Salmon Watch Program Overview

Greg Stabach, RVCOG

Central Point Rotary

August 3rd, 2022

ROGUE VALLEY COUNCIL OF GOVERNMENTS

My Background

- Hydrologist
- 22 years working in the Rogue Basin
- Involved with Salmon Watch since 2006?

Presentation Overview

- What is Salmon Watch?
- Program History
- Program Elements (detail)
- Funding
- Resources

What is Salmon Watch?

A way to teach students about watershed health from the salmons perspective


ROGUE
RIVER
drop of water?
happens


BCWEP
#3

Program History

- Established in 2003 by Oregon Trout
- Curriculum designed to meet STEM standards
- Program ran locally from 2003-2009 – The Freshwater Trust, Coyote Trails, Bear Creek Watershed Education Partners
- Gap from 2009-2014 (5 years, no funding)
- Re-established in 2014 as the current program with local support from Clean Water Act Programs

Focus is on Students from local schools

- 3rd-8th graders*
- High School
- Mae Richardson, Scenic Middle School – 250 Central Point students (approximately 20%)

Learn from local experts who work in the field

Program Elements:

- **Field Trips**
- Hands-On-Activities
- Interactive Programs
- Virtual Sessions
- **Classroom Presentations**
- **Service Learning Projects (Scenic Middle School – active restoration, growing plants)**
- **Surveys**

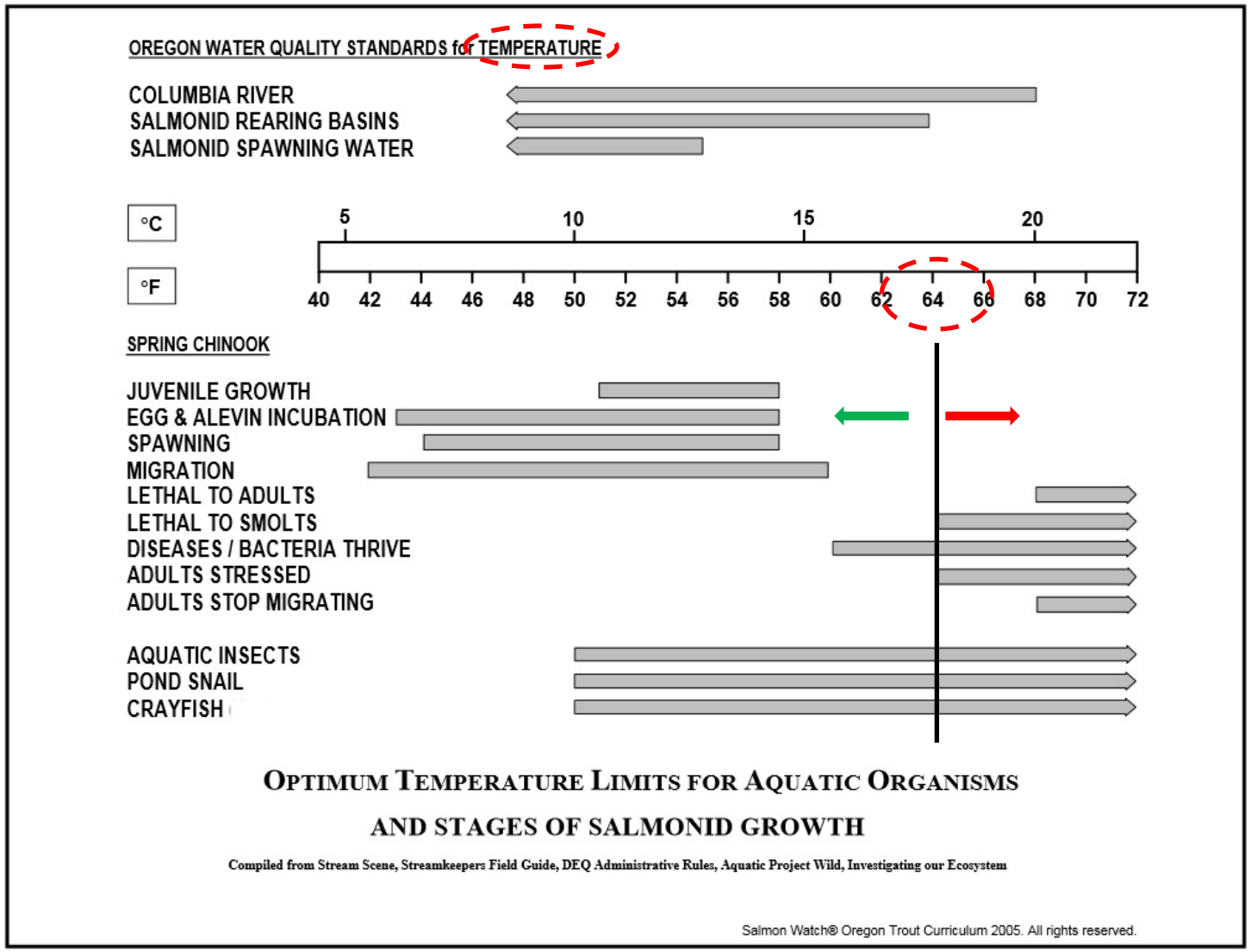
Salmon Watch

A program to learn about watershed health, water quality, and stewardship by connecting how each of these components are important to salmon.

Base Question

Do Salmon like to live in area streams? Why or Why not?

Students get to be scientists and test hypothesis.

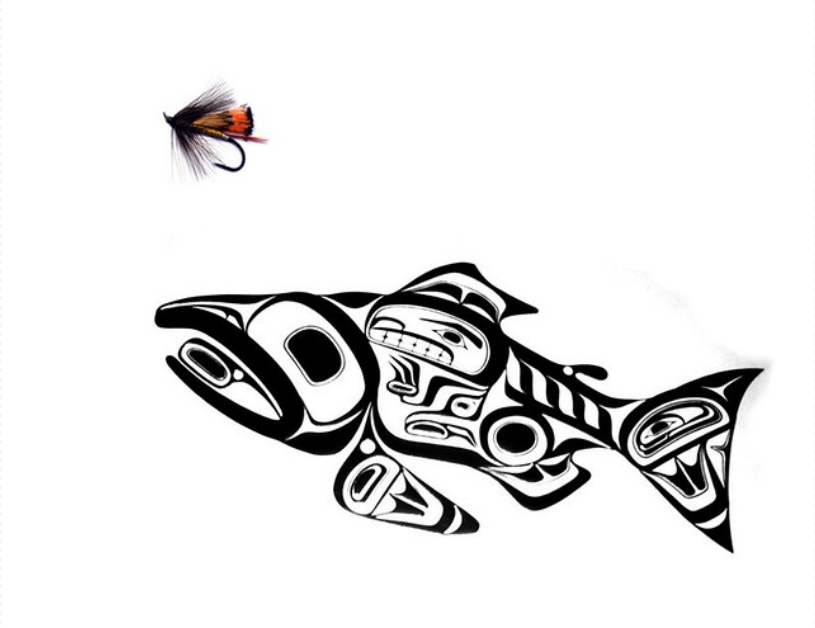


OPTIMUM TEMPERATURE LIMITS FOR AQUATIC ORGANISMS AND STAGES OF SALMONID GROWTH

Compiled from Stream Scene, Streamkeepers Field Guide, DEQ Administrative Rules, Aquatic Project Wild, Investigating our Ecosystem

How does it work?

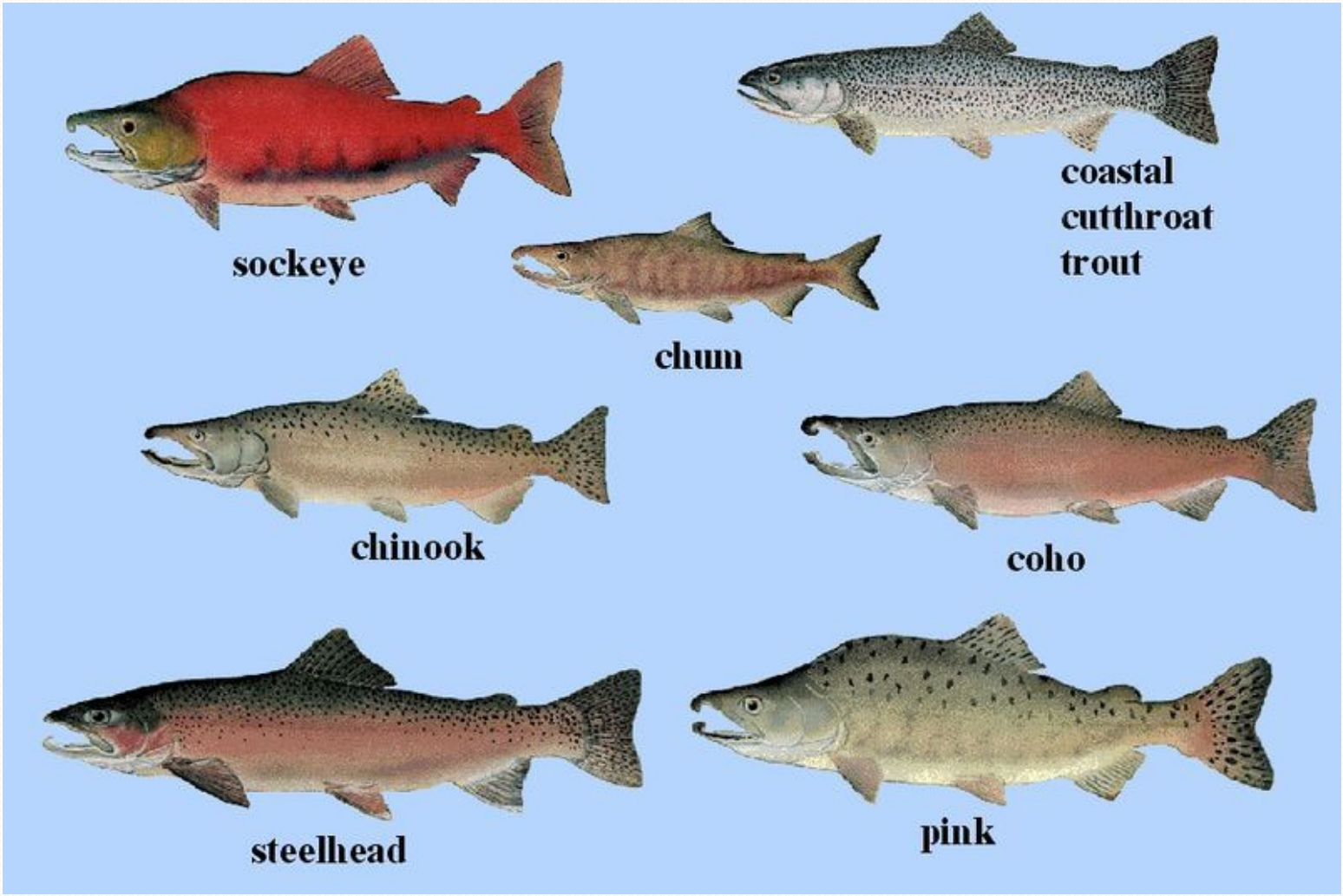
1. Salmon Biology
2. Macroinvertebrates
3. Water Quality
4. Riparian areas



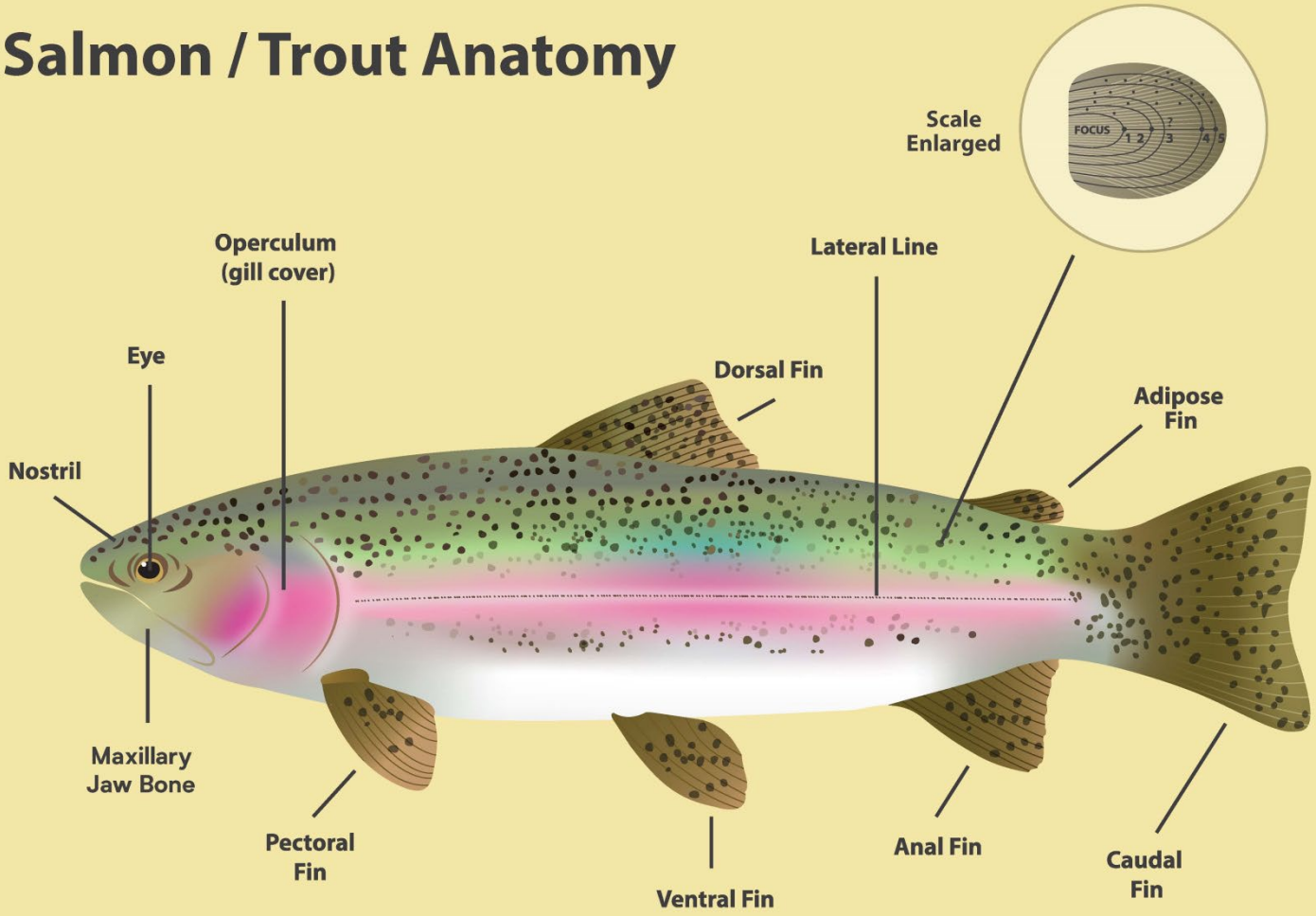
Salmon Biology Module

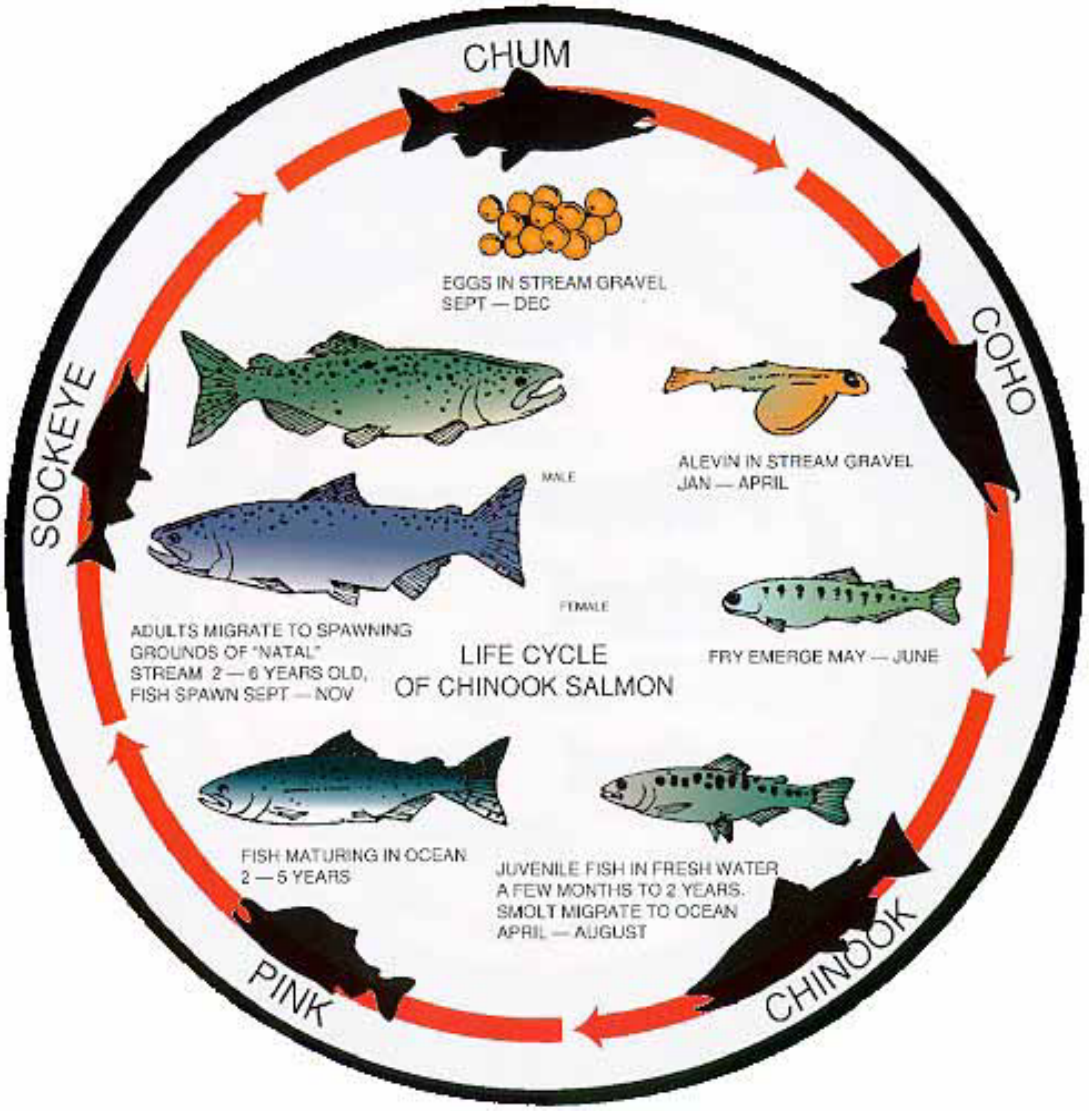
- Types of salmon
- Salmon life cycle
- Behavior[1]
- See Salmon in Stream[1]
- Dissection[2]

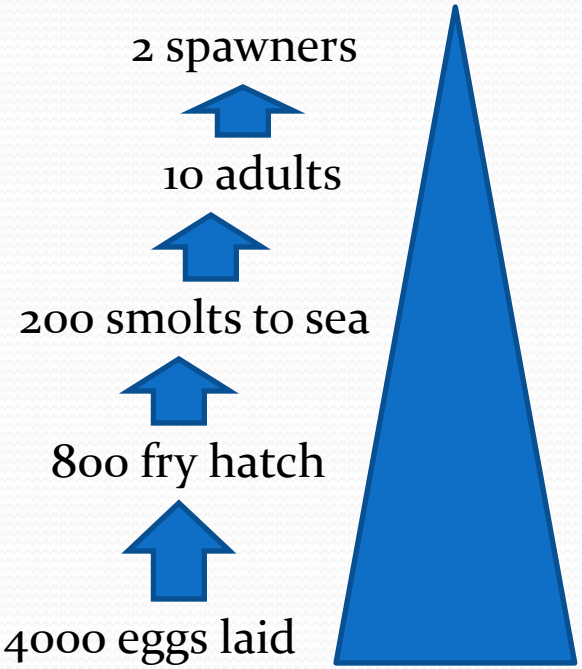
Types of Salmon



Salmon / Trout Anatomy

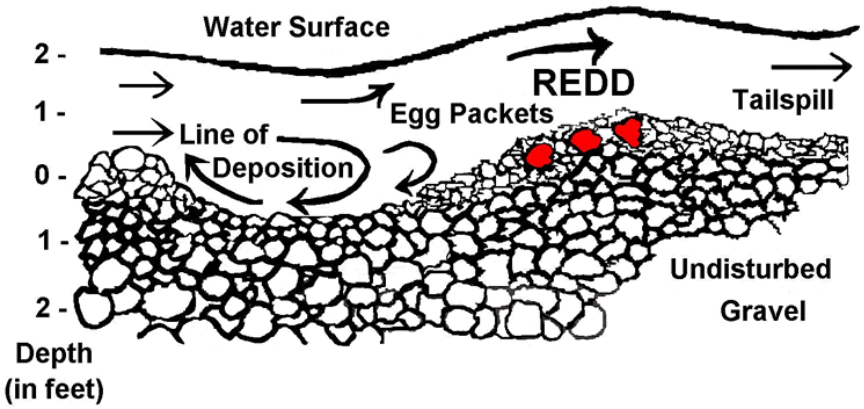



CHUM
EGGS IN STREAM GRAVEL
SEPT — DEC
COHO
ALEVIN IN STREAM GRAVEL
JAN — APRIL
MALE
FEMALE
FRY EMERGE MAY — JUNE
SOCKEYE
ADULTS MIGRATE TO SPAWNING
GROUNDS OF "NATAL"
STREAM 2 — 6 YEARS OLD,
FISH SPAWN SEPT — NOV
LIFE CYCLE
OF CHINOOK SALMON
FISH MATURING IN OCEAN
2 — 5 YEARS
JUVENILE FISH IN FRESH WATER
A FEW MONTHS TO 2 YEARS.
SMOLT MIGRATE TO OCEAN
APRIL — AUGUST
PINK
CHINOOK


2 spawners
10 adults
200 smolts to sea
800 fry hatch
4000 eggs laid

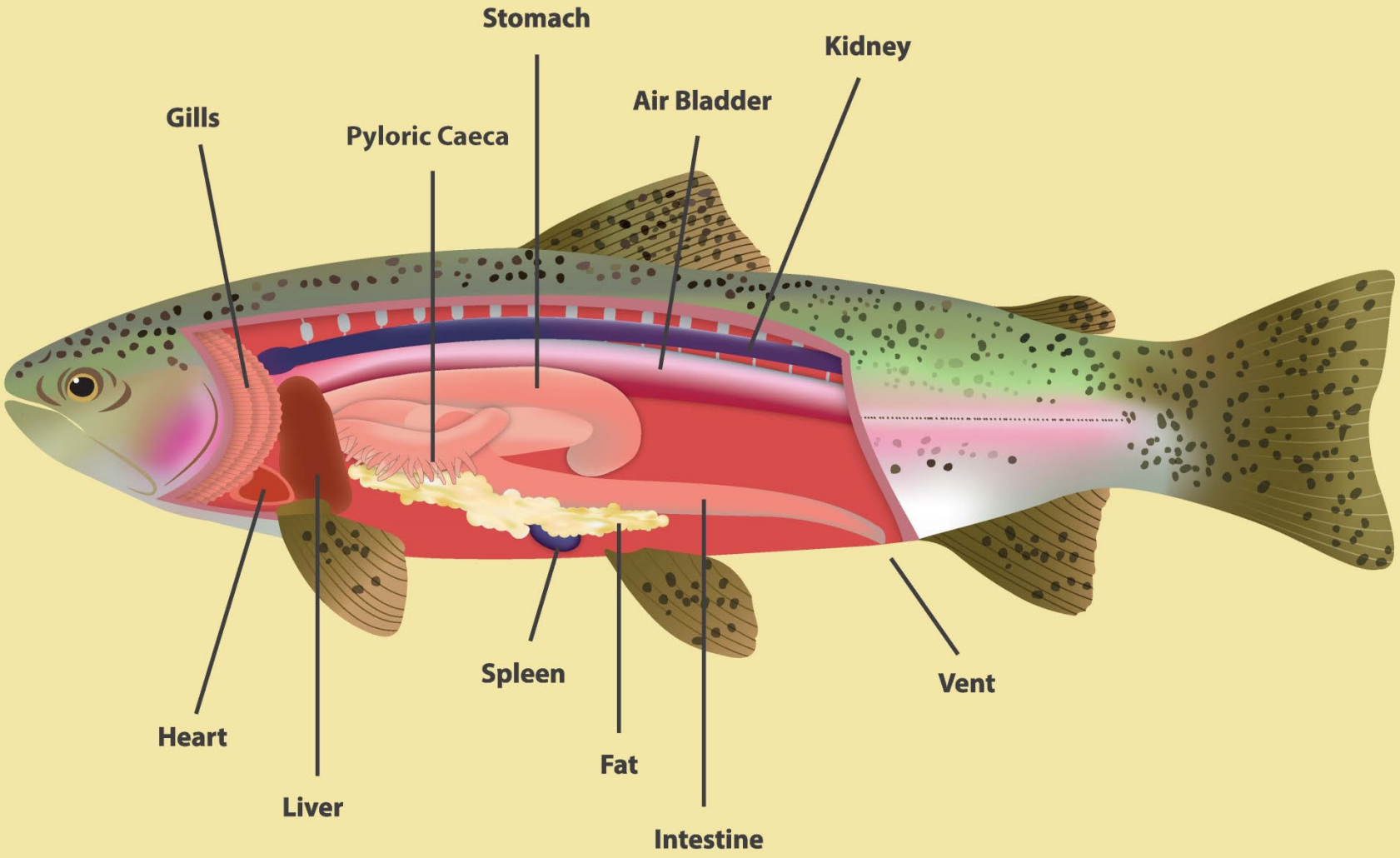
Alevin: **Alevin** are newly hatched **fish**. They derive their nourishment from the yolk sac of the egg from which they were born. Nourishment is provided by the yolk sac for several weeks. They stay in the river gravel until the sac is absorbed.

Redd: a nest dug by salmon and steelhead to deposit eggs. It is formed by the female using her tail to dig in a small area of gravel in the bottom of the stream .



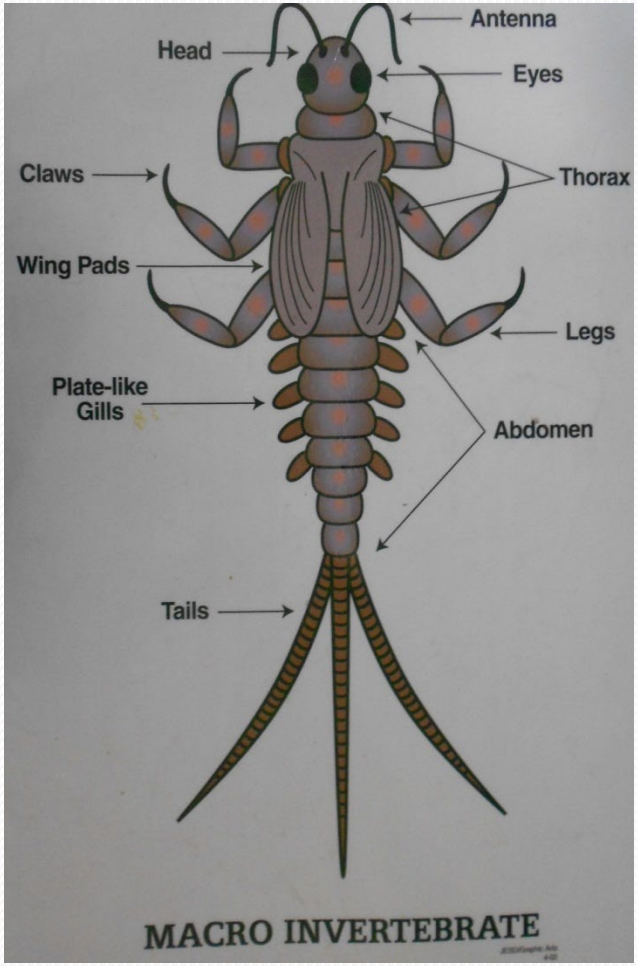
Dissection

Salmon / Trout Anatomy



Macro Invertebrate Module

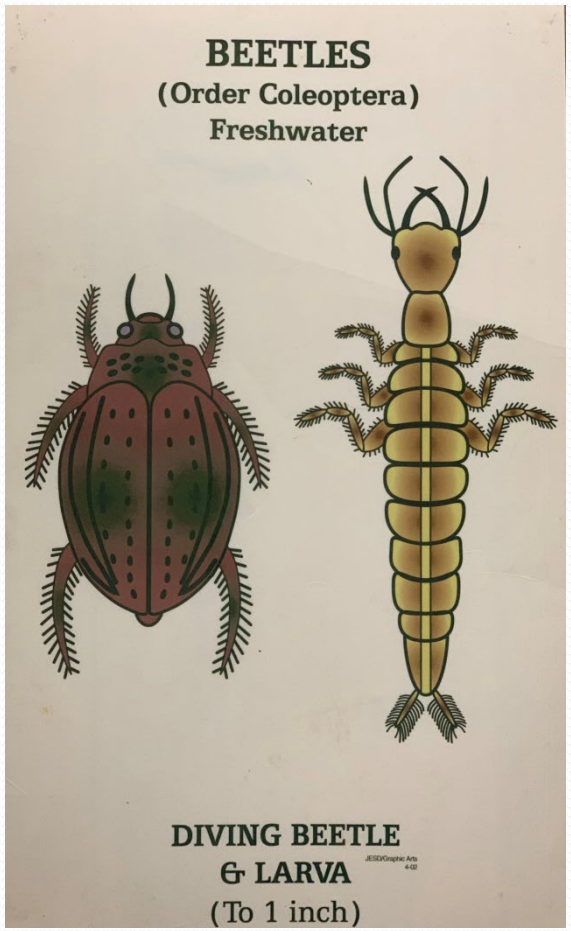
- Macro – can be seen with the eye
- Invertebrate – Lack a backbone

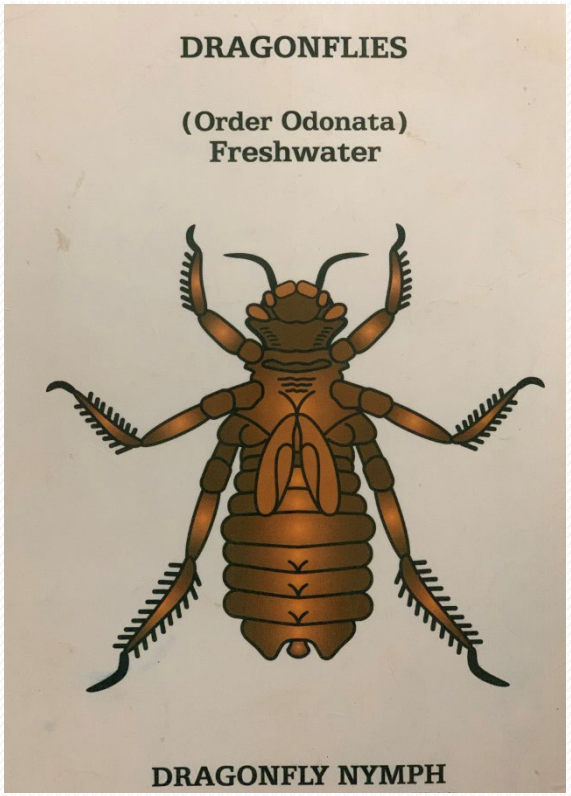


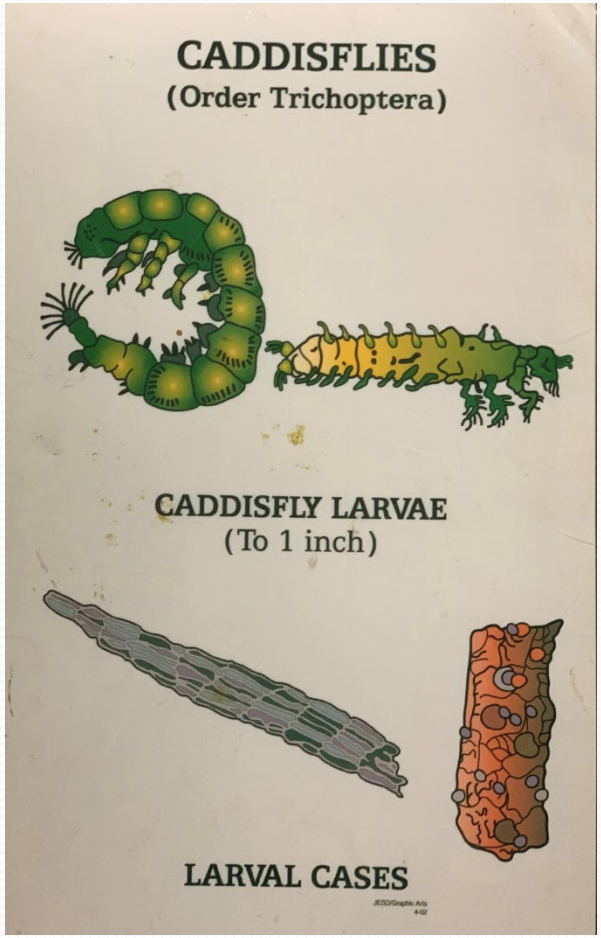
Importance

- Provide food for salmon (young)
- Can tell us about water quality (pollution tolerance index)
- Lots of different functions/roles in the ecosystem

Examples of what you might see







Macro field sheet

OSU Oregon State University Extension Service

StreamWebs™ Student Stewardship Network

MACROINVERTEBRATE SAMPLING

Share your field data quickly and easily using StreamWebs. Find out what the macroinvertebrates you found say about your stream, keep track of your photopoints, graph water quality data, upload a video, and much more.

www.streamwebs.org

Name:_____

School:_____ Teacher:_____

Date:_____ Time:_____ Weather:_____

Stream/Site Name:_____ Time spent sorting/identifying:_____

# of people sorting/identifying:_____ ☐ Riffle ☐ Pool

Directions:
1. Record the number of each type of organism found in the # found column of each section.
2. Then circle the number in the score column (3, 2, or 1) if any of that organism was found.
3. Complete the equation at the bottom by adding up the circled numbers from each score column.

SENSITIVITY TO POLLUTION

Sensitive / Intolerant

	# found	score
caddisfly		3
mayfly		3
riffle beetle		3
stonefly		3
water penny		3
dobsonfly		3
Sensitive TOTAL =		

Somewhat Sensitive

	# found	score
clam/mussel		2
crane fly		2
crayfish		2
damselfly		2
dragonfly		2
scud		2
fishfly		2
alderfly		2
mite		2
Somewhat Sensitive TOTAL =		

Tolerant

	# found	score
aquatic worm		1
blackfly		1
leech		1
midge		1
snail		1
mosquito larva		1
Tolerant TOTAL =		

\+ ☐ Sensitive total
\+ ☐ Somewhat sensitive total
☐ Tolerant total
= ☐ **Water Quality Rating**

☐ Excellent (>22) ☐ Good (17-22)
☐ Fair (11-16) ☐ Poor (<11)

Adapted from: Environmental Services City of Portland

Water Quality Module

- Test the water quality to see if its good for fish and macroinvertebrates
  - Temperature – warm or cold?
  - Dissolved Oxygen – color change
  - pH – color matching

OSU Oregon State University Extension Service

StreamWebs™

Student Stewardship Network

WATER QUALITY DATA FORM

Share your field data quickly and easily using StreamWebs™. Find out what the macroinvertebrates you found say about your stream, keep track of your photopoints, graph water quality data, upload a video, and much more. **www.streamwebs.org**

School: _____ Teacher: _____

Date: _____ Time: _____ Weather: _____

Stream/Site Name: _____

Any fish present? ☐ Yes ☐ No # of live fish: ____ # of carcasses: ____

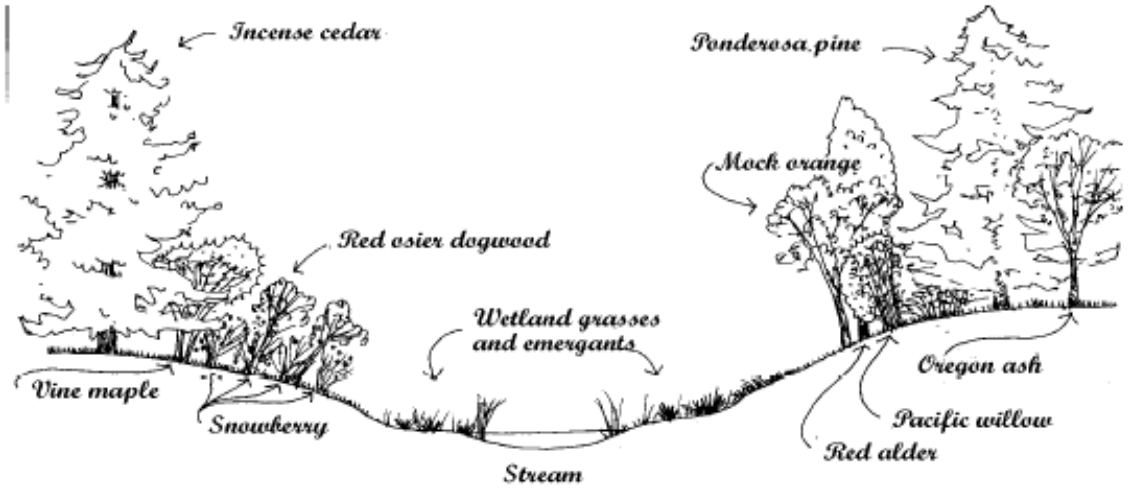
TEST	Sample 1	Sample 2	Sample 3	Sample 4
Water Temperature ☐°C ☐°F				
Equipment used?	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐
Air Temperature ☐°C ☐°F				
Equipment used?	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐
Dissolved Oxygen (mg/L)				
Equipment used?	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐
pH				
Equipment used?	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐
Turbidity (NTU)				
Equipment used?	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐
Salinity (PPT)				
Equipment used?	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐	Vernier ☐ Manual ☐

Adapted from: Environmental Services City of Portland

Riparian Areas Module

What is a riparian area?

A riparian area is the area of land adjacent to a stream, lake, or wetland (see diagram below). Most healthy riparian areas have moist, fertile soils that support many types of moisture-loving plants. These plants provide food and shelter to numerous fish and wildlife.



GOOD SALMON HABITAT

NOAA FISHERIES

HEALTHY VEGETATION

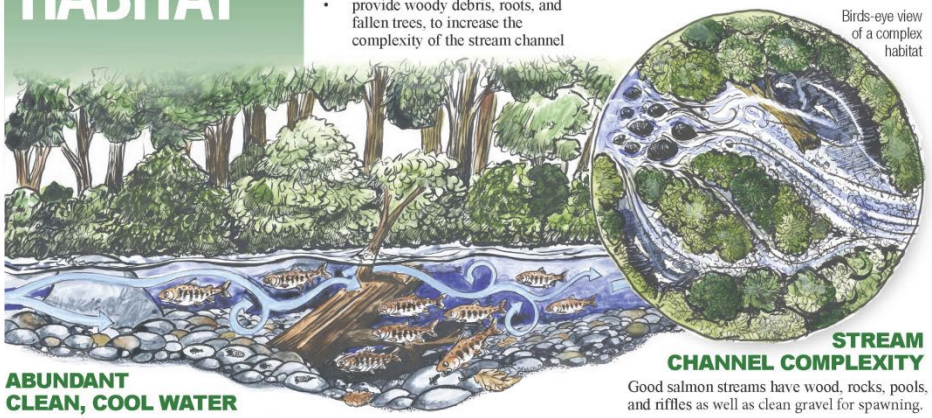
Streamside plants and overhanging branches block the sun and keep things cool.
They also:

- attract insects that salmon eat
- stabilize the banks against erosion and filter run-off from rain
- provide woody debris, roots, and fallen trees, to increase the complexity of the stream channel

GEOGRAPHIC COMPLEXITY

Floodplains and side channels off of the main stream provide:

- refuge from high, harmful flows
- high quality foraging and rearing areas

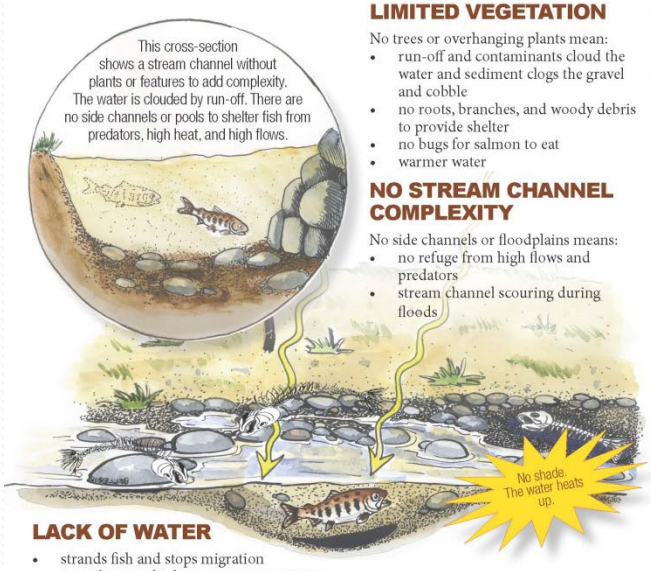


Birds-eye view of a complex habitat

ABUNDANT CLEAN, COOL WATER

STREAM CHANNEL COMPLEXITY

Good salmon streams have wood, rocks, pools, and riffles as well as clean gravel for spawning.



LIMITED VEGETATION

No trees or overhanging plants mean:

- run-off and contaminants cloud the water and sediment clogs the gravel and cobble
- no roots, branches, and woody debris to provide shelter
- no bugs for salmon to eat
- warmer water

NO STREAM CHANNEL COMPLEXITY

No side channels or floodplains means:

- no refuge from high flows and predators
- stream channel scouring during floods

LACK OF WATER

- strands fish and stops migration
- contributes to higher water temperatures

BAD SALMON HABITAT

INVASIVE SPECIES

- invasive aquatic species eat juvenile fish and compete for food, breeding and rearing habitat
- invasive plants change stream flow and affect migration

Importance of Trees

- Shade
- Oxygen
- Roots!
- Habitat

- *Ties to local restoration programs*

Activity Example

RIPARIAN SCAVENGER HUNT

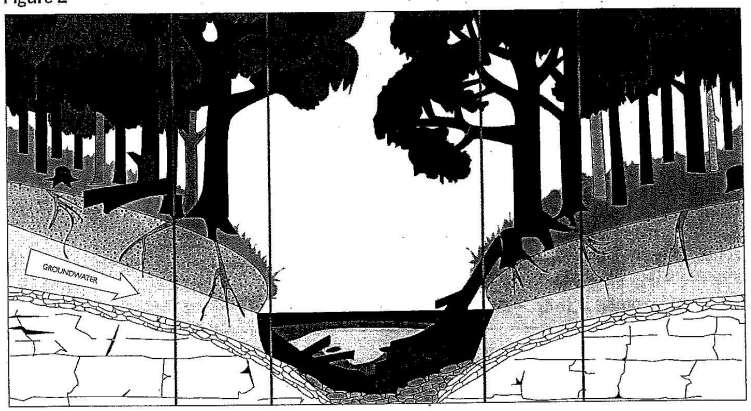
Please find or answer the following items. Draw or describe in writing.

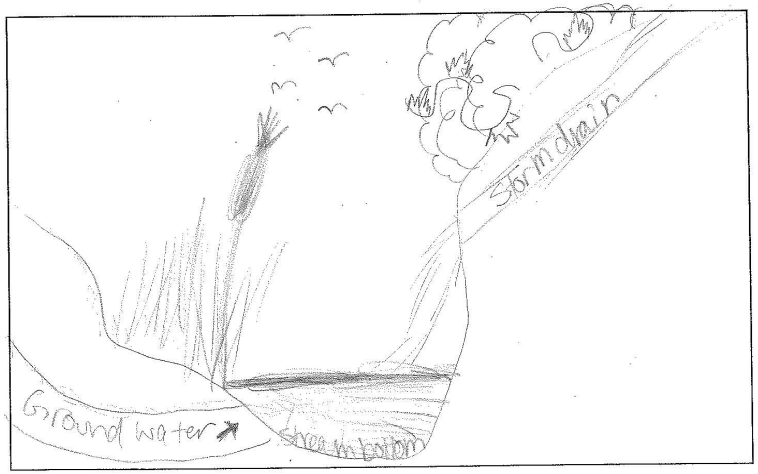
1. How many **different kinds of evergreen trees** are there in this area?
2. How many **kinds of berries or fruits** can you find? (Do not eat them!)
3. Find **three different kinds of seeds or cones**.
4. Is there an **eroded stream bank** in the area? If so, what do you think caused the erosion?
5. Is there a place where **tree roots** are holding the stream bank?
6. Looking around the stream and riparian area, find **3 different types of cover** that help protect fish from predators
7. Find an **insect** or sign of an insect.
8. Find three different types of **evidence that birds** occur in the area.

RIPARIAN AREA PROFILE DATA FORM

Directions: Pick a place along the stream that you particularly like. Draw a profile (cross-section, see **Figure 2**) of this place. Include the near bank, stream, and opposite bank in your drawing. If you aren't sure how to do this, ask your adult group leader. Show the water level in your drawing. Now, draw in features of the riparian zone that you think are important to salmon.

Figure 2





The Freshwater Trust™

Salmon Watch®

RIPARIAN AREA MAPPING DATA FORM

School: Scenic Middle School

Teacher: Mr. Grover

Date: 10-22-14 Time: 3:09 pM

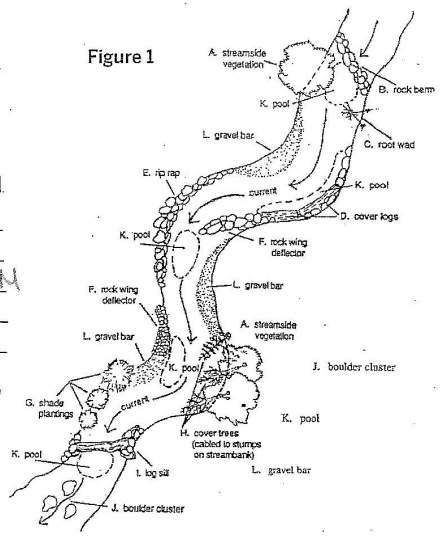
Weather: _____

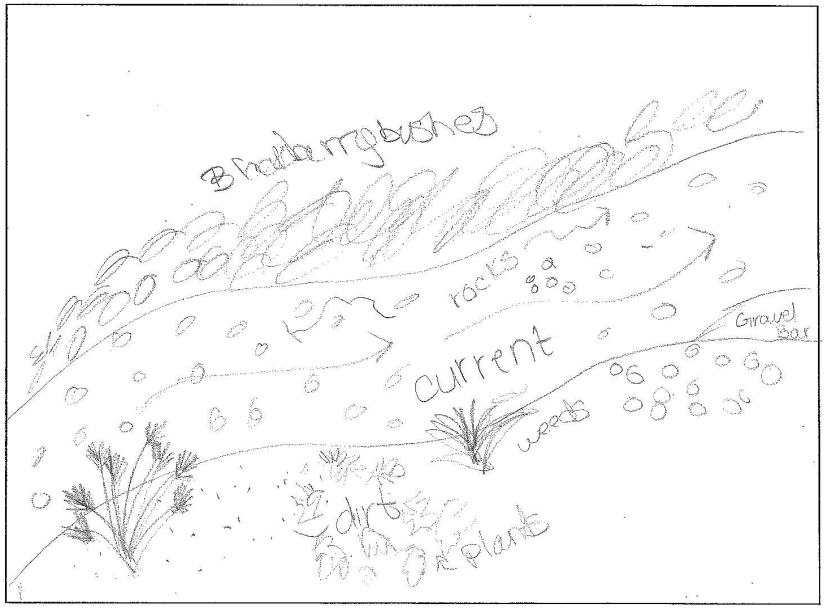
Stream/Site Name: Griffin Creek

Directions: Use this space to make a map of the part of the stream that you think is important (imagine the stream from a "bird's-eye-view"). Be sure to map both the aquatic and riparian zones. Draw in all the features you think are important (see **Figure 1**).

Turn over for profile activity. →

Figure 1





The Freshwater Trust™

Salmon Watch®

Now you can share your Salmon Watch® data quickly and easily using StreamWebs™. You can graph your water quality data, compare your macroinvertebrate count with other schools, and learn more about your home watershed. To find out more, visit: **www.streamwebs.org**

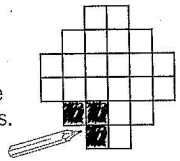
CANOPY COVER DATA FORM

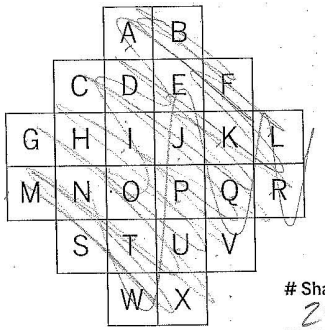
School: _____ Teacher: _____

Date: _____ Time: _____ Weather: _____

Stream/Site Name: _____

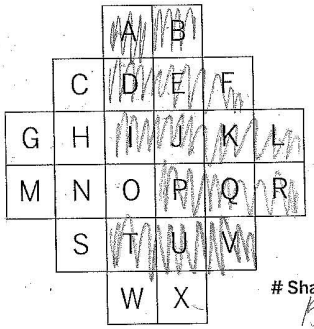
Directions: Working with a partner, take one sample of canopy cover in each cardinal direction using the spherical densiometer. Once you have the densiometer positioned correctly, fill in the areas on this worksheet that are covered with canopy shade. **If the square is 50% shaded or more, fill in the entire square.** Record the number of shaded boxes for each sample. Add up the numbers for all four samples. The result is your estimated percent canopy for your location.





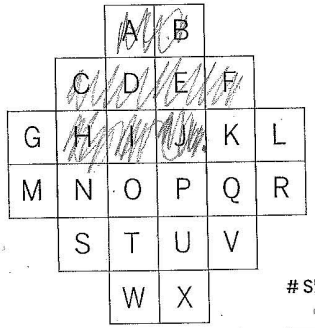
North

Shaded Boxes 24



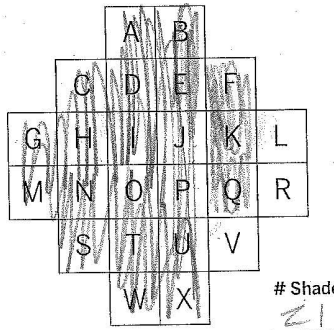
East

Shaded Boxes 15



South

Shaded Boxes 9



West

Shaded Boxes 21

24
15
9
21
69

24 + 15 + 9 + 21 = 69

North + **East** + **South** + **West** = ***Estimated % Canopy***

Did students learn?

Scenic Middle School Survey:

- Pre-survey results averaged 34% correct answers and the post-survey averaged 70%, resulting in a 105% increase in correct answers.

Funding Support (Rotary)

- Contracted Educators
  - Environmental Education Students (SOU/RCC)
  - Recent graduates
- Transportation (McGregor Park, Tou Velle)
- Supplies

Match Funding

- Local Clean Water Act Programs
  - Coordination and Scheduling (logistics)
  - Training
  - Module Instruction
  - Administration
- Partners, Partners, Partners
  - Module Instruction
  - Fee waivers
  - Materials

For more information

https://www.stream-smart.com/our-work/programs-and-projects/rogue-basin-salmon-watch/

Questions?

2021-2022 Stats

- 75 Students
- 2 Schools
- Volunteer instructors
  - RVCOG
  - ODFW

Salmon Watch Program Summary Fall 2021

We pulled it off!

With the continuing challenges of the pandemic including a lack of school bus drivers and limited chaperones, we provided field trips over seven weeks, bringing students outdoors to learn about their local watersheds. Thanks to funding from the Jackson Soil & Water Conservation District and contributions from the water quality programs of local cities (Jacksonville, Ashland, Phoenix, Talent, Medford, Central Point, Grants Pass) and counties (Jackson and Josephine) as well as twelve additional partner organizations we were able to provide no-cost field trips to students in grades 3rd-7th from nine school districts and two private schools in the Rogue basin. Collaboration and partnership make it happen.

We could not do it without your support. Thank you!

Coordinating agencies:

# of students served: over 1240
# of schools participating: 20
# of individual instructors contributing: 38

Students learning about water quality at Blue Heron Park

Students learn at four stations:

- Salmon Biology
- Riparian Ecology
- Water Quality
- Macroinvertebrates

Macroinvertebrates are an important part of the stream ecosystem

Thank you to our Salmon Watch Partners!

- https://www.youtube.com/watch?v=XQeVouErtks&list=UUM1cVIL9V8HHoTJhEq4zfHw