



## Northwest Regional Office

### 5<sup>th</sup> Grade Curriculum: Saving Salmon

Recruiting teachers, Overview, Teacher Feedback and Curriculum Evaluation

## Recruiting Teachers

NOAA's 5<sup>th</sup> grade Saving Salmon Curriculum aligns with:

- Science kits:
  - STC's Land and Water,
  - FOSS's Landforms kit
- Science/Environment (Salmon in the Classroom Unit)
- Social Studies
  - Historical and cultural significance of salmon
  - Geography (habitat and range of 2 species of salmon)
  - Management and Policy (which laws protect salmon and how are they enforced?)
  - Economics (Stakeholders and how different levels of government regulate impacts)
  - Government (three branches of government)
  - Civics (rights and responsibility of citizens)
  - Designed for **Civics Classroom Based Assessment: You Decide**

## Curriculum Overview

Lesson	Topic	Type of Activity	Length of Time	Materials Needed	Assessment
1	Salmon Needs and Historical Perspective	Brainstorm and research	50-60 min.	1 worksheet: <ul style="list-style-type: none"> <li>• Salmon habitat needs and History</li> </ul>	Research worksheets Classroom participation See rubric
2	Geography, Habitat, and Government	Brainstorm and research	50-60 min.	1 worksheet: <ul style="list-style-type: none"> <li>• Geography and Do salmon know borders?</li> </ul>	Research worksheets Classroom participation See rubric
3	Management and Policy	Brainstorm and research	50-60 min.	1 worksheet: <ul style="list-style-type: none"> <li>• Management and Policy</li> </ul>	Research worksheets Classroom participation See rubric
4	Economics and Stakeholders	Brainstorm and research	50-60 min.	1 worksheet: <ul style="list-style-type: none"> <li>• Economics and Government</li> </ul>	Research worksheets Classroom participation See rubric
5	Civics, Rights and Responsibility  <b>NOAA representative</b>	NOAA representative class visit	50-60 min.	1 worksheet: <ul style="list-style-type: none"> <li>• Civics: Salmon Friendly Choices and CBA preparation or</li> <li>• Landforms extension</li> </ul>	Research worksheets Classroom participation See rubric
6	CBA	Graphic Organizer Persuasive Paper or presentation	Teacher dependent	<a href="http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf">http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf</a>	CBA: You Decide

To arrange a guest speaker contact [NWR.education@noaa.gov](mailto:NWR.education@noaa.gov)



**Northwest Regional Office**  
 5<sup>th</sup> Grade Curriculum: Saving Salmon  
 Teacher Feedback and Curriculum Evaluation

**Classroom Background Information**

Teacher's Name:	NOAA representative:
School:	Visit Date:
Grade level:	# of students:

<b>Teacher Evaluation</b>	Strongly disagree.....Strongly agree				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

Lessons 1-5: Was there enough background information?	1	2	3	4	5
Was the information age-appropriate?	1	2	3	4	5
Was the purpose clear?	1	2	3	4	5
Were the instructions for the lessons easy to follow?	1	2	3	4	5
Were the worksheets appropriate?	1	2	3	4	5
Were students successful using the websites?	1	2	3	4	5
Was the time estimated for each lesson accurate?	1	2	3	4	5
Did students enjoy the curriculum?	1	2	3	4	5
Would you teach it again?	1	2	3	4	5
Anything else you would like to tell us?					
NOAA Representative:					
Was the guest timely in preparation, delivery, and cleaning up?	1	2	3	4	5
Was the guest easy to understand/follow?	1	2	3	4	5
Was the guest's time valuable to the success of the curriculum?	1	2	3	4	5
Anything else you would like to tell us?					

Please send to:  
 NOAA Fisheries, c/o Peggy Foreman, 7600 Sand Pointe Way NE, Bld.1, Seattle, WA 98115



## Northwest Regional Office

NOAA's 5<sup>th</sup> grade Saving Salmon Curriculum  
Aligned with Science Kits (Landforms or Land and Water) or Salmon in the Classroom and Social Studies Standards and could prepare students to do a CBA like You Decide.

### Pre-Visit Questionnaire

Your Name:		Teacher's Name:	
		Grade:	
School/Groups Name:		Phone number:	
School location:			
Driving Directions:			
Presentation Date:		Check in at office? Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Room #:	
Time:	What is the best time to set up:	Class size:	Resources that you brought: # Distributed:

### Content background knowledge

- What background do your students have in policy and marine conservation efforts?
- Are there any vocabulary words or topics that you would like me to specifically address or connect to prior knowledge or concepts?

### Class dynamics

- Do you have any special needs students?  
Do you have any tips that work best with these students?
- How do you involve them in group discussion? (raising hands?)
- What techniques do you use to get their attention? (clap, turn off lights, etc.)

### Equipment and Room Space

- Computer and LCD projector? Yes  No  Macintosh  or PC
- Recommendations? own laptop  CD or flash drive  TV/VCR Yes  No   
 Make a pdf of your presentation to avoid inconsistencies in formatting/ font etc.
- Blackboard or dry erase board?
- Table if you have hands-on materials (baleen, salmon eggs, etc.)
- Open space if you are going to do an activity on the floor (sitting or able to move around)

### Other ways to support your class?

# Saving Salmon

## 5<sup>th</sup>Grade Social Studies: You Decide CBA

### Lesson 1: History and Heritage of salmon in the Pacific Northwest

	<b>Subject Area(s):</b> Science( Land and Water/Salmon) and Social Studies (Historical and cultural importance of salmon)	<b>Duration:</b> 50-60 minutes
	<b>Descriptions:</b> Students will investigate salmon habitat needs and their significance to the Pacific Northwest in regards to culture, economics, and the environment.	
	<b>Key words:</b> limiting factors, life stages, cultural significance, economic significance, and ecosystem significance.	
<b>Materials:</b>	Worksheet Computers with internet access	
<b>State Standards:</b> WA, OR, and ID	<p>WA: Science EALR 1: SYSTEMS. Component 1.1 Properties: Understand how properties are used to identify, describe, and categorize substances, materials and objects and how characteristics are used to categorize living things. GLE 1.1.5: Understand physical properties of Earth materials including rocks, soil, water, and air.</p> <p>WA: EALR 4: History. Component 4.2: Understands and analyzes the casual factors that have shaped their events in history. GLE 4.2.2: Analyze how people from various cultural groups have shaped U.S. history.</p> <p>OR: History. CCG: Historical skills. Understands relationships among events, issues, and developments in different spheres of human activity (i.e. economic, social, politics, and cultural).</p> <p>OR: Economics. CCG: Understand that resources are limited. SS.08.EC.01.</p> <p>ID: Standard 1: History. Goal 1.3: Identify the role of American Indians in the development of the U.S. Objective 1: Discuss that American Indians were the first inhabitants of the U.S.</p>	
<b>Focus Questions:</b>	What qualities or attributes do salmon have that influence culture, economics, and our environment? Why do historical number of salmon matter in comparison to contemporary times and our future? What role do humans have in the survival of this species?	
<b>Learning Objectives:</b>	At the end of this lesson students will be able to: <ul style="list-style-type: none"> <li>• Describe the cultural, economic, and environmental significance of salmon in the Pacific Northwest.</li> <li>• Identify fresh water habitat needs in regards to riparian vegetation, substrate, channel, and stream banks.</li> <li>• Explain the limiting factors that influence the ability for salmon to survive and then be able to categorize which ones are natural and which ones are the results of human activity.</li> </ul>	
<b>Engage and Encounter</b>	Students will analyze salmon habitat, categorize characteristics of habitat needs and explore what salmon life stages are affected by these habitat needs.	
<b>Explore and Investigate</b>	Students will start their research on the cultural, economic, and environmental significances of salmon to the Pacific Northwest.	
<b>Reflect and Explain Assessment:</b>	Students will write a persuasive paper using the Washington State Classroom Based Assessment (CBA), You Decide <a href="http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf">http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf</a>	
<b>Apply and Extend</b>	Is It Sustainable? Lesson plan from Facing the Futures <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf</a> Creating our Future <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf</a>	
<b>Contact NOAA</b>	For a guest speaker in lesson 5 email: <a href="mailto:nwr.education@noaa.gov">nwr.education@noaa.gov</a>	

# Saving Salmon

## Lesson 1: History and Heritage of salmon in the Pacific Northwest

**Background:** *Pacific salmon are the Northwest's biological and cultural icon. They are fish with a highly complex life-cycle that spans a variety of fresh and saltwater habitats. Salmon are born in inland streams and rivers, migrate to coastal estuaries, then disperse into ocean waters to grow. Once mature, they reverse their course, returning through the estuaries, fighting their way back upriver to the very streams where they were born, to reproduce, die and begin the cycle again. Most salmon stocks throughout the Northwest are at a fraction of their historic levels. Overfishing had been a major cause of decline. More recently the major cause is loss of freshwater habitat. Poor ocean conditions over the past two decades reduced populations already weakened by loss of freshwater and estuary habitat, fishing pressures, and hatchery practices. Students will explore the role that humans have in protecting salmon and their habitat.*

### I. Whole Class: (20 minutes)

A. Hand out the worksheet and have a student read the directions. Model the first row and then have them finish. (10 minutes)

1. Riparian Vegetation: Emphasize that vegetation provides shade over the stream, keeping the water cooler. The colder the stream water is the more oxygen it can hold. The roots of vegetation can prevent erosion and stabilize the banks of the stream. How might this be important in areas that are prone to flooding? If there is vegetation, do leaves and branches fall? How is this good for the stream and salmon (provide organic matter, good for insects and other wildlife). Lastly emphasize that vegetation in estuaries provides shelter for smolt and other wildlife. Kelp forests on shorelines also provide safe habitats for adult salmon.

B. Have students continue either on their own or in partners. (10 minutes)

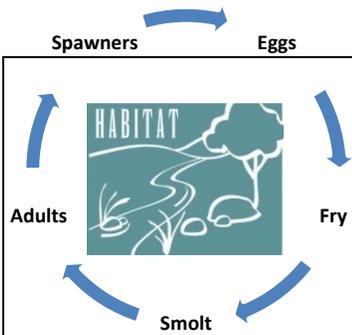
### II. Research time, computer lab ideal: (35 minutes)

A. Ask students to turn over their worksheets and start their homework. Encourage students to write down the source they used in this research.

B. If the computer lab is available, this would be ideal.

### III. Homework/ Assessment:

A. Worksheet provided: Have students finish their research and be prepared to share with the class the next time they meet. See rubric.



## Salmon habitat needs

Define and categorize habitat needs according to different stages of the salmon life cycle. Be thinking about the limiting factors that influence the ability of an organism to survive at each life stage?

Define or quantify by size/shape:	Why is this important to salmon habitat?	At what salmon stage?
Riparian Vegetation <ul style="list-style-type: none"> <li>* plants/grasses</li> <li>* shrubs</li> <li>* trees</li> </ul> Estuary/Nearshore vegetation		Riparian vegetation:  Estuary/ocean/nearshore vegetation:
Substrate in stream beds <ul style="list-style-type: none"> <li>* silt</li> <li>* gravel/cobble</li> <li>* boulders</li> </ul>		
Channel characteristics: <ul style="list-style-type: none"> <li>* meanders</li> <li>* riffles</li> <li>* pools</li> <li>* lateral habitats</li> </ul>		
Condition of stream banks: <ul style="list-style-type: none"> <li>* stable</li> <li>* unstable</li> <li>* armored</li> </ul>		



## HISTORY: Describe the history and heritage of salmon in the Pacific Northwest.

### Explain these Native American Quotes:

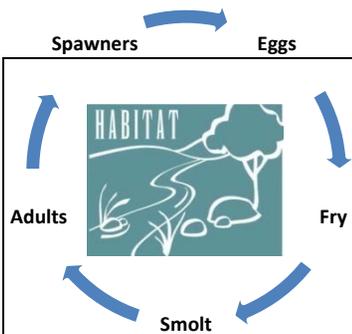
<p><b>Cultural significance:</b></p> <p><b>Source:</b></p>	<p>Which Native American tribes consider salmon significant or central to their culture?</p> <p>Explain other cultural salmon connections.</p>	<p>“Treat the earth well: it was not given to you by your parents; it was loaned to you by your children. We do not inherit the Earth from our Ancestors; we borrow it from our Children.” - <i>Tribe Unknown</i></p>
<p><b>Economic Significance:</b></p> <p><b>Source:</b></p>	<p>Whose livelihoods benefit from salmon? Categorize please.</p>	<p>“The Great Spirit, when He made earth, never intended that it should be made merchandise.” - <i>Tribe Unknown</i></p>
<p><b>Environmental significance:</b></p> <p><b>Source:</b></p>	<p>What does each life stage of salmon contribute to the larger ecosystem?</p> <ul style="list-style-type: none"> <li>*eggs</li> <li>*fry</li> <li>*smolt</li> <li>*adult salmon</li> <li>*spawners/dead salmon</li> </ul>	<p>“Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect.” - <i>Chief Seattle, 1854</i></p>

## Saving Salmon- Worksheets Rubric

Rate on a scale of 1-4 4=Above standard 3=Right at standard 2=Needs improvement 1=Does not meet standard	Lesson 1 Worksheet: Salmon habitat needs and History  <b>20 points</b>	Lesson 2 Worksheet: Geography and Do Salmon know borders?  <b>20 points</b>	Lesson 3 Worksheet: Management and Policy  <b>20 points</b>	Lesson 4 Worksheet: Economics and Government  <b>20 points</b>	Lesson 5 worksheet: Civics: Salmon Friendly Choices  <b>20 points</b>
<b>Content Accuracy:</b> Did students correctly answer the questions and complete their research?					
<b>Ideas:</b> Ideas were expressed in a clear and organized fashion. It was clear that you understood the concepts.					
<b>Completeness:</b> Did student answer all of the questions in full detail?					
<b>Objectives</b> from each lesson addressed					
<b>Neatness:</b> Did student take pride in this work? Was it clean, not wrinkled, and easy to read with no distracting error corrections?					
Add up the total point for each worksheet					

Total score:

Comments:



## Salmon habitat needs

Define and categorize habitat needs according to different stages of the salmon life cycle. Be thinking about the limiting factors that influence the ability of an organism to survive at each life stage?

Define or quantify by size/shape:

Why is this important to salmon habitat?

At what salmon stage?

Riparian Vegetation

- \* plants/grasses
- \* shrubs
- \* trees

Estuary/Nearshore vegetation

**Plants**=short, low cover vegetation, no woody stem. Groundcover  
**Shrubs**=sm. woody plants less than 13 ft. tall  
**Trees**=Lg. woody plants greater than 13 ft. tall, and often crown of foliage.  
**Native vegetation**=one that develops, occurs naturally, or has existed for many years in an ecosystem.  
**Non-native vegetation**=one that is from another region.

Vegetation in a riparian zone provides shade from trees (lowering the temperature of the stream; the colder the water the more oxygen it holds)  
 With increase vegetation, there is often an increase in macroinvertebrate life (food for fry)  
 Roots: stabilize the stream banks  
 Absorb water (precipitation) so helpful in flood control.  
 Leaf litter: aquatic insect production  
 Estuary: Provides food and shelter

Riparian vegetation:  
 Eggs, fry, and spawning adults need clean, cold water  
  
 Estuary/ocean/nearshore vegetation:  
 Smolt and adults need protection in estuary vegetation and often a good source of food is found here too.

Substrate in stream beds

- \* silt
- \* gravel/cobble
- \* boulders

**Silt/sand**= tiny, fine particles, such as soil or sand, suspended in and deposited by water. .05-2mm  
**Gravel**= 2-64mm  
**Cobble**= 64-256mm  
**Boulders**= 256-4096mm

Spawning salmon deposit their eggs in good sized gravel, to keep the eggs aerated. Silt and fine sand can smother the eggs, causing death.  
  
 Larger sediments like cobble and boulders can influence the stream flow and possibly help aerate the stream.

Egg, Fry and Spawning adults

Channel characteristics:

- \* meanders
- \* riffles
- \* pools
- \* lateral habitats

**Meander**=natural curves in a stream or river that allow the water to wind and turn.  
**Riffles**=Fast, shallow waters of a stream  
**Pools**= A still/calm place of water  
**Lateral habitat**= The calm water areas along the edges of a stream.

When humans alter streams such as straighten channels, often this results in faster flow which can be harmful for salmon in streams.  
 There should be a ratio of one to one (50% riffles and 50% pools)

Egg, Fry and Spawning adults

Condition of stream banks:

- \* stable
- \* unstable
- \* armored

**Stable**= Not a lot of erosion, often has vegetation in riparian zone.  
**Unstable**= Susceptible to erosion  
**Armored stream bank**=bulkheads, cement walls, old railroad ties to stabilize banks

Stabilizing banks will prohibit a stream or river from meandering naturally, which can cause problems down the line. Stable banks with good vegetation is preferred.

Freshwater system



## HISTORY: Describe the history and heritage of salmon in the Pacific Northwest.

### Explain these Native American Quotes:

<p><b>Cultural significance:</b></p>	<p>Which Native American tribes consider salmon significant or central to their culture?</p> <p>Coast Salish People (Columbia River Tribes, Puget Sound and North up to Canada)</p> <p>Explain other cultural salmon connections. Totems, stories, artwork, spiritual connections, drums, etc.</p>	<p>“Treat the earth well: it was not given to you by your parents; it was loaned to you by your children. We do not inherit the Earth from our Ancestors; we borrow it from our Children.” - <i>Tribe Unknown</i></p> <p>Taking care of salmon today is ensuring a sustainable fishery for future generations. Managing the fish stocks for availability in future generations.</p>
<p><b>Economic Significance:</b></p>	<p>Whose livelihoods benefit from salmon? Categorize please.</p> <p>Fisheries: sports, commercial, native tribes Canneries: Art: totems, masks, and other native and non-native art Lodges/Hotels Fishing Charter Boats</p>	<p>“The Great Spirit, when He made earth, never intended that it should be made merchandise.” - <i>Tribe Unknown</i></p> <p>There is a cultural and spiritual connection that is sacred to native people. Land and natural resources are not items of possession; we are caretakers of both.</p>
<p><b>Environmental significance:</b></p>	<p>What does each life stage of salmon contribute to the larger ecosystem?</p> <p>*eggs=nutrients, food source of other species *fry=food source for predators *smolt=food source for predators *adult salmon=food source for predators (including humans) *spawners/dead salmon=recycling nutrients for future generations. Fertilizing the streams and ecosystem.</p>	<p>“Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect.” -<i>Chief Seattle, 1854</i></p> <p>Finding a balance in modern times to have abundant resources of native salmon is our goal. The protection of this species, means protection of other animals in the food web, including us.</p>

## Saving Salmon- Worksheets Rubric

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<b>Objectives</b> from each lesson addressed					
<b>Neatness:</b> Did student take pride in this work? Was it clean, not wrinkled, and easy to read with no distracting error corrections?					
Add up the total point for each worksheet					

Total score:

Comments:

# Saving Salmon

## 5<sup>th</sup> Grade Social Studies: You Decide CBA

### Lesson 2: Geography: Where do salmon live and do they recognize borders?

	<b>Subject Area(s):</b> Science (Ecosystems/Ranges) and Social Studies (Geography, Governments, and Management)	<b>Duration:</b> 50-60 minutes
	<b>Descriptions:</b> Students will distinguish between habitats, ranges, and ecosystems. Then students will compare and contrast two different species of salmon and make a map showing their range. Then students will inquire how agencies work together to solve common goals, like salmon recovery.	
	<b>Key words:</b> habitat, range, ecosystem, jurisdictions, managing agencies	
<b>Materials:</b>	Worksheet Computers with internet access	
<b>State Standards:</b> WA, OR, and ID	<p>WA: EALR 1: Civics. Component 1.2: Understands the purposes, organizations, and functions of government, laws, and political systems. GLE 1.2.1: Understands the organization of the U.S. Government.</p> <p>WA: EALR 3: Geography. Component 3.2: Students use spatial perspective to make reasoned decisions. GLE: 3.2.3: Understands human interactions.</p> <p>OR: Geography. CCG: Understands the spatial concepts of location, distance, directions, scale, and movement. SS.05.GE.01: Understands and uses geographic information using a variety of scales, patterns of distribution, and arrangement.</p> <p>OR: Civics and Government. CCG: Understands the organization. SS.05.CG.02: Identify the primary functions of federal, state, and local governments.</p> <p>ID: Standard 2: Geography. Goal 2.1: Analyze the spatial organizations of people, places, and environment on the earth's surface. Objective 1: Develop and use different kinds of maps, globes, graphs, charts, databases, and models to display and obtain information.</p>	
<b>Focus Questions:</b>	Where do these animals live at different stages of their life cycle? What determines an animal's range? Does an animal's range change over time? What might be the cause of that? How important is it that government agencies work together to recover salmon?	
<b>Learning Objectives:</b>	At the end of this lesson students will be able to: <ul style="list-style-type: none"> <li>• Distinguish between a salmon's habitat, range, and ecosystem for two species of Pacific Salmon.</li> <li>• Explain how much time a species spends in different parts of its range.</li> <li>• Explain how levels of government coordinate recovery efforts.</li> </ul>	
<b>Engage and Encounter</b>	Students will discuss the differences and similarities between habitat, range, and ecosystems. Students will look more closely at two species in their region and compare their habitat use, while mapping their range and documenting how long these animals are occupying each habitat.	
<b>Explore and Investigate</b>	Students will start thinking about how agencies govern or manage these species that do not recognize borders.	
<b>Reflect and Explain Assessment:</b>	Students will write a persuasive paper using the Washington State Classroom Based Assessment (CBA), You Decide <a href="http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf">http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf</a>	
<b>Apply and Extend</b>	Is It Sustainable? Lesson plan from Facing the Futures <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf</a> Creating our Future <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf</a>	
<b>Contact NOAA</b>	For a guest speaker in lesson 5 email: <a href="mailto:nwr.education@noaa.gov">nwr.education@noaa.gov</a>	

# Saving Salmon

Lesson 2: Geography: Where do salmon live and do they recognize borders?

**Background:** *Habitat loss and modification are believed to be the major factors determining the current status of salmonid populations. Conservation and recovery of Pacific Northwest salmon and steelhead depend on having diverse habitats with connections among those habitats. The salmonid lifecycle involves adults maturing in the ocean, migrating back to their home streams and spawning, embryos incubating, fry emerging, juveniles growing, and smolts migrating to the estuary to acclimate to saltwater and moving out into the ocean. Each phase may require use of and access to distinct habitats. Loss of habitat reduces the diversity in salmon and steelhead life histories, which influences the ability of these fish to adapt to natural and man-made change.*

## I. Whole Class: (15 minutes)

A. Have students agree on an acceptable definition for habitat, range, and ecosystem.

1. **Habitat:** An animal's habitat is its location or the area in which all of its needs are met.
2. **Range:** An animal's range is the area in which members of its population are distributed.
3. **Ecosystem:** An ecosystem is a collection of plants and animals living and interacting in a common area and dependent on one another for survival.

## II. Research time, computer lab ideal: (45 minutes)

A. Have students work either in partners or alone to compare and contrast the habitat use of two species of salmon in your area.

B. When finished they may turn the worksheet over and look at the positive and negative impacts that affect freshwater habitats.

## III. Homework/ Assessment:

A. Worksheet provided: Have students finish their research and be prepared to share with the class the next time they meet. See rubric.



## GEOGRAPHY

Let's take a closer look at where salmon live, first define the following terms.

Vocabulary words:	Definitions:
Habitat=	
Range=	
Ecosystem=	

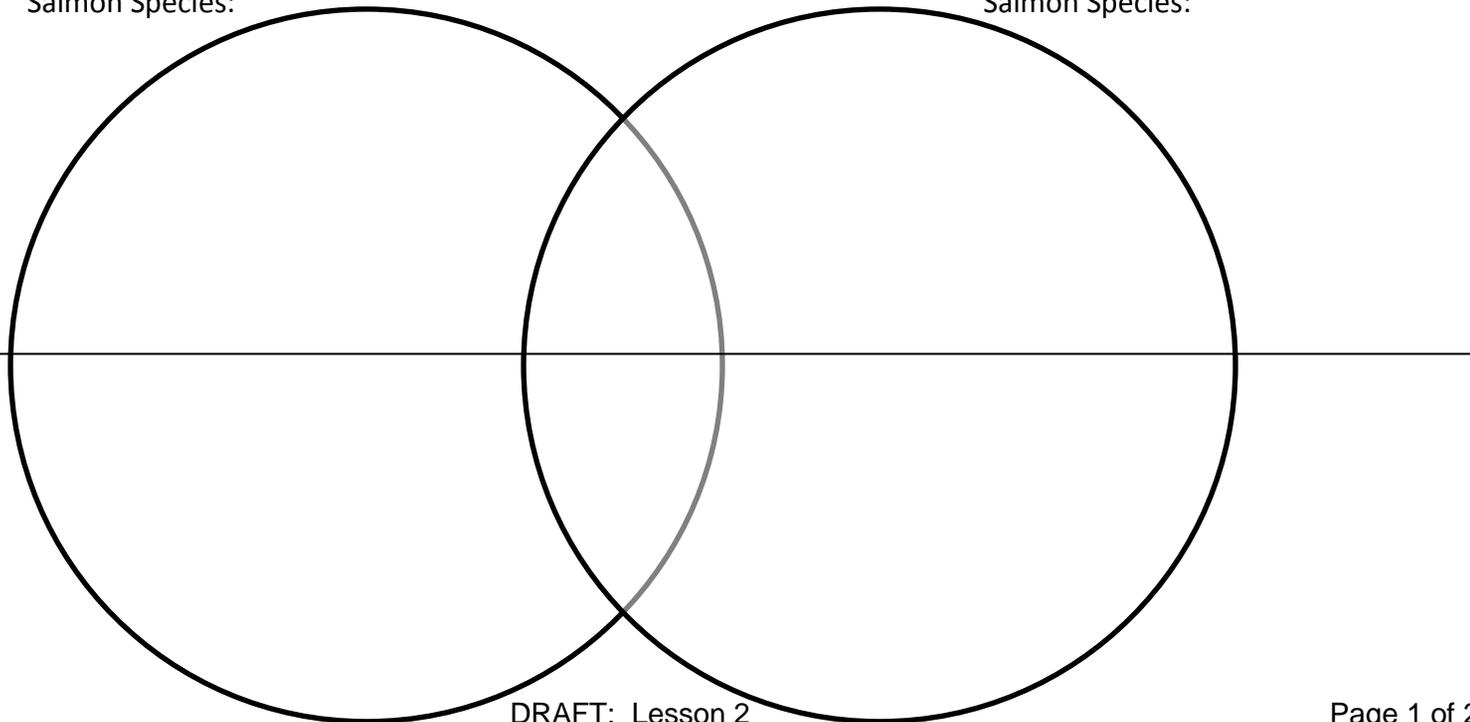
Different species of salmon use different parts of the watershed. Chose 2 species of salmon in your area and compare and contrast the habitat use and prioritize which do you think are the most important to protect. Make a map showing the ranges of the different salmon species.

Salmon Species:

Salmon Species:

Fresh water

Salt water





## Do Salmon know borders?

As the two salmon species you chose on the other side, move through their range, what political boundaries do they cross and how do managers work towards a common goal?

Habitat Type	Federal	State	Local	Tribal
Freshwater				
Estuary				
Ocean				

How do you suppose these different government agencies work together?



## GEOGRAPHY- KEY

Let's take a closer look at where salmon live, first define the following terms.

Vocabulary words:	Definitions:
Habitat=	An animal's habitat is its location or the area in which all of its needs are met.
Range=	An animal's range is the area in which members of its population are distributed.
Ecosystem=	An ecosystem is a collection of plants and animals living and interacting in a common area and dependent on one another for survival.

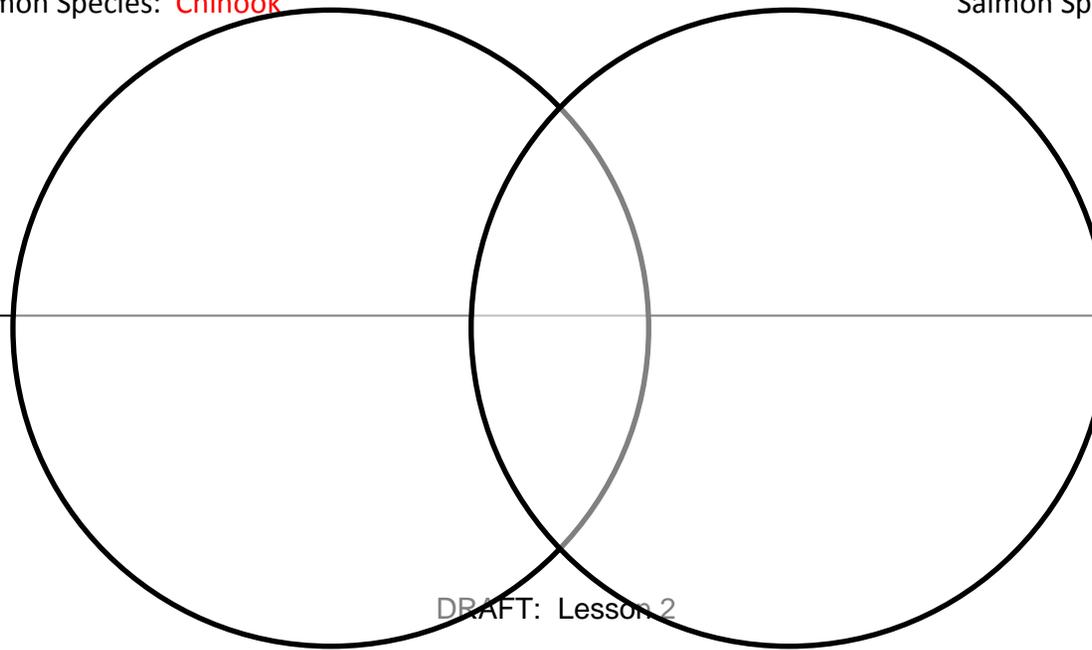
Different species of salmon use different parts of the watershed. Chose 2 species of salmon in your area and compare and contrast the habitat use and prioritize which do you think are the most important to protect. Make a map showing the ranges of the different salmon species.

Salmon Species: **Chinook**

Salmon Species: **Sockeye Salmon**

Fresh water

Salt water





## Do Salmon know borders?

As the two salmon species you chose on the other side, move through their range, what political boundaries do they cross and how do managers work towards a common goal?

Habitat Type	Federal	State	Local	Tribal
Freshwater				
Estuary				
Ocean				

How do you suppose these different government agencies work together? **Cooperative efforts are vital for success. The Pacific Fisheries Management Council has representatives from federal, state, tribal, and local jurisdictions working together to manage the harvesting of salmon. There are often policies like the ESA that different jurisdictions must abide by no matter the level of government.**

# Saving Salmon

## 5<sup>th</sup> Grade Social Studies: You Decide CBA Lesson 3: Management and Policy

	<b>Subject Area(s):</b> Social Studies: Management and Policy	<b>Duration:</b> 50-60 minutes
	<b>Descriptions:</b> Students will look at the threats at different stages of the salmon life cycle and identify if these threats are managed or regulated. Students will specifically look at the Endangered Species Act and other laws that protect salmon and their habitat.	
	<b>Key words:</b> management, policy, Endangered Species Act (ESA) regulations, rights and responsibility	
<b>Materials:</b>	Worksheet Computers with internet access	
<b>State Standards:</b> WA, OR, and ID	<p>WA: EALR 1: Civics. Component 1.2: Understands the purposes, organizations, and functions of government, laws, and political systems. GLE 1.2.1: Understands the organization of the U.S. Government.</p> <p>WA: EALR 3: Application. Component 3.2: Science, Technology, and Society: Analyze how science and technology are human endeavors, interrelated to each other, to society, and to the workplace and the environment.</p> <p>OR: Social Studies Analysis. CCG: Identify and analyze an issue. SS.05.SA.04: Identify characteristics of an event, issue, or problem, suggesting possible causes and results.</p> <p>ID: Standard 4: Civics and Government. Goal 4.1: Build an understanding of the fundamental principles of the American political system. Objective 1: Identify the people and groups who make, apply, and enforce laws within federal and tribal governments.</p>	
<b>Focus Questions:</b>	What are some obstacles that salmon face in both fresh and salt waters? How are these obstacles/threats minimized or managed? Who regulates or manages these natural resources?	
<b>Learning Objectives:</b>	At the end of this lesson students will be able to: <ul style="list-style-type: none"> <li>• List at least 10 threats that impact the survival of salmon.</li> <li>• Articulate what it means to be an endangered species and the protection it provides.</li> <li>• Distinguish which threats are the rights and responsibilities of citizens.</li> </ul>	
<b>Engage and Encounter</b>	Students will brainstorm in small groups the threats that salmon face in freshwater, estuaries, and out in the ocean. Then they will decipher which threats are out of their control (managed/regulated at a level that doesn't necessarily overlap with one's daily actions) and which ones are not strictly regulated and are up to citizens to make good choices.	
<b>Explore and Investigate</b>	Students will explore in more detail what it means to be an endangered species and investigate other laws/regulations that protect salmon and their habitat.	
<b>Reflect and Explain Assessment:</b>	Students will write a persuasive paper using the Washington State Classroom Based Assessment (CBA), You Decide <a href="http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf">http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf</a>	
<b>Apply and Extend</b>	Is It Sustainable? Lesson plan from Facing the Futures <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf</a> Creating our Future <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf</a>	
<b>Contact NOAA</b>	For a guest speaker in lesson 5 email: <a href="mailto:nwr.education@noaa.gov">nwr.education@noaa.gov</a>	

# Saving Salmon

## Lesson 3: Management and Policy

**Background:** *Significant portions of Washington, Oregon, California and Idaho are affected by Endangered Species Act (ESA) listings of salmon and steelhead. ESA recovery plans are being developed for all these areas. There are 27 distinct population segments of steelhead or evolutionarily significant units (ESUs) of salmon listed under the ESA. Students will learn that the primary purpose of the ESA is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation is the recovery of endangered and threatened species and their ecosystems so that they no longer need the protections afforded them under the ESA. The ESA provides a number of regulatory and planning tools to assist with this conservation goal. Among other things, the Act requires the development of recovery plans for endangered or threatened species. These plans serve as an important tool to organize and guide the recovery process and ensure that recovery is achieved.*

### I. Whole Class: (15 minutes)

A. Students will brainstorm in small groups the threats that salmon face in freshwater, estuaries, and out in the ocean. Then they will decipher which threats are out of their control (managed/regulated at a level that doesn't necessarily overlap with one's daily actions) and which ones are not strictly regulated and are up to citizens to make good choices. Different ways to do this:

1. Group of 3: Highlight one of the column titles on page 1 of worksheet. Have students brainstorm for 2-3 minutes on that topic. Then switch papers with a partner and add more details to his/her list. Do one more time for last column. Then share with the whole class and have students write down items on their own sheets.
2. Students could do a quick-write on each column. Sharing in between to gather other ideas from other students.
3. Students could work on their own and then share as a group.

### II. Research time, computer lab ideal: (45 minutes)

A. Have students turn worksheet over and begin their research on the ESA, other laws that protect salmon and their habitat. What students do not finish in class, have them finish for homework.

### III. Homework/ Assessment:

A. Worksheet provided: Have students finish their research and be prepared to share with the class the next time they meet. See rubric.



## MANAGEMENT: Salmon threats

Brainstorm the threats these animals face at different stages of their life cycle. Place a star next to the threats that out of your control and circle the ones that are the rights and responsibility of individuals.

Freshwater

Estuary

Ocean





## MANAGEMENT and POLICY: Background on the ESA and what government agencies help?

Think of the 5 W's as you answer these questions. Use the websites below to guide you.

Which species/stocks are listed as endangered, threatened, or at risk in your state or region? What does it mean to be a listed species? Who manages this?

<http://www.nwr.noaa.gov/ESA-Salmon-Listings/> and click on the 6 species listed on the left.

NOAA Fisheries designates Critical Habitat for listed species. What does this mean for salmon?

<http://www.nwr.noaa.gov/Salmon-Habitat/Critical-Habitat/Index.cfm>

NOAA Fisheries also is responsible for writing Recovery Plans for listed species. These plans must:

1. Assess the factors affecting the species
2. Identify recovery goals
3. Identify the entire suite of actions necessary to achieve these goals
4. Estimate the time and cost required to carry out these actions.

Explain in your own words:

What other laws protect these animals? Think of their habitat (water and land surrounding that water) and their range.



## MANAGEMENT: Salmon threats **KEY**

Brainstorm the threats these animals face at different stages of their life cycle. Place a star next to the threats that are out of your control and circle the ones that are the rights and responsibility of individuals.

Freshwater	Estuary	Ocean
<p>Water quality: Salmon need clean (pollution free), cold (holds more oxygen and dissolved gases), clear water (free of suspended particles).</p> <p>Stream stabilation: Erosion or sediments can smother the eggs in a redd.</p> <p>Predation on eggs, fry, and returning to spawn salmon.</p> <p>Dams or impoundments</p>	<p>Water quality: Salmon need clean, cold, clear water</p> <p>Predation Pollution</p>	<p>Water quality:</p> <p>Fishing Predation Pollution</p> 



## KEY

### MANAGEMENT and POLICY: Background on the ESA and what government agencies help?

Think of the 5 W's as you answer these questions. Use the websites below to guide you.

<p>Which species/stocks are listed as endangered, threatened, or at risk in your state or region? What does it mean to be a listed species? Who manages this?</p>	<p><a href="http://www.nwr.noaa.gov/ESA-Salmon-Listings/">http://www.nwr.noaa.gov/ESA-Salmon-Listings/</a> and click on the 6 species listed on the left.</p> <p style="color: red;"><b>Endangered:</b> Snake River Sockeye, Sacramento River Winter Chinook, Upper Columbia River Spring Chinook, Central CA Coast Coho, S. CA Steelhead, Upper Columbia River Steelhead.</p> <p style="color: red;"><b>Threatened:</b> Ozette Lake Sockeye, Snake River Spring/Summer/Fall Chinook, Puget Sound Sockeye, Lower Columbia River Chinook, Upper Willamette River Chinook, Central Valley Spring Chinook, CA Coastal Chinook, S. OR/N. CA Coho, Lower Columbia River Coho, Oregon Coast Coho, Hood Canal Summer Chum, Columbia River Chum, Central CA Coast Steelhead, South Central CA coast Steelhead, Snake River Steelhead, Lower Columbia River Steelhead, CA Central Valley Steelhead, Upper Willamette River Steelhead, Middle Columbia River Steelhead, N. California Steelhead.</p> <p style="color: red;"><b>At Risk:</b> Central Valley Fall and Late Fall Chinook, Puget Sound/Strait of Georgia Coho, Oregon Coast Steelhead, and Puget Sound Steelhead.</p> <p style="color: red;">NOAA Fisheries manages and being listed means money allocated to critical habitat and recovery efforts.</p>
<p>NOAA Fisheries designates Critical Habitat for listed species. What does this mean for salmon?</p> <p><a href="http://www.nwr.noaa.gov/Salmon-Habitat/Critical-Habitat/Index.cfm">http://www.nwr.noaa.gov/Salmon-Habitat/Critical-Habitat/Index.cfm</a></p>	<p style="color: red;">Critical habitat is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation.</p>
<p>NOAA Fisheries also is responsible for writing Recovery Plans for listed species. These plans must:</p> <ol style="list-style-type: none"> <li>1. Assess the factors affecting the species</li> <li>2. Identify recovery goals</li> <li>3. Identify the entire suite of actions necessary to achieve these goals</li> <li>4. Estimate the time and cost required to carry out these actions.</li> </ol>	<p>Explain in your own words:</p> <ol style="list-style-type: none"> <li>1. Figure out what the factors are affecting the species (salmon, in this case).</li> <li>2. Identify the goals needed to recover the species.</li> <li>3. Identify specifically what actions will address each of the goals.</li> <li>4. Figure out how long it will take to recover the species and how much money will be needed for those action steps.</li> </ol>
<p>What other laws protect these animals? Think of their habitat (water and land surrounding that water) and their range.</p>	

# Saving Salmon

## 5<sup>th</sup>Grade Social Studies: You Decide CBA

### Lesson 4: Economics and Government

	<b>Subject Area(s):</b> Science (environmental impacts/human threats) and Social Studies (Economics and Government)	<b>Duration:</b> 50-60 minutes
	<b>Descriptions:</b> Students will explore different human impacts and industries that affect salmon. Then students will look the three branches of government and explore how these groups deal with salmon recovery issues.	
<b>Key words:</b>	economics, habitat, harvest, hydropower, hatchery, urban development, executive branch, cabinet members, executive offices, legislative branch, house representatives, senators, judicial branch, and civic participation	
<b>Materials:</b>	Worksheet Computers with internet access	
<b>State Standards:</b> WA, OR, and ID	<p>WA: EALR 1: Civics. Component 1.2: Understands the purposes, organizations, and functions of government, laws, and political systems. GLE 1.2.1: Understands the organization of the U.S. Government.</p> <p>WA: EALR 5: Social Studies Skills. Component 5.1: Uses critical reasoning skills to analyze and evaluate positions.</p> <p>OR: Civics and Government. CCG: Understand the roles of the three branches of government and explain how their powers are distributed and shared. SS.05.CG.03: Understands the roles and responsibility of the 3 branches of government.</p> <p>OR: Economics. CCG: Understand that resources are limited. SS.05.EC.01. Understands that all economic choices have costs and benefits.</p> <p>ID: Standard 3: Economics. Goal 3.1: Explain basic economic concepts. Objective 2: Describe how conservation of natural resources is important.</p>	
<b>Focus Questions:</b>	What stakeholders are involved in salmon recovery? Why is it important to understand different points of view? How do different human activities affect different salmon habitats and life stages? What roles do the three branches of government play in salmon and natural resource management?	
<b>Learning Objectives:</b>	At the end of this lesson students will be able to: <ul style="list-style-type: none"> <li>• List at least 5-8 different stakeholders that affect salmon habitat</li> <li>• Explain how each branch of our government is involved in salmon recovery issues.</li> <li>• Describe 2-3 cabinet members or executive offices that deal with salmon issues.</li> </ul>	
<b>Engage and Encounter</b>	Have students describe how different industries actions, products, or practices impact salmon (directly or indirectly).	
<b>Explore and Investigate</b>	Research how the three branches of government deal with salmon issues and how individuals partake in some of these processes.	
<b>Reflect and ExplainAssessm ent:</b>	Students will write a persuasive paper using the Washington State Classroom Based Assessment (CBA), You Decide <a href="http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf">http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf</a>	
<b>Apply and Extend</b>	Is It Sustainable? Lesson plan from Facing the Futures <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf</a> Creating our Future <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf</a>	
<b>Contact NOAA</b>	For a guest speaker in lesson 5 email: <a href="mailto:nwr.education@noaa.gov">nwr.education@noaa.gov</a>	

# Saving Salmon

## Lesson 4 Procedures: Economics and Government

**Background:** *The Endangered Species Act (ESA) requires the federal government to designate “critical habitat” for any species it lists under the ESA; in this case, salmon and steelhead. “Critical habitat” is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. Critical habitat designations must be based on the best scientific information available, in an open public process, within specific timeframes. Before designating critical habitat, careful consideration must be given to the economic impacts, impacts on national security, and other relevant impacts of specifying any particular area as critical habitat. The Secretary of Commerce may exclude an area from critical habitat if the benefits of exclusion outweigh the benefits of designation, unless excluding the area will result in the extinction of the species concerned.*

### I. Whole Class: (10 minutes)

A. Have students look at the different industries or occupations in your region and have them think of the effects on salmon (positive or negative). Permits and consultations are often needed if any of these stakeholders think that their actions, products, or practices could jeopardize the health of listed salmon.

1. Model the first one for them. Timber industry: cut down trees (might increase erosion, increase water flows, and increase water temperatures in streams), however they also replant trees, follow regulations in regards to buffer zones around salmon bearing streams. Education and signage at forested sites also helps the public monitor sustainable practices.
2. Have them either continue in partners or on their own. Share a few with the class if necessary.

### II. Research time, computer lab ideal: (40 minutes)

A. Have students finish the worksheet and their research.

### III. Homework/ Assessment:

A. Worksheet provided: Have students finish their research and be prepared to share with the class the next time they meet. See rubric.



## ECONOMICS:

The four main threats to salmon are sometimes called the “Four H’s”: Habitat, Harvest, Hydropower, and Hatchery.

Local industry or occupation	Categorize which of the 4 H’s does this fit or describe what the industry’s goal is.	How might these industries affect salmon?
Timber Industry		
Agriculture		
Urban Development		
Dams		
Transportation		
Recreation		
Conservation Groups		
Fishing Industry		
Scientists		
Water Quality Technician		



## ECONOMICS AND GOVERNMENT:

Explore how each branch of government is involved in the Salmon Recovery process. Use the following website  
<http://www.whitehouse.gov/government/>

Executive Branch	Legislative Branch	Judicial Branch
President:  Which Cabinet Members:    Executive Offices:	Senate:     House of Representatives:	

### Civic Involvement:

Describe the ways that you could get involved in salmon recovery efforts at any of these levels?

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## ECONOMICS: KEY

The four main threats to salmon are sometimes called the “Four H’s”: Habitat, Harvest, Hydropower, and Hatchery.

Local industry or occupation	Categorize which of the 4 H’s does this fit or describe what the industry’s goal is.	How might these industries affect salmon?
Timber Industry	<b>Habitat:</b> Goal: Cut down trees for paper and wood products (furniture, tools, houses)	Reduces plant cover density (impact on temperature, available habitat loss to many species of animals). Reduces shade and litter/organic matter. Increases the potential for erosion and water quality.
Agriculture	<b>Habitat and Hydropower:</b> Goal: Cultivate the land, raising crops, and feeding/breeding, and raising livestock; farming.	Crops are often seasonal, so there are times when susceptible to erosion by wind and water. Irrigation/Water supply might be drawn from salmon bearing streams and rivers (Dams). Livestock grazing areas can also damage plant cover.
Urban Development	<b>Habitat:</b> Goal: Provide living accommodations, amenities and community resources (stores, banks, etc.)	Clearing, leveling, and filling land surfaces. Constructing buildings with impermeable roofs. Paving roads and sidewalks with impervious materials. Installing sewage disposal systems.
Dams	<b>Hydropower:</b> Goals: Power generation, Irrigate crops, provide transportation, control floods.	Modify channel capacity, rate, and volume of flow. May cause a blockage for migrating salmon (fish ladders may allow some fish to pass). Runoff from agricultural fields may carry fertilizers and pesticides leached from soil.
Transportation	<b>Habitat:</b> Goals: Provide roads, rail, air ways, and water ways for safe passage around our region.	Impervious surfaces increase runoff pollution (leaks, anti-freeze, oil, and deicers). Culverts, levees, dikes or any construction/maintenance in a stream/river may affect erosion, stream flow, etc. Anti-fouling materials and ballast water are of concern too.
Recreation	<b>Habitat and Hydropower:</b> Goal: Provide safe areas for people to enjoy nature, hiking, camping, boating, fishing, etc.	If managed properly, provide wild spaces for both humans and wildlife. Care must be taken around stream/river banks to prevent erosion (encouraged to use labeled trails, bridges, and designated areas to minimize impact in areas).
Conservation Groups	<b>ALL categories.</b> Goal: Supervise rivers, forests, and natural resources in order to preserve and protect them.	Increasing awareness and promoting stewardship actions can inspire individuals and communities to work together to make a difference for salmon habitat, harvest issues, hydropower, and hatchery issues to just name a few.
Fishing Industry	<b>Harvest:</b> Goal: Provide a food source that is nutritional, safe for consumption, and sustainable.	Overfishing, by catch, and derelict gear
Scientists	<b>ALL categories:</b> Goal: The observation, identification, and theoretical explanation of phenomena.	Scientific data helps guide policy and management decisions.
Water Quality Tech	<b>ALL categories:</b> Goal: To assess the health of watersheds	Report to local, state, and federal agencies that manage watersheds and monitor natural resources over time.



## ECONOMICS AND GOVERNMENT: **KEY**

Explore how each branch of government is involved in the Salmon Recovery process. Use the following website  
<http://www.whitehouse.gov/government/>

Executive Branch	Legislative Branch	Judicial Branch
<p><b>President:</b> The president is the chief executive, empowered to administer the laws and affairs of the nation. His agencies have the responsibility and authority to carry out the laws.</p> <p><b>Which Cabinet Members:</b> Dept. of Commerce, Agriculture, Education, Energy, Transportation, Health and Human Services, and Housing and Urban Development.</p> <p><b>Executive Offices:</b> Council on Environmental Quality, Office of Science and Technology Policy</p>	<p>Congress is made up of 2 Houses:</p> <p><b>Senate:</b> Made up of 2 representatives from each state. Who are your state senators?</p> <p><b>House of Representatives:</b> Made up of different representatives depending on the population of the state.</p>	<p>The judicial branch hears cases that challenge or require interpretation of the legislation passed by Congress and signed by the President. It consists of the Supreme Court and the lower federal courts. Appointees to the federal bench serve for life or until they voluntarily resign or retire.</p>

### Civic Involvement:

Describe the ways that you could get involved in salmon recovery efforts at any of these levels?

- To name a few...
- Learn more about salmon recovery efforts.
- Join a group or organization after researching their mission statements and goals.
- Participate in stewardship projects like removing invasive vegetation, planting native species, beach clean-ups, roadside adoption sites, etc.
- Write your congressman/woman to voice your concerns and promote alternatives, ideas, and solutions.
- Testify or send written comments on documents that affect salmon recovery.

# Saving Salmon

## 5<sup>th</sup>Grade Social Studies: You Decide CBA Lesson 5: Civics: Salmon Friendly Choices

	<b>Subject Area(s):</b> Science (Landforms/Salmon/Environmental impacts) and Social Studies (Policy/Management and Civics)	<b>Duration:</b> 50-60 minutes
	<b>Descriptions:</b> Students will look at three limiting factors impacting salmon habitat and then look how laws or policy work at the government level, society level, and an individual level emphasizing rights and responsibilities with our choices.	
<b>Key words:</b>	limiting factors, run-off, harmful chemicals, personal care products, wastewater, temperature, impervious surfaces, effluent, point source pollution, non-point source pollution, rain gardens, and drainage solutions.	
<b>Materials:</b>	Worksheet Computers with internet access	
<b>State Standards:</b> WA, OR, and ID	<p>WA: EALR 1: Civics. Component 1.4: Understands civic involvement. GLE 1.4.1: Understands that civic participation involves being informed about how public issues are related to rights and responsibilities.</p> <p>OR: Civics and Government. CCG: Understands the personal and political rights of citizens in the U.S. SS.05.CG.04. Identify the rights of U.S. citizens.</p> <p>OR: C and Government. CCG: Understands participatory responsibilities of citizens in the community. SS.05.CG.05: Understands how citizens can learn about public issues.</p> <p>ID: Standard 4: Civics and Government. Goal 4.3: Build an understanding that all people in the U.S. have rights and assume responsibility. Objective 2: Identify some of the personal responsibilities and basic rights of individual freedoms that belong to American citizens.</p> <p>ID: Standard 4: Civics and Government. Goal 4.3: Build an understanding that all people in the U.S. have rights and assume responsibility. Objective 3: Describe ways in which citizens participate in public life.</p>	
<b>Focus Questions:</b>	How do laws and policy get enforced at the community level and then at household levels? How can individuals make a difference? Groups or organizations? What rights and responsibility do I have to ensure a healthy habitat for salmon and other wildlife?	
<b>Learning Objectives:</b>	At the end of this lesson students will be able to: <ul style="list-style-type: none"> <li>• Identify at least two laws or regulations that help protect salmon habitat.</li> <li>• Identify 5 salmon friendly choices that individuals can do at home or school.</li> <li>• Explain the different ways pollution enters a stream (run-off and wastewater)</li> </ul>	
<b>Engage and Encounter</b>	Brainstorm the limiting factors that influence the ability of an organism to survive (pollution, temperature, and stream flow) and then look at how laws and policy at the government level regulate these limiting factors; society level; and how individuals respond too.	
<b>Explore and Investigate</b>	Students will revisit what they learned in lesson 3 about laws and policy, apply them to these issues to see how different levels of government work together with individuals on how decisions are made.	
<b>Reflect and Explain/Assessment:</b>	Students will write a persuasive paper using the Washington State Classroom Based Assessment (CBA), You Decide <a href="http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf">http://www.k12.wa.us/assessment/WASL/SocialStudies/BridgingDocuments/Elem08/ElemCivics-YouDecide-CBA.pdf</a> Complement the Landforms Kit by making a 3D model of a rain garden and making a topographical map for a potential site on your school campus.	
<b>Apply and Extend</b>	Is It Sustainable? Lesson plan from Facing the Futures <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/6.Is.it.Sustainable.pdf</a> Creating our Future <a href="http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf">http://www.facingthefuture.org/Portals/0/documents/GSRLibrary/40.Creating.our.Future.pdf</a>	
<b>Contact NOAA</b>	Thank you for piloting our lessons, we would love to get copies of your Pre-Post tests and your evaluation form. Please send to: Peggy Foreman at 7600 Sand Point Way NE, Seattle, WA 98115 or <a href="mailto:nwr.education@noaa.gov">nwr.education@noaa.gov</a>	

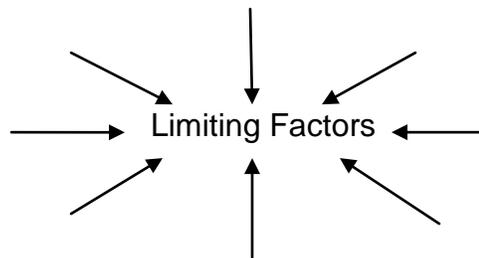
# Saving Salmon

## Lesson 5: Civics: Salmon Friendly Choices

**Background:** *Today's lesson emphasizes individual choices that people make to contribute to the greater good for humans, salmon, and the environment. Pollution from run-off and wastewater are emphasized. These are examples of non-point source pollution, because the source is hard or impossible in some cases to detect. Point source pollution might be that pipe coming from a particular factory that has a permit to release effluent into a stream. Students will brainstorm human impacts that affect limiting factors of salmon and think of how individuals make choices all the time in regards to run-off. Understanding laws and regulations at different levels is important, but these too have limitations. Empowering students that individual efforts if everyone does their part can accomplish great things. The NOAA representative can share how their work in policy and management influences humans and the environment. This activity could also lead students to asking their city/county to participate in storm drain stenciling or other local actions. The sky is the limit.*

### I. Whole Class/NOAA Representative: (40 minutes)

A. Using a graphic organizer (web) on the board, write the words Limiting Factors and place lots of arrows facing in towards those words. Have students think about what factors influence the survival of salmon in their habitat.



1. Encourage them to think about the threats they came up with in the last lesson. (Food, water, shelter, space, pollution, oxygen, predators, stream bed, light, wave action or lack thereof, salinity, type of coastline, temperature, etc.
2. Next, hand them their worksheets and tell them they are going to focus on two main ones: pollution and habitat. All of these can be influenced by run-off. If you already have seen the demonstration of impervious surface (maybe from Homewaters Project fieldtrip to Thornton Creek or other experience), disregard. If they are going, don't do the demonstration. If they have already gone, have them explain it again to YOU.
3. Impervious Surface/Run-Off demonstration: Materials needed: tub, sponge, plexi-glass or hard plastic surface (flat, plastic cutting board), 2 bottles/glasses of equal amounts of water.

- a. With students gathered around you, place tub on ground(which represent their local stream), hold on to the sponge over the tub and pour water over it. Tell them to pretend that this sponge has grass, bushes, and even trees on it. While you are doing this ask what they notice.
  - b. Tell them that the roots of the vegetation do a great job of absorbing water when it rains.
  - c. When done, ring out sponge or set aside. With empty sponge and new glass of water, place the plexi-glass over the sponge and begin pouring the water. It should just run off. However, ask students what they think the plexi-glass represents. Help them expand on their responses: impervious surfaces like parking lots, roads, roofs of houses, etc.
  - d. Then ask them what would happen if a car leaked oil in a parking lot? What would happen? It would go directly into a stormdrain, unfiltered down the drain, to nearest stream and into its larger watershed the ocean.
    - i. Besides oil: fertilizers on wheat fields or golf courses run-off and end up in our streams and oceans.
    - ii. Sometimes this water running off impervious surfaces in the summer can increase the water temperature in streams. How does this impact salmon?
    - iii. Also, if there is an abundance of impervious surface, when it rains all of this water inundates the stream; and can increase its flow. If the velocity of water increases how might this effect erosion (more likely) and is this good for salmon?
4. Return to the worksheet and look at the first column.
- a. Government level: Laws or policy
    - i. Have students review what laws help protect salmon and salmon habitat (ESA, Section 7 examples, BMP's for erosion control during construction, silt fences, straw bales, etc.; riparian buffers- State forest practice rules, minimize riparian clearing; fishing permits, and Clean Water Act, to name a few).
    - ii. Remind them that if there is federal law like the ESA, then State, tribal, or local laws must abide by them too.
  - b. Decision Making at Society level: Businesses and communities.
    - i. Businesses have to apply for a permit to discharge effluent into a body of water. They choose or decide at what level to interpret the law/regulations. Emphasize that this example is point source pollution and sometimes non-point source pollution is difficult to manage.
    - ii. Another example, ask the students: "Let's suppose your County Fair wants to have live stock again; what laws/regulations are in place for this example?"
  - c. Decision making at an individual level: Your rights and responsibility.

- i. We are consumers. If we want to buy a product at the store, do we have the right to buy something even though it might have a “Warning, Caution, Poisonous sign, etc.”, written on it. However, can we make responsible choices and consider alternatives that might be more “Salmon Friendly”?
  - ii. Remind students that everything that goes down a drain (toilet or shower/bath) ends up in our watershed (streams, lakes, and oceans) where salmon live. Ask them about some of their personal care products (shampoo, soaps, lotions, etc.) and have them think of how many people on our planet we have. Ask them if governments can regulate/enforce what people buy and use? No. But can individuals go above and beyond and evaluate what they buy and support. Briefly talk about supply and demand and how that effects businesses.
- d. Wrap up. Answer any more questions that students might have.

## II. Homework/ Assessment:

A. Worksheet provided: Have students finish their research and be prepared to share with the class the next time they meet. See rubric.



## CIVICS: Salmon Friendly Choices

There are many other limiting factors; you will focus only on 2. Let's look at how decisions are made (management and Regulations) and emphasize on our own rights and responsibilities.

Limiting Factors Affecting Salmon	Decision making at the Government Level (Law or Policy)	Decision Making at Society Level (Businesses/Community)	Decision Making at Household/Individual Levels (What are Your Rights and Responsibilities?)
<p><b>Pollution from Run-off:</b> *Chemicals (pesticides/ herbicides)</p> <p><b>Pollution from wastewater:</b> *Personal care products</p> <p>*Fecal Coli form and others</p>			
<p><b>Temperature:</b> *vegetation *run-off</p>			



## CBA Preparation and optional activities

Think of ways to incorporate quotes in one of these projects, revisit lesson 1 or find one that seems appropriate to you. Good luck!

<b>CBA preparation:</b>	<b>“Meeting of the Minds” Skit</b>	<b>Art Project</b>	<b>Landforms Connection</b>	<b>Stewardship or Civics Project</b>
<p>Choose one of the limiting factors that is affecting the health of salmon habitats. Think of three people with opposing views about this issue and decide how stewardship plays a role and what level does it happen. Fill in your CBA worksheet and you are on your way. Good luck!</p>	<p>*Role play interpretation of the Declaration of Independence and People’s rights with Thomas Jefferson and you with your position on salmon recovery issues. What do you think he would say about our rules and regulations and how would he rate Americans in managing natural resources.</p>	<p>*Make a collage of Salmon Friendly choices that individuals could make at home or school.</p> <p>*Shopping as a consumer (what things on a label might imply that the product is not salmon friendly)</p> <p>*transportation</p> <p>*Actions at home</p>	<p>*Look back at your school yard bird’s eye view drawing and determine where a rain garden could work on your school ground.</p> <p>*Construct a 8x8 or 9x9 3D model of a possible rain garden and then make a topographical map of your scale model.</p>	<p>*Plant a Salmon Friendly Garden or Rain Garden</p> <p>*Evaluate your practices at home or school (water and energy use, etc.)</p> <p>*Educate others</p> <p>*Plan or participate in a restoration project</p> <p>*Join a group that promotes Salmon recovery</p> <p>*other</p>

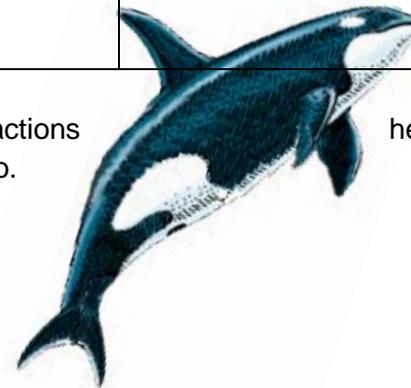
### Ecosystem Connection

\*Make the connection between Salmon Friendly practices and how those actions

\*The Southern resident killer whales are on the endangered species list too.

1. Prey availability (salmon)
2. Toxins
3. Acoustic impacts

Compare and contrast these two, how can you help?



help salmon, orcas and humans!  
Their three main threats are:



## CIVICS: Salmon Friendly Choices **KEY**

There are many other limiting factors; you will focus only on 2. Let's look at how decisions are made (management and Regulations) and emphasize on our own rights and responsibilities.

Limiting Factors Affecting Salmon	Decision making at the Government Level (Law or Policy)	Decision Making at Society Level (Businesses/Community)	Decision Making at Household/Individual Levels (What are Your Rights and Responsibilities?)
<p><b>Pollution from Run-off:</b> *Chemicals (pesticides/herbicides)</p> <p><b>Pollution from wastewater:</b> *Personal care products</p> <p>*Fecal Coliform and others</p>	<p>Endangered Species Act: Section 7 examples</p> <p>Best Management Practices (BMP's) for erosion control during construction (Silt fences, straw bales)</p>	<p>Businesses have to apply for a permit to discharge effluent into a body of water. They choose to decide at what level to interpret the law/regulations.</p> <p>Emphasize that this example is POINT SOURCE pollution. Non-point source pollution might be a candy wrapper found in the stream (you don't know WHO dropped it, or the source). Can you tell me other examples of non-point source pollution? (animal waste, oil slick, etc)</p>	<p>We also choose to abide or interpret the laws. However, we are also consumers. If we want to buy a product at the store, do we have the right to buy something even though it might have a "WARNING, CAUTION, or POISONOUS sign, etc" written on it? However, can we make responsible choices and consider alternatives that might be more "Salmon Friendly"?</p>
<p><b>Temperature:</b> *vegetation *run-off</p>	<p>EPA: Riparian buffers:</p> <p>State Forest Practice rules: provide about 50 feet vegetation around waterways and minimize riparian clearing.</p>	<p>City and County Parks in your neighborhood often are situated close to bodies of water. Often there are recreational areas available and restricted areas for safety, restoring habitat and conservation.</p>	<p>You can choose to remove invasive species in a riparian zone. Planting native trees can provide a canopy and shade to a body of water. Also add understory to riparian vegetation if possible.</p>