BLACKLINE MASTERS

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Clear Creek Salmon in the Classroom Aquarium Use Agreement

The Salmon in the Classroom Aquariums were built by members of the Central Kitsap Kiwanis Club when they first started this program almost 30 years ago. When they disbanded, they persuaded the Clear Creek Task Force and Kitsap County's Surface and Stormwater to administrate the program.

The Clear Creek Task Force (CCTF) along with its partners, Kitsap County Surface and Stormwater Management, Kiwanis Club of Silverdale, Kitsap Public Utilities District #1, Suquamish Tribe, Central Kitsap School District, Kitsap Health Department, Air Management Solutions and many dedicated volunteers have successfully managed the salmonid lifecycle education program Salmon in the Classroom (SitC) since 2003.

The most important and expensive part of these aquariums are the chillers built from refrigerator parts. As these 30-some year old parts fail, they will be replaced with modern chillers at around $300 each. As a nonprofit organization, our financial resources allow replacement of two per year with one chiller held in reserve for emergency use only. Please treat your chiller with care as outlined in our Aquarium Maintenance Manual.

We have put together this agreement so everyone participating in the program will know their important role and hopefully pass on this vital information. Thanks a million.

The Salmon in the Classroom Administrators Shall

- Coordinate all permits and release reporting on behalf of the Suquamish Tribe.
- Assist in acquiring the necessary equipment.
- Provide resources and/or training to support setup and maintenance of the aquarium and equipment.
- Organize pick-up schedule for salmon eggs and food from Grover's Creek Hatchery.
- Provide a loaner chiller on a first-come, first-served basis if the school's chiller fails. The loaner will be available only until the school's chiller is repaired or replaced.
- Assist with repair costs of equipment that fails through normal deterioration.
- Provide Aquarium Maintenance Manual, aquarium checklist*, technical support, and advice about maintenance, problems, and an opportunity for the organized fry release field trips to Clear Creek.

Participating Teachers Shall

- Become familiar with the Aquarium Maintenance Manual before signing this agreement.
- Test equipment readiness* before Thanksgiving break. This allows ample time for repairs to any of the 34 aquariums before egg distribution the first week of January.
- Maintain* the aquarium, chiller, and other equipment according to the procedures in the Aquarium Maintenance Manual.
- Monitor* the aquarium's water temperature daily per the Aquarium Checklist*.
- Keep equipment in a location that the whole school can see unless space and maintenance do not permit.
- Inform school personnel about the importance of leaving the aquarium undisturbed.
- Do not use the aquarium* for anything other than the raising of the salmon provided.
- Release salmon fry* into Clear Creek only per WDFW permit.
- Timely completion and submission of all reporting* and requests for information.
- Perform end-of-season equipment care* as outlined in the Aquarium Maintenance Manual.
- Replace moldy, broken or lost equipment.
- If the aquarium lining, cover, cooling tube, air stone, hoses or thermometer are damaged from improper* use, storage or maintenance, the school will be responsible for the cost of repair.

**Details in the Aquarium Maintenance Manual.*

Classroom Learning

Classroom learning about salmon may take any form that a teacher finds effective, both in providing special salmon lessons and/or incorporating salmon into other activities that address state learning standards. It is recommended that every participating teacher cultivate student learning through observation during the rearing process and strongly encourages every teacher to equip students with broad knowledge of salmon and engage them in aquarium monitoring and care.

- Ensure that students are engaged in monitoring (document daily temperature readings) and maintaining their aquarium.
- Ensure that students observe eggs, alevin, and fry in their aquarium and summarize observations by report, poem, collage, or etc.
- Ensure that students get an overview of salmon species, lifecycle, regional importance, habitat concerns, and practical stewardship actions for their watershed.
- Prepare students for the mid-March release of their fry into Clear Creek either on your own or the optional Salmon in the Classroom Field Trips.

Project Wrap-Up and Reporting

1. Release fry into Clear Creek, report date and fry count to the Clear Creek Task Force Coordinator, ClearCreekTrail@yahoo.com
2. Summarize classroom learning activities and objectives addressed. Submit to ClearCreekTrail@yahoo.com
3. Inform the Clear Creek Task Force Coordinator ClearCreekTrail@yahoo.com if you no longer wish to participate, are changing schools, or are passing the aquarium along to another teacher in your current school.

By signing this agreement, you agree to adhere to all points above to the best of your ability.

This agreement needs to be signed by the responsible teacher. One copy needs to be kept with the aquarium, one copy kept by the school principal, and the original signed copy sent to the Clear Creek Task Force Coordinator, PO Box 1188, Silverdale 98383, or info@clearcreektrail.org.

School Name _____ Office Phone _____

Tank # _____

_____ _____ _____
Lead Teacher's Signature Printed Name Date

_____ _____
Lead Teacher's Phone Lead Teacher's email address

_____ _____
School Principal's Name School Principal's email address

Helpful Hints to remember our Pacific salmon!

Chinook (*King****)***
The king of all fingers

Sockeye (red) the finger you use to point to your eye

Coho *(Silver)*
You wear silver on this finger

Pink (Humpy)
like your pinky

Chum (dog)
rhymes with thumb

Adapted with permission from Students for Salmon, Nooksack Salmon Enhancement Assoc., 2016

Name _____

Pacific Salmon Species Chart

Species Name (Common and Scientific)	Weight	Length	Interesting Fact	Found in Kitsap Streams - A little OR A lot

Adapted with permission from Students for Salmon, Nooksack Salmon Enhancement Assoc., 2016

Chinook

Nicknames: King, Tyee, Blackmouth

Scientific Name: Oncorhynchus tshawytscha

Average Weight: 10-24 lbs. (4.5-10.9 kg) (can reach up to 125 lbs.)

Length at Maturity: 36-58 inches (91.4-147.32 cm)

Life Cycle and Status in Kitsap County

- Can live up to 7 or 8 years; most return to large rivers and streams after 3-4 years.
- Young Chinook live in rivers and streams for up to a year before venturing to the ocean.
- Use Kitsap's nearshore to forage (search for food).
- Adults returning to Kitsap streams are from hatcheries in Gorst, Grovers, and Dogfish Creeks.
- Returns in Kitsap peak in late August through September.
- Chinook is named after a native tribe, so always capitalize the name.

Habitat Needs: Chinook are most often found in rivers and occasionally in larger creeks. Spawning usually occurs in fast-water side channels and areas with fist-sized gravel.

They are the largest, but least abundant salmon. When in the ocean they have bluish-green backs and silver sides with irregular spotting on the back, dorsal fin, and both lobes of the tail. Another distinguishing characteristic is their black gum line. Spawning colors are olive brown to dark brown in color. Males also develop a hooked snout.

Chum

Nicknames: Dog, Keta, Calico

Scientific Name: Oncorhynchus keta

Average Weight: 9-15 lbs., up to 40 lbs. (4.1-6.8 kg, up to 18.1 kg)

Length at Maturity: 25-40 inches (63.5-101.6 cm)

Life Cycle and Status in Kitsap County

- Generally live 3-5 years.
- Young chum migrate to salt water soon after emerging from the gravel.
- Spawn in the lower sections of streams close to the estuary.
- The most abundant salmon in Kitsap streams.
- Return to Kitsap streams late October through November.
- Hood Canal Summer Chum begin to return in August.
- They are usually the species raised in local classrooms.

Habitat Needs:

Chum can often be found spawning where groundwater upwells through the spawning gravel. Upon entering the estuary, juveniles prefer tidal sloughs and small estuaries associated with the nearshore.

They have the most widely distributed population, found from California to Korea. They are the second largest salmon (following the Chinook). When in the ocean they are metallic, greenish-blue along the back with black speckles which closely resemble sockeye and coho. During the spawning phase males get vertical bars in reds, greens, and purples, while females get a black horizontal stripe.

Coho

Nicknames: Silver, silverside

Scientific Name: Oncorhynchus kisutch

Average Weight: 6-12 lbs., up to 31 lbs. (2.7-5.4 kg, up to 14.1 kg)

Length at Maturity: 24-38 inches (61.0-96.5 cm)

Life Cycle and Status in Kitsap County

- Generally live about 3 years.
- Young coho spend 1-2 years in fresh water, preferring upper reaches of streams and off-channel areas like beaver ponds.
- Adult coho spawn in the upper sections of small streams.
- One of the more common species in Kitsap, they return to Kitsap streams in the fall, peaking in late November.

Habitat Needs:

Spawning coho are often found in small, lowland creeks.

While coho are one of the most commercially sought after salmon species, they make up only 7-10% of the commercial salmon fishery. Some coho travel less than 100 miles from the mouth of their stream for reproduction while others travel over a thousand miles. While in the ocean, they have dark metallic blue or greenish backs with silver sides and a light belly. They have small black spots on their backs and the upper lobe of the tail. Another distinguishing feature is their gum line, which is white. Spawning colors are dark with reddish coloration on their sides.

Pink

Nicknames: Humpback, humpy/humpie

Scientific Name: Oncorhynchus gorbuscha

Average Weight: 2-5 lbs., up to 12 lbs. (1.0-2.3 kg, up to 5.4 kg)

Length at Maturity: 20-30 inches (50.8-76.2 cm)

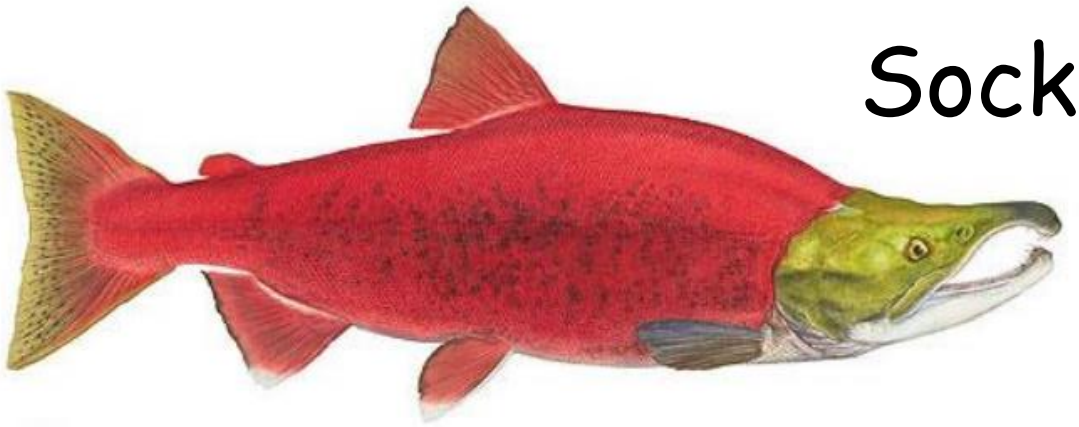
Life Cycle and Status in Kitsap County

- Generally live for 2 years.
- Young pink salmon migrate to saltwater right after emerging from gravel.
- Adult pink salmon spawn close to the estuaries of rivers and streams.
- Only a few spawn in Kitsap streams—less than a dozen spotted by Suquamish Tribe biologists every other year.
- They return to rivers and streams during late summer and early fall every other year.

Habitat Needs:

They are known as humpies due to the very large hump males get just behind the head during the spawning phase. They are the smallest of the species and spend the least amount of time in freshwater, spawning in two-year cycles very close to the mouth of streams with little to no upstream migration. While in the ocean, they appear to have steel blue to blue green backs, silver sides, and a white belly with large oval spots covering their back, adipose fin and both lobes of the caudal fin. During the spawning phase, pinks have dark backs with a pinkish wash and green blotches on their sides.

Sockeye



Nicknames: Redfish red, Blueback

Scientific Name: Oncorhynchus nerka

Average Weight: 4-8 lbs., up to 15 lbs. (1.8-3.6 kg, up to 6.8 kg)

Length at Maturity: 25-33 inches (63.5-83.8 cm)

Life Cycle and Status in Kitsap County

- Generally live 2-6 years.
- Young sockeye spend 1-2 years in lakes before migrating to the ocean. However Sockeye in the Nooksack River in WA have learned to survive without a lake.
- Adults return to spawn in late summer to fall.
- They spawn near shorelines, the bottom of lakes, or hundreds of miles upstream in tributaries to large lakes.
- Seen occasionally in Kitsap streams. One was spotted in Gorst Creek in 2018.

Habitat Needs:

The most important commercial species, sockeye have long gill rakers as they primarily feed on plankton when in the ocean. While in the ocean they are greenish blue on top of the head and back, silvery on the sides, and white to silver on the belly. During the spawning phase the head and caudal fin become bright green and the body turns scarlet. Land locked populations are known as kokanee.

Screenshot used with permission from Kevin Belcher
View full video at https://www.youtube.com/watch?time_continue=434&v=vBME9YT3N2M&feature=emb_logo.
Chinook Salmon Spawning Act3 2016
Phenomenon begins at the 7:05 mark


RELEASE SITE
(green is duckweed floating on the water)

Name: _____

Probe: What Makes a Good Salmon Stream

Put an X in front of the things that can make a good Salmon stream.

___shade
___ deep pools and ponds
___loose gravel
___Beaver dams
___cold water
___culverts
___places to hide
___clean water
___clear water
___meandering stream
___human-made dams
___rocks
___consistent water
___riffles
___air (oxygen)
___ free-flowing rivers
___fallen trees
___boulders
___wood & vegetation along streambank
___food
___excess mud, sand and/or silt from erosion

Explain your thinking. How did you decide whether something makes a good salmon stream?

_____

_____

_____

_____

_____

_____

Questions I have:

_____

_____

_____

_____

_____

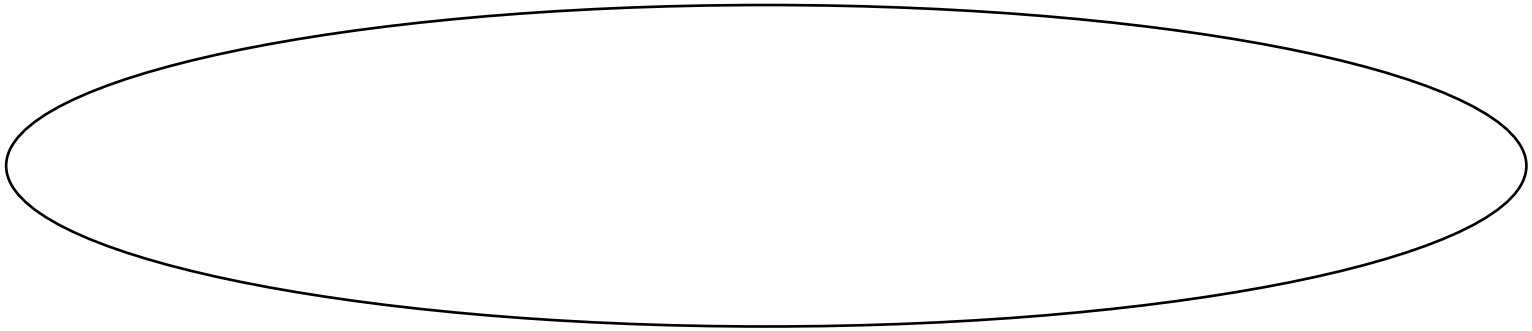
Puppies and Their Parents

What makes a dog a dog? Dogs can look and sound very different from each other. German Shepherds are big and weigh as much as 80 pounds. That's more than a six-year-old human! On the other hand, a Chihuahua is tiny and can fit in a purse. Dogs also have different types of fur. Chihuahuas have short hair but collies have long hair. Poodles have curly hair. Some dogs are brown and some are black. Some dogs howl and some others bark. But they are all dogs. They have four legs, fur and a tail. Many of them do not like cats.

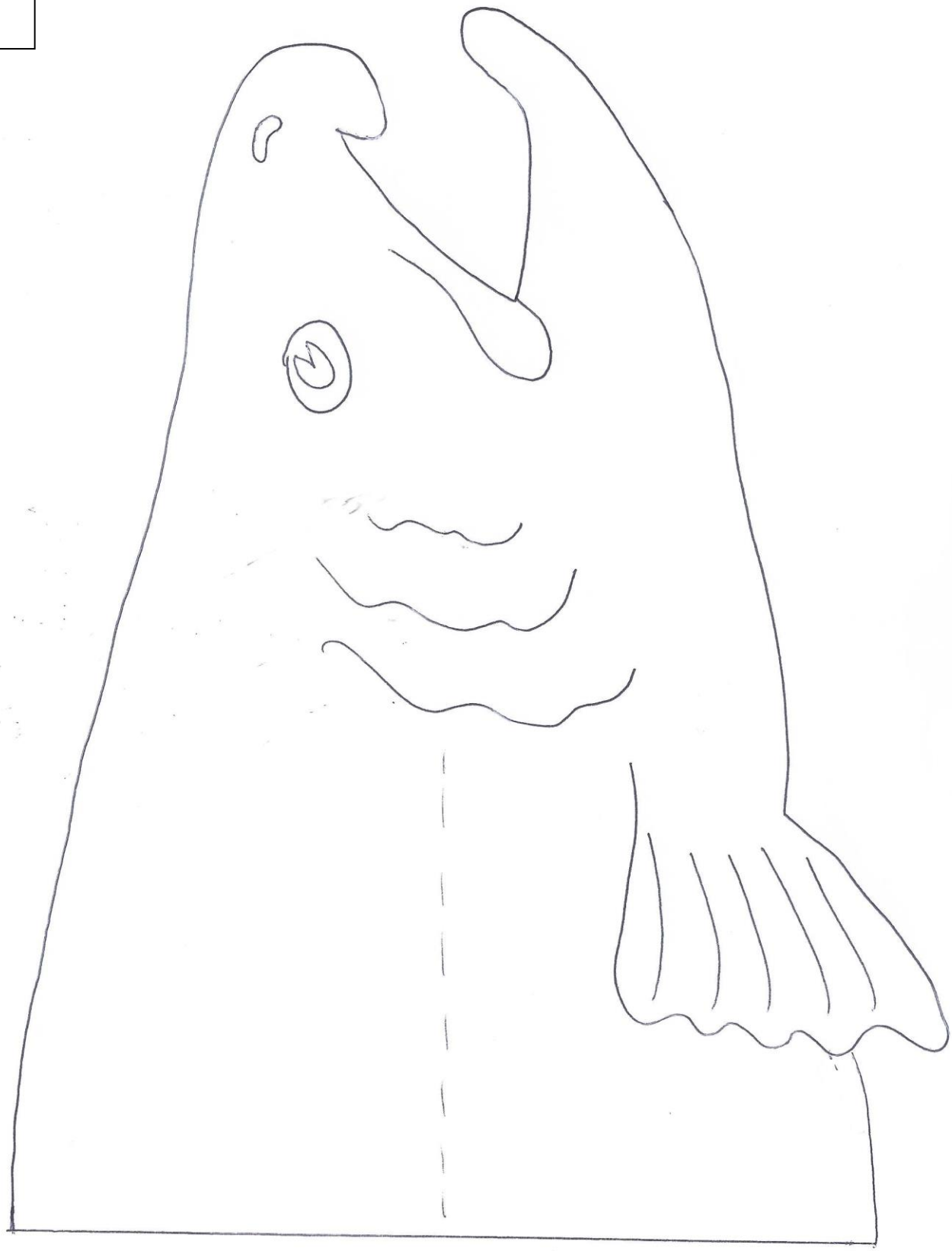
Puppies are usually like their parents. Chihuahuas have small puppies and German Shepherds have bigger puppies. This is because puppies inherit many traits from their parents. Puppies often have the same color or type of fur as their parents. They often grow to be the same size as their parents. But they are not exactly the same. This is why you can tell apart puppies who are brothers and sisters, even when they look similar to each other.

Name _____

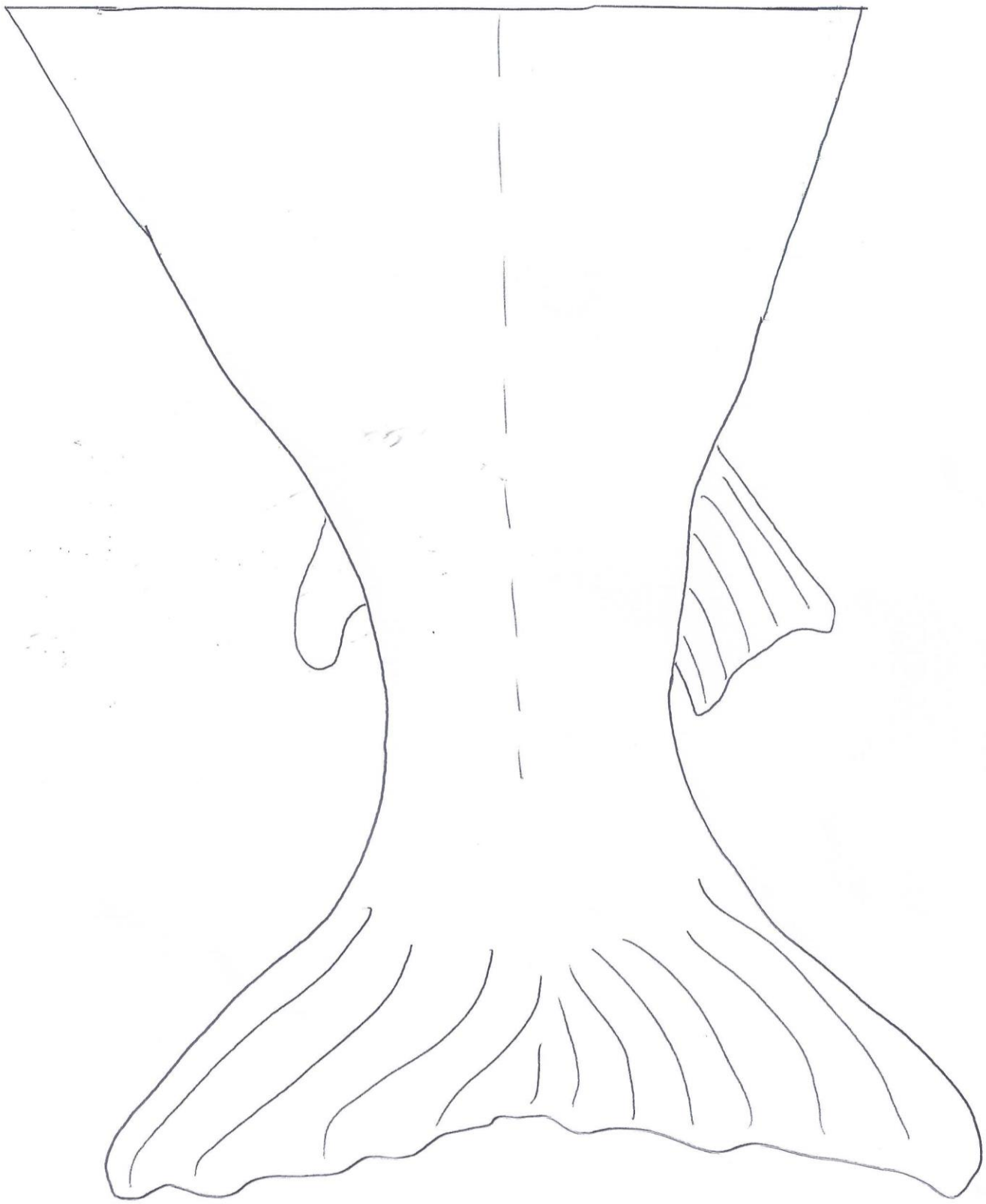
Salmon Body Parts



Salmon Head



Salmon Tail

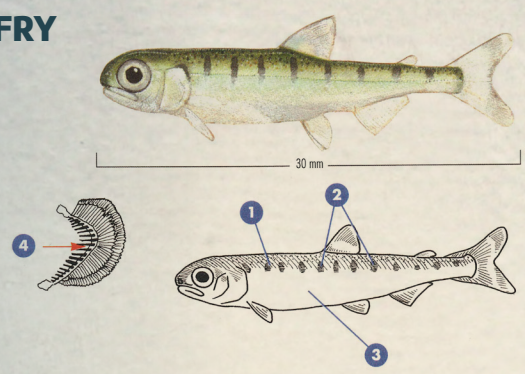


JUVENILE IDENTIFICATION

CHUM SALMONID
Oncorhynchus keta

1. Parr marks are smaller than vertical diameter of eye, and faint or absent below lateral line.
2. Parr mark height is more regular than on Sockeye.
3. Area below lateral line has pale greenish iridescence.
4. Gill rakers are short and stubby, about half the length of gill filament, 19 to 26 on first gill arch.

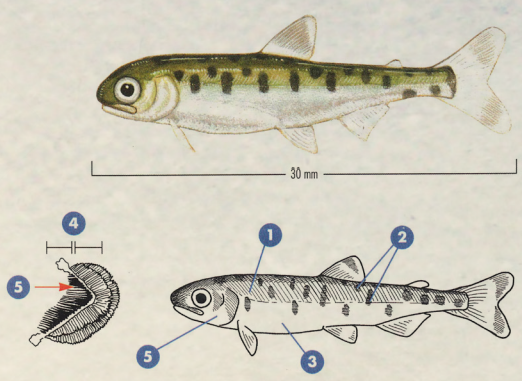
FRY



SOCKEYE SALMONID
Oncorhynchus nerka

1. Parr mark length less than vertical diameter of the eye.
2. Parr marks are irregular—height is irregular.
3. Area below lateral line is silver or white—no greenish sheen.
4. Gill raker length is almost equal to length of gill filaments.
5. 30–39 gill rakers on first arch.

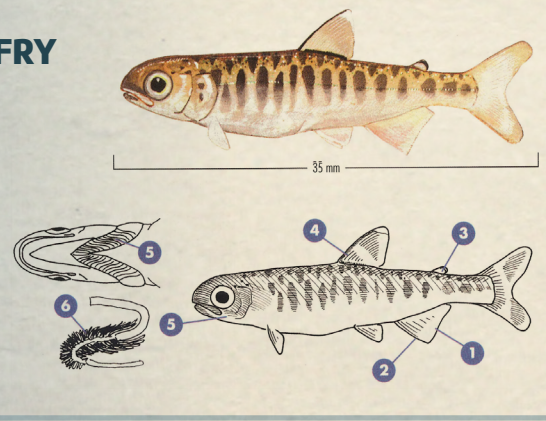
FRY



CHINOOK SALMONID
Oncorhynchus tshawytscha

1. Anal fin is not sickle-shaped; leading edge of anal fin shorter than length of base.
2. Anal fin leading edge is white.
3. Adipose fin has clear center or "window."
4. Dorsal fin has dark leading edge and white tip.
5. Species has 16–18 branchiostegals.
6. Species usually has 135–185 pyloric caeca.

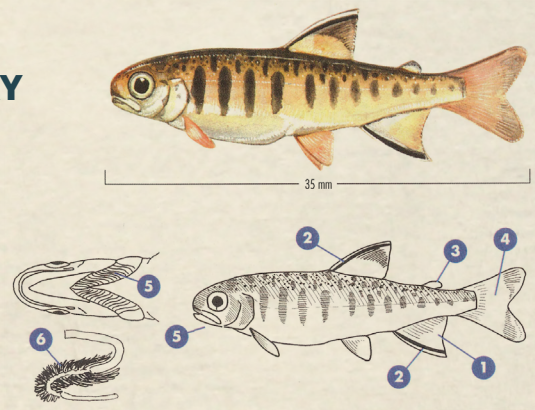
FRY



COHO SALMONID
Oncorhynchus kisutch

1. Anal fin is sickle-shaped, leading edge longer than base.
2. Leading edges of anal and dorsal fins have white followed by black.
3. Adipose fin has dark edge; center is opaque.
4. Caudal, anal, and adipose fins are pale orange.
5. Species has 13–14 branchiostegals.
6. Species usually has 45–80 pyloric caeca.

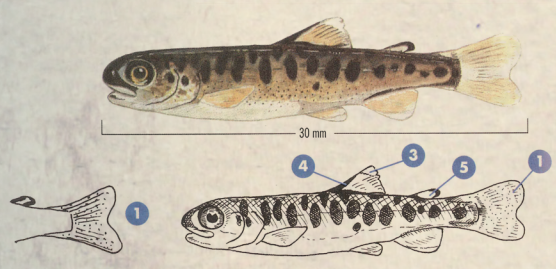
FRY



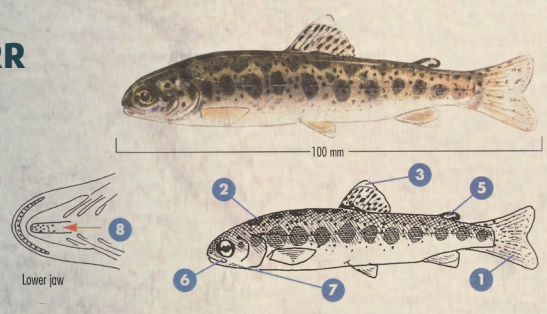
STEELHEAD SALMONID
Oncorhynchus mykiss

1. Melanophores are evenly speckled on caudal fin of fry.
2. Median-dorsal area has parr-like marks, about 5.
3. White tip on dorsal covers 3 to 5 interspaces between dorsal fin rays.
4. First ray is black on fry.
5. Adipose usually has continuous rim of pigment or one break.
6. Maxillary does not extend past back margin of eye of parr.
7. Jaw has no red or yellow slash.
8. There are no hyoid teeth.

FRY



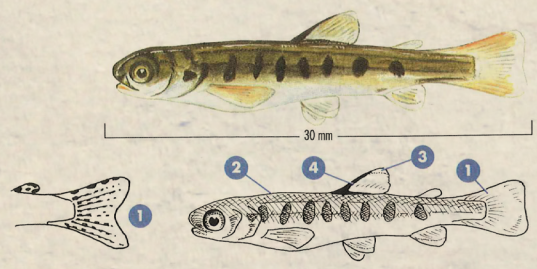
PARR



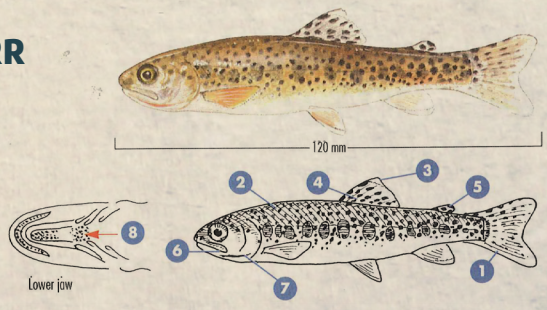
CUTTHROAT SALMONID
Oncorhynchus clarki clarki

1. Melanophores are in spots or streaks along rays in caudal fin or fry <50mm.
2. Median-dorsal parr-like marks are usually absent.
3. White tip on dorsal covers 1 to 3 interspaces between dorsal fin rays.
4. First ray is black on fry.
5. Adipose may have 1-2 breaks in pigment on rim and often spotted on parr.
6. Maxillary extends past rear margin of the eye on fish >80mm.
7. Underside of jaw (on parr) has red or yellow slash.
8. Hyoid teeth are present at the base of the tongue behind first gill arch—see inside lower jaw.

FRY



PARR



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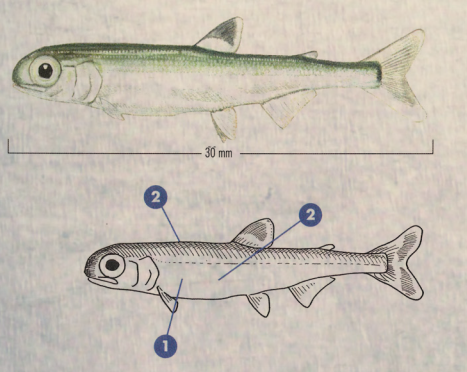


PINK SALMONID
Oncorhynchus gorbuscha

1. Parr marks are absent.
2. Dorsal surface is green; ventral is silver.

Clean Water Kitsap
Partners in Stormwater Solutions

otak

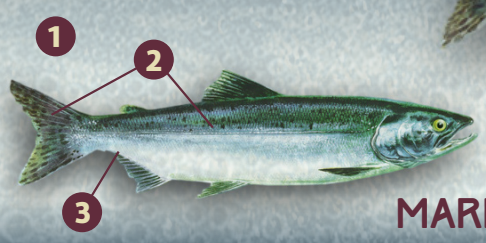
kitsapsalmontours.org

Illustrations by: *C. Groot* from the *Field Identification of Coastal Juvenile Salmonids*, prepared by the *Department of Fisheries and Oceans and Weyerhaeuser Ltd.*

ADULT IDENTIFICATION GUIDE

PINK

1. Small Scales
2. Large Oval Spots
3. 13–17 Anal Rays

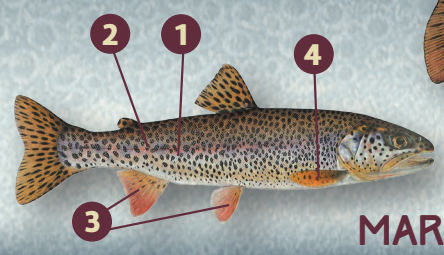


MARINE

SPAWN

CUTTHROAT

1. Silvery Body
2. Heavily Spotted
3. Yellow, Pink, and Orange–Red Anal and Pelvic Fins
4. Dull Orange–Red Cutthroat Mark

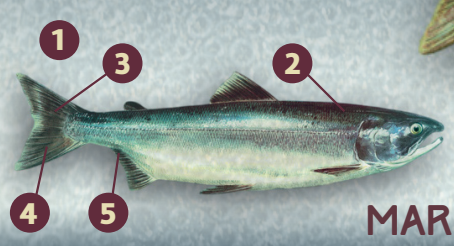


MARINE

SPAWN

SOCKEYE

1. Scales Large and Distinct
2. Small Black Speckles
3. No Spots
4. Dark Color
5. 13–18 Anal Rays

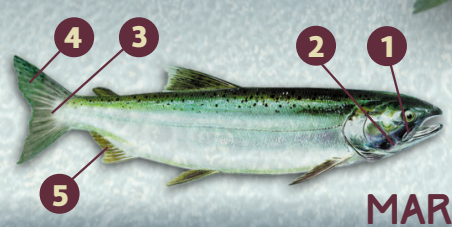


MARINE

SPAWN

COHO

1. White Base of Teeth
2. Black Edge of Gums
3. Silver Color Adjacent to Caudal
4. Spots on Upper Lobe
5. 13–16 Anal Rays



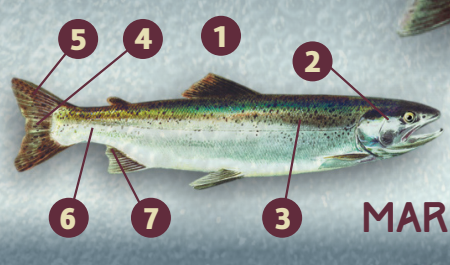
MARINE

SPAWN

Most commonly found in Kitsap streams

STEELHEAD

1. Slender Lateral Profile
2. Short Head
3. Small Black Spots
4. Square Tail
5. Uniform Spots on Tail
6. Wide Caudal
7. 8–12 Anal Rays

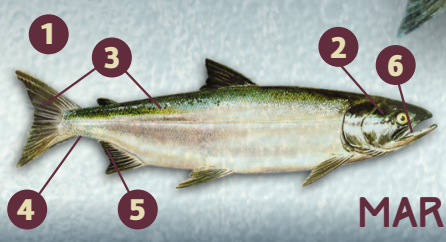


MARINE

SPAWN

CHUM

1. Silver Streaks
2. Large Pupil
3. No Spots
4. Narrow Caudal
5. 13–17 Anal Rays
6. Large Mouth



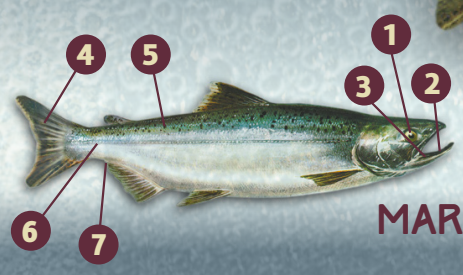
MARINE

SPAWN

Most commonly found in Kitsap streams

CHINOOK

1. Small Eye
2. Black Base of Teeth
3. Black Gums
4. Tail Covered with Spots
5. Long Black Spots
6. Thick Caudal
7. 13–19 Anal Rays



MARINE

SPAWN

Clean Water Kitsap
Partners in Stormwater Solutions

otak

kitsapsalmontours.org

All salmon and steelhead illustrations courtesy of: *Fisheries and Oceans Canada*
Cutthroat illustrations by: Joseph R. Tomelleri from *Trout and Salmon of North America*, by Robert J. Behnke

Name _____

Salmon Release Tool Challenge

GOAL: Use the Engineering Design Process to design and build a tool to release salmon fry. Must meet all the Criteria and Constraints.

BACKGROUND: The salmon you have raised need to be released into Clear Creek within 3-4 inches of the surface of the water. The water level, the plants, and loose dirt beside the stream can make it hard to get close to the water. Design a tool to provide a way to release salmon that is safe for the fish, the stream, and for students.

CRITERIA AND CONSTRAINTS

Your salmon release tool must be able to:

1. be easily transported by car or bus
2. hold a 12 oz. plastic cup
3. support 8 oz. of water and 3-4 salmon fry in the cup
4. reach approximately 4 feet from the stream bank to within 4 inches of the stream surface
5. be operated easily so water can be poured into stream to release salmon
6. be reused by each release team in your class
7. be operated without the need for any electrical power
8. complete the process of pouring the water, start to finish, in **1 minute or less**

THE PROTOTYPES

1. Test each tool in the classroom and decide which TWO (2) tools work best and within 1 minute.
2. Ensure all students know how to use the chosen tools
3. Bring those TWO (2) tools to the field trip to be used at the release station

NOTE: ALL TOOLS MUST BE SUCCESSFULLY TESTED IN CLASS BEFORE BEING BROUGHT TO THE FIELD TRIP

Define the Problem

Ideas for a Solution

Materials needed

Sketch your solution

Build, Test, and Vote on Prototypes

Salmon Stream Design
Gallery Walk Feedback

Salmon Stream Team Name: _____

One thing I liked

One suggestion for improvement

Salmon Stream Design
Gallery Walk Feedback

Salmon Stream Team Name: _____

One thing I liked

One suggestion for improvement

Salmon Tank Checklist Monitoring Weekly Summary					
Item	**Date and Result**				
Water 1" above tube (Yes/no)					
Water Temperature (acutal temp)					
Excessive icing on cooling tube (yes/no)					
Airstone bubbling (yes/no)					
Compressor cycling on and off (yes/no)					
Feeding (times or amount/day)					
Water Changed (yes/no)					

Salmon Tank Checklist Monitoring Weekly Summary					
Item	**Date and Result**				
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Compressor cycling on and off (yes/no)					
Feeding (times or amount/day)					
Water Changed (yes/no)					

Name: _____ Our species being studied/in tank _____ Salmon Trait Data Collection Sheet

Traits of our species of salmon fry (offspring)	Traits of salmon adult (parent)–same species	Variation in similar traits of other 4 salmon species

Similarities and Differences between our salmon fry (offspring) and the adults (parents) in their same species	
Similarities	
Differences	
Fry (offspring)	Adult (parent)

Similarities and Differences between the salmon in our tank (siblings). No tank – list similarities or differences you think siblings of this species may have.
Similarities
Differences

Use the data you collected to describe *patterns of similarities in traits* between adults (parents), our salmon (offspring) and siblings of our salmon that provide *evidence that traits are inherited.*

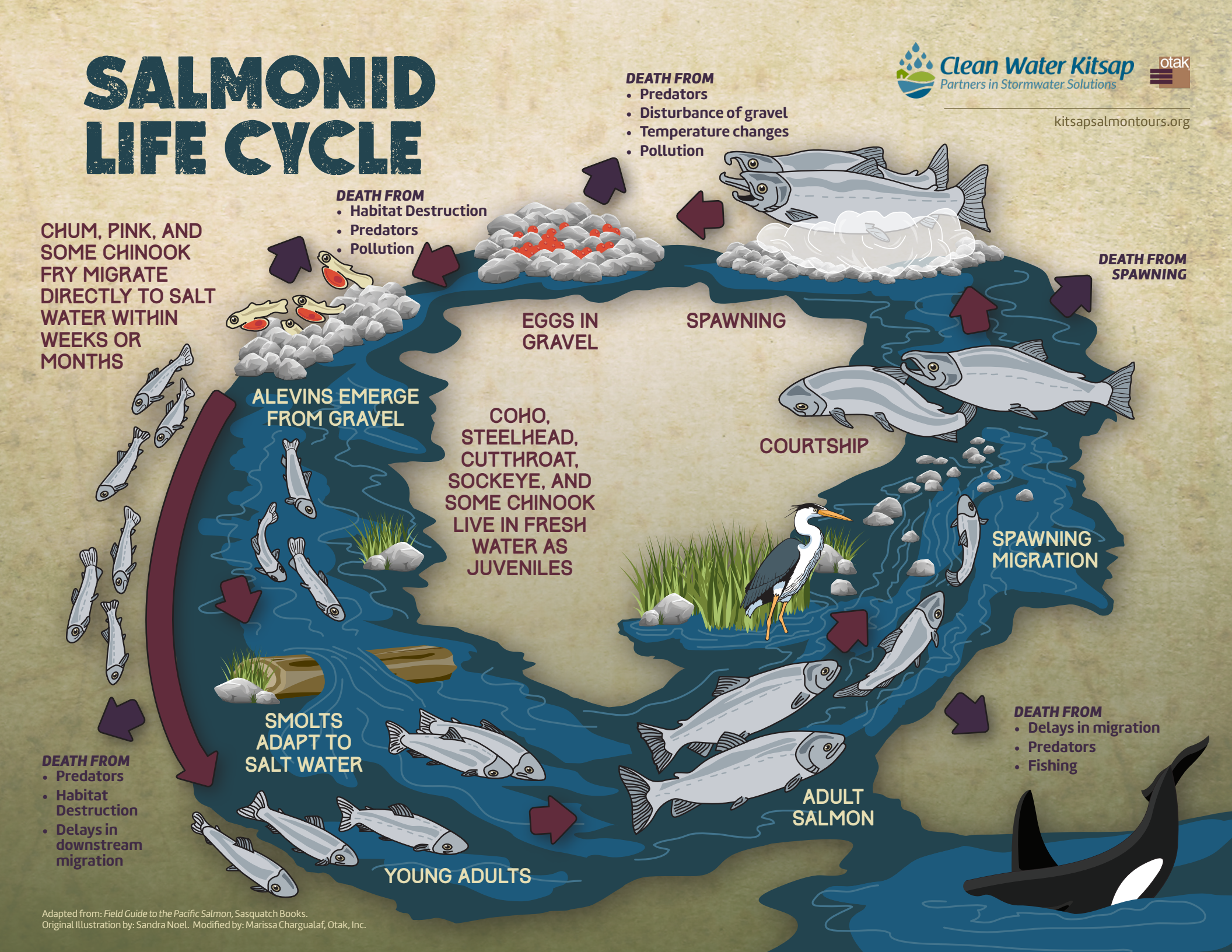
Use the data you collected to describe *patterns of differences in traits* between adults (parents), our salmon (offspring) and siblings of our salmon that provide *evidence that traits can vary*.

SALMONID LIFE CYCLE

Clean Water Kitsap
Partners in Stormwater Solutions

otak

kitsapsalmontours.org

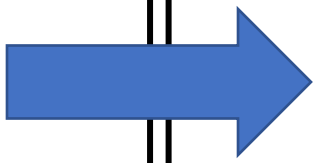


Adapted from: *Field Guide to the Pacific Salmon*, Sasquatch Books.
Original Illustration by: Sandra Noel. Modified by: Marissa Chargualaf, Otak, Inc.

Scaffold - Environmental Effects on Inherited Traits

Phenomenon

Environmental Factors (cause)



Variation in Inherited Trait (effect)

Salmon in the Classroom TANK CHECKLIST

DAILY CHECKS

(NOTE: Complete with a wipe-off marker each time you check the tank)

TANK # _____

Date _____

- ☐ Water is at least one inch above the top of the cooling tube
- ☐ The temperature is between 45°F and 48°F
- ☐ There is not excessive icing on the cooling tube (some light frosting above the water level is normal)
- ☐ The airstone is bubbling
- ☐ The cooling compressor is cycling on and off throughout the day
- ☐ When fry begin swimming:
  - ◊ **Fish are fed 1 pinch of food each day.** *Note time below with wipe-off marker (skipping weekends is ok)*
    - ♦ Time #1: _____
    - ♦ Time #2: _____
    - ♦ Time #3: _____
    - ♦ Time #4: _____

- Water is changed daily, if possible, but at least every three days including during long weekends and holidays. Steps are noted below

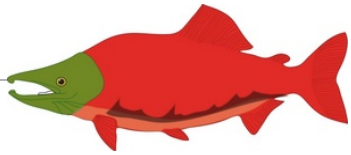
Last date water changed: _____

- ◊ Always have a bucket of water in a cool place waiting for use to allow the chlorine in the water to evaporate.
- ◊ Remove about 5 gallons of water from the aquarium using a siphon tube or a small container. This water can be discarded or used for plants
- ◊ After rinsing, fill that bucket for use next time
- ◊ Gently pour the "prepared" water into the aquarium
- ◊ Monitor the water temperature—should be 45°F – 48°F

Any questions or issues, please contact the Clear Creek Task Force, clearcreektrail@yahoo.com, 360.434.7665 or Kitsap County Stormwater Division, kitsap1@co.kitsap.wa.us, 360.337.5777.

7079 (12/14)

Task: Saving Our Salmon: Clean Water



PART 1 (60-90 minutes)

Student Directions:

Your assignment:

Help! You have been asked to educate other students about the importance of clean water for salmon and actions we can all take to keep the water clean. You will read one article and watch three videos to gather information, taking notes on these sources. Then you will answer three questions before writing your essay.

Steps you will be following:

In order to plan and compose your speech, you will do all of the following:

1. Read an article.
2. Watch three videos.
3. Answer three questions about the sources.
4. Write your essay.

Directions for beginning:

You will now watch the videos and then read an article about clean water taking notes with the templates provided. You will want to refer to your notes when writing your essay. You may refer back to any of the sources as often as you like.

Teacher Note: Prior to reading the article, pre-teach the term "habitat." You may also want to pre-teach "salt water," "fresh water," and "salmon cycle". Preview the article with the students including discussing the text features. Provide scaffolded support as needed with this task.

Source Information:

Source #1: Article	*Clean Water and Salmon* N. Skerritt, 2015
Source #2: Video #1	*Making a Sound Impact Entry Power to The Puget Rap* (1:59) https://www.youtube.com/watch?v=vfb2C3dQTsU
Source #3: Video #2	*Water Pollution Enviromercial* (1:25) https://www.youtube.com/watch?v=D_SWLi7K7_Q
Source #4: Video #3	*Sound System: A Runoff Experience* (1:57) https://www.youtube.com/watch?v=SvJ4FtNOfQo

Clean Water and Salmon

Like every living thing on earth, salmon need water to survive. Their **habitat** or home is water. Salmon live in rivers, streams and oceans. They depend on clean water to stay healthy and produce the next generation of fish. Water pollution is a major problem for salmon. When the water is polluted, the salmon are in danger of dying before they have a chance to complete their life cycle.

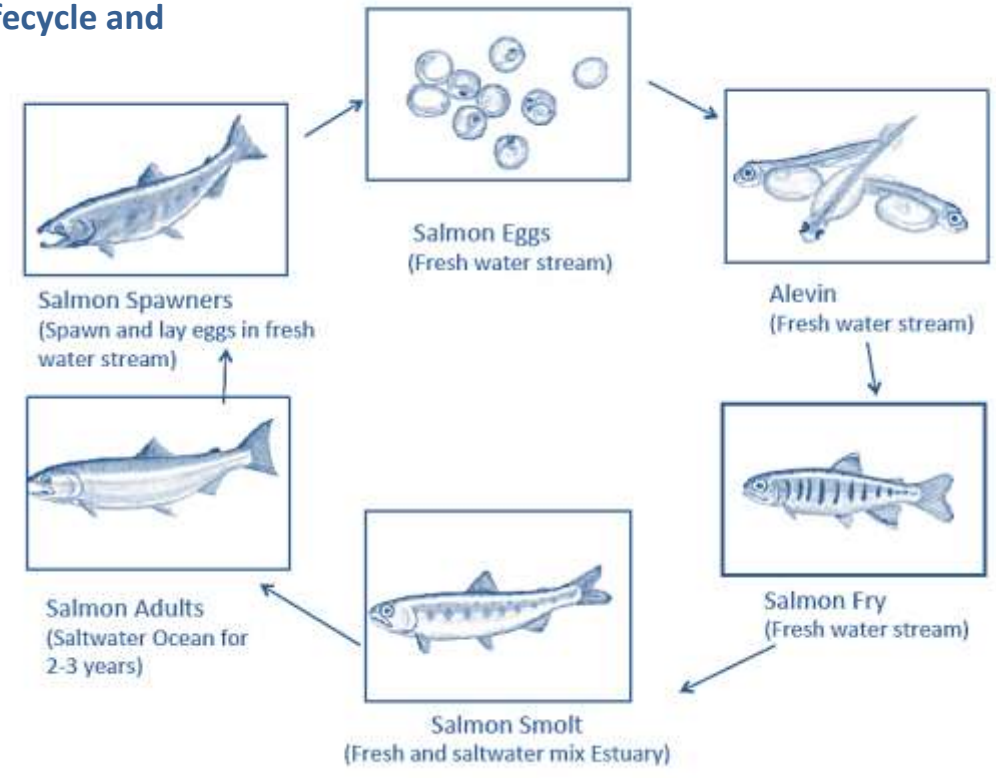
Fresh and Salt Water

Salmon live in two different habitats. One habitat is fresh water and the other is salt water. Salmon begin their life cycle in the shallow fresh water of a stream. Adult salmon lay eggs in the stream. When the salmon eggs hatch, the small fish (alevins) begin their lives. The salmon continue to grow larger in fresh water until they are big enough to begin their journey as adults to the ocean.

Alevins

The ocean is made up of salt water. The salmon become large and strong by swimming and feeding in the ocean. After three or four years, depending on the type of salmon, the fish return to their homes in the fresh water of the streams. They travel from salt water into the mouths of rivers and swim up them to the streams where they were born. Here, the salmon will spawn and lay their eggs. This begins a new life cycle for the salmon.

Salmon Lifecycle and Habitat



Created by Nancy Skerritt and Pat Otto for the Pacific Education Institute

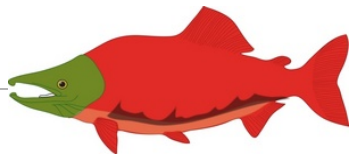
Water Pollution

Salmon call water their home as do many other plants and animals. When the water is polluted, the salmon cannot stay healthy. Trash in rivers and streams can block the salmon from swimming to their birthplaces. Chemicals and certain bacteria can also harm the water. Chemicals that we use on our lawns and gardens can be **toxic** to fish. Soap from washing our cars can find its way down storm drains and out into the rivers and ocean. Pet waste is another major way that water is polluted. Here are some actions you and your families can take to help save our salmon:

What can YOU do?

- ✓ **Use lawn and garden products that are safe for the environment.**
- ✓ **Wash cars on grass or at car washes where the water is recycled**
- ✓ **Pick up pet waste and dispose in the garbage**
- ✓ **Buy cleaning products for the home that are free of *toxic* chemicals**
- ✓ **Do not dump garbage in streams, rivers or oceans**
- ✓ **Volunteer to pick up trash along water ways, including ocean beaches**

Water is the home to many living creatures including the Northwest salmon. When chemicals, garbage, and pet waste pollute these habitats, salmon may not be able to survive. Can you image life without salmon? Salmon are an important food source for people all over the world. **Clean water is one way we can Save Our Salmon.** Do your part to protect the habitat of these amazing fish!

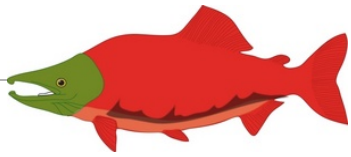


Task: Saving Our Salmon: Clean Water

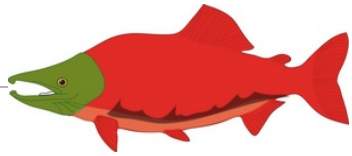
NOTE TAKING TEMPLATE

	Clean Water and Salmon Article
Why Salmon need Clean Water	
How water becomes polluted	
Actions we can take to keep the water clean	

Task: **Saving Our Salmon: Clean Water**



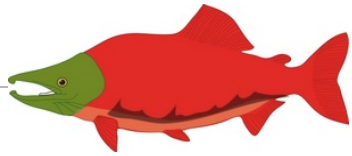
Source	What I learn about Water Pollution	What I learn about how I can help
Video #1: Rap		
Video #2: Environ-mercial		
Video #3: No speaking		



Task: Saving Our Salmon: Clean Water

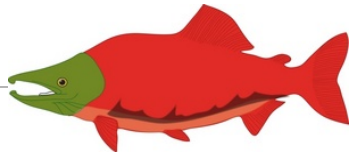
Questions

1. Explain why clean water is important to salmon. Use information from the article. ***(Claim 4, Target 2)***



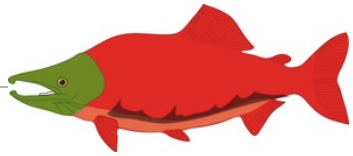
Task: **Saving Our Salmon: Clean Water**

2. Compare the three videos. Which video tells the best story about water pollution and how we can help? Explain your choice.***(Claim 4, Target 3)***



Task: Saving Our Salmon: Clean Water

3. Defend this opinion: We can make a difference in keeping our water clean for salmon. Use information from the any of the sources in your response. ***(Claim 4, Target 4)***



Task: Saving Our Salmon: Clean Water

PART 2 (70 minutes)
Student Directions:

You will now have about 70 minutes to review your notes and sources, plan, draft, and revise your essay. While you may use your notes and refer to the sources, you must work on your own. Now read your assignment and the information about how your essay will be scored, and then begin your work.

Your Assignment:
Write an essay where you explain to your reader why clean water is important to the life cycle of salmon. Tell your reader what we can do to make a difference. Use information from the video and the article to write your essay. Outline your ideas on the template provided.

How your essay will be scored:

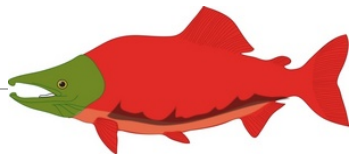
The people scoring your essay will be assigning scores for

1. ***Statement of Purpose/Focus*** – how well you clearly state and maintain your controlling idea or main idea
2. ***Organization*** – how well the ideas progress from the introduction to the conclusion using effective transitions and how well you stay on topic throughout the essay.
3. ***Elaboration of Evidence*** – how well you provide evidence from sources about your topic and elaborate with specific information.
4. ***Language and Vocabulary*** – how well you effectively express ideas using precise language that is appropriate for your audience and purpose
5. ***Conventions*** – how well you follow the rules of usage, punctuation, capitalization, and spelling

Now begin work on your essay.
Manage your time carefully so that you can:

- Plan your essay
- Write your essay
- Revise and edit for a final draft

Word-processing tools and spell check function are available to you.



Task: Saving Our Salmon: Clean Water

Outlining My Essay:

Introduction: How can I capture the reader's attention?
Why Salmon need clean water:
How the water becomes polluted:
What we can do to make a difference:
Conclusion: How can I sum up my ideas?

Informative / Explanatory
Performance Task Writing Rubric (Grades 3-5)

Score	4	3	2	1
Statement of Purpose/Focus	**The response is fully sustained and consistently and purposefully focused:** • controlling or main idea of a topic clearly communicated, and the focus is strongly maintained for the purpose, audience, and task	**The response is adequately sustained and generally focused:** • controlling or main idea of a topic is clear, and the focus is mostly maintained for the purpose, audience, and task	**The response is somewhat sustained and have a minor drift in focus:** • controlling or main idea may be somewhat unclear, or the focus may be insufficiently sustained for the purpose, audience, and task	**The response has little or no discernable organizational structure:** • controlling or main idea may be confusing or ambiguous; response may be too brief or the focus may drift from the purpose, audience, and task
Organization	**The response has a clear and effective organizational structure creating unity and completeness:** • consistent use of a variety of transitional strategies to clarify the relationship between and among ideas • effective introduction and conclusion • logical progression of ideas from beginning to end; strong connections among ideas with some syntactic variety	**The response has an evident organizational structure and a sense of completeness, though there may be minor flaws and some ideas may be loosely connected:** • adequate use of transitional strategies with some variety to clarify the relationship between and among ideas • adequate introduction and conclusion • progression of ideas from beginning to end; strong connections among ideas	**The response has an inconsistent organizational structure, and flaws are evident:** • inconsistent use of transitional strategies and/or little variety • introduction and conclusion, if present, may be weak • uneven progression of ideas from beginning to end; and/or formulaic; inconsistent or unclear connections between and among ideas	**The response may be related to the topic but may provide little or no focus:** • few or no transitional strategies are evident • introduction and/or conclusion may be missing • frequent extraneous ideas may be evident; ideas may be randomly ordered or have an unclear progression
Elaboration of Evidence	**The response provides thorough and convincing support/evidence for the controlling idea and supporting idea(s) that includes the effective use of sources, facts, and details:** • comprehensive evidence from sources is integrated; references are relevant and specific • effective use of a variety of elaborative techniques*	**The response provides adequate support/evidence for the controlling idea and supporting idea(s) that includes the use of sources, facts, and details:** • adequate evidence from sources is integrated, some references may be general • adequate use of some elaborative techniques*	**The response provides uneven, cursory support/evidence for the controlling idea and supporting idea(s) that includes partial or uneven use of sources, facts, and details:** • some evidence from sources may be weakly integrated, imprecise, or repetitive; references may be vague • weak or uneven use of elaborative techniques*; development may consist primarily of source summary	**The response provides minimal support/evidence for the controlling idea and supporting idea(s) that includes little or no use of sources, facts, and details:** • evidence from the source material is minimal or irrelevant; references may be absent or incorrectly used • minimal, if any, use of elaborative techniques*
Language	**The response clearly and effectively expresses ideas, using precise language:** • vocabulary is clearly appropriate for the audience and purpose • effective, appropriate style enhances content	**The response adequately elaborates ideas, employing a mix of precise and more general language:** • vocabulary is generally appropriate for the audience and purpose • generally appropriate style is evident	**The response expresses ideas unevenly, using simplistic language:** • vocabulary use is uneven or somewhat ineffective for the audience and purpose • inconsistent or weak attempt to create appropriate style	**The response is vague, lacks clarity, or is confusing:** • vocabulary is limited or ineffective for the audience and purpose • little or no evidence of appropriate style

Score	2	1	0
Conventions	**The response demonstrates an adequate command of conventions:** • adequate use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling	**The response demonstrates a partial command of conventions:** • limited use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling	**The response demonstrates little or no command of conventions:** • infrequent use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling

NS	**Unintelligible, in a language other than English, off-topic, copied text. (Off-purpose writing will still receive a score in Conventions.)**

*Elaborative techniques may include the use of personal experiences that support the controlling idea.

Thermal Unit (TU) Chart TUs needed by chum salmon from Grovers Creek Hatchery	
Stage	**Thermal Units (TUs) Needed**
Eye Up (stage when picked up)	750
Hatch	950 – 1100
Emergence (Swimming)	1600

Virtual Scavenger Hunt – Good Salmon Habitat

Name:_____

Look for the following elements of good habitat in the photo below. Using the grid, write the letter and number of the section where you found an example of each element. *The first one is done for you. You might find some things in more than one place!*

Vegetation Along Streambank	C-1	**Loose Gravel**		**Clear Water**	
Places to Hide		**Fallen Trees**		**Food**	
Wood Along Streambank		**Pools and Ponds**		**Rocks**	
Meandering Stream		**Riffles**		**Shade**	

7268 (09/20)

WANTED

for Surviving in the Wild!

By student first name or teacher/school

Student Illustration

Common name, scientific name, aliases/nicknames, and stage

Age and Size

Student Illustration

Age:

Length:

Weight:

Distinguishing Features

Student Illustration

Primary function:

Last Seen Looking For

Student Illustration

Description of habitat feature and how it meets salmon's needs

How You Can Help

Student Illustration goes here

Description of relationship between the causal environmental factor, the effect on the habitat and the ultimate impact on the salmon, including ways people can help.

When Will They Hatch Calendar – Recorded in Fahrenheit

SPECIES ________________ DATE FERTILIZED___________________ DATE RECEIVED _______________ ATUs WHEN RECEIVED ___________

MONTH ___________________________

S *	M	T	W	T	F	S *
Date _______ Temp. today ______ - 32^0 F ATU today ________ ATU to date _______	Date _______ Temp. today ______ - 32^0 F ATU today ________ ATU to date _______	Date _______ Temp. today ______ - 32^0 F ATU today ________ ATU to date _______	Date _______ Temp. today ______ - 32^0 F ATU today ________ ATU to date _______	Date _______ Temp. today ______ - 32^0 F ATU today ________ ATU to date _______	Date _______ Temp. today ______ - 32^0 F ATU today ________ ATU to date _______	Date _______ Temp. today ______ - 32^0 F ATU today ________ ATU to date _______
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*Weekends and holidays can be estimated

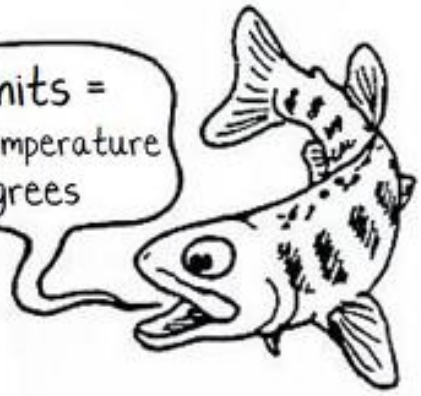
Name _____

When will they hatch?

_____ need _____ T.U. to hatch.

Hatchery Data:

Thermal Units = average water temperature minus 32 degrees



Date eggs were fertilized: _____

Date eggs arrived in your room: _____

TOTAL DAYS spent at the hatchery ☐

Average hatchery water temperature ☐°

☐ T.U./day × ☐ days = ☐ T.U.

In the Classroom:

Total T.U. required for hatching: _____

Thermal units at hatchery: _____

Thermal units still needed: ☐

Average water temperature has been: ☐°

This means that ☐ T.U. will accumulate each day.

Our fish will hatch in ☐ days!

The date will be: ☐ !

You Ain't Nothing but a Hound Dog (but Only If Your Parents Were Too)

Dogs and cats are said to be natural enemies. However, this is not always true. While some cats and dogs fight, others often live together and get along fine. For example, on many farms, farmers keep both cats and dogs on their property. Each of them does important jobs. For example, cats are very good at hunting and catching rats and mice. Having a cat on a farm can prevent the rats and mice from eating crops the farmer has harvested. The dog may do a number of chores. If the farmer raises horses, the dog may help herd them. Or the dog may bark if a stranger arrives on the farm.

Sometimes, if the farmer has more than one dog—male and female—the dogs will breed and make puppies. If the farmer has more than one cat, the cats might breed and make kittens. While both kittens and puppies are very small, they look and act differently because they have different parents. A puppy does not look like a cat, and a kitten does not look like a dog. This is because animals pass down a lot of their own traits to their offspring.

When a male dog and a female dog have puppies, you can expect that the puppies will look something like each of their parents. If both the puppies' parents are big dogs, then the puppies will probably grow up to be big dogs as well. If both the parents have curly hair, then their puppies will probably have curly hair too. The same is true for how the puppies behave. If the parent dogs are friendly, then the puppies may grow up to be friendly too.

Dogs come in different breeds, each with its own characteristics. For example, a Greyhound is a small, thin dog that can run very, very fast. A Great Dane is a large dog that is a good guard dog. A puppy will always look and act somewhat like its parents, because the things that define its parents are passed down to it. So, if two Greyhounds mate, their puppies will look and act like Greyhounds, while if Great Danes mate, their puppies will look and act like Great Danes. If a Greyhound mates with a Great Dane, the puppies may look and act like a combination of their parents. It may be a small dog that is good at guarding things, or it may be a big dog that runs fast. It may also be a medium-sized dog that is fast and good at guarding things.

The same is true of cats. Kittens look and act like their parents. If two cats are both shy, then the kittens they have will probably be shy too. If the two cats are adventurous, then they have adventurous kittens. A cat will never grow up to look like a dog because it cannot inherit dog traits from its parents. The only animal that can grow up to look like a dog is a puppy.

However, the traits an animal gets from its parents are not the only things that define what that animal becomes. The animal may also develop some traits based on the environment in which it was raised. For example, if a puppy gets lots of food growing up, then the animal will probably grow up to be big and strong. However, if a puppy does not get very much food, it may grow up to be skinny and weak. So, the world in which an animal grows up can affect the way it develops.

This can apply both to the look of an animal and how it behaves. There have been cases in which a kitten has grown up with a family of dogs and has actually begun acting like the dogs. When the dogs went chasing a tennis ball, the kitten went chasing the tennis ball too. And when the dogs gnawed on bones, the kitten joined them. When she grew up into a cat, she kept acting like the dogs. Because there were no cats around her, the kitten did not learn to act like a cat—she learned to act like a dog.