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Coastal Needs Assessment for Landscape Ecology and Conservation Biology



FORREX Forum for Research and
Extension in Natural Resources

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Diane Boyd



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EXECUTIVE SUMMARY

This report summarizes the findings of a qualitative study designed to document information needs for the FORREX Landscape Ecology and Conservation Biology program for coastal British Columbia. This assessment gathered input from a diverse base of collaborators who have experiential knowledge in conservation biology in coastal BC. An electronic survey was conducted in April 2009 in which respondents identified issues in need of extension, prioritized those issues, and identified their preferred extension methods.

The issues of top priority, ranked in order of importance, were 1) climate change; 2) species at risk; 3) salmon conservation; 4) timber species and age composition/distribution/proportions; 5) independent power producers (riparian, biodiversity, aquatic system effects); and 6) timber harvesting practices (including high-grading, leave trees, residual coarse woody debris, and tree patches).

The collaborator groups identified as most in need of extension on coastal conservation and management issues, ranked in order of importance, were 1) government, 2) First Nations, 3) environmental non-government organizations, and 4) industry (including timber, oil and gas, and mining). According to survey respondents, the consulting and tourism sectors need extension the least.

The preferred methods of extension, ranked in order of preference, were 1) electronic newsletters/distribution lists, 2) extension notes, 3) workshop/technical session, 4) websites, and 5) conferences. The least preferred methods of extension were multi-media products, mailed hard copies, and one-on-one assistance.

Issues identified as the most important future challenges were climate change, ecosystem-based management, keeping human communities socio-economically and environmentally viable, integrating information exchange with First Nations, and degraded forest health.

KEYWORDS: *assessment, challenges, coastal, conservation, extension, information, management, needs, priority, survey.*

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Author Contact Information

Diane Boyd, Extension Specialist, Landscape Ecology and Conservation Biology, FORREX Forum for Research and Extension in Natural Resources, 400-235 1st Avenue, Kamloops, BC V2C 3J4
Email: society@forrex.org

CONTENTS

EXECUTIVE SUMMARY	iii
ACKNOWLEDGEMENTS	iv
1. INTRODUCTION	1
2. METHODS.....	1
2.1. Study Design.....	1
2.2. Study Delivery	2
2.3 Study Limitations.....	2
3. RESULTS	3
3.1. Identifying coastal conservation and management issues	3
3.2. Prioritizing coastal conservation and management issues	5
3.3. Which groups were identified as in the most need of extension on coastal issues?.....	6
3.4. Preferred extension methods	6
3.5. Future challenges for the coast	7
3.6. Miscellaneous comments	8
4. DISCUSSION AND CONCLUSIONS.....	9
REFERENCES	11

1. INTRODUCTION

The purpose of the FORREX Landscape Ecology and Conservation Biology extension program (LECB) is to enhance communications, knowledge exchange, and the application of existing innovative science and research for a diverse audience in the natural resource use and conservation community. The LECB program provides extension services to stakeholders seeking information on conservation and management topics in British Columbia (BC). The assessment focused on the information needs of coastal BC. Respondent perspectives that were collected in the survey are summarized in this report, not the author's interpretations of respondents' input. This report complements a previous FORREX assessment on coastal watershed management information needs (Pike 2004). The survey responses will guide FORREX strategic planning for the LECB extension program in order to help natural resource practitioners in coastal BC address natural resource challenges.

To better extend information to a wide range of collaborators, it is necessary to first identify what the collaborators' knowledge gaps are, prioritize the knowledge gaps, and come up with the most effective way to deliver this information. To initiate this process, the LECB Extension Specialist conducted a coastal needs assessment in April 2009, and the results are presented herein. Another analysis will be conducted outside the scope of this report that will separate the extension gaps (available information that needs to be extended) from the research gaps (research needs to be done, information is not available).

2. METHODS

2.1. Study Design

The coastal needs assessment survey was designed by the FORREX LECB Extension Specialist with input from FORREX cohorts, and implemented through an electronic survey. The survey consisted of a mix of open-ended and multiple choice questions that were similar in nature to previous FORREX surveys (Pike 2004; Redding et al. 2007; Morford and Hollstedt 2007). A web-based survey was conducted rather than a telephone survey because of resource constraints. All responses were completely anonymous.

This assessment had three objectives:

1. Identify coastal conservation/management issues of concern
2. Prioritize these coastal conservation/management issues in terms of knowledge gaps
3. Identify which extension delivery methods were preferred by survey respondents

The target audience was comprised of individuals from diverse backgrounds in the natural resource community. Selection of respondents was based on their profession, position within their organization, and familiarity with BC coastal conservation issues and extension needs. The author collected respondent recommendations by calling colleagues and persons registered in the FORREX collaborator database to ask for their participation and for their recommendations of other survey respondents. This targeted approach to a smaller subset of respondents was intended to collect the most relevant information on coastal information needs from the most experienced people. Effort was made to solicit input from the following sectors:

- Academia
- Consultants
- Federal government
- First Nations
- Industry (forestry, mining, oil and gas, fisheries)
- Major licensees
- Minor licensees
- Non-government organizations
- Provincial government
- Tourism industry

The intent of this survey was to conduct a qualitative rather than quantitative information needs assessment. Therefore, the study design pooled respondents across all subsectors within the natural resource community rather than separated them. This was done because the sample size within each sector would be too small to analyze for statistically significant differences among the sectors, with potentially only one or two respondents from each sector category.

2.2. Study Delivery

An initial draft database of respondents was created after reviewing FORREX client databases, natural resource practitioner websites, and recommendations from colleagues. After reviewing this first cut and reassessing how to best represent a diverse range of sector interests, the potential respondent list was reduced to 101 people. All 101 were sent an introductory email letter explaining the nature and scope of the electronic survey. This email contained a link to the web-based coastal needs survey. One week after the initial e-letter was sent, a follow-up e-letter was sent to the recipients politely asking them to please participate in the survey. The recipients were allowed 10 days (April 21 to May 1) during which they could respond to the survey. After that time, the survey was closed and analysis of the responses was conducted.

2.3 Study Limitations

One major limitation of the electronic survey was the complete anonymity of the respondents and lack of ability to ask the respondent for clarification. Some answers to the open-ended questions were very short or cryptic and would have yielded better information through clarification that would have been possible during a telephone survey. The nature of open-ended questions inherently involves responses at a variety of temporal and spatial scales, creating a challenge for comparative analysis.

This needs assessment was intended to solicit input from a representative sampling of resource practitioners, managers, and resource users of the coast region. The original sample population of 101 people included individuals from a diverse base of professional and experiential backgrounds. However, the 20 people who anonymously responded may or may not have represented an unbiased sampling of the full distribution list. Additionally, the FORREX Socio-economics Extension Specialist had recently completed a needs assessment with First Nations representatives; it contains data applicable to this coastal needs assessment. Therefore, to avoid burdening First Nations people with another assessment process, we did not contact them. Preliminary results from the socioeconomic needs assessment are discussed herein and is available under a separate document (Krishnaswamy et al. 2009) on the FORREX website. If the socioeconomic assessment does not contain the information needed for this LECB survey, then personal visits with strategically selected First Nations representatives will be conducted at a later date. These responses will be incorporated into the LECB extension program.

3. RESULTS

The survey was sent electronically to 101 individuals from various sectors. Forty-four respondents visited the coastal needs survey on the website and of these, 20 people completed the survey, for a 20% response rate.

3.1. Identifying coastal conservation and management issues

The respondents were asked to identify (open-ended question) the five key (Hollstedt 2000; Pike 2004) environmental and/or resource/policy/management issues for which collaborators required more information about the BC coast. With each open-ended question, numerous possibilities could be listed by the 20 recipients. For example, given that 20 people responded to list five key coastal issues, a possible one hundred choices could be listed. Several answers from different respondents were duplicates and thus, were pooled during analysis.

Individual responses were pooled by theme. Several important themes for extension emerged from this survey and, in order of ranking, were as follows:

1. Climate change (CC)
2. Species at risk (SAR)
3. Salmon conservation
4. Species and age composition/distribution/proportions
5. Independent power producers (IPP) (riparian/biodiversity effects)
6. Timber harvesting practices (including highgrading, leave trees, coarse woody debris, and forest patches)

TABLE 1. Coastal conservation and management issues.

Topical Issue	Number of Responses
Climate change (CC) including protected area management, CC adaptation tools, CC and hydrology, forest management in light of CC, vulnerability and adaptation	10
Species at risk (SAR) including habitat inventory, SAR on the south coast, lack of protection, BC implementation of Species at Risk Act, loss of rare/Garry Oak habitat, SAR habitat protection in light of CC	8
Salmon conservation including aquaculture, sea lice, and overexploitation	6
Independent Power Producers (IPP), powerlines, biodiversity	5
Water resources/watershed function/biodiversity of riparian areas	5
Invasive alien species	3
Marine traffic including public anchorages and harbours	3
Marine protected areas	2
Urbanization/loss of rare habitat	2
Pollution and impacts to biodiversity	1
Need of a Conservation Area Design	1

Roads, access management	1
Non-timber forest products inventory and management	1
Soil conservation and soil carbon	1
Lack of species and ecosystem inventory data	1
Lack of communication to inform management	1
Need to understand changing ecosystems	1
Lack of tracking of land use	1
Allocation of public monies in BC	1
Lack of cumulative impact assessment	1
Effectiveness of conservation efforts	1
Impacts of Department of Fisheries and Oceans, Rockfish Conservation Areas	1
Impacts of Parks Canada's future National Marine Conservation Areas	1
Abalone slow recovery	1
Sea otter range expansion, impact on coastal shellfish	1
Herring decline	1
Terrestrial/marine interface	1
First Nations community health	1
First Nations resource stewardship	1
Short-term economic drivers on decision making	1
Marine temperature and cycling changes	1
Oil and gas development	1
Management approaches/Policy issues	Number of Responses
Tenure reform	3
Ecosystem-based management (EBM)	2
Is "due diligence" approach working?	1
Biomass harvesting	1
Operational issues	
Species and age composition/distribution/proportions, stand to landscape; coastal Douglas fir conservation	6
Timber highgrading including partial cutting, stand degradation	3
Old-growth retention: long-term value of leave trees and patches	2
Coarse woody debris retention	1
Clearcut logging	1
Reduction of silvicultural operations	1

Harvesting impacts on other resources	
Forestry impacts/EBM on coastal bears	3
Carbon storage and cycling, conservation/harvest	2
Aquatic ecosystem integrity, harvesting impacts	2
Terrestrial ecosystem integrity, harvesting impacts	1
Ecological value of cedar	1
Single species vulnerability, harvesting impacts	1
Pressure on Wildlife Habitat Areas, Ungulate Winter Ranges, Old-Growth Management Areas	1
Visual landscape management	1

3.2. Prioritizing coastal conservation and management issues

When asked to prioritize their top two most important issues out of their listed five issues, the respondents identified several common themes as high priority including habitat inventory, climate change, water resources, and forestry practices. The detailed breakdown is as follows:

TABLE 2. Prioritized coastal conservation and management issues.

Priority #1 (highest priority)	Priority #2 (second highest priority)
Habitat inventories of SAR	Habitat inventories of species of management concern
Old-growth retention	Long-term aspects of leave tree and patch
Climate change	EBM
Ecosystem integrity	Climate change and carbon
Water resources	Independent power producers
Seral stage proportions, distribution	Roads, access management
Effectiveness of conservation efforts	Pressure on Wildlife Habitat Areas/Ungulate Winter Range/Old-Growth Management Areas
Timber tenure reform	Watershed management/salmon
Riparian Conservation Areas/National Marine Conservation Areas, reserve effects	Abalone recovery and sea otter expansion
Conservation in Douglas fir zone	EBM in Great Bear Rain Forest
Cumulative impacts	Aquaculture
Oil and gas	Impacts of seals on salmonids
Conserving stream flows for fish	Highgrading of cedar
Climate change including carbon dynamics	Second-growth forest structure
Drinking water	Managing in light of climate change

Due diligence	Protection of marine ecosystems
Implications of forestry on coastal grizzly bears	Lack of protection for SAR
Lack of species and ecosystem inventory data	BC implementation of federal SARA
SAR habitat protection in light of CC	No response (n = 1)
No response (n = 1)	

The respondents were asked if each of these issues was unique to the coast and 77% said the issues were not unique to the coast.

3.3. Which groups were identified as in the most need of extension on coastal issues?

Respondents were asked to identify at least one group, of the 10 listed below, that were most in need of extension for each of the five issues that respondents identified. The collaborator groups that were identified as needing the most extension on coastal conservation issues, ranked in order of importance, were 1) collaborators within the government,¹ 2) First Nations, 3) environmental non-government organizations, and 4) industry. The groups least in need of extension were collaborators within the consultant and tourism sectors.

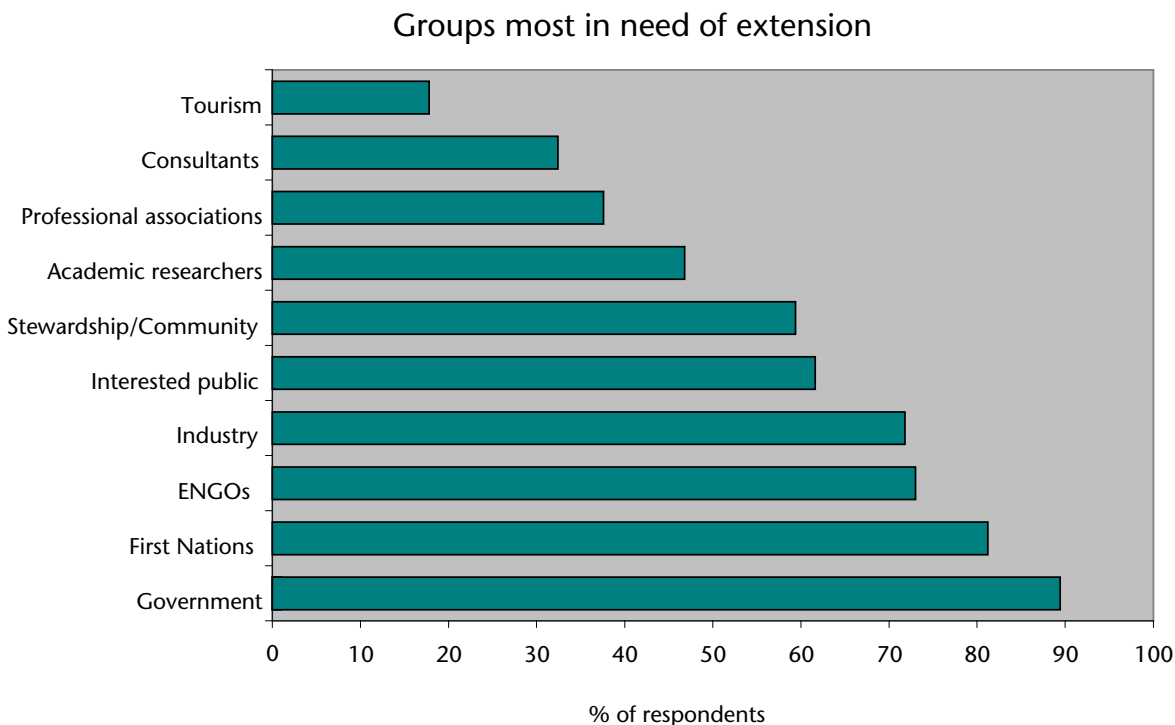


FIGURE 1. Groups most in need of extension.

¹ Includes federal and provincial governments.

3.4. Preferred extension methods

From a list of 16 choices, respondents were asked to select which extension methods would be the most helpful to them for receiving information about coastal issues. The preferred methods of extension, ranked in order of preference, were 1) electronic lists, 2) extension notes, 3) workshops/technical sessions, 4) websites, and 5) conferences. The least preferred methods of extension were multi-media products, mailed paper copies, and one-on-one assistance. The respondents could select more than one extension method from the following list, ranked by respondents' preference:

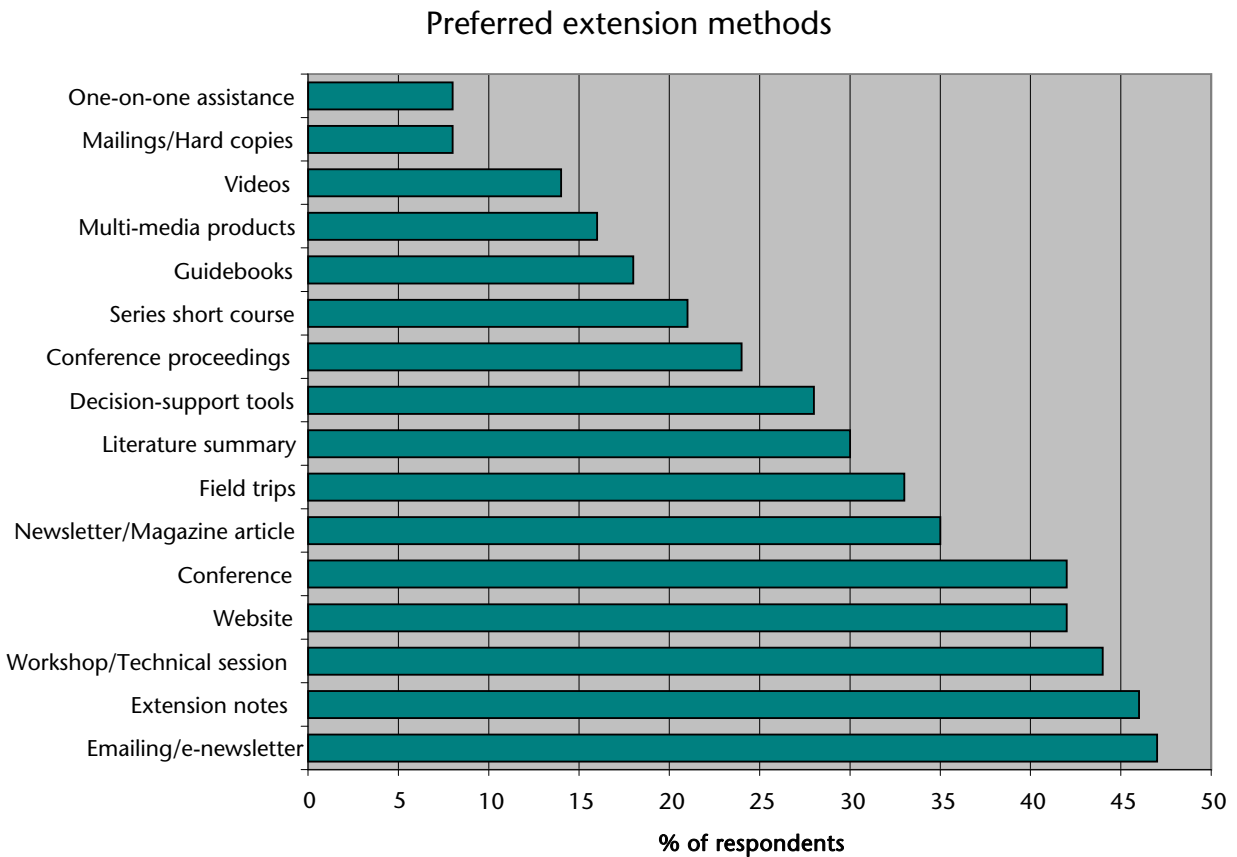


FIGURE 2. Preferred extension methods.

3.5. Future challenges for the coast

The respondents were asked an open-ended question to list what they saw as the most important future challenges to coastal natural resource management. Issues identified as the most important future challenges were climate change, ecosystem-based management, keeping human communities viable, integrating with First Nations, and degraded condition of forests.

Future challenges to coastal conservation and management (n = 15), unranked, quoted by individuals were as follows:

- Being true to EBM, which to this day has not yet occurred since it means not putting an environmental account at risk
- Keeping communities viable, detaching from industrial forestry and expanding local innovative enterprise
- Impacts from climate change. Increased marine traffic and impacts to marine species and systems. Increased pressure for development—aquaculture, oil and gas, nearshore development, etc.
- Co-operation and support of influential interested parties in EBM, government to government co-operation informed by independent science
- Marine protected areas, logging and grizzly bears (Great Bear Rainforest), integration with First Nations
- Invasive alien species and their management, CC effects, and adaptation to CC
- Lack of tracking and inventory
- Incorporating consideration of CC into all of our management decisions
- Lack of active management and consequent loss of resource values
- Pressure on reserves, special management zones and non-timber values from search for additional sawlog timber and biomass requirements; understanding scalar linkages in conservation planning versus response; effectiveness of management at range of scales in meeting non-timber resource conservation objectives
- The degraded condition of the forest resource is the leading problem of the coastal sector. Restrictions on trade along with a general unwillingness of the forest industry to be innovative are also offering huge challenges to the coast.
- Abalone recovery in the face of an expanding sea otter population (both species listed under SARA)
- How to make a living and return money to the communities
- Evolution of shared-decision making with First Nations; increased pressures during poor economic conditions; provincial dependency on primary industries
- Preventing all these industries from trashing the coast like they have in other ecosystems

3.6. Miscellaneous comments

The last question of the survey asked for any additional comments. Respondents (n = 7) replied:

- My opinions on the best extension methods reflect my personal preferences. I don't know what those of the larger communities of collaborators might be.
- Additional ideas on gaps and research in recent report to Ecosystem-based management Working Group:
Fenger, M., S. Howard, S. Loos, and R. Holt. 2009. Active Adaptive Management in Experimental Watersheds Research Design. Prepared for the EBM WG by Mike Fenger and Associates Ltd.
- Some of the coastal issues are related strongly to the south coast (where most of the humans are), e.g., invasive alien species, species at risk, roads and access.
- Note that all five issues are not unique to the coast, but the coastal context of how these issues play out IS unique (e.g., alternative silviculture on the coast is different from that practiced in Interior; management scale linkages on the coast are expressed through EBM; biomass harvesting on the coast will play out totally different than in the Interior; pressure on WHA/UWR/OGMAs for additional timber will be higher on the coast; climate change impacts will play out different on coast than Interior.
- If the coastal economic situation does not change it will be extremely difficult to draw investment or qualified labour back to the coast.

- Coastal BC is a treasure that is rapidly becoming degraded from multiple threats to ecosystem integrity.
- Proving good drinking water and complex stand structures can co-exist with managed forests is critical to maintaining the forest land base and public confidence

4. DISCUSSION AND CONCLUSIONS

This LECB needs assessment will serve as a helpful guide to initiate extension efforts on coastal conservation and management issues. The broad nature of the open-ended answers at varying temporal and spatial scales helps identify where focus groups are needed to further refine the knowledge gaps.

This coastal needs assessment builds upon previous needs assessments conducted by FORREX (Krishnaswamy et al. 2009; Morford and Hollstedt 2007; Pike 2004, Hollstedt 2000; Gregory and Satterfield 1999). However, the various studies used different methodologies and none of the previous assessments focused on coastal conservation biology, so results may not be directly comparable.

Morford and Hollstedt (2007) conducted a needs assessment and asked respondents to identify who should be the primary target audiences for forestry extension services in BC over the next five years. The 2007 assessment by Morford and Hollstedt emphasized forestry extension needs and tools; that differs from the present LECB survey. Respondents in Morford and Hollstedt (2007) were given a list of forestry-oriented topics and asked to select those that they felt had the highest extension priority in BC. In the present survey, this same question was open-ended and thus choices were not comparable. However, species at risk and improved inventories rated fairly high in both surveys. Both studies generally identified forestry-related professions, First Nations, and provincial/federal government as the most important collaborators for extension needs, and both identified the public as low on the list of collaborators in need of extension.

Pike (2004) identified coastal watershed management needs and used open-ended questions similar in format to this LECB coastal needs assessment. However, Pike (2004) focused on watershed management issues while this study considered all coastal conservation biology topics. Nonetheless, issues that were identified as high-priority information needs included salmon conservation, effects of climate change, and water flows. Independent power producers were frequently identified by respondents in this LECB assessment, but not in Pike (2004), so this may be an emerging issue in need of increased extension efforts.

Krishnaswamy et al. (2009) conducted an information needs assessment with First Nations representatives in BC. For all of BC (not just the coastal region), First Nations respondents were asked to select from a list of eight topics they needed information about regarding ecosystem-based management and biodiversity. All respondents identified “improved inventories for ecological values” and “assessing, managing, monitoring, and evaluating biodiversity” as categories in need of more information. Approximately 65% of respondents identified “habitat requirements for species at risk” as a category in need of more information. The question about which type of extension methods were preferred was posed differently during the LECB present survey, so a comparison cannot be made between the two surveys.

In summary, the present LECB study recommends that a telephone survey or interview would be a better tool than an electronic survey to collect collaborator information. Nonetheless, good information about knowledge gaps was obtained from coastal BC collaborators of diverse backgrounds. The results of this

survey and subsequent focus group meetings will be used to develop extension for the LECB program. The information gained about which extension methods are preferred will help guide the outputs and activities of the LECB plan and outreach endeavours.

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