

Fisheries Careers for First Nations

An exploration of traditional and modern fisheries stewardship, related careers and how to direct a career path toward these jobs.

Prescribed Learning Outcome(s) met and Curriculum Organizer(s)

It is expected that students will:

Planning 10

Personal Interests and Attributes

- relate personal attributes and interests to education and career planning

Labour Market Information

- relate labour market information (e.g., types of employment, required skills and education, salary range) to careers of interest

Support Networks and Resources

- identify support networks and resources (e.g., family, school, and community resources) for pursuing their education and career goals

Transition Plan

- develop a personal education and career plan to support the achievement of education and career goals

Course Requirements, Exams, and Focus Areas

- identify the course requirements for the Graduation Program
- identify ways of earning credits for the Graduation Program (e.g., in-school courses, external credits)

Overview of Activity:

This lesson helps students explore the full spectrum of fish- and fishery-related jobs that are important to the economies of many First Nations communities. Traditional and modern stewardship practices that lead to careers are viewed through several short, real case studies. Student will examine their skills and interests to help them find potential matches with a fisheries career. [Internet recommended].

Estimate of time required:

Number of lessons: 1 lesson

Each lesson requires: 1-2 hours

Can be done: Anytime Fall Winter Spring Summer

Notes: This lesson may be conducted entirely in class if a computer is available to each student. Or, Internet research may be conducted as homework, with a wrap-up during a following class.

Natural Area Required: None - Indoor Activity Ocean OR Stream OR Estuary

Overview of Materials and Resources Required:

Material Available for downloading:

Activity Description(s)

- "Activity Description"

Student Handout(s)

- "Case Study: Russel Barsh"
- "Fish-Related Careers in British Columbia"

STREAM TO SEA ACTIVITY



- "Pathfinder Survey"
- "Internet Resources: Researching Careers"
- Background Information
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- Discussion Questions
- [Included in "Activity Description" document]
- Evaluation /Assessment Tool(s)
- [Included in "Activity Description" document]

Other Required Material:

- An Internet-connected computer would be preferable for showing one case study slide show.
- Overhead projector (digital or standard)
- Internet-connected computer (for the teacher)
- Internet-connected computers (one per student) [optional]

Suggested Assessment Activities:

- Lesson Outcomes are provided in the Activity Description, and may be used for assessment purposes.

Recommended Additional Resources and Optional Enrichment Activities:

(E.g. Web-sites, Teaching Guides, Student Reading, Videos/Audio-tapes, Posters and Brochures, Field Trips):

- Videos: "Chasing the Fish: Local Fishing Knowledge of the North Coast " (24 minutes) and "Oona River: Between Forest and Sea" (40 minutes)
www.ecoknow.ca/videos.html
also available from Charles Menzies, UBC for \$25 by calling (604) 822-2240.
- "Traditional Ecological Knowledge from the Salish Sea and its Modern Application in Fisheries Management", Russel Barsh (entire article)
www.coastalrevelations.com/news/index.htm#articles
- Lesson Plans on integrating local ecological knowledge with natural resource management and other issues about living in small resource-based coastal communities.
www.ecoknow.ca/curriculum.html

Support may be Available.

Contact your local Stream to Sea Education Coordinator or Community Advisor.

www-heb.pac.dfo-mpo.gc.ca/community/contacts/ec_e.htm

or phone (604) 666-6614 to find out if an Education Coordinator in your area assists with this activity.

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ACTIVITY DESCRIPTION

Length: 90 minutes [Internet research may be conducted as homework if a computer lab is not available].

Overview

- 1) Intro to lesson
- 2) Review case studies of First Nations engaged in stewardship and fisheries careers
- 3) Brainstorm fish or aquatic ecosystem related careers in groups. Class discussion.
- 4) Personal assessment of interests and related careers - Debrief.
- 5) Online fisheries career browsing
- 6) Wrap-up and identify next steps.

Materials

- 1) Handout, one per student OR printed as overhead, “Russel Barsh...”
- 2) Handout, one per student OR printed as overhead, “Fish Related Careers in British Columbia”
- 3) Handout, one per student, “Pathfinder Survey”
- 4) Handout, one per student, “Internet Resources”
- 5) [Optional] Internet access for each student and ability to project one screen for all to see.

Lesson Outcomes

At the end of the lesson, students should be able to:

- 1) Describe examples of First Nations combining stewardship with fisheries management;
- 2) Identify some fisheries or stewardship jobs in British Columbia;
- 3) List some benefits of working in the field of fisheries and stewardship;
- 4) Identify their personal interests and how they might relate to a career;
- 5) Describe one or two career paths related to their interests;
- 6) Outline some next steps they might take to learn more about these identified careers.

Lesson Plan

Time	Process
5 min	<p>Introduce the Lesson</p> <ul style="list-style-type: none"> • Explain, “We’re here to learn about jobs and career opportunities in the fisheries sector. There will be group and individual work”. • Mention there will be examples where stewardship by Aboriginal people has been used as a tool for conserving, managing and enhancing marine and freshwater aquatic resources and that this stewardship has led to Aboriginal people assuming careers in fisheries. • Describe the lesson outcomes.
15 min	<p>Case Study: First Nations Fisheries Stewardship</p> <ul style="list-style-type: none"> • Have students read the excerpt of the Russel Barsh speech, “Traditional Ecological Knowledge from the Salish Sea and its Modern Application in Fisheries Management” • Discuss the following: <ul style="list-style-type: none"> • Name some examples where stewardship by the Samish Nation led to better fisheries management? • How can local fisheries management (as demonstrated by the Samish Nation) improve the economy for local communities? • What fisheries or stewardship jobs are mentioned?

15 min	<p>[Optional – Internet Required]</p> <p>Case Study: First Nations Fisheries Jobs</p> <ul style="list-style-type: none"> • Online PowerPoint presentation (slide show) of examples of fisheries careers in Nuu-chah-nulth Territory • www.westcoastaquatic.ca/FN_fisheries_careers.htm
15 min	<p>Introducing Careers in Fisheries and Stewardship</p> <ul style="list-style-type: none"> • Divide the class into groups of 5-6; “Each group should brainstorm jobs related to aquatic ecosystems and/or fish. You have 5 minutes”. <ul style="list-style-type: none"> • To provide some focus, ask them to imagine what opportunities arise as a salmon egg grows into a salmon, e.g., hatchery work (eggs); stream stewardship (fry); processing and selling smoked salmon (adult salmon); fisheries management (adult and spawning salmon); eco tourism (entire life cycle). • Have groups share their lists out loud with the class. • Refer to “Fish Related Careers in British Columbia” (as handouts or on overhead), and identify careers that students didn’t think of, and note careers students thought up but that aren’t listed. • Explain, “Fisheries jobs have been identified as key to FN communities in Coastal BC”. • Discuss benefits of working in this sector. <ul style="list-style-type: none"> • Many jobs are in rural areas, allowing a person to stay in his or her community. • There is increasing demand for First Nations (FN) professionals familiar with the needs of FN communities and Traditional Ecological Knowledge (TEK). • Many jobs allow a combination of TEK and cultural values. • “What other benefits to you see in these kinds of jobs?”
15 min	<p>Self-Assessment of Interests</p> <ul style="list-style-type: none"> • Hand out one “Pathfinder Survey” to each student. • Explain that this is a tool to help you see how personal interests can translate into job options. • Ask students to individually complete the survey by selecting their interests and skills on the left, and writing down a concrete example of how they demonstrated that interest or skill on the right. • Debrief: “Was it difficult to come up with concrete examples for each interest?” Let them know they will be using this assessment to help guide them towards successful career options. • Ask students to draw links between jobs brainstormed earlier and the interests and concrete examples they’ve written down.
15 mins or homework	<p>[Optional – Internet Required]</p> <p>Exploring Fisheries and Stewardship Careers</p> <ul style="list-style-type: none"> • Explain, “We’ve seen examples of First Nations fisheries and stewardship jobs, and brainstormed other job options. We’ve looked briefly at your skills and interests and identified some careers that match your preferences. Now you’re going to zoom in on those identified careers to learn more about them.” • Provide as handouts to take home or display as an overhead “Internet Resources”. • Have students select one or two career options linked to their interests and conduct some preliminary research on the job: <ul style="list-style-type: none"> • What kind of work does the career consist of? • Where are these kinds of jobs available? • Are there any First Nations role models in this job? • What education is required to work in this field? • Where could I find out more about this career?

10 min	<p>Wrap Up/The Next Step:</p> <ul style="list-style-type: none"> Based on the students' findings on their specified jobs, lead a class discussion: <ul style="list-style-type: none"> “What did you learn about the fisheries sector as a potential career direction?” “Why do you think it’s important to have Aboriginal people working in the fisheries sector?” “Where could you go to get more information about career planning for fisheries?” (e.g., First Nations Post-Secondary Programs, School Programs, Distance Education Opportunities, Guidance Counselors, volunteering, etc.) Students can take a next step by determining course requirements to prepare them for the career options they have selected.
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Enrichment Activity: Cooperative Fishing and the Tragedy of the Commons

This game is used to encourage students to think about the roles of fisheries management, enforcement and stewardship in protecting the common good.

Cooperative Fishing and the Tragedy of the Commons

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Learning Objectives:	Familiarity with concepts of the tragedy of the commons, free-rider problem, role of government and social rules in protecting the common good, sustainability, over-fishing and other resource overuse problems.
Materials:	One bowl for each 4 students and one cup for each student. Box of fish crackers.
How to Perform the Experiment:	<p>First explain that there are 8 fish in each bowl and there will be two turns per round and several rounds per game. For each turn, each student can remove one fish or zero fish and put it in their cup. Once fish are taken from the bowl they cannot be put back. Explain that after the two turns, you will double the fish in the bowl and then there will be more turns where they can withdraw a fish, etc. Explain also that the object is to get the most fish in your cup and that at the end of the game only fish in your cup count. Explain that no fish are to be eaten during the game.</p> <p>For the first game I tell them there is to be no talking or other communication. At least some groups will deplete all their fish after the first round, but go ahead and play three rounds—they are just out of luck, but it is still good to emphasize the long term consequences of their “overfishing”. They may try to put fish back in the bowl, but explain that the fish are already dead and therefore can’t reproduce to make more fish.</p> <p>For the second game, I tell them they can talk for 30 seconds and then we will play another game in silence. Usually results improve somewhat. For the third game I tell them that they can create rules among themselves about how to play the game (but that the rules of the overall game cannot be changed). To enact the rules a majority must agree and then all must follow the rules.</p>
Explanation of What’s Happening:	<p>This is an example of a tragedy of the commons where doing what is best individually does not lead to the best result in the long run. Optimally, students will remove one fish per round (forgo one of their two turns) and then each round their fish are replenished. But if everybody else follows this strategy, it still pays an individual not to. If 3 players take 1 and one player takes 2, then there are 3 left and they double to 6. Then if all take one, the “defecting” player ends up with 3 total compared to 2 total for the “cooperators”. If the students know how many rounds will be played, then it makes sense to take all the fish on the last round, so leave the number of rounds ambiguous.</p>

CASE STUDY: RUSSEL BARSH

(Excerpted from: “Traditional Ecological Knowledge and its modern application in the context of Marine Protected Areas (MPAs)”, Russel Barsh, Center for the Study of Coast Salish Environments, Washington:

“I used to work for the Mikmaq Grand Council in Atlantic Canada, where of course, there aren’t many fish anymore. We watched all of that happen, and one of the problems was that no one was listening to local people. I now work for a little tribally sponsored research center – the Center for the Study of Coastal Salish Environments, established by the Samish Nation. We examine how First Nations people transformed the landscape, how people took care of things. Our main mandate is science in the service of stewardship of the Samish traditional territory. Part of that is combining traditional knowledge with conventional Western science. We work a lot on salmon, rockfish, native oysters and recruiting and training young native scientists into our Samish Stewards program. I work with them to figure out what kind of research to do and we go out together and do it. We don’t have a bunch of people sitting in offices; we have young tribal members doing field research and bringing in university experts and their graduate students along to help figure out how to do it best. The Samish leadership has come to the conclusion that there’s not much of a future in fishing, but rather in becoming scientists, engineers, teachers, becoming fishers of technology and scientists of fish. We like fish, we eat our science, we only work on species we like to eat. We feel that the people who will have the greatest power and wealth in the San Juan Islands are those who know about fish, make decisions about fish, and who know how to make fish thrive, rather than just those who catch fish. We’re seen as having an economic development focus, even though what we do is not development at all. We train scientists.

“We’re involved right now in three Marine Protected Area projects. The most interesting is the establishment of a “marine stewardship area” for all of San Juan County, which is the entire San Juan archipelago. This project was announced last month by the San Juan Board of County Commissioners. We had our tribal council in the commissioners’ chamber with them and it was a joint declaration of the Samish Nation and San Juan County. They passed a resolution declaring the marine stewardship area, and we passed a resolution endorsing it and saying, “we’ll work with you and make it a partnership”. This is just an idea so far, a framework. There are no rules and regulations at this point. It’s a commitment to see that living resources in San Juan County are given the best protection possible so that they will always be there. It’s the first step in establishing comanagement over a very large habitat area. We worked on the research to support this effort by looking at which habitats and species were at risk in the San Juan Islands, but more importantly, working with non-native communities in the San Juan Islands to get them to see the connection between their concerns and our concerns, organizing a base of mutual interest in building a kind of Marine Protected Area that both native and nonnative communities wanted. This is different than having some area declared a park, and asking First Nations later if they agree. Or sometimes it goes the other way around: tribes take action on fishing regulations and quotas under their treaty rights and then wait to see if everyone else will agree. That usually ends up with everyone going to court and fish not being protected.

“The Cypress Island Aquatic Reserve is an extremely special place to the Samish people both as a fishing ground (especially halibut, which has been a source of wealth for a very long time), and as a sacred place. The mountains of the island are power places and very, very important spiritually, including places where the Thunderbirds nest. The Thunderbirds control the weather, so these places have huge power, and have to be treated with enormous respect. The State of Washington thought this would make a great park, but we intervened and insisted that they look at it our way and examine what is there to protect, and work with us. We decided to be proactive. Instead of waiting for a proposal from the government about how to set up the aquatic reserve, we designed it and went to them. We presented management regulations, critical areas, cultural

landscapes, surveys, fish and wildlife inventories, and the state adopted it. It's a unique arrangement: there's recreational use, but no commercial use; there's subsistence and cultural use; there are places the public can't go because they are spiritual places.

“There is a proposal for a network of marine state parks in the San Juans (state owned park lands with a proposed extension to the marine environment). We chose to work with the state parks department because they have a cultural and interpretive mandate, and we could say we also want to protect these marine areas so people can understand the value of the sea to the Samish. It's not just about fish, it's about how Samish people take care of fish, and raising awareness about how Samish people have always been part of the ecosystem, managing and protecting it. Instead of saying “take the people out to protect the fish,” we turn that around and say “people are good for fish if they know what they're doing.” We can take the pressure off the fish and teach people how to take care of things.

“This is another way we are trying to assert ownership over areas of concern in the Samish traditional territory. This is a way of giving Samish people more presence, more influence, more enjoyment of the resources of the area by taking the initiative, rather than being reactive when things are being done-- saying “WAIT a minute that's a VIOLATION of treaty rights!”, and wasting our resources fighting about it afterwards. Instead we have the state government saying ‘That's a great idea and we have some money for research. We would like you to make some maps, establish a ranger program,’ and so on. That way of thinking goes back to Samish ideas of wealth and power from the past, and to traditional values of stewardship. MPAs are actually old ideas. Instead of talking just about no-take zones we're talking about traditional notions of family ownership of fishing areas. There was always someone responsible for any place that had value. There were areas that were so precious that they really were no-take areas.”

FISH-RELATED CAREERS IN BRITISH COLUMBIA

Canadian Labour Market Information

These career titles come from <http://www.labourmarketinformation.ca>. To see detailed job descriptions, click “Job Descriptions” and search for “fish”. Numbers are the NOC (National Occupational Classification) Code

Management Occupations

- 0412 Government Managers - Economic Analysis, Policy Development and Program Administration
- 0811 Primary Production Managers (Except Agriculture)
- 0911 Manufacturing Managers

Natural and Applied Sciences and Related Occupations

- 2121 Biologists and Related Scientists
- 2221 Biological Technologists and Technicians
- 2222 Agricultural and Fish Products Inspectors
- 2224 Conservation and Fishery Officers
- 2274 Engineer Officers, Water Transport

Occupations in Social Science, Education, Government Service and Religion

- 4121 University Professors
- 4161 Natural and Applied Science Policy Researchers, Consultants and Program Officers

Occupations in Art, Culture, Recreation and Sport

- 5254 Program Leaders and Instructors in Recreation and Sport

Sales and Service Occupations

- 6442 Outdoor Sport and Recreational Guides
- 6241 Chefs
- 6242 Cooks
- 6623 Other Elemental Sales Occupations
- 6641 Food Counter Attendants, Kitchen Helpers and Related Occupations

Occupations Unique to Primary Industry

- 8257 Aquaculture Operators and Managers
- 8261 Fishing Masters and Officers
- 8262 Fishing Vessel Skippers and Fishermen/women
- 8613 Aquaculture and Marine Harvest Labourers

Occupations Unique to Processing, Manufacturing and Utilities

- 9213 Supervisors, Food, Beverage and Tobacco Processing
- 9618 Labourers in Fish Processing
- 9463 Fish Plant Workers
- 9465 Testers and Graders, Food and Beverage Processing
- 9498 Other Assemblers and Inspectors





PATHFINDER SURVEY

Name: _____

PART 1: INTERESTS AND SKILLS

Select the interests and skills that apply to you. For each selection, provide an example of how you have demonstrated the interest or skill.

MY INTERESTS

- Being outdoors
- Computers
- Enforcing rules
- Fixing/repairing things
- Helping/teaching others
- Inventing/designing things
- Lab experiments
- Leadership
- Organizing things
- Physical activity
- Plants and animals
- Reading and writing
- Researching
- Solving problems
- Traveling
- Working with my hands
- Working with others

MY EXAMPLES

INTERNET RESOURCES: RESEARCHING CAREERS

Career Description Databases

Government of Canada Labour Market Information

www.labourmarketinformation.ca (click on “Job Descriptions”; search for “fish” or by NOC code)

BEAHR “Aboriginal EnviroCareers” (Building Environmental Aboriginal Human Resources)

www.beahr.com/aec

CCHREI “Enviro Employment” (Canadian Council for Human Resources in the Environment Industry)

www.cchrei.ca/student/ee/careers.asp

Achieve BC Career Planning

www.gov.bc.ca (click on Key Initiative “Achieve BC”, and select “Career Planning Tools”)

Work Futures: British Columbia Occupational Outlooks

www.workfutures.bc.ca

First Nations Fisheries Careers and Stewardship

“Traditional Ecological Knowledge and the Coast Salish”, Russel Barsh, Center for Coast Salish Studies

www.coastalrevelations.com/news/index.htm#articles

“Traditional Sustainable Use”, Russel Barsh (article)

www.wavelengthmagazine.com/2003/as03.pdf (pages 17-19)

“Taking Care of our Resources: Fisheries Careers for BC First Nations”

www.westcoastaquatic.ca/FN_fisheries_careers.htm

“Sustainable Fishing First Nations Style”, by Martin Fournier,

www.watershedsentinel.ca/Archives_WSS/ws135.pdf (pages 20-21)

Examples of Specific Fisheries and Stewardship Careers

BC Conservation Officer Service Careers

www.env.gov.bc.ca/cos/enfhome/coco.htm

Fisheries and Oceans Canada Careers

www-hr.pac.dfo-mpo.gc.ca/pages/career_e.htm

“Nootka Sound Stewardship Coordination Program and Gold River Stream Keepers”

www.jimmitchell.ca/stewardship.php (click “Stewardship Coordination” for presentation)

Fisheries and Stewardship Courses

Malaspina University-College “Fisheries and Aquaculture Technology” Diploma

www.mala.ca/calendar/Technology/fisheries.asp

Malaspina University-College “Natural Resources Extension”

www.mala.ca/nrep/index.asp

Malaspina University-College “Resource Management Officer Technology”

www.mala.ca/rmot/careers.htm

“Seafood Jobs in Alaska” Division of Employment Security (United States)

www.labor.state.ak.us/esd_alaska_jobs/careerstreams.htm

“Education for Aboriginal Fisheries Science and Ecosystem Management”, Fisheries Centre Research Reports (2002) Volume 10 Number 6. (Survey of Post Secondary Programmes, pages 19 – 22).

www.fisheries.ubc.ca/publications/reports/10-6.pdf

