Connecting Students With Their Watersheds

a workbook for community leaders

by
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and
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Bowen Island Conservancy

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Getting Started

Who This Workbook is For

This workbook is for individuals and stewardship-group members who wish to increase community involvement in stewardship activities by working with elementary school-aged children and their teachers. Service groups such as the Girl Guides and Boy Scouts can also use the principles outlined here.

You may be any of the following:

- a person who will deliver a school or education program
- a trainer of those who will deliver the program
- a committee member guiding collaboration with your local school
- a committee member responsible for exploring programming options and contacting schools and community groups
- a teacher who is also a member of a community stewardship group
- any combination of the above

You may be a seasoned veteran who has developed and presented many projects with students and teachers or you may be just starting out and have little idea of your needs. You may be concerned about your watershed and want to educate children about the issues that affect its health. Perhaps more likely, you are concentrating on an area within your watershed – a stream cleanup or a salmon enhancement project. Whatever your skills or position, if you want to work with elementary school-aged children, this workbook will guide you through an effective planning and delivery process.

This book is part of a series on watershed stewardship encompassing the Georgia Basin. Many workshops, focus groups, and interviews were conducted to gain the best advice and help for stewardship leaders like you. To check where you fit in and to learn how the other books in this series may help you, look at the document road map on the following page.

What This Workbook Does

This workbook provides information on how to involve educators and primary school-aged children in your projects. It also contains advice on how to develop programs that will be effective for this target group. The document will lead you through the process of:

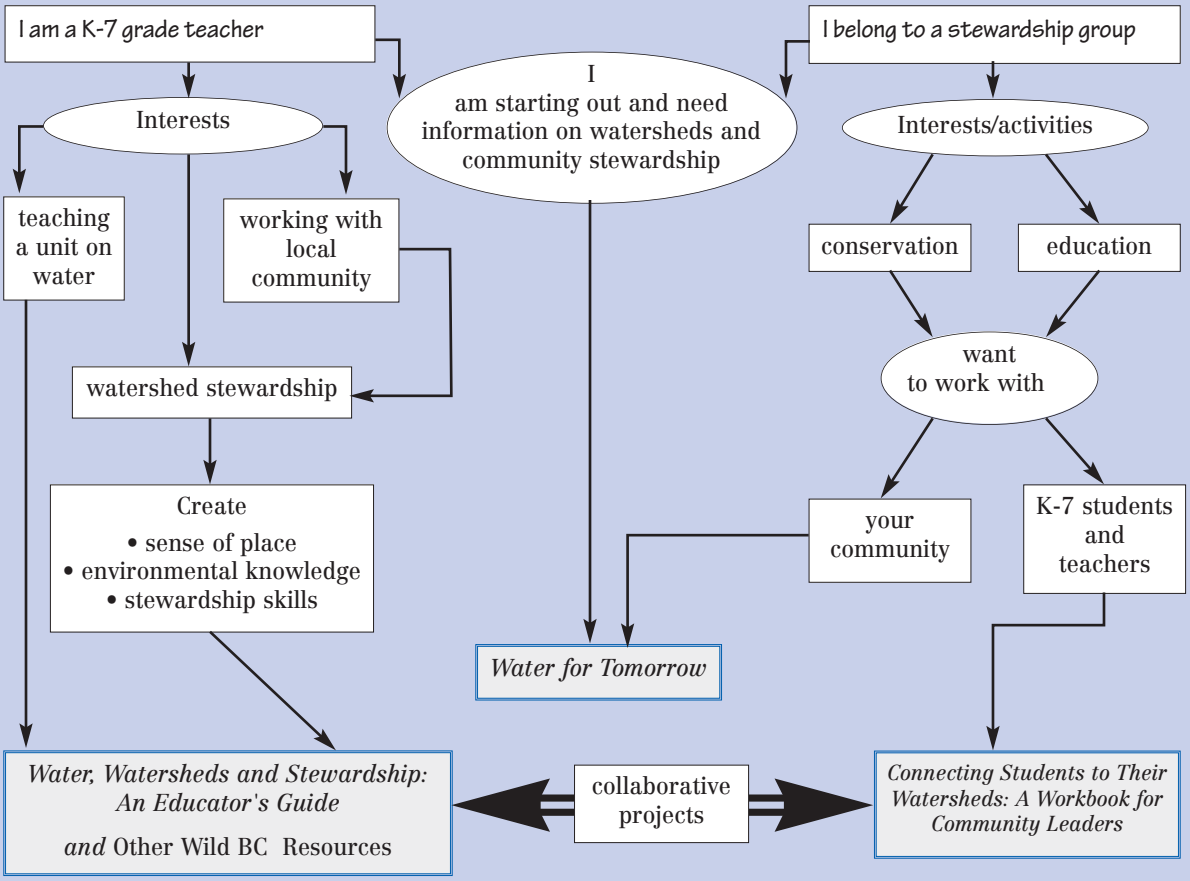
- Identifying ways of working with teachers and elementary school-aged children
- Selecting from among program options
- Preparing a Participant Analysis program that will clearly identify the characteristics and needs of the students you wish to involve
- Developing goals and objectives that clearly identify what students and teachers will do and learn
- Preparing a program plan to achieve these objectives
- Implementing the plan using good practices in leading groups
- Evaluating your effectiveness by identifying strong and weak parts of your program

Please Note

This workbook is not an activity guide. For an excellent selection of watershed stewardship activity guides, see the Stewardship Project Activity Guides and Tools references at the end of this book.

Watershed Stewardship Document Road Map

Wild BC is supporting a series of documents, developed by agencies including the Bowen Island Conservancy and the Bowen Island Forest and Water Management Society. These booklets are designed to help community groups and individuals better understand watershed stewardship issues. Some also will help to develop educational programs and activities for public school students. Follow this road map to select the documents that suit your needs. Also, see Documents on the Road Map)



Documents On The Road Map

Connecting Students to their Watersheds

Water, Watersheds and Stewardship: An Educator's Guide

A guide for primary teachers guide to:

- the importance of water and its conservation;
- watersheds and their importance; and
- stewardship of natural resources.

Water For Tomorrow

First published in 1997, this booklet was written for community service groups, individuals, and municipal officials. It outlines the basics of watershed ecology, mapping, stewardship and watershed legislation.

How to Use this Workbook

This workbook is divided into a series of modules that contain information and tools. The modules can be used together or individually depending on:

your knowledge;

the complexity of your program; and

where you are in your planning and delivery process.

Checklists and Worksheets

Throughout this workbook there are checklists and worksheets to help you organize the various stages of planning, developing and assessing programs and projects. Use these tools as needed.

The Value of Hands-On Watershed Conservation Activities For Children

Studies in Canada and the U.S.A. have identified many effective education programs and activity packages that can help teachers and students learn about watershed conservation and develop a respect and concern for watershed issues. However, the same studies have found glaring gaps and missed opportunities in this educational forum. Key gaps in present watershed stewardship education include:

- Students may study the ecology and science of watersheds but most education programs don't put these studies in context of their own community.
- Students may learn about environmental action skills – things they can do to protect the environment – but they seldom get a chance to practice them.
- Students seldom get a chance at hands-on conservation action in their own communities.
- Students are seldom exposed to people engaged in watershed conservation related careers, community service or hobbies.

Community conservation groups are a key untapped resource that can help fill the gaps in watershed stewardship education (see sidebar How Can Elementary School-age Children Get Involved Your Stewardship Project?). By including local children in your work, you can furnish valuable, real-life experience that makes their abstract learning real and meaningful.

How Can Elementary School-age Children Get Involved in Your Stewardship Project?

There are many ways that students aged between 5 and 12 can be involved in local stewardship. This workbook concentrates on working with the teacher and the children through their school, but much of what you will find here can easily be adapted to summer camps, after-school activities, special events or intergenerational community projects.

There are three main styles of stewardship projects involving elementary school-age children. They vary according to their starting points.

Student-centred Projects

In this type of project, students develop an interest or concern and wish to work on a solution. Your community group may be asked to help them in their tasks.

Community-group Centred Projects

In this example, your community group develops the interest or concern. You initiate student involvement to broaden the scope, interest and educational value of the project.

Collaborative Projects

In this type of project, teachers, students and community groups join forces to identify issues or concerns. Together, you design a collaborative project that reflects the expertise, knowledge and abilities of all the participants.

Project or Program?

This workbook uses projects and programs to mean different products that your group may present.

Projects are student activities that are primarily stewardship actions. They may include a variety of operations such as mapping all or part of a watershed, taking part in a stream restoration or rearing and releasing native salmon into a community stream.

Programs are more education based, aimed at increasing student awareness, appreciation, understanding and commitment to aspects of watershed stewardship.

Module 1: A Sense Of Place

Pre-Test

Do you already have the knowledge covered in this module? Test yourself with the following questions. Check yes or no for each question. If all your answers are yes, you should move to the next module. If one or more of your answers are no, it may be useful to read through this module.

Can you:	**Yes**	**No**
1. Define Sense of Place and apply this concept to your watershed?	❑	❑
2. Describe and define your watershed?	❑	❑
3. Identify your group's strenths and weaknesses with respect to working on projects with students and teachers – with examples?	❑	❑
4. Identify the stewardship groups that play a role in your watershed. Describe how your group fits into the big stewardship picture?	❑	❑
5. State how students and teachers will benefit from working with your group?	❑	❑
6. State how your group will benefit from working with students and teachers?	❑	❑
7. List projects that your group and school or community groups can do together?	❑	❑
8. Indentify ways your project can fit into a teacher's schedule.	❑	❑
9. List five ways that you can contact teachers about your projects.	❑	❑

What Is A Sense Of Place?

A sense of place is an awareness of the diversity and beauty of a landscape or site in all its aspects through space and time. This awareness of place has tremendous scope including a sense of boundaries, location and importance of special places, the roles of natural and cultural forces, their past, present and future players.

Constructing a sense of place has a key role in developing education and interpretation material about our natural and cultural environment. People are pleased to know a landscape or historic site, and to understand its history. Indeed, a strong sense of place supports their sense of personal identity. For that reason, people will defend familiar landscapes and places all the more fiercely. Their empathy for special places engenders their commitment to stewardship of our cultural and natural environment.

Watershed Facts Part 1

What Is a Watershed?

Watersheds are nature's way of dividing up the landscape. Rain falls on the land, soaks into the soil or runs downhill toward the ocean. Surface water forms creeks, streams and rivers. Over time these watercourses dig channels and cut valleys that form natural drainage basins (see figure 1.1).

A watershed is a drainage basin consisting of a valley, or interconnected system of valleys, that contain a single river system (see figure 1.2). Each watershed is separated from the one adjacent by a height of land or ridge. Some writers use the term watershed to describe this height of land. To avoid confusion, this document will use watershed only to refer to a river drainage basin.

Key Features of Watersheds

Watershed Components

Watersheds have many living and non–living components, which co–exist and, in many ways, depend on one another. These components work together in complex ways.

Forests and Wetlands Maintain Watersheds

Forests and wetlands are critical to watershed health. Forests maintain water quality and regulate year-round supply by preventing erosion, holding water for slow summer release and maintaining cool temperatures. Wetlands – whether major swamps or tiny pockets of marsh, swamp or bog – store and purify water.

For a more detailed discussion of the components of watersheds function, see Chapter 2, How Watersheds Work, in *Water for Tomorrow*.

Human Uses

In addition to the natural systems that store and purify, maintain stream flow and recharge ground water, watersheds also contain and sustain the forests, farms and fisheries from which humans draw their livelihoods. The actions of people who live within a watershed affect the health of the water that drains from it (see figure 1.2).

Because watersheds are, in effect, closed systems, land managers are using them as standard units for studying sustainable land use and resource management. By understanding the water cycle and the other components of a watershed, landowners and planners can minimize the impact of development.

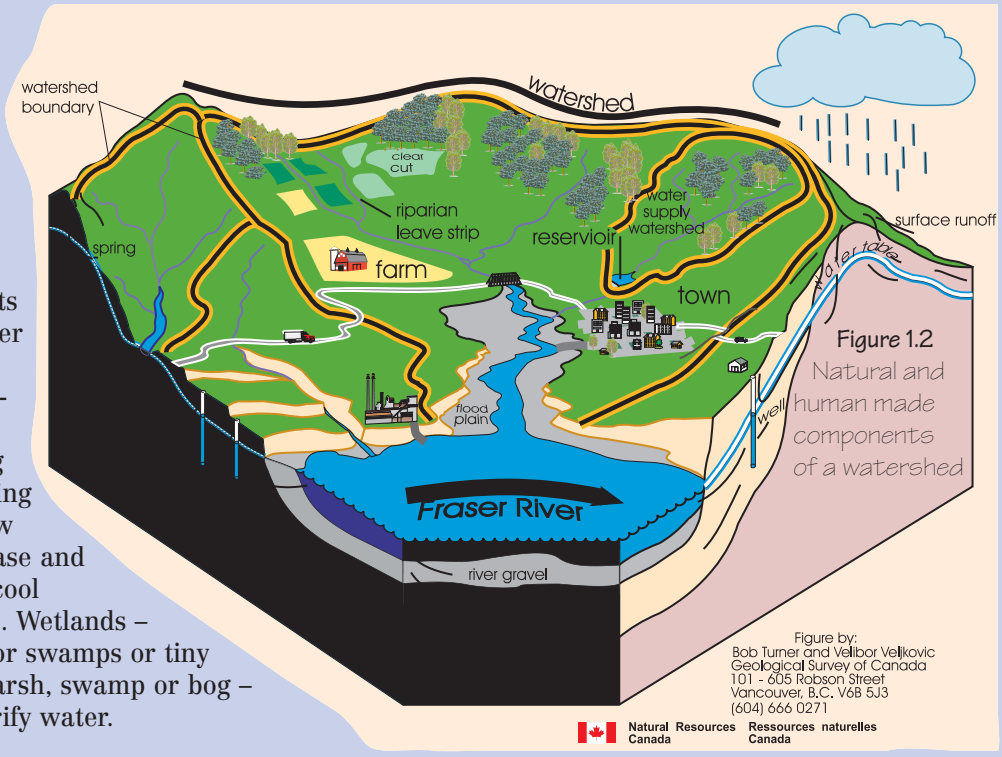


Figure 1.2
Natural and human made components of a watershed

Defining Your Sense of Place

Sense of place can include defining oneself in the context of the place you live. Landscape acts as teacher in shaping our perceptions of place. Four major emotional and spiritual bonds contribute to a sense of place. These are:

- Place Names
- Personal experience within a particular landscape.
- Local stories, including personal or group stories, and legends.
- Spiritual feelings and experiences with respect to a landscape.

Using Your Sense of Place

A clear sense of place makes an environment psychologically comfortable. When you have a strong feeling for a place you are more able to communicate its value.

Developing Your Sense of Place

Putting Boundaries on Your Watershed

Deciding on the limits of your watershed can be a challenge. Some watersheds are tiny systems that consist of a short, unnamed stream, draining several hundred hectares directly into the ocean. Others are huge systems like the Fraser River, containing many sub-basins and countless tributary rivers, streams and creeks.

Deciding on the boundaries of a small watershed is easy: most groups choose the whole thing. But what about communities located within larger watersheds? It makes little sense for a small, community-based group to tackle projects that concern all of a major watershed. Instead, they may concentrate on a sub-basin.

The following criteria may help your group decide on the watershed boundaries of interest to your group.

What Is Your Area of Interest?

Your group's mission statement, goals and

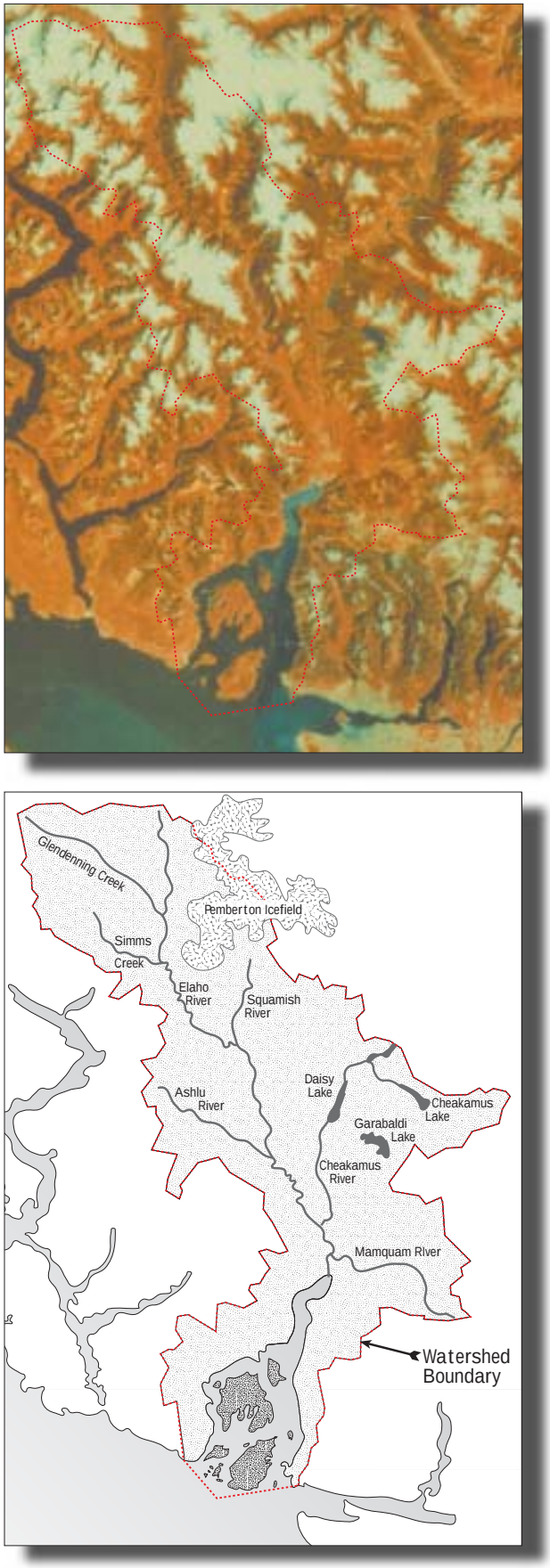


Figure 1.4 Squamish River Watershed
a: Aerial photograph
b: Line map

Watershed Facts Part 2

The Family of Watersheds

Watersheds can be big and complex, tiny and simple, or somewhere in between.

Complex Watersheds

Complex watersheds are usually large, consisting of a main river and several levels of tributaries (see figure 1.3a). First order streams (1) are the small headwater creeks that are the sources of the river system. These streams usually carry a small volume of fast-flowing water down a steep gradient. Vegetation from adjacent banks often meets over top of first order streams, leaving them in near-continuous shade. Higher order streams (2–4) gather the water in larger and larger channels. Many such streams have slower moving sections where material gathered upstream is deposited in sand and gravel bars. Eventually the highest-level stream releases its freshwater into the ocean.

The Squamish River Watershed (figure 1.4) is an example of a complex watershed.

The watershed served by a complex river system consists of several nested sub-basins (see figure 1.3b) or valleys, roughly corresponding to the order of streams in the system. Each sub-basin is a local watershed.

Simple Watersheds

Simple watersheds are usually small and short, containing a simple stream system – a first- and perhaps a second- and third- order stream. Simple watersheds are common in coastal BC where small rivers cascade down steep coastal mountains to the sea.

Focus on Small Local Watersheds

This book focuses on community groups working on stewardship of small local watersheds.

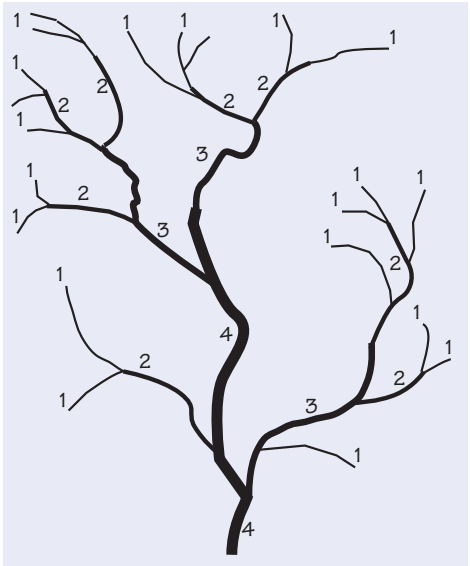


Figure 1.3a Stream Order
– a fourth order stream system
1. First order streams
2. Second order streams
3. Third order streams
4. Fourth order stream

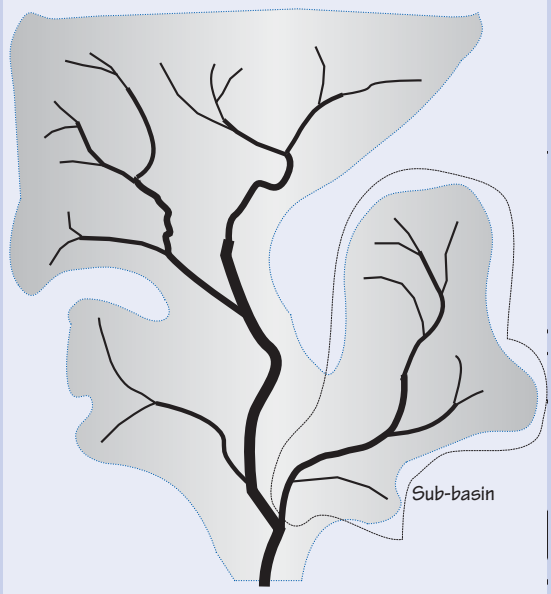


Figure 1.3 b Catchment Basins
The stream system drains a catchment basin which may contain smaller sub-basins or local watersheds.

objectives must first identify the size and location of your local watershed. Many stewardship groups' founding documents begin with a clear description of their watershed, its boundaries and components. For example the Bowen Island Conservancy's mission statement states:

> The mission of the Bowen Island Conservancy is to conserve, protect, sustain and enhance the quality of the natural environment and heritage of Bowen Island, neighboring islets and surrounding waters for the benefit of the inhabitants of Bowen Island and the province of British Columbia.

If your group has not yet clarified this issue, consider setting up a formal or informal discussion among your members to draft a clear mission statement.

Viewing Maps

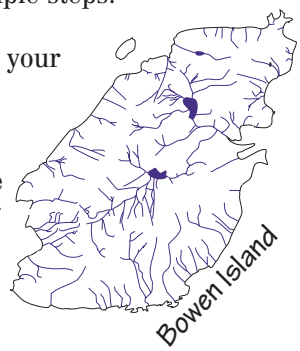
It is helpful to visualize your watershed in order to fully appreciate it. Maps provide you with a good first step toward understanding your watershed. Some watershed maps are available through the BC government's TRIM Watershed Atlas Project. In other cases, local conservancies and watershed societies must produce their own. Consult Appendix 2 for the names of groups that may have produced maps of your watershed.

Draw The Boundaries of Your Watershed

Knowing the boundaries of your watershed will be important when you look more closely at its stewardship. The boundaries help you determine what biophysical and human-made features the watershed contains. If existing maps do not delineate the boundaries of your watershed, the following methods will help you map these edges.

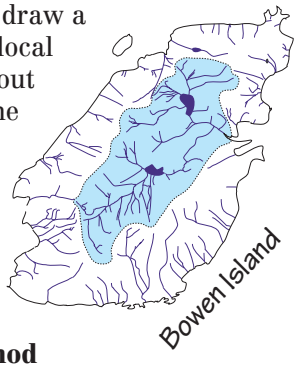
Simple Method

You can outline the boundaries of your watershed in two simple steps. Start with a line map showing the rivers in your community.



1. Using a pen or marker colour the lines representing your river system.

2. Using a different coloured marker, draw a line around your local river system without touching any of the rivers or streams on your map. Presto! you have a watershed map.



More Complex Method

For a more accurate picture, start with a large-scale topographic map that contains your community:

1. Using a pen or marker, colour the lines representing your river system.

2. Using a different coloured marker, follow the contour lines that separate your watershed's rivers from those in adjacent watersheds.

If you are looking for topographic maps, contact your local Maps BC dealer. A listing of dealers is available on the Maps BC web site: www.env.gov.bc.ca/gdbc/mapsbc/ or contact their Victoria Office:

Customer Support
Geographic Data BC
PO Box9355 Stn Prov Govt
Victoria BC
V8W 9M2
Tel: (250) 356-LAND (356-5263)
Fax: (250) 387-3022
E-Mail: support@mail.gdbc.gov.bc.ca

Explore Your Watershed

There is no better way to get to know your watershed than by getting out and walking through it. You may be able to tour a small watershed in less than a day. Large watersheds require more time and perhaps a car or four-wheel drive to access certain points. Even there, however, you should travel on foot whenever possible to become intimately familiar with the geography and features of your watershed. Some groups sponsor watershed walks for the entire community as part of an awareness project.

Giving Your Watershed A Personality

As you become more familiar with your watershed, you may wish to dig deeper to develop maps showing a wider understanding of its structure and history. The following are aspects to consider:

Biophysical Features

These are the natural resources of the watershed. Features that you may encounter include:

- bedrock geology
- soils
- forest cover
- wetlands
- rivers and lakes
- fish and wildlife
- vegetation
- riparian zones

You may find information in reports available through your municipality or regional district or through the provincial ministries of Fisheries, Forestry, and Environment, Lands and Parks. Many reports will include maps that may encompass part or all of your local watershed.

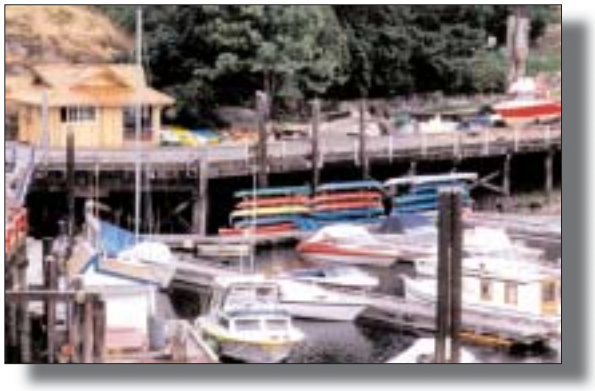
Human-Use Features

Present Use

Human use of lands within a watershed include:

- farming
- forest harvesting
- reservoirs and waterworks
- sewage disposal sites
- landfills
- towns
- industrial sites
- roads
- ports and harbours

Sources of information on human use include those listed above for biophysical studies and reports.



Historical Use

People have a tremendous impact on watersheds. Any time you add people to the watershed, things begin to change: the size of the forest decreases; plant and wildlife species composition changes; wetlands may be drained; watercourses altered. These changes may be short-term (lasting only a few years), long-term, or even irreversible – e.g., forest practices or damming of rivers may drive sub-species of salmon and cutthroat trout to extinction.

Getting a picture of historical land use might be difficult. However, local, regional and provincial historical societies, museums and archives might hold detailed documentary information. Long-time residents might also provide anecdotes, artifacts and photographs as well as names of other old timers.

Checklist: Facts About Your Watershed

Use this checklist to document the characteristics of your watershed.

Watershed Details

Identify:

- ❑ the name of Your Watershed
- ❑ the name(s) of major river(s) and creek(s):
- ❑ how big is your part of the watershed
- ❑ key biophysical features
- ❑ key human use features (present)
- ❑ key human use features (historical)

List Key Points About Your Watershed

- ❑ **Strengths**

  natural, economic and recreational benefits that this watershed provides to your community?
- ❑ Problems

  natural (spring flooding, summer drought) or community (river contamination from feed lots, sharing of water resources during summer dry season).
- ❑ Opportunities

  possible sustainable uses of watershed resources.
- ❑ Threats

  present and upcoming factors that may threaten your watershed?

Map:

- ❑ what your local watershed looks like – select themes (e.g., wildlife habitat, present land use, etc.) and make individual maps showing the features you feel are important.

Review Your Watershed's Issues

Each watershed is unique. Use the checklist, Your Place in Your Watershed to identify the key points. These may include:

Strengths
List the benefits that your local watershed provides to its human and wildlife inhabitants.

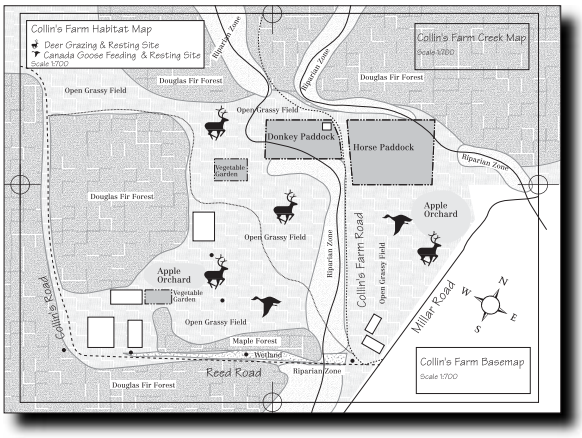
These may include:
- ecological (clean water, salmon spawning, wildlife breeding sites, etc.)
- economic (forestry and fisheries, tourism, farming etc.)

Problems
List the problems, which may include:
- natural (spring flooding, summer drought)
- community (river contamination from feed lots, sharing of water resources during summer dry season).

Opportunities
List the possible sustainable uses of your watershed's resources.

Threats
List the current and upcoming factors that may threaten some or all of your watershed?

Make Your Own Watershed Maps



You may decide to record and communicate the information you have gained in a series of maps. Here you can practice "bioregional mapping," a process where your group can produce maps specifically about your

watershed. A wonderful source book for local area mapping is, *Giving the Land a Voice* edited by Shelia Harrington (for this and several other useful guides, see Bioregional Mapping in the reference section at the end of this workbook).

Applying Sense of Place

The following steps will help you focus your group's resources and connect with teachers and students.

First Step: Know Your Group

When developing a collaborative watershed stewardship project with teachers and students, knowing your conservation group – its strengths and weaknesses – is as vital as knowing your watershed. New groups and even some agencies with long experience sometimes overlook making a resource inventory, but they do so at their peril for it is through such inventories that you can best design projects that are appropriate and doable. A key tool for this first stage is SWOT analysis.

SWOT Analysis

SWOT analysis is an effective way to identify your group's:

- Strengths
- Weaknesses
- Opportunities
- Threats

To carry out a SWOT analysis, consider the following questions:

Strengths:

- What are your group's advantages?
- What do you do well?

You may consider these questions from your group's point of view and from the point of view of the students and teachers you plan to assist. Be as realistic as you can. If you are having difficulty, try writing down a list of the characteristics of your watershed or group. Some of these will be strengths.

What Is Watershed Stewardship?

The concept of stewardship has been around since biblical times. Most conservationists recognize that stewardship applies to all our natural resources, including soil, water, wild lands, wildlife, crops and domestic livestock.

To many, watershed stewardship signifies a commitment to protecting the watershed for generations to come. To others, watershed stewardship is interpreted as leaving the watershed in better condition for future generations.

Natural resource conservation traditionally has focused on those species and habitats that had measurable economic value, such as salmon and forests. Concepts such as biodiversity and non-consumptive uses (e.g. nature study) have broadened the concept of natural resource conservation.

Why Be A Watershed Steward?

The motive for being a good steward is usually rooted in a person's love and respect for a landscape. A second motive is enlightened self-interest – an understanding that a healthy watershed provides us with a sustainable bounty of clean water, food, and timber. Thirdly, certain laws mandate what land management may or may not be done. The intent of these laws is to maintain biological diversity on a particular site.

Finally healthy watersheds afford a variety of enjoyable and lucrative recreation opportunities – such as fishing and hunting, wildlife viewing and white water canoeing.

Stewardship has deep roots. Like planting a tree, its rewards are not often immediate and it takes dedication, nurturing and constant care.

Checklist: Your Place In Your Watershed

Use this checklist to review your readiness to work with primary school-aged children and educators.

- ❑ List the stewardship activities you currently conduct.
- ❑ Identify where your projects(s) fit into your watershed.
- ❑ Describe the types of school involvement are you contemplating?

Profile Your Group or Agency

❑ Strengths

- What value can you bring to students? – e.g., understanding of the value of your local watershed.

❑ Weaknesses

- What might hinder work? – e.g., few members have experience working with school children.

❑ Special Opportunities to Involve School Children

- Which projects can offer students a unique opportunity to get involved in watershed stewardship? – e.g., hands-on riparian habitat enhancement.

❑ Problems and Obstacles to becoming Involved With School Children

- What could prevent your group from working with school children? Classify them as to their significance, such as:

K = key obstacle, may prevent involvement
e.g., your group is active only in summer when school is not in session

M = major obstacle, may reduce involvement
e.g., your site is too dangerous for students under Grade 8

m = minor obstacle, likely to have a simple solution
e.g., there are no rest rooms at your site - local builder can build you a set of pit-toilets

Weaknesses:

When considering weaknesses of a landscape or group, the following questions will be helpful:

- What could be improved?
- What is done badly?
- What should be avoided?

Again this should be considered from an internal and external viewpoint.

Opportunities

Opportunities are options that may come up that would help your watershed or stewardship group. Questions to consider include:

- What are the trends in public perception and interest?
- Changes in government policy related to watershed stewardship.
- Changes in social patterns, population profiles, lifestyle, etc.
- Local events

Threats

- What obstacles do you face? What trends or events could damage your watershed or prevent your group from working with students and teachers?
- Are other stewardship groups in your watershed working with schools?

Carrying out this analysis is will often be illuminating – both in terms of pointing out what needs to be done, and in putting your stewardship project(s) and potential problems into perspective.

Fitting Into Your Community Watershed's Big Picture

Not many community-based conservation projects focus on an entire watershed. Instead, they concentrate on one or more of a watershed's vital components – e.g., forest management, stream restoration, or awareness building through public and school-based programs.

There may be other groups that promote and protect other components of the same watershed. It is useful to identify the other players and list their activities. This information will help you pinpoint gaps in the stewardship of your watershed and will help you identify groups with which you may consider joint ventures.

Example

In your watershed, there may be a group promoting sustainable forestry and another group looking after your local salmon hatchery. However, no one is educating the community about the connections between sustainable forestry and fisheries. Your group may be interested and able to fill that gap, either with a separate project or in partnership with one or both of the other groups.

Other groups and agencies also can help you pinpoint your group's position in the community watershed stewardship map. For information on working in collaboration with other groups, see Module 6, Collaboration and Partners.

Checklist:

Other Groups and Agencies Active in Your Watershed

Use this checklist to develop a clear picture of what conservation and education activities are currently occurring in your watershed and to identify the players.

Other Groups and Agencies

- ❑ List agencies or groups that are active in some aspect watershed stewardship in your community.
- ❑ List each group's activities and projects.

Gaps In The Watershed Stewardship Picture

- ❑ List gaps in stewardship activities and projects.
- ❑ List gaps in education initiatives.
- ❑ Identify which gaps your group is willing and able to fill.

Your Group's Partnerships

- ❑ List all formal and informal partnerships you have with other groups and/or agencies.

Opportunities for Partnerships

- ❑ List groups and projects that your group could partner with.
- ❑ List how your group and the other(s) can work together?
  - in your community watershed's big picture?
  - formally and informally?

Checklist: What You Get From Involving Teachers and Students in Your Projects

Use this checklist to document how working with primary school aged children and educators will benefit your group.

Make a list of the following:

Community Awareness of Your Organization and Projects

- ❑ Key messages about your group and project(s) that you would like students to take home to their families and community.

Byproducts of Increased Community Awareness

- ❑ Benefits to your group that you hope to achieve through increased community awareness- e.g., increased membership or donations for specific projects or equipment.

Kid Power

- ❑ Types of work students could contribute.

Other Benefits For Your Group

- ❑ Other benefits your group will receive. (Sort all benefits in order of importance to your organization.)

Second Step: Connecting Your Project With Schools

If you are reading this booklet, you are likely considering ways to involve school children in watershed stewardship. It is important, though, to identify why and how you want to involve students and teachers? The following is a discussion of some of the key benefits.

What You Get From Involving Teachers and Students in Your Projects

Some of the potential benefits are listed below:

Community Awareness of Your Organization and Projects

Many community conservation groups work long and hard on important conservation projects with few people outside the group's volunteers and employees ever learning about the work and its value to the community. By involving students and teachers, your group can tap into a powerful communication grapevine. Many schools have newsletters and web sites through which they communicate information to students and their parents. By involving students, you will almost instantly reach the large portion of the community who have children in school.

You also can make use of the family jungle telegraph system. Here, students who participated in your program may tell their parents and siblings about the project, field trip or classroom visit, thereby generating interest in your project and your group.

Byproducts of Increased Community Awareness

Increased community awareness can have other beneficial results, including:

- Increased membership, donations and good-will
- Short-term recruitment – teacher and parents assisting or joining your group
- long-term recruitment – students becoming active supporters and members as adults

Kid Power

Many stewardship projects require work ranging from large construction projects done by professionals to smaller functions such as area clean-ups, fund raising and envelope stuffing. If your organization is looking for workers, student helpers may be an answer in some situations. You may also get the added bonus of help from teachers and parents. In most cases, however, your group will have to supply inspiration, motivation, training, supervision and perhaps tools.

Other Benefits

Developing and implementing co-operative, partnership programs with schools can help your group develop new skills – such as communicating with teachers and students and organizing and leading public programs. A successful school partnership can also provide a model for tackling other programs.

What You Can Give Students and Teachers

Depending on your group and the projects that you are involved in, you can provide numerous benefits to students and teachers, including:

Information

Information about watersheds and watershed stewardship is invaluable to you community and its schools children. This information will help create awareness, appreciation and understanding of the following:

- Natural resources in the community
- Watershed stewardship, in your community and in general
- Your organization, its goals, objectives and the services it provides to the community
- Your project including its value, and how it fits into the big picture of stewardship of your community watershed

Skills

Many groups and organizations working with children concentrate on delivering information, overlooking the importance of giving students the opportunity to learn skills through hands-on experience and practice. These skills may be:

- Physical, such as techniques and approaches used in watershed assessment and restoration.
- Critical thinking that helps students make informed decisions about their watershed.

Inspiration

In some cases, sharing your successes may instill in students a deeper commitment to environmental action and, perhaps, a life long interest in watershed stewardship. Your project may involve an awesome landscape or natural feature, a captivating ambassador species or an inspiring person who can grab the attention and imagination of students. Other opportunities for inspiration include:

- An opportunity to see people in their own community modeling good practice in

Checklist: What Your Group Can Give Students and Teachers

List what you can do in the following categories:

Provide Information

- ❑ about watershed stewardship in general
- ❑ about your community watershed in particular
- ❑ about your organization
- ❑ about your project(s)
- ❑ about natural resources in your watershed

Watershed Stewardship Skills:

- ❑ physical skills
- ❑ critical thinking skills

Inspiration

- ❑ landscapes and physical features
- ❑ ambassador species (interesting plants and animals)
- ❑ inspiring people active in conservation in your community

community conservation.
- An opportunity to work with adults on real conservation projects.

Projects You May Consider

A key early decision you will have to make is what kind of project will you present to students and teachers. The following are brief descriptions of major types of programs.

School Visits

A school visit requires that one or more members of your group visiting students in their classroom or on the school site. The purpose may be to convey information about your group and project or it may be to educate students about watershed stewardship issues, in which case it could instructions on developing skills for stewardship actions.

The school visit may entail one or more of the following:

Your group's delegation may offer Simple Presentations to a single class, several classes or an entire school assembly. This might be an introduction of your group and its projects or it may be a formal preparation for a student visit to your site to observe or participate in your project. Here, the presenter acts as a resource person who supplies information and answers questions from students and teachers. An example may be the presentation of a slide show about a local fish hatchery.

Complex Presentations may involve one or more members of your group or a professionals presenting to a single class, several classes or an entire school assembly. The topic will likely be similar to those of simple presentations but may include drama, puppets, songs etc. to capture student attention, communicate information, demonstrate skills or inspire positive watershed actions and attitudes. An example might be a play or puppet show about the conversion of a child from indifference to his/her watershed into a watershed protector.

Demonstrations occur where a presenter shows students an object animal, process or procedure that is key to your project. The presenter may provide information and answers questions or she/he may demonstrate skills that students may apply to a project. For example, a presenter might bring an aquarium containing aquatic creatures from a lake or stream in your watershed, naming and describing the life histories of each creature (information) and/or demonstrating the techniques for observing and describing the creatures (skill).

Student Activities occur where a presenter facilitates student action in a simulation or real-life situation. Here the presenter provides information and helps students develop new skills. An example could be a presenter helping students learn about basic mapping through creating a map of their classroom or schoolyard.

Student Projects arising from a group visit involve the presentation of ideas, materials and advice to help students and teachers set up and run projects over a short or long term. For example, students might monitor the growth and development of salmon eggs, smolts and fry in a classroom for a part of the school year.

Hands-on Projects

The next step up from simple school visits will usually involve students assisting you on your watershed stewardship projects.

They might, for example, help with site restoration or the rearing and release of fish from a hatchery. As with field studies, these may be short- or long-term projects. Some examples include:

- Short-term Projects
  - a one-time clean-up of a section of a stream
  - a planting bee of native riparian vegetation at a disturbed point in your watershed
- Long-term Projects
  - students commit to keeping a section of a stream bed and adjacent riparian habitat clear of litter for the school year

Field Studies

Field studies generally involve education activities on-site. This could include monitoring physical and ecological components of a section of a stream. Almost all field projects include some level of hands-on student involvement rather than a simple streamside lecture. Examples include:

- Short-term Projects
  - A one-time study of part of the watershed's story – e.g., a census of invertebrates at one stretch of a salmon stream
- Long-term Projects
  - A study of part of the watershed's story throughout the school year – e.g., a census of invertebrates at one stretch of a salmon stream consisting of samples taken at two-month intervals
  - A series of observations and/or activities repeated or sequenced at specific grade levels (This could cover Grades K-12, but it is often more practical to span the grades in a single school - e.g., primary, middle or secondary

Third Step: Fitting Your Project Into a Teacher's Schedule

Working with teachers can be challenging. They are often hard to contact because they are in class, away from a telephone, for much of their working day. Field trips and classroom visits must fit into a rigid school schedule. Also, budget cuts have reduced the number of field trips any class can afford to take. Finally, you may be competing with several other community organizations that are tempting teachers with attractive education/outreach programs.

Before you initiate contact with your local schools, it may be wise to learn about your school's situation. Some key aspects are discussed below.

Before You Contact a Teacher Know What Classes Are Learning

Curriculum Guides

BC's Ministry of Education has produced a set of curriculum guides called Integrated Resource Packages (IRPs) for each grade level and area of study. These documents identify learning outcomes – what students should be learning at each grade level – and guide teacher activity throughout the school year. IRPs are available free on the Ministry's web site www.bced.gov.bc.ca/irp/ (See the sidebar: Accessing Curriculum Connections).

Know Class Structure

There are several aspects of class structure and school policy that conservation groups should know when planning co-operative programs. Several key components are discussed below.

Class Size

At the time of writing, most classes contain between 25 and 35 students. These is a manageable-sized groups for one or two experienced presenters to lead but inexperienced volunteers may find such number challenging.

Also, schools often want to send more than

Accessing Curriculum Connections

Learning outcomes include both information such as the names of common salmon found in British Columbia and skills such as critical thinking (logical ways to assess the relative value of information and its sources). An example of an "outcome" might be as follows: After participating in an activity, students will be able to identify three types of aquatic insect that indicate a stream's water is clean and low in organic pollutants.

Appendix 1: A Matrix of Curriculum Connections identifies the connections that you can make between public school curriculum and your watershed stewardship projects.

Also, the BC Habitat Conservation Trust Fund web site lists curriculum connections for conservation/stewardship projects for science, math, social studies, language arts, etc. for Grades K-7. Try accessing the HCTF site map page (www.elp.gov.bc.ca/hctf/sitemap.htm). Scroll through the listings to find web pages such as, Grade 4 Curriculum Connections: Science

These matrices are rather complex. You may wish to work with a teacher in your community to learn how to use them.

one class (usually two) on field trips to share the cost of a bus. Many groups design their programs to accommodate visits by students in busloads.

If the class uses car-pooling, expect extra parents and volunteer drivers and perhaps some younger siblings, as well.

Class sizes vary between grades and may fluctuate as ministry policy changes. The best way to ensure that you are planning for the correct class size is to check with your local principal each year.

Special Needs Students

Many school boards now integrate mentally and physically challenged students into regular classes. Program leaders can expect that some students in visiting classes will have some level of physical, learning or emotional challenges. When booking a class visit, it is wise to ask if there are any special needs students in the class. If the answer is yes, discuss the ways of integrating and including all students.

Class Rotations

By the time students reach secondary school, most classes are integrated into a rotation system. Here, the day is divided into four to six periods. At the end of each period, students move with their classes to another classroom where they are taught specific subject such as mathematics, biology, music, etc. Since it is very difficult to alter rotation schedules, most education presenters find that it is difficult to interest teachers of Grades 8 and higher in a half or whole day field trips.

Semesters/Terms, Exams and Holidays

The school year is divided into several segments called semesters or terms. Depending on the school and grade level, students may have a set of exams followed by a holiday at the end of each term. Most teachers and students will be fully occupied at the beginning of term settling into teaching routines and at the end of term preparing for and writing exams.

When planning for school programs and class visits, it is important to know about

the timing of school holidays. This will prevent you from arranging activities and organizing volunteers and equipment when students are unavailable. It is equally important to avoid planning programs immediately before major school holidays such as Christmas, Spring Break and Summer Vacation. At these times, students are often excited and preoccupied. Many agencies do not book school programs during the week before important holidays and two weeks before summer vacation.

For information about the timing of school holidays contact your local school board.

Professional Development Days

Each year, teachers take several days from their heavy teaching schedule for training in new teaching techniques or technology. Schools are closed and students spend the day at daycare or with their parents. As each school district may have set aside different Professional Development (PD) days, you should contact your local school board for information.

Contacting Teachers

For almost any co-operative program, your group must make direct contact with teachers.

Initial Contact

Most schools prefer that initial contact be made through the board superintendent followed by the principal, who will assess the request and pass it on to the relevant teachers or to the school's science head or field trip liaison. If interested in your program, the superintendent can release teachers and funding to work with you on your project.

Methods For Making First Contact

Telephone
Telephone is still the most popular method of contacting schools. However, teachers may be available only at non-teaching times, before and after classes, at lunch break and during recess.

Mail
Sending a mail-out to schools is another effective means of contact. However, large mail-outs are expensive. And in any case, the school's superintendent still should be informed beforehand to ensure that she/he is aware of your program.

Facsimiles
Many groups that work with teachers find faxes effective in informing teachers about new programs and partnership opportunities. Faxes can be sent and received at any time, avoiding frustrating episodes of telephone tag, and school fax numbers are listed in your telephone directory.

As with mail-outs, however, you should confirm your district's policy on accepting faxes beforehand.

Email
Email also can promote your program directly to teachers. Some schools have their own web pages, including hot buttons that let you email them directly. However, email addresses for schools and teachers may be hard to locate. And once again, check with the district or school principal before you send email.

School Visit
At some point, you may want or need to make a personal visit to present your proposal for co-operative work to one or more teachers. In face-to-face discussions, you will get immediate feedback about your proposal. Remember, though, teachers are busy. Phone ahead to make an appointment.

PD Days
Many school districts have large conventions and workshops during Professional Development days. Here, your group may have the opportunity to address a large number of teachers using displays, printed information and face-to-face conversations.

Teacher Contact Checklist

When making an initial school contact, have a simple plan of action.

Decide who in your group will contact the school.

Develop a communication plan including the following:

- Identify yourself and your group

❑ Give a short description of your group

❑ Outline your project

❑ Discuss ways the class can be involved

❑ Explain why they are being contacted

❑ Outline any other ways that students could collaborate with your group

Make contact in the following order:

❑ superintendent of schools

— introduce yourself, your group and your project
— seek permission to contact principals and teachers
— ask for recommendations on best means to contact teachers - e.g., fax, phone etc.

❑ school principal

— introduce yourself, your group and your project
— ask for recommendations on teachers to contact

❑ individual teachers

— introduce yourself, your group and your project

Decide on the methods for making initial contact (check one or more)

❑ telephone ❑ mail

❑ faxes ❑ email

❑ school visit ❑ PD days

Decide when you will contact teachers?

❑ in the school year

❑ in the week

❑ in the day

Good Times To Contact Teachers

Good Times in the School Year

Teachers usually spend the first few weeks of the school year, term or semester organizing students and their teaching schedule. During this time, they may be too busy with day-to-day tasks to assess your stewardship project. However, most teachers prefer to have their planning completed within the first months of term so that they can book buses, organize parent helpers and commit funds for the term. Many organizations and agencies wait one or two weeks after the start of school before contacting teachers about booking field trips or class visits.

Good Times in the Week

Good times in the week to contact teachers are often mid-week, Tuesday through Thursday.

Good Times in the Day

The best times to contact teachers are when students are not in class – morning before 9 a.m. or at recess, lunch break, afternoons at recess or after 3 p.m. Start, stop and recess times vary from school to school. It is best to call ahead and confirm the school schedule before you try to contact a teacher directly.

Module 2: Who Are These Students Anyway?

Pre-Test

Do you already have the knowledge covered in this module? Test yourself with the following questions. Check yes or no for each question. If all your answers are yes, you should move to the next module. If one or more of your answers are no, it may be useful to read through this module.

Can you:	Yes	No
11. Define three common learning styles and discuss how they will affect your teaching?	❑	❑
2. Identify the general cognitive, physical, and emotional development of students from Kindergarten to Grade 12 and describe their implications for education and conservation activities?	❑	❑
3. Define a participant analysis and explain how it can be used?	❑	❑
4. Conduct a participant analysis of the school or community groups with which you plan to work?	❑	❑

Deborah's Dilemma

Deborah is a member of the Killarney Creek Society on Bowen Island, located near West Vancouver's Horseshoe Bay. The island, being close to Vancouver, has been under heavy development pressure for the last 10 years and the society has been working to conserve the Killarney Creek watershed. The society's board has decided to try to include students in their stewardship projects, which include stream clean-ups, planting of streamside vegetation to reduce erosion, and monitoring of water quality. Board members believe that by including students, they will increase community awareness of local watershed issues and help develop a stewardship ethic in the next generation of Bowen Islanders.

Deborah has volunteered to lead a committee to develop a program that will include students from the local primary school in some of the society's projects.

At first Deborah is apprehensive. It's been quite a few years since her own children were in primary school; her youngest is now 24. She is hazy as to what children know and can do at different grade levels. She visits the community library and with the help of Ross, the librarian, she reviews information on how children learn. Ross also suggests that she look at a number of articles for teachers and parents on Ages and Stages – the physical, mental, and social development of children as they grow up.

Deborah finds this research fascinating. The information seems sensible and she can see many applications for effectively working with students.

This module is a summary of information that Deborah is likely to have uncovered in her research.

What Stays In Your Brain

In general research has shown that people remember:

- 10 percent of what they hear
- 30 percent of what they read
- 50 percent of what they see
- 80 percent of what they do.
- 90 percent of what they teach others

Implications

Effective communication with school children should involve activities, pictures, and images as well as written and spoken words.

Developing An Effective Program

One of the greatest challenges for non-teachers who lead groups of students is to find effective ways to guide activities and present information effectively so that students are interested, engaged, and well behaved. Many volunteers find working with students frustrating, especially after toughing out a session with a wild or unresponsive group. Effective teaching is a demanding task for which teachers receive years of training. However, many non-teacher volunteers and staff from nature centres and conservancy groups regularly lead classes of school children through successful, effective programs and activities. How do they do it?

Understanding of students is key to their success. Knowing where students are in their intellectual, physical and emotional development provides leaders with the background to choose appropriate activities, and to present information using suitable language and presentation techniques.

Learning Styles: How Children Learn

Think about what you do when you are learning something new. Probably you approach leaning tasks in a similar way each time. Over time, you have developed a behaviour pattern that you use for learning. This pattern is called a learning style.

Of course, we don't approach every learning task in exactly the same way. However, we develop a set of behaviors that we are most comfortable with – our preferred learning style.

There are many ways to name learning styles. Behaviour scientists have developed numerous learning theories and models. This workbook will describe only one model, the Visual, Auditory, Kinesthetic model (See References: How Students Learn and Learning Models).

The Visual, Auditory, Kinesthetic Learning Model

In this model, learning can be divided into three styles. Learners in each category learn best under certain conditions.

Visual Learners

Students in this category learn best by taking in new information through seeing real objects, plants, animals and landscapes. They also learn well from pictures, diagrams, and charts. They like to reinforce learning by drawing, and sketching.

Studies have shown that more than 50 per cent of the people in western cultures have strong visual learning tendencies. Thus, whenever possible, leaders should include visual aides when making presentations or instructing students. For example if you are explaining how to build a birdhouse, bring the building materials and tools and demonstrate the technique. For situations where you can't show students the real object, organism or landscape, use a large picture.

Auditory Learners

Auditory learners take in information through the spoken word. This type of learner often reinforces learning by repeating what is said to them, and discussing observations with the leader and other students. Studies show that this is a much smaller group than visual learners.

Do not deliver information and instruction in verbal form only. This may be easy and inexpensive but it will be the least effective technique (see sidebar: What Stays in Your Brain). Instead, include pictures and activities in any presentation. If your situation offers no alternative to auditory instruction, make sure that the presentation is broken into short sections, separated by related activities or rest breaks.

Kinesthetic Learners

These are the hands-on learners who take in new information through active physical involvement, including touching and building or manipulating tools and models.

This type of learner often reinforces learning by physical repetition and model making.

All students, especially younger ones, love to touch and manipulate objects. Keep this in mind if you intend to use delicate materials and tools as props or in demonstrations. You may decide to keep such materials out of reach or protected in plastic or glass cases. But work hard to give kinesthetic learners the opportunity to touch objects. One nature centre that provides a program about beavers living in an adjacent pond shows students a display mounted beaver in a glass case but also passes around several beaver pelts for children to touch and pet.

Implications for Working with Students

The purpose of examining learning styles is to get to know how to communicate and hold the interest of students.

The best learning takes place when you are addressing all three learning styles – e.g., showing students objects and landscapes, and offering opportunities to touch things

and perform physical tasks, as well as talking and giving an opportunity to ask questions and make comments. By doing this you will ensure that you reach and hold the attention of the largest number of students.

Although each student may dominate in one style, she or he will take advantage of others as well. All students will respond better to a varied presentation than to a single approach.

Ages and Stages:

Matching Your Program and Activities to Student's Brains and Bodies

Children from Kindergarten to Grade 12 are undergoing huge changes as their brains, bodies and social skills develop. Often with each year, a child undergoes major changes in abilities to:

- move her or his body
- manipulate tools and objects
- understand
- concentrate
- take instructions
- communicate
- work together in groups

When group leaders are tuned into the interests and abilities of the children they lead, they can provide stimulating and effective activities that fit the needs of teachers and students.

The Ages and Stages sidebar was developed from a number of sources listed in under How Students Learn in the References and from the two authors' 30 years of experience working with students in environmental education programs. The table lists key aspects of students physical, cognitive and social development. Also included are some key implications these ages and stages have for your student activities and teaching. You can use the table to guide the development of new programs and to help review and improve existing programs.

Pre-school to Kindergarten (ages 2-5)					
Physical Development	Cognitive Development	Socialization	Relationship with Adults	Activity Implications	Education Implications
• very active • little stamina, tire easily • fine motor skills and co-ordination is not yet well developed • very limited bladder and bowl capacity, access to on-site washrooms necessary	• can be very curious • very short attention span • have difficulty understanding verbal instructions • learn primarily through use of the five senses • beginning to understand simple cause – effect relationships • can ask and answer simple *what* and *why* questions • still developing memory and language skills • like learning new words • enjoy story telling • can confuse fact and fantasy	• self-centered • find sharing difficult • relationships are based on one-on-one interactions • individuals are unable to work in a co-ordinated groups	• relationships are centred on parents, and care givers	• work in short, simple activities and tasks (5-10 minutes), avoid long projects • concentrate on simple discovery activities using the five senses – e.g., finding the sunniest (warmest) or shadiest (coolest) place in the forest • instructions are best done as demonstrations rather than just verbally, do not give written instructions • give each child the same task, avoid cooperative group work • if using simple equipment (e.g., hand magnifiers) make sure there is one for each child	• information must be relevant to the child's experiences –e.g., express water volumes in bathtub units instead of cubic metres • stories are useful for holding attention and forming a bridge between a child's world and your site • use simple language • make student's experience fun

Grades 1-3 (ages 6-8)

Physical Development	Cognitive Development	Socialization	Relationship with Adults	Activity Implications	Education Implications
• very active • more stamina than 2-5 year-old, but still tire easily • better co-ordination and fine motor skills but still developing • access to on-site washrooms necessary even for short visits	• display a wide variety of skills and abilities • can be very curious • short but increasing attention span • most learn best by doing (active learning) • like to explore the world using the five senses • limited concept of time • have difficulty recognizing that objects may have several properties • still have limited verbal communication skills • enjoy role playing • need immediate results • like to exchange ideas and stories with others • beginning to deduce simple cause – effect relationships, but may be inconsistent • love to answer question but may be off topic stories e.g., "My dog is sick" • enjoy reading and listening to stories • like to make collections of natural objects	• developing strong social relationships among peers (best friends) • can recognize the mood of speakers • are developing a rudimentary moral sense based on personal concepts of right and wrong • are still seeking out identification and clarification of their roles as individuals	• beginning independence from home • many very eager to please	• large, simple tools can be used • use stories to communicate information and instructions • activities must be short (10-20 minutes) • activities and projects should show immediate results • role playing activities will help students build empathy for your project • instructions are best done as demonstrations rather than just verbally or written • leaders' presentations should stress share and do rather than show and tell • group oriented activities can work well • orient activities to the present and to objects that can be watched, touched, heard, smelt or tasted. • students love take-away objects as mementos of their visit, encourage non-consumptive collection (bark rubbings, photographs) or hand out participation certificates	• leaders must show great care about the moods and attitudes you display to students - they can read you like a book • two direction communication between leader and students is needed (speak *and* listen) • questions should generate action rather than just answers • concepts involving relationships should be simple and carefully presented • stress verbal and action as means for students to share their experiences • avoid complex value decisions • encourage personal relationships of students with plants, animals, and landscapes – encourage both feelings and understanding and knowledge • encourage children to use art (drawings, songs etc.) to give you feedback on the effects of your program

Grades 4–6 (ages 9–12)

Physical Development	Cognitive Development	Socialization	Relationship with Adults	Activity Implications	Education Implications
• active • most students have strong stamina • display a wide range of abilities from well co-ordinated and strong to awkward • access to on-site washrooms necessary • like to learn new physical skills	• display a wide variety of skills, abilities, and personalities • can be very curious but may be easily put off by a lecture approach • can state questions clearly • increasing attention span • beginning to understand time sequences and historical time • may have difficulty isolating variables • often proceed from step to step without relating each link to those before and after • can begin to distinguish between fact and opinion; observation and inference • have difficulty recognizing that objects may have several properties • still have limited verbal communication skills • enjoy role playing • need immediate results • like to exchange ideas and stories with others • many can easily understand cause – effect relationships • may be developing special interests and hobbies • enjoy reading and listening to stories • like to make collections of natural objects	• developing cooperative group and social skills • beginning to become aware of self image (especially older students) • can be outspoken, critical and some like to argue • increasingly competitive • more subtle in detecting mood and intent of speakers (detect evasiveness and sincerity) • like to be involved in decision making • beginning to appreciate ideas from other viewpoints than their own	• looking for role models beyond parents and teachers • desire to work on their own or in groups without obvious control of adults	• students can participate in longer activities (½ hr. to 1 hr.) • students can participate in activities requiring stamina and some strength • students can manipulate materials and equipment requiring fine motor skills • energy can be channeled into mock debates and competitive activities • use student's desire for action, avoid long lectures • some activities should provide students some freedom to develop their own approaches and follow individual interests • activities can involve students making decisions about themselves and their environment including moral decisions	• drama and role playing must be carefully presented with awareness of students developing self-consciousness • leaders can help students develop critical thinking skills, by challenging them to separate opinion from facts, and identify biased presentations and reporting • the degree of enthusiasm and commitment displayed by leaders will be read by students appreciated by students • students appreciate opportunities to meet and interact with adult role models

Grades 7–12 (ages 13-17)

Physical Development	Cognitive Development	Socialization	Relationship with Adults	Activity Implications	Education Implications
• many reach optimal strength and coordination • some periods of awkwardness resulting from growth spurts and onset of puberty	• display a wide variety of skills, abilities, and personalities • often reluctant to display ignorance or interest • desire specific, authentic information, have skills of discrimination and clarification • interested in ideas • may state questions clearly • capable of long attention span when interested • can handle two or more variables with ease, easily comprehend logical relationships • can begin to predict outcomes based on systematic analysis of observations and past experience • can easily conceive long term results of action and inaction • can use discussion as means of reaching group decisions and resolving issues • can understand implications of decisions made • beginning to understand the relationship between responsibility and making choices • beginning to understand moral reasoning based on what is best for society, but views may be simple black vs white • some are beginning to question established values and belief systems	• individuals are strongly influenced by need for peer recognition and approval – at some ages this may be an all-consuming matter • very much interested and aware of members of the opposite sex • very wide range in individual levels of maturity and responsibility • huge range of social skills ranging from almost nonexistent to very subtle	• testing relationship with adults • wish to be treated as equals, but may not have social skills to treat adults as equals • desire for independence • may show hostility or indifference to adults in authority	• can take part in longer activities (1 hr. to whole day) • students can participate in activities requiring stamina and strength • majority of students capable of handling most equipment after instruction • consider promoting the search for logical relationships between several variables in the watershed • activities should be multi-leveled to suit a wide variety of skill levels • gear activities to participation by all – don't ask for or require volunteers • use student's desire for action, avoid long lectures • provide students some freedom to develop their own approaches and follow individual interests • involve students in making decisions about themselves and their environment	• leaders should not force students to look or feel foolish in front of peers • try to give students opportunity for work in small groups • small cliques of cronies may work well together or find each other a distraction from the tasks at hand • encourage group work where students discuss problems, and solutions • encourage students to look at choices and their consequences • encourage students to formulate hypotheses based on observations and to develop ways to test the hypotheses • emphasise the process of predicting outcomes • consider including options of making moral judgments about environmental issues

Participant Analysis

What Is A Participant Analysis?

A participant analysis is a profile of the children with whom you will be working.

Why is Participant Analysis Useful?

A good participant analysis can save you time and help ensure that your program will benefit all concerned: that the student activities will be appropriate to their knowledge, skills and understanding; and that their contributions will be valuable to your group.

Conducting Your Own Participant Analysis

No matter what kind of program your group will be conducting, a participant analysis will be a useful planning tool.

The Participant Analysis Form

If you plan to work with several grades or age groups you may need to make several photocopies of this form to cover each target grade. Fill in the sections that you can. Key sources of information will be the Ages and Stages tool in this chapter. Other important sources of information will be;

- Teachers - interview teachers in person or by phone
- Class Visits - talk to individuals and groups of students in the target grades
- Other Groups and Agencies - talk to experienced leaders who are already working with students in the target grades
- Integrated Resource Packages (IRPs) - these teacher guidelines indicate what students will be learning at each grade level in all subject areas
  - (IRPs are available at the BC Education web site www.bced.gov.bc.ca/irp/sciencek7/scienc00.htm)

Part 1: Information

Part 1 consists of the capabilities of students at various ages and should include:

What Do Students Know?

A participant analysis identifies what students already know. This could include knowledge of the following:

- the watershed concept
- your particular watershed
- simple and complex ecological concepts
- your watershed stewardship projects

What Do Students Feel?

Here, you identify the attitudes students have toward watershed conservation issues. There is a clear connection between levels of knowledge and caring. It is almost impossible for people to care about something they don't understand. Positive feelings towards a landscape are best engendered by enjoyable interaction with it.

What Are Students Capable Of?

Here, you identify what students can do, including:

- Physical Abilities - stamina, strength, co-ordination
- Cognitive Skills - learning abilities and skill levels
- Emotional Development - levels of maturity and sophistication

Part 2: Implications

Once you have identified the characteristics of the participant group, you can look at their implications. For example kindergarten students have limited strength and stamina, so your program will likely best include numerous short activities and many breaks.

Use the following participant analysis worksheet to develop a profile of your target participants (refer to the Ages and Stages table).

Participant Analysis

Grade _____

Information	Implications
What Students Know (Key Information Sources: Teachers and IRPs) About Watershed Stewardship	
Information About Your Group's Project(s)	
What Students Feel: About The Importance of Watershed Stewardship	
About The Value of The Work Your Group Does	

Information	Implications
Student Capabilities Physical Abilities	
Cognitive Skills (learning abilities and skill levels)	
Emotional Development	
Other Findings	

Pre-Test

Do you already have the knowledge covered in this module? Test yourself with the following questions. Check yes or no for each question. If all your answers are yes, you can move to the next module. If one or more of your answers are no, it may be useful to read through this module.

Do you:	Yes	No
1. Have a coherent process for gathering and implementing teacher or group leader feedback in the early stages of developing your project?	❑	❑
2. Do you follow a project planning process that is clear to all?	❑	❑
3. Does your project planning process include clear goals and objectives or learning outcomes for participants?	❑	❑
4. Does your project planning proceedure take into account the needs of your participants?	❑	❑
5. Does your process include an ongoing a risk assessment?	❑	❑
6. Does your process include an evaluation component?	❑	❑

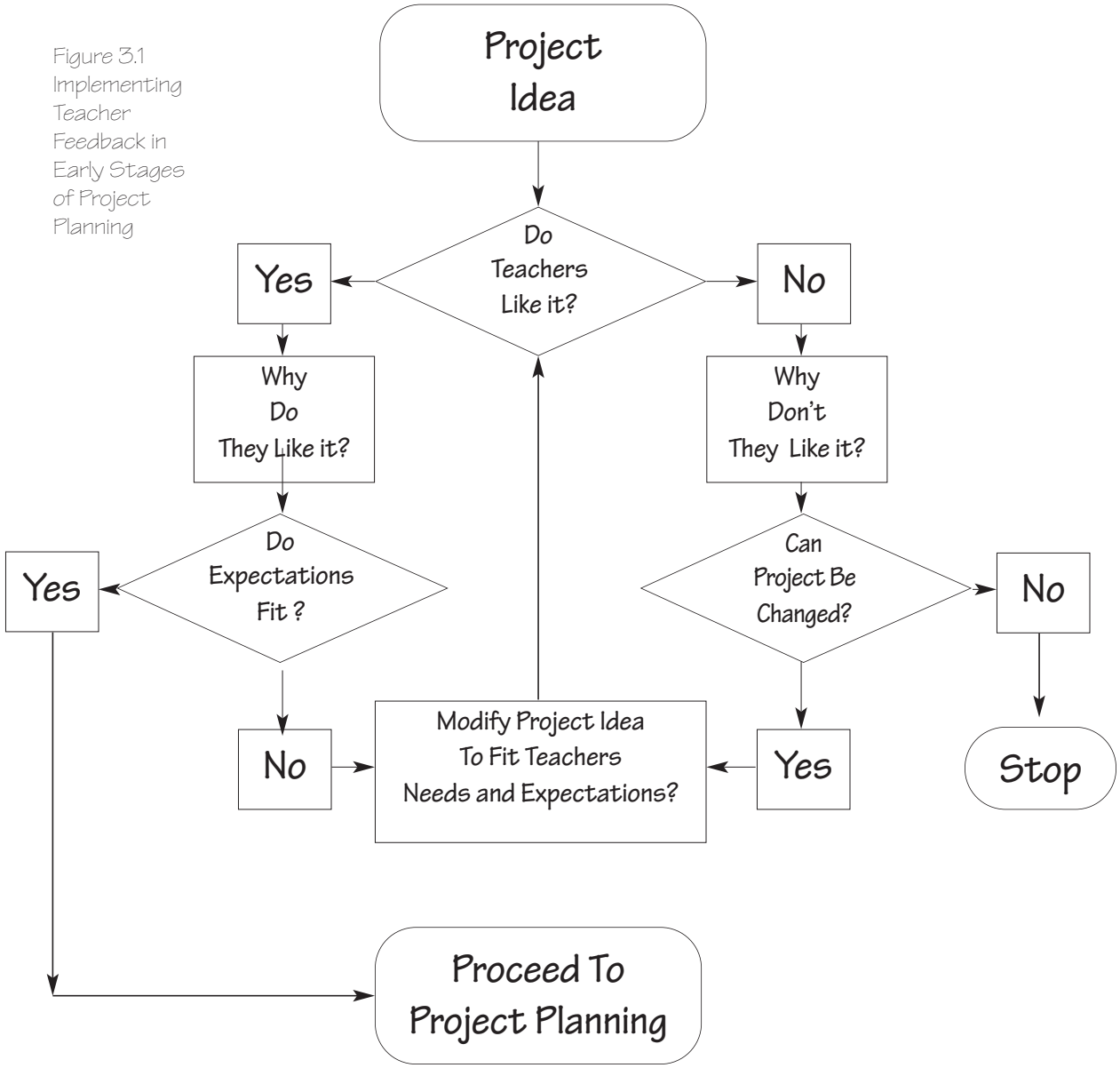
Collaborating With Teachers

It is good to contact teachers during the beginning of the planning process. You can find out key bits of information that can save time, money and ensure a more effective project. Some of the benefits include:

Find Out if Teachers are Interested

Test the waters: are teachers interested in your program or project? If teachers are enthusiastic, find out why. Make sure you can meet their expectations. A discrepancy between what teachers think you will be doing and what you can actually do may lead to big problems. Clearly state your proposed student learning outcomes (goals and objectives) and listen closely to teacher feedback. Make changes accordingly. Such changes may be large and require new research, approaches and materials, while other changes may be minor, such as

Figure 3.1 Implementing Teacher Feedback in Early Stages of Project Planning



changing the time of year that the project is available or promoting the program to a different grade (See Figure 3.1: Implementing Teacher Feedback in Early Stages of Project Planning).

If teachers are not interested, find out why, and modify you program accordingly. If that is not possible, you can abandon the project now before wasting further time and money in development (See Figure 3.1).

Identify Topics of Interest to Teachers and Students

Early contact with teachers can provide a whole slew of ideas for projects and novel ways of including teachers and students in your projects.

Share Brain Power

Teachers have a great deal of experience and understanding of student learning, behaviour management and program planning. Try to find an enthusiastic group of teachers – even one will do. They may have many ideas and viewpoints that will contribute to the effectiveness of your partnership.

Identify Effective Approaches

Teachers can help you identify approaches and options that will be most effective. They can help you decide between presenting an education program about various stewardship concepts and including students in a new or on-going stewardship project such as replanting a disturbed riparian area. Often, you will opt for a combined stewardship/education project where students can take part in a real-world conservation activity and learn about the rationale and community values of these actions.

Share The Workload

Many teachers are willing to use their skills to support or prepare students for a program, either at school or at your site. They may also be willing to share some of the teaching or student supervision.

Share Equipment

Many schools and school districts have relevant equipment (e.g., hand magnifiers, and microscopes) that can be used on the project.

Find Out When Projects Will Fit into the School Year

Teachers often have to stick to schedules. You can find out what times of year your project may work best with the teacher's in-class teaching.

Planning Your Project

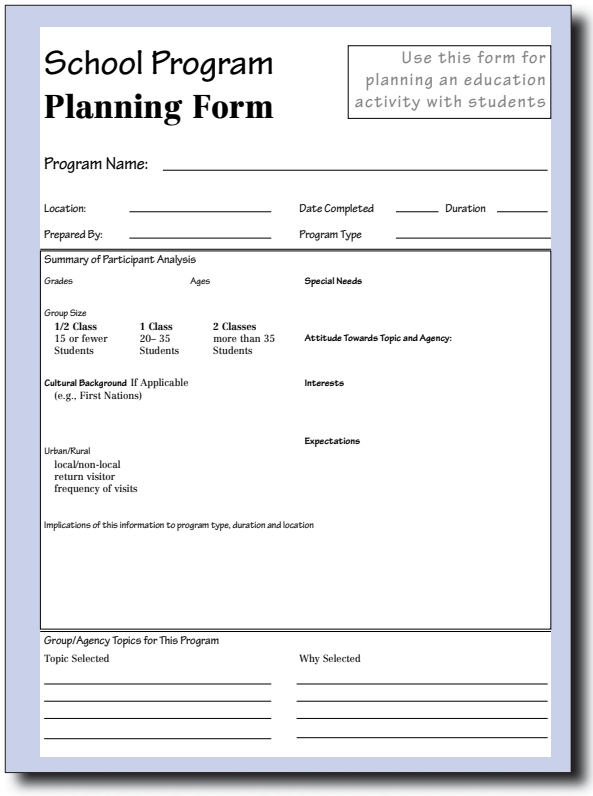
After you have advanced through the idea stage, it will be time to get to the detailed planning process.

Where Does the Initiative Originate?

The initiative for the project or program will come from one of three sources:

- Your stewardship group
- The students and teacher(s)
- A collaboration of both

No matter who initiates the project, all concerned parties should participate in the planning to ensure that the project meets the needs and interests of all players.



School Program
Planning Form

Use this form for planning an education activity with students

Program Name: _____

Location: _____ Date Completed _____ Duration _____

Prepared By: _____ Program Type _____

Summary of Participant Analysis

Grades Ages **Special Needs**

Group Size

1/2 Class	1 Class	2 Classes
15 or fewer Students	20– 35 Students	more than 35 Students

Attitude Towards Topic and Agency:

Cultural Background If Applicable (e.g., First Nations)

Interests

Expectations

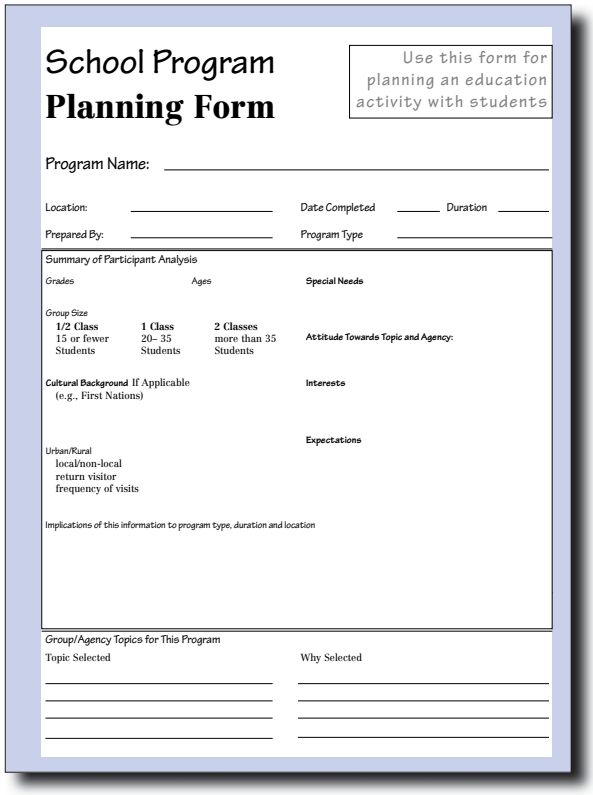
Urban/Rural
local/non-local
return visitor
frequency of visits

Implications of this information to program type, duration and location

Group/Agency Topics for This Program

Topic Selected | Why Selected

Copies of these planning forms can be found in Appendix 5.



School Program
Planning Form

Use this form for planning an education activity with students

Program Name: _____

Location: _____ Date Completed _____ Duration _____

Prepared By: _____ Program Type _____

Summary of Participant Analysis

Grades Ages **Special Needs**

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Cultural Background If Applicable (e.g., First Nations)

Interests

Expectations

Urban/Rural
local/non-local
return visitor
frequency of visits

Implications of this information to program type, duration and location

Group/Agency Topics for This Program

Topic Selected | Why Selected

What is a Program/Project Plan?

A program or project plan is an organizing tool. The plan allows you to:

- Clarify who you will be working with:
  - which grades you will target
  - the number of students, teachers and parent helpers in a group
  - student's physical, metal and social ability
- Specify the project or topics to be covered
- List the themes
- State clearly the goals and objectives (learning outcomes)
- Describe how you plan to meet these goals and objectives
- Pinpoint locations for projects activities
- List materials and volunteers needed and how they can be obtained
- Recognize and minimize possible risks to the students and to the site
- Identify and assess options for advertising to target schools
- Develop an evaluation system

Why Use A Plan?

Clear Communication

A project or program plan is useful for identifying what is to be done and by whom. This is especially helpful for committees of several members who may have to work independently on different components. Each committee member can use the plan to define their tasks and to show how these tasks fit with other components.

Better Chances For Funding

If you need funding, a clear, well-drafted plan will greatly increase your chances with most funding agencies.

A Clear Record of Ideas and Procedures

Plans, even unsuccessful ones, can help you develop new projects and programs. Many community groups have a high turnover in active members. A clear plan can be a useful legacy to leave future board members. Without your plan, future board members may have to repeat the work that you have already done.

Planning Forms

Hands-on stewardship projects and stewardship education programs require some different planning steps. Similar steps may differ in scope. Because of these differences, this workbook contains a School Project Planning Form for stewardship activities and a School Program Planning Form for education based undertakings (copies at the end of this module).

Filling Out Your Project/ Program Plan

This section follows the steps outlined in the Project and Program plans, and briefly describes how to fill in each part.

Program or Project Name

This is simply the title of the program or project. A short descriptive name is useful for communication within your group and for advertising to schools.

Example:
Gently Down The Stream - Spring Salmon Release
or
Trout Creek Rehabilitation Project

Location:

Identify as specifically as possible the location where this project or program will take place.

Example: Mill Creek Salmon Hatchery or Any wooded part of a schoolyard

Program or Project Type

Enter a short description of the type of project or program.

Example:
Replanting of riparian vegetation
or
Travelling play and exhibit

Proposed Completion Date

Enter the completion date of the plan. Years down the line this information can be useful when planning other projects. The date can give others a handle on where other records may be located and who may be contacted to discuss the details of the project.

Duration

Fill in the how long the program will last e.g., 2 hours or half a day.

Author! Author!

Enter the name(s) of the people involved in writing this plan. See the entry for date completed (above) for reasons why this can be useful.

Program/Project Description

Briefly describe the program or project. Provide details about location and content.

Summary of Participant Analysis

Summarize your participant analysis from the previous chapter. Fill in the blanks regarding the grade, age range and other student characteristics, including first language, background (e.g., urban or rural), physical and cognitive skill level (Program Plan only), and social (Program Plan only) abilities, as well as special needs options.

Finally, fill in what you consider are the implication of these findings on the type of program or project you will present and its duration and location (use the Ages and Stages table in Module 2).

Group/Agency Topics for This Program (School Program only)

List the topic(s) selected for the program and describe why they were chosen. Topics can be written as single words or simple phrases. Examples include:

- What Watersheds Are
- Stream Ecology
- Watershed Stewardship
- Salmonids

Check to see if your group already has an education/communication document that describes the chosen topics. Often, these are stated in your group's mission statement or general goals and objectives.

If your group has an education policy, make sure that you choose topics that are consistent with it.

If you do not have a policy, be sure that you board, project committee and volunteers all agree on the topic selection.

Goals of This

Write down two or three (no more than four) goals for the program. Goals refer to the specific messages about the topic we wish to communicate.

Goals focus the planning and delivery of educational programs. As used by teachers, goals are broad statements of intent described in a general, abstract way. A goal is expressed in a full, single sentence and conveys the story you want to tell. Examples include:

- Students will know about the components of a watershed.
- Students will understand that each component of a watershed is interconnected and plays a specific ecological role.
- Students will develop the skills needed to assist in stream rehabilitation.

By writing out your goals and referring to them frequently, you can ensure your program or project remains on topic.

Project Objectives: (School Project only)

Write down the key objective(s) for each of the project's goals. If your school project is part of a larger stewardship project – e.g., part of a multi-year stream restoration project – the project objectives might be recorded already in another project grant proposal or in reports or planning documents.

What is an Objective?

An objective is a learning outcome statement that describes what will happen during and after an activity within a program or project.

Usually one to three objectives accompany each goal. These comprise the details of how the goal will be achieved. Teachers view objectives as learning outcome statements.

Objectives are usually stated with reference to time, target and result.

Time	Target	Result
After the program,	students	will be able to name a watershed's major components and their functions

Types of Objectives

Programs and project objectives can be classified into one of three mutually supporting categories

Knowledge Objectives

This category is concerned with increasing student knowledge of facts and concepts.

Such objectives can be written as follows:

- By the end of the program, students will know the names of three salmonids that live in Killarney Creek.

For many beginning group leaders this is the most common category of objective. Concentrating entirely on teaching facts, however, often leads to a lecture, which is hard work for those leading the program and often boring for students. Most successful programs and projects include behaviour- and emotion-based objectives as well, leading to a more active, participatory program that is easier to lead as students are more engaged and tend to learn more (see Module 2).

Behavior Objectives

This category is concerned with teaching students new skills or changing the way they behave within their watershed.

Such objectives can be written as follows:

- By the end of the program, students will be able to conduct a simple biological inventory of a stream.
- By the end of the projects, student will reduce the amount of water they use in their daily routine by at least 10 per cent.

In many programs and projects, behaviour objectives are often implied but not clearly stated. By writing them down, you ensure they will be part of the focus.

Emotion Objectives

This category concerned with changing or reinforcing positive feelings toward elements of a watershed.

Such objectives can be written as follows:

- By the end of the program, students will have an increased respect for stream creatures and the many ingenious adaptations to their rough and ready environment.

This type of objective is difficult to measure and therefore more often implied than stated. However, studies have shown that people are more likely to change their behaviour when they develop an emotional attachment to wildlife and their habitats.

Fill in one to three objectives for each of the categories.

When writing objectives for programs that focus mostly on education, remember that teachers usually try to write objectives that focus on students and their learning outcomes.

When writing objectives for projects, some objectives may include outcomes for the agency, such as: After the program is delivered, students, teachers and parents will

Figure 3.2 Key tasks from the Program Plan of a hypothetical Smith Creek Watershed Stewardship Education Program

Key Points (and locations if applicable)

Key Point	Activity Planned	Location of Activity
Watersheds are complex	Web of Life Activity	Hatchery Parking Lot
Project Introduction	Introduction to the watershed	School
Smith Creek supports many creatures	Stream Inventory	lower Smith Creek
	electro fishing team	
	aquatic invertebrate team	
	identification & recording results	hatchery lab

Figure 3.3 Key tasks from the Project Plan of a hypothetical Smith Creek Restoration Project

Key Tasks (and locations if applicable)

Key Task	Activity Planned	Location of Task
Project Introduction	Introduction to the watershed	School
Project Preparation	Tool Training	Smith River Hatchery
Beaver Dam Swat Team	Remove beaver dam	Smith Lake

Conducting A Risk Assessment

What is Risk Assessment?

Risk assessment is a process of identifying and assessing the dangers that participants and watershed resources may be exposed to in the course of your program or project. Risk assessment can be done in two steps.

Step 1: Site Inspection

The first step is to identify potential risk factors to the people and to the watershed resources. Resources may include not only natural components of the watershed such as delicate habitat, rare plants and animals but also cultural items like heritage buildings and historic artifacts, as well as private property.

When you have a project and a site in mind, you may find it useful to visit the location and visualize the activities there. Ask yourself questions such as:

- What hazards (fast flowing water, sensitive vegetation etc.) can you see?
- Is access to the site safe and easy?
- What would this site be like in bad weather?
- Are there alternative sites or other ways to gain access?

If you are not experienced with leading school groups outdoors, bring someone who is (program leader from another group or a teacher). These experts may be able to point out problems you may not see and suggest solutions. Also, make sure that you have an experienced naturalist or biologist along to assist in identifying sensitive habitat, plant and animal species.

Using Maps And Taking Notes

When doing a site inspection, take along a map or sketch one as you go. Mark locations and make notes about hazards and potential hazards.

Step 2: Assess Risks and Act

The second step is to assess the hazards you have identified and determine if they are true risks, how risky they are and what you are going to do to avoid or reduce that risk to an acceptable level.

be more aware of our group's conservation initiatives.

Key Points (School Program Only)

In this section you write down:

- the key points that will be covered in your education program;
- the activities that you will lead to make each point; and
- the location where these activities will take place (See figure 3.2 for a sample).

Key Tasks (School Projects Only)

In this section write down:

- the project's key tasks;
- the activities that you will lead to complete each task; and
- the location where these activities will take place (See figure 3.3 for a sample).

Research and Material Acquisition (School Programs Only)

In this section, outline the research that you will need to carry out on information or teaching techniques plus the teaching materials that you will need for each activity you listed in the previous section. List the source and the cost for every item.

Tools and Equipment (School Projects Only)

Similar to the Research and Material Acquisition section for school programs. List the name, sources and cost of materials you will need to carry out the project.

Risk to Participants (Students and Teachers) Risk to Site/Resources

Conduct a risk assessment of your site. See the sidebar, Sandra's Risk Assessment, for an example of the process.

Identify and list all risks and address how these risks can be eliminated or reduced. Note especially those risks that cannot be avoided. Your group must decide if these risks are acceptable or, if the risk at the site is too great, whether the site should be avoided.

Advertising

Circle the methods that you will use to advertise your program or project.

Also identify when the advertising will take place and write sample copy.

Evaluation

Many individuals and agencies do not evaluate their programs and projects. This is unfortunate. Evaluation is essential to determine if the programs are delivering what you intended. Your group may be spending a great deal of time and money on a popular project or program that may not be very effective (See sidebar, Doing the Thing Right or Doing The Right Thing). An evaluation is likely to reveal weaknesses in content delivery or timing that may be remedied easily and cheaply, changing a good program into a great one.

Evaluation is based on a clear set of program or project objectives. An effective evaluation will measure to what level these objectives were met. For more details on types and techniques of evaluation, see Module 5: Evaluating Your Program.

In the evaluation section of the planning form, identify the following:

- who will evaluate the program or project;
- when the evaluations will take place; and
- the key elements of the program that will be evaluated.

Go Out and Do It

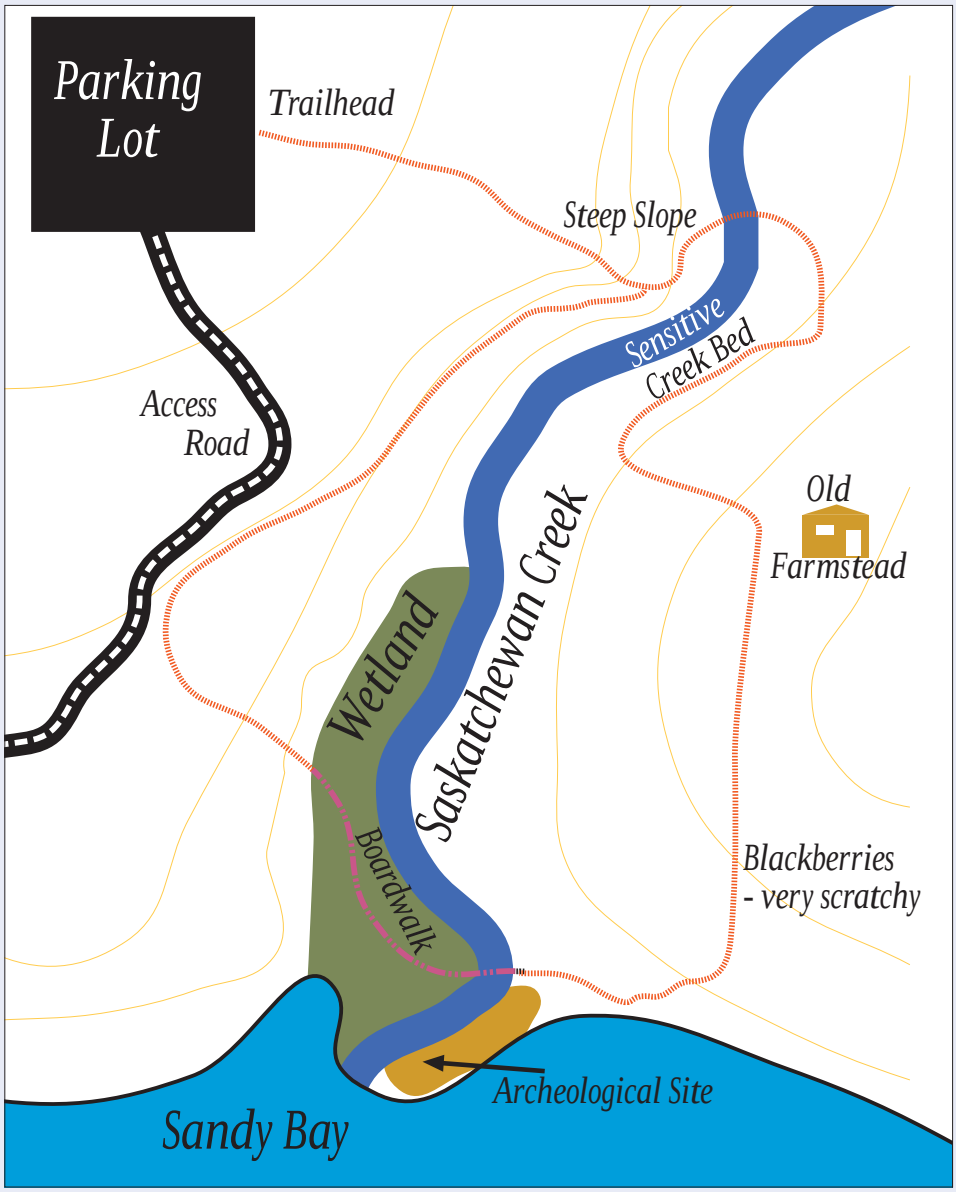
If you have been filling in your planning form as you have been reading through this module, the planning process is now complete. It's time to make your program a reality. Remember that this plan should not be set in stone. Situations and conditions can change quickly as you make new contacts and discoveries. Be flexible and make changes as they are required.

Sandra's Risk Assessment

Sandra is a volunteer working with the Saskatchewan Creek Society. She is the chair of the education committee that is developing a watershed awareness program for Grade 5 and 6 students. The committee has decided to engage students in mapping the lower Saskatchewan Creek watershed. Sandra has been working with Mike, a Grade 5 teacher who is very keen to have his students do real-world mapping as part of a unit on mapping that he teaches each year. Sandra and the committee have looked at the lower creek on maps, but Mike is very keen to inspect the site to make sure it is suitable for a class visit.

Mike, Sandra and two other education committee members walk the hiking trails in Saskatchewan Creek Park, a regional park that occupies much of the lower watershed. As they walk the trails, Mike sketches a map and Sandra takes notes in her field book. After the site inspection, all four meet to complete their risk assessment. Below are Mike's map and Sandra's risk assessment notes.

Mike's Map



Sandra's Notes

Risks To Participants

1. Steep slope in trail - slippery when wet
Assessment:

- *not a real danger to able bodied students*
- *will be a challenge to some mobility-impaired students*
- *can circumvent slope by using parking lot and access road if severely mobility impaired people attend program*

2. Boardwalk - students could fall into Creek
Assessment:

- *small risk*
- *make sure students are careful on this section*

3. Blackberries - many plants adjacent to trail
Assessment:

- *sharp thorns may scratch students and rip clothing*
- *leaders will identify plant, point out to students, warn them not to touch these plants*

4. Old farmstead - buildings in very poor condition - could collapse on participants

Assessment:

- *do not allow entry*
- *warn students of danger*
- ** position assistant or parent near building to ensure students don't go near*

Risks To Watershed Resources

1. Archeological site
Assessment:

- *scientific research can be disrupted by pilfering of artifacts and damage to equipment*
- *do not take students to this site*

2 Cattail Wetland
Assessment

- *important breeding site for water birds, and muskrats*
- *important nursery for several fish species*
- *high potential for disturbance of nesting birds in spring*
- ** no mapping activities in this area April-end of school year*
- *recommend emphasizing importance of site for fish and wildlife to students whenever possible*

3 Saskatchewan Creek Bed
Assessment:

- *important breeding site for Coho salmon*
- *no streambed walking allowed at any time*

4 Old Farmstead
Assessment:

- *experiencing significant damage from local people (including students) exploring site and pilfering artifacts*
- ** no entry by students*
- *impact could be reduced by emphasizing "look but don't touch" philosophy*

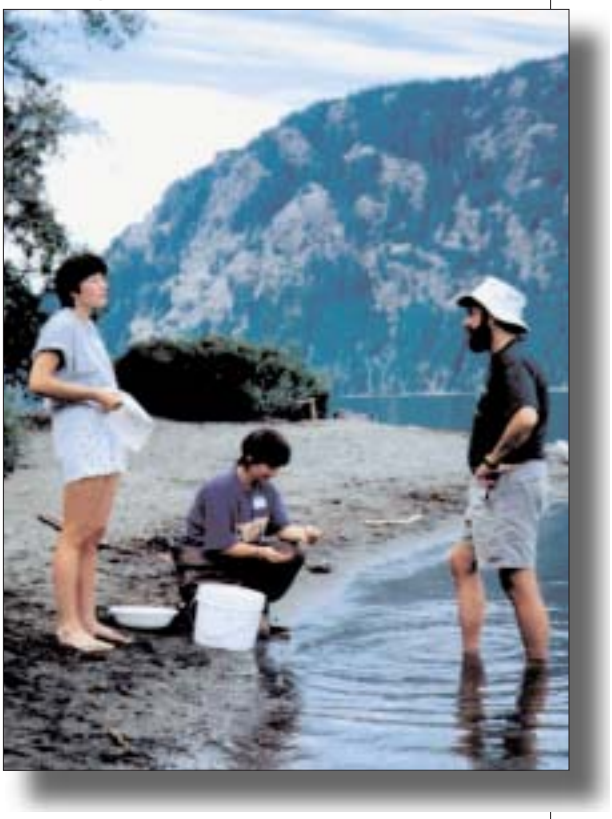
Module 4: Presenting Your Program

Pre-Test

Do you already have the knowledge covered in this module? Test yourself with the following questions. Check yes or no for each question. If all your answers are yes, you can move to the next module. If one or more of your answers are no, it may be useful to read through this module.

Do you:	Yes	No
1. Have a coherent process for gathering and implementing teacher or group-leader feedback in the early stages of developing your project?	❑	❑
2. Do you follow a project planning process that is clear to all?	❑	❑
3. Does your project planning process include clear goals and objectives or learning outcomes for participants?	❑	❑
4. Does your project planning proceedure take into account the needs of your participants, a risk assesment and an evaluation plan?	❑	❑

Case Study Rick's School Program



Rick is a volunteer school program leader with the Lost Lake Society. Last week, he finished his project plan for including local Grade 5 and 6 students in a long-term restoration of the Lost Lake watershed.

Using the project plan, Rick researched his topic, developed his messages, selected his supporting materials, chose and scouted the route for the program. He also developed a story line on which to hang nature discovery, mapping activities and information about the society and the watershed.

Throughout the planning process, Rick worked with Kerry, a Grade 5 teacher at the local public school. Together they fine-tuned the activities and chose the time and for the student mapping activities. The Society hopes that Rick and Kerry's project will be a pilot for an expanded program

Checklist One Week Before Program

Call Teacher

Confirm:

- ❑ Date and Time of Visit
- ❑ How to Get To Site
- ❑ Materials and Tools You Will Provide
- ❑ Materials and Tools Brought By Teacher
- ❑ Cost of Program (if any)
- ❑ Types of Payment Accepted
- ❑ Weather Contingencies
- ❑ Number of Students
- ❑ Grade(s)
- ❑ Arrival Time
- ❑ Where You Will Meet the Bus
- ❑ Duration of Program
- ❑ Departure Time

Discuss

- ❑ Special Needs Students
- ❑ Rest Room Options
- ❑ Program content
- ❑ Order of Activities
- ❑ Special Interests of Students
- ❑ Weather Contingencies
- ❑ What Students Know About Topics
- ❑ Expectations of Students and Teachers

that will include students from several small communities in the Lost Lake watershed.

Rick Gets Ready

Pre-program Preparation

Time: The week before the program.

Rick phones Kerry, the Grade 5 teacher at school during lunch break, when Kerry has some free time. Rick is keen to confirm the details of the visit. Using his checklist (see checklist on the following page), he confirms the logistics of the visit – e.g., number of students, start time etc. – and discusses other details with Kerry.

The Day of the Program

Time: 30 minutes before the program

Rick checks the clock, 12:00 noon, "…half an hour before my program begins, and 15 minutes before I should be at the parking lot to wait for the school bus to arrive," he thinks. "Time to check my list again."

Rick runs his eye down his Day of the Program checklist (see facing page) to make sure he has all the materials he needs. Earlier in the day he checked the program site and trails – all OK.

He sits down at a desk and spreads out his equipment checking off items – safety equipment, comfort items, program notes, a life-sized, rubber cut-throat trout (a key prop he uses when introducing the idea of trout habitat restoration). He carefully checks off all the items from his equipment and tool list. Today he is extra careful. He wants the first day of this project to run smoothly.

Finishing the last part of his checklist, Rick confirms that he has all his equipment ready. In the washroom he checks himself out in the mirror and discovers and removes a poppy seed from his teeth - a legacy from his lunch. He packs his equipment in his backpack and leaves for the parking lot.

Checklist: Day of the Program

- ❑ Check Program/Project Site
  - ❑ Trails Clear
  - ❑ Activity Sites Clear and Ready
  - ❑ On-Site Equipment (if any) In Place

Check Equipment and Tools

- ❑ Safety Equipment
  - ❑ First Aid Kit
  - ❑ Bear Banger/Pepper Spray/Air Horn
  - ❑ Whistle
  - ❑ Solar Blanket
  - ❑ Cellular Telephone/Two-way Radio
  - ❑
  - ❑
  - ❑
  - ❑
- ❑ Comfort of Leader
  - ❑ Rain Wear
  - ❑ Hat
  - ❑ Sun Screen
  - ❑ Insect Repellent (enough to share with entire class)
  - ❑ Drinking Water (enough to share with entire class)
  - ❑ Extra Clothing to Suit the Season
  - ❑
  - ❑
  - ❑
- ❑ Program/Project Materials
  - ❑ Program Notes
  - ❑ Props for Presentations (make a separate list for your program/project)
  - ❑ Tools for Activities (make a separate list for your program/project)
- ❑ Last Minute Checking
  - ❑ Appearance
  - ❑ Hair Combed
  - ❑ Teeth Clean
  - ❑ Clothing Neat & Clean
- ❑ Be At Meeting Site 10 -15 Minutes Before Arranged Meeting Time

Setting Rules at the Beginning

No mater what type of program you are leading — outdoors or indoors, you will need to set up a set of rules that will ensure the following:

- A safe and comfortable learning environment
- The comfort and safety of plants, wildlife and their environment
- That your group does not detract from the enjoyment of other site visitors

The ideal time for setting rules is at the beginning of the program. Select a quiet area off to the side away from main traffic areas where you can talk to the group with minimal distractions.

Rules are most effective when everyone knows why they were made. One effective technique is to look at rules from the point of view of the plants or forest animals. – i.e., students are visiting the homes of plants and forest animals. Ask students to identify visiting rules. They will likely suggest the following:

Rule #1. No running.
Rule #2. No yelling.
Rule #3. No pushing or shoving.

Make sure that you tell the group that all the animals that they will meet in the forest are wild animals. Point out that wild animals are not used to being petted or picked up. If you try, they will be frightened and think that you are going to eat them. Ask what the animal would do if it thought that? (Give a hint — point at your teeth). Ask the group if they can think of two other rules.

Rule #4. Never try to pet or pick up a forest animal.
Rule #5. Don't chase forest animals.

Also, don't forget to point out that all the animals in the forest can find their own food and that most of the food that we eat, like bread, is not good for wild animals.

Rule #6. No feeding of animals during the program.

Finally, point out that you are the group leader and are the only one who knows where you are going. Ask who do they think should be at the front of the line?

Rule #7. No kids in front of the group leader on the trail.

Just Before the Students Arrive

Time: 15 minutes before the program

Rick has arrived at the program meeting place; a parking lot adjacent to the Lost Creek Fish Hatchery. He is feeling pretty good. In his head, he runs through a list of the preparations made for the student's visit:

- Kerry has prepared her students by introducing the key concepts in class.
- The material and equipment for the day are already at the work sites.
- Two more volunteers, Julian and Kathy will meet Rick at the work site.
- He has worked on developing a smooth welcome and introduction to the project that he hopes will inspire students to become more involved in the Society's work.

A few minutes later the school bus arrives. Rick walks up to meet it. Children pour out and several students run up to him. Rick looks them in the eye and greets them with a smile and a polite. "Hello, are you the Grade 5s from Bonny Doon Public School?" In the ensuing conversation, Rick introduces himself as Rick, from the Lost Lake Society. In a louder voice he invites all children to come closer so that he can speak to them easily.

Soon all the students are gathering round. Rick notices that Kerry, the teacher, is still gathering up a few stragglers from inside the bus, so he begins to ask the students some simple questions about their school and if they have been to the hatchery before. Many students are keen to talk. Throughout these conversations, Rick listens until each student has finished speaking before replying. As he listens, Rick occasionally nods or says 'yes' encouragingly.

He is beginning to learn a lot about these students. Jason is especially interested in animals and wants to now what kinds of creatures he will see today. Sarah thinks she would like to be a wildlife vet.

Rick continues to chat up students as they arrive from the bus. As new groups of students join him, he reintroducing himself

and asks questions about their interests, background and expectations of the program. Some students are keen to ask questions. To each question, he responds with a complete answer, knowing that although some are questions he answers several times in each program, the questions are new and unique to the students asking them.

At this point Kerry, the teacher, joins the group with two latecomer students. Rick has made sure that he and Kerry have agreed that student discipline will be the teacher's job and he can see that she is keeping an eye on these two rambunctious students.

Now that the entire group has joined him, Rick introduces himself and his society one more time.

What Is Happening Here

Through his apparently casual, friendly conversations, Rick has found out a great deal about the students' needs and interests and is planning to adjust his program to fit today's situation. He has learned that the students know a good deal about the theoretical end of watersheds but most have not seen or thought about how the component parts work together. He is thinking that he will focus on relationships of watershed components with this group.

Rick Starts On Time

Time: 00.00 Start Time

It is now 12:30 p.m. and Rick is about to begin his program. He has 32 people assembled for his program.

He takes a quick look out to the parking lot to see if any students have wandered off. No – time to start.

He always selects a location off to the side of the trail where 25 to 35 people can assemble without blocking the trail entrance for other hikers. He positions himself on a little rise of ground, facing the sun so that all participants can see him clearly. He is the only one dazzled by the sun.

After politely calling everyone's attention, and encouraging everyone to gather round, Rick introduces himself, his position and the program. He looks around the group to make sure he can see all their faces – an indication that they all can see his. Speaking in a fairly soft voice, he asks if everyone can hear his, and invites those that cannot to move closer.

Rick involves the students as soon as possible, asking who has been to the hatchery before or hiked the local trails. He is asking questions that he may have asked some students before the program. He is confirming his assessment of the class, catching information from those who just arrived and sharing information with the class.

What Is Happening Here

Rick likes to use listening skills when working with students. He often paraphrases questions and answers that he hears from students to make sure that everyone hears and that he understands what they are saying and to confirm that he is listening and hearing.

The part of effective listening that Rick finds the most difficult is listening to student opinions with which he disagrees. He often finds himself working out a reply before the speaker is finished talking. He has found that when he does this, he often misunderstands what the speaker is trying to say.

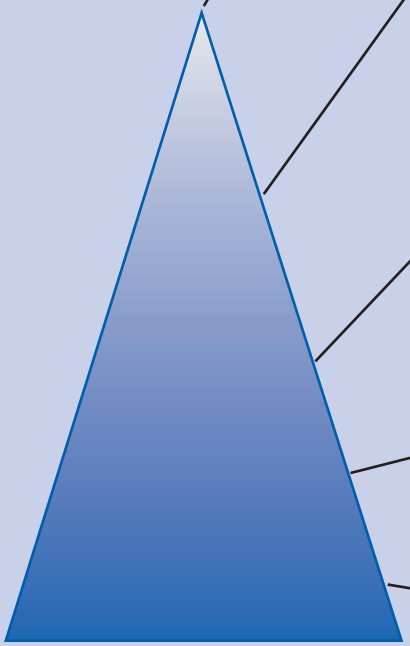
Rick welcomes students on behalf of his society and introduces the group's mandate to conserve this watershed for the enjoyment of present and future generations. He says he is proud to be working for an agency that is protecting such a beautiful place as the Lost Lake watershed. Following this, he outlines that throughout the visit, they will be observing the rules of conservation and good conduct (no picking of wildflowers, harassing of wildlife, etc.). He also restates the distance and duration of the trek (See the sidebar: Setting Rules at the Beginning)

Maslow's Hierarchy of Needs

Abraham Maslow published his theory of human motivation in 1943. Its simple, common-sense approach is very appealing.

Maslow's theory explained that human needs are hierarchical. For a person to effectively learn and perform tasks, certain environmental and social criteria must be met. Many people represent Maslow's five criteria as a pyramid – the base being the lowest, most essential level of needs and the tip representing the needs concerned with a person's highest potential. Each level of the pyramid is dependent on the previous level. For example, a person does not feel the second need until the demands of the first have been satisfied.

Maslow's Five Criteria are shown below. Read from the bottom upward.



Self-actualization Needs

Maslow describes self-actualization as a person's need to reach his calling – be and do that which the person was born to do. 'A musician must make music, and a biologist must look at bugs.' If these needs are not met, the person feels restlessness, on edge, tense and lacking something.

Esteem Needs

Students need a stable, firmly based and high level of self-respect, and respect from others in order to feel satisfied, self-confident and valuable. If these needs are not met, the person feels inferior, weak, helpless and worthless.

Social Needs

These are needs for friendship, love and a sense of belonging. Students need to feel they are part of the group and have friends. They will learn and perform at higher levels in a friendly rewarding atmosphere and they will perform poorly when feeling lonely and alienated.

Safety Needs.

To learn and function best, students must feel safe in the environment you are bringing them into. This is a physical and psychological need – to enjoy freedom from fear.

Physiological Needs.

These are biological needs for such basics as such as food, water and warmth. These needs are the strongest because, if in cases of extreme deprivation, the person would die. In the context of working with students, they cannot learn or perform useful tasks when they are uncomfortable – thirsty, hungry, cold or wet.

See sidebar Maslow Tips At Work

Rick notices as he is talking that several participants are fidgeting, and that Sarah is waving a hand about her face in an irritated manner. Rick breaks off his talk saying 'Ah, I see that a number of us are doing the Mosquito Dance. He mimes several exaggerated slaps at imaginary insects. He pulls from his backpack two family-sized containers of mosquito repellent, demonstrates a simple application technique, and asks if there is anyone who would like to use some. The response is enthusiastic from the entire class.

What Is Happening Here

Rick is very much aware that students learn and participate best when they feel comfortable, safe and welcome. This understanding is based on a learning theory developed by a behaviour scientist, Abraham Maslow (see the sidebars: Maslow's Hierarchy of Needs and Maslow Tips at Work). In this case Rick has noticed that some students are suffering from mosquitoes or other biting insects. He immediately takes steps to reduce the disruption. Throughout this case study, you will see that Rick is continually monitoring and anticipating the comfort needs of the students. This will make their visit a much better learning experience.

As students anoint themselves with mosquito repellant, Rick continues his introduction. He asks the students about watersheds, habitat and habitat restoration. He is impressed by the answers. Kerry has really done her part preparing the students. He confirms his earlier decision to shorten the introduction he had planned; these kids know their stuff.

Next, Rick briefly describes procedures for the day's visit, outlining the activities, the duration of each and where they will take place. Facing the group, he gestures to his left relating the direction, distance and time they will take to walk the trail. He mentions the main locations that hey will be visiting. All the time, Rick is speaking naturally and with his preparation complete. He is feeling confident and relaxed and his body language shows it. As he speaks he is shifting his gaze from face to face, making eye contact, trying to include everyone in the conversation.

Just before the group sets out, Rick tells everyone that the trail can be slippery near the lake shore, and they will be passing through areas of prickly blackberry bushes growing close to the trail. Rick reassures everyone that the problems are minor and that he will alert everyone at these locations.

Rick asks if there are any questions before they set off. He waits, silently counting slowly to 10, to give participants a chance to reflect and formulate questions. Sure enough, there are several questions about the distance of the walk and the duration of the hike which Rick answers easily. After the questions he says, 'If everyone is ready, let's start.'

The program has begun.

Rick On The Trail

Time: 30.00 minutes after start time

We join Rick a half-hour into his program. He has covered two major stops along the trail. He and the students have discovered the abundance of insect life that tumble into Lost Creek from adjacent forest vegetation, and have conducted a series of experiments on temperature of water in direct sunlight and in the deep shade of the forest floor. They map this riparian vegetation and proceed along the Lost Lake Trail to a small cattail marsh.

At the previous trail stop, Rick had hinted that here he will introduce the students to a food factory for fish and wildlife.

He is running a little behind schedule today. Fazel, a mobility challenged student, is game but not a quick mover. Rick has slowed his pace to accommodate the boy. He often has little pauses on the trail to make sure that the group stays together. At these pauses, Rick points out components of the watershed or shows students wildlife signs. These stops allow Fazel and others catch up and to rest as Rick reinforces the program's themes.

Maslow Tips At Work

An understanding of Maslow's Hierarchy is important to successfully leading a group, especially in outdoor situations (See the sidebar: Maslow's Hierarchy of Needs). Students will learn and participate most effectively if they are comfortable, feel safe and welcome. Conversely, they will perform poorly when they are uncomfortable, scared or humiliated. The following are some general tips for using Maslow's criteria to make your school program more effective.

Physical Needs

Experienced group leaders dress for the seasonal conditions to ensure that they are comfortable and effective leaders throughout the school program or project. However, the leader must constantly monitor the comfort of all members of the group throughout the visit, altering the program to ensure that comfort levels are kept at a maximum. Watch, listen and regularly ask students how things are going.

Key points to remember are:

- children have smaller bodies that cool off and tire more quickly than adults
- students and teachers often come dressed in less than adequate clothing
  - make sure you stress the need for season-suitable, outdoor clothing when contacting teachers
  - student culture often dictates that certain types of clothing are fashionable while other clothing is taboo
  - many students and some teachers may not possess certain types of clothing e.g., hiking boots or breathable rainwear

Proper clothing may be critical to the success of your project or program. If visiting classes do not come properly equipped, some groups raise money or find grants to purchase class sets of essential clothing such as boots and rain gear.

Safety Needs

Safety has both a physical and psychological aspect. Many outdoor leaders recognize this. They talk about participant safety issues in terms of real risk (specific quantifiable safety factors like the real risk of electrocution crossing an open hilltop during a lightning storm) and perceived risk (how safe the student thinks the situation is – e.g., a city child may have an all-consuming fear of being attacked by bears when they enter a forest). Conversely, many students may be oblivious to the deadly force of a fast moving stream.

Group leader must pay close attention to what students and teachers perceive as risk. Do not expect them to have your understanding of the safety issues. Ask questions and make sure you provide both reassurance and clear warnings.

Social and Esteem Needs

Group leaders often work hard at welcoming students and providing positive feedback. They work hard to avoid put-downs. An effective leader treats all questions and answers with respect especially wrong answers – often acknowledging them with terms like "Nice try, but I think there is a better answer out there." Try to give students opportunities for social interaction with each other and with the leader and teacher.

In many cases, your program will be pushing students to try new things and look at old ideas in a new light. To do this, they must feel confident to take mental and emotional risks without fear of humiliation. Many group leaders work hard to provide positive feedback to all students.

Self-actualization Needs

Group leaders realize that they will never provide the self-actualization needs for an entire class. It is unlikely that they will meet the self-actualization needs of even one student each time they lead a program. However, many will tell, with great pride, of the individual student that did start a lifetime interest as a result of participation in their program. These are rare and valuable moments.

What Is Happening Here

Rick realizes that he has to be flexible in delivering his program. He is adjusting his program to fit this particular group of students. Throughout the program he will be assessing the situation. He may decide to alter the order of activities as well as add or delete stops on his route to fit the students abilities and needs and the conditions of the weather and the trail.

At this stop, Rick again stations himself at a good assembly point, on the edge of the trail with himself facing a stiff breeze coming in off the lake. He waits for the entire group to catch up and gather around him in a semi-circle. By now, every one is familiar with the drill and the students casually gather around (See side bar Organizing Viewing Patterns).

Rick, facing the participants, starts by saying, "This cattail marsh is an important part of this watershed. These plants supply food and shelter to many creatures. As a matter of fact, if everyone swings around, you can see the home of one of these animals behind you in the shallows among the cattails."

As everyone turns to look for the creature's home, Rick smoothly walks around the outer edge of the group to place himself on edge of the trail, so that all can see and hear him and still have a good view of the lake shore. He helps direct their eyes to a small dome made of cattail stems and roots, about one metre in diameter, on the edge of a dense stand of cattails.

Suddenly, there is a loud roar of a motor. A forestry helicopter roars past just above tree-top level. Rick, realizing that he cannot speak over this noise, pauses. The helicopter zips over a rise and into the next valley. The sound of its motor fades to a soft hum. After explaining that forestry helicopters often pass over this way checking for forest fires, Rick continues his program, redirecting the group to look at the little house in the lake. He asks for suggestions about what creature may have made it. Kirsty suggests beaver. Rick replies that that was a good try. "This mystery creature, when seen swimming in the lake,

Organizing Viewing Patterns

Can They See You?

It is important that students be able to see and hear you as you introduce or review an activity. Here are some hints that can help.

1. You should stand on a high point. Make sure there is a flat area for the group to stand.
2. Select a site with few distractions (away from noisy groups of people, or active sites like food concessions and parking lots).
3. Stop and wait for the entire group to catch up. You may use a group-gathering call.
4. Make sure that your group will be comfortable.
   If you face the sun, no one else will have the sun in their eyes as they look at you.
   If it's raining, select a site under an umbrella tree (an evergreen that sheds most of the rain).
   If it is cold, don't stop for long periods, keep moving.
   If everyone is cold, wet and miserable, consider shortening the program so they can get to heat and shelter.

Can They See What You Are Showing Them

With groups of any size, the people at the back of the group may not be able to observe small or distant objects that you are showing. The following are some hints for making sure that everyone can see.

1. Hold small objects high above the heads of the people close to you.
2. Develop a "looking" routine with the group:
   Tall people at the back of the group, short people at the front;
   For objects that are low down, have the front row people kneel down;
   Practice the routine a couple of times at the beginning of the program so that everyone knows what to do.
3. For distant objects and animals in trees etc. have people that can see the object point at it. Anyone who hasn't found it can stand beside or behind one of those people and look down the pointing finger.
   Before you start to talk, ask if there is anyone who can't see.

Using Questions With Students

Bloom's Taxonomy and Questions

In 1956, Benjamin Bloom headed a group of educational scientists who developed a classification of the processes important in learning. He identified six levels of complexity of learning/thinking behaviour. The following are examples of questions that require students to think at Bloom's six levels. From lowest level to highest levels they are:

Level 1: Knowledge

Knowledge is the recall of information. It includes: remembering, memorizing, recognizing, identifying, recalling information (who, what, when, where, how), and describing.

Sample Questions:
- What kind of tree is this?
- When do salmon spawn?

Level 2: Comprehension

Comprehension involves the translation, interpretation or extrapolation of knowledge. It includes: interpreting, translating from one medium to another, describing in one's own words, or organizing facts and ideas.

Sample Questions:
- In you own words, describe the water cycle.
- Can you tell me how this salmon found its home stream?

Level 3: Application

This level involves the application of knowledge to a new situation. It includes the solving of problems, often using facts, rules and principles.

Sample Questions:
- How is the forest related to to the cool fresh water of this stream?
- Why is this fish hatchery significant?

Level 4: Analysis

Analysis is the process of breaking down knowledge into parts and showing relationships among the parts. Activities include: subdividing something to show how it is put together, identifying motives, separating a whole into component parts, and classifying.

Sample Questions
- How does the forest compare to your yard?
- What evidence can you list for this being an unpolluted stream?

Level 5: Synthesis

Synthesis involves the bringing together parts of knowledge to form a whole and building relationships for new situations. It may include creating a unique, original product – a physical object, for example – or combining ideas to form a new whole concept, inferring generalities from observations.

Sample Questions:
- What would you predict will be the result of your observations?
- After what you've seen here today, how would you design a new fish ladder?

Level 6: Evaluation

Evaluation is a process that involves judgments about the value of material and methods for given purposes. It includes making value decisions about issues, resolving controversies or differences of opinion, developing opinions, and judgments or decisions.

Sample Questions
- What is the most important part of this watershed?
- What criteria would you use to decide how many people can live in this watershed?

Using Questions with Skill

Novice group leaders tend to ask questions in the "knowledge" category 80 to 90 per cent of the time. These questions are not bad, but using them all the time is. Try to build from lower order questions to higher order questions following a theme or line of thought. Give students plenty of time to think about the answers to higher-level questions. Complex questions require much more brainwork and a more extensive and elaborate answer.

is often mistaken for a beaver. A good hint is that the creature is much smaller than a beaver." Rick uses his hands to show the size of a full-grown beaver compared to the size of the mystery creature. He also explains that beaver lodges are much bigger than these houses. Lodges are stick and mud constructions that can reach the size of an average bedroom. Several other students try an answer. Finally, Sarah asks tentatively "Is it a muskrat?"

"Exactly!" exclaims Rick. "We are looking at a muskrat house."

What Is Happening Here

Rick is using a variety of questioning techniques to provoke students to examine their environment and make their own discoveries. He also uses questions to relate and reveal objects and concepts to the students (see the sidebar: Using Questions with Students).

Rick leads the group to the water's edge to help them find other signs of muskrat. Then he sets up an activity where individuals or groups try to find and sketch on their maps another muskrat house as well as three more signs of muskrats along different stretches of the shoreline. As the group is doing this activity, Rick asks Fazel how he is doing to make sure that he is able to keep up. Rick then cruises among the students, making suggestions to any student that appears to be having difficulty. After about 10 minutes, Rick uses his gathering call (See the sidebar: Group Gathering Call) to assemble participants and discuss their findings.

Rick concludes the stop by handing around samples of muskrat fur and showing large photographs of a muskrat and a beaver to highlight the similarities and differences.

He moves on to the next part of his program, saying, "From the kind of answers I've been getting from you folks today, I'll bet some of you can tell me other values the marsh has for this watershed."

Several hands shoot up. Rick chooses students one by one to contribute their

Group-Gathering Call

A group-gathering call is a useful tool in an outdoor activity-based program. If during your activities you are asked students to disperse along a trail, in a forest, or along a shoreline, you can use a group-gathering call to bring them back to a central point, to debrief, discuss discoveries, wrap up an activity or introduce a new activity. Nature-related noise makers (duck or goose calls) and vocalization (you caw like a crow) are both effective and popular.

Communicating Effectively

Rick has worked hard at improving his communication skills. When he first started leading groups, he knew he was not speaking effectively. He asked Lois, his supervisor, to listen to one of his presentations and tell him what he was doing wrong. Lois noted that he had a number of distracting behaviours – pacing, excessive throat clearing and the frequent use of "um" when he paused in mid sentence. Lois jokingly called Rick a song and dance specialist.

Rick sought out several books on public speaking in the library. He worked on correct pronunciation and word articulation, voice projection, tone and volume. He began to listen closely to radio announcers and dramatic events, learning how to use his voice as a tool to evoke emotion, build suspense, even to just get and hold interest. Thanks to Lois's help, and his own hard work, Rick has become an effective and confident communicator.

Rick works to communicate on a level that students can understand. With this group he has kept his biological information clear and has used few technical terms. Whenever a technical term is relevant or necessary, he defines them and often includes a simple example to illustrate. Rick knows that everyone in this group speaks English well and he has worked with Fazel to assure his that the program is accessible. He would use different approaches for groups containing different ages, languages, cultures or other special needs.

ideas. Again he paraphrases each answer to make sure the whole group can hear and be included in the discussion (See the sidebar: Communicating Effectively).

The SBB Incident

Time: 70 minutes after start time

Rick is leading the students through a small blow-down, where several years ago a storm blew over several trees. The area is now densely forested with young alder saplings. It is very difficult to see more than a meter on either side of the trail. Rick pauses to make sure everyone is keeping up. Sarah is beside him. Suddenly, a small brown bird flashes across the trail, neatly navigating between Rick and Sarah, and disappears into the dense vegetation. "What kind of bird was that?" she asks and several others who had seen the flash of brown wings.

"Lets talk about this," Rick says, pausing to wait for the students at the end of the line to catch up. When the group has gathered he describes the incident to those who didn't see it, and invites comment from those who did. Then he restates Sarah's question – what kind of bird was that? No one has an answer. Rick says that he thinks it was an SBB After a pause while students wonder what the heck he is talking about, Sarah asks, "What is a S.B.B.?"

"A Small Brown Bird," Rick replies. Several students chuckle. Rick goes on to explain that he hasn't the foggiest idea what species of bird it was. He has used a term (SBB) that bird watchers have coined to label an unknown bird. He gets the group to stand still and listen. They can hear quite a bit of bird activity in the dense foliage. Rick follows up with a demonstration of techniques used by bird watchers. A small brown bird is observed again. Again, Rick cannot identify it. However, he and the group memorize its size and markings so they can check in one of Rick's field guides at the end of the program.

After the SBB incident, Rick takes the opportunity to focus the students' attention on his next topic: the changing habitats in the forest.

Checklist

Program Wrap Up

Review

- ❑ Sites Visited
- ❑ Observations/Discoveries
- ❑ Skills Developed
- ❑ Tasks Accomplished
- ❑ Questions Answered
- ❑ Questions Not Answered
- ❑ Things To Be Done At School

The Finishing Touches

Time: 90 minutes after start time

Rick and his group have been in the field for almost two hours. Kerry and her students have worked hard, surveying this section of the watershed and mapping their discoveries. A team of these students will present this work to the entire school. Also, Rick's Lost Lake Society hopes to use this information as part of a long-term resource inventory of the watershed.

The students are nearing the hatchery building where they will finish with a rest and cups of hot chocolate and check the reference books to identify the SBB as well as several other plants and animals, before the bus comes to take the students back to school.

Rick has learned that it is important to finish the active part of the program with a short review and wrap-up. He stops the group under a large old-growth cedar whose canopy provides shelter from rain in bad weather and cool shade in hot weather. As he waits for the last stragglers to catch up, Rick glances at his review checklist.

Reassured, he puts the list back into his pocket and launches into a quick summary of the day's activities, making sure to thank students for their help with the project. Throughout the review he asks questions about discoveries and observations.

Rick also looks for feedback about what parts of the program were successful and what parts need improvement. He tells the students of his personal high point for the day – the chance to observe a dipper, a small, semi-aquatic bird feeding in a rapid on Lost Creek. He then reports his low point – the discovery of fresh vandalism to the lower Lost Creek fish ladder. He explains that he and his group had built the fish ladder with help from the local teen centre. After modeling this high/low evaluation, he asks each student to share her or his high and low point during the program. The students provide a variety of responses. It is clear, however, that many people enjoyed the overview of the Lost Lake Watershed from the Henderson Point viewing tower and that just as many did not enjoy the smell of dead, spawned-out salmon along the lower reaches of Lost Creek. After the students board the bus Rick, will document their responses in his program notes. At the end of each season, he and the society's education committee will review the feedback and look for ways to address the good and bad points and thereby improve the program.

When the feedback session is completed, Rick can see that several students are still keen to discuss their day's observations and others still have questions. He invites everyone to join him in the hatchery classroom for a cup of hot chocolate and a chin wag to finish off their visit.

Putting the Program to Bed

Time: 120 minutes after start time

After a final thanks to the teachers and students, Rick watches as the bus full of weary students leaves the hatchery parking lot. It was a good program. Now it's time to put the equipment away and lock up. Another class is booked for next Monday.

Module 5: Evaluating Your Program

Pre-Test

Do you already have the knowledge covered in this module? Test yourself with the following questions. Check yes or no for each question. If all your answers are yes, you can move to the next module. If one or more of your answers are no, it may be useful to read through this module.

Do you:	Yes	No
1. Do you have a coherent process for gathering and implementing teacher or group leader feedback in the early stages of developing your project?	❑	❑
2. Do you follow a project planning process that is clear to all?	❑	❑
3. Does your project planning process include clear goals and objectives or learning outcomes for participants?	❑	❑
4. Does your project planning proceedure take into account the needs of your participants, a risk assesment and does it identify the how you will evaluate the success of your project?	❑	❑

Introduction
Rob's Evaluation

Its 2:45 p.m. Rob has just finished a watershed restoration session with Mr. Knight's Grade 6 class. Students are on the bus heading back to school. As he puts his equipment away, he asks himself the following questions:

"Was the program really OK?"
"Did the students enjoy it?"
"Did they learn something?"
"Did they learn what I wanted them to?"
"Did I provoke them into a new awareness, appreciation and understanding of the watershed?"
"Are there other ways that I could have communicated the messages better?"

Every program leader, volunteer or professional, asks these questions. You will want to know about the effectiveness and efficiency of your presentation – and many teachers, employers and funding agencies will, too. Evaluation is the tool to help you answer the question: "Did it work?"

Doing The Thing Right or Doing The Right Thing

A school program can be a thing of beauty. It can sweep students off their feet through a combination of high-quality images, engaging activities and superb delivery. In such a presentation, the group leader did the thing right.

But did the program meet its objectives? Were the messages appropriate for the site and agency? Did the delivery overpower the message – i.e., did the students leave with a heightened awareness, appreciation and understanding of the watershed stewardship project or did they learn only that the group leader is funny, skilled and knowledgeable? Did the leader do the right thing?

Evaluation is the tool that ensures that you are doing your whole job effectively.

What Evaluation Does

Evaluation identifies parts of your program that could use improvement. It also highlights flashes of brilliance so that you remember to do the same thing next time (See the sidebar: Doing the Right Thing or Doing the Thing Right).

What To Evaluate?

The objective of evaluation is to find out if you are meeting your student learning objectives. Many beginning group leaders find it difficult to start this process.

Use Your Program Plan

A good starting point is a program or project plan (see Module 3). Look at the program goals and objectives. Here the aspects to be evaluated are clearly listed. You should assess whether each objective was reached. If some objectives were not met, you should evaluate why.

Key Components To Evaluate

In most cases you will look at the following three program areas:

1. Effectiveness of the Program/Project Content

Here you can test whether content fits the program's objectives and is suitable for the target students. The following headings and questions can assist your evaluation:

Information
- Was it accurate?
- Was it appropriate for the ages and stages (See Module 2) of the students?
- Were the messages clear?

Skills Taught
- Were the skills appropriate for the ages and stages of the students?
- Were instructions on how to execute new skills clear?

Structure of the Program
Did the program have:

- a clear beginning?
- a central theme or story line?
- activities in the body of the program with a clear beginning, middle and end?
- activities within the program connected in a coherent manner so that students could see the links?
- a clear end with summary and conclusions?

2. Effectiveness of the Program/Project Design

Once you have evaluated your content, it is time to look at the "delivery vehicle" – your program design. The following headings and questions should help with your assessment.

Pre-Knowledge
Did the structure of the program make sure the leader knew:

- what the students already knew about the topic?
- what skills the students already had?
- whether students had sufficient background knowledge and/or skill to take full advantage of the program and its activities?

Content
Did the structure of the program make sure the leader provided:

- factual information and opportunities to develop emotional connections?
- challenges to look at familiar and new ideas with a different slant?
- ideas and facts in conjunction with real landscapes, objects plants and animals?
- props and visual aides to illustrate, when real things were not practical or accessible?
- new information and ideas in context with what students already know?

Skills

Were new skills taught that:

- helped students think clearly and understand concepts?
- enabled students to all perform physical tasks effectively?

Challenge
Did the materials and activities:

- provoke students to look at watershed stewardship in new ways?
- accommodate many learning styles?
- give students the opportunity to:
  - take part in activities?
  - ask questions?
  - answer questions and share observations?
  - make their own discoveries and share ideas and discoveries with others?
  - interact with leader(s) and each other?

Flexibility
Did the program design make it possible for leaders to change locations, content and order of activities to fit the needs of each group of students?

Safety and Comfort
Did the program design ensure the safety and comfort of:

- students and teachers?
- leaders?
- the site?

Site(s)
Were the sites selected for the program and its activities:

- appropriate for the activities?
- appropriate for students age and abilities?

3. Effectiveness of the Leader

The content and design of a program may be top notch, but effective school programs also depend heavily on the skills of the group leader. The following headings and questions can help you assess the human component.

Presentation/Delivery
Did the program leader(s):

- display of enthusiasm
  - for topic(s)?
  - toward working with students?
- use active, vivid language?
- use her/his voice effectively by:
  - changing the pace of speaking?
  - changing volume and inflection?

Organization of Students
Did the leader(s) organize students so that all could see, hear and be included in all activities?

Inclusion
Did the leader(s):

- appear to be talking to everyone?
- encourage and respond to questions from students and teachers?
- start and sustain student involvement by:
  - encouraging students and teachers to ask questions?
  - encouraging hands-on interaction with the environment?

Awareness of Student Needs
Was the leader(s)

- regularly checking student and teacher comfort?
- aware of issues and situations that might effect student and teacher safety?

Flexibility
Did the leader(s) adjust the pace, content and location of the program to fit the needs of the students, teachers and fit the conditions at the delivery site?

Keeping to the Subject
Was the leader able to steer questions and lines of enquiry back to the main subject areas of the program?

When To Evaluate

You can evaluate school programs and projects at several stages of development and delivery. The following is a brief overview of the types of evaluation.

Front-End Evaluation

Front-end evaluation seeks to determine what students know and what they want to know. This is conducted during the very early stages of program/project development. Here, your design team will look at the characteristics of the target grades, including what they already know about the subject, levels of physical, cognitive and emotional development, cultural and educational background, interests, motivations and preferences. Information on student physical and cognitive development is available in the literature and through local school boards (see References).

Formative Evaluation

Formative evaluation is conducted as you develop your program. The aim is to fine-tune the program before you commit funds to expensive support materials, promotion and leader training. At the formative stage, you can pilot different parts of the program and seek teacher and student response. Evaluators observe how students react to the presentations, levels of participation and how students interpret and retain information. Direct teacher and student feedback is often used. Bearing in mind that student reactions will vary based on age, interest in the subject, and learning style, the evaluator compares the student responses to the program's goals and objectives. If key goals and objectives are not met, this is the time to change or modify the program.

Typically the aims of formative evaluation may include:

- to asses the clarity of messages
- to gauge and increase student motivation to engage and learn
- to measure and increase retention of messages
- to identify skills and training needs of group leaders

Student learning and engagement are affected by many variables. Formative evaluation can assess many of the factors that can impact the effectiveness of an entire program, including:

- the location of program elements in the presentation
- repetition of messages
- reinforcing messages with graphics or interactive objects or exercises
- presentation techniques of group leaders

Summative Evaluation

Summative evaluation is the most common and occurs after the program is already operating. It answers the question, how well does the program or project work?

Summative evaluation can occur at three levels:

- Self Evaluation - by the program leader
- Peer Evaluation - by other members of an education crew, by the program supervisor or by an outside expert
- Participant Evaluation - by students, teachers and school principals
  (for further detail see Deciding How to Evaluate, below)

Large samples are usually used in summative evaluations. Statistics may be used to examine aspects of the findings. For a detailed review, see Deciding How to Evaluate (below).

Evaluation Checklist

Student Learning and Participation

- ❑ Did the students learn anything?
- ❑ Did the students learn what you wanted them to learn?
- ❑ Did you engage the students in different learning styles?
- ❑ Was the program design effective for this grade level?

Goals and Objectives

- ❑ Was the program design effective for this grade level?
- ❑ Did your program follow the objectives of the site or agency?
- ❑ Did you fulfill the objectives of your program?

Delivery and Structure

- ❑ Were you effective in your delivery of the program?
- ❑ Did the program have:
- ❑ a clear introduction
- ❑ a clear storyline connecting the parts into a coherent whole
- ❑ several inter-connected parts
- ❑ a clear end or conclusion
- ❑ a summation

Popularity of the Program or Project

- ❑ Did the number of classes and grade levels expected book your program?

Formal and Informal Evaluation

An evaluation system may range from formal to informal. A formal evaluation may include a set procedure with a printed evaluation form, to be filled out by designated evaluators, perhaps followed by an interview. Copies of the results may be sent to funding agencies and partners.

An informal evaluation may consist of a discussion between program leaders or even a short, quiet time of reflection by a lone group leader after the students have left.

The Evaluation Process

Focus on Students

Students should be the key focus of any evaluation: Are they learning something?

Observing Student Responses

You can use several techniques to assess student response, including:

- tracking students throughout the program, documenting what they do
- timing how long students stay engaged in each of the program's discussions and activities
- identifying the kind of student behaviors the program stimulates, including social interactions

These observations are best made unobtrusively by an outside observer (a supervisor, or co-worker). People leading a group will be much too occupied to conduct this type of work.

You also can use informal interviews with students or student reports, written soon after the program. Here students describe the main program theme in their own words, or they rate their enjoyment on a five-point scale.

If you follow Rick's example in Module 3, you will also build into the program evaluation activities that reveal – to you and perhaps your participants – how participant attitudes, skills and understanding are progressing.

If you are evaluating the programs or projects of others, you should be asking the same questions. But remember: be unobtrusive. You do not want to interfere with the engagement of the leader with the students.

Deciding How To Evaluate

There are many aspects of your program that you can evaluate. It is important to be clear and to select the right method. You will also face various limitations or constraints in how you conduct your evaluation – the biggest usually being time, money or both.

Three Major Evaluation Systems

The design of the evaluation will vary according to who is conducting the evaluation.

Self-Evaluation

Self-evaluation is a process where you alone review the effectiveness of your program. You may develop a formal self-evaluation form, a simple informal review of the program, or both.

Questions such as: "Could I have done better?" need to be used with caution. Most program leaders would probably always answer, "Yes." You need to focus on specific aspects you could improve – keeping to the objectives of the program, or placing yourself in a better position to be seen by the whole group. These specifics help you incorporate evaluation in an ongoing, productive way. Better questions might be:

> What did I do well?
> What one thing could I improve on in the next program?

Some organizations and agencies have developed self-evaluation forms for staff and volunteers.

Evaluation by Supervisors and Peers

Your supervisor and co-workers can evaluate your programs formally, using printed instruments like evaluation forms, or informally in conversations after a program. Both methods are useful, but make sure that your evaluations are specific and focussed (See the sidebar: Making Your Own Evaluation Form).

A very good guide for conducting effective supervisor evaluations is, Reaching for Excellence: The Process of Interpretive Critiquing by William J. Lewis produced and distributed by the Interpretation Publications and Resource Center (this booklet and video is out of print but will be available through large libraries).

Evaluation By Target Groups

Teachers

Teacher participants can tell you a lot about the effectiveness of your program. They are the experts on teaching and student behaviour and they know their students. Many group leaders eagerly solicit their input.

Students

Students can tell you about the effectiveness of your program through:

- their responses to activities and questions during the program
- their behaviour during and after your program
- answering direct questions in student feedback forms

Making Your Own Summative Evaluation Form

Each program and project you develop will have unique goals and objectives, so it is unlikely that you will be able to use an evaluation system from another group or agency. It is also difficult to develop an effective generic evaluation form that will be relevant to several types of programs or projects. Instead, you may have to develop your own form for each situation.

Who Will Do The Evaluation

The first step is to decide who will conduct the evaluation – supervisors, teachers, students. Having a clear picture of the evaluator will help you to:

- select key objectives from your planning form for evaluation – e.g., a teacher evaluation form may concentrate on testing whether teachers feel curriculum goals are being met
- use appropriate language – e.g., evaluation forms directed to Grade 4 students must use language at the student's level
- determine the number of and complexity of questions – e.g., busy supervisors may not have time to complete a lengthy form; they may require a shorter, one-page evaluation.

What Will Be Evaluated

Choosing "What to Evaluate" is itself a complex task. It may take you several runs through to select a reasonable number of criteria for your form. The steps listed below will identify issues that will help you refine your form.

When Will The Evaluation Take Place

Select one or more evaluation times from the following:

Evaluations During the Program

Outside observers, such as teachers and supervisors who are not directly involved in program delivery can usually conduct their evaluation while the program is in session, as long as they do not interfere with student-leader interactions. Group leaders can also conduct simple, informal evaluations throughout the program, without actually asking students to break the flow of the program to participate in the evaluation process. (See the examples throughout Rick's School Program, Module 4.)

Evaluation by an outside evaluator during a program may be detailed and comprehensive.

Evaluations After the Program

Post-program evaluations can involve input from student and teacher participants or from outside observers. Most leaders prefer to conduct these evaluations immediately after the program, while activities and incidents are still clear in the evaluators' minds. However, time constraints, such as the need for students and teachers to return to school, may require that evaluations occur several days after the program. Program leaders often find that such delays reduce the number of evaluations that are returned. Evaluators forget, or they lose the evaluation forms.

Designing the Questions

Designing effective questions is essential to the success of your evaluation. This section discusses two common rating scales used in evaluation questionnaires.

Global Rating Scales

This technique is commonly used in evaluating school programs. The evaluator is given criteria such as:

> The program leader works well with children
> or
> How well did you like this program?

The evaluator is asked to rate the criteria based on a scale between one and five, or one and three, where one represents excellence and the higher numbers represent diminishing levels of performance.

Advantages

This system is simple and provides a compact format to address a large number of criteria on a single page.

Continued on page 72

Using Your Evaluation Results

Now that you've conducted an evaluation, what the heck do you do with the data you've collected? First, remember the goal of evaluation is to help make your program effective.

What Worked, What Didn't Work And Why?

Make sure that the positive and negative aspects of the program are documented. This is of little value until you analyse why some aspects were successful and some were not.

What Are You Going To Do About It?

You must decide what to do about your findings:

- keep doing the successful parts of the program
- drop or modify activities and sections that are not working well
- modify content
- change program location
- change time or day
- change length or duration of program
- modify advertising method or locations
- provide training for group leader(s)

Unexpected Information

Sometimes, an evaluation may reveal valuable, unexpected information, such as student interest in other program types or topics, or the suggestion of new locations for parts of the program or project.

Having planned, developed, delivered and evaluated your program, you will probably now have a lot of ideas how to make it better.

Continued from page 70

Disadvantages

Global rating scales do not clearly define performance levels. The evaluations can vary greatly between evaluators and even between evaluations by the same evaluator – e.g., a level two on a scale of one to five can mean something different to each person who evaluates the criteria. This type of information cannot be summarized or compared reliably.

Behaviorally Anchored Rating Scales (BARS)

BARS were developed to remove much of the uncertainty and evaluator bias encountered in global rating scales. Here, each level on the scale is defined with a clear level of performance. The following are two examples of BARS:

Example 1:

Based on your observation of the program, which best describes the level of skill of the group leader? (check one)

- ❑ 1. Leaps tall buildings with a single bound
- ❑ 2. Needs running start to leap tall buildings
- ❑ 3. Can leap over short buildings only
- ❑ 4. Crashes into buildings when jumping them
- ❑ 5. Does not even recognize buildings

Example 2:

Presenter's Encouragement of Student Questions (check one)

- ❑ 1. The leader often encouraged questions, asked pertinent questions that the students could answer, and gave them many chances to touch, hear, smell or see objects and features being discussed.
- ❑ 2. The leader seldom encouraged student questions, asked few questions that the students could answer, and gave them few chances to touch, hear, smell or see objects and features being discussed.
- ❑ 3. The leader did not encourage student questions, nor ask questions of the audience that they could answer, and did not give them any chances to touch, hear, smell or see objects and features being interpreted.

Advantages

This system:

- defines each rating level clearly
- is suitable for both experienced and inexperienced evaluators
- is comparable between:
  - evaluations by different evaluators
  - evaluations conducted over the life of the program

Disadvantages

The system is more complex, requiring more time:

- to develop
- for evaluators to read and assess

The design with its detailed ratings also requires more pages per criteria. This will often:

- make evaluation forms more costly
- intimidate evaluators by their thickness and apparent complexity

Test Drive Your Evaluation Form

A final step after you have developed your evaluation form is to try it out yourself and then pilot it in a real-life situation. Look for problems in wording, time needed to fill out the form etc. Make any required modifications and you will have a functional evaluation form.

Develop a Program Evaluation Plan

Now that you have an evaluation form, it is time to devise a plan to use it effectively. An evaluation plan identifies the following:

- Who will conduct the evaluations?
- When will evaluations take place – e.g., during or after the program?
- How often will the evaluation be conducted – e.g., after every program, once a month, three time each year?
- How will the results be tabulated?
- What is the procedure for responding to findings of the evaluations

Implement Your Evaluation Plan

The final stage is simple. Follow your Evaluation Plan. The information you gain will ensure you have an effective education program.

Pre-Test

Do you already have the knowledge covered in this module? Test yourself with the following questions. Check yes or no for each question. If all your answers are yes, you can move to the next module. If one or more of your answers are no, it may be useful to read through this module.

Do you:	Yes	No
1. Do you have a coherent process for gathering and implementing teacher or group leader feedback in the early stages of developing your project?	❑	❑
2. Do you follow a project planning process that is clear to all?	❑	❑
3. Does your project planning process include clear goals and objectives or learning outcomes for participants?	❑	❑
4. Does your project planning proceedure take into account the needs of your participants, a risk assesment and identify the how you will evaluate the success of your project?	❑	❑

Diane's Collaboration Dilemma

Diane is education coordinator of the Salmon Valley Nature Club. For the past three years, the club has been working informally with Mrs. Post's Grade 5 classes, helping with a field study and mapping project of the Salmon Creek watershed.

The club has decided to formalize their work with schools and to develop a watershed ecology activity pack for students and teachers in their school district.

After writing a project plan, with the cooperation of Mrs. Post and several other teachers, the club has assigned Diane to look for funding for the project.

What is Collaboration?

Collaboration is the art of independent groups working together to achieve common goals.

The Continuum of Collaborative Relationships

Collaboration can involve many types of relationships. The following is a list of collaborative liaisons in order from simplest to most complex. Some authorities liken the continuum to that between a blind date (contract) and marriage (merger).

Traditional Contract

In this relationship, one party hires another party to provide goods and/or services for a set fee. In most cases, the deliverables and timing are clearly stated in a mutually agreed-upon, written contract. Many government grants are contracts between the grantor (government agency or crown corporation) and the grant receiver (your watershed stewardship group).

Information Exchange

This type of collaboration is often a networking as well as an information exchange. It is similar to a telephone date. Two parties exchange facts and findings about clients, resources and funding agencies. You also may share interests, likes, dislikes as well as long- and short-term aspirations. In this relationship there is little risk to both parties. You exchange information and both parties can assess compatibility – and either party can easily terminate the relationship if they are not interested.

Input/Output Co-ops

This type of collaboration can be likened to two people splitting the cost of a bulk order of potatoes. Each party benefits from a simple sharing of expenses and benefits. With partners, this could involve sharing the cost of staff/volunteer training, or sharing staff. This is a low stress relationship. Both parties can assess the other for compatibility and reliability with little risk. Some relationships remain at this level.

Joint Ventures

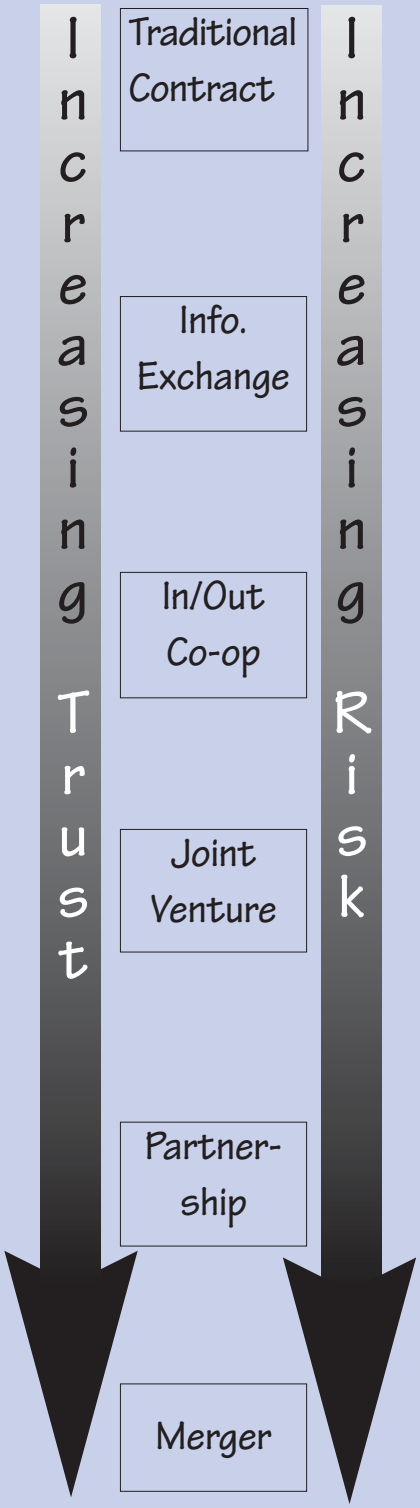
Joint ventures occur when two or more parties work together on a major project. It can be likened to a couple going on vacation together. Here, larger amounts of time and money are invested. There is greater risk to finances and reputation as each party has to depend more heavily on the other. An example could include the joint sponsorship of an annual watershed festival.

Partnerships

Partners maintain separate organizations with separate goals and objectives. However, within the partnership, they must have a mutually understood vision, as well as a clear set of goals and objectives. This could be likened to a couple living together or getting engaged. Examples of partnerships include two or more conservation groups working together to develop and deliver a watershed stewardship program or project to local schools. Here, the risks and benefits for each group are highly dependent upon the performance of the partner group.

Mergers

At this level, the two organizations amalgamate to form one entity, with a single mission. This is equivalent to a marriage where the resources of a couple are joined. This level requires the highest level of understanding and trust.



As the level of complexity of collaboration increases, the amount of risk rises. This heightened risk must be balanced by a corresponding increase in trust between parties.

One of her first contacts is Rob, a community liaison for the BC Ministry of Environment's Urban Salmon Habitat Restoration Program. Diane is pleased to find Rob helpful with funding information. He also has suggestions about other potential funding sources. She is surprised, however, when Rob says that another group, the Rock River Stream Keepers, is working in her watershed, exploring stewardship issues with school children. Rob urges Diane to contact the Stream Keepers because he is sure that his and other funding agencies would prefer a single, cooperative venture over two separate ventures from the two organizations.

Acting on Rob's advice, Diane contacts the president of the Rock River Stream Keepers. They agree to meet to discuss working together. Diane has now entered the world of joint ventures and collaboration. This module contains information Diane and her group would find useful at this point.

Collaborating

Often your watershed stewardship program or project can go more smoothly if, in addition to working with teachers and schools, you collaborate with other partners (See sidebar: What is Collaboration?).

Why Collaborate?

Collaboration can make your programs and projects more effective and efficient. Partners may share funding and facilities, as well as supply complementary skills and abilities.

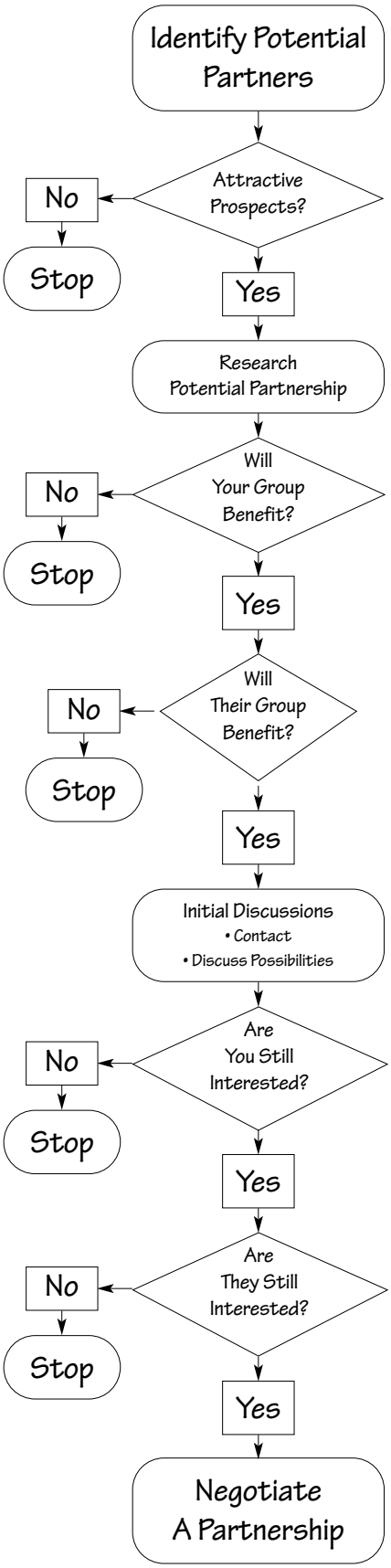


Figure 6.1
Collaboration
Flow Chart

What Partners Can You Collaborate With?

Partners may be:

- experts, such as scientists, researchers and educators from:
  - colleges
  - universities
  - government agencies
  - private institutions
- liaison officers of government departments
- colleagues, such as volunteer and staff of community stewardship groups who:
  - work in your community
  - are involved in similar projects elsewhere

How Partners Can Help

There are many useful things they might assist with including:

- helping in developing and delivering programs and projects
- answering questions about program content, design, delivery and funding
- providing technical expertise, such as:
  - identification of plants and animals
  - suggestions for design and delivery of programs and projects
  - effective techniques for presenting, leading and assessing school programs and projects
- donating, selling or lending tools and support materials for your projects
- giving or getting permission for you to do what you want to do
- suggesting school-related projects your group can work on
- advertising or publicizing your programs and projects to school groups that they work with
- combining their program(s) with yours to provide a more comprehensive education experience to teachers and students

Selecting Partners

First: Know Your Own Organization
Before you consider working with partners, it is wise to know your own group or organization well. Review the SWOT analysis of your group in Module 1. Knowing your group's strengths and weaknesses will help you decide whether

you really need partners. If so, select partners that have complementary skills and abilities and compatible goals and objectives.

Identify Attractive Prospects

The process of selecting and negotiating with partners is an important process that requires thought and planning. The following process can assist you (See also, Figure 6.1: Collaboration Flow Chart).

Potential Compatible Partners

First, you must find out as much as you can about the partners you are considering approaching. Look for information that gives you specific ideas about what support they can give.

- Review the groups and organizations listed in Appendix 2. Many of these groups have web sites where they describe the work they do. And many large organizations release an annual report that lists and describes their mission statement, goals and objectives and activities for the year.
- Talk to community advisers and government department liaison staff (See, Potential Partners: Government Agencies in this module and Appendices 3 and 4). These experts know most of the local, provincial and national organizations that are active in your area. Ask their advice on suitable partners.

Identify Areas of Mutual Interest

This process requires that you know and understand what you and your potential partner could bring to your relationship.

- List ways that your project can complement the work of each potential partner.
- List the ways you envision the partner can assist with your project(s).

Assess Your Potential Relationship

- Decide if there are areas of mutual benefit for cooperative ventures.

Contact Selected Potential Partners

- Introduce your group.
- Identify the following:
  - areas where you think the two groups can cooperate;
  - benefits that your potential partner will reap from the relationship;
  - how they will be helping you.

Negotiate Partnership

At this stage, your potential partner may have some ideas to add to the discussion. Listen carefully. Make sure that your goals and objectives are compatible. If they are, and your potential partner is still interested, now is the time to develop a collaborative relationship (See sidebar: What is Collaboration).

Tips for Working with Partners

The following tips will help make sure that you will communicate effectively with your partners and avoid uncomfortable misunderstandings.

- Prepare before you call, write or meet. Be as specific as possible about how you think you can work together.
- Always give your name and the name of your group.
- Be polite and respectful, even when you disagree or don't get what you want.
* Say thank you.
* Send thank-you notes.
* Invite partners to your project celebrations.
- Select one person from your group to call. Don't confuse your partners by having several different contact people.
- Make sure you have a complete list of all your questions before you call, so that you don't have to keep calling back each time something comes up.
- Document your contacts with partners in a project notebook, including:
  - names, phone numbers and addresses
  - who will do what in the partnership
  - all commitments that you make to your potential partners, including:
  - what will be done
  - who will do it
  - when it will be done
  - how the parties will evaluate the partnership
- Follow up on any commitments you make.
- Call back after a couple of days if someone hasn't returned your call.

Potential Partners: Government Agencies

A key mandate for many government agencies is to assist community groups in providing goods, services and information to the people of a municipality, province or country. The types of assistance that they provide include:

- expertise in specific fields
- funds to assist in the provision of specific types of goods and services
- education and information materials (e.g., brochures and booklets)
- skills training

Each government agency will have a set of guidelines identifying what groups they can assist and how they can help. The following are some of the key players in the Federal and Provincial governments.

Federal Agencies

Fisheries and Oceans Canada

The Salmonid Enhancement Project

The goals of this project are to:

- increase salmon production
- conserve threatened stocks
- contribute to sustainable harvests
- encouraged public involvement in salmon enhancement

SEP produces salmon – through hatcheries, spawning channels and lake enrichment – that account for about 10 to 20 per cent of the total annual Canadian catch.

Community involvement and partnerships are central to the program. SEP works with community groups, other agencies and industry on hands-on stream and watershed restoration and enhancement projects. Many community groups are engaged in watershed stewardship under SEP's Stream Keepers Program.

For more information, call the Community Advisor in your area (see Appendix 4).

Provincial Agencies

The BC government has numerous agencies and programs that may assist with your watershed stewardship programs and projects. Appendix 3 provides details on

many contacts who can provide expertise, funding or both.

The following are some of the key potential provincial partners:

- Community Skills Centres
- Fisheries Renewal BC (FRBC) Watershed Restoration Program
- Fisheries Renewal BC Planning
- Habitat Conservation Trust Fund
- Urban Salmon Habitat Program (USHP) Partnership Program
- Wild BC Environmental Education in Action
- Naturescape British Columbia
- Public Conservation Assistance Fund

Higher Learning Institutions

Universities and colleges are hotbeds of research, applied information and training. Most higher learning institutions are publicly funded and have a mandate to provide technical support to community groups. The following are some of the ways that community groups can forge partnerships with these institutions.

Research
Professors, instructors and students may be actively involved in research that may be directly related to your group's project(s) – e.g., the effects of deforestation on watersheds or the ecological recovery of streams after natural or human-induced habitat damage. Many researchers are looking for research sites and reliable partners. Check with local and regional institutions to see if there are researchers interested in your site or projects.

Expertise
If you have a technical problem there may be an answer available through a university or college through professors, students and technical staff.

Training
Most universities and colleges have extension education departments that provide short and long courses in a wide range of specialties ranging from ecology to teaching techniques. Check out the extension education brochures and course outlines of your local higher education institutions.

University of British Columbia Urban Salmon Habitat Restoration Program.

www.landcentre.ubc.ca/urban/ushp.html
The Urban Salmon Habitat Program encompasses the following initiatives:

- protecting and restoring salmon habitat in urban areas
- encouraging stewardship projects by providing funding and technical resources to community-based organizations, for activities including:
  - public education
  - habitat resource assessment
  - landowner contact programs
  - watershed planning
  - monitoring and evaluation
  - rehabilitation and restoration
- sharing costs and staffing between the province, regional districts, municipalities and communities – funds will be available to help support local government in strategic Georgia Basin urban centres.
- providing eight new BC government staff to act as a resource for locally-based salmon habitat conservation initiatives
- helping to provide educational materials and initiatives that the Rock River Stream Keepers raise awareness of conservation issues and promote stream stewardship

Local Regional and National Groups

There are countless individuals and organizations active in aspects of watershed stewardship at the local, regional and national levels. Appendix 2 lists many of community groups that may be contacts and potential partners in your watershed projects.

It can be confusing, frustrating and, perhaps, overwhelming to determine which of these groups may be active in your watershed or nearby community. If you are having difficulty, contact your federal SEP community advisor or USHP representative for suggestions.

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Planet Drum Foundation. *Discovering Your Life Place: A First Bioregional Workbook*. Planet Drum Foundation

Map Sources For BC

Geographic Data BC

Customer Support
Geographic Data BC

A product list summarizing accessible products is available. Contact the centre and ask for an index for your area of interest.

Mailing Address
Customer Support
Geographic Data BC
PO BOX 9355 STN PROV GOVT
VICTORIA BC V8W 9M2

Office
Fourth Floor, 810 Blanshard St.,
Victoria, BC Canada
Tel: (250) 356-LAND (356-5263)
Fax: (250) 387-3022
E-Mail: support@mail.gdbc.gov.bc.ca
www.env.gov.bc.ca/gdbc/mapsbc/

Other Internet Access

Geographic Data BC. Geographic Data BC Catalog.

www.env.gov.bc.ca/gdbc/mapsbc/mapcat.htm
Geographic Data BC. Base Mapping. Base maps, including TRIM (diazo paper prints) are distributed by MAPS-BC from an authorized map dealer in your area. Some map dealers stock an inventory of base maps, most notably TRIM, of their local area. Note: This site describes the types and scales of base maps available through MAPS BC dealers.
www.env.gov.bc.ca/gdbc/mapsbc/mapbase.htm

Geographic Data BC. Provincial Digital Atlas.

www.env.gov.bc.ca/gdbc/mapsbc/mapatlas.htm

Geographic Data BC. *Aerial Photography and Associated Products*.

(Most areas of the province are covered by air photos less than ten years old, with large areas covered by small scale (1:60,000 or 1:70,000) photography.)
www.env.gov.bc.ca/gdbc/mapsbc/mapphoto.htm

Geographic Data BC. *Maps BC Agents in BC.* www.env.gov.bc.ca/gdbc/mapsbc/bc_deal.htm

Geological Survey of Canada

Bedrock Geology Maps
Bedrock Geology Maps for British Columbia have been produced by the Geological Survey of Canada (GSC) and by the Geological Survey Branch (BCGS) of the Ministry of Energy, Mines and Petroleum Resources.
GSC maps cover all of the province at a scale of 1:250 000.

Contact
Maps and Publications
Geological Survey of Canada
100 West Pender, 6th Floor
Vancouver, BC
V6B 1R8
Tel: (604) 666-0271

BC Conservation Data Centre

The British Columbia Conservation Data Centre (CDC) collects information on the rare and endangered plants, animals and plant associations in the province. Information is compiled and maintained in a computerized database providing a centralized source of information on the status, locations and level of protection of these rare organisms and ecosystems.
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Salmonids in the Classroom - Primary Update

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- Chucky Chum Audio Tape and Book

Egg-to-fry Display
Life Cycle Puppets
In-service Sessions
Classroom Incubation Program
Storm Drain Marking Program
Brochure Sets

Salmonids in the Classroom - Intermediate Package: English or French

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Watershed Works
Fish in the Floodlights
Upstream Racers
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Life Cycle Puppets

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Shared Learnings K–7 with Watershed Stewardship

Social Studies

A Matrix of Watershed Stewardship Curriculum For Public Schools developed by Ann Finlayson, 2000.

	Grades K–1	Grades 2–3	Grade 4	Grade 5	Grade 6	Grade 7 (Ancient World – A.D. 500)
Society and Culture	• describe the differences between needs and wants • identify some characteristics of their community	• describe ways members of a community meet one another's needs • identify changes in the school and community throughout the year	• describe how people's basic needs are met in a variety of cultures • demonstrate understanding of timelines		• describe ways social and economic organizations satisfy needs and wants in a variety of cultures	
Politics and Law		• explain their roles, rights, and responsibilities within the community • describe functions of local governments		• explain citizenship in terms of participation in the community, province, country, and world		
Economy and Technology		• describe ways in which communities are interdependent • describe the development of various BC communities in relation to their location and availability of resources • identify contributions of various occupations to BC communities • describe how technology affects individuals and communities		• analyse the relationship between development of communities and their available natural resources • explain how supply and demand are affected by population and the availability of resources	• assess effects of urbanization and technology on lifestyles and environments	

Shared Learnings K-7 with Watershed Stewardship

Social Studies

	Grades K-1	Grades 2-3	Grade 4	Grade 5	Grade 6	Grade 7 (Ancient World - A.D. 500)
Environment	• use picture maps to identify home and school within the community • demonstrate awareness of natural and human built environmnets • describe how they interact with different environments • practise responsible behaviour in caring for their immediate environment	• create and interpret simple maps using cardinal directions, symbols, and simple keys • identify and describe major landforms and water bodies in British Columbia and Canada • describe how physical environment influences human activities • demonstrate understanding of their responsibility to local and global environments	• locate and map world continents and oceans using simple grids, scales, and legends • analyse how people interact with their environment, in the past and in the present	• use latitude and longitude to locate major political features of Canada, including provinces and territories and their capitals • locate and describe major physical features of Canada using topographic and thematic maps • describe the diverse distribution of natural resources within Canada • demonstrate understanding of sustainability, stewardship, and renewable vs non-renewable natural resources • assess effects of lifestyles and industries on local and global environment	• interpret and use graphs, tables, aerial photos, scales, legends, and various types of maps • relate population growth and settlement patterns to resource consumption and depletion in selected countries • compare use of resources and conservation practices in Canada and other countries	• locate and describe current and historical events • analyse ways that people's interactions with their physical environments change over time • evaluate the impact of natural processes and human-induced changes on communities

In general in Social Studies students are expected to develop the following skills:
- identify a problem or an issue
- gather, interpret, analyse and present information
- practise active citizenship

Specifically to the Environment organiser the students are to gain an understanding of natural environments and relationships between people and natural systems. They apply their knowledge of physical environments to resource development, stewardship and sustainability. As the table shows mapping and use of maps are to be used extensively along with research and presentations.

Shared Learnings K–7 with Watershed Stewardship

Science

In general students are expected to develop an understanding of scientific processes and the work of scientists. The development of these skills is carefully sequenced from Kindergarten up.

	Grades K–1	Grades 2–3	Grade 4	Grade 5	Grade 6	Grade 7
Applications of Science		• describe the ways people in the community use science • conserve resources in the school		• identify ways science is used responsibly in their communities		• investigate how models may be used to think about processes that cannot be observed directly • analyze costs and benefits of alternative scientific choices related to a community problem
Life Science	• describe the characteristics of a variety of plants • describe the diversity of plants within the home and school environment • collaborate with others in the care of a plant or animal • determine the requirements of healthy plants and healthy animals • identify the stages in the life cycle of a plant and of a pet or other animal • demonstrate how plants and other organic material can be recycled back into the environment	• demonstrate knowledge of how plants use water, nutrients, and light • compare and contrast plant life cycles • describe structures that enable plants to survive in different environments • suggest reasons for the endangerment or extinction of a plant species • describe structures that enable animals to survive in different environments • demonstrate a knowledge of what animals need to survive • suggest reasons for	• relate the structure and behaviour of local organisms to their survival in local environments • discuss how changes in an organism's habitat can affect the survival of individual organisms and entire species • give examples of how the differences in individuals of the same species may give an advantage in surviving and reproducing • relate the growth and survival of organisms to a variety of conditions	• identify living resources in the local environment • describe how humans use B.C.'s living resources • describe the known and potential environmental impacts of using B.C.'s living resources • devise a strategy for sustaining a living resource	• describe how all living things belong to one of five kingdoms (Plants, Animals, Monera, Protista, Fungi)	• describe all organisms in terms of their roles as part of interconnected food webs • describe ways in which species interact with each other • compare and contrast the major biogeoclimatic zones of B.C. • determine the limiting factors for local ecosystems • outline the stages of recovery of a damaged local ecosystem

Shared Learnings K–7 with Watershed Stewardship

Science

	Grades K–1	Grades 2–3	Grade 4	Grade 5	Grade 6	Grade 7
Physical Science			• analyse changes in electrical usage during the last 100 years			• use the pH scale to classify a variety of substances • identify chemical reactions that are important in the environment • assess the impact of chemical pollution on a local environment • collect, analyse, and interpret data on environmental quality • describe different sources of energy that can be harnessed to produce electrical energy • evaluate energy options available for particular purposes in the community
Earth and Space Science	• describe the characteristics of rocks, soil, and water • classify rocks and soil according to their physical characteristics • identify living and non-living materials in soil • describe the effects of water and wind on rocks and soil • describe the effects of weather on living things • identify characteristics of each season		• categorize the various uses of water • outline the importance of water for life • use the physical properties of water to describe or illustrate the water cycle • compare and contrast fresh water and salt water environments • describe human impacts on the	• identify local and global factors responsible for weather systems • describe the key features of a variety of weather conditions • identify and measure the factors that influence local weather • use instruments to measure weather • describe the consequences of extreme weather conditions • identify the methods of extracting and processing non-living resources • describe how non-living resources are used in society • describe the environmental impacts of using non-living resources		

Potential Partners: Non-Government Organizations

Conservancies

Land Trust Alliance of British Columbia
#204 - 338 Lower Ganges Road
Salt Spring Island, BC V8K 2V3
Tel: (250) 538-0112
Web Page: www.island.net/~ltabc/

Georgia Strait Alliance
201-195 Commercial St.,
Nanaimo, BC V9R 5G5
Tel: (250) 753-3459
Fax: (250) 753-2567
Email: gsa@island.net
Web Page:
onenw.org/~gsa/index.html

Bowen Island Conservancy
Box 301
Bowen Island, BC V0N 1G0
Tel: (604) 947-0483
Email: suefast@istar.ca

Burns Bog Conservation Society
11961 88th Avenue, Suite 202
Delta, BC V4C3C9
Tel: (604) 572-0373
Fax: (604) 572-0374
Email: burnsbog@uniserve.com
Web Address:
www.burnsbog.paconline.net/

Central Okanagan Parks & Wildlife Trust
Box 1233, Stn. A
Kelowna, BC V1Y 7V8
Tel: (250) 861-6160
Fax: (250) 861-6156

Coast Islands Conservancy
RR 1, S-5, C-40
Mayne Island, BC V0N 2J0
Tel: (250) 539-2034
Email: rpither@gulfislands.com

Comox Valley Land Trust
Box 3462
Courtenay, BC V9N 5N5
Tel: (250) 337-1929
Email: swp@mars.ark.com

Cowichan Community Land Trust
#6 - 55 Station Street
Duncan, BC V9L 1M2
Tel: (250) 746-0227
Fax: (250) 746-1932
Email: cclt@island.net
Web Address:
http://www.island.net/~steward/

Denman Conservancy Association
PO Box 60
Denman Island, BC V0R 1T0
Tel: (250) 335-0517
Fax: (250) 335-2731
Email: decosson@mars.ark.com

Discovery Coast Greenways
Box 291
Campbell River, BC V9W 5B1
Tel: (250) 287-8565
Email: mar@online.bc.ca

Ecotrust Canada
#420 - 1122 Mainland Street
Vancouver, BC V6B 5L1
Tel: (604) 682-4141
Fax: (604) 682-1944
Email: info@ecotrustcan.com
Web Address:
www.ecotrustcan.org

Galiano Conservancy
R.R. #1 Porlier Pass
Galiano Island, BC V0N 1P0
Tel: (250) 539-2424
Fax: (250) 539-2424
Email:
galiano_conservancy@gulfislands
.com

Habitat Acquisition Trust
Box 8552
Victoria, BC V8W 3S2
Tel: (250) 388-4520
Fax: (250) 388-5705
Email: cob@islandnet.com

Islands Trust Fund
200-1627 Fort St.
Victoria, BC V8R 1H8
Tel: (250) 405-5174
Fax: (250) 405-5155
Email: cstewart@islandstrust.bc.ca

Land Trust Alliance of British Columbia
204-338 Lower Ganges Road
Salt Spring Island, BC V8K 2V3
Tel: (250) 538-0112
Email: ltabc@saltspring.com

Linnaea Farm Society
Box 98
Manson's Landing,BC V0P 1K0
Tel: (250) 935-6370
Fax: (250) 935-6370

Mount Tolmie Conservancy Association
3503 Camcrest Place
Victoria, BC V8P 4V6
Tel: (250) 592-9089
Fax: (250) 592-9809
Email:
upgareau@mail.islandnet.com

Nanaimo and Area Land Trust
2948 Hammond Bay Road
Nanaimo, BC V9T 1E2
Tel: (250) 758-5490
Email: hourston@island.net
proj2000@nanaimo.ark.com

Nanaimo and Area Land Stewards Society
2948 Hammond Bay Road
Nanaimo, BC V9T 1E2
Tel: (250) 758-5490
Fax: (250) 754-7530
Email: dhooper@island.net

Nature Conservancy of Canada
827 West Pender St., 2nd floor
Vancouver, BC V6C 3G8
Tel: (604) 656-6286
Fax: (604) 656-6286
Email:
nature@natureconservancy.ca

Nature Conservancy of Canada - Victoria
202-26 Bastion Square
Victoria, BC V8X 1H9
Tel: (250) 479-3191
Fax: (250) 479-0546
Email: www.natureconservancy.ca

Pender Islands Conservancy Association
Box 52
Pender Island, BC V0N 2M0
Tel: (250) 629-3299
Email: taylors@gulfislands.com

Quadra Island Conservancy and Stewardship Society
PO Box 202
Heriot Bay, BC V0P 1H0
Tel: (250) 285-2331
Fax: (250) 285-2331
Email: bara@oberon.ark.com

Rosewall-Bonnel Land Trust Society
563 West Cescent
Qualicum Beach, BC V9K 1K2
Tel: (250) 752-6585
Fax: (250) 752-7085
Email: bharany@macn.bc.ca

Salt Spring Island Conservancy
PO Box 551
Salt Spring Island,BC V8K 2W3
Tel: (250) 653-4632
Fax: (250) 653-4362
Email: richd@saltspring.com

Savary Island Land Trust Society
Box 141
Lund, BC V0N 2G0
Tel: (604) 414-0073
Fax: (604) 485-2868
Email: LIZ@pradm.pr.mala.bc.ca

Silva Forestry Foundation
Box 9
Slocan Park, BC
V0G 2E0
Email: silvafor@mail.netidea.com

The Land Conservancy of British Columbia
5739 Old West Saanich Road
Victoria, BC
V8X 3X3
Tel: (250) 361-7693
Fax: (250) 44-2251
Email:
conservancy@conservancy.bc.ca

Turtle Island Earth Stewards
Box 3308
Salmon Arm, BC V1E 4S1
Tel: (250) 832-3993
Fax: (250) 832-9942
Email: ties@jetstream.net
Web Address:
www.landtrust.org/turtleisland

Wild Bird Trust of BC
124-1489 Marine Drive
West Vancouver, BC
V7T 1B8
Tel: (604) 922-1550
Fax: (604) 922-8407
Email: minerva@direct.ca

Conservation Groups and Agencies

Alberni Environmental Coalition
Box 1087
Port Alberni, BC V9Y 7L9
Tel: (250) 723-4666
Fax: (250) 723-4666
Email: aec@portaec.net
Web Address: www.portaec.net/

Alouette Field Naturalists
12554 GraceSt.
Maple Ridge, BC V2X 5N2
Tel: (604) 463-8743

Arrowsmith Ecological Association
Box 179
Errington, BC V0R 1V0
Tel: (250) 248-2894
Fax: (250) 248-8670

Association Of Whistler Area Residents For The Environment
Box 35-3500
Whistler, BC V0N 1B0
Tel: (604) 932-4457
Fax: (604) 932-3776

BC Watershed Alliance
3360 West 53rd Ave
Vancouver, BC V6N 4C9
Tel: (604) 940-9810
Fax: (604) 940-9833

BC Wetlands Network
PO Box 41
Delta, BC V4K 3N5
Tel: (604) 940-1540
Fax: (604) 940-9833
Email: mkwetnet@direct.ca

BC Wildlife Federation
#303-19292-60th Avenue
Surrey, BC V3S 8E5
Tel: (604) 533-2293
Fax: (604) 533-1592
Email: bcwf@istar.ca

BC Conservation Foundation
#206 - 17564 - 56a Avenue
Surrey, BC V3S 1G3
Tel: (604) 576-1433
Fax: (604) 576-1482

BC Environmental Network
610-207 W. Hastings
Vancouver, BC V6B 1H7
Tel: (604) 879-2279
Fax: (604) 879-2272
Email: info@bcen.bc.ca
Web Address: www.bcen.bc.ca/

BC Spaces for Nature
Box 673
Gibsons, BC V0N 1V0
Tel: (604) 886-4632
Fax: (604) 886-3768
Email: info@bcen.bc.ca
Web Address: www.bcen.bc.ca

BC Wild
Box 2241, Main Post Office
Vancouver, BC V6B3W2
Tel: (604) 669-4802
Fax: (604) 669-6833
Email: jholmes@helix.net
Web Address:
www.helix.net/bcwild

Campbell River Environmental Council
c/o Wayne Gray, 1189 Park Dr.
Campbell River, BC V9W 1N2
Tel: (250) 923-4690
Fax: (250) 287-7052

Canada EarthSave Society
103-1093 West Broadway
Vancouver, BC V6H 1E2
Tel: (604) 731-5885
Fax: (604) 731-5805
Email: office@earthsave.bc.ca
Web Address:
www.earthsave.bc.ca/

Canadian EarthCare Society - Kelowna
Box 1810, Stn A (Street Address:
1476 Water Street)
Kelowna, BC V1Y 8P2
Tel: (250) 861-4788
Fax: (250) 868-3718
Email:
lmanch@ogopogo.edu.sfu.ca

Canadian Parks and Wilderness Society
502-475 Howe St
Vancouver, BC V6C 2B3
Tel: (604) 685-7445
Email: cpawsbc@direct.ca
Web Address:
cpaws.org/index.html

Canadian Rainforest Network
Box 2241 MPO
Vancouver, BC V6B 3W2
Tel: (604) 669-4303
Fax: (604) 669-6833
Email: crn@helix.net
Web Address: www.helix.net/~crn/

Cariboo Environmental Committee
Box 2066
100 Mile House, BC V0K 2E0
Tel: (250) 395-2347
Fax: (250) 395-2347

Cariboo Mountains Wilderness Coalition
Box 47008, Denman Pl Postal
Outlet
Vancouver, BC V6G 3E7
Tel: (604) 685-8269
Fax: (604) 681-8999

Carmanah Forestry Society
1431 Richardson
Victoria, BC V8S 1R1
Tel: (250) 381-1141
Fax: (250) 389-1848

Chetwynd Environmental Society
Box 2049
Chetwynd, BC V0C 1J0
Tel: (250) 788-2685
Fax: (250) 788-2685

Chilliwack Field Naturalists
Box 268
Chilliwack, BC V2P 6J1
Tel: (604) 795-5108

Clayoquot Biosphere Project
Box 67
Tofino, BC V0R 2Z0
Tel: (250) 725-2001
Fax: (250) 725-2433
Email: jon_darling@mindlink.bc.ca

Coast Islands' Conservancy
Box 3698
Courtenay, BC V9N 1B6
Tel: (250) 338-8028
Fax: (250) 539-2000

Coastal Ecosystems Research Foundation
1843 W 12th Ave.
Vancouver, BC V6J 2E7
Tel: (604) 736-5188
Email: megill@zoology.ubc.ca
Web Address:
www.bcu.ubc.ca/~megill/cerf/
index.htm

Comox Strathcona Natural History Society
Box 3222
Courtenay, BC V9N 5N4
Tel: (250) 337-8180

Cortes Island Forest Committee
Box 118
Manson's Landing, BC V0P1K0
Tel: (250) 935-6460
Fax: (250) 935-6757

Cowichan Estuary Preservation Society
RR #5, Box 20
Duncan, BC V9L 4T6
Tel: (250) 748-6582
Fax: (250) 748-8944

Cowichan Valley Naturalists
Box 361
Duncan, BC V9L 3X5
Tel: (250) 748-8506

Darke Lake Watershed Protection Alliance
RR 3, Site 44
Summerland, BC V0H 1Z0

Delkatla Wildlife Sanctuary Society
Box 187
Masset, BC V0T 1M0
Tel: (250) 626-5015

Ducks Unlimited Canada Coastal Office
WRPS Box 39530
(14343-44th Street, Surrey)
White Rock, BC V4A 9P3
Tel: (604) 591-1104
Fax: (604) 591-3164

Earth Friendship Centre Foundation
Box 7
Salmon Arm, BC V1E 4N2
Tel: (250) 832-7405
Fax: (250) 832-6874

East Kootenay Environmental Society
Box 8
Kimberley, BC V1A 2Y5
Tel: (250) 427-2535
Fax: (250) 427-3535
Email: ekes@cyberlink.bc.ca
Web Address:
www.cyberlink.bc.ca/~ekes/

East Kootenay Environmental Society - Creston Valley
Box 1837
Creston, BC V0B 1G0
Tel: (250) 428-9532
Email: ekes@cyberlink.bc.ca

East Kootenay Environmental Society - Golden Branch
Address:
Box 1946
Golden, BC VOA 1HO
Tel: (250) 348-2225
Fax: (250) 344-5225
Web Address:
www.cyberlink.bc.ca/~ekes/

East Kootenay Environmental Society - Invermere Branch
Box 2741
Invermere, BC VOA 1KO
Tel: (604) 342-5033
Web Address:
www.cyberlink.bc.ca/~ekes/

Ecological Rights Association
502 Craigflower Road
Victoria, BC V9A 2V8
Tel: (250) 380-2563
Fax: (250) 385-0068

Ecology Circle
375 Patricia Blvd
Prince George, BC V2L 3T9
Tel: (250) 563-5390

Environmental Fund of British Columbia
503 - 207 West Hastings St.
Vancouver, BC V6B 1H6
Tel: (604) 682-3439
Fax: (604) 857-813

Evergreen Foundation - Vancouver
410-744 W. Hastings St.
Vancouver, BC V6C 1A5
Tel: 1 (888) 426-3138 (toll free)
Fax: (604) 669-6222
Email: infobc@evergreen.ca
Web Address: www.evergreen.ca/

Federation Of BC Naturalists
321 - 1367 West Broadway
Vancouver, BC V6H 4A9
Fax: (604) 738-7175
Email: fbcn@intergate.bc.ca
Web Address:
www.members.xoom.com/fbcn

Forest Action Network
Box 625
Bella Coola, BC V0T 1C0
Tel: (250) 7995800
Fax: (250) 799-5830
Email: fan@alternatives.com
Web Address: fanweb.org

Forest Council
c/o Box 3
Crawford Bay, BC V0B 1E0
Tel: (250) 227-9550
Fax: (250) 227-9505

Fraser River Coalition
Box 157, 3456 Dunbar Street
Vancouver, BC V6S 2C2
Tel: (604) 263-4360
Fax: (604) 731-5311

Friends of Boundary Bay/Fraser For Life
PO Box 41
Delta, BC V4K 3N5
Tel: (604) 9401540
Fax: (604) 940-9833
Web Address:
www.bcwetlands.com

Friends of Caren
Box 272
Madeira Park, BC V0N 2H0
Tel: (604) 885-2398

Friends of Clayoquot Sound
Box 489
Tofino, BC V0R 2Z0
Tel: (250) 725-4218
Fax: (250) 725-2527
Email: focs@web.apc.org
Web Address:
diane.island.net/~focs/

Friends of Cortes Island
Box 3333
Manson's Landing, BC V0P1K0
Tel: (250) 935-6992
Fax: (250) 935-6992
Email: foci@web.apc.org

Friends of Cypress Provincial Park
2604 Lawson Avenue
Vancouver, BC V7V 2G2
Tel: (604) 922-7949
Fax: (604) 922-7949

Friends of Rowbotham Ridge Society
Box 262
Errington, BC V0R 1V0
Tel: (250) 954-1100
Fax: (250) 741-2687

Friends of Strathcona Park
Box 3404, 4791-4th Street
Courtenay, BC V9N 5N5
Tel: (250) 338-1944
Fax: (250) 338-1944
Email: fosp@web.apc.org

Friends of the Fraser Valley
c\o #324 - 256th Street
Aldergrove, BC V4W 2C2
Tel: (604) 856-6954

Friends of the Stikine
802 West 66th Avenue
Vancouver, BC V6P 2R6
Tel: (604) 301-1238
Fax: (604) 301-1239
Email:
maggie_paquet@bc.sympatico.ca
Web Address:
www.sierraclub.ca/bc/projects/stikine/

Georgia Strait Alliance
195 Commercial Street #201
Nanaimo, BC V9R 5G5
Tel: (250) 753-3459
Fax: (250) 753-2567
Email: gsa@island.net
Web Address: onenw.org/~gsa/

Gowgaia Institute
Box 638
Queen Charlotte
Haidi Gwaii, BC V0T 1S0
Email: gaia@island.net
Web Address:
www.spruceroots.org

Grand Forks Watershed Coalition
Box 1706
Grand Forks, BC V0H 1H0
Tel: (250) 442-8342
Fax: (250) 442-2877

Greater Ecosystem Alliance - BC DESK
Box 957
Nelson, BC VIL 6A5
Tel: (250) 355-2327
Fax: (250) 355-2327
Email: Econet: gea@igc.apc.org

Greater Victoria Ecological Network
59 Moss Street
Victoria, BC V8V 4M1
Tel: (250) 384-7357
Fax: (250) 382-4604

Greengrass Institute
Box 39
Denman Island, BC V0R 1T0
Tel: (250) 335-2283
Fax: (250) 335-0322
Email: grngrass@web.apc.org

Greenpeace - Vancouver
1726 Commercial Drive
Vancouver, BC V5N 4A3
Tel: (604) 253-7701
Fax: (604) 253-0114
Email: blyons@alternatives.com

Heritage Forests Society
623 Goldenrod Blvd
Delta, BC V4L 2H2
Tel: (604) 943-2759
Fax: (604) 943-2759

Heron Rocks Friendship Society
RR #1
Hornby Island, BC V0R 1Z0
Tel: (250) 335-0751
Fax: (250) 335-0751
Email: earlg@mars.ark.com

Island Watch Society
Box 315
Salt Spring Island, BC V8K 2V9

Islands Trust Fund
1627 Fort St, 2nd Floor
Victoria, BC V9R 1H8
Tel: (250) 952-4175
Fax: (250) 952-4193
Email: cstewart@islandstrust.bc.ca

Kaslo & District Environmental Society
Box 484
Kaslo, BC V0G 1M0
Tel: (250) 353-7350
Fax: (250) 353-7350
Email: ashaorack@selkirk.bc.ca

Lakes District Friends of the Environment
c/o Frank Lehmann, RR 2
Burns Lake, BC V0J 1E0
Tel: (250) 695-6366

Marine Life Sanctuaries Society Of BC
Box 48299
Vancouver, BC V7X 1A1
Tel: (604) 929-4131

Mission Environmental Society
8037 Caribou Street
Mission, BC V2V 5R1
Tel: (604) 820-9511
Fax: (604) 826-6075

Nelson & Area Watershed Committee
Bruce Martin, Davies St. Group
Box #1
Nelson, BC V1L 3V2

Northwest Wildlife Preservation Society
Box 34129, Station D
Vancouver, BC V6J 4N3
Tel: (604) 736-8750
Fax: (604) 736-9615

Okanogan Save Our Lakes
12601 Kidston Road
Vernon, BC V1B 1Z4
Tel: (250) 545-8772

Okanogan Similkameen Parks Society
Box 787
Summerland, BC V0H 1Z0
Tel: (250) 494-8996
Fax: (250) 494-1415

Osoyoos Lake Water Quality Society
c/o Box 251
Osoyoos, BC V0H 1V0
Tel: (250) 495-3341
Fax: (250) 495-3392

Pacific Salmon Alliance
PO Box 1086
101-1001 W. Broadway Ave.
Vancouver, BC V6H 4G4
Tel: (604) 255-3161
Fax: (604) 939-3940
Email: psa@island.net
Web Address:
www.island.net/~psa/

Pacific Stream keepers Federation
720 Orwell Street
North Vancouver, BC V7J 2G3
Tel: 1 (800) 723-7753 (toll free)
Fax: (604) 986-5688
Email: pskf@direct.ca

Peace Valley Environmental Association
Box 6062
Fort St. John, BC V1J 4H6
Tel: (250) 785-2105

Pender Harbour & District Wildlife Society
Box 220
Madeira Park, BC V0N 2H0

Prince George Naturalists
Box 1092, Station A
Prince George, BC V2L 4V2
Tel: (250) 963-7837

Quesnel Environmental Society
Box 4188
Quesnel, BC V2J 3J3
Tel: (250) 992-8742

Quesnel River Watershed Alliance
Box 1098
150 Mile House, BC V0K 2G0
Tel: (250) 296-4358
Fax: (250) 296-4358

Raincoast Conservation Alliance
PO Box 206
Bella Bella, BC VOT 1B0
Tel: (250) 957-2480
Fax: (250) 957-2444
Email: ikrcoast@islandnet.com
Web Address:
www.islandnet.com/~ikrcoast

Rivers Defense Coalition
Box 2781
Smithers, BC V0J 2N0
Tel: (250) 847-9693
Fax: (250) 847-6068

Royal City Field Naturalists
4752 Driftwood Place
Burnaby, BC V5G 4E3
Tel: (604) 430-8033

Sage Foundation
744 West Hastings St, Suite 410
Vancouver, BC V6C 1A5
Tel: (604) 669-6298
Fax: (604) 669-6222

Saltspring Island Water Preservation Society
1200 Mt Maxwell Road
Saltspring Island, BC V8K 2H7
Tel: (250) 537-9281
Fax: (250) 537-4192
Email: insight@saltspring.com

Save Our Parkland Association
Box 39028, Pt. Grey RPO
Vancouver, BC V6R 4P1
Tel: (604) 738-9305

Save-The-Cedar League
8995 Loos Road
Crescent Spur, BC V0J 3E0
Tel: (250) 553-2325
Fax: (250) 553-2325
Email: rzammuto@aol.com
Web Address:
home.iSTAR.ca/~zpt/rvt.html

Shuswap Assn. for the Promotion of Eco Desarrollo
186 O'Hara Place
Nanaimo, BC V9R 1Y2
Tel: (250) 753-1187

Shuswap Environmental Action Society
Box 1021
Salmon Arm, BC V1E 4P2
Tel: (250) 679-3693
Fax: (250) 679-8248

Sierra Club of BC - Lower Mainland Group
PO Box 3012, 349 West Georgia
Vancouver, BC V6B 3X5
Tel: (604) 669-7292

Sierra Club of BC - Victoria Group
502 Craigflower Road
Victoria, BC V9A 2V8
Tel: (250) 384-2468
Fax: (250) 385-0068
Email: jwight@islandnet.com

Sierra Club of Western Canada Foundation
576 Johnston St.
Victoria, BC V8W 1M3
Tel: (250) 386-5255
Fax: (250) 386-4453
Email: scbc@islandnet.com
Web Address:
www.sierraclub.ca/bc

Sierra Legal Defense Fund
Suite 214 - 131 Water Street
Vancouver, BC V6B 4M3
Tel: (604) 685-5618
Fax: (604) 685-7813
Email: sldf@sierralegal.org
Web Address: www.sierralegal.org

Slocan Valley Watershed Alliance
P.O. Box 139
Winlaw, BC V0G 2J0
Tel: (250) 359-7185
Email: gellox@netidea.com

Society For The Preservation of Kalamalka Lake
c/o 4217 - 25th Avenue
Vernon, BC V1T 7G9
Tel: (250) 542-4122
Fax: (250) 542-1834

Society for the Protection of Ayum Creek
PO Box 1282
Sooke, BC
Tel: (250) 642-7278

Society Promoting Environmental Conservation
2150 Maple Street
Vancouver, BC V6J 3T3
Tel: (604) 736-7732
Fax: (604) 736-7115
Email: enviro@spec.bc.ca
Web Address: www.spec.bc.ca

Soil & Water Conservation Society - BC Chapter
c/o Orris Burns; 123 Main Street
Vancouver, BC V6A 2S5
Tel: (604) 669-6711
Fax: (604) 669-5180

Southern Chilcotin Mountains Wilderness Soc.
2114 Kirkstone Place
North Vancouver, BC V7J 3R1
Tel: (604) 987-1232
Fax: (604) 654-7444
Email:
jay.macarthur@tc.resonet.com

Squamish Estuary Conservation Society
Box 1274
Squamish, BC V0N 3G0
Tel: (604) 898-5734
Email: see under ACTIVITIES

Steelhead Society of BC
130-1140 Austin Avenue
Coquitlam, BC V3K 3P5
Tel: (604) 931-8288
Fax: (604) 931-5074
Web Address:
www.flyfishing.com/ssbc/

Stewardship Pledge Program
Pacific Wildlife Research Center
5421 Robertson Rd.
Delta, BC V4K 3N2
Tel: (604) 946-8546
Fax: (604) 946-7022
Email: Duynstee@ec.gc.ca

Sunshine Coast Environmental Protection Project
RR1, Comp 8, Mission Site
Sechelt, BC V0N 3A0
Tel: (604) 885-3618

Sustainable BC
1123 South Dyke Road
New Westminster,BC V3M 5Y3
Tel: (604) 521-8052

T. Buck Suzuki Environmental Foundation
160 - 111 Victoria Drive
Vancouver, BC V5L 4C4
Tel: (604) 255-8819
Fax: (604) 255-3162

The David Suzuki Foundation
219-2211 West Fourth Avenue
Vancouver, BC V6K 4S2
Tel: (604) 732-4228
Fax: (604) 732-0752
Email: solutions@davidsuzuki.org
Web Address:
www.davidsuzuki.org/

The Living by Water Project
Address:
P.O. Box 7
Salmon Arm, BC V1E 4N2
Tel: (250) 832-7405
Fax: (250) 832-6874
Email: lbywater@jetstream.net

Trail & District Environmental Network
910 Portland Street
Trail, BC V1R 3X7
Tel: (250) 368-9131
Fax: (250) 368-5568

Tsolum River Enhancement Committee
c/o Father Charles Brandt, 2364 Catherwood
Black Creek, BC V9J 1J3
Tel: (250) 337-8525

University College of The Cariboo - Envir. Comm.
Box 3010
Kamloops, BC V2C 5N3
Tel: (250) 371-5516
Fax: (250) 371-5697
Email: hay@cariboo.bc.ca

Valhalla Wilderness Society
Box 329
New Denver, BC V0G 1S0
Tel: (250) 358-2333
Fax: (250) 358-7950
Email: vws@vws.org
Web Address:
www.rmec.org/valhalla/

Vancouver Foundation
Suite 1200, 555 West Hastings St,
PO Box 12132, Harbour Centre
Vancouver, BC V6B 4N6
Tel: (604) 688-4170
Fax: (604) 688-4170
Email:
info@vancouverfoundation.bc.ca

Vancouver Natural History Society
Box 3021
Vancouver, BC V6B 3X5
Tel: (604) 737-3074

Victoria Natural History Society
Box 5220, Station B
Victoria, BC V8R 6N4
Tel: (250) 479-2054

Vulnerable Ecologies Protection Society
06 Warder Place
Victoria, BC V9A 7H6
Tel: (250) 360-1541
Fax: (250) 360-1541
Email: jwight@islandnet.com

West Arm Watershed Alliance
Box 787
Nelson, BC V1L 5S9
Tel: (250) 352-9288
Fax: (250) 354-1141

West Coast Environmental Law Research Foundation
1001-207 West Hastings Street
Vancouver, BC V6B 1H7
Tel: (604) 684-7378
Fax: (604) 684-1312
Email: admin@wcel.org
Web Address:
vcn.bc.ca/wcel/welcome.html

Western Canada Wilderness Committee (Main Office & Wilderness Committee Store)
20 Water Street
Vancouver, BC V6B 1A4
Tel: (604) 683-8220 or
1 (800) 661-WILD (9453)
(toll free)
Fax: (604) 683-8229
Email:
info@wildernesscommittee.org
Web Address:
www.wildernesscommittee.org/

Western Canada Wilderness Committee - Mid-Island Chapter
P.O. Box 442
Qualicum Beach, BC V9K 1S9
Tel: (250) 716-WCWC (9292)
Fax: (250) 752-7085 (call first)
Email: wcwcqb@nanaimo.ark.com

Western Canada Wilderness Committee - Okanagan Chapter
PO Box 23025
Plaza 33, Postal Outlet
Kelowna, BC V1X 7K7
Tel: (250) 765-5883
Fax: (250) 764-2393
Email: footprint@awinc.com

Western Canada Wilderness Committee - Victoria Chapter & Store
507 - 620 View Street
Victoria, BC V8W 1J6
Tel: (250) 388-WCWC (9292)
Fax: (250) 388-9223
Email: wc2vic@islandnet.com

Western Canada Wilderness Committee - W. Kootenay Chapter
RR 1, Group 16, C-9
Winlaw, BC V0G 2J0
Tel: (250) 226-7324
Fax: (250) 226-7324 (call first)

Western Canada Wilderness Committee - White Rock Chapter and Green Line
1654 127th Street
Surrey, BC V4A 3S1
Tel: (604) 591-7899
Fax: (604) 538-1778
Email: gentry@intergate.bc.ca

Wetlandkeepers
1420 Falls Street
Nelson, BC V1L 1J4
Tel: (250) 354-1088
Fax: (250) 354-1033
Email: tsouth@netidea.com

Whistler Foundation For A Sustainable Envir.
4 - 4631 Lochside Drive
Victoria, BC V8Y 2S9
Tel: (250) 658-2740
Fax: (250) 658-2740

Williams Lake Environmental Society
Box 2503
Williams Lake, BC V2G 4P2
Tel: (250) 296-4327
Fax: (250) 398-7599

Potential Partners: Provincial Government

BC Government Departments That May Assist Watershed Stewardship Projects

The BC Government has a web page that helps citizens stay abreast of developments and lists the addresses of all government departments. The web page address is www.gov.bc.ca/index.html.

Ministry of Education: www.bced.gov.bc.ca/
Ministry of Advanced Education, Training and Technology: www.aett.gov.bc.ca/
Ministry of Employment and Investment: www.ei.gov.bc.ca/
Ministry of Energy and Mines: www.em.gov.bc.ca/
Ministry of Environment, Lands and Parks: www.env.gov.bc.ca/
Forest Renewal Coordination Office: www.elp.gov.bc.ca/frco/frphome.html
Forest Renewal Projects: www.elp.gov.bc.ca/frco/projects.html
- Watershed Restoration Program: www.elp.gov.bc.ca/frco/watershed.html
- Biodiversity Research Program: www.elp.gov.bc.ca/frco/research.html
- The Natural Resource Inventory Program: www.elp.gov.bc.ca/frco/resource.html
- The Forest Recreation Program: www.elp.gov.bc.ca/frco/recreation.html

Ministry of Fisheries: www.fisheries.gov.bc.ca/
Ministry of Forests: www.for.gov.bc.ca/
Forest Practices Branch: www.for.gov.bc.ca/hfp/hfp.htm
Research Branch: www.for.gov.bc.ca/research/
Resources Inventory Branch: www.for.gov.bc.ca/resinv/homepage.htm

Crown Corporations

Fisheries Renewal BC: www.fishrenewal.gov.bc.ca/
Salmonid Renewal Program: www.fishrenewal.gov.bc.ca/salpinfo.htm

BC Government Programs That May Fund Watershed Stewardship-related Projects

Check out the resource page: www.fishrenewal.gov.bc.ca/programs.htm

This page lists government departments that may fund fisheries-related projects. Many of these agencies will support broader watershed projects.

The many agencies are listed below. If you do not have access to the internet, check the government directory (Blue Pages) in your telephone book for a contact telephone number.

- Apprenticeship Programs
- Community Skills Centres
- Environment Youth Team
- Job Start
- Student Summer Employment Program
- Vocational Rehabilitation Services
- Youth Works/Welfare to Work
- BC Focus
- Co-operative Development Program
- Employee Share Ownership Program
- Equity Capital Program
- First Citizens' Fund
- Working Opportunity Fund
- FRBC Watershed Restoration Program
- Habitat Conservation Trust Fund
- Urban Salmon Habitat Program - Community
- FRBC Operational Inventory Program - Framework Inventory component
- First Job in Science and Technology Program
- Natural Resources Community Fund
- Partners in Progress Program
  - Partners in Action component
  - Partners in Development component
- BC Heritage Rivers Board

Selected British Columbia Agencies

Community Skills Centres

www.fishrenewal.gov.bc.ca/cmtyskls.htm

Ministry Responsible
Education, Skills & Training (MEST)

Contact
Dawn McKay
Ministry of Education, Skills and Training
Tel: (250) 356-7700
Fax: (250) 952-6113

Myrna Partridge
Human Resources Development Canada
Tel: (604) 666-9555
Fax: (604) 666-3615

Form of Assistance Offered
- Community Training Needs Identification/Training Strategies

Objectives
Coordinating Community Training Resources
- To act as a focal point for bringing together community resources to increase access to training, and to bridge between training and work.

Community-Based Management
- To increase community input and decision making regarding training and adjustment.

Innovative Use of Technology
- To increase competitiveness of business and industry in the global marketplace, and individuals in the labour market, by providing access to information technology.

Financial Independence
- To achieve financial independence from government funding sources to finance operational costs.

Community Skills Centres in British Columbia

- Alberni-Clayoquot Community Skills Centre (Port Alberni)
- Burnaby Community Skills Centre
- Cariboo-Chilcotin Community Skills Centre (Williams Lake)
- Community Skills Centre of the North Island and Region (Port Hardy)
- Haida Gwaii/QCI Community Skills Centre (Masset)
- Kimberley Community Skills Centre
- Kitimat Community Skills Centre
- Greater Trail Community Skills Centre
- Mission Community Skills Centre
- Morice Community Skills Centre
- New Westminster Community Skills Centre
- North Cariboo Community Skills Centre (Quesnel)
- North Coast Community Skills Centre (Prince Rupert)
- North Thompson Community Skills Centre (Clearwater)
- Peace Community Skills Centre (Dawson Creek)
- Prince George Community Skills Centre
- Princeton and District Community Skills Centre
- Revelstoke Community Skills Centre
- Sparwood Community Skills Centre
- Vancouver East Community Skills Connection

Fisheries Renewal BC (FRBC) Watershed Restoration Program

Contact
Al Martin
Ministry of Environment, Lands & Parks
Tel: (250) 387-9351
Fax: (250) 356-0985
Web Page:
www.fishrenewal.gov.bc.ca/frbc_wrp.htm

FRBC is working with forest companies, workers, environmental groups, communities, First Nations, and government agencies to renew the forest sector and for the benefit of communities that depend on forest resources.

Watershed restoration attempts to re-establish conditions similar to those found in

unimpacted watersheds by altering the rates of the processes that control the physical and biological structure of watersheds. It encompasses activities ranging from hill slope stabilization and road rehabilitation to riparian revegetation and fish habitat improvement.

Ministries Responsible
- Ministry of Environment, Lands and Parks (MELP) manage the stream component.
- Ministry of Forests (MoF) manage the hill slope component.

Purpose
The Watershed Restoration Program (WRP) is a provincial initiative under FRBC to restore the productive capacity of forest, fisheries and aquatic resources that have been adversely impacted by past forest harvest practices.

Objectives
FRBC
- To restore, protect and maintain fisheries, aquatic, and forest resources adversely affected by forest harvesting practices, that, without intervention, would require decades to recover naturally.
- To bring areas harvested under previous (pre-Forest Practices Code) standards up to Forest Practices Code standards.
- To provide community-based employment, training, and stewardship opportunities throughout the province.

Watershed Renewal BC
- To use an integrated watershed approach.
- To recognize interconnections between physical and biological processes within impacted watersheds.

Habitat Conservation Trust Fund

Contact
Rod Silver
Habitat Conservation Trust Fund
Tel: (250) 356-6124
Fax: (250) 356-0985
Web Page:
www.fishrenewal.gov.bc.ca/hctf.htm

Minister Responsible
Environment, Lands & Parks as Trustee

Objectives
- To protect the habitat base of biological diversity and ecosystem integrity.
- To appropriately conserve and, where necessary, enhance wild fish populations and their habitats.
- To appropriately conserve and, where necessary, enhance wildlife populations and their habitats.
- To acquire, control, and manage key habitats for fish and wildlife.
- To increase public understanding and support for habitat-based ecological values in the Province.
- To increase public awareness and support for the Habitat Conservation Trust Fund.

Urban Salmon Habitat Program (USHP)

Contacts
David Buchwald
BC Environment
Tel: (250) 356-2353
Fax: (250) 387-9750

Vancouver Island
Tracy Michalski
BC Environment,
Tel: (250) 751-3100
Fax: (250) 751-3103

Lower Mainland
Rob Knight or Krista Payette
BC Environment,
Tel: (604) 582-5200
Fax: (604) 930-7119
Web Page:
www.fishrenewal.gov.bc.ca/ushp_cg.htm

Ministry Responsible
Environment, Lands & Parks

Purpose
Program's prime purpose is to protect and restore salmonid habitats in urban areas in BC's portion of the Georgia Basin.

Community Stewardship projects encourage community involvement in the protection, enhancement, and restoration of urban watersheds. In addition, community stewardship groups can provide input at the planning stage of urban, agricultural, and industrial development in order to prevent environmental damage, protect salmonid habitats, provide public education, and encourage supportive actions by local governments.

Objectives
Urban Salmon Habitat Program
- Ensure sustainable wild salmon and other salmonid stocks and habitats in populated

areas of the Georgia Basin.
- Build partnerships with other orders of government, including First Nations, to facilitate effective land use planning.
- Initiate community involvement, including landowners and developers, in land use planning.
- Increase public awareness of salmon and salmonid populations and habitats.

Community Stewardship
- Protect, enhance, and restore salmonid habitats.
- Increase public involvement and community awareness of salmonid habitats and the impacts of urban, agricultural and industrial development.
- Create partnerships between community stewardship groups and other organizations.

Fisheries Renewal BC Planning and Partnership Program

Contact
#405 - 960 Quayside Drive
New Westminster BC
V3M 6G2
Tel: (604) 660-0939 or
1 (888) GO-RENEW (toll free) or
1 (888) 467-3639 (toll free)
Web Page:
www.fishrenewal.gov.bc.ca/pppinfo.htm

The program works to build partnerships and help groups and business ventures develop partnerships and plans by funding:
- strategic, business and project planning
- research and information gathering
- workshops or meetings to facilitate groups coming together for a common purpose
- feasibility studies

Eligibility
Any person, group or organization wanting to explore an idea or a partnership opportunity in British Columbia's fisheries qualifies for assistance.

Funding is available for:
- strategic, business and project planning
- researching ideas
- information gathering
- contracting essential services
- other activities that lead to practical partner groups and effective planning

Wild BC Environmental Education in Action

Contacts
Mailing Address:
Coordinator, Wild BC
PO Box 9354 STN PROV GOVT
Victoria, BC V9W 9M1
Tel: (250) 356-7111
1 (800) 387-9853 (toll free)
Fax: (250) 952-6684
Email Address: wild@pop.gov.bc.ca
Web Pages:
www.elp.gov.bc.ca/hctf/wild.htm

Wild BC, a project of the Habitat Conservation Trust Fund, offers a wide range of environmental educational programs and resources.

Mission
The mission of Wild BC is to educate, encourage and foster appreciation, knowledge and understanding of biological diversity, and to increase ecological literacy.

Goals
- To increase the awareness about biodiversity in British Columbia.
- To encourage responsible actions and decisions concerning the environment.
- To promote ecological literacy.
- To nurture stewardship of the Earth.

Objectives
- To produce high quality environmental education learning resources and programs for educators in BC.
- To deliver programs and resources through workshops.
- To coordinate educational programs and resources that emphasize biological diversity.

Products
- environmental education learning resources
- workshops
- training opportunities
- newsletters

Naturescape British Columbia

Contact
PO Box 9354 Stn. Prov. Gov.
Victoria BC V8W 9M1
Web Page:
www.elp.gov.bc.ca/hctf/nature.htm

The program's vision is to help create communities that live in harmony with the natural environment.

Naturescape works to restore, preserve, and enhance wildlife habitat in the urban and rural landscapes of British Columbia. The program empowers private citizens to end the loss of habitat and to create green spaces for wild plants and animals in urban and rural communities.

The Naturescape Kit
When your group joins Naturescape British Columbia, you are provided with a Naturescape Kit containing resources needed to restore an outdoor space to a more natural state.

The resources provide program information and benefits in two stages.

Stage 1: The Naturescape Kit contains:
- a provincial guide featuring instructions and illustrations for designing wildlife habitat appropriate to your particular site
  - building a pond
  - erecting bird and bat houses, etc.
- a native plant and animal booklet featuring indigenous plants and animals in your region of the province
- a regional resource booklet that lists publications, naturalist organizations, garden clubs, participating garden centres and retailers, and wildlife rehabilitation centres
- Naturescape British Columbia membership card which entitles you to discounts at participating retailers.

Stage 2: Additional Benefits include:
- an easy-response questionnaire that encourages you to describe your outdoor space and how you have made it more attractive to wildlife
- upon receipt of this information we will send you the following materials:
  - a Naturescape British Columbia sign to demonstrate that you care for wildlife habitat
  - a Naturescape British Columbia newsletter

Products
Naturescape Kit Georgia Basin
Cost: $20.00
Naturescape Kit Southern Interior
Cost: $20.00

Public Conservation Assistance Fund
(formerly Habitat Conservation Fund) has made

PO Box 9354 Stn Prov Gov
Victoria, BC V8W 9M1
Tel: 1 (800) 387-9853 (toll free)
Web Page:
www.elp.gov.bc.ca/hctf/pubcon/index.html

The fund provides about 20 grants available to organizations and individuals who want to carry out a conservation project but need financial help to get going. The grants average about $2,500 each.

Eligible Projects
Project must be of a conservation nature and may include any activity which:
- maintains or enhances fish and wildlife resources and their habitat
- contributes to public awareness of our natural resources

Activities may include
- improving spawning grounds
- building bird houses
- planting shrubs for cover
- tagging animals
- printing posters
- fish egg incubation
- waterfowl nesting floats and boxes
- fencing
- winter range improvements

There is almost no limit to what will be considered as long as it will make a contribution to the conservation of wildlife or fisheries.

Your organization must contribute an amount equal to or greater than the amount of the grant in money, volunteer labour and/or materials.

Potential Partners: Federal Government

Fisheries and Oceans Canada

Salmonid Enhancement Program (SEP)

Salmonid Education Resources

Primary Level Resources
Salmonids in the Classroom - Primary Package, English or French
Salmonids in the Classroom - Primary Update
- Primary Posters
- Salmon Alphabet Poster
- Chucky Chum Audio Tape and Book
- Egg-to-fry Display
- Life Cycle Puppets
- In-service Sessions
- Classroom Incubation Program
- Storm Drain Marking Program
- Brochure Sets
- Audio Visuals

Intermediate Level Resources
Salmonids in the Classroom - Intermediate Package, English or French
- Salmon Below the Surface
- Table Talk
- Watershed Works
- Fish in the Floodlights
- Upstream Racers
- Egg-to-fry Display
- Life Cycle Puppets
- In-service Sessions
- Classroom Incubation Program
- Storm Drain Marking Program
- Brochure Sets
- Audio Visuals

Salmonids Curriculum Materials with K-7 Integrated Resource Packages (tables showing how the SEP education materials fit with the Ministry of Education's Curriculum).
www.sd73.bc.ca/Education/Salmonid/pubs.htm

Salmonid Education Resources
www.sd73.bc.ca/Education/Salmonid/pubs.htm

For general inquiries, please call (604) 666-6614. For more information about community involvement opportunities, contact the Community Advisor, Education Coordinator or Community Involvement Officer in your area.

Community Advisors
Queen Charlotte Islands
Box 208
Queen Charlotte City, BC
V0T 1S0
Tel: (250) 559-0039
Fax: (250) 559-4678
Email: DaviesD@pac.dfo-mpo.gc.ca

North Coast and Northern Interior (Terrace)
5235 Keith Ave.
Terrace, BC V8G 1L2
Tel: (250) 615-5353
Fax: (250) 615-5364
Email: PetersB@pac.dfo-mpo.gc.ca

Northern Interior (Smithers)
Box 578
Smithers, BC V0J 2N0
Tel: (250) 847-5298
Fax: (250) 847-4723
Email: DonasB@pac.dfo-mpo.gc.ca

Central Coast
Box 340
Hagensborg, BC V0T 1H0
Tel: (250) 982-2663
Fax: (250) 982-2439
Email: MacLaurinS@pac.dfo-mpo.gc.ca

Northern Vancouver Island
Box 10
Port Hardy, BC V0N 2P0
Tel: (250) 949-6181
Fax: (250) 949-6755
Email: BatesG@pac.dfo-mpo.gc.ca

North-Central East Coast of Vancouver Island
148 Port Augusta Street
Comox, BC V9N 7Z4
Tel: (250) 339-0431
Fax: (250) 339-4612
Email: AllenB@pac.dfo-mpo.gc.ca

South-Central West Coast of Vancouver Island
3225 Stephenson Point Rd.
Nanaimo, BC V9T 1K3
Tel: (250) 756-7263
Fax: (250) 756-7020
Email: CordocedoB@pac.dfo-mpo.gc.ca

Southern Vancouver Island
4250 Commerce Circle
Victoria, BC V8Z 4M2
Tel: (250) 363-0233
Fax: (250) 363-0336
Email: RutherfordT@pac.dfo-mpo.gc.ca

Sunshine Coast
Box 10
Madeira Park, BC V0N 2H0
Tel: (604) 883-2613
Fax: (604) 883-2152
Email: McBainG@pac.dfo-mpo.gc.ca

West Vancouver - Howe Sound
4500 Capilano Park Road
North Vancouver, BC V7R 4L3
Tel: (604) 666-6325, or
1 (800) 863-2116 (toll free)
Fax: (604) 666-1949
Email: GidoraS@pac.dfo-mpo.gc.ca

Burrard Inlet - Indian Arm
610 Derwent Way
New Westminster,BC V3M 5P8
Tel: (604) 666-0743
Fax: (604) 666-7112
Email: HollickSa@pac.dfo-mpo.gc.ca

North Side Fraser River
Burnaby to Boston Bar
610 Derwent Way
New Westminster,BC V3M 5P8
Tel: (604) 666-2870
Fax: (604) 666-7112
Email: CoulterBoisvertM@pac.dfo-mpo.gc.ca

South Side Fraser River to Boston Bar
610 Derwent Way
New Westminster,BC V3M 5P8
Tel: (604) 666-0742
Fax: (604) 666-7112

Central Interior
Boston Bar to 100 Mile House
1278 Dalhousie Drive
Kamloops, BC V2C 6G3
Tel: (250) 851-4954
Fax: (250) 851-4951
Email: DemontierD@pac.dfo-mpo.gc.ca

Central Interior
North of 100 Mile House and
Yukon Territory
3690 Massey Drive
Prince George, BC V2N 2S8
Tel: (250) 561-5533
Fax: (250) 561-5534
Email: ArgueR@pac.dfo-mpo.gc.ca

Streamkeepers Program
400-555 W. Hastings St.
Vancouver, BC V6B 5G3
Tel: (604) 666-6831
Fax: (604) 666-0292
Email: JohnsonM@pac.dfo-mpo.gc.ca

Education Coordinators
Lower Mainland
1132 Maplewood Cres.
North Vancouver, BC V7P 1H9
Tel: (604) 980-7602
Fax: (604) 980-7602

Southern Vancouver Island
Don Lowen
3731 Winston Crescent
Victoria, BC V8X 1S2
Tel: (250) 388-4756
Fax: (250) 388-4759

Central Vancouver Island
c/o Big Qualicum Hatchery
215 Fisheries Road
Qualicum Beach, BC V9K 1Z5
Tel: (250) 757-8412
Fax: (250) 757-8741

Community Involvement
For further information, contact:
Joanne Day,
Community Involvement
HEB, Fisheries and Oceans
555 West Hastings Street
Vancouver, BC V6B 5G3
Tel: (604) 666-6614

Fax: (604) 666-0292
Email: DayJ@pac.dfo-mpo.gc.ca

Habitat and Enhancement Branch
Habitat and Enhancement Branch Main Page
www.sd73.bc.ca/Education/Salmonid/pubs.htm

Fish Habitat Inventory & Information Program (FHIIP)
For information on the Fish Habitat Inventory and Information Program please contact:
Brad Mason, Program Coordinator
masonb@pac.dfo-mpo.gc.ca

For technical information please contact:
Cheryl Lynch, Data Management Coordinator lynchc@pac.dfo-mpo.gc.ca

Habitat and Enhancement Branch
360 - 555 West Hastings
Vancouver, BC
V6B 5G3
www-heb.pac.dfo-mpo.gc.ca/heb/FHIIP/about.htm

Fish Habitat Inventory & Information Program www-heb.pac.dfo-mpo.gc.ca/heb/FHIIP/index.htm

HRSEP - Habitat Restoration and Salmon Enhancement Program www-heb.pac.dfo-mpo.gc.ca/heb/HRSEP/HRSEP.htm

Habitat and Enhancement Branch Community Involvement and Programs
www-heb.pac.dfo-mpo.gc.ca/heb/community/comminv.htm

Pacific Stream Keepers Federation
Coordinator: ZoAnn Morten
720 Orwell Street
North Vancouver, BC V7J 2G3
Tel: 1 (800) 723-7753 (toll free)
Tel/Fax: (604) 986-5059
E-mail: pskf@direct.ca
Web: www-heb.pac.dfo-mpo.gc.ca/PSkF/home.htm
Searchable Database of Stream Keepers and Community Involvement Groups
www-heb.pac.dfo-mpo.gc.ca/heb/community/commdir.htm

Pacific Stream Keepers Federation
Anatomy of a Stream www-heb.pac.dfo-mpo.gc.ca/PSkF/Anatomy/Anatomy.htm

Education Resources

Module 1
- Introductory Stream Habitat Survey.
- Walk a stream and map its features.

Module 2
- Advanced Stream Habitat Survey.
- Select a location and complete a detailed habitat assessment.

Module 3
- Water Quality Survey.
- Collect a water sample and test it for purity.

Module 4
- Stream Invertebrate Survey.
- Collect and identify aquatic bugs to assess stream health.

Module 5
- Storm Drain Marking.
- Paint a yellow fish beside storm drains to identify that they empty into local streams.

Module 6
- Stream Clean Up.
- Learn the do's and don'ts of cleaning up a stream.

Module 7
- Streamside Planting.
- Select, propagate and plant native species.

Module 8
- Streamside Fencing.
- Design and build a fence to protect streamside vegetation.

Module 9
- Observe, Record and Report.
- Guidelines for identifying and reporting unlawful activities.

Module 10
- Community Awareness.
- Educate your neighbours about their watershed.

Module 11
- Juvenile Fish Trapping and Identification.
- Capture fish in a live trap and determine its species.

Module 12
- Salmonid Spawner Survey.
- Identify and count spawning salmonids.

Module 13
- Creel Survey.
- Monitor sport fishing effort and catch.

Module 14
- Stream Channel Improvement.
- Assess sites, design and build a project.

The Streamkeepers Handbook and Modules is available through the Pacific Streamkeepers Federation. If you would like a copy, please mail a cheque for $30.00 to:
The Pacific Streamkeepers Federation
720 Orwell Street
North Vancouver, BC
V7J 2G3

Environment Canada

Environment Canada Inquiry Centre

For general information on the programs, services and publications of Environment Canada contact:
Inquiry Centre
351 St. Joseph Boulevard
Hull, Quebec
K1A 0H3
Tel: (819) 997-2800, or
1 (800) 668-6767 (toll free)
Fax: (819) 953-2225
Web: www.ec.gc.ca/prod/inqry-e.html

Other Environment Canada Web Pages of Interest
Environmental Priority - Clean Water
www.ec.gc.ca/envpriorities/cleanwater_e.htm

Environment Canada. Green Lane Databases. www.ec.gc.ca/data_e.html

Georgia Basin Initiative
For Information contact:
Information on the Georgia Basin is available from Environment Canada's Green Lane web site at:
http://www.pyr.ec.gc.ca

Or telephone:
Mark Colpitts
Environment Canada
Tel: (819) 997-1441

Alex Dabrowski
BC Ministry of Environment, Lands and Parks
Tel: (250) 387-9423
Tel: (250) 920-6026 (cell)

Bruce Kay
Georgia Basin Coordination Office
Environment Canada
Tel: 713-9528
Web: www.pyr.ec.gc.ca

Also, check the following web pages:
Working Together for the Georgia Basin.
www.pyr.ec.gc.ca/GeorgiaBasin/gbi_eIndex.htm

Georgia Basin Action Plans
www.pyr.ec.gc.ca/GeorgiaBasin/eactionPlan.htm

Building it Together, Georgia Basin Action Plans
www.pyr.ec.gc.ca/GeorgiaBasin/eletsBuild.htm

Georgia Basin Links
www.pyr.ec.gc.ca/GeorgiaBasin/ebasinLinks.htm

EcoAction 2000

EcoAction 2000 Web Page (EcoAction 2000 is an Environment Canada program that helps Canadians take action in support of a healthy environment. Through community funding and public engagement initiatives, EcoAction 2000 is providing tools and information to help Canadians make "down-to-earth" choices in support of a healthy environment.)
www.ec.gc.ca/ecoaction/index_e.htm

Canadian Wildlife Service Programs

For Information contact:
Canadian Wildlife Service
Environment Canada
351 St. Joseph Boulevard
Hull, Quebec
K1A 0H3
Tel: (819) 997-1095
Fax: (819) 997-2756
www.cws-scf.ec.gc.ca/programs_e.html

Planning Forms

- Project Planning Form
- Program Planning From

School Project **Planning Form**

Use this form for planning a stewardship activity with students

Project Name: _____

Location: _____ Date Completed _____ Duration _____

Prepared By: _____ Program Type _____

Project Description

_____

_____

_____

Summary of Participant Analysis

Grades Ages

Group Size (circle one or more)

1/2 Class	**1 Class**	**2 Classes**
15 or fewer Students	20– 35 Students	more than 35 Students

Ability to Take Instructions

First Language

English Other (e.g., English as Second Language)

Background of Students With Respect to This Site

Urban/Rural
Local/Non-local
Return Visitors

Physical Abilities of Students

Ability to Use Tools and Equipment

Special Needs

Implications of this information to program type, duration and location

School Project Planning Form

Goals of This Project

Project Objectives (e.g., environmental objectives)

Objectives for Students

Knowledge: – After taking part in this project students will:

Behavior: – After taking part in this project students will:

Emotion: – After taking part in this project students will:

Key Tasks (and locations if applicable)

Key Task	Activity Planned	Location of Task

Tools and Equipment Needed For Project:

Research/Material Needed	Source	Cost

Risk To Participants (Students and Teachers):

Risk	How to avoid/reduce risk	Can this be done? (Y/N)

Risk To Site/Resource:

Risk	How to avoid/reduce risk	Can this be done? (Y/N)

Advertising:

How will this program be advertised? (Circle one or more)

Telephone Contact With Teacher Brochure Mailed To School Brochure Faxed To School
Internet Presentation At PD Meeting or Conference

Other _____
Please Specify

When will it be advertised? (e.g., first week of school year)

Sample copy of advertisement

Evaluation:

Who will Evaluate the program? (Circle one or more)

Self Peer Supervisor Other

When will program be evaluated?

Key elements to be evaluated

School Program **Planning Form**

Use this form for planning an education activity with students

Program Name: _____

Location: _____ Date Completed _____ Duration _____

Prepared By: _____ Program Type _____

Summary of Participant Analysis

Grades

Ages

Special Needs

Group Size

1/2 Class	**1 Class**	**2 Classes**
15 or fewer Students	20– 35 Students	more than 35 Students

Attitude Towards Topic and Agency:

Cultural Background If Applicable
(e.g., First Nations)

Interests

Expectations

Urban/Rural
local/non-local
return visitor
frequency of visits

Implications of this information to program type, duration and location

Group/Agency Topics for This Program

Topic Selected	Why Selected

School Program Planning Form

Goals for this Program

Goal 1 _____

Goal 2 _____

Goal 3 _____

Goal 4 _____

Program Objectives

Knowledge: – By the end of the program students will:

_____

_____

_____

_____

Behavior: – By the end of the program students will:

_____

_____

_____

Emotion: – By the end of the program students will:

_____

_____

Program Type and Why Selected

_____

Key Points (and locations if applicable)

Key Point	Activity Planned	Location of Activity

Research & Materials Acquisition:

Research/Material Needed	Source

Risk To Participants (Students and Teachers):

Risk	How to avoid/reduce risk	Can this be done? (Y/N)

Risk To Site/Resource:

Risk	How to avoid/reduce risk	Can this be done? (Y/N)

Advertising:

How will this program be advertised? (Circle one or more)

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Sample copy of advertisement

Evaluation:

Who will Evaluate the program? (Circle one or more)

Self Peer Supervisor Other

When will program be evaluated?

Key elements to be evaluated