
Coastal Information Resource Inventory

Prepared by

Ministry of Agriculture, Fisheries and Food

Aquaculture and Commercial Fisheries Branch

for the Coastal Ecosystems Task Force

Resources Inventory Committee

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Preface

This report is submitted to the Resources Inventory Committee (RIC) by the Coastal Task Force.

The Resource Inventory Committee members are resources inventory specialists from a wide variety of professional disciplines and representing provincial, federal, aboriginal and private sector agencies and other resource interests. RIC's objective is to develop a common set of standards and procedures for provincial resource inventories.

The Coastal Information Resource Inventory provides (a) an overview of data presently being collected on the coastal zone, (b) reviews user needs and (c) provides recommendation for the development of a British Columbia Coastal Data Set

Funding of the Resources Inventory Committee work, including preparation of this report, is provided by the Canada-British Columbia Partnership Agreement on Forest Resources Development; FRDA II. This is a five-year (1991-1996) \$200 million program cost-shared equally by the federal and provincial governments.

Contents of this report are presented for discussion purpose only. A formal technical review of this document has not been undertaken. Funding from FRDA II does not imply acceptance or approval of any statements or information contained herein by either government. This document is not official policy of Forestry Canada or any British Columbia government ministry or agency. For additional copies and/or further information about the Committee and its task forces, please contact the Secretariat, Resources Inventory Committee.

Executive Summary

This report describes results of a Coastal Resource Inventory of the various information sources held by government agencies, universities and individuals that relate to the coastal zone of British Columbia. The three objectives of the project are: (a) to compile a listing of coastal data sets (**Coastal Data Set Inventory**), (b) conduct a survey of user interest in coastal resource data (**User Needs Survey**) and (c) develop a priority list of common resource data that is of interest to a wide range of users (**BC Coastal Resource Data Set**).

Our approach relied heavily on interviews - nearly 300 individuals were contacted during the project and the User Survey Questionnaire was sent to over 207 individuals. As such, the surveys reached a broad range of data collectors and resource users; the one exception is the native groups who did not respond to the questionnaire and who are important users of coastal resources.

The **Coastal Data Set Inventory** identified 107 data sets of relevance to the coastal zone (base maps were specifically excluded from the survey). Important application areas of these data sets are: **Environmental, Protection/Monitoring, Fisheries Management, Physical Baseline Information and Wildlife Management**. Data attributes most commonly represented within these data sets are shown below.

Data Set Categories

- Habitat (19% of data sets)
- Marine Plants (15%)
- Coastal Fringe Veg. (13%)
- Water Quality (13%)
- Tourism and Recreational Use (13%)
- Birds (waterfowl - 13%)
- Fisheries (12%)

User Interests

- Habitat (65% of questionnaires)
- Oceanography (61%)
- Aquaculture Use (57%)
- Industrial Use (49%)
- Fish Resources (46%)
- Coastal Geology (45%)

Results of the **User Needs Survey** show interests in resource data (above) with “Habitat” identified as the primary interest. These results provide the framework for a **BC Coastal Resources Data Set (CODAS)**. The framework in terms of applications, high interest categories and priority coastal attributes is summarized (below). Further definition of “water quality” is required to refine data acquisition programs.

Priority Application Areas	Priority high Interest Resource Categories	Priority Coastal Attributes
<ul style="list-style-type: none">• Physical baseline information• Environmental protection & monitoring	<ul style="list-style-type: none">• Habitat• Coastal Oceanography• Aquaculture• Industrial use• Fisheries Resources• Coastal Geology	<ul style="list-style-type: none">• Water quality• Wave exposure• Surficial geology• Shore-zone morphology• Coastal biota

Acknowledgments

Funding of the Resources Inventory Committee work, including the preparation of this document, is provided by the Corporate Resource Inventory Initiative (CRII) and by Forest Renewal BC (FRBC). Preliminary work of the Resources Inventory Committee was funded by the Canada-British Columbia Partnership Agreement of Forest Resource Development FRDA II.

The Resources Inventory Committee consists of representatives from various ministries and agencies of the Canadian and the British Columbia governments as well as from First Nations peoples. RIC objectives are to develop a common set of standards and procedures for the provincial resources inventories, as recommended by the Forest Resources Commission in its report “The Future of our Forests”.

For further information about the Resources Inventory Committee and its various Task Forces, please access the Resources Inventory Committee Website at:
<http://www.for.gov.bc.ca/ric>.

Coastal Ecosystems Task Force

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1.0 Introduction

1.1 Statement of the Problem

The coastal zone represents a truly unique environment - the triple interface between the ocean, land and atmosphere. This triple-interface, often only a few metres in width, marks the transition between a totally marine environment and a totally terrestrial environment, and is one of the sharpest biome delineations on the planet. Being of both the sea and land, the coastal zone has always posed a problem of jurisdiction and resource management.

Federal, provincial and municipal agencies collect a wide range of environmental and socioeconomic resource information for the coastal zone and surrounding environs. However, at the present time, this data collection is not coordinated (see Howes, 1992), and many agencies may not be aware of some of the information that is collected. This project addresses these issues.

1.2 Project Objectives

There are essentially three major objectives of the project:

- review the existing information that is being collected by the various agencies and summarize the information into a **Coastal Data Set Inventory** supported by an electronic catalog.
- conduct a **User Needs Survey** of coastal resource information.
- provide an overview that summarizes common data requirements into a **BC Coastal Resources Data Set**.

1.3 Basic Terminology

A glossary of terms is provided in Appendix A to assist users in the interpretation of terms used in this project. There are three items of particular significance to the study that are defined below:

Coastal Resources - what constitutes the coastal zone? For the purpose of this project, a relatively narrow definition of the coastal zone or coastal resources was used: **coastal resources** are defined as those resources falling between the normal limit of the highest high tides (effectively the storm log line limit) and the 20m isobath; the 20m isobath was chosen as this reflects the normal limit of kelp beds and associated nearshore habitat.

Coastal Data Set - what criteria were used to include or exclude various data sets? Our basic criteria for the inclusion of a data set as a “relevant” coastal data set was its essential nature to coastal management planning objectives. In other

words, does the data set represent an essential piece of information to the coastal-zone planner in terms of managing resources within the coastal zone.

As an example, tidal elevation data would be considered essential in that it strongly affects biotic and cultural use of the shore zone. However, offshore tidal current data, as per current atlases (e.g., DFO 1983) is not relevant in that its net effect on the coastal zone is very small. Similarly, herring roe catch statistics data is a “coastal data set” in that the roe is collected from within the coastal zone but salmonoid catch data set is not a coastal data set because only a very small portion of the fishery is within the coastal zone and the data set, provides no locational information.

We also used the guideline that a coastal data set must be either regional in extent (e.g., a single bird survey of the entire Strait of Georgia) or provide a time series of more than one year (e.g., a long-term water quality sampling program). Priority was also given to active and recent (<5 years old) data sets.

Coastal Habitat - what is meant by the term coastal habitat? Habitat is a term used widely in this report and requires a definition in that it has a wide-range of meanings to a wide range of users. We believe that the vast majority of users consider “coastal habitat” as the physical framework and associated “fixed” biological communities that determine the biological use of the coastal zone by more mobile terrestrial (including humans), coastal and marine species. Habitat is a general term that refers to a collection of attributes such as: coastal morphology, substrate, wave exposure, tidal range, water quality and intertidal biota.

Levels of Information - what levels of information are represented in a data set? General concepts related to the levels of information included within data sets is outlined below; these definitions are our own and apply to this report and not necessarily Consistent with those defined by RIC in the Data Modelling Project, which post-dated the initiation of our project (see DMR, 1992).

Data Set - a systematic collection of information about a coastal resource.

Attribute Categories - some terms, such as “coastal habitat”, represent a collection of many attributes rather than as a single attribute.

Attribute - a feature or characteristic of a coastal resource that is relatively well-defined in time and space.

Entity - a measurable quantity about an attribute.

Additional terminology definitions are included within Appendix A.

2.0 Approach

2.1 Introduction

This project relied heavily on interviews because there are few published summaries of coastal resource inventories. During the project, over three hundred individuals were contacted either directly or indirectly by project team members; a user needs form was circulated to over 200 individuals. As a result, an extensive **Contact Database** (file CONTACT.DBF) was developed (see Appendix B for listing) and integrated into the main database.

Two additional data sets were developed: the **Coastal Data Set Inventory Database** (file INVENT.DBF), which categorizes each database, and the **Reference Database** (file REFER.DBF), which is essentially a citation database linking published reports and documents to the Inventory Database. Figure 2.1 summarizes the relation and characteristics of each database.

The data sets are compiled in a dBase III+ format and are linked via a custom-designed data entry and editing program.

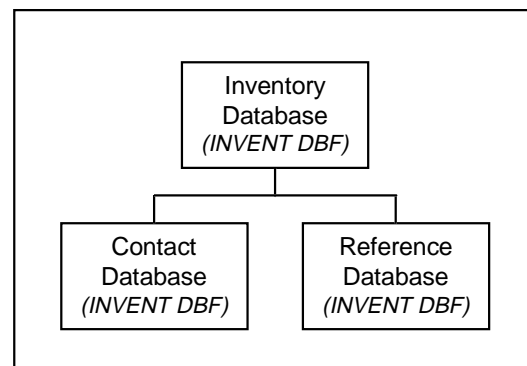


Figure 2.1 Relationship of Electronic Database

2.2 Data Set Inventory Compilation

A catalog or inventory of coastal data sets was compiled primarily by contacting key individuals working in natural science studies, land use and tourism. Approximately 200 individuals were contacted, and approximately 107 data sets were identified. The total number of data sets provides only a very general index of the resources in that (a) there are many overlapping inventories being conducted by the Resource Inventory Committee (RIC) (e.g., fisheries, water and aquatic resources, etc.) and (b) there are some related marine resources that were considered beyond the scope of this project.

2.3 User Needs Survey

A "User Needs Questionnaire" was distributed in early December 1992 to 207 individuals. The distribution to various user groups is indicated in Figure 2.2. Responses to the survey are summarized in Section 4.

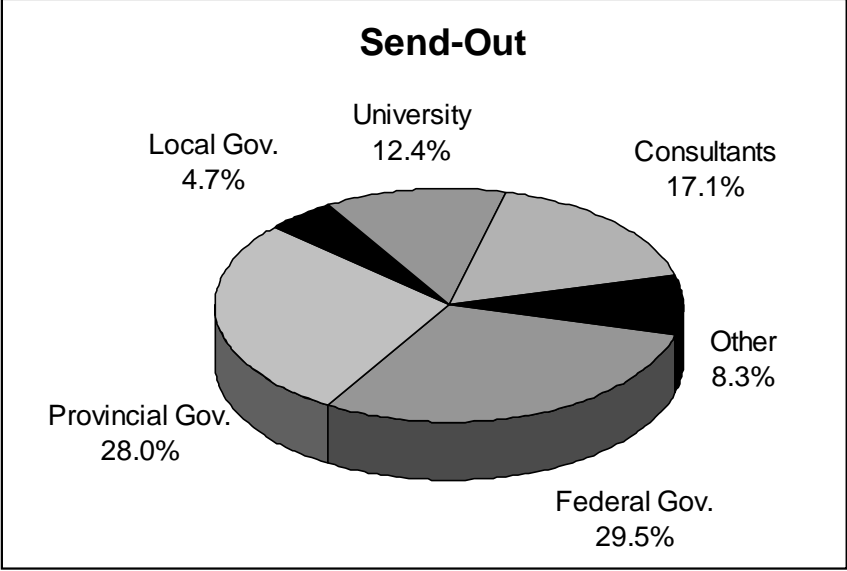


Figure 2.2 Distribution of User-Needs Questionnaires
(distributed to 207 individuals)

3.0 Inventory of Coastal Data Sets

3.1 Summary of Data Sets

Questions included in the coastal data set inventory questionnaire are listed in Tables 3.1 and 3.2; generally, the data entry form was completed by a project team member but in some cases was completed directly by the respondent.

An abbreviated listing of data sets is provided in Appendix C; the complete inventory is catalogued on a dBaseIII+ database file (see Appendix D for a listing of database fields). This section of the report provides a general overview of the coastal resource inventory and is designed to answer the following questions:

What is the general agency activity in coastal resources?

How is the information being used?

What types of resource data are being collected?

What level of detail of information is being collected?

What is the geographic coverage of the coastal data sets?

A. Contact Information

- Interviewee?
- Who owns the database?
- Who manages the database?
- Who sponsored development of the database?

B. References

- Are there any reports related to this database?

C. Frequency and Duration of Data Collection

- When did the data collection begin?
- Is the data collection ongoing?
- When did the data collection end?
- What is the frequency of data collections?
- If the data is seasonally collected, what months are represented?

D. Geographical Characteristics

- What is the geographical extent of the data? (descriptive)
- What Fisheries Statistical Areas contain data?
- What was the original scale of mapping?
- Is the data georeferenced?

E. Database Format

- What is the hard-copy storage medium? (e.g., atlas, report, etc.)
- What is the electronic storage medium?
- What computer or operating system was used?
- What software was used?

F. Purpose

- What is the intended purpose of the data? (planning, management, operations)
- What is the major application of the information in the database?
- Is the database available for public use?

G. Attributes of Database

- (see Table 3.2)

Table 3.1 Questions Asked During the Data Set Inventory Review

Table 3.2 List of Attributes Recorded in the Inventory Database

<p>Biological Resources</p> <p>Habitat</p> <p>Fish</p> <ul style="list-style-type: none"> salmon herring bottomfish other <p>Shellfish</p> <ul style="list-style-type: none"> oysters geoducks clams other mussels abalone PSP (red tide) <p>Birds</p> <ul style="list-style-type: none"> shorebirds seabirds nesting waterfowl eagles/osprey other beached birds <p>Marine Mammals</p> <ul style="list-style-type: none"> seals sea lions sea otters other <p>Terrestrial Mammals</p> <ul style="list-style-type: none"> river otters deer raccoons bears mink other <p>Marine Plants/Algae</p> <p>Coastal Fringe Vegetation</p> <p>Invertebrates</p> <p>Physical Resources</p> <p>Geology</p> <ul style="list-style-type: none"> bedrock surficial geology shore-zone geology estuary character other paleo-sealevels trace metals 	<p>Oceanography</p> <ul style="list-style-type: none"> nearshore circulation water quality wave characteristics temperature/salinity tides waterway ranking sheets trace metals <p>Meteorology</p> <ul style="list-style-type: none"> winds temperature precipitation visibility other <p>Heritage Resources</p> <p>Archaeological</p> <p>Historic</p> <p>Other</p> <p>Cultural Resources</p> <p>Tourism/Recreation</p> <ul style="list-style-type: none"> use patterns resources capability other recreational features <p>Fisheries (catch)</p> <ul style="list-style-type: none"> commercial recreational subsistence other <p>Native Use</p> <ul style="list-style-type: none"> land claims traditional use other <p>Aquaculture</p> <ul style="list-style-type: none"> finfish shellfish plants crustaceans other <p>Industrial</p> <ul style="list-style-type: none"> general log-handling drill-site/well site other 	<p>Commercial</p> <ul style="list-style-type: none"> general fishing camp commercial wharf marina other fish processing marine plant harvesting fish sales anchorage <p>Residential</p> <ul style="list-style-type: none"> general floating cabin(s) private moorage other <p>Utility</p> <ul style="list-style-type: none"> electric power line gas/oil pipeline telecommunications water line sewage/effluent line other <p>Transportation</p> <ul style="list-style-type: none"> roadway railway ferry terminal public wharf navigation aid other shore-zone access <p>Land Use</p> <ul style="list-style-type: none"> reserve fish/wildlife res. public access fishery facility recreational reserve environmental protection area other <p>Emergency Response</p> <ul style="list-style-type: none"> dangerous goods incidents pollutant sources
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What is the General Agency Interest in Coastal Resources?

General agency activity is summarized in terms of the percentage of data sets included for the federal, provincial and local governments as well as for universities and consultants (Fig. 3.1). The federal and provincial holdings appear approximately equal with only a small portion maintained by municipalities, universities, consultants and others.

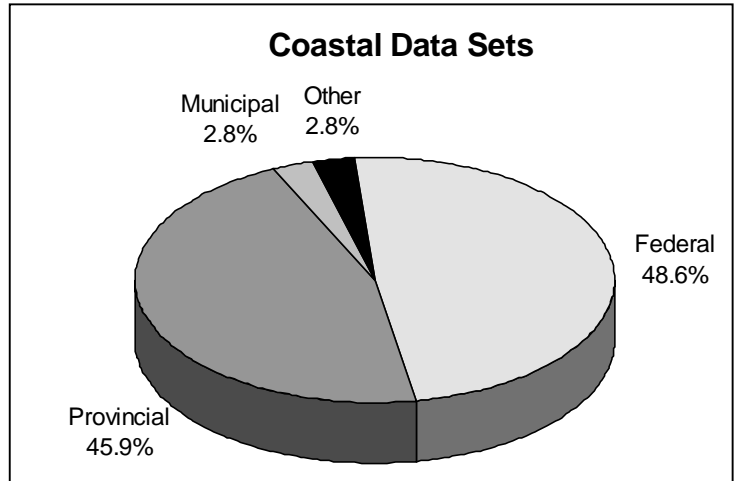


Figure 3.1 Agency Holdings of Coastal Resource Data Sets

What is the Primary Application of the Resource Data?

The data set were catalogued by the project team in terms of the **primary** application of the data set. Figure 3.2 shows the percent occurrence by resource category for the 107 data sets currently included in the data inventory.

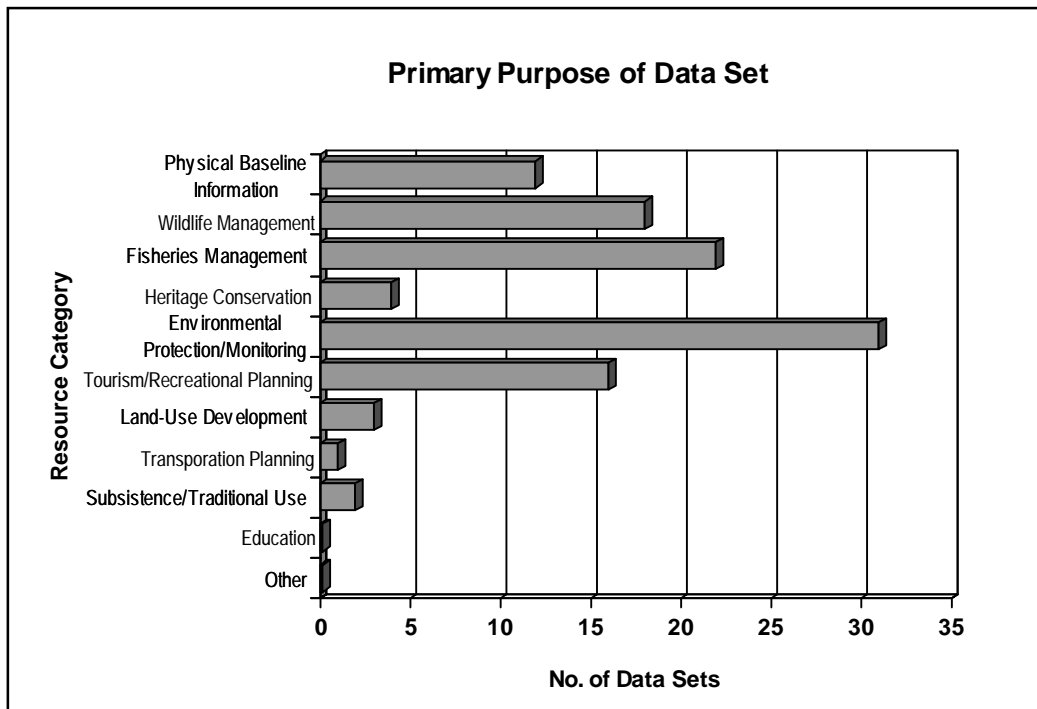


Figure 3.2 Primary Application of Data Sets (refer to Appendix A for description of terms)

The primary category for data set application is Environmental Protection and Monitoring (27% of the data sets); this category includes: water quality and contaminant monitoring programs and oil spill response mapping projects. Wildlife Management, Fisheries Management and Tourism & Recreational Planning represent important categories with representation in 15% or more of the data sets.

The data sets were also characterized in terms of secondary applications (e.g., a physical shore-zone mapping project might have a primary application for oil spill response and planning but a secondary application for physical baseline information). The relative weighting of categories, including secondary applications is included in Figure 3.3. The data for the primary + secondary applications show a similar distribution to the primary application with some minor ranking changes. Environmental Protection and Monitoring is either a primary or secondary focus of 45 of the 107 data collections followed by Fisheries Management (36), Physical Baseline Information (30) and Wildlife Management (28).

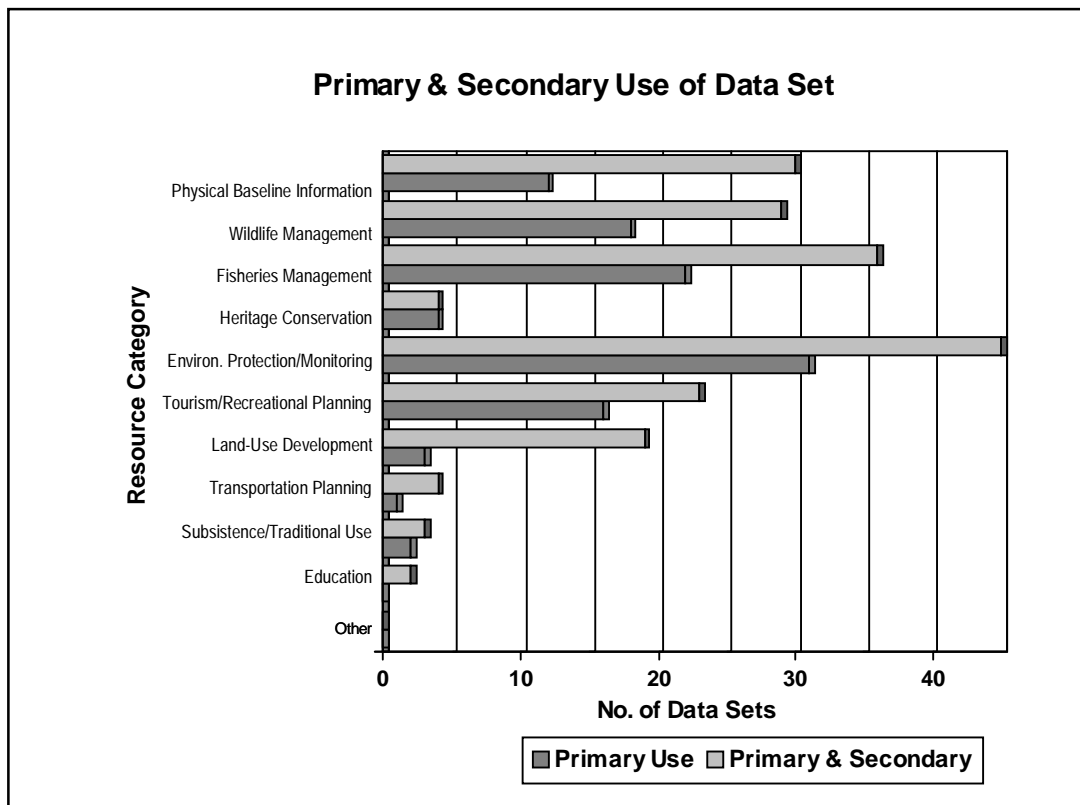


Figure 3.3 Primary and Secondary Applications of Data Sets

What Types of Resource Data Are Being Collected?

The data set inventory also catalogues attributes associated with each data set (as coded by project team members). The occurrence of various attributes included within the 107 data sets are summarized in Figures 3.4a, 3.4b and 3.4c. It should be noted that these attributes are not necessarily primary data. Many of the data sets summarize previously collected data.

The eleven most commonly characterized attributes are listed in the inset (below). Interestingly, the four most common attributes of these data sets probably do not reflect primary data collection but rather reconstituted or derivative information from other sources. For example, **habitat** information summarized in the “Oil Spill Response Atlas for the Southern Strait of Georgia” is derived from physical shore-zone mapping data rather than representing new field data collections and/or interpretation. Similarly, we are aware of only one systematic data collection for Marine Plants (the MAFF Kelp Inventory Program), yet marine plants and algae are characterized in 16 of the 107 data sets.

Attribute	Occurrence (number of data sets)
Habitat	21
Marine Plants	16
Coastal Fringe Vegetation	14
Water Quality Tourism & Recreation Use Patterns	14
Bird Resources	14
Waterfowl	14
Commercial Fisheries	13
Recreational Fisheries	13
Subsistence Fisheries	13
Recreational Land Use	13

What Level or Detail of Information is Being Collected?

This question is summarized in terms of two items recorded for each data set: (1) the design application of the data set and (2) scale of mapping, where applicable. In terms of general levels of application, the coastal resource information is relatively uniformly distributed (Fig. 3.5) with the “management”-scale application being most common (65% of the data sets) and the “planning”-scale application the least common (45% of the data sets).

The most common mapping scales represented in the data sets (Fig. 3.6) are in the 1:20,000 - 50,000 range followed by the 1:10,000 - 20,000 range.

The data suggest that the most common uses are satisfied by mapping scales in the 20,000 - 50,000 range with a slight bias towards the 1:20,000 end of the range. This mapping scale is consistent with the most common application purposes, i.e., reconnaissance, management and operations.

What is the Geographic Coverage of the Data Sets?

The relative geographic distribution of the data sets is shown in Figures 3.7 and 3.8. The surprising facet of this figure is the relative uniformity of the distribution. There are 49 data sets that are identified as occurring within all the regions. The Southern Strait of Georgia has the greatest number of resource programs (represented in 36 of the data sets), not surprising due to the greater population and development of this area, followed by the Northern Strait of Georgia (77 data sets) and Southwestern Vancouver Island (75 data sets). The remainder of the regions are relatively similar with about 65 of the data sets represented in each.

The reason that the distribution is so geographically uniform is that many of the data sets incorporate data from the entire province, for example fish licensing sales, the Land Tenure System, the Stream Information Catalogues (SISS), etc.

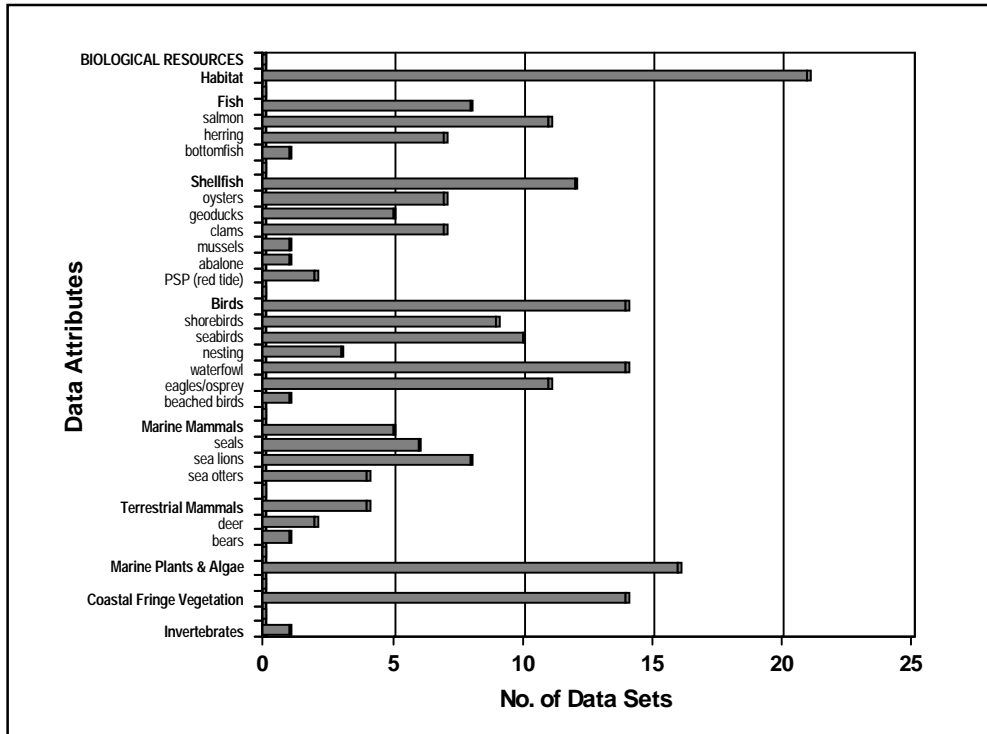


Figure 3.4a Biological Attributes Summarized in the Data Sets

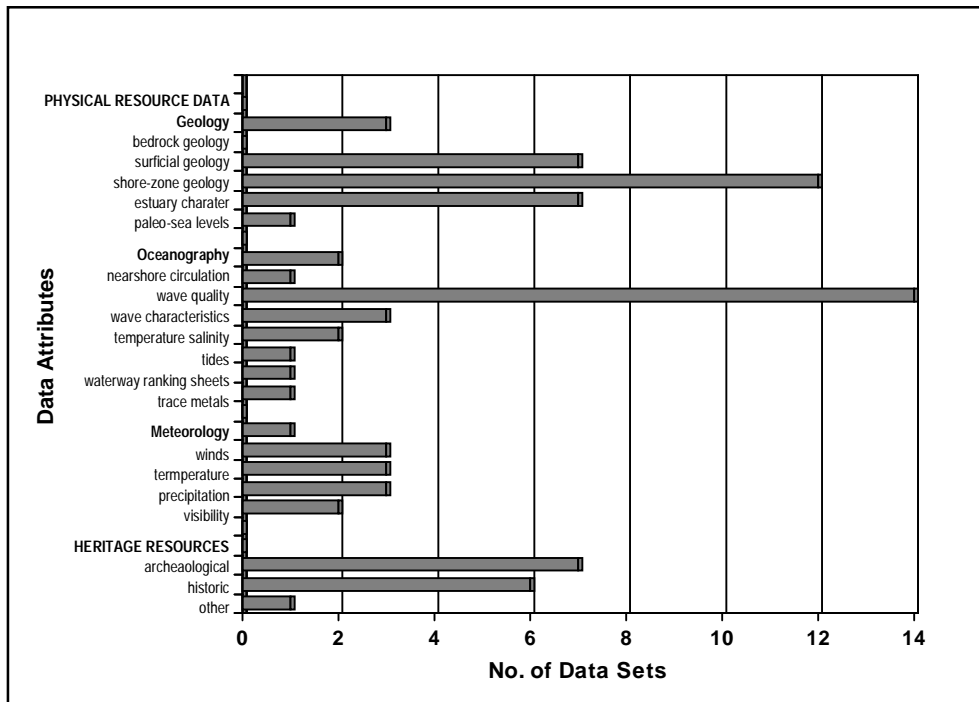


Figure 3.4b Physical and Heritage Resource Attributes

Human-Use Resources

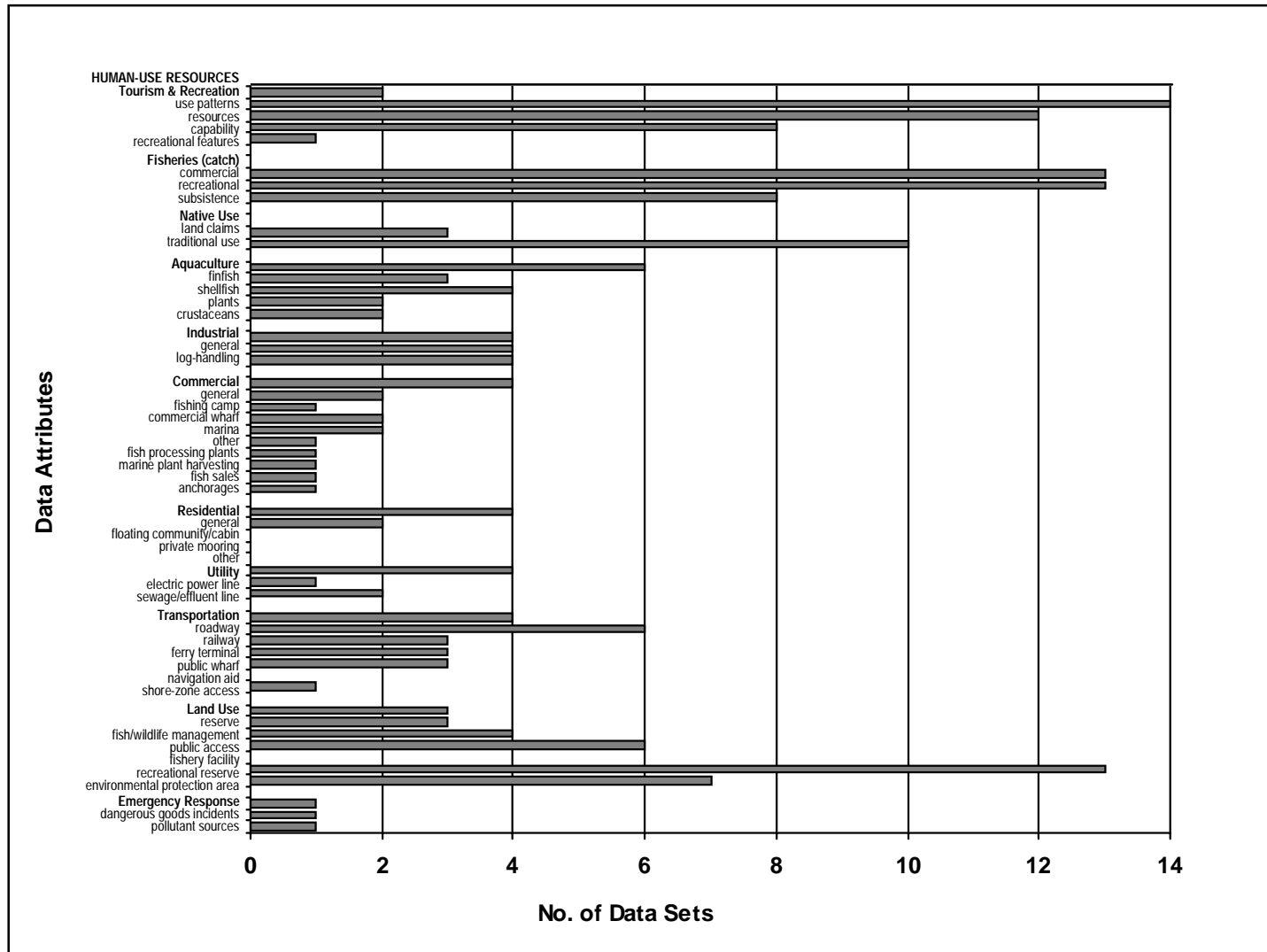
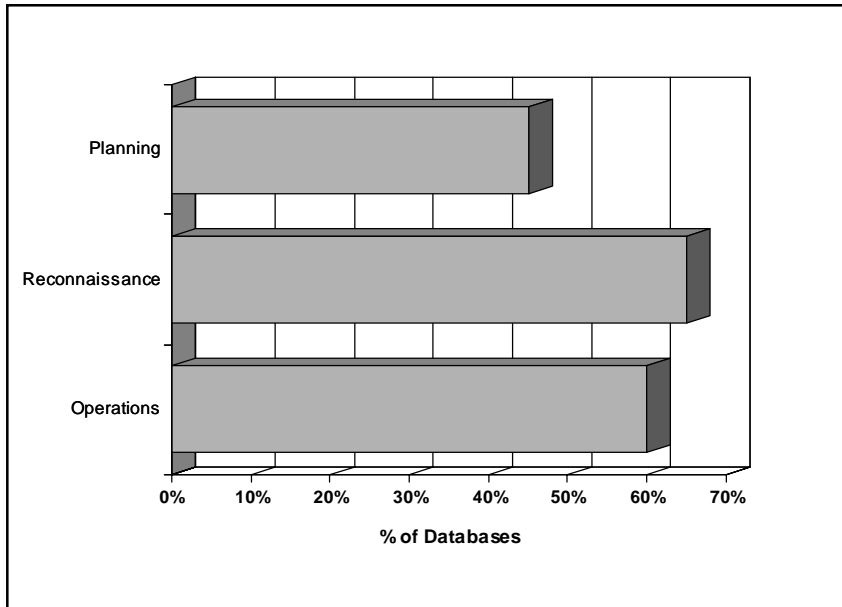


Figure 3.4c Human-Use Data Attributes



Figures 3.5 General Application Purpose of Data Set
 (see Appendix A for explanation of terms)

3.2 General Overview

The Coastal Data Set Inventory provides a characterization of known coastal resource information within the Province. Some important information sources have been excluded because they are considered beyond the scope of the study; these sources include: (a) marine resource data sets that lie seaward of the 20m isobath and (b) basemaps (maps, charts, aerial photographs, satellite images and digital files such as TRIM).

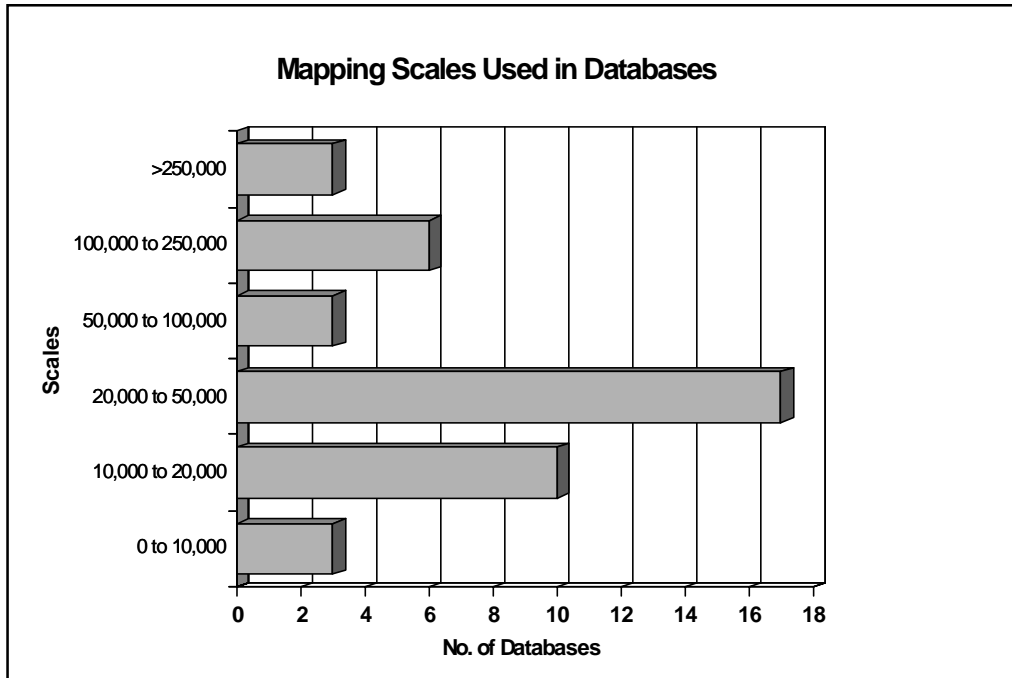


Figure 3.6 Mapping Scales in the Data Sets

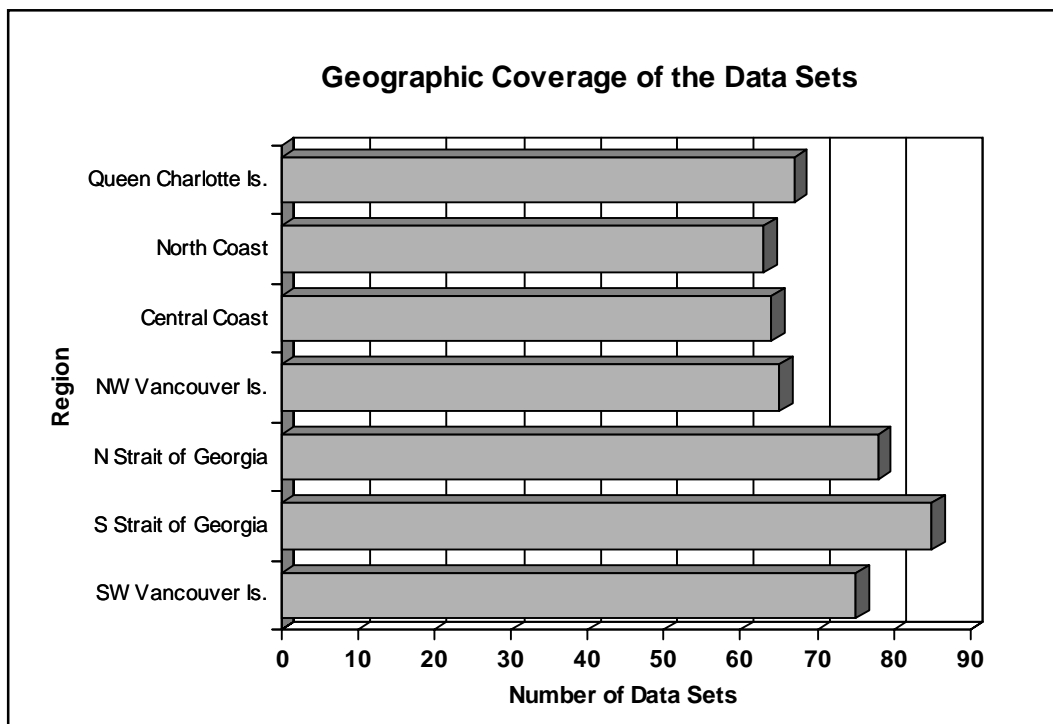


Figure 3.7 Geographic Distribution of Databases

Coastal information sources are used in the following primary applications:

Environmental Monitoring and Protection (29%)

Fisheries Management (21%)

Wildlife Management (17%)

Tourism and Recreational Planning (15%)

Physical Baseline Information (11%)

Features characterized in the data sets are summarized in terms of about 100 attributes (Fig. 3.4). Of the data sets included within the survey, the most common attributes are:

Coastal Habitat (21 of data sets)

Marine Plants (16)

Coastal Fringe Vegetation (14)

Water Quality (14)

Tourism and Recreational Use (14)

Birds [especially waterfowl] (14)

Fisheries [commercial, recreational, subsistence] (13)

The above-ranking of data sets does not necessarily reflect the occurrence of primary data collection, however. Some of the attributes refer to derivative features of the data set or represent different presentations of other source information. For example, while a large number of the data sets apparently reference marine plant data, we are aware of only one systematic, primary data collection program (i.e., the Ministry of Agriculture, Fisheries and Food's Kelp Resources Inventory Program).

Error! No topic specified.

Figure 3.8 Numbers of data sets represented within each of the DFO statistical region indicating the general geographic distribution of resource data. The total number of data sets that were inventoried was 107.

4.0 User Needs Assessment

In early December 1992, a Coastal Information User Survey was conducted to characterize the needs of coastal resource data users. This section contains a summary of that survey.

Figure 4.1 provides an indication of the response in terms of the various user groups. The distribution of questionnaires that were returned were reasonably representative of the questionnaires distributed (see Figure 2.2) except for native groups where only one response was received. The current survey information may not reflect the needs of all user groups but the response was considered sufficiently broad to provide a reasonable sample cross-section. The return of 77 questionnaires (37%) far exceeds that of typical mail-out returns.

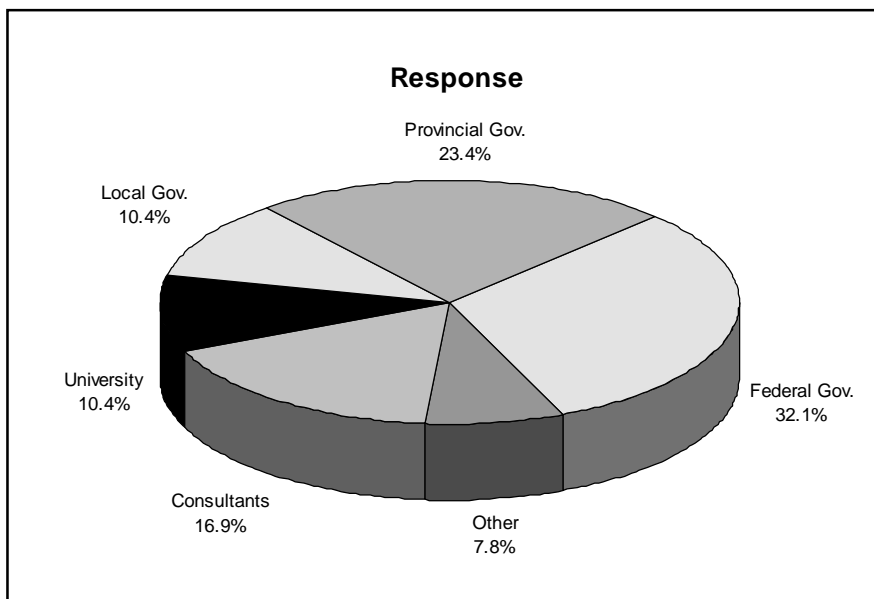


Figure 4.1 Summary of Questionnaire Response

4.1 Summary of User Needs

As with the Resource Inventory, the User Survey was designed to answer a series of questions and the results are summarized in terms of these questions.

What is the Intended Use of the Resource Data?

It is clear that there is no single application of coastal resource information - it is being used for planning, management and operational use (Fig. 4.2). As such, the coastal data is being applied to a full-range of regional to site specific activities. This pattern is in general agreement with the intended application of the existing data sets (Fig. 3.4).

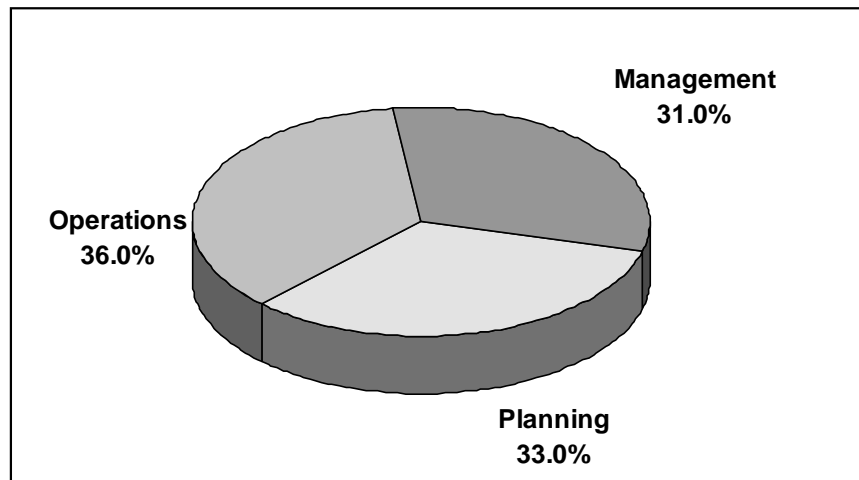


Figure 4.2 Intended Uses of Coastal Resource Data

What is the General Application of the Coastal Resource Data?

There are two distinct categories that stand out in terms of needs for coastal resource data (Fig. 4.3): physical baseline information (46 of the 77 responses) and environmental protection and monitoring (43 of the 77 responses). Education and subsistence use are the categories for which coastal data is least likely to be used.

What are the Types of Coastal Resource Information of Most Interest?

Figure 4.4a shows the overall response to the “Most Interest” question. Over 50 of the 77 responses identified Coastal Habitat (see page 2 for definition of “Coastal Habitat”) as the highest interest category. There is also high interest in the following coastal resources (in descending order): oceanography, aquaculture, industrial use, fish, geology, commercial use and industrial use. Meteorology appeared to be the category of least interest.

The question of “Most Interest” is critical to the development of a common-needs coastal data set; consequently, federal (24 questionnaires returned) and provincial (18 questionnaires returned) responses were extracted and interpreted separately. The federal agency response (Fig. 4.4b) shows a strong interest in oceanography followed by habitat, aquaculture-use, industrial-use, fish and others. It is important to note that a large component of the federal response (11 of the 24 responses) were from the Institute of Ocean Sciences.

The provincial agency response was quite different (Fig. 4.4c) with aquaculture being of primary interest followed by coastal geology, coastal fringe vegetation, habitat, residential--use and transportation-use. The provincial agencies appear to have a much broader interest than the federal agencies with 16 categories identified in 8 or more responses and only 3 categories identified in less than 6 responses.

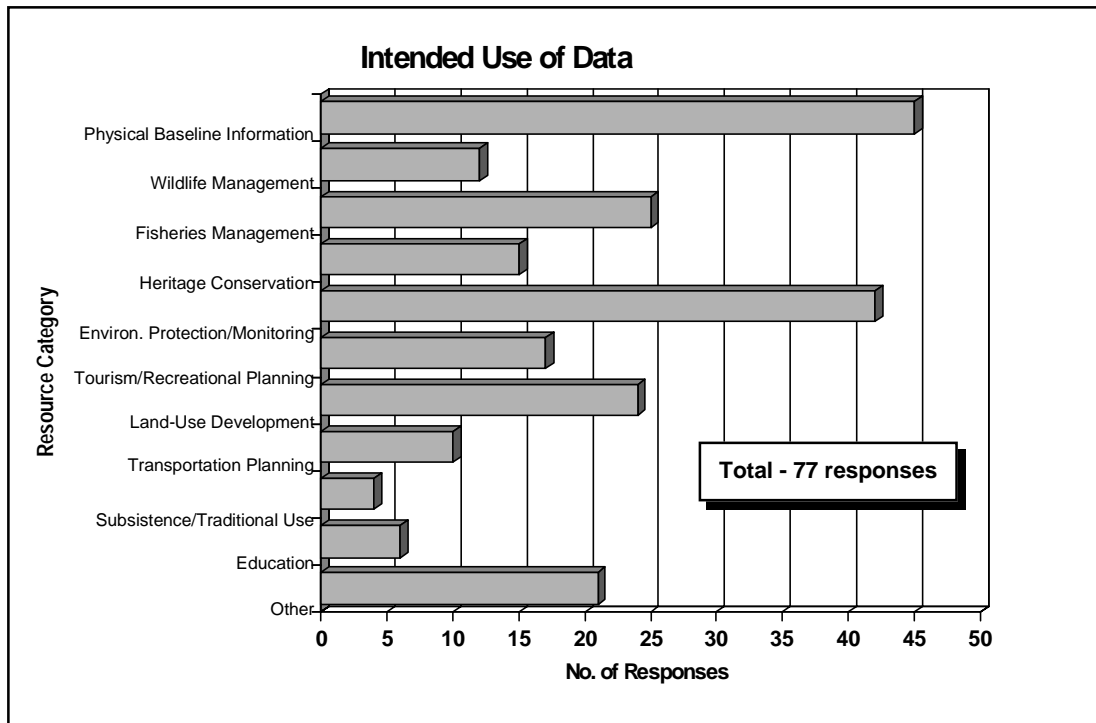


Figure 4.3 Applications of Coastal Data

What Scale of Mapping is of Greatest Interest?

The survey data (Fig. 4.5) indicate that most users have a preference for map data plotted at the scale of 1:20,000 to 1:50,000 with a bias towards more detailed scale maps (i.e., 1:10,000 to 1:20,000).

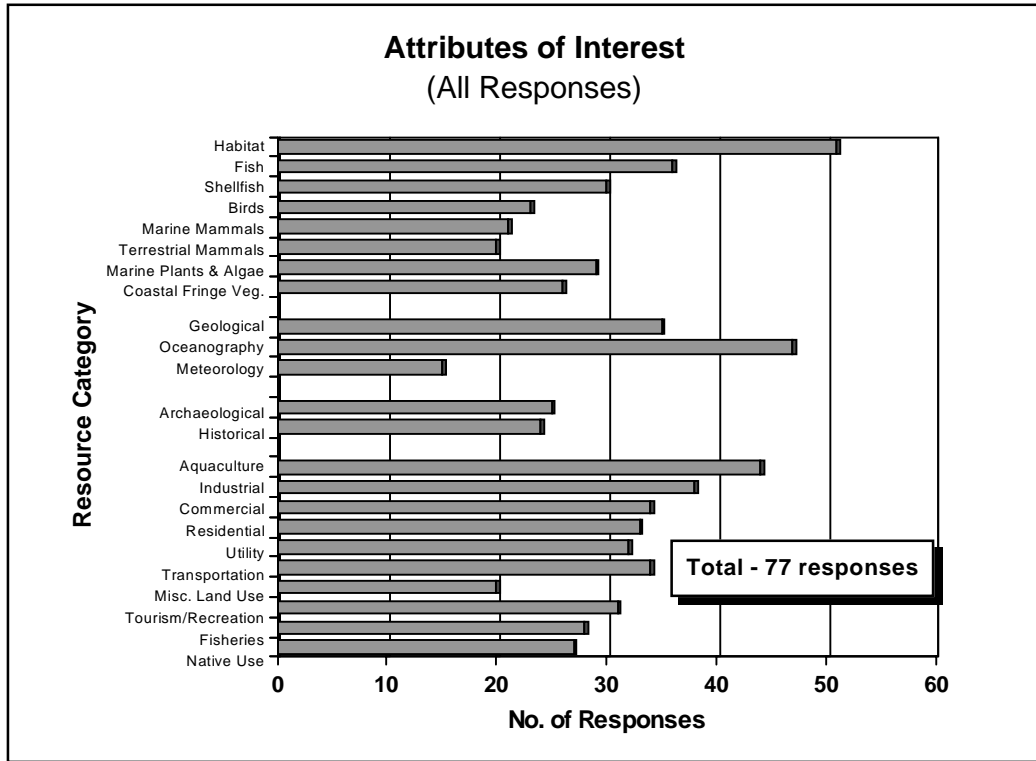


Figure 4.4a Categories of Coastal Resource Needs (All Responses)

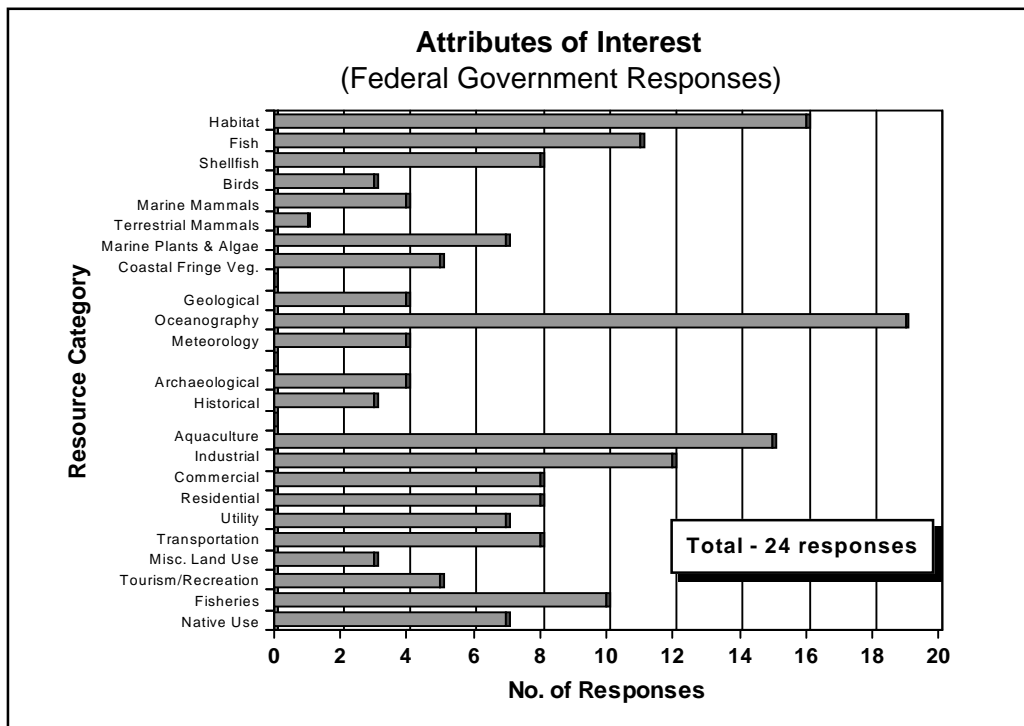


Figure 4.4b Categories of User Needs (Federal Agencies)

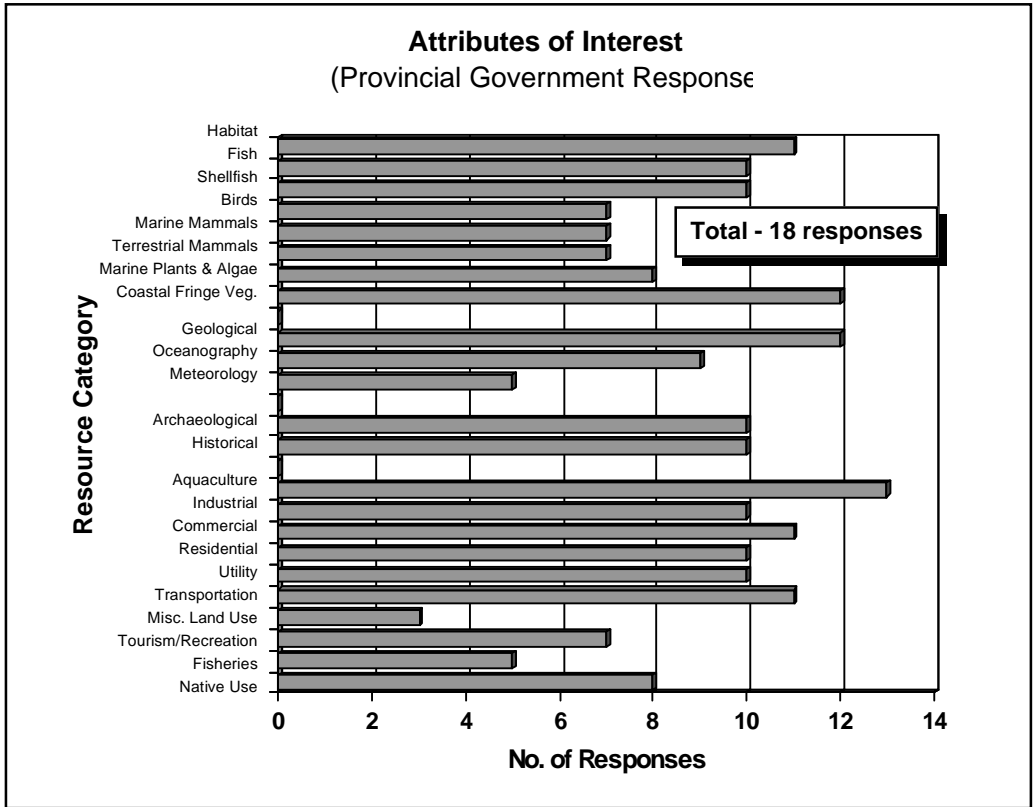


Figure 4.4c Summary of User Needs (Provincial Agencies)

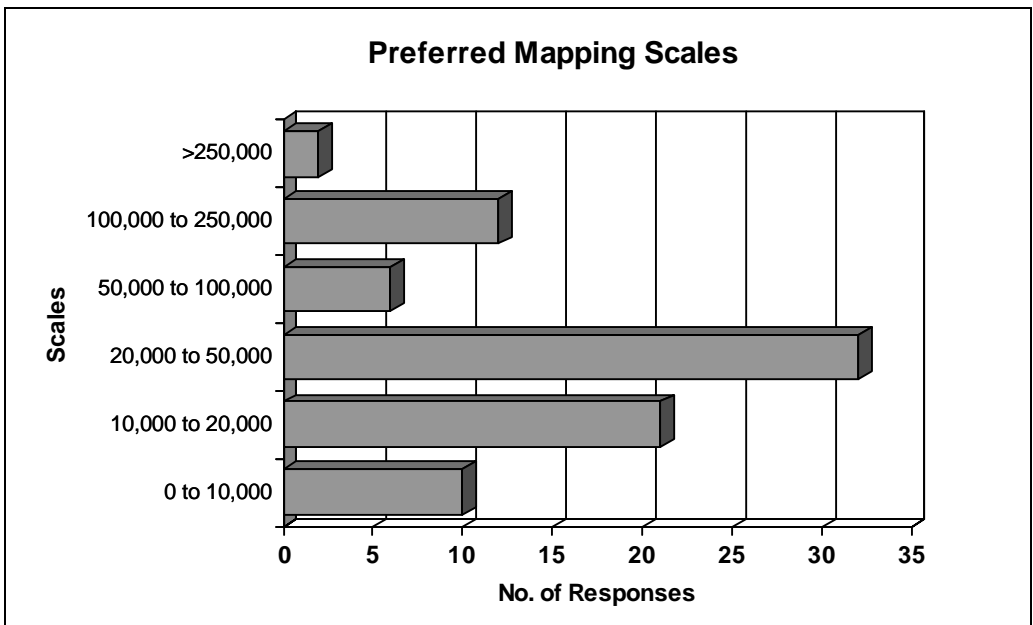


Figure 4.5 User Preferred Mapping Scales

What are the Primary Geographic Areas of Interest?

Not surprisingly, the Southern Strait of Georgia is the primary area of interest to coastal resource data users (Fig 4.6; Fig 4.7). The Central Coast and Northern Strait of Georgia are high interest areas with the remainder of the regions falling in the same range. Figure 4.7 provides greater detail on the subregional interest.

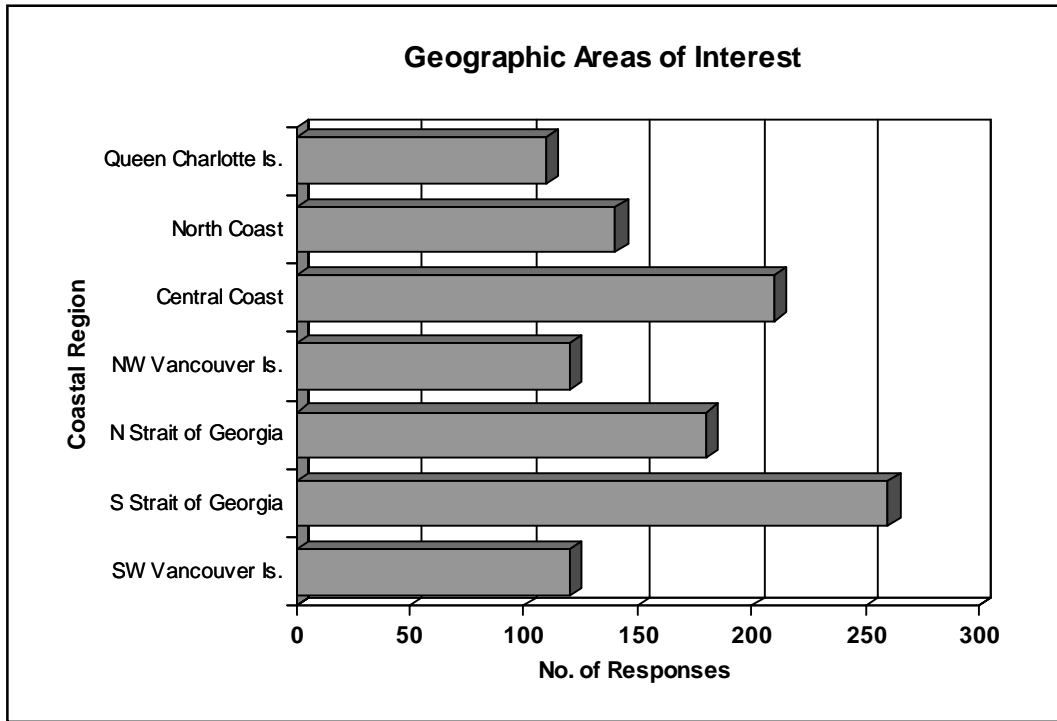


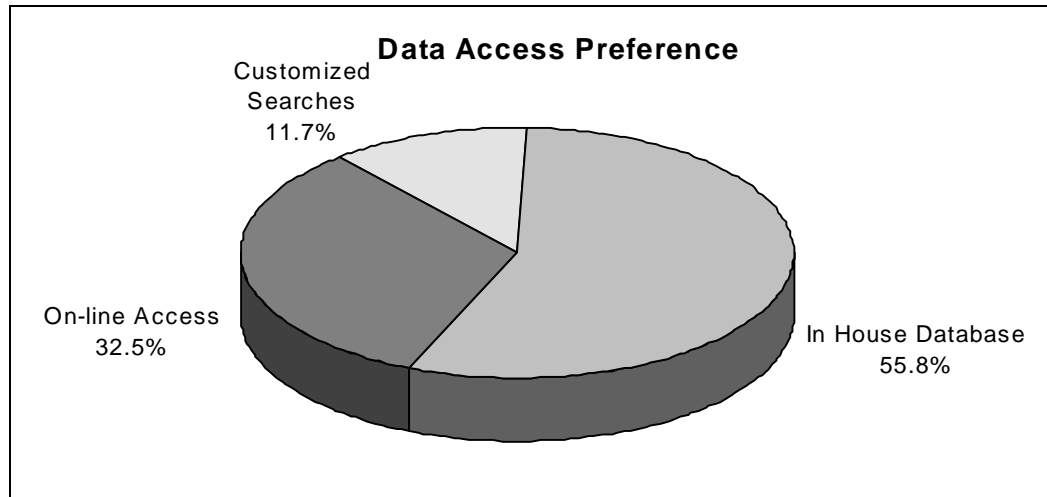
Figure 4.6 Geographic Regions of Interest

Error! No topic specified.

Figures 4.7 Numbers of responses for each DFO statistical region indicating the general geographic areas of user interest. Numbers indicate the number of positive responses from the 77 questionnaires returned.

What is Your Data Access Preference?

Users were asked their preference for data access in the questionnaires. The results show a strong preference for the use of data sets in-house (Fig. 4.8); that is, the ability to manipulate the data to their own needs. However, almost a third of the respondents indicated an interest in on-line data searches. The interest in custom data searches was largely concentrated in the federal agency response.



Figures 4.8 Data Access Preference

4.2 General Overview

The User Survey documented both general and specific resource information. Some of the key results are:

1. The primary areas of use for coastal resource data are:
 - Physical Baseline Information** (identified in 60% of the 77 responses)
 - Environmental Protection and Monitoring** (56% of responses)
 - Fisheries Management** (34% of responses)
 - Land-Use Development** (31% of responses)
2. Coastal resource attributes or summary attributes of greatest interest to users are summarized in terms of six highest ranking categories for three different user groups:

<u>ALL USERS</u>	<u>FEDERAL AGENCIES</u>	<u>PROVINCIAL AGENCIES</u>
Habitat	Oceanography	Aquaculture Use
Oceanography	Habitat	Coastal Geology
Aquaculture Use	Aquaculture Use	Coastal Fringe Vegetation
Industrial Use	Industrial Use	Habitat
Fish Resources	Fish Resources	Commercial Use
Coastal Geology	Fisheries Activities	Transportation Use

There is some overlap between these categories. For example, the term “Habitat” incorporates several attributes including: shoreline morphology and substrate, wave exposure and nearshore water quality; these attributes may be cross-referenced in other categories such as coastal geology and oceanography. As such, the user survey data provides a general guide as to the attributes of primary interest to the users. The response ranking of “All Users” is most representative as it represents the aggregate response of all 77 respondents.

3. The preferred mapping or data collection scale is in the 1:20,000 to 1:50,000 range with a slight bias towards more detailed maps.
4. There is a strong geographic preference for data in the Southern Strait of Georgia followed by preferences in the Central Coast/Queen Charlotte Sound and Northern Strait of Georgia regions.

5.0 Discussion

5.1 Sources of Information

Our assessment of the present needs of the coastal data users and of the development of a “corporate” coastal data set is based on two sources:

- the **User Needs Survey** conducted as part of this project (see Section 4),
- extensive interviews with coastal users and coastal data collectors during the course of this project; during the project a contact list of over 300 individuals was developed, and many of the individuals on this list were contacted during either the **Data Set Inventory** phase or during the **User Needs Survey**.

As such, the conclusions are drawn largely from the qualitative assessment of the project team and from statistical trends identified in the **User Needs Survey**.

5.2 General Applications of Coastal Data Sets

The **User Needs Survey** provides a general indication of the primary areas of data application (Fig. 5.1). These categories are not necessarily mutually exclusive and indicate general trends. For example, water quality data could be used as physical baseline information, as environmental protection/monitoring information and as fisheries management information. The trends are important, however, in providing insight to the intended use areas for data.

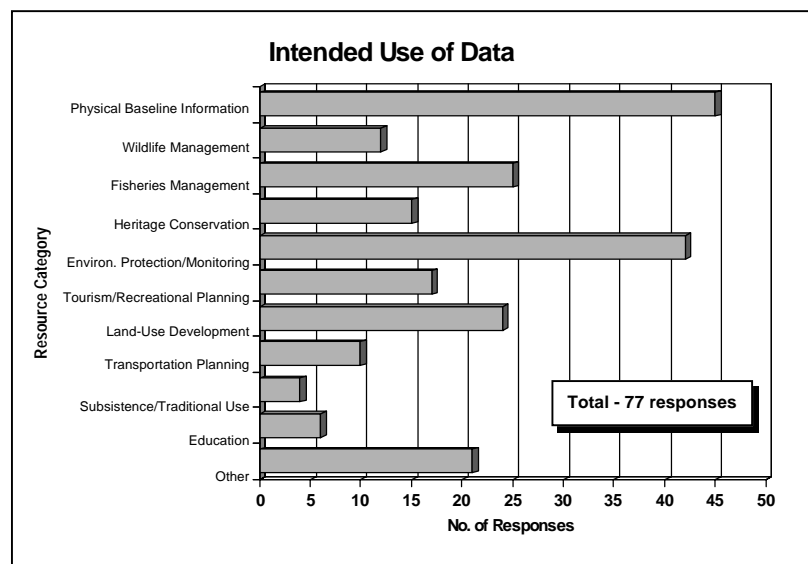


Figure 5.1 Applications of Coastal Data Identified in the User Survey Responses

The top four categories are discussed below in terms of (a) their use in resource management and (b) data attributes associated with each category.

Physical Baseline Information Category

Physical Baseline Information was identified as the highest category of user needs (60% of the responses). Baseline Information provides a basic building block for resource management and bridges a wide range of disciplines. It can be built into various models to assess resource capabilities; for example, wave exposure provides an important constraint to aquaculture capability.

Coastal attributes that appear to be of primary interest in this category include: sufficient geology, shore-zone morphology, shore-zone wave exposure and water quality (e.g., contaminants, suspended sediment concentration, temperature and salinity characteristics).

Environmental Protection and Monitoring (EP&M) Category

EP&M was identified as an important application category (56% of the responses). EP&M includes: (a) compliance monitoring, (b) monitoring of non-point pollutant sources, (c) state-of-the-environment monitoring, and (d) resource management (e.g., habitat or stock assessment).

In addition to those physical baseline attributes identified above, EP&M is likely to include a variety of biological attributes, depending on the specific application area. Coastal Habitat and associated attributes appears to be one of the most widely used components of EP&M. For example, in oil spill protection planning, habitat provides an important framework to which derivative impact models are attached.

Fisheries Management Category

Fisheries Management was identified as an important application category in 34% of the responses. In terms of coastal resources, fisheries management concerns include: estuarine habitat, coastal habitat, coastal fish (fish that spend either a major portion of their life cycle in the coastal zone) and coastal fisheries (a fishery that takes place predominantly within the coastal zone).

Land-Use Development Category

Land-Use Development is a concern to coastal resource managers in that upland development can significantly affect the coastal zone; 30% of the User Needs respondents identified Land-Use Development as an important application area. It is not entirely clear what specific attributes are of interest but these are thought to include: land-use classifications (e.g., industrial, commercial, residential), land ownership, foreshore leases, watershed management and permitted discharges.

5.3 Types of Coastal Information

The **User Needs Survey** is the principal guide to identifying summary attributes of high interest to users. The inset at right shows the top six summary attributes identified in the User Survey. It is important to note that Coastal Habitat is **the highest ranking category** in terms of user interest. This is followed closely by Oceanography (including water quality) and Aquaculture.

There is some overlap of categories (right inset) identified in the user survey. In attempt to clarify what parameters would have to be measured to address these needs, the project team identified a derivative set of attributes (Table 5.1). These “derived” parameters represent building blocks for the high interest coastal resource categories. Their selection is based on experience of the project team and on our discussions with users during the project. Table 5.1 indicates the six attributes categories and associated derivative attributes. These attributes provide a framework for a common coastal data set.

<u>User Interests</u>
Habitat (65% of questionnaires)
Oceanography (61%)
Aquaculture Use (57%)
Industrial Use (49%)
Fish Resources (46%)
Coastal Geology (45%)

Table 5.1 Associated Attributes for Six Summary Attribute Categories

Habitat	Oceanography	Aquaculture Capability	Industrial Use	Fish Resources	Coastal Geology
water quality	water quality	water quality	water quality	water quality	wave exposure
wave exposure	wave exposure	wave exposure	vegetation fringe	wave exposure	surficial geology
surficial geology	nearshore currents	nearshore currents	permitted discharges	surficial geology (substrate)	shore-zone morphology
shore-zone morphology			use classification	intertidal and subtidal biota	
supratidal, intertidal and subtidal biota				catch or census data	

The most common “attribute” is **Water Quality**, which is also a summary attribute in that it incorporates a wide range of parameters such as organic pollutant measurements, inorganic pollutant measurements, suspended sediment concentrations, temperature and salinity concentrations and nutrients (DO, CO₂, nitrates, phosphates, etc.). Water quality is identified as a constituent in five of the six top attribute categories. Some additional research is required to more precisely define what components of water quality are of interest to users.

Coastal Wave Exposure is also identified as a constituent in five of the six attribute categories. Wave exposure provides an important constraint to development in the foreshore (e.g., aquaculture siting) as well as to the use by intertidal and subtidal biota. Wave exposure also strongly influences shore-zone morphology and sediment transport.

Surficial Geology is identified as important constituent of three of the six attribute categories. In particular, surficial sediment type is an important component of coastal and estuarine habitat.

Coastal Biota are identified as an important constituent of three of the six attribute categories. The coastal biota represent the “fixed”, relatively permanent species that occur within the terrestrial fringe, the intertidal zone and the subtidal zone to the 20m isobath.

Other important coastal attributes are: shore-zone morphology, nearshore currents, permitted discharges, industrial-use classification and coastal fisheries catch or census data.

The province has extensive mapping programs underway for **wave exposure, surficial geology** and **short-zone morphology**. A Coastal Mapping Manual (Howes *et al.*, 1993) provides a classifications system and standards for mapping.

A **Coastal Biota/Habitat** manual is currently under preparation by the Ministry of Environment and scheduled for release in September of 1993. This manual will provide a classification system and standards for coastal habitat or community mapping for fixture coastal mapping projects of the Ministry of Environment.

5.4 Coastal Data Scale Considerations

Users indicated a map-scale preference of 1:20,000 - 1:50,000 with a bias towards more detailed mapping scales (e.g., 1:20,000). Users expect to use this information for planning, management and operational activities in approximately equal amounts. Since more detailed information can be generalized to meet the less detailed requirements of planning and assessment applications, it is recommended that future data sets be collected and mapped at 1:20,000 - 1:50,000 map scales; this presentation scale appears to be adequate for most users.

5.5 Geographic Areas of Interest

The Southern Strait of Georgia is the area of highest user interest followed by strong interest in both the Queen Charlotte Strait region and the Northern Strait of Georgia regions.

5.6 Miscellaneous Observations

A wide-range of individuals and agencies were contacted during this project and there are a number of areas of concern, in addition to that of a coordinated BC Coastal Data Set that are of interest. This section identifies some of these concerns or interest.

Information Exchange

It is clear that there are a large numbers of individuals within the province who deal with coastal resources on almost a day-to-day basis - probably thousands within the province. However, because of the fragmented nature of jurisdictions and regulations related to the coastal zone, there is little communication between individuals. An informal newsletter (or in the future, an electronic bulletin board) focusing on coastal zone projects, issues and individuals would greatly facilitate information exchange.

Human-Use Classifications

There is a large amount of coastal data related to human-use activities. However, the information is spread across a wide range of diverse data sets and tends to be very site specific. A standardized, human-use classification system would allow for a uniform characterization of coastal human-use activities. Such a classification should incorporate upland fringe activities as well as nearshore and marine activities.

A sub-category of the classification should focus on recreational boater use. There appears to be little hard information on recreational boater use within the province.

6.0 Recommendations

6.1 British Columbia Coastal Data Set

The User Needs Survey provides the framework for a BC Coastal Data Set (CODAS) The Coastal Data Set should incorporate the following constraints:

INTENDED USE OF COASTAL DATA

In terms of general application areas, **Physical Baseline Information** and **Environmental Protection and Monitoring** are of greatest interest to users.

COASTAL RESOURCE CATEGORIES OF HIGHEST USER INTEREST

The top six coastal attribute categories in terms of user interest are:

- Habitat
- Coastal Oceanography
- Aquaculture
- Industrial Use
- Fisheries Resources
- Coastal Geology

DATA ATTRIBUTES OF HIGH USER INTEREST

Analysis of the top six coastal attribute categories suggests that as a first approximation, CODAS should concentrate on the following coastal attributes:

- water quality**
- wave exposure**
- surficial geology**
- shore-zone morphology**
- coastal biota (terrestrial fringe, intertidal, subtidal)**

Water quality is loosely defined and additional survey work is required to refine the definition of water quality. Water quality measurements are shared among a number of federal, provincial and municipal agencies, and coastal users would benefit from a centralized source agency for accessing results. Such a clearing-house might also function as a coordinating agency to minimize duplication of measurements.

MAPPING SCALES

Since more detailed information can be generalized to meet the less detailed requirements of planning and assessment applications, it is recommended that future data sets be collected and mapped at 1:20,000 - 1:50,000 map scales; this presentation scale appears to be adequate for most users.

DATA COVERAGE

Although province-wide data coverage is desirable, it is clear that there is a strong user preference for information in the Southern Strait of Georgia followed by the Queen Charlotte Strait and Northern Strait of Georgia regions.

6.2 Other Recommendations

COASTAL ZONE NEWSLETTER

The implementation of a coastal zone newsletter would greatly facilitate the exchange of information between the many agencies and institutions involved with coastal zone activities in the province. The multi-jurisdictional nature of the coastal zone tends to fragment communications.

HUMAN-USE CLASSIFICATION

The development of a standardized Human-Use Classification to characterize human activities within the coastal zone would greatly facilitate resource management. Information is spread across a wide range of diverse data sets and is difficult to access.

Appendix A

Appendix A

Contact List

<p>Alliance Tribal Council 6615 Salish Drive Vancouver, BC V6N 4C4 wk: 604/263-1975 fax: 604/263-4201 Specialties: tribal council Contact: Peters</p>	116*	<p>BC Aboriginal Peoples Fisheries Commission Suite 204 - 990 Homer St. Vancouver, BC V6B 2W7 wk: 604/264-1114 fax: 604/682-3550 Specialties: subsistence; traditional use Contact: Peters Notes: not contacted yet; message left</p>	<p>117* First Nations of South Island Tribal Council PO Box 62 Mill Bay, BC V0R 2P0 wk: 250/743-3228 fax: 250/743-7207 Specialties: tribal council Contact: Peters</p>
<p>Kwakiutl District Council PO Box 2490 Port Hardy, BC V0N 2P0 wk: 250/949-9433 fax: 250/949-9677 Specialties: tribal council Contact: Peters</p>	121*	<p>Island Tribal Council Silverstrand Road Ladysmith, BC V0R 2E0 wk: 250/245-7155 fax: 250/245-3012 Specialties: tribal council Contact: Peters</p>	<p>207* Maritime Forces Pacific Headquarters FMO Victoria, BC V0S 1B0 wk: 250/363-2191 Contact: Dickins</p>
<p>Mus-Gamagw Tribal Council PO Box 90 Alert Bay, BC V0N 1A0 wk: 250/974-5516 fax: 250/974-5466 Specialties: tribal council Contact: Peters</p>	122*	<p>North Coast Tribal Council 100 West 1st Ave. Prince Rupert, BC V8J 1A8 wk: 250/624-4666 fax: 250/624-1602 Specialties: tribal council Contact: Morris</p>	<p>43* Pacific Salmon Commission 1155 Robson St. Vancouver, BC V6E 1B9 Specialties: fisheries, commercial Contact: Godon Notes: contacted; no info</p>
<p>Tsimshiam Tribal Council 119 3rd St. Prince Rupert, BC V8J 3P4 wk: 250/627-8782 fax: 250/627-1938 Specialties: tribal council Contact: Peters</p>	125*	<p>Whe-La-La-U Area Council PO Box 150 Alert Bay, BC V0N 1A0 wk: 250/974-5220 fax: 250/974-5904 Specialties: tribal council Contact: Peters</p>	<p>126* Acheson, Steve 1 Archaeological Branch Ministry of Tourism and Culture c/o Parliament Buildings Victoria, BC V8V 1X4 wk: 250/356-1439 fax: 250/387-4420 Specialties: archaeology; heritage resources Contact: Peters Notes: contacted; no follow-up required</p>
<p>Adair, Marian 244* Fraser River Estuary Management Program (FREMP) 301-960 Quayside Dr. New Westminster, BC V3M 6G2 wk: 604/525-1047 fax: 604/525-3005 Contact: Peters Notes: contacted; provided info on habitat mapping; no follow-up required</p>		<p>Adams, Mark 270* ECL Envirowest Consultants Ltd. 204-800 McBride Ave. New Westminster, BC V3L 2B8 Specialties: Notes: user survey only</p>	<p>Addison, Jack 6 Integrated Resources Branch Ministry of Forestry 1450 Government St. Victoria, BC V8W 3E7 wk: 250/387-3900 fax: 250/387-6751 Specialties: forests; recreational maps Contact: Morris Notes: contacted; no info; no further contact</p>

<p>Akhurst, Barry 203* Provincial Emergency Program 368B 11th St. Courtenay, BC V9N 3H5 wk: 250/334-2778 Specialties: Contact: Dickins</p>	<p>Albright, Larry 271*r Institute of Aquaculture Research Simon Fraser University Burnaby, BC V5A 1S6 wk: 604/291-3193 fax: 604/291-3496 Notes: user survey only</p>	<p>Amy, Geoff 204* Provincial Emergency Program 3287 Oak St. Victoria, BC V8X 1P8 wk: 250/387-5956 Specialties: emergency response; dangerous goods incidents Contact: Harper Notes: not contacted; Paul Valencourt provided info</p>
<p>Anderson, Dr. Ray 195* Department of Oceanography-Rm. 1461 University of British Columbia Vancouver, BC V6T 1Z4 wk: 604/822-3278 Specialties: Contact: Dickins</p>	<p>Arber, John 2* Water Quality Branch Ministry of Environment, Lands and Parks 765 Broughton St Victoria, BC V8V 1X4 wk: 250/387-9491 fax: 250/356-8298 Specialties: water quality Contact: Harper Notes: coastal Task Force member; not contacted</p>	<p>Assu, Don 3* Native Gillnetters' Association Native Brotherhood of BC 200 - 1755 East Hastings St. Vancouver, BC V5L 1T1 wk: 604/255-3137 fax: 604/251-7107 Specialties: fisheries, commercial Contact: Peters</p>
<p>Austin, William 258*r Khoyatan Marine Laboratory 4635 Alder Glen Pl. Cowichan Bay, BC V0R 1N0 wk: 250/748-5020 fax: 250/748-4410 Notes: user survey only</p>	<p>Bajard, Yves 272* First Watercount Systems Ltd. 595 West 24th Ave. Vancouver, BC V6Z 2B5 Notes: user survey only</p>	<p>Balsler, Roger 4*r Surveys and Resource Mapping Branch Ministry of Environment, Lands and Parks 4th Fl., 1802 Douglas Victoria, BC V8V 1X4 wk: 250/387-9321/ fax: 250/356-7831 Specialties: base maps Contact: Booth Notes: not contacted yet</p>
<p>Barker, J.E. 307 r Western Forest Products Ltd. 1200-1140 West Pender St. Vancouver, BC V6G 4E6 wk: 604/665-6200 fax: 604/665- 6268 Contact: Moris Notes: responded to user survey</p>	<p>Barrett, David 251* Canadian Coast Guard Vancouver, BC V6Z 2J8 wk: 604/631-3800 Specialties: vessel management Contact: Dickins</p>	<p>Barrie, J. Vaughn 152*r Geological Survey of Canada Pacific Geoscience Centre PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6424 fax: 250/363-6565 Specialties: marine geology Contact: Harper</p>
<p>Beech, Fred 155* Conservation and protection Environment Canada 225 W Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-0370 fax: 604/666-6281 Specialties: oil spill response Contact: Harper</p>	<p>Bekker, Pieter 5*r Inventory and Resource Planning Ministry of Tourism and Culture 1117 Wharf St. Victoria, BC V8W 2Z2 wk: 250/356-8797 fax: 250/356-6555 Specialties: tourism Contact: Booth Notes: contacted; referred to Jennifer Nichol</p>	<p>Benn, Don 140*r Juan de Fuca Environmental Consultants 160 Beach Dr. Victoria, BC V8S 2L5 wk: 250/598-4211 fax: 250/598-4211 Specialties: coastal biology Contact: Morris Notes: contacted; no follow-up</p>
<p>Benson, Patricia 134* Canadian Park Service 220 4th Ave. SE Calgary, AB T2P 3H8 wk: 403/292-4519 fax: 403/292-4746 Specialties: coastal mapping; biophysical surveys Contact: Harper</p>	<p>Berg, Linda 246*r Habitat Management Division (EARP) Fisheries and Oceans Canada 327-555 W Hastings Vancouver, BC V6B 5G3 wk: 604/666-3283 fax: 604/666-7907 Specialties: habitats Contact: Peters Notes: contacted; info provided; no follow-up</p>	<p>Berris, Catherine 269* Catherine Berris Associates Inc. 250-1508 W 2nd Ave. Vancouver, BC V6J 1H2 wk: 604/736-6336 fax: 604/736-2338 Notes: user survey only</p>

<p>Bertold, Stan 243* Water Quality Program Greater Vancouver Regional District 4330 Kingsway Vancouver, BC V5H 4G8 wk: 604/451-6000 Specialties: water quality Contact: Peters Notes: contacted but no info; referred to Doug Walton at MELP</p>	<p>Bijersteveld, Lia 324 Fisheries Data Management Unit Fisheries and Ocean Canada 416-555 W Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-6501 fax: 604/666-7369 Specialties: fisheries statistics Contact: Peters Notes: Jim Bjerring provided info; database manager</p>	<p>Bird, Tom 7* Fisheries and Oceans 415 - 555 W. Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-3271 fax: 604/666-3450 Specialties: salmonids; recreational fisheries Contact: Peters Notes: still trying to reach him</p>
<p>Birkbeck, Alex 273* Applied Biology Division BC Research 3650 Westbrook Mall Vancouver, BC V6S 2L7 Notes: user survey only</p>	<p>Birt, Charlie S. 274*r Marine Operations Sandwell Inc 1190 Hornby St. Vancouver, BC V6G 2H6 wk: 604/684-9311 fax: 604-688-5913 Notes: user survey only</p>	<p>Birtnell, Ian 8 Fisheries and Oceans West Vancouver Lab 4160 Marine Dr. W. Vancouver, BC V7V 1N6 Contact: Peters Notes: used Brad Mason instead</p>
<p>Bjerring, Jim 179* Biological Sciences Division Fisheries and Oceans Canada 416-555 W Hastings Vancouver, BC V6B 5G3 wk: 604/666-9234 fax: 604/666-7369 Contact: Peters Notes: contacted; provided info; no follow-up required</p>	<p>Bjsterveld, Lia 181* Biological Services Division Fisheries and Oceans Canada 416-555 W Hastings Vancouver, BC V6B 5G3 wk: 604/666-6501 fax: 604/666-7269 Contact: Peters Notes: not contacted directly; info supplied by Jim Bjerring</p>	<p>Bobrowsky, Peter 80*r Geological Survey Branch Ministry of Energy, Mines and Petroleum Resources 553 Superior St., Victoria, BC V8V 1X4 wk: 250/356-7763 fax: 250/356-8153 Specialties: geology; shore zone character Contact: Harper Notes: supplied report; no follow-up required</p>
<p>Booth, Jacqueline 103*r J. Booth and Associates 3211 Hammond Bay Rd. Nanaimo, BC V9T 1E4 wk: 250/756-1935 fax: 250/756-1935 Specialties: coastal biology; database management Contact: Booth Notes: CIRI interviewer</p>	<p>Borstad, Gary 275* G.A. Borstad Associates 114-9865 West Saanich Rd Sidney, BC V8L 3S1 Notes: user survey only</p>	<p>Bosworth, G.B. 276* Kilborn Engineering Pacific Ltd. 400 1380 Burrard St. Vancouver, BC V6Z 1B7 Notes: user survey only</p>
<p>Bowen, Ken 9* Timber Harvesting Branch Ministry of Forestry 1450 Government St. Victoria, BC V8W 3E7 wk: 250/387-8319 fax: 250/387-6445 Specialties: forestry Contact: Morris Notes: contact; requires follow-up</p>	<p>Boyd, Sean 218 Canadian Wildlife Service PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Contact: Booth Notes: contacted; no follow-up required</p>	<p>Brady, Cam 137* Ministry of Forests Box 7000 Port McNeil, BC V0N 2R0 wk: 250/956-5076 fax: 250/956-5005 Specialties: recreational planning; coastal video Contact: Morris Notes: contacted; include in user survey; follow-up required</p>
<p>Breault, Andrea 331 Canadian Wildlife Service PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8540 fax: 604/946-7022 Specialties: seabirds Boundary Bay; Contact: Booth Notes: not contacted; Rob Butler provided info; missed user survey</p>	<p>Britneff, Antony 10 Resources Inventory Branch Ministry of Forestry 1319 Government St. Victoria, BC V8W 3E7 wk: 250/387-5727 fax: 250/387-5999 Specialties: forestry Contact: Morris</p>	<p>Brown, Robin 11*r Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6378 fax: 250/363-6390 Specialties: oceanography Contact: Harper</p>

<p>Burger, Alan 334 Biology Department University of Victoria PO Box 1700 Victoria, BC V8W 2Y2 wk: 250/721-7106 fax: 250/721-7120 Specialties: birds; beached bird surveys Contact: Harper Notes: not contacted; Don Howes supplied info</p>	<p>Burles, Doug 245* Canadian Park Service PO Box 37 Queen Charlotte, BC V0T 1M0 wk: 250/559-8818 fax: 250/559-8366 Specialties: recreational planning; wildlife biology Contact: Morris Notes: contacted; user survey only</p>	<p>Burrows, Mac 67 United Fishermen & Allied Workers Union 160 111 Victoria Dr. Vancouver, BC V5L 4C4 wk: 604/2558819 fax: 604/255-3162 Specialties: fisheries, commercial Contact: Godon Notes: still trying to contact</p>
<p>Butler, Rob 330 Canadian Wildlife Service PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Specialties: seabirds; Boundary Bay Contact: Booth Notes: contacted; missed user survey</p>	<p>Cain, Gary 113*r Courtenay Access Centre Ministry of Agriculture, Fisheries and Food 2500 Cliffe Ave. Courtenay, BC V9N 5M6 wk: 250/334-1403 fax: 250/334-1410 Specialties: shellfish habitat Contact: Harper Notes: contacted; shellfish habitat capability</p>	<p>Campbell, Wayne 220* Wildlife Branch Ministry of Environment, Lands and Parks 780 Blanshard St. Victoria, BC V8V 1X4 wk: 250/3879719 fax: 250/356-9145 Specialties: birds; seabirds Contact: Booth Notes: not contacted yet; follow-up required</p>
<p>Carswell, Barron 112* Aquaculture and Commercial Fisheries Branch Ministry of Agriculture, Fisheries and Food 808 Douglas St. Victoria, BC V8W 2Z7 wk: 250/356-2237/ fax: 250/356-7280 Specialties: aquaculture databases; shellfish databases Contact: Harper Notes: handles Quikmap and database work</p>	<p>Chiang, Rudy 141* Shellfish and Aquaculture Inspection Fisheries and Oceans Canada 2250 South Boundary Rd Burnaby, BC V5M 4L9 wk: 604/666-3150/fax: 604/666-4440 Specialties: shellfish inspections Contact: Peters Notes: contacted via J. Power; no follow-up required</p>	<p>Chin, Greg 158* Parks, South Coast Ministry of Environment, Lands and Parks 1610 Mt. Seymour Rd North Vancouver, BC V7G 1L3 wk: 604/929-1290 fax: 604/929-2425 Specialties: recreational planning; parks planner Contact: Peters Notes: contacted; no follow-up required</p>
<p>Clark, Brian 51* Inventory Forestry Western Forest Products 1200 - 1140 W Pender St. Vancouver, BC V6E 4G6 wk: 604/665-6258 Specialties: Contact: Morris</p>	<p>Coatta, Earl 150 Atmospheric Environment Service Environment Canada 700-1200 W 73rd Ave. Vancouver, BC V6P 6H9 wk: 604/664-9156 fax: 604/664-9126 Specialties: meteorology Contact: Peters Notes: contacted; no follow-up required</p>	<p>Cockburn, Tom 13* Land Policy Branch Ministry of Environment, Lands and Parks 6th Fl. 1802 Douglas St. Victoria, BC V8V 1X4 wk: 250/387-1808 fax: 250/356-1916 Specialties: fisheries Contact: Peters Notes: not contacted; used Brian Moen as contact</p>
<p>Coon, Michael 15 Aquaculture Operations Ministry of Agriculture, Fisheries and Food 808 Douglas St. Victoria, BC V8W 2Z7 wk: 250/387-9684 fax: 250/356-7280 Specialties: marine plants; aquaculture Contact: Harper Notes: use Truscott as alternative</p>	<p>Cosgrove, Jim 242 Biology Collections BC Royal Museum 675 Belleville St. Victoria, BC V8V 1X4 wk: 250/387-3544 Specialties: biology Contact: Peters Notes: need to contact; referred to by Alex Peden; Natural Museum Inventory Program</p>	<p>Cowdell, Stan 127* Westmar Consultants 400-233 West 1st Ave. North Vancouver, BC V7M 1B3 Specialties: coastal engineering; waste management Contact: Peters</p>
<p>Cox, Bob 16* Integrated Management Branch Ministry of Environment, Lands and Parks 780 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-9556 Specialties: Contact: Harper Notes: Coastal Task Force Member</p>	<p>Craven, Susan 266* Fletcher Challenge Canada Box 9502 815 W Hastings St. Vancouver, BC V6B 5K9 wk: 604/654-4503 Specialties: Contact: Morris</p>	<p>Cretney, Walter 308 r Ocean Chemistry Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6412 fax: 250/363-6807 Contact: Harper Notes: responded to user survey</p>

<p>Crowther, W.S. (Sev) 298 r Canadian Hydrographic Service Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6335 fax: 250/363-6479 Contact: Harper Notes: responded to user survey</p>	<p>Dalzell, Bob 17 BC Marine Parks Ministry of Environment, Lands and Parks Victoria, BC V8V 1X4 Specialties: parks; recreation Contact: Harper Notes: personal friend of JRH</p>	<p>David, Alain 252* Pollution Abatement Environment Canada 224 W Esplanade North Vancouver, BC V7M 3H7 Specialties: pollution Contact: Dickins Notes: user survey only</p>
<p>Davies, Rick 267* Ministry of Environment Ministry of Environment, Lands and Parks 2569 Kenworth Rd Nanaimo, BC V9T 4P5 wk: 250/751-3100 fax: 250/755-2473 Specialties: eagles; eagle nest surveys Contact: Morris Notes: eagle nest surveys</p>	<p>Dawes, Neil 18 Canadian Wildlife Service 3567 Island Highway West Qualicum Beach, BC V9K 2B7 wk: 250/752-9611 fax: 250/752-9611 Specialties: wildlife Contact: Booth Notes: not contacted; on sabbatical</p>	<p>Day, Chad 263* Natural Resource Department Simon Fraser University Burnaby, BC V5A 1S6 Notes: user survey only</p>
<p>Delaney, Peter 19 Fisheries and Oceans Canada 327 - 555 W Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-2410 fax: 604/666-6970 Specialties: fish; habitat Contact: Peters Notes: Coastal Task Force Member; used Kathy Pontus as contact</p>	<p>Demarchi, Dennis 20* Habitat Inventory Section Ministry of Environment, Lands and Parks 780 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-9772 fax: 250/387-9145 Specialties: fish; habitat Contact: Morris/Booth</p>	<p>Denman, Ken 21* Institute of Ocean Sciences Ocean Ecology 9865 West Saanich Rd Sidney, BC V8L 4B2 wk: 250/356-6346 Specialties: ecology Contact: Harper</p>
<p>Desjardin, Darrell 239* Port of Vancouver 1900 - 200 Granville St. Vancouver, BC V6C 2P9 wk: 604/666-3170 Specialties: port operations; habitat mapping Contact: Peters Notes: not contacted; referred by Nancy Yates</p>	<p>Dickins, David 105* D.F. Dickins Associates Ltd. Vancouver, BC V6B 1A1 wk: 604/684-0516 fax: 604/684 2357 Specialties: coastal studies; engineering Contact: Dickins Notes: CIRI interviewer</p>	<p>Dunn, Michael 22*r Canadian Wildlife Service Environment Canada PO Box 340, Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Specialties: shore-zone character; fish, habitat; base maps Contact: Booth Notes: Coastal Task Force Member</p>
<p>Duval, Wayne 277* AXYS Group Ltd. 407-1155 Robson St. Vancouver, BC V6E 1B9 Notes: user survey only</p>	<p>Eade, Alan 257*r State of the Environment Reporting Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6568 fax: 250/363-6479 Contact: Morris Notes: user survey only</p>	<p>Eby, Philip 23* Fishing Vessel Owner's Association of BC 206 - 5316 Victoria Dr. Vancouver, BC V5P 3V7 wk: 604/321-4744 fax: 604/321-2940 Specialties: fisheries; commercial Contact: Godon Notes: contacted; no further follow-up</p>
<p>Elkington, Bill 278* HBT Agra Ltd. 2227 Douglas Rd Burnaby, BC V5C 5A9 Notes: user survey only</p>	<p>Emmett, Brian 279* Archipelago Marine Research 200-525 Head St. Victoria, BC V9A 4S1 Notes: user survey only</p>	<p>English, Karl 135* LGL Limited 9768 Second Ave. Sidney, BC V8L 378 wk: 250/656-0127 fax: 250/655-4761 Specialties: marine biology; coastal mapping Contact: Harper</p>

<p>Farlinger, Sue 148* Management Biology Unit Fisheries and Oceans Canada 417 2nd Ave. West Prince Rupert, BC V8J 1G8 wk: 250/624-0464 fax: 250/624-0411 Specialties: marine biology; abalone Contact: Peters Notes: contacted; no follow-up required</p>	<p>Farrell, Tony 237* Biological Sciences Simon Fraser University Burnaby, BC V5A 1S6 wk: 604/291-3647 Contact: Peters Notes: not contacted yet; referred by Chad Day</p>	<p>Ferguson, Duncan 255* Ministry of Environment Lands and Parks 1106-1175 Douglas St. Victoria, BC V8V 1X5 wk: 250/387-9952 fax: 250/953-3856 Notes: user survey only</p>
<p>Forbes, J. Roderick (Rod) 162*r Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6443 fax: 250/363-6390 Specialties: ocean ecology; red tide; PSP Contact: Harper Notes: contacted; no follow-up required</p>	<p>Forbes, Trudie 156 Geological Survey of Canada Pacific Geoscience Centre PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6425 fax: 250/363-6565 Specialties: sediment samples; sediment analyses Contact: Harper Notes: contacted; no follow-up required</p>	<p>Foreman, Ron 280* Botany Department University of British Columbia 6270 University Blvd. Vancouver, BC V6T 1Z4 wk: 604/822-4672 Notes: user survey only</p>
<p>Foster, John (Jack) G 25*r Archaeology Branch Ministry of Tourism and Culture 5th Fl., 800 Johnson St. Victoria, BC V8V 1X4 wk: 250/356-1055 fax: 250/387-4420 Specialties: heritage resources Contact: Peters Notes: Coastal Task Force Member; no follow-up</p>	<p>Frederick, Gay 231* BC Royal Museum 675 Belleville St. Victoria, BC V8V 1X4 wk: 250/387-5576 fax: 250/727-2497 Specialties: archaeology Contact: Peters Notes: contacted but no info; no follow-up required</p>	<p>Freeland, Howard 154 r Ocean Physics Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6590 fax: 250/363-6746 Specialties: oceanography; lighthouse data Contact: Harper</p>
<p>Gale, Stuart 26 r Policy, Planning, Development and Implementation Ministry of Tourism and Culture 1117 Wharf St. Victoria, BC V8W 2Z2 wk: 250/356-9600 fax: 250/387-1420 Specialties: tourism Contact: Booth</p>	<p>Gardner, Robin 202*r Provincial Emergency Program 207-815 Hornby St. Vancouver, BC V6Z 2E6 wk: 604/660-3723 fax: 604/660-2606 Specialties: emergency services; spill response Contact: Harper Notes: contacted; no follow-up required</p>	<p>Garrett, John 27 Ocean Physics Institute of Ocean Sciences 9865 W. Saanich Rd Sidney, BC V8L 4B2 wk: 250/356-6474 Specialties: oceanography Contact: Harper</p>
<p>Gibbon, D. 306 r Delta Parks and Recreation 4994 48th Ave. Delta, BC V4K 1V7 wk: 604/946-1874 fax: 604/946-4693 Contact: Peters Notes: responded to user survey</p>	<p>Gibson, Margaret 323 Community Health Services Capital Regional District 3995 Quadra St. Victoria, BC wk: 250/388-9019 Specialties: water quality; fecal coliform counts Contact: Harper Notes: Les potter provided info; database manager</p>	<p>Giles, Tim 186*r Geological Survey Branch Ministry of Energy, Mines & Petroleum Resources 553 Superior St., Victoria, BC V8V 1X4 wk: 250/387-6330 fax: 250/356-8153 Specialties: geology Contact: Peters Notes: sent a questionnaire in; Ralph Schmidt</p>
<p>Gower, Jim 300*r Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6558 fax: 250/363-6479 Notes: responded to survey</p>	<p>Goyette, Darcy 29* Conservation and Protection Environment Canada 224 W Esplanade Vancouver, BC V7M 3H7 wk: 604/666-2880/ fax: 604/666-6281 Specialties: marine ecology; water quality; habitat Contact: Peters Notes: not contacted; John Powers supplying master list</p>	<p>Green, Bill 124 Nuu-Chah-Nulth Tribal Council PO Box Port Alberni, BC V9Y 7M2 wk: 250/724-5757 fax: 250/724-0463 Specialties: tribal council Contact: Peters/Dickins</p>

<p>Grey, Collin 221 Canadian Wildlife Service PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Contact: Booth Notes: not contacted yet</p>	<p>Hadden, Glen 30 Aquaculture Organization BC Shellfish Growers Assoc. 807 Shorewood Dr. Parskville, BC V9P 1S1 wk: 250/248-3899 fax: 250/248-3899 Specialties: aquaculture Contact: Peters</p>	<p>Hale, Ken 240* Westwater Research Institute 1933 West Mall Vancouver, BC V6T 1Z2 wk: 604/822-6474 Contact: Peters Notes: not contacted yet; referred by Chad Day</p>
<p>Hall, David 313 r Economic Planning Group 14-3318 Oak St. Victoria, BC V8X 1R1 wk: 250/383-5818 fax: 250/383-9581 Contact: Harper Notes: responded to user survey</p>	<p>Halsey, Gordon 32* Commercial Fisheries Ministry of Agriculture, Fisheries and Food 808 Douglas St. Victoria, BC V8W 2Z7 wk: 250/387-9687 fax: 250/356-7280 Specialties: habitat Contact: Peters Notes: not contacted; Truscott supplied info</p>	<p>Hanna, Scott 281* Acres International Ltd. 400-845 Cambie St. Vancouver, BC V6B 2P4 Notes: user survey only</p>
<p>Harbo, Rick 222* South Coast Division Fisheries and Oceans Canada 3225 Stephenson Point Rd Nanaimo, BC V9T 1K3 wk: 250/756-7268 fax: 250/758-9600 Specialties: shellfish Contact: Peters Notes: contacted; no follow-up required</p>	<p>Harding, Lee E. 33* Marine & Estuarine Group, Environment Canada 224 West Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-2917 fax: 604/666-6756 Specialties: water quality; habitat Contact: Peters Notes: Coastal Task Force Member; contacted; no follow-up required</p>	<p>Harper, John 102*r Coastal and Ocean Resources Inc. 107-9865 W Saanich Rd. Sidney, BC V8L 5M8 wk: 250/655-4035 fax: 250/6551290 Specialties: coastal geomorphology; coastal processes; physical sciences Contact: Harper Notes: CIRI interviewer</p>
<p>Harrison, Dr. Paul 199*r Department of Oceanography-Rm. 1461 University of British Columbia Vancouver, BC V6T 1Z4 wk: 604/822-4198 fax: 604/822-6091 Specialties: aquatic plants Contact: Dickins</p>	<p>Hatfield, Chris 133* Hatfield Consultants 201-1571 Bellevue St. West Vancouver, BC V7V 1A6 wk: 604/926-3261 fax: 604/926-5389 Specialties: aquaculture Contact: Peters Notes: responded to Wolferstern survey; user survey only</p>	<p>Hawes, Robert 282* Norecol Environmental Consultants Ltd. 7001090 W Pender St. Vancouver, BC V6E 2N7 Notes: user survey only</p>
<p>Hawksworth, Cynthia 249* Islands Trust 2nd Fl., 1627 Fort St. Victoria, BC V8R 1H8 wk: 250/387-4000 Specialties: foreshore planning Contact: Harper</p>	<p>Hay, Doug 139* Pacific Biological Station Hammond Bay Rd Nanaimo, BC V9R 5K6 wk: 250/756-7201 fax: 250/756-7053 Specialties: fisheries Contact: Booth Notes: contacted; no follow-up required</p>	<p>Healey, Michael 283* Westwater Research Centre 1933 West Mall Annex Vancouver, BC V6T 1Z2 Notes: user survey only</p>
<p>Heba, Richard 35 Archaeology Royal British Columbia Museum 675 Belleville Victoria, BC V8V 1X4 wk: 250/387-2416 fax: 250/388-9315 Specialties: archaeology Contact: Peters Notes: contacted</p>	<p>Henwood, Bill 247* Canadian Park Service 103-267 W Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-1280 Specialties: recreational planning; parks Contact: Harper Notes: user survey only</p>	<p>Herchmer, Doug 109* Ministry of Forests 3726 Alfred Ave. Smithers, BC V0J 2N0 wk: 250/847-7425 fax: 250/847-7217 Specialties: recreational planning Contact: Morris Notes: contacted; referred to alternatives</p>

Hickey, Dwight
ECL Envirowest Consultants Ltd.
204-800 McBride Blvd.
New Westminster, BC V3L 2B8
wk: 604/521-6500
fax: 604/521-2208
Contact: Peters
Notes: responded to user survey

314 r

Hill, Bob
Tsimshian Tribal Council
PO Box 7
Prince Rupert, BC V8J 3P4
wk: 250/627-8782
fax: 250/627-1938
Specialties: subsistence use; traditional use
Contact: Peters
Notes: Coastal Task Force Member

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Hodgson, Christine
Courtenay Access Centre
Ministry of Agriculture, Fisheries and Food
2500 Cliffe Ave.
Courtenay, BC V9N 5M6
wk: 250/334-1408
fax: 250/334-1410
Specialties: marine plants
Contact: Harper
Notes: contact; marine plants licensing

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<p>Holden, Brendan 38* Water Resources Ministry of Environment, Lands and Parks 737 Courtney St. Victoria, BC V8V 1X5 Specialties: oceanography Contact: Harper Notes: Coastal Task Force Member</p>	<p>Holmes, John 234 Inspections Branch Environment Canada 224 W Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-3489 Specialties: compliance monitoring Contact: Peters Notes: contacted but no info; no follow-up required</p>	<p>Hooper, Mike 256* MacMillan Bloedel 65 Front St. Nanaimo, BC V9R 5H9 wk: 250/755-3477 Notes: user survey only</p>
<p>Howes, Don 39*r Environmental Emergency Services Branch Ministry of Environment, Lands and Parks 737 Courtney St., Victoria, BC V8V 1X5 wk: 250/356-9300 fax: 250/356-0742 Specialties: base maps; physical shore zone; habitat Contact: Harper Notes: Coastal Task Force Co-Chairman; Harper</p>	<p>Hunter, Michael 40 Commercial Fisheries Fisheries Council of BC 706-1155 Robson St. Vancouver, BC V6B 1R6 wk: 604/684-6454 Specialties: fisheries, commercial Contact: Godon Notes: contacted; no follow-up required</p>	<p>Hutchinson, Ian 100*r Dept. of Geography Simon Fraser University Burnaby, BC V5A 1S6 wk: 604/291-3232/ fax: 604/291-5841 Specialties: coastal oceanography; quaternary geology Contact: Harper Notes: contacted; provided info; no follow-up required</p>
<p>Inglis, Richard 41 Native Affairs Ministry of Environment, Lands and Parks 4th Fl., 737 Courtney St. Victoria, BC V8V 1X4 wk: 250/386-5461 fax: 250/387-8897 Specialties: archaeology; traditional use; subsistence use Contact: Peters</p>	<p>Irvin, Pat 144 BC Oyster Marketing Board PO Box 970 Ladysmith, BC V0R 2E0 wk: 250/245-3213 Specialties: oyster production Contact: Godon Notes: contacted; no follow-up required</p>	<p>Isaacson, Dr. Michael 192*r Department of Civil Engineering University of British Columbia Vancouver, BC V6T 1Z4 wk: 604/822-2637 fax: 604/822-6901 Contact: Dickins</p>
<p>Jamieson, Glenn 235 Pacific Biological Station Hammond Bay Rd Nanaimo, BC V9R 5K6 wk: 250/756-7223 fax: 250/756-7141 Specialties: shellfish Contact: Peters Notes: not contacted; referred to by Rick Harbo</p>	<p>Jane, Mona 111 Aquaculture and Commercial Fisheries Branch Ministry of Agriculture, Fisheries and Food 808 Douglas St. Victoria, BC V8W 1Z7 wk: 250/356-1250/ fax: 250/356 7280 Specialties: aquaculture licensing; fish sales licensing Contact: Harper Notes: contacted; ALRAS and sales licensing</p>	<p>Jones, Greg 44 Fish & Wildlife Branch Ministry of Environment, Lands and Parks 4th Fl., 810 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-4601 Specialties: fisheries, recreational; recreation use; parks Contact: Peters Notes: contacted Brian Price as alternative</p>
<p>Jordan, A.J. John 312 r Vancouver Port Corporation 1500-200 Granville St. Vancouver, BC V6C 2P9 wk: 604/666-3226 fax: 604/666-0590 Contact: Dickins Notes: responded to user survey</p>	<p>Joy, Kerry 45* Fish & Wildlife Branch Ministry of Environment, Lands and Parks 4th Fl., 810 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-4598 Specialties: recreation use; parks Contact: Morris</p>	<p>Jung, ManLee 180 Biological Services Division Fisheries and Oceans Canada 416-555 W Hastings Vancouver, BC V6B 5G3 wk: 604/666-2833 fax: 604/666-7369 Contact: Peters Notes: not contacted directly; info supplied by Jim Bjerring</p>
<p>Kaiser, Gary 46 Canadian Wildlife Service Environment Canada PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Specialties: birds Contact: Booth Notes: contacted; no follow-up required</p>	<p>Kalinovich, David 216* Corporation of Delta 4994-48 Ave. Delta, BC V4K 1V7 wk: 604/945-4141 fax: 604/945-4141 Contact: Dickins</p>	<p>Karefoot, Tom 265* Biology Department University of British Columbia 6270 University Blvd. Vancouver, BC V6T 1Z4 Notes: user survey only</p>

<p>Kay, Bruce 47* Environmental Protection Environment Canada 224 West Esplanade Vancouver, BC V7M 3H7 wk: 604/666-6036 Specialties: water quality; shellfish Contact: Peters Notes: not contacted; Bert Kouli supplied info</p>	<p>Keller, Peter 284* Geography Department University of Victoria PO Box 3050 Victoria, BC V8W 3P5 Notes: user survey only</p>	<p>Kelso, Brian 163* Pollution Abatement Branch Environment Canada 224 W Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-5193 fax: 604/666-9107 Specialties: water quality Contact: Peters Notes: contacted; no follow-up required</p>
<p>Kenk, Evert 48* Survey and Resource Mapping Branch Ministry of Environment, Lands and Parks 4th Fl., 1802 Douglas St. Victoria, BC V8V 1X4 wk: 250/387-9309 Specialties: base maps Contact: Booth Notes: not contacted</p>	<p>Khristensen, Dag 99* Resources Inventory Branch Ministry of Forests 1319 Government St. Victoria, BC V8W 3E7 wk: 250/752-9611 Specialties: forestry Contact: Morris Notes: contacted; follow-up required</p>	<p>Kim, Kay 190* Waste Management Environment Canada 224 West Esplanade North Vancouver, BC V3M 3H7 wk: 604/666-2685 fax: 604/6667294 Contact: Peters Notes: contacted; sending info</p>
<p>Kinney, Al 34* BC Salmon Farmers Assoc. 506-1200 West Pender St. Vancouver, BC V6E 2S9 wk: 604/682-3077 fax: 604/669-6974 Specialties: aquaculture; fish Contact: Godon Notes: still trying to reach</p>	<p>Kooi, Bert 176* Environmental Protection Environment Canada 224 West Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-2917 fax: 604/666-6756 Contact: Peters Notes: no follow-up required</p>	<p>Kreuder, W. L. 49* Data Management in the Pacific and Yukon Region Environment Canada 224 W Esplanade Vancouver, BC V7M 3H7 wk: 604/666-3859/ fax: 604/666-6713 Specialties: resource mapping Contact: Peters Notes: not contacted; John Powers supplied info</p>
<p>Kristiansen, D. 304 r Inventory Branch Ministry of Forests 1450 Government St. Victoria, BC V8W 3E7 wk: 250/387-6734 fax: 250/387-5999 Contact: Morris Notes: responded to user survey</p>	<p>Kumi, Janna 14* MacMillan Bloedel 65 Front St. Nanaimo, BC V9R 5H9 wk: 250/755-3421 fax: 250/755-3550 Specialties: forestry Contact: Morris</p>	<p>Kusch, Bob 305 r District of West Vancouver 750 17th St. West Vancouver, BC V7V 3T3 wk: 604/922-1211 fax: 604/922-6214 Contact: Peters</p>
<p>Kuwahara, Dr. Ronald 209* Defense Research Establishment Pacific Victoria, BC V0S 1B0 wk: 250/363-2191 Specialties: Contact: Dickins</p>	<p>Lawrence, Dr. Greg 193* Department of Civil Engineering University of British Columbia Vancouver, BC V6T 1Z4 wk: 604/822-2637 Contact: Dickins</p>	<p>LeBlond, Dr. Paul 197* Department of Oceanography-RM 1461 University of British Columbia Vancouver, BC V6T 1Z4 wk: 604/822-3278 Contact: Booth Notes: not contacted</p>
<p>Lees, Eric 217* Parks and Recreation District of West Vancouver 750 - 17th St. West Vancouver, BC V7V 3T3 wk: 604/922-1211 fax: 604/922-6214 Contact: Dickins</p>	<p>Lefevre, Al 52* Land Policy Ministry of Environment, Lands and Parks 6th Fl., 1802 Douglas Victoria, BC V8V 1X4 wk: 250/387-1819 fax: 250/356-1916 Specialties: Contact: Dickins</p>	<p>Leung, William 182* Small Crafts Harbours Branch Fisheries and Oceans Canada 327-555 W Hastings Vancouver, BC V6B 5G3 wk: 604/666-6271 fax: 604/666-7907 Contact: Peters Notes: Coastal Task Force Member; Brian Moen supplied info</p>

<p>Levings, Collin 50* West Vancouver Lab Fisheries and Oceans Canada 4160 Marine Dr. West Vancouver, BC V7V 1N6 wk: 604/666-7915 fax: 604/666-5155 Specialties: water quality Contact: Peters Notes: contacted; no follow-up required</p>	<p>Lewis, Karen 303 r BC Parks Ministry of Environment, Lands and Parks 2nd Fl., 800 Johnson St. Victoria, BC V8V 1X4 wk: 250/387-0535 fax: 250/387-5757 Contact: Harper Notes: responded to user survey</p>	<p>Lewis, Peter 53* Fisheries Branch Ministry of Environment, Lands and Parks 780 Blanshard Victoria, BC V8V 1X4 wk: 250/387-9553 Specialties: habitat; shore-zone character Contact: Harper Notes: contacted; already sent user survey to bands; info in RIC report; Harper to keep</p>
<p>Lihman, Sue 325 Salmonid Enhancement Program Fisheries and Oceans Canada 323-555 W Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-2039 Specialties: fisheries; salmonid enhancement Contact: Peters Notes: Greg Steer provided info</p>	<p>Lindsay, David J. 132*r South Island Division Box 130 Crofton, BC V0R 1R0 wk: 250/246-9332 fax: 250/246-9644 Specialties: forestry Contact: Morris Notes: responded to Wolfersern survey</p>	<p>Lombardson, Ken 236* Fraser River Estuary Management Program (FREMP) 301 - 960 Quayside Dr. New Westminster, BC V3M 6G2 wk: 604/525-1047 fax: 604/525-3005 Contact: Peters Notes: not contacted yet</p>
<p>Luternauer, John 55* Geological Survey of Canada Energy, Mines and Resources 100 W Pender, Vancouver, BC V6B 1R8 wk: 604/666-0788 fax: 604/666-1124 Specialties: estuaries; shore zone character Contact: Harper Notes: contacted; no direct info; supplied other contact name on Fraser</p>	<p>Lynds, Pegi 212* Parks and Recreation City of Burnaby 4949 Canada Way Burnaby, BC V5G 1M2 wk: 604/294-7102 fax: 604/294 7710 Contact: Dickens</p>	<p>MacDonald, Al 173* Fraser River District Aboriginal Fisheries Commission 610 Derwent Way New Westminster, BC V3M 5P8 wk: 604/666-8616 Contact: Peters Notes: still trying to contact</p>
<p>Macdonald, Rob 138*r Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6409 fax: 250/363-6807 Specialties: chemical oceanography Contact: Harper</p>	<p>MacKinnon, Andy 56 Integrated Resource Management Ministry of Forestry 1450 Government St. Victoria, BC V8W 3E7 wk: 250/387-6536 fax: 250/387-6751 Specialties: forestry Contact: Morris Notes: not contacted</p>	<p>MacKinnon, Colin 178*r Habitat Management Fisheries and Oceans Canada 327-555 W. Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-1257 fax: 604/666-7907 Contact: Peters Notes: contacted; no info</p>
<p>Magee, Colin 233* Ministry of Energy, Mines and Petroleum Resources Rm. 413, 617 Government St. Victoria, BC V8V 1X4 wk: 250/356-2771 fax: 250/356-0160 Specialties: geology Contact: Peters</p>	<p>March, Doug 57 Commercial Fishing Industry Council 400 845 Cambie St. Vancouver, BC V6B 2P4 wk: 604/669-2932 fax: 604/683-9148 Specialties: fisheries; commercial Contact: Godon Notes: contacted; no follow-up required</p>	<p>Marchant, Brad 129* Coastal Research Inc. 80 Niobe St. North Vancouver, BC V7J 2C9 Specialties: marine biology; environmental testing Contact: Peters</p>
<p>Martin, Al 65 Fisheries, Wildlife and Integrated Management Ministry of Environment, Lands and Parks 4th Fl., 810 Blanshard Victoria, BC V8V 1X4 wk: 250/387-9585 fax: 250/387-9750 Specialties: fisheries Contact: Morris</p>	<p>Mason, Brad 58* Habitat Management Division Fisheries and Oceans Canada 327 - 555 W Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-6683/ fax: 604/666-7907 Specialties: habitat Contact: Peters Notes: Coastal Task Force Member; contacted; no follow-up required</p>	<p>McAllister, Carey 60* Pacific Biological Station Fisheries and Oceans Hammond Bay Road Nanaimo, BC V9R 5K6 wk: 250/756-7000 fax: 250/756-7053 Specialties: estuarine ecology; fisheries Contact: Booth Notes: contacted; no follow-up required</p>

McGreer, Eric Beak Association Consulting Ltd. 160 14480 River Rd Richmond, BC V6V 1Z4 Notes: user survey only	285*	McInerney, John Bamfield Marine Station Bamfield, BC V0R 1B0 Notes: user survey only	261*	McIntosh, Lorne Fish and Wildlife Service Ministry of Environment, Lands and Parks Bag 5000 Smithers, BC V0J 2N0 wk: 250/847-7307 fax: 250/847-7728 Contact: Morris Notes: responded to user survey	302*r
McKelvey, Rick Canadian Wildlife Service PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-2357 Contact: Booth Notes: not contacted yet	223	McLaren, Patrick Geosea Research Ltd. General Delivery Fulford Harbour, BC wk: 250/653-4060 fax: 250/653-4060 Specialties: marine geology Contact: Harper Notes: contacted; no follow-up required	153	McNally, John Small Craft Harbours Branch Fisheries and Oceans Canada 555 West Hastings Vancouver, BC V6B 5G3 wk: 604/666-6530 Contact: Dickins	206*
Meakins, Donald Data Dissemination Statistics Canada 340F - 757 W. Hastings St. Vancouver, BC V6C 3C9 wk: 604/666-3691 fax: 604/666-4863 Contact: Dickins	210*r	Millar, Judy Parks, South Coast Ministry of Environment, Lands and Parks 1610 Mt. Seymour Rd North Vancouver, BC V7G 1L3 wk: 604/929-1291 fax: 604/929-2425 Specialties: recreational planning Contact: Peters Notes: not contacted; info obtained from Greg	159*r	Millen, John Integrated Programs Branch Environment Canada 224 West Esplanade North Vancouver, BC V3M 3H7 wk: 604/666-0670 fax: 604/666-6713 Contact: Peters Notes: contacted; no follow-up required	191*
Millen, Sandra Department of Zoology University of British Columbia 6270 University Blvd. Vancouver, BC V6T 1Z4 wk: 604/822-2087 fax: 604/822-2416 Contact: Dickins Notes: user survey	264*r	Moen, Brian Lands Policy Branch Ministry of Environment, Lands and Parks 6th Fl., 1802 Douglas Victoria, BC V8V 1X4 wk: 250/387-1800 fax: 604/356-1916 Contact: Peters Notes: contacted; no follow-up required	145*	Mollet, R.J. Marine Operations Royal Canadian Mounted Police 657 W 37th Ave. Vancouver, BC V5Z 1K6 wk: 604/264-2241 fax: 604/264-3546 Specialties: emergency response; enforcement; search and rescue Contact: Dickins	250*r
Montieth, Derick Aquatic Toxicity BC Research 3650 Westbrook Mall Vancouver, BC V6S 2L7 wk: 604/224-4331 fax: 604/224-0540 Notes: user survey only	286*	Moore, Kathleen Canadian Wildlife Service Environment Canada PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Contact: Booth Notes: contacted; referred to Peggy Ward	62*	Morris, Mary Kallahin Surveying PO Box 131 Queen Charlotte, BC V0T 1S0 wk: 250/559-8455 fax: 250/559-8430 Specialties: coastal biology; habitat biologist; coastal vegetation Contact: Morris Notes: CIRI interviewer	106*r
Morrison, Jim Southwestern BC Regional Office Fisheries and Oceans Hammond Bay Rd Nanaimo, BC V9R 5K6 wk: 250/756-7267 Specialties: water quality; habitat Contact: Booth Notes: contacted; no info; no follow-up required	63*	Munro, Bill Fisheries, Wildlife and Integrated Management Ministry of Environment, Lands and Parks 4th Fl., 810 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-9791 fax: 250/356-9145 Specialties: wildlife Contact: Morris/Booth	31*	Murray, Ted Recreation Ministry of Forests 1450 Government St. Victoria, BC V8W 3E7 wk: 250/387-8480 Specialties: recreational use; forestry Contact: Morris Notes: Coastal Task Force Member	64*

<p>Murtha, Mike 328 BC Parks-Northern Regional Headquarters Ministry of Environment, Lands and Parks 1011 Fourth Ave. Prince George, BC V2L 3H9 wk: 250/565-6400 fax: 250/565-6629 Specialties: recreational planning Contact: Morris Notes: Don Benn provided info</p>	<p>Nash, Laurel 160* Ecological Reserves Program Ministry of Environment, Lands and Parks 2nd Fl., 800 Johnson St. Victoria, BC V8V 1X4 wk: 250/387-4608 Specialties: ecological reserves Contact: Peters Notes: not contacted; info supplied by Brian Price</p>	<p>Nasichuck, Mike 101 Water Quality Unit Fisheries and Oceans Canada 327-555 W Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-0209 fax: 604/666-7907 Specialties: water quality Contact: Peters Notes: not contacted; Melanie Sullivan supplied</p>
<p>Neal, Bob 66 Atmospheric and Environment Service Environment Canada 700 1200 W. 73rd Ave. Vancouver, BC VP 6H9 wk: 604/664-9121 fax: 604/664-9195 Specialties: meteorology Contact: Peters Notes: not contacted; Earl Coalta supplied info</p>	<p>Nelson, Gordon 157 Commercial Fisheries Division Fisheries and Oceans Canada 418 - 555 W Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-0752 fax: 604/666-8525 Specialties: fisheries openings Contact: Peters Notes: contacted; no follow-up required</p>	<p>Nelson, Hal 327 Environment and Protection Environment Canada 224 W Esplanade N Vancouver, BC V7M 3H7 wk: 604/666-2947 Specialties: shellfish Contact: Peters Notes: not contacted; info provided by John Powers</p>
<p>Nichol, Jennifer 68*r Tourism, Policy, Planning & Implementation Ministry of Tourism and Culture 2F-1117 Wharf St. Victoria, BC V8W 2Z2 wk: 250/387-1474 fax: 250/387-6555 Specialties: tourism; recreational use Contact: Booth Notes: Coastal Task Force Member; not contacted</p>	<p>Nock, Max 146 Land Policy Branch Ministry of Environment, Lands and Parks 851 Yates St. Victoria, BC V8V 1X4 wk: 250/356-2705 Specialties: database manager Contact: Peters Notes: not contacted; Brian Moen supplied info</p>	<p>Norrish, Roger 110* Parks Branch Ministry of Environment, Lands and Parks 4th Fl., 810 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-4593 Specialties: recreational planning; coastal resources Contact: Peters Notes: complete; no follow-up required</p>
<p>North, Margaret 287*r Geography Department University of British Columbia 1984 West Mall Vancouver, BC V6S 2L7 Notes: user survey only</p>	<p>Olesiuk, Peter 329 Biological Science Branch Pacific Biological Station Hammond Bay Rd. Nanaimo, BC V9R 5K6 wk: 250/756-7254 fax: 250/756-7053 Specialties: marine mammals; sea lions Contact: Booth Notes: contacted; no follow-up required</p>	<p>Oryall, Greg 288* Flour Daniel 1444 Alberni St. Vancouver, BC V6G 2Z4 Notes: user survey only</p>
<p>Osmond, Dave 289* Gartner Lee Ltd. 490-6400 Roberts St. Burnaby, BC V5G 4C9 Notes: user survey only</p>	<p>Paisley, R.K. 317 r Westwater Research University of British Columbia 1933 West Mall Vancouver, BC V6T 1Z2 wk: 604/822-9224 Contact: Peters Notes: responded to user survey</p>	<p>Parsons, Tim 229* Department of Oceanography University of British Columbia 6270 University Blvd. Vancouver, BC V6T 1W5 wk: 604/228-4273 fax: 604/228-6091 Specialties: biological oceanography Contact: Dickins/Peters Notes: contacted; no follow-up required</p>
<p>Paul, Julie 316 r ARA Consulting Group Inc. 402-475 Howe St. Vancouver, BC V6C 2B3 Notes: responded to user survey</p>	<p>Pearson, Vic 69* Nuu-cha-nulth Tribal Council PO Box 1383 Port Alberni, BC Specialties: subsistence use; traditional use Contact: Dickins/Peters</p>	<p>Peden, Alex 241*r BC Royal Museum 675 Belleville St. Victoria, BC V8V 1X4 wk: 250/387-2422 fax: 250/356-8197 Specialties: biology Contact: Peters Notes: contacted but no info; referred to by Gay Fredericks; no follow-up required</p>

<p>Pendergast, Bruce 70* Fisheries, Wildlife and Integrated Management Ministry of Environment, Lands and Parks 4th Fl., 810 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-9770 fax: 250/356-9145 Specialties: Wildlife; habitat Contact: Morris/Booth Notes: Coastal Task Force Member</p>	<p>Penuay, Gary 301*r City of North Vancouver 141 W 14th St. North Vancouver, BC V7M 1H9 wk: 604/985-7761 fax: 604/985-0576 Contact: Peters Notes: responded to user survey</p>	<p>Peppin, Nellie 335 Water Resources Branch Ministry of Environment, Lands and Parks 765 Broughton St., Victoria, BC V8V 1X4 wk: 250/387-9962 fax: 250/356-8298 Specialties: water quality; SEAM database Contact: Harper Notes: contacted; info on SEAM dbase; no follow-up required</p>
<p>Peters, Sandra 104*r D.F. Dickins Associates Ltd. Vancouver, BC V6B 1A1 wk: 604/684-0516 fax: 604/684-2357 Specialties: coastal studies; engineering Contact: Peters Notes: CIRI interviewer</p>	<p>Pike, Captain Wayne 211* Marine Investigations Transportation Safety Board 409-100 Park Royal S. West Vancouver, BC V7T 1A2 Contact: Dickins</p>	<p>Pilon, Paul 71* Resources Inventory Branch Ministry of Forestry 1319 Government St. Victoria, BC V8W 3E7 wk: 250/387-5262 fax: 250/387-5999 Specialties: base maps; satellite imagery; forestry Contact: Morris</p>
<p>Pinnell, Bill 259* Malaspina College 900 - 5th Ave. Nanaimo, BC V9R 5S5 Notes: user survey only</p>	<p>Plath, Tom 224 Fish and Wildlife Ministry of Environment, Lands and Parks 10334 - 152 A St. Surrey, BC V0H 1Z0 wk: 604/758-3951 Specialties: wildlife; raptors Contact: Booth Notes: not contacted yet</p>	<p>Pond, Dr. Steve 196* Department of Oceanography-Rm. 1461 University of British Columbia Vancouver, BC V6T 1Z4 wk: 604/822-3278 Contact: Dickins</p>
<p>Pond, Steve 72* Conservation and Protection Environment Canada 224 West Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-2514 fax: 604/666-6858 Specialties: habitat oil spill planning Contact: Peters Notes: contacted; John Power supplied info</p>	<p>Pontus, Kathy 143* Habitat Management Division Fisheries and Oceans Canada 327-555 W Hastings Vancouver, BC V6B 5G3 wk: 604/666-6683 fax: 604/666-7907 Specialties: database management Contact: Peters Notes: contacted; no follow-up required</p>	<p>Poppleton, John 131* Triton Environmental Consulting Ltd. 120-13511 Commerce Parkway Richmond, BC V6V 2L1 Specialties: environmental monitoring; marine biology Contact: Peters</p>
<p>Potter, Les 322 Health Department Capital Region District 524 Yates St. Victoria, BC wk: 250/360-3118 Specialties: water quality; fecal colliforms Contact: Harper Notes: contacted; no follow-up required</p>	<p>Power, Beth 290*r EVS Environmental Consultants 195 Pemberton Ave. North Vancouver, BC V7P 2R4 wk: 604/662-8548 fax: 604/986-4331 Notes: user survey only</p>	<p>Power, John 142 Environment and Conservation Environment Canada 224 W Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-3859 fax: 604/666-6713 Specialties: database management Contact: Peters Notes: contacted; no follow-up required</p>
<p>Powers, John 326 Conservation and Protection Environment Canada 224 W Esplanade N Vancouver, BC V7M 3H7 wk: 604/666-2699 fax: 604/666-9107 Specialties: sewage discharge Contact: Peters Notes: contacted; no follow-up required</p>	<p>Powers, Tim 315 r Resource Systems Management International Inc. 306-604 Columbia St. West New Westminster, BC V3L 2B8 wk: 604/525-6110 fax: 604/525-7735 Contact: Peters Notes: responded to user survey</p>	<p>Prelusky, Allen 73 Resources Inventory Branch Ministry of Forestry 1319 Government St. Victoria, BC V8W 3E7 wk: 250/387-8387 Specialties: base maps; GIS Contact: Morris</p>

<p>Price, Brian 74* Non-Conforming Use & Heritage Resources Ministry of Environment, Lands and Parks 4th Fl., 810 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-4597 fax: 250/387-5669 Specialties: parks; recreational use Contact: Peters Notes: contacted; no follow-up required</p>	<p>Quick, Dr. Michael 194* Department of Civil Engineering University of British Columbia Vancouver, BC V6T 1Z4 wk: 604/822-3278 Contact: Dickins</p>	<p>Radford, Ron 291* Fisheries and Oceans Canada 417 2nd Ave. W Prince Rupert, BC V8J 1G8 wk: 250/624-0420 fax: 250/627-3056 Contact: Peters Notes: Mackinnon supplied info; user survey only</p>
<p>Redpath, Ken 75 Canadian Wildlife Service Environment Canada PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Specialties: wildlife Contact: Booth Notes: not contacted yet</p>	<p>Reid, Bruce 177* Fraser River Division Fisheries and Oceans Canada 610 Derwent Way New Westminster, BC V3M 5P8 wk: 604/666-0514 fax: 604/666-6627 Contact: Peters Notes: contacted; referred us to FREMP & Burrard Inlet Action Plan</p>	<p>Reimer, P. Douglas 107* EML Environmental Mapping Ltd. 237 Portsmouth Dr. Victoria, BC V9C 1S1 wk: 250/478-9727 fax: 250/478-5307 Specialties: coastal mapping; coastal geology; database management Contact: Harper Notes: CIRI team member</p>
<p>Reimer, Dr. Ken 208* Environmental Sciences Group Royal Roads Military College Victoria, BC V0S 1B0 wk: 250/363-4600 Contact: Dickins</p>	<p>Remington, Dawn 98* Habitat Management Ministry of Environment, Lands and Parks 3726 Alfred Ave. Smithers, BC V0J 2N0 wk: 250/847-7693 fax: 250/847-7591 Specialties: wetlands Contact: Morris</p>	<p>Richardson, Heather 118* Council of the Haida Nation PO Box 589 Skidegate, BC V0S 1S0 wk: 250/559-4468 Specialties: tribal council Contact: Morris Notes: contacted; no info; no follow-up required</p>
<p>Roberts, Judy 184* Licensing-Commercial Fisheries and Oceans Canada 327-555 W Hastings Vancouver, BC V6B 5G3 wk: 604/666-2075 fax: 604/666-7907 Contact: Peters Notes: contacted; no info</p>	<p>Rochinni, Roland 333 Water Quality Branch Ministry of Environment, Lands and Parks 765 Broughton St. Victoria, BC V8V 1X4 wk: 250/387-9502 fax: 250/356-8298 Specialties: water quality Contact: Harper Notes: contacted; JRH to pick up annual report</p>	<p>Roger, Hal 318 r Regional Dioxin Laboratory Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6806 fax: 250/363-6807 Contact: Harper Notes: responded to user survey</p>
<p>Ross, Paul 311 r D. Environmental Emergency Group Environment Canada 224 W Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-6950 fax: 604/666-1140 Contact: Harper Notes: responded to user survey</p>	<p>Russell, James E 114*r Courtenay Access Centre Ministry of Agriculture, Fisheries and Food 2500 Cliffe Ave. Courtenay, BC V9A 5M6 wk: 250/334-1409 fax: 250/334-1410 Specialties: oysters; shellfish habitat Contact: Harper Notes: contacted; wild oyster stock assessment</p>	<p>Rutgers, Piet 215* Parks Board City of Vancouver 2099 Beach Ave. Vancouver, BC V6G 1Z4 wk: 604/681-1141 fax: 604/643-2877 Specialties: Contact: Dickins</p>
<p>Sagert, Peter 292* Cirrus Consultants 410-475 West Georgia St. Vancouver, BC V6B 4M9 Notes: user survey only</p>	<p>Salem, Rod 205*r Provincial Emergency Program 2914 Eby St. Terrace, BC V8G 2X5 wk: 250/638-3514 fax: 250/638-3498 Contact: Dickins</p>	<p>Saunby, Wanda 232*r Recreational Fisheries Division Fisheries and Oceans Canada 415-555 W Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-5835 fax: 604/666-7369 Specialties: recreational fisheries; licensing Contact: Peters Notes: info provided; no follow-up required</p>

<p>Sawayama, Gary 77 Lands, Surveys and Resource Mapping Branch Ministry of Environment, Lands and Parks 4th Fl., 1802 Douglas St. Victoria, BC V8V 1X4 wk: 250/387-6316 Specialties: base maps Contact: Booth Notes: not contacted; use Roger Balsler as contacted</p>	<p>Schimdt, Rolph 78* Land Use Policy Ministry of Energy, Mines and Petroleum Resources 124 - 525 Superior St. Victoria, BC V8V 1X4 wk: 250/356-2847 Specialties: geology; land use Contact: Peters Notes: Coastal Task Force Member; sending</p>	<p>Sekela, Mark 183* Water Quality Environment Canada 248 West Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-8086 Contact: Peters Notes: contacted; no info</p>
<p>Selbee, Donna 151* BC Parks Ministry of Environment, Lands and Parks 2nd Fl., 800 Johnson St. Victoria, BC V8V 1X4 wk: 250/387-4502 fax: 250/387-5757 Specialties: park attendance; recreational planning Contact: Peters Notes: not contacted; Brian Price supplying info</p>	<p>Serbic, Greg 225* Pacific Biological Station Hammond Bay Rd Nanaimo, BC V9R 5K6 wk: 250/756-7000 fax: 250/756-7053 Specialties: salmon Contact: Booth Notes: contacted; no follow-up required</p>	<p>Sholte, Joe 293* Reid Crowther and Partners Ltd. 300-4170 Still Creek Dr. Burnaby, BC V5C 6C6 Notes: user survey only</p>
<p>Simmons, Rik 161* Parks, Strathcona Division Ministry of Environment, Lands and Parks PO Box 1479 Parksville, BC V0R 2S0 wk: 250/755-2483 fax: 250/248-8584 Specialties: recreational planning Contact: Peters Notes: not contacted; info supplied by Greg Chin</p>	<p>Skydt, Paul 200*r Greater Vancouver Regional District Parks Planning 4330 Kingsway Vancouver, BC V5H 4G8 wk: 604/432-6357 fax: 604/432-6296 Contact: Dickins</p>	<p>Slaney, Tim 294* Aquatic Resources Ltd. 40-942 SW Marine Dr. Vancouver, BC V6P 5Z2 Notes: user survey only</p>
<p>Smiley, Brian 79* Information Services Institute of Ocean Sciences PO Box 6000, Sidney, BC V8L 4B2 wk: 250/363-6551 fax: 250/363-6479 Specialties: oceanography; habitat Contact: Harper Notes: Coastal Task Force Member; contacted; Harper to have him check responses</p>	<p>Smith, Hugh 248* Fish and Water Resources BC Hydro 808 Nelson St. Vancouver, BC V6Z 2H2 wk: 604/663-4481 Contact: Dickins Notes: user survey only</p>	<p>Smith, John 226 Canadian Wildlife Service PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Contact: Booth Notes: not contacted yet</p>
<p>Somntag, Nicholas 130* ESSA Environmental and Social Systems Analysts Ltd. 300-1765 West 8th Ave. Vancouver, BC V6J 5C6 Specialties: environmental monitoring Contact: Peters</p>	<p>St. Peirre, Paul 296* ARA Consulting Group Inc. 402-475 Howe St. Vancouver, BC V6C 2B3 Contact: Peters Notes: no follow-up required</p>	<p>Steer, Greg 174*r Salmonid Enhancement Program Fisheries and Oceans Canada 327-555 W Hastings St. Vancouver, BC V6B 5G3 wk: 604/666-0115 fax: 604/666-6894 Contact: Harper Notes: not contacted</p>
<p>Stephenson, Fred 321 Canadian Hydrographic Service Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6350 fax: 250/363-6323 Specialties: tides; tidal currents Notes: user survey only</p>	<p>Stewart, Ian 295* EBA Environmental Ltd. 550-1100 Melville St. Vancouver, BC V6E 4A6 Contact: Peters</p>	<p>Stockwell, Alan 128* AGRODEV CANADA LTD 160-14480 River Rd Richmond, BC V6V 1L4 Specialties: fisheries Notes: user survey only</p>

<p>Stucchi, Dario 310 r Ocean Physics Division Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6588 fax: 250/363-6746 Contact: Harper Notes: responded to user survey</p>	<p>Sullivan, Melanie 147*r Water Quality Unit Fisheries and Oceans Canada 327-555 W. Hastings Vancouver, BC V6B 5G3 wk: 604/666-7215 fax: 604/666-7907 Specialties: water quality Contact: Peters Notes: contacted; no follow-up required</p>	<p>Taylor, Dr. Max 198* Department of Oceanography-Rm. 1461 University of British Columbia Vancouver, BC V6T 1Z4 wk: 604/8223278 Contact: Dickins</p>
<p>Taylor, Janna 214* Parks and Recreation City of Port Coquitlam 2272 McAllister Road Port Coquitlam, BC V3C 1Z2 wk: 604/941-5411 fax: 604/944-5405 Contact: Dickins</p>	<p>Thomas, Greg 149 Management Biology Unit Fisheries and Oceans Canada 417 2nd Ave. West Prince Rupert, BC V8J 1G8 wk: 250/624-0465 fax: 250/624-0411 Specialties: abalone database Contact: Peters Notes: not contacted; Sue Farlinger supplied info</p>	<p>Thompson, Jeff 309 r Ocean Chemistry Division Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6408 fax: 250/363-6807 Contact: Harper Notes: responded to user survey</p>
<p>Townsend, Gerry 82 Canadian Wildlife Service Environment Canada PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/9467022 Specialties: wildlife Contact: Booth Notes: not contacted yet</p>	<p>Tredger, D. 319 r Fisheries Branch Ministry of Environment, Lands and Parks 780 Blanshard St. Victoria, BC V8V 1X4 wk: 250/387-9588 fax: 250/387-9750 Contact: Harper Notes: responded to user survey</p>	<p>Tremblay, Tom 185* Water Quality Environment Canada 248 W Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-8008 fax: 604/666-6756 Contact: Peters Notes: contacted but no info</p>
<p>Truscott, Joe 83* Aquaculture Operations Finfish Ministry of Agriculture, Fisheries and Food 808 Douglas St. Victoria, BC V8W 2Z7 wk: 250/387-9570 fax: 250/356-7280 Specialties: aquaculture, fish; water quality; habitat Contact: Harper</p>	<p>Trydal, R. 320 r Vancouver Parks Board 2099 Beach Ave. Vancouver, BC V6G 1Z4 wk: 604/643-2868 fax: 604/643-2877 Contact: Peters Notes: responded to user survey</p>	<p>Turner, Mel 230* Parks, South Coast Division Ministry of Environment, Lands and Parks 1610 Mount Seymour North Vancouver, BC V7G 1L3 wk: 604/929-1291 fax: 604/929-2425 Specialties: recreational planning Contact: Peters Notes: contacted; referred to Greg Chin</p>
<p>Valencourt, Paul 332 Provincial Emergency Program 3287 Oak St. Vancouver, BC V8X 1P8 wk: 604/387-5956 Specialties: emergency services; dangerous goods incidents Contact: Harper Notes: contacted; no follow-up required</p>	<p>Van Barneveld, Jim 76*r Integrated Management Branch Ministry of Environment, Lands and Parks 780 Blanshard Victoria, BC V8V 1X4 wk: 250/387-9945 fax: 250/356-7183 Contact: Morris</p>	<p>Vermeer, Kees 85*r Canadian Wildlife Service Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6537 fax: 250/363-6390 Specialties: birds Contact: Booth Notes: not contacted yet</p>
<p>Vold, Terje 86 Integrated Resources Branch Ministry of Forestry 1450 Government St. Victoria, BC V8W 3E7 wk: 250/387-8482 Specialties: recreational use Contact: Morris</p>	<p>Ward, Jeff 201*r Parks Capital Regional District 490 Atkins Ave. Victoria, BC V9B 2Z8 wk: 250/478-3344 fax: 250/478-5416 Contact: Dickins</p>	<p>Ward, Peggy 227*r Canadian Wildlife Service 3567 Island Highway West Qualicum Beach, BC V9K 2B7 wk: 250/752-9611 fax: 250/752-9611 Contact: Booth Notes: not contacted; Kathleen Moore provided info</p>

<p>Watts, Teresa 297* Resource Systems Management International Inc. 300-604 Columbia St. W New Westminster, BC V3M 1A6 Notes: user survey only</p>	<p>Wayne, Maureen 87* Habitat Conservation Fund Ministry of Environment, Lands and Parks 780 Blanshard St. Victoria, BC V8V 1X5 wk: 250/387-1159 fax: 250/356-9145 Specialties: habitats; estuarine mapping Contact: Morris/Booth Notes: contacted; no follow-up required</p>	<p>Weir, Gary 88 Planning and Statistics Ministry of Finances 2nd Fl., 1405 Douglas St. Victoria, BC V8V 1X4 wk: 250/387-0327 Contact: Peters Notes: no relevant info</p>
<p>Wells, Gary 89 Atmospheric Environment Service Environment Canada 200 1200 W. 73rd Ave. Vancouver, BC V6P 6H9 wk: 604/664-9000 fax: 604/664-9004 Specialties: meteorology Contact: Peters Notes: not contacted; Earl Coalta is alternative</p>	<p>Western, Charlie 108*r Ministry of Forests 4595 Canada Way Burnaby, BC V5G 4L9 wk: 604/660-7608 fax: 604/660-7778 Specialties: recreational planning Contact: Morris Notes: contacted; no follow-up required; coastal videos</p>	<p>Wetmore, Steve 90 Canadian Wildlife Service Environment Canada PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Specialties: birds; migratory birds Contact: Booth Notes: not contacted yet</p>
<p>Whitbrad, Ian 187* Archaeology Branch Ministry of Tourism and Culture 800 Johnson St. Victoria, BC V8V 1X4 wk: 250/387-4420 Contact: Peters Notes: owner of dbase written up by Jack Foster; spoke to Foster only</p>	<p>White, Dinah 97* Economic Planning Group Suite 14 - 3318 Oak St. Victoria, BC V8X 1R1 wk: 250/383-5818 fax: 250/383-9581 Specialties: tourism Contact: Morris Notes: contacted; supplied report to Harper</p>	<p>White, Richard 213* City of North Vancouver 141 West 14th St. North Vancouver, BC V7M 1H9 wk: 604/985-0576 fax: 604/985-576 Contact: Dickins</p>
<p>Whitehead, Phil 228 Canadian Wildlife Service PO Box 340 Delta, BC V4K 3Y3 wk: 604/946-8546 fax: 604/946-7022 Contact: Booth Notes: not contacted yet</p>	<p>Whitfield, Paul 188 Water Quality Environment Canada 248 West Esplanade North Vancouver, BC V7M 3H7 wk: 604/666-6756 Contact: Peters Notes: contacted; no info</p>	<p>Wier, Josette 119*r Haisla Village Council Haisla PO Box 1101 Kitamaat Village, BC V0T 2B0 wk: 250/639-9382 fax: 250/632-2840 Specialties: tribal council Contact: Peters</p>
<p>Williams, Gary 136* G.L. Williams and Associates Ltd. 2300 King Albert Ave. Coquitlam, BC V3J 1Z8 wk: 604/936-0185 fax: 604/939-6692 Specialties: habitat mapping; estuarine management Contact: Harper</p>	<p>Williamson, Bob 92 Lands, Survey and Resource Mapping Branch Ministry of Environment, Lands and Parks 4th Fl., 1802 Douglas St. Victoria, BC V8V 1X4 wk: 250/387-6316/ fax: 250/356-7831 Specialties: base maps Contact: Booth Notes: not contacted; used Roger Balsler as contact</p>	<p>Wilson, Bob 299*r Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/363-6335 fax: 250/363-6479 Specialties: Contact: Harper Notes: responded to user survey</p>
<p>Wolferstan, Bill 93* Environmental Emergency Services Branch Ministry of Environment, Lands and Parks 737 Courtney St. Victoria, BC V8V 1X5 wk: 250/356-9300 fax: 250/356-0742 Specialties: risk assessment; shore zone character Contact: Peters/Harper Notes: contacted; supplied data on previous</p>	<p>Wong, C. S. 94 Ocean Chemistry Division Institute of Ocean Sciences PO Box 6000 Sidney, BC V8L 4B2 wk: 250/356-6407 Specialties: water quality Contact: Harper</p>	<p>Yates, Nancy 238* Burrard Inlet Environment Action Plan 803-510 W Hastings St. Vancouver, BC V6B 1L8 wk: 604/775-5195 Specialties: Contact: Peters Notes: contacted; no info</p>

Young, Rick

95*

MacMillan Bloedel Limited

925 W. Georgia St.

Vancouver, BC V6C 3L2

wk: 604/661-8283

fax: 604/661-4480

Specialties: forestry; environmental permitting;

spill response

Contact: Morris

Notes: user survey

Appendix B

Abbreviated Listing of Coastal Data Sets

PHYSICAL RESOURCE DATA SETS

Geological

- 003 Physical Shore-zone Mapping (MELP)
 MELP - Environmental Emergency Services
 mapping of the shore-zone substrate, morphology and wave exposure
- 004 Physical Shore-zone mapping (CPS)
 BC - Canadian Park Service
 mapping of the shore-zone substrate, morphology and wave exposure
- 006 Physical Shore-zone Mapping (EC)
 EC - Environmental Conservation
 mapping of the shore-zone substrate, morphology and wave exposure
- 007 Physical Shore-zone Mapping (LD)
 Lands Directorate (now Environment Canada)
 mapping of the shore-zone substrate, morphology and wave exposure
- 008 Paleo Sea Level Data
 Simon Fraser - Institute of Quaternary Research
 record of coastal radiocarbon dates in BC and associated paleo sea levels
- 009 Surficial Geology Maps
 MEMPR - Geological Survey Branch
 maps of surface sediment character, slope stability, or terrain
- 010 Coastal Aerial Videotapes
 MELP - Environmental Emergency Services
 oblique, low-altitude aerial videotapes of the shore-zone, usually flown at low tide
- 011 Coastal Aerial Videotapes (CPS)
 EC - Canadian Park Service
 oblique, low-altitude aerial videotapes of the shore-zone, usually flown at low tide (Pacific Rim National Park and Gwaii Haanas)

- 019 Coastal and Marine Sediment Database
 EMR - Geological Survey of Canada
 data on sediment texture for coastal and marine surficial sediments

Meteorological

- 050 Climatological Data
 EC - AES
 coastal weather observations (wind speed, direction; temperature; etc.)
- 051 Anchored Buoy Data BC
 EC - AES
 weather data collected by offshore and nearshore weather buoys
- 053 Marine Lighthouse Weather Observations
 EC - AES
 weather data collected by lighthouses; quality control may be more variable than AES climate data

Oceanography/Water Quality

- 001 Tide Data
 DFO - Canadian Hydrographic Service
 water elevation for coastal stations
- 002 Lighthouse Temperature and Salinity Data
 DFO/EC - IOS
 records dating to 1914 of surface water temperature and salinity for selected lighthouses
- 026 Nearshore Fecal Coliform Surveys
 Capital Regional District
 surveys of recreational beaches for fecal coliform; summer only
- 028 Dioxin/PCB Database
 DFO - IOS

records data on all dioxin and PCB analyses run at IOS
dioxin lab

029 Water Quality Objectives

MELP - Water Resources Branch

sets water quality objectives for coastal water bodies and
usually includes 2-3 of data collection when initiated

030 System for Environmental Assessment and
Management (SEAM)

MELP - Water Resources Branch

primarily a water quality database related to compliance
monitoring programs

031 Water Quality Monitoring

Capital Regional District

sewer outfall water quality monitoring program

032 Ocean Data Information System

DFO - IOS

systematic cataloging of oceanographic temperature,
salinity and current data collected by various agencies and
universities

064 Dioxin/Furan Measurement Inventory

DFO - Habitat Management Division

database of dioxin and furan measurements in fish,
shellfish, marine mammals and algae from coastal areas

069 Marine Parks Water Quality

MELP - Parks Branch

fecal coliform counts in 17 marine parks

076 Marine Environmental Quality Data

BC - Environmental Conservation

water quality data and trace metal data in marine
sediments

BIOLOGICAL RESOURCE DATA SETS¹

Birds

- 021 Beached Bird Surveys
MELP - Environmental Emergency Services Branch
monitoring of the frequency of beached bird carcasses for baseline information
- 084 Ornithology Collection
BC Royal Museum
georeferenced data on bird specimens collected in BC; maintained at BC Royal Museum
- 089 Distributions and Densities of Marine Birds
EC - CWS
atlas with bird distribution and density by species
- 107 Eagle Nest Tree Surveys
MELP - Wildlife Branch
inventory of eagle nest locations for southern Vancouver Is.; northern Vancouver Is. in progress
- 110 Eagle Population Estimates
MELP - Wildlife Branch
ongoing eagle population estimates coordinated with Alaska
- 154 East Strait of Georgia Waterbirds
EC - CWS
regular monthly surveys for waterbirds
- 155 Seabird Colony Inventory of BC
EC - CWS
1988 to 1989 survey of the Fraser Delta
- 158 heron Colony Census
EC - CWS
census of heron colonies and reproductive success
- 159 Boundary Bay Bird Surveys
EC - CWS
1991 Weekly survey of birds in Boundary Bay
- 164 Snowgeese in the Fraser and Skagit Deltas
EC - CWS
surveys of the abundance and distribution of snowgeese in the Fraser and Skagit River deltas
- 165 Abundance and Distribution of Swans on the Fraser Delta
EC - CWS
surveys of the abundance and distribution of swans on the Fraser River delta
- 167 *Scirpus americanus* in the Fraser River Delta
EC - CWS
surveys of *Scirpus americanus* in the Fraser River delta
- 168 Chlorinated Hydrocarbons in Marine Bird Eggs of the Strait of Georgia
EC - CWS
database on chlorinated hydrocarbons in marine birds eggs from nest sites around the Strait of Georgia
- 169 Birds of BC Wildlife Records Scheme
MELP - Wildlife Branch
records of BC birds currently being synthesized

Environmental Atlases/Review

- 033 TECHREF
DFO - IOS
systematic database of technical references related to oceanography and environmental science for the marine area of British Columbia
- 070 Bibliography of Publications on Ecological Reserves
MELP - Ecological Reserves Program
publications related to marine reserves; updating is ongoing

Fisheries

¹ including fisheries management data sets

- 058 Stream Information System (SISS)
DFO - Habitat Management Division
summary stream data on fish and fish habitat
- 059 Maps of Spawning and Fishing Areas
DFO - Habitat Management Division
compiled by Fishing Vessel Owners Association;
confidential
- 150 Salmon Escapement Database System
DFO - Biological Service Branch
database of salmon escapement records
- 151 Salmon Escapement Estuaries
Jaqueline Booth and Associates
salmon escapement data linked to estuaries
- 152 Herring Spawn Surveys
DFO - PBS
1:100,000 scale maps of spawning data; summarized
data public but maps confidential
- north coastal wetland programs; biological, physical,
human use and land tenure data
- 102 Estuary Mapping System
MELP - Environmental Emergency Services
Branch
mapping and classification system applied to
approximately 15 estuaries; not active
- 109 Wetlands of the Comox Valley
EC - CWS
baseline inventory of wetland distribution for
environmental protection monitoring
- 153 Wetlands of the Fraser Delta
EC - CWS
wetlands mapped in SPANS GIS
- 166 Intertidal and Upland Habitat of E Vancouver Is
EC - CWS
a pilot assessment of historical changes in estuarine
habitat

Habitat

- 005 Habitat Mapping (CPS)
EC - Canadian Park Service
mapping of intertidal physical shore-zone character,
wave exposure and macro biota
- 013 Kelp Inventory Program
MAFF - Aquaculture and Commercial Fisheries
Br.
systematic survey program for estimating kelp
standing stock
- 022 Intertidal Habitat Mapping (MELP)
MELP - Environmental Emergency Services
Branch
mapping of physical shore-zone character, wave
exposure and macro biota
- 088 FREMP Habitat Management Maps
Fraser River Estuary Management Program
detailed maps of physical shore-zone character,
riparian vegetation, marsh, and land use data
- 100 Habitat Assessment and Rating of Coastal
Wetlands
MELP - Smithers

Marine Mammals/Zoology

- 085 Invertebrate Zoology Collection
BC Royal Museum
data summarized on Canadian heritage Information
network; georeferenced
- 086 Mammalogy Collection
BC Royal Museum
mammalogy collection maintained at BC Royal
Museum
- 161 Harbour Seal Census
DFO - PBS
annual census of harbour seals at selected locations
on the BC coast
- 162 Sea Lion Colony Census
DFO - PBS
annual census of sea lion colonies in BC; not
georeferenced
- 163 Sea Lion Colony Locations
Jaqueline Booth and Associates
georeferenced data file on the location of sea lion
colonies listed in the annual sea lion census
- 170 Sea Otter Surveys

DFO - PBS

annual surveys of sea otters to evaluate population and distribution

Shellfish/Invertebrates

017 Wild Oyster Stock Assessment

MAFF - Aquaculture and Commercial Fisheries Br.

yearly survey of standing stock of wild oysters; mostly Clayoquot Sound, Desolation Sound, Nootka Sound, Barkley Sound

018 Shellfish Habitat Capability

MAFF - Aquaculture and Commercial Fisheries Br.

maps of water quality and oceanographic data indicating suitability for shellfish habitat

020 Red Tide (PSP) Monitoring Program

DFO - IOS

weekly monitoring of selected sites in Gulf Is, S Strait of Georgia and Long Beach for red tide; research program

056 Paralytic Shellfish Poisoning Database (DFO)

DFO - Inspection Branch

archive of paralytic shellfish poison levels in bivalves; maintained by shellfish area and sub-areas

HUMAN-USE RESOURCE DATA SETS²

Archaeological/Heritage Resources

- 052 Designated Heritage Site
Registry MOT/MRC - Archaeology Branch
georeferenced locations of heritage sites
- 054 Shipwreck Information Database (SID)
MOT/MRC - Archaeology Branch
georeferenced locations and data on BC shipwrecks
- 055 Archaeological Site Inventory
MOT/MRC - Archaeology Branch
confidential database with the locations of archaeological sites
- 057 Annotated Bibliography of Archaeological Research
MOT/MRC - Archaeology Branch
printed annually in Word Perfect

Fisheries

- 012 Aquaculture License and Revenue Administration System (ALRAS)
MAFF - Aquaculture and Commercial Fisheries Br.
licensing system for all aquaculture leases and operations
- 014 Marine Plant Harvesting Licensing System
MAFF Aquaculture and Commercial Fisheries Br.
licensing program for harvesting of marine plants (kelp, salicornia)
- 015 Fish Sales Licensing
MAFF - Aquaculture and Commercial Fisheries Br.
licensing for shore stations, barges, vessels, vehicles and fish processing plants
- 016 Finfish Aquaculture Capability Atlas

- MAFF - Aquaculture and Commercial Fisheries Br.
summarizes existing data and provides suitability codes for potential aquaculture
- 067 Fisheries Openings/Closings
DFO - Commercial Fisheries Division
documentation of all fisheries openings/closings by species, gear type and areas (also PSP closures)
- 077 Environmental Planning Information Control Database
DFO - Salmonid Enhancement Program
salmonid enhancement program database
- 079 Commercial Catch Statistics Program
DFO - Fisheries Data Management Unit
summarizes data from commercial sales slip records
- 081 Recreational Catch Statistics
Biological Services Division
database on recreational fisheries catch data
- 083 Tidal Water Sport Fishing Licenses
Recreational Fisheries Division
database on salt water fishing licenses
- 091 Record Management Strategy
DFO - Biological Sciences Division
annual, detailed record of the fishing season used for assessing the effectiveness of strategies
- 171 Shrimp Trap Prawn Log Books
DFO - PBS
summaries of about 25,000 records annually for catch and effort by vessel, subarea or location; used for stock assessment
- 172 Geoduck Harvest Logs
DFO - Shellfish Management
log data used to assess stock, catch and effort and regional harvest
- 173 Miscellaneous Dive Fisheries Log Books

² including fisheries management data sets

DFO - Shellfish Management

log book data on clams, urchins, scallops, sea cucumber, octopus, and mussels

Attorney General - Provincial Emergency Program

records all spill incidents, including coastal and marine

Foreshore Use/Land Use

023 Shore-zone Access Database

MELP - Environmental Emergency Services Branch

mapping and database of shore-zone access points from both land and water

061 East Vancouver Island Coastal and Marine Data Atlas

MELP - Land Policy Branch

summery atlas of foreshore data (1984)

062 Lands Tenure Administration System (TAS)

MELP - Land Policy Branch

licensing data of all foreshore leases and land status

063 Coastal Resource Interests Studies (CRIS)

MELP - Land Policy Branch

collection of biological and human-use information for selected areas of the BC coast

078 Discharge Inventory

EC - Conservation and Protection

municipal discharges (sewage) including permitted discharge, location, flow, treatment

080 Harbour Sites and Mooring Buoys

DFO - Small Craft Harbour

locations of all public wharves and buoys maintained by DGO Small Craft harbours

087 Foreshore Referrals Program

Habitat Management Division

database on the evaluation of coastal and estuarine development proposals; habitat description procedure

Hazardous Materials/Oil Spills

024 BC Oil Spill Environmental Specialist Directory

MELP - Environmental Emergency Services Branch

directory of specialist that have environmental knowledge that could be applied during an oil spill

027 Dangerous Goods Incidents

Native use/Subsistence Use

025 Native Resource Use Sites

MELP - Environmental Emergency Services Branch

locations of native harvest data determined from interviews with coastal bands; data is confidential and owned by band

075 Native Food Fishery Statistics System

DFO - Biological Services Division

data on permitted catch data; does not include Fraser River

105 Coastal Zone mapping & Digital Database

ESRF/Council of Haida Nation

inventory of fisheries, birds, coastal geology, and traditional use of the shore-zone of the Queen Charlotte Islands.

Recreational Planning & Management

066 BC Parks Attendance System

MELP - Ecological Reserves Program

documents locations, character, purpose and information about each reserve

074 BC Parks Subregional Plans

MELP - Parks Branch

summary of use patterns, resources and capability of various subregions; 5 yr update frequency (intended)

101 Landscape/Recreation Program

MOF - Port McNeil

MOF maps on recreational capability and use

103 Ministry of Forests Recreation Inventory

MOF - Recreation Division

mapping and classification system includes coastline as well as uplands

104 North Coast parks Evaluation Survey

MELP - Parks Division

parks systems study to evaluate potential park sites; partial shore data inventory

106 TFL 46 & 47 - Resource Use Inventory
Fletcher Challenge
documentation of human-use in terms of recreational potential and use patterns

108 TFL 6, 24 & 25 - Resource Use Inventory
Western Forest Products
ecosystem classification, terrain classification, slope stability, environmental sensitivity and some stream classification recorded on GIS

Shellfish Harvesting

060 Oyster Production
BC Oyster Marketing Board
production records of oyster growers; confidential

065 Abalone Harvest Log
DFO - Fisheries Branch
database of commercial harvesting records

068 Desolation Sound Shellfish Inventory
MELP - Parks Branch
water quality, visitor use and shellfish capability analysis

082 Canadian Shellfish Sanitation Program
EC - Conservation and Protection
classification of shellfish growing waters to ensure protection of public health

Tourism

160 Coastal Tourism Inventory Project (CTRIP)
MT - Tourism Policy Planning and Implementation
compilation of biological, physical and human use resource data for use in tourism and recreational planning

Appendix C

Electronic Database Structures

INVENT.DBF Database Structure

Inventory Database (INVENT.DBF)

This database catalogues information collected in the Coastal Data Set Inventory phase of the project - it provides a systematic catalog of the coastal data sets and their associated data.

INV_IDENT - the unique record number of the database.

SET-NAME - the descriptive name of the database.

DESCRIPT - a short summary description of the database.

INTER_E - the interviewee who provided information on the database. Cross referenced to the contact database.

INTER_R - the project team interviewer who contacted the interviewee and who completed the data entry form. Cross referenced to the contact database.

INTER_DATE - the date of the interview.

OWNER - the owner of the database.

MANAGER - the current database manager.

DEVELOPER - the database developer.

REFERENCE - technical reports on the database; these are a cross-reference code to the reference database (REFER.DBF)

START_DATE - the date when the database was initially developed.

END_DATE - the date of last updating: indicated as "resent" if ongoing.

Structure for database: C:\INVENT.dbf
 Number of data records: 107
 Date of last update: 01/28/93

Field	Field Name	Type	Width
1	INV_IDENT	Numeric	4
2	SET_NAME	Character	55
3	DESCRIPT	Character	200
4	INTER_E	Character	20
5	INTER_R	Character	20
6	INTER_DATE	Date	8
7	OWNER	Character	20
8	MANAGER	Character	20
9	DEVELOPER	Character	20
10	REFERENCE	Character	55
11	START_DATE	Date	8
12	END_DATE	Date	8
13	ONGOING	Character	1
14	SEASON	Character	50
15	FREQ_COL	Character	50
16	GEO DESCPT	Character	120
17	GEO EXTENT	Character	100
18	SCALE	Character	50
19	GEO_REF	Character	1
20	HARDCOPY	Character	50
21	EL-MEDIUM	Character	30
22	EL-SYSTEM	Character	30
23	EL_SOFT	Character	50
24	PURPOSE	Character	50
25	APPLICATE	Character	50
26	PUBLIC	Character	1
27	KEYWORDS	Character	100
28	NOTES	Memo	10
29	TAG	Logical	1
Total			1183

ONGOING - a yes (Y) or no (N) indication if the database is still actively maintained.

SEASON - months (indicated by 1 - 12) for which there is data; "*" indicates all.

FREQ_COL - an indication of the frequency of data collections (erratic, hourly, daily, weekly, monthly, seasonal, bi-annual, annual).

GEO_DESCRPT - provides a description of the extent of the database.

GEO_EXTENT - number(s) of the DFO management regions in which data occurs.

SCALE - indicates the scale of mapping associated with the original data collection

GEO_REF - a yes (Y) or no (N) indication if the data is georeferenced.

HARD-COPY - an indication if there is a hard-copy of the database, and if so, the hard-copy type (report, atlas, maps, photographs, other).

EL_MEDIUM - an indication if the database is on an electronic medium (disk, CD-ROM, tape, video or other).

EL_SYSTEM - an indication of the system type under which the data is stored (IBM, MAC, UNIX, other).

EL_SOFT - an indication of the software under which the database is compiled.

PURPOSE - the general level of application of the data (overview/planning; reconnaissance/management; operational).

APPLICATE - the major application area of the database (physical baseline information, wildlife management; fisheries management, heritage conservation, tourism/recreational planning, land-use planning, transportation planning, subsistence/traditional use).

PUBLIC - a yes (Y) or no (N) indication of the public availability of the database.

KEYWORDS - one or more keywords that describe the attributes of the database. Table 3.2 includes a glossary of attributes.

NOTES - miscellaneous notes on the database provided by the interviewer.

TAG - cross-reference number between INVENT.DBF, CONTACT.DGF and REFER.DBF.

Contact Database (CONTACT.DBF)

CONTACT.DBF Database Structure

Structure for database: C:CONTACT.dbf
Number of data records: 2
Date of last update: 01/28/93

Field	Field Name	Type	Width
1	CONT_IDENT	Numeric	4
2	FIRST_NAME	Character	15
3	INITIAL	Character	5
4	LAST_NAME	Character	20
5	TITLE	Character	30
6	ORGANIZAT	Character	80
7	STREET	Character	80
8	CITY	Character	20
9	PROVINCE	Character	3
10	COUNTRY	Character	10
11	ZIPCODE	Character	10
12	WORKPHONE	Character	14
13	HOMEPHONE	Character	14
14	FAX	Character	14
15	SPECIALTY	Character	80
16	NOTES	Character	120
17	TAG	Logical	1

This database catalogues individual contacts made during both the Coastal Resource Information Review phase of the project and User Survey phase of the project

CONT_IDENT - the unique record number of the contact.

FIRST-NAME - the first name of individual.

INITIAL - the middle initial of the individual.

LAST_NAME - the last name of the individual.

TITLE - the individual's title.

ORGANIZAT - the organization or institution with which the individual is associated.

STREET - the street address of the individual; in some cases the postal address.

CITY, PROVINCE, COUNTRY, WORKPHONE, FAX - self-explanatory

SPECIALTY - general field of training or experience.

NOTES - notes made during the interview regarding follow-up.

TAG - cross-reference number between INVENT.DBF, CONTACT.DBF and REFER.DBF.

Reference Database (REFERE.DBF)

REFER.DBF Database Structure

Structure for database: C:REFER.dbf
Number of data records: 92
Date of last update: 01/28/93

Field	Field Name	Type	Width
1	REF_IDENT	Numeric	4
2	LAST_NAME	Character	50
3	FIRST_NAME	Character	20
4	OTHERS	Character	200
5	DATE	Character	4
6	TITLE	Character	180
7	SOURCE	Character	150
8	PUBLISHER	Character	120
9	LOCATION	Character	50
10	PAGES	Character	50
11	NOTES	Character	120
12	TAG	Logical	1

This database catalogues printed reports that relate to the databases in INVENT.DBF.

REF_IDENT - the unique record number of the reference.

LAST_NAME - the last name of senior author; agency name if no stated author.

FIRST_NAME - the first name or initial of the senior author.

OTHERS - names of other authors.

DATE - year of publication.

TITLE - the published title of the report.

SOURCE - the issuing agency or institution of the report.

PUBLISHER - the agency or institution responsible for publishing the report.

LOCATION - the location of the source institution.

PAGES - number of pages in the report

NOTES - notes made by the interviewer on the publication contents.

TAG - cross-reference number between INVENT.DBC, CONTACT.DBF and REFER.DBF.

Appendix D

User Survey Tabular Data

Agency Response

Agency	Number of Questionnaires Sent Out	Number of Questionnaires Received
Federal Government	57	24
Provincial Government	54	18
Local/Municipal Government	9	8
Research Agencies (University)	24	8
Consultants	33	13
Native Groups	14	1
Other	16	5

Purpose for Acquiring Coastal Resource Information (Frequency)

	Other	Native	Consultants	Research	Mun. Gov't	Prov. Gov't	Fed. Gov't	Total
Physical Baseline Information	4	0	7	5	5	12	13	46
Wildlife Management	2	1	3	1	0	3	3	13
Fisheries Management	3	1	5	3	0	8	6	26
Heritage Conservation	2	1	1	2	1	6	2	15
Environmental Protection/Monitoring	3	1	8	5	5	8	13	43
Tourism/Recreational Planning	1	1	6	2	4	3	1	18
Land-Use Development/Planning	3	1	6	2	6	5	1	24
Transportation Planning	3	0	3	1	2	1	0	10
Subsistence/Traditional Use	0	1	1	1	0	1	0	4
Education	0	0	1	2	2	1	1	7
Other	0	0	2	4	0	7	9	22
Total	21	7	43	28	25	55	49	228

Purpose for Acquiring Coastal Resource Information (Percentage Frequency)

	Other	Native	Consultants	Research	Mun. Gov't	Prov. Gov't	Fed. Gov't	Total
Physical Baseline Information	0.19	0.00	0.16	0.18	0.20	0.22	0.27	0.20
Wildlife Management	0.10	0.14	0.07	0.04	0.00	0.05	0.06	0.06
Fisheries Management	0.14	0.14	0.12	0.11	0.00	0.15	0.12	0.11
Heritage Conservation	0.10	0.14	0.02	0.07	0.04	0.11	0.04	0.07
Environmental Protection/Monitoring	0.14	0.14	0.19	0.18	0.20	0.15	0.27	0.19
Tourism/Recreational Planning	0.05	0.14	0.14	0.07	0.16	0.05	0.02	0.08
Land-Use Development/Planning	0.14	0.14	0.14	0.07	0.24	0.09	0.02	0.11
Transportation Planning	0.14	0.00	0.07	0.04	0.08	0.02	0.00	0.04
Subsistence/Traditional Use	0.00	0.14	0.02	0.04	0.00	0.02	0.00	0.02
Education	0.00	0.00	0.02	0.07	0.08	0.02	0.02	0.03
Other	0.00	0.00	0.05	0.14	0.00	0.13	0.18	0.10

Purpose for Which Coastal Resource Information is Utilized (Frequency)

	Other	Native	Consultants	Research	Mun. Gov't	Prov. Gov't	Fed. Gov't	Total
Planning	4	0	5	4	5	11	4	33
Assessment/Management	3	1	8	2	5	11	6	36
Day to Day Use/Research	2	0	4	5	1	7	12	31
Total	9	1	17	11	11	29	22	100

Purpose for Which Coastal Resource Information is Utilized (Percentage Frequency)

	Other	Native	Consultants	Research	Mun. Gov't	Prov. Gov't	Fed. Gov't	Total
Planning	0.44	0.00	0.29	0.36	0.45	0.38	0.18	0.33
Assessment/Management	0.33	1.00	0.47	0.18	0.45	0.38	0.27	0.36
Day to Day Use/Research	0.22	0.00	0.24	0.45	0.09	0.24	0.55	0.31

Map Scale Preferences

	Frequency	Percentage Frequency
0-10,000	11	13%
10,001-20,000	22	25%
20,001-50,000	33	38%
50,001-100,000	7	8%
100,001-250,000	13	15%
250,001+	2	2%
Total	88	100%

Data Access Preferences (Frequency)

	Other	Native	Consultants	Research	Mun. Gov't	Prov. Gov't	Fed. Gov't	Total
In-house Database Use	3	0	7	4	4	11	14	43
On-line Access	1	0	2	5	3	8	6	259
Customized Search Service	0	0	2	0	0	3	4	9
Total	4	0	11	9	7	22	24	77

Data Access Preferences (Percentage Frequency)

	Other	Native	Consultants	Research	Mun. Gov't	Prov. Gov't	Fed. Gov't	Total
In-house Database Use	75.00%	0.00%	63.64%	44.44%	57.14%	50.00%	58.33%	55.84%
On-line Access	25.00%	0.00%	18.18%	55.56%	42.86%	36.36%	25.00%	32.47%
Customized Search Service	0.00%	0.00%	18.18%	0.00%	0.00%	13.64%	16.67%	11.69%

Types of Computer Systems Used (Frequency)

	Other	Native	Consultants	Research	Mun. Gov't	Prov. Gov't	Fed. Gov't	Total
IBM	3	1	10	5	5	14	20	54
Macintosh	0	0	3	4	0	4	3	14
INIX	0	0	0	1	0	8	1	9
Mainframe	1	0	0	2	1	2	7	13
Other	0	0	0	0	0	1	0	1
Total	4	1	13	12	6	29	31	91

Types of Computer Systems Used (Percentage Frequency)

	Other	Native	Consultants	Research	Mun. Gov't	Prov. Gov't	Fed. Gov't	Total
IBM	0.75	1.00	0.77	0.42	0.83	0.48	0.65	0.59
Macintosh	0.00	0.00	0.23	0.33	0.00	0.14	0.10	0.15
INIX	0.00	0.00	0.00	0.08	0.00	0.28	0.03	0.10
Mainframe	0.25	0.00	0.0	0.17	0.17	0.07	0.23	0.14
Other	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01

Geographical Areas of Interest for Each User Group by Statistical Area

Fisheries Area	Federal Government	Provincial Government	Local/Municipal Government	University (Research)	Consultants	Native Groups	Other	Total
1	12	10	0	3	11	0	1	37
2e	12	12	0	3	11	0	3	41
2w	12	11	0	3	11	0	2	39
3	12	10	0	2	8	0	1	33
4	12	11	0	2	8	0	2	35
5	11	12	0	2	7	0	2	34
6	15	11	0	2	7	1	2	38
7	11	12	0	2	7	0	2	34
8	11	12	0	2	8	0	2	35
9	11	11	0	2	7	0	2	33
10	11	12	0	2	7	0	2	34
11	11	11	0	4	8	0	2	36
12	11	12	0	6	10	0	3	42
13	14	12	0	5	11	0	4	46
14	15	14	0	4	11	0	3	47
15	14	13	0	4	10	0	2	43
16	16	13	0	6	11	0	3	49
17	19	13	1	6	12	0	3	54
18	18	13	1	5	12	0	2	51
19	18	13	1	5	12	0	2	51
20	14	13	1	4	9	0	3	44
23	17	12	0	5	10	0	2	46
24	12	12	0	4	9	0	2	39
25	14	12	0	5	8	0	4	43
26	11	13	0	4	8	0	2	38
27	13	13	0	4	9	0	2	41
28	18	13	3	7	12	0	2	55
29	17	14	4	7	12	0	2	56

Geographical Region of Interest by Each User Group

Region	Federal Government	Provincial Government	Local/Municipal Government	University (Research)	Consultants	Native Groups	Other	Total
Queen Charlotte Is.	36	33	0	9	33	0	6	117
North Coast	61	56	0	10	37	1	9	174
Central Coast	55	58	0	16	40	0	11	180
Northwest Vancouver Is.	38	38	0	13	25	0	8	122
Northern Strait of Georgia	59	52	0	19	43	0	12	185
Southwest Vancouver Is.	43	37	1	13	28	0	7	129
Southern Strait of Georgia	90	66	10	30	60	0	11	267
Total	382	340	11	110	266	1	64	1174

Geographical Region of Interest by Each User Group (Percentage Frequency)

Region	Federal Government	Provincial Government	Local/Municipal Government	University (Research)	Consultants	Native Groups	Other	Total
Queen Charlotte Is.	9%	10%	0%	8%	12%	0%	9%	10%
North Coast	16%	16%	0%	9%	14%	100%	14%	15%
Central Coast	14%	17%	0%	15%	15%	0%	17%	15%
Northwest Vancouver Is.	10%	11%	0%	12%	9%	0%	13%	10%
Northern Strait of Georgia	15%	15%	0%	17%	16%	0%	19%	16%
Southwest Vancouver Is.	11%	11%	9%	12%	11%	0%	11%	11%
Southern Strait of Georgia	24%	19%	91%	27%	23%	0%	17%	23%

Relative Interest by User Groups for Coastal Resource Information by Region

Region	Federal Government	Provincial Government	Local/Municipal Government	University (Research)	Consultants	Native Groups	Other	Total
1	low	low	low	low	low	low	low	low
2	low	low	low	low	low	high	low	low
3	low	low	low	low	low	low	low	low
4	low	low	low	low	low	low	low	low
5	low	low	low	low	low	low	low	low
6	low	low	low	low	low	low	low	low

Appendix E

User Survey Comments

- Excellent project. Please keep us in touch. (Dwight Hickey, Envirowest Environmental Consultants)
- Keep us updated. (Beth Power, EVS Environmental Consultants)
- Are non-shellfish invertebrates of no interest to anyone but me? Good to see all these databases put together. (Sandra Millen, UBC)
- It is only if GIS format is available that users can assess the utility of these databases. If only georeferences and numerical data they may be of limited use. (Margaret North, Geog. Dept., UBC)
- Our GIS curator suggests that the integration of all these data sources is long overdue. This department has obtained funding to purchase and/or create a GIS for the Federal and Federal airphoto indexes, it would be a logical extension to have this photo database fully integrated with the provincial resource inventory so that one lat/long or UTM locator can be used to access both map and photo sources. (Margaret North, Dept. of Geog., UBC).
- SRMB produces base maps. A requirement to integrate this data is that a common georeferencing system and related base maps be used. To share the data, a common data model must be developed. Access via Land Data BC should be considered. (Roger Balser, B.C. Surveys and Resource Mapping)
- Monitoring for change usually requires a data quality and precision not inherent in “reconnaissance” surveys. The data bases may, therefore, prove to be of limited use. Monitoring is largely done only as a research objective. We are at the beginning of recognizing a need to monitor “as an audit of performance”, I can therefore not foresee what data would be required to facilitate “early trend detection”. (Jim van Barneveld, Integrated Management Branch)
- This is a wonderful start, and the information provided here is already of great value. For marine park/protected area system planning it would be ideal to have a marine ecological classification system (something equivalent to the Ministry of Forests biogeoclimatic ecosystem classification system). I understand that in Washington there has been some work undertaken in this regard. Do you know of any other examples or any efforts underway in B.C. (e.g., through academic institutions) to develop a classification system for marine ecosystems? (Kaaren Lewis BC Parks)?
- Please don't spend any money collecting new data in the sense of taking and analyzing samples or digitizing photographs, etc. The first priority has got to be to provide interagency access to a "compiled" set of existing data. I'd like to be able to sit at my computer, identify a geographic area, and find out what information or attributes are available for that area. (Bob Wilson, IOS, DFO)

Glossary (abbreviated)

Attributes - feature or characteristic of a coastal resource that is relatively well-defined in time or space.

Attribute Categories - a collection of attributes about a coastal resource or feature.

Bird Resources - an attributes category that collectively refers to coastal birds.

BC Coastal Resources Data Set - a recommended data set that reflects priority interests and needs of users of coastal data. This recommended data set is based on results for the User Needs Survey and from the many discussions that project team members had with users over the course of the project.

Coastal Data Set Inventory - the phase of the project associated with documenting existing coastal information data sets.

Coastal Fringe Vegetation - an attribute category referring to the terrestrial vegetation in the immediate backshore of the coastal zone.

Commercial Fisheries - an attribute category that collectively refers to fish catch, escapement and other management data.

CONTACT.DBF - a dBaseIII+ database file that contains names, addresses and notes on contacts made during the project.

Data Set - systematically collected coastal resource data that is: active or recent, regional in extent or spans more than one year and focused on a resource that is important to coastal zone resource managers.

Education - activities related to education or public awareness on coastal zone resources.

Entity - a measurable quantity about an attribute.

Environmental Protection/Monitoring - resources or activities related to environmental protection or to environmental monitoring (e.g., compliance monitoring of pulp mills).

Fisheries Management - resource information and/or activities that are used in fisheries (or shellfish) management.

Habitat - an attribute category that considers the physical and “fixed” biological framework of the coastal zone as “habitat” for more mobile organisms (including man).

Heritage Conservation - resources or activities related to anthropological, archaeological or historical features of the coastal zone.

INVENTORY.DBF - a dBaseIII+ database file that records information on the coastal data sets identified in this survey; see Appendix C for a summary listing.

Management Scale Application Purposes - application of coastal data that are used in regional or sub-regional applications; usually associated with map scales in the range of 1:50,000.

Marine Plants - an attribute category that collectively identifies marine and coastal plant resources.

Operations Scale Application Purposes - applications of coastal data that are used for day-to-day type operational decision-making; usually associated with map scales of 1:10,000 - 1:20,000.

Physical Baseline Information - physical features of the coastal zone such as surficial geology, water quality, tidal range, currents, etc. This information is often a building block for derivative models of the coast (e.g., stranded oil residence; shellfish capability).

Planning Scale Application Purposes - applications of coastal data that are used in regional-type applications; usually associated with map scales in the range of 1:100,000 to 1:250,000.

Recreational Fisheries - an attribute category that refers to attributes on coastal and marine parks and park management.

REFERENCE.DBF - a dBaseIII+ database file that contains technical references associated with the Coastal Data Set Inventory.

Subsistence Fisheries - an attribute category that refers to coastal resource harvesting by aboriginal peoples.

Subsistence/Traditional Use - resources or activities related to native use of coastal resources.

Tourism/Recreational Planning - resources or activities related to the management and planning of coastal tourism, parks, park reserves.

Tourism & Recreational Use Patterns - an attribute category that collectively refers to attributes related to tourism and recreational use activities (see Recreational Land use for marine and coastal park).

User Needs Survey - a phase of the project where questionnaires were distributed to determine the needs of individuals and institutions for coastal data.

Waterfowl - an attribute category that collectively refers to the various species of coastal waterfowl.

Water Quality - a loosely defined attribute category that incorporates a wide range of parameters such as organic pollutant measurements, inorganic pollutant measurements, suspended sediment concentrations, temperature and salinity concentrations and nutrients (DO, CO₂, nitrates, phosphates, etc.)

Wildlife Management - resource information that is primarily used for wildlife management.

References

- DMR Group Inc. 1992. Data modelling project. Contract Report to the Resources Inventory Committee by the DMR Group, Vancouver, BC. 25 p.
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