



FORESTS AND FINS

VIRTUAL FIELD STUDY TRIP



Salmon are a vital part of Pacific Northwest ecosystems. The stronger and healthier they are when they leave freshwater streams as they migrate to the ocean, the better chances they have of returning as spawning adults to lay their own eggs. They can travel hundreds of miles in their lifetime; throughout this journey, they rely on cold, clean, clear water. Join a Greenway Educator for a Forests and Fins field study trip along the Tolt River in Carnation, WA. You'll see how we figure out if the river is healthy habitat for salmon by studying four aspects of stream health:

- 1) riparian zone (the area along the stream where the plants grow)
- 2) stream channel
- 3) macroinvertebrates (stream bugs)
- 4) water quality

Your job is to record the Greenway Educator's data on this worksheet and then use that data to determine whether or not the Tolt River provides healthy habitat for salmon.

Email education@mtsgreenway.org to request a copy of the Forests and Fins science journal.

TIME: 45 minutes

MATERIALS: Forests and Fins Virtual Field Trip video can be found at mtsgreenway.org/get-involved/education/forests-and-fins

The Forests and Fins program is supported in part by:





RIPARIAN ZONE Data Analysis

1. Circle the choices that best fit your stream survey results:

	EXCELLENT	MEDIUM	POOR
a) Native plants growing along stream bank:	Mostly trees & shrubs	Some trees & some grass	All grass or bare soil
b) Trees & shrubs hanging over the stream	Yes, on both sides of the stream	Yes, but only on one side of the stream	No
c) Amount of woody debris in the stream:	Many pieces	A few pieces	None
d) Invasive species growing near the stream bank	None	A few	Lots

2. Based on your data, the quality of this riparian zone is (circle one):

EXCELLENT

MEDIUM

POOR



STREAM CHANNEL Data Analysis

1. Record the three velocity measurements (feet per second), and then find the average.

Velocity 1: _____ Velocity 2: _____ Velocity 3: _____

2. Circle the choices that best fit your stream survey results:

	EXCELLENT	MEDIUM	POOR
a) Shape:			
b) Woody debris:	>1000 pieces	500-1000 pieces	<500 pieces
c) Count pools and riffles?	Equal number	Close to equal	Many more of one than the other
d) Stream bottom	Mostly cobble	Close to equal cobble/gravel/sand	Mostly sand
e) Erosion	No gullies, banks stable	Some gullies or collapsing banks	Many gullies, banks collapsing
f) Built structures	No dam/culvert	-----	Dam or culvert
g) Velocity	2 - 3 feet/second	1 - 2 feet/second	0 - 1 or >3 ft/sec

3. Based on your data, the quality of this stream channel is (circle one):

EXCELLENT

MEDIUM

POOR



MACRO-INVERTEBRATES Data Analysis

1. Use tallies to record how many macro-invertebrates you found:

Group #1 _____ Examples: _____

Group #2 _____ Examples: _____

Group #3 _____ Examples: _____

2. Use the table below to analyze your data:

	Quantity	Multiply
Group 1		x3=
Group 2		x2=
Group 3		x1=
Total		

3. Based on your data, the water quality of the stream is (circle one):

EXCELLENT
(total=22+)

MEDIUM
(total=11-21)

POOR
(total<11)

WATER QUALITY Data Analysis



1. Record your team's data:

- Temperature: _____ °C
- Dissolved Oxygen: _____ ppm
- pH: _____
- Phosphate: _____ ppm
- Turbidity: _____ NTU

2. Circle the choices that best fit your stream survey results:

	EXCELLENT	MEDIUM	POOR
a) Temperature	5-12°C	13-20°C	Above 20°C
b) DO (Dissolved Oxygen)	More than 9 ppm	6-8 ppm	Less than 6 ppm
c) pH	6.5-8.5	4.5-6.4 or 8.5-10	Less than 4.5 or higher than 10
e) Phosphate	0-2 ppm	3-4 ppm	Above 4 ppm
f) Turbidity	0-50 NTU	51-100 NTU	Above 100 NTU

ppm= parts per million

3. Based on your data, the water quality of this stream is:

EXCELLENT

MEDIUM

POOR



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Now that we have assessed all four habitat aspects of the Tolt River, we can decide whether this river provides healthy habitat for our native salmon. Looking at the riparian zone, stream channel, macroinvertebrates, and water chemistry data, do you think the Tolt River provides a healthy habitat for Pacific Northwest salmon? Why or why not? How could the Tolt River's habitat quality be improved? Write your conclusion and reflections below.

We would love to hear from you! Email your ideas to education@mtsgreenway.org.

If you're a teacher in King County who would like to bring your students on a Forests and Fins field trip, visit mtsgreenway.org/education.

