



Gambier Island Local Trust Committee

Regular Meeting Agenda

Date: February 12, 2015
Time: 10:30 am
Location: Gleneagles Community Centre
6262 Marine Drive, West Vancouver, BC

Pages

- | | | |
|------|--|---------------------|
| 1. | CALL TO ORDER | 10:30 AM - 11:00 AM |
| 2. | APPROVAL OF AGENDA | |
| 3. | TOWN HALL AND QUESTIONS | |
| 4. | COMMUNITY INFORMATION MEETING - none | |
| 5. | PUBLIC HEARING - none | |
| 6. | MINUTES | |
| 6.1 | Local Trust Committee Meeting Adopted Minutes
Dated October 23, 2015 for receipt | 4 - 10 |
| 6.2 | Section 26 Resolutions-without-meeting Report
Dated February 3, 2015 | 11 - 11 |
| 6.3 | Advisory Planning Commission Minutes - none | |
| 7. | BUSINESS ARISING FROM MINUTES | |
| 7.1 | Follow-up Action List Dated February 3, 2015 | 12 - 12 |
| 8. | DELEGATIONS - none | |
| 9. | CORRESPONDENCE

(Correspondence received concerning current applications
or projects is posted to the LTC webpage) | |
| 9.1 | Letter Dated January 13, 2015 from Gambier Island
Conservancy regarding Amendment to Bylaw
Nos. 73 and 86 for Woodlot Use and Timber
Harvesting | 13 - 14 |
| 10. | APPLICATIONS AND REFERRALS | |
| 10.1 | Gabriola Island Local Trust Area Bylaw Referral
Request for Response regarding Bylaw Nos. 278
and 279 | 15 - 17 |

11.	LOCAL TRUST COMMITTEE PROJECTS	11:00 AM - 11:20 AM
11.1	Foreshore Protection and Stewardship - Forage Fish Mapping	
11.1.1	<u>Memorandum dated January 27, 2015</u>	18 - 78
11.2	Riparian Areas Regulation - verbal update	
11.3	Implementing Official Community Plan Advocacy Policies	
11.3.1	<u>Memorandum Dated January 27, 2015</u>	79 - 93
12.	REPORTS	11:20 AM - 11:30 AM
12.1	Work Program Reports	
12.1.1	<u>Top Priorities Report Dated February 3, 2015</u>	94 - 94
12.1.2	<u>Projects List Report Dated February 3, 2015</u>	95 - 96
12.2	Applications Report Dated February 3, 2015	97 - 100
12.3	Trustee and Local Expense Report Dated January, 2015	101 - 101
12.4	Adopted Policies and Standing Resolutions - none	
12.5	Local Trust Committee Webpage	
12.6	Chair's Report	
12.7	Trustee Reports	
12.8	Electoral Area Director's Report	
12.9	Trust Fund Board Report Dated January 2015	102 - 104
13.	CLOSED MEETING	11:30 AM - 12:15 PM
13.1	Motion to Close the Meeting	
	That the meeting be closed to the public in accordance with the Community Charter, Part 4, Division 3, s.90(1)(f) for the purpose of considering: Bylaw Enforcement AND that the recorder and staff attend the meeting.	
13.2	Recall to Order	
13.3	Rise and Report	

BREAK

14. NEW BUSINESS

- | | | | |
|-------------|--|----------------------------|-----------|
| 14.1 | Bylaw Enforcement - Miles Drew, Bylaw Enforcement Manager | 12:15 PM - 12:30 PM | |
| 14.1.1 | <u>Staff Report Dated Janaury 28, 2015</u> | | 105 - 110 |
| 14.2 | Gambier Island Local Trust Committee Work Program - 2015 | 12:30 PM - 2:00 PM | |
| 14.2.1 | <u>Staff Report Dated January 21, 2015</u> | | 111 - 138 |
| 14.2.2 | <u>Goal Setting Session</u> | | |
| 14.3 | 2014 Eelgrass Mapping | 2:00 PM - 2:30 PM | |
| 14.3.1 | <u>Memorandum Dated January 28, 2015 from Kate Emmings, Ecosystem Specialist</u> | | 139 - 225 |
| 14.4 | Trust Council Participation with Howe Sound Community Forum | | |
| 14.4.1 | <u>Briefing Dated Janaury 15, 2015 from Clare Frater, Policy Analyst</u> | | 226 - 244 |
| 14.5 | Scheduling Meeting with Metro Vancouver Area A Director | | |
| 14.6 | Trustee Liaison Positions with Community Groups - for discussion | | |

15. UPCOMING MEETINGS

- 15.1** Next Regular Meeting Scheduled for Thursday, March 26, 2015 at 10:30 am at Gibsons library, 470 South Fletcher Road, Gibsons, BC

16. TOWN HALL

- | | |
|------------------------|--------------------------|
| 17. ADJOURNMENT | 2:30 PM - 2:30 PM |
|------------------------|--------------------------|



Gambier Island Local Trust Committee Minutes of Regular Meeting

Date: October 23, 2014
Location: Gibsons and District Public Library
470 South Fletcher Road, Gibsons, BC

Members Present David Graham, Chair
Jan Hagedorn, Local Trustee
Kate-Louise Stamford, Local Trustee

Staff Present Aleksandra Brzozowski, Island Planner
Diane Corbett, Recorder

Others Present Dan Rogers, Keats Island resident

1. CALL TO ORDER

Acting Chair Stamford called the meeting to order at 10:41 am. She acknowledged that the meeting was being held in the traditional territory of the Coast Salish First Nations.

Trustee Stamford passed the Chair to Trustee Graham.

Trustee Graham assumed the Chair via telephone.

2. APPROVAL OF AGENDA

By general consent the agenda was approved as presented.

3. MINUTES

3.1. Local Trust Committee Meeting Minutes dated September 18, 2014 – for adoption

The following amendment to the minutes was presented for consideration:
Page 4, last line: insert within parentheses before the colon the link to Trustee Stamford's written September 2014 report.

By general consent the minutes were adopted as amended.

3.2. Section 26 Resolutions Without Meeting Log dated October 9, 2014

Received.

3.3. Gambier Island Advisory Planning Commission Minutes - none

None.

4. BUSINESS ARISING FROM MINUTES

4.1. Follow-up Action List dated October 13, 2014

Regarding the March 20, 2014 direction to follow up on rifle discharging in the Local Trust Area, Planner Brzozowski explained that the community association could put up signage identifying regulations as well as put out maps showing where the residential areas are on the island. Community members could also feel free to distribute information.

In light of technical difficulties being experienced, Trustee Stamford assumed the Chair and recessed the meeting at 10:50 a.m. The meeting reconvened meeting at 11:00 a.m. Trustee Graham assumed the Chair.

Trustee Stamford indicated she had spoken to the Conservation Officer, who said he would send the trustee signage giving basic hunting regulations for the area. Trustee Stamford remarked that she would augment that with some maps that she would distribute to a local outdoor store that promotes hunting on Gambier. Trustee Stamford noted she would send follow up information to the Keats Island trustee to make available for Keats Islanders. Efforts would be made to post information at local sites.

Planner Brzozowski provided an update on preparations for a shoreline protection workshop for contractors. It is intended that a workshop will be held before the end of March 2015.

4.2. Sustainability Guide Distribution and Shoreline Brochure Distribution

Planner Brzozowski and the trustees discussed distribution of the Sustainability Guide and Shoreline brochure, and how to get the information to property owners prior to commencement of building on their property. This would include paper copies and/or laminated displays. The Sustainability Guide has been forwarded to the Sunshine Coast Regional District (SCRD).

Suggestions for distribution noted in ensuing discussion included: post at Langdale; contact Mercury at Horseshoe Bay; post on webpage; ask Stormaway; distribute guide and brochure via the building permit process with SCRD; ask Islands Trust office staff to follow up on pre-application conversations; invite real estate agents to the Local Trust Committee (LTC) meeting where they could receive the Sustainability Guide, Shoreline and Green Wharf brochures; provide realtors an introduction package with introductory letter, brochures dealing with septic, water, shoreline – building packages for each island.

5. CHAIR'S REPORT

The Executive Committee has been looking at materials for the December Trust Council meeting, and is reviewing all of the materials trustees were shown when they were first elected. The Executive Committee has added an extra day to the process of elections to give an opportunity to meet new trustees and learn more about them and their perspectives.

6. TRUSTEES' REPORT

Trustee Stamford recently participated in a tour with the owner of Woodlot 39, the existing woodlot on Gambier Island, where she learned about the operation and how areas are being re-grown. The trustee spoke with the owner about how communications with the public might mitigate community concerns. If the other two woodlots come online, the trustee will have more specific questions to ask regarding how things will be done.

Trustee Hagedorn had attended the Howe Sound Community Forum. As well, the trustee had distributed the final newsletter of her term as trustee. Trustee Hagedorn remarked that she was grateful for the work the Local Trust Committee has done, and spoke of her appreciation for the opportunity to learn and grow in this kind of forum.

She expressed thanks and distributed gifts for trustees and staff. A special thanks was directed to Denman Island trustee and Chair David Graham for coming over to this Trust Area and providing leadership.

7. DELEGATIONS - none

None.

8. TOWN HALL SESSION

Dan Rogers, Keats Island, said he was here to learn, show appreciation for the work the Local Trust Committee is doing, and see what was on the agenda.

9. CORRESPONDENCE

(Correspondence received concerning current applications is considered with the application)

9.1. Email dated September 30, 2014 from Anthony Leoni on behalf of the Future of Howe Sound Society regarding Liquid Natural Gas (LNG) Plant (Woodfibre) Proposal

Discussion ensued regarding correspondence dated September 30, 2014 from Anthony Leoni on behalf of the Future of Howe Sound Society regarding the Woodfibre LNG Substitution Decision of February 19, 2014.

Planner Brzozowski explained that the matter of Woodfibre LNG falls within the larger Trust Area, which means that follow up and advocacy are to be decided by Trust Council and Executive Committee.

At its previous meeting, the Executive Committee considered the subject correspondence from Future of Howe Sound Society and its request to sign on to correspondence requesting the Minister of Environment “to rescind the Substitution Decision, and that the Environmental Assessment of the Woodfibre LNG Project be conducted pursuant to s. 38 of CEAA 2012, including referral to a Review Panel.” The Executive Committee agreed with staff that this was not an appropriate time and there was not the background for Islands Trust to sign on to the letter. Trust Area Services Policy Analyst, Clare Frater, sits on the Woodfibre Working Group, and would be doing a lot of work on this issue. The Working Group is in the process of building the Application Information Requirements (AIR). The decision from the Executive Committee was to continue on with the Working Group and Environmental Assessment.

10. LOCAL TRUST COMMITTEE PROJECTS

None.

11. APPLICATIONS AND PERMITS - none

None.

12. BYLAWS

None.

13. REPORTS

13.1. Work Program Reports

13.1.1. Top Priorities Report and Projects List dated October 13, 2014

The Top Priorities Report and Projects List dated October 13, 2014 was received for information.

Planner Brzozowski announced that staff had been given direction to do a

Request for Proposals for the Riparian Areas Regulation Implementation Project work on Gambier Island.

13.2. Applications Log Report dated October 13, 2014

Planner Brzozowski gave an update on the status of GM-DVP-2002.1 (Land Plan Group, Inc).

As there were communication problems pertaining to this application in the past, Trustee Hagedorn indicated she would send out the most recent staff report on this application to the Gambier community. She had also sent out information in the last newsletter. It was noted that there are five reports on the GM-DVP-2002.1 on the website.

13.3. Trustee and Local Expense

13.3.1. Expenses posted to Month ending September, 2014

Trustee Stamford inquired about the trustee budget, recognizing there is a higher expense for this LTC in light of geographical factors and related costs. Chair Graham noted it had been increased to \$2500. Gambier represents 1% of the trust population but Islands Trust Financial Committee had budgeted 12% for the next term for Gambier Island LTC.

Planner Brzozowski advised that the request for \$1000 for Howe Sound Community Forum hosting had gone through.

Trustee Hagedorn asked that this be added to the Projects List.

14. NEW BUSINESS

14.1. Green Wharf Guide - for discussion

Trustee Hagedorn requested that a package be developed for real estate agents, to follow up with applicants who come in, and that this be added to the Projects List. The trustee described a Green Wharf Guide produced by Ramona de graff, which she thought would be good to post to the website, and also to the Projects List. Discussion ensued. There were suggestions to add the guide to the foreshore protection priorities project and to add distribution of the Green Wharf Guide to communications materials for distribution.

Staff was requested to put the Green Wharf Guide on the agenda for discussion at the next Local Trust Committee meeting, and to bring a copy.

14.2. Howe Sound Community Forum, Update from October 17 event - for discussion

Trustee Hagedorn discussed topics from the October 17, 2014 Howe Sound Community Forum, hosted by the Squamish Nation. The province had offered nine values they wanted to track through the Cumulative Effects Assessment (CEA) framework. The consensus around the table was to accept the offer to conduct the CEA framework for Howe Sound commencing in 2015. This would be brought back to the next forum for further input, and would be an opportunity to work together. The CEA is a tool, as compared to a management plan.

There was also acknowledgement of support by the forum for the Squamish Nation's efforts to develop a marine use plan for Howe Sound. Staff noted that Islands Trust would be sharing information with the Squamish Nation related to the marine use plan.

Trustee Hagedorn also brought forward a resolution from the Howe Sound Community Forum for endorsement.

GM-2014-052

It was MOVED and SECONDED

That the Gambier Island Local Trust Committee, as a member of the Howe Sound Community Forum, accepts the FLNRO's offer to conduct a Cumulative Effects Assessment (CEA) for Howe Sound, within the BC CEA Framework but tailored to the Howe Sound Area, with assessment work commencing in early 2015.

CARRIED

It was noted that these actions would not impact upon the four current projects proposed for Howe Sound that are causing concern. Trustee Stamford remarked that, because the CEA framework is very specific, and it does not address any of the current issues, she would reiterate that the forum also be used as a venue to advocate and to push for address to the current issues in Howe Sound.

Chair Graham recessed the meeting at 12:33 pm. and reconvened the meeting at 12:38 pm.

15. ISLANDS TRUST WEBSITE

15.1. Gambier Island Web Pages

The Gambier Island Local Trust Committee Website can be found at: <http://www.islandstrust.bc.ca/islands/local-trust-areas/gambier.aspx>

Staff was requested to post the following documents on the Gambier web pages:

New trustee newsletter;

Trustee reports;

List of all Gambier Island Local Trust Committee resolutions for this term;

Trust Fund Board letter in response to correspondence from applicant for District Lot 696 regarding conservation proposal for Sandy Beach, Keats Island.

16. NEXT MEETING DATE

Thursday, November 27, 2014 at 9:15 am at Gibsons Library, 470 South Fletcher Road, Gibsons, BC

GM-2014-053

It was MOVED and SECONDED

That the Gambier Island Local Trust Committee cancel the business meeting dated November 27, 2014.

CARRIED

The date of the next Gambier Island Local Trust Committee meeting will be announced.

17. TOWN HALL SESSION - time permitting

None.

18. ADJOURNMENT

By general consent the meeting was adjourned at 12:52 pm.

David Graham, Chair

Certified Correct:

Diane Corbett, Recorder

RWM From: October 10, 2014 To: February 03, 2015

Gambier Island

Resolution #	Action	Resolution Description	Resolution Date
2014-08	In Favour	"THAT the Gambier Island Local Trust Committee schedules its 2015 regular business meetings on the following dates: Thursday, February 12, 2015 Thursday, March 26, 2015 Thursday, May 7, 2015 Thursday, June 18, 2015 Thursday, August 6, 2015 Thursday, October 1, 2015 Thursday, November 19, 2015."	Dec 18, 2014
2014-07	In Favour	"That the Gambier Island Local Trust Committee adopt the minutes of its regular business meeting of October 23, 2014."	Nov 28, 2014
2014-06	In Favour All in Favour.	"That the Gambier Island Local Trust Committee adopt the minutes of its September 18, 2014 In Camera Meeting, as attached."	Nov 20, 2014
2014-05	In Favour	"That the Gambier Island Local Trust Committee request staff to send a letter, as attached, for the Chair's signature to the Ministry of Forests, Lands, and Natural Resource Operations thanking the Minister on the recent decision to not proceed with the bidding process for woodlots W2068 and W2069 on Gambier Island."	Nov 18, 2014



Islands Trust

Print Date: Feb-03-2015

Follow Up Action Report w/ Target Date

Gambier Island Nov-29-2013

No.	Activity	Responsibility	Target Date	Status
1	Staff to provide Trustees with possible shoreline protection strategies for DL 696.	Aleksandra Brzozowski Sonja Zupanec	Mar-20-2014	On Going

Oct-23-2014

No.	Activity	Responsibility	Target Date	Status
1	Source Green Wharf guide by Ramona de Graaf.	Aleksandra Brzozowski	Nov-27-2014	On Going
1	Notify Future of Howe Sound Society of resolution passed: That the Gambier Island Local Trust Committee, as a member of the Howe Sound Community Forum, accepts the FLNRO's offer to conduct a Cumulative Effects Assessment (CEA) for Howe Sound, within the BC CEA Framework but tailored to the Howe Sound Area, with assessment work commencing in early 2015.	Aleksandra Brzozowski	Nov-27-2014	Done

Nov-18-2014

No.	Activity	Responsibility	Target Date	Status
1	Send a letter with the Chair's signature to the Ministry of Forests, Lands, and Natural Resource Operations thanking the Minister on the recent decision to not proceed with the bidding process for woodlots W2068 and W2069 on Gambier Island.	Aleksandra Brzozowski David Graham Kate-Louise Stamford	Dec-01-2014	Done

Gambier Island Conservancy
1005 West Bay Road
Gambier Island, B.C. V0N 1V0
info@gambierc.ca
<http://www.gambierc.ca>



Gambier Island Local Trust Committee

January 13, 2015

Subject: **Request for a Bylaw to Amend Bylaw No. 73 and Land Use Bylaw No. 86**

Dear Trust Committee,

On 9 July 2013, representatives of the Local Trust Committee and the Gambier Island Conservancy met with officials from the Sunshine Coast District of the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) to learn more about plans to advertise for licences to log two new woodlots on Gambier Island. In response to one of our questions concerning the decision to create the new woodlots, the following was written in a Q&A document: *"Gambier Island is part of the Sunshine Coast Timber Supply Area and is available for timber harvesting consistent with the Official Community Plan and Land Use Bylaw."* This Q&A document (<http://www.islandstrust.bc.ca/media/232083/Woodlots%20Q%20and%20A%20updated%20Oct%202013%20%282%29.pdf>) was given broad distribution to the Gambier Island community which led to a campaign of community opposition to the plans to log the woodlots. Written responses to a number of letter writing campaigns to the minister continued to refer to the logging being consistent with the Official Community Plan (OCP).

The public opposition campaign lasted more than one year and included the Trustees meeting with the minister and legal action being initiated by the Conservancy which resulted in a public consultation meeting on 24 July 2014 in which about 200 people showed up to oppose the logging plans. On 5 November 2014, the following announcement was issued by the District Office: *"The Minister of Forests, Lands and Natural Resource Operations has decided to decline to accept a winning applicant in the recent tendering of two woodlots on Gambier Island in order for the Province of British Columbia to address community concerns and undertake further consultations with the Squamish Nation...."*

It is noted that the two new woodlots fall within a designated Wilderness Conservation Zone of the Gambier Island Trust Committee Bylaw No. 73 cited as "The Gambier Island Official Community Plan Bylaw No.73, 2001. In view of the widespread opposition to logging on this part of Gambier Island, the Gambier Island Conservancy feels strongly that sub-point vi should be removed from Policy 7.26 of the bylaw. Policy 7.26 falls under the Wilderness Conservation section of the bylaw and lists the permitted uses, with number vi being as follows: *"sustainable harvesting of trees including woodlot and community forest use."* The Conservancy is in full agreement with Advocacy Policy 7.22 which falls under the Forestry section of the bylaw and it reads as follows: *"The Ministry of Forests should only consider permitting new woodlots on lands designated as Forestry to be created on a site-specific basis and conditional on undertaking a community review process and environmental assessment of the proposed site."*

In the related Gambier Island Land Use Bylaw No. 86, 2004, it is stated that: *"The purpose of the Wilderness Conservation Zone is to provide regulations to maintain wilderness and ecological values, ecosystems and unique areas of undisturbed large parcels."* We feel that woodlot logging is not consistent with this purpose. Furthermore, within a wilderness conservation zone, the bylaw limits structures that alter the landscape to the following: *"Pedestrian trail bridges, stairs, boardwalks, rails and culverts."*

Woodlot logging would very likely entail the construction of logging roads, associated bridges over creeks and a shoreline log dump which would be in contravention of the bylaw.

In the process that led up to the creation and approval of the two subject bylaws, there doesn't appear to be any specific documentation of public approval or opposition to including woodlot logging as a permitted use in the Wilderness Conservation Zone. We feel that having documentation of such public opposition in the process to amend the bylaws would be helpful to our continued efforts to oppose any future logging plans in the new woodlots. In fact, just having the process underway to amend the bylaws could be helpful in opposing any new initiative by FLNRO to advertise for logging the new woodlots. For this reason, we would like to see this request to amend the two bylaws proceed on its own merits rather than being part of a larger review of the OCP.

In summary then, our request is have the two subject bylaws amended to remove woodlot use and timber harvesting as a permitted use in the Wilderness Conservation Zone designation.

Yours truly,

A handwritten signature in black ink, appearing to read "Peter Scholefield". The signature is fluid and cursive, with the first name "Peter" and last name "Scholefield" clearly distinguishable.

Peter Scholefield
President



Islands Trust

BYLAW REFERRAL FORM

700 North Road
Gabriola Island, BC BC V0R 1X3
Ph: (250) 247-2063
Fax: (250) 247-7514
northinfo@islandstrust.bc.ca
www.islandstrust.bc.ca

Island: Gabriola Island Trust Area **Bylaw No.:** 278 and 279 **Date:** December 8, 2014

You are requested to comment on the attached Bylaw for potential effect on your agency's interests. We would appreciate your response within 30 days. If no response is received within that time, it will be assumed that your agency's interests are unaffected. For your information a Public Hearing to consider the Bylaw will be held Spring 2015.

APPLICANTS NAME / ADDRESS:

Gabriola Island Local Trust Committee

PURPOSE OF BYLAW:

The purpose of these proposed bylaws is to address a number of minor issues and correct errors and inconsistencies in the Gabriola Island Land Use Bylaw (LUB) and Official Community Plan (OCP).

GENERAL LOCATION:

Gabriola Island

LEGAL DESCRIPTION:

N/A

SIZE OF PROPERTY AFFECTED:

Whole of Gabriola Island

ALR STATUS:

N/A

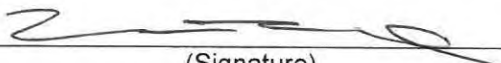
OFFICIAL COMMUNITY PLAN DESIGNATION:

N/A

OTHER INFORMATION:

Staff has been keeping a list of minor issues, errors or omissions in the Gabriola LUB and OCP to bring forward for a housekeeping bylaw amendment at an opportune time. The objectives of the amendments are to make the bylaws more easily interpreted by staff and the public; to correct the bylaws where errors have been identified; and to improve the mapping of development permit areas. The Local Trust Committee gave First Reading to Bylaws 278 and 279 at their meeting on October 2, 2014. Please contact Karin Kronstal, a/Island Planner at 250.247.2211 directly with questions.

Please fill out the Response Summary on the back of this form. If your agency's interests are "Unaffected", no further information is necessary. In all other cases, we would appreciate receiving additional information to substantiate your position and, if necessary, outline any conditions related to your position. Please note any legislation or official government policy which would affect our consideration of this Bylaw.


(Signature)

Name: Karin Kronstal

Title: A/ Island Planner

This referral has been sent to the following agencies:

Federal Agencies

N/A

Provincial Agencies

Agricultural Land Commission

Regional Agencies

Regional District of Nanaimo –Building Department

Adjacent Local Trust Committees and Municipalities

Executive Committee Acting As A Local Trust Committee
Gambier Local Trust Committee
Thetis Local Trust Committee

PLEASE TURN OVER → 15

Non-Agency Referrals

Islands Trust - Bylaw Enforcement

First Nations

Snuneymuxw First Nation
Cowichan Tribes
Halalt First Nation
Hul'quimi'num Treaty Group
Lake Cowichan First Nation
Lyackson First Nation
Semiahmoo First Nation
Stz'uminus First Nation
Te'Mexw Treaty Association

BYLAW REFERRAL FORM RESPONSE SUMMARY

- ☐ Approval Recommended for Reasons Outlined Below
- ☐ Approval Recommended Subject to Conditions Outlined Below
- ☐ Interests Unaffected by Bylaw
- ☐ Approval Not Recommended Due to Reason Outlined Below

(DO NOT FILL OUT BEYOND THIS SECTION – REFERRAL AGENCY WILL COMPLETE SECTION)

Gabriola Island Trust Area
(Island)

(Signature)

(Date)

278 and 279
(Bylaw Number)

(Title)

(Agency)



Memorandum

700 North Road Gabriola Island BC V0R 1X3

Telephone **250. 247-2063** FAX: 250. 247-7514

Toll Free via Enquiry BC in Vancouver 660-2421. Elsewhere in BC **1.800.663.7867**

northinfo@islandstrust.bc.ca www.islandstrust.bc.ca

Date January 27, 2015 File Number GM-6500-20
Foreshore Protection

To Gambier Island Local Trust Committee

From Aleksandra Brzozowski
Island Planner
Northern Office

Re Foreshore Protection & Stewardship Deliverable – Forage Fish Mapping

This memorandum is to present to the Gambier Local Trust Committee (LTC) the final report of a forage fish spawning habitat mapping contract conducted by the BC Marine Conservation and Research Society.

Mapping took place in August and September 2014, and this final report including mapping of suitable spawning habitat was submitted to the Islands Trust in November 2014.

Attachment: *Gambier and Keats Islands Surf Smelt and Pacific Sand Lance Spawning Habitat Suitability Assessments*

Gambier and Keats Islands Surf smelt and Pacific sand lance Spawning Habitat Suitability Assessments



Pebble Beach – Keats Island
Photo: RC de Graaf

Prepared for the Islands Trust and Islands Trust Fund

Prepared by:
Ramona C. de Graaf, BSc, MSc
Marine Biologist
Forage Fish Specialist

British Columbia Marine Conservation and Research Society
October 31, 2014

Gambier and Keats Islands- Sept 2014 – October 2014

Surf smelt and Pacific sand lance

Spawning Habitat Suitability Assessments

TABLE OF CONTENTS

	Page Number
Acknowledgements	4
1.0 Introduction to Forage Fish	
1.1 Role of Forage Fish in marine ecosystems	5
1.2 Connections to other valued ecosystem components	5
2.0 Beach Spawning Forage Fish Habitat	6
3.0 Spawning Habitat Characteristics	
3.1 Intertidal Elevation	6
3.2 Sediment Characteristics	6
3.3 Beach Biophysical Characteristics	7
4.0 Spawning Seasons	7
5.0 Threats to Beach Spawners' habitat	8
6.0 Introduction to the Forage Fish Habitat Suitability Assessment	8
6.1 General Introduction	8
6.2 Area Surveyed	9
7.0 Methods	9
7.1 General Methodology	
7.2 GPS/GIS Methodologies	11
7.2.1 Spatial Data Specifications	11
7.2.2 Digitizing Spatial Data and Map Production	11
8.0 Project Limitations	11-12
9.0 Results	13
9.1 Gambier Island	
9.1.1 Statistical Analyses	13
9.1.2 Grain-Size Analyses	17
9.1.3 Length of Suitable Forage Fish Spawning Habitat	17
9.1.4 Suitable Forage Fish Spawning Habitat Types	18
9.1.5 Geographic distribution of beach units	19
9.1.6 Foreshore Modification	20
9.1.7 Foreshore and Backshore Structures	20-21
9.1.8 Overhanging Shade Vegetation	22
9.2 Keats Island	23
9.2.1 Statistical Analyses	23

9.2.2 Grain-Size Analyses	26
9.2.3 Length of Suitable Forage Fish Spawning Habitat	26
9.2.4 Suitable Forage Fish Spawning Habitat Types	27
9.2.5 Geographic distribution of beach units	28
9.2.6 Foreshore Modification	29
9.2.7 Foreshore and Backshore Structures	30
9.2.8 Overhanging Shade Vegetation	31
10.0 Summary & Recommendations	32
10.1.0 General	32
Shoreline Structures	33
Marine Vegetation	33
Stressors/Restoration	35
10.2.0 Specific Recommendations	35
Shoreline Management Goals/Policies	35
Land Owner Stewardship	35
Measures to protect beach habitats	36
Public access	37
Shoreline Structures	37
Shoreline erosion mitigation	37
Gambier Island	38
Keats Island	38
Piers and docks	39
Gambier Island	39
Keats Island	40
Vegetation Losses	41
Gambier Island	41
Keats Island	41
Beach Health/Restoration-Enhancements	42
Future uses of the data provided	42
11.0 References Cited	43
12.0 Appendices	
Appendix A: Beach Units – Gambier Island	45
Appendix B: Beach Type Classifications Gambier Island	48
Appendix C: Beach Type Grain-Size Curves Gambier Island	50
Appendix D: Beach Units – Keats Island	53
Appendix E: Beach Type Classifications Keats Island	54
Appendix F: Beach Type Grain-Size Curves – Keats Island	55
Appendix G: GPS/GIS Methodology	57
Appendix H: Digitizing Spatial Data and Map Production	60
Appendix I: Forage Fish Habitat Assessment Methods	60

Acknowledgements

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1. Introduction

The term “forage fish” refers to small schooling fishes that are prey for larger animals. Forage fish include species such as herring, anchovy, sardines, capelin, smelt and sand lance. This study focusses on beach spawning forage fish: Pacific sand lance and surf smelt.

Beach spawning forage fish are a critical prey source for hundreds of marine predators in the Strait of Georgia. Pacific sand lance are often referred to as the most important fish in the North East Pacific due to this species role as forage for marine fishes, seabirds and marine mammals (Robards 1999). Surf smelt are also important prey for marine predators. Surf smelt are managed by the Department of Fisheries and Oceans under the Surf Smelt Management Plan for commercial and recreational fishers and their population abundance in the Strait of Georgia is declining (Therriault et al 2002). Surf smelt and Pacific sand lance spawning habitats are protected under Section 35 of the *Federal Fisheries Act*.

1.1 Role of forage fish in marine ecosystems

Pacific sand lance and surf smelt are important to the recovery of marine species at risk (from Humpback and Killer whales to Marbled Murrelets); the marine survival of salmon (such as Chinook and Coho); and the survival of provincially blue-listed coastal cutthroat trout. Both Chinook and Coho feed on sand lance both as juveniles and as adults.

Numerous fish, seabird, and marine mammal populations are in precipitous decline in British Columbia and scientists have started to look at the link between forage fish biomass reduction and these declining populations.

1.2 Connections to other valued ecosystem components

Forage fish depend on nearshore habitat for their survival. Herring spawn on marine vegetation such as eelgrass and seaweeds and Pacific sand lance and surf smelt spawn high up the beach near the log line. Like numerous fish species, surf smelt and Pacific sand lance also require subtidal areas such as kelp forests for rearing.

2. Beach Spawning Forage Fish Habitat

Beach spawning forage fish of commercial, recreational and ecological value in the Strait of Georgia are the capelin, surf smelt (*Hypomesus pretiosus*) and Pacific sand lance (*Ammodytes hexapterus*). The Washington Department of Fish and Wildlife has conducted extensive surveys in Puget Sound and produced maps of spawning habitat (Penttila, D. 2007). Approximately 10% of Puget Sound beaches are used by surf smelt for spawning and 10% are used by Pacific sand lance (Penttila 2007). Unfortunately critical spawning habitat of these two forage fishes has not been mapped in British Columbia.

Surf smelt and Pacific sand lance depend on a healthy nearshore and beach habitat, and they are vulnerable to impacts from shoreline development. Beaches with natural erosion processes supplying appropriate sized gravels and extant marine riparian zones are an optimal state for spawning surf smelt and sand lance. Of primary importance for spawning is the mixture of gravels and sand.



Halkett Bay Marine Park.
Photo: RC de Graaf

3. Spawning Habitat Characteristics

3.1 Intertidal Elevation

The highest densities of embryos found to date have been in the upper beach slope between the high water seaweed wrack zone and the low high water seaweed wrack zone. Consistently, mixed embryo stages are found in samples taken from +1.5 m to +4.5 m above chart datum and can be found at the highest extent of the maximum high tides. Sand lance spawn may also be found on the sand flat edge near the beach slope (Penttila 2001b, Penttila 2007, de Graaf unpublished data); however, this area of the intertidal has been sparsely sampled.



Mannion Creek West
Photo: RC de Graaf

3.2 Sediment Characteristics

Both surf smelt and sand lance embryos can be found on certain beaches in the same beach sediment sample collected along the upper beach slope. Surf smelt are reported to spawn in sediments of fine “pea pebble”/sand to coarse pebble/sand beaches with the bulk of the pooled data set having material of 1-10 mm; although full grain size spectra show numerous sample sets with a wide range of pebble/sand including coarse pebble greater than 2.6 cm (Penttila 2001c). Surf smelt do not spawn in coarse sand beaches without pebble due to the unique attachment pedestal of the osmerid egg (they are gravel-dependent spawners). Sand lance are reported to spawn in sediments of coarse sand/pebble with the bulk of the pooled data set (67%) having material of a median grain size of 0.2 – 0.4 mm and a portion of the data set (25%) being gravel-coarse sand from 1 – 7mm (Penttila 2001c; 2007). Recent findings in British Columbia reveal that sand lance embryos are also found in beaches bearing a high percentage of coarse pebble greater than 2.6 cm (de Graaf unpublished data). Sand lance embryos are found throughout the range of surf smelt bearing sediments as well as coarse sand. Pacific Sand lance do not spawn on fine silt and cobble (Penttila 2007). In British Columbia, both surf smelt and sand lance embryos can be found throughout a beach drift cell in the erosion, transport and accretion zones (de Graaf, unpublished data, presented at American Fisheries Society Conference Sept 2011). Over 40 years of government sponsored surveys in Puget Sound and carried out by Mr. Penttila has yielded important data on the spawning habitat of these two species. With recent attention to surveys in the Strait of Georgia and the outer coast of Vancouver Island, our understanding of beach spawning habitat types has increased.

3.3 Beach Biophysical Characteristics

Beaches in British Columbia bearing surf smelt and Pacific sand lance spawning sites are typically of sand/pebble in the upper component of the beach slope, a cobble component seaward, followed by a sand or mud flat toward the low tide zone. The width of the sand/pebble component (commonly referred to as the B1 component) is variable and can range from 0.5 m to over 10 m in width.

4. Spawning Seasons

Surf smelt are known to spawn year round in Puget Sound and also have distinct winter and summer spawning stocks (Penttila 2007). In British Columbia, summer and year round spawning beaches have been detected (de Graaf unpublished data). Sand lance spawning is from Nov – January with incubating embryos detected into February (30-45 day fall/winter incubation period). Data

compilation for spawning periods for regions of British Columbia has begun due to the extraordinary effort of over 30 communities working with the author through the BC Shore Spawners Alliance (BCSSA), a project of the BC Marine Conservation and Research Society. In the Islands Trust Area, communities are presently undertaking spawning surveys with the BCSSA as the Gulf Islands Forage Fish Initiative.

5. Threats to Beach Spawning Forage Fish Habitat

Shoreline modifications can negatively impact the nearshore marine food web in numerous ways, but are a primary threat to surf smelt and sand lance spawning beaches (Penttila 2007).

Many human activities impact and alter marine shorelines either through disruption of the sediment drift cell or by physical alteration of the beach, including: piers, pilings, docks, jetties, groins, breakwaters, riprap, seawalls and others. Marine shellfish aquaculture in foreshore areas can affect beach spawning forage fish habitat. Diversion of sediment-bearing streams through culverts can also starve beaches of spawning sediment. Many of these activities render beaches unusable for spawning. These shoreline modifications can also limit sediment exchange in the shallow subtidal where sand lance is known to burrow.

The presence of overhanging vegetation in marine riparian zones is important for the ecological function of nearshore marine habitats providing insect prey for migrating fish (Levings and Jamieson 2001; Brennan and Culverwell 2004) and having a positive effect on summer surf smelt spawn survival (Penttila 2001a, Penttila 2007, Rice 2006). The loss of shade increases thermal stress and desiccation to incubating eggs as sediment temperatures rise resulting in increased mortality of buried eggs (Penttila 2007, Rice 2006). Vegetation buffers the drying effect of winds; and where beaches have lost riparian zones, eggs can also suffer a higher mortality than normal due to wind-induced desiccation effects.

Other threats to surf smelt and sand lance eggs include contamination from acute oil spill events and chronic oiling which can result in 100% mortality of surf smelt eggs. Oiling from vessel operations near beaches can potentially cause mortality of incubating forage fish eggs (herring, sand lance, and surf smelt) (Penttila 2005).

6. Introduction to the Beach Spawning Forage Fish Habitat Assessment

6.1 General Introduction

To refine the study area, sediment maps were produced from the Coastal Resource Information Management System, DataBC (DataBC Catalogue 2013). The data layer used to produce the sediment map was the shoreline biophysical classification by repetitive shore type. All shore-units of unconsolidated sediments were investigated along the entire shoreline length of Gambier and Keats Islands. Unconsolidated sediments include silt, mud, sand, and gravels. Shore-units of consolidated sediment (rock) were also reviewed to ensure that no suitable habitats were present.

Gambier Island surveys took place on September 6-11, 2014. Keats Island surveys took place on September 11, 12, and October 2, 2014.

From September to October 2014, no major storm activity was noted for the Strait of Georgia.

6.2 Area Surveyed

The entire coastlines of Gambier and Keats Island were surveyed by foot with the exception of some areas of consolidated sediment (rocky beaches, rock terraces etc.). Areas with consolidated sediment types interspersed with unconsolidated sediment types were mapped to provide an estimate of total shoreline area surveyed. Contiguous shoreline areas of consolidated sediments were surveyed by kayak and boat to ensure the absence of pocket coves.

Areas surveyed included areas with drift cell attributes of erosional faces that graded into beach areas. These are areas with unconsolidated sediments of gravel/sand as well as mud/silt areas. Gravel is defined as pebble, cobble and boulder.

Beach units of pebble and sand were assessed for spawning habitat suitability. Areas of mud/silt were assessed for the presence of upper bands of pebble and sand.

7. Methods

Forage Fish Habitat Assessments – Assessing Suitable Forage Fish Spawning Habitat

Actual forage fish spawning beaches are determined after a two-year embryo survey and the presence of two or more embryos in a sample (Moulton and Penttila 2001). In the absence of such comprehensive surveys, beaches may be classified as suitable surf smelt/Pacific sand lance

spawning habitat following a habitat assessment. The habitat assessment protocol used in this project, the Forage Fish Habitat Assessment, has been developed through a collaboration of forage fish biologists from British Columbia and Washington State. Due to the current transition of the Department of Fisheries and Oceans Habitat Program to the Fisheries Protection Program and numerous staff reassignments, the FFHA protocol vetting process has been stalled.

7.1 General Methodology

A habitat suitability model is based on the observed response of an animal to specific environmental attributes (Robinson et al 2013). The Forage Fish Habitat Assessment (FFHA) entails a survey of habitat attributes for each area of unconsolidated sediments making up the upper component of intertidal beaches (beach berm/beach face and mid intertidal). Measurements are taken of physical variables of the beach units and grain-size samples assessed. Additional variables are measured to assess human activities that may have directly modified the foreshore or adjacent backshore areas. Assessments are conducted by experienced beach spawning forage fish biologists/technicians. These data are used to predict the suitability of beach units relative to beach units observed to be spawning habitat for spawning activity by surf smelt and Pacific sand lance.

Physical variables from suitable beaches are compared to a database of habitats that were monitored using spawning surveys (over 2 years) for surf smelt and/or Pacific sand lance in British Columbia and Washington State. The software program PRIMER-E, a multivariate statistical program, set at an 80% similarity threshold, is used to test suitable beaches to this BC/WA database. The PRIMER-E software program is used extensively by ecologists to describe similarities and differences among biological communities, habitat types, or for monitoring biological communities and habitats.

Using statistical analyses, a statistical probability can be assigned to each beach unit measured. Beaches are assigned as being suitable spawning habitat for surf smelt, Pacific sand lance, or both surf smelt/Pacific sand lance. Beach units assessed in the field but failing statistical analysis are assigned as "Not Suitable Spawning Habitat". Beach units assigned as "Not Spawning Habitat" are those consisting of mud, silt, rock or shallow pebble layers (veneers) over rock.

For shoreline property owners undertaking works that may impact fish and their habitat, a project review by the Department of Fisheries and Oceans (DFO) may be required. In the absence of a two-

year spawning survey, a FFHA can provide a good indication of suitable surf smelt and sand lance habitat for use by landowners and other agencies responsible for shoreline management.

A detailed description of the survey methodology has been provided to the Islands Trust/Islands Trust Fund and is available upon request for the purposes of verifying the validity of the data collection and analysis.

7.2 GPS/GIS Methodology

7.2.1 Spatial Data Specifications

A Trimble Juno 3B receiver was used to acquire spatial data. GPS data were post-corrected using Path Finder Office software. GPS data were collected according to the GPS Specifications provided by the Islands Trust as part of this contract (Appendix G).

GPS specifications were adjusted in two circumstances. Firstly, during vessel-based surveys, at beach units scored in the field as “not habitat” due to the dominance of cobble and boulder substrates and access to the shoreline was difficult, positional data (latitude and longitude) was collected following the Islands Trust eelgrass methodology. Feature data were taken by collecting 3 fixes at 1 second intervals each. The vessel was used and placed on the lower tide limit while recording positional data, uncorrected water depth (by depth sounder) and the time. Secondly, if positional fixes with the Trimble Juno 3B at the desired level of accuracy were not possible due to satellite interference caused by land forms such as sea cliffs, feature data were digitized by the GIS technician from orthophotographs provided from the Islands Trust and reviewed by the author.

7.2.2 Digitizing Spatial Data and Map Production

Maps of line segments were produced by digitizing spatial data following the protocol in Appendix H.

8.0 Project Limitations

The project was limited to assessing beaches as suitable spawning habitat for two species of beach spawning forage fish, surf smelt and Pacific sand lance. Data for this study was compiled before major fall/winter storm events. The methods used in a forage fish habitat assessment do not allow one to determine the presence or absence of spawning activity as sediments are not collected for nor screened for the presence of embryos. Spawning surveys are conducted over two spawning seasons (24 months) and follow strict protocols (Moulton and Penttila 2001). The project undertaken grades beaches as being “suitable” spawning beaches, but it does not confirm the presence or absence of spawning activity.

9. Results

9.1 GAMBIER ISLAND

9.1.1 Statistical Analyses

In total, 78 beach units comprised of unconsolidated sediments were assessed (Table 1). Principal Component Analysis using PRIMER-E and beach metrics, including grain-size analyses, assessed forty (40) beach units with 80% similarity to known positive beaches in BC and Washington State and were classified as “suitable spawning habitat” (Figure 1A-E). Twenty-eight (28) of these beach units had continuous habitat and twelve (12) had discontinuous habitat.

Four (4) beach units failed statistical analyses, the same beach units with non-conforming grain-sizes, and were classified as “not suitable spawning habitat”. Thirty-four (34) beach units were comprised of unconsolidated sediments such as mud, silt, cobble that are not habitat types that are potential spawning habitat (Figure 1A-E).

Seven (7) of these beach units had significant shoreline modifications and/or localized erosion factors (vessel wakes) that may have contributed to lack of fine spawning sediments and the current beach condition of cobble and/or cobble/boulder. A list of beach units identified in the map Figures 1A-E is provided in Appendix A.

Table 1: Gambier Island - Beach Unit Statistical Analyses

	Count	Total	Length (m)	Percentage of Shoreline Perimeter
Habitat	40	40	2122.8	3%
Not Suitable	4	4	265.6	0.4%
Not habitat (Modification/Erosion Effects)	27(7)	34	4638.8	6%
Total Beach Units		78		
Total Length			7027.2	
Habitat	Count		Length	
Continuous	28		1235.2	2%
Discontinuous	12		887.6	1%

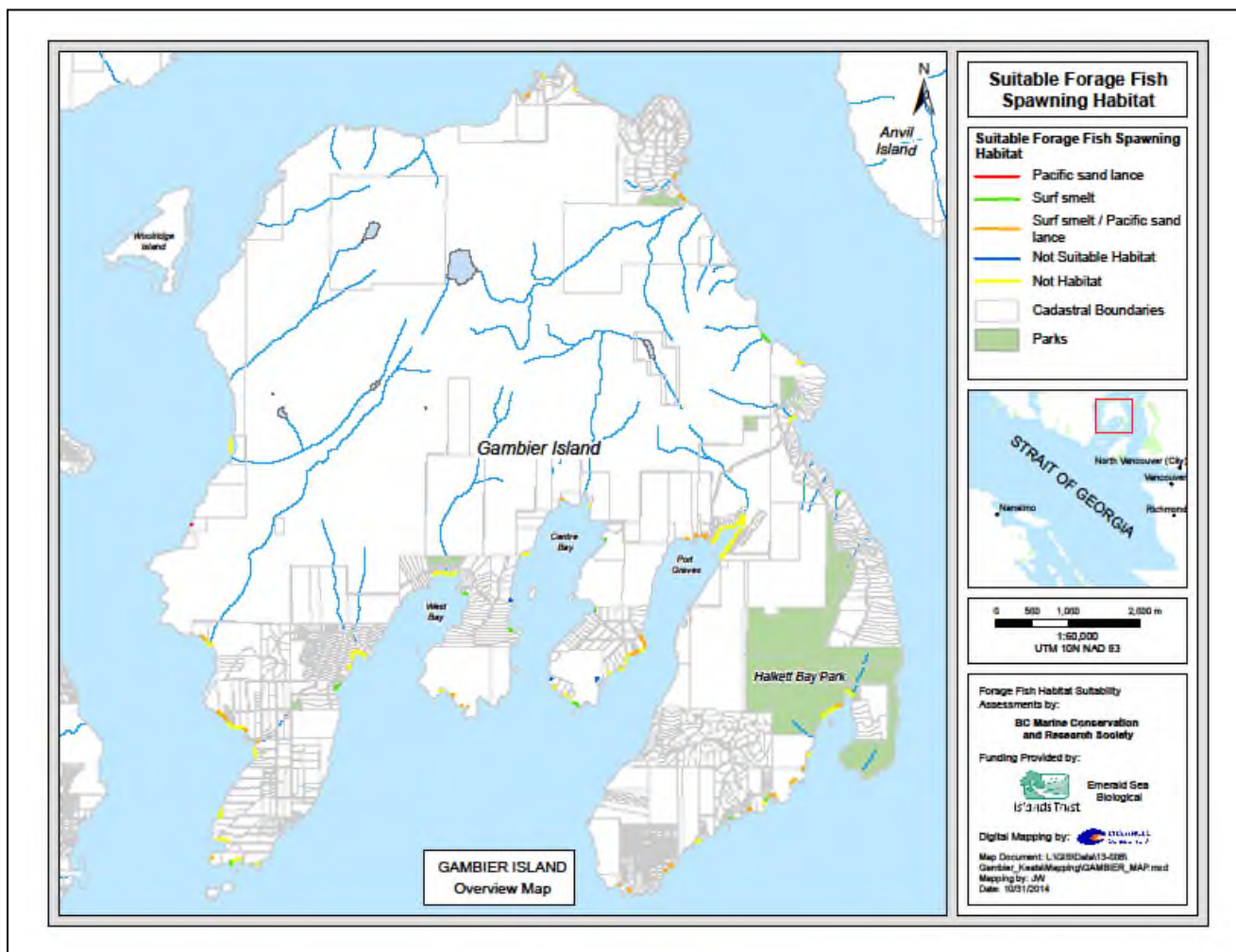


Figure 1A: Suitable Beach Spawning Forage Fish Spawning Habitats – GAMBIER ISLAND

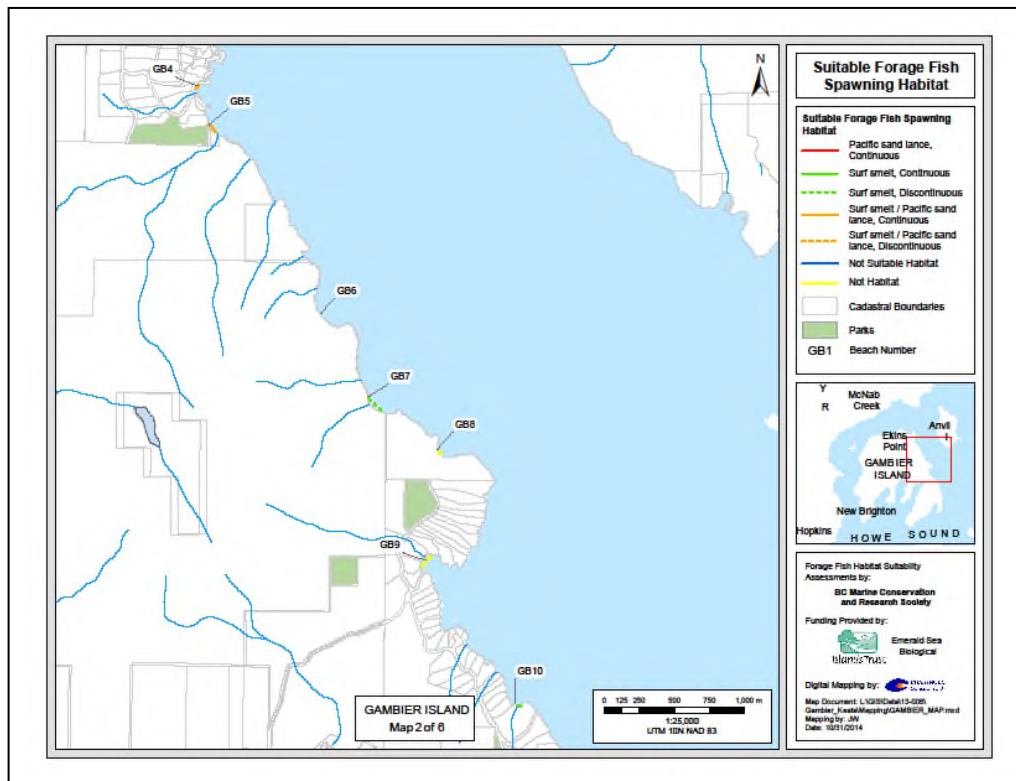
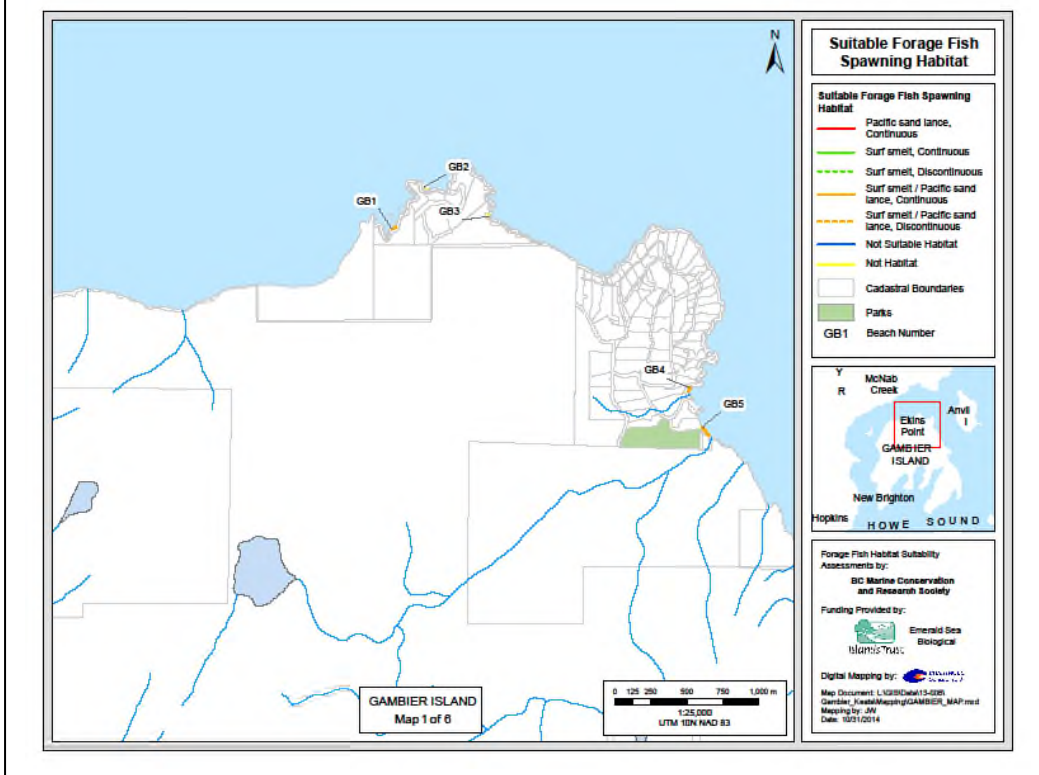


Figure 1B-1C: Suitable Beach Spawning Forage Fish Spawning Habitats – GAMBIER ISLAND

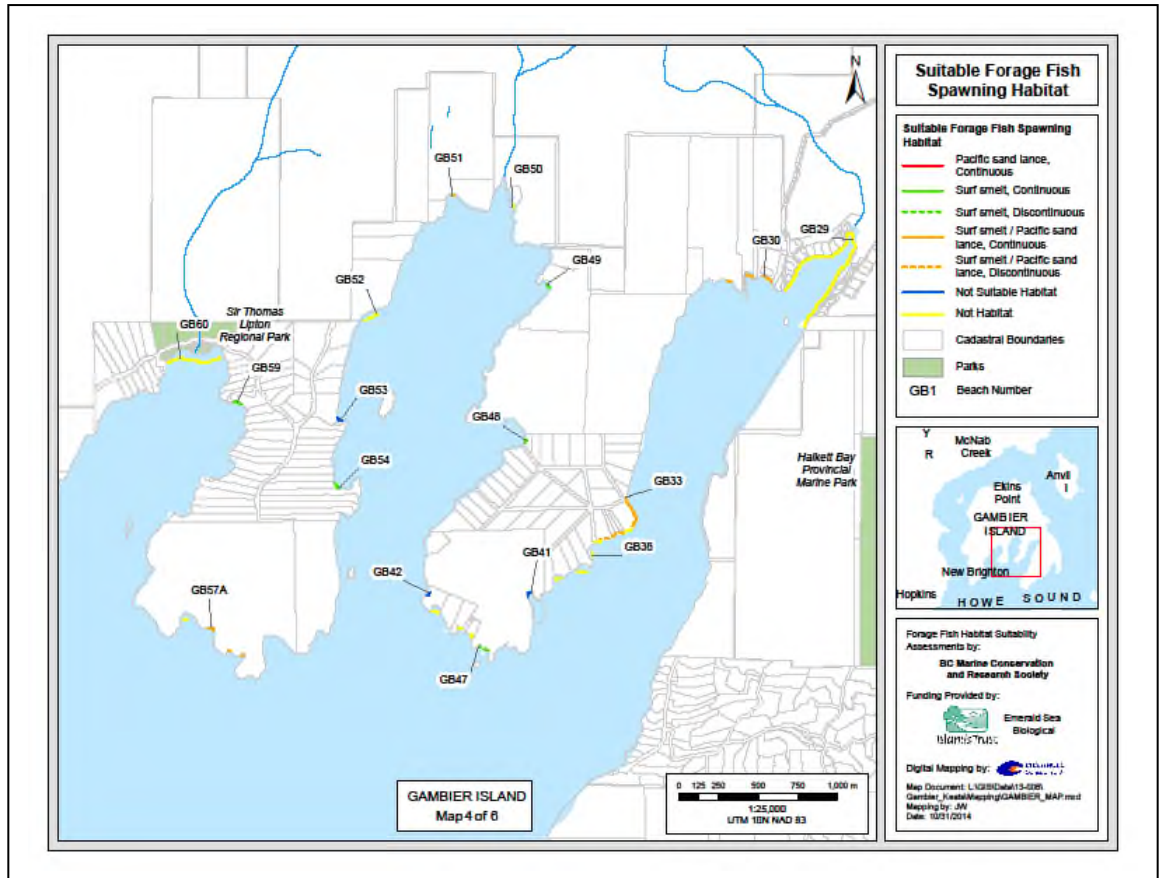
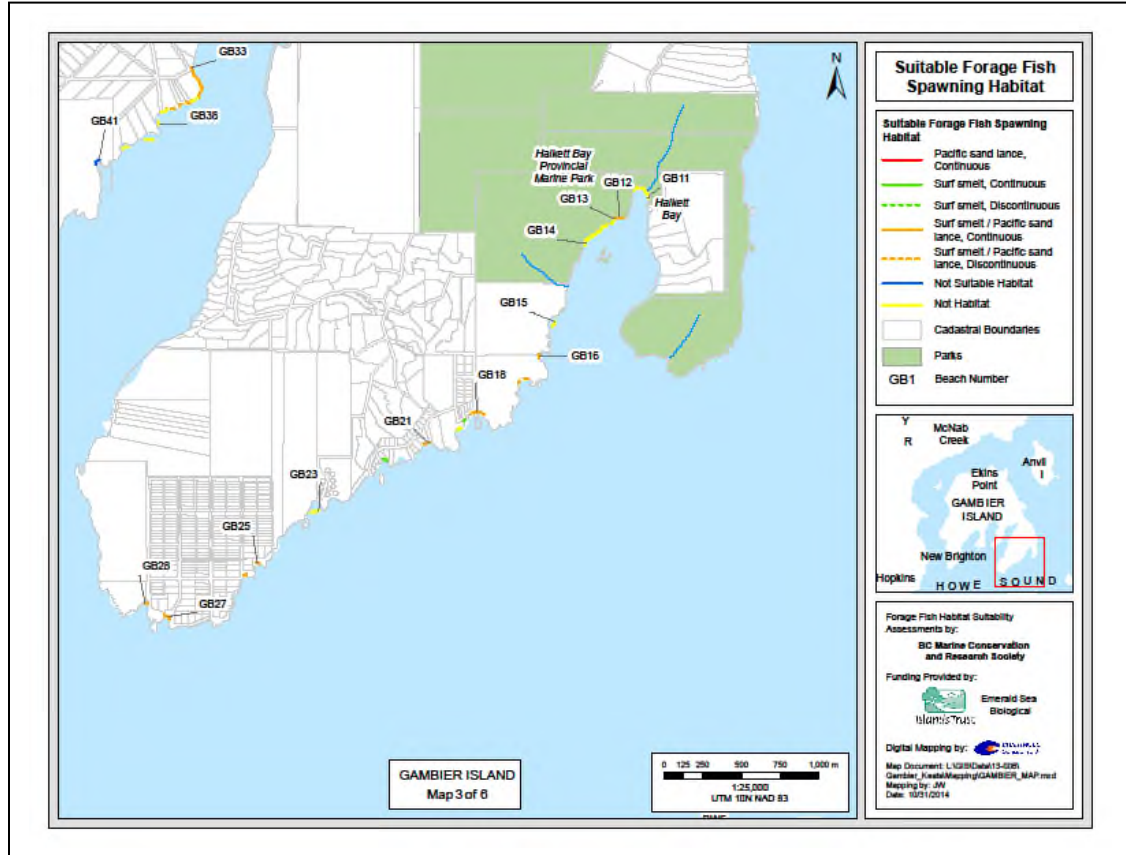


Figure 1D-1E: Suitable Beach Spawning Forage Fish Spawning Habitats – GAMBIER ISLAND

9.1.2 Grain-Size Analyses

Grain-size analyses were used to test for likelihood of beaches to support spawning. All grain-size frequencies curves were classified to Type curves. Forty (40) beach units showed grain-size frequencies curves that were within 80% and higher similarity to known positive spawning beaches (Appendix B, Appendix C, Figures 2-7). The grain-size frequencies of four (4) samples did not meet the statistical standards of the analysis.

9.1.3 Length of Suitable Forage Fish Spawning Habitat

The total shoreline perimeter of Gambier Island is 74.1 kilometers. Suitable forage fish spawning habitat comprised 2.1 kilometers (2,123 m) or three percent (3%) of the Gambier Island shoreline perimeter (Table 1). Of the suitable forage fish spawning habitat, the shoreline perimeter is comprised of 1% (20 m) suitable for Pacific sand lance spawning; 27.7% (587.5 m) suitable for surf smelt spawning; and 71.3% (1,515.5 m) as suitable for surf smelt/Pacific sand lance spawning habitat (Table 2).

Table 2: Gambier Island - Classification of
Suitable Forage Fish Beaches

	SS	PSL	SS/PSL	Total
Count	11	1	28	40
Length (m)	587.5	20	1515.5	2123
Length Percentage	27.70%	1%	71.30%	

SS - Surf smelt

PSL - Pacific sand lance

9.1.4 Suitable Forage Fish Spawning Habitat Beach Types

Of the 40 suitable spawning beaches, 1 was classified as Pacific sand lance, 11 as surf smelt, and 28 as mixed surf smelt/Pacific sand lance spawning habitat (Table 2). Of the Pacific sand lance beaches, grain size analyses assessed 1 as Type 3 Pacific Sand lance beach. Of the surf smelt beaches, grain size analysis assessed 10 as Type 1 and 1 as Type 4 Surf Smelt beaches. Of the mixed surf smelt/Pacific sand lance beaches, grain size analysis assessed 15 as Type 1; 7 as Type 2; 3 as Type 4, and 1 as Type 5 Surf Smelt beaches (Appendix C, Figures 2-7). There were few pure sand beach types; and overall, grain size types are coarser than those surveyed on Denman, Hornby and Thetis Islands.

Table 3: Gambier Island Grain-Size Types

Category	SS	PSL	SS/PSL
PSL TYPE 1			
PSL TYPE 2			
PSL TYPE 3		1	
SS TYPE 1	10		15
SSTYPE 2			7
SS TYPE 3			2
SS TYPE 4	1		3
SS TYPE 5			1
Totals	11	1	28

9.1.5 Geographic Position of Suitable Forage Fish Spawning Beaches

Dividing Gambier Island into north, south, west and east coast lines, 1 suitable beach unit is located on the north coast; 28 suitable beach units are located on the south coast; 7 suitable beach units on the west coast; and 4 suitable beach units on the east coast (Table 4).

Table 4: Gambier Island

Gambier Island Coast Lines
Suitable Forage Fish Beach Units

	SS	PSL	SS/PSL	Total
North			1	1
South	9		19	28
West		1	6	7
East	2		2	4

9.1.6 Foreshore Modification

Modification of the foreshore is classified as a percentage of the length of the beach unit that has been altered from a natural state by structures that would impede movement of sediments either to the beach or along the beach. Twenty (20) of the beach units had unmodified shorelines and twenty (20) were modified. Of the twenty (20) modified beach units, 8 (20%) were 1-25% impacted; 3 (7.5%) were 51-75% impacted; and 9 (22.5%) were 75-100% impacted (respectively) (Table 5).

Table 5: Foreshore Modification - Gambier Island

	0% impact	1-25% Impact	26-50% Impact	51-75% Impact	76-100% Impact
Count	20	8	0	3	9
Percentage	50	20	0	7.5	22.5

9.1.7 Foreshore and Backshore Structures

Of the twenty-one (21) suitable forage fish spawning beach units with modified foreshore zones, the presence of sediment impeding structures were classified and enumerated. In total twenty-nine (29) structures were classified into nine categories (Table 6).

Of the suitable spawning beach units, 11, 27.5% had modified backshore zones. In total twelve (12) structures were classified into seven categories. Buildings (cabins, houses, sheds, etc.) are not enumerated but only classified as present or absent. All other Individual structures were numerated. Buildings were present at 24 beach units (Table 6).

Ten (10) beach units had 1 foreshore structure each, seven (7) beach units had 2 foreshore structures each, two (2) beach units had 3 foreshore structures each, and two (2) beach units had 4 foreshore structures.

Table 6: Foreshore and Backshore Structures - Gambier Island

Category	Foreshore		Backshore		No. Beach Units Buildings Present
	Count	Percentage	Count	Percentage	
Building					24
Boat Ramp	2	5.1			
Boat					
Boat House	1	2.6	1	8.3	
Dock/Wooden Pier	14	35.9	1	8.3	
Seawall	6	15.4			
Riprap	8	20.5	1	8.3	
Groin	4	10.3			
Break Water	1	2.6			
Infill	2	5.1			
Storm Water Outfall	1	2.6			
Stairs			1	8.3	
Platforms/Patios					
Derelict floats					
Derelict Boats					
Road to beach			6	50.0	
Boardwalks			2	16.7	
Total Number of Structures	39	100	12	100	24
Beach Units with Structures	21	52.5	11	27.5	

9.1.8 Overhanging Shade Vegetation

Marine riparian overhanging shade is classified into percentage of the length of the beach unit with tree branches overhanging the spawning zone. Trees are, generally, located above the high water mark and subject to removal by property owners. Of the suitable beach units, 25% of the beach units had no overhanging shade; 37.5% had 1-25% overhead shade; 15% had 26-50% overhanging shade; 2.5% had 51-75% overhanging shade; 20% had 76-100% overhanging shade (10, 15, 6, 1, and 8 beach units respectively)(Table 7).

Marine riparian vegetation may be absent due to soil conditions, the type of land form, or due to landscaping. Of the suitable beach units with no overhanging shade, 25% had modified foreshore and 30% modified backshore zones; beach units with 1-25% overhead shade, 45% had modified foreshore and 43% modified backshore zones; beach units with 26-50% overhead shade had 15% modified foreshore and 15% modified backshore zones; beach units with 51-75% overhead shade had 0% modified foreshore and 0% modified backshore zones; and beach units with 75-100% overhead shade had 15% modified foreshore and 12% modified back shore zones (Table 7). In general, modification of foreshore and backshore areas resulted in significant losses of shade bearing trees.

Table 7: Overhead Shade Vegetation - Gambier Island

	Fully exposed	1-25% Shade	26-50% Shade	51-75% Shade	76-100% Shade
Count	10	15	6	1	8
Percentage	25	37.5	15	2.5	20
Foreshore Modified %	25%	45%	15%	0%	15%
Backshore Modified %	30%	43%	15%	0%	12%

9.2 Keats Island

9.2.1 Statistical Analyses

In total, twenty-seven (28) beach units comprised of unconsolidated sediments were assessed (Table 1). Principal Component Analysis using PRIMER-E and beach metrics, including grain-size analyses, assessed twenty-one (21) beach units within 80% similarity to known positive beaches in BC and Washington State and were classified as “suitable spawning habitat” (Figure 8A-C)(Table 8). Fourteen (14) of these beach units had continuous habitat and seven (7) had discontinuous habitat.

Six (6) beach units were comprised of unconsolidated sediments such as mud, silt, cobble that are not habitat types that are potential spawning habitat (Table 8; Figure 8A-C). Three (3) of these beach units had significant shoreline modifications and/or localized erosion facts (wakes from BC ferries) that may have contributed to lack of fine spawning sediments and the current beach condition of cobble and/or cobble/boulder. A list of beach units identified in the map Figures 8A-C is provided in Appendix D.

Table 8: Keats Island - Beach Unit Statistical Analyses

	Count	Total	Length (m)	Percentage of Shoreline Perimeter
Habitat	21	21	2036.2	14.4%
Not Suitable	0			
Not habitat (Modification/Erosion Effects)	3(3)	6	390	2.8%
Total Beach Units		27		
Total Length			2426.2	
Habitat	Count		Length	
Continuous	14		1090.1	7.7%
Discontinuous	7		946.2	6.7%

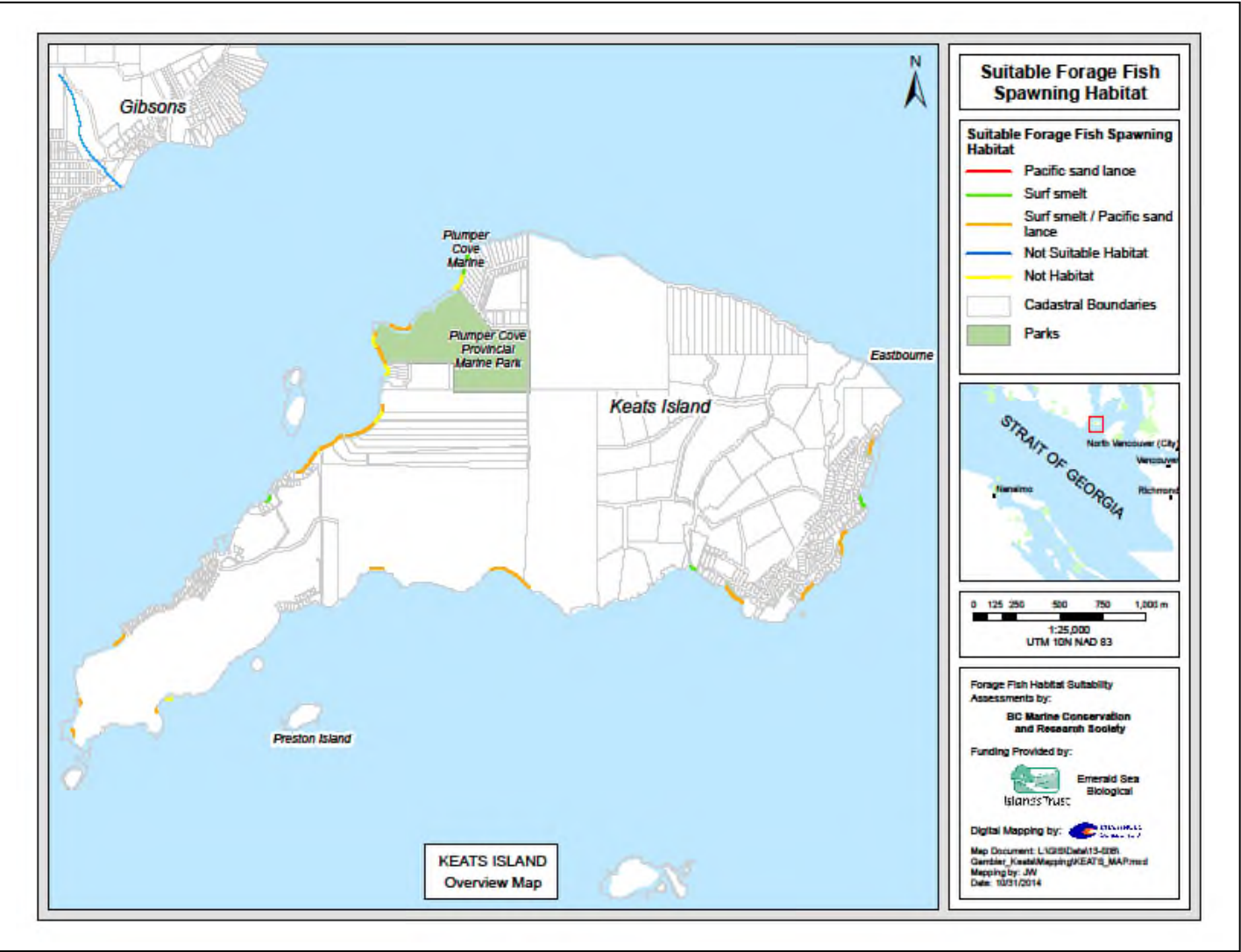


Figure 8A: Suitable Beach Spawning Forage Fish Spawning Habitats – Keats Island

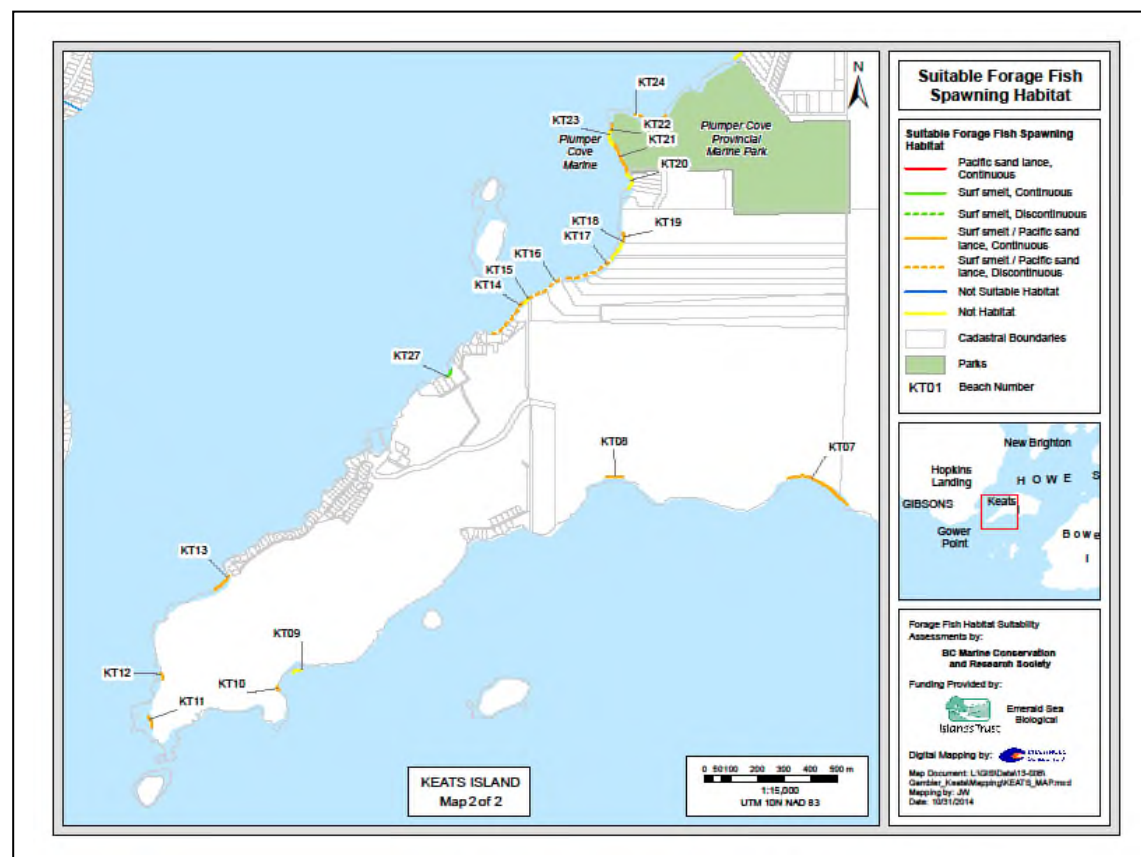
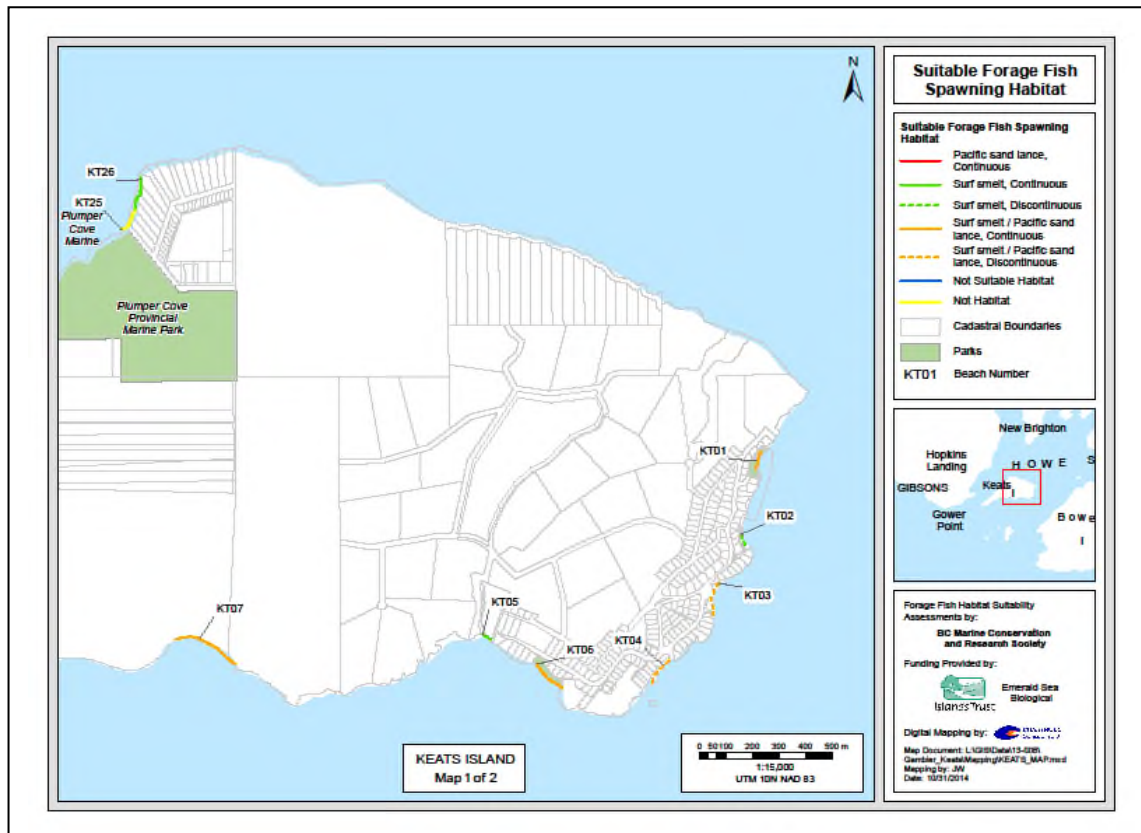


Figure 8B-C: Suitable Beach Spawning Forage Fish Spawning Habitats – Keats Island

9.2.2 Grain-Size Analyses

Grain-size analyses were used to test for likelihood of beaches to support spawning. All grain-size frequencies curves were classified to Type curves. Twenty-one (21) beach units showed grain-size frequencies curves that were within 80% and higher similarity to known positive spawning beaches (Appendix E; Appendix F, Figures 9-12).

9.2.3 Length of Suitable Forage Fish Spawning Habitat

The total shoreline perimeter of Keats Island is 14.2 kilometers (14,149 m). Suitable forage fish spawning habitat comprised 14.4% (2,036 meters) of the Keats Island shoreline perimeter (Table 8, Table 9). Of the suitable forage fish spawning habitat, the shoreline perimeter is comprised of 12.6% (258 m) suitable for surf smelt spawning, and 87.4% (1,778 meters) as mixed surf smelt/Pacific sand lance spawning habitat (Table 9).

Table 9: Classification of Keats Island
Suitable Forage Fish Beaches

	SS	PSL	SS/PSL	Total
Count	4	0	17	21
Length (m)	257.8		1778.4	2036.2
Length Percentage	12.60%		87.40%	

SS - Surf smelt

PSL - Pacific sand lance

9.2.4 Suitable Forage Fish Spawning Habitat Types

Of the twenty-one (21) suitable spawning beaches, four (4) were classified as surf smelt and seventeen (17) as mixed surf smelt/Pacific sand lance spawning habitat (Table 10). Of the surf smelt beaches, grain size analysis assessed two as Type 1, one as Type 3 and one as Type 4 surf smelt beaches. Of the mixed surf smelt/Pacific sand lance beaches, grain size analysis assessed ten as Type 2; two as Type 2; two as Type 3; and 3 as Type 4 Surf Smelt beaches (Appendix E). There were few pure sand grain-size types and overall, grain-size types are coarser than those found on Denman, Hornby and Thetis islands.

Table 10: Keats Island Grain-Size Types

	SS	SS/PSL
SS TYPE 1	2	10
SSTYPE 2		2
SS TYPE 3	1	2
SS TYPE 4	1	3
SS TYPE 5		

9.2.5 Geographic Position of Suitable Forage Fish Spawning Beaches

Dividing Keats Island into north, south, west and east coast lines, one (1) beach units was located on the south coast; eleven (11) beach units on the west coast; and nine (9) beach units the east coast.

Table 11: Keats Island Coast Lines
 Suitable Forage Fish Beach Units

	SS	SS/PSL	Total
North	0	0	0
South	0	1	1
West	2	9	11
East	2	7	9

9.2.6 Foreshore Modification

Modification of the foreshore is classified as a percentage of the length of the beach that has been altered from a natural state by structures that would impede movement of sediments either to the beach or along the beach. Twelve (12) of the beach units had unmodified shorelines and nine (9) were modified. Of the twenty one (21) beach units, 57% were in a natural state; 14% were 1-25% impacted; 10% were 26-50% impacted; 10% were 51-75% impacted; and 10% were 75-100% impacted (12, 3, 2, 2, and 2, respectively)(Table 12).

Table 12:: Foreshore Modification - Keats Island

	0% impact	1-25% Impact	26-50% Impact	51-75% Impact	76-100% Impact
Count	12	3	2	2	2
Percentage	57	14	10	10	10

9.2.7 Foreshore and Backshore Structures

Of the nine (9) suitable forage fish spawning beach units with modified foreshore zones, the presence of sediment impeding structures were classified and enumerated. In total, 24 (24) structures were classified into ten categories (Table 13).

Of the suitable spawning beach units, nine (9) (41%) had modified backshore zones. In total nine (9) structures were classified into six categories. Buildings (cabins, houses, sheds, etc.) are not enumerated but only classified as present or absent. All other Individual structures were numerated. Buildings were present at 12 beach units (Table 13).

Of the suitable spawning beach units, three (3) beach units had 1 foreshore structure each, four (4) beach units had 2 foreshore structures each, one (1) beach unit had 3 foreshore structures, one (1) beach unit had 4 foreshore structures; and one (1) beach unit had 5 foreshore structures.

Table 13: Foreshore and Backshore Structures - Keats Island

	Foreshore		Backshore		
Category	Count	Percentage	Count	Percentage	No Beach Units Buildings Present
Building					12
Boat Ramp	1	4			
Boat					
Boat House					
Dock/Wooden Pier	6+	25	1	11	
Seawall	4	17	4	44	
Riprrap	5	21	1	11	
Groins	3	13			
Infill	1	4			
Stairs	1	4	1	11	
Platforms/Patios	1	4	1	11	
Derelict floats	1	4			
Derelict Boats	1	4			
Road to beach			1	11	
Total Number of Structures	24	100	9	100	
Beach Units with Structures	10	45	9	41	

9.2.8 Overhanging Shade Vegetation

Marine riparian overhanging shade is classified into percentage of the length of the beach unit with tree branches overhanging the spawning zone. Trees are, generally, located above the high water mark and subject to removal by property owners. Of the suitable beach units, 14% of the beach units had no overhanging shade; 32% had 1-25% overhead shade; 14% had 26-50% overhanging shade; 18% had 51-75% overhanging shade; 23% had 76-100% overhanging shade (3, 7, 3, 4 and 5 respectively)(Table 14).

Marine riparian vegetation may be absent due to soil conditions, the type of land form, or due to landscaping. Of the suitable beach units with no overhanging shade, 33% had modified foreshore and 100% modified backshore zones; beaches with 1-25% overhead shade, 57% had modified foreshore and 71% modified backshore zones; beaches with 26-50% overhead shade had 67% modified foreshore and 100% modified backshore zones; beaches with 51-75% overhead shade had 50% modified foreshore and 25% modified backshore zones; and beaches with 75-100% overhead shade had 20% modified foreshore and 40% modified back shore zones (Table 14). In general, an increase in backshore modification resulted in significant losses of shade bearing trees.

Table 14: Overhead Shade Vegetation - Keats Island

	Fully exposed	1-25% Shade	26-50% Shade	51-75% Shade	76-100% Shade
Count	3	7	2	4	5
Percentage	14	32	14	18	23
Foreshore Modified %	33%	57%	50%	50%	20%
Backshore Modified %	100%	71%	100%	25%	40%

10.0 Summary and Recommendations

10.1 General

The shorelines of Howe Sound islands, Gambier, Keats and Bowen Islands relative to those surveyed in 2013-2014 on Denman, Hornby and Thetis, were notably different in the small percentage of pure sand beaches and overall, beaches comprised of coarser beach types. However, with approximately 2.1 kilometers of suitable spawning habitat on Gambier Island and 2.04 kilometers on Keats Island, there are excellent opportunities to safeguard and protect these critical fish habitats. Gambier and Keats Island had the same length of suitable forage fish spawning habitat, although Gambier has a shoreline perimeter of 74.1 kilometers and Keats a shoreline perimeter of 14.1 kilometers.

As stated in the introduction, particular marine shorelines are critical fish habitat for spawning surf smelt and Pacific sand lance, and also provide rearing grounds for juvenile salmonids. Forage Fish Habitat Assessments (FFHAs) can grade beaches as to their spawning suitability only. Where resources permit, the Islands Trust and the Island Trust Fund should support further forage fish habitat spawning surveys and community involvement in marine habitat stewardship.

Recommendations from this study have been evaluated with the goal of balancing changing oceanographic conditions (sea level rise), ecological values, public access/enjoyment of beaches, and shoreline property values. Recommendations should also promote local governance tools and community discussions that incorporate emerging engineering, biological and policy advances for shoreline protection and ecological/resource benefits.

Shoreline structures:

Structures placed along shorelines can impede sediment delivery to shorelines either by blocking transport along the beach or blocking sediment transport from eroding land forms. Over time, beaches lack sediment “nourishment” and will coarsen. Some structures, such as hard structures (seawalls, riprap boulders, retaining walls) have various impacts on the foreshore, but generally these structures can increase erosion due to wave-induced scouring on the face of these structures. Overtime, fine sediments are scoured from the beach surface, slopes steepen, and sediments coarsen. Foreshore structures may also be placed directly on top of spawning habitat. The cumulative effects of shoreline structures have a detrimental impact on beach spawning forage fish

habitat. Clearing cobbles and boulders from the foreshore changes beach profiles and changes sediment supply/delivery leading to altered habitat types.

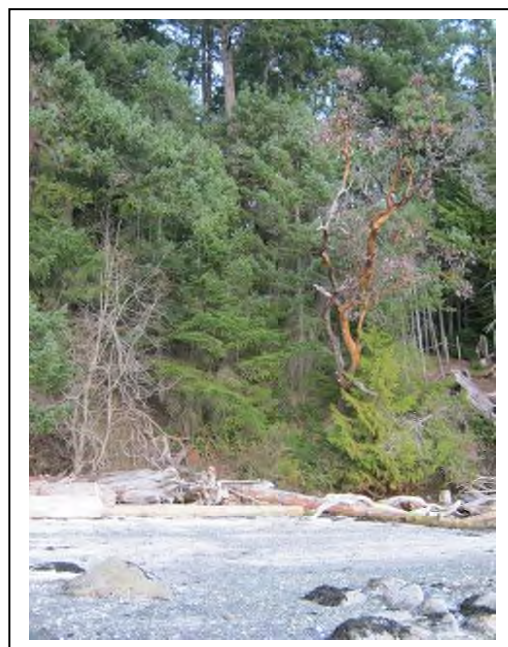
Forage fish spawning habitat is vulnerable to the impacts of sea level rise. At sites with hard armouring placed close to, at or below the high water mark (“natural boundary”) these structures cause phenomena known as “coastal squeeze”. Hardening of the shoreline prevents the landward transgression of intertidal habitats and wave energy reflectance degrades forage fish spawning habitat. As a result, the spatial area of suitable spawning habitats may reduce or be completely lost due to the presence of hard armouring or foreshore infills with increasing sea level rise.

Marine Riparian Vegetation:

Marine riparian vegetation, gravel/sand beaches and good water-quality are important to the health of these spawning areas. A healthy surf smelt/Pacific sand lance spawning beach has an intact marine riparian buffer zone, overhanging shade vegetation, a supply of pebble and sand and clean water. Shade from overhanging shoreline vegetation keeps summer surf smelt eggs moist. Removing shoreline vegetation increases temperatures within the spawning gravels; and on hot summer days, surf smelt egg mortality is high (Penttila 2001, Rice 2006). Key to maintaining and restoring these shoreline areas will be measures to limit physical structures

that negatively affect sediment transport as well as actions that protect marine riparian vegetation and water quality.

Land-owner education and expanded spawning surveys are all central to protecting these beaches.



Marine Riparian Vegetation
Thetis Island - Photo: RC de Graaf

Marine riparian vegetation is a valued ecosystem component that provides benefits for human security and benefits to the ecosystem. Recent studies from Puget Sound and Squamish confirm the use of marine shorelines as rearing habitat for juvenile salmonids, such as Chinook. Dietary analyses show that up to 50% of the stomach contents of juvenile Chinook were composed of insect “windfall”, insects transported by winds from marine shoreline vegetation to the water’s surface (Brennan and Culverwell 2004).

Marine riparian vegetation provides ecological benefits as well as a net benefit to property owners as a free “ecosystem service” limiting erosion and stabilizing slope soils. Trees and shrubs absorb large volumes of rain water and filter pollutants. Vegetation removal may cause large sediments loads to enter the ocean limiting light for eelgrass growth and clogging fish gills. Managing storm water by maintaining vegetation is an effective and low-cost measure.

Foreshore areas lacking vegetation and overhanging vegetation could benefit by restoring vegetation. Overtime, restoration of shrubs, alders, arbutus, maples and other trees in some areas would also provide overhanging shade for summer surf smelt embryos and insect prey for juvenile salmonids. Replanting vegetation benefits property owners by stabilizing shoreline sediments. This is particularly important on high bank and bluff habitats. With careful site planning, shoreline vegetation and other landowner values, such as views, can be maintained.



Overhanging Shade Vegetation

Photo: RC de Graaf

Stressors/Restoration:

Shoreline modifications can change habitats as well as public access/enjoyment of beaches. Deleterious changes to habitats can be termed “stressors”. A stressor negatively impacts ecological function, poses a threat to future habitat/public values, and decreases public enjoyment/utilization of resources. Restoration strategies can lead to effective solutions if grounded in cost-effective, community-supported regulatory tools. The following is a list of stressors and restoration options relevant to the shoreline survey completed.

Stressors:

A. Shoreline Modifications

1. Hard armouring

- reduces public access to beach
- removal of spawning habitat
- interruption of sediment supply
- increases beach erosion (sediment coarsening, beach profile changes)
- Sea Level Rise(SLR) inundation (habitat narrowing; sediment coarsening; beach profile changes)
-

2. Pier/Docks; Boat Ramps; Groins; Berms; Breakwaters; clearing foreshore
 - reduces public access to beach
 - blocks sediment supply/littoral drift
 - increases beach erosion (sediment coarsening, beach profile changes)
 -

B. Vegetation Removals

- impairment of soil conditions (slope/shoreline stability, pollution filtering, storm water management)
- loss of overhead shade vegetation
- loss of nutrient (prey) inputs for juvenile salmonids

Enhancement/Restoration:

A. Shoreline Modification

- shoreline set backs
- soft engineering approaches for shoreline stabilization
- reducing/removal number of foreshore structures present on beach unit
- beach restoration/sediment nourishment

B. Vegetation Removals

- site management/planning
- marine riparian set backs
- trim vegetation for views
- replanting
- assessing role of invasive plant species

C. Beach Health

- Removal of derelict structures
- Removal/replacement of creosote pilings
- Monitoring of upland septic systems
- Monitoring/mitigating oil/fuel fouling sources

10.2.0 Specific Recommendations

Shoreline Management Goals/Policies

Land-Owner Stewardship

Throughout the islands, good stewardship should be actively encouraged and formalized in regulation where appropriate. Section 3.4.4 of the Islands Trust Policy Statement requires that local trust committees address protection of sensitive coastal areas in official community plans and regulatory bylaws. Section 3.4.5 requires that local trust committees address the planning for and regulation of development in coastal regions to protect natural coastal processes. Coastal planning can assist by reducing the need for sea defences by advocating building setbacks from the water line, implementing shoreline buffers and considering drift cell management for contiguous property owners. As a coastal resource, forage fish spawning beaches are a sensitive nearshore habitat and

protection measures for these beaches could be included in Official Community Plans, Land Use Bylaws and shoreline development permit areas.

Marine shoreline management policies, bylaws and shoreline development permit areas are increasing in popularity among jurisdictions bounding south coastal British Columbia. Forage fish spawning habitat protection requires specific management and mitigation measures.

Land owners and local permitting officials are becoming increasingly burdened with environmental protection as more senior governments divest themselves of this responsibility or lack effective management regimes. Implementing changes to new bylaws should be accompanied by tools to assist property owners in meeting permit requirements. Gambier/Keats Islands, like other municipalities, would benefit from developing a common “toolkit” for property owners to protect shoreline ecological values while planning development of their properties. These could include checklists of Gambier/Keats islands vegetation types, timing windows of least risk for marine species, and local government funded engineering assessments of slope stabilities. These could work as incentives for multiple shoreline property owners to work at the “shoreline drift cell” level to manage sediment processes rather than individual site planes. As well as incentives for employing “soft” options (bioengineering) rather than hard armouring for shoreline erosion and sea level rise protection should accompany any local bylaw implementation. Local “best management practices” can be developed that will assist land owners wishing to develop and steward their properties.

Measures to protect beach habitats

Generally, beach units suitable for forage fish spawning that are have sediment inputs, intact natural shorelines and riparian vegetation zones with overhanging shade trees. These are priority sites for protection of ecological values through shoreline setbacks (buffer zones), upland site planning, and water quality protection measures. These are also areas of high social and esthetic values. Numerous beach units can be enhanced for juvenile salmonid habitat and forage fish spawning habitat by replanting vegetation, modifying structures that may be blocking sediment drift, and managing storm water and pollution/nutrient inputs into marine habitats. Beach units can also be restored by removal of hard armouring and employing soft bioengineering methods that, depending on the local oceanographic conditions, can be less expensive and more effective in mitigating erosion.

Beach units suitable for forage fish spawning that are generally, intact with natural shorelines and riparian vegetation zones (e.g. Gambier: east coast beach units, Halkett Bay and Mannion Creek) are priority sites for protection of ecological values through shoreline setbacks and site management planning. Suitable forage fish spawning beach units in Halkett Bay are unique on Gambier Island as the mid-intertidal and shallow subtidal zones are comprised of soft sediments suitable for Pacific sand lance burrowing. Throughout other areas of Gambier Island, these zones are comprised of cobble/boulder substrate or eelgrass beds which are not conducive to burrowing by Pacific sand lance. Protection of nearshore and subtidal forage fish habitats of Halkett Bay is a high priority. Another exceptional habitat area is Mannion Creek.

Public Access

Properly managed public access points to marine shorelines can be an asset for residents and visitors as they promote opportunities to connect with nature and protect shoreline ecological values. Shoreline modifications can hinder public access to beaches either due to overwater structures (piers/dock structures) or seawalls/rock revetments physically limiting access (Griggs 2010, Shipman et al 2010).

Public access to marine shorelines on Gambier and Keats is limited. The lack of public access both by road or foot to marine shorelines can result in significant shoreline modification of beach units. It is common to encounter beaches fronting properties with little to no public access becoming utilized by a select few; and in some instances with significant levels of shoreline modifications. Examples can be commonly found where modifications are initiated on shorelines isolated by geography or zoning and are not monitored. In some communities, providing better signage and frequency of public beach accesses helps to reduce changes such as multiple access stairs along single beach units. Public access points may reduce the need for multiple access stairs and improve enjoyment for both residents and visitors.

Shoreline structures:

Foreshore areas are the property of the Crown unless upland property owners secure a lease for a water lot or have “grandfathered” use of the foreshore through historical zoning (e.g. industrial land

sites, commercial, recreational uses). Access to and alterations to the foreshore require permits and approvals at various government levels.

Shoreline Erosion Mitigation

Gambier Island

Gambier Island had a significant proportion of suitable spawning habitat classified as having modified shorelines. Gambier Island, 52.5% (21) of beach units suitable as forage fish spawning habits were impacted by structures that impeded the delivery of sediments to the beaches or the transport of sediments along the drift cell. In light of future sea level change predictions, as well as shoreline development, threats/pressures to harden shorelines will increase. Seawall, riprap, and infills below the natural boundary should be removed or elevated foreshore/beach nourishment methods employed to re-establish and enhance forage fish spawning habitat.

On Gambier Island, seven and possibly ten beach units had significantly coarsened sediments resulting in classification as “not habitat” but it is possible that sediments at these beach units were degraded over time from fine sediments (pebbles and sand) to coarse sediments (cobbles/boulders) due to shoreline modifications and local wave/swell conditions. On Gambier Island, these beach units measure a total of 786 m and may represent habitat losses.



Foreshore structure impeding sediment flow.
Photo: RC de Graaf

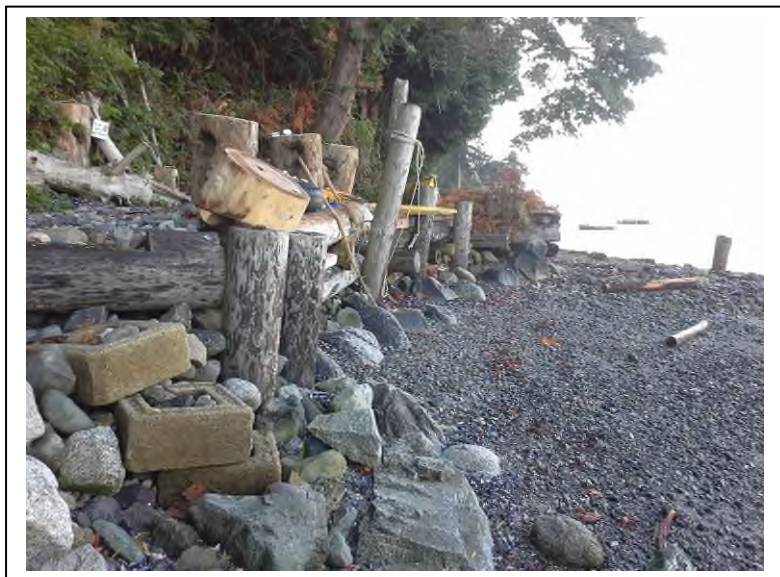
Keats Island

On Keats Island, 43% of beach units (9 beach units) suitable as forage fish spawning habits were impacted by structures that impeded the delivery of sediments to the beaches or the transport of sediments along the drift cell. In light of future sea level change predictions, as well as shoreline development, threats/pressures to harden shorelines will increase. Seawall, riprap, and infills below

the natural boundary should be removed or elevated foreshore/beach nourishment methods employed to re-establish and enhance forage fish spawning habitat.

On Keats Island, three (3) beach units had significantly coarsened sediments resulting in classification as “not habitat” and measured 231 meters in length. It is possible that sediments at these beach units were degraded over time from fine sediments (pebbles and sand) to coarse sediments (cobbles/boulders) due to significant shoreline modifications, the number and type of shoreline structures, vegetation removals and local wave/swell conditions.

Three beach units classified as suitable forage fish spawning habitat had significant shoreline modifications near, at or below the natural boundary impairing ecological function and shoreline processes: including seawalls, foreshore infills, riprap armouring, piers/docks,



Foreshore structures impeding sediment delivery and flow along beach surface.
Photo: RC de Graaf

Piers and Docks

Gambier Island

Proliferation of piers and docks can reduce public access to the foreshore as well as negatively impact marine habitats. Coastal planning should evaluate the cumulative impacts to social and ecological values and consider the placement of and maximum number of piers/docks per beach should be re-evaluated. Investigation of “green docks”, minimizing float sizes, shared pier/dock

facilities, community moorage facilities is recommended. Aging public dock facilities can serve as a “green dock” pilot project to educate other residents.

A number of beach units located in Port Graves, Centre Bay, West Bay, and Thornbrough Bay have significant shoreline modification and vegetation removals. The majority of beach units in these bays were modified with hard armouring, piers/docks. The high number of piers/docks is a concern due to cumulative impacts on multiple valuable habitats. The majority of beach units on Gambier constitute pocket coves. Multiple piers/docks within a single pocket cove are not uncommon. Due to the loss of public access to these beaches and cumulative effects on spawning habitat, placement of and maximum number of piers/docks per beach should be re-evaluated.

A number of beach units in Thornbrough Bay also had areas of the foreshore where cobbles/boulders were cleared and either displaced or used for building mid-intertidal berms. Stressors related to this activity are alteration of sediment/littoral drift and changes of beach profiles including degradation and loss of spawning habitat. As foreshore areas are not to be altered or disturbed without application to the Province, educating land owners on foreshore matters is strongly encouraged.



Clearing of cobbles and boulders resulting in changes to beach profiles and sediment types.
Photo: RC de Graaf

Keats Island

A large number of piers/docks on Keats Island span soft sediment beaches and their construction should be evaluated to mitigate any sediment flow disruptions. Unelevated piers/floats are not permitted by present best management practices and two such structures are present at one beach unit in Plumper Cove south, although not comprising suitable forage fish spawning habitat, unelevated docks deny public access to the foreshore and can be significantly block sediment transport.

Three beach units in Plumper Cove South and Plumper Cove North had areas of the foreshore where cobbles/boulders were cleared and either displaced or used for building mid-intertidal berms. Stressors related to this activity are alteration of sediment/littoral drift and changes of beach profiles including degradation and loss of spawning habitat. This is particularly true at one beach unit where this activity (combined with a seawall below the natural boundary) has resulted in extreme changes in

beach elevation and littoral drift resulting in a loss of spawning habitat. These cobble groins/berms span the upper and mid foreshore and under pier footings should be removed to restore forage fish spawning habitat.



Cobbles at pier footings blocking sediment flow.

Photo: RC de Graaf



Foreshore moving/clearing of cobble and boulder resulting in beach profile changes.

Photo: RC de Graaf

Vegetation Losses:

Marine Riparian Vegetation and Overhanging Shade Vegetation:

Gambier Island

On Gambier Island, 77.5% of beach units (31 beach units) had only 1-50% cover of overhanging shade vegetation. These differences may be due to land forms, soils, and landscaping. Encouraging stewardship practices that involve trimming tree branches and shrubs, rather than vegetation removal, will maintain nutrient subsidies to marine ecosystem as well as protect shorelines from accelerated rates of erosion. Vegetation replanting is also advised.

Keats Island

On Keats Island, 57% of beach units (12 beach units) had only 1-50% cover of overhanging shade vegetation. These differences may be due to land forms, soils, and landscaping. Encouraging stewardship practices that involve trimming tree branches and shrubs, rather than vegetation removal, will maintain nutrient subsidies to marine ecosystem as well as protect shorelines from accelerated rates of erosion.

Beach Health/Enhancement

Several beach units presented opportunities to remove derelict structures/vessels which will improve water quality and overall beach health. Within Plumper Cove BC Marine Park (Keats Island), two medium size derelict vessel hulls are present and should be removed. Some derelict structures may be the result of past (historical) uses of the beaches.

When repairing old piers/dock structures, minimizing the number of pilings, removal/elimination of creosote pilings, and following green dock guidelines provide a positive benefit to marine habitats. Vegetation losses can be offset by replanting.

While historical commercial/industrial land/beach uses may have left structures such as bulkheads and infills, these should not be encouraged for present or future residential/recreational development if they negatively affect shoreline areas.

Future uses of data provided

This report presents the forage fish spawning habitat maps only. Maps of overhanging shade vegetation, marine riparian vegetation, as well as foreshore structures and categories of foreshore/backshore modification can also be generated from the data provided as part of the project deliverables.

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Appendix A - Beach Units Gambier Island

Gambier Island - Beach Units

Beach Number	Beach Name	Habitat Class	Sediment Distribution	Species Most Likely	Grain Size Type	Length (m)
GB1	ThunderbirdYC	Habitat	Continuous	SS/PSL	T2	41
GB2	EkinsPnt1	Not Habitat			nil	10
GB3	EkinsPnt2	Not Habitat			nil	13
GB4	Douglas Bay 1	Habitat	Continuous	SS/PSL	T1	39
GB5	Douglas Bay 2	Habitat	Continuous	SS/PSL	T1	82
GB6	BrigadeBay5	Not Suitable	Continuous		T1	164
GB7	BrigadeBay4	Habitat	Discontinuous	SS	T1	141
GB8	BrigadeBay3	Not Habitat			nil	50
GB9	BrigadeBay2	Not Habitat			nil	107
GB10	BrigadeBay1	Habitat	Discontinuous	SS	T1	46
GB11	HalketBayN	Not Habitat			nil	144
GB12	HalkettBayMrnP3	Habitat	Continuous	SS/PSL	T1	57
GB13	HalkettBayMrnP2	Not Habitat			nil	42
GB14	HalkettBayMrnP1	Not Habitat			nil	210
GB15	HalkettBayWestw	Not Habitat			nil	39
GB16	HalkettBayWest1	Habitat	Continuous	SS/PSL	T1	33
GB17	Camp Fircom	Habitat	discontinuous	SS/PSL	T1	93
GB18	Camp Fircom1	Habitat	Continuous	SS/PSL	T2	99
GB19	Camp Fircom2	Habitat	Discontinuous	SS	T1	21
GB20	Camp Fircom3	Not Habitat			nil	34
GB21	HopePntN6	Habitat	Continuous	SS/PSL	T5	38
GB22	HopePntN5	Habitat	Discontinuous	SS	T4	27
GB23	HopePntN4	Not Habitat			nil	57
GB25	HopePntN2	Habitat	Discontinuous	SS/PSL	T1	43
GB26	HopePntN1	Habitat	Continuous	SS/PSL	T4	27
GB27	HopePnt2	Habitat	Continuous	SS/PSL	T1	48
GB28	HopePnt1	Habitat	Continuous	SS/PSL	T1	17
GB29	PtGraves Estuary	Not Habitat			nil	1324
GB30	CampArtaban1	Habitat	Continuous	SS/PSL	T1	55
GB31	PtGravesPier	Habitat	Continuous	SS/PSL	T1	44
GB32	PtGraves1	Habitat	Discontinuous	SS/PSL	T2	25
GB33	PottsPnt1	Habitat	Continuous	SS/PSL	T2	156
GB34	PottsPnt2	Habitat	Continuous	SS/PSL	T1	62
GB35	PottsPnt3	Not Habitat			nil	52

Appendix A - Beach Units Gambier Island

Gambier Island - Beach Units						
Beach Number	Beach Name	Habitat Class	Sediment Distribution	Species Most Likely	Grain Size Type	Length (m)
GB36	MitchellCove5	Habitat	Discontinuous	SS/PSL	T1	164
GB37	MitchellCove6	Not Habitat			nil	42
GB38	MitchellCove4	Not Habitat			nil	21
GB39	MitchellCove3	Not Habitat			nil	57
GB40	MitchellCove1	Not Habitat			nil	35
GB41	East Bay	Not Suitable			nil	44
GB42	GambierPnt1	Not Suitable			nil	25
GB43	GambierPntS1	Not Habitat			nil	41
GB44	GambierPntS2	Not Habitat			nil	23
GB45	GambierPntS3	Not Habitat			nil	26
GB47	GambierPntS5	Habitat	Discontinuous	SS	T1	64
GB48	MacKenzieCove	Habitat	Discontinuous	SS	T1	18
GB49	WVYachtClub	Habitat	Continuous	SS	T1	27
GB50	CentreBay6	Not Habitat			nil	328
GB51	CentreBayYachtStation	Habitat	Continuous	SS/PSL	T3	19
GB52	CentreBayS1	Not Habitat			nil	89
GB53	Cecil's Landing1	Not Suitable			nil	33
GB54	Cecil's Landing2	Habitat	Continuous	SS	T1	47
GB55	Carmelo4	Habitat	Continuous	SS/PSL	T3	11
GB56	Carmelo3	Habitat	Continuous	SS/PSL	T2	12
GB57A	Carmelo5	Habitat	Continuous	SS/PSL	T1	11
GB58	Carmelo1	Not Habitat			nil	24
GB59	WestBayN5	Habitat	Continuous	SS	T1	58
GB60	WestBayN4	Not Habitat			nil	362
GB61	WestBayN3	Not Habitat			nil	278
GB62	WEstBayN2	Not Habitat			nil	45
GB63	WEstBayN1	Habitat	Discontinuous	SS	T1	89
GB64	HebbPnt4	Not Habitat			nil	28
GB66	Druid Bay	Not Habitat			nil	125
GB67	HebbPnt1	Habitat	Continuous	SS	T1	52
GB68	AvalonByS1	Habitat	Continuous	SS/PSL	T1	23
GB69	Avalon Bay	Not Habitat			nil	134
GB70	Burgess Cove	NotHabitat			nil	131

Appendix A - Beach Units Gambier Island

Gambier Island - Beach Units						
Beach Number	Beach Name	Habitat Class	Sediment Distribution	Species Most Likely	Grain Size Type	Length (m)
GB71	NewBrS2	Not Habitat			nil	136
GB72	NewBrS1	Habitat	Continuous	SS/PSL	T4	21
GB73	NewBrN1	Habitat	Discontinuous	SS/PSL	T4	75
GB74	NewBrN2	Not Habitat			nil	289
GB75	NewBrN3	Habitat	Discontinuous	SS/PSL	T1	82
GB76	NewBrN4	Not Habitat			nil	33
GB77	NewBrN5	Habitat	Continuous	SS/PSL	T2	57
GB78	MannionCk1	Not Habitat			nil	145
GB79	Andys1	Not Habitat			nil	166
GB79	MannionCk2	Habitat	Continuous	SS/PSL	T2	82
GB80	Andys2	Habitat	Continuous	PSL	T3	20

Beach Type Classifications - Gambier Island

Surf smelt Type 1

Beach Unit Number	Beach Unit Name	Beach Type	Species	Length (m)
GB7	BrigadeBay4	T1	SS	140.6
GB10	BrigadeBay1	T1	SS	45.9
GB19	Camp Fircom2	T1	SS	20.8
GB47	GambierPntS5	T1	SS	64.2
GB48	MacKenzieCove	T1	SS	17.8
GB49	WVYachtClub	T1	SS	27.0
GB54	Cecil's Landing2	T1	SS	46.6
GB59	WestBayN5	T1	SS	57.6
GB63	WEstBayN1	T1	SS	89.1
GB67	HebbPnt1	T1	SS	51.5
GB4	Douglas Bay 1	T1	SS/PSL	38.8
GB5	Douglas Bay 2	T1	SS/PSL	81.6
GB12	HalkettBayMrnP3	T1	SS/PSL	56.7
GB16	HalkettBayWest1	T1	SS/PSL	33.4
GB17	Camp Fircom	T1	SS/PSL	93.1
GB25	HopePntN2	T1	SS/PSL	43.3
GB27	HopePnt2	T1	SS/PSL	48.1
GB28	HopePnt1	T1	SS/PSL	16.7
GB30	CampArtaban1	T1	SS/PSL	55.1
GB31	PtGravesPier	T1	SS/PSL	43.5
GB34	PottsPnt2	T1	SS/PSL	62.2
GB36	MitchellCove5	T1	SS/PSL	163.7
GB57A	Carmelo5	T1	SS/PSL	10.7
GB68	AvalonByS1	T1	SS/PSL	22.7
GB75	NewBrN3	T1	SS/PSL	82.4

Appendix B – Beach Types Gambier

Appendix B – Beach Types Gambier Island

Beach Type Classifications - Gambier Island

Surf smelt Type 2

Beach Unit Number	Beach Unit Name	Beach Type	Species	Length (m)
GB1	ThunderbirdYC	T2	SS/PSL	41.0
GB18	Camp Fircom1	T2	SS/PSL	98.6
GB32	PtGraves1	T2	SS/PSL	25.4
GB33	PottsPnt1	T2	SS/PSL	155.6
GB56	Carmelo3	T2	SS/PSL	12.1
GB77	NewBrN5	T2	SS/PSL	57.3
GB79	MannionCk2	T2	SS/PSL	81.8

Surf smelt Type 3

Beach Unit Number	Beach Unit Name	Beach Type	Species	Length (m)
GB51	CentreBayYachtStation	T3	SS/PSL	19.3
GB55	Carmelo4	T3	SS/PSL	11.2

Surf smelt Type 4

Beach Unit Number	Beach Unit Name	Beach Type	Species	Length (m)
GB22	HopePntN5	T4	SS	26.5
GB26	HopePntN1	T4	SS/PSL	27.4
GB72	NewBrS1	T4	SS/PSL	21.4
GB73	NewBrN1	T4	SS/PSL	75.0

Surf smelt Type 5

Beach Unit Number	Beach Unit Name	Beach Type	Species	Length (m)
GB21	HopePntN6	T5	SS/PSL	37.6

Pacific sand lance Type 3

Beach Unit Number	Beach Unit Name	Beach Type	Species	Length (m)
GB80	Andys2	T3	PSL	19.9

Appendix C: Beach Type Grain-Size Curves Gambier Island

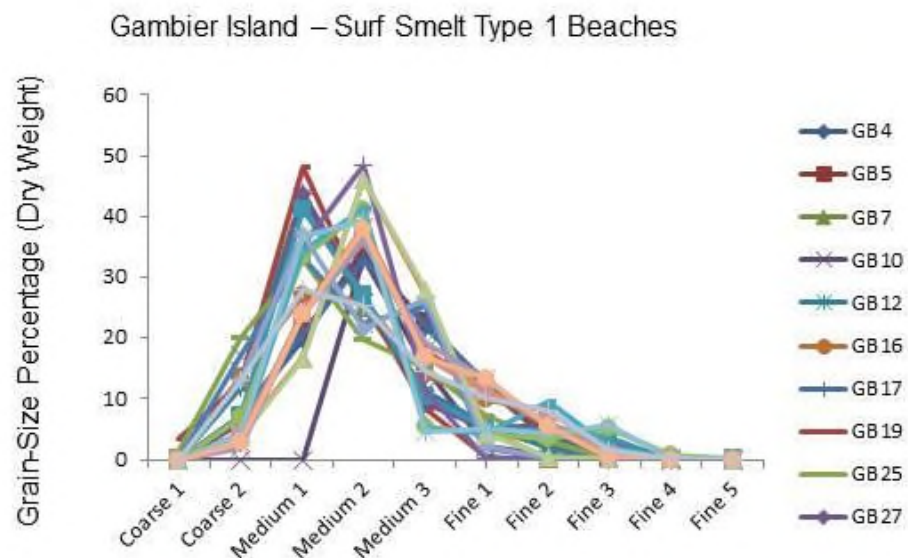


Figure 2 Gambier Island – Surf Smelt Type 1 Beaches

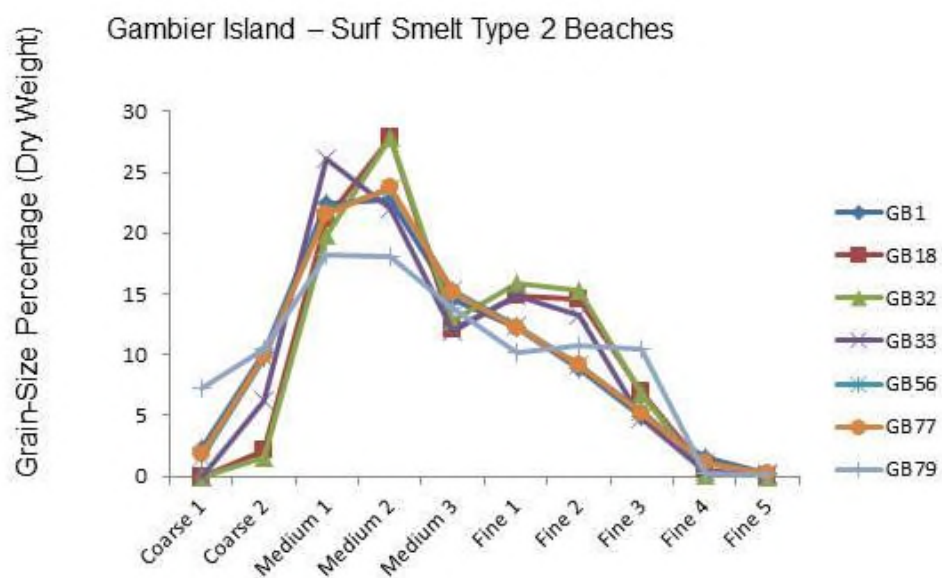


Figure 3: Gambier Island – Surf Smelt Type 2 Beaches

Appendix C: Beach Type Grain-Size Curves Gambier Island

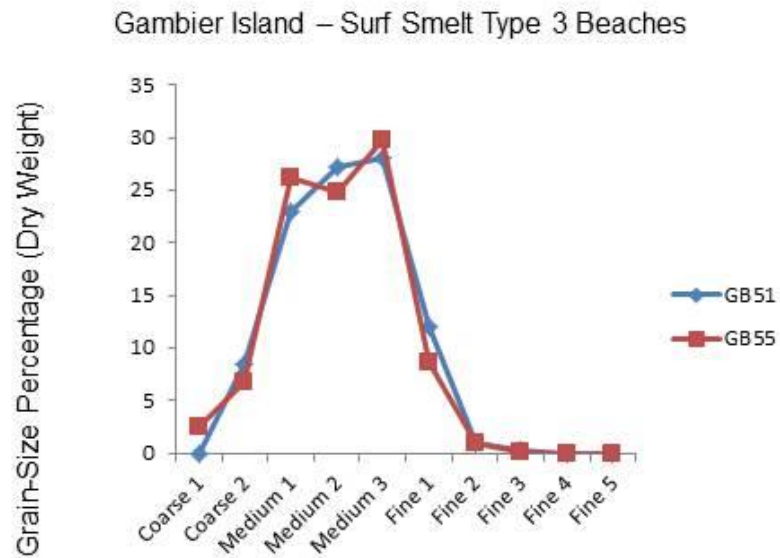


Figure 4: Gambier Island – Surf Smelt Type 3 Beaches

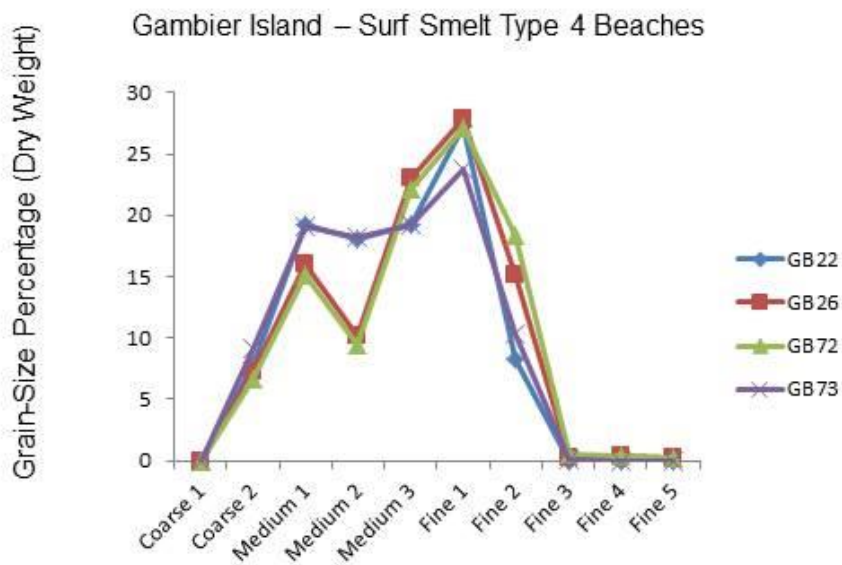


Figure 5: Gambier Island – Surf Smelt Type 4 Beaches

Appendix C: Beach Type Grain-Size Curves Gambier Island

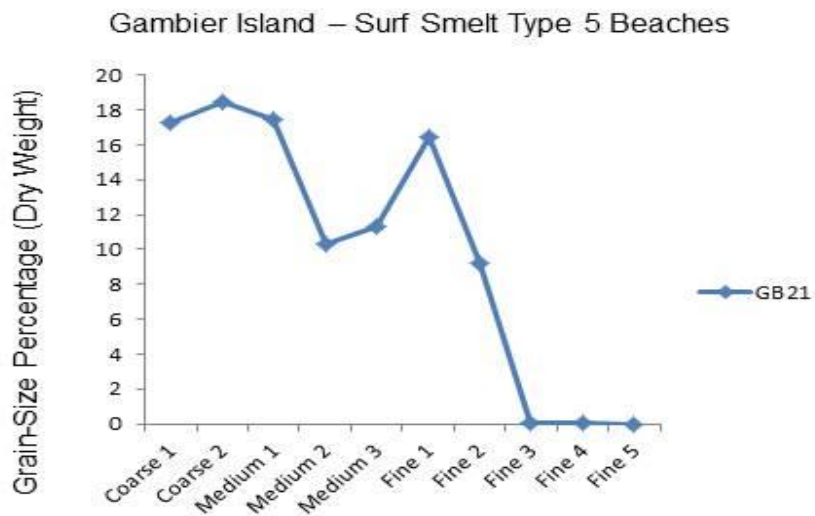


Figure 6: Gambier Island – Surf Smelt Type 5 Beaches

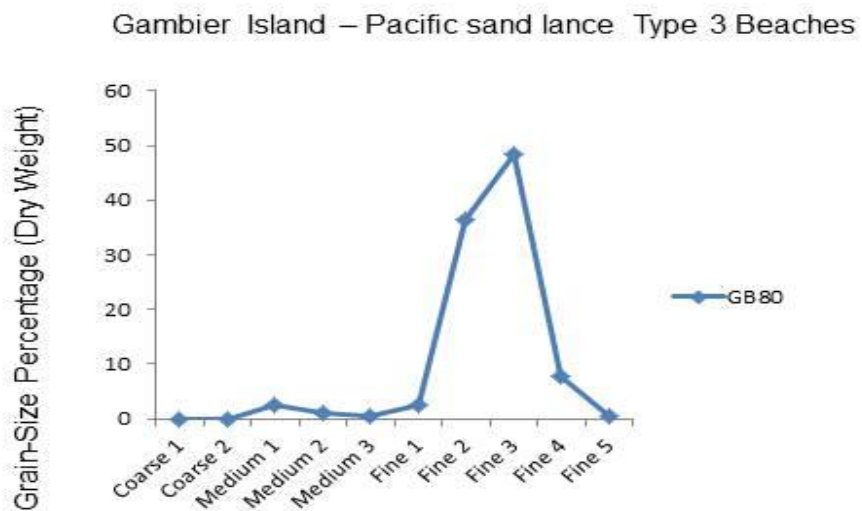


Figure 7: Gambier Island – Pacific sand lance Type 3 Beaches

Keats Island - Beach Units

Beach Number	Beach Name	Habitat Class	Sediment Distribution	Species Most Likely	Grain Size Type	Length (m)
KT01	Wreck	Habitat	Continuous	SS/PSL	T3	69.3
KT02	East	Habitat	Discontinuous	SS	T4	60.4
KT03	Maple	Habitat	Discontinuous	SS/PSL	T2	134.4
KT04	Laurels	Habitat	Discontinuous	SS/PSL	T1	113.4
KT05	Andys	Habitat	Continuous	SS	T1	31.4
KT06	West	Habitat	Continuous	SS/PSL	T4	137.9
KT07	Pebble	Habitat	Continuous	SS/PSL	T1	262.0
KT08	HardToComeByCove	Habitat	Continuous	SS/PSL	t1	64.8
KT09	BeachcomerPnt2	Not Habitat	Nil	nil	nil	34.6
KT10	BeachcomerPnt	Habitat	Continuous	SS/PSL	T1	19.9
KT11	Salmon Rock	Habitat	Continuous	SS/PSL	T1	47.7
KT12	SandyS1	Habitat	Continuous	SS/PSL	T1	27.5
KT13	Sandy	Habitat	Continuous	SS/PSL	T4	76.9
KT14	PlumperS1	Habitat	Discontinuous	SS/PSL	T1	173.1
KT15	PlumperS2	Not Habitat	Nil	nil	nil	42.4
KT16	PlumperS3	Habitat	Discontinuous	SS/PSL	T1	148.6
KT17	PlumperS4	Habitat	Discontinuous	SS/PSL	T1	186.0
KT18	PlumperS5	Not Habitat	Nil	nil	nil	88.9
KT19	PlumperS6	Habitat	Continuous	SS/PSL	T4	30.6
KT20	PlumperS7	Not Habitat	Nil	nil		70.6
KT21	PlumperCove3	Habitat	Continuous	SS/PSL	T2	125.2
KT22	PlumperCove2	Habitat	Continuous	SS/PSL	T1	31.0
KT23	PlumperCoveNeg	Not Habitat	Nil	nil	NIL	53.6
KT24	PlumperCove1	Habitat	Discontinuous	SS/PSL	T3	130.3
KT25	PlumperN1	Not Habitat	Nil	nil	NIL	99.7
KT26	PlumperN2	Habitat	Continuous	SS	T3	132.5
KT27	Plumper10	Habitat	Continuous	SS	T1	33.6

Beach Type Classifications - Keats Island**Surf smelt Type 1**

Beach Number	Beach name	Grain Size Type	Species	Length (m)
KT05	Andys	T1	SS	31.4
KT27	Plumper10	T1	SS	33.6
KT08	HardToComeByCove	t1	SS/PSL	64.8
KT11	Salmon Rock	T1	SS/PSL	47.7
KT16	PlumperS3	T1	SS/PSL	148.6
KT17	PlumperS4	T1	SS/PSL	186.0
KT04	Laurels	T1	SS/PSL	113.4
KT07	Pebble	T1	SS/PSL	262.0
KT10	BeachcomerPnt	T1	SS/PSL	19.9
KT14	PlumperS1	T1	SS/PSL	173.1
KT12	SandyS1	T1	SS/PSL	27.5
KT22	PlumperCove2	T1	SS/PSL	31.0

Surf smelt Type 2

Beach Number	Beach name	Grain Size Type	Species	Length (m)
KT03	Maple	T2	SS/PSL	134.4
KT21	PlumperCove3	T2	SS/PSL	125.2

Surf smelt Type 3

Beach Number	Beach name	Grain Size Type	Species	Length (m)
KT26	PlumperN2	T3	SS	132.5
KT24	PlumperCove1	T3	SS/PSL	130.3
KT01	Wreck	T3	SS/PSL	69.3

Surf smelt Type 4

Beach Number	Beach name	Grain Size Type	Species	Length (m)
KT02	East	T4	SS	60.4
KT06	West	T4	SS/PSL	137.9
KT19	PlumperS6	T4	SS/PSL	30.6
KT13	Sandy	T4	SS/PSL	76.9

Appendix F: Beach Type Grain-Size Curves Keats Island

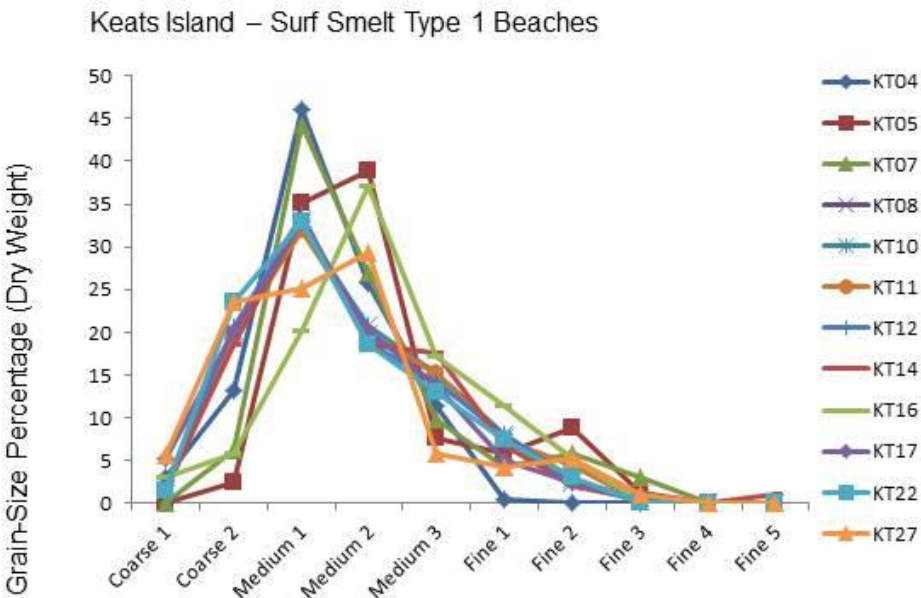


Figure 9 Gambier Island – Surf Smelt Type 1 Beaches

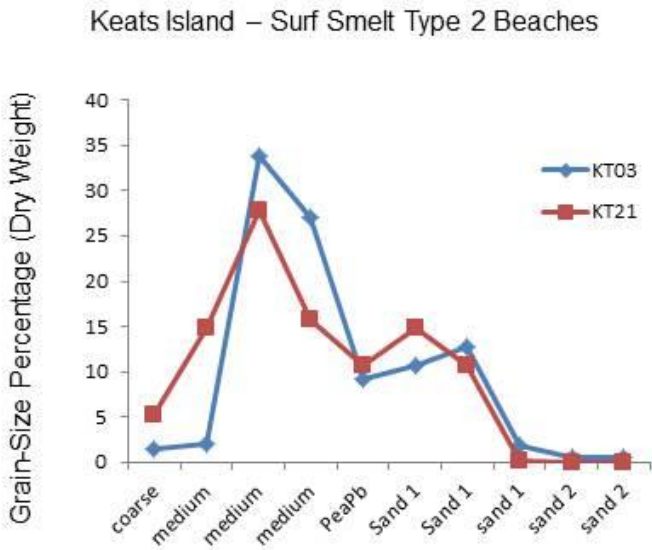


Figure 10: Keats Island – Surf Smelt Type 2 Beaches

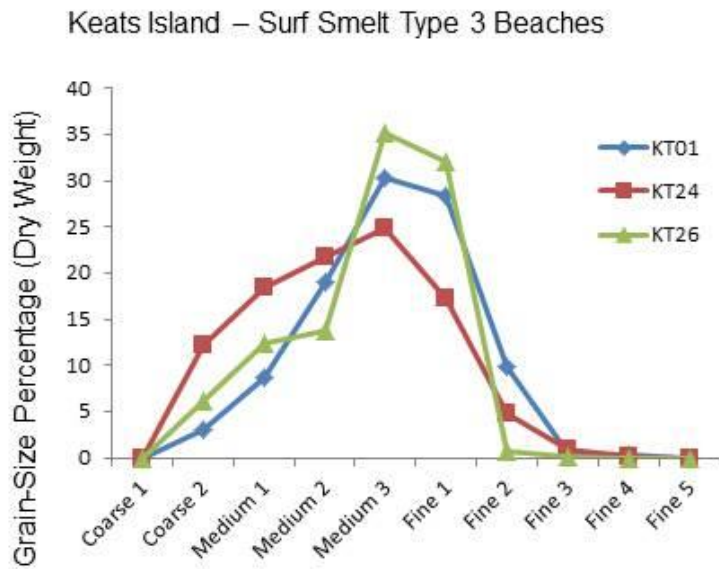


Figure 11: Keats Island – Surf Smelt Type 3 Beaches

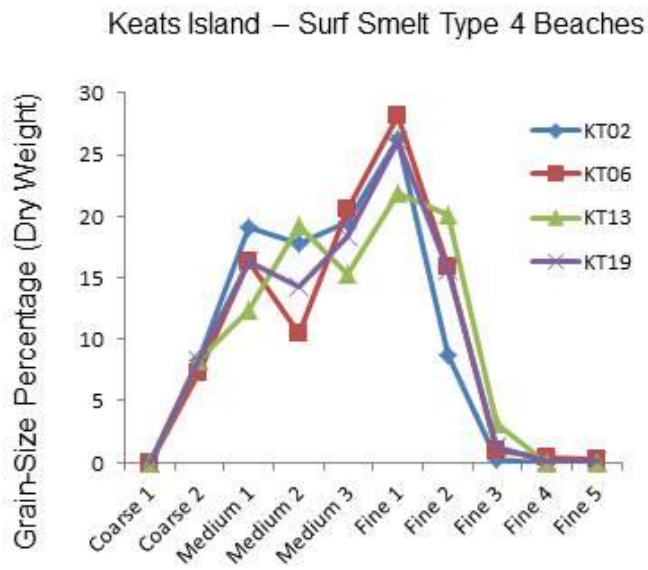


Figure 12: Keats Island – Surf Smelt Type 4 Beaches

Global Positioning System Specifications

1. General Application

1.01

The target horizontal accuracy is 1 metre. The lowest acceptable horizontal accuracy is 5 metres, at the 95% confidence level. This applies to final map data after averaging (for point features), approximating (for line features), and any editing.

1.02

All GPS receiver systems must be approved for use in stream mapping by Islands Trust GIS staff. Only receiver models which have been tested and proven to be capable of meeting the above accuracy specification in field conditions will be approved.

1.03

At least one person, who is responsible for the quality of the data, must act as a supervisor and have completed GPS-specific training acceptable to Islands Trust GIS staff.

1.04

Field operators must be trained to the satisfaction of the supervisor, including GPS training and other training as required.

2. Field Parameters and Procedures

2.01

All positions fixes must use at least four satellites. No height constraints can be applied.

2.02

The minimum elevation angle to satellites is 15 degrees above the horizon.

2.03

The maximum Dilution of Precision (DoP) is:

HDOP 5 (preferred in most cases)

PDOP 8

GDOP 10

VDOP 5 (only if elevations are required)

2.04

For standard static point features, occupation time must be at least 60 seconds AND there must be at least 30 individual position fixes for each feature.

2.05

The maximum distance for point offsets is 25 metres. Directions must be accurate to 2 degrees and distances accurate to 1 metre. If the slope is over 10 percent and over 10 metres long, slope measurements (accurate to 5 percent or 3 degrees) must be made.

2.06

For all line (and polygon) features, all significant deflections and meanders of the feature must be mapped. Dynamic points recorded every 5 metres and static every 50 metres, or significant deflection.

2.07

For line (and polygon) features surveyed in dynamic mode, the majority of the individual position fixes must be no more than 5 metres apart. The maximum distance between successive position fixes is 10 metres.

2.08

The maximum distance for constant line offsets is 5 metres.

2.09

Supplementary traverses (using compass and chain) must begin (Point of Commencement) and end (Point of Termination) on static GPS point features or on survey control monuments of 1 metre or better accuracy.

2.10

Directions for supplementary traverses must be accurate to 2 degrees and distances accurate to 1 metre. If the slope is greater than 10 percent, slope measurements accurate to 5 percent or 2.5 degrees must be made. The maximum length of an individual traverse leg is 50 metres. There is no limit on the total length of a supplementary traverse.

2.11

Static features collected for start and end point of all sampling units. Static features will be meet collection and accuracy requirements as outlined in section 2.04.

2.12

Sampling unit feature descriptions refer to the centerline of B1 sediment component. Centerline changes of direction will be captured as static points every 50 meters or less. Centerline of features will be described between static points using dynamic mode. Dynamically collected transverses will not be required to meet static feature standards of accuracy.

3. Data Processing and Mapping

3.01

All position fixes must be differentially corrected in real-time or post-processed. If position corrections are used, the same set of satellites must be used at the reference station as at the field receiver.

3.02

Reference stations (real-time or post-processed) must be approved by Islands Trust GIS staff.

3.03

The maximum age of real-time corrections is 20 seconds from the time the observations are made at the reference station to the time the computed corrections are applied at the field receiver.

3.02

All directions from compass observations must be corrected for declination before offset or traverse computations. If applicable, correction for grid convergence must be made.

3.05

Supplemental traverses must close to better than 1 percent (1/100) of the total traverse distance plus 2.5 metres. Traverse misclosures over 2.5 metres total must be adjusted (“balanced”) using the standard compass rule method.

3.06

If true NAD 27 coordinates are required, NAD 83 coordinates must be converted using the Canadian National Transformation, version 2 (NT v2).

3.07

If elevations are required, they must be converted from ellipsoidal to orthometric using the CRD Geoid model HT 2.0.

3.08

If data in any other coordinate system (e.g. ground coordinates) are required, procedures acceptable to Islands Trust GIS staff and the owner of the mapping must be used.

3.09

Any discrepancies between the GPS survey and existing mapping used as base maps must be resolved to the satisfaction of Islands Trust GIS staff and the local agency(s) considered responsible for the mapping.

4. Deliverables and Archiving

4.01

The following digital files must be archived and delivered to Islands Trust GIS staff and other appropriate agency(s) in the following formats:

Deliverable	Digital Format
Uncorrected GPS data	GPS manufacturer's proprietary
Reference station data	downloaded format
Originally corrected GPS Including complete metadata report for all dynamic and static point features, including but not limited to Max HDOP, Max PDOP, and Horizontal Precision	ESRI Shapfile
Final map	ESRI ArcGIS MXD

Appendix H: Digitizing Spatial Data and Map Production

Mapping Procedure for Forage Fish Habitat Beach Segments using Static and Dynamic GPS Features

Pathfinder Office

Export GPS point features and positions-not-in-features as two separate shapefiles using Pathfinder Office.

ArcGIS 10.1

1. Project the two GPS data shapefiles to NAD83 UTM 10N projection..
2. Create an empty polyline shapefile with NAD83 UTM 10N projection for the Forage Fish Habitat beach segments.
3. Connect static GPS features based on the *Point_Type* field which describes whether the features is a start, mid or end point on a beach segment. Only start and end points with horizontal accuracy less than 5m are used.
4. Re-shape the centerline between static feature points by snapping to dynamic feature points.
5. Provide a preliminary *Habitat* designation (Yes/No) and *Species* classification based on the data sheet provided by Ramona.

Forage Fish Segments Attributes

FID – Unique identifier assigned to each segment by ArcGIS software.

Habitat – Declared Potential Habitat (Yes) or Not Habitat (No) while in the field. This is based on the observed shore type. For example, cobble shoreline is Not Habitat.

Species – Declared Surfsmelt (SS)/ Pacific Sandlance (PSL), Surf Smelt and Pacific Sandlance (SS/PSL) or Not Suitable Habitat (NSH).

Length - Length of the segment.

Appendix I: Forage Fish Habitat Suitability Assessment Methods

Housed with the Islands Trust Fund and the author



Memorandum

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northinfo@islandstrust.bc.ca www.islandstrust.bc.ca

Date January 27, 2015

File Number GM 5450-30

To Gambier Island Local Trust Committee

From Aleksandra Brzozowski
Island Planner, Northern Office

Re Response Procedures for Howe Sound Industrial Applications - Updates

This memorandum is to provide information to the Gambier Local Trust Committee (LTC) on matters pertaining to response procedures appropriate for the LTC for project applications proposed in Howe Sound.

Woodfibre Liquified Natural Gas (LNG) Facility

The project is undergoing a provincial and a federal environmental assessment (EA) led by the BC Environmental Assessment Office (EAO). The EAO finalized the requirements for the Application Information Requirements on November 24, 2014. The proponent submitted an application to obtain an Environmental Assessment Certificate in January 2015, and the EAO initiated the 180-day assessment process on January 30, 2015.

Following up on Trust Council's request for the Executive Committee to monitor and consider directing activities related to the environmental assessment (EA) process for the Woodfibre LNG project, Clare Frater, Islands Trust Policy Analyst, joined the LNG Working Group. Clare Frater, as Trust Area Services staff, will focus predominantly on the issue of tanker traffic through the Howe Sound. Members of the LNG Working Group are expected to give comments on the application by February 6, 2015.

The EAO is seeking public comments on potential effects (environmental, social, heritage and health) that might result from the proposed project, and these are identified for consideration as part of the assessment process. There are 45 days for the submission of comments by the public. The comment period will begin on January 22, 2015 and end on March 9, 2015. All comments received during this comment period will be considered. Please see Attachment 1 for details on how to submit comments.

The Trustees are encouraged to participate individually in the process, following the procedures laid out in the Islands Trust Advocacy Policy (Attachment 2).

Part of EAO's public comment process includes three open houses that will be held in Squamish, West Vancouver, and on Bowen Island. The Sunshine Coast Regional District has officially requested an additional meeting in Gibsons for a presentation and Q+A with the proponent. The LTC may pass a resolution to support this request, or may make a separate request if they so choose.

BURNCO Aggregates Project

The Environmental Assessment Office (EAO) approved the Application Information Requirements for the BURNCO project on December 17, 2014.

An application has not yet been submitted but an application is expected in the spring of 2015.

Community Woodlots on Gambier Island

On November 5, 2014, the Minister of Forests, Lands and Natural Resource Operations (FLNRO) decided to decline to accept a winning applicant in the recent tendering of two woodlots on Gambier Island in order for the Province of British Columbia to address community concerns and undertake further consultations with the Squamish Nation consistent with the Supreme Court of Canada's recent decision in *Tsilhqot'in Nation v. BC* (*Tsilhqot'in* decision). In reviewing the consultation record for the two Woodlot License areas, the Minister concluded that more work needs to be done to ensure that the Province properly carries out its constitutional obligations consistent with this new direction, as well as to address the public interest.

Following this decision, the LTC sent a letter to Minister Thompson thanking him for the decision to delay (Attachment 3). Staff contacted the Sunshine Coast Forest District on January 13, 2015 for any updates. Presently, there is no movement on this issue.

Sinking of HMS Annapolis

The Artificial Reef Society of British Columbia (ARSBC) intended to sink the former HCMS Annapolis in Halkett Bay on January 17, 2015. On January 7, 2015, the Save Halkett Bay Society filed an application for judicial review and for an injunction or interim relief to prevent the sinking until a decision was made regarding toxic substances found in the paint on the hull of the ship.

The hearing set for January 27, 2015 has been postponed to a later unknown date.

Response and Advocacy regarding the Howe Sound Industrial Projects

At the May 22, 2014 meeting, the LTC requested Staff to prepare a summary of the response processes the Islands Trust were employing to address the various applications being proposed in the Howe Sound. This information is updated and included in this memorandum again for information.

Project	Location/Jurisdiction of project	IT Staff Assigned? Who?	Formal Processes Occurring? Run by whom?	Timeline of Project
BURNCO	Project occurs in the Gambier Local Trust Area, but outside the zoned plan areas	Aleksandra Brzozowski, Island Planner	Provincial Environmental Assessment, run by the BC Environmental Assessment Office. Rezoning Application, administered by the Sunshine Coast Regional District.	<i>Completed (2013):</i> Comments on the draft Value Components. <i>Completed (2013):</i> Comments on two drafts of the Application Information Requirements (AIR). <i>Next Steps:</i> Evaluation of Application and Comments on Application

Woodfibre LNG	Project occurs outside the Gambier Local Trust Area, but tanker traffic will go through waters in the Gambier Local Trust Area.	Clare Frater, Policy Analyst (Trust Area Services)	Federal and Provincial Assessment, both run by the BC Environmental Assessment Office. Rezoning Application with the Sunshine Coast Regional District.	<i>Completed (2014):</i> Comments on the draft Value Components. <i>Current Steps:</i> Comments on draft of the Application Information Requirements (AIR). <i>Next Steps:</i> Evaluation of Application and Comments on Application
Gambier Woodlots W2068 & W2069	Project occurs within the Gambier Island Plan Area, but on land not under the authority of the Islands Trust. Under the authority of the Ministry of Forests Lands and Natural Resource Operations (FLNRO)	Aleksandra Brzozowski, Island Planner	FLNRO's Community Woodlot License process, including agency referral to Islands Trust.	<i>Incomplete (2003 - 2008):</i> Agency referral with Islands Trust regarding the draft woodlot boundaries. <i>Completed (2011):</i> Agency referral with Islands Trust regarding the completed woodlot boundaries. <i>Next Steps:</i> Monitor situation for update from FLNRO regarding consultation with the Squamish Nation.
Potential Port Mellon Incinerator	Project occurs outside the Gambier Local Trust Area, but air quality issues encroach into the LTA.	Aleksandra Brzozowski, Island Planner	None as of yet. Process will likely be run by Metro Vancouver.	<i>Completed (2014):</i> Comments sent to SCRDP upon request. <i>Completed (2014):</i> Advocacy to Metro Vancouver. <i>Next Steps:</i> Monitor situation.
Sinking of the Annapolis	The array indicates the ship is slated to sink in the Provincial Park waters, which are not under the jurisdiction of the Gambier LTC.	Clare Frater, Policy/Advocacy Analyst (Trust Area Services)	No formal process. Advocacy regarding the Policy Statement's position on artificial reefs has been made.	<i>Completed (2012-2013):</i> Multiple Advocacy Letters <i>Next Steps:</i> Monitor injunction and sinking situation.

Attachments:

1. EAO notice regarding public consultation period for Woodfibre LNG application
2. Islands Trust Advocacy Policy
3. Letter from Gambier LTC to Minister Thomson dated November 19, 2014

Environmental Assessment of the Proposed Woodfibre LNG Project, Squamish, BC



Open House and Invitation to Comment

Woodfibre LNG Limited (WLNG, or Proponent) is proposing the development and operation of a liquefied natural gas (LNG) production facility and floating LNG storage at the former Woodfibre Pulp and Paper Mill site (Project site) near Squamish, British Columbia (BC).

The Woodfibre LNG Project (Project) comprises construction and operation of a gas processing and liquefaction facility to produce approximately 2.1 million metric tonnes per annum of LNG, associated storage capacity of 250,000 m³, and export infrastructure.

The proposed Project is subject to review under British Columbia's Environmental Assessment Act and the Canadian Environmental Assessment Act.

The Proponent has now submitted its application (Application) to obtain an Environmental Assessment Certificate.

In order to provide information to the public about the Application, and to receive comments from the public, the Environmental Assessment Office of British Columbia (EAO) invites the public to attend an Open House. Open Houses are scheduled as follows:

SQUAMISH

Wednesday, January 28, 2015

4:00 pm to 8:00 pm

CN Roundhouse & Convention Centre 39645 Government Road, Squamish

DISTRICT OF WEST VANCOUVER

Thursday, January 29, 2015

5:00 pm to 9:00 pm

Caulfeild Elementary School 4685 Keith Road, West Vancouver

BOWEN ISLAND

Friday, January 30, 2015

4:00 pm to 8:00 pm

Bowen Island Community School 1041 Mt. Gardner Road, Bowen Island

The intention of seeking public comments is to ensure that all potential effects — environmental, social, heritage and health — that might result from the proposed Project are identified for consideration as part of the assessment process.

There are 45 days for the submission of comments by the public in relation to the Application. The comment period will begin on January 22, 2015 and end on March 9, 2015. All comments received during this comment period will be considered.

EAO accepts public comments through the following ways:

By Online Form: <http://www.eao.gov.bc.ca>

By Mail: Environmental Assessment Office
PO Box 9426 Stn Prov Govt
Victoria BC V8W 9V1

By Fax: 250-387-0230

An electronic copy of the Application and information regarding the environmental assessment process will be available at **www.eao.gov.bc.ca as of January 13, 2015**. Copies of the Application will also be available for viewing at these locations:

- Woodfibre LNG Fortis BC Community Office, 38134 Cleveland Avenue, Squamish, BC
- Squamish Public Library, 37907 2 Avenue, Squamish, BC
- Squamish Municipal Hall, 37955 2 Avenue, Squamish, BC
- Bowen Island Library, 430 Bowen Trunk Road, Bowen Island, BC
- West Vancouver Memorial Library, 1950 Marine Drive, West Vancouver, BC
- West Vancouver Municipal Hall, 750 17 Street, West Vancouver, BC

NOTE: All submissions received by EAO during the comment period in relation to the proposed Project are considered public and will be posted to the EAO website.



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November 19, 2014

File Number: 4920-30

Sent via email: FLNR.Minister@gov.bc.ca

Hon. Steve Thomson
Minister of Forests, Lands and Natural Resource Operations
PO Box 9049
STN PROV GOVT
Victoria, BC V8W 9E2

Dear Mr. Thomson,

On behalf of the Gambier Island Local Trust Committee I would like to thank you for deciding to not accept a winning applicant in the tendering of Woodlots 2068 and 2069, opting rather to return to a more community-based consultation process.

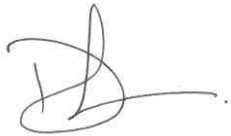
We recognize that this decision based on a complex series of factors including the *Tsilhqot'in* decision by the Supreme Court and long-term discussions that your ministry will be having with Squamish and other First Nations. Even so, this does not lessen the impact of how landowners and community members came together to demonstrate the importance of the forest to the island and we appreciate that their concerns were heard.

As the land planning body for the Island, the Gambier Island Local Trust Committee is well structured to support public consultation through our advisory planning commission and public meeting process. In addition, we have access to a large email contact list that the Gambier communities use to communicate. These are valuable resources that can be used to reach out to landowner and residents in future consultation about provincially held lands.

The Gambier Island Local Trust Committee is an active participant in the Howe Sound Community Forum and has signed onto the Cumulative Effects Assessment Framework that is being spearheaded by Forests, Lands and Natural Resource Operations as a planning tool for the Howe Sound area. Islands Trust staff work closely with the Squamish people and other First Nations in the area especially in terms of mapping and cultural/archeological interests.

The new Local Trust Committee looks forward to participating in a more comprehensive consultation process with the staff at FLNRO around the future of provincially-held lands on Gambier Island.

Thank you again for making this important decision.

A handwritten signature in black ink, appearing to be 'D. Graham', with a stylized flourish at the end.

David Graham, Chair
Gambier Island Local Trust Committee.

pc: Islands Trust Executive Committee

Garry Nohr, SCRD Chair, garry.nohr@scrd.ca

Ian Winn, Area F Director SCRD, info@scrd.ca

Nicholas Simons, MLA, Powell River-Sunshine Coast,

nicholas.simons.mla@leg.bc.ca

Jordan Sturdy, MLA, jordan.sturdy.mla@leg.bc.ca

Mike Peters, District Manager, Resource Operations, Sunshine Coast, Ministry of Forests, Lands and Natural Resource, Mike.Peters@gov.bc.ca

Heather MacKnight, Regional Executive Director, South Coast,

Heather.MacKnight@gov.bc.ca

Squamish Nation – Chiefs and Council, communications@squamish.net; [Lisa Wilcox@squamish.net](mailto:Lisa.Wilcox@squamish.net)

6.10.iii Policy & Procedure

ADVOCACY POLICY

Trust Council: September 12, 2012

A: PURPOSE:

1. To provide guidelines for advocacy activities in the context of legislation and policy.
2. To define policies and procedures for effective advocacy.
3. To ensure that advocacy positions are credible and supported by public process.
4. To clarify roles and responsibilities for implementing this policy, for the benefit of Islands Trust as well as the public and agencies involved in advocacy in the Islands Trust area.

B: BACKGROUND

1. The *Islands Trust Act* establishes that the Object of the Islands Trust is to preserve and protect the Trust Area and its unique amenities and environment in cooperation with others. Based on this legislated mandate, Trust Council encourages cooperation by all levels of government, First Nations, industry, business, not-for-profit and community groups to act in ways that advance the Object, using a variety of strategies, such as protocol agreements, letters of understanding and advocacy. All levels of government, First Nations, non-profit agencies, businesses, property owners, residents and visitors share responsibility for the preservation and protection of the unique environment and amenities of the Trust Area.

C: REFERENCES:

1. The *Islands Trust Act* defines the Islands Trust's purpose, referred to in the legislation as its "object" and defines Trust Council's advocacy roles in section 8 and 9.
2. Islands Trust Policy Statement, section on Roles and Responsibilities

The Islands Trust Council cannot effectively implement the Policy Statement without the support of all stakeholders. Assistance, cooperation and collaboration are required from local trust committees, island municipalities, the Trust Fund Board, the Provincial Government, other government agencies, non-government organizations, communities, First Nations, property owners, residents and visitors. In the spirit of the legislated object of the Islands Trust, it is expected that all corporate entities of the Islands Trust will consult with other agencies on matters involving potential conflict between the legislated object of the Trust and the legislated mandate of other agencies.

3. Islands Trust Policy Statement, Part 1: Purpose and implementation of the Trust Policy Statement, Roles and Responsibilities, Role of Other Government and Non-Government Organizations.

Government agencies and non-government organizations can contribute greatly to the preservation and protection of the environment and amenities of the Trust Area through cooperative actions based on the Policy Statement. Cooperative actions such as protocols and mutually supportive strategies and action plans are necessary for the sustainability of the Trust Area.

4. Islands Trust Policy Statement, Part II - The Islands Trust object and its meaning

to achieve its object, the Islands Trust must be an educator, coordinator, and initiator, guiding individuals, organizations and other agencies in support of the object. While the Islands Trust can provide the necessary leadership, responsibility for stewardship of the Trust Area rests with many. Individuals, other government agencies, organizations, and the Province itself all have important roles to play. Cooperative actions are required of other agencies, organizations and individuals to ensure that activities are carried out in a manner that is sensitive to the needs of Trust Area ecosystems and island communities.

5. Islands Trust Policy Statement, Part II - The Islands Trust object and its meaning, Guiding Principles:

- *The primary responsibility of the Islands Trust Council is to provide leadership for the preservation, protection, and stewardship of the Trust Area's amenities, environment, and resources.*
- *When making decisions and exercising judgment, Trust Council will place priority on preserving and protecting the integrity of the environment and amenities in the Trust Area.*
- *Trust Council will seek information from a broad range of sources in its decision-making processes, recognizing the importance of local knowledge in this regard.*
- *Trust Council believes that open, consultative public participation is vital to effective decision making for the Trust Area.*
- *Trust Council will implement a plan for the advancement of the Policy Statement as part of its annual budget process, and the Executive Committee of Trust Council will report to Council on progress in achieving the goals of the Policy Statement.*

6. Islands Trust Policy Statement, Part III Ecosystem Preservation and Protection, Policy 3.1.9

Trust Council encourages actions and programs of other government agencies which:

- *place priority on the side of protection for Trust Area ecosystems when judgment must be exercised,*
- *protect the diversity of native species and habitats in the Trust Area, and*
- *prevent pollution of the air, land and fresh and marine waters of the Trust Area.*

7. Trust Council Policy 1.3.i Policy Statement Implementation Policy
8. Trust Council Policy 2.1.i Statutory Rules of Conduct
9. Trust Council Policy 2.1.ii Standards of Conduct
10. Trust Council Policy 2.4.i Executive Committee Terms of Reference
11. Trust Council Policy 2.4.iv Trust Programs Committee Terms of Reference
12. Trust Council Policy 3.2.ix Islands Trust/Trust Fund Board Communications
13. Trust Council Policy 5.4.ii Procedural Fairness in Rezoning
14. Trust Council Policy 6.3.i Budget Process
15. Trust Council Policy 6.10.i Annual Report
16. Trust Council Policy 6.10.ii Communications
17. Trust Council Policy 6.12.ii UBCM/AVICC Membership and Resolutions
18. Trust Council Policy 7.1.iii Use of Local Trustee letterhead
19. Trust Council Policy 7.1.vii. Receipt of Confidential Information from External Governmental Organizations and Agencies
20. Trust Council Policy 7.1.iv & vi Use of Islands Trust letterhead and logo
21. Trust Council Policy 7.1.vii Receipt of Confidential Information from External Government Organizations and Agencies
22. Trust Council Strategic Plan
23. Local Trust Committee Official Community Plans
24. Trust Fund Board Policy 03008 Consulting Trust Council, Local Trust Committees, Island Municipalities, and Local Trustees on Trust Fund Board Matters
25. Trust Fund Board Policy 96009 Roles and Responsibilities
26. Trust Fund Board Policy 03006 Relationships with External Groups
27. Trust Fund Board Policy 03008 Consulting Trust Council, Local Trust Committees, Island Municipalities, and Local Trustees on Trust Fund Board Matters
28. Best Election Practices for Staff and Trustees - Guidelines

D. DEFINITIONS

In this policy,

1. **“Advocacy”** is the act of influencing and/or seeking cooperation with other agencies and decision-makers about laws, regulations, policies, programs, budgets, priorities, and other decisions relevant to the Islands Trust mandate.
2. **“Islands Trust bodies”** are the legal entities within the organizational structure of the Islands Trust, including Trust Council, local trust committees, council committees and the Trust Fund Board.
3. **“Consultation”** is the act of seeking comment on a proposed position or program, or other decision and then considering input received.

E. GENERAL POLICIES

1. From Communications Policy 6.10.ii: “In all communications, staff and trustees should identify whether they are representing a Local Trust Committee, the Executive Committee, Trust Council, or the Trust Fund Board” or speaking as an independent elected official or private citizen.”
2. Islands Trust bodies will conduct their advocacy activities in a manner that enhances Islands Trust’s reputation as an organization that works proactively, constructively and collaboratively to advance the Object in an informed, organized, respectful, and transparent way.
3. Islands Trust bodies will ensure that their advocacy positions are consistent with the *Islands Trust Act*, the Object and established policy and are supported by a resolution of Trust Council, Executive Committee, Trust Fund Board or local trust committee.
4. Islands Trust bodies will ensure that their advocacy positions consider the roles and needs of all other bodies of the Islands Trust. When practical, Islands Trust bodies will coordinate their advocacy efforts through the Executive Committee so that related issues can be advanced strategically, in the context of Trust Council’s Strategic Plan.
5. When making decisions about new advocacy positions and actions, Islands Trust bodies will base those decisions on research, such as: a) a review of related past Trust Council and Executive Committee decisions and actions; b) consistency with the Islands Trust Policy Statement; c) consistency with Official Community Plan policies; d) relevant evidence; e) contextual information; f) an assessment of partnership opportunities; g) implications of proceeding or not proceeding with certain courses of action; and h) potential workload implications for staff and trustees.
6. When practical, Islands Trust bodies will proactively monitor the legislation and policy development activities of other levels of government so that advocacy actions can be undertaken early in the policy development process when they might be most effective.

7. When developing an advocacy position, or substantially changing an advocacy position, Islands Trust bodies will consult other Islands Trust bodies that could be affected. The consulted body will consider adding the item to its next public agenda and convey through a resolution whether or not there are any concerns, the nature of the concern and, if appropriate measures that would resolve or address the concern. In the case of an urgent matter, an Islands Trust body may wish to comment through a resolution without meeting process.
8. Islands Trust bodies will adapt their advocacy strategies in response to changing political and economic contexts and new information.
9. Islands Trust bodies will consider the impact on existing work programs when considering advocacy positions.
10. Islands Trust bodies will ensure their advocacy positions and strategies:
 - respect the roles and needs of other stakeholders, and demonstrate a sincere attempt to build lasting relationships, even during conflict;
 - are non-partisan;
 - respect the public policy process by targeting requests to decision-making bodies with the mandate to act on the request and; demonstrate adequate knowledge and expertise, using scientific knowledge where appropriate.
11. Advocacy letters from Islands Trust bodies to elected officials should be signed by an elected official and be grounded in a resolution made at a public meeting.
12. Before announcing an advocacy position, Islands Trust bodies will prepare a strategic communications plan, and prepare for media attention and comment from constituents, stakeholders or partners. Community outreach may be considered before and/or after taking a position.
13. When entering partnerships for the purpose of advocacy Islands Trust bodies will consider broader implications such as:
 - conflicts may arise between the requirements of statutes such as the *Community Charter* or *Local Government Act* and the practices of non-governmental groups;
 - partnerships may require employees to receive confidential information requiring prior authorization by Trust Council or the Executive Committee consistent with Trust Council Policy 7.1.vii Receipt of Confidential Information from External Government Organizations and Agencies; and
 - partners may expect commitments for a longer duration than a one-year budget cycle or three-year election cycle.
14. Islands Trust bodies will ensure that advocacy strategies involving partnerships, especially those using the Islands Trust logo, include agreement among all partners on the provisions in E.12, the roles and responsibilities within the partnership and the decision-making processes.

F. ROLES AND RESPONSIBILITIES:

Trust Council

1. The Islands Trust Council establishes overall advocacy direction through the Islands Trust Policy Statement, sets priorities through its strategic plan and takes advocacy positions by resolution.

Executive Committee

1. The Executive Committee coordinates Trust Council's advocacy direction.
2. Executive Committee members encourage a coordinated approach to advocacy and external liaison as part of their appointment to local trust committees and the Trust Fund Board.
3. The Executive Committee appointee will notify Executive Committee when a local trust committee or the Trust Fund Board passes a resolution related to advocacy.
4. The Executive Committee directs individual advocacy actions in accordance with the advocacy direction set by Trust Council through resolutions and the strategic plan.
5. The Executive Committee may assist local trust committees, island municipalities and the Trust Fund Board with advocacy if a request for support is referred to the Executive Committee by resolution of those bodies.
6. The Executive Committee will seek a resolution of support from a local trust committee before engaging in advocacy on a local trust area issue.
7. The Executive Committee will include a report on advocacy activities in its quarterly report to Trust Council.
8. The Executive Committee will use their annual joint meeting with the Trust Fund Board and Bowen Island Municipality to discuss current and emerging advocacy topics of mutual interest.

Local Trust Committees

1. Local trust committees conduct advocacy based on the Islands Trust Object, the Islands Trust Policy Statement and their Official Community Plan(s).
2. Local trust committees may, by resolution, undertake advocacy on land use issues specific to their local trust area and consistent with the official community plan after considering whether the position may fetter their discretion on current or future land use planning decisions.
3. The duties of elected office to make unbiased decisions about land use planning will take precedence when an advocacy topic overlaps with those duties.

4. When a local trust committee adopts an advocacy position, it will inform the Executive Committee, and will consider how the item relates to the staff work program.
5. If a local trust committee wishes to advocate on an issue not related to land use planning or not consistent with its Official Community Plan, the local trust committee Chair will seek approval from the Executive Committee to allocate staff time to the project.
6. If a local trust committee wishes to advocate on an issue overlapping with the jurisdiction of another Islands Trust body or island municipality, it will consult with the affected body. After considering the advice from that body it may take an independent position that is consistent with the object of the Islands Trust and the Islands Trust Policy Statement, and will inform that body of the position.

Trust Fund Board

1. Trust Fund Board advocacy is governed by Trust Fund Board policies TFB 96009 Trust Fund - Roles and Responsibilities, TFB 03006 Relationships with External Groups and TFB 03008 Consulting Trust Council, Local Trust Committees, Island Municipalities, and Local Trustees on Trust Fund Board Matters. If the Trust Fund Board wishes to advocate on an issue overlapping with the jurisdiction of another Islands Trust body or island municipality, it may consult with the affected body as described in those policies. After considering the advice of that body it may take an independent position consistent with the object of the Islands Trust, and will inform the affected body of the position.

Individual trustees

1. Only the Chair of Trust Council may represent Trust Council advocacy positions to the media unless the Chair designates this role to a trustee.
2. Individual trustees may advance advocacy positions that are established by local trust committee policy, resolution or bylaw.
3. Trustees will comply with policies on communications, letterhead and logo when communicating about advocacy or other topics.
4. Local trustees are encouraged to notify the Executive Committee of any upcoming meetings with provincial or federal ministers to ask if there is an opportunity to promote the broader interests of the Islands Trust. The likelihood of success increases when positions are sponsored by the broader organization, and are consistent with other positions being advocated to that same minister.
5. Before advancing an advocacy position as a private individual, a trustee must ensure he or she is taking into account the principles of administrative fairness and he or she is acting in accordance with Trust Council Guidelines on Statutory Rules of Conduct and section 103 of the *Community Charter* which imposes restrictions regarding conflict of interest and outside influence.
6. Municipal trustees will be responsible for liaison between Trust Council and the municipality on advocacy issues in between the annual joint meeting between the municipality and Executive Committee.

Staff

1. The Chief Administrative Officer will be responsible for the Islands Trust's advocacy policies and procedures.
2. Staff who become aware of emerging legislative or other issues relevant to the Islands Trust mandate will notify their Director, who will raise the topic at the subsequent team meeting. If the issue warrants further action, the request will be forwarded to the Trust Area Services Director for discussion at Executive Committee.
3. Trust Area Services staff are responsible to alert the Executive Committee to new issues that directly affect Islands Trust operations or mandate and to seek political direction before investing staff time exploring the issue.
4. Local planning staff are responsible for research on issues identified by local trust committees relating to land use planning and the official community plan.
5. When a local trust committee passes a resolution related to advocacy, local planning staff will notify the Director of Local Planning, who will then notify the Director of Trust Area Services.
6. When a local trust committee considers an advocacy issue that is relevant to the whole Trust Area, including Bowen Island Municipality, the Director of Local Planning Services may ask Executive Committee for support from Trust Area Services. Executive Committee will consider the requests for service and the advice of the CAO, and decide on staff support to carry out the local trust committee direction as time allows.
7. When researching background about a potential advocacy position, staff will convey to contacts that the inquiry is for research purposes only.
8. When researching advocacy positions, staff will work with external contacts at the staff-to-staff level, and will communicate with non-Islands Trust elected officials only with the permission of the appropriate Chair and/or the Chief Administrative Officer.
9. When participating in advocacy partnerships that involve the receipt of confidential information, staff will comply with the Trust Council Policy 7.1.vii Receipt of Confidential Information from External Governmental Organizations and Agencies (See E12).
10. When Trust Area Services staff are involved in advocacy work related to Trust Fund Board activities or interests, they will notify the Trust Fund Board Manager, and as appropriate, work with Trust Fund Board staff to prepare briefing and decision documents for the Trust Fund Board.

G. SPOKESPEOPLE:

1. Communications Policy 6.10.ii. will guide decisions about spokespeople.
2. As the official representative of the Islands Trust Council, the Chair of the Islands Trust Council may independently and immediately state advocacy positions that are consistent with the Object, the Policy Statement or previous resolutions of Islands Trust bodies.
3. Spokespeople should keep their comments as concise as possible, limit their comments to their own scope of knowledge and, when practical, should indicate that their statements are in support of the Object, Policy Statement policies or resolutions of an Islands Trust body. Where additional technical detail is desired, a staff or consultant report or comment can support the spokesperson.
4. Spokespeople should advance advocacy positions in a manner that is consistent with Trust Council's policy on standards of conduct.
5. Spokespeople should notify the Chief Administrative Officer (CAO) and Executive Committee of public statements made on an advocacy topic as soon as possible, and provide copies of any printed materials used to the directors of units with a relevant work program.

H. REPORTING

1. The Director of Trust Area Services will prepare a summary of advocacy activities for inclusion in the Islands Trust annual report.
2. The Executive Committee will report advocacy activities to each quarterly Trust Council meeting and seek updates from other Islands Trust bodies involved in advocacy.
3. Annually, the Executive Committee will report to the Trust Council on advocacy actions and highlights from conventions of the Association of Vancouver Island and Coastal Communities and Union of British Columbia Municipalities.

I. BUDGET

1. Funding for advocacy activities will be considered in accordance with the Islands Trust Council's policy on budget process.

J. EVALUATION

1. Islands Trust bodies are encouraged to celebrate positive results by thanking or congratulating key decision-makers.
2. In the last year of every Islands Trust Council term the Executive Committee will review and evaluate the effectiveness of the advocacy work undertaken during the term, considering the general policies in section E.

Top Priorities

Gambier Island

No.	Description	Activity	Received/Initiated	Responsibility	Target Date	Status
1	Foreshore protection/stewardship and clarity; implementation of Development Approval Information Bylaw (DAI) or Development Permit Areas (DPA's).	Investigate and recommend options for protection/stewardship within the local trust area through the use of existing land use planning tools.	Jan-31-2012	Aleksandra Brzozowski	Nov-27-2014	On Going
2	OCP advocacy policies - implementation & support	Work related to supporting the advocacy policies stated in the Gambier, Keats, and Associated Islands OCPs and in the IT Strategic Plan. Ex. Woodlots, industrial facilities, cross-jurisdictional management of Howe Sound	Oct-24-2013	Aleksandra Brzozowski	Nov-03-2014	On Going
3	Riparian Areas Regulation Implementation Project for Gambier Island Local Trust Area.		Oct-26-2011	Aleksandra Brzozowski	Dec-31-2012	On Going

Projects

Gambier Island

No.	Description	Activity	Received/Initiated	Status
1	Keats Island OCP Map Amendment - add trail map used during public process developing OCP.		Mar-08-2007	On Going
1	Staff to prepare an issues outline with respect to Gambier Island Comprehensive Land Use Planning Project. (Address community planning and environmental protection issues)	Gambier DP and comprehensive planning - subject to alternate funding and resources. To include: 1. Road issues - road network, and parking issues 2. Gambier forest tenure and reallocation - Gambier Island Crown lands. Gambier LUB follow-up: Definition of recreation in Area 3, CD1 Zone. Subdivision and use of common property in a bare land strata plan. Legal non-conforming - information note. ssociated secondary dwelling - definition and use. Potable water requirements.	Jun-23-2010	On Going
1	Consider a mechanism to recognize authorizations of additional dwellings as permitted by s. 4.4.10 of Keats LUB		Aug-04-2010	On Going
1	Food Security: Based on the November 2010 'Exploring Food Security in the Islands Trust Area' - explore opportunities to implement policies and regulations to address food security in the Gambier Trust Area.	Please make note to consider Objectives 6.1 & 6.2 in the Agricultural Area Plan for the Sunshine Coast Regional District.		On Going
1	Development Approval Information Bylaw	Develop and adopt a D.A.I bylaw for the Gambier Trust Area.		On Going
1	Consultation with Squamish First Nation	Scope interim strategies pending completion of a possible protocol agreement to address protection of archaeological and heritage resources.	Jan-31-2012	On Going
1	Strategic Planning Review for Howe Sound		Jan-31-2012	On Going

1	Review Gambier OCP/LUB to address: - definition of breakwater - trams (currently silent) - advocacy policies around pump out stations - review of title Wilderness Conservation - 2013: REVIEW KEATS AND GAMBIER LUBS FOR ACCOMMODATION of OCEAN LOOP GEO-EXCHANGE SYSTEMS - 2010: GHG Emissions (a more proactive approaches to plan for GHG reductions especially in relation to Policies 6.1 and 6.2 in consultation with SCRD.) Initiative arises from recommendation of SCRD in comments about bylaws 111 & 112.	May-22-2014	On Going
1	Staff to research the history of Site-Specific water zones on Gambier.	Sep-26-2013	On Going



Applications w/ Status - Gambier Island Status: Open

Applications

Development Variance Permit

File Number	Applicant Name	Date Received	Purpose
GM-DVP-2002.1	Land Plan Group Inc. Planner: Sonja Zupanec	Jan-24-2002	PID: 014-385-694 Keats Island - Keats Camp cottage lots - siting variances DL 696

Planning Status

Status Date: Apr-10-2008

still on hold pending rezoning

Status Date: Aug-13-2007

on hold pending rezoning application

Status Date: May-16-2006

Met with applicant. Outstanding items forwarded for attention. May be add'l fees.

File Number	Applicant Name	Date Received	Purpose
GM-DVP-2011.2	Elena and France Corin and Larouche Planner: Marnie Eggen	Mar-22-2011	PID: 024-212-041 1250 Taki-Te-Si Road, Gambier Island vary the setback to the natural boundary of the sea for retaining wall

Planning Status

Status Date: Feb-02-2015

no change

Status Date: Aug-26-2014

no change

Status Date: May-07-2014

no change

File Number	Applicant Name	Date Received	Purpose
GM-DVP-2013.2	Jim Green	Apr-08-2013	027-998-967 Jim Green (Reel 17 Investments) Gambier Island A variance to site a rock retaining wall and to authorize additional width for a walkway pier

Planner: Aleksandra Brzozowski

Planning Status

Status Date: Jan-26-2015

Working with staff to resolve issues that lie outside the possibility of variance.

Status Date: Nov-26-2014

Applicant submitted outstanding information.

Status Date: Oct-25-2013

Staff advised applicant of outstanding information required for application.

Forest Land Reserve

File Number	Applicant Name	Date Received	Purpose
GM-FLR-2013.1			

Planner:

Planning Status

Rezoning

File Number	Applicant Name	Date Received	Purpose
GM-RZ-2004.1	LandPlan Group Inc.	Jun-16-2004	PID: 014-385-694 Keats Island - Keats Camp rezoning application DL 696

Planner: Courtney Simpson

Planning Status

Status Date: Oct-10-2014

Applicant notified SZ not lead planner on file

Status Date: Sep-18-2014

Trust Fund accepted nature reserve at Sandy Beach

Status Date: Mar-13-2014

Teleconference with applicant regarding next steps.

Subdivision

File Number	Applicant Name	Date Received	Purpose
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GM-SUB-2000.1

LANDPLAN
GROUP INC.

May-04-2000

PID: 014-385-694 Keats Island - 111 bare land strata subdivision, 2 camp lots, and remainder(Keats Camp); nature reserve, park dedication, parking lot. DL 696

Planner: Sonja Zupanec

Planning Status

Status Date: Jun-06-2007

On hold pending rezoning application.

Status Date: May-16-2006

Met with applicant - revised plan to come based on LUC. May be add'l fees.

Status Date: Dec-21-2005

MOT issues Prelim Layout NOT APPROVED with conditions.

File Number	Applicant Name	Date Received	Purpose
GM-SUB-2010.1	Venture Management Ltd Planner: Sonja Zupanec	May-25-2010	PID: 015-980-324 7 residential lots

Planning Status

Status Date: Jan-06-2012

No further action until applicant finalizes final plan of subdivision.

Status Date: Mar-16-2011

Comments sent to MoTI. Depth to width information was received.

Status Date: Feb-23-2011

Waiting for applicant to confirm that lots comply with depth to width ratio. Revised comments to be sent to MoTI.

File Number	Applicant Name	Date Received	Purpose
GM-SUB-2012.2	Reel 17 Investments Ltd. Planner: Aleksandra Brzozowski	Jun-29-2012	4 lot subdivision

Planning Status

Status Date: Dec-08-2014

Reaffirmed with MOTI that DVP is required before property is deemed compliant with zoning.

Status Date: Oct-03-2012

Referral response sent to MOTI and applicant

File Number	Applicant Name	Date Received	Purpose
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GM-SUB-2013.1

Creus Engineering Dec-09-2013

PID: 014-385-694 The Convention of Baptist Churches of BC Keats Island
9 Lot Subdivision

Planner: Sonja Zupanec

Planning Status

Status Date: Mar-28-2014

Under review by planner

File Number	Applicant Name	Date Received	Purpose
GM-SUB-2015.1	Walker	Jan-05-1900	Passage Island - Boundary Adjustment 3 lots to 2 lots

Planner: Marnie Eggen

Planning Status

Status Date: Feb-02-2015

Planner reviewing.

Islands Trust
LTC EXP SUMMARY REPORT F2015
Invoices posted to Month ending January 2015

630 Gambier	Invoices posted to Month ending January 2015	<u>Budget</u>	<u>Spent</u>	<u>Balance</u>
65000-630	LTC "Trustee Expenses"	1,000.00	3,561.16	-2,561.16
LTC Local				
65200-630	LTC - Local Exp - LTC Meeting Expenses	2,500.00	1,362.82	1,137.18
65210-630	LTC - Local Exp - APC Meeting Expenses	750.00	0.00	750.00
65220-630	LTC - Local Exp - Communications	300.00	0.00	300.00
65230-630	LTC - Local Exp - Special Projects	750.00	0.00	750.00
TOTAL LTC Local Expense		<u>4,300.00</u>	<u>1,362.82</u>	<u>2,937.18</u>
Projects				
73001-630-3003	Gambier RAR	30,000.00	0.00	30,000.00
73001-630-4024	Gambier Foreshore Protection and Stewardship	3,000.00	0.00	3,000.00
73001-630-4027	Gambier Forage Fish	5,000.00	5,000.00	0.00
TOTAL Project Expenses		<u>38,000.00</u>	<u>5,000.00</u>	<u>33,000.00</u>

Trust Fund Board Report to Local Trust Committees and BIM – January 2015

Chair and FPC representative

At its first meeting of the term, the Trust Fund Board (TFB) re-elected Tony Law as chair and appointed Dereck Atha as TFB's representative on the Financial Planning Committee.

Regional Conservation Plan extended

The Board voted to extend our 2011-15 Regional Conservation Plan (RCP) to 2017. The RCP contains strategic goals and objectives which guide our work. Rather than preparing a new plan, the extension will allow us to focus resources on other priorities, including completing some outstanding actions in the RCP. The Board also felt that it would be more efficient and effective to develop a revised RCP alongside preparing our 2017-22 Five Year Plan, which is required by legislation.

Conservation Strategy for Coastal Douglas-fir and Associated Ecosystems

Islands Trust Fund (ITF) staff are participating in the multi-agency Coastal Douglas-fir and Associated Ecosystem Conservation Partnership (CDFCP) which is in the process of developing a Conservation Strategy. TFB has asked staff to look at integrating the completed strategy into our Regional Conservation Plan and report back to the board.

Eelgrass Mapping Complete

We are excited that our Eelgrass Mapping Project –covering the whole Trust Area – is now complete. This addresses one of the goals in our Regional Conservation Plan: to work with partners to conserve marine environments and habitat. Eelgrass is a critical near-shore habitat for numerous birds, mammals, invertebrates and commercial and non-commercial fish. Eelgrass beds are also an important carbon sink.

The mapping of eelgrass beds will help local trust committees, the Trust Fund Board and others to make science-based decisions around land use and conservation to prevent further habitat loss. We understand that the Ministry of Forests, Lands and Natural Resource Operations is welcoming this mapping as a tool to help assess dock and other shoreline applications. The report accompanying the mapping includes recommendations for restoring eelgrass habitat. The full report is available on ITF's website. The mapped data is also available on *MapIT [Shorelines](#)*. If your local trust committee would like to post the maps and recommendations relevant to your local trust area on your web page, please direct your planner to do so.

Eelgrass mapping was done by boat with the aid of a towed underwater camera. The Islands Trust area was mapped over three years through a partnership with SeaChange Marine Conservation Society. The Islands Trust contributed just over half of the total budget of this project with the remainder of the funds being secured by our project partner.

Conservation Planning and Official Community Plans

One of our Regional Conservation Plan goals is to work with the Islands Trust Council, local trust committees and island municipalities to implement conservation goals in Official Community Plans (OCPs). As your local trust committee strategizes your priorities for the term, you may want to consider how to advance conservation provisions in your OCPs, including using sensitive and nearshore

ecosystem mapping. One focus of attention might be Council's policy to establish protected area networks.

From the Policy Statement:

3.1.2 It is Trust Council's policy to work towards the establishment of a network of protected areas that preserves representative ecosystems in their natural state and in sufficient size and distribution to sustain their ecological¹⁴ integrity

3.1.3 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the identification and protection of the environmentally sensitive areas and significant natural sites, features and landforms in their planning area.

3.1.4 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the planning, establishment, and maintenance of a network of protected areas that preserve the representative ecosystems of their planning area and maintain their ecological integrity.

Updates Specific to Local Trust Areas

Hornby

ITF's Ecosystem Protection Specialist, Kate Emmings, continues to work with Hornby Island property owner Karin Fischer and Conservancy Hornby Island to establish a conservation covenant to protect Garry oak and Douglas-fir ecosystems on her property.

Denman

ITF's manager, Jennifer Eliason, is contacting Ministry of Environment staff to pursue an inter-agency meeting to address the disposition of Crown land with conservation values on Denman Island. ITF's Property Management Specialist, Nuala Murphy, is working with Denman Conservancy Association to address management issues on Denman's nature reserves, including rerouting of a trail at Morrison Marsh Nature Reserve in coordination communication with BC Parks , and planning a restoration project at Lindsay Dickson Nature Reserve.

Gabriola

ITF's Property Management Specialist, Nuala Murphy, is reviewing workable options to address safety issues on the Coats Millstone Nature Reserve.

Lasqueti

TFB has signed a covenant with Lasqueti Island Nature Conservancy and Nanaimo and Area Land Trust Society to ensure the continued protection of ecological values on the John Osland Nature Reserve.

TFB received a request to consider placement of a 911 relay installation on Mount Trematon. The Board has noted that such a request cannot be considered under existing land use regulations. TFB would also need to consult with the donors, and seek the approval of the covenant holders and Environment Canada because of their roles in protecting the values of this nature reserve.

Gambier

The board formally established the Gambier Island Acquisition Fund, created with funds from a significant bequest received in 2011. Restoration continues at Long Bay Wetlands Nature Reserve with work to protect naturally regenerating conifers by caging them from browsing deer.

Staff are currently working to develop a new nature reserve on Keats island, after the TFB approved a conservation proposal from the Convention of Baptist Churches in November.

Thetis

A special Thetis Island Acquisition Fund has been established following a significant donation provided to support land acquisition on Thetis Island.

Salt Spring

In November 2014, TFB approved a conservation proposal on Salt Spring Island and has directed staff to negotiate a conservation covenant on private land in the Reginald Hill area.

North Pender

Staff continue to work on two conservation covenants on North Pender Island, one for Wallace Point and one for the Clam Bay Farm property.

South Pender

ITF's Ecosystem Specialist, Kate Emmings, continues to work with partners to secure a new covenant over Brooks Point Regional Park, to include the recent acquisition. The covenant will be co-held with Habitat Acquisition Trust.

Mayne

A revised management plan for Horton Bayviary has begun which will involve public consultation for the property.

Galiano

TFB approved a new conservation covenant on Galiano Island and directed staff to negotiate a conservation covenant. ITF had provided a contribution from the "Opportunity Fund" to assist the Galiano Conservancy Association with appraisal costs associated with the acquisition of this property and approved funds to cover some necessary survey costs. Staff have also indicated a willingness to accept a conservation covenant for the Crystal Mountain property should the local trust committee choose to proceed with the Crystal Mountain rezoning application.

Bowen

Bowen Island Municipal Council have renewed discussions about the expansion of the NAPTEP program onto Bowen Island. Staff are providing information as requested to support decision making.

Ongoing property management activities, carried out in partnership with the Bowen Island Conservancy, include installing additional signage at the David Otter Nature Reserve, upgrading trails, removing invasive plant species, and planting and caging trees to protect them from browsing at Singing Woods Nature Reserve and continuing to monitor and work with the Ministry of Forests, Lands and Natural Resource Operations to address off-road vehicle use at Fairy Fen Nature Reserve.



Staff Report

To: Gambier Local Trust Committee

For the Meeting of: February 12, 2015

From: Miles Drew, Bylaw Enforcement Manager

Date : January 28, 2015

SUBJECT: BYLAW ENFORCEMENT REPORT

DESCRIPTION OF ISSUE:

The attached report was presented to the December Trust Council but is also designed so that bylaw enforcement statistics for each Trust Area are presented. The report shows the number of enforcement files; organized by local trust area, and by the type of enforcement. Also included are reports on the status of open files and the length of time current files have been open.

BACKGROUND:

Attached are four tables and two pie charts that provide information on bylaw enforcement activity.

Table 1 shows the total number of bylaw enforcement files for each local trust area by fiscal year and the number of files remaining open at the end of the fiscal year. Information is provided for the 2012/13, 2013/14 and 2014/15 Fiscal years. For the current fiscal year the information is broken down by Quarter, in addition to providing a total for the 2014/15 Fiscal year.

Chart 1 shows the number of files open at the end of the most recent reporting Quarter.

Table 2 shows the number of open files by violation type. The table includes the more common categories of enforcement types. The "Other Land Use" column includes a mix of enforcement types that do not fit in the larger categories.

Chart 2 shows the percentage of open files by type.

Table 3 show the status of open files as well as the numbers of new and closed files during the most recent reporting Quarter.

Table 4 shows how long current bylaw enforcement files have been open.

COMMENT:

The new bylaw enforcement officer is now in position on Salt Spring and bylaw enforcement files have been reassigned to match new assignments. A brief period of familiarization with the files is now being completed. Of the seventeen Gambier Trust Area files six enforcement efforts are on hold because the LTC has indicated that it

wants to review policies on setbacks of structures from the sea. Some of these files are approaching five years since the original complaint without the issue being resolved. Two files are subject to litigation and the rest are moving towards compliance.

Recommendation:

That this report be received for information.

ATTACHMENT(S):

Bylaw Enforcement - File Volume

Bylaw Enforcement - Violation Type

Bylaw Enforcement - Status of Open Files

Bylaw Enforcement - Length of Time Files Have Been Open

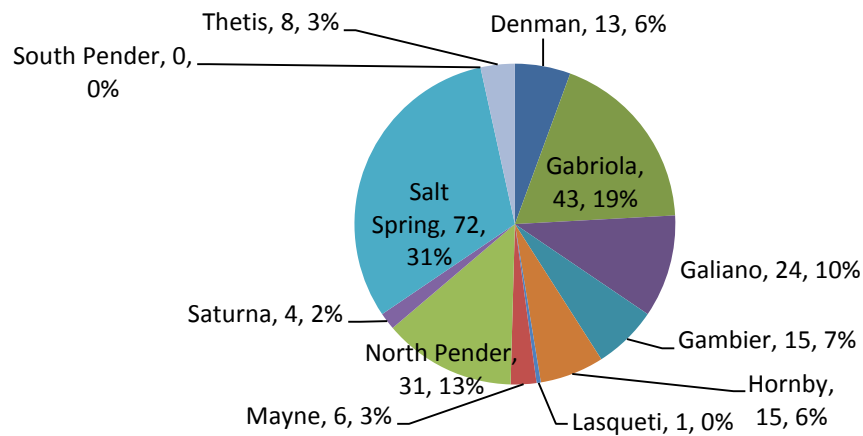
Prepared By: Miles Drew, Bylaw Enforcement Manager

Bylaw Enforcement - File Volume

TABLE 1

LTC	Fiscal 2012/13				Fiscal 2013/14				Fiscal 2014/15							
	Total	%	Open	%	Total	%	Open	%	Q1	Q2	Q3	Q4	YTD Total	YTD %	T Open	%
Denman	19	6%	18	6%	21	7%	14	6%	14	13			27	5%	13	6%
Executive	0	0%	0	0%	0	0%	0	0%	0	0			0	0%	0	0%
Gabriola	40	13%	40	14%	60	20%	51	20%	56	43			99	19%	43	19%
Galiano	25	8%	25	9%	32	11%	30	12%	31	24			55	11%	24	10%
Gambier	16	5%	16	6%	18	6%	17	7%	18	15			33	6%	15	6%
Hornby	17	6%	16	6%	16	5%	15	6%	17	15			32	6%	15	6%
Lasqueti	1	0%	1	0%	1	0%	1	0%	1	1			2	0%	1	0%
Mayne	8	3%	5	2%	10	3%	9	4%	11	6			17	3%	6	3%
North Pender	43	14%	40	14%	45	15%	36	14%	38	31			69	14%	31	13%
Saturna	8	3%	6	2%	6	2%	3	1%	3	4			7	1%	4	2%
Salt Spring	112	37%	104	37%	81	27%	66	26%	78	72			150	30%	72	31%
South Pender	1	0%	1	0%	1	0%	0	0%	0	0			0	0%	0	0%
Thetis	12	4%	10	4%	11	4%	8	3%	9	8			17	3%	8	3%
TOTAL	302	100%	282	100%	302	100%	250	100%	276	232	0	0	508	100%	232	100%

Chart 1: Open Files to Jun 30, 2014



LEGEND

YTD Total = Total number of open files year to date, including open files carried over from the previous quarter and files opened during the current reporting period.

T Open = Total number of files remaining open at the end of the current reporting period

Q1 = April 1 to June 30 - reported to September Trust Council

Q2 = July 1 to September 30, Report to December Trust Council

Q3 = October 1 to December 31, Reported to March Trust Council

Q4 = January 1 to March 31, Reported to June Trust Council

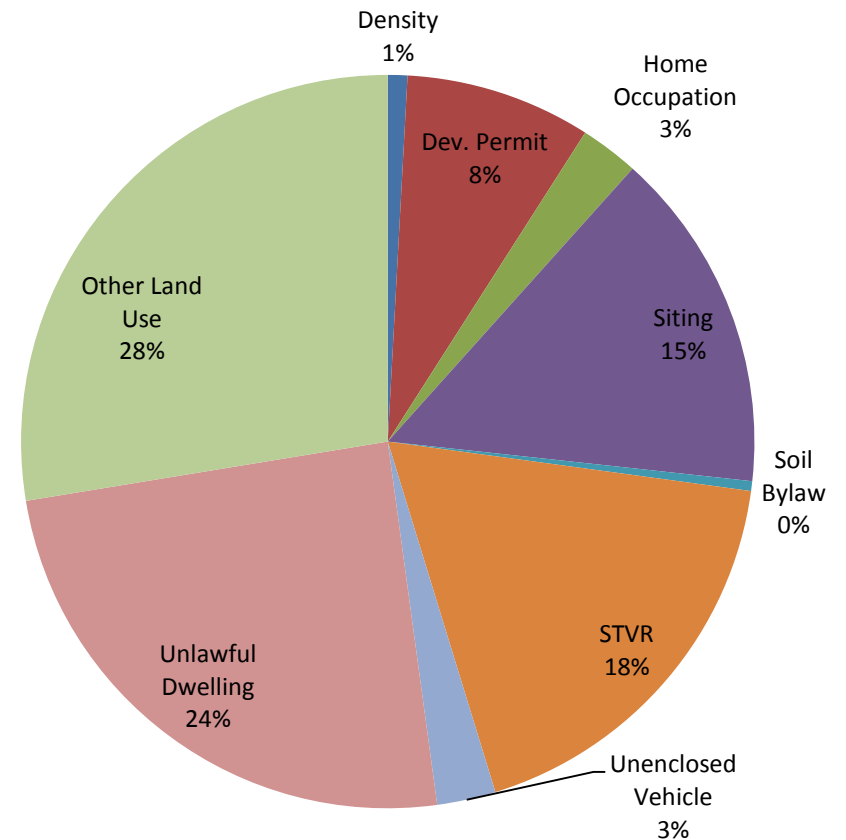
The numbers for each quarter are a running total of all open and closed files in the period.

Bylaw Enforcement - Violation Type

Table 2

LTC	Violation Type										
	Density	Dev. Permit	Home Occupation	Siting	Soil Bylaw	STVR	Unenclosed Vehicle	Unlawful Dwelling	Other Land Use	TOTALS	Percentage
Denman		5				1		4	3	13	6%
Executive										0	0%
Gabriola	1	2	2	5		14		9	10	43	19%
Galiano			1	5		3	2	6	7	24	10%
Gambier				5				1	9	15	6%
Hornby	1	1	1	3		2		5	2	15	6%
Lasqueti								1		1	0%
Mayne				2		3			1	6	3%
North Pender		1		5		11	2	5	7	31	13%
Saturna		1		2		1				4	2%
South Pender										0	0%
Salt Spring		9	2	4	1	7	2	25	22	72	31%
Thetis				4				1	3	8	3%
TOTALS	2	19	6	35	1	42	6	57	64	232	100%
%	1%	8%	3%	15%	0%	18%	3%	25%	28%	100%	

Chart 2: Open Files by Type



Bylaw Enforcement - Status of Open Files

Table 3

Local Trust Area	2014/2015 2nd Quarter (Jul 1 - Sep 30)				Proceeding to Compliance	On Hold			Litigation	TOTAL
	OPEN Start of Quarter	NEW	CLOSED	OPEN End of Quarter		Application in to LTC	LTC Direction	Staff Direction*		
Denman	12	1		13	8		3	1	1	13
Executive	0			0						0
Gabriola	40	3	0	43	43					43
Galiano	24	0	0	24	10	2	3	7	2	24
Gambier	15	0	0	15	7		5	1	2	15
Hornby	15	0	0	15	8		6	1		15
Lasqueti	1			1	1					1
Mayne	6	0	0	6	5	1				6
North Pender	31	0	0	31	16	1		11	3	31
Saturna	4			4	3		1			4
Salt Spring	64	8	0	72	50		16	5	1	72
South Pender	0			0						0
Thetis	7	1		8	8					8
Total	219	13	0	232	159	4	34	26	9	232
Percentage					69%	2%	15%	11%	4%	100%

* "Staff Direction" refers to files that Staff have decided not to pursue at this time for a variety of reasons, such as waiting for a court decision or for bylaw amendments that could alter the need for enforcement.

Bylaw Enforcement - Length of Time Files Have Been Open

Table 4

Local Trust Area	<1 year	1-5 Years	> 5 years	Total Open Files
Denman	3	8	2	13
Executive				0
Gabriola	25	16	2	43
Galiano	1	10	13	24
Gambier	1	14		15
Hornby	3	9	3	15
Lasqueti		1		1
Mayne	3	3		6
North Pender	7	20	4	31
Saturna	1	1	2	4
South Pender				0
Salt Spring	27	27	18	72
Thetis		6	2	8
TOTAL	71	115	46	232
PERCENTAGE	31%	50%	20%	



STAFF REPORT

Date: January 21, 2015

File No.: 6500-02
LTC Top Priorities

To: Gambier Island Local Trust Committee
For the meeting of February 12, 2015

From: Aleksandra Brzozowski, Island Planner

CC: Courtney Simpson, Regional Planning Manager

Re: Local Trust Committee Work Program 2014 -2018 term

The purpose of this report is to provide the Local Trust Committee (LTC) with an overview of top priorities, projects, and budgets at the start of this new term of office. This report is intended to provide background for LTC discussion about existing, and possibly new, priorities for this new term.

The report also gives a regional overview of the anticipated workload for the Northern Team for 2015 in order to assist the LTC with its program planning.

The LTC is also requested to review the budget requests for the 2015/16 fiscal year submitted by the LTC to Financial Planning Committee in September, 2014 and confirm or amend the budget request.

LTC WORK PROGRAM

LTC initiated work is managed through the Work Program, as per Islands Trust Policy 6.7.i. There are two components of the Work Program: The Top Priorities and the Projects Lists. The Top Priorities work program accounts for approximately one-third of planning staff resource time. The Project List is a record that lists potential projects the LTC may wish to undertake in the future.

Top priority planning projects can be significant and long-term, such as an official community plan review or a community education project, or may be relatively minor, such as an amendment to a specific section in a land use bylaw. Top priority projects, unless very minor, must have an approved budget before any significant work can begin. A LTC can have up to three top priorities at any given time.

For each top priority project, planning staff develops a “project charter” at the outset of the project to communicate the scope, timeline, budget and deliverables of a project in a short, concise document. The Project Charter is presented to and endorsed by the LTC.

Current LTC Top Priorities

The Top Priorities List indicates the focus of LTC initiated planning work. It can be changed by LTC resolution throughout the term if priorities change, or to remove a completed project. Below is the current Top Priorities List for the Gambier LTC. This list is a version of the standard report

that appears on all LTC regular meeting agendas, but with added status and comments for the purpose of this report.

Table 1: Gambier Island Local Trust Committee Top Priorities List January 2015

Description	Activity	Status and comments
1. Foreshore Protection	Investigate and recommend options for protection/stewardship within the local trust area through the use of existing land use planning tools, including Development Approval Information Bylaw (DAI) or Development Permit Areas (DPAs).	This project was added to the Top Priorities List in January 2012 to provide clarity on foreshore issues and address the issue of structures in the setback from the sea. Shoreline type and watershed mapping was completed for Gambier Island, and later Keats and Thormanby Islands. A webinar presenting this information and introducing the Green Shores program was held in March 2013. A forage fish workshop was held on Keats Island in July 2013. Eelgrass mapping for all islands in the LTA was completed in 2013/2014. Forage Fish mapping for Gambier and Keats Islands was completed in 2014. A shoreline stewardship brochure and a tri-fold pamphlet have been produced and distributed online. A contractors' workshop on soft shore approaches is the current activity planned for this project, scheduled to occur in March.
2. OCP advocacy policies - implementation & support	Work related to supporting the advocacy policies stated in the Gambier, Keats, and Associated Islands OCPs and in the Islands Trust Strategic Plan. (Ex. Woodlots, industrial facilities, cross-jurisdictional management of Howe Sound.)	This project was added to the Top Priorities list in 2013 in recognition of the workload required to effectively respond to and follow up on various concurrent development issues emerging in the Local Trust Area, rather than adding this work for the LTC and staff to do "off the side of their desk". The status of application issues is detailed on page 8 of this staff report.
3. Riparian Areas Regulation (RAR)	Produce regulatory measures to implement provincial requirements.	This project was pending the adequate funding to provide needed mapping information on streams in the Gambier LTA. A contract has recently been issued to conduct mapping for Gambier Island and certain identified Associated Islands. The Ministry of Forests, Lands, and Natural

Resource Operations (FLNRO) has noted that regulatory measures to implement the RAR are to be completed by October 2015.

Completed Priorities in the 2011-2014 Term

To aid the discussion of priorities for the coming term, it may be helpful to reflect on recently completed work of the LTC. The table below lists projects that were completed during the 2011-14 term.

Table 2: Gambier Island Local Trust Committee Completed projects in 2011 – 2014 term

Description	Activity	Comments
Associated Islands Land Use Bylaw Review (islands within the SCRD)	Develop new LUB to replace SCRD Bylaw No. 96 (repealed)	Bylaw 120, the new Associated Islands Land Use Bylaw, was adopted on September 26, 2013.
Sustainability Guide	Develop a sustainability guide or checklist.	Guide completed in 2014. "Building Sustainably – Best Practices Guide for Howe Sound and the Northern Gulf Islands" is available for download on the Island Trust website.
Electronic Meetings	Amend the Meetings Procedures bylaw to allow meeting electronically.	This minor project was completed in 2014. Recognizing the opportunities offered through technology to address sporadic travel difficulties for trustees, the Meetings Procedures bylaw (Bylaw 87) was amended to allow trustees to meet remotely by electronic means at times.

Previous Term Work Summary

The following summary is for information purposes, to illustrate LTC activity over the past three years.

Meetings and Resolutions	2012	2013	2014
Regular business meetings	8	8	7
Special business meetings	3	1	0
Community information meetings	1	2	2
Closed Meetings	1	5	3
Public hearings	1	1	2
Resolutions	71	87	53

The LTC is scheduled to have seven regular meetings in 2015.

Projects List

A LTC can have any number of projects on a project list; however, staff recommends this list be reviewed regularly to ensure the projects can be feasibly initiated in a reasonable timeframe, and remain relevant. The following is the LTC Projects List as it stood at the end of the 2011-2014 term. This list should be reviewed and revised by the new LTC. The projects list is normally not in any particular order although a LTC could prioritize it. In the comments section below, staff notes any recommendations about priority or timeliness of a particular item.

Table 3: Gambier Island Local Trust Committee Projects List

Description	Activity	Staff Comments
Possible Gambier Island Comprehensive Land Use Planning Project.	Address community planning and environmental protection issues. To include: 1. Road issues - road network, and parking issues 2. Gambier forest tenure and reallocation - Gambier Island Crown lands. Subject to alternate funding and resources.	The possibility of doing planning work related to the Crown Land on Gambier beyond land use designation and zoning was placed on the project list in 2010.
Gambier OCP/LUB review items:	• Definition of recreation in Area 3, CD1 Zone. • Subdivision and use of common property in a bare land strata plan. • Legal non-conforming - information note. • Associated secondary dwelling - definition and use. • Potable water requirements. • definition of breakwater • Trams (bylaw is currently silent) • Advocacy policies around pump out stations • Review of title "Wilderness Conservation" in Land Use Designations • Accommodation of ocean loop geo-exchange systems. • GHG Emissions (a more proactive approaches to plan for GHG reductions)	Various topics for exploration or review were raised over the term.

Possible changes to Keats LUB:	- Consider a mechanism to recognize authorizations of additional dwellings as permitted by s. 4.4.10 of Keats LUB. - Accommodation of ocean loop geo-exchange systems.	A smaller number of issues were raised for review regarding the Keats LUB.
Food Security: Based on the November 2010 'Exploring Food Security in the Islands Trust Area'.	Explore opportunities to implement policies and regulations to address food security in the Gambier Trust Area. Please make note to consider objectives from the Agricultural Area Plan for the Sunshine Coast Regional District.	This item was placed on the Projects List as a follow up to food security planning work done in 2010.
Development Approval Information Bylaw	Develop and adopt a Development Approval Information bylaw for the Gambier Trust Area.	This item was placed on the Projects List in 2013. Minutes indicate this project was intended to improve expectations around development application processes in the LTA.
Consultation with Squamish First Nation	Scope interim strategies pending completion of a possible protocol agreement to address protection of archaeological and heritage resources.	This item was a priority project in 2011 and was moved to the Projects List at the beginning of the 2011-2014 term.
Strategic Planning Review for Howe Sound	Planning to be done on a regional scale, developing a regional strategic plan for the entire Howe Sound.	This item was placed on the Projects List at the beginning of the 2011-2014 term. Minutes indicate issues around the BURNCO gravel mine application precipitated this idea.
History of Site-Specific water zones on Gambier	Staff to research the history of Site-Specific water zones on Gambier.	This item was placed on the Projects List in 2013 as a result of questions the LTC had regarding a relevant rezoning application. This work could be encapsulated in background research for a future Gambier LUB review.

Keats Island OCP Map Amendment.	Add trail map used during public process developing OCP.	This has been on the project list since 2007. Because OCP amendments require approval by the Ministry of Community, Sport, and Cultural Development, this project has awaited the opportunity of another OCP amendment to the Keats OCP.
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LTC Work Program Budget

The following table lists project budgets for the current fiscal year and their balance. The comments section describes planned expenditures to the end of the fiscal year on March 31, 2015.

Table 4: 2014/15 Gambier Island Local Trust Committee Work Program Budget

Project	Budget	Spent	Balance	Comments
Riparian Areas Regulation	\$30,000	\$30,000	\$0	Budget to be spent before March 31, 2015 on Qualified Environmental Professional (QEP) stream mapping contract.
Foreshore Protection	\$8,000	\$5,000	\$3,000	Budget spent to date on forage fish mapping contract. Additional funds to be spent on contractors activity and outreach materials.

The following table (Table 5) lists the project budget requests that the LTC submitted to Financial Planning Committee in the fall of 2014. In an election year, the outgoing LTC must make budget requests prior to the election in order to keep within the Island Trust annual budgeting schedule. These requests should be considered as their recommendation to the new LTC on what budgets should be requested and the new LTC has the opportunity to confirm or amend the request for consideration at the February Financial Planning Committee meeting. The budget will be adopted at the March Trust Council meeting.

The budget requests were made based on staff advice to each LTC in a memo dated August 18, 2014 (Attachment 1). Keep in mind that in the first year of term, when new projects are getting started, often little budget is required as much of the initial scoping and background work is done internally by Island Trust planning staff, which does not require a project budget.

Table 5: 2015/16 Gambier Island Local Trust Committee Work Program Budget request

Project	Budget	Comments
Riparian Areas Regulation (completion)	\$10,000	Budget to be spent on the remaining mapping required, communication to the public, and a Community Information Meeting/Public Hearing pending LTC decision on how to implement RAR measures.
Review of Gambier Island Official Community Plan and Land Use Bylaw	\$7,000	Launch of major multi-year OCP/LUB review project. Budget to be spent on communications, public consultation, community profile, and necessary mapping or technical studies.

REVISING THE LTC WORK PROGRAM FOR 2015

Table 1 shows the current Top Priorities List, and Table 5 shows the 2015/16 budget request for this LTC's projects. Together, these lists indicate new or continuing projects that the previous LTC recommends this LTC prioritize. Not all Top Priority projects require a budget request; the LTC Local Expense Account Special Projects budget is meant to be used for lower budget projects as they come up instead of requiring a specific budget for that project.

Reviewing the current Top Priorities List and 2015/16 budget request, the LTC is asked to confirm or amend the Top Priorities List in consideration of the following:

- Current projects that are not yet complete should remain on the Top Priorities list;
- Changes to the Top Priorities List should take into account the regional workload for the Northern Planning Team;
- Projects that are intended to fulfill a legal requirement, such as compliance with the provincial Riparian Areas Regulation, should be prioritized.

Northern Region Planning Priorities

The Northern Office staff is responsible for seven LTC's. As a result, the Northern Region has 13 sets of bylaws to implement, advise upon, and at times review. In order to best serve all the LTCs and bylaws, a work balance is sought through a coordinated Northern approach to work program planning.

A review of anticipated regional priorities was detailed in the memorandum from the Regional Planning Manager dated August 18, 2014 (Attachment 1). The Regional Planning Manager made recommendations for large-scale work projects (major bylaw reviews) in regards to how they would relate to staff resources regionally.

Staff recommended that two new Official Community Plan (OCP) / Land Use Bylaw (LUB) reviews begin in the Northern Region in 2015; DeCourcy Island in the Gabriola Local Trust Area and Gambier Island in the Gambier Island Local Trust Area. Both of those LTCs agreed to request budgets for these projects in the 2015/16 fiscal year, and through that action, have recommended to the current LTCs that these projects be prioritized in the current term. Based on staff resources and other ongoing and recommended projects, this is realistically the maximum number of complete OCP/LUB review projects that can be undertaken by Northern Staff at this time. Targeted amendments can be considered for additional OCPs and LUBs.

GOAL SETTING FOR THE 2014-2018 TERM

With all the information presented in this report so far as background, and in consideration of the Staff Analysis section below, planning staff including the Regional Planning Manager will facilitate a goal setting session at the first 2015 meeting of each LTC. The purpose of this session is to encourage LTCs to set both short and long-term goals for the term through a facilitated session. The rationale of undertaking such an activity is to:

- determine broad objectives of the LTC and how it envisions the work program over the four-year term;
- strategically plan projects to meet these objectives; and
- enable the Northern Team to set out a long-term schedule that balances large priority projects across the seven Northern LTCs.

New project topics and activities may be developed at this time, to be considered when amending the Work Program.

STAFF ANALYSIS

Table 1 lists the current top priorities of the Gambier LTC and Table 5 indicates the current budget request for 2015/2016 projects. A significant new item introduced in this budget request is launching a review of Gambier Island's Official Community Plan (OCP). In order to begin work on this item, it must be placed onto the Top Priorities list and a current Top Priority item must be removed.

The scope and workload involved in an OCP review is such that taking one on will require the LTC and staff to carefully consider the workload expected for the other two Top Priority items. The current status and projected workload for the LTC's current Top Priorities are discussed below.

Riparian Areas Regulation

This priority project is a long-standing item precipitated by a provincial requirement. The Ministry of Forests, Lands, and Natural Resource Operations (FLNRO) has noted that regulatory measures to implement the RAR are to be completed by October 2015.

A mapping contract has just recently been awarded, and it is expected that stream mapping will be completed in 2015. Once this information is obtained, Staff is optimistic that this project can move toward pursuing regulatory options in the coming year. Workload will comprise two-way communication with the community once mapping is complete, drafting regulatory measures, and conducting the legislative process once regulation is drafted.

Implementation and support of OCP Advocacy Policies

This work was designated as a priority project in October 2013 to reflect the increasing amount of time staff and trustees were spending on responses to applications in the greater Local Trust Area. Project work primarily focuses on five industrial proposals occurring in Howe Sound: bidding for the Community Woodlots on Gambier Island, the BURNCO gravel mine proposal at McNab Creek, the Woodfibre LNG project near Squamish, the sinking of the HMS Annapolis in Halkett Bay, and a possible waste-to-energy incinerator in Port Mellon. Response procedures to

these applications can be found in this February 12, 2015 agenda package in a memorandum under Agenda Item 13.2.

Looking ahead to the 2015/2016 year, two of these five projects have been suspended (Community Woodlots on Gambier and HMS Annapolis), one has gone dormant (waste-to-energy incinerator), and the remaining two are moving into the advanced stages of the application process.

The Environmental Assessment Office (EAO) is currently conducting environmental assessments of the BURNCO aggregate mine proposal and the Woodfibre LNG plant proposal. Islands Trust staff sit on the working groups for these assessments and have given input over the last 18 months in the establishment of the Application Information Requirements (AIR). AIRs for both of these applications have recently been finalized.

The applicant for the Woodfibre LNG project has prepared the information required in the AIR and has submitted an application to the EAO. The application is out for public comment until March 9, 2015. The EAO assessment is due to end 180 days after the application submission; as such, staff work required to provide input on the Woodfibre LNG's environmental assessment will occur in the spring.

The applicant for BURNCO has not yet submitted its application and required information; however, it is anticipated that the application will be submitted in the spring. The public consultation and assessment timelines for the BURNCO assessment will be similar to those for the Woodfibre LNG project.

A key rationale for placing this work item on the Top Priorities list was to recognize the workload required by staff to research and monitor the various application processes. There remains staff work to be conducted in the spring as part of the EAO working groups; however, the LTC could move this item off their Top Priorities list to allow staff to begin on the Gambier OCP review while the Trustees follow up on advocacy and solicitation of public input. Note that should this item be taken off the Top Priorities list to make room for the Gambier OCP review, the community woodlot issue would remain a focus of planning work, as it is anticipated that the Gambier OCP review will encompass a discussion of the community woodlot issue, including potentially a review of relevant advocacy policies.

Regardless of the direction the LTC chooses to go with this Top Priority item in 2015/2016, staff notes the Trust Council Policy 5.9ii "Planning, Regulation and Advocacy Initiatives: Outer Boundary of Islands Trust Area" (Attachment 2) adopted in September 2014 prioritizing advocacy on matters occurring in the zoned portions of Local Trust Areas. This policy provides parameters on advocacy issues where previously there was ambiguity.

Foreshore Protection and Stewardship

Foreshore Protection and Stewardship has been an ongoing topic for the Top Priorities list since January 2012. The majority of work that took place over the 2011-2014 term was the development of mapping information for the Local Trust Area and, to a lesser extent, communication of this data to the public.

Addressing the issue of shoreline practices and structures along the foreshore have been of long-time concern. In July 2013, the Gambier Island Local Trust Committee requested the Local Planning Committee to provide proactive educational support regarding unlawful structures on the foreshore in the Gambier Island Local Trust Area. Most recently, the LTC

directed staff in November 2013 to explore possible shoreline protection strategies when processing the DL 696 (Keats Camp) rezoning application.

The LTC adopted a Project Charter for this project in March 2014. Earlier milestones of the project charter are to produce public education materials and host public education events on the topic of shoreline protection practices. Later milestones are an exploration of options for shoreline protection in the local trust area through the use of existing land use planning tools, including possibly a Development Approval Information Bylaw (DAI) or Development Permit Areas (DPAs).

Currently, there is no further budget requested for Foreshore Protection project in 2015/2016 as the project was set to move into a focus on research and regulatory review and staff time is not calculated as part of budget requests.

Shoreline protection outreach and policy for Gambier could be touched upon as part of the Gambier OCP review; however, the OCP review would not address foreshore protection issues on Keats Island or the other Associated Islands. Staff also notes that should Foreshore Protection not be addressed as a Top Priority item, increased workload will continue for planning and bylaw enforcement staff regarding development applications and bylaw enforcement issues on this issue.

Revising the Top Priorities List

The LTC is being asked to revise its Top Priorities List for 2015/2016 and note to the Financial Planning Committee if any changes will be made to the LTC's budget requests. Staff hopes that the above information, as well as Goal Setting session for the Gambier LTC, will aid the LTC in making decisions on the upcoming year's workload priorities.

Reviewing the Project List

In terms of the other projects, staff recommends that the LTC review the Projects List either following the Goal Setting session or at the next LTC meeting.

RECOMMENDATIONS:

THAT the Gambier Island Local Trust Committee:

1. Review the current LTC Work Program;
2. Amend the Top Priorities and Projects List as deemed necessary; and
3. Confirm or amend the 2015/16 Budget Request and direct staff to forward any amendments to Financial Planning Committee

Prepared and Submitted by:

Aleksandra Brzozowski

Aleksandra Brzozowski
Island Planner

January 27, 2015

Date

Concurred in by:

Courtney Simpson

Courtney Simpson, RPP, MCIP
Regional Planning Manager

January 30, 2015

Date

Attachments:

1. Memorandum dated August 18, 2014 regarding 2015-16 Budget Submissions
2. Trust Policy 5.9ii - Planning, regulation and advocacy initiatives in outer boundaries

5.9.ii. Policy

PLANNING, REGULATION AND ADVOCACY INITIATIVES: OUTER BOUNDARY OF ISLANDS TRUST AREA

Trust Council: September 10, 2014

A: PURPOSE

1. To provide for a consistent approach to potential Islands Trust Council advocacy initiatives along the outer boundary of the Islands Trust Area.
2. To provide for a consistent approach to potential local trust committee initiatives for land use planning, regulation and advocacy along the outer boundary of the Islands Trust Area.
3. To manage the financial resources that the Islands Trust Council devotes to local trust committee initiatives for land use planning, regulation, and advocacy initiatives along the outer boundary of the Islands Trust Area in a manner that is fair and equitable to all local trust committees.
4. To identify those areas that the Islands Trust Council considers the priority geographical areas within each local trust area for the land use planning and regulatory functions of local trust committees.

B: BACKGROUND**1. BOUNDARY OF THE ISLANDS TRUST AREA**

- 1.1 Schedule A to the *Islands Trust Act* defines the boundary of the Islands Trust Area through a ‘metes and bounds’ description. Generally, it includes all of the islands and waters that lie between the BC Mainland and Vancouver Island, starting at the Canada-USA boundary in the south and extending to a line that runs north of Denman, Hornby and Lasqueti Islands. The precise metes and bounds description, and other legislative references are provided in Attachment A.
- 1.2 The metes and bounds description of the Islands Trust Area indicates that the boundary begins and ends at the high water mark on Vancouver Island, and follows the international boundary where it exists. While the description does not specify where the boundary begins and ends on the British Columbia mainland, the Islands Trust Area map attached as Schedule A to the *Islands Trust Regulation* has insets that suggest the boundary may begin and end at the high water mark.
- 1.3 The metes and bounds description of the Islands Trust Area specifically excludes land within reserves defined in the federal *Indian Act* and land within the boundaries of the municipalities of Vancouver, Nanaimo, Delta and Richmond. It does not specifically exclude other adjacent municipalities whose boundaries include part of the foreshore.

2. BOUNDARY OF LOCAL TRUST AREAS

- 2.1 Boundaries of local trust areas are defined by a map included as Schedule A to the *Islands Trust Regulation* (BC Reg 119/90).
- 2.2 The definition of a local trust area in the *Islands Trust Act* refers to ‘island’, which the *Islands Trust Act* defines as ‘all of the land that makes up an island, and includes surrounding land attached to and extending from an island, whether or not water flows over or under it.
- 2.3 Local trust areas exclude any land that is in a municipality, all or part of which is in the Islands Trust Area.

- 2.4 Within a local trust area, the *Islands Trust Act* provides a local trust committee with most of the powers and authorities of a regional district for the purposes of land use planning and regulation as are provided by the *Local Government Act*. A local trust committee does not have jurisdiction over matters that fall within federal or provincial jurisdiction, such as resource extraction, navigation or water quality.
- 2.5 Section 32 of the *Islands Trust Act* indicates that a person must not begin construction on land in a local trust area that is not covered by a zoning bylaw unless the construction is approved by the local trust committee. Section 4 of the *Islands Trust Regulation (BC Reg 119/90)* indicates that Section 32 of the *Islands Trust Act* does not apply, on a parcel of land within a local trust area, to the construction of: a dwelling unit, (unless a dwelling unit already exists on the parcel), a recreational cottage not exceeding 400 square feet in floor area, unless a recreational cottage already exists on the parcel, and to any structure accessory to a dwelling unit or recreational cottage.
- 2.6 Local trust areas with boundaries adjacent to Vancouver Island or the British Columbia Lower Mainland are: Executive Committee (Ballenas-Winchelsea), Denman, Gabriola, Gambier, North Pender, Salt Spring and Thetis.
- 2.7 Legislative references related to the boundaries of local trust area are provided in Attachment B and the Islands Trust Area map is included in Attachment C.

3. BOUNDARIES OF REGIONAL DISTRICTS

- 3.1 The boundaries of regional districts that are situated within the Islands Trust Area are illustrated in Attachment D.

4. ELECTED REPRESENTATION

- 4.1 Pursuant to s. 23 of the *Islands Trust Act*, a local trust committee is comprised of the two local trustees for the local trust area and a member of the Executive Committee appointed by the Islands Trust Chair.
- 4.2 Pursuant to s. 6 of the *Islands Trust Act*, two local trustees are elected to represent the electors of each local trust area.
- 4.3 Electors of a local trust area consist of residents and non-resident property owners, who are otherwise eligible as electors under the *Local Government Act*. Property owners and residents living adjacent to the high water mark on Vancouver Island and the BC Mainland (or on reserves defined in the *Indian Act*) elect representatives to Regional Districts and are not eligible to vote in Islands Trust elections, unless they also own property within the Islands Trust Area.

5. RECOVERY OF COSTS FOR ISLANDS TRUST OPERATIONS

- 5.1 Pursuant to section 47 of the *Islands Trust Act*, the majority of the costs of the operations of the Islands Trust are recovered by the requisition of taxes from within the Islands Trust Area.
- 5.2 Pursuant to sections 14(3)(c)(ii) and 47(2)(a)(ii) of the *Islands Trust Act*, the Islands Trust Council must identify expenditures relating to the ‘general’ operations of all local trust committees in its annual budget and may recover such costs through the requisition of taxes from within the entire Islands Trust Area, with the exception of island municipalities.
- 5.3 Pursuant to section 14(3)(c)(iii) of the *Islands Trust Act*, the Islands Trust Council’s annual budget may also identify expenditures related to ‘additional’ operations of one or more of the local trust committees. If the annual budget identifies expenditures related to ‘additional’ operations of a local trust committee, section 47(5) of the *Islands Trust Act* allows for a special requisition to be made from the relevant local trust area to recover the costs. The Islands Trust Council has adopted *Islands*

Trust Council Policy 6.3.ii – Special Property Tax Requisition to guide the use of special property tax requisitions.

6. MAPPING AND INFORMATION RESOURCES

- 6.1 The Islands Trust Council routinely funds the collection of planning information and map data relevant to the islands within the Islands Trust Area, but does not routinely fund the collection of such information in regards to the outer boundary of the Islands Trust Area.

C: REFERENCES

1. LEGISLATION

Islands Trust Act
Islands Trust Regulation (BC Reg. 119/90)

2. ISLANDS TRUST POLICY

Islands Trust Policy Statement
Islands Trust Council Policy 2.4.iv – Executive Committee Legislative Role
Islands Trust Council Policy 5.5.i – Bylaw Enforcement
Islands Trust Council Policy 5.9.i – Best Management Practices for Delivery of Local Planning Services to Local Trust Committees
Islands Trust Council Policy 6.3.ii – Special Property Tax Requisition
Islands Trust Council Policy 6.9.ii -- Advocacy

D: DEFINITIONS

‘advocacy’ is the act of influencing and/or seeking cooperation with other agencies and decision-makers about laws, regulations, policies, programs, budgets, priorities, and other decisions relevant to the Islands Trust mandate.

‘Islands Trust Area’ has the same meaning as is given in the *Islands Trust Act*.

‘Local Trust Area’ has the same meaning as is given in the *Islands Trust Regulation*.

‘Outer boundary of the Islands Trust Area’ means the boundary of the Islands Trust Area that is adjacent to Vancouver Island and the British Columbia Mainland.

‘new land use planning and regulatory initiatives of local trust committees’ means initiatives that begin after the adoption date of this policy.

E: POLICY

1. PRIORITY AREAS FOR LOCAL TRUST COMMITTEE LAND USE PLANNING AND REGULATORY INITIATIVES

- 1.1 The Islands Trust Council identifies the following areas as its priority areas for funding new land use planning and regulatory initiatives of local trust committees:

- a) the land and freshwater areas on the individual islands within each local trust area
- b) the tidal waters that extend from individual islands, provided they are:
 - a. within 300 m of the high water mark of an island within the local trust area and
 - b. no further from an island within the local trust area than the mid-point between that island and the nearest point on either Vancouver Island, the British Columbia mainland or a municipal boundary, or

- c. already zoned by a local trust committee on the date of adoption of this policy.

The Islands Trust Council could consider the expenditures related to such initiatives for funding in its annual budget as ‘general’ operations of a local trust committee pursuant to s. 14(3)(c)(ii) of the *Islands Trust Act*.

- 1.2 For clarity, a sample zoning map that illustrates the definition provided in E.1.1 is provided in Attachment E.
- 1.3 Unless it considers that the interests of the Islands Trust Area are significantly affected, the Islands Trust Council will normally consider that new land use planning and regulatory initiatives of local trust committees outside the area identified in E.1.1. are ‘additional’ operations of a local trust committee. The Islands Trust Council could consider recovering the costs of expenditures related to such initiatives through a special property tax requisition within the relevant local trust area, upon request of the local trust committee and in accordance with the process described in *Islands Trust Council Policy 6.3.ii – Special Property Tax Requisition*. Where a local trust committee has requested funding for such expenditures, the Islands Trust Council will consider legal advice regarding the local trust committee’s authority in the area of the proposed initiative before making a decision regarding the request.
- 1.4 Where the Islands Trust Council’s annual budget provides for a local trust committee’s land use planning and regulatory initiatives within the area identified in E.1.1, the local trust committee may not use the funds for initiatives outside that area.

2. RESOLUTIONS PURSUANT TO S. 32 OF THE ISLANDS TRUST ACT

- 2.1 Should a local trust committee become aware of or receive an application pursuant to s. 32 of the *Islands Trust Act* (unzoned areas) that is not within the area identified in E.1.1, the Islands Trust Council encourages local trust committees to provide advocacy comments only through the approval processes of other agencies. Such advocacy comments should be based on the Islands Trust object, the *Islands Trust Policy Statement* and any relevant Official Community Plan.
- 2.2 Should Islands Trust planning staff receive enquiries about proposed construction pursuant to s. 32 of the *Islands Trust Act* (unzoned areas) that is not within the area identified in E.1.1, they should advise that the local trust committee may wish to comment on the proposal in accordance with the Islands Trust object, the *Islands Trust Policy Statement* and any relevant Official Community Plan.

3. PRIORITY AREAS FOR LOCAL TRUST COMMITTEE BYLAW ENFORCEMENT INITIATIVES

- 3.1 The Islands Trust Executive, acting in its capacity under *Islands Trust Council Policy 5.5.i – Bylaw Enforcement*, will not approve the funding of legal action related to bylaw enforcement initiatives of a local trust committee outside the area described in E.1.1.
- 3.2 A local trust committee that wishes to undertake bylaw enforcement outside the area described in E.1.1 may request support from the Islands Trust Council for funding of any related costs.
- 3.3 The Islands Trust Council should not normally support legal action related to bylaw enforcement outside the area described in E.1.1 unless the matter is considered of significance to the entire Islands Trust Area and it has considered legal advice. The Islands Trust Council may recover the costs of such enforcement through a special requisition within the relevant local trust area.

4. LOCAL TRUST COMMITTEE RESPONSES TO REFERRALS

- 4.1 Should a local trust committee or Islands Trust planning staff receive a referral from another agency that is relevant to an area outside that described in E.1.1, they are encouraged to provide or recommend advocacy comments, in accordance with the Islands Trust object, the *Islands Trust*

Policy Statement and any relevant Official Community Plan. Proposed uses that would conflict with existing zoning should be identified. Related staff reports should make reference to this policy.

5. COMMUNICATIONS

- 5.1 Should the Islands Trust Council, a local trust committee or Islands Trust planning staff receive enquiries or requests for land use planning and regulatory initiatives or bylaw enforcement relevant to an area outside that described in E.1.1, reference to this policy should be included in the response.

6. ADVOCACY INITIATIVES

- 6.1 Should an Islands Trust body propose an advocacy or other initiative that is relevant to an area outside that described in E.1.1, it is encouraged to base its initiative primarily on the Islands Trust object or the *Islands Trust Policy Statement*, or advocacy policies in an Official Community Plan as appropriate, rather than on the potential exercise of land use planning or regulatory authority.

F. IMPLEMENTATION

1. CHIEF ADMINISTRATIVE OFFICER

- 1.1 The Chief Administrative Officer will ensure that reference to this policy is included in materials provided to trustees during their orientation at the beginning of each term.
- 1.2 The Chief Administrative Officer will ensure that reference to this policy is included in the materials provided to all members of the management team during their orientation at the beginning of their employment.

2. DIRECTOR OF LOCAL PLANNING SERVICES

- 2.1 The Director of Local Planning Services will ensure that reference to this policy is included in the materials provided to all staff in the Local Planning Services Unit during their orientation at the beginning of their employment.
- 2.2 The Director of Local Planning Services will take steps to ensure that this policy is reflected in staff reports and advice to local trust committees (e.g. by amendment to planning report templates, bylaw enforcement report templates or other items to ensure they reflect this policy).

3. REGIONAL PLANNING MANAGERS

- 3.1 Regional Planning Managers will ensure that staff reports and budget requests related to local trust committee work on the outer boundary of the Islands Trust Area make reference to this policy.

4. DIRECTOR OF TRUST AREA SERVICES

- 4.1 The Director of Trust Area Services will ensure that reference to this policy is included in the materials provided to all staff in the Trust Area Services Unit during their orientation at the beginning of their employment.
- 4.2 The Director of Trust Area Services will take steps to ensure that this policy is considered in any communications or advocacy initiatives relevant to the outer boundary of the Islands Trust Area.

ATTACHMENT A

ISLANDS TRUST AREA BOUNDARY

LEGISLATIVE REFERENCES

Islands Trust Act Section 1: ‘trust area’ means the land located within the boundaries described in Schedule A.

Islands Trust Act Schedule A:

“All the land, except land situated within a reserve as defined in the *Indian Act* (Canada), on all the islands situated in the Strait of Georgia, Howe Sound and Haro Strait lying to the South of a line commencing at the most easterly corner of Lot 140, Comox District, being a point on the high water mark on the easterly shore of Vancouver Island; thence South 70° East in a straight line to the point of intersection with the middle line of Sabine Channel; then in a general south-easterly direction along the middle line and passing to the northeast of Jervis, Paul and Jedediah Islands and continuing south-easterly along the south-easterly prolongation of the middle line of Sabine Channel to the point of intersection with a straight line drawn from the most southerly extremity of Young Point (Lasqueti Island) to the most southerly southwest corner of Lot 6274, Group 1, New Westminster District; then north-easterly along the line to the most southerly southwest corner of Lot 6274 and North of a line commencing at the northwest corner of Section 74A, Lake District, being a point on the high water mark on the easterly shore of the Saanich Peninsula; then East to the point of intersection with the easterly boundary of the Province of British Columbia, excepting from the above described area those islands lying within the boundaries of the City of Vancouver, the City of Nanaimo and the District Municipalities of Delta and Richmond.”

Community Charter (Schedule – Definitions and Rules of Interpretation)

"land"

- (a) for the purposes of assessment and taxation, means land as defined in the Assessment Act, and
- (b) for other purposes, includes the surface of water, but does not include
 - (i) improvements,
 - (ii) mines or minerals belonging to the Crown, or
 - (iii) mines or minerals for which title in fee simple has been registered in the land title office;

Local Government Act

5.1 Unless a term is otherwise defined in this Act or a contrary intention appears in this Act, the definitions in the *Community Charter* apply to this Act.

Interpretation Act

40 (1) So far as the terms defined can be applied, the definitions established by or applicable under

- (a) the schedule to the *Community Charter*, and
- (b) section 5 of the *Local Government Act*

extend to all enactments relating to municipal and regional district matters.

ATTACHMENT B

LOCAL TRUST AREA BOUNDARIES

LEGISLATIVE REFERENCES

Islands Trust Act Section 1:

‘island’ means all of the land that makes up an island, and includes surrounding land attached to and extending from an island, whether or not water flows over or under it;

‘local trust area’ means

‘(a) an island designated in Schedule B, or

(b) an island or group of islands in the trust area that is designated as a local trust area by regulation,

and includes those islands, if any, within boundaries surrounding an island or group of islands referred to in paragraphs (a) and (b) that may be specified by regulation, but does not include land in a municipality, all or part of which is in the trust area.’

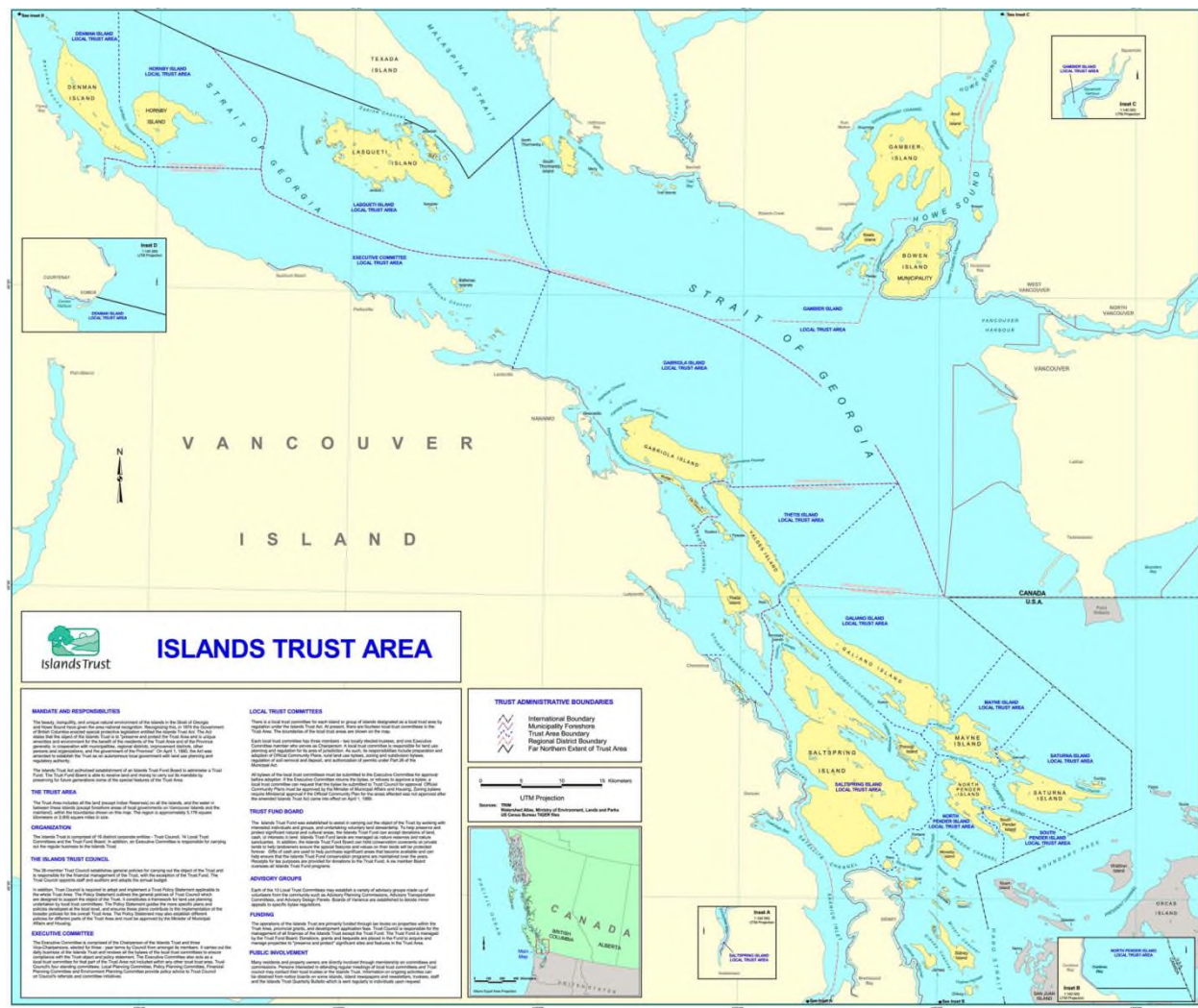
Islands Trust Act Schedule B:

Names the following islands in reference to Section 1(a) of the *Islands Trust Act*: Denman, Gabriola, Galiano, Gambier, Hornby, Lasqueti, Mayne, North Pender, Saltspring, Saturna, South Pender and Thetis

Islands Trust Regulation (BC Reg 119/90) Section 3:

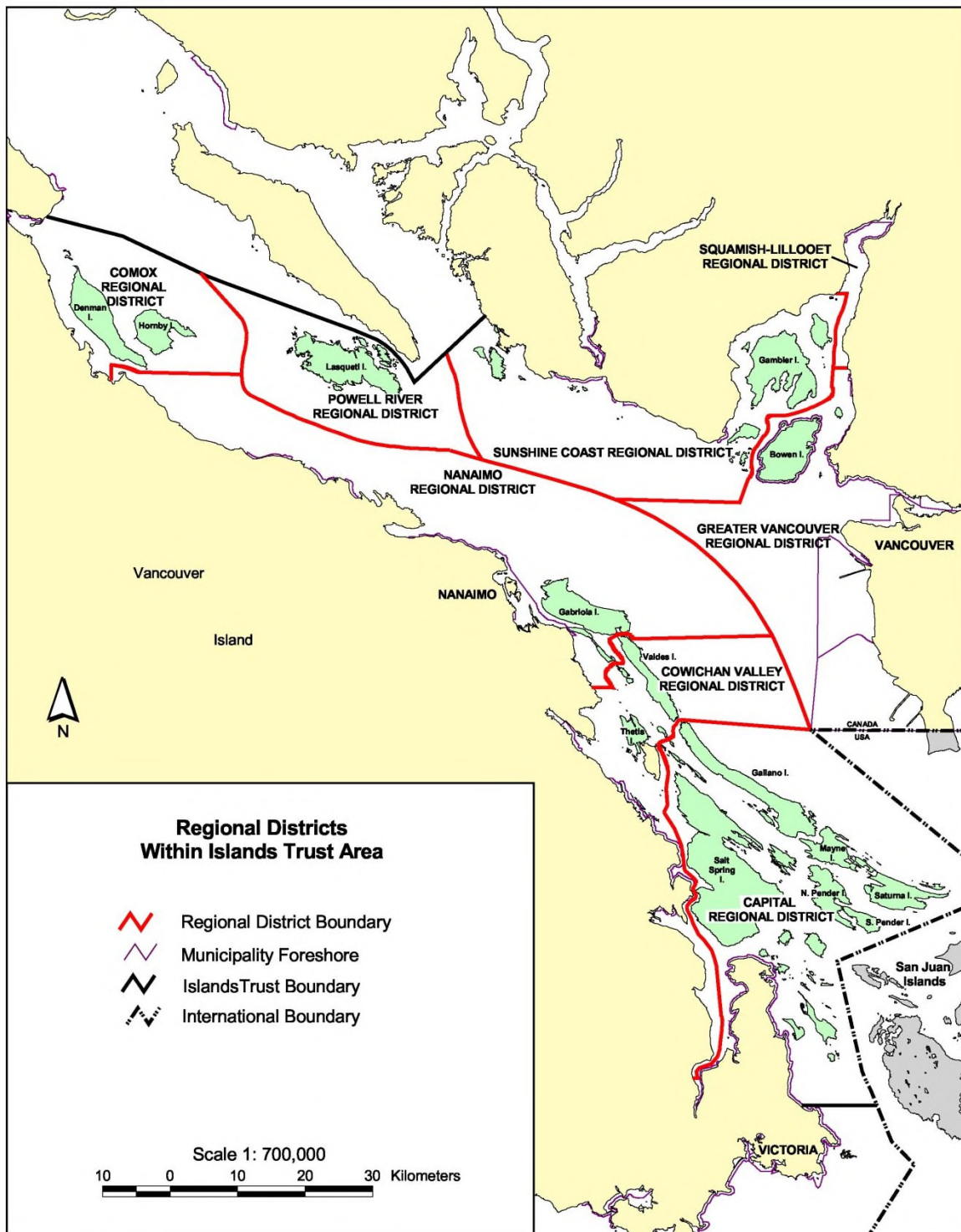
For the purposes of the Act, the boundaries of each local trust area are show on the map in Schedule A to the *Islands Trust Regulation*.

ATTACHMENT C ISLANDS TRUST AREA

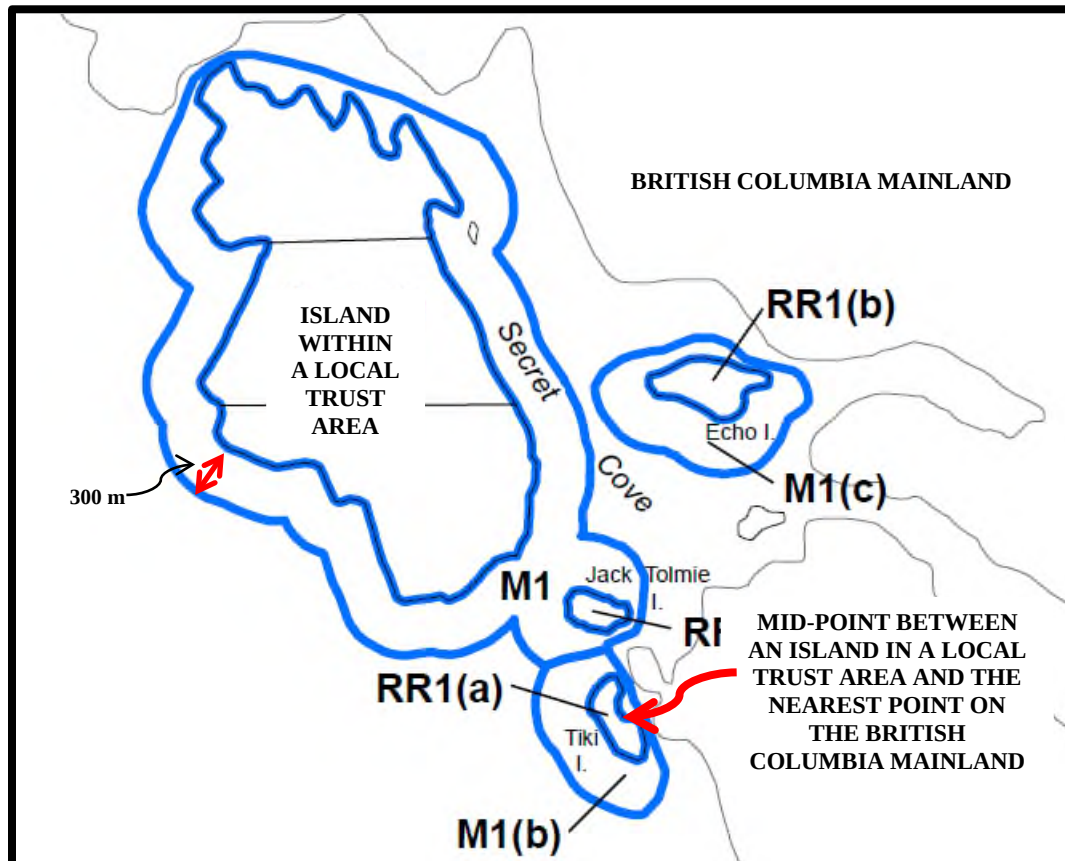


ATTACHMENT D

REGIONAL DISTRICTS WITHIN THE ISLANDS TRUST AREA



ATTACHMENT E
SAMPLE MAP ILLUSTRATING THE ISLANDS TRUST COUNCIL'S
PRIORITY AREAS FOR FUNDING LOCAL TRUST COMMITTEE
LAND USE PLANNING AND REGULATORY INITIATIVES
(SAMPLE PRIORITY AREAS REFERRED TO IN SECTION E.1.1 ARE INSIDE BLUE LINES)





Memorandum

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Date August 18, 2014 File Number 6500-01

To Denman Island Local Trust Committee
Hornby Island Local Trust Committee
Lasqueti Island Local Trust Committee
Ballenas – Winchelsea Islands Local Trust Committee (Executive Committee)
Gabriola Island Local Trust Committee
Gambier Island Local Trust Committee
Thetis Island Local Trust Committee

From Courtney Simpson
Regional Planning Manager, Local Planning Services

Re **2015-16 Budget Submissions**

Local trust committees are asked to submit budget requests for the next fiscal year (2015-16).

Local Trust Committee Expense Budgets:

Local Trust Committee Expense budgets include the following:

- LTC meeting expenses
- APC meeting expenses
- Communications
- Special Projects
- Miscellaneous

A budget for Local Expense Account has been developed based on the historical spending, and is shown in Attachment 1. Local trust committees may make changes to this allocation; however, consideration should be given to the historical spending and a rationale provided for making the change.

LTC meeting expenses:

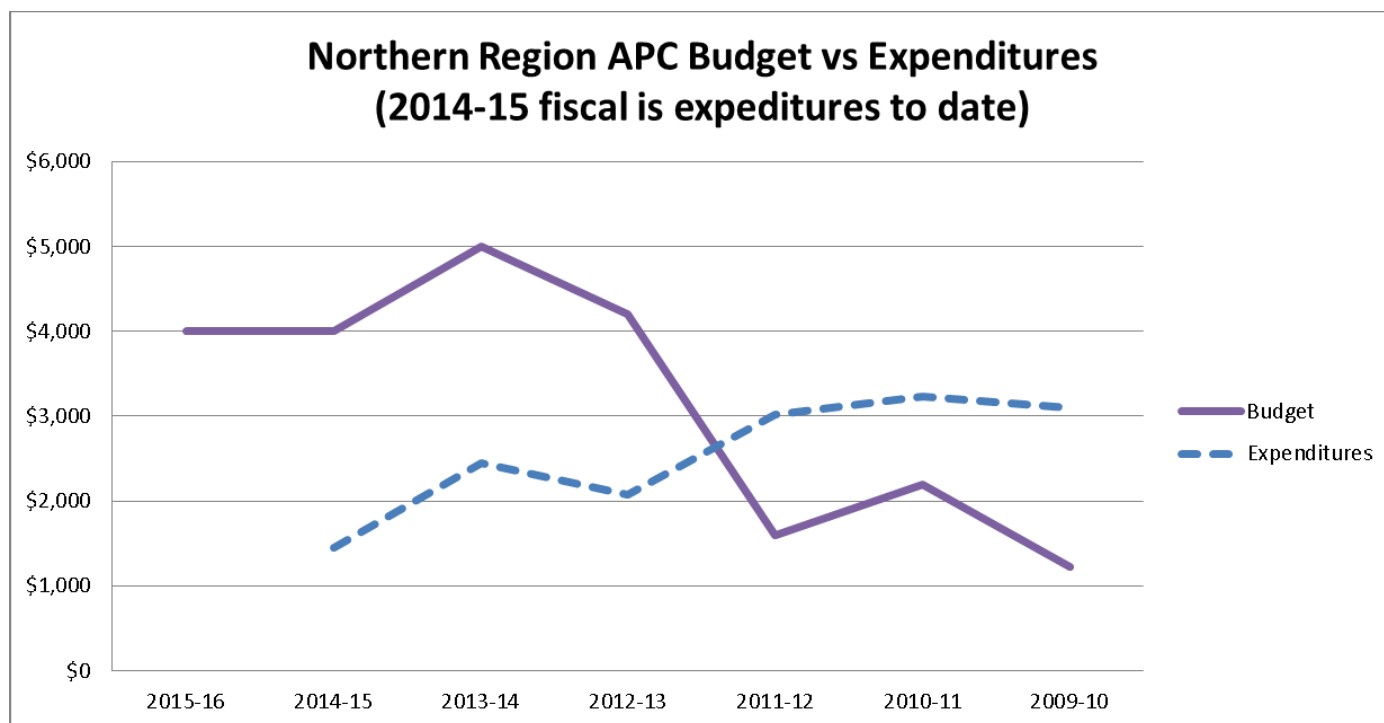
No changes are recommended for the LTC meeting expense account budgets as presented in Attachment 1.

Advisory Planning Commission Budgets:

Consideration was given to recommending increased budget requests for LTCs that staff is recommending take on a major project that is likely to have a higher than average number of APC referrals. Attachment 1 shows a proposed \$750 Advisory Planning Commission (APC) budget for all Northern LTCs excepting Thetis and Lasqueti with a \$500 budget.

In the Northern Region, contract minute takers are only hired for an APC meeting at the direction of the LTC on a case by case basis, at times upon recommendation of staff. In the Southern and Salt Spring regions all APC meeting minutes are taken by a contract minute taker. Staff has found that having a contract minute taker for APC meetings can be a resource for meeting procedures when no other staff is present, reduces staff time

after the meeting to reformat minutes, and typically results in a more useful record of the meeting and as such will be recommending to LTCs that all APC minutes are taken by a contract minute taker. Staff analyzed the APC budgets and expenditures over the past five fiscal years to determine if an increase to the APC budget would be recommended to allow all APC minutes to be taken by a contract minute-taker.



For the Northern Region overall, APC budgets have increased since the 2009-10 fiscal year in response to expenditures exceeding budget in the earlier years shown on the chart above. The number of APC meetings in the region peaked in the 2010-11 fiscal which coincides with the peak in expenses. Although LTC's that undertake major OCP/LUB review projects in the next fiscal are expected to exceed their \$750 budget for APC meetings, APC expenses for the Northern Region are not expected to exceed the budget. Staff considered recommending some LTC's reduce their APC meeting budget request and other LTC's increase theirs to keep the total for the region the same but bring the budgets more in line with expected expenses, but has decided not to make this recommendation. It is difficult to predict projects and APC referrals in an election year, and given historical records of expenditures in this category back to 2009-10, the overall APC budget for the region is not expected to be exceeded. Staff believes contract minute takers can be hired for all APC meetings and still stay within the budget for the region.

Communications Budgets:

No changes are recommended to the communications budgets as presented in Attachment 2. Communications for project work is included in the budget requests for those projects.

Special Projects Budgets:

A small amount of funding is included in the Special Projects line item in the Local Trust Committee Expense Account. This funding is intended to support local planning initiatives at the discretion of the local trust committee (a local trust committee resolution is required to use these funds).

LTC Projects Budgets:

Local trust committees should make a funding request to support project work, including OCP and LUB work that cannot be undertaken with the money available in the Expense Account Special Projects line. Given the upcoming election, consider what the current LTC would recommend as projects for the incoming LTC in 2015/16 fiscal year. The new LTC will have an opportunity to amend these requests after being sworn-in in December and prior to the Financial Planning Committee meeting in February 2015. Recommended projects budgets are presented in Attachment 2.

For the Northern Region, staff recommends that two new OCP/LUB reviews are undertaken; DeCourcy Island (Gabriola Local Trust Area) and Gambier Island. Based on staff resources and other ongoing and recommended projects, this is the maximum number of complete OCP/LUB review projects that can be undertaken. In order to decide which bylaws to recommend for review, the table in Attachment 3 was developed, that lists all Northern Region base bylaws and their adoption dates.

The projections for major OCP/LUB reviews in Attachment 3 has OCP/LUB's that are being adopted this term waiting in excess of 25 years before another review, if the schedule remains at two major reviews per term. The Northern Region has 13 sets of bylaws compared to 6 in the Southern Region and 4 in the Salt Spring Local Trust Area, and comparable staff resources between the three offices.

A need to address the number of OCP/LUB's in the Northern Region has been identified, with the goal of reducing the years between reviews. One option is to start a new OCP/LUB review in the third or fourth year of a term with the goal of completing it in the following term, thus condensing the review schedule. Another option is to join base bylaws as they are reviewed to reduce the number of base bylaws in a single local trust area. These options can be further explored in the future. Undertaking more major reviews concurrently is not a feasible option with current budget and staffing levels.

Riparian Areas Regulation:

Local trust committees should discuss their requirements for RAR funding next fiscal to assist the Regional Planning Manager and Director in developing a budget for RAR.

Special Consideration:

When considering new work items for the 2015/16 fiscal year, LTCs are asked to consider the following:

- A new local trust committee will be sworn-in in December 2014, therefore, priorities could potentially change after the new LTC sets its priorities. Current LTCs are responsible for ensuring that the incoming LTC has sufficient funds to undertake work program items.
- Projects planned for the current fiscal (2014/15) which are not completed should be considered as a new project for the 2015/16 fiscal year with resources allocated to support that work.

Budget Request Timeline:

August 2013 Regional Planning Managers develop budget estimates for consideration by LTCs

Aug to Sept LTCs review and approve budget requests at LTC meetings

Sept 23, 2014 All budget requests forwarded to Director of Local Planning Services

Sept 29, 2014 All budget requests forwarded to Director of Administrative Services

Oct 29, 2014 FPC reviews and discusses first draft of budget

Nov 12, 2014 FPC approves the draft budget

Dec 3, 2014 Trust Council reviews draft budget

LTC Budget Requests

Attachment 2 is a Table with all draft project submissions recommended to Northern LTCs. LTCs should review the attached worksheet of its specific requests. The preliminary project requests have been drafted based on all Top Priority work program items which are currently anticipated to commence in, or to carry, into the next fiscal year. Items from the Projects List which the planners anticipate commencing in the coming year are also included. The LTC should identify any other projects it is currently considering and add them to the

budget request (and the work program if necessary) and identify any additional expenses associated with the identified projects.

Resolution Wording

1. THAT the ____ Island Local Trust Committee approve and forward the draft 2015-16 LTC Project Budget submission to Financial Planning Committee as presented; or
2. THAT the ____ Island Local Trust Committee revise the draft 2015-16 LTC Project Budget submission and forward to Financial Planning Committee as revised.

Attachments:

1. Table of Local Trust Committee Expense Budgets
2. Summary table of Northern LTC project budget requests
3. Northern Official Community Plan and Land Use Bylaws Review Schedule

pc Island Planners and Planner 2

Attachment 1: Local Trust Committee Expense Budgets

2015/16 LTC EXPENSE BUDGET																Total 2015/16
	615-Denman	620-Gabriola	625-Galiano	630-Gambier	635-Hornby	640-Lasqueti	645-Mayne	650-N.Pender	655-Salt Spring	660-Saturna	665-S.Pender	670-Thetis	EC as LTC	LPC		
population	1095	4050	1258	313	1074	359	1112	1996	9780	359	236	372				22004
	5%	18%	6%	1%	5%	2%	5%	9%	44%	2%	1%	2%				
LTC EXPENSES **																
LTC Meeting Expenses	2,500	4,250	2,500	2,500	2,500	500	1,500	2,750	8,000	1,000	1,000	1,000				30,000
APC Meeting Expenses	750	750	500	750	750	500	750	750	2,000	500	500	500				9,000
Communications	300	750	300	300	300	300	300	300	1,250	300	300	300				5,000
Special Projects	750	2,250	750	750	750	750	750	750	4,500	750	750	750	750			15,000
Miscellaneous																0
SUB-TOTAL EXPENSES	4,300	8,000	4,050	4,300	4,300	2,050	3,300	4,550	15,750	2,550	2,550	2,550	750			59,000
Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	4,300	8,000	4,050	4,300	4,300	2,050	3,300	4,550	15,750	2,550	2,550	2,550	750	0		59,000
	7%	14%	7%	7%	7%	3%	6%	8%	27%	4%	4%	4%				

Attachment 2:

Draft Northern LTC Program Budget Requests 2015/16 Fiscal				
LTC	Project Request	Cost (\$)	Description	Notes
Denman	RAR (completion)	\$ 2,500.00	Mapping completed in 2013-14, draft bylaws July 2014, consultation to begin in Sept 2014	1 public hearing (\$2000) stand-alone, communications material (\$500) Tentative. May be completed in current fiscal
	Protocol Agreement with K'omoks First Nation	\$ 2,000.00	K'omoks has invited discussion on a protocol agreement with a focus on aquaculture	Meetings and some consultant support
Hornby	RAR (completion)	\$ 2,500.00	Mapping completed in 2013-14, consultation summer 2014, draft bylaws Sept 2014	1 public hearing (\$2000) stand-alone, communications material (\$500) Tentative. May be completed in current fiscal
Lasqueti	Targeted OCP/LUB Review	\$ 2,000.00	Marine policies, food security	Consultation and communications
Gabriola	Gabriola OCP/LUB Targeted Review (continuation)	\$ 3,500.00	Village core, density transfer, and implementing First Nations archaeological protection policies	1 public hearing (\$2,500) combined, communications materials (\$500), FN meeting expenses (\$500)
	DeCourcy OCP/LUB Review	\$ 2,500.00	Launch of OCP/LUB review for this associated island	Communications, community profile
Gambier	RAR (continuation)	\$10,000.00	Developing RFP for 2014/15 fiscal, need QEP expertise to determine budget request for next fiscal	Contract with QEP and communications
	OCP/LUB Review Gambier Island	\$ 7,000.00	Launch of major OCP/LUB project. Includes continuation of shoreline protection project.	Communications, community profile, studies
Thetis	RAR (completion)	\$ 1,500.00	Mapping completed, project needs to come to top priority to be completed. Affects one strata property, working with owner-developer	1 public hearing (\$1500) stand-alone
	Shoreline protection (continuation)	\$ 5,000.00	Continuation of Greenhore pilot. \$5,000 to match contributions of other municipalities for the 2015/16 continuation of the pilot with Stewardship Centre	
Ballenas-Winchelsea	None	\$ -		
TOTAL		\$38,500.00		

Attachment 3: Northern Official Community Plan and Land Use Bylaws Review Schedule Projection

						Projected terms for major review								
<u>LTA</u>	<u>Bylaw area</u>	<u>OCP adopt'n</u>	<u>LUB adopt'n</u>	<u>Years since OCP</u>	<u>Years since LUB</u>	<u>2014-18</u>	<u>2018-22</u>	<u>2022-26</u>	<u>2026-30</u>	<u>2030-34</u>	<u>2034-38</u>	<u>2038-2042</u>		
Gabriola	DeCourcy	1981	1987	34	28	☑								
Thetis	Valdes	1996		19			☑							
Gabriola	Gabriola	1997	1999	18	16		☑							
Gambier	Gambier	2001	2004	14	11	☑								
Gambier	Keats	2002	2002	13	13			☑						
Lasqueti	Lasqueti	2005	2005	10	10			☑						
Gabriola	Mudge	2007	2007	8	8				☑					
Denman	Denman	2008	2008	7	7				☑					
Gambier	Gambier Assoc Isl	2009	2013	6	2					☑				
Thetis	Thetis	2011	2011	4	4					☑				
Ballenas-Winchelsea	Ballenas-Winchelsea	2013	2013	2	2						☑			
Hornby	Hornby	2014	2014	1	1						☑			
Thetis	Thetis Assoc Isl	2014	2014	1	1							☑		



Memorandum

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Date: January 28, 2015

To: Gambier Island Local Trust Committee

From: Kate Emmings, Ecosystem Protection Specialist, Islands Trust Fund

Re: Islands Trust/Islands Trust Fund Eelgrass Mapping

Eelgrass Mapping in the Gambier Island Local Trust Area

Eelgrass Mapping for the islands off of the Sunshine Coast (e.g. the Thormanbies) was completed in December, 2014 by SeaChange Marine Conservation Society under contract with the Islands Trust (see attached report). These islands complete the mapping for the Gambier Island Local Trust Area which began in 2012. Findings for the islands off of the Sunshine Coast found that:

- Eelgrass comprises 19.6% of the combined linear shorelines of the Thormanby Islands
- There are significant amounts of eelgrass around North Thormanby Island primarily because of sandy sediments around the island
- No eelgrass habitat was noted off of Surrey Island, Bertha Island, or Merry Island
- Small amounts of eelgrass were found around the Trail Islands, Turnagain Island, Echo Island and Tiki Island

About Eelgrass

Eelgrass is a critical nearshore habitat for birds, mammals, invertebrates and commercial and non commercial fish. Eelgrass beds are also an important carbon sink. Contaminants, shading from docks and overwater structures, increased sedimentation, marine traffic and development pressures from shoreline land use threaten eelgrass ecosystems and the species they support.

Report Recommendations

The 2012-2014 Nearshore Eelgrass Inventory Report contains several recommendations. Some of the relevant recommendations for local trust committees are:

- Create setbacks from the shoreline in regulatory bylaws.
- Prevent construction of docks in eelgrass beds. Where dock construction cannot be avoided, ensure that docks are built to allow light to pass through to eelgrass beds below and that they are constructed from materials that have a minimum impact on water quality.
- Require removal of illegal shoreline modifications and habitat restoration where appropriate.
- Support education of the boating community and shoreline landowners regarding the importance of eelgrass beds and natural shorelines.

- Encourage the boating community not to locate mooring buoys in eelgrass beds and not to anchor in eelgrass beds. Where mooring buoys are located in eelgrass beds, encourage the use of line floats to keep chains and lines off of the sea floor where they can drag and scour the bottom, removing eelgrass habitat and killing species.
- Encourage dock owners to replace dock materials with light penetrable materials.

Next Steps

The Islands Trust Fund has placed the eelgrass mapping and the associated report on its website at <http://www.islandstrustfund.bc.ca/initiatives/marineconservation/eelgrass-mapping.aspx> and has added eelgrass mapping to the MapIT public mapping site at <http://www.islandstrustfund.bc.ca/maps/mapit.aspx> (Shorelines Application). Local trust committees are encouraged to provide links to the mapping on their websites and consider actions within their local trust areas to include eelgrass protection in their official community plans and regulatory bylaws as per the Islands Trust Policy Statement, section 3.4.4 (see background below). Local trust committees may wish to direct staff to highlight maps and recommendations specific to their local trust area on their own webpage.

Attachment Report: 2012-2014 Nearshore Eelgrass Inventory
 Map 3c: Eelgrass Presence Gambier Local Trust Area Associated Islands Sunshine Coast Area

Background

The Islands Trust Policy Statement, section 3.4.4, states:

Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the protection of sensitive coastal areas.

The 2013 Audit of Biodiversity in B.C. (Office of the Auditor General of B.C., www.bcauditor.com/pubs/2013/report10/audit-biodiversity-bc-assessing-effectiveness-key-tools) highlighted the importance of collecting sufficient and reliable information on species distribution in order to make well-informed decisions about conserving biodiversity. With sensitive ecosystem mapping completed in the Islands Trust Area (2008-2010), the Bowen Island Municipality (BIM) and local trust committees have access to ecosystem data for terrestrial species. The Islands Trust and Islands Trust Fund are now working to acquire mapping of sensitive coastal areas to help island governments meet the requirements of the Islands Trust Policy Statement.

In 2012, the Islands Trust and Islands Trust Fund launched a project to map eelgrass as a partnership with the Seagrass Conservation Working Group and SeaChange Marine Conservation Society. The arrangement between the partners resulted in shared funding of the program between the Islands Trust, the Islands Trust Fund and the Seagrass Conservation Working Group (through grants acquired by its member group, SeaChange Marine Conservation Society).

Eelgrass mapping is intended to assist BIM, local trust committees and the Trust Fund Board in making science-based decisions about land use and conservation to preserve coastal ecosystems in the Islands Trust Area. Eelgrass mapping will serve as a baseline inventory to monitor the effects of conservation activities, such as Marine Protected Areas, as well as human impacts, such as potential increased tanker traffic, marine industrial activities (e.g. log dumping and booms) and foreshore use (e.g. wharves and docks). It will also enable marine conservation groups to identify areas ideal for eelgrass restoration.

Mapping Partnership:

Mapping was completed by SeaChange Marine Conservation Society through a partnership with the Seagrass Conservation Working Group and the Islands Trust Fund. The Mayne Island Conservation Society provided eelgrass mapping for Mayne Island free of charge. The total project budget was \$155,610 (over three years)

and the Islands Trust, primarily through Trust Fund Board budgets, contributed 54% of the total amount. The Gambier Island Local Trust Committee contributed \$2,000 towards the project in the 2013/2014 fiscal year.

Mapping is now complete for the entire Islands Trust Area. Islands were mapped over three years as follows:

2012:

- Gambier Island
- Lasqueti Island
- Mayne Island Local Trust Area (information courtesy of Mayne Island Conservation Society)
- North Pender Island
- South Pender Island
- Thetis Island Local Trust Area (excluding Valdes)

2013:

- Ballenas-Winchelsea (Executive Islands) Local Trust Area
- Bowen Municipality
- Denman Island Local Trust Area
- Gabriola Island Local Trust Area
- Galiano Island Local Trust Area
- Hornby Island Local Trust Area
- Gambier Associated Islands except those off of the Sunshine Coast (e.g. the Thormanbys)
- Valdes Island
- Cufra Inlet (Thetis Island)

2014:

- North Pender Associated Islands
- Islands off the Sunshine Coast (e.g. the Thormanby Islands)
- Lasqueti Associated Islands
- Saturna Island Local Trust Area
- Salt Spring Island Local Trust Area

Resources for local trust committees

The following are some resources for local trust committees. Please see references in the attached report for a more complete list.

Hutton, K. E. and S. C. Samis. 2000. Guidelines to protect fish and fish habitat from treated wood used in aquatic environments in the Pacific Region. Can. Tech. Rep. Fish. Aquat. Sci. 2314: vi + 34 p. Available at <http://www.dfo-mpo.gc.ca/Library/245973.pdf> .

Fisheries and Oceans Canada. Projects Near Water. Available at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html> .

Province of BC. 2011 (amended August 2013). Land Use Operational Policy: Private Moorage. Available at http://www.for.gov.bc.ca/Land_Tenures/documents/policies/private_moorage.pdf .

EnviroVision, Herrera Environmental, and Aquatic Habitat Guidelines Program. October 2007 (revised June 2010). Protecting Nearshore Habitats and Functions in Puget Sound. Available at <http://wdfw.wa.gov/publications/00047/>.

2012 - 2014

Final Report Nearshore Eelgrass Inventory



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Thank you.

Contents

Acknowledgements	i
1 Introduction	1
2 Importance of Eelgrass	1
2.1 Biodiversity	2
2.2 Blue Carbon.....	2
2.3 Ecosystem Services	2
3 Eelgrass Habitat Characteristics	3
3.1 Wildlife Corridors	4
4 Impacts from Human Activities	4
4.1 Removal and Burial	5
4.2 Pollution and Changes to Freshwater Input	5
4.3 Forestry Activities	6
4.4 Oil Spills.....	6
4.5 Shading by Overwater Structures.....	6
4.6 Effects of Boating.....	6
5 Eelgrass and Rising Sea Levels	6
6 Mapping Methodology.....	7
6.1 Distribution	7
6.2 Form.....	7
6.3 Sediment Types.....	8
6.4 Percent of Cover	8
6.5 Tidal Fluctuations	8
6.6 Presence of Other Vegetation.....	8
6.7 Visibility.....	9
7 Survey Limitations.....	9
8 2012 Inventory Findings	9
8.1 Gambier Island Local Trust Area	10
8.2 Lasqueti Island Local Trust Area.....	13
8.3 North Pender Island Local Trust Area	14
8.4 South Pender Island Local Trust Area	16
8.5 Mayne Island Local Trust Area	16
8.6 Thetis Island Local Trust Area	17
9 2013 Inventory Findings	19
9.1 Galiano Island Local Trust Area.....	20
9.2 Gabriola Island Local Trust Area	21

9.3	Denman Island Local Trust Area	22
9.4	Hornby Island Local Trust Area	23
9.5	Winchelsea-Ballenas (Executive Islands) Local Trust Area	23
9.6	Bowen Island Municipality.....	24
10	2014 Inventory Findings.....	26
10.1	Salt Spring Local Trust Area	26
10.2	Saturna Island Local Trust Area	30
11	Threats to Eelgrass Habitats.....	31
12	Opportunities for Eelgrass Restoration	31
12.1	History of Eelgrass Restoration.....	31
12.2	Criteria for Successful Restoration	32
13	Recommendations.....	32
13.1	Education	33
13.2	Regulatory and Enforcement.....	33
13.3	Opportunities for collaboration with other agencies.....	34
14	Conclusion.....	34
15	References	35

Maps

Map 1a: Eelgrass Presence North Pender Island	38
Map 1b: Eelgrass Presence North Pender Local Trust Area Associated Islands – North	39
Map 1c: Eelgrass Presence North Pender Local Trust Area Associated Islands - South	40
Map 2: Eelgrass Presence South Pender Island	41
Map 3a: Eelgrass Presence Gambier Island	42
Map 3b: Eelgrass Presence Gambier Local Trust Area Howe Sound Associated Islands.....	43
Map 3c: Eelgrass Presence Gambier Local Trust Area Associated Islands - Sunshine Coast Area	44
Map 4a: Eelgrass Presence Thetis Island Local Trust Area Excluding Valdes	45
Map 4b: Eelgrass Presence Valdes Island	46
Map 5b: Eelgrass Presence Lasqueti Local Trust Area - West	48
Map 6: Eelgrass Presence Hornby Island Local Trust Area	49
Map 7: Eelgrass Presence Mayne Island Local Trust Area	50
Map 8: Eelgrass Presence Ballenas – Winchelsea (Executive Islands) Local Trust Area	51
Map 9a: Eelgrass Presence Bowen Island North and Bowyer Island.....	52

Map 9b: Eelgrass Presence Bowen Island South and Passage Island	53
Map 10: Eelgrass Presence Denman Island Local Trust Area	54
Map 11a: Eelgrass Presence Gabriola Island Local Trust Area – Southeast	55
Map 11b: Eelgrass Presence Gabriola Island Local Trust Area – Northwest	56
Map 12a: Eelgrass Presence Galiano Island Local Trust Area – South	57
Map 12b: Eelgrass Presence Galiano Island Local Trust Area – North	58
Map 13a: Eelgrass Presence Salt Spring Local Trust Area – South	59
Map 13b: Eelgrass Presence Salt Spring Local Trust Area – North	60
Map 14: Eelgrass Presence Saturna Local Trust Area	61

Appendices

Appendix A: Mapping Methodology 2012 – 2014	62
2012 Methodology for <i>Zostera marina</i> Presence and Absence Mapping With a Towed Underwater Camera	62
2013 Methodology for <i>Zostera marina</i> Presence Mapping with a Towed Underwater Camera	63
Appendix B: Maps of Shoreline Units	65
Appendix C: Summary of Overwater Structures	90
Appendix D: 2012 - 2014 Islands Trust Area Eelgrass Inventory Meta Data	98

1 Introduction

Land use developments within watersheds have led to a loss of natural estuarine and nearshore marine habitats in British Columbia - the receiving waters of land based activities. Agriculture, forestry, and dredging for commercial and residential development have all contributed to the loss (Durance, 2002). The pressure to modify natural marine features and habitat for the development of commercial facilities and residential units within coastal areas is intensifying. To prepare for the increase in populations on the BC coast and concurrent shoreline developments, it is necessary to identify and quantify nearshore habitats to protect and maintain these valuable nearshore environments.

As part of a conservation strategy to protect and conserve critical nearshore areas, the Islands Trust and the Islands Trust Fund initiated an inventory of the presence of native eelgrass (*Zostera marina*) surrounding islands within the Islands Trust Area. The 2012-2014 Nearshore Eelgrass Inventory Report provides background information for future eelgrass inventories and adds value to the Islands Trust Shoreline Mapping Project. The goal is to support sound decisions that will affect the natural ecological health of the marine nearshores within the Islands Trust Area. The Islands Trust and Islands Trust Fund have limited jurisdiction over marine areas; however, they can have an impact on long term development and protection of the shoreline. This report and the mapping information that forms its basis are designed to assist Islands Trust and Islands Trust Fund planners and elected officials to make science-based decisions when planning for nearshore areas.

ShoreZone maps of coastal habitats within the Islands Trust Area were created over the past decade. ShoreZone is a mapping and classification system that produces an inventory of geomorphic and biological features of the intertidal and nearshore zones from low altitude aerial images of the coastal environment (Harper 2011). These maps provided the groundwork for identifying suitable physical components for eelgrass on the islands mapped during 2012-2014. Eelgrass biobands are not shown for First Nations Reserves on the maps.

The presence/absence of *Zostera marina* was determined according to the methodology of Cynthia Durance, R.P. Bio., Precision Identification (Appendix A). A more detailed description of the methods used can be found in Section 6.

2 Importance of Eelgrass

Seagrasses are rooted aquatic plants that grow in estuaries and along low wave energy shorelines throughout the world. They have important influences on biogeochemical cycling, sediment stability, and food web support (McGlathery et al. 2007; Orth et al., 2006). Seagrasses can form extensive meadows supporting high biodiversity. The global species diversity of

seagrasses is low (~60 species). Across the globe, however, seagrass meadows cover about 177,000 square kilometers of coastal waters – larger than the combined area of the Maritime Provinces. (Short et al, 2007) British Columbia has about 400 km² of saltmarsh and eelgrass habitats (Campbell 2010).

2.1 Biodiversity

The complex and intricate food webs of an eelgrass (*Zostera marina*) meadow provide food and shelter for numerous fish and invertebrates. Meadows also serve as a nursery habitat and as a refuge from predation for juvenile fishes (Orth et al., 1984; Bostrom and Bonsdorff 2000; Duarte 2000). The productivity of native seagrasses rivals the world's richest farmlands and tropical rainforests. From an unstructured muddy/sandy bottom grows a myriad pattern of leaves that supply nutrients to salmonids and other fish, shellfish, waterfowl and about 124 species of faunal invertebrates. The plants offer surface area for over 350 species of macroalgae and 91 species of epiphytic microalgae – the basis of the food web for juvenile salmon in marine waters (Phillips 1994). Often referred to as “salmon highways”, nearshore marine environments containing eelgrass beds (*Zostera marina*) are home to over 80% of commercially important fish and shellfish species, including all species of salmon, at some point in their life histories (Durance 2002).

2.2 Blue Carbon

Like terrestrial forests, eelgrass habitats capture and store large amounts of carbon but at much more efficient rates - up to ninety times the uptake provided by equivalent areas of forest. This “Blue Carbon” is stored in sediments where it is stable for thousands of years. In B.C., roughly 400 km² of salt marsh and seagrass meadows sequester as much carbon as B.C.'s portion of the boreal forest, and the equivalent of the emissions of some 200,000 passenger cars (Campbell 2010).

When eelgrass beds are restored, the rate of carbon sequestration appears to be rapid over the first few years and up to 40 years following restoration. The natural transport of eelgrass by currents and wave action to deeper waters in estuaries and the coastal ocean may further sequester more carbon (Thom 2011).

As ocean waters warm as a result of climate change (up to 5 C° during the spring), greater flowering as well as faster growth of eelgrass shoots has been observed. Both of these changes result in greater biomass. Like marshes, much of the eelgrass biomass is under the substrate, indicating that a warming environment may result in greater carbon accumulation rates (Thom 2011).

2.3 Ecosystem Services

Ecosystem services are the benefits provided by the land, air, water and subsurface materials of the earth (Molnar et al 2012). Eelgrass habitats within the lower reaches of the Salish Sea provide

carbon sequestration and storage, habitat refugia and nursery and nutrient cycling benefits to an approximated natural capital cost of \$80,929 per hectare per year (Molnar et al., 2012). Within the Islands Trust Area, eelgrass habitats also provide revenue for commercial fisheries, recreational fishery, and revenue from tourism.

Another ecosystem service eelgrass habitats provide is shoreline stability. Established eelgrass beds reduce currents, leading to increased sediment and organic detritus deposition (Durance 2002). Continuous dense eelgrass beds provide a buffer for incoming wave energy. The more the bed is fragmented by physical structures (e.g. boats, wharves, docks and overwater play structures), the less eelgrass beds function as an erosion buffer. Where shorelines are constrained by development or structures to prevent erosion (e.g. rip rap, sea walls), natural coastal features will be squeezed out and maintaining shoreline infrastructure and development will require increasingly expensive engineering measures (Mumford 2007). Pre-emptive planning for these changing conditions is necessary to protect settlement areas and shore features recognized for their natural and ecosystem services.

Protecting and conserving, and in some instances restoring these critical habitats is a recommendation of the Islands Trust Fund's Regional Conservation Plan. Mapping eelgrass is identified as a priority to meet the goal of conserving marine ecosystems and habitats. As well, accounting for these benefits in economic dollars and cents and factoring them into decision making policies would emphasize the economic, cultural and ecological values of nearshore habitats.

3 Eelgrass Habitat Characteristics

Eelgrass meadows are found in most of the world's coastal temperate regions except at extremely high latitudes. Physical and chemical factors affecting *Zostera marina* include temperature, light attenuation, elevation, substratum, wave action, salinity and pH. Worldwide, the plants survive under a wide range of water temperatures, from 0° to greater than 30°C. The optimum temperature for growth lies between 10° - 20° C in most areas (Phillips 1984). Eelgrass grows best within the Salish Sea in salinity ranges of 20 ppt - 32 ppt. Eelgrass can tolerate periods of freshwater inundation on a seasonal or daily basis (Durance 2002).

Of all the above factors, light availability and elevation may be the most crucial. Light availability seems to be the primary factor limiting depth, distribution, density, and productivity of eelgrass meadows within their salinity and temperature ranges. For example, when the Coal Port was expanded in 1982-1983 in Roberts Bank, the range of both native eelgrass (*Z. marina*) and introduced eelgrass (*Z. japonica*) expanded. The construction of causeways across a broad intertidal zone directed the turbid Fraser River water offshore, improving the light regime and initiating higher productivity in the eelgrass beds (Harrison and Dunn 1999).

3.1 Wildlife Corridors

Seagrasses are in decline throughout much of the world, with rates of loss accelerating from a median of 0.9% per year before 1940 to 7% per year since 1990 (Waycott et al., 2009). It has been estimated that 18% of coastal marine and nearshore wildlife habitat, including eelgrass habitats, in the Salish Sea has been destroyed (British Columbia/Washington Marine Science Panel 1994). A large percentage of this decline is attributed to human impacts, including filling of shallow waters, dredging, and eutrophication (Short and Wyllie-Echeverria 1996).

Often referred to as “salmon highways”, nearshore marine environments containing *Z. marina* beds are home to more than 80% of commercially important fish and shellfish species, including all species of salmon, at some point in their life histories (Durance 2002). *Zostera marina* beds are highways for Chinook, Coho, Pink, Chum, and Sockeye salmonid stocks (Thompson 1994). Great Blue Herons have been observed to feed in eelgrass beds within 3 km of their nesting colonies. Other important bird species using these habitats include Brant geese, Rhinoceros Auklets, cormorants and Western Grebes.

E.O. Wilson proposed the importance of habitat corridors in the 1960s (MacArthur and Wilson 1967). Habitat reduction and fragmentation at a variety of spatial scales has been widely acknowledged as a primary cause of the decline of many species worldwide (Thompson 1994). Habitat fragmentation generally leads to smaller and more isolated animal populations. Smaller populations are more vulnerable to local extinction. To reduce the isolation of habitat fragments, many conservation biologists have recommended maintaining landscape “connectivity” - preserving habitat for movement of species between remaining fragments (BC/Washington Marine Science Panel 1994).

Many nearshore environments on the islands inventoried in 2012 and 2013 indicated continuous fringing eelgrass beds. These beds are the connectivity for salmon and other marine wildlife for shelter, food and refugia. Although they may contain less biomass than continuous flat beds of eelgrass plants, they serve an important function and should be protected.

4 Impacts from Human Activities

The majority of the earth’s population now lives within 10% of land defined as “coastal”. One of the results of this increased pressure on coastal shorelines has been the destruction of approximately 215,000,000 acres of estuarine habitat worldwide (BC/Washington Marine Science Panel 1994). With the population of the Georgia Basin/Puget Sound forecasted to exceed nine million people by 2020, nearshore critical habitat loss is likely to increase.

The following is a description of some of the major impacts human coastal settlements have on eelgrass habitats and their functions.

4.1 Removal and Burial

Dredging and filling associated with the construction of harbors and ports have been the major cause of the decline in eelgrass beds (Levings and Thom 1994). The plants themselves are removed and then the physical, chemical and biological composition of the system is altered. Sediments raised by dredging can also bury plants growing nearby and alter eelgrass density by affecting water clarity. The reduction in plant density can further increase silt load because it reduces the capacity of eelgrass beds to trap sediments. It can also increase the erosion of bottom sediments because of the reduced root mass available to hold sediments together. The ultimate result is the reversal of the entire nutrient-flow mechanics of the ecosystem. Dredging activities include hydraulic clam harvesting, bay scallop raking, oyster harvesting and maintenance dredging of harbors. Filling in shallow wetland areas with the debris from wood processing (e.g. log dumps and log booms), sediment runoff from agricultural land and logging severely impact eelgrass habitats as well (Phillips 1984).

4.2 Pollution and Changes to Freshwater Input

Since estuaries are extremely vulnerable to changes in salinity and temperature, human activities affecting freshwater flows from streams heavily affect eelgrass meadows. Pristine watersheds surrounding estuaries provide steady supplies of fresh water and clean sediments to seagrass communities in the estuary. The opposite holds true as well: unhealthy watersheds increase the problems for seagrass distribution and productivity. Activities that cause increased nutrient loads in streams and rivers can result in overgrowth of algae that then die and deplete the oxygen from the bottom of poorly flushed bays. Chemical contaminants, such as fertilizers, pesticides and household hazardous wastes, runoff from streets and roads and runoff from industrial activities also add to the toxic composition of muddy bottoms of eelgrass meadows (BC /Washington Science Panel 1994).

Quiescent waters are more susceptible to chronic contamination than areas with high energy water flows (Harrison and Dunn 1999). In the Salish Sea, more than 540 sq. kilometers of intertidal gravel, sand and mud habitat are closed for shellfish harvesting because of bacterial contamination. More than 730 sq. kilometers of shallow water habitat are unusable for crab and shrimp because of dioxin contamination from pulp mills. More than 32% of classified commercial shellfish growing areas in Puget Sound and Juan de Fuca Strait are either restricted or prohibited for harvesting due to water quality issues (Levings and Thom 1994). The same activities that impact shellfish, crab and shrimp harvesting also impact the health of eelgrass meadows.

Most toxic chemicals that accumulate in sediments in an inland sea such as the Salish Sea reside there for long periods of time unless they are physically removed. There is evidence that the roots of eelgrass take up a significant amount of heavy metals for long periods of time (e.g. lead, cadmium, zinc and chromium), thereby making up a large pool of heavy metals in coastal systems (Lyngby and Brix 1989). The consequences of toxic chemicals may have long term effects on eelgrass consumers, especially waterfowl and marine invertebrates.

4.3 Forestry Activities

Logging may cause scouring of stream channels and thereby increase sedimentation in estuaries, limiting the light available for photosynthesis. Bark chips from log booms smother eelgrass beds and form a blanket on the substrate, which leads to anaerobic sediment devoid of life (BC/Washington Marine Science Panel 1994).

4.4 Oil Spills

Oil spills pose serious threats to eelgrass communities growing in sheltered bays that are poorly flushed. These areas will tend to retain oil for long periods of time, becoming chronically contaminated. If spills happen in late summer or winter when leaf sloughing is at its peak, mats of drift blades will tend to catch and retain oil for later decomposition in the intertidal zone. Seed production and viability could be affected if a spill occurs in the spring (Beak Consultants 1975).

4.5 Shading by Overwater Structures

Increase in demand for overwater structures in the islands can have deleterious and cumulative impacts on the nearshore system. Shading, disruption of nearshore marine water movement, damage to the shore and subtidal habitat and operational pollution from boats can be some of the impacts (Van der Slagt et al., 2003).

4.6 Effects of Boating

Boat propeller cuts disturb eelgrass beds in shallow waters, both when boats are travelling through shallow areas and when they are approaching the shore to debark passengers, moor or anchor. The impacts from boating activities in eelgrass beds may be affecting waterfowl such as Black Brant, direct grazers on eelgrass. The Brant have been steadily decreasing in the Pacific Northwest since the 1940's (Phillips 1994).

Conserving eelgrass habitats enhances the amount of high quality rearing habitat as well as increases the ecological services for human communities, including erosion control, sediment settling and food production (shellfish and fish). With the population of the Georgia Basin/Puget Sound forecasted to exceed nine million people by 2020, nearshore critical habitat loss is likely to increase.

5 Eelgrass and Rising Sea Levels

Sea level rise and increased frequency and intensity of extreme weather are two expected and observed effects of climate change (IPCC, 2007, IPCC 2012). The Intergovernmental Panel on Climate Change warns that on small islands in particular, sea level rise is expected to exacerbate coastal hazards such as storm surges, floods and erosion (IPCC 2007).

Impacts of rising sea level on the coastline of the Salish Sea will be more complicated than the inundation of low-lying areas. The effects will differ significantly between different shoreline features. Inland movement of sea water (Titus and Strange 2008), as well as erosion and re-deposition of sediment will reshape the coastal landscape where there is room for the shoreline to shift and sufficient sediment is available (Mumford 2007). Increasing sea levels are expected to shift the zone in which sunlight is available to eelgrass beds. As a result, eelgrass beds are expected to shift inland unless barriers impede this shift (Titus and Strange 2008).

6 Mapping Methodology

Identifying and monitoring the distribution of native eelgrass habitats supplies much needed information for regional planning. Maps and associated outreach activities may also lead to improvements in land use practices from increased knowledge and awareness about the habitat. Locating areas suitable for eelgrass restoration will lead to rehabilitation of eelgrass meadows as funding opportunities become available.

The eelgrass inventory for this project entailed determining the presence or absence of *Zostera marina* with an underwater towed camera and a boat, except in the Cufra Inlet (Thetis Island) where mapping was done by kayak without a towed camera due to shallow tides. GPS hand held units were used to record waypoints at approximately 10 m intervals in 2012. Accuracy of the GPS readings was on average ± 2.4 metres. In 2013, a Trimble Pathfinder ProXR GPS was used, except in the Cufra Inlet where a handheld GPS unit was used. A detailed description of the methods used to map eelgrass habitats can be found in Appendix A.

The terms used to map eelgrass habitats are described below.

6.1 Distribution

The distribution of eelgrass within the bed is described for this inventory as either patchy or continuous. Patchy beds are those that contain isolated groups or patches of plants. Beds which are not patchy are classified as continuous; a bed that contains bare patches surrounded by eelgrass is classified as continuous. The boundary of a bed is determined by a shoot density of less than 1 shoot per square meter (Durance, 2002).

6.2 Form

There are two basic forms of eelgrass beds in the Pacific Northwest: fringing beds that occur as relatively narrow bands usually on gentle slopes, and more expansive beds that cover large areas such as tidal flats known as “flat” beds (Durance, 2002). Inter-annual variation within a bed is not well known, but appears to be less than ten percent (Dowty et al, 2005). Fringing beds are generally linear. Flat beds are areas of large eelgrass beds in embayments that extend deeper than fringing and more linear beds found along shorelines (Dowty et al. 2005). Distribution is

often, but not solely, determined by aspect to dominant winds. Eelgrass distribution across a bathymetric gradient is limited at the upper boundary by the degree of exposure at low tide (desiccation) and by light limitations at the lower boundary.

6.3 Sediment Types

When possible, field observers rated the primary, secondary and tertiary occurrence of substrate types: sand, mud, pebble and cobble. A subtidal environment dominated by cobble might indicate a habitat more suitable for large kelps, which would shade any eelgrass shoots growing between the cobble during the summer months. A predominately sandy muddy bottom would support continuous eelgrass meadows in most cases, unless other factors are present, such as exposure to strong waves or the interruption of habitat by boat mooring buoys. In some cases substrate characteristics change with increasing depth (e.g. cobble to sand or mud to cobble).

6.4 Percent of Cover

Percent cover was estimated in broad categories to increase accuracy of observation (<25%, 26-75%, >75%). The coverage of an eelgrass meadow reflects both the substrate and the flow of water through it. A calm environment with a sandy mud substrate generally supports a dense, continuous eelgrass bed with virtually 100% cover. The cover of eelgrass in areas subjected to strong currents is typically patchy. Areas with heterogeneous substrate (mixture of fine and coarse) also tend to be patchy (Durance 2002). The percent of cover data collected from this inventory is based on subjective approximations as observed through the lens of an underwater camera. The approximate percent of cover does give important information on the density and productivity of a bed.

6.5 Tidal Fluctuations

It was important to note whether the tide was running or slack at the time of the inventory. Eelgrass shoots will tend to bend towards the substrate during running tides; the accuracy of percent of cover is then very approximate.

6.6 Presence of Other Vegetation

Other types of algae were documented as broad or tuft. Broad algae, such as kelps, sea lettuce and *Sargassum muticum* can blanket the ocean floor and make it difficult to characterize substrate. They can also shade eelgrass in mixed substrates as they anchor to hard surfaces. Tuft algae, such as brown and red algae do not shade eelgrass but indicate presence of hard surfaces for attachment. The presence of kelps, predominately large brown kelps, was noted, as was the presence of other types of smaller algae and *Sargassum muticum*. *Sargassum* is an exotic species of algae that can overshadow eelgrass if the substrate is a mix of sand and cobble. The presence of *Sargassum* was noted especially off the shores of Thetis and North and South Pender Islands.

6.7 Visibility

Visibility was a subjective observation and was rated low, medium and high. The amount of visibility could impact in some instances the accuracy of the observations, namely characterization of substrate. For example, Gambier Island often had low visibility. This can be caused by winds, sediment flows from the lower reaches of watersheds, inputs from nearby streams and tidal/current movements. Low tide periods make for the best visibility.

7 Survey Limitations

The range of accuracy for all the islands surveyed in 2012 was within ± 2.4 metres. Visibility at times was poor, due to tidal influences, sedimentation in the water column from stream outflows, summer plankton blooms and wind. During the last day of mapping Gambier Island in August, 2012 the wind was too high to continue the inventory. The survey team returned to complete the inventory in September 2012. During the 2013 survey of islands within Howe Sound, the winds were often a factor in scheduling the inventories. The average horizontal precision for the GPS unit used for the 2013 and 2014 eelgrass inventories was ± 0.814 metres.

Shorelines within the Gulf Islands National Park Reserve were not included as part of this survey. However, eelgrass that occurs along shorelines within the Gulf Islands National Park Reserve are represented by BC Shorezone eelgrass biobands on maps included with this report.

Percent of cover of eelgrass shoots is difficult to assess accurately with an underwater camera but was deemed important to characterize. Areas of particular interest (e.g., impact of shoreline modifications, restoration potential) should be surveyed by SCUBA divers. Overall, this inventory is an indication of the presence or absence of eelgrass habitat and does not represent maps of the outer or shoreward edges of each bed, with the exception of Bowen, Passage and Bowyer Islands. Polygons were mapped for these islands where possible in 2013.

8 2012 Inventory Findings

Eelgrass inventories were conducted using ShoreZone inventory maps which include presence of eelgrass where available and the ShoreZone shoreline classification types (available for all islands) as a reference.

The Islands Trust eelgrass inventory is important, particularly on islands such as Gambier and Lasqueti, as the ShoreZone data was based on Orthophoto images alone. Valdes, Cufra Inlet (Thetis Island), Passage and Bowyer Islands were mapped in 2013, but are included in the 2012 inventory, as they are within the Thetis and Gambier Island Local Trust Areas which were

surveyed in 2012. Similarly, the Associated Islands of Lasqueti Island and North Pender Islands were mapped in 2014 and are included here.

8.1 Gambier Island Local Trust Area

Gambier Island was surveyed on August 21st-23rd and September 11th, 2012. This island has rugged shorelines, with steep slopes leading to the subtidal zone. Eelgrass habitat comprises approximately 8.3% of the island's linear subtidal shoreline. The majority of the eelgrass beds are fringing, the significance of which has been described earlier in this report as important to wildlife corridors.

Gambier Island has been highly impacted by historical log storage practices. Eight sites were identified as possible restoration areas starting with small eelgrass test plots (approximately 800 to 1000 shoots). Larger eelgrass restoration might occur if these test plots increase in shoot density and coverage and as funding opportunities arise. In some of these sites, backshore lands have been placed on the real estate market, which may impact future restoration efforts if docks and wharves are permitted as additions to upland development.

Boat mooring buoys and recreational equipment on the water over eelgrass beds as well as derelict log booming cables and booms were observed. There were numerous docks and wharves within eelgrass habitats. Several large shoreline modifications were also noted. These changes to the shore can have long term impacts on nearshore environments, including wave scouring, shading and interruptions to sediment transport. With the presence of active and retired log leases, the island would greatly benefit from an eelgrass restoration strategy plan to increase value for both biological diversity and ecological services.

Bowyer Island was surveyed on October 11-12th, 2013 using the polygon mapping methodology. The west, north and east coasts of Bowyer Island are largely steep and rocky. The south shore is characterized by several coves, varying in substrate. Eelgrass was estimated to extend along 11.35% of the Bowyer Island shoreline, observed only in particular coves along the southern portion of the island. The area of polygons containing eelgrass was observed to total 3690 m² and the length of mapped line features was observed to total 70 m. In addition to continuous beds, 4 individual patches of eelgrass were recorded, noted on the map as points. Eelgrass around Bowyer Island was similar in appearance and percent cover to that surrounding Bowen Island, i.e. patchy and sparse. Percent cover within the polygons was less than 25%.

Docks were located in eelgrass depth in the bay on the central southern shore of Bowyer Island, within zone W2/W1a. Eelgrass beds in that bay were observed to extend as far as the docks. Several chains were located on the ocean floor in zone W2 on the southeast shore of the island, and a large dock is within or adjacent to the eelgrass bed.

Large schools of small fish were frequently observed while circumnavigating Bowyer Island, particularly on the west, north and east coasts. Also observed were large numbers of pile perch (*Rhacochilus vacca*) and rockfish. Harbour seals were observed in several locations.

Passage Island was surveyed on October 5th, 2103 using the polygon methodology. One of the most exposed islands of Howe Sound, this island is a good example of how people and eelgrass tend to occur within similar, sheltered environments. Most of the island is characterized by rocky cliffs, with a few beaches. Eelgrass was observed in sections of the east coast of the island, along 15.7% of the total shoreline of the island. The area of polygons containing eelgrass was observed to total 3718 m² and the length of mapped line features was observed to total 40 m. Percent cover within the polygons was less than 25%. Ropes were observed on the sea floor in eelgrass depth in an area of the southeast coast of the island in the presence of patchy eelgrass. In this area was also located a floating dock within eelgrass depth and approximately 12 moorings in the eastern part of the area, where the eelgrass was very sparse and patchy. A floating dock and mooring was located at the south end of the more northerly eelgrass polygon on the east coast of the island.

The islands west of Bowen Island were inventoried between August 4th - 6th, 2013. The linear shoreline extent of eelgrass habitat surrounding the associated islands within the Gambier Island Local Trust Area totals approximately 13.3%.

Most of **Keats Island** contains flat or fringing beds of continuous eelgrass habitat on sandy/mud substrates, especially on the north and west facing shores. Patchy eelgrass beds were observed on the southeast shores, most likely due to exposure to predominant winds.

A high preponderance of single eelgrass patches lie on the southern tip of Keats Island, which may be caused by exposure to southerly winds, but also to the multiple locations of docks, especially on the southwestern shore.

There is potential for eelgrass restoration on the northern end of the island at the eastern point of a log booming area if the log lease is retired in the future. This area has a rocky/cobble foreshore, forested backshore and water park with overwater floats. There are also many docks on the southwestern portion of the island, which may cause fragmentation of eelgrass beds. Where there were low rock/cobble substrates, no eelgrass was present.

Anthropogenic Impacts include the construction of docks, presence of moored boats in eelgrass beds, removal of native backshore vegetation and recreational use of the nearshore (water park overwater play structures).

Continuous flat eelgrass habitat was observed in the southeast and western shores of **Shelter Island** directly west of Keats Island. No eelgrass was found near **Home Island** south west of Keats Island. **Preston Island** south of Keats Island contains a small continuous eelgrass bed on the southeast shore. The backshore is forested. **Ragged Islets** contain mostly patchy eelgrass beds throughout most of the subtidal areas, except for the west facing side of the islets. Mooring buoys and docks were observed on the eastern shore and a float on the northern side of the islets. Most of the islets are forested and contain rocky substrate. The small islet to the northeast contains a fringing continuous eelgrass bed.

The majority of eelgrass surrounding **Pasley Island** south of Ragged Islets is flat and continuous in

sandy/shell hash substrate. Vegetation along the foreshore has been cleared near many residences. Retaining walls, docks and mooring buoy chains interrupt eelgrass continuity along the south and southeastern facing shores. There is potential for eelgrass restoration on the southeastern facing shore almost at the midpoint of the island where there is a gap in an otherwise flat continuous eelgrass bed. On the northeastern shore of Pasley there is a dense eelgrass bed that could serve as a possible harvesting site for restoration of lost or damaged eelgrass habitat.

No eelgrass was noted off of **Worlcombe Island** southeast of Pasley Island.

Mickey Island northeast of Pasley Island is surrounded on its western, southern and northern shores by mostly fringing patchy beds of eelgrass in sandy/shell substrate. Eelgrass is mostly likely limited on the eastern shores by low rock/boulder substrates. The rocky shores are surrounded by natural forests. Minimal anthropogenic impacts were observed.

To the west lies **Hermit Island**. The majority of eelgrass habitat is flat and continuous in sandy/shell hash substrates. Most of the habitat is located on the east facing shoreline, though the foreshore is cobble or low rock. The majority of the backshore is forested. In some areas, dock construction interrupts eelgrass beds. Harlequin ducks were observed within an eelgrass area on the southwestern side of the island.

Little Popham Island south of Hermit Island has mostly continuous flat beds of eelgrass to the southwest and northeast next to rocky shores and forested backshores. It is very likely eelgrass is limited by the subtidal low rock/boulder substrate surrounding the remaining areas of the island. Most of the eelgrass around **Popham Island** lives on the northeastern portion of the island in sandy/shell substrate and consists mostly of continuous and flat beds along steep rocky shores.

Grace Island southwest of Gambier Island contains mostly fringing continuous eelgrass habitats in shell/sand substrates next to steep rocky foreshores and forested backshores. A large school of fish was observed. **Woolridge Island** to the northwest of Gambier Island contains mostly flat continuous beds of eelgrass on its north facing shores. The beds are very robust, with a possible harvesting site on the east shore if restoration is undertaken in this area. There is woody debris noted near a breakwater on the north western facing shore of the island.

The majority of eelgrass habitat surrounding **Anvil Island** northeast of Gambier Island lives on the southeastern shores and is characterized as fringing. Most of the island is classified as cliff or low rock/boulder which is limiting for eelgrass growth. The presence of numerous mooring buoys and retaining walls impact the habitat. One potential restoration site was identified on the eastern shore.

Near the Sunshine Coast, the shorelines of **North Thormanby Island** are composed of sediment accreted from nearby large sandy bluffs, as compared with the shores of **South Thormanby Island**, which are dominated by sea cliffs, low rock boulders and exposure to wind and strong wave forces from the south and northwest. Eelgrass composes 19.6% of the combined linear shorelines of both North and South Thormanby Islands.

Eelgrass distribution on North Thormanby Island reflects this predominately sandy sediment, as most of the eelgrass surveyed was continuous flat habitats completely surrounding the island, broken only by a change in sediment from sand to gravel. Rockfish, perch, seastars and Dungeness crabs were observed in the continuous flat eelgrass habitats.

Fringing continuous beds in **Buccaneer Bay** are the exception to the flat eelgrass habitats on the southwestern side of North Thormanby, where a steep drop off in depth prevents a flat contour for eelgrass growth. The eastern shore of Buccaneer Bay on South Thormanby Island had a paucity of eelgrass, but an abundance of sea urchins was noted.

No eelgrass habitat was noted off of **Surrey Island**. Very small eelgrass patches and two small continuous beds were located on the eastern shores of South Thormanby Island, most likely due to their exposure to high wave energy. No eelgrass was noted on **Bertha** and **Merry Islands** on the south end of South Thormanby Island. The furthest eastern island of the **Trail Islands** group contained patchy continuous eelgrass on its northwestern shoreline and continuous eelgrass flats on northeastern facing shores. An active log booming business operates on the north side of the island. An abundance of fish populations were observed in the waters on the eastern side of this island. Patchy eelgrass was also surveyed on the western-most island on the west side.

Turnagain, Echo and **Tikki Islands** contained very small patches of eelgrass. Within **Secret Cove**, on the northeast side of Turnagain Island log booming debris showed evidence of a former log storage site

8.2 Lasqueti Island Local Trust Area

Lasqueti Island was surveyed from July 17th to July 19th 2012. This island's shoreline is composed of substrate formed from shallow stony deposits over bedrock. Shallow sandy/muddy benches extend into the subtidal zones. Eelgrass comprises approximately 13.8% of the island's linear intertidal and subtidal shoreline. The majority of the eelgrass habitat is flat, dense and continuous. Most of the backshore lands were naturalized with little development.

Possible impacts that could be occurring would be from boat mooring buoys anchored within eelgrass habitats, grazing by Canada geese, historical damage from log booming practices, hardened shoreline modifications and site locations of some aquaculture enterprises. False Bay could benefit from more detailed eelgrass mapping, as the multiple mooring buoys might be impacting eelgrass habitats.

Lasqueti Associated Islands' eelgrass habitats were surveyed between August 19th and October 8th, 2014. Eelgrass beds cover 16.5% of the shorelines.

Small continuous eelgrass beds were observed in the more protected northern sides of **Higgins** and **Olsen Islands** within False Bay. The backshore was forested with some residences. Backshore was composed of steep rocky cliffs descending to the shore. Most of the eelgrass beds on **Finnerty Island** are on the northeast side between islets in a narrow channel. Shores are characterized as rocky cobble with steep slopes. Oyster catchers were noted feeding within the mussel beds there.

The **Fegan Islands** have dense continuous beds between islets, although there was citing of many boats anchored in areas where substrate would have been suitable for eelgrass growth and none was observed. **Lindbergh Island** in Scottie's Bay contains small continuous flat eelgrass beds on its eastern shores. **Marine Island** to the north contains small continuous and patchy eelgrass on its south facing shores. **Jelina Island's** extensive continuous flat eelgrass beds lie south facing Lasqueti Island and on the southwest shore. One house is constructed on this island. One small continuous eelgrass bed was located on the western shore of **Jervis Island**. Two small patches less than 10m² were noted on the two islets north west of Jervis. Rocky substrate is most likely the cause of the absence of subtidal eelgrass. Steep drop offs down to the shore characterized **Paul Island** where no eelgrass was observed. On **Jedidiah Island**, designated as a BC Provincial Marine Park, there were small continuous and patchy eelgrass beds observed on the western and eastern rocky shores.

An abundance of green sea urchins were observed off the south side of **Bull Island**, which had eelgrass in patches and small continuous beds on the north side. Green urchins have been observed eating eelgrass in other locations within British Columbia (pers. comm. Cynthia Durance). Eelgrass was absent surrounding **Circle Island** southeast of Jedidiah Island, where green urchin barrens were also noted. No kelps were present, although pelagic cormorants, oyster catchers, gulls and a colony of stellar sea lions were cited.

No eelgrass was noted off of **Bo Ho, Rabbit** or **Sheer Islands**, although eelgrass was expected to be noted on Rabbit Island because of the sandy substrate. The presence of green urchin barrens was noted however. Rocky islets prevented the surveyors from travelling closer to shore on Rabbit Island, so there is a possibility eelgrass was present in shallower waters if sea urchins were absent. Stellar sea lions were hauled out near Sheer islands.

No eelgrass was observed off of **Sangster Island** to the southeast of Lasqueti Island. A sea urchin barren was noted on this island's northeast side.

To the south of Lasqueti Island no eelgrass was noted on **Sea Egg Rocks**. Two small continuous beds were located on the northwest shore of **Jenkins Island**.

Lasqueti and its associated islands may contain the least impacted eelgrass habitat of all the southern Gulf Islands in the Islands Trust Area, as land development and marine activities are at a minimum compared to more populated islands in the southern Salish Sea.

8.3 North Pender Island Local Trust Area

North Pender was inventoried on July 3rd, 4th and 6th 2012. Eelgrass comprises approximately 11.6% of the island's linear intertidal and subtidal shoreline. The majority of the eelgrass beds are flat and continuous. The protected nature of North Pender results in a relatively high proportion of soft substrate in shallower areas.

Impacts include housing developments with accompanying tree and shrub clearings, rip rap and rock wall modifications, some of which were constructed below the high water line, direct raw

sewage outfall at Port Washington which would directly affect the water quality for eelgrass productivity, the presence of Canada geese, direct grazers on eelgrass shoots during low tides, and mooring buoys within eelgrass beds. Port Browning might be an appropriate site for eelgrass restoration as the substrate is suitable and there is a small bed on the northeast side.

The **Associated Islands of North Pender Island** were surveyed between June 5th and 17th 2014. Only shorelines outside the Gulf Islands National Park Reserve were mapped. Eelgrass grows on 17.5 % of these islands' shores, excluding areas within the National Park Reserve. The maps associated with this report show BC Shorezone eelgrass bioband coverage for shorelines within the Gulf Islands National Park Reserve. Impacts on eelgrass beds include derelict fishing gear, removal of native shoreline vegetation, shading by docks and shoreline modifications. Two potential restoration sites were identified: one off of Knapp Island and one off of Sidney Island.

Extensive eelgrass beds surround the west and east shores of **Knapp Island**. One restoration site was located between two continuous beds on the eastern shore near a constructed breakwater. Rocky substrate limits eelgrass extent on the southeastern shore. **Pym Island** to the east has small fringing patchy beds on its west facing shoreline. The western shore of this island has a 70 metre retaining wall in back of beds of fringing patch surf grass (*Phyllospadix* sp.), a plant that is an indicator of high wave energy in the intertidal zone.

The major distribution of **Coal Island's** eelgrass lies near its southern shores. In a bay on the northwestern side of the island sheltered by a breakwater lies a continuous flat bed of eelgrass. A large dock and several large boats are situated within eelgrass depth range.

Goudge Island has two small continuous flat beds on its northern shore, characterized by natural vegetation and a forested backshore. South of Canoe Cove is **Kolb Island** where a continuous flat eelgrass bed grows on its western shore. **Fernie Island** has no eelgrass present. **Ker Island** has a continuous flat bed of eelgrass below a backshore of Garry Oaks on its south shore and another small continuous bed on the north shore in front of a rocky shore.

Forrest, Sheep, Domville, Brethour, Comet and **Gooch Islands** have small continuous flat eelgrass habitats where suitable substrates allow for their growth. The islands are mostly cobble rocky beaches as indicated by an abundance of kelp beds and rocky slopes. A 50 metre rip rap wall has been erected on the southern shore of Brethour Island below the High Water Mark (HWM). On the northern side of Brethour shoreline modifications such as a rock wall and rip rap were also observed.

Between Sheep Island and Domville Islands a derelict trap was noted. An extensive kelp bed was also noted on the north end of Comet Island. There was no eelgrass habitat observed off of **Ruby Island** to the south east of Domville Island.

Small continuous flat and fringing eelgrass beds were located on the northwest and eastern coasts of **Moresby Island**. Possible impacts to the habitat on the west facing shore are cleared

landscaped and agricultural areas close to shore and some dock construction. Most of the shoreline of Moresby is characterized as rock/cobble. Kelp beds were abundant near the east and south shorelines, where some continuous flat beds were located. Most of the backshore in these areas was forested.

James Island was surveyed June 25th, 2014. Because of its eroding sandy bluffs on the northeast end of the island and relative lack of backshore activities, extensive continuous flat eelgrass habitats were located along the west and eastern sides of the island, at times in deeper water (-5 to -7.6 m). Percent of cover was between 26-75%. On the southwestern shore, a dense kelp bed interrupted the eelgrass survey, but eelgrass seemed to be growing around the kelp. Most likely, since this is a depositional area for the sandy sediment eroding from nearby sandy bluffs, cobbles and boulders are providing anchors for kelp holdfasts amidst an otherwise sandy substrate. An extensive patchy flat eelgrass habitat was located here. High wave energy arriving from the southwest most likely prevents stable sediment for eelgrass growth.

Eelgrass surrounding **Sidney Island** was surveyed June 26-27th, 2014. Continuous and patchy flat eelgrass habitats were located on the west facing shores and south of the Parks Canada National Park boundary on the east side. Percent of cover on the western side ranged from continuous beds of <25% to 75%. The backshore on this side of the island is characterized as steep high sandy bluffs, which create sandy sediment for abundant eelgrass habitat. Anthropogenic backshore activities that would lead to damage of these beds are minimal. Kelp beds were dense on the southwest shore. *Sargassum* was also noted in this area. Eelgrass was growing at depths of - 8.6 metres. Though not directly surveyed, it is worth noting that the shoreline of the northern spit on Sidney Island is shown to have significant eelgrass coverage by the BC Shorezone eelgrass bioband.

The most southern part of Sidney Island had surfgrass appearing to be growing out of the rock outcroppings. High wave energy might explain the scarcity of eelgrass on this side. Patchy surfgrass was also observed on the south eastern shoreline. Patchy eelgrass beds on the eastern side were less dense (<25%) and growing in shallower depths (-2.5 to -3.6 m). One potential eelgrass restoration site was indicated in this area. Continuous flat eelgrass beds were surveyed on the west side of **Little D'Arcy Island**.

8.4 South Pender Island Local Trust Area

South Pender was surveyed on July 6th 2012. Eelgrass comprises approximately 8.5% of the island's linear intertidal and subtidal shoreline. South Pender has more exposed shoreline therefore less eelgrass is to be expected. Roughly the same proportion of flat and fringing beds are present with slightly more than half of them being continuous.

8.5 Mayne Island Local Trust Area

Mayne Island was surveyed from 2009-2012 using two methodologies on a variety of platforms including: 1) delineation and creation of polygons (with towed underwater camera, on foot, by kayak, by free diver), 2) linear presence/absence (by kayak). Data was converted to

presence/absence line format for incorporation into the 2012 Islands Trust Eelgrass Inventory.

Mayne Island is mostly protected except on the Northeast side which is exposed to winds from the Strait of Georgia. Eelgrass comprises approximately 22% of the island's linear intertidal and subtidal shoreline. Mayne Associated Islands, Georgeson and Curlew contain 15.7% and 24.8% respectively.

Evidence from the Mayne Island Conservancy's eelgrass monitoring program and historical anecdotal evidence has shown loss in intertidal eelgrass in Miners Bay and two Southeast facing bays on the Southeast side of Mayne. Reasons for loss are unknown, but ongoing monitoring will indicate natural variability in these eelgrass beds. Potential impacts include grazing from Canada geese, anchoring, mooring buoys, trampling by kayakers and damage from boats and propellers. Winter heavy rain events could be introducing increased sediment loads into eelgrass beds, but this would need to be studied.

Gallagher Bay (on Navy Channel) and Conconi Reef Park are potential eelgrass restoration sites. They both have large bare areas adjacent to continuous eelgrass beds and have suitable substrate.

8.6 Thetis Island Local Trust Area

Thetis and its associated islands were surveyed July 31st through August 3rd, 2012, except for the inside of Cufra Inlet which was inaccessible because of low tides, and Valdes Island. The Cufra Inlet survey was completed in the summer of 2013. Valdes Island was surveyed July 29th, and 30th, 2013.

Approximately 26.6% of the linear subtidal shoreline on Thetis Island is composed of eelgrass habitat, 72% of which is continuous. Fringing continuous eelgrass beds were observed off the western shore of Thetis where the ShoreZone map indicates a preponderance of low rock and boulder (not a typical shoreline type for eelgrass). North Cove is also rich with an abundance of eelgrass, except where it is shaded by overwater structures.

Cufra Inlet contains dense (26-75% cover) flat continuous eelgrass beds. The inside of the inlet was surveyed during the summer of 2013 by local residents using kayaks and hand held GPS units but without the use of an underwater camera, as the water was shallow enough for eelgrass to be observed from the kayaks. Low tides in 2012 prevented an aluminum boat from approaching close to shore during the low tides occurring during the survey. The continuous bed begins on the western shore of Cufra Inlet as a narrow 1 m wide swath on the shoreward side and then widens out. An abundance of drifting sea lettuce (*Ulva* spp.) was observed within this area. Eelgrass became denser seaward in the muddy/shell hatch substrate. The substrate became sandier as the mappers traveled towards the mouth of the channel. Patches of sand dollars were noted as the inlet widens and the eelgrass extends towards the eastern shore. Diatoms were noted growing on the eelgrass blades. At the western edge of the mouth of the inlet eelgrass is patchy and sparse despite its ShoreZone classification of 'cliff'.

Clam Bay eelgrass was dense and continuous.

Telegraph Harbour on Thetis Island had a preponderance of algae (*Ulva* spp.), *Sargassum muticum* and filamentous algae growth. Visibility was poor. Upland and shoreline development (rip rap, retaining walls and cement ramps) with accompanying vegetation clearing most probably has led to higher sedimentation in the nearshore waters.

Understory kelps were observed at most sites, although no fish or crab species were present at the time of the survey in the majority of the survey area. Possible impacts from boat moorings within eelgrass beds (e.g. **Ruxton Island** had >15 boats moored off shore in one small area), recreational overwater play structures, shoreline modifications and nutrient run-off could be impacting nearshore habitats. Where there was suitable substrate for eelgrass as indicated by the ShoreZone data, eelgrass was present, with the exception of the narrow channel between Thetis and Penelakut Islands. However a long-time resident remembers eelgrass presence there approximately 40-50 years ago. Islets and small islands are important refugia for wildlife and often are less impacted than the surrounding larger islands.

A short description of the smaller islands and islets associated with Thetis Island are described below.

Percentages of eelgrass for each associated islet are:

Island	Eelgrass % Cover
Ruxton	11.6%
Pylades	0%
Bute	50.3%
Dunsmuir Islands (2)	34.7%
Hudson	30.9%
Reid	3.9%
Dayman & Scott Islands	39.6%
Valdes	12.7%

Hudson Island west of Thetis is rich with continuous fringing beds of eelgrass (26-75% cover) on both its eastern and western subtidal areas. **Dayman Island** has just under approximately 25% coverage of patchy eelgrass habitat mostly on its eastern facing side. **Reid Island** to the east has dense patches of fringing eelgrass on its northeast facing shore.

Ruxton Island to the north of Thetis has flat, continuous (less than 25% cover) eelgrass beds

within sheltered sites on the western facing area; an abundance of nudibranchs was observed on eelgrass blades. The eastern shore, with the exceptions of some sites with fringing patchy beds, is too deep for eelgrass growth.

Whaleboat Island to the east of Thetis had too steep a drop off to be suitable for shallow eelgrass habitats. **Tree Island** contained 100% cover of understory kelps, which is an indication of a dominance of cobble/pebble substrate. As well, the subtidal area is too deep for eelgrass production.

Bute Island off of Ladysmith Harbour contained dense continuous beds because it is surrounded by a shallow bay with sandy substrate. There is a potential eelgrass restoration site on the northeast side of **Dunsmuir Island**, as it is composed of clean sandy substrate in a protected site. The narrow channel between Dunsmuir Island and Ladysmith Harbour contains continuous dense flat eelgrass beds.

Valdes Island was surveyed between July 29th and 30th, 2013. Eelgrass covers 12.69 % of its linear subtidal shores. The majority of the habitat is flat and continuous, with most of the locations cited on the northeastern and southwestern shorelines. Although the majority of the shorelines on the western portion of Valdes are ShoreZone classified as low rock/boulder or cliff, the presence of flat continuous beds with bare patches was noted on the north and south western shores. Three potential restoration sites were identified; one on the central western side of the island, the second site on the northern tip of the island containing a small degraded eelgrass bed adjacent to the BC Parks dock, and the third is located on the southwestern shore which might have been historically impacted by log storage. The substrate at this site is suitable for a transplant; however *Ulva* spp. is present, which might be an indication of a high level of nutrient inputs.

The location of mooring buoys in eelgrass habitats with fifty-one buoys observed within beds and the interruption of eelgrass continuity by the construction of docks are the major anthropogenic impacts affecting eelgrass habitats on Valdes. The majority of the shoreline is naturally vegetated.

9 2013 Inventory Findings

Areas mapped in 2013 for eelgrass (*Zostera marina*) within the Islands Trust Area include:

- Denman Island Local Trust Area,
- Hornby Island Local Trust Area,
- Winchelsea - Ballenas (Executive Islands) Local Trust Area,
- Gabriola Island Local Trust Area,
- Galiano Island Local Trust Area,
- Valdes Island and Cufra Inlet in the Thetis Island Local Trust Area (Findings included in Section 8.6 above)

- Bowen Island Municipality
- Gambier Island Local Trust Area Associated Island in the Howe Sound excluding the islands off of the Sunshine Coast. (Findings included in Section 8.1 above)

The characteristics and locations of eelgrass habitats for each island are described below in order of the beginning dates eelgrass inventories occurred. Note that Valdes and Cufra Inlet are described in Section 8 above as they are in the Thetis Island Local Trust Area. Similarly the Gambier Island Local Trust Area Associated islands are also described in Section 8 as they are in the Gambier Local Trust Area. Both Thetis and Gambier Islands were mapped in 2012.

9.1 Galiano Island Local Trust Area

Galiano and its associated islands were inventoried over seven days between June 26th and November 25th, 2013. Approximately 16.7 % of the linear subtidal shoreline of Galiano Island is eelgrass habitat.

ShoreZone maps indicate that most of the southwestern and northeastern shorelines of Galiano Island are not suitable substrates (coastal bluffs and low rock/boulder respectively), except where there are sheltered embayments. However there are notable exceptions over the north, south west, south and eastern areas of the entire island.

The eelgrass distribution on Galiano is 88% continuous; 12% patchy. The placement of mooring buoys (at least 14 were noted within eelgrass beds, especially on the southwestern shores of the island), private docks (at least 12) and log storage have damaging effects on the habitat's continuity and function as a wildlife corridor. The construction of retaining walls (rip rap, rock and wooden) and the removal of backshore vegetation (at least 10 sites were observed) are obstacles for eelgrass to flourish in certain sites.

Most of the backshore on Galiano Island remains naturalized, with notable exceptions where trees and understory vegetation surrounding residences are removed and where shores are modified with retaining walls. Exotic invasive plants include English ivy, St John's Wort and gorse. Heavy epiphytic algae growth on eelgrass blades were noted within **Montague Harbour**, a possible indication of a high level of non-point source pollution. Another site for pollution is the public dock in **Whaler Bay** where boats are worked upon. Best management practices are recommended for boat sewage disposal and using tarps for collection of boat paint chips at each location.

There is the potential for eelgrass restoration within Whaler Bay, as the channel in front of the public dock contains a narrow band of eelgrass that could be expanded shoreward if log leases were retired in the future. In November, bufflehead and Barrow's Goldeneye as well as schooling forage fish were observed. Patchy eelgrass beds were noted off the eastern shores of Galiano Island. This area is ShoreZone classified as low rock/boulder. Four mooring buoys were located with these beds.

The eelgrass habitats covering the associated islands of Galiano comprise approximately 19.98% of the islands' linear shorelines. **Parker Island** has extensive eelgrass on its northeastern shores (96% continuous). The construction of docks and the placement of mooring buoys within eelgrass beds, however, may be impacting the habitat. Most of the eelgrass surrounding **Gossip Island** lives on the island's east facing shores is continuous (95%); however docks (7 were noted within the eelgrass beds) interrupt their form and function. Mooring buoys (3 observed) are situated within the existing beds on the south-western facing shores also disrupt the connectivity of eelgrass habitats.

No eelgrass was observed on **Ballingall** and **Lion Islets**, **Wise**, **Charles**, **Sphinx** or **Julia Islands**.

9.2 Gabriola Island Local Trust Area

Gabriola Island and associated islands were surveyed between July 8th and 21st, 2013. Gabriola Island's linear shores are comprised of 24.8 % eelgrass, with 89% continuous distribution. Two potential eelgrass restoration sites were identified on this island. The first is on the southwestern shore facing **Mudge Island** near an active log booming site. When the log lease is retired at this site, a small eelgrass transplant (100-500 shoots) could indicate whether the area is suitable for a larger transplant. The second site is on the northeast tip of Gabriola Island where a small existing bed could be expanded.

Wildlife in some areas abound, including Canada geese, an abundance of fish species, Great Blue Herons (22 at the southern channel entrance between Gabriola and Mudge Islands), sand dollars and Bald Eagles. Beaches that have suitable substrate for sand lance and surf smelt spawning were also noted. Healthy eelgrass beds near the **Malaspina Galleries** in Gabriola Sands Provincial Park are not surrounded by mooring buoys and docks and are thriving in in 4-5 metres water depth, although the area also contains rocky substrates.

Possibly the biggest impacts to marine wildlife habitats on Gabriola and its associated islands are the locations of floats and mooring buoys (in one embayment on the northwestern shore of Gabriola, over 12 floats – moorings and/or crab traps – and 14 buoys were observed in a continuous eelgrass bed); construction of retaining walls (nine riprap or rock walls identified); and, the removal of native backshore vegetation (13 sites). Numerous moorings are located in an otherwise robust eelgrass bed in **Degnen Bay**.

The eelgrass coverage for the Gabriola associated islands' linear shorelines totals 19.98%. Near the eastern shore of **DeCourcey Island** south of a marine park there are many docks and boats. Poor water quality was noted, and there are no washroom facilities at this location. No marine life was observed growing on the seafloor. North of the marine park there is a potential restoration site facing a steep rock ramp foreshore and a steep grassy conifer backshore near a former log booming site.

Snake Island has the potential for eelgrass restoration on its southern tip where there is a protected area with suitable subtidal sandy mud substrate, although this location may be too

close to active boating. Seal pups and oyster catchers were cited near a large mussel bed.

There was no eelgrass habitat observed on **Hudson Rocks**. Marine life there included seal pups hauled out, bird habitats, cormorants and oyster catchers. The shell hash substrate off of **Five Finger Island** was noted to be situated too deep for eelgrass growth.

Mudge Island also has a potential eelgrass restoration site on its southeastern shore. Kelps are mixed with sandy/muddy/shell substrate. Most of the backshores are naturally vegetated, with exceptions near residential developments where mooring buoys are situated within eelgrass beds (4 observed). The eelgrass habitat observed on Mudge was a mix of patchy/ continuous and flat / fringing beds on the eastern shores of the island. One bed in particular, located mid- island on the eastern side extended 100 metres shoreward beyond the waypoint, but the water depth was too shallow to delineate the bed.

Eelgrass on **Link Island** is characterized as flat continuous beds on its eastern shores. On the south shore of Link Island there are multiple docks (4) and mooring buoys (6).

Continuous fringing beds lie next to the northwest shores of **Breakwater Island**. Near **Saturnina Island** there are fringing continuous beds of eelgrass habitat on the western and northern shores.

Bath Island has a wide rock ramp in front of a windblown forest with a patchy bed with two larger patches surrounded by kelp and *Sargassum muticum* on its northwestern shore, while on its western shore there was a flat continuous bed.

Eelgrass habitat on **Tugboat Island** is characterized as narrow beds tucked between shore and wharf floats on the eastern side of the island and between the Tugboat Island and **Sear Island** to the south, which has flat continuous beds on its western shores. Continuous flat beds lie at the entrance to a marina on **Vance Island**. A rock/boulder shoreline with a, private dwelling with floating dock and several moorings are near flat continuous eelgrass habitat on **Acorn Island**.

9.3 Denman Island Local Trust Area

Denman Island and its associated islands were inventoried on several boat expeditions between August 20th and September 15th, 2013. In the Denman Island Local Trust Area 33.24% of the linear shore contains eelgrass. In some areas, especially in eastern subtidal areas, patchy eelgrass was observed amongst broad leaf kelps and *Sargassum muticum*, where the substrate is classified as low rock/boulder. A potential restoration site is located on the southwest area of the island near **Metcalf Bay** and is close to a site that could be used for harvesting transplants. The substrate south of this site gradually changes to cobble and gravel. Most of the beds surrounding the island are fringing, most likely due to coarser substrate changes at depth.

Eelgrass habitat is situated on the north eastern shores, classified by ShoreZone as sand/cobble and where numerous overwater structures are located and associated with industrial aquaculture activities. The eelgrass here was predominately patchy; most likely there are more patchy beds both shoreward and seaward of the mapped area. This area is the second most

patchy eelgrass habitat observed, second only to areas in Howe Sound.

The majority of the backshore is not heavily impacted by development; most of the residences had either forested or grassy areas between them, with a minimum of landscaping. Abundant species of birds including black legged kittiwakes, surf scoters, marbled murrelets, grebes, harlequin ducks, surf scoters, herring gulls, and other marine wildlife species such as hooded nudibranchs, sand dollars, sand lance juveniles and abundant schooling fish were observed.

Sandy Island north of Denman Island contains continuous (99%) eelgrass habitats although the southern shores are ShoreZone classified as sand/cobble and the northern areas are classified as altered. Sand dollars were observed on both eastern and western sides of the island. **Seal Islets** were surrounded by fringing continuous (81%) eelgrass habitats. Associated with these beds were observed marbled murrelets and rafts of harlequin ducks and surf scoters, kittiwakes, gulls and seals. The backshore consisted of flat shrub, herbaceous and grassy slopes. . No eelgrass habitat was observed near **Chrome Island** due to unsuitable rocky substrates.

9.4 Hornby Island Local Trust Area

Eelgrass beds on Hornby Island were mapped over several days between August 21st and September 12th, 2013. The linear shoreline of the Hornby Island Local Trust Area is composed 31.70 % of eelgrass habitat. Large areas on both the western and northeastern shores of Hornby have continuous (90%) flat beds, although the classification by ShoreZone of these shorelines is low rock/boulder. The small areas of eelgrass found in these otherwise rocky cobble areas are valuable as critical habitat and corridors for marine life.

Most of the backshore is naturalized, even where residential houses are situated. Suitable substrate for spawning sites for forage fish was identified on the north eastern shores. Three potential restoration sites were also noted; one near this area for potential forage fish spawning, the second within a sandy embayment on the eastern shore (if boat anchoring pressures were decreased), and the third near the Hornby Island ferry terminal on the western side of the island (eelgrass was noted just north of the terminal growing in pebbles). There is also an opportunity for a community clean-up of underwater debris near a breakwater and marina on the southern end of the island. On **Toby Island** dozens of seals were hauled out.

9.5 Winchelsea-Ballenas (Executive Islands) Local Trust Area

The islands within the Winchelsea-Ballenas Local Trust Area were surveyed for eelgrass habitat between November 21st and 23rd, 2013. The total linear shoreline coverage of the Local Trust Area is 1.4%.

Mistaken Island west of Parksville has two eelgrass sites, one fringing patchy bed and the second within a cove with a dock, both on the southwestern shore. A flat continuous bed lies between the channel separating the **Ballenas Islands**. A continuous bed also lives on the north shore of the south island, punctuated with rock substrate. A school of forage fish, possibly sand lance was observed at the time of the survey in the shallow subtidal zone.

A small flat continuous bed on the west facing shores of the Ada Islands also may serve as suitable habitat for forage fish, prey for ancient murrelets, of which one was cited by field staff (unconfirmed). A second eelgrass bed is situated on the western shore of the west Ada Islands. The substrate at this location is primarily sandy with a secondary substrate of bedrock with associated intermixing rockweed and detritus. A seal haul out with 61 seals was noted near this site.

A small flat continuous eelgrass bed is located on the northeastern side of Southey Island. No eelgrass habitats were observed on Gerald, Yeo, Amelia, Ruth or Winchelsea Islands.

9.6 Bowen Island Municipality

Bowen Island was surveyed between Aug 6th - 11th and Oct 4th, 5th and 12th, 2013 using the polygon mapping methodology. The island is characterized by a mix of sandy bays and steep shorelines. Large homes are common, with docks constructed both in the bays and on the steep cliffs. Bays, which are areas in which eelgrass is expected to grow, were also the location of waterfront homes and associated docks (both land-based and floating), moorings and anchored boats.

Eelgrass was estimated to extend along 11.6% of the shoreline of Bowen Island. The area of mapped eelgrass polygons was observed to total 41,917 m² and the length of mapped line features was observed to total 958 meters. Percent cover was low, however, and in addition to continuous beds, 84 individual patches of eelgrass were recorded and noted on the map as points. Eelgrass was observed within bays and straight sections of coastline on the southwest, northwest, northeast tip, east (Mannion Bay and north) and southeast coasts.

Around much of the island eelgrass was characterized by frequent individual patches, with each patch often consisting of very few shoots. Patches on the west coast were observed in areas that, from the shoreline or ShoreZone analyses, would not have been predicted, as the plants occurred seemingly opportunistically in patches of soft substrate located amid boulders and other coarser substrate. Percent cover even in continuous beds was consistently far less than 25% and noticeably sparser than other islands within the Islands Trust areas also surveyed during the 2013 mapping season.

Docks in areas such as in Tunstall Bay were located in depths suitable for eelgrass growth. Distances between some points on the polygon mapped in Tunstall Bay are longer than 20 meters as the eelgrass field surveyors needed to navigate around swimmers, docks and moored boats. Large clusters of sunflower stars (*Pycnopodia helianthoides*) were observed in the bay on sandy bottoms that did not contain eelgrass. Docks and moorings were also located in eelgrass depth elsewhere on the west coast of Bowen Island (e.g. the relatively straight shoreline north of Bowen Bay, King Edward Bay, the shoreline north of King Edward Bay and Galbraith Bay).

In some sites such as Galbraith Bay and Columbine Bay, eelgrass was only observed on one side of the bay despite suitable sandy substrate on the other side. For example, the substrate on the

north side of Galbraith Bay was bare sand. There were several moorings in that bay. Eelgrass in Columbine Bay was sparse and appeared unhealthy; individual clumps were surrounded by bare sand. One hypothesis for this is that eelgrass may be impacted by boat wakes in the area. Boats were moored throughout eelgrass depth in **Cates Bay**.

Multiple beds of continuous eelgrass were identified throughout **Mannion Bay** between zero and more than 5 meter depth relative to chart datum. These beds, however, were not as dense as would be predicted given the soft substrate and sheltered environment. In the northeast side of the bay bare sandy fringing beds are interrupted by the construction of docks.

Mannion Bay is heavily used for boat anchoring, mooring and docking within depths suitable for eelgrass growth. The construction of docks and floats and their associated chains are impediments for eelgrass productivity in this area. Multiple adjacent docks have been constructed within eelgrass depth. Ropes and chains from docks, moorings or anchors had dragged on the sea floor, apparent due to the patterns they had created in the sand. The motion of the chains due to waves and currents can damage or uproot eelgrass.

Eelgrass otherwise appeared healthy in Mannion Bay and there are opportunities to restore lost eelgrass habitat if boat anchoring were restricted to a defined area outside of the depth range for eelgrass growth, i.e. if they were limited to 6 m depth or deeper. Schools of fish were observed within the existing sparse eelgrass; therefore, restoring the eelgrass in the area would serve to enhance fish habitat. Although it was not included in the project deliverables, the research team had been requested to look for evidence of litter on the sea floor in this bay; however, only a few cans and the possible remnants of a shopping cart were observed. Some of the moorings and anchored boats appeared derelict. Many crabs were observed on the south side of the bay, but were not identified to species.

No eelgrass was observed in **Snug Cove** including the head of the cove, near Crippen Park beach. Possible reasons include dredging, ferry wakes, eutrophication and boat traffic associated with the marina, and pollution of the substrate due to chipped wood debris. No flora was observed on the sea floor except for encrusting algae. There are restoration opportunities for the nearshore environment by Crippen Park beach if the historical and present impacts from the marina and former log booming site are addressed.

The inner portion of the eastern cove of **Konishi Bay** on the south coast of the island appeared suitable for eelgrass due to the sandy substrate and sheltered cove with a sandy beach. The substrate was bare sand, however. Eelgrass was observed in deeper locations of that bay. Removal of native plants and retaining wall constructions were noted around residences. In another eelgrass location in the southern portion of Seymour Bay/Seymour Landing where an adjacent coastal lot was for sale, coastal vegetation had been cleared and there is already evidence of slope failure both at the top and foot of the slope, despite installation of riprap. Water flow had also been channeled in the area, which could intensify water and sediment flow into the nearshore environment. Slope failure is a possible threat to eelgrass through smothering by eroding sediments. Shoreline hardening also increases wave energy and wave deflection, which can scour shorelines (Lamont 2013).

The area around **Cape Roger Curtis** has been of concern to local residents due to the construction of large docks and potential for damage to submerged habitats. Eelgrass was not observed around the exposed cape, as the observed substrate was steep and rocky. Kelp was observed in the area, however. Chains from the new construction were observed on the ocean floor. Kelp beds are a major feature along the rocky parts of the Bowen Island shoreline. Several schools of small or juvenile fish were also observed around the island.

10 2014 Inventory Findings

Areas mapped in 2014 for eelgrass (*Zostera marina*) within the Islands Trust Area include:

- Salt Spring Island Local Trust Area
- Saturna Island Local Trust Area
- Thormanby Islands and Gambier - Sunshine Coast associated islands (findings included in Section 8.1 above)
- Lasqueti Associated Islands (findings included in Section 8.2 above)
- North Pender Associated Islands (findings included in Section 8.3 above)

The characteristics and locations of eelgrass habitats for Salt Spring Island and Saturna Island local trust areas are described below. Thormanby Islands are described in Section 8.1 above as they are in the Gambier Island Local Trust Area; Lasqueti Associated Islands are included in Section 8.2 as they are part of the Lasqueti Island Local Trust Area; and North Pender Associated Islands are included in 8.3, as they are part of the North Pender Island Local Trust Area.

10.1 Salt Spring Local Trust Area

Eelgrass surrounding Salt Spring and its associated islands was surveyed between April 18th and August 1st, 2014. Approximately 18% of the Island's linear shorelines are eelgrass habitats. The shore composition is mostly low rocky boulder (62%) with softer sediments in pocket beaches on the west facing shorelines. Most of the impacts on eelgrass habitat are heavy boat usage near the shore (boat moorings and anchoring, fuel docks, marinas, sewage discharge and derelict boats, docks and buoys), non-point source pollution and the removal of shoreline riparian native vegetation. Seven potential eelgrass restoration sites were identified.

It is recommended that intertidal mapping by community members be undertaken to update intertidal mapping data collected by the community in 1975 and 1996. It is also suggested that an eelgrass monitoring schedule be developed to measure potential eelgrass habitat impacts of aquaculture activities on the island over time. Improved anchoring methods for mooring buoys would decrease scouring of the seabed.

Compared to maps of intertidal eelgrass beds completed in the past (1975 and 1996), eelgrass beds are greatly reduced in size and spatial extent in **Ganges Harbour**. Flat patchy beds with less than 25% cover (density) were growing near its south western shores. Surveyors identified one

potential eelgrass restoration site on this side of the harbour and another site south of the harbour's entrance near a large continuous bed. Major impacts to eelgrass distribution within the harbour include historical log storage, present day non-point pollution and heavy usage by recreational boats.

The north eastern shoreline of the harbour contains small areas of continuous fringing eelgrass beds. No eelgrass was observed growing on Goat, Deadman or Sister Islands. Ruckle Park to the north of Beaver Pt. contains a naturalized shoreline and is protected as a BC Provincial Park. Densities of eelgrass varied from 25% to 75% in small bays within the Park boundary.

Fulford Harbour contains continuous flat eelgrass habitat on the western shoreline. The density changes into fringing continuous beds to the south of these beds. Five eelgrass patches less than 10m² were noted on the eastern shores. Two potential restoration sites are suggested near two of the eelgrass patches to the south.

Off the shores facing Sansum Narrows eelgrass grows intertidally, some of which lies between aquaculture rafts. Some riparian vegetation had been removed from behind a 30 metre long brick wall. At one site where there is a natural shoreline with a fringing continuous eelgrass bed, an abundance of salmon smolts was noted (May 6, 2014).

Eelgrass in Burgoyne Bay is composed of small fringing continuous beds delineated by a sharp drop off into deeper waters on the southern shores of the bay. Closer to the mouth of Burgoyne Bay, known to be used by salmon (pers. comm. Kathy Reimer), there is extensive flat continuous eelgrass. A derelict dock was observed and there was evidence of past log booming activities. Approximately seven boats, including house boats and a sailboat, some of them with small attached docks, were observed.

Over ten harbour seals were noted in the eelgrass beds in the bay. No eelgrass was noted on the northern shore or on the shores of Mt. Maxwell Ecological Reserve, with the exception of a small patch and a small continuous bed to the north of the patch. The sediment on this side of the island is low rocky boulder.

Bader's Beach contains three small but continuous flat eelgrass beds. The continuity of the habitat may be affected by a boat ramp and nearby placement of rip rap, as well as boat moorings. Booth Inlet contains extensive continuous flat eelgrass habitat amongst mooring buoys and a gravel boat launch site. It is recommended that a more detailed polygon be created of this habitat to monitor changes over time from aquacultural activities and from the effects of mooring buoys. A potential restoration site was located north of Booth Bay. Many eagles were cited in this area.

Vesuvius Bay also contains extensive continuous flat eelgrass beds, as well as Duck Bay. Surrounding the shores of Idol Island eelgrass habitat is characterized as patches and fringing and flat continuous beds. Small eelgrass patches (<10m²) to small continuous flat beds were observed from Duck Bay to Stone Cutters Bay. In Stone Cutters Bay an increase of continuous flat eelgrass habitat was noted, although there was clearing of backshore native vegetation near residences.

At the northern tip of the bay, dense continuous beds extend into the intertidal zone, but the habitat is interrupted by docks and mooring buoys and most likely impacted by the removal of backshore vegetation.

Continuous flat eelgrass habitat continues along the more protected northeastern shore of the island. Along the shores there was a groin, clearing of riparian vegetation by shore residences and docks. There is a gap in the habitat, beginning with a residential site with cleared vegetation from the house to the beach. The gap might be due to a change from shallow sand to cobble. Another gap in otherwise continuous eelgrass occurs further south where again backshore vegetation was cleared.

At the northern and southern outside edges of **Walker's Hook** lie continuous flat eelgrass beds, associated with natural shores and backshores. From the end of the southern bed of Walker's Hook to Nose Pt., small patches, with some fringing continuous beds were surveyed. Dense kelp (*Nereocystis* sp.) obstructed surveyors from traveling closer to shore. Most likely exposure to southwesterly waves and storms limits eelgrass growth in this area.

A derelict buoy was observed in an eelgrass bed on the south side of Walker's Hook. It is providing a subtidal platform for kelp settlement and may be shading out eelgrass beneath it. River otters were observed on the eastern facing shore of Walker's Hook near a small fringing patch of eelgrass.

Intertidal eelgrass habitats along the eastern shores of **Long Harbour** were observed by community mappers in the past. In 2014, four small continuous flat beds were noted in the same areas. On the northwestern shore, sandy substrate where eelgrass should have been present but was absent was noted by the surveyors. Two potential restoration sites were indicated within the harbour. An eelgrass restoration test plot (1200 shoots) was installed during the summer of 2014 near one of these sites. It will be monitored in the spring of 2015 to evaluate whether the transplanted eelgrass site can be expanded. On the western shore two small fringing continuous beds were found. A yacht club outstation and approximately 20 mooring buoys were observed in the harbour.

The eastern shore of **Madrona Bay** contains patchy continuous beds. Some dock construction and boat moorings were present. Gravel beaches line the bay.

The **Associated Islands of Salt Spring** are composed of 14% eelgrass habitat. Four potential eelgrass restoration sites were noted. Impacts included boat anchoring, present day and historical log booming operations, placement of mooring buoys in shallow waters and shoreline modifications resulting in potential hardening of the shore. Note that the Isabella Islets were not surveyed as they are within the Gulf Islands National Park Reserve boundary.

Wallace Island to the northeast of Salt Spring Island contains extensive continuous flat eelgrass habitat on its northwestern shores. However, **Princess Cove** is composed of sandy substrate and was evaluated as a suitable eelgrass restoration site, as well as another site to the south of this area. Boat anchoring may be impacting this area; with improvements in boat mooring practices,

eelgrass in Princess Cove, within the Wallace Island Marine Provincial Park, could be restored. Two potential eelgrass restoration sites were located on the western shore of Wallace Island.

One potential eelgrass restoration site was also located off the southeastern shore of **Secretary Island**. A small patch of eelgrass is growing in this area, which may have been used for log storage in the past. Dense intertidal and subtidal eelgrass beds were noted on the southern end of the Secretary Islands. Most likely rocky cobble substrate limits eelgrass growth between otherwise continuous eelgrass. A seal haul out was observed in one of the south west facing bays. The survey of shallow eelgrass habitat in these bays was limited by tide levels and rocky substrate.

Mowgli Island has a small fringing continuous bed on its south and north shores. The southwestern facing shores of **Norway Island** contain continuous and patchy eelgrass habitats amidst rocky outcrops. **Jackscrew Island** has small continuous flat eelgrass beds growing in muddy sandy bottoms of its western shores. Some of the beds are extending into the intertidal zone. **Hall Island** has two continuous eelgrass beds and a patchy bed less than 10 m² on its southeastern shore which extends into the intertidal zone. Eelgrass patches are growing within a small cove in the most southern area. The entrance of this site is surrounded by *Nereocystis* sp. and other kelps.

Eelgrass is continuous along the eastern, northern and southern areas of **Shoal Islands**. The northern Shoal Island eelgrass is dense (26 %-> 75% percent cover) and in shallow water (-0.9 to -3.5 m depth). Large schools of fish, harbour seals, gulls, Blue Herons, Canada Geese and eagles were observed here. One buoy was observed within the bed. There was also a logging operation noted on a large tidal flat site in this area. On the farthest northern section of this area, there was an abundance of logs and woody debris on shore, indicators of a highly impacted shoreline. Eelgrass distribution changes in this site from continuous to patchy or absent.

The southern, east facing beds of the Shoal Islands were dense (26%-75% cover) continuous flat habitats. A pulp mill and associated activities have impacted the southern area of these beds, such as the placement of a modified shoreline composed of rip rap. A white slime was observed on eelgrass blades in this area. However, it is recommended that the eelgrass beds surrounding Shoal Islands be protected as they illustrate a rich biodiversity within the Salish Sea, even though industrial activities are operating nearby (log booms to the north and a pulp mill in the south).

All eelgrass surrounding **Prevost Island** was surveyed, except for beds occurring within the boundary of the Gulf Islands National Park Reserve (Parks Canada). The majority of eelgrass habitats were situated on the southwestern shores and most were characterized as either fringing or flat continuous beds, some of which extended into the intertidal zone. One restoration site was indicated on the southeastern bay. One small continuous flat bed was observed on the central east side of the island. Most likely rocky substrate limits extensive eelgrass growth. Most of the backshore was naturally vegetated.

Piers Island eelgrass habitat is composed of extensive continuous bands on the south and eastern shorelines. Docks, boat moorings and their associated chains, and seawalls may be

causing some of the habitat to be interrupted or less dense than if these structures were not present. In many places eelgrass was located behind docks closer to shore, which might indicate the locations of these docks may be shading otherwise continuous beds.

10.2 Saturna Island Local Trust Area

Eelgrass surrounding Saturna Island was surveyed between July 2nd and 29th, 2014 and is present on 19.5% of its shores, excluding the shores within the Parks Canada's Gulf Islands National Park Reserve. Fifty-seven percent of Saturna Island's shoreline is composed of rocky boulder and 32% sea cliffs.

Most of the eelgrass located within the Islands Trust Area on Saturna Island was located on the east side, where it is protected from the north westerly winds and waves by Mayne Island. The majority of shoreline on the south end of the island is under the protection and jurisdiction of Parks Canada's Gulf Islands National Park Reserve and was not included in this eelgrass inventory. Eelgrass on the southwest and southeast of the Parks Canada boundary was distributed in patchy and continuous flats. Impacts on eelgrass beds include mooring buoys, docks and shoreline developments that remove native plant vegetation from the marine riparian areas. One potential restoration site was located.

Within **Boot Cove** on the west side of Saturna Island, eelgrass was expected to be observed, as it is a very sheltered site with sandy substrate. However, the area is very heavily used with the construction of docks, placement of multiple mooring buoys and attached boats, floats and ramps throughout the cove. Eelgrass is present but is not dense and absent in many areas where it should be growing. There is potential at this site for restoration in cooperation with local residents. The eelgrass between **Trevor Islet** and Saturna Island was growing in shallow waters (-1.3m). The surveyors were not able to access the site to map, but it was evident the entire area is eelgrass. Canada geese were observed swimming in the bed.

Eelgrass on the south shores of **Lyall Harbour** is mostly continuous flat beds with boulder shores and forested backshores. Towards the east of the harbour there is evidence of a former log booming site with three dolphins (upright log poles) in the site as well as a constructed breakwater and a grouping of wooden floats. Eelgrass is patchy at this location. Approximately one half of the backshore at the end of the harbour is landscaped (i.e. natural native vegetation has been removed). The north side of the harbour contains continuous beds extending into the intertidal zone. The backshore here is forested with rocky boulder shores. At some shore sites the eelgrass becomes dense (26%-75%).

The southwestern entrance to **Winter Cove** is composed of fringing continuous eelgrass with *Nereocystis* sp. kelp growing in deeper waters. The shores are predominately rocky with very small sandy beaches. The majority of the backshore in the bay is treed, with some rip rap placed on shore.

Eelgrass habitats off the southwestern shores of **Samuel Island** are continuous and flat. Canada geese were observed on shore. Except for a small continuous bed mid-island, there was no

eelgrass noted on the northeastern shore. Most likely exposure to northwesterly winds and waves prevent its growth. Natural shorelines and backshores characterize this island.

11 Threats to Eelgrass Habitats

The impacts from human activities have been described previously (Section 4.0). Other field observations are described below.

There seems to be an increase in the abundance and distribution range of the invasive seaweed, *Sargassum muticum* within the Islands Trust Area, although there is at present no research to substantiate this. Although the plant settles and grows on cobble, surrounding eelgrass in sandy/muddy sediment can be shaded out by its overarching canopy. The presence of *Zostera japonica* was noted on Lasqueti and Thetis Islands and other areas within the Islands Trust. This non-native species of eelgrass is not known to compete with *Z. marina*, though it can be found mixed with the native eelgrass in the lower reaches of the intertidal zone.

Though there is some disagreement about the causes of epiphytic algae growth on eelgrass blades, it was noted within Telegraph Harbour on Thetis Island and Montague Harbour on Galiano Island. This could be an indication of excessive nutrients, causing an abundance of algae growth on the blades and blocking light, nutrients and gas exchange (Mumford 2007).

Canada geese are infamous for their grazing on eelgrass shoots. They were noted in large numbers on Lasqueti, Gabriola, and North Pender and South Pender Islands. Overgrazing of shallow eelgrass beds might be a growing concern as the birds are increasing in range and numbers.

As winter storms intensify, there might be an increase in burial of eelgrass shoots by sand over wash. Monitoring eelgrass habitats over time in selected locations vulnerable to storm events might shed light on the effects of climate changes upon the nearshore environment.

12 Opportunities for Eelgrass Restoration

A total of forty-two sites were identified as potential eelgrass transplant areas during the inventories that occurred between 2012-2014. These sites are shown on the maps produced by this project. When funding is available, these sites can be further investigated. The history of eelgrass transplants and their success in British Columbia to date is described below.

12.1 History of Eelgrass Restoration

In the Pacific Northwest, the history of success for *Zostera marina* transplanting projects was dismal prior to 1985. Initially transplant techniques were developed and successful on the Atlantic coast. However, these techniques were not well suited to the Pacific north coast environment and

eelgrass. Many of the early transplants were conducted without a thorough understanding of eelgrass physiology and ecology; the donor stock was not always well suited to the area where they were transplanted, and the biophysical conditions of the transplant site were not always appropriate for the species (Durance 2001).

Since 1985, knowledge and experience from adaptive management practices have resulted in a higher success rate for focused mitigation and enhancement projects along the Pacific coast (Thom, Borde, Williams, Southard, Blanto and Woodruff 2001). Factors that led to a higher success rate include the correct selection of physical attributes for the restoration area, including elevation, substrate composition and light and current regime. The selection of the most suitable ecotype or genotype increased the likelihood for success and rate of production. The criteria for success included shoot density and area re-vegetated (Durance 2001).

12.2 Criteria for Successful Restoration

In British Columbia, the criterion for transplant success is based upon the mean shoot density being equal or greater than the area of adjacent natural beds and the area coverage. Projects are thus considered successful if the habitat that was created provided habitat equal in eelgrass productivity (shoot density) to that which it was designed to replace (Durance 2001).

Site selection with the appropriate biophysical characteristics (salinity, sediment type, current velocity, light/depth, temperature, and pH), using suitable plant donor stock (ecotype), using an appropriate transplanting technique and handling the donor plants with care are necessary for successful transplants. Several restoration transplants have occurred in Squamish, the Sunshine Coast, Campbell River, Cowichan Bay and Saanich Inlet. Most of the locations have been impacted by historical log storage practices. The majority of these transplants are considered successful based on monitoring of shoot densities and area coverage post-transplant. They were completed under the supervision of a scientific advisor with community volunteer support and a Workers Compensation Board (WCB) certified team, with funds collected by environmental conservation groups.

13 Recommendations

Globally, eelgrass has been used as an indicator of water quality (Neckles 1994). Often, a bed will decrease or increase in width and length dependent on light availability. The lower depth distribution of eelgrass is related to overall water clarity. Water quality, including water clarity, is affected by land practices and water uses. If, for example, a large scale development occurs on shore near an eelgrass bed, the bed may decrease in size because the water quality in the nearshore is consistently compromised by the increased pollution load, known as non-point source pollution, frequently delivered by the storm water system. When the amount of light reaching the plants is limited by shading from increased sediment or plankton blooms associated with increased nutrients from land, eelgrass meadows adapt to the poor light availability through dieback, decreases in density or width and migration to shallower depths.

The Islands Trust Area is home to more than 25,000 people and is located between the highly populated centres of Vancouver, Victoria and Nanaimo. However, only approximately 12.5 % of the marine environment has some type of protection. Most of this protection is in Rockfish Conservation Areas, with Provincial and Federal Marine Protected Areas accounting for only 1.53% (Islands Trust Fund Regional Conservation Plan 2011-2015). Sound decisions by local trustees and an educated public are necessary to protect the functions of the nearshore for all who benefit from their healthy ecology.

A set of recommendations is listed below to contribute to the conservation work of the Islands Trust and Islands Trust Fund.

13.1 Education

1. Educate boaters and coastal residents about the presence and importance of eelgrass beds.
2. Encourage shoreline landowners to replace light-impenetrable docks with materials that allow light penetration.
3. Encourage signage at boat ramps reminding boaters to avoid eelgrass beds in shallow water.
4. Build public awareness about the importance of reducing nutrient inputs in marine riparian areas; encourage protection and restoration of wetlands and the construction of retention ponds to filter land based pollutants; and encourage reduction in the use of fertilizers, pesticides and herbicides.
5. Develop a long term public outreach nearshore marine education strategy that includes new shoreline property owners.

13.2 Regulatory and Enforcement

1. Limit dock development, particularly in established and potential eelgrass areas (i.e. areas where substrate is suitable for eelgrass growth).
2. Encourage creation of “No anchoring/mooring” zones in suitable eelgrass areas (based on substrate, depth and observed presence of eelgrass); encourage movement of moorings to areas that are too deep for eelgrass.
3. Limit shoreline development; maintain a coastal riparian zone that will enable inland shift of eelgrass beds as sea levels rise.
4. Create and implement appropriate setbacks for built structures from the nearshore.

5. Limit or reduce overwater structures; increase shared community docks and wharves when possible.
6. Require removal of illegal shoreline modifications; require restoration or removal of aged derelict structures where possible.

13.3 Opportunities for collaboration with other agencies

1. Encourage and undertake as resources allow regularly scheduled monitoring of sensitive or vulnerable shorelines; make monitoring results readily accessible to all.
2. Where boat traffic must go through an eelgrass bed, encourage establishment of marked boat channels so that the least damage is done to the habitat.
3. Create protected marine zones and encourage planned siting for mooring buoys for recreational boats around eelgrass beds.
4. Promote management strategies to mitigate conflicting uses in eelgrass habitat, such as oyster and clam harvesting, boating and anchoring in meadows and near-shore development requiring dredging.
5. Promote restoration of natural hydrology when opportunities arise.
6. Promote restoration of eelgrass habitats where possible.
7. Work with BC Parks staff and other organizations to establish best practices for anchorages and mooring buoy sites and encourage active monitoring of the usage of those sites.

14 Conclusion

Changes from increased human population, more frequent and intense storms and changes in sea levels and pH of the oceans emphasize the need to monitor eelgrass habitat and protect it with sound science-based policies and regulations.

Eelgrass meadows function as natural marine sanctuaries, as indicators of nearshore ecological health, and as sequesters of atmospheric carbon. As well, these valuable habitats are important sources of nutrients for local and off-shore marine and nearshore systems. The conservation, protection, monitoring and restoration of native eelgrass within the Islands Trust Area is and will continue to be a long term smart investment in the social, cultural and biological vitality of the islands.

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Appendix A: Mapping Methodology 2012 – 2014

2012 Methodology for *Zostera marina* Presence and Absence Mapping With a Towed Underwater Camera

The following methodology for eelgrass mapping (*Zostera marina*) was used to determine the location (presence/absence) of eelgrass habitats for Thetis, North and South Pender, Mayne, Lasqueti and Gambier Islands in 2012 under contract with the Islands Trust Fund.

The methodology reported here is an addendum to “Methods for Mapping and Monitoring Eelgrass Habitat in British Columbia” (“Methods”) authored by Precision Identification Biological Consultants and peer reviewed by experts in the field. This addendum was created by the Seagrass Conservation Working Group with input and review by Precision Identification.

The purpose of presence and absence mapping methodology is to determine the linear extent of eelgrass along the coastline. This is achieved by deploying an underwater camera that is towed by a boat and recording the geographic location of eelgrass beds using a hand held GPS. The resulting representation of eelgrass beds are lines.

General habitat characteristics outlined in Methods are also recorded: Form (flat/fringing), Distribution (continuous/patchy), Percent Cover (<25%, 26-75%, >75%), and Substrate type (sand/mud/pebble/cobble/boulder). The state of the tide was recorded as “slack” or “running” in order to indicate the level of confidence in the percent cover estimate. A slack tide yields a higher level of confidence than a running tide, which causes the eelgrass lay across the ocean floor.

Eelgrass ShoreZone bioband mapping and marine charts were used to determine potential locations of eelgrass beds. The majority of the eelgrass beds in the Southern Salish Sea include habitat between 1 and 3 m chart datum. This depth contour was followed and eelgrass presence within this depth range was recorded. If eelgrass was not found in this depth range where bathymetry and substrate characteristics were suitable for eelgrass growth, a perpendicular transect was followed ranging from +1m to -6m which is the typical range of eelgrass in the Salish Sea.

GPS waypoints and the following parameters were recorded at roughly 10m intervals: depth, eelgrass presence, form, distribution, substrate, percent cover, tide state, presence of broad or tuft algae, visibility.

Where marine charts indicated suitable conditions (a shallow bathymetric relief) for eelgrass but eelgrass was not present; waypoints and substrate type were recorded at 20m intervals. Where marine charts indicated unsuitable conditions for eelgrass (steep bathymetric relief), only waypoints were recorded to indicate mapping coverage.

2013 Methodology for *Zostera marina* Presence Mapping with a Towed Underwater Camera

For the 2013 contract, the following methodology for eelgrass mapping (*Zostera marina*) was used to determine the location (presence) of eelgrass habitats for the Gabriola Island Local Trust Area, the Galiano Island Local Trust Area, Valdes Island, Winchelsea-Ballenas (Executive Islands) Local Trust Area, Cufra Inlet (Thetis Island) and the Gambier Associated Islands found within Howe Sound (excluding the Thormanbies and other islands off of the Sunshine Coast).

The methodology reported here is an addendum to “Methods for Mapping and Monitoring Eelgrass Habitat in British Columbia” (“Methods”) authored by Precision Identification Biological Consultants and peer reviewed by experts in the field. This addendum was created by the Seagrass Conservation Working Group with input and review by Precision Identification. For 2013 mapping Islands Trust Global Positioning System Specifications (Schedule G to the contract) were adopted except for Cufra Inlet on Thetis Island where a hand held GPS was used to be consistent with 2012 mapping. Average accuracy was 0.814m and was the combined result of the built-in accuracy of the GPS unit, lag time between sighting eelgrass and the unit gathering enough satellite data to create a waypoint, in combination with boat drift.

Linear Mapping

With the exception of the islands in Metro Vancouver, the Islands Trust eelgrass mapping was done using a linear method to determine presence of eelgrass along the shoreline. This linear eelgrass mapping is achieved by towing an underwater camera using a boat, except for the mapping done in Cufra Inlet in 2013, where the water was shallow enough to observe eelgrass from kayaks, and by concurrently recording the geographic location of eelgrass beds using a GPS. The resulting representations of eelgrass beds are lines and points (where the eelgrass patch was less than 3m in length).

Polygon Mapping

With financial assistance from Metro Vancouver, eelgrass beds on Bowen, Bowyer and Passage Islands were mapped using polygons to show their full extent. In addition to the linear mapping described above, underwater camera transects were conducted perpendicular to shore to map shoreward and seaward edges. In some areas, fringing eelgrass and eelgrass patches were too small to map as polygons. In these locations lines and points were used respectively to show eelgrass presence. Fringing eelgrass bands $\leq 5\text{m}$ wide were mapped as lines and patches less than 10m^2 were mapped as points. Mapping of polygons according to standard methodology was limited due to safe boat operation in wind, current and tidal movements, as well as navigation around boats and swimmers.

For all the islands, general habitat characteristics outlined in Methods are also recorded: Form (flat/fringing), Distribution (continuous/patchy), Percent Cover (<25%, 26-75%, >75%), and Substrate type (sand/mud/pebble/cobble). The state of the tide was recorded as “slack” or

“running” in order to indicate the level of confidence in the percent cover estimate. A slack tide yields a higher level of confidence than a running tide, which causes the eelgrass to lie across the ocean floor.

ShoreZone eelgrass bioband mapping and marine charts were used to determine potential locations of eelgrass beds. The majority of the eelgrass beds in the Southern Salish Sea are found between 1 and 3m chart datum. This depth contour was followed and eelgrass presence within this depth range was recorded. If eelgrass was not found in this depth range where bathymetry and substrate characteristics were suitable for eelgrass growth, a perpendicular transect was followed ranging from +1m to -6m which is the typical range of eelgrass in the Salish Sea.

GPS waypoints and the following parameters were recorded at roughly 10m intervals with intervals no longer than 20m: depth, eelgrass presence, form, distribution, substrate, percent cover, tide state, presence of broad or tuft algae, visibility.

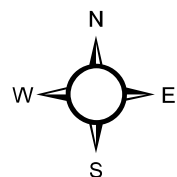
The following section was removed from the methodology for 2013:

Where marine charts indicated suitable conditions (a shallow bathymetric relief) for eelgrass but eelgrass was not present, waypoints and substrate type were recorded at 20 metre intervals. Where marine charts indicated unsuitable conditions for eelgrass (steep bathymetric relief), only waypoints were recorded to indicate mapping coverage.

Appendix B: Maps of Shoreline Units

Shoreline Units & Zostera Bioband Units -- Pender Islands --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2012
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

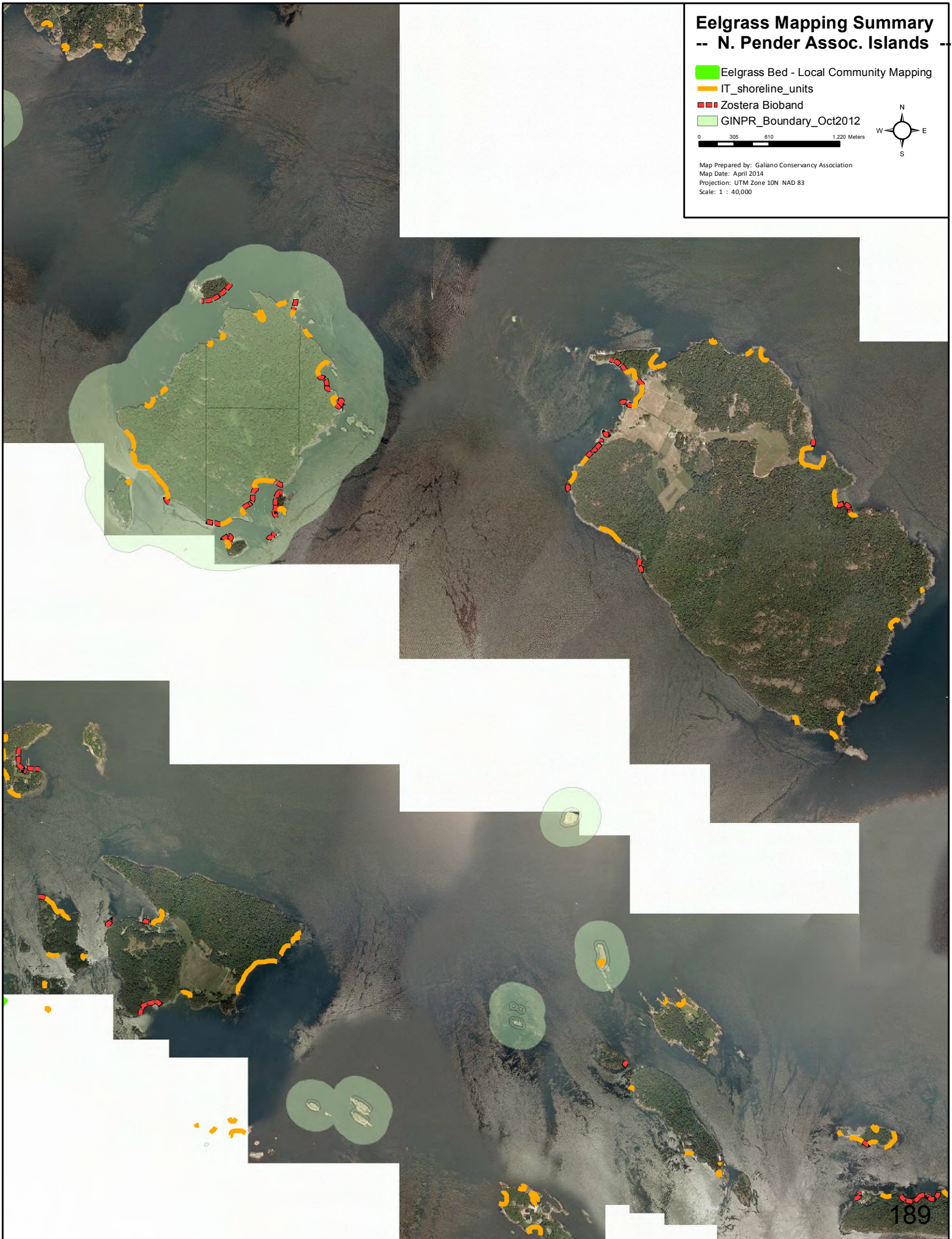
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Eelgrass Mapping Summary -- N. Pender Assoc. Islands

- Eelgrass Bed - Local Community Mapping
- IT_shoreline_units
- Zostera Bioband
- GINPR_Boundary_Oct2012

0 305 610 1,220 Meters

Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Eelgrass Mapping Summary -- N. Pender Assoc. Islands

- Eelgrass Bed - Local Community Mapping
- IT_shoreline_units
- Zostera Bioband
- GINPR_Boundary_Oct2012

0 345 690 1,380 Meters



Map Prepared by: Galiano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Shoreline Units

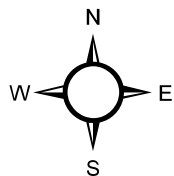
-- Gambier Island --

Produced By: Galiano Conservancy Association

Data Source: Provincial Shorezone Database

Map Date: June 2012

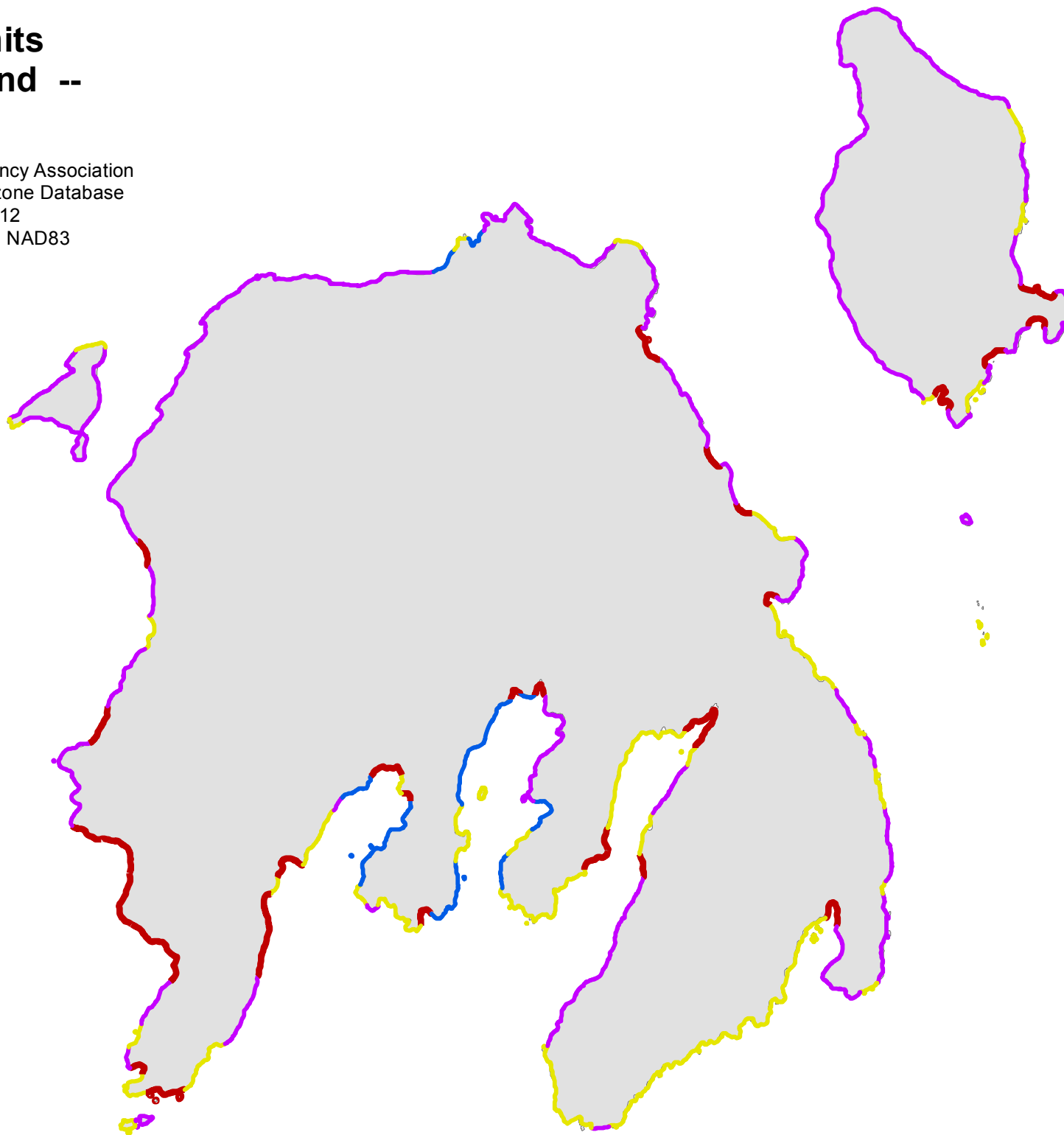
Projection: UTM Zone 10 NAD83



SHORELINE_UNITS

- Estuary
- Sand / Cobble
- Low Rock / Boulder
- Altered
- Cliff
- Coastal Banks or Bluffs

1:70,000



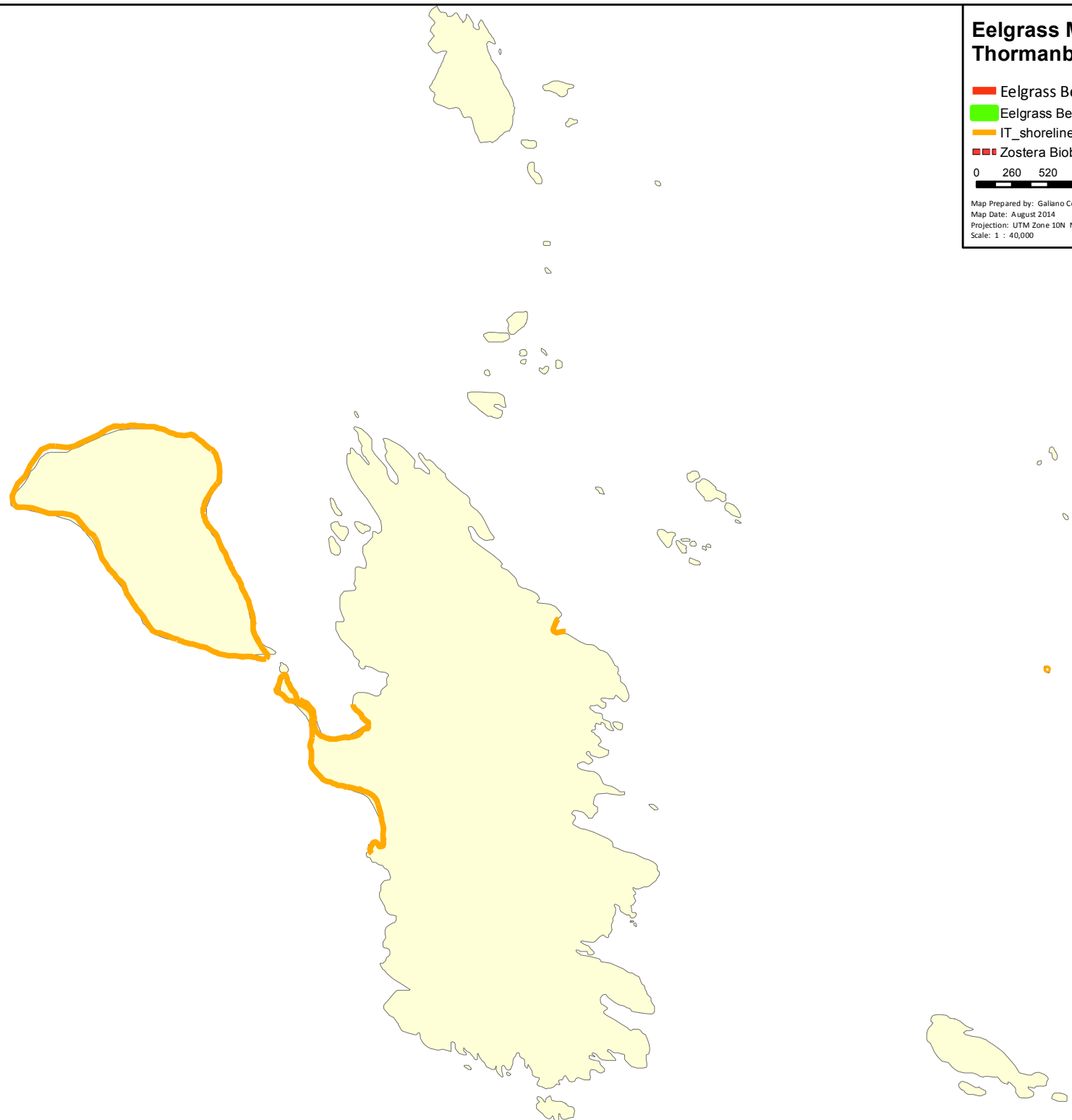
Eelgrass Mapping Summary Thormanby & Assoc. Islands NW

- Eelgrass Bed - 2012 Islands Trust Inventory
- Eelgrass Bed - Local Community Mapping
- IT_shoreline_units
- Zostera Bioband

0 260 520 1,040 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: August 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



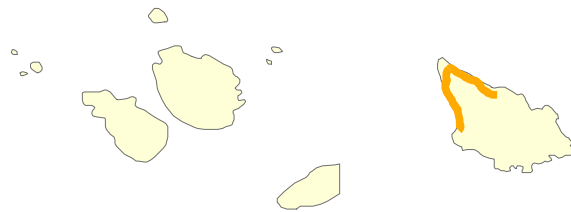
Eelgrass Mapping Summary

-- Thormanby Assoc. Islands SE --

-  Eelgrass Bed - 2012 Islands Trust Inventory
-  Eelgrass Bed - Local Community Mapping
-  IT_shoreline_units
-  Zostera Bioband

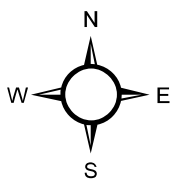
0 260 520 1,040 Meters

Map Prepared by: Galliano Conservancy Association
Map Date: August 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Shoreline Units & Zostera Bioband Units -- Thetis Island Trust Area --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2012
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

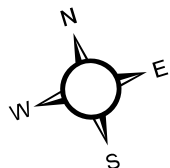
SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:55,000

Shoreline Units & Zostera Bioband Units -- Valdez Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2013
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:61,321

195

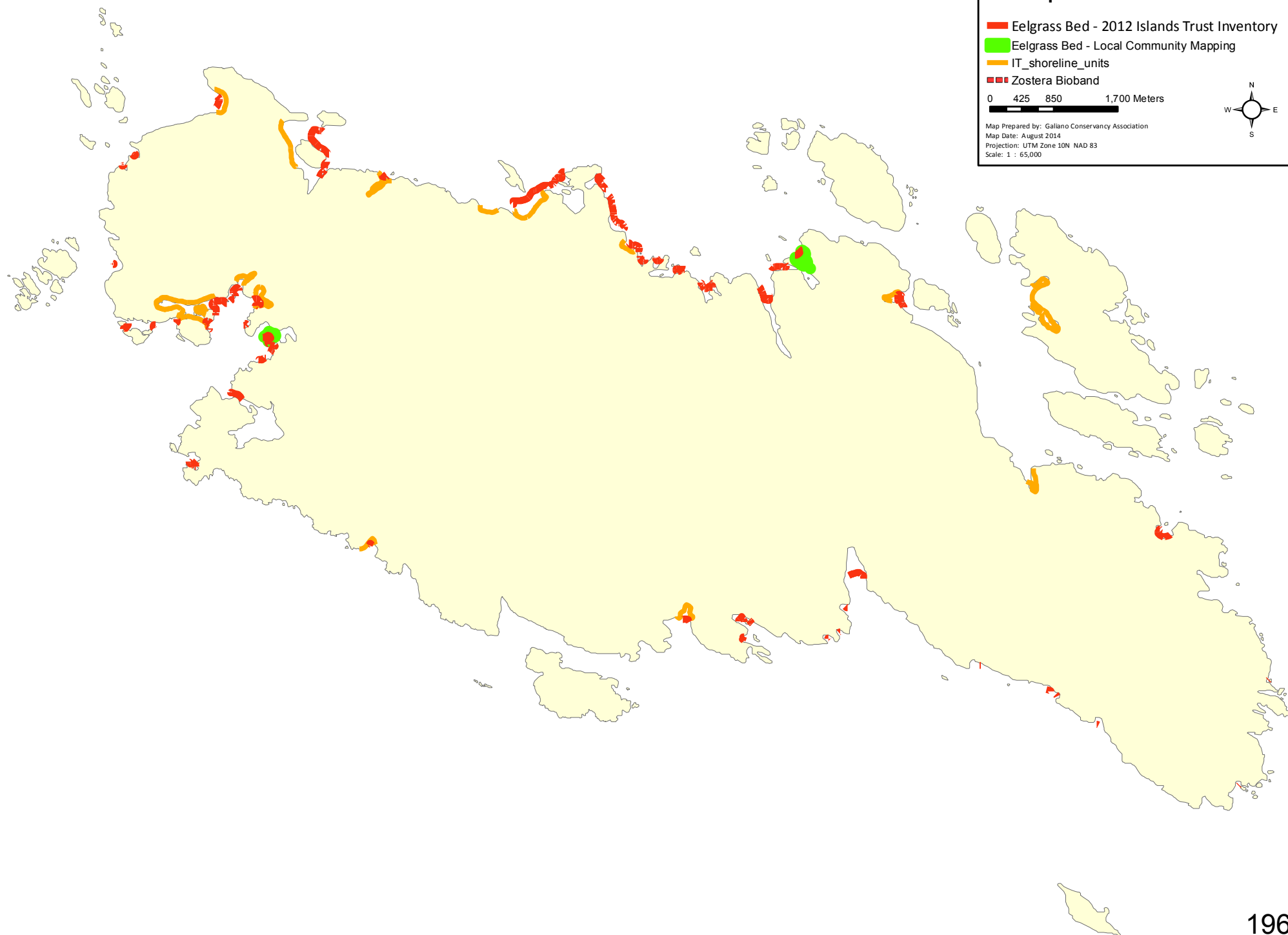
Eelgrass Mapping Summary -- Lasqueti & Associated Islands --

- Eelgrass Bed - 2012 Islands Trust Inventory
- Eelgrass Bed - Local Community Mapping
- IT_shoreline_units
- Zostera Bioband

0 425 850 1,700 Meters

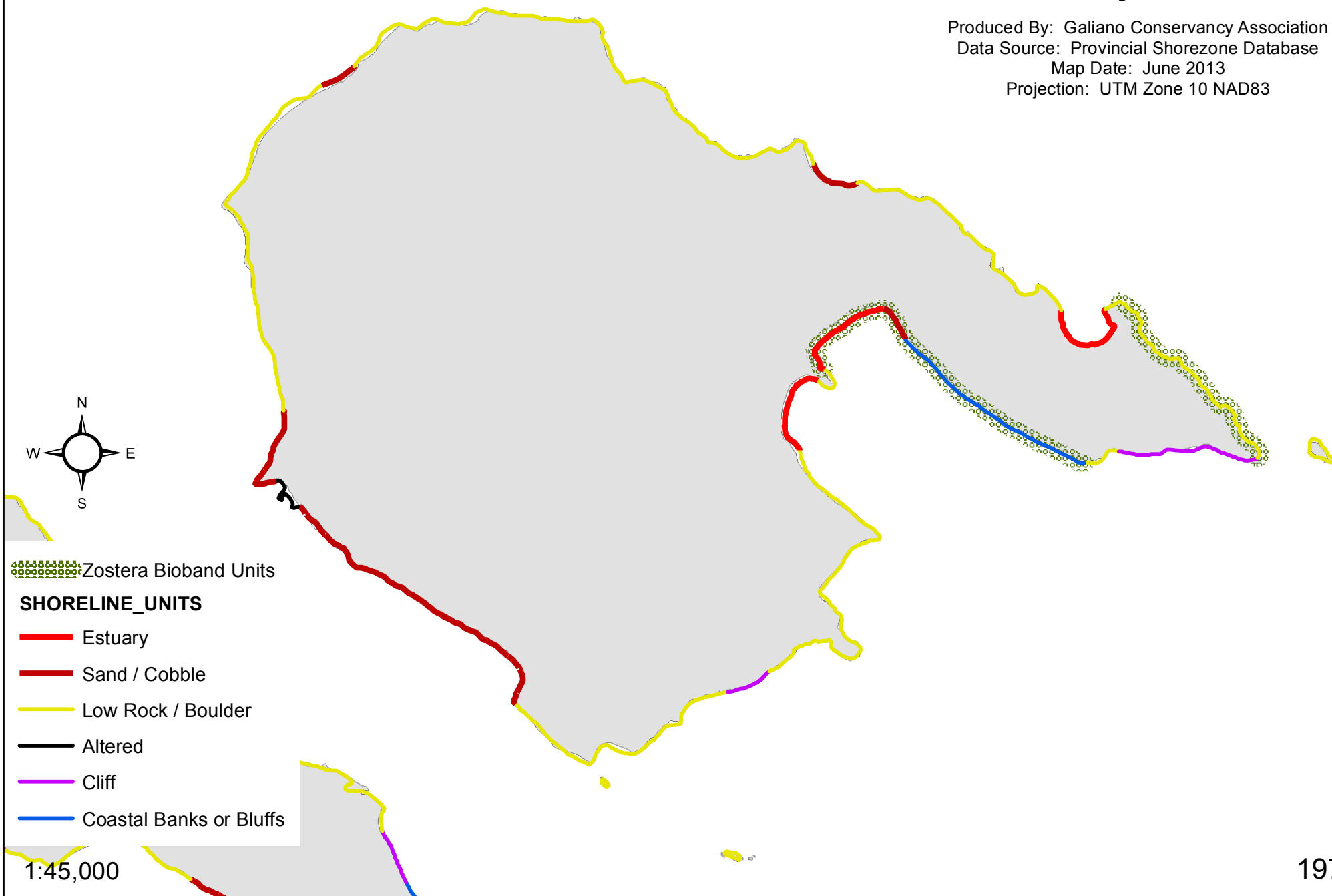


Map Prepared by: Galliano Conservancy Association
Map Date: August 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 65,000



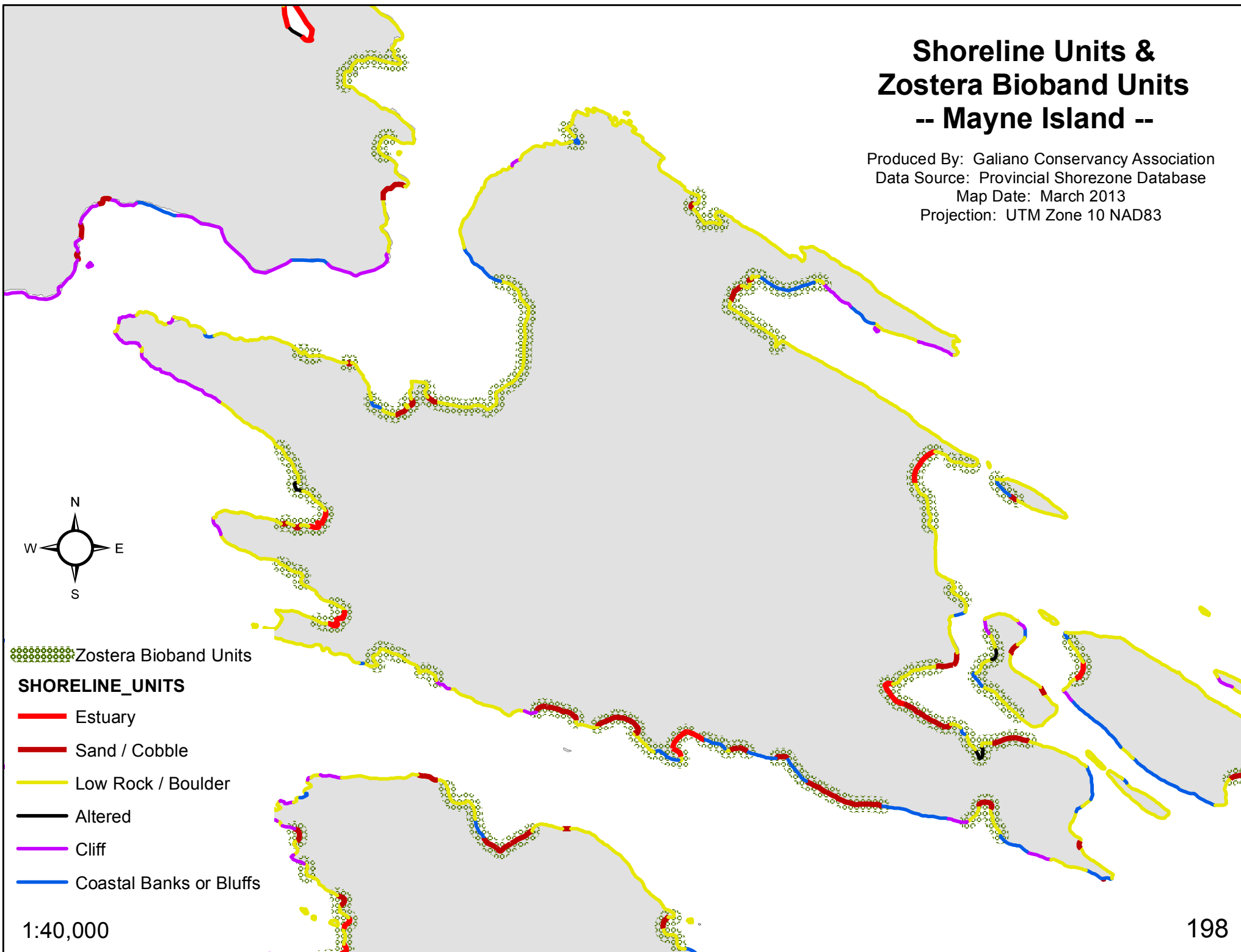
Shoreline Units & Zostera Bioband Units -- Hornby Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2013
Projection: UTM Zone 10 NAD83



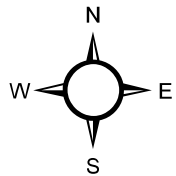
Shoreline Units & Zostera Bioband Units -- Mayne Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: March 2013
Projection: UTM Zone 10 NAD83



Shoreline Units & Zostera Bioband Units -- Executive Islands --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2013
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:46,362

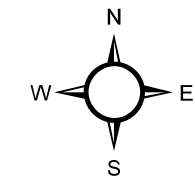
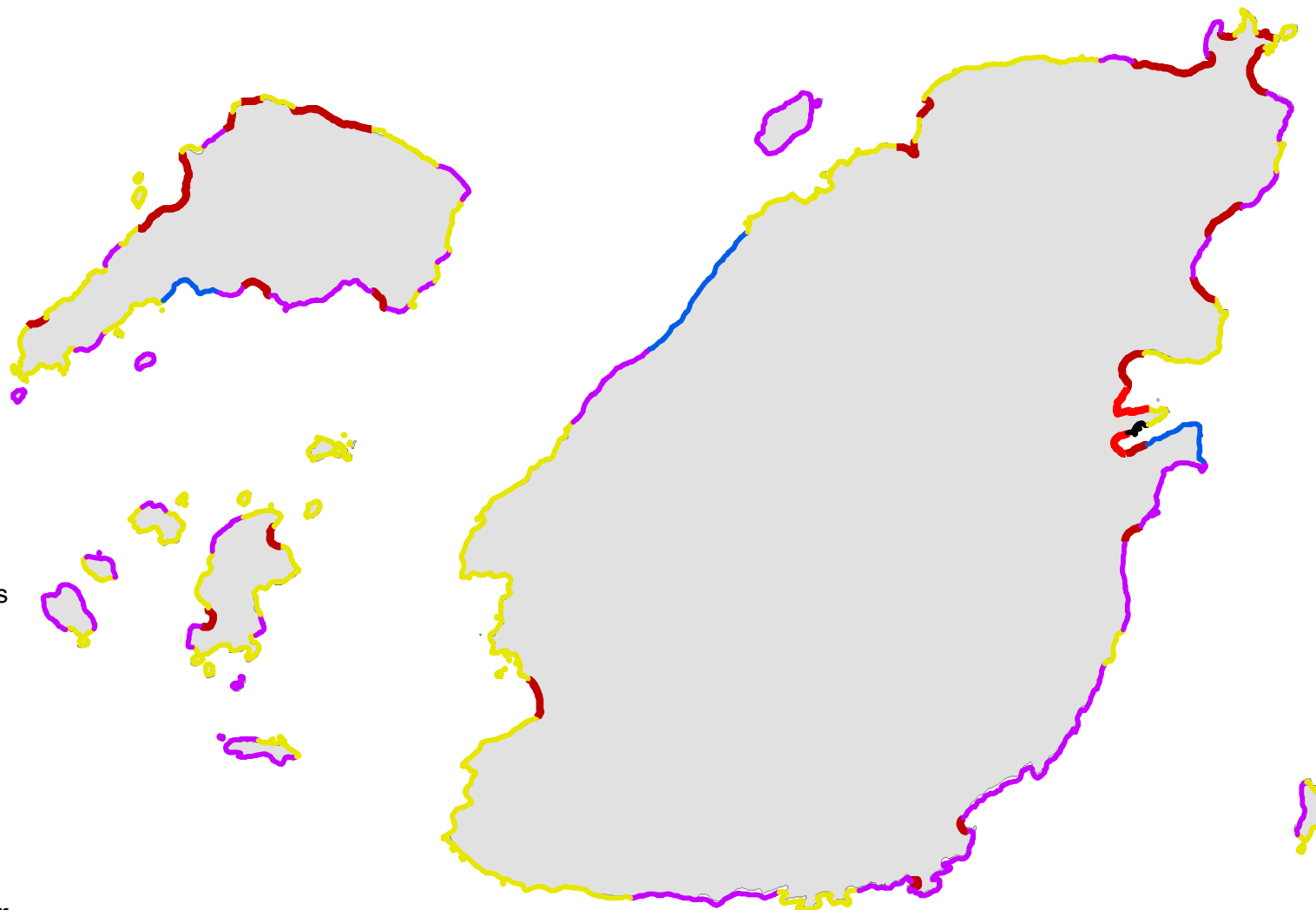
Shoreline Units & Zostera Bioband Units -- Bowen Island --

Produced By: Galiano Conservancy Association

Data Source: Provincial Shorezone Database

Map Date: June 2013

Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

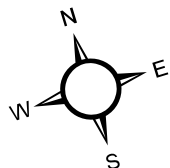
-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:70,000

200

Shoreline Units & Zostera Bioband Units -- Denman Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2013
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

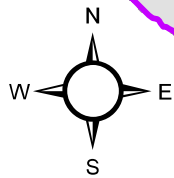
SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:70,000

Shoreline Units & Zostera Bioband Units -- Gabriola Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2012
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:57,500

202

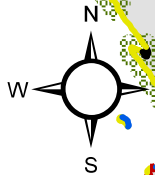
Shoreline Units & Zostera Bioband Units -- Galiano Island --

Produced By: Galiano Conservancy Association

Data Source: Provincial Shorezone Database

Map Date: June 2013

Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:90,000

203

Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000

Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000

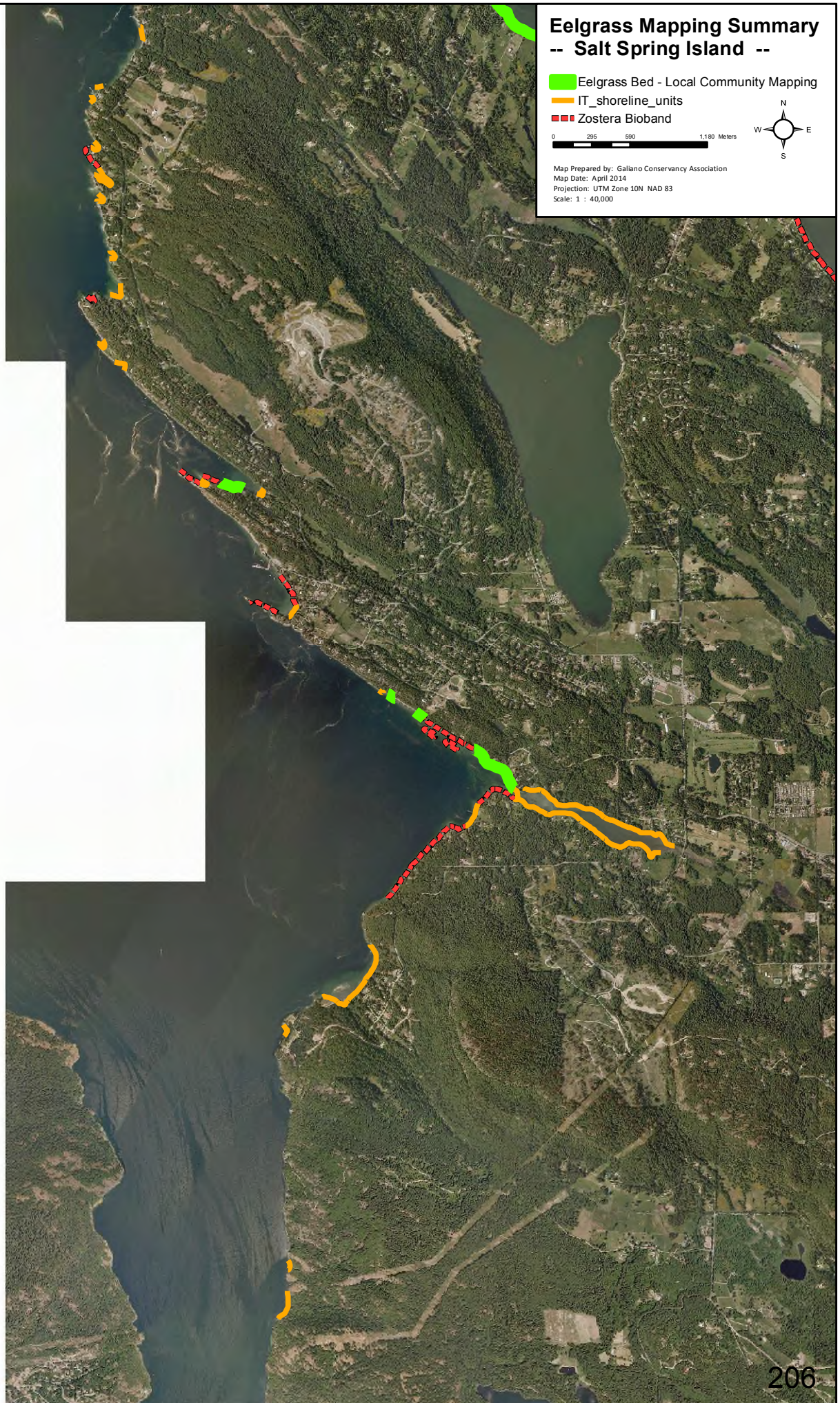
Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



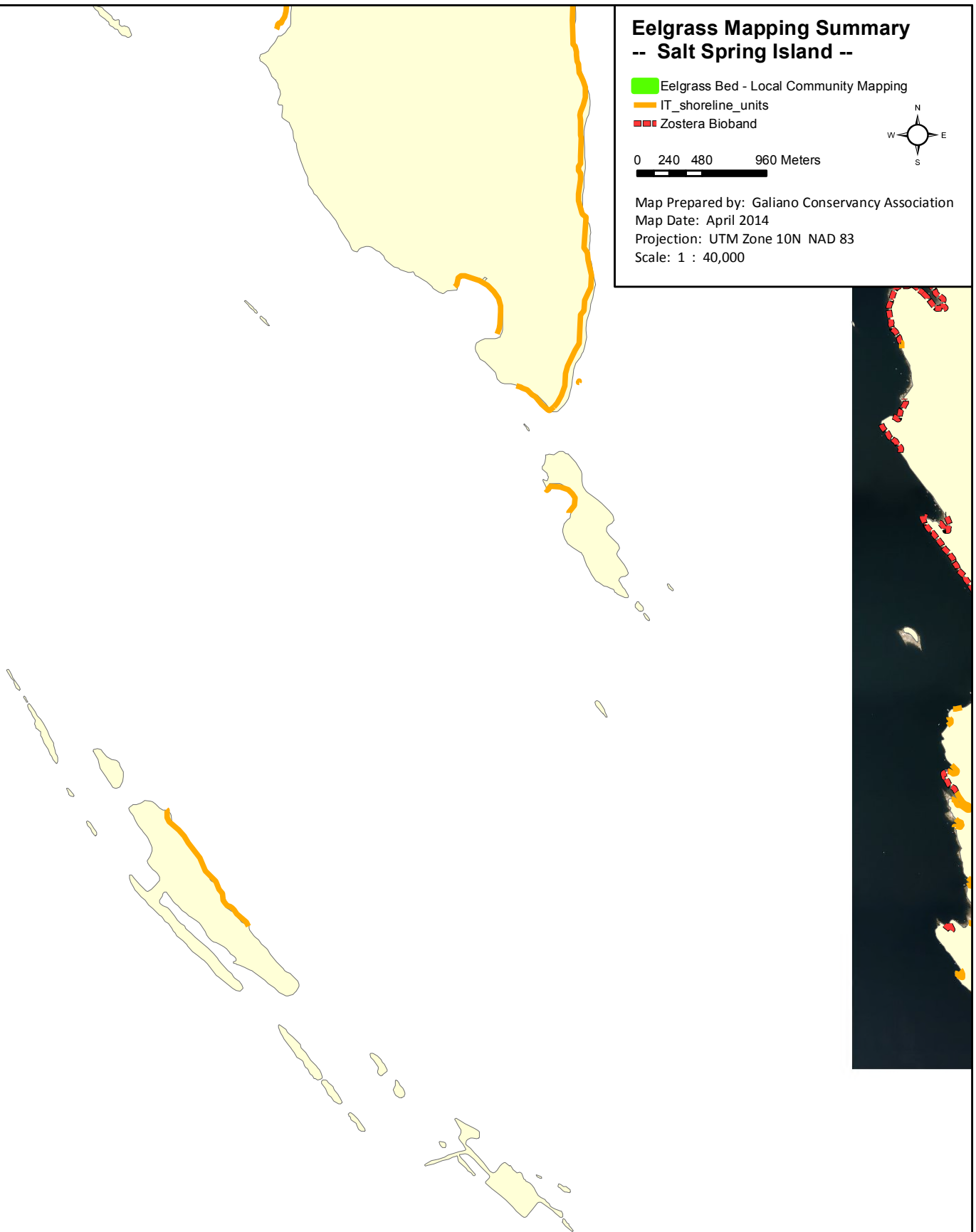
Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 240 480 960 Meters



Map Prepared by: Galiano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping

 IT_shoreline_units

 Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000

Eelgrass Mapping Summary -- Salt Spring Island North --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 240 480 960 Meters



Map Prepared by: Galiano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000

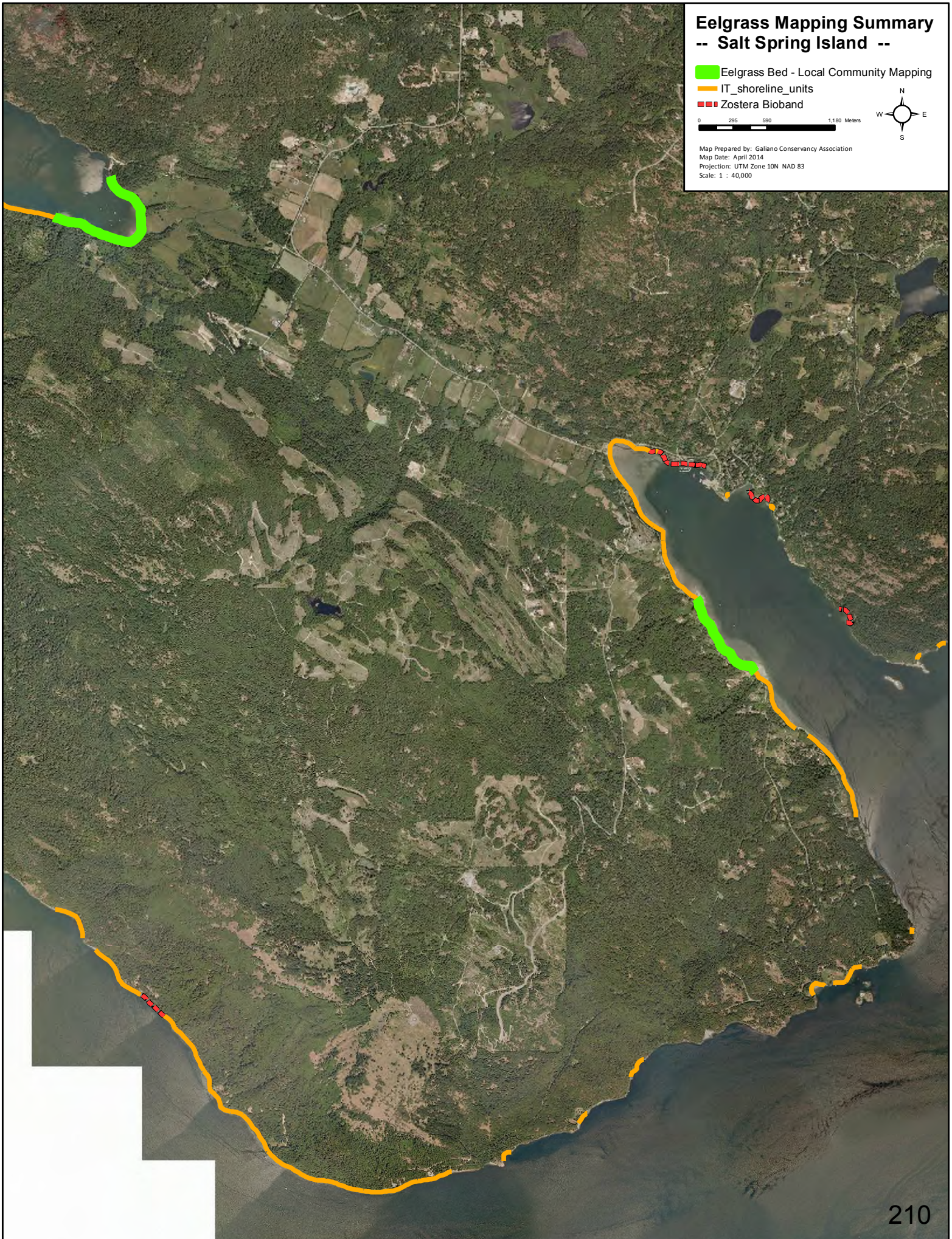
Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Eelgrass Mapping Summary

-- N. Pender Assoc. Islands

Eelgrass Bed - Local Community Mapping

IT_shoreline_units

Zostera Bioband

GINPR_Boundary_Oct2012

0 410 820 1,640 Meters

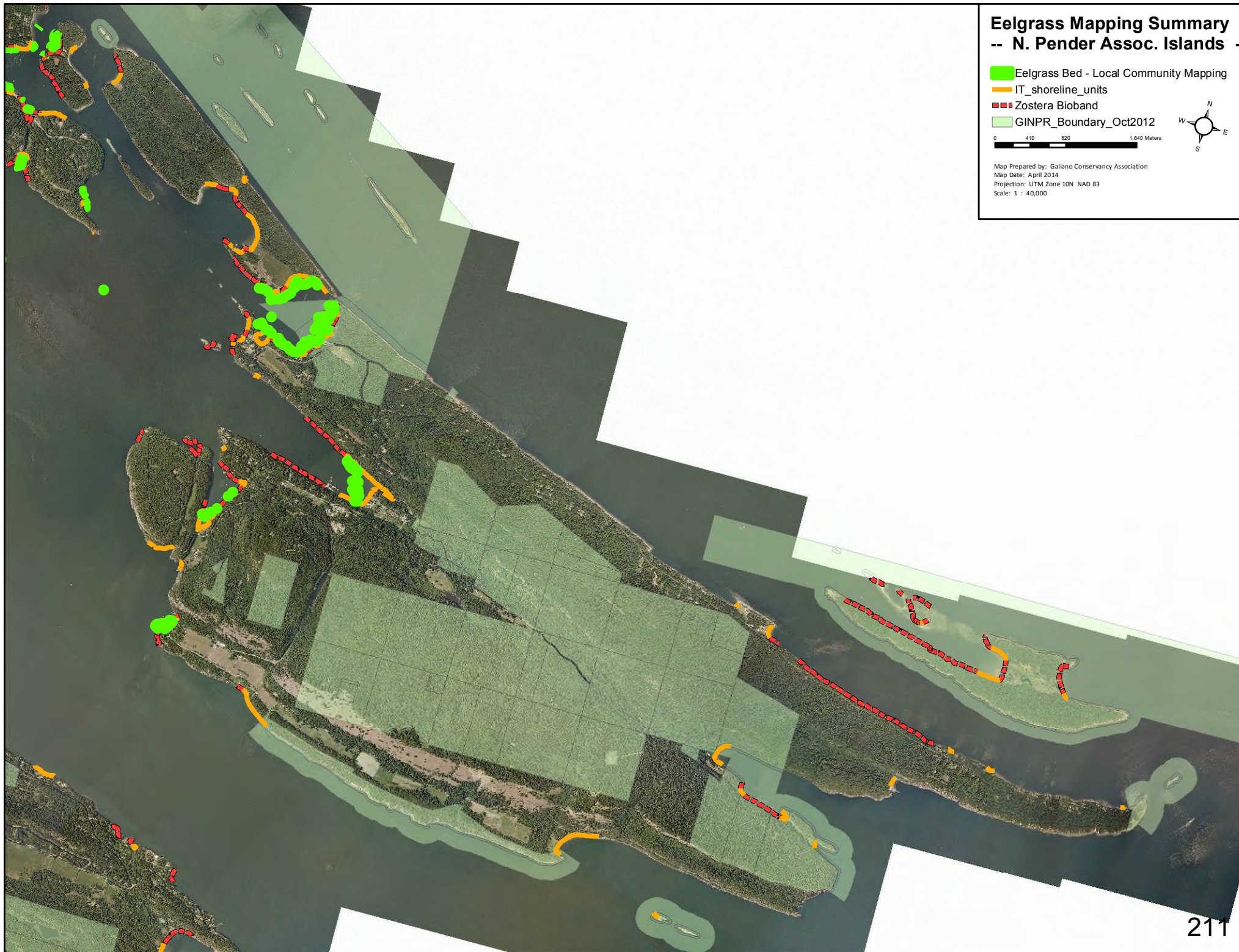


Map Prepared by: Galliano Conservancy Association

Map Date: April 2014

Projection: UTM Zone 10N NAD 83

Scale: 1 : 40,000



Appendix C: Summary of Overwater Structures

The Impacts of Overwater Structures on the Marine Nearshore Environment



The following information was taken from two sources. A Green Shores document summarizes possible effects of docks.¹ A White Paper published in 2001² for the Washington State Transportation Commission in Puget Sound is more detailed. The page numbers at the end of paragraphs indicate the page on which the information was found in the original document.

Information collated by Nikki Wright, Executive Director

SeaChange Marine Conservation Society

¹ Province of British Columbia. *Coastal Shore Stewardship: A Guide for Planners, Builders and Developers on Canada's Pacific Coast*. www.greenshores.ca

² Nightingale, B. & Simenstad, C.A. (2001) *Overwater Structures: Marine Issues White Paper Research Project T 1803, Task 35*. Prepared for Washington State Transportation Commission and in cooperation with U.S. Department of Transportation, Federal Highway Administration. 108 pages.

Summary of Possible Effects of Docks

Coastal Shore Stewardship: A Guide for Planners, Builders and Developers on Canada's Pacific Coast Province of British Columbia (Available on the Green Shores Web site:

www.greenshores.ca)

What Can Happen (p. 65)

The installation of docks can affect the coastal biophysical environment in a variety of ways:

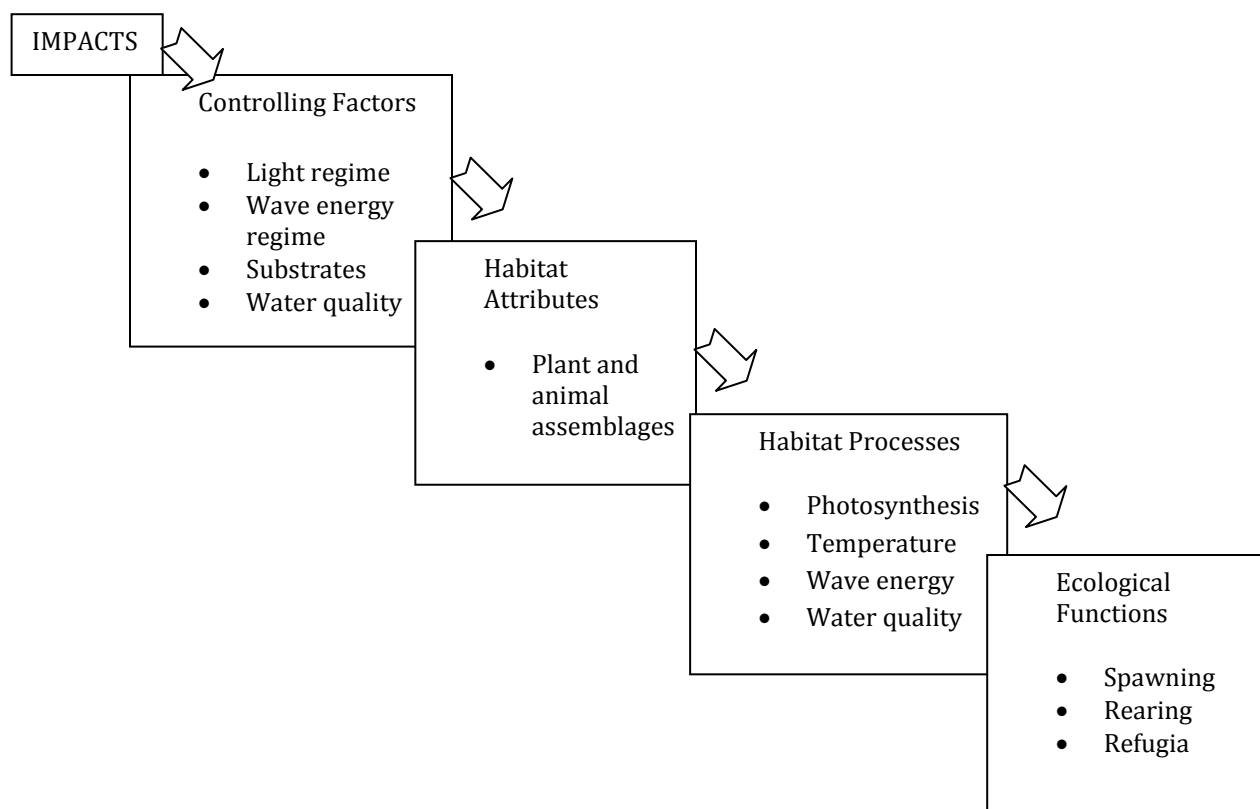
- Shading: Shading caused by the dock can affect the vigor of intertidal and subtidal plant communities, such as marsh plants, eelgrass and kelp beds. These impacts may be chronic (reduced productivity) or acute (wiping out plant communities, leaving the area barren).
- Disruption of shore drift patterns: This can result in updrift beach formation and downdrift shoreline erosion.
- Shore damage: Removal of shore plants and disturbance of soils where docks are attached to land can increase erosion and sedimentation of the intertidal and adjacent subtidal areas.
- Bottom habitat: Installation of footings, pilings and other structures permanently alienates benthic habitat. Dredging to create sufficient depth next to the dock can also disrupt or destroy bottom habitat.
- Operational pollution: poor refueling and dock maintenance practices, bilge releases and accidental spills from boats and docks can release contaminants into the nearby waters. (p. 65)

Overview of Ecological and Habitat Issues

From: Overwater Structures: Marine Issues White Paper Research Project T 1803, Task 35.

Estuarine and shallow marine nearshore habitats provide passage for fish and fish larvae, ocean water and human transportation, as well as areas for settlement of marine shellfish and other marine life. These sites are important sources of prey resource production, refugia, and spawning areas for Pacific salmon, groundfish, and forage fish, such as herring, sand lance and surf smelt. Overwater constructed structures can pose alterations to key factors that control prey production and spawning. Light, wave energy and substrate regimes determine the habitat characteristics that support these critical functions (p. 1).

Overwater structures are typically located in intertidal areas from above the area submerged by the mean higher high tides and out to 15 meters below the area exposed by the mean lower low tide. The primary physical processes controlling habitat attributes (i.e. plant and animal assemblages) and functions are depth (elevation) substrate type, wave energy, and light and water quality. These are the most important factors influencing the development and distribution of nearshore habitats (p. 33).



Conceptual model used by authors to define overwater structure impacts to nearshore habitat (p. 33).

Overwater structures and associated activities can impact the ecological functions of habitat through the alteration of habitat controlling factors (light regime, wave energy regime, and substrate and water quality). These alterations can, in turn, interfere with habitat processes supporting the key ecological functions of spawning, rearing and refugia. Whether any of these impacts occur and to what degree they occur at any one site depend upon the nature of site-specific habitat controlling factors and the type, characteristic, and use patterns of a given overwater structure located at a specific site (p. 34).

In addition to impacts associated with overwater constructed structures, activities associated with docks can also pose risks to the quality and quantity of habitat through prop scour, groundings, contaminant introduction to the marine environment and structural interferences with shallow nearshore habitats with the placement of ramps and haul-outs in nearshore areas.

Habitat Impact Mechanisms (p. 34)

Habitat Controlling Factors	Overwater Structures & Activities	Habitat Impact Mechanisms	Habitat Impacts
Light Regime	• Docks • Floats • Pilings • Moored vessels	• Reduced light levels	• Limited plant growth & recruitment • Altered animal behavior and assemblages
Wave Energy Regime	• Floats • Breakwaters • Prop wash • Marina	• Altered wave patterns	• Altered plant and animal assemblages • Altered substrate type • Altered sediment transport & distribution
Substrate	• Prop & anchor scour • Pilings, breakwaters & floats	• Altered substrate characteristics	• Altered sediment transport & distribution • Altered substrate type • Altered plant & animal assemblages
Water Quality	• Discharges • Boat & upland run-off	• Increased exotics, toxics, nutrients and bacterial introductions	• Altered plant & animal assemblages • Limited growth & recruitment • Exotic species replacement of natives

Overwater Structure Effects on Light Regime

Effects on Underwater Vegetation

Without proper precautions, docks, piers, and pilings can cast shade upon the underwater water environment thereby limiting light availability for plant photosynthesis. Distributions of invertebrates, fishes, and plants have been found to be severely limited in under-dock environments when compared to adjacent vegetated habitat in the Pacific Northwest not shaded by overwater structures (p. 38).

Each dock defines a shade footprint specific to its structural specifications. Dock height, width, construction materials, and the dock's orientation to the arc of the sun are primary factors in determining the shade footprint that a given dock casts over the submerged substrates. Researchers found underwater light availability and eelgrass bed quality under docks to be primarily dependent upon dock height, followed in importance by dock width and dock orientation to the arc of the sun. Light is the most important variable affecting canopy structure (i.e. shoot density and height) and eelgrass bed quality. To the degree that a shade footprint limits plant photosynthesis, it decreases the extent and quality of habitat that support a wide variety of fish and shellfish populations. Construction of even partially shading types of structures, floating or on pilings, could be expected to largely eliminate existing eelgrass and other macroflora with little chance for replacement plant growth (p. 39).

Effects on Fish

Overwater structures can create sharp underwater light contrasts by casting shade in ambient daylight conditions. They can also produce sharp underwater light contrasts by casting artificial light in ambient nighttime conditions. Changes to ambient underwater light environments pose a risk of altering fish migration behavior and increasing mortality risks. Findings have demonstrated that fish responses to piers are ambiguous with some individuals passing under the dock, some pausing and going around the dock, schools breaking up upon encountering docks, and some pausing and eventually going under the dock (p. 43).

Light is considered to be the primary factor limiting the survival and distribution of eelgrass. Given the strong association of important fish prey resources with eelgrass, limitations in the extent of eelgrass pose a potential risk of reduced prey resources. Prey resource limitations likely impact migration patterns and the survival of many juvenile fish species. For smaller fish less than 50 mm in length, residence times along particular shorelines are thought to be a function of prey abundance. Research in the Hood Canal demonstrated that outmigrating juvenile chum fry (30-45 mm) feed extensively upon small, densely distributed harpacticoid

copepods selecting for the largest copepods available. As the fish grew in size, their diet content became composed more of larger epibenthos and pelagic crustaceans. Consistent with other studies, the highest densities of harpacticoid copepods occurred in magnitudes 4-5 times higher in eelgrass stands than in sand habitat without eelgrass. Similarly, the largest abundance of first post-larval stage crabs of 0+ age are found in eelgrass beds (p. 45).

Impacts on Wave Energy

Wave energy and water transport alterations imposed by docks, bulkheads, breakwaters, ramps and associated activities alter the size, distribution, and abundance of substrate and detrital materials required to maintain the nearshore detrital-based food web. Alteration of sediment transport patterns can present potential barriers to the natural processes that build spits and beaches and provide substrates required for plant propagation, fish and shellfish settlement and rearing, and forage fish spawning. Although the specific characteristics of the factors at play vary with the geology of each region or subsystem, changing the type and distribution of sediment will likely alter key plant and animal assemblages. Wave and current interactions in shallow water (i.e. depths <1.0m) are particularly important to intertidal flora and fauna (p. 48).

Dock pilings have also been found to alter adjacent substrates with increased shell hash deposition from piling communities and changes to substrate bathymetry. Similarly, dock uses and construction activities are known to limit underwater light and redistribute sediments through prop scouring, vessel shading, and pile driving. These changes in substrate type can change the nature of the flora and fauna native to a given site. In the case of pilings, native dominant communities typically associated with sand, gravel, mud, sand, and seagrass substrates are replaced by those communities associated with shell hash substrates (p. 49).

Cumulative Effects

Given the apparent increasing demand for overwater structures, structural design to allow maximum light transmission and to mitigate energy and substrate changes is required to protect the ecosystems marine fishes rely upon. Given what is known concerning overwater structure impacts in marine and estuarine ecosystems, we conclude that multiple placements of overwater structures in marine waters can pose substantive risks of significant changes to the immediate and surrounding marine and estuarine ecosystems. These risks require the assessment of existing cumulative light limitation effects and wave energy and substrate effects to the shoreline environment. These risks require assessment at the drift cell before considering the addition of new structures (p. 91).

Appendix D: 2012 - 2014 Islands Trust Area Eelgrass Inventory Meta Data

1. File Identification Information:

2012-2014 Islands Trust Eelgrass Inventory.dbf
 2012-2014 Islands Trust Eelgrass Inventory.prj
 2012-2014 Islands Trust Eelgrass Inventory.sbn
 2012-2014 Islands Trust Eelgrass Inventory.sbx
 2012-2014 Islands Trust Eelgrass Inventory.shp
 2012-2014 Islands Trust Eelgrass Inventory.shx

2012-2014 Islands Trust Eelgrass Inventory Points.dbf
 2012-2014 Islands Trust Eelgrass Inventory Points.prj
 2012-2014 Islands Trust Eelgrass Inventory Points.sbn
 2012-2014 Islands Trust Eelgrass Inventory Points.sbx
 2012-2014 Islands Trust Eelgrass Inventory Points.shp
 2012-2014 Islands Trust Eelgrass Inventory Points.shx

2012-2014 Islands Trust Eelgrass Inventory Polygons.dbf
 2012-2014 Islands Trust Eelgrass Inventory Polygons.prj
 2012-2014 Islands Trust Eelgrass Inventory Polygons.sbn
 2012-2014 Islands Trust Eelgrass Inventory Polygons.sbx
 2012-2014 Islands Trust Eelgrass Inventory Polygons.shp
 2012-2014 Islands Trust Eelgrass Inventory Polygons.shx

2. Standard: GPS survey was conducted in accordance with “Methods for Mapping and Monitoring Eelgrass Habitat in British Columbia (MMEHBC)” and the addendum included below as *Appendix A*. GPS data (2013/2014) was collected in accordance with 'Ammended Schedule G: GLOBAL POSITIONING SYSTEM SPECIFICATIONS' included below as *Appendix B*.
3. GPS Receiver Type: 2012 Data: Garmin GPSMAP 62s with build in high sensitivity receiver (Penders, Lasqueti, Thetis). Garmin GPSMAP 60C and Garmin GPSMAP 62st with built in high sensitivity receiver (Gambier). 2013/2014 Data: Trimble Pathfinder ProXR.
4. Correction Type: 2012 Data: Uncorrected 2013/2014 Data: Post Processed (Trimble Pathfinder Office Pro)
5. Accuracy: GPS data was exported to ESRI shape file format and brought into an ArcMap project. GPS line segments were interpreted and edited to improve accuracy in accordance with MMEHBC standards. The following tables summarize reported GPS accuracy:

2012 Data:

Worst Horizontal Precision Reading (m)	
Gambier Island	12
Lasqueti Island	2
Thetis Island	7
North Pender Island	2
South Pender Island	2

Average Horizontal Precision Reading(m)	
Gambier Island	3
Lasqueti Island	2
Thetis Island	3
North Pender	2
South Pender	2

2013 & 2014 Data:

	2013	2014	2013/14 Combined
Total Point Features	11,754	9,032	20786
Best Reported Horizontal Precision	0.3 m	0.3 m	0.3
Worst Reported Horizontal Precision	69.3 m	75.6 m	75.6
Average Horizontal Precision	0.814 m	0.615 m	0.728
Standard Deviation of Horizontal Precision	1.812 m	1.644 m	1.739
% Point Features with Reported Horizontal Precision < 1.0m	91.44%	97.00%	93.85%
% Point Features with Reported Horizontal Precision < 5.0m	97.04% *	99.06%*	97.91%
% Point Features with Maximum HDOP < 3	99.62%	99.62%	99.62%
% Point Features with Maximum HDOP < 5	100%	99.98%	99.99%

*All point features with reported horizontal precision over 5.0m were duly noted and assessed on a case by case basis for their utility as guides for interpretation of line / polygon / point placement.

6. Geographic Extent: Islands Trust Area
West Bounding Coordinate: 365551
East Bounding Coordinate: 496460
North Bounding Coordinate: 5499562
South Bounding Coordinate: 5379453

Areas Exempted From Inventory:

- i. Shoreline areas within the Gulf Islands National Park Reserve
- ii. Shoreline areas directly adjacent to First Nations Reserves

7. Contact Information
Keith Erickson
Galiano Conservancy Association
RR#1 Sturdies Bay Road
Galiano Island, BC V0N 1P0
Canada

8. Data Projection: UTM, Zone 10, NAD 83

9. Definitions of Attributes in Database Fields:

Field	Description
ObjectID	Unique number ID for labeling purposes
ID	Code used to match up records with GPS data
Trust_Area	Code for Islands Trust Area
Is_Name	Code for island located in Trust Area
Presence	Presence (Y) or Absence (N) of eelgrass
Form	Describes the shape of an eelgrass bed as either flat (FL) or fringe (FR)
Distrib	Indicates the distribution of eelgrass as either continuous (C) or patchy (P)
Sub_sand	Indicates proportion of sand substrate as primary (1), secondary (2) or tertiary (3)
Sub_mud	Indicates proportion of mud substrate as primary (1), secondary (2) or tertiary (3)
Sub_shell	Indicates proportion of shell substrate as primary (1), secondary (2) or tertiary (3)
Sub_pebble	Indicates proportion of pebble substrate as primary (1), secondary (2) or tertiary (3)
Sub_cobble	Indicates proportion of cobble substrate as primary (1), secondary (2) or tertiary (3)
Cover	Estimate of percent cover of eelgrass; <25% (1), 26-75% (2), >75% (3)
Tide	Describes whether the tide is running (R) or slack (S). A running tide increases error of percent cover estimate.
Algae	Describes presence of broad (B) and/or tufty (T) algal species. Presence of broad algae can impair surveyor's ability to characterize the substrate.
Visibility	Refers to the ability of the surveyor to see through the water column; high (H), medium (M), low (L). Low visibility can impair surveyor's ability to characterize substrate and can increase error of percent cover estimate.
Comments	Comments on backshore and eelgrass limiting factors such as presence of docks, wharves, mooring buoys, anchoring boats, shoreline erosion, point source pollution.
Length_m / Area	Length of line segment in meters / Area of polygon in square meters
Map_Class	Categories used for map display (Presence + form + distribution)
Rest_Pot	Yes – identified as a potential site for ecological restoration
Survey_Yr	Year that ground inventory was completed

Local Trust Area Codes

BO Bowen
 DE Denman
 EX Ballenas – Winchelsea (Executive Committee)
 GB Gabriola
 GL Galiano
 GM Gambier
 HO Hornby
 LA Lasqueti
 MA Mayne
 NP North Pender
 SA Saturna
 SP South Pender
 SS Salt Spring
 TH Thetis
 VA Valdes

SCHEDULE G

GLOBAL POSITIONING SYSTEM SPECIFICATIONS

1. General Application

1.01

The target horizontal accuracy is 1 metre. The lowest acceptable horizontal accuracy is 5 metres, at the 95% confidence level. This applies to final map data after averaging (for point features), approximating (for line features), and any editing.

1.02

All GPS receiver systems must be approved for use in stream mapping by Islands Trust GIS staff. Only receiver models which have been tested and proven to be capable of meeting the above accuracy specification in field conditions will be approved.

1.03

At least one person, who is responsible for the quality of the data, must act as a supervisor and have completed GPS-specific training acceptable to Islands Trust GIS staff.

1.04

Field operators must be trained to the satisfaction of the supervisor, including GPS training and other training as required.

2. Field Parameters and Procedures

2.01

All positions fixes must use at least four satellites. No height constraints can be applied.

2.02

The minimum elevation angle to satellites is 15 degrees above the horizon.

2.03

The maximum Dilution of Precision (DoP) is:

HDOP 5 (preferred in most cases)

PDOP 8

GDOP 10

VDOP 5 (only if elevations are required)

2.04

For standard static point features occupation time must be at least 60 seconds AND there must be at least 30 individual position fixes for each feature.

For boat-based, eelgrass surveys, occupation time for static point features must be less than 5 seconds with a target of 1 position fix and never more than 3 position fixes for each feature. Line and polygon features may be interpreted from successive static point features. The majority of the static point features must be no more than 15 metres apart. The maximum distance between successive static point features is 20 metres.

2.05

The maximum distance for point offsets is 25 metres. Directions must be accurate to 2 degrees and distances accurate to 1 metre. If the slope is over 10 percent and over 10 metres long, slope measurements (accurate to 5 percent or 3 degrees) must be made.

2.06

For all line (and polygon) features, all significant deflections and meanders of the feature must be mapped.

2.07

For line (and polygon) features surveyed in dynamic mode, the majority of the individual position fixes must be no more than 2.5 metres apart. The maximum distance between successive position fixes is 10 metres.

2.08

The maximum distance for constant line offsets is 5 metres.

2.09

For line (and area) features surveyed in station-to-station mode, the maximum distance between stations is 10 metres.

2.10

Supplementary traverses (using compass and chain) must begin (Point of Commencement) and end (Point of

Termination) on static GPS point features or on survey control monuments of 1 metre or better accuracy.

2.11

Directions for supplementary traverses must be accurate to 2 degrees and distances accurate to 1 metre. If the slope is greater than 10 percent, slope measurements accurate to 5 percent or 2.5 degrees must be made. The maximum length of an individual traverse leg is 50 metres. There is no limit on the total length of a supplementary traverse.

3. Data Processing and Mapping

3.01

All position fixes must be differentially corrected in real-time or post-processed. If position corrections are used, the same set of satellites must be used at the reference station as at the field receiver.

3.02

Reference stations (real-time or post-processed) must be approved by Islands Trust GIS staff.

3.03

The maximum age of real-time corrections is 20 seconds from the time the observations are made at the reference station to the time the computed corrections are applied at the field receiver.

3.04

All directions from compass observations must be corrected for declination before offset or traverse computations. If applicable, correction for grid convergence must be made.

3.05

Supplemental traverses must close to better than 1 percent (1/100) of the total traverse distance plus 2.5 metres. Traverse misclosures over 2.5 metres total must be adjusted ("balanced") using the standard compass rule method.

3.06

If true NAD 27 coordinates are required, NAD 83 coordinates must be converted using the Canadian National Transformation, version 2 (NT v2).

3.07

If elevations are required, they must be converted from ellipsoidal to orthometric using the CRD Geoid model HT 2.0.

3.08

If data in any other coordinate system (e.g. ground coordinates) are required, procedures acceptable to Islands Trust GIS staff and the owner of the mapping must be used.

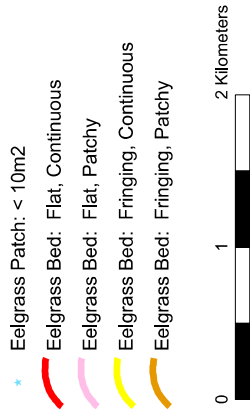
3.09

Any discrepancies between the GPS survey and existing mapping used as base maps must be resolved to the satisfaction of Islands Trust GIS staff and the local agency(s) considered responsible for the mapping.

Map 3c: Eelgrass Presence Gambier Local Trust Area Associated Islands Sunshine Coast Area

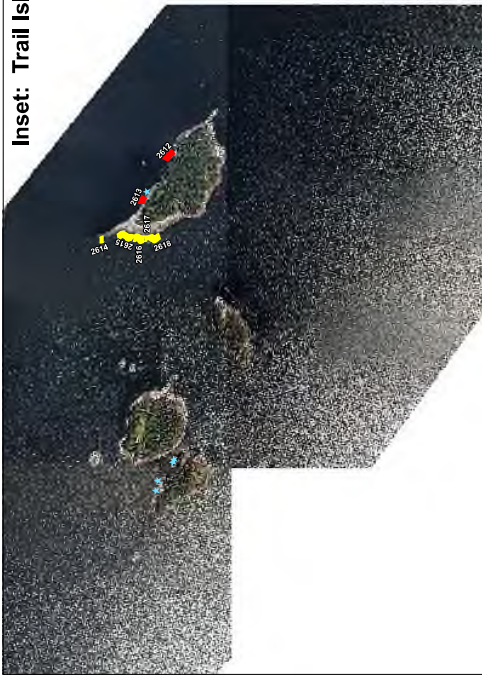
The eelgrass inventory was completed by SeaChange Marine Conservation Society under contract by Islands Trust Fund and the Islands Trust. The inventory was conducted from June to September, 2014 using a towed underwater camera and Trimble Pathfinder Pro XR GPS.

Produced by: Galiano Conservancy
Map Date: Nov. 28th, 2014
Orthophoto Date: 2011
Scale: 1 : 15,000
Projection: UTM Zone10N, NAD83



Each line segment is labeled with its unique ID number. This number corresponds with the ID column in the associated data table.

Inset: Trail Islands



BRIEFING

To: Bowen Island Municipal Council;
Gambier Island Local Trust Committee

For the Meeting of: January 26, 2015
(BIM), February 12,
2015 (Gambier LTC)

From: Executive Committee

Date prepared: January 15, 2015

SUBJECT: ISLANDS TRUST OPTIONS FOR HOWE SOUND FORUM PARTICIPATION

DESCRIPTION OF ISSUE:

The Islands Trust Executive Committee is inviting comments from Bowen Island Municipal Council and Gambier Island Local Trust Committee about the level and type of involvement Islands Trust staff and the Islands Trust Council might have in the Howe Sound Community Forum.

BACKGROUND:

On January 14, 2015, the Islands Trust Executive Committee received a briefing about the Howe Sound Community Forum. The Executive Committee voted to invite comments on the options at the end of the briefing from Bowen Island Municipal Council and Gambier Island Local Trust. Executive Committee members are leaning towards options 1 and 3 over the next six months, but will make their decision after they consider any comments received from Bowen Island Municipal Council and Gambier Island Local Trust Committee.

In April or May 2015, the Executive Committee will send another briefing to Gambier LTC and Bowen Island Municipal Council seeking broader input to Trust Council's 2015-2018 Strategic Plan. This could include longer term activities that support the Howe Sound Community Forum or other projects in the Howe Sound.

The Executive Committee is considering the following options for participation in the Howe Sound Community Forum (copied below from the attachment), and is willing to consider additional options based on advice from the Gambier Island LTC and Bowen Island Municipal Council.

1. Maintain status quo (includes continued staff and Chair attendance as observers at 1.5 days and \$300 per person per meeting) until Trust Council's new strategic plan is in place.
2. Cease attendance by staff and Chair until the 2015-2018 Strategic Plan is in place.
3. Add Howe Sound Community Forum as a standing item to Trust Council Agenda (section 7 re trustee updates) asking Gambier and/or Bowen representatives to report out and/or propose new business for Trust Council's consideration (using staff support as needed). A Howe Sound trustee used to report out routinely to Trust Council about the Howe Sound Forum in 2002-2004.

4. Request that staff prepare a Request for Decision document from the Executive Committee to the March 2015 meeting of the Islands Trust Council recommending that Trust Council become a signatory of the Howe Sound Community Forum's Principles of Cooperation. This would present a similar level of commitment as the Coastal Douglas-fir and Associated Ecosystems Conservation Partnership Agreement Council, signed in 2013, or the Transborder Island Agreement between the Islands Trust and the San Juan County, signed in 2007.
5. Recommend advocacy about Howe Sound in the 2015-2018 Strategic Plan. This would empower Executive Committee to request Chair/Vice-Chair attendance and staff attendance at Forum meetings.

ATTACHMENT(S): Howe Sound Community Forum membership briefing for Islands Trust Executive Committee's January 14, 2015 meeting

AVAILABLE OPTIONS:

- 1) Provide comments to the Islands Trust Executive Committee by February 18, 2015 on the options in the attached briefing.
- 2) Do not provide comments

FOLLOW-UP:

The Islands Trust Executive Committee will consider your comments when making any decisions or recommendations to the Islands Trust Council about participation in the Howe Sound Community Forum.

Prepared By: Clare Frater

Reviewed By/Date: Lisa Gordon, Director, Trust Area Services

To: Executive Committee

For the Meeting of: January 14, 2015

From: Clare Frater

Date prepared: December 18, 2014

SUBJECT: Howe Sound Community Forum membership

DESCRIPTION OF ISSUE: On October 28, 2014, the Executive Committee directed staff to provide the Howe Sound Community Forum minutes to the Executive Committee's first meeting of 2015 with advice regarding:

- a request from the Forum that signatory local governments endorse resolutions resulting from the Forum's October 17, 2014 meeting, and
- Trust Council's role in the Howe Sound Community Forum.

BACKGROUND:

The Howe Sound Community Forum was created in 2000 to provide a political forum for local government, regional districts and First Nations to discuss Howe Sound land-use and marine issues. Recently the forum has been meeting a few times each year.

The Howe Sound Community Forum Principles for Cooperation provide a framework for cooperative discussion and efforts by signatories to maintain and enhance the economic, environmental, cultural and social well-being of Howe Sound. The Principles for Cooperation support a common vision for the Howe Sound area, shared values for the Community Forum, and offer a set of actions that include: facilitating information exchange, identifying areas of public policy and projects that require attention, assessing progress through benchmarks, monitoring and program assessments, and promoting transparency and accessibility.

History of Islands Trust bodies' role in the Howe Sound Community Forum

The Gambier Island Local Trust Committee and Bowen Island Municipality first became signatories to the Howe Sound Community Forum Principles of Cooperation in 2002. Both bodies signed the revised Principles of Cooperation document (attached) on May 2, 2014. The Islands Trust Council has never been a signatory although staff understand that Trust staff was instrumental in the creation of the Principles of Cooperation document in 2000-2001.

The Forum agreed in its Principles for Cooperation that the role of hosting meetings would rotate around Howe Sound. Previous gatherings have attracted up to 80 people and have been hosted by Town of Gibsons, Resort Municipality of Whistler, Sunshine Coast Regional District, Village of Lions Bay, District of West Vancouver, and Squamish-Lillooet Regional District at Britannia Beach. The Gambier Island Local Trust Committee hosted a Forum webinar in February 2014, with \$2100 contribution from the Trust Area Services budget. Bowen Island Municipality is tentatively hosting the next in-person Forum meeting in February 2015.

In September 2012, the Islands Trust Council resolved to:

advocate for a comprehensive Howe Sound management plan to assure a balanced relationship between development and the protection of unique biophysical qualities of the region.

In March 2013, the Executive Committee requested staff to arrange an invitation for Chair Sheila Malcolmson to attend the Howe Sound Forum as an observer. The Chair and Islands Trust Policy Advisor subsequently attended Forum meetings in 2013 and 2014 as observers.

In September 2013, the Islands Trust Council resolved to:

request staff and trustees to participate in Howe Sound Comprehensive Management Plan meetings on September 18 and 25, 2013, to be followed by Executive Committee's consideration in October 2013 of staff advice regarding options for further action, in consultation with the local trustees of the Gambier Island Local Trust Area and Bowen Island.

The Union of British Columbia Municipalities endorsed the following resolution at its September 16-20, 2013 convention:

That UBCM urge the provincial government to support the development of a Comprehensive Management Plan for Howe Sound that facilitates a coordinated land and marine use planning process between First Nations, senior and local governments, and other local bodies to ensure ongoing recovery and responsible land use planning within Howe Sound.

On September 26, 2013, the Gambier Island Local Trust Committee resolved to request staff to recommend to the Executive Committee to add advocacy regarding the Howe Sound management plan to the Islands Trust Council 2011-2014 Strategic Plan.

In November 2013, the Executive Committee received a staff report about the Howe Sound Forum meetings and requested staff to provide advice on whether to consider this item in the Strategic Plan with limited activities, i.e., letter writing and mapping support.

In December 2013, the Islands Trust Council amended its 2011-2014 Strategic Plan to add "Advocate for a comprehensive Howe Sound management plan that ensures a balance between development and protection" as a activity in support of the goal "Advocate for protection of the Salish Sea and Howe Sound from oil spills, derelict vessels and industrial activities."

On October 28, 2014, the Executive Committee directed staff to place Howe Sound Community Forum minutes on first 2015 Executive Committee meeting agenda with advice regarding:

- a request from the Forum that signatory local governments endorse resolutions resulting from the Forum's October 17, 2014 meeting, and
- Trust Council role in the Howe Sound Community Forum.

Staff advice re Islands Trust Council continuing role in the Howe Sound Community Forum

Timing of decision

In the December 2014 briefing to Trust Council, Executive Committee mentioned staff's plan to recommend to the Islands Trust Council in March 2015, that Council become a member of the Forum and use Trust Area Services staff to support Council's engagement in the Forum. After further consideration, staff see no imminent need for Islands Trust Council to decide about its role in the Howe Sound Community Forum. That decision could follow Trust Council's adoption of its 2014-2018 Strategic Plan. Under the guidance provided by the 2011-2014 Strategic Plan, Trust Area Services staff can continue to attend Forum meetings, if desired.

Rationale for considering joining the Howe Sound Community Forum

The Islands Trust Council may wish to participate in the Forum to advance Policy Statement advocacy policies. A guiding principle of the Policy Statement is: *The primary responsibility of the Islands Trust Council is to provide leadership for the preservation, protection and stewardship of the amenities, environment and resources of the Trust Area.*

As Bowen Island Municipality and the Gambier Island Local Trust Committee are already Forum members and have elected representatives at each meeting, Trust Council participation would only enhance their efforts to promote the Islands Trust Object. The attendance of the Chair and/or Trust Area Services staff at the meetings could:

- increase networking between local government staff working on Howe Sound advocacy issues, and
- increase staff's ability to support Trust Council's advocacy objectives. Some objectives discussed at the Forum might be of interest to Council but not within the jurisdiction of Gambier Island Local Trust Committee and/or Bowen Island Municipality (e.g. marine issues in Howe Sound).

Islands Trust planners are not trained to undertake advocacy work for local trust committees and local trust committees should not request that planners undertake or provide advice regarding advocacy. With regard to the Howe Sound Community Forum, the Gambier Island Local Trust Committee and Bowen Island Municipality only receive services from the Islands Trust Policy Advisor when authorized by the Executive Committee or Trust Council.

In recent years, the topics discussed at the Forum meetings have been concerned with marine health and a request for the Province to develop a Howe Sound Management Plan and, more recently, for the Province to undertake a Cumulative Effects Assessment of Howe Sound.

Relevant Council policies

1) [Trust Council Coordination Agreements Process \(2.1.iv\)](#)

The coordination agreements policy covers agreements that coordinate land use activities among agencies and did not anticipate this kind of agreement, which involves only commitment to a set of principles. The policy could be revised to provide guidance for this and other more principled agreements such as the Statement of Cooperation with the Coastal Douglas Fir Conservation Partnership.

2) [Trust Council Best Management Practices for Delivery of Local Planning Policy \(5.9.i\)](#)

Services to Local Trust Committees Policy (5.9.i) B16: Local Planning Services staff and LTC Chairs will ensure that all decisions on the LTC business agenda that require Local Planning Services staff resources are relevant to the responsibilities of LTCs to regulate the development and use of land pursuant to s. 24 of the Islands Trust Act or relevant to any powers that may be delegated to an LTC under s. 10 of the Islands Trust Act. LTCs should not instruct Local Planning Services staff to undertake work that is un-related to these responsibilities.

3) [Trust Council Advocacy Policy \(6.10.iii\)](#) is intended to provide guidelines for advocacy activities of Islands Trust bodies. The policy indicates that *'LTCs may, by resolution, undertake advocacy on land use issues specific to their local trust area and consistent with the official community plan after considering whether the position may fetter their discretion on current or future land use planning decisions'*

Staff advice re: Trust Council endorsement of resolutions resulting from the Forum's October 17, 2014 meeting

Trust Council's endorsement of the following resolutions is not required, as Council was not a signatory to the Principles of Cooperation document in October 2014.

1. *As a member of the Howe Sound Community Forum, _____ accepts the FLNRO's offer to conduct a Cumulative Effects Assessment (CEA) for Howe Sound, within the BC CEA Framework but tailored to the Howe Sound area, with assessment work commencing in early 2015.*
2. *That _____ continue its commitment to the Howe Sound Community Forum and its ongoing contributions towards achieving comprehensive land and marine planning for Howe Sound over 2014-2018.*
3. *_____ thanks the Squamish Nation for hosting the Howe Sound Community Forum on October 17th, 2014 and for the attendance by Chief Gibby Jacob, Chief Bill Williams, Councillors Chris Lewis, Josh Joseph and Richard Baker.*
4. *The _____ respectfully acknowledge and support Squamish Nation's intention to commence marine planning for Howe Sound.*

ATTACHMENT(S):

- 1) Howe Sound Community Forum Signed Principle for Cooperation 0814
- 2) Howe Sound Community Forum Meeting Report Oct. 17th, 2014
 - a. Howe Sound Community Forum Community Effects Assessment for Howe Sound Resolution
 - b. Howe Sound Community Forum Resolution re Squamish First Nation Marine Planning

AVAILABLE OPTIONS:

The Executive Committee has several options for participation in the Howe Sound Community Forum.

1. Maintain status quo (includes continued staff and Chair attendance as observers at 1.5 days and \$300 per person per meeting) until new strategic plan is in place.
2. Cease attendance by staff and Chair until the 2015-2018 Strategic Plan is in place.
3. Add Howe Sound Community Forum as a standing item to Trust Council Agenda (section 7 re trustee updates) asking Gambier or Bowen representatives to report out and / or propose new business for Trust Council's consideration (using TAS staff support for RFDs as needed). A Howe Sound trustee used to report out routinely to Trust Council about the Howe Sound Forum in 2002-2004.
4. Request that staff prepare a Request for Decision document from the Executive Committee to the March 2015 meeting of the Islands Trust Council recommending that Trust Council become a signatory of the Howe Sound Community Forum's Principles of Cooperation. This would present a similar level of commitment as the Coastal Douglas-fir and Associated Ecosystems Conservation Partnership Agreement Council, signed in 2013, or the Transborder Island Agreement between the Islands Trust and the San Juan County, signed in 2007.
5. Recommend advocacy about Howe Sound in the 2015-2018 Strategic Plan. This would empower Executive Committee to request Chair/Vice-Chair attendance and staff attendance at Forum meetings.

FOLLOW-UP:

- 1) Staff will follow up as directed.
 - 2) Staff will advise Executive Committee of the date of the next Howe Sound Community Forum meeting.
-

Prepared By: Clare Frater, Policy Advisor, December 19, 2014

Reviewed By/Date: Lisa Gordon, Director, Trust Area Services, Jan 6th, 2015

Principles For Cooperation

Howe Sound Community Forum

To provide an overview of the need, purpose and structure for cooperative efforts by interested local governments and First Nations in the Howe Sound area.

1. Statement of Purpose

To provide a forum for local governments, Regional Districts and First Nations discussion to maintain and enhance the economic, environmental, cultural and social well being of the Howe Sound for the benefit of present and future generations.

2. Rationale (The Need)

The Howe Sound Community Forum will enhance collective action among local governments, regional districts and First Nations by:

- Providing a common forum for dialogue
- Sharing knowledge and information to avoid duplication of effort and to enhance any single organization's capacity for action
- Promoting the use of transparent processes that encourage awareness and involvement.

3. Scope (The area)

The Howe Sound area includes the marine waters and all the municipal, regional district, local trust committee and First Nation lands that drain into these waters, the surrounding airshed on the east side of the Strait of Georgia between Point Atkinson and Gower Point, and interested adjacent communities.

4. Common Vision

The Howe Sound Community Forum envisions that communities within the Howe Sound area can be healthy, productive and sustainable by:

- promoting compact and complete communities;
- encouraging safe and livable communities;
- encouraging an integrated transportation system;
- preserving a healthy and natural environment;
- nurturing cultural heritage
- supporting sustainable use of resources;
- fostering a vibrant and dynamic economy;
- raising awareness about land use; and
- ensuring the public is informed and encouraged to be active.

5. Shared Values

The Howe Sound Community Forum will involve the collective efforts of a wide variety of governments, First Nations, non-government organizations, the private sector, educational institutions and individuals to pursue the following values and objectives. The Forum shares the following values and objectives.

Value...Spirit of Sharing

Objective – The many interests and organizations in the Howe Sound can strengthen the effectiveness of programs by openly sharing information and knowledge.

Value... Action Orientation

Objective – The Howe Sound Community Forum will encourage groups to take actions that produce positive observable results and public benefit to communities.

Value...Efforts towards Sustainability

Objective - The Howe Sound Community Forum members recognize the need to effectively manage and maintain a balanced relationship between community development and the protection of unique biophysical and cultural qualities of the region.

Value.. The need for Cooperation

Objective –Governments, First Nations and organizations will be encouraged to work together.

Value...Stewardship

Objective – Voluntary action of individuals and organizations as a powerful and effective tool for achieving positive results is an objective of the Forum.

Value... Transcending Jurisdictions

Objective – The Forum will encourage communities to work together for the greater good because territorial lines on a map mean nothing in terms of sustainability.

Value...Focus and Transparency

Objective – Forum member programs will encourage clear objectives and use accountable processes that are available to Howe Sound Community Forum members and the public.

Value... Respect for Diversity

Objective – It is recognized that while every member of the Howe Sound Community Forum may have a different focus or interest, they are encouraged to acknowledge a shared interest in the sustainability of Howe Sound.

6. Structure (The Members)

A hosting community from the membership will act as the focal point and be responsible to coordinate meetings and agenda material.

The hosting community will rotate among the Howe Sound Community Forum members and meetings will be held annually, or more frequently, as requested by any member or as predicated by local issues.

Task forces or sub forums may be established to focus on specific projects.

Charter members of the Howe Sound Community Forum include elected representatives of:

District of Squamish	Greater Vancouver Regional District
Resort Municipality of Whistler	Squamish-Lillooet Regional District
Squamish Nation	Village of Lions Bay
District of West Vancouver	Sunshine Coast Regional District
Gambier Island Local Trust Committee	Bowen Island Municipality
Village of Pemberton	Town of Gibsons

7. Activities (Action and Results)

The Howe Sound Community Forum members are not expected to make decisions as a body and will achieve its objectives through activities that build on the talents, knowledge and actions of its individual members by:

- Facilitating information exchange about local or regional projects
- Supporting members by sharing information, research and best practices
- Apprise the public of topical and important matters that affect us all
- Identifying areas of public policy that require attention and projects that deserve the support of the Forum members
- Assessing progress through benchmark, monitoring, and program assessments; and
- Promoting transparency and accessibility by the Forum members.

Therefore, all the parties of the Howe Sound Community Forum commit to respect the Principles for Cooperation

Approved by the District of Squamish this 2 day of May, 2014 by [Signature]
Rob Kirkham, Mayor

Approved by the Bowen Island Municipality this 2 day of May, 2014 by [Signature]
Jack Adelaar, Mayor

Approved by the Squamish Nation this ____ day of ____, ____ by ____
Ian Campbell, Chief

Approved by the Gambier Island Local Trust Committee this 2 day of May, 2014 by [Signature]
for David Graham, Chair

Approved by Metro Vancouver this 25 day of July 2014 by [Signature]
Greg Moore, Chair

Approved by the Town of Gibsons this 24th day of JUN 2014 by [Signature]
Wayne Rowe, Mayor

Approved by the Village of Lions Bay this 2nd day of May 2014 by [Signature]
Brenda Broughton, Mayor

Approved by Squamish Lillooet Regional District this 21 day of Aug 2014 by [Signature]
Patricia Heintzman, Chair

Approved by the Sunshine Coast Regional District this 2 day of MAY 2014 by [Signature]
Garry Nohr, Chair

Approved by the Resort Municipality of Whistler this 21st day of Aug. 2014 by [Signature]
Nancy Wilhelm-Morden, Mayor

Approved by the Village of Pemberton this 2 day of May 2014 by [Signature]
Jordan Sturdy, Mayor

Approved by the District of West Vancouver this 2 day of MAY 2014 by [Signature]
Michael Smith, Mayor

**HOWE SOUND COMMUNITY FORUM
MEETING REPORT, October 17, 2014**

Hosted by Squamish Nation

Location: Sea-to-Sky Gondola, Squamish

Report prepared by Ruth Simons, Forum Coordinator, based on recorder notes

Participants: 63 participants, including local government officials, staff and observers (list separate)

AGENDA

Opening and introductions
Orientation on the Sea to Sky Gondola
Squamish Nation Presentation
Forum member introductions & updates
<i>Lunch</i>
Sea to Sky Clean Air Society – Update
Natural Capital Report – David Suzuki Foundation
Cumulative Effects Assessment for Howe Sound: Presentation and panel discussion
Next Steps – Draft Resolution for Councils
Host's closing remarks
Glass Sponge Reefs of Howe Sound – Marine Life Sanctuary Society & Underwater Council of B.C.

Welcome from Squamish Nation - Chris Lewis

- We are here to work on common issues for the future and the sustainability of Howe Sound.
- Reminded everyone to consider that we are all parts in an interwoven web and that it is important to ensure that the balance of nature is maintained. The spirits and creator remind us of this.

Welcome from Jason Faulkner, Founding Partner, Sea to Sky Gondola

- Sea-to-sky Gondola has done very well this summer. 30% ahead of forecast, sold 10,000 season passes this year.

Squamish Nation Presentation - Chief Gibby Jacob

- Emphasized the Squamish Nation history and the importance of remembering the past
- Discussed the struggles they have engaged in to protect the Howe Sound ecosystem
- Asked participants - "if you could write down one thing, for yourself, and answer the question, why are you here? what would it be?"
- Noted that they have a duty to engage in the issues that concern their territory and Nation. They will be here forever; they are not going anywhere.
 - "Saving Howe Sound is one thing, enhancing it is another."
 - "We need to find a commonality of purpose, and a commonality of objectives."

Council Member Chris Lewis

- Gave a brief history of Squamish.
- Many court cases have been won, there has been an evolving establishment of First Nations Rights and Title, duty to consult, and similar decisions.
- Capacity is an issue. Squamish Nation gets about 50 referrals a month, with one person to address.
- Priority is to protect Squamish rights and Title.
- The Squamish Nation have decided they will starting the process of preparing a Marine Use Plan.
- They already have Xai-temixw – Sacred Land, Land Use Plan, that includes Wild Spirit Places.
- A goal of the Marine Use Plan is to identify areas in the marine environment they want to protect.
- They are here today to forge a partnership, and appeal to agencies and local governments for help.
- Mentioned a study by the PSF regarding the impacts of tanker traffic in the Salish Sea (they want to

**HOWE SOUND COMMUNITY FORUM
MEETING REPORT, October 17, 2014**

work with the Squamish Nation).

- Question is how to sustain their livelihoods, and the livelihoods of neighbouring communities, and still protect the ecosystem.
- It is important for us to think about seven generations down the road.

Round table with elected officials

Sheila Malcomson, resigning Islands Trust Chair. Our mandate is to protect and preserve the ecosystem and communities of the Salish Sea. Work with 7 RD, 6 MLAs, 5MPs. Have been writing letters emphasizing the cumulative effects associated with LNG at Woodfibre.

Andrew Stone Councillor, Bowen Isl. – mentioned Fraser-Surrey Docks Coal proposal. Sits on the Metro Vancouver Environmental Parks Committee, unanimous decision from the board (which has broad municipal representation) several months ago to reject the proposal, after 2 days of presentations and deliberation. Subsequent research launched to look at the impacts of coal development in the region, but the Provincial Government has given green light on the proposal and are charging ahead. Air quality, especially particulate matter is a real concern. There is no legislation that requires that coal to be treated. After coal arrives at the Port, it is shipped up to Texada.

John Weston, MP - Joined today by Chris Lee, Manager of Aboriginal Affairs and Laureen Tang, Advisor on Aboriginal Affairs with Environment Canada. DFO Biologist Herb Klassen was on the phone. Minister of Transportation Lisa Rait and MP Colin Carey, Parliamentary Secretary to the Minister of Environment, visited the riding. Provided a list of contacts for relevant federal departments (copy attached).

Updates from organizations:

- Tankers: Distributed Ministry of Transportation brochure on Tanker safety 10-points summary and funding announcement.
- Working with Vancouver Aquarium – to create a centre of excellence (West Van lab site).
- Coal airshed - kudos to SCRD for forcing attention to this issue and taking local initiative.
- For future discussion, proposing the option of appointing a harbour master for Howe Sound under the Marine Act. *John is seeking input on this idea.*
- Town Hall regarding humanitarian aid to Iraq being held in the riding today.

Maurice Freitag – Retiring Area D (Britannia Beach) Director SLRD - has bought a boat and is exploring the Salish Sea to get a sense of issues.

Susie Gimse - Retiring as Area C Director SLRD - founding member of HSCF. Susie's one word goal for the day - "to learn"

Lee Ann Johnson, Councillor Town of Gibsons - was just on a webinar about Blue Carbon - they have a lot of eelgrass. Gibsons passed a unanimous vote against tanker traffic in the Salish Sea.

Donna Shugar, retiring, Sunshine Coast RD – Roberts Creek, - her goal is to ensure the protection and continued revitalization of the HS ecosystem. RE: coal issue - was disappointed with Federal response.

Alison Morse, Councillor, Bowen Island - For update on derelict vessels situation, talk to Bonnie.

Tim Rhodes, Councillor, Bowen Island - Emphasis on working together. Hoping to have discussion today about the Environmental Assessment process linked to Woodfibre LNG

Jan Hagedon, retiring Gambier Island Local Trustee, Islands Trust - Update on Gambier woodlots: lack of public consultation – have been pressing FLNRO to open the dialogue (waiting to hear from FLNRO as to status). Have funded Ramona DeGraff to do Forage Fish mapping (spawning surveys) in the Howe Sound area. Re: Parks around Gambier - Annapolis sinking: Environment Canada has issued a disposal at sea permit to sink it. It would be nice to have a more thorough plan to run these sorts of initiatives by.

Lee Turnbull, retiring Area F Director, SCRD - emphasis on the protection of Howe Sound area. Very interested in the Squamish Nation Marine Plan proposal. Burnco proposal – have expressed concern regarding amendments to the proposal (changed time frames). LNG: concerns with tankers and heated

**HOWE SOUND COMMUNITY FORUM
MEETING REPORT, October 17, 2014**

water effluent.

Rob Kirkham, Mayor, District of Squamish - Acknowledges hard working staff and support. There is strength and power in working together, in groups like HSCF. Storytelling is an important component moving forward. Woodfibre – District of Squamish has a committee doing research on potential impacts on Squamish and HS. Please visit website Squamish.ca/LNG to see meeting minutes and Q & As.

Trish Panz, Retiring, District of West Vancouver - Acknowledge Squamish Nation proposal for a Marine Plan. West Vancouver has serious issues with LNG – not included in the process and would like to be.

Frank Mauro, Area A Director SCRD - reiterate the importance of following up on the resolutions passed at the UBCM last year, e.g., RD and municipalities want more control over local issues. SCRD is going into an Official Community Plan review. Restated the Squamish First Nations message - it is our duty to think about future generations.

Garry Nohr, Chair SCRD - wants to finalize an effort to establish a protocol agreement with between Squamish First Nations and the SCRD. Have one with the Sechelt Nation.

Bill Soprovitch, Councillor District of West Van - Reiterate the strong message of cooperation.

Patricia Heintzman, Chair SLRD, Councillor District of Squamish - highlighted that the role of the Coast Guard is absent in Federal Government document handout on tanker traffic.

Brenda Broughton, Mayor, Village of Lions Bay - Village of Lions Bay Council has been involved in letter writing and resolutions regarding Woodfibre LNG.

Joanne Ronsley, Councillor Village of Lions Bay - gratitude to Squamish Nation and to Ruth Simons.

Nora Gambioli, Councillor District of West Vancouver - Hello and thank you to group.

Sea to Sky Clean Air Society - Peter Frinton, Chair - expanding their membership and looking at new funding structures.

Natural Capital in Howe Sound- Michelle Molnar, Environment Economist (Key Findings)

- The study is an economic argument for nature.
- Focus has been on the goods/services for which there is no existing economic valuation.
- Approach - look at the quantifiable costs associated with the degradation of nature; these figures represent only a fraction of the value.
- Output 1 - Maps. Seven maps that show the distribution of ecosystems, development, tourism, etc.
- Output 2 - Ecological Values. Valued 11 services, e.g., \$1 - 5 billion per year saved by maintaining the ecological integrity of the Sound. Top ecological services: tourism and recreation \$304,000ha/yr, regulating disturbances \$84,000ha/yr, habitat \$66,000 ha/yr, beaches \$225,105 ha/yr, wetlands \$172,946 ha/yr, eelgrass beds \$87,203 ha/yr

Study Applications:

- First Nations - can use in referrals, land and marine planning
- Prov/Fed governments - CEA; EIA; Financial Assurances
- Local government - asset management programs (DSF is working with some pilot municipalities on how to manage the natural environment as an asset), infrastructure planning
- Science/research: work remains to be done on biophysical measures to pair with economic measures, missing ecological services and distribution of benefits
- Hoping the report will be out in about a month (maybe slightly longer).

Proposed Provincial Cumulative Effects Assessment and Monitoring Project for the Howe Sound Area
(presentation available separately)

FLNRO: Jeff Juthans, Land and Resource Specialist; Steve Kachanoski, Marine Resource Specialist; Scott Barrett, Manager of Resource Management for South Coast Region

Context: After past meetings with HSCF on possible CEA for Howe Sound, they were asked to come back with a decision on proceeding and information on proposed valued components.

**HOWE SOUND COMMUNITY FORUM
MEETING REPORT, October 17, 2014**

CEA Background

- Overview: Steps: define values/objectives -> assemble data and identify trends - create a report - review report and make recommendations (every 3-7 yrs) -> decision support tool
- Management actions needed would ideally match the level of risk identified by the CEA

Phase 1 Implementation of CEAF in BC

- Being piloted in the MaPP region (Marine Planning Partnership for Haida Gwaii, North Coast, Central Coast and North Vancouver Island) - marine; North-east Area (terrestrial); Thompson Okanagan (terrestrial), and now, possibly Howe Sound – terrestrial and marine.
- These areas have helped to engage in the “building a values [value components] foundation”.
- Development of terrestrial valued is further ahead in the CEA framework.

Proposal for CEA in Howe Sound – see slides and presentation notes for details

Planning Area: Howe Sound straddles 3 FLNRO Natural Resource Districts - Chilliwack, Sea-to-Sky and Sunshine Coast; see map of proposed landscape units to be included in Howe Sound CEA: seeking feedback on geographic scope

Timeline: Looking at a 2 year period for roll out. 4 values in 2015, the rest in 2016.

Proposed Value Components for Project: see slides and presentation notes

Next steps – Jeff Juthans:

- Is there support from the Forum? Response needed through local government resolutions.
- Will follow up with First Nations.
- Will continue project scoping, including determining boundaries for study area.
- Will follow up with consulting stakeholders.

Q & A:

Q - how quickly can this get started?

A: Next step would be to develop a Project Charter and work plan.

Q - how are benchmarks of low/med/high informed, and strategic plans measured against the CEA?

A: Not a clear answer.

Q: how is this different from the *status quo*?

A: what we're proposing is a current condition evaluation

Q: where are other marine values - other forage fish, eelgrass, marine mammals. When/how do these other values get added?

A: These commitments are based on what could be delivered in 2 years; we had to start somewhere. There will be opportunities to add other values and there is potential to tweak this list.

Q: Comment – important to extend the boundaries.

Q: what comes after 2 years?

A: This provides the basis for a long term monitoring process.

Q: boundary - are you considering extending up to Pemberton?

A: We hadn't at this point, but it could be up for discussion.

Q: Where are the values related to jobs and the economy?

A: It's not something being considered at this time, but something we've talked about. It is the intention to look at economic growth down the road.

Q: Hard to see how this information would be used in decision making (say in the shoes of a minister). A Marine Plan makes more sense to me.

A: This is only meant to be used along with other decision support tools.

Comment - this is an opportunity to assess what is broken and how we're going to fix it.

Q: how do the current projects fit into this proposal –

**HOWE SOUND COMMUNITY FORUM
MEETING REPORT, October 17, 2014**

A: They are not part of the CEA timeline or scope.

Q: comment - We need make sure that this initiative is well linked to supporting the idea of the Marine Use Plan put forth by the Squamish.

Q: comment - there are many Squamish FN values that are missing from this list (e.g. shellfish, ooligan)

Draft Resolution in support of CEA - Ruth Simons (see revised Resolution – slightly different wording)

Comments on the draft resolution in support of proceeding with a Cumulative Effects Assessment:

- Aspect of economic growth and prosperity is not as included and should be.
- Environment is the basis for the economy.
- Monitoring is important. Strong comment on the role of the Forum to be more forward-thinking as opposed to reactionary to proposals. Need to strengthen the Forum.
- Ruth: reminds everyone that this is just a resolution and that the Principles Of Cooperation include the values of communities and economic growth along with environmental values.
- Concluded with consensus that the resolution in support of the CEA would be taken back to Councils and Boards for submission.

Draft resolution in support of Squamish Nation Marine Planning – Refer to resolution

- *Consensus in favour*

Closing remarks:

- Chief Gibby Jacob and Council Chris Lewis: “All good things start at the top of a mountain, and flow their way into the sea.” (Chris)

Glass Sponge Reefs of Howe Sound – Adam Taylor, Director Marine Life Sanctuaries Society

- MLSS together with other agencies are seeking to extend Halkett Bay Marine Park to protect rare sponge reefs accessible to divers. Refer to Youtube video “Cradles of Glass”.
- ***Resolution in support (by Howe Sound Community Forum) recommended by Chief Gibby Jacob***

Next Forum – Bowen Island (to be confirmed) – February 2015 (tentative)

Resolution re Cumulative Effects Assessment for Howe Sound

Background:

In 2014 members of The Howe Sound Community Forum - District of West Vancouver, Village of Lions Bay, District of Squamish, Town of Gibsons, Municipality of Bowen Island, Resort Municipality of Whistler, Village of Pemberton, Gambier Island Local Trust, SLRD, SCRD and Metro Vancouver, renewed their commitment to the Principles for Cooperation. The majority of these local governments supported the following resolution passed at UBCM September 2013:

WHEREAS all local governments around Howe Sound are currently dealing with recent multiple referrals and applications for gravel, liquid natural gas, coal and bitumen;

AND WHEREAS Howe Sound is a sensitive, ecologically significant area of unparalleled scenic beauty, and provides important ecosystem services for various First Nations, senior and local governments, and is without a land and marine use plan to facilitate a coordinated approach to land and marine use planning;

AND WHEREAS there has been no discussion between the local governments and the Squamish First Nation regarding the cumulative potential impacts;

AND WHEREAS there is a growing concern regarding the future of Howe Sound as commercial, industrial and recreational uses expand without an approach for assessing the cumulative impacts of those increased uses, thereby putting recent progress of significant ecosystem recovery at risk:

THEREFORE BE IT RESOLVED that UBCM urge the provincial government to support the development of a Comprehensive Management Plan for Howe Sound that facilitates a coordinated land and marine use planning process between First Nations, senior and local governments, and other local bodies to ensure ongoing recovery and responsible land use planning within Howe Sound.

The request was referred to the Ministry of Forests, Lands and Natural Resource Operations. By way of correspondence, Minister Thomson responded negatively to a Land Resource Management Plan for Howe Sound, but is supportive of planning and acknowledged the potential cumulative effects that multiple projects and expanded development may have on the Howe Sound land and marine region.

In January 2014 the Province of BC, via the Ministry of Forests Lands and Natural Resource Operations (FLNRO), committed to implementing a Cumulative Effects Assessment Framework throughout the province over the next several years.

Resolution re Cumulative Effects Assessment for Howe Sound

The Howe Sound Community Forum received presentations and Q & A sessions on the CEAF from Ministry Staff at a Forum meeting in January 2014 and a webinar in February 2014. Forum member communities then expressed interest in further exploring the CEA for Howe Sound through submitting individual Council resolutions to the FLNRO Minister. Ministry staff again presented at Howe Sound Community Forums on May 2nd, and October 17th, 2014.

The use of Cumulative Effects Assessment (CEA) as a decision support tool was also discussed at the Howe Sound Aquatic Forum in April 2014, an event attended by diverse government and non-government stakeholders and First Nations. The Aquatic Forum report expressed participant support for an integrated planning approach that incorporates multiple complementary tools. These could include strategic (marine) planning; marine spatial planning and management; marine protected areas planning; and action planning; combined with decision support tools, such as CEA and ecosystem services assessments. Project-level environmental assessment is another decision support tool currently being used in the Sound.

On October 17th, FLNRO offered to proceed with a Cumulative Effects Assessment, to be undertaken within the Provincial CEA Framework, but tailored to local governments' request for an area-wide approach. In order to focus on the Howe Sound area, the CEA will generally be based upon the Landscape Units around Howe Sound, with assessment work commencing in early 2015.

Therefore let it be resolved:

As a member of the Howe Sound Community Forum, _____ accepts the FLNRO's offer to conduct a Cumulative Effects Assessment (CEA) for Howe Sound, within the BC CEA Framework but tailored to the Howe Sound area, with assessment work commencing in early 2015.

It is also recommended that Council continue its commitment to the Howe Sound Community Forum and its ongoing contributions towards achieving comprehensive land and marine planning for Howe Sound over 2014-2018.

Howe Sound Community Forum

Background:

On October 17, 2014 at the Howe Sound Community Forum, was hosted by Squamish Nation at the Sea to Sky Gondola.

Squamish Nation Council member Chris Lewis announced to the Forum members the Squamish Nation's decision to start the process of a Marine Use Plan, with the goal to identify areas in the marine environment that they want to protect. The Squamish Nation's intention through the Howe Sound Community Forum is to forge a partnership, appeal to agencies and local governments for help.

The Nation seeks to find ways to sustain their livelihoods, and the livelihoods of neighbouring communities while still protect the ecosystem.

Squamish Nation has in place the Xay Temixw – Sacred Land, Land Use Plan which describes the community's vision for the future of the forests and wilderness of the traditional territory. A Marine Use Plan for Howe Sound is the next phase of planning.

In response to this announcement, members of the Howe Sound Community may respond with the following resolution:

Be it resolved:

_____ thanks the Squamish Nation for hosting the Howe Sound Community Forum on October 17th, 2014 and for the attendance by Chief Gibby Jacob, Chief Bill Williams, Councillors Chris Lewis, Josh Joseph and Richard Baker.

And, we respectfully acknowledge and support Squamish Nation's intention to commence marine planning for Howe Sound.