

## Interpretive Writing

### YEAR-ROUND WILDLIFE WATCHING

#### The Broken Shell Mystery

*I often see interesting broken shells on the pavement of the causeway. I wondered how they got there. One day I found out. Smack! A clam shell smashed onto the pavement in front of me.*

*A crow swooped down, grabbed it, flew upwards and dropped it again... crunch. I stood still and watched as the bird landed and ate the clam meat from inside the broken shell and then swooped down to the beach.*

*I spent a fun hour watching as gulls and crows stalked about on the beach at low tide digging up shellfish and then flying over "nutcracker bridge" to drop them, using gravity to crack open the shells.*

*I now watch the tide tables and visit during low tides to observe the bird shellfish feasts. I also take a field guide to BC sea life and join the search with the crows and gulls on the beach.*

#### The Overhanging Forest

##### Lagoon Riparian Zone

I first noticed this lagoon-side forest when a kingfisher darted out from a bush on the edge, splashed into the water in front of me, and flapped back to her perch with a tiny fish. I've kept an eye on the overhanging forest ever since and I'm continually surprised by the amount of wildlife action I see there.

#### Digging Deeper

I've asked some of my friends in the Fish and Wildlife Club and the Nature Club—why is this place such a hotbed of wildlife activity? Here are some facts I've found out...

This forest on the edge of the water is called a riparian forest. The plants living here get unlimited water and lots of sunlight so they grow lush and thicker than their neighbours inland.

#### An Historic Wildlife Viewing Site

The Millennium Kiosk in the Davies Orchard in Snug Cove is another great source of information. It's beside Cottage #20 which houses the summer tourist information centre run by the Bowen Island Heritage Preservation Association.

To learn more about Bowen's past I drop in at the Bowen Museum and Archives run by the Bowen Historians.

#### Bowen Island-based Conservation Groups

You can learn more about Bowen's natural and cultural heritage by contacting or joining one of the island's many clubs and societies.

- BI Fish and Wildlife Club
- BI Farm and Water Management Society
- BI Nature Club
- BI Conservancy
- BI Historians
- BI Heritage Preservation Association

#### My Low-Tide Sea Life Collection

##### On and Under the Sand

When I find a small smooth something hole in sand at low tide, I carefully dig and find all sorts of things.

##### On and Under the Rocks

These tiny rocks are everywhere under rocks close to the water's edge.

#### It's a Wildlife Restaurant

The lush plant growth provides lots of seeds, fruits, worms and insects which attract lots of birds.

#### It's a Safe Home

The dense branches and leaves provide great hiding places for birds and other animals and their eggs and young.

#### It's a Great Lookout

Many birds like the edge of the forest because it gives them a good view of neighbours encroaching on their territory, prey that are out in the open for easy pickings, or predators that may be sneaking up.

#### Doing It Right

I collect only photos to take home. When I find something living, I take a photo of it and then put it back where I found it. I even fill in the holes that I dig. These creatures need fresh air, water for food and to breathe. If I take them home they will die.

#### Safety

Some people like to collect shellfish for food. The nature is not a safe place to do this. There is a danger that they will have picked up pesticides from sewage run-off from nearby houses and boats anchored in the bay. For information on seafood safety contact Fisheries and Oceans Canada.

#### Finding Out More

I sometimes see creatures I don't recognize, and I often see them doing things that I don't understand. I find answers in the many web-based nature field guides available and by taking part in the family program provided by the Bowen Fish and Wildlife Club, the Bowen Nature Club and the Bowen Island Conservancy. I also keep my eyes peeled for announcements about special events provided by COVID Parks.



# Our Writing Gets Results

## Major Projects

Attendance increased by 37% to pass the 100,000 mark and program revenue increased by 25% to \$67,000 during the two year period when EcoLeaders principals managed and produced all interpretation programs and events including outreach projects, were deeply involved in exhibits and books, contributed much of the interpretive writing, and edited all text at the John Janzen Nature Centre in Edmonton.

150,000 people per week watched the Nature Walk television series when it first aired on Canadian cable television in spring 1996. The series was honoured with twenty national and international film and video awards.

## Interpretive Sign Projects:

The interpretive plan we produced during the research phase of our Elsie King Universal Access Trail Sign project was used successfully by the client park agency to raise funds locally to fabricate and install the signs (portfolio sample on page 36).

Non-English-speaking families using the fishing pier where our Crab Watch signs were installed were observed measuring their catch against the illustrations on the mini-panels, and releasing some of their catch. The federal Department of Fisheries and Oceans used the design and illustrations to produce and post their own similar signs on other public docks in the Metro Vancouver region through a partnership agreement secured by EcoLeaders.

### Our Approach to Interpretive Writing

Our writing is friendly, fun, inclusive and experience-oriented. We tend to use imagination, first-person, characterization, themes, sensory references, inquiry, activity-focus, behaviour modeling and often illustrations that people can relate to making themselves.

We look at text as one component of the interpretive experience. It must work with illustrations, artifacts and most importantly with the real thing (e.g., plant, animal, habitat, natural process, landscape, historic/cultural site, artifact, person persons or human experience) that is being interpreted.

The writing must support the overall visitor experience by:

- provoking activity, discovery, thought, conversations and questions
- relating information, ideas and stories in language that is suitable and relevant to target participants and audiences in words that are appropriate to their needs, interests and abilities
- revealing hidden meanings, new interpretations and interrelationships between the visitor and the landscape and the history and cultures of Canada
- enhancing, rather than interrupting with intrusive media, styles or sizes of installations

- avoiding inappropriate approaches that can negatively impact a visitor's experience
- inspiring visitors to explore and encounter the real things and to deepen their connections

Whenever possible, we see that the interpretive writer should be involved in the research and planning of interpretive products. The writers should participate in the selection of illustrations, artifacts, models and design and in the selection of media and design of interpretive exhibits and other non-personal products.

Further, we feel that it is important to consider the integration of new non-personal interpretation products with existing and future personal interpretation offerings and non-personal products whenever possible.

For example, a new interpretive trail sign system in a national park could engage trail users in nature discovery activities and encourage participants to bring questions to and share observations with staff and volunteers working at the park's visitor centre.

As another example, some interpretive signs could include sections that encourage trail users to visit other interpretive sites in a park to continue their discovery and learning.



## Our Understanding of Interpretive Writing

### Tilden's Principles of Interpretation

We look upon the writings of Freeman Tilden as the cornerstone of interpretive writing. His six principles are a key part of the Canadian Heritage Interpreter National Occupational Standards. The principles are:

*1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.*

We work to connect visitors with what they can immediately see, hear, smell and taste at the location of the interpretive media they are interacting with. We work hard to understand the target audiences so that our writing and approach is appropriate for their prior knowledge, interest and backgrounds.

*2. Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.*

For all our interpretive writing, we conduct research on the features of the site and on the characteristics of site visitors to ensure that our interpretation is based on accurate and up-to-date information. We then apply creativity, design and illustrations to edit down the information for maximum engagement and interpretive impact.

*3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.*

We see interpretation as a communication art that stimulates deep emotion, makes connections and meaning and stimulates and guides skill development in participants. It may even lead to behaviour changes.

Interpretation is also a combination of many arts that may include writing, illustration, photography, graphic design, video and music into one integrated communications package. As well, the package may include integration with traditional or new technologies.

In most art, the artist gets better with practice. We have been working as interpretive planners, writers and trainers for over 25 years.



### Our Understanding of Interpretive Writing continued

*4. The chief aim of interpretation is not instruction, but provocation.*

In all our interpretation projects we work to provoke observation, action and inquiry. We often do this through using real and fictional characters to model inquiry and discovery learning behaviours—see the Killarney Creek Salmon Watching Kiosk (page 6).

*5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.*

We see this a meaning that interpretation should encompass the whole site and include systems thinking (how the local ecosystem you is connecting to the plants, animals and habitats that the visitor is encountering, and/or the deeper historical context of the historic feature that the visitor is observing).

We also interpret this principle to mean that interpretation should try to help participants to make connections between the site and its features with their world view and incorporate these connections into their daily lives. We think that these types of connections are illustrated in the Killarney Creek Salmon Watching Kiosk (page 6).

*6. Interpretation addressed to children (up to the age of 12) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.*

We wholeheartedly agree with this principle. We understand that children of different ages are at different stages of development of their cognition, social development, physical stamina and motor abilities. We also understand current learning theory that focuses on constructivism, inquiry and activity for effective child learning.

Through both research into the “ages and stages” of child development and from many years of on-the ground experience leading school programs, we develop age-appropriate school and public interpretive programming for children.



## Best Practice Learning Models

Current best practice takes into account many advances from the studies of formal and informal learning, visitor experience outcomes, museum studies, etc. Key aspects are discussed below.

## Informal Education and Lifelong Learning

Through our many years of experience, we have found that effective interpretation and learning cannot be a passive experience. Whenever possible our interpretive writing supports active learning and experience models that provides opportunities for adults, children and families to interact with the natural and cultural environment of parks and historic sites, share their discoveries, and perhaps return in person or via the internet to further their connections with the site. These active approaches also enrich user experience to a higher degree making their visit more memorable and meaningful.

## Learning Models

In our work we strive to incorporate current best practice using up-to-date models and approaches including:

- constructivist learning
- discovery learning approaches
- two-way communication
- experiential education
- inquiry learning
- Maslow's Hierarchy of Needs
- Blooms Taxonomy of Cognitive Domains
- education for sustainable development
- David Sobel's philosophy of Place-Based Education
- Richard Louv's work on Nature Deficit Disorder
- social learning

## Writing for Different Media

What works on the web is different from what works on television or a book. Each medium calls for a different approach.

For example, users of a webpage expect short chunks of text that fit onto their computer screen. This screen may include links to other web pages or even other websites. It is up to the user to decide if they want to extend their learning by clicking one or more of these links. The writer must make the text on the initial screen engaging enough to entice the reader to want to continue their learning adventure by clicking on links, and often provides the user with multiple lines of inquiry that they can follow—hence the storyline and content may not have a linear flow.

By contrast, for books and television, and most other interpretive writing, the writer follows a singular linear storyline with more or less limitations on the amount of content that is covered.



### Writing For Different Target Groups

We understand that interpretive writing must be participant-focused. Imagination and ideas are important to all, but each target will require different writing styles, techniques and approaches.

The process must start with a clear understanding of the interests, prior knowledge and inclinations of target participants and audiences. Approaches and choice of media must be made based on what best suits these target groups. Writing must be at an appropriate level for target audiences and be integrated with illustrations, artifacts and models into a engaging package that provokes emotions, thought, connections with the site and positive actions.

Some areas of consideration are discussed here.

#### **Motivations**

This approach looks deeply into why visitors are coming to your site. There are several models in use including the Canadian Tourism Commission's Explorer Quotient and Dr. John Falk's visitor segmentation model described in his book, *Identity and the Museum Visitor Experience*. Falk's model, offers a particularly useful framework for tailoring interpretive writing to mesh with visitor prior knowledge, interests and motivations.

#### **Multiple-Repeat Visitors**

oriented , single-visit participants who go to once or twice to a park or historic site over their lifetime. Long-time multiple-repeat visitors spend time at a park or heritage site many times per year. They often know a lot about many aspects of the site, and may have deep emotional and spiritual connections with it. Writing for this type of visitor may require greater depth of information. Invitations to observe using the senses will always yield fresh results and may be most appropriate for these audiences. Opportunities for them to contribute and participate in meaningful ways to the site's stewardship may also be appropriate.



## Writing For Different Target Groups *continued*

### **Regional and Cultural Background**

Canada is a large country. Knowledge of where audience segments come from and understanding of cultural and regional attitudes toward nature and history, including the traditional knowledge of First Nations people, can be applied by interpretive writers to frame communications and tailor activities to fit the needs and interests of the important visitor groups.

### **Educational Background**

This has little to do with the intelligence of participants or their interest in interpretation services. However, level of education often has significant importance to the prior knowledge of participants on some subjects (e.g., where does the interpretive writer begin—at the basics, at an advanced level, or somewhere in between?). It may also influence the complexity of language used.

### **New Canadians: Country of Origin**

Parts of Canada, especially major cities, have very large communities of people born outside of the country. Knowledge of the place of origin of these groups and research into their culture and their knowledge and attitudes toward nature and human history gives interpretive writers a starting point and context for their writing.

For example, interpretive writers must be sensitive to barriers specific to some new Canadians such as fear of wild places and negative connotations of people in uniform delivering programming (related to past negative experiences with police and soldiers in their original homeland).

### **Age/Demographics**

Different age cohorts have different requirements. For example:

- studies show that seniors are generally interested in reading more text than families with small children
- interpretation for children is very much age-dependant—writers must be aware of the “ages and stages” of children’s cognitive, emotional and social development
- effective interpretation for very young children is best aimed at the child-care-giver pair
- many park and museum visitors come in groups that include a mix of ages who are interested in learning together



### Writing For Different Target Groups continued

#### **Streakers, Strollers and Studiers**

This is a traditional behaviour classification used by interpreters and exhibit designers based on visitors' interactions with signs and exhibits.

##### **Streakers**

These visitors rarely spend more than a few seconds glancing at a sign or exhibit. They quickly assess it, look at photos and illustrations and the main headers and decide whether the sign has any interest for them. They may slow down as they pass but seldom stop walking.

Most research shows that streakers are a large group of visitors at most sites

##### **Strollers**

These visitors are looking for engagement but their eyes are moving relatively quickly over the sign or exhibit. Again, they look mainly at photos and images. They also read captions and small blocks of text. It leads to layered text and is a time-tested approach

This group is smaller than the streakers but can be a significant proportion of visitors.

##### **Studiers**

These readers stop and spend much more time interacting with the sign or exhibit, reading headers, subheadings and most blocks of text.

Some studies show that about 20% of site visitors fit into the studying category generally.

#### **Implications of the Streaker, Stroller, Studier Model**

Interpretive sign and exhibit design can accommodate all three types of interaction. Large, interesting images and bold colourful headers conveying the main themes and topics, addressing the streakers. The same images and headers plus small blocks text in large fonts provide more depth to fit the needs of the strollers. Finally, more text and detailed diagrams provide studiers with the richer engagement that they seek.

Ideally, a well written and designed, interpretive sign or exhibit has the potential to really catch the attention of visitors, converting streakers into strollers and strollers into studiers.



## Example of Interpretive Writing: Killarney Creek Salmon Watching Kiosk



Research, planning, design concept, writing, photography and maps by EcoLeaders Interpretation.

Final graphic design, and hand drawings by Debbie Bowles, Metro Vancouver Regional Parks.



### Background

Killarney Creek and its estuary are located within Crippen Regional Park. They are the most significant salmon habitat on Bowen Island. An historic causeway that crosses the mouth of Killarney Creek is the best location to watch local salmon runs.

The Bowen Island Fish and Wildlife Club, with a grant from the BC Salmon Foundation, partnered with Metro Vancouver Parks to develop an interpretive site on the causeway. As a first step, the club designed and built a large three-panel kiosk on the edge of the causeway. At this point the partners approached EcoLeaders to develop interpretive materials.

### Planning

Although funds were limited, we developed an interpretive plan that included an audience analysis, features analysis, learning objectives, interpretive themes and a storyline.

A site analysis indicated that the kiosk was located on a main commuter trail where Bowen Island residents walk between a residential area and the village of Snug Cove. It was also noted that the kiosk site is located well off the regular park visitor trail system and was not visible from the trails normally used by park visitors.

### Target Audiences

Visitor analysis identified the primary audience as local Bowen Islanders travelling to and from their homes to Snug Cove. A high percentage of these people were highly educated professionals who commuted daily to work in Vancouver by catching the ferry in Snug Cove. Also most were parents of young children who chose to raise their families in the island's safe natural setting where they and their families could walk to a nearby beach and use the many trails through the forests of Crippen Park. Almost all crossed the causeway many times a week, year-round.

more on target audiences—>





### Killarney Creek Salmon Watching Kiosk

#### **Target Audiences** continued

A smaller secondary audience is off-islanders who take the ferry to Bowen Island to enjoy the trails and historic precinct of Crippen Park. The majority come on weekends in the summer. However, there is a steady stream of visitors on weekdays year-round.

#### **Our Approach**

Because our primary audience was made up of multiple-repeat visitors who pass by often, year-round, we recognized that panels full of information and facts would be ineffective. Instead, we chose to focus on helping participants develop wildlife-watching skills and to read the landscape—things they could do year-round and develop over time.

Also, because many people would be passing by when there was no salmon activity, we decided to expand the scope of the interpretation to include year-round nature-watching.

After interacting with the kiosk several times, local people tend to be reminded to look for wildlife each time they pass it. They find that they have fresh new experiences, year-round.

#### **Interpretive Objectives**

Through interacting with the kiosk, participants will:

- observe local plants, wildlife, and natural processes
- observe historical relicts and become aware of their significance
- through this observation develop an awareness, appreciation and understanding of the natural and cultural heritage of the causeway-lagoon site including the seashore, creek and watershed
- become aware of the ways that Metro Vancouver Parks, Fisheries and Oceans Canada, the Bowen Fish and Wildlife Club, and local community organizations are working to learn about and protect the Island's natural and cultural heritage and resources
- interact with the natural and cultural features of the area in a consciously respectful and sustainable way





## Killarney Creek Salmon Watching Kiosk

### Interpretive Themes

1. You can identify salmon species and observe and learn from their behaviours without disturbing them.
2. Estuaries and riparian zones like these are important food-factories and shelter zones for salmon and wildlife. Here you can observe many creatures throughout the year as they come to feed at the estuary restaurant.
3. The intertidal zone poses key challenges to plants and creatures that live there: twice-daily changes

from wet to dry, salinity and exposure to predators. You can find and identify many intertidal creatures in ways that will not harm them, and observe their many adaptive structures and behaviours.

4. Bowen was an important recreation destination for people living in Vancouver from the early 1900s up to the end of the Second World War. You can observe signs that people have been using and enjoying this landscape for a long time.

### Storyline

We chose to write the text from the point of view of a local commuter who has an interest in nature and history. The panels consist of notes and illustrations of this character as he/she models good practice in nature observation.

### How this Writing is Interpretive

- the writing models good practice in wildlife-watching and provokes active learning through asking questions and using observation to find the answers
- the kiosk combines words and illustrations to communicate
- the exhibit reveals meaning through stories of personal discovery and observation experiences of visitors
- the writing provokes participants to make further observations, encourages them to go to other locations for further activity and to make connections with local community groups that can further their connections with the site and the whole ecosystem
- target audiences can relate to the character
- the character presents in the first person for maximum engagement



## Killarney Creek Salmon Watching Kiosk: Panel 1

# FALL FISH WATCHING

### Naturalist's Scrapbook

*When I first came to live on Bowen Island, I walked this causeway every day without noticing much in the way of wildlife. Then one cloudy fall day I saw a group of people gathered on the bridge looking down into the water. I was thrilled to see several large fish splashing their way upstream against the current into the quiet lagoon. This was my first sight of the salmon returning home to the Killarney Creek watershed after years at sea.*

*Since then, I've kept my eyes and ears open and I often sit here taking pictures, making sketches, or just watching. I am amazed by the amount of wildlife I can see as soon as I slow down.*

*Read through my notes and take your time to observe with family, friends or as a solo onlooker. Ask questions about what you see. Like me, I bet you'll be able to find answers and new questions each time you stop and watch.*

### Identifying Adult Salmon

If I stand on the causeway when the salmon are running, I get a perfect view of the fish as they slither up the spillway into the lagoon. In the spillway, they are in only a few inches of water where I can see them most clearly. Here are some of my observations...

Male salmon develop huge hooked jaws and dog-like teeth.

Female salmon have a normal fish-shaped head.

### Males and Females Look Different

### Fish Fight! Fish Fight!

When I first saw the salmon swimming upstream, I asked myself "Why are they doing this?" Fortunately, watching what they do on the gravel bar (in the lagoon beside the causeway bridge) gave me the answer. They have come here to mate and to die. Here is what I've seen so far...

#### Females

- Select Nest Sites
  - Hover over a section of gravel
  - Chase other females away
  - Choose males that they want for mates
  - Chase away unsuitable males or those they are not ready for
- Dig Redds (Nests) In The Gravel
  - Lie on their sides facing upstream
  - Dig into the gravel bed with body, using flipping motions and beating tail
  - Rest and do it again

#### Males

- Male Activities I Have Seen
  - Several hanging around each female
  - Bumping and biting other males to get the attention of a female
  - Lots of splashing, nipping and chasing
  - Lone big males positioned beside a female

### When Do the Fish Come?

The season for watching salmon returning to the stream is short—from October through to the end of November. Action usually starts soon after the fall rains have filled up the creeks. The seductive scents of the fresh stream water entering the sea beckon the salmon back home.

*Though the salmon viewing season is short, it is full of drama and fills me with a sense of wonder.*

### How and Where to Watch

These salmon swam thousands of miles dodging bigger fish, seals, sea lions, killer whales, fishing nets and lures. They come here to complete a vital part of their life cycle. I make sure I do nothing that will harm them or the eggs and young they leave behind.

Here are my rules:

- Protect the adult fish—Never harass a fish.
- Protect the baby fish. I stay out of the lagoon, and especially off the gravel bar. The fertilized eggs and newly hatched baby salmon (called alevins) remain in the gravel for about 3 1/2 months. People or dogs walking on the gravel bar can crush or smother them.

Two Places To Keep My Eye On...

Protect the baby salmon - keep out of the gravel

### I Usually See Two Species

#### Coho

When ready to spawn both male and female have greenish-black heads and brown to brownish-red sides.

No obvious stripes or blotches

Male  
Long toothy jaws

Normal looking jaws

Female

#### Chum

When ready to spawn both sexes have brownish-green backs and brownish-red sides with dull red stripes.

Up and down tiger stripes and blotches

Male  
Very long toothy jaws

Normal looking jaws

Female

Wide, reddish stripe from nose to tail

### Salmon Watching Questions

I have the basics – now it's time to observe the fish. Here are three questions anyone can answer by watching the fish:

- Which species of salmon is most commonly seen here?
- Are there more females than males, more males than females, or equal numbers?
- Do the Coho and Chum mate and lay eggs in the same places?

### Egg Laying

When a female has completed her redd:

- A female and a male rest side by side over redd
- Both quiver their bodies releasing eggs and sperm (milt)
- Eggs sink into gravel in redd
- Female covers redd with gravel using her tail
- Female may dig several redds and mate with several males

Dead salmon are recycled as food by gulls, crows, mink and aquatic insects.

Ducks feeding on spawned-out salmon

After spawning is complete males and females can live for up to two weeks. Salmon that have been spawning for a long time can be identified by:

- Frayed fins
- Skin wounds
- Fluffy white fungal infections on their skin



### Killarney Creek Salmon Watching Kiosk: Writing Sample from Panel 1

#### *Naturalist's Scrapbook*



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## Killarney Creek Salmon Watching Kiosk: *Writing Sample from Panel 1*

### When Do the Fish Come?

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### How and Where to Watch

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*Though the salmon viewing season is short,  
it is full of drama  
and fills me with a sense of wonder.*

*Two Places  
To Keep My Eye On...*



Gravel Bar



Causeway bridge



### Identifying Adult Salmon

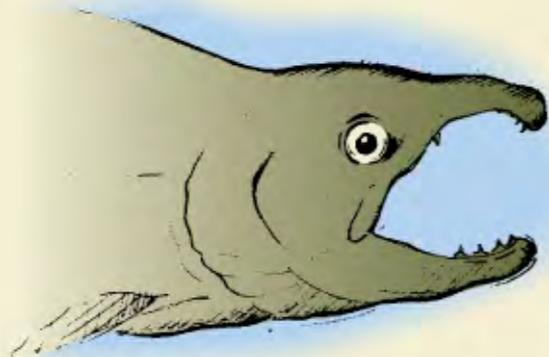
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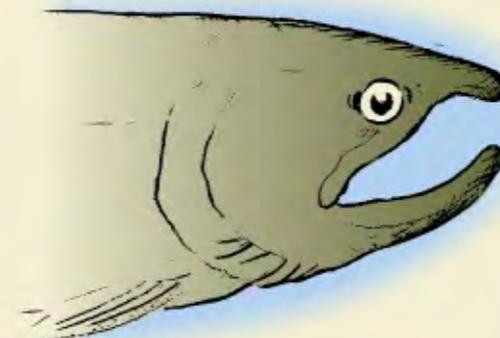
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### Males and Females Look Different



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Killarney Creek  
Salmon Watching  
Kiosk: *Writing  
Sample from Panel*

## *Fish Fight! Fish Fight!*

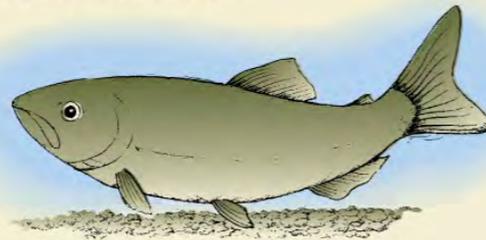
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### Females

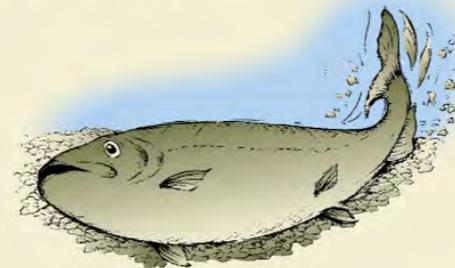
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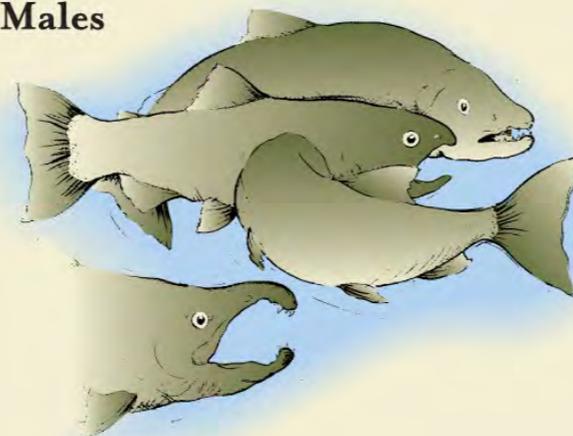


#### Dig Redds (Nests) In The Gravel

- Lie on their sides facing upstream
- Dig into the gravel bed with body, using flipping motions and beating tail
- Rest and do it again



### Males

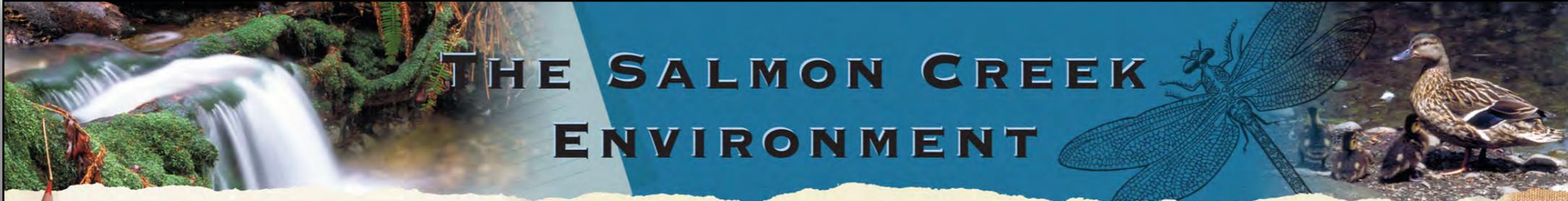


#### Male Activities I Have Seen

- Several hanging around each female
- Bumping and biting other males to get the attention of a female
- Lots of splashing, nipping and chasing
- Lone big males positioned beside a female



## Killarney Creek Salmon Watching Kiosk: Panel 2



# THE SALMON CREEK ENVIRONMENT

### Where Do All These Fish Come From?

*This was my first question for the members of Bowen's Fish and Wildlife Club.*

*They gave me a double-barreled answer...*



*Salmon have been coming here for thousands and thousands of years...*

#### Natural Reproduction

Salmon have been coming to this stream to lay their eggs ever since the glaciers melted about 10,000 years ago. Many of the fish you see are their direct descendants.

#### The Terminal Creek Fish Hatchery

My friend Al is a volunteer at Bowen's Terminal Creek Hatchery. It sits upstream on the edge of Crippen Regional Park.

With the help of the regional Community Advisor who works for Fisheries and Oceans Canada, he and other Bowen Islanders raise and release thousands of Coho and Chum salmon each year.

Families tour the hatchery and help to release young salmon into the creek at an annual event organized by the Fish and Wildlife Club and Crippen Regional Park. I keep a lookout in the local paper for announcements of this event.

For more information about the hatchery, check the Bowen phone book for the current number of the Bowen Fish and Wildlife Club.





### Where Does All This Water Come From?

#### The Grafton Lake/Killarney Lake Watershed

I found that there are only a few big streams on the island. Killarney Creek, flowing into this lagoon, is the biggest. Through talking to my friend Murray, a member of the Bowen Island Forest and Water Management Society, I discovered a lot about where this water comes from.



#### Components of a Watershed

This watershed has features that provide good clean water for people. These features also make Killarney and Terminal Creeks great salmon and wildlife streams.

##### Forests:

**Temperature Control:** forests shade streams, keeping the water at an ideal cool temperature for salmon and other water creatures.

**Flood Control:** fallen logs and the roots and stems of forest trees and plants hold back rainwater for slow release into streams and lakes.

Crippen Regional Park protects a large area of the watershed ensuring that many of its important natural components are protected. The habitat of salmon and wildlife of this part of the island is safe for the foreseeable future.

I can find many of these watershed features as I walk the trails to Killarney Lake.

##### Lakes:

Lakes store water from the winter rainy season and release it slowly into the stream throughout the year. This means young salmon and other water creatures have a place to live and land creatures, including us Bowen Islanders, have a year-round supply of drinking water.

##### Wetlands:

**Pollution Control:** wetland plants suck up pollutants, providing a cost-free, self-sustaining water purification system for people, fish and all living creatures.

**Flood Control:** wetlands also trap and hold flood waters then release them slowly, preventing flash floods.

**Silt Control:** mud picked up by fast flowing streams settles out in wetlands giving cleaner water.





### The Creek Estuary

The creek estuary is full of wildlife year-round. I see more creatures in the lagoon and in the bay than most other places. Why? Here is what I've found out so far...

In the estuary, the fast-flowing creek finally slows down and drops its load of nutritious mud, leaves and wood that it picked up as it rushed through the forest. This stuff decays and becomes great food for small creatures like bugs and clams—and there are lots of them here.



*An estuary is where the freshwater from the creek and the ocean's saltwater mix.*

#### Rest Stop

Many travellers, such as migrating salmon, stop in the estuary to rest. Returning adult fish need time in the estuary to adjust to fresh water before they head upstream to spawn. I've seen schools of young salmon here too, resting and adjusting to saltwater in the lagoon before they leave the creek for a life at sea.

Other migrants like ducks and geese stop over as well to rest on their journeys. I've found this small estuary usually attracts small numbers of these travellers in spring and fall.




#### Hunting Ground

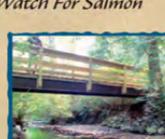
Hunters like salmon, great blue herons, kingfishers and mink have a choice of freshwater and saltwater prey.

### Year-Round Wildlife Watching

#### Other Places To Watch For Salmon



In spring, summer and fall, juvenile salmon may be seen in the lagoon and in creeks from trail bridges.



In the fall, spawning salmon may be seen further upstream at the Bridal Veil Falls fish ladder.



#### Wildlife I've Seen in this Estuary:

 <p><i>Seals visit throughout the year, but mostly when the salmon are running.</i></p>	 <p><i>I see them here year-round, eating water plants and bugs—and maybe salmon eggs.</i></p>	 <p><i>A robin-sized bird that walks underwater to gobble up loose salmon eggs and water bugs.</i></p>
 <p><i>These vegetarians feed on water plants and eat the grass beside the lagoon.</i></p>	 <p><i>This vegetarian European swan was probably someone's pet. Watch out—it packs!</i></p>	 <p><i>This diving duck has a taste for salmon eggs, fish, and mussels.</i></p>

My list is just beginning. By using field guides and by going out on Bowen Nature Club family walks, I'm seeing, identifying and learning about more creatures that visit the lagoon or live here year-round. Each new creature I see will be added to my estuary life list.







Killarney  
Creek  
Salmon  
Watching  
Kiosk:  
Writing  
Sample from  
Panel 2

## Where Do All These Fish Come From?

*This was my first question for  
the members of Bowen's Fish  
and Wildlife Club.*

*They gave me a double-barreled  
answer...*

### **Natural Reproduction**

Salmon have been coming to this stream to lay their eggs ever since the glaciers melted about 10,000 years ago. Many of the fish you see are their direct descendants.



*Salmon have been coming here for  
thousands and thousands of years...*

### **The Terminal Creek Fish Hatchery**

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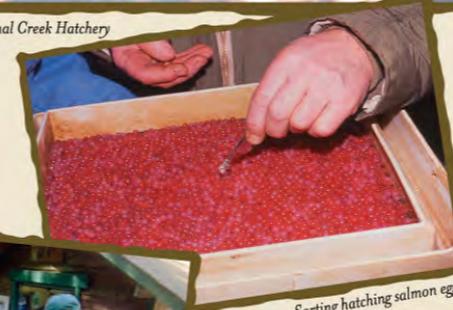
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The Terminal Creek Hatchery



Sorting hatching salmon eggs



Young salmon ready for release





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Mergansers (fish ducks)



An estuary is where the freshwater from the creek and the ocean's saltwater mix.

### Hunting Ground

Hunters like salmon, great blue herons, kingfishers and mink have a choice of freshwater and saltwater prey.



Great Blue Heron

Year-Round Wildlife Watching

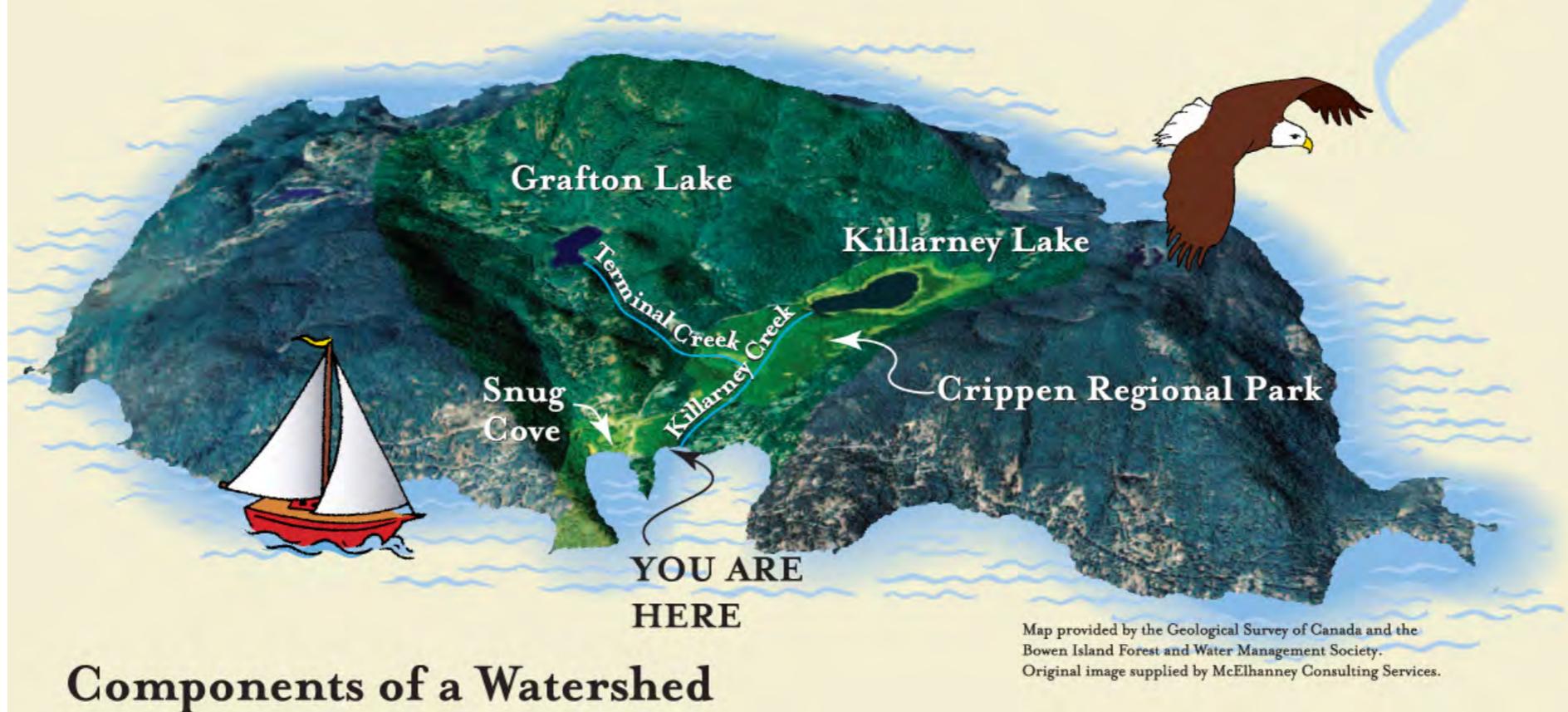


## *Where Does All This Water Come From?*

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## Killarney Creek Salmon Watching Kiosk: Panel 3

# YEAR-ROUND WILDLIFE WATCHING

### The Broken Shell Mystery

*I often see interesting broken shells on the pavement of the causeway. I wondered how they got there. One day I found out. Smack! A clam shell smashed onto the pavement in front of me.*

*A crow swooped down, grabbed it, flew upwards and dropped it again ... crunch. I stood still and watched as the bird landed and ate the clam meat from inside the broken shell and then swooped down to the beach.*

*I spent a fun hour watching as gulls and crows stalked about on the beach at low tide digging up shellfish and then flying over "nutcracker bridge" to drop them, using gravity to crack open the shells.*

*I now watch the tide tables and visit during low tides to observe the bird shellfish feasts. I also take a field guide to BC sea life and join the search with the crows and gulls on the beach.*

### The Overhanging Forest

#### Lagoon Riparian Zone

I first noticed this lagoon-side forest when a kingfisher darted out from a bush on the edge, splashed into the water in front of me, and flapped back to her perch with a tiny fish. I've kept an eye on the overhanging forest ever since and I'm continually surprised by the amount of wildlife action I see there.

#### Digging Deeper

I've asked some of my friends in the Fish and Wildlife Club and the Nature Club—why is this place such a hotbed of wildlife activity? Here are some facts I've found out...

This forest on the edge of the water is called a riparian forest. The plants living here get unlimited water and lots of sunlight so they grow lush and thicker than their neighbours inland.

### An Historic Wildlife Viewing Site

*The Approach to PP Structures Landfill Bowen Island B.C.*

Photo courtesy of Bowen Museum and Archives

As I stand on the causeway bridge I feel the presence of many people who have stood on this very spot watching the pageant of nature unfold.

To learn more about Bowen's past I drop in at the Bowen Museum and Archives run by the Bowen Historians.

The Millenium Kiosk in the Davies Orchard in Snug Cove is another great source of information. It's beside Cottage #20 which houses the summer tourist information centre run by the Bowen Island Heritage Preservation Association.

### My Low-Tide Sea Life Collection

*On and Under the Sand*

**Bent-nose Clam**

*When I find a small smooth breathing hole in sand at low-tide, I carefully dig and find all sorts of clams.*

**Clam tunnels**

*The only sign of this delicate tunnel dweller is the penny-sized entrance hole in the mud during the lowest tides.*

**Sand Worm**

*This huge amazing worm hunts small creatures deep in the sand. It often has a rainbow sheen.*

*On and Under the Rocks*

**Purple Shore Crab**

*These tiny crabs are everywhere under rocks close to the water's edge.*

**Mussels and Barnacles**

*The black clam-like mussels and white armoured barnacles seem to be fighting for space on top of many rocks covered by high tides.*

**Sea Stars**

*I find tiny sea stars under some of the rocks exposed at low tide. When they grow up, they will prey upon mussels for food.*

### It's a Wildlife Restaurant

The lush plant growth provides lots of seeds, fruits, worms and insects which attract lots of birds.

**Robin**

### It's a Safe Home

The dense branches and leaves provide great hiding places for birds and animals and their nests and young.

**Robin's Nest**

**Young Coho Salmon**

Young Coho salmon and other fish cruise under the overhanging branches and snap up insects and fruit that fall into the water.

**Black-tail Deer**

### It's a Great Lookout

Many birds like the edge of the forest because it gives them a good view of neighbours encroaching on their territory, prey that are out in the open for easy pickings, or predators that may be sneaking up.

**Barred Owl**

### Foot

*Tracks—crab followed by a mink*

### Shelter

*There is so much to find out about this amazingly rich place.*

### Doing It Right

I collect only photos to take home. When I find something living, I take a photo of it and then put it back where I found it. I even fill in the holes that I dig. These creatures need fresh sea water for food and to breathe. If I take them home they will die.

### Safety

Some people like to collect shellfish for food. The estuary is not a safe place to do this. There is a danger that they will have picked up poisons from sewage run-off from nearby houses and boats anchored in the bay. For information on seafood safety contact Fisheries and Oceans Canada.

### Finding Out More

I sometimes see creatures I don't recognize, and I often see them doing things that I don't understand. I find answers in the many west coast nature field guides available and by taking part in the family programs provided by the Bowen Fish and Wildlife Club, the Bowen Nature Club and the Bowen Island Conservancy. I also keep my eyes peeled for announcements about special events provided by GVRD Parks.





Killarney  
Creek  
Salmon  
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## Bowen Island-based Conservation Groups

You can learn more about Bowen's natural and cultural heritage by contacting or joining one of the island's many clubs and societies.

- BI Fish and Wildlife Club
- BI Forest and Water Management Society
- BI Nature Club
- BI Conservancy
- BI Historians
- BI Heritage Preservation Association



*Tracks—crab followed by a mink*

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