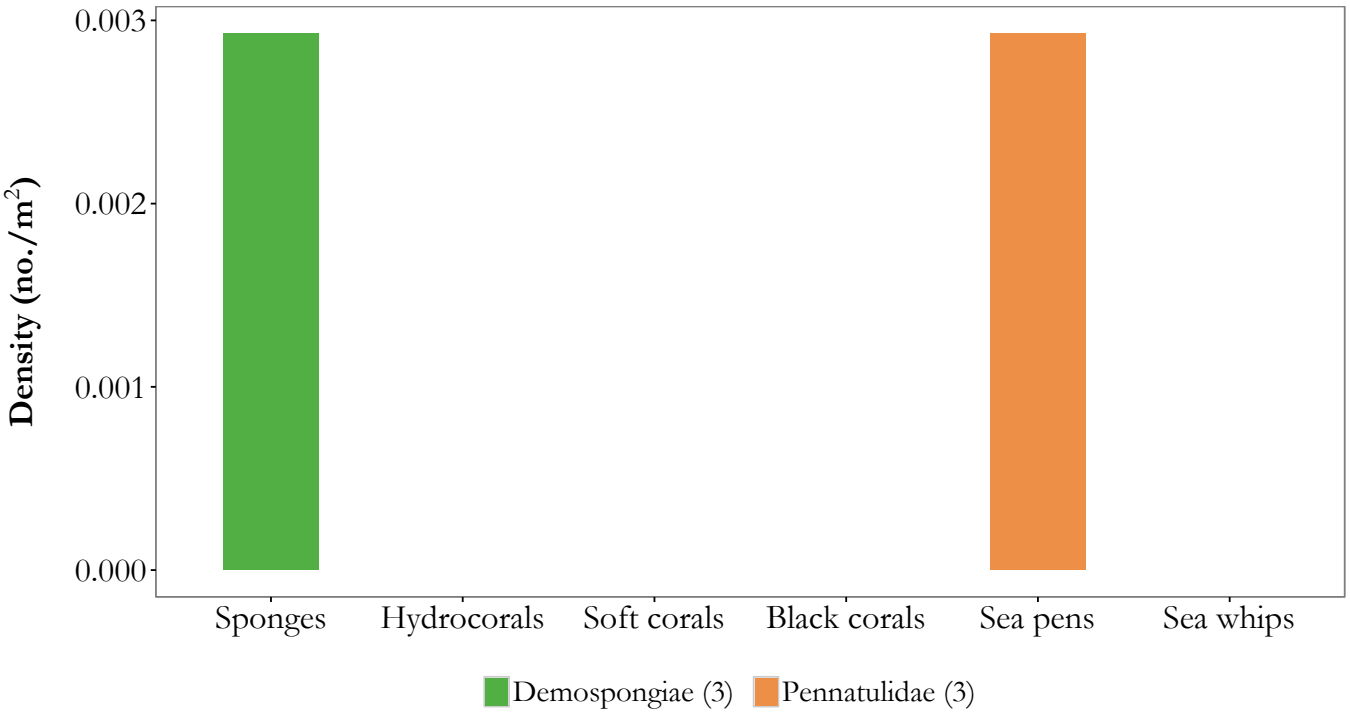


Images

AREA: Bowers Bank Transect 2014-31

Vertical Habitat Summary





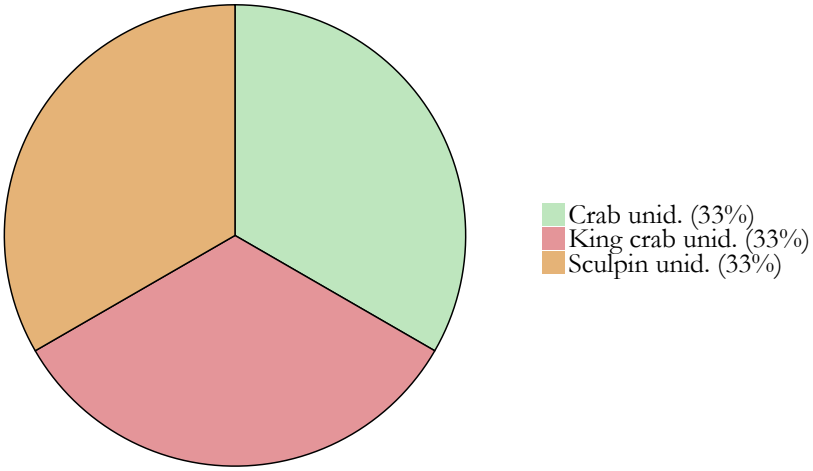
Summary - description of transect

Transect 2014-31: Primary and secondary substrates consisted of sand, gravel, and a few boulders. Fish and crab density was very low, 0.01 individuals/m^2. Structure-forming invertebrate habitat consisted of three Demospongiae and three Pennatulidae, resulting in a density of 0.01 individuals/m^2.

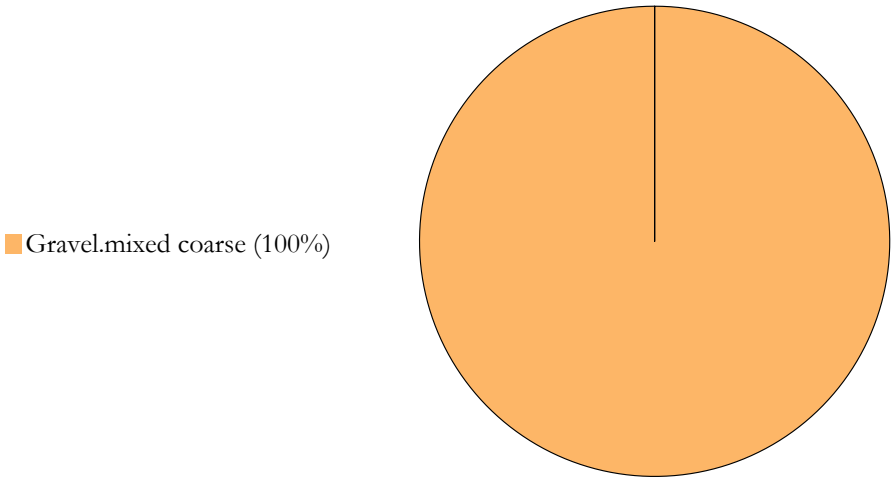
AREA: Bowers Bank — Transect 2014-32

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.17	-179.83	701	132	4.2

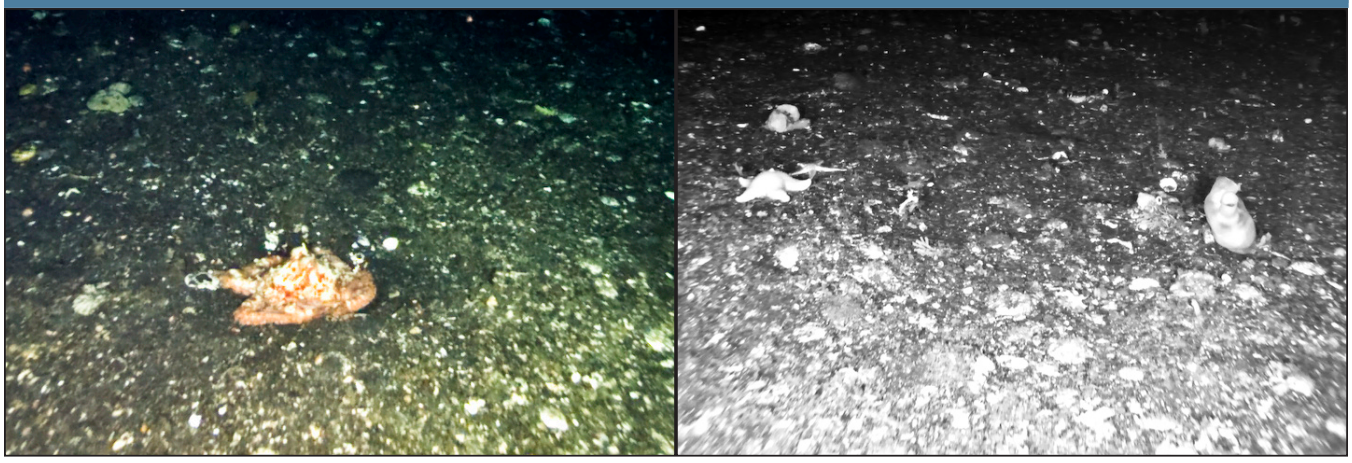
Fish and Crab Composition (n = 3)



Substrate Composition

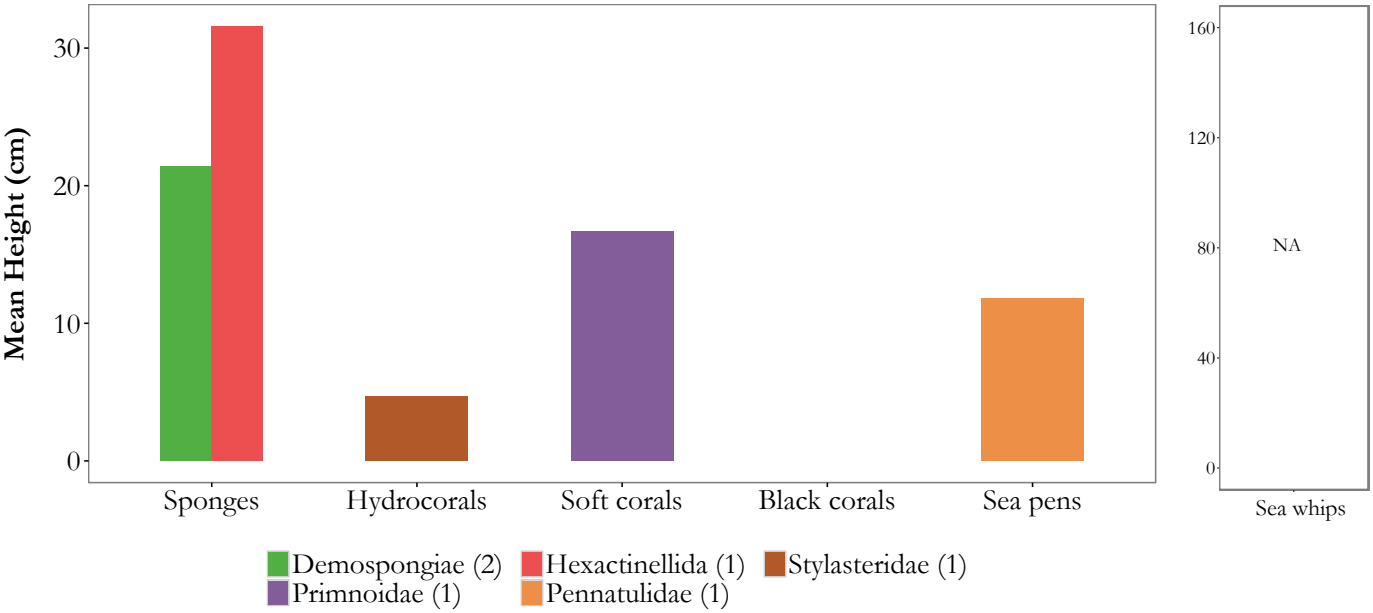


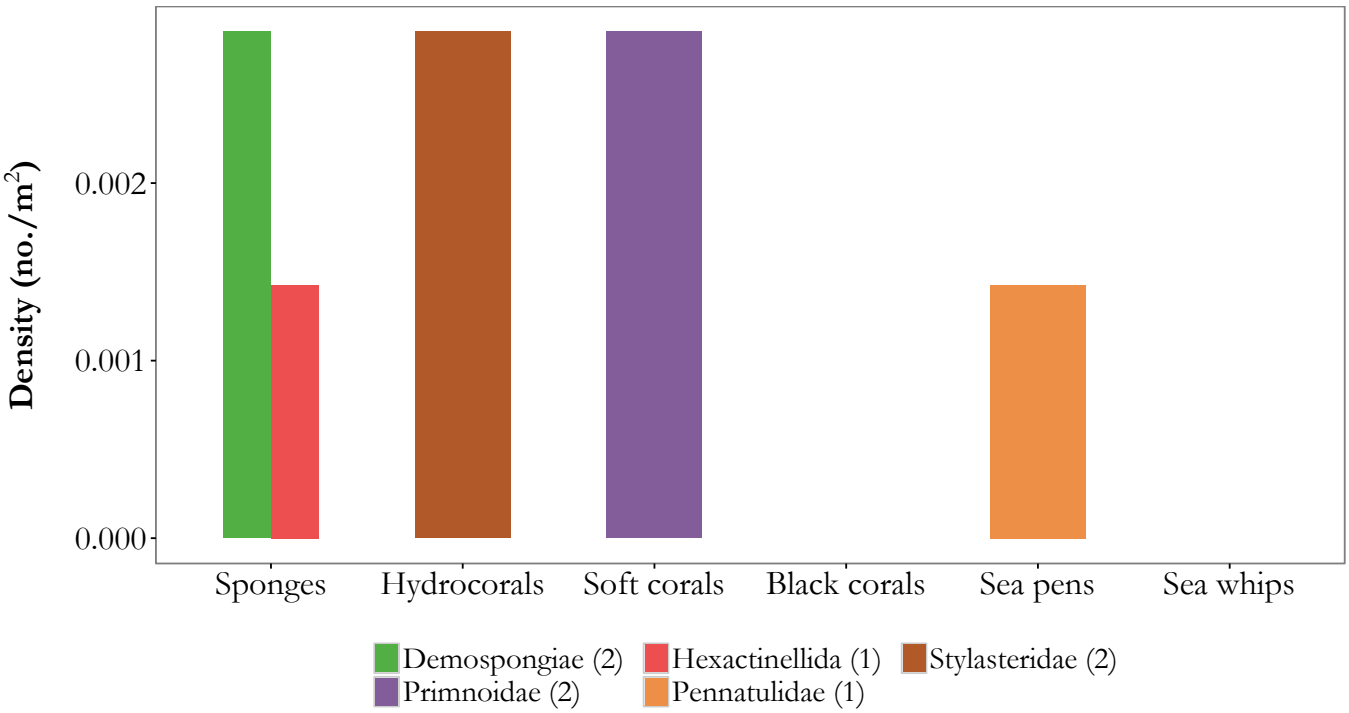
Images



AREA: Bowers Bank Transect 2014-32

Vertical Habitat Summary





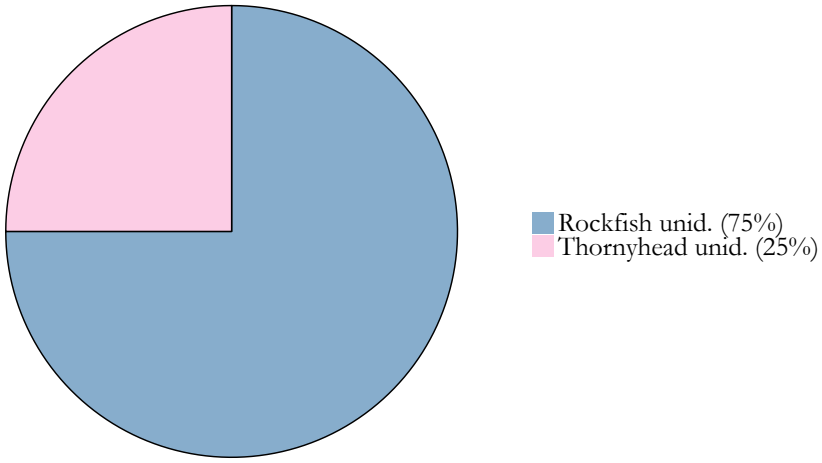
Summary - description of transect

Transect 2014-32: Primary and secondary substrates consisted of gravel and mixed coarse. Fish and crab density was very low, < 0.01 individuals/m^2. Structure-forming invertebrate density was also low, 0.01 individuals/m^2. Mean height was calculated for Demospongiae (21 cm).

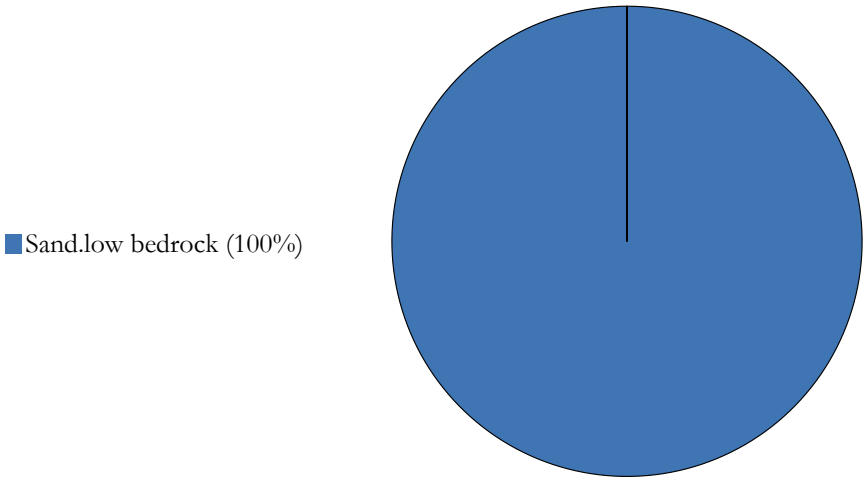
AREA: Bowers Bank — Transect 2014-33

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.17	-179.70	863	281	4.2

Fish and Crab Composition (n = 8)



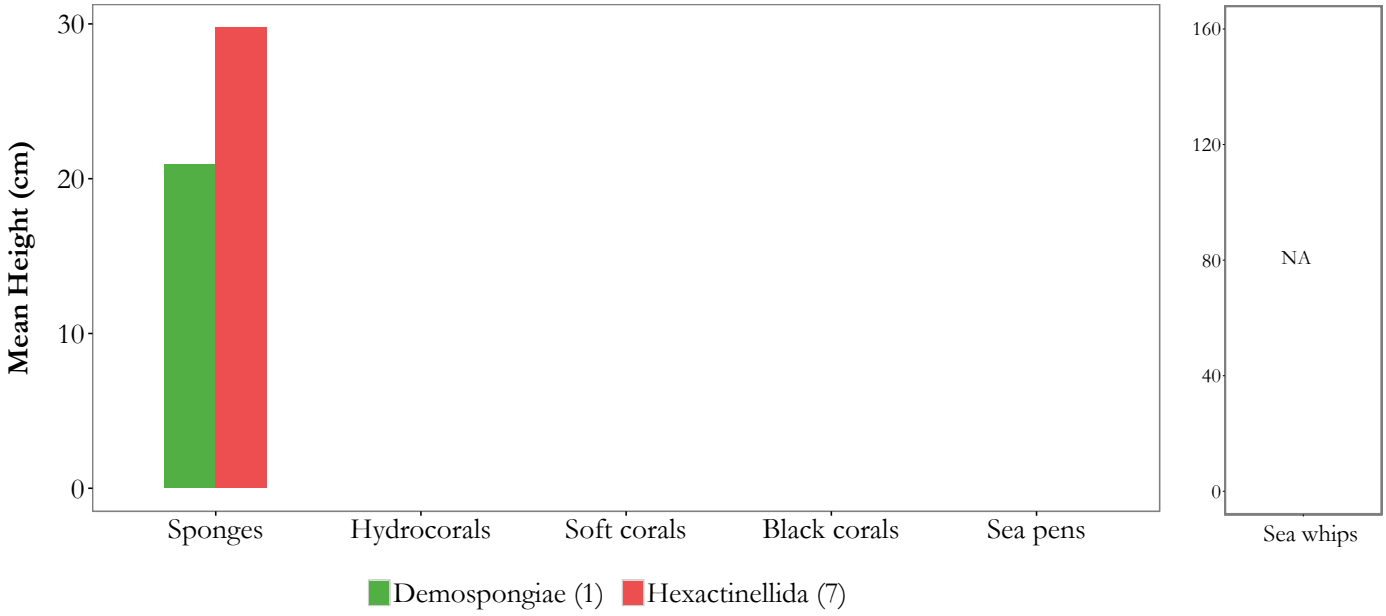
Substrate Composition

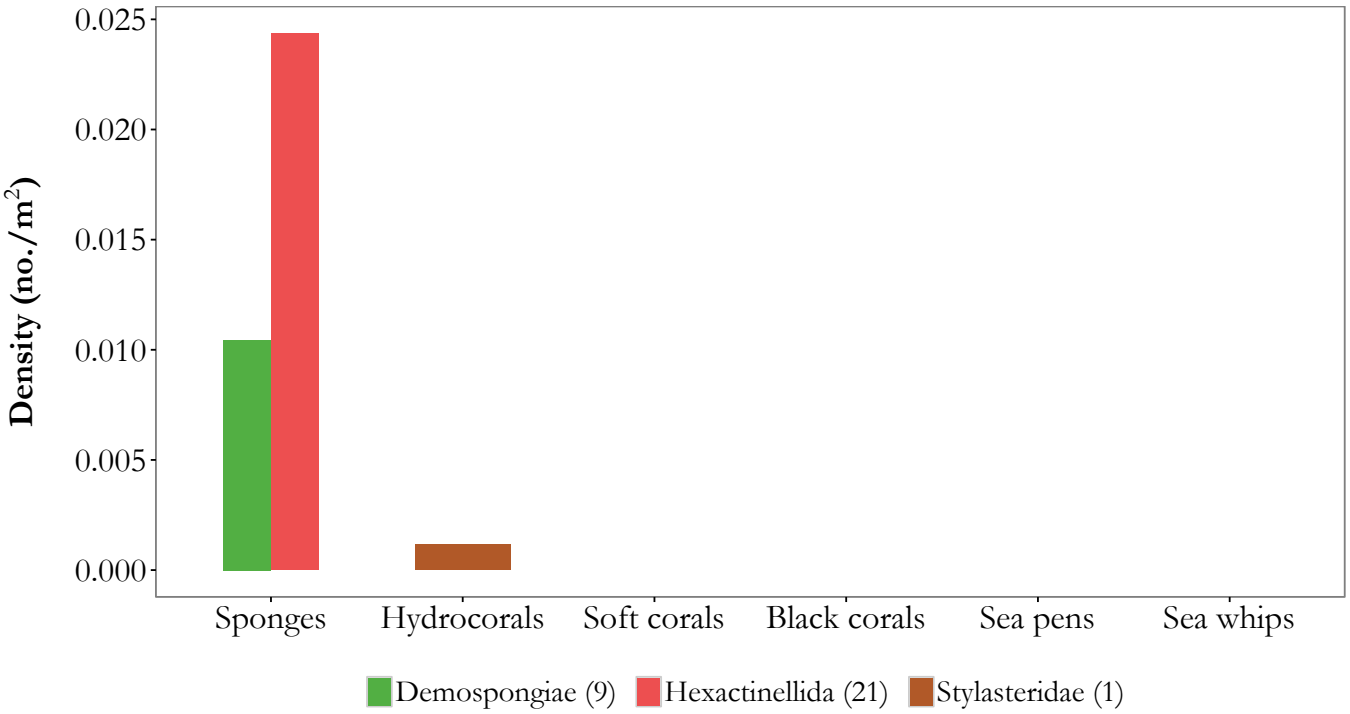


Images

AREA: Bowers Bank Transect 2014-33

Vertical Habitat Summary





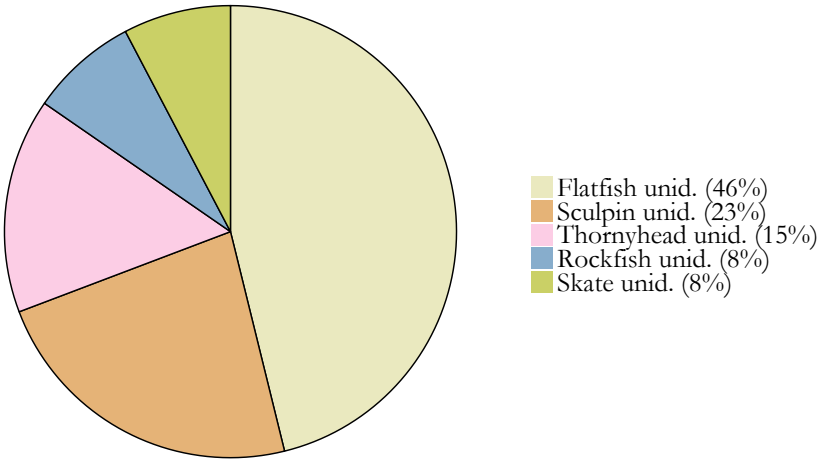
Summary - description of transect

Transect 2014-33: Primary and secondary substrates consisted of sand and bedrock. Fish density was very low, 0.01 individuals/m^2. Structure-forming invertebrate density was also low, 0.04 individuals/m^2. Mean height was calculated for Hexactinellida (30 cm).

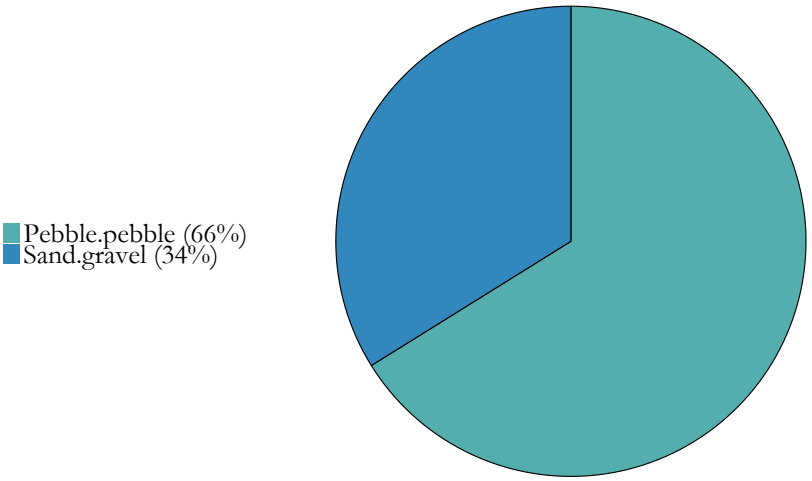
AREA: Bowers Bank — Transect 2014-34

Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.10	-179.75	1,552	239	4.2

Fish and Crab Composition (n = 13)



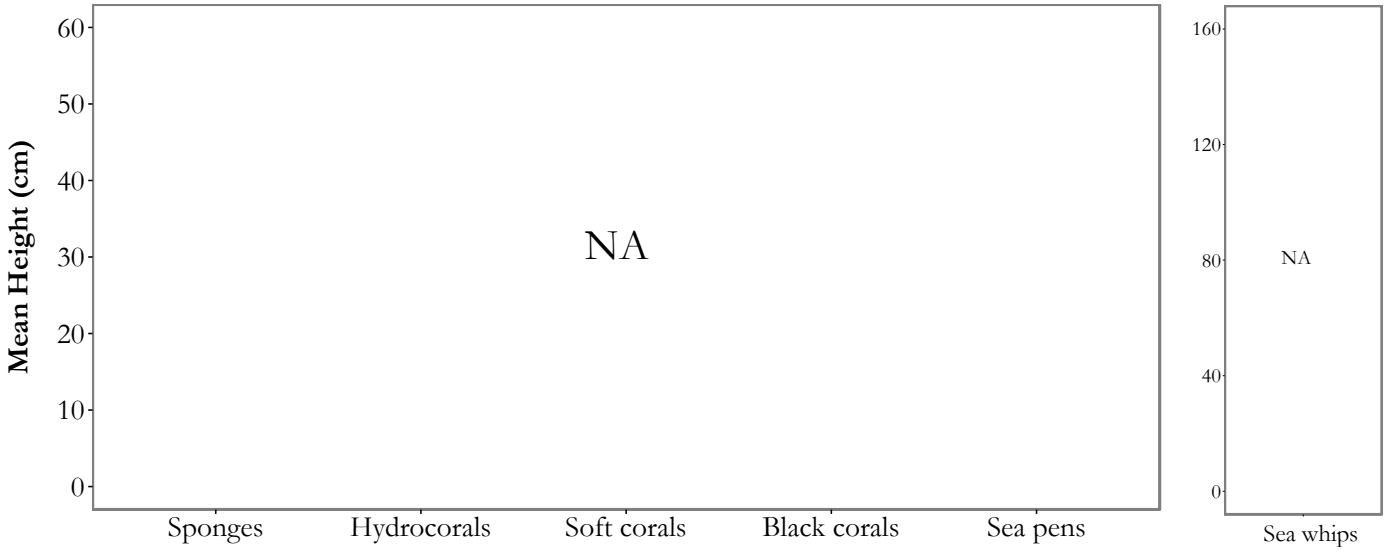
Substrate Composition

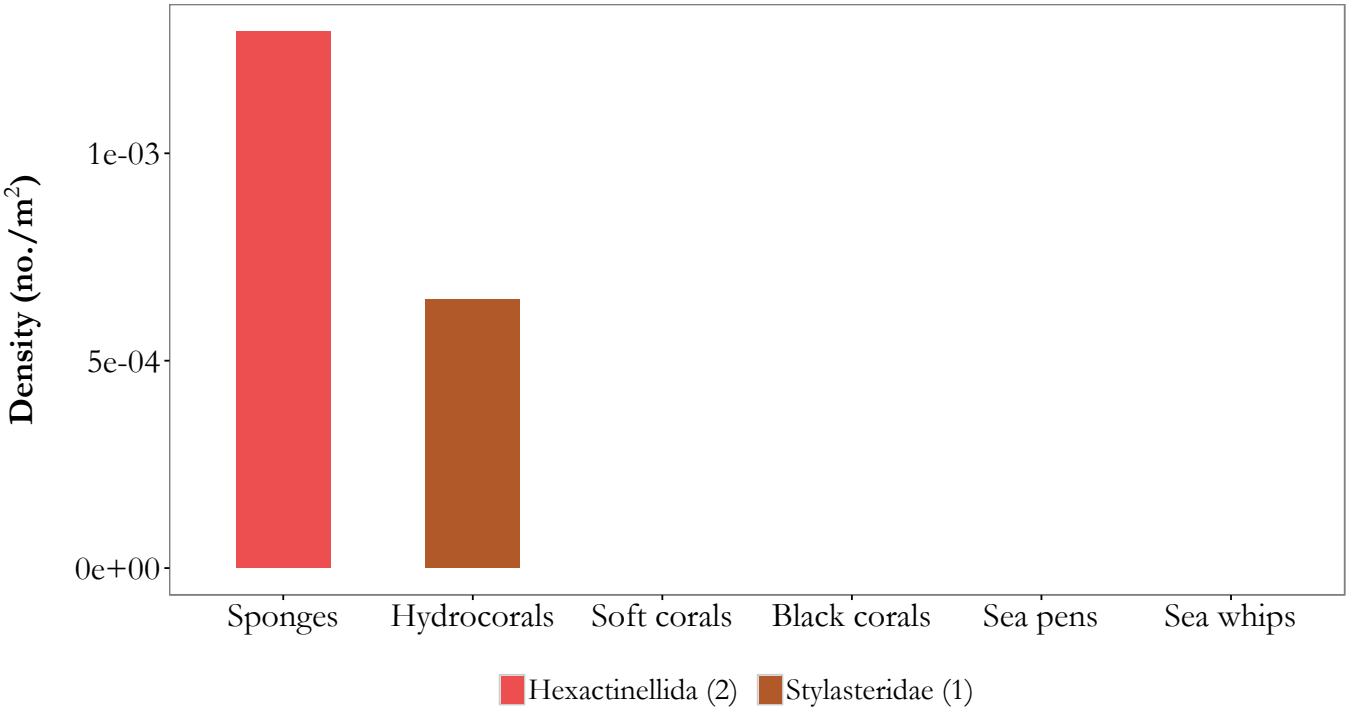


Images

AREA: Bowers Bank Transect 2014-34

Vertical Habitat Summary





Summary - description of transect

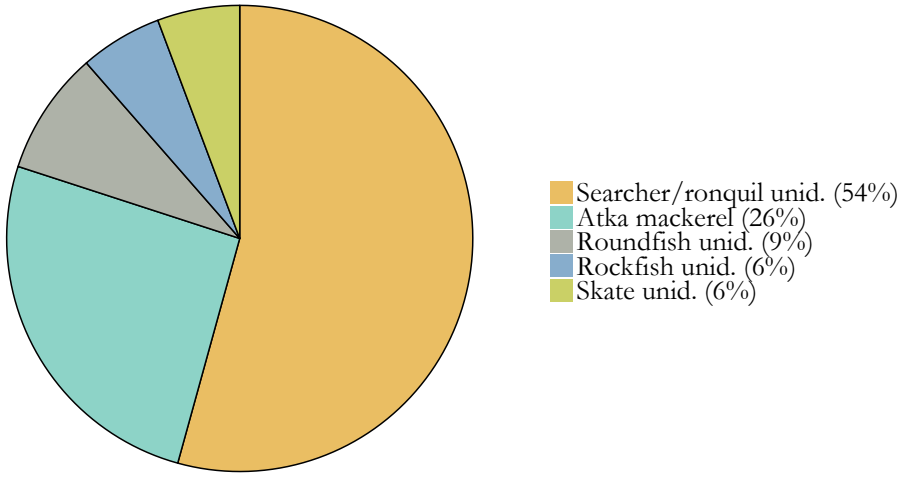
Transect 2013034: Primary and secondary substrates consisted of pebble, sand, and gravel. Fish density was low (0.01 individuals/m^2). Structure-forming invertebrate density was also low, < 0.01 individuals/m^2.

AREA: Bowers Bank — Transect *2014-35

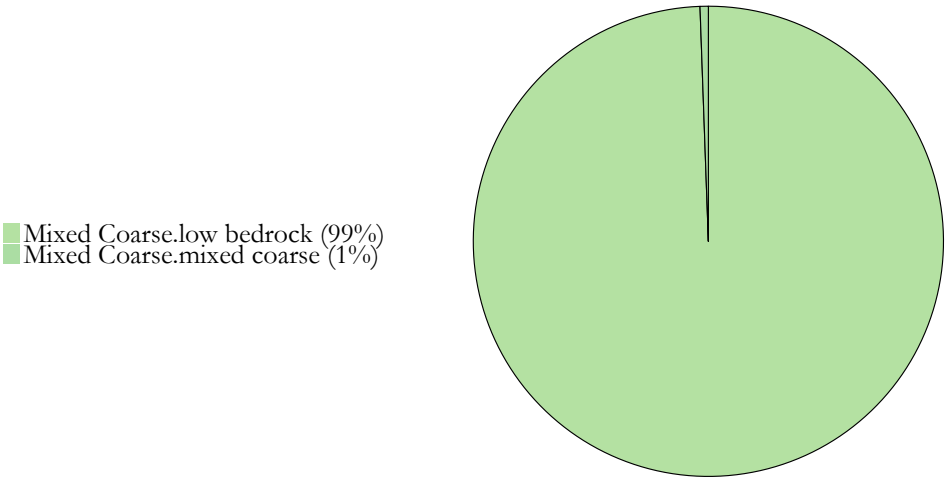
Date (mm/dd/yy)	Start Position (DD)		Area (m^2)	Mean Depth (m)	Mean Temp (°C)
5/2/2014	52.05	179.91	3,264	112	4.1

*Area of high coral or sponge density (> 1.0 individuals/m^2)

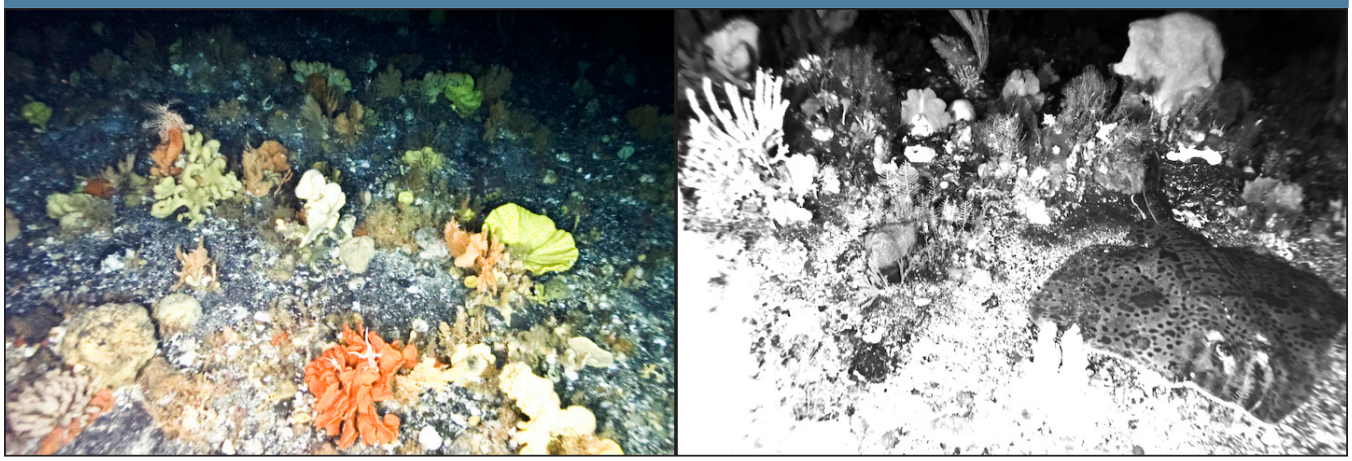
Fish and Crab Composition (n = 35)



Substrate Composition



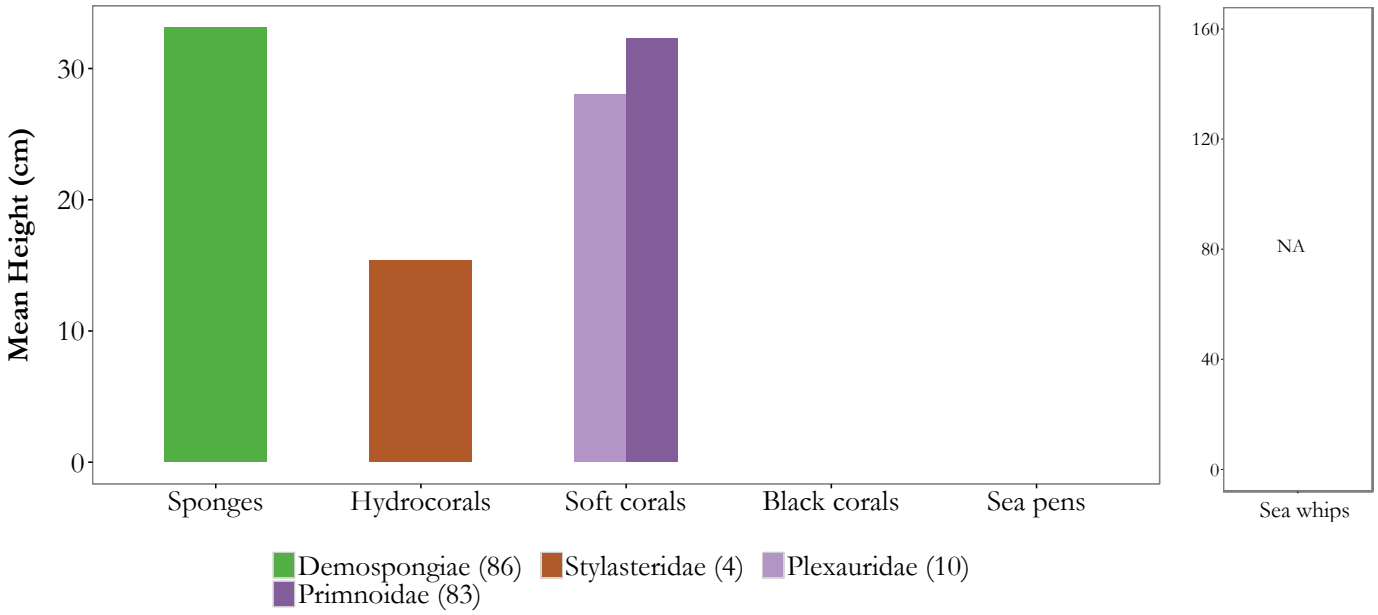
Images

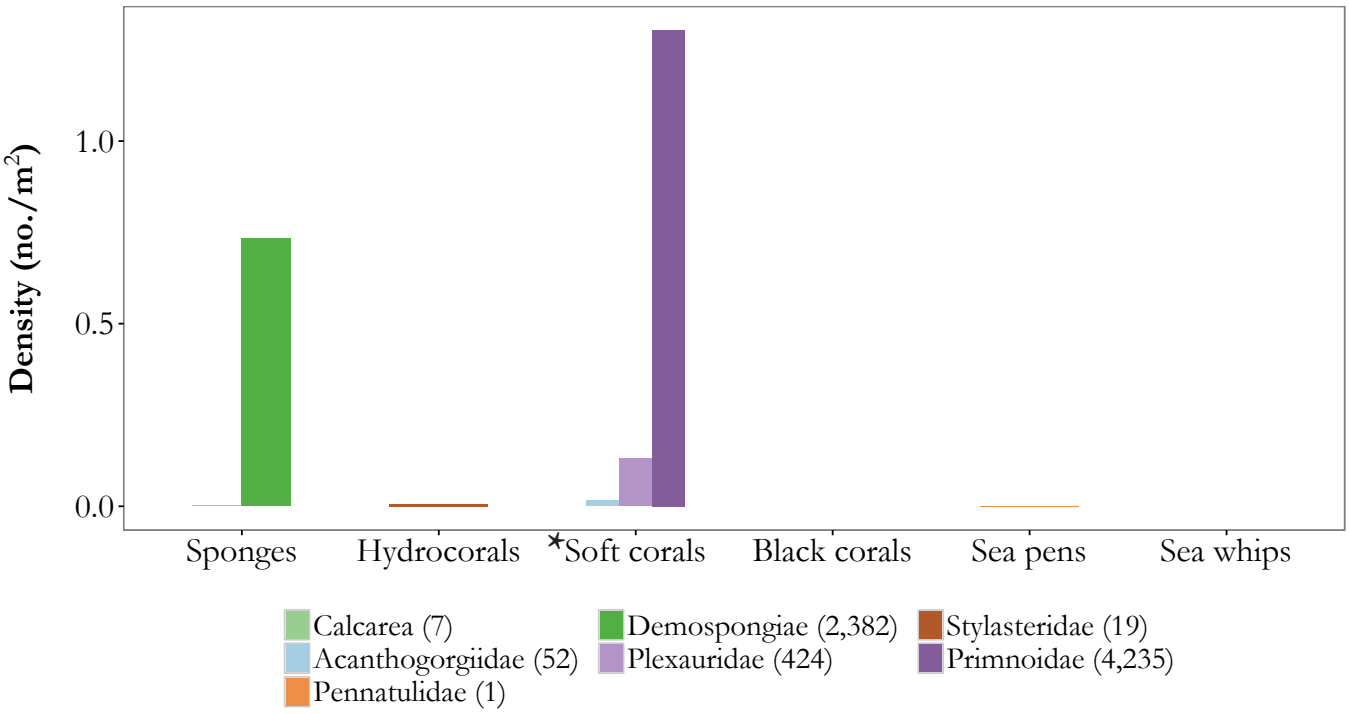


AREA: Bowers Bank Transect *2014-35

Vertical Habitat Summary

*Area of high coral or sponge density (> 1.0 individuals/m^2)





Summary - description of transect

Transect 2014-35: Primary and secondary substrates consisted of mixed coarse and bedrock. Fish density was low (0.01 individuals/m^2). Structure-forming invertebrates consisted largely of Primnoidae (1.30 individuals/m^2) and Demospongiae (0.73 individuals/m^2). Overall density was 2.19 individuals/m^2. Mean heights were calculated for Demospongiae (33 cm), Stylasteridae (15 cm), Plexauridae (28 cm), and Primnoidae (32 cm).

APPENDIX

Appendix Table A1. -- Aleutian Island 2012 and 2014 camera surveys transect data.

Survey Region	Year	Transect	Start Lat.	Start Long.	Distance (m)	Swath (m)	Area (m^2)	Depth (m)	Temp. (°C)
Akutan to Samalga	2012	1	54.08	-166.19	429	4.60	1,970	76	6.5
Akutan to Samalga	2012	2	54.03	-165.78	494	3.80	1,880	92	6.6
Akutan to Samalga	2012	3	53.95	-165.71	380	3.80	1,447	98	6.6
Akutan to Samalga	2012	4	53.86	-165.78	360	3.80	1,369	77	6.8
Akutan to Samalga	2012	5	53.77	-165.78	354	5.41	1,916	96	4.9
Akutan to Samalga	2012	6	53.73	-165.75	358	5.34	1,908	93	4.7
Akutan to Samalga	2012	7	53.72	-165.83	306	3.80	1,166	123	4.6
Akutan to Samalga	2012	8	53.85	-166.05	428	4.25	1,820	68	6.2
Akutan to Samalga	2012	9	53.95	-166.02	622	4.48	2,785	83	6.0
Akutan to Samalga	2012	10	53.96	-166.06	645	4.66	3,009	50	6.3
Akutan to Samalga	2012	11	53.92	-166.12	423	4.61	1,949	64	6.6
Akutan to Samalga	2012	12	53.45	-168.46	634	4.49	2,842	87	5.8
Akutan to Samalga	2012	13	53.47	-168.61	205	3.80	780	500	3.7
Akutan to Samalga	2012	14	53.37	-168.60	548	3.75	2,054	93	5.8
Akutan to Samalga	2012	15	53.35	-168.62	455	4.37	1,989	93	5.6
Akutan to Samalga	2012	16	53.32	-168.60	374	5.01	1,872	78	5.9
Akutan to Samalga	2012	17	53.31	-168.56	199	3.80	758	54	6.1
Samalga to Seguam	2012	18	52.92	-169.71	269	4.90	1,317	73	5.3
Samalga to Seguam	2012	19	52.91	-169.84	620	4.86	3,009	79	5.3
Samalga to Seguam	2012	20	52.29	-172.33	554	2.89	1,602	74	4.8
Samalga to Seguam	2012	21	52.21	-172.37	322	3.69	1,188	192	4.6
Samalga to Seguam	2012	22	52.22	-172.45	472	3.86	1,820	137	4.8
Samalga to Seguam	2012	23	52.22	-172.47	404	4.12	1,666	118	4.8
Samalga to Seguam	2012	24	52.24	-172.50	387	3.14	1,214	85	4.9
Samalga to Seguam	2012	25	52.16	-172.62	485	3.08	1,490	153	4.0
Samalga to Seguam	2012	26	52.16	-172.80	233	3.51	818	135	3.8
Samalga to Seguam	2012	27	52.25	-172.80	767	4.53	3,477	126	4.0
Samalga to Seguam	2012	28	52.27	-172.87	318	3.48	1,106	236	4.0
Samalga to Seguam	2012	29	52.22	-172.94	307	3.80	1,168	128	4.9
Seguam to Amchitka	2012	30	52.23	-173.02	355	3.07	1,091	126	4.4
Seguam to Amchitka	2012	31	51.87	-173.99	464	3.38	1,567	155	5.2
Seguam to Amchitka	2012	32	51.91	-174.09	531	3.80	2,015	101	5.1
Seguam to Amchitka	2012	33	51.93	-174.18	351	3.56	1,248	104	5.0
Seguam to Amchitka	2012	34	51.90	-174.29	483	3.97	1,916	117	4.9
Seguam to Amchitka	2012	35	51.92	-174.28	459	3.82	1,754	110	4.9
Seguam to Amchitka	2012	36	51.92	-174.29	415	3.64	1,511	110	5.0
Seguam to Amchitka	2012	37	51.93	-174.30	436	3.70	1,612	110	5.2
*Seguam to Amchitka	2012	38	52.03	-174.34	535	3.56	1,904	58	5.8
*Seguam to Amchitka	2012	39	51.99	-174.57	185	3.13	578	68	5.9
Seguam to Amchitka	2012	40	51.94	-174.66	467	3.95	1,847	95	5.6

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Appendix Table A1. -- Continued.

Survey Region	Year	Transect	Start Lat.	Start Long.	Distance (m)	Swath (m)	Area (m^2)	Depth (m)	Temp. (°C)
*Seguam to Amchitka	2012	41	51.95	-174.75	312	3.37	1,051	91	5.6
Seguam to Amchitka	2012	42	51.94	-174.78	520	3.36	1,750	94	5.6
*Seguam to Amchitka	2012	43	51.92	-174.98	316	3.11	983	110	5.1
Seguam to Amchitka	2012	44	51.74	-174.89	353	2.93	1,033	866	3.4
Seguam to Amchitka	2012	45	51.55	-178.39	1102	3.72	4,096	106	4.9
*Seguam to Amchitka	2012	46	51.50	-178.41	1006	3.56	3,579	80	4.5
Seguam to Amchitka	2012	47	51.52	-178.65	366	3.80	1,393	104	5.1
Seguam to Amchitka	2012	48	51.47	-178.87	167	3.23	540	555	3.7
Seguam to Amchitka	2012	49	51.38	-178.65	380	3.37	1,281	810	3.2
*Seguam to Amchitka	2012	50	51.30	-179.03	419	2.89	1,213	82	5.4
Seguam to Amchitka	2012	51	51.45	-179.07	274	1.92	526	701	3.1
Seguam to Amchitka	2012	52	51.58	-179.17	952	3.99	3,796	97	4.4
Bowers Bank	2012	53	52.77	-179.85	269	2.91	782	855	3.1
Bowers Bank	2012	54	52.85	-179.70	274	2.86	784	634	3.5
Bowers Bank	2012	55	52.86	-179.69	256	2.61	670	635	3.5
Bowers Bank	2012	56	53.01	-179.87	193	3.80	736	778	3.2
Bowers Bank	2012	57	53.20	-179.77	383	3.80	1,458	601	3.4
Bowers Bank	2012	58	53.24	-179.91	301	3.80	1,144	784	3.3
Bowers Bank	2012	59	54.86	178.84	424	3.80	1,613	745	3.2
Bowers Bank	2012	60	54.84	178.73	347	4.77	1,654	249	3.8
Bowers Bank	2012	61	54.77	178.69	423	4.38	1,852	332	3.8
Bowers Bank	2012	62	54.78	178.83	306	4.65	1,425	387	3.8
Bowers Bank	2012	63	54.65	179.22	358	4.15	1,484	307	3.8
Bowers Bank	2012	64	54.59	179.22	467	3.90	1,822	299	NA
Bowers Bank	2012	65	54.45	179.46	293	4.16	1,217	680	3.4
Bowers Bank	2012	66	54.46	179.52	213	3.74	797	188	3.5
*Bowers Bank	2012	67	54.40	179.61	380	3.80	1,447	132	3.0
Bowers Bank	2012	68	54.32	179.62	329	3.80	1,251	142	2.8
Bowers Bank	2012	69	54.11	179.75	445	4.53	2,018	424	3.8
Bowers Bank	2012	70	53.98	179.90	398	3.80	1,513	282	3.8
Bowers Bank	2012	71	53.92	179.78	237	2.80	662	485	3.6
Seguam to Amchitka	2012	72	51.81	-177.63	384	2.81	1,079	165	4.8
Seguam to Amchitka	2012	73	51.96	-176.45	410	3.05	1,254	85	5.4
Seguam to Amchitka	2012	74	51.93	-176.08	630	2.68	1,690	56	5.9
Seguam to Amchitka	2012	75	52.01	-175.86	341	2.49	848	109	5.0
Seguam to Amchitka	2012	76	52.15	-174.75	587	2.68	1,577	86	5.7
Seguam to Amchitka	2012	77	52.14	-174.69	376	2.65	995	52	6.6
Seguam to Amchitka	2012	78	52.28	-174.70	396	2.11	837	121	4.7
Seguam to Amchitka	2012	79	52.17	-173.86	449	3.00	1,343	79	5.7
Seguam to Amchitka	2012	80	52.25	-173.57	332	1.96	649	105	5.3
Seguam to Amchitka	2012	81	52.27	-173.45	444	1.87	831	124	3.8
Seguam to Amchitka	2012	82	52.20	-173.33	411	2.78	1,143	90	4.9

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Appendix Table A1. -- Continued.

Survey Region	Year	Transect	Start Lat.	Start Long.	Distance (m)	Swath (m)	Area (m^2)	Depth (m)	Temp. (°C)
Seguam to Amchitka	2012	83	52.29	-173.27	372	2.52	937	440	3.7
Seguam to Amchitka	2012	84	52.28	-173.24	338	2.47	833	309	3.9
Samalga to Seguam	2012	85	52.35	-172.83	351	2.69	945	704	3.3
Samalga to Seguam	2012	86	52.82	-170.70	928	3.24	3,004	463	3.5
Samalga to Seguam	2012	87	52.68	-170.80	1121	2.93	3,283	108	4.4
Samalga to Seguam	2012	88	52.72	-170.66	1476	2.80	4,135	84	4.4
Samalga to Seguam	2012	89	52.74	-170.58	1002	3.34	3,342	111	3.6
Samalga to Seguam	2012	90	52.58	-170.61	890	2.84	2,529	96	5.1
Samalga to Seguam	2012	91	52.59	-170.35	567	2.25	1,275	370	3.8
Samalga to Seguam	2012	92	52.57	-170.14	753	2.49	1,874	257	4.1
Samalga to Seguam	2012	93	52.49	-170.01	186	3.80	708	226	4.7
*Samalga to Seguam	2012	94	52.53	-169.77	681	3.22	2,192	170	4.8
Samalga to Seguam	2012	95	52.52	-169.77	488	3.25	1,588	194	4.8
Samalga to Seguam	2012	96	52.50	-169.68	231	3.30	763	244	4.7
Samalga to Seguam	2012	97	52.43	-169.61	558	2.86	1,594	393	4.1
Akutan to Samalga	2012	98	53.40	-167.74	628	3.06	1,922	70	6.6
Akutan to Samalga	2012	99	53.46	-167.64	367	3.80	1,395	120	6.0
Akutan to Samalga	2012	100	53.62	-168.05	340	1.82	618	690	3.3
Akutan to Samalga	2012	101	53.66	-167.46	379	3.57	1,353	140	5.2
Akutan to Samalga	2012	102	53.86	-167.32	246	2.63	646	715	3.2
*Akutan to Samalga	2012	103	53.93	-167.11	366	3.35	1,225	94	5.5
*Akutan to Samalga	2012	104	54.01	-166.94	188	3.24	610	192	4.0
Akutan to Samalga	2012	105	54.05	-166.81	491	2.24	1,101	394	3.7
Akutan to Samalga	2012	106	54.07	-166.80	434	2.07	901	604	3.4
Akutan to Samalga	2014	1	53.13	-168.85	632	2.44	1,545	83	4.4
Akutan to Samalga	2014	2	53.15	-168.88	613	2.70	1,654	280	4.0
Akutan to Samalga	2014	3	53.01	-169.05	887	3.82	3,385	72	4.4
Akutan to Samalga	2014	4	52.86	-169.31	322	4.45	1,433	88	4.4
*Samalga to Seguam	2014	5	52.92	-169.57	301	3.01	905	80	4.3
*Samalga to Seguam	2014	6	53.03	-169.55	128	4.01	513	88	4.0
Samalga to Seguam	2014	7	53.00	-169.79	205	4.67	955	82	4.1
*Samalga to Seguam	2014	8	52.86	-171.17	796	4.31	3,430	214	4.0
*Samalga to Seguam	2014	9	52.90	-171.29	477	3.87	1,846	243	4.0
*Samalga to Seguam	2014	10	52.83	-171.36	206	3.86	793	170	4.0
*Samalga to Seguam	2014	11	52.78	-171.56	116	3.45	400	193	4.0
*Samalga to Seguam	2014	12	52.78	-171.26	352	4.42	1,555	147	4.1
Samalga to Seguam	2014	13	52.78	-171.19	101	3.23	326	189	4.1
Samalga to Seguam	2014	14	52.61	-171.20	218	4.43	965	495	3.5
Samalga to Seguam	2014	15	52.45	-172.50	629	3.68	2,313	125	4.3
Samalga to Seguam	2014	16	52.45	-172.50	480	3.80	1,824	116	4.3
Samalga to Seguam	2014	17	52.44	-172.50	472	2.90	1,368	111	4.4
Samalga to Seguam	2014	18	52.45	-172.35	531	3.76	1,994	144	4.1

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Appendix Table A1. -- Continued.

Survey Region	Year	Transect	Start Lat.	Start Long.	Distance (m)	Swath (m)	Area (m^2)	Depth (m)	Temp. (°C)
Samalga to Seguam	2014	19	52.60	-172.37	465	3.86	1,794	224	4.0
Amchitka to Buldir	2014	20	51.64	179.17	223	4.78	1,064	595	3.3
Amchitka to Buldir	2014	21	51.61	179.11	305	4.07	1,241	327	3.7
*Amchitka to Buldir	2014	22	51.48	179.29	569	5.40	3,074	212	4.0
Bowers Bank	2014	23	52.01	179.72	932	4.53	4,226	63	4.3
Bowers Bank	2014	24	52.05	-179.79	188	3.59	675	296	4.1
*Bowers Bank	2014	25	52.59	-179.49	576	3.54	2,042	116	3.9
Bowers Bank	2014	26	52.58	-179.51	653	4.48	2,926	107	4.0
*Bowers Bank	2014	27	52.58	-179.54	639	4.94	3,153	102	4.0
*Bowers Bank	2014	28	52.56	-179.51	667	4.40	2,937	104	4.0
Bowers Bank	2014	29	52.55	-179.87	137	4.09	559	794	3.1
Bowers Bank	2014	30	52.36	179.92	257	3.80	978	126	4.2
Bowers Bank	2014	31	52.33	179.74	217	4.72	1,026	133	4.2
Bowers Bank	2014	32	52.17	-179.83	210	3.34	701	132	4.2
Bowers Bank	2014	33	52.17	-179.70	192	4.49	863	281	4.2
Bowers Bank	2014	34	52.10	-179.75	418	3.71	1,552	239	4.2
*Bowers Bank	2014	35	52.05	179.91	647	5.05	3,264	112	4.1
*Amchitka to Buldir	2014	36	51.30	179.36	297	5.14	1,527	99	4.2
*Amchitka to Buldir	2014	37	51.28	179.28	231	5.05	1,166	98	4.2
Amchitka to Buldir	2014	38	51.38	178.77	128	5.17	660	494	3.3
*Amchitka to Buldir	2014	39	51.43	178.92	199	5.74	1,142	96	4.0
*Amchitka to Buldir	2014	40	51.46	178.84	327	4.87	1,592	104	4.0
*Amchitka to Buldir	2014	41	51.53	178.61	392	5.21	2,041	119	4.0
*Amchitka to Buldir	2014	42	51.54	178.56	462	5.55	2,560	108	4.0
Amchitka to Buldir	2014	43	51.73	178.32	152	5.22	793	85	4.0
Amchitka to Buldir	2014	44	51.80	178.03	554	5.32	2,950	100	4.0
Amchitka to Buldir	2014	45	51.81	177.97	88	4.73	415	99	3.9
Amchitka to Buldir	2014	46	51.93	177.89	672	4.68	3,149	107	3.9
Amchitka to Buldir	2014	47	52.09	177.53	243	3.39	822	47	4.2
*Amchitka to Buldir	2014	48	52.06	177.23	171	5.39	922	80	4.0
*Amchitka to Buldir	2014	49	52.08	176.92	475	4.89	2,323	118	3.8
*Amchitka to Buldir	2014	50	52.10	176.77	408	4.50	1,837	90	3.8
*Amchitka to Buldir	2014	51	51.99	176.83	765	4.80	3,669	105	3.8
*Amchitka to Buldir	2014	52	51.95	176.57	179	4.79	857	100	3.8
Amchitka to Buldir	2014	53	51.87	176.38	255	4.86	1,239	233	3.7
Amchitka to Buldir	2014	54	51.73	175.78	517	5.28	2,735	84	4.0
Amchitka to Buldir	2014	55	51.79	175.62	291	5.05	1,467	110	3.9
*Amchitka to Buldir	2014	56	51.81	175.63	59	5.29	315	106	3.9
Buldir to Near	2014	57	52.20	173.81	281	3.35	940	96	3.3
*Buldir to Near	2014	58	52.25	173.91	294	4.40	1,296	103	3.5
Buldir to Near	2014	59	52.40	174.10	168	4.36	734	129	3.5
Buldir to Near	2014	60	52.40	174.08	315	3.69	1,165	128	3.5

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Appendix Table A1. -- Continued.

Survey Region	Year	Transect	Start Lat.	Start Long.	Distance (m)	Swath (m)	Area (m^2)	Depth (m)	Temp. (°C)
Buldir to Near	2014	61	52.40	173.99	222	3.15	700	119	3.2
Buldir to Near	2014	62	52.36	173.87	398	4.24	1,688	96	3.1
Buldir to Near	2014	63	52.40	173.88	249	3.80	946	113	3.2
Buldir to Near	2014	64	52.45	173.78	68	3.80	259	75	3.4
Buldir to Near	2014	65	52.47	174.03	36	3.80	137	125	3.1
Buldir to Near	2014	66	52.46	174.11	21	3.80	80	116	3.0
Buldir to Near	2014	67	52.53	174.07	144	2.61	375	120	3.1
Buldir to Near	2014	68	52.57	174.12	137	3.67	504	120	3.0
Buldir to Near	2014	69	52.66	174.25	333	3.39	1,130	56	3.3
Buldir to Near	2014	70	52.70	174.30	217	5.14	1,115	116	3.2
Buldir to Near	2014	71	52.70	174.34	263	6.32	1,664	87	3.2
Buldir to Near	2014	72	52.77	173.04	380	3.08	1,171	71	3.5
*Buldir to Near	2014	73	52.71	173.15	557	3.53	1,967	88	3.4
Buldir to Near	2014	74	52.65	173.04	606	3.39	2,055	106	3.4
Buldir to Near	2014	75	52.66	172.86	570	3.26	1,860	134	3.6
Buldir to Near	2014	76	52.75	172.84	434	3.80	1,649	78	3.4
*Buldir to Near	2014	77	52.76	172.80	543	3.53	1,920	65	3.4
Buldir to Near	2014	78	52.76	172.74	323	3.84	1,242	97	3.4
Buldir to Near	2014	79	52.86	172.56	281	3.80	1,068	111	3.5
Buldir to Near	2014	80	52.90	172.30	360	4.38	1,578	126	3.7
Buldir to Near	2014	81	52.93	172.19	230	3.80	875	389	3.8
Buldir to Near	2014	82	52.97	172.08	219	4.30	944	576	3.6
Buldir to Near	2014	83	53.26	170.66	403	4.45	1,794	216	3.8
Buldir to Near	2014	84	53.06	172.86	512	4.08	2,091	88	3.5
Buldir to Near	2014	85	53.04	172.89	431	3.80	1,639	80	3.6
Buldir to Near	2014	86	53.01	173.07	483	3.61	1,742	118	3.6
Buldir to Near	2014	87	52.97	173.30	326	3.89	1,269	485	3.8
*Buldir to Near	2014	88	52.87	173.45	427	4.26	1,818	94	3.6
Buldir to Near	2014	89	52.87	173.51	160	4.36	699	106	3.5
Buldir to Near	2014	90	52.85	173.71	298	5.50	1,638	118	3.5
Buldir to Near	2014	91	52.84	173.71	384	3.80	1,462	116	3.5
Buldir to Near	2014	92	52.56	173.59	398	3.80	1,513	126	3.2
Buldir to Near	2014	93	52.56	173.56	376	3.80	1,429	124	3.1
Buldir to Near	2014	94	52.58	173.44	305	4.22	1,287	140	3.1
Buldir to Near	2014	95	52.59	173.32	305	2.99	913	85	3.2
Buldir to Near	2014	96	52.62	173.27	278	3.41	949	86	3.4
Buldir to Near	2014	97	52.61	173.23	271	3.80	1,030	82	NA
Buldir to Near	2014	98	52.55	173.15	350	3.45	1,206	101	3.5
Samalga to Seguam	2014	99	52.62	-172.31	912	4.05	3,694	326	3.9
*Samalga to Seguam	2014	100	52.56	-172.17	363	4.04	1,464	372	3.8
Samalga to Seguam	2014	101	52.47	-172.16	706	3.66	2,582	273	4.1
Samalga to Seguam	2014	102	52.48	-172.11	680	3.64	2,477	296	4.2

*Area of high coral or sponge density (> 1.0 individuals/m^2)

Appendix Table A1. -- Continued.

Survey Region	Year	Transect	Start Lat.	Start Long.	Distance (m)	Swath (m)	Area (m^2)	Depth (m)	Temp. (°C)
Samalga to Seguam	2014	103	52.37	-172.07	487	2.53	1,234	372	4.3
Samalga to Seguam	2014	104	52.24	-172.09	248	3.36	836	337	4.4
Samalga to Seguam	2014	105	52.12	-171.99	649	3.80	2,469	211	4.3
Samalga to Seguam	2014	106	52.09	-171.88	481	4.00	1,927	141	4.5
Samalga to Seguam	2014	107	52.09	-171.82	317	4.09	1,295	141	4.4
Samalga to Seguam	2014	108	52.08	-171.95	366	3.56	1,305	325	4.6
Samalga to Seguam	2014	109	52.09	-172.12	402	4.34	1,744	228	4.5
*Samalga to Seguam	2014	110	52.04	-172.10	474	4.10	1,943	116	4.6

*Area of high coral or sponge density (> 1.0 individuals/m^2)

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