

SGaan Kinghlas- Bowie Seamount

2019

MARINE PROTECTED AREA MANAGEMENT PLAN

GIN SIIGEE TL'A DAMAAN KINGGANGS GIN K'AALAAGANGS



HAIDA NATION

Canada

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1. SGaan Kinghlas-Bowie Seamount Gin siigee tl'a damaan kinggangs gin k'aalaagangs Marine Protected Area Management Plan 2019

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Foreword

Dear Reader,

On behalf of the Council of the Haida Nation and the Government of Canada, we are pleased to present the SGaan Kinghlas-Bowie Seamount Gin Siigee Tl'a Damaan Kinggangs Gin K'aalaagangs Marine Protected Area Management Plan. Today, as we bring our two management systems together, we are building on our relationship, based on common values, to conserve and protect this culturally and ecologically unique area.

According to gin k'iygangas (canon of Haida oral histories), the seamount is home to SGaan Kinghlas, one of the sGaanwee (supernatural beings) that inhabit our world. The Haida have experienced an intimate interconnection with these beings ever since Nang Kilslaas (He Whose Voice Was Obeyed) brought people into existence. Haida ancestors developed elaborate rites to affirm this interconnection and designed strict protocols to protect our world.

The Canadian and international scientific communities have identified seamounts as ecologically and biologically significant areas. The completion of this management plan, which fulfills a key commitment of Canada's National Conservation Plan, will support the unique biodiversity and biological productivity of this marine ecosystem, which includes cold-water corals and sponges. Working together, we have now outlined the tools and measures we will use to safeguard SGaan Kinghlas-Bowie Seamount for current and future generations.

This plan demonstrates the area's importance to both Haida and Canadian governments and outlines our shared commitment to protecting this special place. Our congratulations to everyone involved in this important and historic work. This Plan reflects your hard work and dedication. Haw'aa! Thank you!

Sincerely,



Jonathan Wilkinson
Minister of Fisheries, Oceans and
the Canadian Coast Guard
Fisheries and Oceans Canada



Gaagwiis Jason Alsop, President
Council of the Haida Nation

Acknowledgements

We would like to acknowledge the following people for their hard work and dedication in preparation of the SGaan Kinghlas–Bowie Seamount Management Plan. Haw'aa! Thank you!

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Disclaimer

This Plan is not legally binding and does not create legally enforceable rights between Canada and the Haida Nation. This Plan is not a treaty or land claims agreement within the meaning of sections 25 and 35 of the Canadian Constitution Act, 1982.

This Plan does not create, define, evidence, amend, modify, recognize, affirm or deny any Aboriginal rights, Aboriginal title and/or treaty rights or Crown title and rights, and is not evidence of the nature, scope or extent of any Aboriginal rights, Aboriginal title and/or treaty rights or Crown title and rights.

This Plan does not limit or prejudice the positions Canada or the Haida Nation may take in any negotiations or legal or administrative proceedings.

Nothing in this Plan constitutes an admission of fact or liability.

Nothing in this Plan alters, defines, fetters or limits or shall be deemed to alter, define, fetter or limit the jurisdiction, authority, obligations or responsibilities of Canada or the Haida Nation.

“Indigenous,” “Aboriginal,” and “First Nation” are used interchangeably throughout the document depending on the context, with “Indigenous” and “Indigenous peoples” reflecting contemporary usage consistent with The United Nations Declaration on the Rights of Indigenous Peoples.



BACKGROUND

About the SK-B Logo

The Sgaan Kinghlas–Bowie Seamount MPA logo was designed by Haida artist Wayne Edenshaw. The Sgaan Kinghlas seamount is a supernatural being in Haida culture. The logo depicts the seamount as a Waaxaas, a giant sea monster that is half wolf and half killer whale and has the ability to move on both land and in the sea. Waaxaas once preyed on Haida villages and are renowned in Haida culture for their ferocity. This supernatural being was selected because of the potential danger and power of the offshore underwater volcano. K'ats (rockfish) and seaweed fronds represent the biological abundance of the seamount, and the nutrient-rich waters surrounding the seamount are represented by a green backdrop to the Waaxaas.

HAIDA LANGUAGE

The Xaad kil (Haida language) used in the Sgaan Kinghlas–Bowie Seamount Management Plan is in the Massett Haida dialect.

Executive Summary

The SGaan Kinghlas–Bowie (SK-B) Seamount is located 180 km offshore of Xaayda Gwaay (Haida Gwaii), off the North Pacific coast.

The seamount is an underwater mountain formed by volcanic activity which fosters unique oceanographic interactions that enhance the biological productivity of the area. SGaan Kinghlas–Bowie Seamount and the surrounding area have been designated by both the Haida Nation and the Government of Canada as a protected area. The Haida Nation, as represented by the Council of the Haida Nation (CHN), and the Government of Canada, as represented by the Minister of Fisheries and Oceans, signed a Memorandum of Understanding in April 2007 that established a Management Board to facilitate the cooperative management and planning of the protected area. On April 17, 2008, the area was officially designated as a Marine Protected Area (MPA) under Canada's *Oceans Act*.

The purpose of the MPA is to conserve and protect the unique biodiversity and biological productivity of the area's marine ecosystem, which includes the SGaan Kinghlas–Bowie, Hodgkins and Davidson seamounts and the surrounding waters, seabed and subsoil.

This Management Plan has been collaboratively developed by the CHN and Fisheries and Oceans (DFO) with input from the SK-B Advisory Committee, and describes a cooperative approach for MPA management. It outlines guiding principles; describes goals and objectives; identifies management tools for the area; addresses surveillance, enforcement and user compliance; and highlights education and outreach. Four implementation priorities are

identified for the MPA: cooperative governance and adaptive co-management; research to support conservation outcomes; monitoring; and education and outreach.

The SK-B MPA is a locally, nationally and internationally significant marine area. Cooperative management of the MPA illustrates a shared commitment by the CHN and DFO to conserve and protect our oceans.

Pictured

White branching hydrocoral, Venus flytrap, squat lobsters, drab six-armed star, and encrusting sponges are just some of the marine life that can be found at the SK-B MPA. Photo credit: Ocean Exploration Trust and Northeast Pacific Seamount Expedition Partners

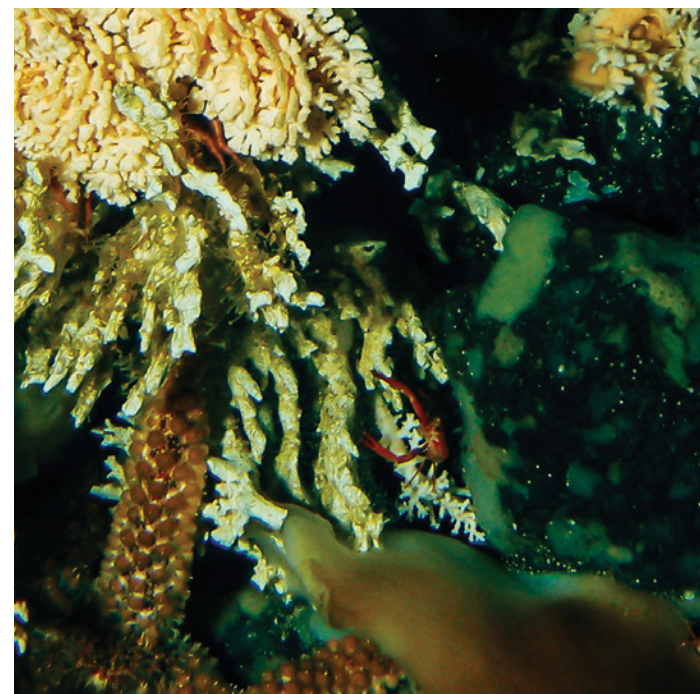


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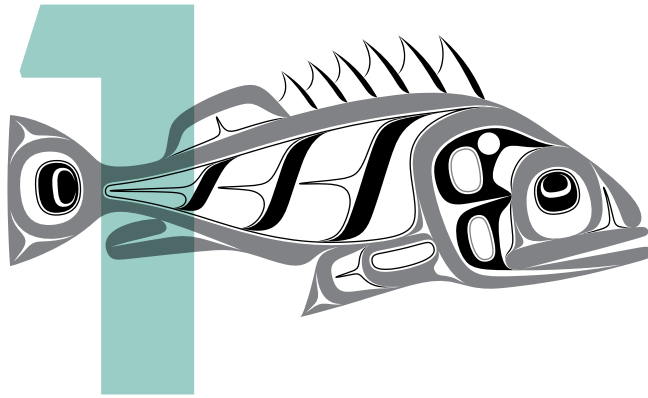
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Introduction

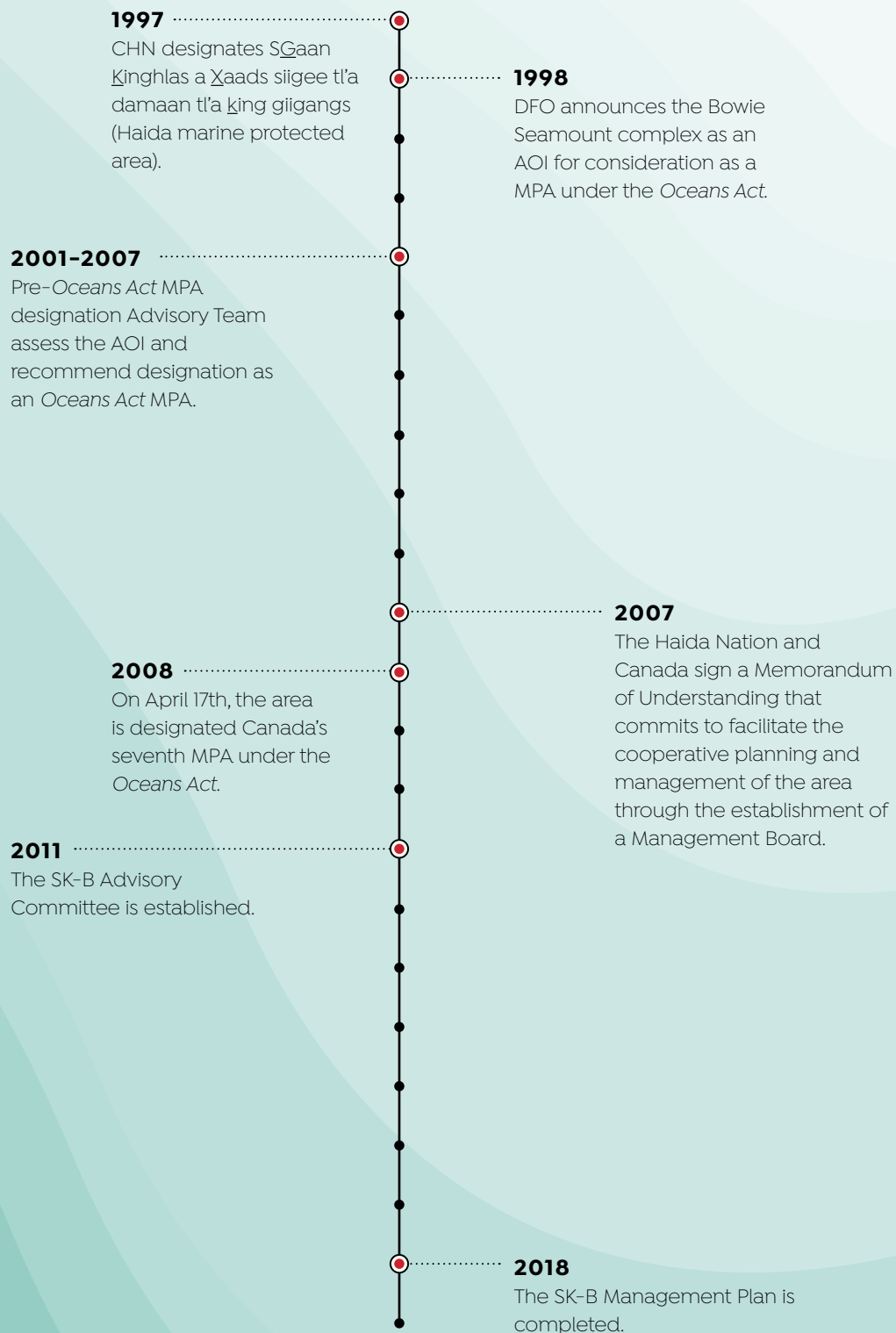
The SGaan Kinghlas (SAH-aawn KING-thlus)–Bowie Seamount is one of the shallowest seamounts in the North Pacific, rising from a depth of 3,000 metres to within 24 metres of the ocean’s surface.

The seamount is an underwater mountain formed by volcanic activity which fosters unique oceanographic interactions that enhance the biological productivity of the area. Eddies enrich and trap nutrients around the seamount to support a highly biodiverse ecosystem that acts as a refugium and nursery for flora and fauna, and provides an important feeding area for resident and migratory fish species, transient marine mammals, and seabirds.

The Haida have a historical, spiritual and cultural connection with the SGaan Kinghlas–Bowie Seamount area. According to Xaads gin k’iyyangaas (Haida oral traditions), before the time of humans, supernatural beings made their home beneath numerous places around Haida Gwaii including mountains, creeks, shoals and reefs and, in this case, the site of an ancient volcano. The seamount is said to be the home of a supernatural being known as SGaan Kinghlas, which in the Masset dialect means “supernatural being looking outwards.”

BOX 1

SK-B MPA History Highlights



SḠaan K̓inghlas and the surrounding area have been designated by both the Haida Nation and Canada as a protected area (Box 1).

The Haida Constitution holds the living Haida generation responsible for ensuring that natural and cultural heritage is passed on to following generations, and in 1997 the Council of the Haida Nation (CHN) designated SḠaan K̓inghlas as a Xaads siigee t'l'a damaan t'l'a k̓ing giigangs (Haida marine protected area).

In 1998, the Minister of Fisheries and Oceans identified Bowie Seamount as an Area of Interest (AOI), and in 2008 the area was designated as a Marine Protected Area (MPA) under Canada's *Oceans Act* by way of the Bowie Seamount Marine Protected Area Regulations (the SK-B Regulations, Appendix 1). Respecting the collaborative approach to the area's planning and management, it is commonly referred to as the SḠaan K̓inghlas–Bowie Seamount (SK-B) MPA.

The purpose of the MPA is to conserve and protect the unique biodiversity and biological productivity of the area's marine ecosystem, which includes the SḠaan K̓inghlas–Bowie, Hodgkins and Davidson seamounts and the surrounding waters, seabed and subsoil. This Management Plan (the Plan) identifies goals,

strategic objectives, and operational objectives for the MPA to support this purpose and describes how they will be achieved. It was prepared by the SK-B Management Board in consultation with the SK-B Advisory Committee.

1.1 LOCATION

The SḠaan K̓inghlas–Bowie (SK-B) Seamount is located 180 km offshore of Xaayda Gwaay (Haida Gwaii), situated off the North Pacific coast (Figure 1). The boundaries of the SK-B MPA include the SḠaan K̓inghlas–Bowie, Hodgkins, and Davidson seamounts and their surrounding waters, seabed, and subsoil. The total area of the SK-B MPA is 6,131 km².

1.2 PROHIBITED ACTIVITIES AND EXCEPTIONS

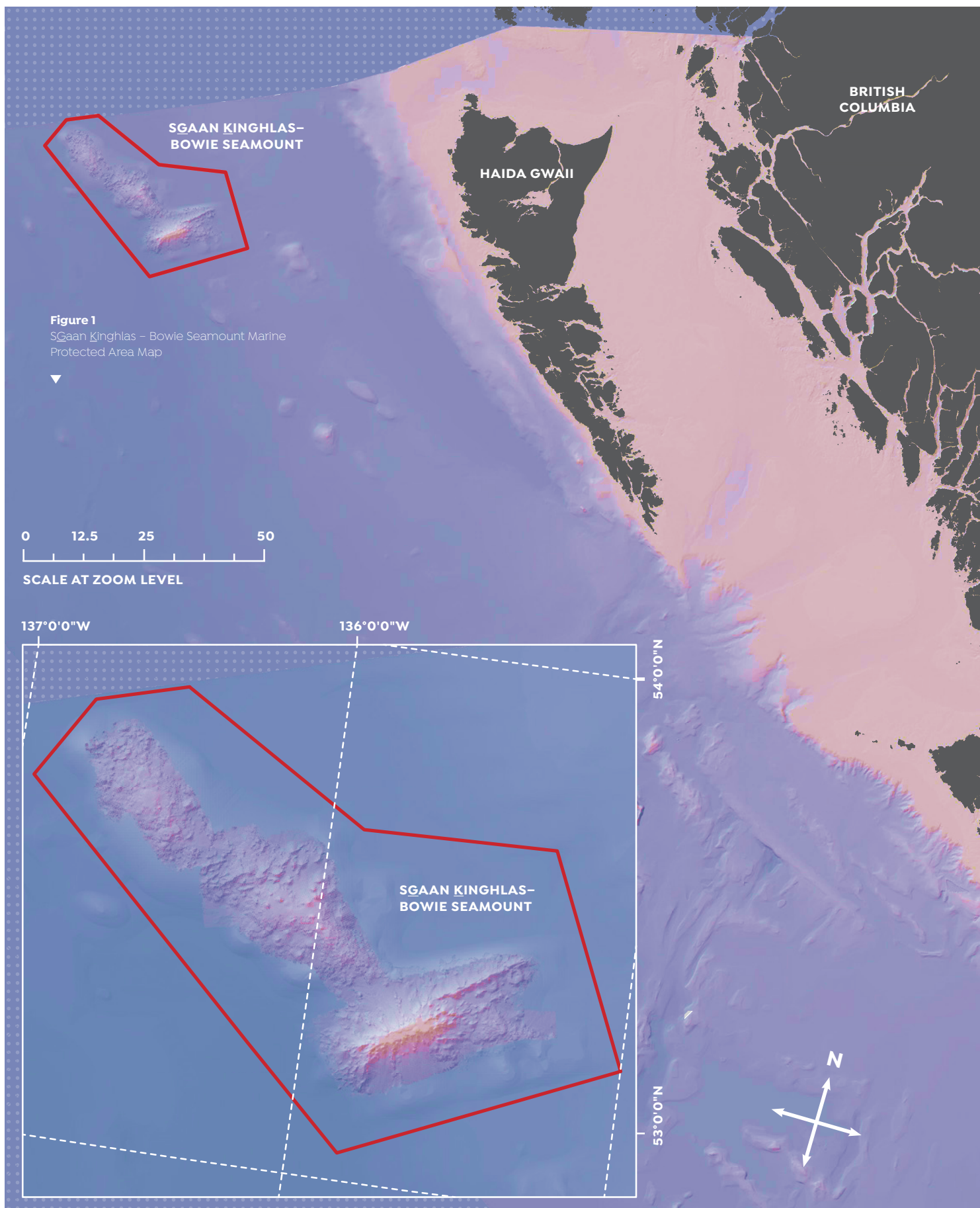
The SK-B Regulations (Appendix 1) prohibit activities that disturb, damage, destroy, or remove from the area any living marine organism or any part of its habitat, or the seabed. Similarly, any activity that deposits, discharges or dumps substances that are likely to result in the disturbance, damage, destruction or removal of living marine organisms or any part of their habitat is also prohibited.

Under the SK-B Regulations, certain activities may be carried out within the MPA (called “exceptions” in the SK-B Regulations) under specified conditions. These activities include, among others, Aboriginal, commercial and recreational fishing; vessel travel; and marine scientific research. This Management Plan provides guidance on activities that may be carried out in the MPA, including the conservation and management objectives for the MPA outlined in Section 5.

Pictured

A wolf-eel peaks out of its shelter surrounded by aggregating anemones and algae. Photo credit: Fisheries and Oceans Canada

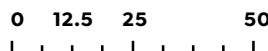




SGAAN KINGHLAS-BOWIE SEAMOUNT



BATHYMETRIC DATA NOT AVAILABLE



SCALE AT 100% SIZE



Cooperative Governance

The Memorandum of Understanding (MOU) between the Haida Nation, as represented by the CHN, and Canada, as represented by the Minister of Fisheries and Oceans, confirms a commitment to a relationship based on mutual respect and understanding and facilitates the cooperative planning and management of the SK-B MPA, including an adaptive co-management approach.

It demonstrates the shared responsibility of the Haida Nation and Canada (the “parties”) to protect and conserve the SK-B MPA for the benefit, education and enjoyment of present and future generations. With this understanding, both parties agreed to work together through a Management Board to develop this Plan to contribute to the protection of the SK-B MPA.

The Management Board consists of two CHN representatives and two Fisheries and Oceans (DFO) representatives designated by the respective parties. The Management Board seeks to operate on a consensus basis and submits recommendations to the CHN and the Minister of Fisheries and Oceans for their respective consideration.

Management of the SK-B MPA is further supported by advice from an Advisory Committee. The Advisory Committee is a multi-stakeholder group that works collaboratively to provide advice to the Management Board regarding planning and management of the MPA.

The Haida Nation, Government of Canada, and Province of BC are also working collaboratively on other marine planning initiatives on the Pacific coast (see Box 2). Although these processes are governed by different legislation and are proceeding on different timelines, the governments and agencies involved are taking a coordinated approach with the goal of well-aligned and complementary marine initiatives.



BOX 2

Other Cooperative Processes

The Pacific North Coast Integrated Management Area or PNCIMA Plan (DFO, First Nations, and the Province of BC) was completed in 2013 and endorsed in early 2017. The Haida Gwaii Marine Plan developed through the Marine Plan Partnership (including the CHN and the Province of BC) was completed in 2015, and the Gwaii Haanas Gina 'Waadluxan KilGuhlGa Land-Sea-People Management Plan (CHN, DFO, and Parks Canada) was completed in 2018.

In addition, the Government of Canada, Province of BC and Indigenous Peoples are working together to design and establish a network of MPAs for the Northern Shelf Bioregion (NSB). Although the SK-B MPA falls outside of the NSB, linkages between the MPA and other protected areas within the NSB are an important consideration for effective and coordinated planning and management of the MPA and the broader network.

Pictured

Haida hereditary leader and former president of the Haida Nation Gidansda (Guujaaw) and Sandlanee Gid Raven-Ann Potschka celebrate the signing of the Sqaan Kinghlas-Bowie Seamount Memorandum of Understanding. Photo credit: Fisheries and Oceans Canada





SK-B Guiding Principles

The following guiding principles are based on Haida ethics, values and laws that were developed to support planning on Haida Gwaii and that have been modified for the SK-B MPA context.

This plan follows an ecosystem-based approach (as defined in the glossary), consistent with other marine plans in the region (e.g. PNCIMA, Marine Plan Partnership, Gwaii Haanas Gina 'Waadluxan KilCuhlGa Land-Sea-People Management Plan). These guiding principles align with principles in national MPA and oceans strategies and frameworks, and ecosystem-based management (EBM) described in scientific, planning and management literature (Table 1).

● **Yahgudang. Respect.**

We respect each other and all living things. We take only what we need, we give thanks, and we acknowledge those who behave accordingly.

● **Gin ‘laa hl isdaa.uu. Responsibility.**

We accept the responsibility to manage and care for the land and sea together. We work with others to ensure that the natural and cultural heritage of SK-B MPA is passed onto future generations.

● **Gin ‘waadluwaan gud ahl kwaagiidang. Interconnectedness.**

We respect each other and all living things. We take only what we need, we give thanks, and we acknowledge those who behave accordingly.

● **Gin ‘waadluwaan damaan tl’ kinggang. Balance.**

The world is as sharp as the edge of a knife. Balance is needed in our interactions with the natural world. Care must be taken to avoid reaching a point of no return and to restore balance where it has been lost. All practices in the SK-B MPA must be sustainable.

● **Gin k’aaydangga Giiy uu tl’a k’anguudangs. Seeking Wise Counsel.**

Haida elders teach about traditional ways and how to work in harmony with the natural world. Like the forests, the roots of all people are intertwined. Together we consider new ideas, traditional knowledge, and scientific information that allow us to respond to change in keeping with culture, values and laws.

● **‘Isda isgyaan diigaa isdii. Giving and Receiving.**

Reciprocity is an essential practice for interactions with each other and the natural and spiritual worlds. We continually give thanks to the natural world for the gifts that we receive.

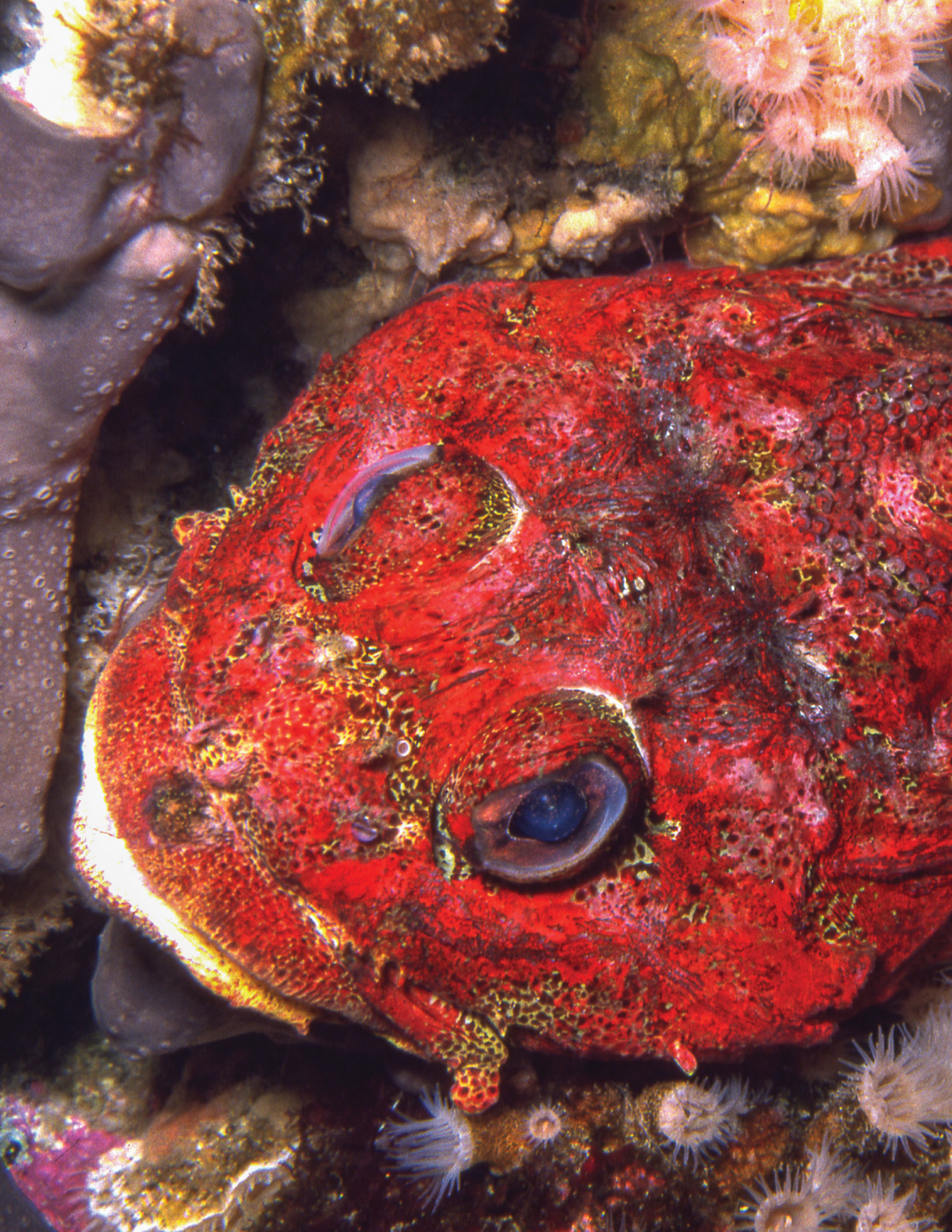


TABLE 1

Linkages between SK-B MPA guiding principles, Canada's MPA and oceans strategies and frameworks and EBM principles.

SK-B PRINCIPLES	CANADA'S MPA AND EBM PRINCIPLES*
Yahgudang. Respect.	<ul style="list-style-type: none"> ■ Precautionary principle ■ Precautionary approach
Gin 'laa hl isdaa.uu. Responsibility.	<ul style="list-style-type: none"> ■ Consultation & collaboration ■ Respect Indigenous Peoples ■ Shared responsibility ■ Public awareness, education, and stewardship initiatives ■ Inclusive and participatory ■ Long-term protection ■ Protection of unique, vulnerable habitats and populations
Gin 'waadluwaan gud ahl k'waagiidang. Interconnectedness.	<ul style="list-style-type: none"> ■ Ecosystem approach ■ Integrated management ■ Representation & replication ■ Ecological linkages/connectivity
Gin 'waadluwaan damaan tl' k'inggang. Balance.	<ul style="list-style-type: none"> ■ Sustainable use and development
Gin k'aaydangga Giyy uu tl'a k'anguudangs. Seeking Wise Counsel.	<ul style="list-style-type: none"> ■ Knowledge based ■ Adaptive management ■ Management effectiveness
Isda isgyaan diigaa isdii. Giving and Receiving.	<ul style="list-style-type: none"> ■ Equitable sharing

*Includes Canada's Federal MPA Strategy (DFO, 2005); Canada's Oceans Strategy (DFO, 2002); and Canada-British Columbia Marine Protected Area Strategy (DFO & BC, 2014). Additional principles were identified from the EBM literature.

Pictured

A red Irish lord, a colourful sculpin that reaches 30 cm long, is found on a bed of colonial zoanths and encrusting gray ridge sponge. Photo credit: Neil McDaniel





Conservation Significance and Human Use

The SK-B MPA is a biologically rich area that is home to high densities of marine species in the North Pacific, all supported by a relatively rare and productive habitat.

The shallow seamounts in the MPA are underwater mountains formed by volcanic activity which have fostered unique oceanographic interactions that enhance the biological productivity of the area. Eddies enrich and trap nutrients around the seamount to support a highly biodiverse ecosystem that acts as a refugium and nursery for flora and fauna, and provides an important feeding area for resident and migratory fish species, transient marine mammals, and seabirds.

Marine research on seamounts around the world has demonstrated that not only are seamounts rich with sea life compared to the open ocean, they are also fragile ecosystems that are susceptible to damage from human activities. Many of the species on seamounts grow and reproduce slowly and are therefore vulnerable to overexploitation. Little is known about deep and

largely inaccessible seamount habitats, and the SK-B MPA presents opportunities to learn more about these unique ecosystems.

Seamounts such as those in the SK-B MPA are also subject to global threats that affect the ocean, such as climate change, and trends in ocean acidification and ocean warming. Many other productive seamounts can be found in the high seas beyond the jurisdiction of any State or Nation, creating governance and management issues in terms of effective protection of open ocean habitats. The SK-B Management Board will work with relevant agencies, as appropriate, when formulating recommendations to address new and emerging threats to seamount ecosystems, including fishing and deep sea mining.

4.1 GEOLOGICAL, OCEANOGRAPHIC, AND ECOLOGICAL CHARACTERISTICS

Seamount ecosystems are fragile underwater mountains, formed by volcanic activity, that rise from the ocean floor but do not reach the surface. The SK-B Seamount has two distinct terraces at depths of 65–100 m and 220–250 m, and rises to within 24 m of the surface. In geological terms it is relatively young, having formed less than one million years ago. Due to the presence of wave-cut terraces below the surface and relatively young volcanic deposits at its peak, it is thought to have been an active volcanic island about 18,000 years ago during the last Ice Age.

Limited information is available about water dynamics at or near the Bowie, Hodgkins and Davidson seamounts. However, Cobb Seamount, a shallow seamount located 500 km southwest of Vancouver Island, was the focus of a major oceanographic research program between 1989 and 1994. Assuming similar water flow phenomena occur at the SK-B seamount, there is probably an area of cold, nutrient-rich water in the upper euphotic zone with a high level of mixing. Biologically, these conditions would increase phytoplankton growth, thereby contributing to the highly productive communities that often exist on shallow seamounts.

In addition to localized eddies, the SK-B MPA is affected by regional eddies, known as “Haida Eddies.” While the ecological linkages between Haida Eddies and seamount ecosystems are not well understood, it is believed that Haida Eddies carry coastal waters rich in larval fish, plankton and nutrients, such as nitrate and iron, from coastal waters out to the SK-B MPA, where they settle and mature (Figure 2).

The various oceanographic phenomena in the area support a unique, rich biological community that, despite its shallowness, includes a combination of open ocean species (e.g. salps), deep water species (e.g. Prowfish and squat lobsters), and intertidal and shallow subtidal

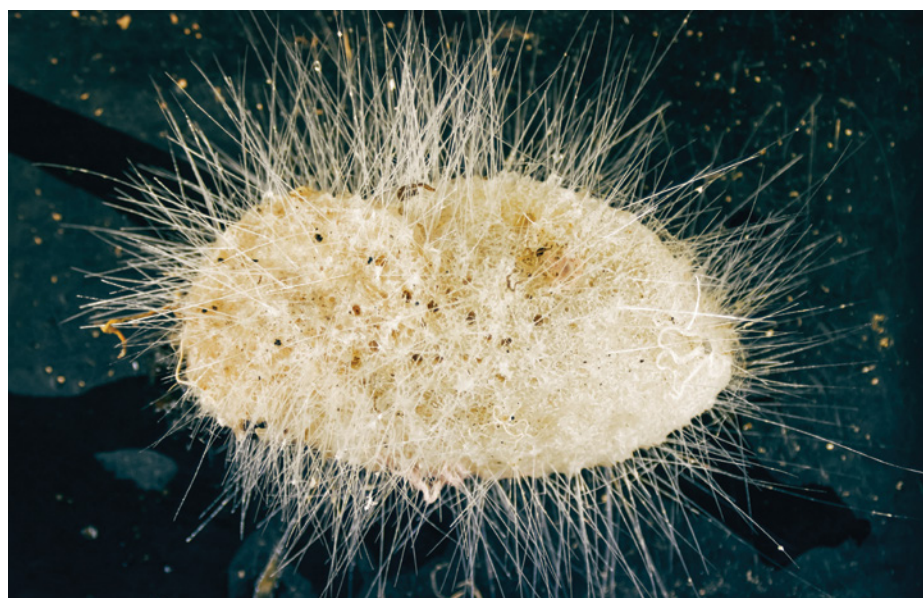
Figure 2
Haida Eddies
in the vicinity of
the SK-B MPA



coastal species (e.g. taaXuu [California mussels] and k'aay [split leaf Laminarian kelp]).

Investigations of the seamount's ecology have noted that due to water clarity, light can penetrate to depths of 40 m or more. The largest and most conspicuous algae, ngaalaagaas (flattened acid kelp), have been found at depths of 38 m. For most species of algae, their presence on the SK-B seamount represents new depth records, as benthic marine algae are rarely found at depths greater than 20 m in coastal waters.

Pictured
Rhabdocalyptus
trichotis, one of the
two newly identified
skaank'aa (sponge)
species at Sgaan
kinghlas – Bowie
Seamount. Photo
credit: H. M. Reislwig



In 2015 a gin gii hlk'uuwaansdlagangs (glass sponge) was discovered in the SK-B MPA, documented as the first member of the genus *Doconesthes* reported outside the North Atlantic Ocean and the first ever found in the Pacific Ocean. The following year, two skwaank'aa (sponge) samples were identified as new species previously unknown to science (*Rhabdocalyptus trichotis* and *Pinulasma bowiensis*). These discoveries suggest that the MPA may support other species that are currently unknown in the North Pacific and highlights the importance of ongoing research and monitoring in the area.

4.2 CULTURAL CHARACTERISTICS AND VALUES

According to oral traditions, at the beginning of time, Haidas “gin siigee tl’a ḵaatl’aagangs” (came out of the ocean) at many locations around Haida Gwaii in the presence of supernatural beings. S̱gaan Ḵinghlas, one of those supernatural beings, reflects the Haida belief in these ocean origins. Some also believe that the seamount is the two-headed stone frontal pole referred to in a Haida story about “Chaan s̱gaanuwee” (The One in the Sea) published by the anthropologist and linguist John Swanton in 1905.

Pictured

ḵwa.anaa (tufted puffin) mask carved by Haida artist Yahl Aadaa Cori Savard. Photo credit: Full Moon Photography, Jason Shafto



In another oral tradition, Haida elders tell the story of two young siblings who set out to find a fog-shrouded puffin colony to restore their family's wealth and prestige. After a lengthy journey, they discover a hidden island far off the northwest coast of Haida Gwaii, believed to be S̱gaan Ḵinghlas at a time of lower sea levels. The island is covered in ḵwa.anaa kun (puffin beaks), and the brother and sister return to their village with a canoe full of beaks. By distributing the beaks at a potlatch, the family ultimately regains their status in the community. These oral traditions indicate that the pinnacle of S̱gaan Ḵinghlas may contain archeological evidence of human occupation.

Haida fishermen continue to visit and fish the area and have historically fished the seamount for traditional use and commercial purposes. For current status, including bottom contact fishing restrictions, see Section 4.3.1.

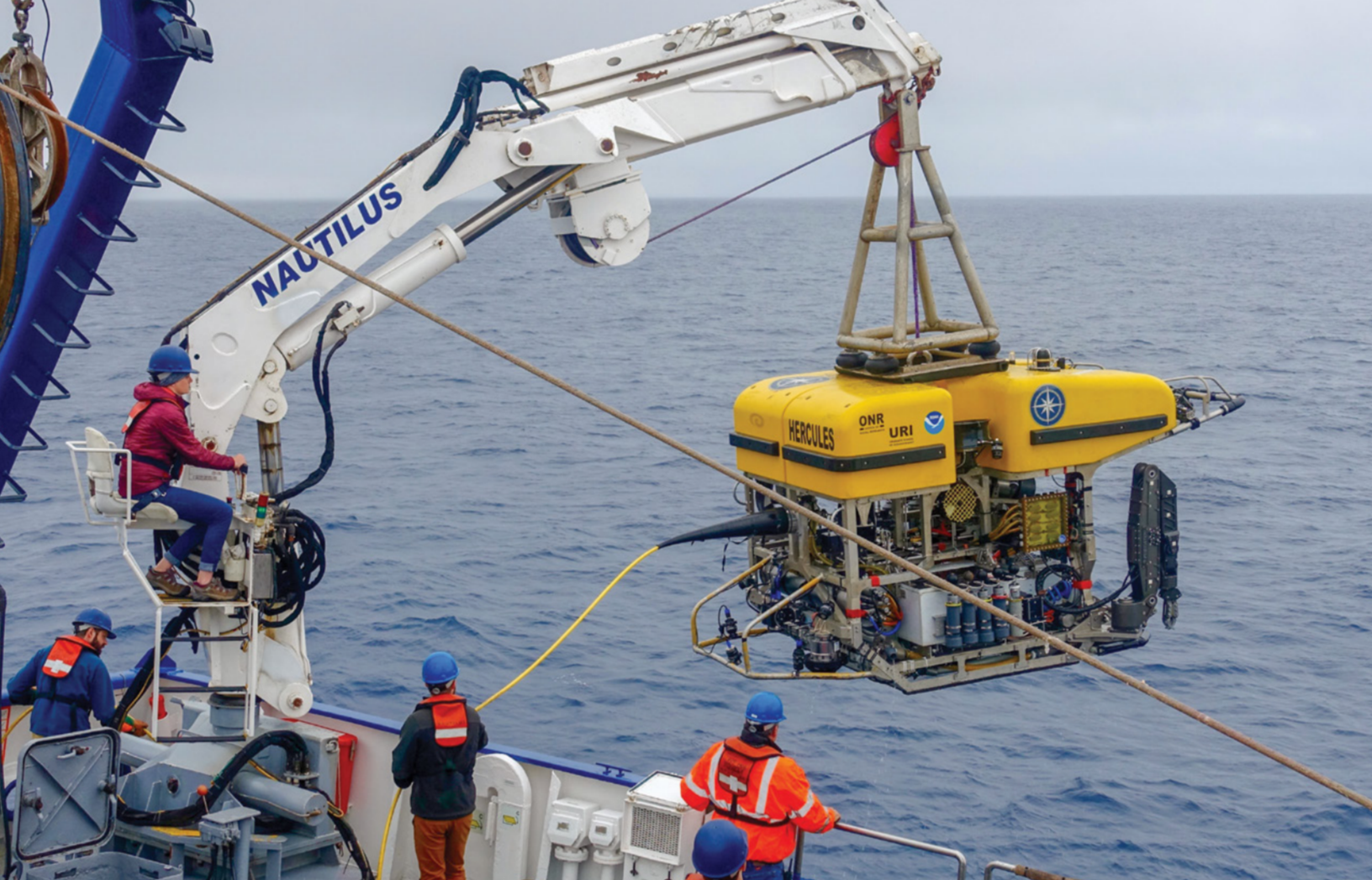
4.3 SOCIO-ECONOMIC USES

In addition to Haida knowledge and use, over the past hundred years the SK-B Seamount and surrounding areas have also supported a myriad of human activities including whaling, fishing and research (Box 3).

Currently, the primary human activities in the SK-B MPA are scientific research and monitoring, and vessel traffic. Other activities also occur infrequently (e.g. marine tourism, recreational fishing).

4.3.1 Fishing Activities

Consistent with the SK-B MPA Regulations, commercial, recreational and Aboriginal fishing activities, including Haida traditional fishing, are allowed under specific conditions. At the time of MPA designation, the Northern Seamount Sablefish (*Anoplopoma fimbria*) trap fishery was the only commercial fishery that DFO permitted within the MPA.



BOX 3

A Recent History of Socio-Economic Activities in the SK-B MPA

Records of whaling activity occurring in the vicinity of the seamount date from 1911 through 1943, and catches during this period include sgaguud (fin whale) and a kun (blue whale). Since then, commercial xaguu (halibut), skil (Sablefish), and k'ats (rockfish) fisheries have taken place at various times. Anecdotal information also indicates sporadic Albacore Tuna harvesting has occurred opportunistically when warm water moves north.

Prior to 1972, the federal government issued 227 permits and licences for oil and gas exploration in the offshore, including the SK-B Seamount. Rights under those permits were suspended as of 1972 by way of Orders-in-Council. The offshore is currently under both provincial and

federal moratoria prohibiting exploration and development of offshore oil and gas. Many Indigenous peoples, including the Haida Nation, have also passed resolutions opposing offshore oil and gas development.

In 1995 the National Geographic Society undertook an expedition to the SK-B Seamount to conduct a combination dive and remotely operated vehicle survey, documented in the November 1996 issue of National Geographic magazine. Since then, multidisciplinary research has occurred in the SK-B area, increasing scientific knowledge of biological and physical oceanography at the seamount.

Pictured

Crew aboard the E/V Nautilus carefully maneuvering the immersion of Hercules, a remotely operated vehicle, during the 2018 Expedition to SK-B Seamount. Photo credit: Oceans Network Canada



The Northern Seamount Sablefish trap fishery was managed by DFO as a limited entry fishery in which participants were determined in a lottery process. Beginning in 2014, the fishery was conducted between May 1 and August 31, allowing four vessels to fish every year (one per month). The fishery also had trip limits. The fishery was restricted at SK-B Seamount to depths greater than 250 fathoms (456 m) and prohibited at Hodgkins and Davidson seamounts. Management measures were described annually in the groundfish Integrated Fishery Management Plan.

Recent scientific analyses suggest an exchange of Sablefish between seamounts and other parts of their range, although relative rates of exchange are unknown at this time.

Other concerns and areas of uncertainty about the Sablefish fishery initially identified by the CHN and jointly investigated by the Management Board included impacts of the Sablefish fishery on species/population dynamics, habitat impacts (including corals and sponges), bycatch (removal and discards of non-target species), and limited baseline ecological information against which to measure change.

As a result of these concerns, interim management measures for the Sablefish fishery within the SK-B MPA were introduced from 2014 to 2017. The interim measures included fewer fishing trips, at-sea observer coverage, additional data collection requirements, and implementation of a coral/sponge encounter protocol. An Ecosystem-Based Fisheries Management Strategy process, including a Management Strategy Evaluation for the SK-B MPA Sablefish fishery, was also initiated at this time to investigate impacts of this fishery on sensitive benthic habitat, Sablefish abundance and rockfish. Data collected over the interim period confirmed that the Sablefish traps came into contact with cold-water coral and sponges within the MPA.

In January 2018, the Haida Nation and the Government of Canada agreed to increase the level of protection for sensitive benthic habitat within the MPA. To achieve this, all bottom-contact fishing within the MPA, including the Northern Seamount Sablefish trap fishery, was closed. These restrictions are a precautionary management measure and are intended to continue with the implementation of this Plan by utilizing the management tools available to the parties.

As a result of these restrictions, fishing activities for species requiring the use of bottom-contact gear is no longer allowed in the MPA. This decision has resulted in the MPA being closed to all commercial fishing activities. The decision also applies to bottom-contact recreational and Aboriginal fisheries.

Consistent with the MOU and the cooperative governance relationship described in section 2, the reinstatement or opening of fishing activities within the MPA would be informed by a recommendation by the SK-B Management Board or, if the Board is unable to reach a joint recommendation, by separate advice to the CHN and DFO with associated rationales.

4.3.2 Scientific Research and Monitoring

In order to conduct scientific research or monitoring activities in the SK-B MPA, researchers must submit an activity plan. The Management Board will review activity plans for consistency with the goals and objectives outlined in this Plan and make a recommendation to the CHN and DFO. The Management Board supports research activities that have minimal ecological impacts and that contribute to the increased understanding of the MPA.



Other requirements and processes may also apply for marine scientific research carried out or sponsored by a foreign government. Those researchers must contact the Defence and Security Relations Division of Global Affairs Canada (GAC) to obtain prior approval. The SK-B Management Board also expects all researchers in the MPA to submit an Activity Plan for review.

Since 2010, research activities have included multi-year hydroacoustic data collection by DFO Science. The collection of hydroacoustic data has enabled analysis of the impacts of underwater noise on fish and increased understanding of marine mammal activity in the MPA. In addition, the Management Board encouraged an independent analysis of satellite Automatic Identification System (AIS) tracking information; this, paired with acoustic data, informed understanding of vessel traffic patterns and trends in the MPA. Ongoing acoustic monitoring is recognized as a potential tool to increase understanding of seamount ecology and human-use activities in the area.

From 2014 to 2017, Wild Canadian Sablefish Ltd. conducted research in response to Management Board concerns about fishery impacts. This research used underwater cameras and other data-recording equipment deployed on fishing traps to quantify bottom contact. It also included biological sampling and tagging of Sablefish and the k'aalts'adaa (Blackspotted/Rougheye) rockfish species complex.

Complementary to this work, a 2015 DFO survey gathered video documentation of the structure and distribution of biodiversity (including the distribution of corals). The researchers also noted any observable impacts of fishing and recorded seabirds and marine mammals within the MPA. Additional hydroacoustic data and plankton samples were also collected.

From July 5 to 21, 2018, the Haida Nation, Fisheries and Oceans Canada, Oceana Canada, and Ocean Networks Canada partnered on an expedition to explore offshore seamounts, including SK-B. The expedition team captured high-quality video footage with two remotely operated vehicles (ROVs), collected species samples, and mapped the seafloor at SK-B using a multi-beam echo sounder. The data collected during this expedition will provide insight into the diverse ecosystems of seamounts, for which data is limited, and help inform the planning and management of SK-B.

Pictured

Marine biologist interpreting the footage received from the remotely operated vehicle. Photo credit: Fisheries and Oceans Canada



Potential management issues associated with research activities include equipment installation, loss and abandonment; impacts of collecting samples; and the potential introduction of aquatic invasive species from submersible operations, research equipment, and discharge from vessels.

4.3.3 Vessel Traffic

Vessel traffic in and around the MPA primarily transits in a northwest–southeast orientation, reflecting routes between Alaska and the southern continental United States, and trans-Pacific shipping traffic.

As of 2015, vessel activity was found to be dispersed throughout the MPA and surrounding area at generally low intensity levels; however, there are three distinctive higher-intensity areas: the northeastern boundary (predominantly cargo vessels), 90 km south of the MPA (mainly tanker traffic), and in and around the SK-B seamount pinnacle (fishing vessel activities – closed in January 2018).

Ongoing hydroacoustic monitoring and additional collaborative research initiatives are expected to further inform baseline noise levels in the area.

Potential impacts related to vessel traffic include both noise and discharge. Anthropogenic ocean noise is considered a chronic stressor for marine organisms and can have harmful effects on a variety of marine organisms. Discharge from vessels includes aquatic invasive species, debris, oil/contaminants, nutrients and any other foreign materials/chemicals that can be expelled from a vessel via ballast water, hull fouling, sewage or waste disposal, bilge, lost cargo or other means. The risk associated with noise and discharge is related to the frequency of vessel traffic in the MPA and broader region (Box 4).

Every vessel is responsible for managing its ballast water properly to prevent harmful aquatic organisms or pathogens from being released into the SK-B MPA and surrounding waters. Vessels engaged in transoceanic navigation are required to discharge ballast water at least 200 nautical miles (nm) from shore or, if doing so is infeasible or would compromise the stability or safety of the vessel or the safety of persons on board, at least 50 nm from the SK-B Seamount pinnacle (53°18' north latitude and 135°40' west longitude). The basis for the 50-nm distance will be reviewed as part of the implementation of the Management Plan.

The SK-B Seamount can represent a grounding hazard for vessels, given its shallow pinnacle. As a result, tankers and cargo ships typically avoid the area. Transiting vessels are encouraged to avoid the entire MPA to minimize ecological impacts.

4.3.4 Other Activities

Other marine activities may occur within the MPA. Specifically, educational and commercial marine tourism activities may occur if the activity is consistent with the Plan's goals and objectives, increases public awareness of the area, and is approved by way of an activity plan.

Activities of ships, submarines or aircraft carried out for the purposes of public safety, law enforcement, emergency response, national security and exercise of sovereignty also may occur within the MPA. The Department of National Defence and/or the Canadian Coast Guard are the lead federal agencies for carrying out these activities.



BOX 4

Regional Vessel Traffic Context

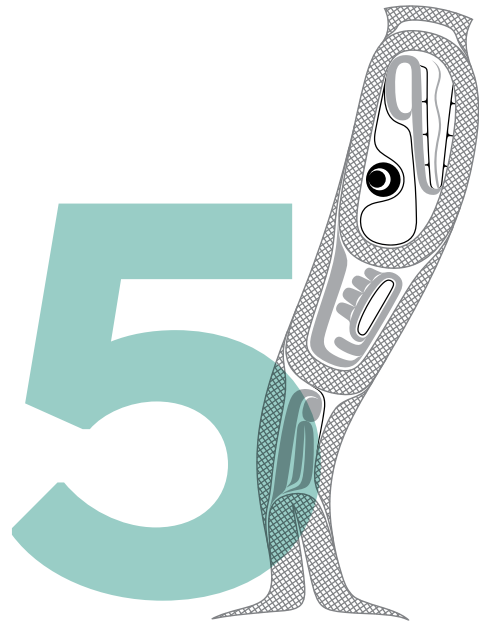
In 1985, a voluntary Tanker Exclusion Zone (TEZ) was established 100 nm offshore from the west coast of Haida Gwaii to help avoid potential oil spills in the area. The pinnacle of the SK-B Seamount is 10 to 20 nm west of the TEZ and is, therefore, susceptible to oil tanker traffic. In addition, existing and proposed industrial development on the North Pacific Coast is resulting in increasing numbers of vessels in the SK-B MPA and surrounding area. Vessel traffic includes tankers (e.g. crude oil, fuel oil, heavy diesel oil) and non-tankers (bulk carriers, general cargo ships, container ships, barges and passenger ships). With approximately 3,000 vessel trips transiting the SK-B MPA area in 2014 (Canessa et al. 2016), there is potential for an oil spill to occur. Oil spills are considered to have a high cumulative risk to marine species and habitats in the SK-B MPA (DFO 2015). There is also a high level of uncertainty, as impacts vary based on the size of spill, type of oil, proximity to the MPA, and ocean conditions after the spill (DFO 2015).

The potential for increased vessel traffic in the area has implications for management of the SK-B MPA, such as potentially increased ocean noise and risk of pollution discharge. Opportunities for improved management may arise from implementation of the Oceans Protection Plan (OPP), announced by the federal government in November 2016. The OPP includes commitments to improving marine safety, responsible shipping, and protecting ocean ecosystems. OPP activities that may benefit the MPA include two new heavy-duty towing vessels and the installation of large-capacity towing kits on Canadian Coast Guard vessels. The OPP also includes an agreement—signed in June 2018—for collaborative governance and management between Canada and Indigenous peoples, including the Haida Nation, for the Northern Shelf Bioregion.

Pictured

Photo credit:
Alex Bobrov





Management Framework

The SK-B MPA management framework includes five components: conservation and management goals, strategic objectives, operational objectives, indicators, and reference points or thresholds (illustrated in Figure 3).

There are five goals for the SK-B MPA. Goal 1 is a conservation goal and generally describes the desired state of ecosystem components. Goals 2 through 5 are management goals and generally describe the desired management approach. Conservation and management goals are linked and not mutually exclusive.

All goals are supported by strategic objectives, which break the goals down into specific components. Strategic objectives are supported by operational objectives that are more detailed and measurable. Operational objectives guide the selection of indicators and associated reference points or thresholds that will be identified in a monitoring plan for the MPA. The monitoring plan will enable the SK-B Management Board to evaluate the effectiveness of management efforts and to make adjustments as necessary.

The process to identify goals and objectives for the SK-B MPA is described in Box 5.

SK-B Management Framework

Figure 3
Illustrates the process and framework of the SK-B Management under the overarching guiding principles





BOX 5

Developing Goals and Objectives

The SK-B MPA goals and objectives were informed by ecological, cultural, social and economic values and priorities identified by the Management Board, including the overarching purpose of the MPA. The ecological goals and associated objectives were informed by EBM indicator work for other cooperative marine planning processes (e.g. Gwaii Haanas, Marine Plan Partnership), the application of DFO's ecological risk assessment framework (O et al. 2015; DFO 2015), and an ecosystem management framework developed by Jennings (2005). The cultural, social and economic objectives were informed through the identification of additional cooperative management priorities in workshops and Management Board discussions. The goals and objectives were also reviewed by the SK-B Advisory Committee. Input received during this engagement process was considered by the Management Board and incorporated to the final goals and objectives listed in section 5.1.

Pictured above

Colonial scalps are planktonic tunicates that can form intricate bioluminescent chains to attack potential mates or distract predators. Photo credit: Emory Kristof and Bill Curtsinger (National Geographic Society)



Pictured right

Crimson anemone. Photo credit: Neil McDaniel



5.1 GOALS AND OBJECTIVES

Goal 1. The unique biodiversity, structural habitat and ecosystem function of the SK-B MPA are protected and conserved.

STRATEGIC OBJECTIVES	OPERATIONAL OBJECTIVES
1.1 Populations of rare, localized, endemic and vulnerable species are protected and conserved.	<p>a. The condition and abundance of cold-water coral and sponges are within a range of the natural state.</p> <p>b. The condition and abundance of other invertebrates are within a range of the natural state.</p> <p>c. The condition and abundance of fishes (e.g. Blackspotted/ Rougheye rockfish, Bocaccio, Yelloweye rockfish, Sablefish, Prowfish) are within a range of the natural state.</p>
1.2 Habitats that are essential for life history phases of species within the MPA are protected and conserved.	<p>a. Sensitive benthic habitats are within a range of the natural state.</p> <p>b. Pelagic and sea surface conditions are within a range of the natural state.</p>
1.3 Ecosystem food webs are protected and conserved.	<p>a. Ecosystem function and trophic structure are within a range of the natural state.</p>



Goal 2. The protection and conservation of the unique biodiversity, structural habitat and ecosystem function of the SK-B MPA are not compromised by human activities.

STRATEGIC OBJECTIVES

2.1 Fishing is managed to not compromise the protection and conservation of the SK-B MPA.



2.2 Vessel traffic is managed to not compromise the protection and conservation of the SK-B MPA by working with other federal agencies.

2.3 Scientific research and monitoring activities are managed to not compromise the protection and conservation of the SK-B MPA.

OPERATIONAL OBJECTIVES

- a.** Direct and non-direct removal of species are managed to maintain the condition and abundance of target and non-target species and adhere to approved levels of bycatch.
 - b.** Direct and non-direct removal of species is managed to fully protect sensitive benthic habitats from direct and non-direct impacts, including, but not limited to: crushing, sedimentation, breakage, entanglement, and removal.
 - c.** Direct and non-direct removal of species is consistent with marine mammals and marine birds conservation plans, recovery strategies, and related policies.
 - d.** Direct and non-direct removal of species is managed to prevent and report on gear loss and retrieval of lost gear (intentional or not).
 - e.** Fishing gear is managed according to best practices to prevent the introduction and spread of aquatic invasive species.
-
- a.** Large vessels are encouraged to transit a minimum of 50nm from the SK-B pinnacle.
 - b.** Underwater noise from vessel traffic is monitored to establish a baseline.
 - c.** Ballast water is exchanged at least 50nm from the SK-B pinnacle to avoid the introduction of invasive species from vessels.
-
- a.** Non-destructive sampling strategies are applied where possible.
 - b.** Impacts of destructive (i.e., damaging, extractive) sampling techniques are minimized and rationalized.
 - c.** Loss of research equipment is avoided and reported.
 - d.** Research and monitoring equipment is managed according to best practices to prevent the introduction and spread of aquatic invasive species.

STRATEGIC OBJECTIVES

2.4 Marine tourism activities are managed to not compromise the protection and conservation of the SK-B MPA.

2.5 Non-renewable resource activities outside the SK-B MPA are considered in the management of the MPA.

OPERATIONAL OBJECTIVES

a. Marine tourism activities are monitored as appropriate, and impacts are minimized as necessary.

a. Readily available information regarding non-renewable resource activities that may compromise the conservation and protection of the SK-B MPA is shared with the SK-B Management Board.



Pictured left

Monitoring activities at the SK-B MPA.
Credit: Fisheries and Oceans Canada



Goal 3. Best available information and effective monitoring increase understanding of ecosystem variability and impacts related to human activities in the SK-B MPA.

STRATEGIC OBJECTIVES

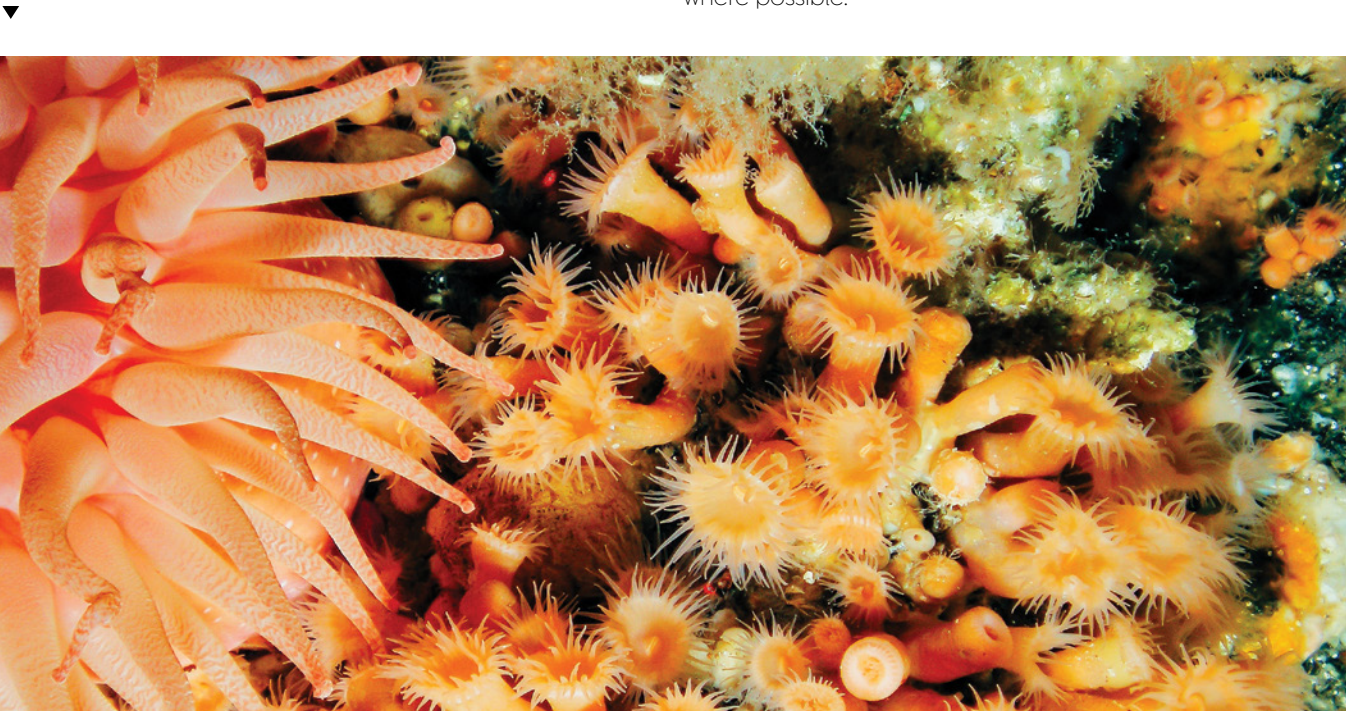
3.1 Best science, including Haida traditional knowledge and local knowledge, is used to support decision making.

3.2 A comprehensive monitoring plan is developed and implemented.

OPERATIONAL OBJECTIVES

- a. Support decision-making by incorporating scientific research on seamounts as appropriate.
 - b. Support decision-making by incorporating Haida traditional knowledge that is shared as appropriate.
 - c. Support decision-making by incorporating local knowledge as appropriate.
-
- a. Research is conducted to establish baseline information.
 - b. Trends in fishing and science/research activities are monitored.
 - c. Trends in vessel traffic activity in and around the SK-B MPA are monitored by working with relevant agencies.
 - d. Transient populations (e.g. marine mammals and marine birds) are monitored to establish a baseline and detect significant changes by working with relevant agencies.
 - e. New and existing partnerships support monitoring activities where possible.

Pictured
Crimson anemone surrounded by colonial zoanthids. Credit: Fisheries and Oceans Canada



Goal 4. Cooperative management of the SK-B MPA is adaptive and responsive.

STRATEGIC OBJECTIVES

4.1 Collaborative relationships and open sharing of information and knowledge contribute to the protection and conservation of the SK-B MPA.

4.2 Cooperative management of the MPA achieves coordinated, integrated, and effective management decision-making.

OPERATIONAL OBJECTIVES

- a.** SK-B data is shared openly and transparently between DFO and the CHN, subject to privacy, confidentiality and other considerations.
 - b.** Collaborate with other researchers and stakeholders working on broader relevant initiatives (e.g., seamount monitoring, State of the Pacific Ocean reporting, climate change research, geology) as appropriate.
-
- a.** A cooperative process for SK-B Management Board involvement in fisheries management decision-making is implemented.
 - b.** An Advisory Committee is engaged and provides advice in the implementation of the management plan as necessary.
 - c.** Opportunities to coordinate and maximize capacity and resources to manage the SK-B MPA are identified and utilized wherever possible.
 - d.** Decisions related to the management of the SK-B MPA are documented and, as appropriate, reported.

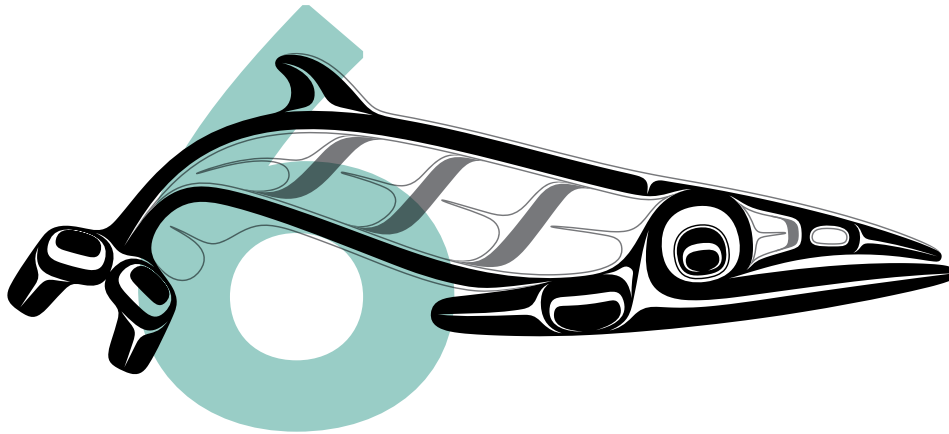
Goal 5. Public awareness of the SK-B MPA is increased.

STRATEGIC OBJECTIVES

3.1 An outreach strategy is created and implemented to increase awareness of the SK-B MPA among responsible agencies, stakeholders and other interested groups.

OPERATIONAL OBJECTIVES

- a.** Awareness of the SK-B MPA is increased locally, nationally and, where appropriate, internationally, via implementation of the outreach strategy.
- b.** The virtual reach of the SK-B MPA is increased (e.g. websites, social media).
- c.** Haida language and oral traditions are used in SK-B communications materials.



Surveillance, Enforcement and Compliance

Pictured

Fisheries and Oceans Canada aerial surveillance program aircraft. Credit: Fisheries and Oceans Canada



The CHN and DFO have important roles and responsibilities in the area, with other agencies assisting in the monitoring of the MPA.

The CHN is responsible for ensuring that Haida lands and waters are sustainably managed, continuing the traditional role of Haida watchmen. In the marine environment, this is achieved through the Haida Fisheries Program, supported by Haida Fisheries Guardians. The CHN and DFO will continue to explore increasing opportunities for joint participation in MPA surveillance, compliance and enforcement activities.

Currently, the primary means of surveillance and enforcement in the SK B MPA is through the aerial surveillance program managed by DFO's Conservation and Protection Branch.

Fisheries Officers and Fishery Guardians, including CHN Fishery Guardians, are responsible for enforcement matters under the *Oceans Act*, *Fisheries Act* and the *Species at Risk Act*. The Canadian Coast Guard provides support for SK B MPA surveillance and enforcement through its marine safety, vessel traffic management,

pollution surveillance, and environmental response programs. Other federal departments or agencies that may be involved in surveillance, enforcement and compliance within the MPA include Environment and Climate Change Canada, Transport Canada, the Department of National Defence, and the Department of Foreign Affairs, Trade and Development.

6.1 REPORTING ACCIDENTS AND VIOLATIONS

Any accident that is likely to result in disturbance, damage, destruction or removal of living marine organisms, their habitat or the seabed must be reported to the Canadian Coast Guard within two hours of its occurrence. Under the *Fisheries Act*, users are also legally obligated to take reasonable measures to prevent or mitigate an accident, spill or environmental emergency. In addition, recording and reporting of any observed violation in the MPA is encouraged.





Education and Outreach

The MPA provides an excellent opportunity to raise public awareness about seamount ecosystems and their contributions to diverse, productive and healthy oceans.

Increased understanding and awareness of the MPA through outreach activities is expected to support management and compliance within the MPA and foster a sense of stewardship. A communications protocol for the SK-B MPA facilitates coordinated CHN and DFO education and outreach initiatives.

Currently, SK-B MPA-related material is available online.



CHN: haidamarineplanning.com

DFO: <https://www.dfo-mpo.gc.ca/oceans/mpa-zpm/bowie-eng.html>

The CHN and DFO websites will be updated with news about plan implementation, outreach activities, and scientific research projects and findings.

A priority for education and outreach activities is increasing local, national and international awareness of the SK-B MPA. A recent SK-B outreach project engaged Haida artists and dance groups to share information about Haida cultural connections to the MPA (Box 6).

To further support increased education and awareness, an outreach strategy will be developed, and engagement with researchers, educators and the general public regarding activities taking place in the area will also be explored. National and international forums about seamount ecosystems may provide additional opportunities to increase awareness of the SK-B MPA and to share experience and knowledge.



BOX 6

S̱gaan Kinghlas aauu tl'a 'waadluwaan hlGajagang We all take care of S̱gaan Kinghlas

In the fall of 2015 a collaborative project with two Haida artists, a Haida composer, a Haida videographer and two youth dance groups was initiated. The artists carved two dancing masks that were unveiled and danced by the youth dance groups in the fall of 2015. A film that documents the project—from the carving of the masks and composition of the song, through to the public event—was released in 2017.



The film is available on the Council of the Haida Nation YouTube channel available at: youtu.be/1Wak5JW0h1w

Pictured

X̱uuya K'aadjuu giis
Teresa Russ performs
the S̱gaan Kinghlas
song at a community
event in G̱aw Massett in
fall 2015.





Implementation

The CHN and DFO are committed to collaborative implementation of this Plan in accordance with SK-B guiding principles, mandates, priorities and capacities for ocean management.

Implementation includes continued cooperative management by both parties as well as the ongoing participation and advice of stakeholders.

8.1 MANAGEMENT PRIORITIES

The Management Board has identified four linked management priorities for the SK B MPA based on the goals and objectives outlined in Section 5. These priorities, outlined in Table 2, will inform annual work plans and will be implemented within existing programs and resources, where possible.

8.2 REPORTING AND PLAN EVALUATION

Monitoring reports will be produced at least once every five years and will include management recommendations to inform annual work plans, updates to the Plan, and management decisions, where appropriate. Results from monitoring will also be used to prioritize research activities and identify research gaps.

The Plan, including goals and objectives, will be collaboratively reviewed and updated every five years to consider emerging management needs and priorities, as well as results from monitoring reports and annual work plans. A comprehensive re-evaluation of the Plan will occur every 10 years.

TABLE 2

SK-B MPA Management Priorities and Associated Actions

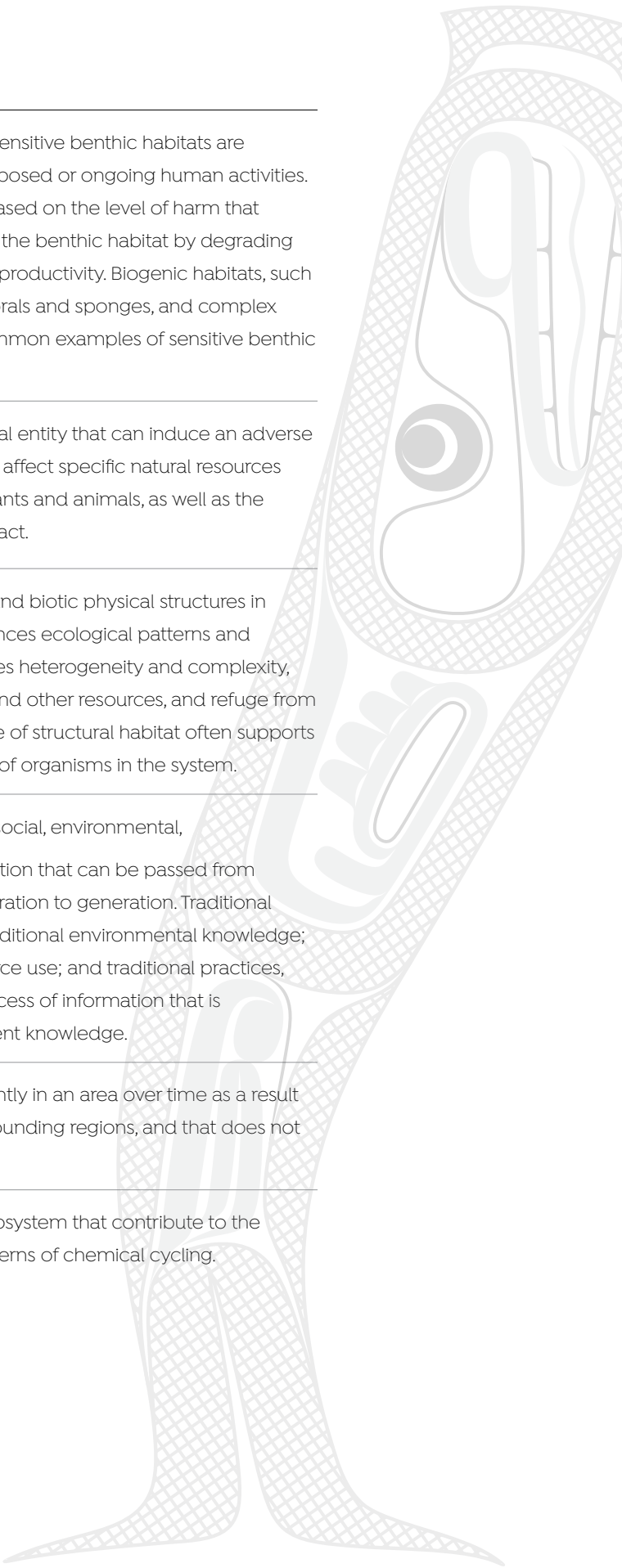
MANAGEMENT PRIORITY	ASSOCIATED ACTIONS	
A. Cooperative Governance and Adaptive Co-Management	<ol style="list-style-type: none"> 1. Maintain regular communication and meetings of the Management Board, supported by technical staff. 2. Engage Advisory Committee at least once a year. 3. Continue to collaboratively review activity requests for the SK-B MPA. 4. Develop annual workplans and progress updates, including monitoring (see Priority C). 	<ol style="list-style-type: none"> 5. Create linkages, identify points of integration/overlap, and communicate and collaborate with other marine planning, science, and fisheries management processes as appropriate 6. Identify and implement points of engagement for the SK-B Management Board in the fisheries management decision-making process.
B. Research to support conservation outcomes	<ol style="list-style-type: none"> 1. Identify research priorities (e.g., understanding the SK-B benthic community) to fill knowledge gaps. 2. Compile the best available data to inform management decisions, including collaboration with other researchers where appropriate. 3. Continue to assess impacts of human activities (e.g., vessel traffic). 	<ol style="list-style-type: none"> 4. Continue to pursue scientific and/or research-based advice from DFO, CHN and others, including advice based on Haida traditional knowledge, as appropriate. 5. Explore opportunities to utilize hydrophones to collect data.
C. Monitoring	<ol style="list-style-type: none"> 1. Develop a monitoring plan, including identification of indicators, reference points and thresholds as appropriate. 2. Utilize existing and new partnerships to conduct monitoring activities, where appropriate. 	<ol style="list-style-type: none"> 3. Based on monitoring results, update and revise the Plan (e.g., operational objectives) and/or adapt the monitoring plan, as appropriate.
D. Education and Outreach	<ol style="list-style-type: none"> 1. Update CHN and DFO websites on an ongoing basis with news about plan implementation, outreach activities, and scientific research projects and findings. 	<ol style="list-style-type: none"> 2. Develop an outreach strategy to build relationships with researchers, schools/educators, the Haida Nation, and the general public. 3. Implement the outreach strategy as resources permit.

Glossary of terms

Adaptive Management	A monitoring and management approach that assists in decision-making related to science-based processes. It is a prescriptive, formalized, systematic method that enables management to learn from the outcomes of implemented management actions.
Adaptive Co-management	An emergent governance approach for complex social-ecological systems that links the learning function of adaptive management and the linking function of co-management.
Baseline Information	The reference condition for ecosystem components against which to monitor or assess change.
Biodiversity	The variability among living organism from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.
Bycatch	Retained or non-retained incidental catch of non-target species, including, but not limited to, fish, cold-water corals and sponges, marine plants, and birds.
Conservation	The protection, maintenance and rehabilitation of living marine resources, their habitats and supporting ecosystems.
Ecological Risk Assessment Framework (ERAF)	A systematic, science-based decision-making structure that is intended to help guide transition from high-level aspirational principles and goals to more tangible and specific operational objectives. When an ERAF is applied, it assesses potential individual and cumulative risk to significant ecosystem components from human activities and their associated stressors. The results of this application inform the identification and prioritization of potential indicators.
Ecosystem	A dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit.

Ecosystem component	A fundamental element of the biological, physical or chemical environment that represents an explicit and tangible (i.e. measurable or observable) species, habitat, function, structure or other attribute.
Ecosystem-based Management	An adaptive approach to managing human activities that seeks to ensure the coexistence of healthy, fully functioning ecosystems and human communities. The intent is to maintain those spatial and temporal characteristics of ecosystems such that component species and ecological processes can be sustained, and human well-being can be supported and improved. Application of an EBM approach requires a strong foundation in science, including the incorporation of traditional and local knowledge.
Ecosystem function	The physical, chemical and biological processes or attributes that contribute to the self-maintenance of the ecosystem.
Food Web	The transfer of food energy across trophic levels within an ecological community.
Haida Eddies	Large anti-cyclonic vortices (waters spiraling clockwise outward from a warmer, less saline centre) that form off the west coast of Haida Gwaii and transport warmer, nutrient- and plankton-rich coastal water out into the North Pacific Ocean.
Indicator	Quantitative/qualitative statements or measured/observed parameters that can be used to describe existing situations and to measure changes or trends over time.
Integrated Fisheries Management Plan	A plan used by DFO to manage fisheries pursuant to the <i>Fisheries Act</i> , to guide the conservation and sustainable use of marine resources.
Large vessels	A boat, ship or craft above 150 gross tonnage designed, used or capable of being used for navigation in, on, through or immediately above water, regardless of its method or lack of propulsion.
Local knowledge	Current knowledge held by people within a community. It can be gained by any individual who has spent considerable time on the land or water observing nature and natural processes.
Management Strategy Evaluation	A simulation-based approach to assessing the relative performance of candidate management procedures under conditions that mimic plausible, though uncertain, stock and fishery dynamics.

Monitoring	A continuous management activity that uses the systematic collection of data on selected indicators to provide managers and stakeholders with indicators that denote the extent of progress toward the achievement of management goals and objectives.
Northern Shelf Bioregion (NSB)	The NSB encompasses approximately 102,000 km ² of marine area, extending from the base of the continental shelf slope in the west to the coastal watershed in the east (adjacent terrestrial watersheds are not included), and from the Canada–U.S. international border of Alaska to Brooks Peninsula on northwest Vancouver Island and to Quadra Island in the south. The NSB is ecologically unique for the diversity of ocean features it contains and the important habitat it provides for many species.
Objectives	Objectives describe a desired future state but are more specific and concrete than goals. They are the means of reaching the goals. They answer the question, “What steps are required to achieve the goal?”
Pelagic conditions	The oceanographic qualities within the pelagic zone (e.g. physical, chemical, and biological characteristics).
Pelagic zone	The section of the water column that extends from the surface of the ocean to directly above the ocean floor. The pelagic zone is comprised of five different layers within the water column: epipelagic (< 200 m), mesopelagic (200–1000 m), bathypelagic (1000–4000 m), abyssopelagic (4000–6000 m), and hadopelagic (> 6000 m).
Protection	Avoiding harm to fish, fish habitat or other natural resources from human activities through surveillance and enforcement, and management measures with the goal of compliance with relevant policies, plans and/or regulations (e.g. protection of species at risk).
Range of the Natural State	The natural variation of condition and extent, or range, of an ecosystem component (e.g. a species, ecological process, or environmental quality). In areas where human activity occurs, it implies that no measurable difference exists with or without such activity.
Recovery strategy	A document that outlines the long-term goals and short-term objectives for recovering a species at risk, based on the best available scientific baseline information.
Risk	The uncertainty that surrounds future events and outcomes. It is the expression of the likelihood of an adverse ecological effect occurring as a result of exposure to one or more stressors.



Sensitive benthic habitat	Similar to sensitive benthic areas, sensitive benthic habitats are habitats that are vulnerable to proposed or ongoing human activities. Vulnerability will be determined based on the level of harm that the human activities may have on the benthic habitat by degrading ecosystem functions or impairing productivity. Biogenic habitats, such as those created by cold-water corals and sponges, and complex physical seabed elements are common examples of sensitive benthic habitats.
Stressor	Any physical, chemical or biological entity that can induce an adverse response. Stressors may adversely affect specific natural resources or entire ecosystems, including plants and animals, as well as the environment with which they interact.
Structural Habitat	Refers to the presence of abiotic and biotic physical structures in a system to the degree that influences ecological patterns and processes. Structural habitat creates heterogeneity and complexity, providing niches, access to food and other resources, and refuge from predators. As a result, the presence of structural habitat often supports a higher abundance and richness of organisms in the system.
Traditional knowledge	Oral and written cultural, spiritual, social, environmental, ecological and economic information that can be passed from one person to another, from generation to generation. Traditional knowledge is a combination of traditional environmental knowledge; traditional marine, land and resource use; and traditional practices, beliefs and laws. It is a resilient process of information that is transformed and adapted to current knowledge.
Transient population	A population that occurs infrequently in an area over time as a result of dispersal from or between surrounding regions, and that does not maintain viable local populations.
Trophic structure	The feeding relationships in an ecosystem that contribute to the routes of energy flow and the patterns of chemical cycling.

List of Acronyms

The following acronyms are used in the context of marine protect area management for SGaan Kinghlas-Bowie Seamount Marine Protected Area:

AIS	Automatic Information System
AOI	Area of Interest
CHN	Council of the Haida Nation
DFO	Fisheries and Oceans Canada
EBM	Ecosystem-based Management
IFMP	Integrated Fisheries Management Plan
MOU	Memorandum of Understanding
MPA	Marine Protected Area
NSB	Northern Shelf Bioregion
OPP	Oceans Protection Plan
PNCIMA	Pacific North Coast Integrated Management Area
SK-B	S <u>G</u> a <u>a</u> n K <u>i</u> ngh <u>l</u> as-Bowie Seamount

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Appendix 1: Bowie Seamount MPA Regulations

SOR/2008-124 April 17, 2008

Bowie Seamount Marine
Protected Area Regulations
P.C. 2008-785 April 17, 2008

Her Excellency the Governor General
in Council, on the recommendation of
the Minister of Fisheries and Oceans,
pursuant to subsection 35(3) of the
Oceans Act, hereby makes the annexed
Bowie Seamount Marine Protected
Area Regulations

INTERPRETATION

1. (1) In these Regulations, Area”
means the Bowie Seamount Marine
Protected Area designated
under section
- (2) In these Regulations, all
geographical coordinates (latitude
and longitude) are expressed in the
North America Datum 1983 (NAD 83)
geodetic reference system.
- (3) In the schedule, the lines
connecting the
points are rhumb lines.

DESIGNATION

2. The area of the Pacific Ocean –
consisting of the seabed, the subsoil
and the water column above the
seabed – that is bounded by a series
of rhumb lines drawn from a point
53°03'07.6" N, 135°50'25.9" W, to a
point 53°16'20.9" N, 134°59'55.4" W, then
to a point 53°39'49.2" N, 135°17'04.9"
W, then to a point 53°39'18.0" N,
135°53'46.5" W, then to a point

53°52'16.7" N, 136°30'23.1" W, then to a
point 53°49'19.6" N, 136°47'33.1" W, then
to a point 53°40'02.5" N, 136°57'03.5"
W, then to a point 53°13'59.2" N,
136°10'00.0" W, then back to the point
of commencement (which points are
shown as points 1 to 8, respectively, of
the schedule)
is designated as the Bowie Seamount
Marine Protected Area.

PROHIBITED ACTIVITIES

3. In the Area, no person shall
 - (a) disturb, damage or destroy, or
remove from
the Area, any living marine
organism or any part
of its habitat;
 - (b) disturb, damage or destroy or
remove from the Area, any part of
the seabed; or
 - (c) carry out any activity –
including depositing, discharging
or dumping any substance,
or causing any substance to
be deposited, discharged or
dumped – that is likely to result
in the disturbance, damage,
destruction or removal of a living
marine organism or any part of
its habitat.

EXCEPTIONS

4. Despite section 3, the following
activities may be carried out in the
Area:

- (a) commercial fishing that is carried
out in accordance with the
Fisheries Act and its regulations;
- (b) recreational fishing that is carried
out in accordance with the
Fisheries Act and its regulations;
- (c) fishing that is carried out in
accordance with the Aboriginal
Communal Fishing Licences
Regulations;
- (d) vessel travel carried out in
accordance with the Canada
Shipping Act, 2001 and its
regulations;
- (e) foreign vessel travel carried out
in accordance with the Canada
Shipping Act, 2001 and its
regulations and foreign ship travel
carried out in accordance with
the *Coasting Trade Act* and
its regulations;
- (f) any movement or other activity
of a ship, submarine or aircraft if
the movement or other activity
is carried out for the purpose of
public safety, law enforcement
or national security or for the
exercise of Canadian sovereignty
and
- (vii) the ship, submarine or aircraft
is owned or operated by or on
behalf of Her Majesty in right of
Canada or by a foreign military
force acting in cooperation with,
or under the command or control
of, the Canadian Forces; or

- (viii) the movement or other activity is carried out for the purpose of an emergency response under the direction, command or control of the Canadian Coast Guard;
- (i) marine scientific research activities that are carried out or sponsored by a foreign government and in respect of which that government has received the consent of the Minister of Foreign Affairs under paragraph 3(2)(c) of the Coasting Trade Act, if the activities are carried out in a manner that complies with the terms and conditions of the consent; and
- (j) an activity approved under section 6.

ACTIVITY PLAN

5. Every person who proposes to carry out a scientific research, monitoring, educational or commercial marine tourism activity in the Area shall submit to the Minister for approval, not less than 60 days before the day on which the activity is proposed to begin, a plan that contains
 - (a) the name, address and telephone number and, if applicable, the facsimile number and electronic mail address of a person who can be contacted in respect of the plan;
 - (b) a detailed description of the proposed activity that sets out
 - (i) its purpose,
 - (ii) the period or periods during which it is to be carried out,
 - (iii) its location on a map;
 - (iv) the types of data that are to be collected, if any, and the sampling protocols or other techniques to be used to collect the data,

- (v) the types of equipment, if any, that are to be used during the proposed activity, including those for gathering data and, if any of the equipment is to be anchored or moored in the Area, the methods by which the anchoring or mooring is to be conducted,
- (vi) the type and identity of every ship that is to be used to carry out the proposed activity, and
- (vii) every substance, if any, that is to be deposited, discharged or dumped within the Area during the proposed activity;
- (c) an assessment of the environmental effects that are likely to occur within the Area as a result of the proposed activity; and
- (d) a list of every licence, permit, authorization or consent obtained or applied for in respect of the proposed activity.

6. (1) Subject to subsection (2), the Minister shall, within 30 days after the day on which a plan that is submitted in accordance with section 5 is received, approve the plan if

- (a) in the case of scientific research and monitoring, the activity is for the purpose of
 - (i) understanding the ecology of the Area,
 - (ii) contributing to the management of the Area, or
 - (iii) monitoring the effectiveness of the conservation measures being implemented within the Area; or
- (b) in the case of educational activities or commercial marine tourism activities, the activity is for the purpose of increasing public awareness of the Area.

- (2) The Minister shall not approve a plan if

- (a) the activity is likely to damage or destroy the habitat of a living organism within the Area; or
- (b) the cumulative environmental effects of the proposed activity, in combination with any other past and current activities carried out within the Area, are likely to damage or destroy the habitat of living marine organisms in the Area.

REPORTING OF ACCIDENTS

7. Every person involved in an accident that is likely to result in any disturbance, damage, destruction or removal prohibited under section 3 shall, within two hours after its occurrence, report the accident to the Canadian Coast Guard.

COMING INTO FORCE

8. These Regulations come into force on the day on which they are registered.

<https://laws-lois.justice.gc.ca/eng/regulations/SOR-2008-124/>

