

Strait of Georgia and Howe Sound Glass Sponge Reefs  
Conservation Initiative Workshop  
January 28, 2020

**Workshop Report**

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# 1 Acronyms

BMP	-	Best management practice
CPAWS	-	Canadian Parks and Wilderness Society
DSF	-	David Suzuki Foundation
ENGO	-	Environmental Non-Governmental Organization
FLNRORD	-	British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development
FSC	-	Food, social and ceremonial
GSR	-	Glass Sponge Reef
HSBRIS	-	Howe Sound Biosphere Region Initiative Society
MLSS	-	Marine Life Sanctuaries Society
NSMEC	-	Nicholas Sonntag Marine Education Centre
RCA	-	Rockfish Conservation Area
ROV	-	Remote Operated Vehicle
SFAB	-	Sport Fishing Advisory Board
UBC	-	University of British Columbia
UCBC	-	Underwater Council of British Columbia

## 2 Introduction

DFO is in the process of engaging with First Nations and stakeholders regarding Glass Sponge Reef (GSR) Marine Refuges and the integration of Rockfish Conservation Areas (RCAs) in Howe Sound. The purpose of the engagement process is to solicit input from First Nations, local and municipal governments, commercial and recreational fish harvesters, and conservation organizations on proposed interim protection measures for glass sponge reefs, and to provide a forum for sharing information and ideas among stakeholder groups and DFO.

This report summarises the outcomes of the **Strait of Georgia and Howe Sound Glass Sponge Reefs Conservation Initiative Workshop** held on January 28, 2021. A second workshop with a focus on Rockfish Conservation Area integration is expected to follow in 2021.

This report was prepared by Sandra Bicego, PacificaBlue Consulting. If there are any questions about this report please contact:

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## 2.1 Workshop Objectives

The workshop objectives were to:

- Discuss and obtain feedback from representatives on ideas for interim measures to protect glass sponge reefs in Howe Sound.
- Provide a summary of what DFO has heard to date from the fall 2020 stakeholder workshops with various sectors and interests in Howe Sound regarding glass sponge reef protection.
- Bring representatives from each sector and interest group together to enable sharing of different perspectives on protecting Howe Sound glass sponge reefs.

## 2.2 Background

Believed to be extinct until the late 1980s, glass sponge reefs (GSRs) are deep, globally unique ecosystems found only in the northeast Pacific Ocean. They provide habitat for a variety of species, filter large volumes of water and are important in carbon and nitrogen processing. Howe Sound boasts some of the few reefs shallow enough to be accessible to air gas divers and dive research.

Since 2016, seventeen marine refuges have been established under the Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Initiative to protect glass sponge reefs from all commercial, recreational,

and Indigenous food, social, and ceremonial bottom-contact fishing activities in alignment with DFO's *Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas*.

In Spring of 2019, nine additional glass sponge sites were identified as possible GSRs. Following ground-truthing of these locations, a report was published by DFO indicating the presence of five live reefs and one dead reef that may be a good candidate for recovery, along with three additional sponge gardens in Howe Sound. These newly ground-truthed sponge reefs are the focus of Phase 3 of the GSR Conservation Initiative, in which DFO aims to put into place interim protection measures by Spring 2021, and have more permanent protection measures in place by Spring 2022 that align with Rockfish Conservation Areas (RCAs).

## 3 What We Did

On January 28, 2021, 9:00 am – 12:30 pm, DFO held a Zoom workshop with 31 invited participants who represented the following key areas: First Nations communities in Howe Sound, local governments, commercial and recreational fishing, and environmental groups.

Following a welcome from Ray Natraoro, Cultural Manager, Rights and Title from Squamish Nation and a round of participant introductions, Lindsay Klopp, Regional FAM Officer, Sustainable Fisheries Framework, DFO, provided a context-setting presentation. The presentation provided an update on the Strait of Georgia and Howe Sound Glass Sponge Reefs Conservation Initiative; reviewed a summary of the feedback from the fall sectoral webinars; set out the process timeline and next steps; and the meeting discussion topics.

Participants worked in virtual breakout groups with a mix of sectors and interests to discuss the key topics and questions using pre-formatted worksheets. In the breakouts, ideas were collected on digital sticky notes and posted onto the worksheets where they were clustered and sorted into theme areas. Each group then presented their outcomes to the larger plenary group. A discussion followed on the ideas and themes raised and the workshop ended with next steps.

## 4 What We Heard

This section sets out a summary of the main themes from the workshop discussions.

### 4.1 Discussion Topics

There were four topics to be discussed. We asked the same question of each group to ensure everyone was able to provide input. The topics and questions were as follows:

1. **Passage Island:** In regard to the dead reef at Passage Island, what considerations should be taken into account during the development of glass sponge interim protection measures?

2. **Stewardship & Awareness:** Thinking about guidelines, tools, and/or best practices in and around GSRs:
  - What kind of best practices or guidelines to minimize impacts to glass sponge reefs has your group developed that can be shared?
  - How does your organization, group or network build awareness about glass sponge reefs and share information about them? Or how could it in the future?
  
3. **Community Collaboration:** What opportunities do you see for community collaboration on the Howe Sound glass sponge reefs? We are interested to support others in leading on GSR community collaboration such as future research projects, surveys, education/awareness, and ecological monitoring.
  - Where are there opportunities to align current activities with this glass sponge reef conservation initiative?
  - What would be needed to support collaboration?
  
4. **Long Term Planning:** In your view, what values should be considered in long-term marine planning for Howe Sound?
  - Why are they important and to whom?
  - If values relate to a specific location, please identify and explain.

## 4.2 Summary

The following sets out a summary of the broad subjects and main themes that arose from all the breakout group discussions, organized by discussion topic.

### Topic 1 Summary: Passage Island

This topic focussed on Passage Island and asked the question: *In regards to the dead reef at Passage Island, what considerations should be taken into account during the development of glass sponge interim protection measures?*

Main themes summarize the detailed responses from the six breakout sessions and are organized by broad subject area. The subjects are not ordered in relation to any priority sequence.

Subjects	Main Themes
<b>Close the Dead Reef Area</b>	<ul style="list-style-type: none"> <li>• Protection is important for a fragile system; will help reef and ecosystem in recovery / restoration.</li> <li>• GSRs provide important habitat for commercial and recreational species.</li> <li>• Even if dead, the reef provides habitat for new sponge recruits to settle and grow.</li> </ul>
<b>Keep the Dead Reef Area Open</b>	<ul style="list-style-type: none"> <li>• Keep open due to socio-economic impacts - Most productive and important commercial, recreational and First Nations fishing area.</li> <li>• Easily accessible, important and prime First Nation and public/recreational prawn fishing area.</li> <li>• Do not support downrigger restriction in this area.</li> </ul>

Subjects	Main Themes
<b>Protection Measure Considerations</b>	<ul style="list-style-type: none"> <li>• Should not close dead reef areas without science-based evidence.</li> <li>• Recognize or accommodate indigenous fishing rights in protected areas.</li> <li>• Consider other uses such as recreational boating, ferry traffic and impacts on glass sponge reefs.</li> <li>• Consider economic values as part of a balanced approach.</li> <li>• Protect according to precautionary principle.</li> <li>• Take extra caution with downriggers on shallow reef southwest of Passage Island.</li> <li>• Consider different protection measures for dead vs live reefs.</li> <li>• Reduce buffer area to reduce socio-economic impact.</li> <li>• Affirm relationship between reefs and buffer.</li> <li>• Concern there will be displacement of fishing effort to other areas.</li> <li>• Gear and technology have improved for trap deployment.</li> <li>• Identify a protection target for GSRs.</li> <li>• Consider how integration of RCA and GSR will affect prawn by trap fishing.</li> </ul>
<b>Science, Data Collection and Monitoring</b>	<ul style="list-style-type: none"> <li>• Science-based evidence is needed to demonstrate why closures are important on dead reef.</li> <li>• Monitor and gather data to learn about ecology of dead reef / determine recovery potential.</li> <li>• Determine why the reef died to prevent it happening again or to ensure restoration success.</li> <li>• Consider investigating species abundance/size inside vs. outside already existing GSR refugia through research work. Living reef is more productive for marine species such as prawns.</li> <li>• Turn to local expert knowledge on boundary changes.</li> <li>• Squamish Nation recognizes the importance of GSR water filtering capabilities and as habitat for rockfish and other species.</li> <li>• Use adaptive management approach to reassess dead reef closure on a time cycle that could lead to reopening if shown not to be useful.</li> <li>• Can the live reefs in this area be shown on a map?</li> <li>• Keep the reef open and monitor it for new sponge growth.</li> <li>• Study impacts of sedimentation at these reefs.</li> </ul>
<b>Enforcement and Education</b>	<ul style="list-style-type: none"> <li>• Closures need to be supported by enforcement and education.</li> <li>• Shape of proposed closure makes enforcement tricky; how will it work in practice?</li> <li>• Provide education to tow boat operators.</li> <li>• Single, large, protected area would be easier to manage for enforcement and education.</li> </ul>

## Topic 2 Summary: Stewardship & Awareness

Stewardship and awareness building was the focus of the second topic. Two sets of questions were asked and the following sets out a summary of the main theme responses and key subject areas covered.

### 2.1 Guidelines, Tools and Best Practices

For this first sub-topic, participants were asked about guidelines, tools and best practices. The question asked was: *Thinking about guidelines, tools, and/or best practices in and around GSRs: What kind of best practices or guidelines to minimize impacts to glass sponge reefs has your group developed that can be shared?*

Participants across the six breakouts provided information about what their or other organizations are doing, and some provided suggestions about what could be done regarding guidelines, tools or best practices. Main themes in the table below summarize the detailed responses from the six breakouts and are organized by broad subject area. The subjects are not ordered in relation to any priority sequence.

Subject	Main Themes
Technological Advances	<ul style="list-style-type: none"><li>• Bottom tracking technology is gaining advancement for downriggers.</li></ul>
Mapping, Images, Video and Interactive Tools	<ul style="list-style-type: none"><li>• Electronic maps for use in navigation software can help boaters determine where closures are and learn about regulations/guidelines.</li><li>• Update Navionics charts to build awareness of where the reefs are to help avoid them.</li><li>• Advising DFO through our underwater mapping, images and video documentation showed evidence of the importance of GSRs as habitat for commercial, recreational and cultural species and led to establishment of marine refuges.</li></ul>
Signage	<ul style="list-style-type: none"><li>• Increase signage on anchoring/bottom fishing methods in commonly used areas that contain GSRs.</li></ul>
Marinas as venue to disperse information	<ul style="list-style-type: none"><li>• Information and presentations at marinas will help increase awareness because most people do not know about GSRs in Howe Sound.</li></ul>
Presentations, Videos, Courses and Interpretive Programs	<ul style="list-style-type: none"><li>• Marine Life Sanctuaries Society (MLSS), Underwater Council of British Columbia UCBC, and BC Parks are developing a diver training course / program for sponge reefs at Halkett Bay Marine Park. Course aims to ensure that recreational divers enjoy diving safely with the least impact on sponges in this area.</li><li>• Interpretive dive programs are in place to educate on the diversity of marine life and need for protecting GSRs for the long term.</li><li>• Showing sponge reef specimens to the public creates interest, appreciation and desire for stewardship of the reefs.</li><li>• Providing presentations on GSRs helps educate public on their importance.</li></ul>



Subject	Main Themes
<b>News Releases</b>	<ul style="list-style-type: none"> <li>• News releases on latest developments/discoveries by Islands Trust and the Conservancy help keep people engaged and builds awareness and sense of stewardship.</li> </ul>
<b>Outreach</b>	<ul style="list-style-type: none"> <li>• Educational outreach programs by MLSS are available for local, regional and First Nations governments.</li> <li>• Consider educational outreach for other potentially high impact activities such as tow boat lines over shallow reefs, anchoring, prop wash.</li> <li>• Recreational fishers can be made aware through fishing/guiding outlets, posting notices at public launches, fishing derbies and the BC Fishing App.</li> </ul>
<b>Associations and Organization Updates</b>	<ul style="list-style-type: none"> <li>• Guides Associations and Boating BC can help with education and influencing behavior change.</li> <li>• Updates are provided to our membership on GSRs.</li> </ul>
<b>Social Media Marketing</b>	<ul style="list-style-type: none"> <li>• Engaging in social media marketing (e.g., projects through University of British Columbia, BC Salmon Restoration Fund).</li> </ul>
<b>GSR Best Practices</b>	<ul style="list-style-type: none"> <li>• Some best management practices (BMP)s with respect to the diving community were noted: <ul style="list-style-type: none"> <li>○ No collection inside GSRs because we know they are too fragile.</li> <li>○ No anchoring on reefs.</li> <li>○ Anchor only in shallow areas when partaking in collection dives.</li> </ul> </li> </ul>
<b>Build Awareness of Range of Depths</b>	<ul style="list-style-type: none"> <li>• Build awareness of range of reef depths and sponge garden depths so fishers can avoid GSRs.</li> </ul>
<b>Monitoring Framework</b>	<ul style="list-style-type: none"> <li>• DFO developing an ecological monitoring framework to better understand what is happening at the reefs and evaluate if protection measures are effective.</li> </ul>
<b>Management Planning and Permitting</b>	<ul style="list-style-type: none"> <li>• MLSS, UCBC and BC Parks are working on a management plan and permitting to facilitate protecting Halkett reef during diving activity within Halkett Bay Provincial Marine Park.</li> </ul>
<b>Regulations</b>	<ul style="list-style-type: none"> <li>• Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) is working to ensure GSRs are considered in marine tenure application reviews (e.g., log handling and storage, linear submarine infrastructure, docks, and others).</li> <li>• Important to increase awareness of regulations with the general public through social media/marketing.</li> </ul>

## 2.2 Building Awareness and Sharing Information on GSRs

The second sub-topic asked about building awareness and sharing information. The question asked was: *Thinking about guidelines, tools, and/or best practices in and around GSRs: How does your organization, group or network build awareness about glass sponge reefs and share information about them? Or how could it in the future?* Participants provided information about what their or other organizations are doing, and some also suggested ideas about what more could be done. Main themes in the table below summarize the detailed responses from the six breakouts and are organized by broad subject area. The subjects are not ordered in relation to any priority sequence.

Subject	Main Themes
<b>Education and Awareness</b>	<ul style="list-style-type: none"> <li>• Education for various user groups lead to greater understanding, awareness, appreciation and stewardship of the GSR areas.</li> <li>• Need to greatly increase public education of marine environment and GSRs.</li> <li>• Need to compile all the BMPs and share with all interested parties and the general public.</li> <li>• DFO education plan needed to communicate with and educate the general public.</li> </ul>
<b>Dive Trips</b>	<ul style="list-style-type: none"> <li>• Dive charter trips for instructors and key community members help spread the word about protecting GSRs.</li> </ul>
<b>Presentations, Lecture Series &amp; Education Training</b>	<ul style="list-style-type: none"> <li>• Training models include GSR programming for volunteer interpreters.</li> <li>• MLSS provides lecture series for interested parties.</li> <li>• Dive community provides information events on GSR protection.</li> <li>• DFO presentations at Sport Fishing Advisory Board (SFAB) meeting helps educate our participants.</li> </ul>
<b>Documentaries &amp; Video</b>	<ul style="list-style-type: none"> <li>• Deep-water videos and images of GSRs are available from MLSS.</li> <li>• Documentary exists on Howe Sound GSR called Moonless Oasis.</li> <li>• Use of 3D model and videos in visitor and student education programming to raise awareness of the GSRs by Nicholas Sonntag Marine Education Centre (NSMEC) in the Gibsons Public Market.</li> </ul>
<b>Forums for Information Exchange</b>	<ul style="list-style-type: none"> <li>• Howe Sound Forums are an effective hub to enable information exchange with professionals.</li> <li>• Local Trustees can send GSR information to large residential databases helping build awareness.</li> </ul>
<b>Collaborative Research</b>	<ul style="list-style-type: none"> <li>• Collaboration between MLSS, BC Parks, DFO, and First Nations brings a new player to the table regarding education and conservation. We are working together documenting and researching information on GSRs to establish their significance as important ecosystems.</li> <li>• Continued collaboration between MLSS and the fishing industry is a win win for industry and GSRs.</li> </ul>
<b>Signage, Posters and Pamphlets</b>	<ul style="list-style-type: none"> <li>• Signage from Phase 1 can be reused.</li> <li>• Posters distributed to marinas and tackle shops highlight GSR and RCA locations.</li> <li>• Pamphlets and maps are handed out to members prior to fishing trips.</li> </ul>
<b>Education Kits</b>	<ul style="list-style-type: none"> <li>• Education kits could be developed specifically for GSRs, MPAs, protected areas.</li> </ul>
<b>Publications, Reports, Bulletins, Newsletters</b>	<ul style="list-style-type: none"> <li>• Leys Research Group, University of Alberta shares our GSR research findings through scientific publications.</li> <li>• Ocean Watch Reports are focused on education and building awareness.</li> <li>• Metro Vancouver residential bi-annual bulletins to Passage and Bowyer Islands can include GSR information.</li> <li>• Newsletters are used to pass on GSR information.</li> <li>• Fishing reports are produced to educate the public on the closures.</li> </ul>
<b>Mapping and Models</b>	<ul style="list-style-type: none"> <li>• MLSS has GSR mapping data that can be shared.</li> <li>• Gibsons Marine Education Society website has 3D models of GSRs available for public awareness and education.</li> <li>• DSF has created a web map showing reef locations, ecological importance and best practices for diving and recreational fishing.</li> <li>• Ocean Watch Marine Reference Guide includes GSR mapping.</li> <li>• Navionics map cards are able to be used in boat electronics or phone apps.</li> </ul>

Subject	Main Themes
Online Resources	<ul style="list-style-type: none"> <li>• <a href="http://www.glassspongereefs.com">www.glassspongereefs.com</a> details the discovery of glass sponge reefs off the coast, their biology as well as efforts to conserve them.</li> <li>• Online information includes information and diagrams, regarding GSRs.</li> <li>• Infographics and online resources are used to educate on the fragility and uniqueness of GSRs.</li> </ul>
Webinars, Podcasts, Social Media	<ul style="list-style-type: none"> <li>• Webinars, podcasts, social media posts are useful and efficient communications tools.</li> </ul>
Marine Planning and Permitting	<ul style="list-style-type: none"> <li>• Ocean Watch Marine Reference Guide includes GSR planning.</li> <li>• Consider permitting for recreational reef diving.</li> </ul>
Transportation - BC Ferries	<ul style="list-style-type: none"> <li>• BC Ferries could consider providing GSR announcements to raise general public awareness.</li> </ul>
Notification to Elected Officials	<ul style="list-style-type: none"> <li>• Maintain relevance about and help to prioritize GSRs by notifying elected officials and staff about GSR conservation initiatives.</li> </ul>
Enforcement	<ul style="list-style-type: none"> <li>• Education and enforcement are both critical. More enforcement is needed before the damage is done, not after when it may be too late for the GSRs.</li> <li>• Enforcement provides an opportunity to educate the public as well as enforce closures.</li> </ul>

### Topic 3 Summary: Community Collaboration

The third topic focussed on opportunities for community-based collaboration. DFO emphasized it has an interest to support others in leading on GSR community collaboration, such as future research projects, surveys, education/awareness, and ecological monitoring. The question asked was: *What opportunities do you see for community collaboration on the Howe Sound glass sponge reefs? Where are there opportunities to align current activities with this glass sponge reef conservation initiative? What would be needed to support collaboration?*

Main themes in the table below summarize the detailed responses from the six breakouts and are organized by broad subject area. The subjects are not ordered in relation to any priority sequence.

Subject	Main Themes
Education	<ul style="list-style-type: none"> <li>• Ocean Wise is working on Ocean Watch reporting and the creation of education kits that can be capitalized upon. Howe Sound Biosphere Region Initiative Society (HSBRIS) is promoting the Ocean Wise education kits which will include a GSR module that can be shared. DFO could consider supporting this combined collaborative initiative.</li> <li>• MLSS conducts beach interpretation sessions where divers collect nearshore creatures for display onshore with biologists. Posters and videos of GSRs are included in these events along with samples of dead sponge.</li> <li>• HSBRIS welcomes DFO participation on training videos for teachers.</li> </ul>

Subject	Main Themes
	<ul style="list-style-type: none"> <li>• Recreational fishing sector would be interested in an educational approach through BC Fishing App, fishing outlets, and networking with guides associations and lodges.</li> <li>• The recreational fishing sector would like to work with DFO to provide more support for angler education.</li> <li>• Our live dives provide the public with an opportunity for GSR education, and we could use more support.</li> <li>• NSMEC can support education and awareness through in-house science dive teams, access to Remote Operated Vehicles (ROVs), programming for K12, camps, and adult education initiatives.</li> <li>• School teachers, nature groups, and other community organizers might welcome DFO as guest speakers and to assist in GSR related activities / programs.</li> <li>• Canadian Parks and Wilderness Society (CPAWS)-BC's web series / podcast on ocean conservation could feature different people and organizations' roles in these glass sponge reef marine refuges.</li> <li>• Consider a live webcam that citizens could visit online, like the heron nests webcam in Stanley Park.</li> </ul>
<b>Multi-sectoral Education Campaigns</b>	<ul style="list-style-type: none"> <li>• Industry, education groups, ENGOs, DFO should collaborate on signage and info sharing.</li> <li>• DFO and BC Ferries should collaborate with education groups, photographers, and citizen scientists on creative advertisements, interpretive signage for GSR aboard ferries and in terminals as ferry routes sail over Passage Island, Langdale and Gabriola Island reefs and nearby outer Gulf Islands reefs.</li> </ul>
<b>Organized Groups</b>	<ul style="list-style-type: none"> <li>• Community members can help with enforcement simply by seeing what is happening from their homes or when they are on the water.</li> <li>• MLSS started a Reef Watchers program to encourage community members to help monitor where people are placing traps. This could be an educational and collaborative opportunity to develop further.</li> <li>• HSBRIS networks with many groups and academia to bring resources to fill gaps.</li> <li>• DFO participation in the Ocean Watch Action Committee would be welcomed or could attend as guest speakers.</li> </ul>
<b>Research</b>	<ul style="list-style-type: none"> <li>• MLSS seeks to continue collaborating with DFO, BC Parks, First Nations, HSBRIS, Ocean Wise, UBC and University of Alberta researchers, and local governments on GSR research, mapping and monitoring.</li> <li>• Industry would be willing to work with regulators on researching sedimentation impacts from use of trap gear. Industry can provide vessels and equipment for collaborative research.</li> <li>• Ocean Wise has the Ocean Biodiversity Research Team with approximately 40 years underwater research data for Howe Sound.</li> <li>• Funding is always needed for data collection and overall monitoring and research.</li> </ul>
<b>Monitoring &amp; Volunteer Citizen Science</b>	<ul style="list-style-type: none"> <li>• Citizen scientist SCUBA divers could help with an array of reef monitoring efforts including effectiveness monitoring to determine if and how closures are working.</li> <li>• For community monitoring, it would be ideal for DFO to provide direction on indicators, collection methods, frequency and other data collection and management methodology.</li> <li>• Funding, in kind help, and boat support would help expand existing MLSS citizen science work as we are almost 100% volunteer-funded.</li> </ul>

Subject	Main Themes
<b>DFO - First Nations Cooperative Leadership, Governance and Collaboration</b>	<ul style="list-style-type: none"> <li>• Would the local First Nations be interested to make this an indigenous-led conservation initiative supported by, or co-led with, DFO?</li> <li>• Greater opportunities exist to have Squamish Nation members involved in GSR research.</li> <li>• Consider developing a First Nations Guardian Program for ecological monitoring.</li> </ul>
<b>Conferences and Forums</b>	<ul style="list-style-type: none"> <li>• The 5th International Marine Protected Area (MPA) Congress in 2022 with a combined side Ocean Festival can showcase protection in Howe Sound and groups involved.</li> <li>• HSBRS hosts knowledge gaps workshops through the Howe Sound Ocean Watch Action Network.</li> </ul>
<b>Compiling and Sharing Best Practices</b>	<ul style="list-style-type: none"> <li>• Could a best practices document be prepared and shared?</li> <li>• HSBRS could provide a central hub of best practices if resources are provided to build capacity.</li> </ul>
<b>Funding sources</b>	<ul style="list-style-type: none"> <li>• Funding ideas could be private funding, permitting costs and requiring BC ferries, tankers and boats to pay a fee for crossing over the GSRs. Perhaps people who impact these reefs pay a tax based on the "ecological value" of the reef and then it could be decided, for example, whether the value of a GSR is higher than a seagrass bed.</li> <li>• License fees for sport fishing can support education.</li> </ul>
<b>Mapping</b>	<ul style="list-style-type: none"> <li>• The MLSS currently has the ability to map and image deep reefs in Howe Sound which could use further support.</li> </ul>
<b>Survey</b>	<ul style="list-style-type: none"> <li>• Consider a survey of individual prawn fishers who do not belong to an association.</li> </ul>
<b>New Discoveries</b>	<ul style="list-style-type: none"> <li>• More exploration will likely lead to more reef discoveries; there will be user groups that want to access them.</li> </ul>
<b>Planning and Permitting</b>	<ul style="list-style-type: none"> <li>• Consider a permitting system for diving on the reefs recreationally.</li> </ul>

## Topic 4 Summary: Long Term Planning

Long term planning for GSRs and RCAs in Howe Sound and the Strait of Georgia is a key next step for DFO. The question for this fourth topic was: *In your view, what values should be considered in long-term marine planning for Howe Sound? Why are they important and to whom? If values relate to a specific location, please identify and explain.*

Main themes summarize the detailed responses from the six breakout sessions and are organized by broad subject area. The subjects are not ordered in relation to any priority sequence.

Subject	Main Themes
<b>Management Planning</b>	<ul style="list-style-type: none"> <li>• Co-create and co-manage with First Nations a comprehensive management plan for all Strait of Georgia and Howe Sound glass sponge reefs marine refuges.</li> <li>• Consider fully integrating the Squamish Nation Marine Plan and continue to build their capacity within the initiatives presented at this workshop.</li> </ul>

Subject	Main Themes
	<ul style="list-style-type: none"> <li>• Need a long-term management plan to protect marine life in Howe Sound from further human impacts moving forward. Better management practices are needed for all stakeholders, local, provincial and federal level.</li> <li>• Squamish will be embarking on a marine use planning study for Átl'ka7tsem/Howe Sound which should serve as the foundation for any future marine planning activities.</li> <li>• Future planning should be carried out in co-operation between governments and in line with United Nations' Declaration on the Rights of Indigenous Peoples/Declaration on the Rights of Indigenous Peoples Act.</li> <li>• Collaboration and resource sharing is needed between the different local government bodies. No one government body has overriding jurisdiction.</li> <li>• HSBRS objective is to develop an overarching land and marine use plan for Howe Sound.</li> <li>• It would be very helpful to have a bubble diagram with contact information of all of the various groups involved in the Howe Sound area so that we can use each other's knowledge effectively.</li> </ul>
<b>Education, Knowledge / Awareness Building</b>	<ul style="list-style-type: none"> <li>• Communicate that you're going to communicate. Communicate that you are communicating. Communicate that you communicated and that you're going to continue communicating.</li> <li>• Knowledge is power - Get more people involved in not just the science of GSRs in Howe Sound, but also the whole Howe Sound Biosphere.</li> <li>• Educational outreach is required for recreational fishers and casual fishers without GPS technology or local knowledge.</li> <li>• Make Howe Sound a regional model as a place of learning. The Marine Reference Guide and the Suzuki Mapping project are all ways to "normalize" awareness of ecosystems that are invisible to us from the surface of the water.</li> <li>• Communicate about the value of the reefs and its ecosystem services.</li> </ul>
<b>Defense Islands and Public Fishery Education</b>	<ul style="list-style-type: none"> <li>• Considerable use from public salmon fishery and Squamish Nation due to being safely, easily accessible, and close to home.</li> <li>• The potential for impact from downriggers is extremely low with current GSR closure at over 250 feet depth. SFAB feel the best solution in this area is angler education and we would assist DFO.</li> </ul>
<b>Balancing Cultural, Social and Economic Values</b>	<ul style="list-style-type: none"> <li>• Consider the important long-term social and economic impact these closures will have on the recreational fishery. A more balanced presentation of harvester and coastal community quality of life values is needed to properly evaluate the conservation and socio-economic tradeoffs. The combined and continual reduction of fishable areas - which are available for commercial harvest access and which are also critical to maintaining food security, and the viability of our coastal communities - needs to be recognized in a balanced approach.</li> <li>• Overall, the Minister has a dual mandate to conserve and protect, but also consider social and economic impact, in fact, to foster economic opportunities.</li> <li>• Support the local community fishing families which feeds our public and enables local food security.</li> </ul>
<b>Boundaries, Buffers and Zoning</b>	<ul style="list-style-type: none"> <li>• In the long-term, work on ensuring the boundaries are appropriate, including effective protection buffers. Consider the approach used by the proposed United Nations Educational, Scientific and Cultural Organization (UNESCO) biosphere of having core, buffer and transition zones to guide uses in the Sound.</li> </ul>

Subject	Main Themes
	<ul style="list-style-type: none"> <li>• Consider the recreational fishing sector input into Passage island sponge reef boundary changes.</li> <li>• Recreational fishing sector is seeking slight adjustments to Collingwood Channel boundaries to accommodate socio-economic interests.</li> <li>• Integrate marine zoning measures with existing fishery management systems.</li> </ul>
<b>Science, Research, Monitoring</b>	<ul style="list-style-type: none"> <li>• Damage to sponge reef is incremental and MLSS is concerned that science has no idea of how long the recovery is, if there is any recovery possible.</li> <li>• Studying the ecological benefits of reefs through their filtration services such as water filtration, carbon removal and nutrient movement for plankton feeders could inform fisheries recovery.</li> <li>• Contributing scientific data, DNA, to DFO helps give fish status information.</li> <li>• MLSS monitors the reefs including water temperatures.</li> <li>• Long-term monitoring and protection of rockfish is needed to measure effectiveness.</li> <li>• Sponge gardens are possibly more biodiverse and more important for rockfish than GSR.</li> <li>• Evaluate fishing gear impacts to GSR (e.g., downriggers).</li> <li>• Understanding the ecology of reefs will help us understand the magnitude of the protection needed.</li> <li>• Consider rising sea temperatures from climate change.</li> </ul>
<b>Government Priorities / Targets</b>	<ul style="list-style-type: none"> <li>• What are government priorities with permanence of protection and ministerial changes.</li> <li>• Clarify DFO protection target expectations. What are the long-term percentage protection goals?</li> <li>• Concern that of all of Canada, the Pacific Region is already seeing a lot of marine planning closures.</li> </ul>
<b>Protection</b>	<ul style="list-style-type: none"> <li>• Pasley Island RCA has high ecological value beyond rockfish and should be a candidate for Other Effective Area-Based Conservation Measures status. Respect sponge reefs like old growth forests which have been here for an est. 6000 years.</li> <li>• Ecological Hotspots have been mapped by David Suzuki Foundation (DSF), which are key for furthering conservation and restoration.</li> <li>• Protect all wildlife values. Protect clean water, healthy habitat, food fish harvesting and recreation values. Protect the enjoyment of the outdoors.</li> <li>• The Howe Sound GSRs are unique in being the only air gas diveable sites in the world.</li> <li>• Downrigger fishing is usually done in upper water column during migration periods.</li> </ul>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>• Consider what we are leaving for future generations.</li> <li>• Consider a sustainability plan for Howe Sound that is part of all governments' responsibility.</li> </ul>
<b>MPA Standards and Designation</b>	<ul style="list-style-type: none"> <li>• These marine refuges should adopt Canada's MPA standards.</li> <li>• Would like to see these marine refuges become Ocean Act MPAs to protect against cable laying, dumping, anchoring, coastal infrastructure, etc.</li> </ul>
<b>New discoveries</b>	<ul style="list-style-type: none"> <li>• A lot of GSRs potential exists in inlets - potential in future to find new discoveries.</li> <li>• Are remaining areas worth protecting with the assumption that the majority of GSRs have been identified?</li> </ul>

Subject	Main Themes
Enforcement	<ul style="list-style-type: none"> <li>• Enforcement is very low in Howe Sound and the Federal government needs to fund enforcement to a much higher degree.</li> <li>• How enforceable are these sites? Are closures complex and difficult to enforce?</li> </ul>

## 4.3 Key Highlights

Each breakout group summarized the top highlights from their discussion and presented them back to the larger plenary group. The following sets out the main highlights organized by broad subject areas. The subjects are not ordered in priority sequence.

### *Balancing conservation with social-economic considerations*

The need for DFO to take a balanced approach to its measures, taking into account conservation and socio-economic values, arose as a main topic through all the discussion groups. There was broad support for GSR protection among the commercial and recreational fishing sectors, but harvesters want to better understand the objectives for protecting the dead reef at Passage Island. There was great concern about closing this area due to its importance as an easily accessible recreational prawn fishing area. Requests were made to conduct more research on the reefs in collaboration with key groups to monitor the dead reefs and impacts from fishing before turning to a closure.

### *First Nations Stewardship and Governance*

First Nations stewardship and governance was brought forward as a way to co-lead and co-manage GSRs. Participants noted it is time to recognize indigenous fishing rights and indigenous-led conservation and management for Howe Sound GSRs and RCAs.

### *Management Collaboration*

In the same spirit, participants emphasized that Howe Sound requires increased management collaboration with all key user groups and authorities and that due to there being so many jurisdictions with a mandate in the area that it cannot be solely managed by one authority. It was noted by the fishing sectors that collaboration can enable protection and management of the reefs beyond the use of a fishing closures tool.

The workshop brought to light all the positive collaborative work currently underway in Howe Sound by many groups. There was a strong emphasis by many participants to increase collaboration as resources are scarce and could be more effectively shared. For instance, projects relating to data management, research and monitoring, outreach, and communications could all benefit from working together, but more importantly could benefit from DFO support through funding or fund-matching.

### *Education, Awareness, Communications*

Education and building awareness about GSRs was brought up repeatedly as a key highlight from the workshop. Many participants emphasized various ways that education and communications can be supported, enhanced, or increased to improve GSR understanding by users, key sectors of society, as well as the general public. Participants noted that it was important to communicate that GSR preservation is



focused on protecting key habitat for rockfish and prawns, and that in the longer term it can contribute greater benefits. The sponges are like ‘condominiums’ supporting clouds of rockfish larvae. Enabling knowledge of where the reefs are located through mapping app technology can lead to reduced impact from recreational fishing. In addition, it was suggested that a central hub would be useful for the various user groups involved in Howe Sound to share contact information, knowledge, projects, data and resources.

### *Funding*

Participants highlighted the need to fund the development and execution of an overall education and awareness plan. Groups also emphasized the need for a funding model to support ENGOs in providing education, awareness and enforcement services that would avoid group competition for the same resources. Providing ongoing support for First Nations programs and engagement processes in GSR and RCA initiative was seen as important moving forward.

### *Science, Research, Monitoring*

Many questions arose about the science of GSRs such as recovery rates, reasons for protecting dead reef and the need for evaluating fishing gear impacts to GSRs, such as downriggers. Ecological monitoring of GSRs and RCAs is also important and particularly the need to evaluate whether conservation measures are working. It was noted that surveys on such long-lived species may be difficult to undertake; however, using a method of opening and closing rotations at different GSR areas over different years may show positive outcomes. Reports such as those from Ocean Wise (Education Kits, Ocean Watch report) were emphasized as important tools for compiling and sharing digestible information about GSRs.

### *Enforcement and Education*

Participants highlighted that conservation measures are dependent on both enforcement and education. Concern was raised that if efforts focus solely on enforcement, the importance of GSRs may not be highlighted until it is too late to protect them from damage, which is why it’s important to pair with education. As glass sponge reefs are slow growing and there is some uncertainty with recovery rates, any impact from bottom-contact human activity may be significant. Some sponge reefs are thousands of years old and found only in BC. They are like a jewel and should be portrayed like old growth trees. It was noted that the SFAB worked to ensure the Squamish DFO Conservation and Protection office would remain open. Amalgamating GSRs and RCAs to help with enforcement concerns was generally agreed upon by the fishing community, but not at the expense of socio-economic values. The need for a balanced approach was reiterated often.

### *Understanding objectives of RCA – GSR Integration*

Participants emphasized that they need a better understanding of what DFO’s objectives are with RCA and GSR integration and marine zoning. It was a concern of the fishing sector that there are significant fishing opportunities that could be lost with this initiative and that there needs to be more discussion with DFO Fisheries Management. It was noted that this discussion will take place later this spring.

### *Knowledge transfer of fishing practices*

The fishing sector feel that preserving the knowledge and practice of both recreational and commercial fishing is important for the next generation, both for leaving a legacy and for food security. With the loss

of access, the concern is that there is a reduced incentive to go fishing which is enhanced by the increased fishing competition at reduced fishing grounds.

## 4.4 Plenary Discussion

The following is a summary of the main themes that arose in the open plenary discussion following the report backs. The main themes represent a summary of the comments and are organized by subject areas. The subjects are placed in order according to how many comments were made on that particular subject.

Subject	Main Themes
<b>Enforcement</b>	<ul style="list-style-type: none"> <li>• We fought to keep the Squamish Office open. It is the best presence seen in 15 years. We see an improvement in enforcement.</li> <li>• Harvesters that target sponge reef areas illegally are a key sector missing from this workshop and initiative. As locals we fully support education, and improved harvester knowledge.</li> <li>• With more closures, more enforcement will be needed. Squamish office needs more funding and human resources because if they observe illegal fishing on damaged reefs, it's too late for the GSRs.</li> <li>• Is there further talk about First Nations Guardians for education and enforcement?</li> <li>• Response from Squamish Nation: Regarding the Guardian Program, it is on Squamish Nation's radar, but it is a complex decision; a lot of factors involved.</li> <li>• Enforcement does not have the capacity or the appropriate vessels for retrieving illegal trap gear and we see lots of poaching year around.</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>• We should come together as different user groups to help with education and enforcement. DFO could help us with collaboration and include more education in their officer enforcement efforts.</li> <li>• Lack of a formally funded education process is problematic as it then falls on the private sector.</li> <li>• Let's look to the new online ways to provide education on GSRs as noted in this workshop.</li> <li>• All recreational harvesters should have mapping technology mandatory on their boat so they are fully aware of GSRs and RCAs.</li> <li>• Build awareness and popularize the importance of these GSRs, so that people will want to follow voluntary measures (parallel to mask usage in COVID).</li> <li>• Hard to communicate to the public that the ocean is 3D when our mapping is 2D.</li> </ul>
<b>Divers impacts on reefs</b>	<ul style="list-style-type: none"> <li>• What depth was decided as a recreational diving limit? My understanding is that a lot of divers don't have access.</li> <li>• Participant Response: Based on Navy Dive Table: 130 ft. Researchers go to 200 ft. Underwater Council of BC has been working with BC Parks to minimize diving impacts to Halkett Reef (shallower).</li> <li>• Extensive ROV footage is available from the southeast dead reef at Passage Island. Jackson Chu discovered the reef.</li> <li>• Anchoring risks is not being addressed in this process.</li> <li>• PADI is offering a special course to train divers at the only gas diveable glass sponge reefs in Howe Sound.</li> </ul>

Subject	Main Themes
<b>Socio-Economic Impacts</b>	<ul style="list-style-type: none"> <li>• Concern by all fishing community that proposed closures represent a significant economic impact and query if there is flexibility.</li> <li>• Acknowledgement that socio-economic impacts will be considered in decision making on interim protection measures for the GSR.</li> <li>• Recognize that the commercial fishers are feeding the people of the Lower Mainland with the local fishery in Strait of Georgia / Howe Sound. People love eating local and love our concept of farm to table. The fishery is becoming less and less viable due to the expanding closures.</li> </ul>
<b>Integration of RCAs and GSRs</b>	<ul style="list-style-type: none"> <li>• RCAs need to be integrated with fisheries management systems, not sponge reef conservation system.</li> <li>• Recognition that there will be more opportunities to discuss the integration of RCAs and GSRs later this year.</li> </ul>
<b>Management and Monitoring Plans</b>	<ul style="list-style-type: none"> <li>• DFO noted that a draft management plan has been developed for the Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Initiative. Our intent going forward is to identify opportunities for collaborative management and monitoring plans with the community.</li> </ul>
<b>Boundary Line Adjustments</b>	<ul style="list-style-type: none"> <li>• Harvesters suggest there are a few boundary adjustments that could be made to support fishing access and opportunities. DFO should be thoughtful with the placement of boundary lines for the Phase 3 closures and consider fishing opportunities in boundary decisions not just convenience.</li> <li>• Are adaptive management and precautionary approaches being taken to see whether we are getting it right?</li> </ul>
<b>Buffers and Sedimentation Impacts</b>	<ul style="list-style-type: none"> <li>• DFO is exploring opportunities to further investigate sedimentation impacts from trap gear and potential collaboration with industry on how to address all risks specifically, in Howe Sound and the Strait of Georgia.</li> </ul>
<b>OECM Protection and MPA Standards</b>	<ul style="list-style-type: none"> <li>• All these fishing closures will be OECM. How will this affect these GSR closures? OECMs objective is still the same, long-term protection objectives.</li> <li>• Marine Refuge standard is different from the MPA Standards.</li> </ul>
<b>Sea Temperature Changes</b>	<ul style="list-style-type: none"> <li>• Assess opportunity to collaborate with ECCC on possible ocean warming impacts to GSRs</li> <li>• DFO response: Ocean warming and capacity to address its impact to GSRs is an important discussion point to add going forward.</li> </ul>
<b>Involvement of Science, Province, ECCC and Transport</b>	<ul style="list-style-type: none"> <li>• Science community not well represented at the workshop.</li> <li>• Would be good to see ECCC, Transport, and Province involved to address non-fishing activities in these sites.</li> </ul>

## 4.5 Next Steps

DFO next steps include continuing engagement with First Nations, particularly regarding the risks of Indigenous food, social and ceremonial fishing activities to glass sponge reefs. A recreational sector meeting is scheduled to follow up on some of the site-specific feedback. DFO aims to put forth recommendations and will include concerns regarding the needs to balance social and economic values along with ecological values.

DFO's goal is to implement the GSR interim protection measures (fishing closures) by spring or summer of this year. A phased approach may be used for interim protections, with a focus on recommending closures for recreational and commercial sectors first. Recommendations on Indigenous food, social and ceremonial fishing would follow, pending further discussions with First Nations. DFO will follow up with all participants with what approach will be taken either in writing or via a conference call.