ELWHA RIVER RESTORATION

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Elwha River Restoration Survey

Background and Purpose

Two dams have recently been removed on the Elwha River in northwestern Washington State. Opportunities exist to help the environment recover from the effects of the dams, but doing so will cost money. The purpose of this survey is to get your views on what, if anything, should be done.

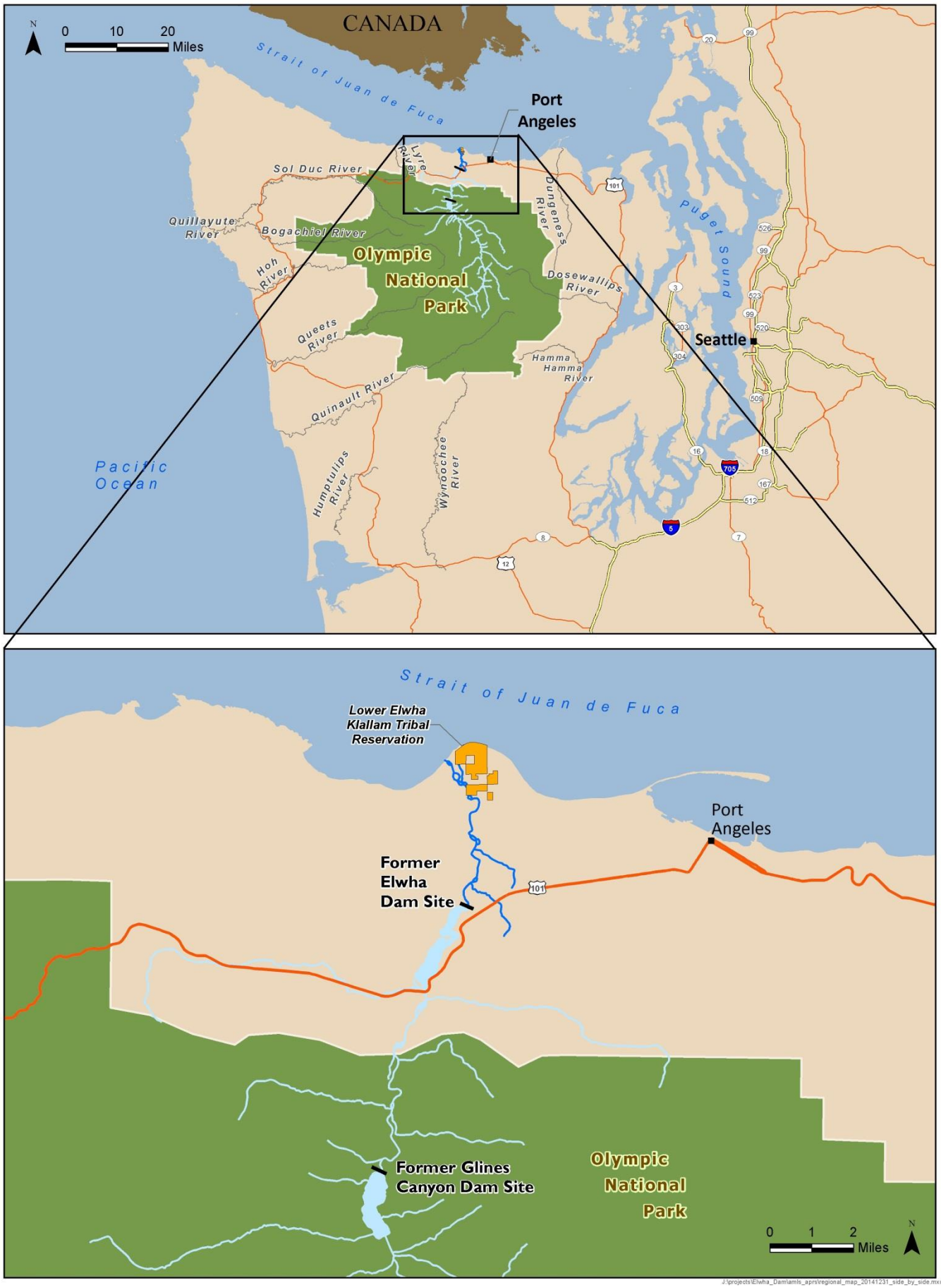
Please take a few minutes to fill out this survey. Even if you are not familiar with the area, the next few pages will provide you with all the information you need to answer our questions. Public officials will use the results of this survey to help them decide what to do. Some of the options being considered would cost your household money.

The maps on the next page show the Elwha River and the streams flowing into it.

- The Elwha River flows mainly from south to north for more than 70 miles before it empties into the Strait of Juan de Fuca, which connects the Pacific Ocean and Puget Sound.
- The top map shows other rivers that, like the Elwha River, have salmon. Several of them flow through Olympic National Park, including the Hoh River and the Quinault River.
- The bottom map shows the former Elwha and Glines Canyon Dam sites.
- The largest city near the river is Port Angeles, WA, six miles away, with a population of about 20,000.
- The Lower Elwha Klallam Tribal Reservation is also close to the Elwha River.

Before the river reaches the former Elwha Dam site, it runs through steep, narrow valleys and canyons as shown in the picture to the left.

Most of the Elwha River is in Olympic National Park, in remote areas with limited or no access by road.


CANADA
N
0 10 20
Miles
Strait of Juan de Fuca
Port Angeles
Lyre River
Sol Duc River
Quillayute River
Bogachiel River
Hoh River
Olympic National Park
Dungeness River
Dosewallips River
Puget Sound
Seattle
Queets River
Hamma Hamma River
Quinault River
Pacific Ocean
Humptulips River
Wynoochee River
Strait of Juan de Fuca
Lower Elwha Klallam Tribal Reservation
Port Angeles
Former Elwha Dam Site
Former Glines Canyon Dam Site
Olympic National Park
0 1 2
Miles
N

The two dams on the Elwha River have been removed.

The Elwha Dam was built in 1910. The Glines Canyon Dam was built in 1920, in what became the Olympic National Park. The dams were completely removed by 2014, because it was less expensive to take them down than to bring them up to modern standards.

1. **Before today, had you heard of the Elwha River? Please check ☒ one box.**

   ☐ Yes

   ☐ No

2. **Have you ever visited the Elwha River? Please check ☒ one box.**

   ☐ Yes

   ☐ No

3. **Have you ever visited Olympic National Park? Please check ☒ one box.**

   ☐ Yes

   ☐ No

4. **Before today, had you heard or read about the dams being removed on the Elwha River? Please check ☒ one box.**

   ☐ Yes

   ☐ No

Salmon and the Elwha River Ecosystem

Elwha River salmon were important to the people, plants, and animals before the dams were built.

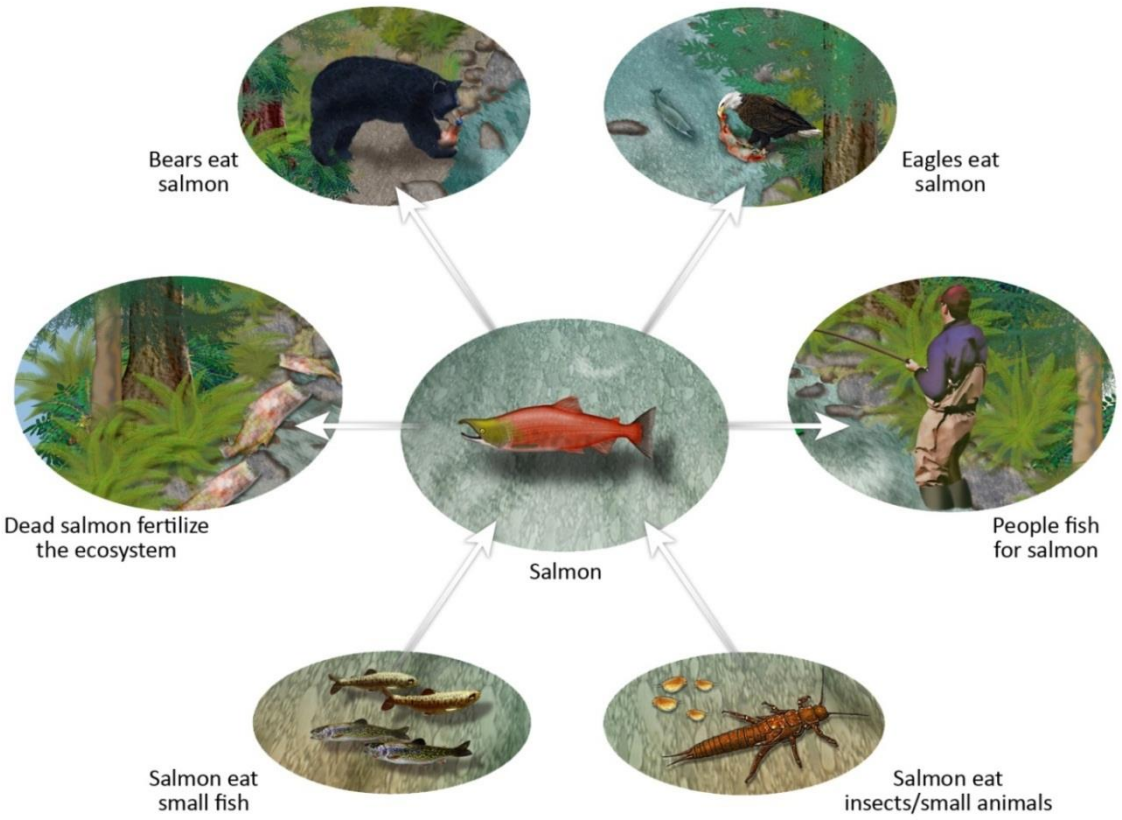
- The Elwha River supported many kinds of plants and animals. The Elwha River ***ecosystem*** included these plants and animals and nearby forests, mountains, and valleys.
- Young salmon swam down the Elwha River and into the ocean. The salmon that survived to adulthood swam back up the Elwha River, spawned and died, beginning the life cycle again.
- People also depended on the salmon. Visitors and people living by the river, including members of the Lower Elwha Klallam Tribe, fished for Elwha River salmon.
- In addition, the Elwha River salmon contributed to the much larger ocean ecosystem. Orcas, sea lions, and other sea animals ate salmon from the many rivers in the Northwest, including the Elwha River.

According to scientists, salmon were a ***keystone species*** for the Elwha River ecosystem.

- This means they were important in holding the ecosystem together.

The diagram below shows how important the salmon were to the people plants and animals living along the Elwha River.

Salmon as a keystone species



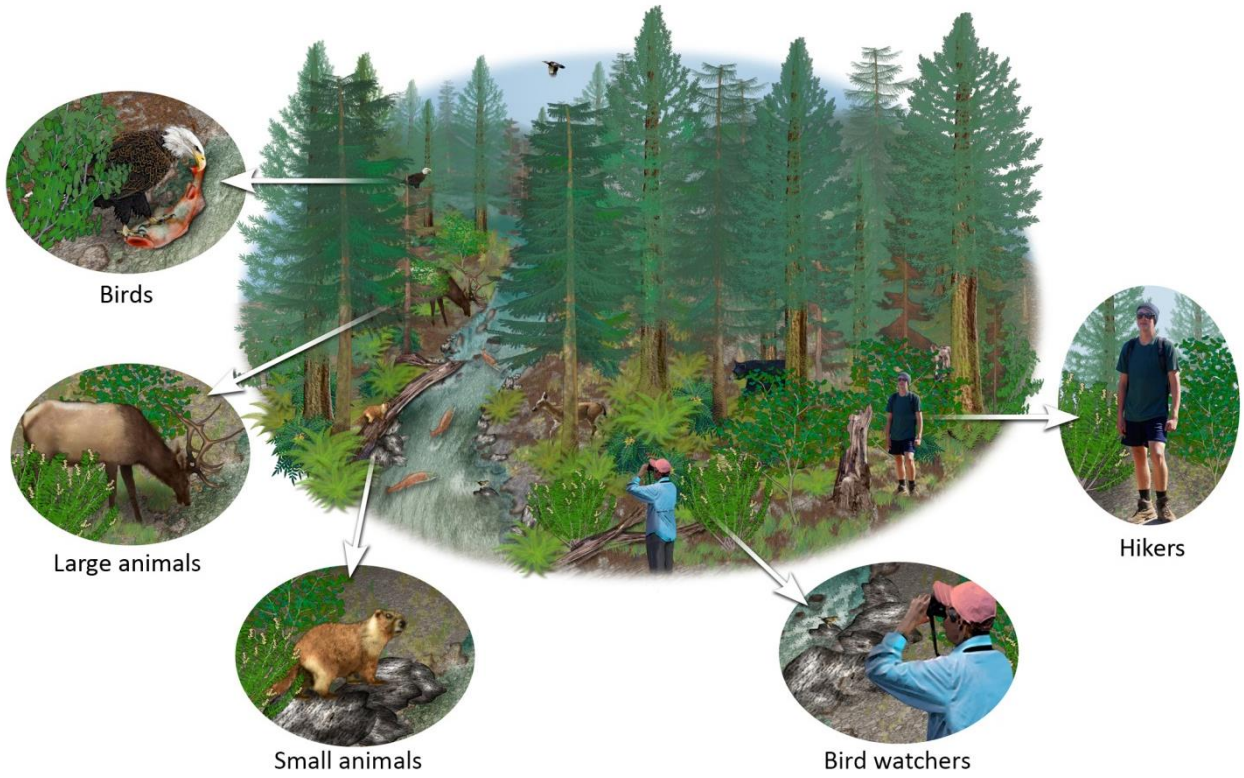
Forests and the Elwha River Ecosystem

Forests along the Elwha River were important to people, plants, and animals before the dams were built.

- These areas contained more types of trees and other plants than other forests.
- The forests along the Elwha River were home to many types of wildlife, including:
  - Large animals, such as elk and deer.
  - Small animals, such as raccoons, mink, mice, chipmunks, squirrels, frogs, turtles, and salamanders.
  - Many birds, such as songbirds, wood ducks, ospreys, and woodpeckers.

The diagram below shows how important the forests were to the people, plants, and animals living along the Elwha River.

The forest as an ecosystem



5. How well do you feel you understood what you just read about the Elwha River Ecosystem? Please check ☒ one box.

- ☐ I understood it very well
- ☐ I have gained some understanding, but some parts were hard to understand
- ☐ I didn't understand it at all

Effects of the Dams on the Elwha River Ecosystem

The dams prevented salmon from swimming upstream. This had three effects on the Elwha River ecosystem.

- First, salmon numbers in the Elwha River fell by more than 90%. Only parts of the river downstream from the Elwha Dam still had salmon.
- Second, the river upstream from the Elwha Dam lost salmon, its keystone species, which changed the ecosystem.
- Third, the lakes formed by the dams flooded some areas of the forests where wildlife had lived.

Animals living in the ocean were also affected. Orcas, sea lions, and other sea animals had fewer salmon to eat.

Elwha River Salmon Restoration

Historic and Future Salmon Numbers

Before the dams were built, an average of ***300,000 salmon*** swam up the Elwha River each year to spawn. Unfortunately, Elwha River salmon will never return in these numbers.

One reason is that people have changed the river downstream of the Elwha Dam; some of it can never be restored to its previous condition. Also, there are more fishermen to catch Elwha River salmon.

Scientists predict that if steps are taken to help salmon recover, the numbers of salmon returning to the Elwha River each year to spawn could reach as much as 60% of historical levels (***180,000 salmon*** returning each year). This estimate is based on more than 100 years of research on Pacific salmon, including Elwha River salmon.

Taking Action

Scientists think steps could be taken to increase the number of salmon faster and allow more salmon to return each year to spawn. Three alternatives have been proposed.

In Salmon Alternative 1, no salmon restoration actions would be taken. Salmon recovery would be slower than under the other alternatives and fewer salmon would return to the river each year to spawn.

In Salmon Alternatives 2 and 3, salmon habitat would be improved downstream of the former Elwha Dam site. The more salmon habitat is improved, the faster salmon will increase in number and the more salmon will return each year to spawn.

Salmon Alternative 3 would involve additional habitat improvements and a new salmon nursery to produce more young salmon for release upstream. This would help salmon numbers increase at a faster rate and result in more salmon returning each year to spawn.

The salmon nursery would be different from conventional fish hatcheries:

- Salmon native to the Elwha River would be used for reproduction. Young fish from these adults have the best chances of survival in the Elwha River since their ancestors have always lived there.
- Once Elwha River salmon are reestablished throughout the river, the nursery would close.

Salmon Alternative 1 **No further actions**	**Salmon Alternative 2** **Limited actions**	**Salmon Alternative 3** **Extensive actions**
• No habitat improvements • No salmon nursery • The number of salmon would level off at about ***40% of historical levels*** in about ***100 years*** (120,000 salmon would return each year).	• Some habitat improvements • No salmon nursery • The number of salmon would level off at about ***50% of historical levels*** in about ***50 years*** (150,000 salmon would return each year).	• Full habitat improvement • New salmon nursery • The number of salmon would level off at about ***60% of historical levels*** in about ***25 years*** (180,000 salmon would return each year).

Figure 1 below shows how quickly salmon numbers are expected to increase for each alternative.

Figure 1. Timelines for salmon restoration

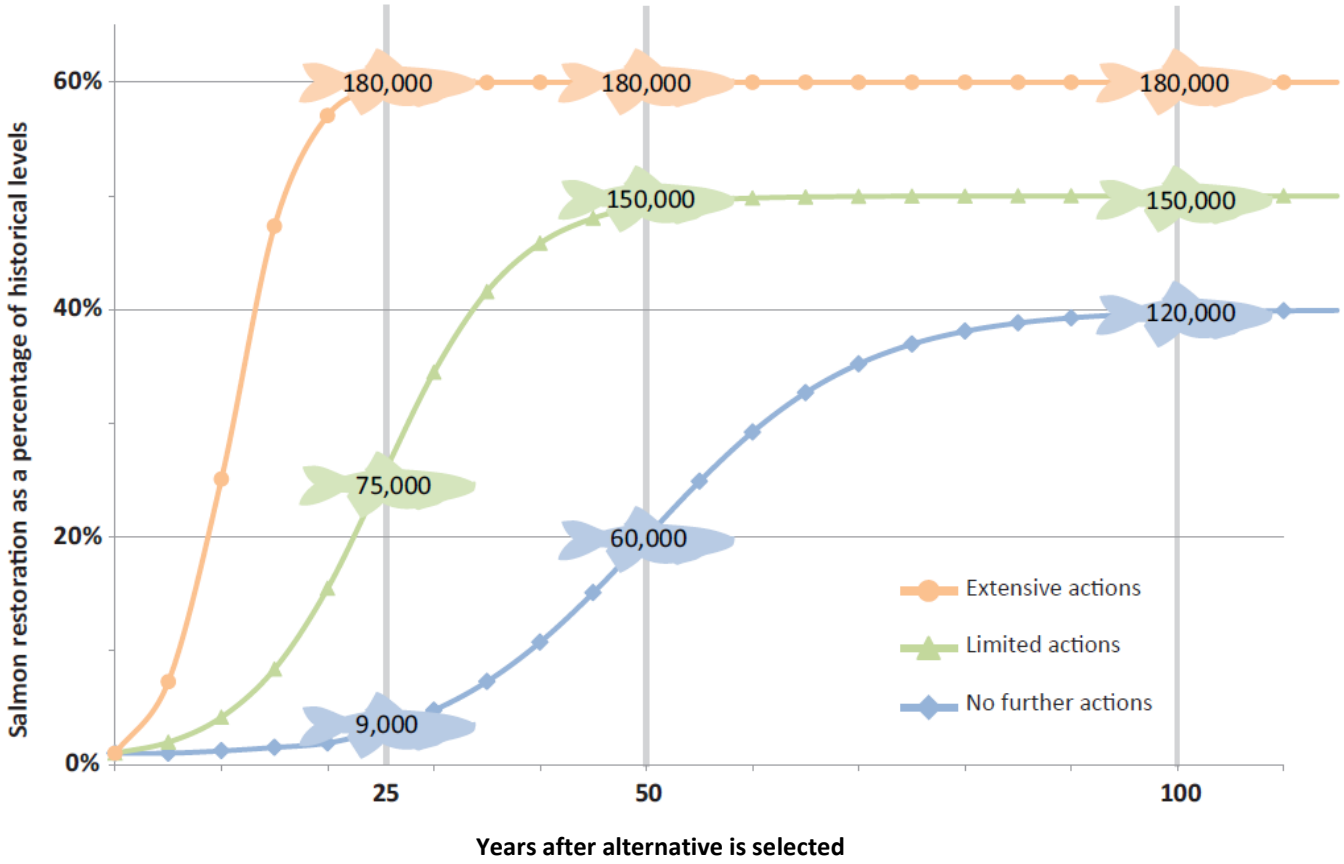


Table 1 below shows the number of returning salmon and the percentage of historical levels in 25, 50 and 100 years after an alternative is selected.

Table 1. Salmon restoration alternatives

Years after alternative is selected	Salmon Alternative 1 No further actions	Salmon Alternative 2 Limited actions	Salmon Alternative 3 Extensive actions
25 years	3% of historical levels (9,000 salmon would return each year)	25% of historical levels (75,000 salmon would return each year)	60% of historical levels (180,000 salmon would return each year)
50 years	20% of historical levels (60,000 salmon would return each year)	50% of historical levels (150,000 salmon would return each year)	60% of historical levels (180,000 salmon would return each year)
100 years	40% of historical levels (120,000 salmon would return each year)	50% of historical levels (150,000 salmon would return each year)	60% of historical levels (180,000 salmon would return each year)

6. How well do you feel you understood what you just read about the salmon restoration alternatives? Please check ☒ one box.

- ☐ I understood it very well
- ☐ I have gained some understanding, but some parts were hard to understand
- ☐ I didn't understand it at all

In a moment we will ask you for your opinions on the salmon alternatives. First, we want to tell you about some steps that would improve forests and wildlife at the old lake sites and how this will be paid for.

Forests and Wildlife Restoration at the Old Lake Sites

Historic and Future Forests and Associated Wildlife Recovery

When the dams were completed, about 5 of the 70 miles of forests along the Elwha River were covered with water to make two lakes. The lakes covered a total of 800 acres of forests, which is equal to about 600 football fields. The lakes have disappeared now that the dams have been removed.

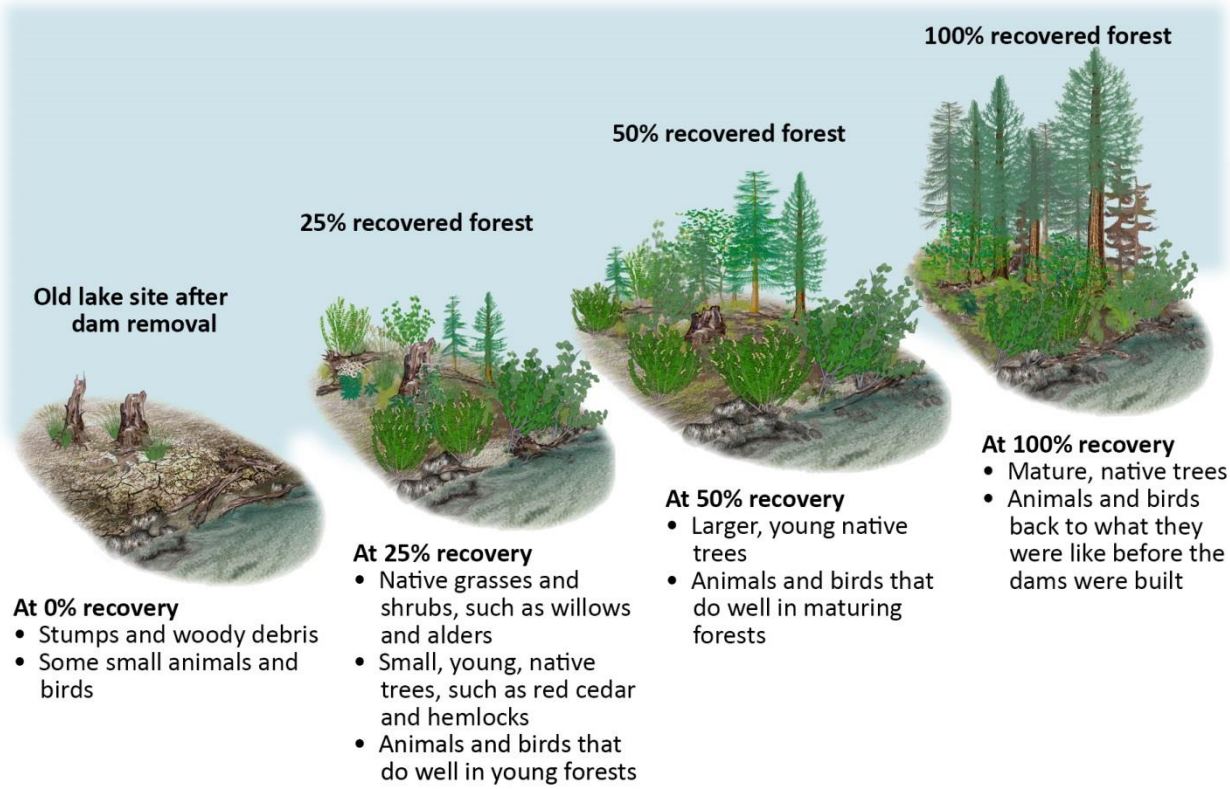
It would take decades for the forests to regrow and for all the wildlife to return to the old lake sites.

- After several years, the soils would begin to support weeds that grow faster than native plants and trees.
- It would take about 50 years for native grasses, trees, and shrubs to become established.
- It would take about 200 years for the forests to grow enough to support the types of birds and other wildlife that need big trees.

Scientists predict that 100% recovery of the forests and associated wildlife is possible, which means that the forests and wildlife would return to what they were like before the dams were built. This estimate is based on many years of research on how forests grow after lakes are drained.

Progress toward recovery will be described as percentages of full recovery, as illustrated in this diagram.

Forests and associated wildlife recovery



Taking Action

Scientists think steps could be taken to restore the forests and associated wildlife at the old lake sites more quickly. Three alternatives have been proposed that involve different levels of forests and associated wildlife recovery.

In Forests and Wildlife Alternative 1, no restoration actions would be taken. Forests and associated wildlife recovery would be slower than under the other alternatives.

In Forests and Wildlife Alternatives 2 and 3, native grasses, shrubs, and trees would be planted at the old lake sites. This would eventually do three things:

- Reduce erosion and prevent weeds from taking over.
- Give native plants a much earlier start than they would get with natural seeding.
- Allow new plants to spread to neighboring areas without the help of people.

The speed of the forests and associated wildlife recovery at the old lake sites would be faster the more areas that are planted with native grasses, shrubs and trees.

Forests and Wildlife Alternative 1 No further actions	**Forests and Wildlife Alternative 2 Limited actions**	**Forests and Wildlife Alternative 3 Extensive actions**
• No native grasses, shrubs, or trees would be planted. • ***100% recovery*** of forests and associated wildlife would be achieved in about ***200 years***.	• Native grasses, shrubs, and trees would be planted in some areas. • ***100% recovery*** of forests and associated wildlife would be achieved in about ***125 years***.	• Native grasses, shrubs, and trees would be planted in as many areas as possible. • ***100% recovery*** of the forests and associated wildlife would be achieved in about ***90 years***.

Figure 2 below shows how quickly forests and associated wildlife are expected to recover for each alternative.

Figure 2. Timelines for the forests and associated wildlife recovery

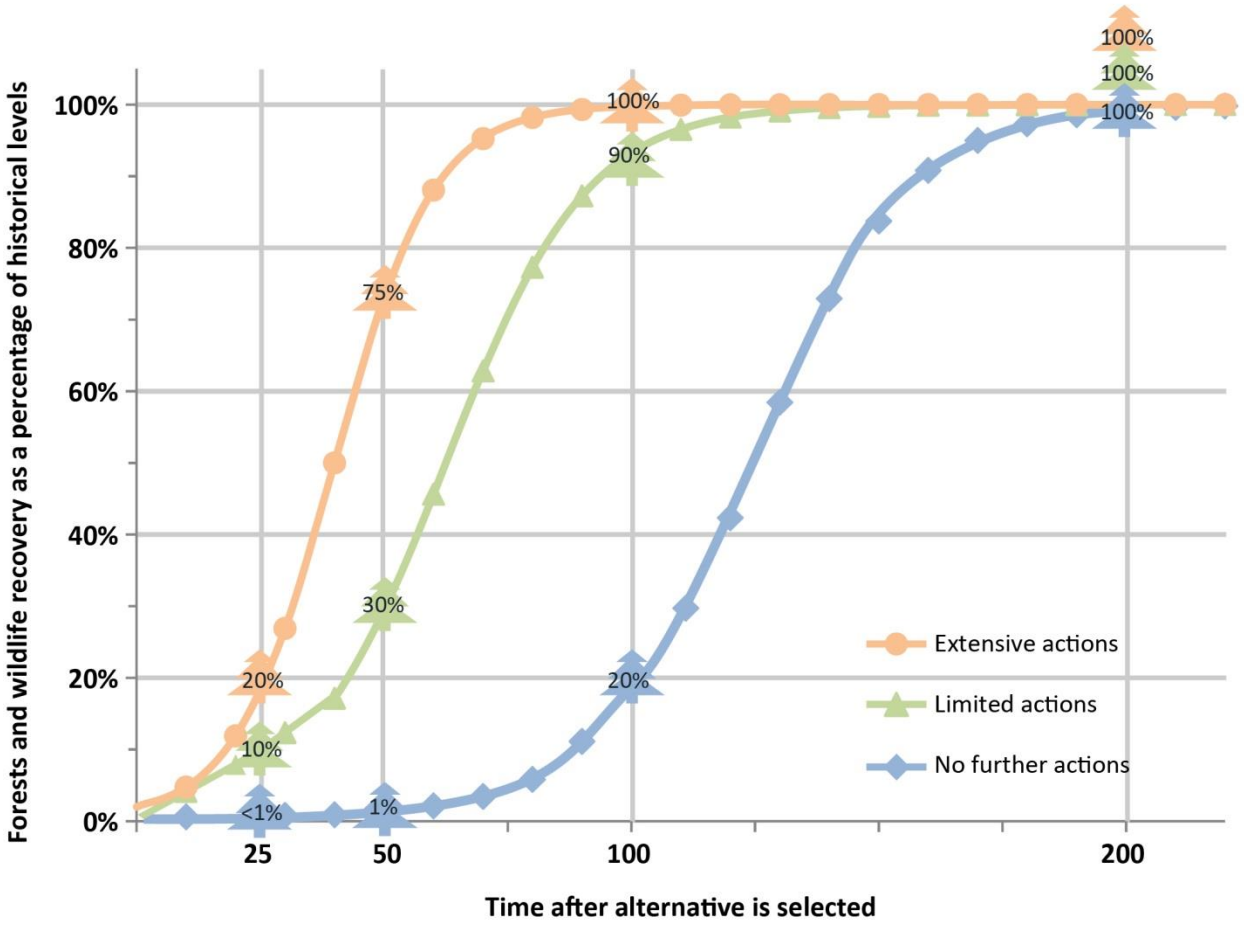


Table 2 below shows the percentage of historic levels in 25, 50, 100 and 200 years after an alternative is selected.

Table 2. Forests and associated wildlife restoration alternatives

Years after alternative is selected	Forests and Wildlife Alternative 1 No further actions	Forests and Wildlife Alternative 2 Limited actions	Forests and Wildlife Alternative 3 Extensive actions
25 years	< 1% recovered	10% recovered	20% recovered
50 years	1% recovered	30% recovered	75% recovered
100 years	20% recovered	90% recovered	100% recovered
200 years	100% recovered	100% recovered	100% recovered

7. How well do you feel you understood what you just read about forests and associated wildlife restoration alternatives? Please check ☒ one box.

☐ I understood it very well

☐ I have gained some understanding, but some parts were hard to understand

☐ I didn't understand it at all

Who would benefit from restoring the Elwha River ecosystem?

Restoring the Elwha River ecosystem would benefit people in the following ways.

- Some people would like knowing that natural ecosystems are being restored, even if they do not personally visit them.
- People visiting the river would eventually see thousands more salmon returning to the river to spawn and be able to enjoy forests, birds, and other wildlife at the old lake sites much sooner than without restoration.
- Members of the Lower Elwha Klallam Tribe would benefit from restoration efforts because they would eventually be able to catch many more salmon, and restored forests and associated wildlife at the old lake sites would have cultural and religious significance.

Restoring the Elwha River ecosystem would also have some negative impacts.

- As the number of young salmon using the river increases, they would compete with local trout for food and habitat.
- Improving salmon habitat and planting native grasses, shrubs, and trees could also disturb local wildlife until the activities are completed in about five years.
- Doing more would involve costs to the public and those funds could not be spent on other things.

Who would pay for restoring the Elwha River ecosystem?

If no further actions are taken now that the dams have been removed, there will be no additional cost to the public.

If additional restoration actions are taken, the costs would be shared across various groups:

- Sport and commercial fishermen and Olympic National Park visitors would pay a share of the costs from existing fishing license and entrance fees to pay for Elwha River ecosystem restoration.
- The rest of the costs would be paid for by the general public in Washington and Oregon.

The general public's share of the costs would be collected by adding surcharges to 2016 electricity bills.

The surcharge on your electricity bill would last for only one year, 2016. These charges would be enough to complete the work. By law, no surcharges would be added in 2017 or thereafter.

All the money would go into the Elwha River Restoration Trust Fund, and an independent nonprofit organization would be formed to manage the trust fund. By law, this trust fund could be spent only on Elwha River ecosystem restoration activities.

What do you think should be done now that the dam has been removed?

In a moment, you will be asked about which alternatives you think are the best. Here are some things to consider:

- Public officials will take the results of this survey into account when they choose what to do.
- The cost to your household, if any, would be added to your 2016 electricity bill.
- By law, no money collected for Elwha River ecosystem restoration could be spent on other things.

You might decide that no further actions should be taken or you might choose other alternatives. The choice is yours. Our job is to learn what you think and report the results to the public officials who will decide.

Which alternatives do you think should be implemented and what will it cost?

Please complete the four steps in the table below.

1. First, review all of the alternatives and their costs.
2. Second, check the box of the salmon alternative you would like to see implemented (Question 8).
3. Third, check the box of the forests and wildlife alternative you would like to see implemented (Question 9).
4. Fourth, add the one-year costs from the alternatives you circled and fill in the sum your household would pay on the right side of the table.

8. Salmon restoration

	Alternative 1 No further actions	Alternative 2 Limited actions	Alternative 3 Extensive actions
25 years	3% of historical levels (9,000 salmon would return each year)	25% of historical levels (75,000 salmon would return each year)	60% of historical levels (180,000 salmon would return each year)
50 years	20% of historical levels (60,000 salmon would return each year)	50% of historical levels (150,000 salmon would return each year)	60% of historical levels (180,000 salmon would return each year)
100 years	40% of historical levels (120,000 salmon would return each year)	50% of historical levels (150,000 salmon would return each year)	60% of historical levels (180,000 salmon would return each year)
Surcharge on your electric bill in 2016	$0 total ($0 per month)	$45 total ($3.80 per month)	$95 total ($7.90 per month)
Please check the alternative that you personally think is the best of the three	☐	☐	☐

In the space below, please write the one-year cost for the salmon alternative you chose.

↓

$ _____

9. Forests and associated wildlife restoration

	Alternative 1 No further actions	Alternative 2 Limited actions	Alternative 3 Extensive actions
25 years	< 1% recovered	10% recovered	20% recovered
50 years	1% recovered	30% recovered	75% recovered
100 years	20% recovered	90% recovered	100% recovered
200 years	100% recovered	100% recovered	100% recovered
Surcharge on your electric bill in 2016	$0 total ($0 per month)	$40 total ($3.30 per month)	$90 total ($7.50 per month)
Please check the alternative that you personally think is the best of the three	☐	☐	☐

In the space below, please write the one-year cost for the forests and associated wildlife alternative you chose.

↓

$ _____

Your total one-year cost (salmon cost plus the forests and associated wildlife cost)

Following are some questions about what you were thinking when you chose your preferred alternatives.

10. You just chose a combination of alternatives for salmon restoration and the forests and associated wildlife recovery. In the space provided below, please tell us your reasons for choosing that combination.

11. How likely is it that public officials will use the results of this survey when they decide what to do? Please check ☒ one box.

- ☐ Very likely
- ☐ Somewhat likely
- ☐ Not very likely
- ☐ Not likely at all

12. How certain are you that you would actually have to help pay for restoration as part of your 2016 electricity bills? Please check ☒ one box.

- ☐ Very certain
- ☐ Somewhat certain
- ☐ Not very certain
- ☐ Not certain at all

13. Do you think that the restoration projects described in this survey would be effective in restoring the Elwha River ecosystem? Please check ☒ one box.

- ☐ I think they would be very effective
- ☐ I think they would be moderately effective
- ☐ I think they would be slightly effective
- ☐ I do not think they would be effective at all

14. Would you say you think of yourself as not an environmentalist at all, slightly an environmentalist, a moderate environmentalist, a strong environmentalist, or a very strong environmentalist? Please check ☒ one box.

- ☐ A very strong environmentalist
- ☐ A strong environmentalist
- ☐ A moderate environmentalist
- ☐ Slightly an environmentalist
- ☐ Not an environmentalist at all

Now we have some questions about your background.

15. In what year were you born?

☐

16. Are you male or female?

- ☐ Male
- ☐ Female

17. What is the highest degree or level of school you have COMPLETED? Check one box. If currently enrolled, mark the previous grade or highest degree received. Please check ☒ one box.

- ☐ Did not finish high school
- ☐ High school diploma or GED
- ☐ Some college
- ☐ Bachelor's degree
- ☐ Graduate or Professional degree beyond a bachelor's degree

18. Are you of Hispanic, Latino, or Spanish origin? Please check ☒ one box.

- ☐ No, not of Hispanic, Latino, or Spanish origin
- ☐ Yes, Mexican, Mexican Am., Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latino, or Spanish origin

19. Please choose one or more of the races shown here that you consider yourself to be. Please check ☒ all boxes that apply.

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Native Hawaiian or other Pacific Islander
- ☐ Other:

The next question is about your family income. This includes income from jobs, pensions, social security, interest, child support, dividends, profits from businesses or farms, or any other sources of income.

If you live alone, your family income is just your income.

If you live with other family members, your family income includes your total income plus the incomes of any of the family members who live with you.

20. During 2014, what was your total income before taxes? Please check ☒ one box.

- ☐ Less than $20,000
- ☐ $20,000 to $39,999
- ☐ $40,000 to $69,999
- ☐ $70,000 to $99,999
- ☐ Greater than $100,000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