

SGaan Kinghlas-Bowie Seamount Marine Protected Area Species Inventory: Chordata

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ABSTRACT

Gauthier, M., Curtis, J.M.R., Gale, K.S.P. and Haggarty, D.R. 2018. SGaan Kinghlas-Bowie Seamount Marine Protected Area Species Inventory: Chordata. Can. Tech. Rep. Fish. Aquat. Sci. 3197: vi + 48 p.

Bowie Seamount or SGaan Kinghlas (the traditional Haida First Nation name) is an isolated biodiversity hotspot located within the Exclusive Economic Zone (EEZ) waters of Canada in the Northeast Pacific Ocean. In 2008, Bowie seamount was protected in the SGaan Kinghlas-Bowie Seamount Marine Protected Area (SK-B MPA) under Canada's Oceans Act. In order to characterize the biodiversity of Bowie Seamount, Fisheries and Oceans Canada (DFO) led three expeditions (DFO Science Cruise Number PAC 2000-031, PAC 2011-062, PAC 2015-048) to survey the benthic communities using submersible in 2000; a Remotely Operated Vehicle (ROV) and an Autonomous Underwater Vehicle (AUV) in 2011; and a tow-camera system in 2015. The 2000 survey was focused on benthic rockfishes, but collected information on habitat and invertebrates as well. A submersible was used to survey between 53-306 m. Longline surveys also occurred to look at fish health and biological traits. The 2011 survey aimed to document the habitats and species on SK-B Seamount and collected benthic imagery using a ROV (28-272 m) and an AUV (180-933 m). The main objective of the 2015 survey was to document benthic biodiversity in the deeper (> 200 m) areas of Bowie and Hodgkins Seamounts. In total, 17 transects were completed between 249 m and 1246 m depth. In total, 49 taxa in the phylum Chordata were observed in the SK-B MPA using the visual surveys. Here we provide a complete list of species observed on the three surveys, and documented in previous reports. We document each record with photographs, whether the species has been previously observed at SK-B MPA, the surveys and depth range the observations were made from, and additional notes. Two companion reports document the invertebrate and algae species observed in the SK-B MPA.

RÉSUMÉ

Gauthier, M., Curtis, J.M.R., Gale, K.S.P. and Haggarty, D.R. 2018. Inventaire des espèces résidant dans les zones de protection marine du mont sous-marin Bowie (SGaan Kinghlas) : cordés. Can. Tech. Rep. Fish. Aquat. Sci. 3197: vi + 48 p.

Le mont sous-marin Bowie ou SGaan Kinghlas (nom traditionnel de la Première Nation Haïda) constitue une zone prioritaire (pour la biodiversité) isolée, située dans les eaux de la zone économique exclusive (ZEE) du Canada, dans le nord-est de l'océan Pacifique. En 2008, la protection du mont sous-marin Bowie a été officialisée par la désignation de la zone de protection marine du mont sous-marin Bowie (SGaan Kinghlas) [ZPM SK-B] en vertu de la Loi sur les océans du Canada. Afin de caractériser la biodiversité du mont sous-marin Bowie, Pêches et Océans Canada (MPO) a dirigé trois expéditions (campagnes scientifiques du MPO nos PAC 2000-031, PAC 2011-062, PAC 2015-048) ayant pour objectif l'étude des communautés benthiques, au moyen d'un engin sous-marin, en 2000; d'un véhicule sous-marin téléguidé (VTG) et d'un véhicule sous-marin autonome (VSA), en 2011; et d'une caméra sous-marine, en 2015. La campagne scientifique de 2000 était axée sur les sébastes (benthiques), mais elle a aussi permis de recueillir des renseignements quant à l'habitat et aux invertébrés. Un engin sous-marin a été utilisé pour effectuer des levés à une profondeur de 53 à 306 m. Des relevés à la palangre ont également été réalisés afin d'observer l'état de santé des poissons ainsi que leurs caractéristiques biologiques. L'étude de 2011 visait la documentation des habitats et des espèces présentes au mont sous-marin SK-B et a permis de recueillir de l'imagerie benthique au moyen d'un VTG (28 à 272 m) et d'un VSA (180 à 933 m). Le principal objectif de la campagne réalisée en 2015 était de documenter la biodiversité benthique des zones plus profondes (> 200 m) des monts sous-marins Bowie et Hodgkins. Au total, des relevés ont été effectués dans 17 transects à une profondeur allant de 249 à 1246 m. Au total, 49 taxons dans le phylum des cordés ont été observés dans la ZPM SK-B, par des relevés visuels. Dans ce document, nous fournissons une liste complète des espèces observées lors des trois relevés et documentées dans les rapports précédents. Nous documentons chaque fiche à l'aide de photographies et indiquons si les espèces ont été observées précédemment dans la ZPM SK-B; nous mentionnons les relevés et les tranches d'eau pour lesquelles des observations ont été effectuées, et offrons des remarques supplémentaires. Deux rapports complémentaires documentent les espèces d'invertébrés et d'algues observées dans la ZPM SK-B.

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INTRODUCTION

Bowie Seamount or SGaan Kinghlas (SK-B Seamount) is located within Canada's national waters. SGaan Kinghlas is the traditional Haida First Nation name. It is situated 180 km west of Haida Gwaii in Canada's Exclusive Economic Zone (200 nautical miles from the coast). Bowie Seamount is at the southern end of a seamount chain extending from the Aleutian trench in Alaska. It is shallower and younger than other seamounts within the chain. Although the seamount reaches depths of 3,000 metres, its peak is estimated to be 24 metres below the water's surface. Also, it is estimated to be less than a million years old (Canessa et al. 2003). In 2008, SK-B Seamount, along with two deeper, adjacent seamounts, Hodgkins and Davidson Seamounts, were protected under Canada's Oceans Act in the SGaan Kinghlas-Bowie Seamount Marine Protected Area (SK-B MPA) (Figure 1, Figure 2). These seamounts were targeted for protection in an MPA because seamounts are areas of higher biodiversity compared to surrounding ocean. This increased biodiversity is a consequence of nutrient rich waters being brought to the surface through upwelling as well as providing physical habitat (Canessa et al. 2003).

Sporadic surveys have taken place on SGaan Kinghlas-Bowie Seamount since the 1940s, for geological, biological, and naval purposes (see Gale et al. 2017 for summary). Information on target and non-target fish and non-target invertebrate species is available from commercial fishery records, as well as SCUBA dive, submersible, and remotely operated vehicle (ROV) surveys (Canessa et al. 2003).

Fisheries and Oceans Canada (DFO) carried out benthic video surveys in 2000 (Yamanaka 2005), in 2011 (unpublished) and 2015 (Gale et al. 2017). All three surveys took place on board the CCGS *John P. Tully* (Figure 2). The 2000 survey was from July 31st to August 14th (PAC 2000-031). Although the survey was focused on benthic rockfishes, they collected information on all fishes, habitat and invertebrates using video from a human occupied submersible (*Delta* submersible). They also did a longline survey to collect data on fish health and biological traits, collected oceanographic information (CTD and bongo nets), and recorded seabird and mammal observations (Yamanaka 2005). The depths surveyed by submersible ranged from 53-306 m in depth. The 2011 survey, July 19th to August 5th (PAC 2011-062), was led by James Boutillier (Pacific Biological Station, DFO), and was a joint venture between DFO and the United States (US) National Oceanic and Atmospheric Administration (NOAA) and aimed to document the habitats and species on SGaan Kinghlas-Bowie Seamount. The 2011 survey collected benthic imagery using DFO's Phantom ROV (video and photos; survey range 28-272 m) and NOAA's SeaBED AUV (photos; 180-933 m) (unpublished data).

With the exception of the photos taken during the deep AUV dives in 2011, all of the previous visual surveys of benthic communities at SK-B Seamount were restricted to shallow areas around the plateau at depths less than about 300 m (Figure 2c). No visual surveys have previously been done anywhere on Hodgkins or Davidson Seamounts and little was known of the species composition and diversity in the deeper areas of SK-B MPA. Therefore a survey was completed July 4th to July 21st, 2015 (PAC2015-048), using a tow-camera system to survey deeper regions in the SK-B MPA. Goals of this survey were to characterize the deeper biodiversity at SK-B Seamount. The depth range surveyed was from 249 m to 1246 m, although the majority of the area surveyed was below 500 m (Gale et al. 2017).

OBJECTIVE

We present a complete inventory of taxa that have to date been found at SK-B MPA as determined by the three visual surveys described above. We provide a summary of all taxa detected in the SK-B MPA, their scientific and common names, survey photographs, transect information, depth ranges observed at, and our degree of confidence with the observation. The 2011 and 2015 surveys went through a thorough quality assurance/quality control (QAQC) process in 2016 to evaluate the taxa identifications. Although the 2000 survey was not included in the QAQC exercise, the manned submersible allowed for expert ID during the survey itself. In order to reduce the size of the reports, the SK-B MPA species inventory has been divided into three separate reports dealing with the following taxa: Chordata (this report), species forming biogenic habitat (Algae, Cnidaria, Porifera, Bryozoa; Gauthier et al. 2018a), and other invertebrates (Gauthier et al. 2018c).

METHODS

The three surveys used different methods but all had the objective to document benthic communities of SK-B Seamount using imagery.

In 2000, the Delta submersible was used and could hold two people (a pilot and a scientist) (Yamanaka, 2005). Cameras and lasers are mounted externally, with a forward-view as well as a starboard side-view standard definition (SD) camera. Each camera was mounted with parallel lasers. Each submersible dive consisted of two 30 minute transects with a 10 minute break between transect for photography and repositioning. Post-processing of the videotape was conducted by Rick Stanley and Jonathan Martin to assess habitat and enumerate fish by voice recordings from the on-board scientist and visual review of both the forward and the side view videotape (Yamanaka, 2005). Videotapes were subsequently re-reviewed by Jonathan Martin to record details including all species occurrences, habitat type, and image quality using the Video Miner (version 1.2) qualitative protocol. A summary of the depths and durations of the 20 dives completed is found in Table 1.

In 2011 a combination of ROV (DFO's Phantom ROV) and AUV (NOAA's SeaBED AUV) was used. The ROV conducted 16 dives at various locations on the seamount. For each ROV dive SD and high definition (HD) video was collected as well as still photos. The AUV conducted 4 successful dives at various locations on the seamount during which it collected still images. Sarah Cook systematically annotated the video and the digital still photographs from the AUV to record details including all species occurrences, habitat type, and image quality using the Video Miner (version 1.2) qualitative protocol. Only 5 AUV dives had photos (Dives 1,4,5,6,7). A summary of the depths, lengths and durations of the 20 dives completed on this survey is found in Table 2.

In 2015, a tow-camera system "BOOTS" (Bathyal Ocean Observation and Televideo System) was used (Gale et al. 2017). An HD MiniZeus video camera was set in the forward-facing position, with capabilities for pan and tilt (horizontal and vertical axes, respectively). Two parallel scaling lasers, positioned 10 cm apart, were attached to the camera's pan-tilt chassis, such that the laser dots always remained in the centre of view. An HD 1CamAlpha+ video camera with 24-megapixel still image capabilities was set in the downward-facing position on the tow-camera frame. There were no scaling lasers associated with the downward-facing camera during the survey. High resolution photographs (6544 x 3680 pixels) were collected using the 1CamAlpha during 16 of the 17 BOOTS dives. The camera was configured to automatically take a photo every 10 seconds, but the actual interval between captured pictures was about 15 seconds (average 4 pictures per minute). Overall, 3546 photos were collected during the BOOTS dives.

In 2015, Maeva Gauthier systematically annotated 42 hours of video to record details including all species occurrences and relative abundance, habitat type, and image quality using Video Miner (version 2.1.4) quantitative protocol. Photographs were not used for this analysis because videos were considered more useful for video annotation (Gale et al. 2017). A summary of the depths, lengths and durations of the 17 dives completed on this survey is found in Table 3.

In addition to video annotation, all videos and still photographs from the surveys were viewed by the experts aboard the cruises (see Expedition Participants, below) in real time and following retrieval of vehicles to compile preliminary list of observed species.

In 2016, a thorough QAQC process was completed on the 2011 and 2015 survey datasets. Five to 10 records of each taxa were randomly selected and reviewed by independent taxonomic experts. In some cases, experts recommended that some taxa be grouped to a higher level of taxonomy to ensure a higher level of confidence for data analysis. There was also a difference in the level of taxonomy between surveys. The image quality during the 2011 survey was better and allowed for lower-level taxonomic identification compared to the 2015 survey.

Species Inventory Format

This species inventory, modelled after the species inventory for Cobb Seamount by Du Preez et al. (2015), documents observations from the SK-B MPA survey using images, taxonomy, scientific and common names, the taxonomic authority, a level of confidence in the identification, the year of the survey and depth range at which the organism was observed, as well as additional notes including pertinent information and relevant references. An example of the inventory format is provided in Table 4. World Register of Marine Species (WoRMS, 2014) was used as authoritative reference.

Taxonomy

The organisms in this Chordata inventory report are presented in taxonomic order, starting with Class Ascidiacea (1.1) and ending with Order: Scorpaeniformes (1.4.4). Each organism is identified to the lowest taxonomic level possible with confidence. Page headers indicate the Phylum, Class, and Order, and individual inventory records indicate Family, Genus, and Species. If an organism could not be identified to species, the lowest taxonomic level is provided followed by “sp.”. If more than one taxon was observed and differentiated a number follows (e.g. “sp. 1”). If more than one taxon was observed but could not be differentiated, the lowest taxonomic level is followed by “spp.”. Common names (if well established) or a brief description of the organism is also included. If the image does not allow identifying to species level but there are reasons to believe it looks like a known species, “cf.” is used in the species name. See Figure 3 for example of pictures.

Confidence in Identification

Confidence in identification categories refer to previous records of the organism occurring on SK-B Seamount:

- **Previously observed:** This organism has been observed by divers or in imagery collected from submersibles at SK-B MPA. Our confidence is high but there are no voucher specimens from this location to confirm the identification.
- **Previously collected:** This organism has been collected at SK-B MPA and identified by taxonomic experts.
- **New record:** This is the first record of this organism occurring in SK-B MPA. There are no previous observations and no voucher specimens from this location. It is likely that this organism has been observed and/or collected in neighbouring regions including other seamounts or from the continental shelf at similar depths.

If the organism was previously observed or collected at SK-B MPA a numerical reference of the record's source follows the confidence category. Where,

- [1] = Austin (1999)
- [2] = Canessa et al. (2003)
- [3] = Herlinveaux (1971)
- [4] = Boutillier (2011)
- [5] = Martin (2010)
- [6] = McDaniel (2003)
- [7] = Cooke (2011)
- [8] = Scagel (1970)
- [9] = Scrimger and Bird (1969)
- [10] = Yamanaka and Brown (1999)
- [11] = Yamanaka (2005), if collected with longline
- [12] = Yamanaka (pers. comm.)

Survey year and depth

The survey year(s) and the depth range (in meters) where the organism was observed are provided. If the observed depth range exceeds the species' published known range a footnote indicating the discrepancy with relevant references is included. If a species was only observed once, a single observed depth is mentioned rather than a depth range.

Image(s)

For each taxon record a photograph or video still from the 2000, 2011 or 2015 cruise is provided (with the image credit). Multiple photos are provided when an organism has different morphotypes or distinctly different juvenile and adult life-stages, or to demonstrate the appearance of the organism in a group/colony and the appearance of the organism close up. In images where the organism may be difficult to see, a white arrow or a red box is used to indicate its location. For images that are very low quality, an alternative image has been added from other available online resources. Note that imagery from video is often clearer than it may appear to be from the still screen shots.

Species inventory table

Finally, this information was tabulated into a comprehensive table that details the complete species list recorded from SK-B MPA across all transects undertaken in 2000, 2011, 2015. The table includes images, taxonomy, scientific and common names, the taxonomic authority, the level of identification confidence, and the survey(s) and depth range at which the organism was observed, as well as additional notes and relevant references. An example of the inventory format is provided in Table 4.

A checklist of the taxa presented in this report is found in Appendix 1. Appendix 2 presents all taxa in this report as well as the literature.

Table 1. Depths, length and duration of dives from the 2000 survey of Bowie Seamount.

Date	Number of Transects	Transect names	Min. depth (m)	Max. depth (m)	Av. transect length (m)	Av. dive duration (min)
3 Aug 2000	2	5182 [1,2]	73	169	-	103
5 Aug 2000	2	5183 [1,2]	224	306	-	132
5 Aug 2000	2	5184 [1,2]	146	233	-	101
5 Aug 2000	2	5185 [1,2]	195	300	-	110
6 Aug 2000	2	5186 [1,2]	100	260	-	102
6 Aug 2000	2	5187 [1,2]	105	290	-	104
6 Aug 2000	2	5188 [1,2]	67	218	-	86
7 Aug 2000	2	5189 [1,2]	76	183	-	74
7 Aug 2000	2	5191 [1,2]	72	177	-	96
7 Aug 2000	2	5192 [1,2]	53	210	-	93
8 Aug 2000	2	5193 [1,2]	133	200	-	88
9 Aug 2000	2	5195 [1,2]	78	153	-	83
9 Aug 2000	1	5196 [1]	114	147	-	50
10 Aug 2000	2	5198 [1,2]	95	158	-	80
10 Aug 2000	2	5199 [1,2]	62	178	-	75
10 Aug 2000	2	5200 [1,2]	0	196	-	80
10 Aug 2000	2	5201 [1,2]	120	220	-	87
11 Aug 2000	2	5202 [1,2]	147	175	-	62
11 Aug 2000	2	5203 [1,2]	0	231	-	89
11 Aug 2000	2	5206 [1,2]	0	220	-	69

Table 2. Vehicle type, depths, length and duration of dives from the 2011 survey of Bowie Seamount.

Date	Type	Transect Name	Min Depth	Max Depth	Transect Length (m)	Duration (min)
24 Jul 2011	ROV	1	165	246	1252	58
24 Jul 2011	ROV	2	232	239	1281	43
25 Jul 2011	ROV	3	170	269	1386	67
25 Jul 2011	ROV	4	156	251	2240	109
25 Jul 2011	ROV	5	141	178	630	63
26 Jul 2011	ROV	6	50	225	1069	91
26 Jul 2011	ROV	7	64	103	434	44
26 Jul 2011	ROV	8	214	234	2055	86
31 Jul 2011	ROV	9	29	90	594	79
31 Jul 2011	ROV	10	43	190	977	97
01 Aug 2011	ROV	11	64	231	974	93
01 Aug 2011	ROV	12	98	196	986	89
02 Aug 2011	ROV	13	48	227	1012	85
02 Aug 2011	ROV	14	78	111	385	28
02 Aug 2011	ROV	15	67	82	na	100
02 Aug 2011	ROV	16	101	103	202	64
23-24 Jul 2011	AUV	d20110723_1	186	259	1093	1440 (24 hr)
25-26 Jul 2011	AUV	d20110725_4	428	483	1444	1440 (24 hr)
27 Jul 2011	AUV	d20110726_5	449	451	47	163
01 Aug 2011	AUV	d20110801_6	176	498	760	51
02 Aug 2011	AUV	d20110801_7	420	930	1305	87

Table 3. Depths, length and duration of dives from the 2015 survey of SGaan Kinghlas-Bowie Marine Protected Area. Transect length for each dive is reported based on camera positioning (USBL, if available for the entirety of the dive) and the ship's positioning (A-frame).

Date	Number of Transects	Transect names	Min. depth (m)	Max. depth (m)	Transect length (m) / USBL/A-frame	Transect duration (min)
10 Jul 2015	1	5	272	327	— / 247	30
10 Jul 2015	1	6	556	613	— / 256	31
11 Jul 2015	1	7	716	733	261 / 257	43
11 Jul 2015	1	8	854	968	265 / 261	45
12 Jul 2015	1	9	1016	1176	606 / 526	56
12 Jul 2015	1	10	401	463	263 / 264	32
12 Jul 2015	1	11	871	928	— / 258	29
12 Jul 2015	1	12	727	845	— / 266	43
13 Jul 2015	1	13	316	350	— / 266	42
13 Jul 2015	1	14	682	747	241 / 257	32
13 Jul 2015	1	15	749	830	313 / 271	43
13 Jul 2015	1	16	1011	1246	835 / 710	84
16 Jul 2015	1	17	591	677	262 / 263	38
16 Jul 2015	1	18	632	840	559 / 515	70
16 Jul 2015	2	19a	674	956	534 / 511	68
		b	704	882	375 / 251	29
17 Jul 2015	1	20	1028	1125	270 / 251	31

Table 4. An example of the inventory record format and brief explanation of notation.

#. Phylum

##. Class

###. Order

	<p>Family name</p> <p>Scientific name</p> <p>Common name</p> <p>Taxonomic authority</p> <p>Confidence of identification</p> <p>Survey(s) where the organism was observed</p> <p>Depth range of the observations (meters)</p>
<p>Image credit</p> <p>Photograph or video filename</p>	<p>Footnotes (if applicable)</p>

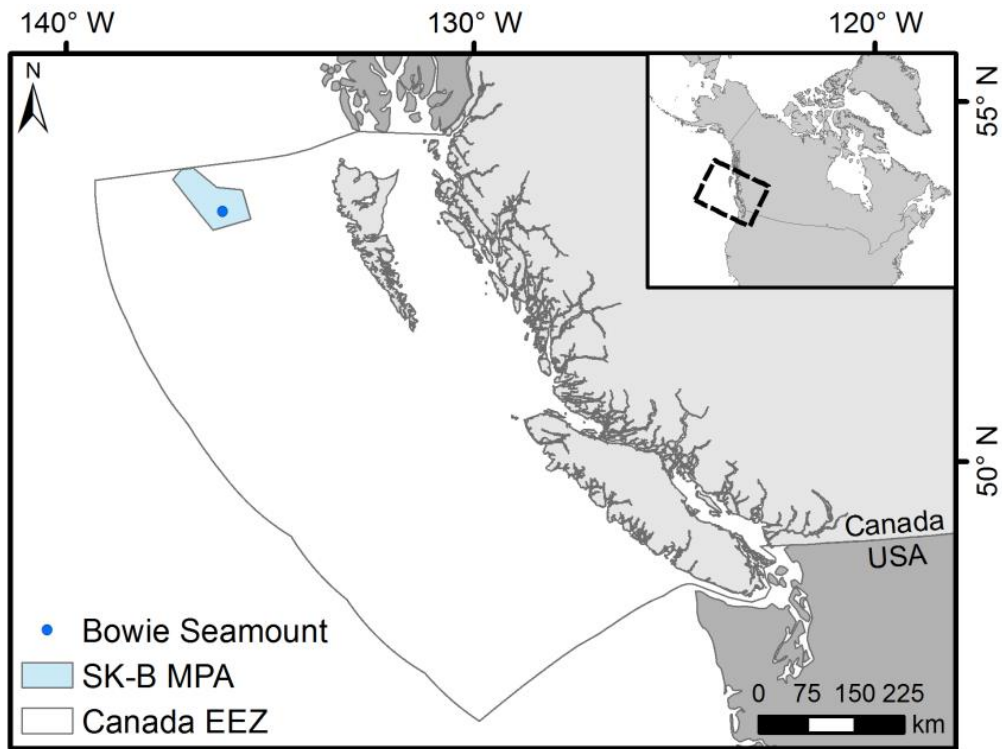


Figure 1. Location of Bowie Seamount and SGaan Kinghlas-Bowie Marine Protected Area (SK-B MPA) within Canada's EEZ (Exclusive Economic Zone).

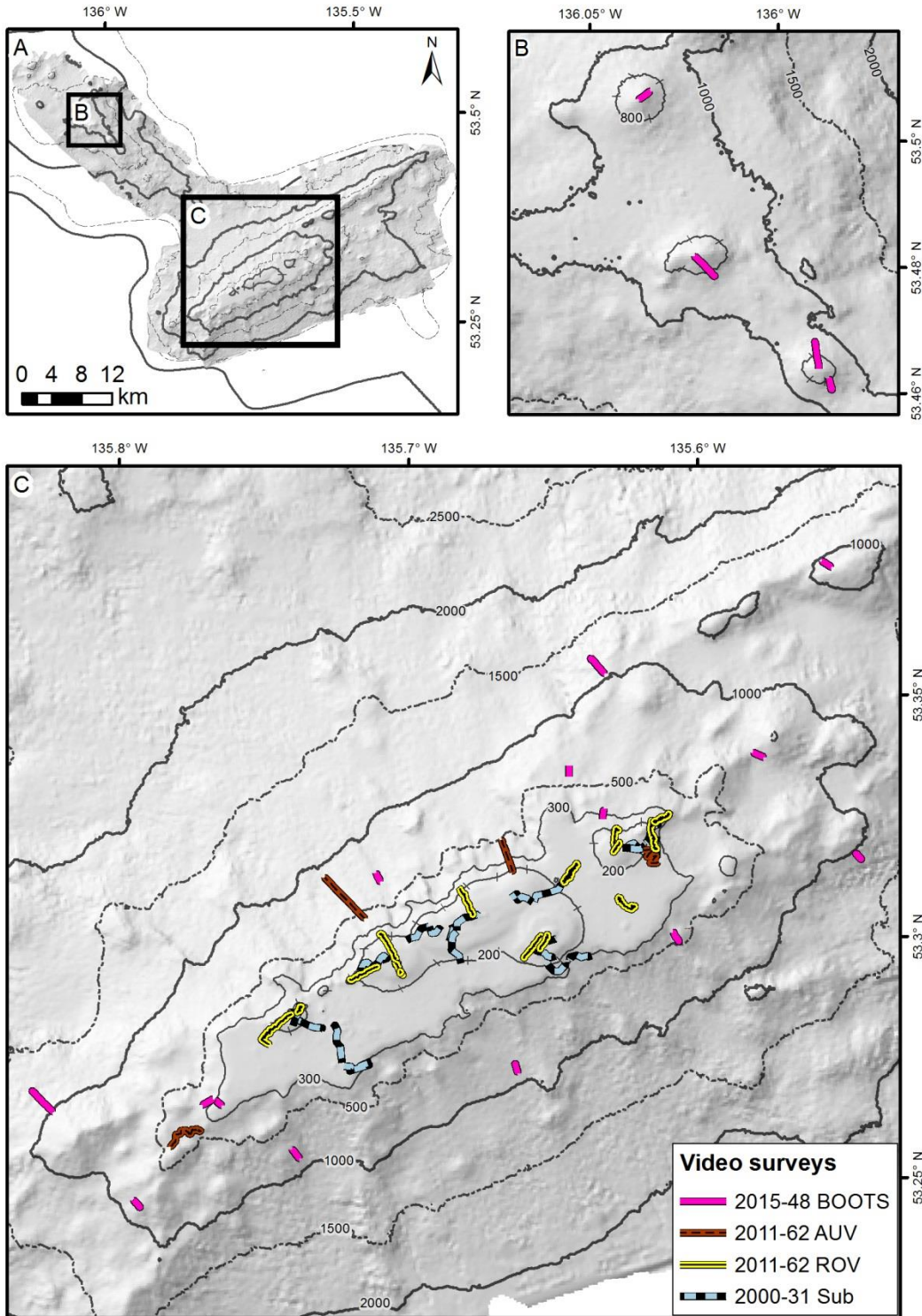
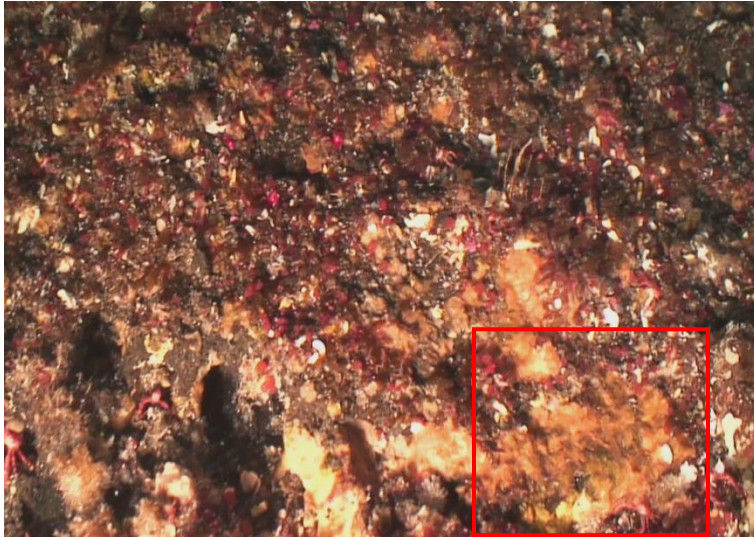


Figure 2. Locations of video surveys carried out by DFO at Bowie and Hodgkins Seamounts from 2000 (Delta submersible; Yamanaka 2005), 2011 (Phantom ROV and SeaBED AUV; unpublished), and 2015 (BOOTS tow-camera system; Gale et al. 2017); A) Bowie and Hodgkins Seamounts, B) the three summits of Hodgkins Seamount, and C) part of Bowie Seamount including the shallow summit.



Figure 3. Examples of organisms observed during the SK-B MPA 2000, 2011, and 2015 surveys. Top left: *Farrea* spp. sponge with deep-sea sunflower star (*Rathbunaster californicus*). Lower left: Benthoplectinidae sea stars and boot sponges (Rosselidae). Right: Poacher (Agonidae) and squat lobsters (*Munida quadrispina*) surrounding an orange sea pen (*Ptilosarcus gurneyi*). Image credits: © Fisheries and Oceans Canada, 2011 (top left and right) and DFO Science (BOOTS Tow-camera, 2015-048; bottom left).

1. Phylum: Chordata
1.1. Class: Ascidiacea
1.1.1. Order: Aplousobranchia



Family Holozoidae

Distaplia occidentalis

Authority: Bancroft, 1899

Confidence: New record

Survey(s): 2011

Depths (m): 33-66

Credit: © Fisheries and Oceans Canada, 2011
Video still: Pac2011_Dive009_Screengrabs-Distapliaoccidentalis_001.png

1. Phylum: Chordata
1.1. Class: Ascidiacea
1.1.2. Order: Phlebobranchia



Family Cionidae

Ciona savignyi
Solitary sea squirt

Authority: Herdman, 1882

Confidence: New record

Survey(s): 2011

Depths (m): 186-236

Credit: © Fisheries and Oceans Canada, 2011
Photo: pac2011-062_dive004_cionasavignyi.png

1. Phylum: Chordata
1.1. Class: Ascidiacea
1.1.3. Order: Stolidobranchia



Family Styelidae

Cnemidocarpa finmarkiensis
Broadbase tunicate

Authority: Kiaer, 1893

Confidence: New record

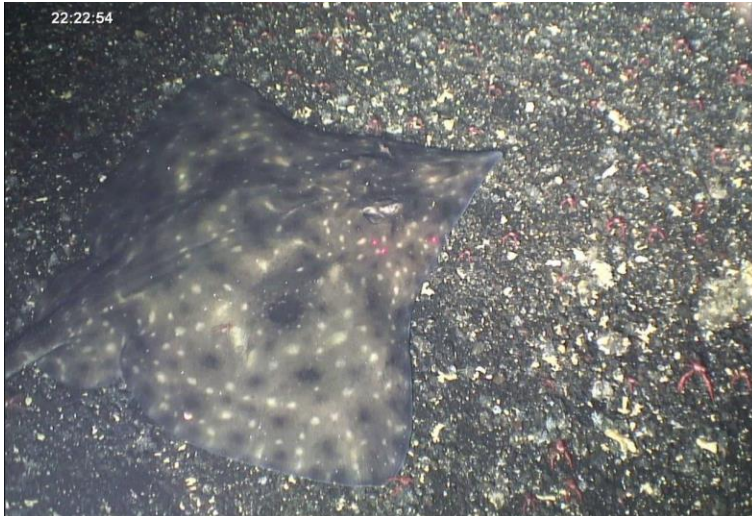
Survey(s): 2011
Depths (m): 52-250

Credit: © Fisheries and Oceans Canada, 2011
Photo: 080211_162009_130.jpg

1. Phylum: Chordata

1.2. Class: Elasmobranchii – sharks, rays, & skates

1.2.1. Order: Rajiformes



Credit: © Fisheries and Oceans Canada, 2011
Photo (top): Bigskate2.jpg

Family Rajidae

Raja binoculata
Big Skate

Authority: Girard, 1855

Confidence: Previously observed [2, 10]

Transect: 2011

Depths (m): 116-236



Credit: © Fisheries and Oceans Canada, 2011
Photo (top): 072611_152042_13.jpg

Family Rajidae

Raja rhina
Longnose Skate

Authority: Jordan & Gilbert, 1880

Confidence: Previously collected [2, 10, 11]

Transect: 2000, 2011

Depths (m): 76-242

Notes: QAQC suggested using genus level for ID for data analysis purpose.

1. Phylum: Chordata
1.3. Class: Holocephali – ray-finned fishes
1.3.1. Order: Chimaeriformes



Family Chimaeridae

Hydrolagus colliei
Spotted Ratfish

Authority: Lay & Bennett, 1839

Confidence: Previously observed
[10]

Survey(s): 2000
Depths (m): NA

Credit: © Fisheries and Oceans Canada 2000 (Delta Submersible)
Video still: 100-01-001-5181-T001-EF00005.png

1. Phylum: Chordata
1.4. Class: Actinopterygii – ray-finned fishes
1.4.1. Order: Gadiformes – grenadiers or rattails



Family Gadidae

Gadus macrocephalus
Pacific Cod

Authority: Tilesius, 1810

Confidence: New record

Survey(s): 2000
Depths (m): 53-306

Notes: Depth range of survey was used
in this case because the depth of the
species observation was not available.

Credit: © Fisheries and Oceans Canada 2000 (Delta Submersible)
Video still: Pac2000_Dive5193_Screengrabs-Pacificcod_001.png



Family Gadidae

Gadus chalcogrammus
Walleye Pollock

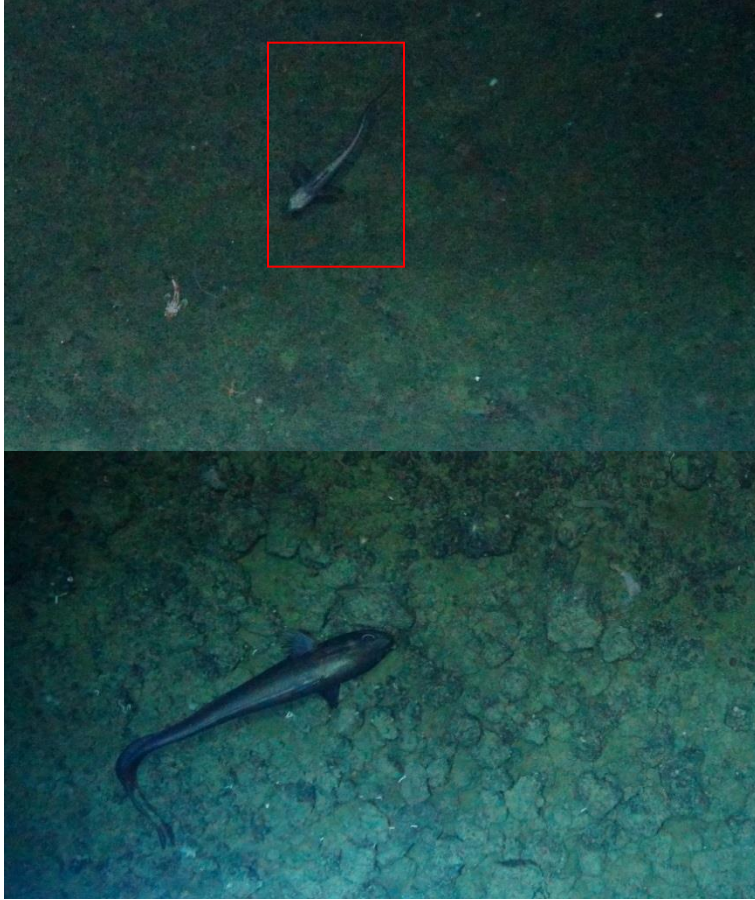
Authority: Pallas, 1814

Confidence: Previously observed
[10]

Survey(s): 2000
Depths (m): 53-306

Notes: Synonym name used: *Theragra chalcogramma*. Depth range of survey was used in this case because the depth of the species observation was not available.

Credit: © Fisheries and Oceans Canada 2000 (Delta Submersible)
Video still: Pac2000_Dive5203_Screengrabs_pollock-00001.png (top)
and Pac2000_Dive5203_Screengrabs_pollock-00002.png (bottom)



Family Macrouridae

cf. *Coryphaenoides acrolepis*
Pacific Grenadier
or
Coryphaenoides armatus
Abyssal Grenadier
or
Albatrossia pectoralis
Giant Grenadier

Authority: Bean 1884, Hector, 1875,
Gilbert, 1892

Confidence: Previously collected
[11]

Survey(s): 2015
Depths (m): 665-1224

Notes: Morphology similarities and
camera distance /angle make it difficult
to ID to species level.

Credit: DFO Science (BOOTS Tow-camera, 2015-048)
Video: PAC2015-048_Dive014 (9).jpg (top)
PAC2015-048_Dive016 (11) (bottom)

1. Phylum: Chordata
1.4. Class: Actinopterygii – ray-finned fishes
1.4.2. Order: Perciformes



Family Anarrhichadidae

Anarrhichthys ocellatus
Wolf-eel

Authority: Ayres, 1855

Confidence: Previously collected
[1,3,12]

Survey(s): 2000, 2011
Depths (m): 35

Credit: © Fisheries and Oceans Canada, 2011
Photo: 073111_203027_184.jpg



Family Bathymasteridae

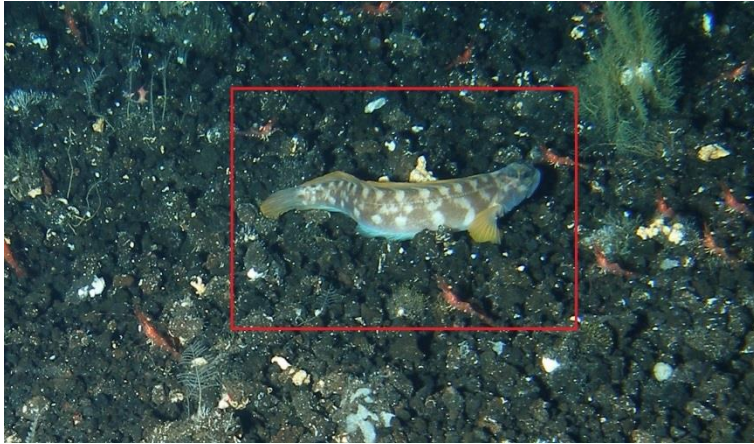
Bathymaster caeruleofasciatus
Alaskan Ronquil

Authority: Gilbert & Burke, 1912

Confidence: New record

Survey(s): 2011
Depths (m): 29-218

Credit: © Fisheries and Oceans Canada, 2011
Photo: P8010166.jpg



Credit: © Fisheries and Oceans Canada, 2011
Photo: P8010470.jpg

Family Bathymasteridae

Ronquilus jordani
Northern Ronquil

Authority: Gilbert, 1889

Confidence: New record

Survey(s): 2011
Depths (m): 71-156



Credit: © Fisheries and Oceans Canada, 2011
Video still: Pac2011_Dive004_Screengrabs-Gunnels_001.png

Family Pholidae

Pholis sp.
Gunnels

Authority: Scopoli, 1777

Confidence: New record

Survey(s): 2011
Depths (m): 222



Credit: © Fisheries and Oceans Canada, 2011
Video still: Pac2011_Dive004_Screengrabs-decoratedwarbonnet_001.png

Family Stichaeidae

Chirolophis decoratus
Decorated Warbonnet

Authority: Jordan & Snyder 1902

Confidence: New record

Survey(s): 2011
Depths (m): 240



Family Zaproridae

Zaprora silenus
Prowfish

Authority: Jordan, 1896

Confidence: Previously observed
[1, 2, 6, 10]

Survey(s): 2000, 2011
Depths (m): 42-177

Credit: © Fisheries and Oceans Canada, 2011
Photo: P8010256.jpg



Family Zoarcidae

Eelpout

Authority: Swainson, 1839

Confidence: Previously observed [2,
10]

Survey(s): 2000, 2015
Depths (m): 168-805

Credit: DFO Science (BOOTS Tow-camera, 2015-048)
Photo: Pac2015-048_SZ_HD_7_10_2015_00_27_50PM007.png
Pac2015-048_SZ_HD_7_10_2015_00_30_22PM007.png

1. Phylum: Chordata

1.4. Class: Actinopterygii – ray-finned fishes

1.4.3. Order: Pleuronectiformes – flatfishes



Family Pleuronectidae

Soles

Authority: Rafinesque, 1815

Confidence: New record

Survey(s): 2011, 2015

Depths (m): 118-1173

Notes: it was recommended from the QAQC process to use a higher taxonomy level for all soles for data analysis.



Credit: DFO Science (BOOTS Tow-camera, 2015-048), © Fisheries and Oceans Canada, 2011

Video still: PAC2015-048_Dive007 (147).jpg (top),
Pac2011_Dive001_Screengrabsrocksole_001.png (bottom)



Family Pleuronectidae

Microstomus pacificus
Dover Sole

Authority: Lockington 1879

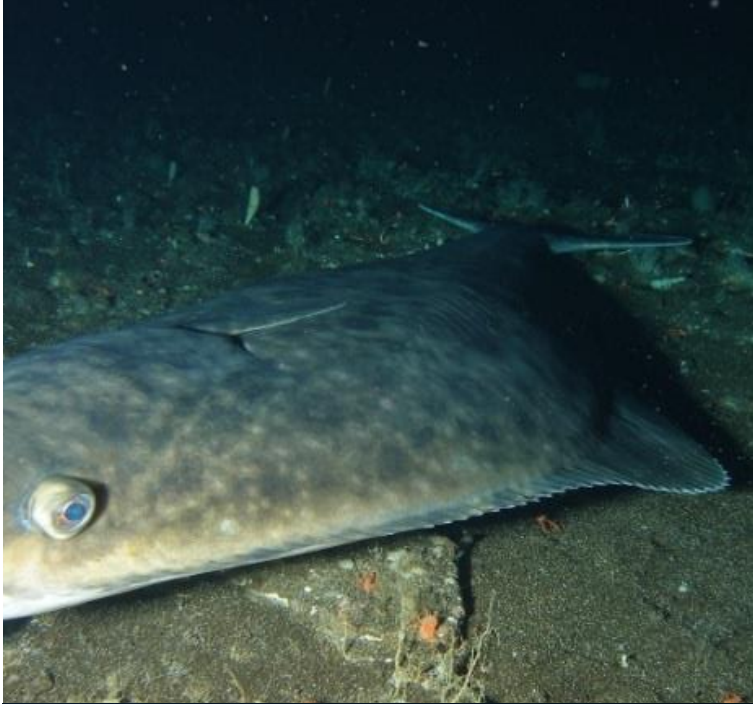
Confidence: New record

Survey(s): 2000

Depths (m): 226-334

Credit: DFO Science (BOOTS Tow-camera, 2015-048)

Video still: PAC2015-048_Dive005 (222).jpg



Family Pleuronectidae

Hippoglossus stenolepis
Pacific Halibut

Authority: Schmidt, 1904

Confidence: Previously collected [2, 6, 10, 11]

Survey(s): 2000, 2011

Depths (m): 86-238

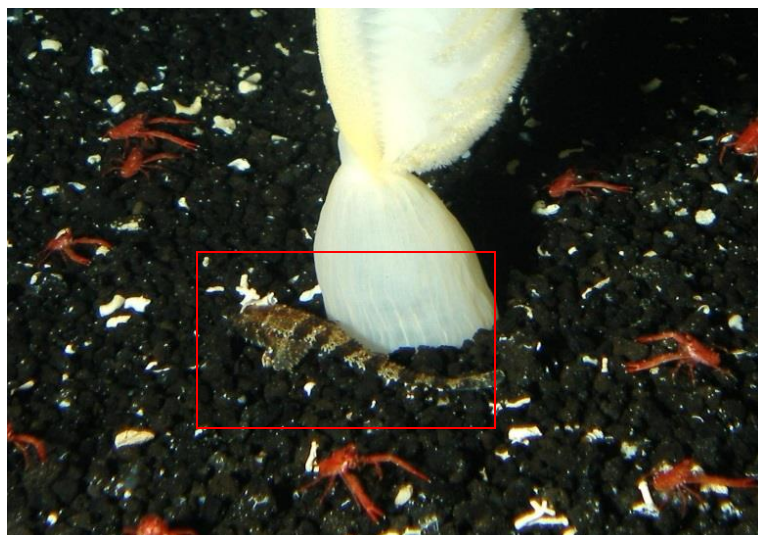


Credit: © Fisheries and Oceans Canada, 2011

Photo (left): 072411_172820_36.jpg

Photo (right): 072411_172740_34.jpg

1. Phylum: Chordata
1.4. Class: Actinopterygii – ray-finned fishes
1.4.4. Order: Scorpaeniformes



Family Agonidae

Poachers

Authority: Swainson, 1839

Confidence: Previously collected
[11]

Transect: 2011

Depth (m): 122-238

Credit: © Fisheries and Oceans Canada, 2011
Photo: P8010118.jpg



Family Agonidae

Xeneretmus latifrons
Blacktip Poacher

Authority: Gilbert, 1890

Confidence: New record

Transect: 2011, 2015

Depth (m): 273-324

Credit: © Fisheries and Oceans Canada, 2011
Photo: pac2011-062_dive008_Xeneretmuslatifrons.png



Family Anoplopomatidae

Anoplopoma fimbria
Sablefish

Authority: Pallas 1814

Confidence: Previously collected [2, 10, 11]

Transect: 2000, 2011, 2015

Depths (m): 224-906

Credit: © Fisheries and Oceans Canada, 2011
Photo: 080211_152827_3.jpg



Family Cottidae

***Cottidae* sp.**
Unknown Sculpin

Confidence: Previously collected [11]

Survey(s): 2000, 2011

Depths (m): 75-247

Notes: Species may be *Dasycottus setiger*. (Family Psychrolutidae, Order Scorpaeniformes; Bean, 1890)

Credit: © Fisheries and Oceans Canada, 2011
Video still: 20110724.002710.00605 (2).jpg



Credit: © Fisheries and Oceans Canada 2000 (Delta Submersible)
Video still: Pac2000_Dive5199_Screengrabs-KelpGreenling_001.png

Family Hexagrammidae

Hexagrammos decagrammus
Kelp Greenling

Authority: Pallas, 1810

Confidence: Previously observed [6]

Survey(s): 2000
Depths (m): 53-306

Notes: Depth range of survey was used in this case because the depth of the species observation was not available.



Credit: © Fisheries and Oceans Canada 2000 (Delta Submersible)
Video still: Pac2000_Dive5198_Screengrabs-Lingcod_001.png

Family Hexagrammidae

Ophiodon elongatus
Lingcod

Authority: Girard, 1854

Confidence: New record

Survey(s): 2000
Depths (m): 53-306

Notes: Depth range of survey was used in this case because the depth of the species observation was not available.



Credit: © Fisheries and Oceans Canada, 2011
Video still: Pac2011_Dive001_Screengrabs-Sebastesalutus_001.png
(top)

Family Scorpaenidae

***Sebastes* spp.
Rockfish**

Authority: Cuvier 1829

Confidence: Previously observed [1, 2, 3, 10]

Survey(s): 2011, 2015

Depths (m): 29-458

Notes: *Sebastes* sp. was used for rockfish unidentifiable to species-level owing to its life stage (e.g. juveniles) or to poor image quality (e.g. distance, camera angle, water visibility, etc.).



Credit: © Fisheries and Oceans Canada, 2011
Video still: 072511_155305_22.jpg

Family Scorpaenidae

***Sebastes babcocki*
Redbanded Rockfish**

Authority: Thompson, 1915

Confidence: Previously collected [2, 10, 11]

Transect: 2000, 2011

Depths (m): 164-259



Family Scorpaenidae

Sebastes borealis
Shortraker Rockfish

Authority: Barsukov, 1970

Confidence: Previously collected [2, 10, 11]

Transect: 2000, 2011

Depths (m): 248

Credit: NOAA Fisheries (online)
Video still: Shortraker_Rockfish_NOAAFisheries.jpg



Family Scorpaenidae

Sebastes brevispinis
Silvergray Rockfish

Authority: Bean, 1884

Confidence: Previously collected [2, 10, 11]

Transect: 2000, 2011

Depths (m): 33-221

Credit: © Fisheries and Oceans Canada, 2011
Video still: Pac2011_Dive003_Screengrabs-Silvergrayrockfish_001.png (top) and Pac2011_Dive003_Screengrabs-Silvergrayrockfish_002.png (bottom)



Family Scorpaenidae

Sebastes crameri
Darkblotched Rockfish

Authority: Jordan, 1897

Confidence: Previously observed [2, 10]

Transect: 2000, 2011
Depths (m): 71-235



Credit: © Fisheries and Oceans Canada, 2011
Video still: Pac2011_Dive_001_Screengrabs-Sebastescrameri_001.png
(top) and Pac2011_Dive_001_Screengrabs-Sebastescrameri_004.png
(bottom)



Family Scorpaenidae

Sebastes diploproa
Splitnose Rockfish

Authority: Gilbert, 1890

Confidence: Previously observed [2, 10]

Transect: 2000

Depths (m): 53-306

Notes: Depth range of survey was used in this case because the depth of the species observation was not available.

Credit: © Fisheries and Oceans Canada 2000 (Delta Submersible) (top Video still)
Video still: Pac2000_Dive5185_Screengrabs-SplitnoseRockfish_001.png (top Video still)
Credit: MBARI (online) (bottom photo)
Photo: sebastes_diploproa_400_MBARI.jpg (bottom photo)



Family Scorpaenidae

Sebastes elongatus
Greenstriped Rockfish

Authority: Ayres 1859

Confidence: Previously collected [2, 11]

Transect: 2000, 2011

Depths (m): 186-320

Credit: SCID (<http://sep.csusb.edu/ifame/scid/>)
Video still: Greenstriped_Rockfish_SCID.jpg



Family Scorpaenidae

Sebastes entomelas
Widow Rockfish

Authority: Jordan & Gilbert 1880

Confidence: Previously collected [1, 2, 3, 10, 11]

Survey(s): 2000, 2011

Depths (m): 29-250

Credit: © Fisheries and Oceans Canada, 2011
Video still: 080211_165049_223.jpg



Credit: © Jean DeMarignac (SIMoN / MBNMS)

Family Scorpaenidae

Sebastes flavidus
Yellowtail Rockfish

Authority: Ayres, 1862

Confidence: Previously observed [2]

Survey(s): 2000, 2011
Depths (m): 72-198



Credit: © Ed Bowlby, NOAA/Olympic Coast NMS; NOAA/OAR/Office of Ocean Exploration

Family Scorpaenidae

Sebastes helvomaculatus
Rosethorn Rockfish

Authority: Ayres 1859

Confidence: Previously collected [2, 10, 11]

Survey(s): 2000, 2011
Depths (m): 59-298



Family Scorpaenidae

***Sebastes melanostictus* &
Sebastes aleutianus
Blackspotted-Rougheye Rockfish
complex**

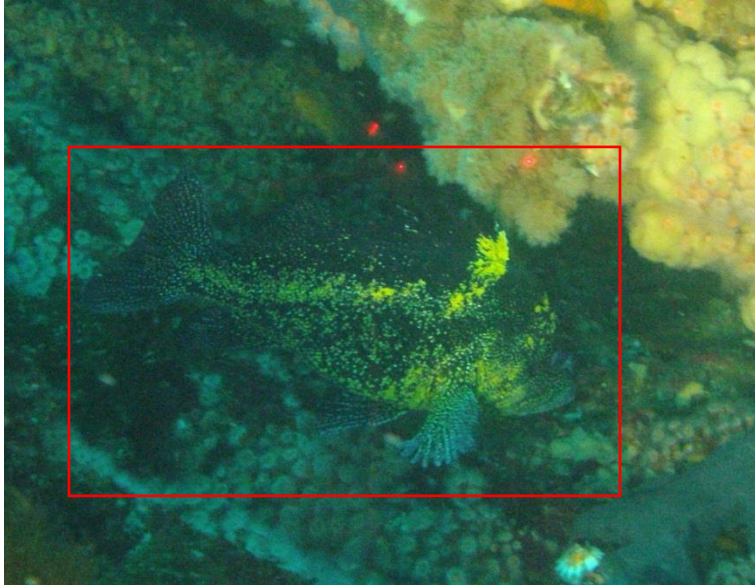
Authority: Matsubara 1934 & Jordan
& Evermann 1898

Confidence: Previously collected [2,
10, 11]

Survey(s): 2000, 2011, 2015
Depths (m): 60-449

Notes: There is a history of confusing and misidentifying Blackspotted rockfish and Rougheye rockfish owing to similar geographic distributions, depth ranges, and morphologies (Orr & Hawkins 2008; Love et al. 2002; Butler et al. 2012). There is also evidence of hybridization between the two species (Orr & Hawkins 2008). It is particularly difficult to identify individuals underwater. In the case of SK-B seamount, the QAQC review has shown a high probability of Blackspotted rather than Rougheye rockfish.

Credit: © Fisheries and Oceans Canada, 2011
Video still (top): 072511_160850_86.jpg
Video still (bottom): P8010004.jpg



Credit: © Fisheries and Oceans Canada, 2011
Video still: 073111_204647_234.jpg

Family Scorpaenidae

Sebastes nebulosus
China Rockfish

Authority: Ayres, 1854

Confidence: Previously observed [2]

Transect: 2000, 2011
Depth (m): 29



Credit: © Fisheries and Oceans Canada, 2011
Video still: 072611_163708_192.jpg

Family Scorpaenidae

Sebastes nigrocinctus
Tiger Rockfish

Authority: Ayres, 1859

Confidence: Previously observed [2,
6, 10]

Survey(s): 2000, 2011
Depths (m): 38-103



Family Scorpaenidae

Sebastes paucispinis
Bocaccio

Authority: Ayres, 1854

Confidence: Previously observed [2, 10]

Survey(s): 2000
Depths (m): 53-306

Notes: Depth range of survey was used in this case because the depth of the species observation was not available.

Credit: © Fisheries and Oceans Canada, 2000 (Delta Submersible)
Video still: Pac2000_Dive5200_Screengrabs-BocaccioRockfish_002.png



Family Scorpaenidae

Sebastes proriger
Redstripe Rockfish

Authority: Jordan & Gilbert, 1880

Confidence: Previously observed [2, 10]

Survey(s): 2000, 2011
Depths (m): 34-256

Credit: © Fisheries and Oceans Canada, 2011
Photo: P8010284.jpg



Family Scorpaenidae

Sebastes reedi
Yellowmouth Rockfish

Authority: Westrheim & Tsuyuki,
1967

Confidence: Previously observed [2,
10]

Survey(s): 2011
Depths (m): 193-239



Credit: © Fisheries and Oceans Canada, 2011
Video Still: Pac2011_Dive1_Screengrabs-
YellowmouthRockfish_001.png (top) and Pac2011_Dive1_Screengrabs-
YellowmouthRockfish_002.png (bottom)



Family Scorpaenidae

Sebastes ruberrimus
Yelloweye Rockfish

Authority: Cramer 1895

Confidence: Previously collected [1, 2, 3, 6, 10, 11]

Survey(s): 2000, 2011, 2015
Depths (m): 29-326

Credit: © Fisheries and Oceans Canada, 2011

Photo (top): P8010286.jpg (juvenile)

Photo (bottom): P8010297YE.jpg



Credit: NOAA NWFSC/PIFSC AUV Team
Photo: 20110723.232423.00066.jpg

Family Scorpaenidae

Sebastes rufus
Bank Rockfish

Authority: Eigenmann &
Eigenmann, 1890

Confidence: New record

Survey(s): 2011- AUV photos
Depths (m): 186-483

Notes: The depth range of the transects
was used because the depth of the
observations was not available.



Credit: © Fisheries and Oceans Canada, 2011
Photo: 072411_040209_178.jpg

Family Scorpaenidae

Sebastes variegatus
Harlequin Rockfish

Authority: Quast 1971

Confidence: Previously collected [2,
6, 10, 11]

Survey(s): 2000, 2011, 2015
Depths (m): 35-327



Family Scorpaenidae

Sebastes zacentrus
Sharpchin Rockfish

Authority: Gilbert 1890

Confidence: New record

Survey(s): 2000, 2011
Depths (m): 85-204

Credit: © Fisheries and Oceans Canada, 2011
Photo: 072411_035909_166.jpg



Family Scorpaenidae

***Sebastolobus* spp.
Thornyhead**

Authority: Gill 1881

Confidence: Previously observed [2, 10] and *S. alascanus* collected [11]

Survey(s): 2000, 2011, 2015

Depths (m): 238-1173

Notes: There is a history of confusing and misidentifying the Shortspine Thornyhead (*Sebastolobus alascanus*; Bean 1890) and Longspine Thornyhead (*Sebastolobus altivelis*; Gilbert 1986) owing to similar geographic distributions, depth ranges, and morphologies (Love et al. 2002; Butler et al. 2012). It is particularly difficult to identify individuals underwater & from an overhead perspective.

Credit: DFO Science (BOOTS Tow-camera, 2015-048)

Video still: PAC2015-048_Dive007 (168).jpg (top) and

Credit: © Fisheries and Oceans Canada 2000 (Delta Submersible)
(bottom photo)

Video still: Pac2000_Dive5203_Screengrabs_SebastolobusAlascanus-002.png

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SK-B Seamount 2000 Crew: John Dower, David Jones, Tawnya Peterson from the University of British Columbia, Tomas Tomascik from Parks and Heritage Canada, Linda Snook from the University of California at Santa Barbara, Michael Bentley contracted by the Canadian Wildlife Service, Dave Slater, Chris Ijames and Joe Lilly from Delta Oceanographics, Rick Stanley, Steve Sviatko, Sheila Dawe and Paul Preston from DFO all participated in the cruise. Special thanks to Captain Paul Frost on the CCGS John P. Tully and Captain Gerald Dalum on the F/V Double Decker, without their knowledge and expertise this research cruise would not have been possible. Thanks also to the ship's crews and the Science crew for all their efforts to make this cruise a success. Thanks to Rick Stanley who endured many submersible dives and reviewed videotape.

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SK-B Seamount 2011 Science Crew: This research cruise included personnel from DFO Science, Oceans and Fishery and Aquaculture Management as well as personnel from NOAA (NWFS and Pac Islands). Jim Boutillier, Wolfgang Carolsfeld, James Pegg, Robert Stone, Curt Whitmire, Jeremy Taylor, Dustin Schornagel, Neil Davis, Robin Abernethy, Mayuko Otsuki, Elizabeth Clarke, Erica Fruh, Janelle Curtis, Sarah Davies, Miriam O, Melissa Evanson. Vessel Crew: Captain: Simon Schwartz and Chief Mate: Al Young.

This survey was possible through direct funding from the International Governance Strategy (IGS) Program.

SK-B Seamount 2015 Science Crew: Janelle Curtis, Emily Braithwaite, Lily Burke, Lindsay Davidson, Beau Doherty, Katie Gale, Andrew McMillan, Ken Morgan, Hamish Murray, Aidan Neill, Chelsea Stanley, Wendy Szaniszló, Kim Wallace, Jon Zand, Jackson Chu, Stephane Gauthier, James Pegg, Keith Shepherd, Jessica Qualley, Kelly Young. This research cruise included personnel from Canadian Wildlife Service, Fisheries and Oceans Canada, Environment Canada, Institute for Ocean Sciences, Pacific Biological Station, Simon Fraser University, University of Victoria, and Highland Technologies Inc.

The field survey and reporting were supported by DFO's National Conservation Plan, Strategic Program for Ecosystem Research and Advice, and International Governance Strategy.

The DFO science teams and the personnel of the Canadian Coast Guard Vessel *John P. Tully* all contributed to the collection of valuable video and still photographs of benthic and mid-water species and habitat. Funding for the completion of this report was provided by DFO's SPERA Program.

Many colleagues assisted us with the development of this species inventory: we especially thank Dr. Henry Reiswig, Dr. Daphne Fautin, Dr. Philip Lambert, Dr. Cherisse Du Preez, Jonathan Martin, Lily Burke, Beau Doherty, Andrew McMillan, Aidan Neill, and Dr. Stephanie Archer.

IMAGE CREDITS

Images credited “© Fisheries and Oceans Canada, 2000 (Delta Submersible)” and “NOAA NWFSC/PIFSC AUV Team” were collected during the 2000 survey. Images credited “© Fisheries and Oceans Canada, 2011” were collected during the 2011 survey. Images credited “DFO Science (BOOTS Tow-camera, 2015-048)” were collected during the 2015 expedition.

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NOAA NWFSC/PIFSC AUV Team – Personnel from NOAA (NWFS and Pac Islands).

© Fisheries and Oceans Canada, 2011 – Fisheries and Oceans Canada Pacific Biological Station remotely operated vehicle team

DFO Science (BOOTS Tow-camera, 2015-048) – Fisheries and Oceans Canada Pacific Biological Station Tow-camera team

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APPENDIX 1 – CRUISE TAXONOMIC CHECKLIST

Classification of the 49 organisms observed as occurring on SK-B Seamount during the 2000, 2011, and 2015 surveys (from the Chordata phylum).

Phylum: Chordata

Class: Ascidiacea

Ascidiacea spp.

Order: Aplousobranchia

Distaplia occidentalis

Order: Phlebobranchia

Ciona savignyi

Order: Stolidobranchia

Cnemidocarpa finmarkiensis

Class: Elasmobranchii

Order: Rajiformes

Raja spp.

Raja binoculata

Raja rhina

Class: Holocephali

Order: Chimaeriformes

Hydrolagus colliei

Order: Gadiformes

Gadus macrocephalus

Gadus chalcogrammus

Macrouridae spp.

Order: Perciformes

Anarrhichthys ocellatus

Bathymaster caeruleofasciatus

Chirolophis decoratus

Pholis sp.

Ronquilus jordani

Zaprora silenus

Zoarcidae

Order: Pleuronectiformes

Hippoglossus stenolepis

Microstomus pacificus

Pleuronectidae

Order: Scorpaeniformes

Agonidae

Anoplopoma fimbria

Cottidae

Hexagrammos decagrammus

Ophiodon elongatus

Sebastes spp.

Sebastes aleutianus

Sebastes babcocki

Sebastes borealis

Sebastes brevispinis

Sebastes crameri

Sebastes diploproa

Sebastes elongatus

Sebastes entomelas

Sebastes flavidus

Sebastes helvomaculatus

Sebastes melanostictus

Sebastes nebulosus

Sebastes nigrocinctus

Sebastes paucispinis

Sebastes proriger

Sebastes reedi

Sebastes ruberrimus

Sebastes rufus

Sebastes variegatus

Sebastes zacentrus

Sebastolobus spp.

Xeneretumus latifrons

APPENDIX 2 – SUMMARY TAXONOMIC CHECKLIST

Classification of all 91 benthic and mid-water organisms observed as occurring on SK-B Seamount including the 2000, 2011, 2015 survey taxa from the Chordata phyla as well as species present from the literature. Species with an asterisk indicate absence from the 2000, 2011, and 2015 surveys.

Phylum: Chordata

Sub-Phylum: Tunicata

Class: Ascidiacea

Ascidiacea spp.

Order: Aplousobranchia

Distaplia occidentalis

*Ritterella rubra**

Order: Phlebobranchia

Ciona savignyi

Order: Stolidobranchia

Cnemidocarpa finmarkiensis

Class: Appendicularia

Order: Copelata

*Oikopleura dioica**

Class: Thaliacea

Order: Salpida

Cyclosalpa sp.*

*Salpa fusiformis**

*Thalia democratica**

*Thetys vagina**

Sub-Phylum: Vertebrata

Class: Actinopteri

Order: Anguilliformes

*Avocettina**

Order: Stomiiformes

*Bathophilus flemingi**

*Chauliodus macouni**

*Tactostoma macropus**

Order: Myctophiformes

*Nannobranchium ritteri**

*Stenobranchius leucopsarus**

Order: Tetraodontiformes

*Mola mola**

Class: Elasmobranchii

Order: Carcharhiniformes

*Apristurus brunneus**

*Prionace glauca**

Order: Lamniformes

*Cetorhinus maximus**

Order: Rajiformes

Raja spp.

Raja binocolata

Raja rhina

Order: Squaliformes

Somniosus pacificus

Squalus acanthias

Class: Holocephali

Order: Chimaeriformes

Hydrolagus colliei

Order: Gadiformes

*Albatrossia pectoralis**

*Antimora microlepis**

*Coryphaenoides acrolepis**

Gadus macrocephalus

Gadus chalcogrammus

Macrouridae

Order: Perciformes

Anarrhichthys ocellatus

Bathymaster caeruleofasciatus

*Bothrocara brunneum**

*Bothrocara molle**

Bramidae*

Chirolophis decoratus

*Icosteus aenigmaticus**

Pholis sp.

Ronquilus jordani

Stichaeidae*

Zaprora silenus

Zoarcidae

Order: Pleuronectiformes

*Atheresthes stomias**

*Embassichthys bathybius**

*Eopsetta jordani**

*Glyptocephalus zachirus**

Hippoglossus stenolepis

*Lepidopsetta bilineata**

Microstomus pacificus

Pleuronectidae

Order: Scorpaeniformes

Agonidae

Anoplopoma fimbria

*Careproctus melanurus**
Cottidae
*Hemilepidotus hemilepidotus**
Hexagrammos decagrammus
Ophiodon elongatus
*Podothecus accipenserinus**
Sebastes aleutianus
*Sebastes alutus**
*Sebastes aurora**
Sebastes babcocki
Sebastes borealis
Sebastes brevispinis
Sebastes crameri
Sebastes diploproa
Sebastes elongatus
Sebastes entomelas
Sebastes flavidus
*Sebastes goodei**
Sebastes helvomaculatus
*Sebastes maliger**

*Sebastes miniatus**
*Sebastes mystinus**
Sebastes melanostictus
Sebastes nebulosus
Sebastes nigrocinctus
Sebastes paucispinis
*Sebastes pinniger**
Sebastes proriger
Sebastes reedi
Sebastes ruberrimus
Sebastes rufus
Sebastes variegatus
*Sebastes wilsoni**
Sebastes zacentrus
Sebastes spp.
Sebastolobus spp.
*Sebastolobus alascanus**
*Sebastolobus altivelis**
Xeneretumus latifrons

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