



Teacher Resource Lesson #5

Protecting Our Coast: Conservation in Action

Coastal Insights: Eyes on the Coast



Guest speaker info

David Scott, Research and Restoration Coordinator for the Lower Fraser Salmon Program



Dave Scott is a salmon biologist with a focus on understanding juvenile salmon life histories to facilitate better restoration planning. Dave is currently a PhD student in the Pacific Salmon Ecology and Conservation Laboratory at the University of British Columbia where he studies under highly renowned salmon researcher Dr. Scott Hinch.

Dave's PhD research focuses on understanding juvenile Chinook estuary reliance through field research capturing out migrating juvenile salmon in the Fraser River estuary along with laboratory

studies conducted at UBC. Dave also leads Raincoast's Fraser Estuary Connectivity Project which has created three large breaches in the Steveston Jetty, reconnecting the river to its delta after over 100 years of separation. As part of his research Dave also leads our effectiveness monitoring which has demonstrated the movement of juvenile salmon through the newly created breaches along with measuring changes in the distribution of freshwater and sediments and changes in vegetation.

[Lower Fraser Salmon Conservation Program](#)

Shauna Doll, Project Coordinator for Gulf Islands Forest Project



Shauna is the project coordinator for the [Gulf Islands Forest Project](#). Previously, Shauna worked in the Acadian forests of Nova Scotia. She is based out of Victoria and often works from Raincoast's Applied Conservation Science Lab in the Department of Geography at the University of Victoria.

She has a bachelor's degree in Environmental Sustainability and Society and a master's degree in

Resource and Environmental Management, both from Dalhousie University. Her graduate research focused on assessing the ecological integrity of institutional greenspaces—those intersectional urban spaces that seem to exist somewhere between nature and development, like university campuses, golf courses, and cemeteries—to determine whether they might contribute to the maintenance of biodiversity and resilience, using characteristic Acadian tree species as indicators. She completed a conservation-focused internship in Cambodia. She has also worked managing a rural field station on the South Shore of Nova Scotia.

[Gulf Islands Forest Project](#)

Misty MacDuffee, Biologist & Program Director, Wild Salmon Program



Misty MacDuffee is a conservation biologist with a focus on fisheries ecology in salmon ecosystems. For the past 20 years, she has undertaken various types of field, laboratory, technical and conservation assessments in the salmon-bearing watersheds of the BC coast. She has a particular interest in the role of salmon as critical food sources for wildlife and incorporating their needs into salmon management decisions. She is also interested in historic stock assessment and run reconstructions in salmon watersheds. The application of her work is to implement ecosystem considerations in fisheries

management. This often requires her engagement with management, dialogue and stakeholder forums that affect fisheries and wildlife policy.

Link to [Southern Resident Killer Whale Recovery Program](#)

Lesson vocabulary

Breach: A gap in a wall or barrier.

Barter: To trade merchandise for other merchandise.

[Clam Gardens](#): Ancient intertidal features constructed by the coastal First Nations of British Columbia (Canada) and Native Americans of Washington State and Alaska (USA), to enhance shellfish productivity. These features are made by constructing rock walls at the low tide line

along the edges of bays and inlets, transforming naturally sloping beaches or rocky shorelines into productive, level beach terraces.

Contaminants: A polluting or poisonous substance that makes something impure.

Coastal Douglas Fir Forest: A unique forest ecosystem found in only 0.3% of British Columbia. This unique forest is a result of a milder climate that exists due to the rain-shadow effect of the Olympic mountains. The dominant tree in this forest is the Douglas-fir (*Pseudotsuga menziesii*). Other trees in these forests include the Western red-cedar (*Thuja plicata*) found in the wetter areas, Arbutus (*Arbutus menziesii*) and Garry Oak (*Quercus garryana*).

Conservation: To protect and nurture an area or ecosystem.

Critical Habitat: a term defined and used in the Endangered Species Act. It is specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection.

Echolocation: the general method of locating objects by determining the time for an [echo](#) to return and the direction from which it returns, as by radar or sonar.

Estuary: Bodies of water usually found where rivers meet the sea. Estuaries are home to unique plant and animal communities that have adapted to brackish water—a mixture of fresh water draining from the land and salty seawater.

Intertidal Zone: The area where the ocean meets the land between high and low tides.

Invasive Species: A non-native species that takes up the space of native species.

Jetty: A breakwater constructed to protect or defend a harbor, stretch of coast, or riverbank.

Restoration: Rebalancing an area or ecosystem's species and conditions.

Shell Midden: are the heaps of shells, bones, utensils and artifacts that accumulated sometimes over thousands of years of Aboriginal Peoples occupation of a site..

Southern Resident killer whales (SRKW): In the Pacific Northwest, an eco-type of killer whales that feeds almost exclusively on salmon.

Review and discussion questions

As a follow-up to the session, below are some suggested review questions and discussion points to go over with your groups.

1. What distinct geographical feature is present at the mouth of the Fraser River where it meets the ocean?
2. What is the main motivation for Dave's restoration work in the Lower Fraser Estuary? What species does his work directly focus on?
3. What kind of considerations would be necessary to create more breaches for salmon in the jetties along the Fraser river? What kind of environmental, political and logistical challenges do you think Dave and his team faced in starting this project?
4. According to W̱SÁNEĆ First Nations oral history, how were clams created?
5. What is a midden and what does its presence tell us?
6. What percent of the province is covered by Coastal Douglas-fir forests (CDF)? Why is it considered such a valuable ecosystem? List 3 major threats to the CDF forests in the Gulf Islands.
7. What are the main survival requirements for southern resident killer whales (SRKWs)?
8. What are the three major threats to the SRKW population?
9. Why has there been little progress towards reducing contaminant levels in the Salish Sea?
10. What are some ways you might be able to contribute to the projects outlined in this session?

Links and additional resources

Lower Fraser Estuary Conservation and Restoration

Video: [The Fraser River Estuary Connectivity Project](#) (5 mins)

Webinar series: [Connected Estuary](#) - a webinar series about how the Fraser River Estuary connects people, salmon, whales and birds across ecosystems.

Updates: [Jetty breaches](#) blog, Fraser River [Habitat restoration page](#) with further links to updates.

Report: [Towards a vision for salmon habitat in the Lower Fraser](#) River (An extensive report identifying some of the major challenges to conservation of local salmon and their habitat and recommendations on how to restore their ecological resilience).

Gulf Islands Forest Project

An Introduction to [S'DÁYES Flycatcher Forest](#)

Information relating to the [Pender Islands Big Tree Registry](#)

Opinion piece: A Vancouver Sun Editorial Article on the need for protection of BC's Coastal Douglas Fir Forests, written with Raincoast Executive Director Chris Genovali

An Interview with [Shauna Doll on Pacific Rim College Radio](#)

Southern Resident Killer Whales Recovery (SRKW) Program

Review: [Raincoast decade of action for Southern Residents](#) (a snapshot of Raincoast's decade-long work toward SRKW recovery).

Video:

- i) [Southern Resident Killer Whales Need Help](#) (4 mins), [A Killer Whale Emergency](#) (1.5 mins)
- ii) Coastal Insights (season 1) - [Demystifying the Killer Whales of BC](#) An episode dedicated to understanding the complex language, culture, evolution and family dynamics of killer whales on BC's coast (1 hour).

Book: [Spirits of the Coast](#) - Book highlighting the "killer whales" as complex social beings with culture and language of their own. Feature Chapter by Misty MacDuffee.

Radio coverage:

- What's happening to salmon? Raincoast's Misty MacDuffee speaks with Tyler Hall at Oceanside News October 2020
- CBC All Points West: The Salish Sea 10 years later: A panel discussion with Chief Dalton Silver, Joe Gaydos and Misty MacDuffee August 2020

<https://www.cbc.ca/listen/live-radio/1-93-all-points-west/clip/15796430-the-salish-sea-10-years-later-a-panel>

- CBC Radio Canada [Terrain électoral] Le pipeline Trans Mountain menace les épaulards. We travel with Misty MacDuffee to the habitat of Southern Resident killer whales

<https://www.raincoast.eco/2019/10/terrain-electoral-le-pipeline-trans-mountain-menace-les-epaulards/>

- CBC Radio Special Podcast: Killers J Pod on the brink. Misty MacDuffee speaks with Gloria Macarenko about [SOUTHERN RESIDENT KILLER WHALES](#) / [SRKW](#)

Clam Gardens

[The Clam Garden Network](#) - A group of First Nations, academics, researchers, and resource managers from coastal British Columbia, Washington State, and Alaska who are interested in the cultural and ecological importance of traditional clam management practices and features, including clam gardens.

Bill Reid's Raven and the First Man artwork and Haida story

[The Raven and the First Man](#) (From Conception to Completion)