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*Report on*  
**Stewardship Education  
and Outreach Inventory  
and Gap Analysis**

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Prepared for  
**Canadian Wildlife Service,  
Habitat Conservation Trust Fund  
and Fisheries and Oceans Canada**  
by  
**Dovetail Consulting Inc.**

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# 1 Introduction

This report is submitted by Dovetail Consulting Inc. to the Canadian Wildlife Service, the Wildlife Habitat Trust Fund and Fisheries and Oceans Canada. The research team was Dr. Julia Gardner, Dr. Buffy Baumbrough, Julian Griggs and Karin Albert. The report accompanies spread-sheets produced in Microsoft Excel. Together, the report and the spreadsheets are the results of a project to inventory and analyse gaps in stewardship education and outreach products and programs in BC.

## 1.1 Objectives

The two objectives of the project were to:

1. Undertake a comprehensive inventory of outreach and education products and programs providing aquatic and terrestrial stewardship information to the public in British Columbia. This inventory will establish a database with basic descriptions of stewardship education and outreach (SEO) materials and programs for the Stewardship Centre (see 1.2), and will support objective 2, below.
2. Provide an analysis of the gaps (and overlaps) in information and educational services these materials and programs provide, in terms of:
  - A) their coverage of stewardship topics,
  - B) their reach and potential impact on learners and/or prospective stewards.

## 1.2 Context

The last five to ten years have seen government agencies at all levels and NGOs promoting private land and watershed stewardship. An extensive array of programs, products, training and education materials is now available on a wide variety of stewardship-related topics, or topics that support stewardship education. This project stems from the need to review which government and non-government organizations are supporting stewardship programs, and what products are currently available. The products of the project will contribute to the Stewardship Centre for British Columbia, which is currently under development. The Centre has been defined in publicity materials as follows:

The *Stewardship Centre's* primary purpose will be to provide access to information that fosters awareness, provides practical advice, and technical assistance to help preserve and enhance habitats and ecosystems throughout B.C.

The *Stewardship Centre* will be a place where anyone with an interest in environmental matters – from a homeowner to a local government – can communicate with, and learn from other people's experiences and knowledge. This network will help facilitate creative collaborations and

constructive partnerships to meet the challenges of responsible stewardship of land and water.

In particular, the results of this inventory will provide the foundation for a link library and resource access centre of related stewardship initiatives and organizations.

Other research was underway concurrently with this project to address other development needs of the Stewardship Centre. Our consultant team communicated with Katherine Morgan, who was working on linkages between the business sector and the Stewardship Centre; Sara Muir, who was working on linkages with the academic sector; Sabina Tamm, who was working on linkages with community groups, and Doug Backhouse, who was working on the database for the Stewardship Centre.

Following are additional anticipated benefits of this inventory research:

- a geo-referenced inventory as a resource for internal and external audiences,
- an extended network of partners providing stewardship education and outreach,
- support for strategic cooperation between stewardship programs,
- potential budget savings in future projects,
- identification of agencies or NGOs who are potential conduits for information generated by government agencies,
- identification of areas where programs and products are needed,
- means of setting priorities among incoming requests for funding of new initiatives in stewardship education and outreach.

### ***1.3 Working Definition of Stewardship Education and Outreach***

Documentation for the Stewardship Centre states that:

Stewardship promotes environmental leadership, awareness, co-operation and innovation by people, businesses, schools, organizations, and governments.

Effective stewardship overcomes economic and social obstacles and inspires the conservation and restoration of watersheds and ecosystems.

A working definition of stewardship education and outreach was developed for this project to help establish the boundaries of the research, as follows:

Environmental stewardship education and outreach encompasses educational programs and materials that encourage (promote or stimulate) people to voluntarily take responsibility for the land and water over which they have some influence. This involves changes in behavior that reduce negative impacts on the environment or enhance the environment.

## **1.4 Scope**

The *potential* scope of the inventory is very broad. The inventory could incorporate all activities in B.C. that are initiated by the public or voluntary sector, that address environmental education, and/or that promote stewardship by individuals as volunteers or workers. This potentially includes everything from an annual workshop for science teachers, through training for forest workers on the Forest Practices Code (provided by government and contractors around the province), municipal Environmental Advisory Committees in the various cities, the fish hatcheries, the myriad on-the-ground habitat monitoring and restoration projects of naturalists and other groups, the extension work of agencies and post-secondary education institutions, the numerous park-based interpretive programs, the widely dispersed and varied programs offered by community centres and museums, to all the brochures, booklets, guides, etc. associated with these programs or produced independently. The programs and products within the scope described above would number in the thousands.

The research could not cover the above topics comprehensively in the time available. Therefore the scope was defined through an iterative process involving advisors from the sponsoring agencies, initial estimates of the potential volume of stewardship education and outreach (SEO) initiatives and a series of draft research frameworks.

### **1.4.1 Producers, Target audiences and Program Types**

Priorities were set for various categories of producers, audiences and program types. First priorities were emphasized in the research effort, with second priorities being addressed when first priorities were exhausted or on an opportunistic basis (where information easily came to hand).

These priorities are summarized in Table 1.

**Table 1: Priority research areas for the inventory**

	First Priority	Second Priority
Producers	Federal and Provincial Governments Larger, provincial and regional Environmental Non-Government organizations	Smaller, local, Environmental Non-Government organizations Community/municipal organizations Institutions and organizations involved in extension
Audiences	The general public Landowners Interest groups, community groups, youth groups, etc.	Teachers, trainers Development sector and other professionals K-12 students
Programs	Education programs for the public Outreach programs encouraging stewardship activities "on the ground" Staffed outreach programs Training programs	Interpretive programs Regularly-offered continuing education and extension programs

In addition to the emphasis on number 1 priorities, the following guidelines served to focus the coverage of producers, audiences and program types:

- The question arose as to how central education had to be to the SEO programs or products, and whether they needed to include an action (or "on the ground") component. In the end both "extremes" were included – SEO initiatives that were educational in the narrowest sense of providing information (e.g., some nature interpretation programs) and SEO initiatives that focus only on action (e.g., bird house construction). The rationale is that even the most simple, descriptive information provides a resource for education and outreach, and that most actions, even when not associated with information, have an educational effect. More technical information, targeted to a specialist rather than a public audience, was not included.
- The focus is on educational initiatives rather than financial, regulatory or structural incentives for environmental stewardship. The emphasis on voluntary, individual action *excludes* policy, planning, legislation, or regulation and enforcement for stewardship. Education *about* financial, legal and other stewardship tools *is* within the scope of the research.
- Educational initiatives to encourage stewardship undertaken "on the job" were not within the scope of the study if they were in-house initiatives (i.e., the producer and audience are in the same organization). SEO initiatives to encourage business and industry to comply with or exceed regulatory standards, which often take the form of extension initiatives, were included as a second priority category. The lower priority assigned to extension programs offered by government, universities and professional associations was based on the fact that extension initiatives are numerous and their investigation would dilute the comprehensiveness of coverage of the other categories, and on the fact that Katherine Morgan's research for the Stewardship Centre may cover extension to some extent.

- Environmental groups or organizations that focus on advocacy or lobbying rather than SEO were not included.
- In cases where there would be numerous groups or organizations within a category (e.g. naturalist clubs, interpretive programs, local governments, streamkeepers groups), only samples of such groups were included in the inventory. Contact information and/or links to existing directories, umbrella organizations or databases that could provide access to the full array of such groups is provided in the Information Resources Spreadsheet.
- Programs must be on-going in order to be included. This excludes “one-off” events such as workshops that will not be repeated at regular intervals.

Priorities were also determined in part through the research methodology, described in section 2.

### 1.4.2 Geographical Scope

All the materials and programs to be covered by the inventory are delivered in British Columbia. They usually originate in this province but may have been developed by national organizations or agencies located outside the province. Within the province, the research strived to be most comprehensive in its coverage of the Georgia Basin.

### 1.4.3 Topics

The range of stewardship topics emphasized by the research was determined according to advice from representatives of the sponsoring agencies, which in turn related to the mandates of those agencies. Generally, the focus was on plant and animal species and their habitat, in the most general sense of the word habitat. This focus was highly inclusive, with few stewardship topics falling outside its reach. Examples of the latter were environmental topics related to human health and waste management.

Based on a few rounds of consultation with the sponsoring agency contacts, the following list of main stewardship topics was decided upon:

- Biodiversity
- Climate Change
- Air Quality
- Water Quality
- Habitat
- Species
- Soils
- Nature

All SEO programs and materials were associated with one or more of the above topics. Within these topics, the variety of sub-topics that could be used to describe the programs and materials was unlimited.

#### **1.4.4 Reach and effectiveness**

At the outset, the research aimed to answer the following evaluative questions:

Reach: How many people has the program reached? How effectively has the product been distributed?

Effectiveness: What is the potential effectiveness of the programs and products in influencing stewardship behavior?

As the challenge of completing a comprehensive inventory became apparent, the decision was made to strive for a fuller coverage of SEO programs and products with a basic description rather than to cover fewer initiatives in a more evaluative manner. Accordingly, investigation of reach and effectiveness was given a lower priority and addressed only when information was readily available.

## **2 Approach**

This section describes the stages of the research, the choice of software for the inventory, the spreadsheet design and information sources.

### **2.1 Research Stages**

The research was undertaken in three stages, as follows.

#### **2.1.1 Stage 1: Develop conceptual foundation and research framework**

This stage developed the conceptual basis for the research and built the research framework. A review of selected publications on the theory of stewardship education and social marketing contributed to the design of the inventory and gap analysis. It identified key themes that provide indicators of the effectiveness of SEO materials and programs. The report from stage 1 was titled "Key Concepts in Environmental Education and Community Based Social Marketing and Implications for Stewardship Education and Outreach."

Stage 1 also designed the central spreadsheet for the inventory and gap analysis, which is described in section 3.1: the Programs and Products Inventory. This process involved several iterations of "templates" that were drafted by the consultants, reviewed by sponsoring agency representatives and improved based on the representatives' advice.

#### **2.1.2 Stage 2: Undertake inventory**

This stage addressed the first goal of the project, to undertake an inventory of outreach and education products and programs providing aquatic and terrestrial stewardship information to British Columbians.

The inventory research was guided by the scoping guidelines set out in section 1.4 and by the spreadsheet column headings described in section 3. The steps in the inventory research were as follows:

1. Initial expert contacts and sources of stewardship information were identified by the sponsoring agency representatives and by the consultants, establishing a network of key informants. This resulted in a list of key persons, programs and websites to pursue. The researchers began with these sources and branched out from them, following leads in a "snowball" approach.
2. An extended list of over 500 organizations and individuals potentially involved in SEO was compiled, using directories, interviews, email correspondence and websites from the list generated in step 1. At the same time, the research began to gather SEO materials from producers who provided documentation on their programs by surface mail, email and fax; from site visits; and through research in the Dovetail Consulting library.

3. Research on databases and experimentation with the programs Outlook and Access was undertaken, resulting in the selection of Excel as the repository for the research results (see section 2.2, below).
4. Some programs and materials were entered into to the draft spreadsheets and the spreadsheets were revised based on this experience. At this point, it became apparent that the original scope of the project was too broad to be covered in the time available for the research. As a result, certain priorities were set as described in section 1.4, above.
5. Additional spreadsheets were created to record research results that would supplement the information provided in the main Programs and Products Inventory spreadsheet.
6. Compilation of materials and references on programs continued, and descriptions were entered into the spreadsheets. The inventory results is described in section 3.

### **2.1.3 Stage 3: Analyse gaps**

This stage addressed the second goal of the project, to provide an analysis of the "gaps" (and overlaps) in information and educational services these materials and programs provide. Further information on the approach to the gap analysis and its results are presented in section 4.1.

## **2.2 Choice of software for data management**

The potential of various databases to accommodate the inventory information was investigated, and a trial database was developed with Access software. Contact information was compiled in Outlook.

Two factors eventually led to the use of a spreadsheet (Excel '97) rather than a relational database for the inventory results. First, the expertise in database design necessary to meet the needs of the project was not available within the constraints of time and budget. Second, the database for the Stewardship Centre, which will house the results of the inventory in the long term, was not designed at the time this research was carried out. Specialists in data management advised that an Excel spreadsheet would be the most flexible software to allow for export of data into an as yet unknown database program. As well, the research team had extensive experience with Excel so that the program could be used to its maximum potential in the inventory and gap analysis.

## **2.3 Spreadsheet Design and Data Entry**

Five spreadsheets were designed to accommodate the information gathered by the inventory:

1. Programs and Products Inventory
2. Producer Information
3. Other Environmental Organizations

#### 4. Contact Persons

#### 5. Information Resources

Data on SEO programs, materials, contacts and information links were entered into five spreadsheets according to fields set out in column headings. Section 3 describes in detail the type of information gathered and the categories used to describe it.

For some fields in the spreadsheets, the data had to be described according to a set number of terms while in other fields the wording of entries was unlimited. For fields between these two extremes, the provision of descriptive detail was traded off against the need to limit the realm of possible descriptors in order to support the ability to search and sort the data by key words.

Missing information for cells of the various spreadsheets was coded as follows:

- When a field was not applicable this was designated as 'n/a' (e.g., when describing printed material, 'n/a' would be used under program type and format).
- When the information was not available from printed or electronic sources used in the research, this was designated as 'INC' for incomplete.
- When the producer was contacted and the contact person did not have the information (it had not been compiled or the person was unaware of it), this was designated as 'UNK,' for unknown.

### **2.4 Information Sources**

Sources of information were as follows:

- personal communications
- printed documentation
- websites

The priority in the use of the researchers' time was to gather information available in print or electronically first, and then to fill gaps as far as possible through interviews.

#### **2.4.1 Personal Communications**

Over 85 persons were contacted, predominantly located in the Georgia Basin. Other regions in which several persons were contacted were the Shuswap, the Similkameen, the Thompson and the Okanagan.

Approximately half of those contacted contributed through personal interviews or email correspondence; the other half either did not reply or were unable or unwilling to contribute information in the time available. The Contact Persons spreadsheet lists these contacts as well as names of other persons knowledgeable about SEO who could not be contacted in the time available. Personal contacts and associates who are peripheral to SEO but who did connect us with other specialists are not included in the Contact Persons Spreadsheet

The people contacted are described below as key informants or producers of SEO programs.

### **Key informants**

The first research involved contacting representatives of the sponsoring agencies to request names of experts and/or stewardship programs. Some representatives were interviewed while others assisted through email. These key informants were:

Gretchen Harlow, Canadian Wildlife Service  
Rod Silver, Habitat Conservation Trust Fund  
Melody Farrell, Fisheries and Oceans Canada  
Graham van der Slagt, Fisheries and Oceans Canada  
Mark Johnson, Fisheries and Oceans Canada  
Kerrie Post, Wild BC

Other key informants – people knowledgeable about SEO – were identified through these initial communications and by using the networks of personal contacts of the consultants. These people were then contacted by telephone or email. In some cases the researchers did not persist in making contact with key informants who were too busy to return calls. Information on some of the programs in which these people are involved was obtained off the Internet.

Some key informants from cities outside the province were contacted for their specialist knowledge about stewardship: e.g., Ottawa (Claudia Latsch of Wildlife Habitat Canada), Guelph (Stuart Hilts of the University of Guelph), California (Elin Kelsey, environmental education consultant).

### **Producers of SEO programs and materials**

Representatives of many of the agencies or organizations producing SEO programs and materials were interviewed at their offices or by telephone, or were contacted by email. These contacts were identified by key informants or by document or website review. The community of interpreters in B.C. was contacted by email with the assistance of Lisa McIntosh.

Interviewing producers was given a lower priority later in the research. The researchers found that interviews were not an efficient means of gathering information because the large diversity of producer and program types meant that interview questions had to vary somewhat from case to case, and interviewees rarely had the necessary information close to hand. As well, many organization representatives contacted did not wish to contribute to the project, for various reasons. Some simply did not have time; others felt that the government funds invested in this research should have instead been put into supporting stewardship initiatives underway by non-government organizations.

### **2.4.2 Printed documentation**

Dozens of printed stewardship materials were gathered by the researchers. Some materials were faxed or mailed following interviews with key informants or producers, and some were provided directly during face-to-face interviews or site visits. Most of the Stewardship Series and many other references were available in the Dovetail Consulting library.

Secondary sources on SEO products and programs were also used. Catalogues and directories were a key source of leads to SEO initiatives, and in some cases these documents had sufficient information on a product or program to enter into the inventory without going to the original source. (Thus, not all the materials included in the inventory were directly available to the researchers.) These references are listed in the Information Resources spreadsheet.

### **2.4.3 Websites**

Websites provided information on numerous SEO materials and other products as well as on programs. A weakness of this information source was that websites are often out of date, as indicated by long-past dates of last up-date and by cautionary comments from interviewees. The advantages of websites were that they could provide a lot of information efficiently and they provided useful links. The Internet was key to building the list of organizations to be contacted.

### 3 Inventory Results

This section describes the information gathered by the inventory. The column headings, or fields, for each of the spreadsheets used to house the inventory data are described, with notes on approaches to data entry for some fields. Where data entry was guided by a selection of categories for a given field, these categories are listed. Total numbers of items inventoried in each spreadsheet are also provided.

The results of the inventory are available in electronic form, in Excel '97.

#### 3.1 Programs and Products Inventory

There are a total of 556 entries (rows) in the spreadsheet for the Programs and Products Inventory, of which 329 describe printed materials or other products and the other 227 entries describe programs. In some cases one entry (row) includes several programs produced by a single organization or agency, and it may also include materials associated with those programs.

**Program/Product Title:** When research sources did not provide program names, and when several programs of one organization were lumped together, the name of the organization followed by "educational or outreach programs" was entered.

The decision on whether to lump the description of one producer's set of programs/materials together as a single row in the spreadsheet or to give each program/material a row was made as follows:

- If the topic of the various programs/materials produced by one organization were highly similar, all are included in one row as "the [organization name] educational and outreach programs."
- If the topics varied widely (e.g. building bee houses and restoration of riparian zones) then each program/material is listed separately with the title of the material or program.
- If the source of the information was a website that did not provide detailed information on the organization's programs, the programs were described in a single row.
- If topics were similar, yet programs/materials were substantial in their depth/reach, then each is listed separately.

**Lead Producer:** This is the name of the organization/agency that produced the material/program, or, if partners were involved, the partner that led the initiative. In cases where partners are listed as equals, the first partner in the list, or the partner responsible for distribution is entered.

**Producer Type:** Producers generally fall into the following categories:

- Government: federal government resource/environment agencies, or provincial government resource/environment agencies
- Charitable and non-profit groups: provincial and local environmental non-government organizations, including Land Trusts

- Community groups including round tables
- Multi-party organizations, including coalitions and committees
- Educational institutions
- Private sector, e.g., businesses, professional associations

The producers are entered as they describe themselves (e.g. non-profit charitable organization/association/society, registered charitable organization etc.).

**Partner:** Up to four partners are named in separate columns, in the order in which they are listed in the source of the information.

**Role:** The roles of the partners are described as follows: co-producer, sponsor/funder or delivery agent.

The term 'sponsor' includes partners offering financial or other support such as facilities or technical support.

**Number of additional partners:** If there are more than 4 partners, the number of partners is indicated.

**Associated Initiative:** Broader program(s)/initiative(s) of which this SEO material or program is a part.

**Target Age Group:** The age group is entered as described by producers, or as follows:

- children (under 13)
- youth (13 to 19)
- adults (20 years and up)

When materials are teacher resource materials, the target age group is listed as 'adults' (even though children or youth are benefactors of the material).

**Audience Type:** Up to 3 audience types were entered in separate columns as described by the producer. They generally fall into the following categories:

- the general public
- landowners
- interest groups, community groups, youth groups, etc.
- teachers, trainers, with type specified
- development sectors or professionals, with sector or profession specified
- K-12 students (in the formal education system)

In relation to teaching materials:

- When materials are described as a 'teacher resource', the audience is described as 'educators' to include interpreters and volunteers as well as classroom teachers.

- Students are described as elementary, intermediate, or secondary or, if the program was appropriate for all these groups, the audience is described as K-12).
- When specific grades (e.g. grades 3-5) are listed by the producer, this was noted.

**Print Material Type:** Up to 4 print materials per program are in separate columns. Where possible, materials were entered as the producer described them (e.g. resource guide, activity guide, Guidelines, booklet etc.). In other cases the material type is self-evident, e.g., newsletters and posters.

The following criteria were used to distinguish certain types of printed document:

- A pamphlet or brochure is one large or small sheet of paper folded, usually into three.
- A 'fact sheet' may be more than one page in length but contains information relevant to only one issue or topic (e.g. fire management in a grassland or the three toed salamander).
- A 'booklet' is a several page document that is only loosely bound (pages are held together by staples or cerlox).
- A 'Book' is a hard bound document.

**Number of pages:** The number of pages in the document. (The number of pages in a pamphlet is stated as 2 when it is one double-sided, full-sized sheet folded into three. If the pamphlet was created using three full-sized double-sided sheets, the number of pages is stated as 6.)

**Number of Printed Materials Produced:** This information was rarely available.

**Means of Distribution/Promotion:** Up to 4 means of distribution (for materials) or promotion (for a program) may be described in separate columns (e.g., mail-outs, displays, libraries). In the case of programs, these fields describe ways in which the target audience is made aware of the availability of programs. This may include word of mouth, telephone, mail-outs, public events/information booths, use of media, newsletters, memberships (e.g., notices sent out to members regarding stewardship events). It may also include 'personal visits' in the context of a landowner contact program. If information on programs was taken from a website, 'website' is listed as a means of distribution. If printed materials produced by the lead producers are listed on their website (but not necessarily down-loadable), 'website' is listed as a means of distribution.

**Number of Printed Materials Distributed:** This information was rarely available.

**Non-print Product Type:** 'Website' is listed as a non-print product only when interactive programs or activities are part of the website of the lead producer. Other product types include:

- videos

- television shows
- slide shows
- CD Roms
- cassettes

**Program Type:** Up to 3 program types are entered in separate columns. Program types include:

- education programs for the public, including festivals, special events, information booths
- outreach programs encouraging stewardship activities “on the ground” (e.g., habitat restoration, monitoring, mapping/inventory, enhancement)
- staff-based outreach programs (e.g., Habitat Auxiliaries, Stewardship Coordinators)
- training programs (for teachers, trainers, volunteer “ambassadors,” outreach agents), with an indication as to whether this is included as a component of other programs
- interpretive programs
- regularly-offered continuing education and extension programs for professionals/workers

**Program Format:** Program formats include the following:

- self-directed projects: programs that involve individuals taking part in monitoring programs
- habitat enhancement events: outreach programs that involve volunteers gathered for one or part-day restoration projects such as stream-side plantings, stream or beach clean-ups
- classes/indoor workshops
- outdoor workshops
- field trips, interpretive walks/tours
- hands-on project
- lecture/slide shows

**Dedicated materials:** Indicates whether or not materials are provided with the program. If information on the dedicated materials was available and if the materials were substantial (e.g. resource kits that included activity guides, lesson plans, background information, posters, videos), the materials were described in the ‘printed materials’ fields and this was indicated by ‘as listed’ under dedicated materials.

**Number of volunteers/agents involved in outreach:** Number of agents/volunteers/employees involved in ongoing outreach. This information was rarely available.

**Launch date:** Date of first delivery of materials/programs. If the launch date of a specific program was not available but the inception date of the organization was, the latter is included as the launch date.

**Duration:** The date to which the program is expected to be ongoing or “indefinite.” This information was rarely available.

**Frequency of distribution:** The number of times per year the material is provided (published, distributed, aired); or the number of times per year the program is offered.

**Geographical area of target audience:** The areas the target audience is from may be larger than the geographical area of the program (e.g. tourists from all over the world may come to a festival or a museum exhibit). Conversely, the target audience may reside in an area smaller than that covered by the topic of the material or program.

**Topic of Stewardship:** Up to 4 main stewardship topics may be stated in separate columns.

Topics were limited to the following 8:

- Biodiversity
- Climate Change
- Air Quality
- Water Quality
- Habitat
- Species
- Soils
- Nature (natural history)

**Sub-topic:** Up to 5 sub-topics can be stated in separate columns. Sub-topics vary with programs and follow as closely as possible the language used by lead producers. Sub-topics may include some of the issues addressed in the program/materials or more details on the activities included in the program (such as restoration or mapping).

**Geographical Area of Program:** In the case of programs, this is the area in which the program is available, or the location from which it is delivered. In the case of materials, this is the geographical range of the topic.

**Basic Information Provided:** A ‘yes’ in this column indicates that the material or program includes basic, descriptive information on its topics.

**Issues Addressed:** A ‘yes’ in this column indicates that the material or program addresses issues (challenges or problems) associated with its topics:

**Actions/ Skills Addressed:** A ‘yes’ in this column indicates that the material or program helps its audience acquire skills for action, and/or it encourages its audience to take particular stewardship actions.

**Other resources listed:** A ‘yes’ in this column indicates that the material or program provides leads to additional SEO resources.

Source of information: If the source of information was a website, the address of the site is given. If it was a booklet, pamphlet, etc., this was indicated by 'document'. If the source of information was a secondary document such as a directory or catalogue (e.g. Biodiversity Publications Catalogue) the name of the directory/catalogue is listed.

Date: The date of the last update of the website or the date of publication of the document.

Author(s): The author or authors of the document, where provided.

### **3.2 Producer Information**

This spreadsheet contains contact information for, and brief descriptions of, lead producers whose materials/programs were included in the Programs and Products Inventory. Information on attempts to make contact was included to facilitate future research to expand the inventory.

There are 203 producers listed in this spreadsheet. Several of these are different branches or programs within the same agency.

The headings under which these producers are described are:

Name of Producer: Name of organization or agency.

Address: ... Phone: ... Fax: ... Email: ... Web Address: ...

Attempt to Contact: A yes indicates that an attempt was made to contact the producer.

Contact Successful: A yes or no indicates whether contact was made.

Notes: Notes include the mandate or mission of the lead producers when available. These were usually cut and pasted from websites.

A number of producers did not wish to have full contact information publicized but nevertheless provided this information for research purposes. This private information is included in the spreadsheet under notes.

### **3.3 Other Environmental Organizations**

This spreadsheet contains contact information for 237 organizations that may be producers of stewardship education and outreach materials/programs but were not included in the inventory. These producers were not inventoried because information about them was lacking (there was no website or the website did not provide enough details) and there was not sufficient time to contact them, or because, on initial investigation, it appeared that their focus was advocacy rather than education and outreach. Information is included in the spreadsheet on the stewardship topics in which these organizations are interested, if this was available. This information could help set priorities in future research efforts.

The headings under which these producers are described are:

Name of Producer: Name of organization or agency.

Address: ... Phone: ... Fax: ... Email: ... Web Address: ...

Source of Information: Reference that brought this producer to the attention of the researchers.

Notes: Any other information available on the producer or on related research efforts; reason for not including the producer in the Programs and Products Inventory.

### **3.4 Contact Persons**

The Contact Persons spreadsheet provides information on 108 people who were referred to the researchers as potential sources of information on SEO initiatives in B.C. A field in this spreadsheet indicates which of these people were contacted by the researchers. Those who were successfully contacted contributed to the inventory research through personal or telephone interviews, by email or through regular mail and courier. This spreadsheet is included as a record of sources of information and as an aid to future research efforts. The following headings were used:

Name: Name of person.

Affiliation: Agency or organization, if applicable.

Title: Position or appropriate form of address, if applicable.

City: City, town, etc. in which the person is located.

Date Contacted: Date or month(s) of communication.

Contact successful: A yes or no indicates whether the person responded and provided information for the inventory. The word "partial" means that some information was provided but that follow-up was unsuccessful.

Referred by: Person who suggested that the researchers contact this contact person.

Notes: Comments on the nature of the contribution of the contact person and the potential for obtaining further assistance from them.

### **3.5 Information Resources**

This spreadsheet includes:

- catalogues and directories that list resource materials relevant to stewardship education and outreach
- websites which provide lists of organizations which are involved in SEO
- websites which provide lists of resources
- websites which provide articles, reports, publications, etc. that are relevant to stewardship

There are 28 resources in this spreadsheet, described as follows:

Title:	Name of the catalogue, directory or website.
Producer:	Name of author or publisher of the catalogue, etc.
Address:	Website or surface mail address.
Date:	Date of publication or date when website was last updated.
Notes:	The notes clarify the type of information supplied on the website or in the catalogue.

### **3.6 Comprehensiveness and accuracy of the inventory**

The experience of the researchers in this project indicated that as more effort continues to be invested in research, more SEO programs, producers and products will continue to come to light. If representatives of all 204 producers included in the inventory were interviewed, many more programs and materials could be included. As information leads are pursued they continue to point to new leads. Only in the area of the central focus of the research – larger groups and agencies in the Georgia Basin – was this tendency beginning to diminish by the completion of the project.

Numerous gaps in the inventory spreadsheet are indicated by “INC” for incomplete. The lack of information for various cells in the spreadsheet is due to the lack of detailed information provided by sources of information such as printed documentation and websites and the lack of extensive interviews.

#### **3.6.1 Coverage within and outside the Georgia Basin**

The concerted research effort to cover the SEO initiatives of larger organizations and provincial and federal agencies in the Georgia Basin likely was successful, as indicated by the strong drop-off in new leads for these producers by the end of the research. Any stewardship group that regularly came up in links from websites was included in the inventory, and personal contacts were yielding few new producer names by the end of the research. All of the websites that came to the attention of the researchers for groups active in the Georgia Basin were pursued, and, since most large organizations now have websites, it is unlikely that any key organizations were missed by focusing efforts on the Internet.

As time permitted, SEO initiatives in other parts of the province were included in the research. Approximately 25% of the research effort was focused on stewardship activities located outside the Georgia Basin. Initial efforts in contacting people focused largely on the Okanagan and Thompson regions due to the number of contacts that were easily made in these areas. The focus then turned to the Georgia Basin, and to Internet research rather than personal contacts. Therefore there was no specific effort to cover all regions of the province systematically. Following is a summary of the geographical coverage of the inventory. See section 4.2.1 for data on the geographical distribution of the inventoried programs and products.

### 3.6.2 Coverage of various types of producers

As indicated above, the focus was on larger groups and agencies, which are likely to have been well covered by the research. In contrast, the following types of producers are relatively under-represented in the inventory:

*Smaller organizations without websites:* Only a small proportion of the numerous smaller organizations such as naturalist clubs were included in the inventory.

*First Nations:* Personal communications indicated that First Nations are also contributing much to stewardship in B.C., and they were not pursued in this research.

*Educational institutions:* The research did not contact the many post-secondary institutions (colleges and universities) and their relevant departments and continuing education units. Time ran out before this second priority could be addressed.

*Professional organizations:* The research did not inventory the SEO initiatives of professional organizations. Again, time ran out before this second priority could be addressed.

*Municipal Governments:* The websites of 15 regional districts and municipalities were accessed to determine whether they had stewardship initiatives underway. The websites suggested that their emphasis tended to be on waste management (e.g., recycling, composting). A selection of regional districts that have stewardship initiatives that encompass one or more stewardship topics of interest were included in the inventory.

### 3.6.3 Coverage of the stewardship topics

The research effort was inevitably skewed by the experience of the three consultants and the sponsoring agency representatives who were the first key informants contacted: their libraries, expertise and personal contacts lead to more in-depth research on some topics than others. No systematic attempt was made to pursue SEO programs and products in each of the eight main stewardship topic areas (in the sense of giving each "equal treatment"). The consultant team experience was least extensive on the topics of climate change and air quality.

### 3.6.4 Potential sources of error

Errors may have entered into the record for the following reasons:

- The source of the information may have been out of date.
- The lead producer identified may not be the lead even though it was the first listed in the source used. As well, the source of the information was assumed to be the lead producer whether or not this is actually the case.
- Key words entered into the spreadsheet may not be what the producer would have selected; e.g., the role of the partners may have been misinterpreted; the focus of the program or material may have been misinterpreted as it is described under topics and sub-topics.

## 4 Gap Analysis

The analysis of gaps in SEO is based on the Programs and Products Inventory. It does not draw on the other inventory results such as producer information, other environmental organizations, etc.

The SEO products and programs inventoried are analysed in terms of their:

- distribution across BC,
- relative emphasis on stewardship topics,
- producers and partners involved,
- audiences targeted,
- diversity of delivery mechanisms, and
- potential breadth of impact.

### 4.1 Method

The gap analysis considers the inventory contents in four categories based on the following divisions:

*Programs (& assoc. products):* SEO programs include education and outreach activities.

Products produced by the same lead producer that offers the program are inventoried in association with that program (to the extent that these products came to the attention of the researchers). Several lead producers created more than one program that may also be of more than one type (e.g. education, outreach and training programs). Major programs have been given separate entries the inventory.

*Products (materials etc.):* SEO products include printed materials, videos, CD Roms, etc., that were inventoried independently of programs. These products may nevertheless be connected with SEO programs in the following ways:

- They may be produced independently of OE programs (e.g., "Global Warming: Climate Change Briefing Kit" produced by the David Suzuki Foundation).
- They may have been produced for outreach or educational programs that are no longer continuing (e.g., "Stewardship '94 Symposium Background Papers").
- They may be produced by OE programs but not connected to them in the inventory (e.g., "Do you know your fish?" a publication by Fisheries and Oceans Canada, is likely used in EO activities within the salmon enhancement program).
- They may be used by OE programs with lead producers different from those which produced the products (e.g., environmental education programs for teachers may use "Discover Boundary Bay: A Teachers' Resource Guide" created by the B.C. Wetlands Society).

*Georgia Basin or broader:* Range of application is within the Georgia Basin or to broader areas that include the Georgia Basin (i.e., British Columbia, Canada or international).

Results for the Georgia Basin (and areas that include it) are reported separately because the coverage of the Georgia Basin is comprehensive whereas the coverage of other parts of the province is not comprehensive. This distinction allows for a more reliable analysis.

*B.C. regions outside GB:* Range of application is outside the Georgia Basin but within British Columbia. This category has been separated because the programs and products from these areas of the province have been inventoried less comprehensively. Coverage is not sufficient to draw conclusions for the province as a whole; thus results are seldom aggregated provincially in the analysis.

These categories build the column headings for the tables in which results are presented:

Inventory Categories	Programs (& assoc. products)				Products (materials etc.)			
	Georgia Basin or broader		B.C. regions outside GB		Georgia Basin or broader		B.C. regions outside GB	
	#	%	#	%	#	%	#	%

Most of the analysis is based on tabulations in tables such as the above, with some results being aggregated where appropriate. Each subsection includes results and discussion.

## 4.2 Results

### 4.2.1 Distribution of SEO initiatives across BC

This analysis is based on the inventory field, "Geographical Area of Program." In the case of programs, this is the area in which the program is available, or the location from which it is delivered. In the case of materials, this is the geographical range of the topic. As explained above (section 4.1), this geographical break-down of results is carried through the analysis of other inventory categories. As a reminder, programs and products for areas encompassing the Georgia Basin were lumped with the Georgia Basin as they all contribute to that region, which was the main focus of the research. Programs and products specific to areas in B.C. outside the Georgia Basin are analysed separately. Table 2 provides total numbers in each category.

**Table 2: Geographical Area of Program/Product**

Geographical Area of Program/Product	Programs (& assoc. products)		Products (materials etc.)	
	Georgia Basin or broader	B.C. regions outside GB	Georgia Basin or broader	B.C. regions outside GB
Total inventoried	177	50	289	40

Of the programs and products offered in the Georgia Basin or broader, 114 programs and 57 products were specific to areas within the Georgia Basin (e.g., Greater Vancouver, southern

Vancouver Island, Powell River, Hope). Table 3 describes the distribution of programs and products offered in broader areas inclusive of the Georgia Basin.

The programs and products focused on B.C. regions outside the Georgia Basin were located in the following areas: Kootenays, Okanagan-Similkameen, Cariboo-Chilcotin, B.C. Interior, Central coast, North coast, Shuswap, Thompson, Northern BC, NW and North Coast. Of these regions, the Kootenays, Okanagan-Similkameen, and BC Interior were the focus of over 75% of the programs and products (evenly distributed between these three regions).

**Table 3: Geographical Area of Programs and Products in the Georgia Basin or Broader**

<b>Geographical Area of Programs and Products in the Georgia Basin or Broader</b>	<b>Programs (&amp; assoc. products)</b>	<b>Products (materials etc.)</b>
Total inventoried	177	289
Areas within the Georgia Basin	114	57
British Columbia	45	204
National (Canada)	11	23
North America/Global	7	5

#### 4.2.2 Relative Emphasis on Stewardship Topics

##### Main topics

There were four columns in the inventory for information on the main stewardship topics addressed by the program or product. The great majority of programs and products covered more than one main topic. Ten percent of the total number of programs in the inventory appeared to focus on one topic, and 21% of the products likewise focused on one topic. (The differences within and outside the Georgia Basin were minimal.)

Table 4 describes the number of times the eight main topics selected for analysis were the focus of programs and products in the inventory (and there could be up to four topics for each program or product).

**Table 4: Main topics focused on by programs and products**

Main Topics focused on by Programs and Products	Programs (& assoc. products)				Products (materials etc.)			
	Georgia Basin or broader		B.C. regions outside GB		Georgia Basin or broader		B.C. regions outside GB	
	#	%	#	%	#	%	#	%
Total inventoried	177	100	50	100	289	100	40	100
Air Quality	13	7	1	2	20	7	0	0
Biodiversity	80	45	30	60	86	30	11	28
Climate Change	13	7	3	6	18	6	0	0
Habitat	146	83	38	76	210	73	28	70
Nature	31	18	2	4	3	1	1	3
Soils	11	6	4	8	4	1	1	3
Species	145	82	42	84	214	74	39	98
Water Quality	57	32	10	20	59	20	5	13

Table 5 ranks the main topics in sequence from the ones most frequently addressed to those least often addressed. Note that there is a sharp drop-off between the first four to the lower four.

**Table 5: Rank of Main Topics**

Main Topics	Overall Rank	Programs (& assoc. products)		Products (materials etc.)	
		Georgia Basin or broader	B.C. regions outside GB	Georgia Basin or broader	B.C. regions outside GB
Species	1	2	1	1	1
Habitat	2	1	2	2	2
Biodiversity	3	3	3	3	3
Water Quality	4	4	4	4	4
Nature (natural history)	5	5	7	7	5
Soils	6	8	5	7	5
Climate Change	6	6	6	6	7
Air Quality	8	6	8	5	7

**Sub-topics**

Table 6 lists a selection of frequently-addressed sub-topics. There were up to 5 fields available in the inventory for sub-topics in the spreadsheet. Virtually all programs and products addressed a number of sub-topics.

Table 6: Frequency of attention to sub-topics, in rank order

Sub-topics	Total inventoried for all programs and products	Programs (& assoc. products)		Products (materials etc.)	
		Georgia Basin or broader	B.C. regions outside GB	Georgia Basin or broader	B.C. regions outside GB
forests/forestry	115	30	16	56	13
wildlife	109	43	13	51	2
fish	101	32	3	66	0
ecology	70	34	8	23	5
salmon	69	25	4	39	1
birds	68	26	12	21	9
restoration	68	36	12	16	4
plants/vegetation	66	16	14	29	27
ecosystems	62	13	6	40	3
stream	60	38	4	18	0
conservation	57	22	6	28	1
wetland	53	16	9	19	9
endangered	48	15	7	25	1
monitoring	32	20	5	7	0
identification	31	14	7	10	0
trees	30	8	0	22	0
native species	29	5	10	14	0
watershed	29	13	4	11	1
urban	27	9	2	16	0
planning	25	7	3	15	0
mapping	23	16	2	5	0
soil	22	8	1	6	7
river	21	10	1	8	2
bats	20	4	1	14	1
bears	13	5	2	6	0
grasslands	13	1	4	2	6
threatened	13	4	1	8	0
trail building	10	6	4	0	0
mammals	8	5	0	2	1

### 4.2.3 Producers and Partners Involved

#### Producers

Table 7 lists the types of producers included in the inventory and the number of programs or materials included for each producer type. The producers were not counted more than once within each column, but the same producer could be enumerated in more than one column. There was no predetermined set of descriptors defined for this field in the inventory; rather, the descriptions used by the producers themselves were included. Similar types of producer types have been clustered under sub-headings in the table. In cases where there was only one producer in a given category, that producer name is included in the table.

Table 7: Producer types

Producer Types	Programs (& assoc. products)		Products (materials etc.)	
	Georgia Basin or broader	B.C. regions outside GB	Georgia Basin or broader	B.C. regions outside GB
<b>CHARITABLE AND NON-PROFIT GROUPS</b>				
charitable corporation (Ducks Unlimited)	1	1	1	1
charitable non-profit society	22	9	12	1
non-profit society	31	10	8	1
charitable organization	9	0	3	0
non-profit organization	8	0	2	0
non-profit co-operative	2	0	0	0
land trust	6	1	2	0
<b>COMMUNITY GROUPS (not included above)</b>				
community groups	5	1	0	0
community round table	2	0	0	0
<b>MULTI-PARTY ORGANIZATIONS</b>				
coalition (Forest Alliance, Grasslands Council)	1	1	0	0
committee (B.C. Energy Aware Committee)	0	0	1	0
multi-agency committee (PCJV)	1	0	0	0
multi-sector partnership (Northern Forest Research and Extension Partnership)		1		
<b>EDUCATIONAL INSTITUTIONS, ETC.</b>				
educational institution	6	2	2	1
non-profit civic museum (Vancouver Museum)	1	0	0	0
student association (BCIT)	1	0	0	0
<b>GOVERNMENTS</b>				
federal government	2	0	4	0
provincial government	4	0	9	4
regional government	4	1	4	0
First Nation organization	1	1	2	0
<b>PRIVATE SECTOR</b>				
business association (Golden C of C)	0	1	0	0
professional association	2	0	0	0
private education company	2	0	1	0

## Partners

Table 8 lists the number of partners per program or product, in three categories. More programs and products had one to four partners than had none, or greater than four. Remember that the term partners included co-producers, sponsors/funders or delivery agents.

**Table 8: Number of partners**

Number of Partners	Programs (& assoc. products)				Products (materials etc.)			
	Georgia Basin or broader		B.C. regions outside GB		Georgia Basin or broader		B.C. regions outside GB	
	#	%	#	%	#	%	#	%
Total inventoried	177	100	50	100	289	100	40	100
No partners	16	9	2	4	35	12	1	3
1-4	74	42	17	34	83	29	11	28
> 4	50	28	18	36	14	5	0	0
INC (incomplete)	37	21	11	22	157	54	28	70

Table 9 lists the organizations and agencies that appeared most frequently in the partners fields.

**Table 9: Frequent partners**

Frequent Partners	Programs (& assoc. products)		Products (materials etc.)	
	Georgia Basin or broader	B.C. regions outside GB	Georgia Basin or broader	B.C. regions outside GB
Habitat Conservation Trust Fund	11	11	19	1
Environment Canada	16	5	15	6
Canada Trust Friends of the Environment	15	6	3	1
BC Hydro	11	1	2	0
Fisheries and Oceans Canada	19	1	8	0
BC MELP	9	13	22	2
Ministry of Forests	1	2	14	1
VanCity	11	0	1	0
Real Estate Foundation	9	2	2	0
Urban Salmon Habitat Program	7	0	0	0
Vancouver Foundation	6	1	3	0
Wildlife Habitat Canada	2	0	6	0

## 4.2.4 Audiences Targeted

### Types of audience

Table 10 lists the types of audiences targeted by the products and programs, roughly in descending order of frequency of being targeted. Up to three audience types could be included in the inventory for any given program or product. Table 10 indicates the number of products and programs that targeted only one audience. The great majority had more than one target audience. The managers category, which was a frequent target audience of SEO materials, included those involved in fisheries, forestry, parks and other resource management.

**Table 10: Audience types**

Audience Types	Programs (& assoc. products)				Products (materials etc.)			
	Georgia Basin or broader		B.C. regions outside GB		Georgia Basin or broader		B.C. regions outside GB	
	#	%	#	%	#	%	#	%
Total inventoried	177	100	50	100	289	100	40	100
Only one audience type	47	27	24	48	73	25	10	25
General Public	107	60	27	54	144	50	14	35
Community groups	49	28	8	16	63	22	4	10
Landowners	30	17	15	30	24	8	5	13
Educators	34	19	6	12	44	15	0	0
Students	77	44	10	20	40	14	0	0
Resource managers	11	6	7	14	113	39	32	80
Outdoor recreationists	9	5	7	14	27	9	9	23
Government	10	6	0	0	32	11	0	0
Scientists	5	3	1	2	30	10	12	30
Agricultural producers	6	3	1	2	5	2	8	20
Professionals	3	2	1	2	18	6	0	0
Youth groups	14	8	0	0	1	<1	0	0
Workers	9	5	0	0	3	1	0	0
ENGOS	4	2	0	0	1	<1	0	0
First Nations	3	2	2	4	2	1	0	0
Business and industry	2	1	0	0	6	2	0	0
Developers	0	0	0	0	5	2	0	0

### Age groups

Table 11 lists the age group categories targeted by the SEO programs and products in the inventory.

**Table 11: Age groups targeted by programs and products**

Age groups targeted by programs and products	Programs (& assoc. products)				Products (materials etc.)			
	Georgia Basin or broader		B.C. regions outside GB		Georgia Basin or broader		B.C. regions outside GB	
	#	%	#	%	#	%	#	%
Total inventoried	177	100	50	100	289	100	40	100
All ages	55	31	13	26	4	1	0	0
Adults	76	43	25	50	248	86	40	100
Adults and youth	23	13	7	14	4	1	0	0
Youth	7	4	0	0	10	3	0	0
Children and youth	5	3	1	2	12	4	0	0
Children	6	3	0	0	6	2	0	0

#### 4.2.5 Potential breadth of impact

##### Diversity of delivery mechanisms

Diversity of delivery mechanisms refers to the array of program and product types that are used by producers in their SEO initiatives.

Table 12, Table 13 and Table 14 address delivery mechanisms for programs, printed products and non-print products, respectively. The mechanisms are listed in alphabetical order and the mechanisms used most frequently are highlighted in bold text.

**Table 12: Delivery mechanisms for programs**

Delivery Mechanisms for Programs	Georgia Basin or broader	B.C. regions outside GB
land acquisition	5	0
conference	1	0
consulting	1	0
<b>education</b>	<b>154</b>	<b>35</b>
enhancement	1	0
extension	2	2
hatcheries	1	0
identification/monitoring	1	0
<b>interpretive</b>	<b>35</b>	<b>14</b>
mapping/inventory	1	0
observation/reporting	1	0
<b>outreach</b>	<b>113</b>	<b>40</b>
restoration	3	0
staff-based outreach	5	0
trail maintenance	1	1
<b>training</b>	<b>32</b>	<b>5</b>

**Table 13: Delivery mechanisms for printed products**

Delivery Mechanisms for Printed Products	Georgia Basin or broader	B.C. regions outside GB
<b>activity guide</b>	<b>17</b>	<b>0</b>
backgrounder	1	0
bibliography	1	0
binder	2	0
<b>book</b>	<b>31</b>	<b>0</b>
<b>booklet</b>	<b>54</b>	<b>5</b>
<b>brochure</b>	<b>47</b>	<b>5</b>
case studies	1	0
discussion paper	1	0
education guide	3	0
<b>fact sheet</b>	<b>13</b>	<b>6</b>
field guide	1	0
<b>guide/guideline</b>	<b>15</b>	<b>6</b>
handbook	8	2
identification guide	6	0
information sheet	1	0
journal	2	0
lesson plans/aids	5	0
magazine	1	0
manual	11	1
map	3	0
newsletter	10	1
newsmagazine	1	0
pamphlet	11	1
poster	9	0
report	12	0
<b>technical report</b>	<b>41</b>	<b>15</b>
workbook	1	0
workshop & conference proceedings/reports	9	0

**Table 14: Delivery mechanisms for non-print products**

Delivery Mechanisms for non-print products	Georgia Basin or broader	B.C. regions outside GB
audio-visual educational materials	1	0
bird and mammal specimens	1	0
board game	1	0
cassette	3	0
CD	1	0
CD Rom	3	0
display	1	0
<b>film/video</b>	<b>35</b>	<b>8</b>
interactive website	1	0
on-line directory	1	0
puppets	1	0
radio/TV program	2	0
signage	1	0
<b>slide show</b>	<b>6</b>	<b>1</b>
website database	1	0
website listserve discussion group	1	0

### Reach

For more than 75% of the programs and products inventoried, information was lacking on means of distribution (i.e., how the programs were delivered and/or promoted and how the products were distributed). Means of distribution and promotion include mail-outs, media, landowner contact, displays at public events, libraries, posters, newsletters, workshops, memberships and presentations.

### Range of Learning Opportunities Provided

Four fields in the spreadsheet indicate whether the program or product provided:

1. basic, descriptive information
2. information on issues (challenges or problems)
3. assistance in building skills for action, and/or encouragement toward engaging in particular stewardship actions
4. access to additional SEO resources (e.g., reference materials, relevant publications, related organizations).

Regarding the fourth field, above, the information available to the researchers for the inventory often did not indicate whether the program or product provided access to additional SEO resources (indicated by "INC," meaning incomplete, in the cells of the inventory spreadsheet). Forty-three percent of the programs and 18% of the products for which information was available did provide such access; for the remainder of the programs and products, data was usually missing.

For fields 1 to 3 in the list above, information was generally available for 1, less complete for 2 and often lacking for 3. Virtually all of the programs and products do provide basic information. There was slightly less attention to issues but attention to issues was still the norm, for those programs and products on which information was available. The research was unable to determine whether programs and products addressed skills and/or actions in a large proportion of the inventory entries (20% of the programs and 40% of the products).

Of the programs and products for which information on attention to actions/skills was available, the vast majority did address this learning opportunity, as indicated in Table 15.

**Table 15: Actions/skills addressed by programs and products**

Actions/Skills Addressed by Programs and Products	Programs (& assoc. products)				Products (materials etc.)			
	Georgia Basin or broader		B.C. regions outside GB		Georgia Basin or broader		B.C. regions outside GB	
	#	%	#	%	#	%	#	%
Total for which information was available	144	100	46	100	214	100	20	100
Total that address actions/skills	133	92	41	89	173	81	16	80

A closer examination of these programs and products indicates that those that do promote actions/skills almost always include basic information and information on issues as well.

### 4.3 Discussion

#### 4.3.1 Who is Involved in SEO in B.C.?

##### SEO Producers and Partners

The number of programs/products attributed to each producer cannot be used to indicate the volume of programs/products that a given producer is involved in because frequency of mention of a lead producer in the inventory was related to the relative availability of information, whether an interview was conducted (leading to more in-depth knowledge of SEO initiatives), how their Website was set up (with some offering more information than others), etc. No patterns were apparent in the data regarding which types of producers are focused on which stewardship topics; however analysis via a relational database might draw out patterns that cannot be identified in a spreadsheet. The researchers have observed that different types of producers do have different

niches in the world of SEO; that is, their programs and products serve different purposes. These patterns are outlined in section 4.3.4.

The large proportion of charitable and non-profit groups as lead producers, which are mainly environmental non-government organizations, is related to the focus of the research on these groups, as opposed to professional organizations, institutions involved in extension, and the formal educational system.

Government agencies do not appear as frequently as lead producers as would be expected. However, the analysis of partners in the inventory shows that provincial and federal governments are highly involved in SEO by way of providing resources and other incentives/support to the groups doing the work closer to the ground.

The frequency of programs and products produced with the involvement of multiple partners demonstrates that SEO in B.C. is a cooperative effort. A small proportion of producers choose to, or are able to "go it alone." Other than government agencies, the organizations that appear as partners in the inventory most frequently are funders located in B.C., such as the Vancouver Foundation and VanCity. Some national-level sponsors are also prevalent, such as Canada Trust Friends of the Environment. Overall, sources of support appear to be mainly B.C.-based. In the sector of environmentalism that is more advocacy-oriented, more international foundations would come into play.

### **Audiences**

Perhaps more than any other fields in the inventory spreadsheet, audiences reflect closely the focus of the research effort. Thus, public audiences and the educators who in turn target public audiences were most frequent. The high rating of landowners as an audience is likely due to the high incidence of landowner contact programs, including land trusts. Business, industry and developers were the least frequently targeted by the programs and products inventoried because they were a lower priority audience. Extension programs were also a lower priority in this research. Managers rate highly as a target audience for products because they encompass a large audience category which includes forestry, fisheries, parks, wildlife and other land and resource managers. As well, many products for these audiences were drawn from the Biodiversity Publications Catalogue, which is produced by government partners who target these audiences. Within the audience categories targeted (i.e., the public), coverage is fairly even.

Almost three quarters of the SEO products focused on the Georgia Basin or broader areas (B.C., Canada, etc.) had a single audience focus, while more than half of the programs in all areas had multiple audiences. Products for areas outside the Georgia Basin but within B.C. had multiple audiences in most cases, perhaps reflecting a greater community focus than more specialized products produced by larger organizations or agencies.

Setting aside the programs that target all age groups, the frequency with which an age group was targeted descended from adults to children. This is likely due to the emphasis of the research on public programs rather than SEO taking place within the formal educational system. Nevertheless, it is interesting that relatively few of the many non-government organizations in the inventory appear to target youth or children.

### **4.3.2 Where is SEO happening in B.C.?**

Of the inventoried products and programs outside the Georgia Basin, the following regions were the focus of SEO activity: Kootenays, Okanagan-Similkameen, Cariboo-Chilcotin, Interior, Central coast, North coast, Shuswap. A possible explanation is that these areas are more environmentally active due to higher populations than northern B.C. and the environmental pressures and potential numbers of stewards that accompany higher populations. The activity in the Okanagan may be a function of the region's unique and threatened ecosystems. Cultural factors may also come into play, as in the Kootenays where there has long been a strong environmental movement. The popularity of these regions for outdoor recreation and tourism may also contribute to both the need for and the interest in stewardship. However, the lack of entries in the inventory from the North could well be more closely related to the scoping of the research (see section 1.4) and a lack of key informants for that part of the province.

The fact that the inventory identified 171 programs and products that apply specifically within the Georgia Basin suggests that there is much SEO activity in that region. Within the scope of this research, these positive numbers cannot be compared to the totals for products and programs specific to areas in B.C. falling outside the Basin because research efforts particularly focused on the Georgia Basin. Some 95 programs and products are applicable to the whole province and beyond. Combining the 171 and the 95 suggests that well over 266 programs and products are available to promote SEO in the Georgia Basin (given that many programs and products remain to be inventoried, as indicated by the spreadsheet of Other Environmental Organizations and the constrained scope of the research). This does not mean that SEO initiatives in the Georgia Basin are sufficient. Respondents in the research were quick to point out that there remains much to be done by way of SEO. They point to the fact that stewardship efforts are still not extensive enough to save disappearing ecosystems or to promote a dominant attitude across society in support of environmentally responsible behavior. Additionally, the effectiveness of current programs is largely unknown.

### **4.3.3 What is the Content and format of SEO in B.C.?**

Patterns of topic coverage for areas outside the Georgia Basin generally mirrored those for the Georgia Basin and broader (B.C., Canada, etc.). Any exceptions are noted in the following discussion.

Species and habitat were by far the most frequently focused on main topics, with over 70% of programs and products addressing these topics. Biodiversity was the third most common topic, and water quality the fourth. For the Georgia Basin and broader areas there was a sharp drop-off in coverage of the four other topics: air quality, climate change, nature and soils.

In terms of sub-topics, the frequent mention of forest and forestry themes in the inventoried products probably relates to a selection of publications drawn from the Biodiversity Publications Catalogue produced by the B.C. Ministry of Forests.

Sub-topics coverage to a large extent mirrored the emphasis placed on the eight main topics, with themes related to individual species receiving much attention, and urban and planning topics being addressed less frequently (consistent with the lower ranking of air quality and climate change as main topics).

Given that many programs and products are supported by government agencies, it is possible that government policy has promoted the targeting of certain topics, such as biodiversity (which can include habitat and species) and endangered species/ecosystems. The Salmonid Enhancement Program of Fisheries and Oceans Canada has encouraged attention to aquatic and riparian ecosystems, and water quality. The work of more local, community based groups which often focus on a particular issue or site (e.g., saving a particular wetland) is likely not as greatly influenced by funding or government policy.

Nature (natural history) may rank lower in its coverage because the research intentionally did not focus on naturalist groups due to their small size and the fact that their activities are often less directly related to stewardship. Amongst professional nature interpreters and interpretive centers, however, current standards call for the incorporation of conservation messages, encouraging stewardship behavior.

The reasons for climate change and air quality being infrequently targeted are uncertain, given their priority in government policy and the attention paid to these issues in the popular media. Possible explanations are that the researchers and key informants who assisted the researchers were less informed about stewardship initiatives in these areas, that it is more difficult for groups to create hands-on SEO programs and products in these areas, or that SEO initiatives in these areas are generated by producers who were not the focus of the present research (e.g. local government, educational institutions).

Soils may not be the focus of many stewardship programs because they have a low profile and tend to get trampled.

The fact that species is the most widely covered main topic could suggest that the programs and products may be too narrowly focused and therefore potentially less effective in SEO. However, around 80% of the programs and products that had species as a main topic also addressed other main topics. Furthermore, the sub-topics within the programs and products were often broader, including ecological themes and systems such as watersheds and ecosystems.

#### **4.3.4 What is the potential effectiveness of SEO initiatives in B.C.?**

Environmental education experts suggest that products such as print materials on their own are a less effective means of encouraging stewardship behavior than are programs that involve participants actively (usually with the use of supporting products). Many programs appear to have grasped the importance of this range of learning opportunities in leading people towards changing their behavior: of the programs and products for which information on attention to stewardship actions and skills was available, over 80% do address this learning opportunity, at the same time as they deliver information on issues and basic descriptive information on the topic. Furthermore, the initiatives with a narrower focus may complement one another. Some are purposefully supportive, creating resources to be used by other organizations. It is likely, however, that much potential complementarity remains unrealized.

In theory, the constellation of different types of SEO programs and products complement each other through a continuum of varying emphases and delivery mechanisms. At one end of the spectrum lie the larger, provincial programs that target a broad audience with print materials and/or training, focus on topics of broad relevance, and that support a range of smaller

organizations, but do not directly promote hands-on stewardship activities. Examples are the Forest Education British Columbia program and the Association for the Promotion and Advancement of Science Education (APASE), which both provide materials and other forms of support for educators who can then be more effective in their SEO initiatives. Other large organizations with a broad focus and audience include centers like the Vancouver Museum and Science World which stand to draw an “unconverted” audience through their entertainment value.

At the other end are the smaller, community-based organizations that target a smaller audience with more hands-on programs, focused on local issues. These are the community groups practicing stewardship through activities like clean-up and restoration (e.g., Camosun Bog Restoration Group, Mosquito Creek Stewardship Society, Mount Tolmie Conservancy Association). These organizations make immediate, on the ground, contributions to stewardship, but may be targeting a largely “converted” audience with their narrower reach.

Between the ends of the spectrum are the landowner contact programs which range from small to large, reach both “converted” and “unconverted” and likely have a relatively direct influence on stewardship behavior (e.g., South Okanagan Similkameen Stewardship Program and Delta Farmland and Wildlife Trust). The Vancouver Aquarium also falls between the two extremes, being a large organization with a focus on interpretation but which also engages potential stewards in hands on activities like River Works!. Wetlandkeepers is another example of an organization that bridges the gap between classroom style learning and experiential learning. Like the larger organizations such as APASE, Wetlandkeepers aims to build the capacity of a wide range of players to be more effective in their SEO. The Federation of B.C. Naturalists, Naturescape B.C. and Bird Studies Canada play a similar role, enabling local activities by providing information and resources to local groups and individuals (e.g., Bird Studies Canada program’s Project FeederWatch, Important Bird Areas).

This distribution of large and small organizations with different foci, different audiences and different delivery mechanisms presents an image of an “ecosystem” of SEO programs and products that each fill a valuable niche. If this potential is real, the question of which types of producers or SEO initiative are most effective becomes less relevant. And, as in ecosystem management, the wisest approach may be to nurture diversity and redundancy, and support connections that build resilience rather than supporting individual components to the neglect of others.

## **5 Recommendations**

Suggestions are provided here regarding application of the results of the inventory and future research directions.

### **5.1 Application of Inventory and Gap Analysis Results**

This section provides some brief observations on the potential utility of the inventory and gap analysis results, as well as some potential drawbacks that were identified by SEO producers contacted during the research.

#### **5.1.1 Application of Inventory Results**

The extensive inventory of SEO programs and products created by this research should provide a solid foundation for the Stewardship Centre database. The detailed record of the research effort provided in the four spreadsheets that supplement the Program and Products Inventory (references, contact persons, leads not yet pursued, etc.) should make future efforts to fill out the inventory efficient. The spreadsheets should facilitate tailoring the inventory to suit the needs of the users of the Stewardship Centre. These needs were being identified by research projects underway at the same time as this one.

The design of the database for the inventory traded off detail against the need to be able to efficiently sort and search the database for key words and information (as in the gap analysis). Thus, some users of the inventory might wish for more detailed descriptions of SEO initiatives. This need can be met in part by linking the spreadsheet of Producer Information to the Programs and Products Inventory, because the former has more descriptive information on the producers included in the latter. Conversely, ease of searching the database electronically is an advantage for users who wish to quickly determine whether certain topics of interest have been addressed by various types of producers and where various producers and programs are located, allowing these users to personally follow-up with the producers in the database to obtain more detailed information.

#### **5.1.2 Application of Gap Analysis Results**

Given the lack of comprehensive coverage of the research (see section 3.6), particularly outside the Georgia Basin, the results of the gap analysis should be applied with caution. Nevertheless, the directional findings set out in section 4 provide a starting point to determine where resources for further SEO products and programs should be invested. Areas that are well covered according to the inventory results may warrant support for maintenance and expansion of their impact and effectiveness. Areas that may be less well covered may warrant more start-up support. However, further research to expand the inventory may determine that the areas with apparent gaps are in fact being covered by producers not yet identified in the inventory.

### **5.1.3 Potential Drawbacks to SEO Producers in the Application of Results**

Reactions to this inventory project from the people contacted during the research were mixed. Most consultants and educators involved in stewardship and many of the SEO producers were supportive, pleased that there will be a place where they can access resource materials and experts. Several respondents, however, particularly representatives of smaller stewardship groups, expressed concerns about the use of the inventory, as follows:

- Some were uncomfortable with a perceived lack of privacy associated with communicating information on their organizations and initiatives via the Stewardship Centre.
- Some feared that the listing of their funding partners in the public domain could increase the competition for funding.
- Some felt that the focus on larger groups was inappropriate. Even though the smaller ENGOs often focus on a single issue or activity and may have a small reach and a narrow audience, they are doing good stewardship work that may have significant impacts, especially when the cumulative effect of the numerous small organizations involved is taken into account.
- A number of contacts did not feel that government agencies were the appropriate organizations to take the lead in this project. These people feared that bureaucracy would delay or stifle the positive actions that could result from this work; or felt that government agencies are too far removed from the grass roots and do not understand the needs of those “on the ground” organizations; or they wondered whether the funds for the project were being well-spent, questioning whether there is a clear need for this project.
- Some organizations that play roles similar to the Stewardship Centre on a smaller scale were concerned that the funds being invested in the Stewardship Centre could have been more usefully invested in their organizations, expanding on the foundation of what they are already doing.

## **5.2 Future research directions**

The results of this inventory project should be regarded as a foundation for ongoing research and communications involving the stewardship community of B.C. With more research the inventory could be expanded considerably and its accuracy improved. As well, its results could be supplemented with more evaluative research, for example, focusing on effectiveness of SEO.

### **5.2.1 Data to add to the inventory**

The “incomplete” cells of the spreadsheets could be filled in via interview research or surveys.

Research topics that were a lower priority in the limited time available for this project (see section 1.4) could be pursued, namely:

- the areas outside the Georgia Basin;
- smaller, more local groups;
- groups, organizations without websites;

- local and regional governments and their committees and task forces;
- Waste management and water conservation are themes that these bodies;
- First Nations;
- post-secondary institutions and their extension work;
- professional organizations and their extension work.

### **5.2.2 Methods for verifying and expanding the inventory**

Possible methods for verifying and expanding the inventory include the following.

- Ideally, all producers with programs or products listed in the inventory should have an opportunity to verify the inventory data on their initiatives, through interviews or via a survey.
- Users of the inventory could be invited to submit corrections, with an indication of the source of their improved data.
- A network of key contacts active in the various regions of the province could be established to act as communication nodes for their regions, drawing together more detailed information, particularly on smaller organizations;
- Targeted research projects could be undertaken on SEO initiatives in each of the eight main topic areas.

There remain several potentially valuable sources of information that should still be followed up; at every stage of the research names and documents were provided that could have further expanded the scope of the research. Therefore:

- The resources (directories, etc.) in the Information Resources spreadsheet should be pursued.
- Leaders in SEO in BC who have not yet been contacted should be interviewed, including those in the Contact Persons and the Other Environmental Organizations spreadsheets who could not be interviewed during this research.

### **5.2.3 Maintaining and up-dating the inventory**

Data in the inventory will eventually be outdated in the following ways:

- materials or programs that are included may be no longer available;
- contact information may have changed;
- partners may have changed;
- new producers may not be included;
- newer and possibly more central programs or materials may not be listed for existing producers.

Stewardship Centre staff or contractors will have to find ways to regularly, or continually, update the information in the inventory. Potential methods include the following:

- Users of the inventory could be invited to submit up-dated information on programs, products and producers.
- A survey could be undertaken at regular intervals.
- Key contacts in the regions of the province could be called upon at regular intervals to submit new information for the inventory.

#### **5.2.4 Assessing effectiveness of SEO**

Based on current thinking within the field of environmental education, the value of stewardship materials and programs should be assessed in terms of their contribution to lifelong learning and the development of higher-level cognitive skills such as problem solving and critical thinking, rather than only in terms of its content. The North American Association for Environmental Education has provided a credible set of guidelines for the evaluation of EE materials.

The review of literature from environmental education and community-based social marketing leads to a number of conclusions that have implications for stewardship materials and programs. Hypotheses for the effectiveness of SEO in B.C. could be developed from these implications and then tested through further research:

- Research from the field of environmental education suggests that printed materials may help to increase knowledge and improve attitudes, but have little or no impact on changing behavior. Reformers in the field argue that the value of educational materials may be increased if efforts are shifted away from the development and distribution of further informational materials, and toward (a) the use of existing materials through new partnerships, and (b) hands-on training for teachers and others involved in environmental education.
- Research from social psychology and the field of social marketing also shows that information alone cannot change behavior. However, education and outreach may be included as one of a variety of strategies used to shift the ratio of benefits and barriers for a given behavior for a target population.
- To achieve significant behavioral change towards stewardship, community-based social marketing strategies may need to be developed on a community-by-community basis to implement the various stewardship approaches promoted. One of the key steps in developing such strategies is the assessment of perceived benefits and barriers. Proponents of social marketing argue that barriers are often not well known,<sup>1</sup> resulting in poorly targeted programs and ineffective (and costly) programming. Social marketers argue that initial research is critical to ensure a well-designed program and that "doing it right the first time" will result in savings of time and costs.

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<sup>1</sup> For a detailed discussion of the dangers of assuming barriers to others' behavior are known, and an explanation of the social psychologists viewpoints on this problem, see McKenzie Mohr and Smith, pages 43-45.