

## Inquiry Question

*What is the most important benefit that salmon provide?*

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_



(image from <https://pixabay.com/photos/sockeye-salmon-adams-river-spawning-52272/>)

It's no secret that salmon are important to British Columbia—in fact, the Pacific Salmon is the province's official fish emblem. Since time immemorial, salmon have had a central place in many Indigenous cultures and spirituality. Salmon provide food and jobs for many people, and also are a keystone species in ecosystems.

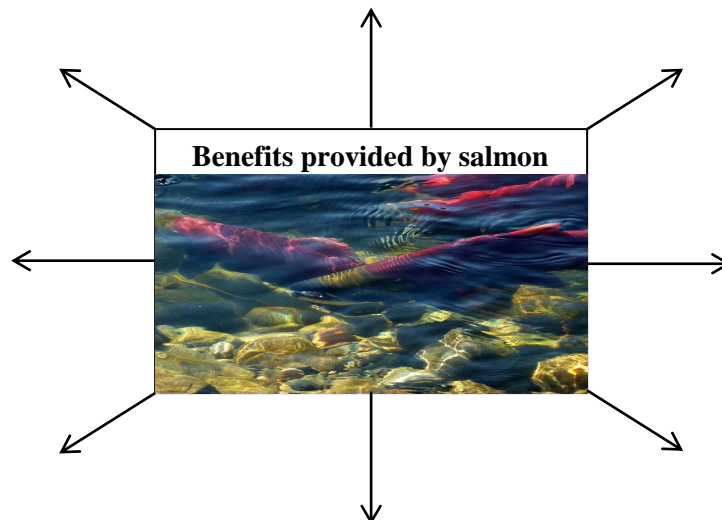
Of all the benefits that salmon provide, which is the most important?

It is also important to consider the role of the ecosystem in which a salmon lives. Ecosystems and their parts provide goods and services. They provide tangible things that can be consumed or used and also act in ways that provide a benefit. Understanding ecosystem goods and services (EGS) can help us describe and quantify the benefits provided by parts of an ecosystem.

General Instructions
The goal of this project is to consider the benefits that salmon provide and explore ecosystem goods and services to gain a better understanding of these benefits.
<b>Materials you'll need:</b> <ul style="list-style-type: none"><li>• Pencil or pen</li></ul>
<b>Project submission:</b> <p>Submit the completed pages of this project.</p>

**Brainstorming**

What benefits do salmon provide? Using the concept map below, list as many benefits as you can think of (and in addition to the benefits that we receive, try to think of benefits that salmon provide for other creatures too!)



### Make an initial decision

Look back at your ideas, which benefit do you think is the most important?

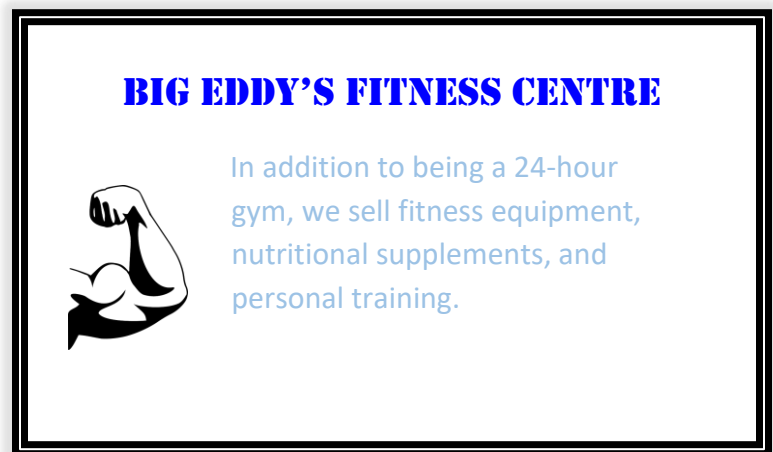
What are your reasons for choosing that benefit?

### Identify goods and services

What goods and services might be offered by the business featured in this sign?

Goods:

Services:



Most businesses offer goods and services to consumers:

- **Goods:** any tangible things that can be consumed or used (e.g., a sandwich, light bulb, plant, skateboard)
- **Services:** any actions that provide a benefit (e.g., making a sandwich, installing a light bulb, growing a plant, fixing a skateboard)

Revisit your list of goods and services that might be provided by the business featured in the sign. Use the definitions to double-check your lists.

### Explore ecosystem goods and services

Ecosystems and their parts also provide goods and services. Understanding ecosystem goods and services (EGS) can help us describe and quantify the benefits provided by parts of an ecosystem.

(EGS) can be organized into three general categories:

- **Provisioning services:** the goods that are obtained from ecosystems. These are the material and energy provided by ecosystems (ex. timber, fish, or plants that have a particular economic use).
- **Regulating services:** the capacity of ecosystems to regulate climatic, hydrological, and biochemical cycles, as well as biological processes.
- **Cultural services:** generated from the physical setting and location of ecosystems, these are the emotional, intellectual, and symbolic benefits that people obtain from ecosystems through recreation, knowledge development, relaxation, and spiritual reflection.

More information about the types of ecosystem goods and services can be found at:  
<https://www150.statcan.gc.ca/n1/pub/16-509-x/2016001/31-eng.htm>

Try sorting the EGS provided by a cedar tree into the three categories. Use the table at the top of the next page to record your thinking.



1. Branches provide homes for birds, insects, and other creatures
2. Contributes to air filtration
3. Provides shade and temperature control

4. Cedar bark has anti-inflammatory properties

5. Decomposing cedar contributes organic matter back to the soil

6. Cedar roots were braided and used by Coast Salish peoples for ropes and hats

7. Roots help stabilize soil and prevent erosion

8. Contributes to water filtration

9. Supports nutrient cycling

10. Cedar wood can be used for many purposes including homes, baskets, fishing equipment, totem poles, bentwood boxes

11. Cedar is used for a variety of ceremonial purposes by coastal First Nations. Families often commissioned a carver to create cedar figures for a potlatch, usually as a welcoming gesture to the guests. Ceremonial dancers' regalia might include head rings, neck rings, wristlets braided from cedar, as well as cedar masks.

(from <https://indigenousfoundations.arts.ubc.ca/cedar/>)

<b>What EGS does the cedar tree provide?</b> <i>(list the numbers from the diagram on page 4 in the appropriate category)</i>		
Provisioning services	Regulating services	Cultural services

**Develop criteria for most important benefit**

Revisit your thoughts on the EGS provided by the cedar tree: which is the most important benefit?

What are your reasons for picking that benefit?

Criteria can guide our thinking and help us to make reasoned judgments. The criteria for a most important benefit could include:

- **Significant:** Does the benefit fill a critical need or perform a vital service?
- **Widespread:** Is the benefit broadly felt or used by many people, other parts of the ecosystem, or environment?

Revisit your decision about the most important benefit provided by the cedar tree, this time using the criteria to guide your thinking. Would your decision change? Why?

**Thinking about salmon**

Let's go back to the inquiry question for this project: of all the benefits that salmon provide, which is the most important?

On the next page, you'll find some sources about salmon and a table to sort ideas. Follow these steps to make your decision about the EGS provided by salmon:

1. Read through the information in each of the sources and identify any EGS provided by salmon
2. Sort the EGS provided by salmon into the three categories
3. Use the criteria to decide which benefit provided by salmon is the most important

**Source 1:** Salmon are considered keystone species on the B.C. Coast, meaning there are many species that rely on salmon. Because so many organisms rely on salmon as an essential food source, the salmon population is very important in maintaining biodiversity on the B.C. Coast. Salmon gain a lot of their mass while in the ocean. When they come back to their spawning grounds in thousands of numbers, they bring millions of pounds of nutrients from the ocean to the river ecosystem. Simply put, the salmon migration during spawning season helps replenish the entire ecosystem, from the animals that eat the salmon, to the decomposers who break down their dead bodies, to the trees that grow from their broken down nutrients. With a decline in salmon, many other coastal organisms suffer as well.

(from <https://www.scienceworld.ca/resource/salmon-food-web/> )

**Source 2:** <https://psf.ca/work/habitat/marine-conservation/>

**Source 3:** <https://www.wildsalmoncenter.org/why-protect-salmon/>

**What EGS does the salmon provide?**

Provisioning services	Regulating services	Cultural services

The criteria for a most important benefit include:

- **Significant:** Does the benefit fill a critical need or perform a vital service?
- **Widespread:** Is the benefit broadly felt or used by many people, other parts of the ecosystem, or environment?

The most important benefit provided by salmon is:

Reasons that support your decision:

To conclude this inquiry project, revisit the top of page 3 and your decision about the most important benefit provided by salmon.

Has your decision changed or stayed the same?

What evidence played the most important role in guiding your thinking?

The ideas in the inquiry project can also be used to think about the EGS provided by other ecosystems.

For example, take a walk through a park near your home. What's the most important EGS provided by the park? See if you can use the ideas from this project to describe other EGS that you see every day.