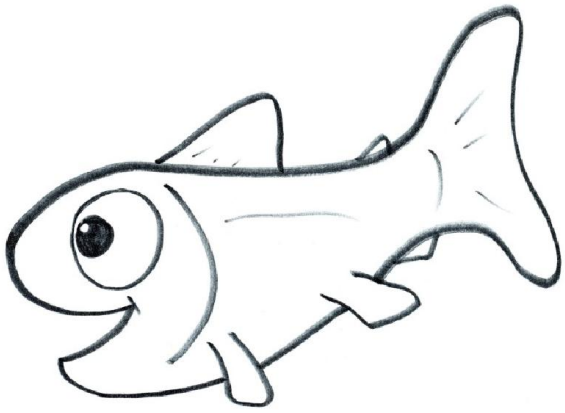
Salmon and Trout Go to Second Grade

A Thematic Unit



Your purchase of fishing equipment and motor fuel supports boating access and Sport Fish Restoration.

Compiled and created by
Gail Hickman Davis, Salmonids in the Classroom Program Coordinator,
California Department of Fish and Wildlife, Central Region
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Burbank Elementary School, Modesto, CA
2013

Salmonids in the Classroom is part of a statewide education program sponsored by the California Department of Fish and Wildlife along with many community partners including fishing organizations and other government entities throughout the state. You may have heard it called Trout in the Classroom or Salmon in the Classroom depending on the region of the state that the program serves.

This program involves training teachers to hatch trout or salmon in their classrooms. The classes then take the fish to their local waterway to be released into the wild.

We encourage teachers to take part in this program but it is not necessary to have fish in your classroom to take advantage of the lessons in this book.

The first step is to teach the students about the life cycle of the salmon and trout and their habitat needs. After they understand those concepts, the other lessons will fall in place.

It is our hope that this unit, *Salmon and Trout Go to Second Grade,* will help you introduce and intrigue your students regarding the wonders of salmon, trout, and other life in their local rivers. We encourage you and your students to visit the local river or creek, either as a group or with their families and friends. Even if a field trip is not possible, we hope you enjoy using this guide to open the children's eyes to the delights of nature.

If a child is to keep alive his inborn sense of wonder. . . he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in. — Rachel Carson

The California Department of Fish and Wildlife maintains native fish, wildlife, plant species and natural communities for their intrinsic and ecological value and their benefits to people. This includes habitat protection and maintenance in a sufficient amount and quality to ensure the survival of all species and natural communities. The Department is also responsible for the diversified use of fish and wildlife including recreational, commercial, scientific and educational uses.

This publication includes adaptations or material from the publications:

- *The Fish Hatchery Next Door, An Educator's Guide* by the Oregon Department of Fish and Wildlife

- *Salmonids in the Classroom, curriculum resource materials for the study of Pacific salmonids in British Columbia*, prepared by their federal Department of Fisheries and Oceans and the provincial Ministry of Environment, Lands, and Parks.

- *Salmon and Trout Go to School*, written by Diane Higgins and illustrated by Gary Bloomfield.

- Word puzzles were created with Discovery Channel School's Puzzlemaker.

This publication includes illustrations by Gail Hickman Davis.

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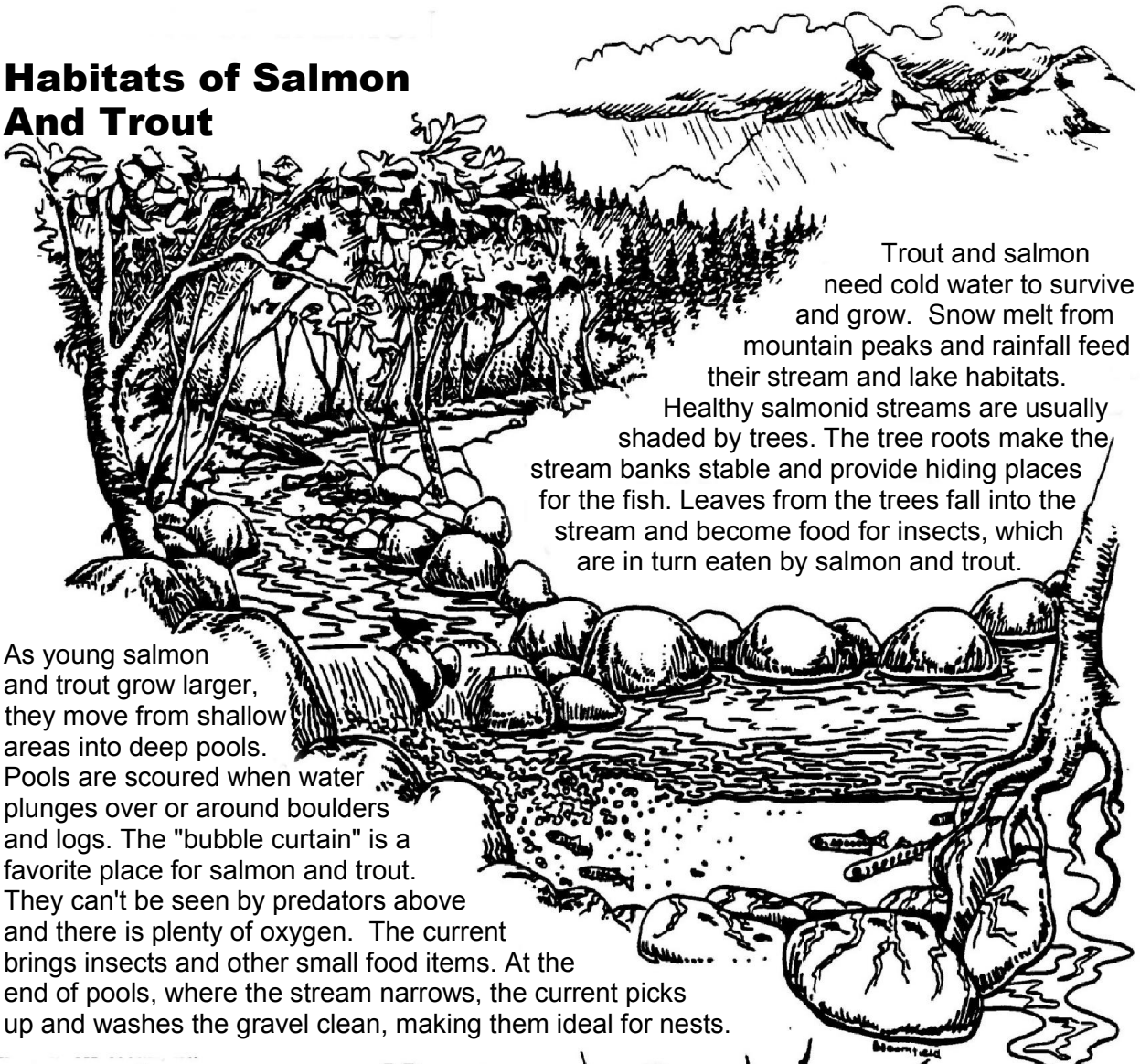
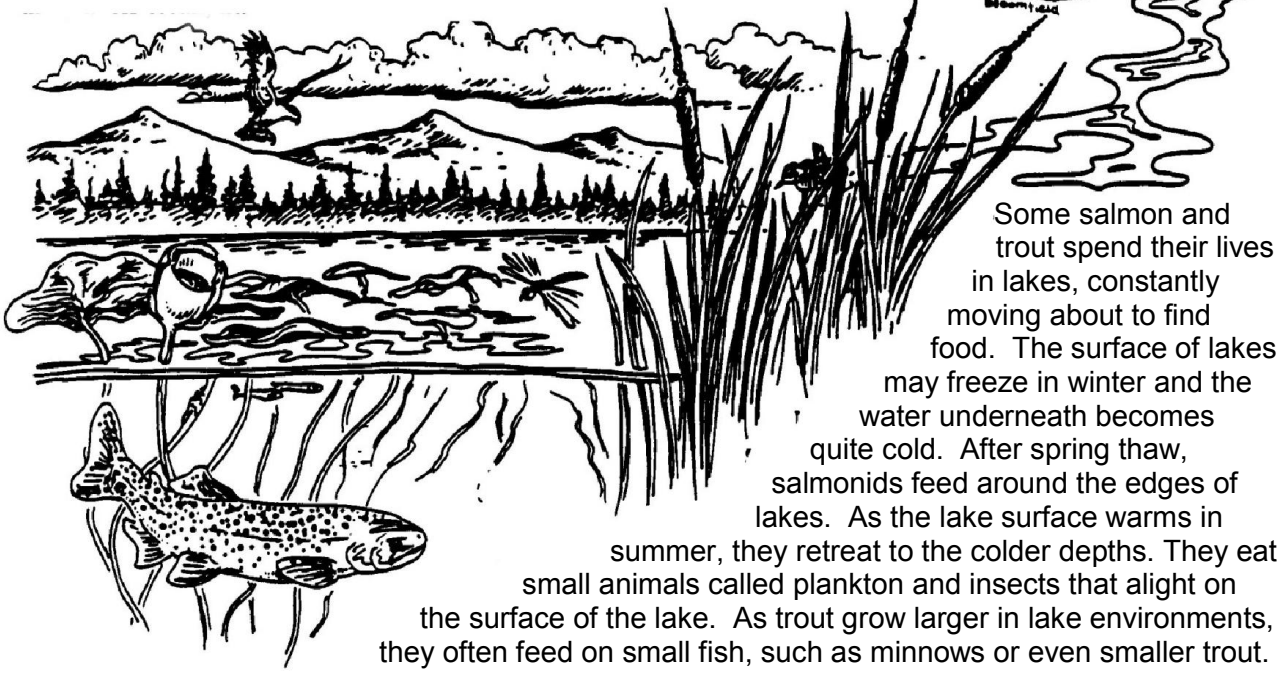
Habitats of Salmon And Trout



Trout and salmon need cold water to survive and grow. Snow melt from mountain peaks and rainfall feed their stream and lake habitats. Healthy salmonid streams are usually shaded by trees. The tree roots make the stream banks stable and provide hiding places for the fish. Leaves from the trees fall into the stream and become food for insects, which are in turn eaten by salmon and trout.

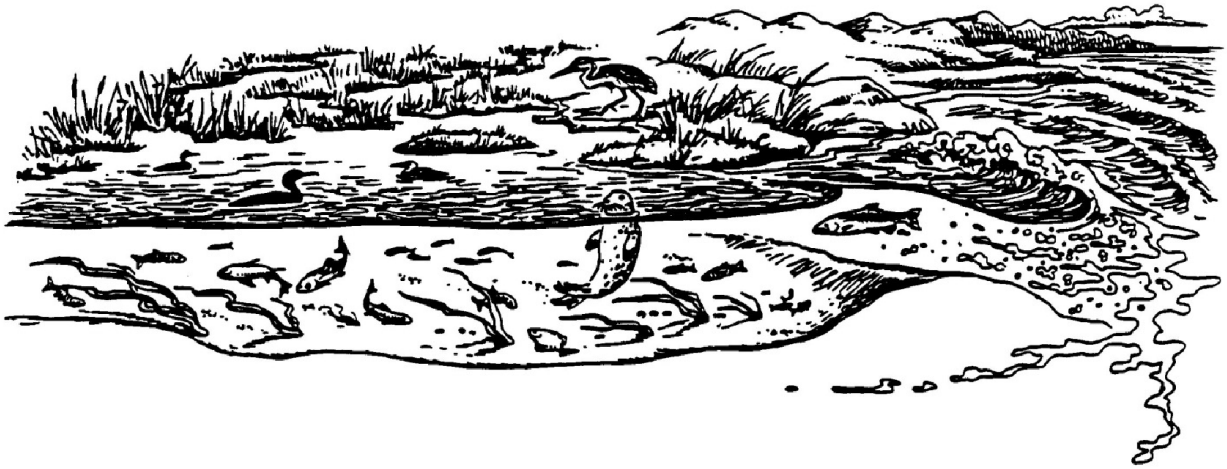
As young salmon and trout grow larger, they move from shallow areas into deep pools. Pools are scoured when water plunges over or around boulders and logs. The "bubble curtain" is a favorite place for salmon and trout. They can't be seen by predators above and there is plenty of oxygen. The current brings insects and other small food items. At the end of pools, where the stream narrows, the current picks up and washes the gravel clean, making them ideal for nests.



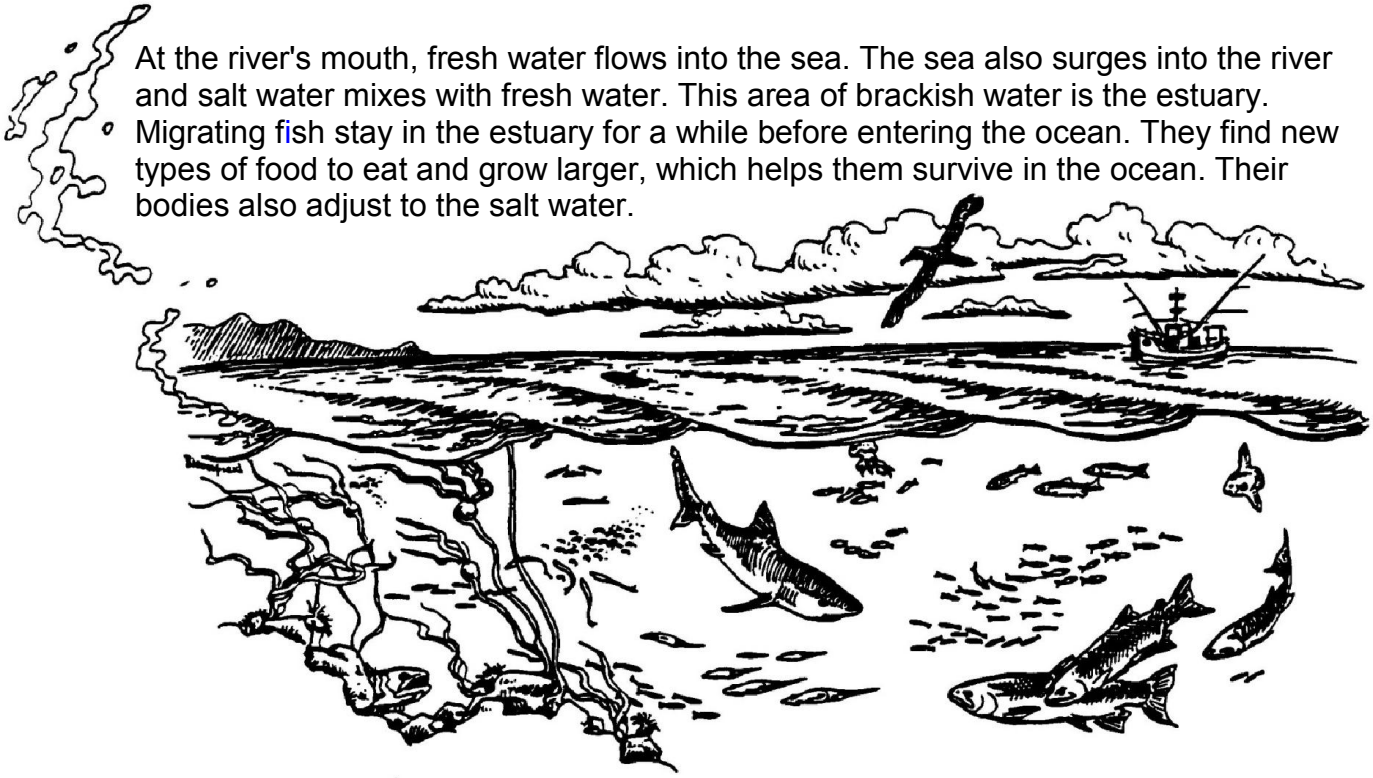
Some salmon and trout spend their lives in lakes, constantly moving about to find food. The surface of lakes may freeze in winter and the water underneath becomes quite cold. After spring thaw, salmonids feed around the edges of lakes. As the lake surface warms in summer, they retreat to the colder depths. They eat small animals called plankton and insects that alight on the surface of the lake. As trout grow larger in lake environments, they often feed on small fish, such as minnows or even smaller trout.

Seagoing Salmon And Steelhead

Anadromous salmonids spend part of their lives in salt water. Chinook salmon, Coho salmon. steelhead trout and coastal cutthroat trout are all anadromous. These fish leave their streams and migrate out to the ocean where they grow much larger than salmonids that stay in the stream all the time. Chinook usually move into the estuary when they are several months old. The other anadromous fish all spend at least one year in the stream before migrating to sea.

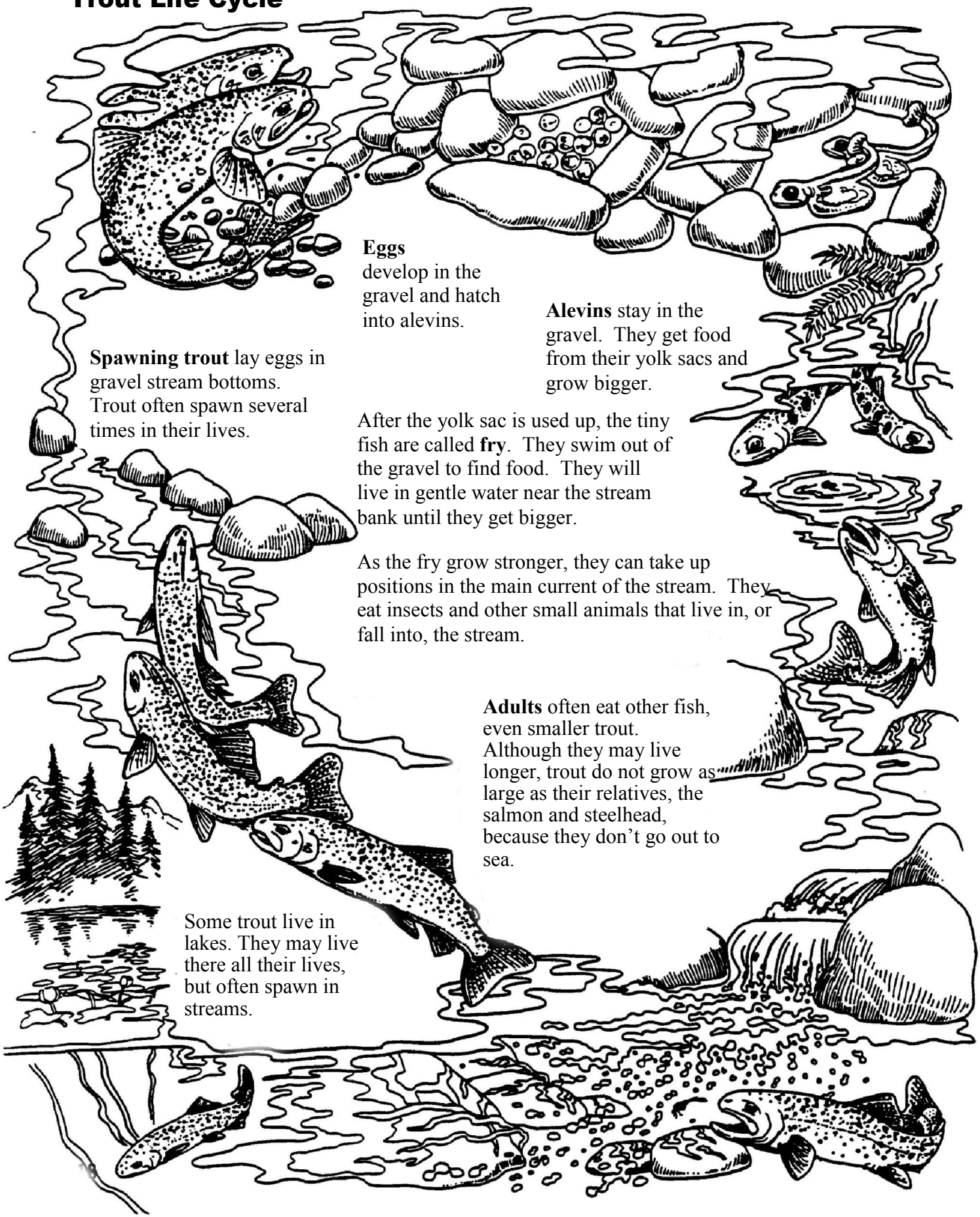


At the river's mouth, fresh water flows into the sea. The sea also surges into the river and salt water mixes with fresh water. This area of brackish water is the estuary. Migrating fish stay in the estuary for a while before entering the ocean. They find new types of food to eat and grow larger, which helps them survive in the ocean. Their bodies also adjust to the salt water.



The ocean is a vast resource for the fish. They find much to eat and they grow very large. Cutthroat trout usually keep close to the river's mouth, and stay for only a few months, so they remain fairly small. But salmon and steelhead stay in the ocean for several years and grow very large. They may swim many miles up and down the coast line. California's north coast is one of the places richest in food in the Pacific Ocean.

Trout Life Cycle



Eggs develop in the gravel and hatch into alevins.

Alevins stay in the gravel. They get food from their yolk sacs and grow bigger.

Spawning trout lay eggs in gravel stream bottoms. Trout often spawn several times in their lives.

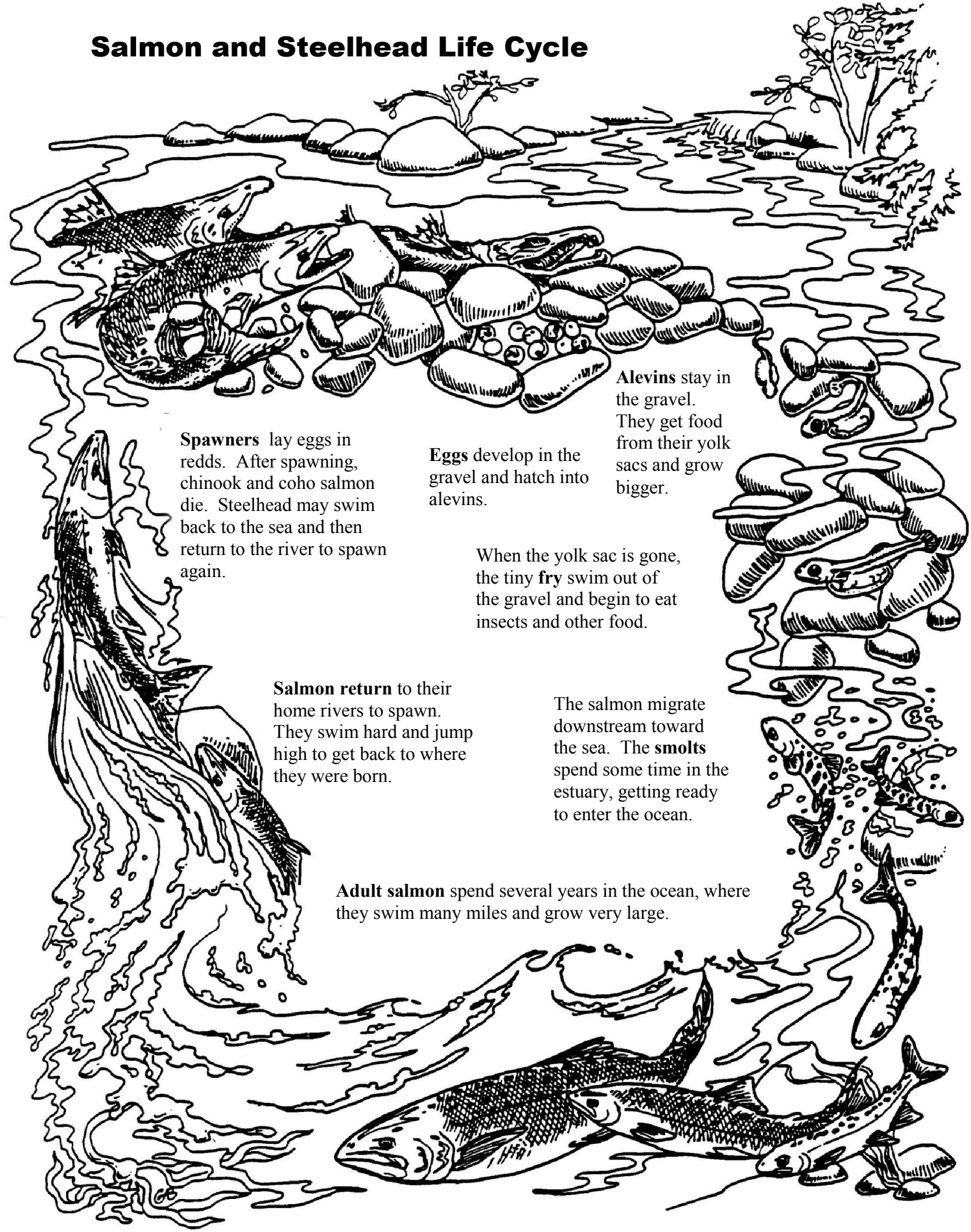
After the yolk sac is used up, the tiny fish are called **fry**. They swim out of the gravel to find food. They will live in gentle water near the stream bank until they get bigger.

As the fry grow stronger, they can take up positions in the main current of the stream. They eat insects and other small animals that live in, or fall into, the stream.

Adults often eat other fish, even smaller trout. Although they may live longer, trout do not grow as large as their relatives, the salmon and steelhead, because they don't go out to sea.

Some trout live in lakes. They may live there all their lives, but often spawn in streams.

Salmon and Steelhead Life Cycle



Spawners lay eggs in redds. After spawning, chinook and coho salmon die. Steelhead may swim back to the sea and then return to the river to spawn again.

Eggs develop in the gravel and hatch into alevins.

Alevins stay in the gravel. They get food from their yolk sacs and grow bigger.

When the yolk sac is gone, the tiny **fry** swim out of the gravel and begin to eat insects and other food.

Salmon return to their home rivers to spawn. They swim hard and jump high to get back to where they were born.

The salmon migrate downstream toward the sea. The **smolts** spend some time in the estuary, getting ready to enter the ocean.

Adult salmon spend several years in the ocean, where they swim many miles and grow very large.

Habitats of Salmon and Trout
Student Note-taking Activity

Prior to the students reading the following page, **Habitats of Salmon and Trout** student page, you may want to discuss with the students what a river habitat is and what it provides for the salmon and trout. Then discuss how you can bring that into the classroom. As you discuss this, draw on the board so that the final picture looks remarkably like the unit in the room.

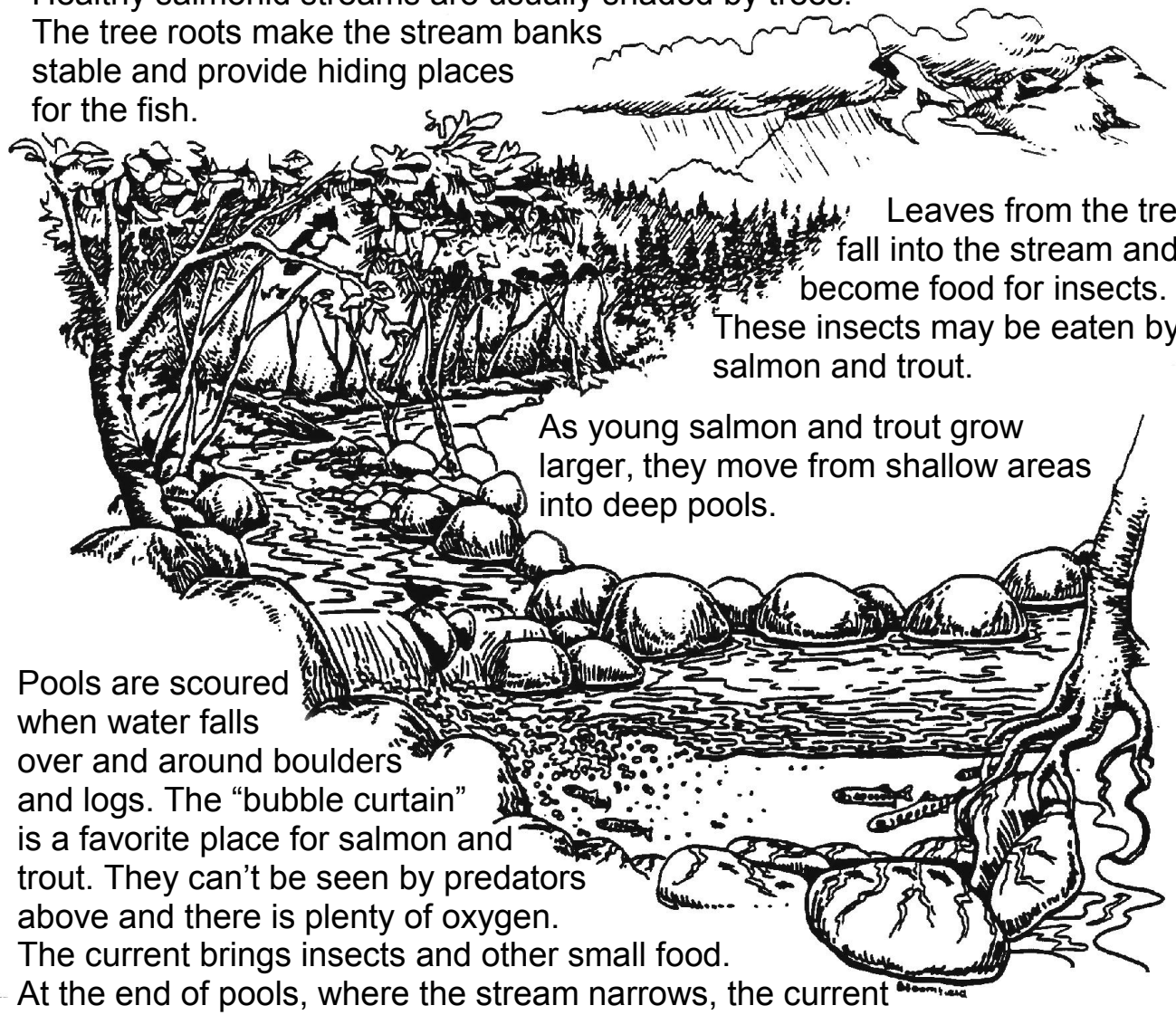
Next, have the students read the **Habitats of Salmon and Trout** student page. As they read, have them highlight key needs of the salmon and trout. As they highlight a need, then have the students write on the lines on the right of the page what the class will use to simulate that need in the classroom.

The discussion and note-taking activity together combine to bring the set up of the aquarium full circle. It ties everything together neatly for the students to understand how the class is simulating a river environment which is different from the type of fish tank they may have at home.

Habitats of Salmon and Trout

Name_____

Trout and salmon need cold water to survive and grow. Melting snow from mountain peaks and rain feed their stream and lake habitats. Healthy salmonid streams are usually shaded by trees. The tree roots make the stream banks stable and provide hiding places for the fish.



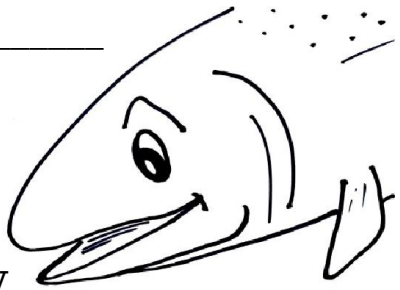
Leaves from the trees fall into the stream and become food for insects. These insects may be eaten by salmon and trout.

As young salmon and trout grow larger, they move from shallow areas into deep pools.

Pools are scoured when water falls over and around boulders and logs. The "bubble curtain" is a favorite place for salmon and trout. They can't be seen by predators above and there is plenty of oxygen. The current brings insects and other small food. At the end of pools, where the stream narrows, the current picks up and washes the gravel clean, making them ideal for nests.

What I Know!

Name_____



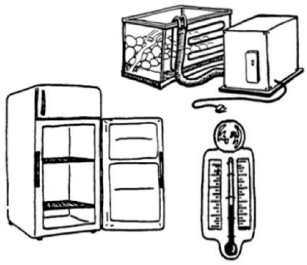
Draw and write about some things you know about salmon or trout. Use complete sentences.

Name _____

Aquarium Habitat Match

When we set up an aquarium for fish we need to try to make it like the natural habitat of the fish. Each part of the aquarium helps to create a more natural habitat. Draw a line from each part of the aquarium to the matching part of the habitat.

Running water mixes air bubbles into the water.



Melting snow and shade keep river water cold.

Rocks and gravel provide shelter to eggs and alevins.

Food is an important part of habitat too. If you were a small salmon or trout, where would you get your food?

Name_____

Eggs to Fry: My Observation Journal

Draw and describe what you observe.

Today's date_____

How old are the eggs or fish?

What is the temperature of the water?

Name _____

Eggs to Fry: My Observation Journal

Draw and describe what you observe.

Today's date_____

How old are the eggs or fish?

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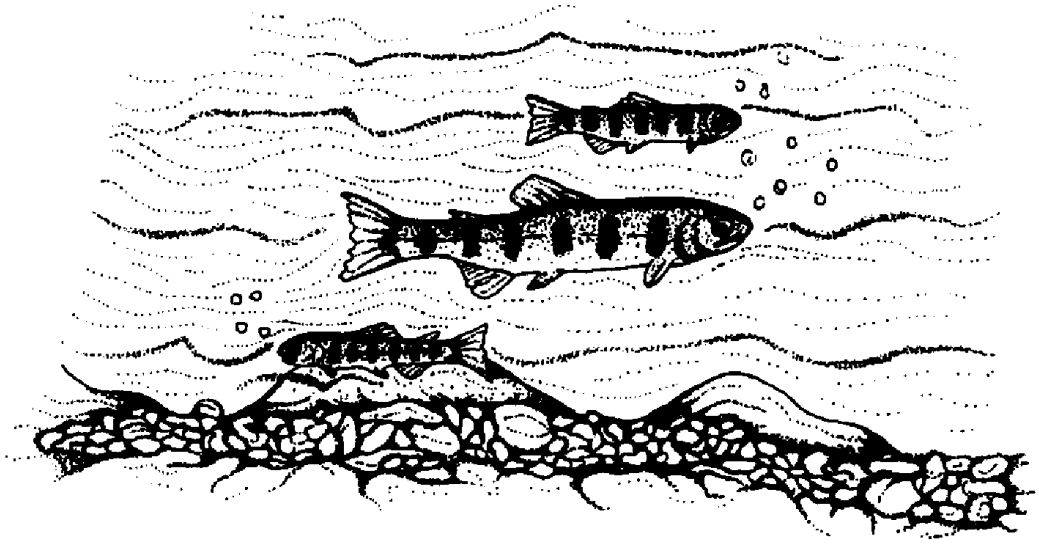
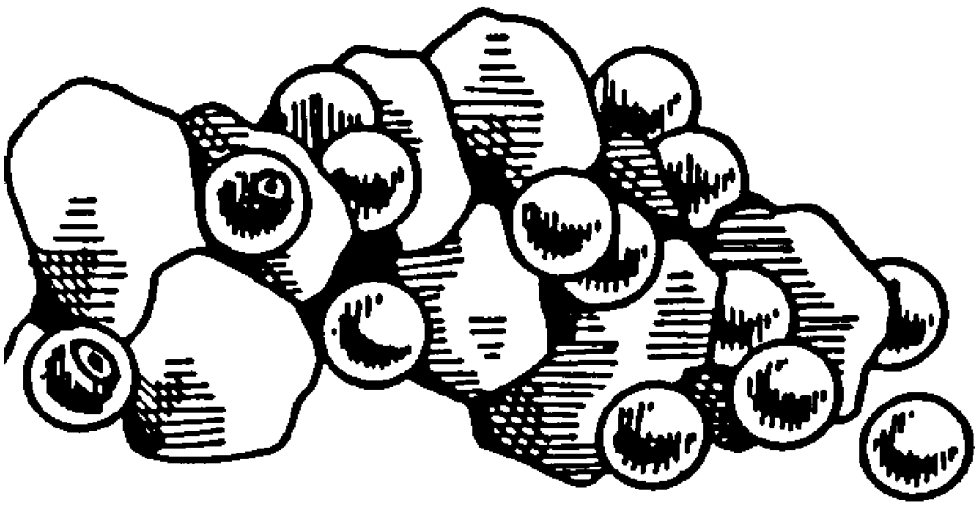
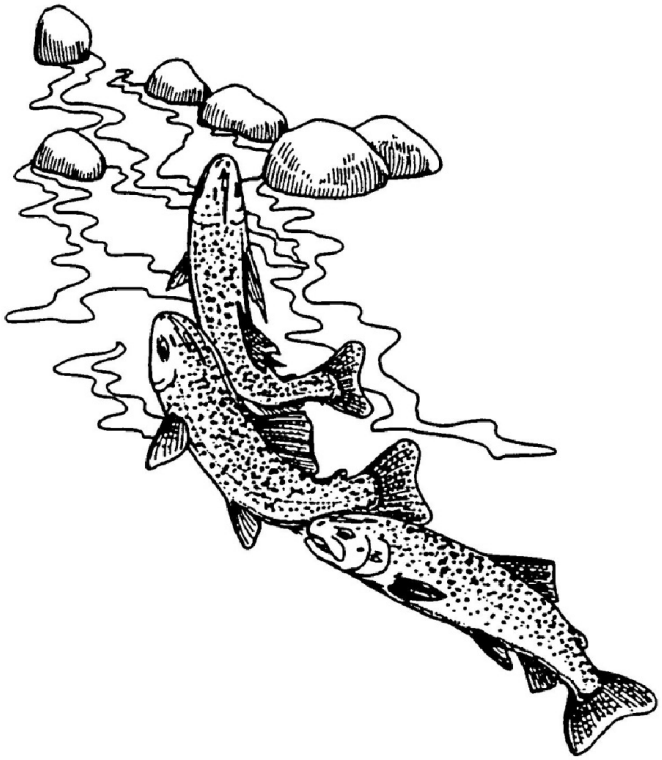
My Salmon Book



Name_____

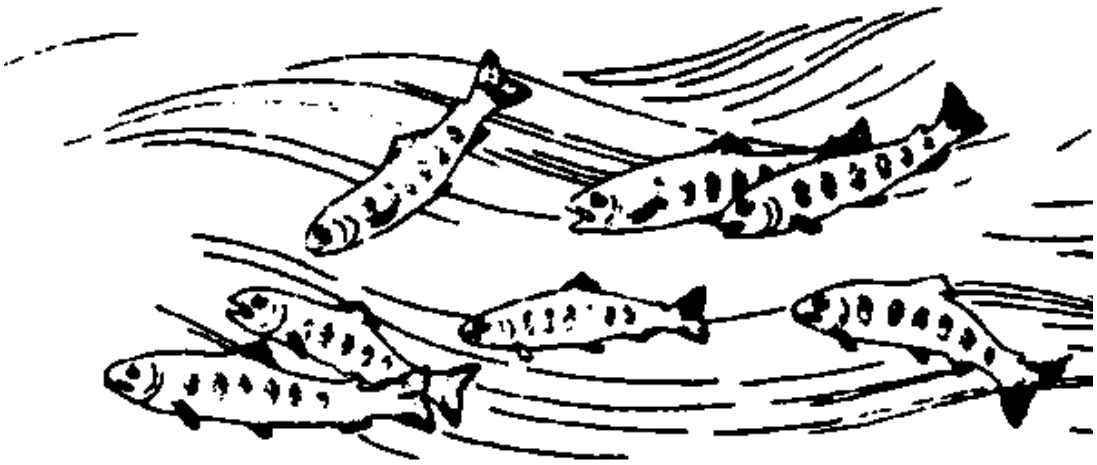


The salmon **egg** hatches. A young salmon comes out of the egg. The young salmon is called an **alevin**.

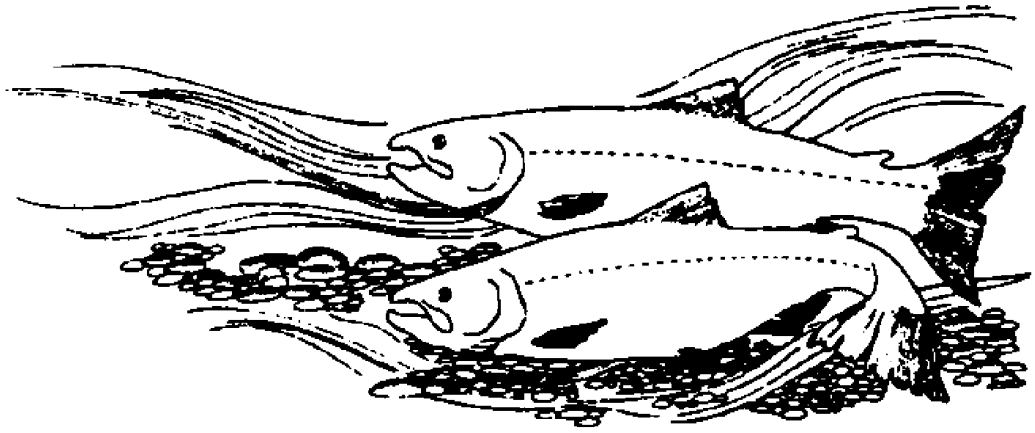


A salmon is a fish. A salmon has five stages in its life cycle. A salmon may live in a river or a lake. The first stage of its life is an **egg**.

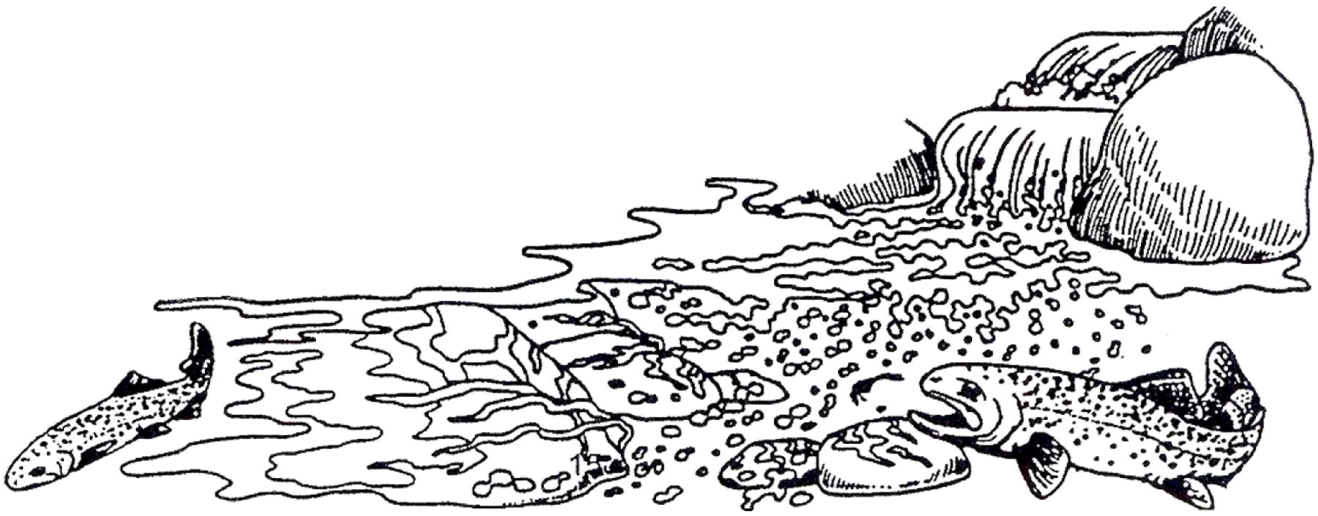
An **alevin** looks like a very small fish with a balloon attached to its stomach. The balloon is called a **yolk sac**. The **yolk** is food for the baby salmon.



The **alevin** will absorb the yolk. When the yolk sac is empty, the fish is called a **fry**. The **fry** must look for food.



The salmon will find lots of food to eat in the ocean. It will grow to be a big adult. The salmon will swim back to the river where it grew up. The female salmon will lay eggs in a nest of rocks called a **redd**. The life cycle will begin again.



When a fry grows larger it may swim down the river to the ocean. Its body must change to live in salty ocean water. It is now like a teenager leaving home. Now it is called a **smolt**.

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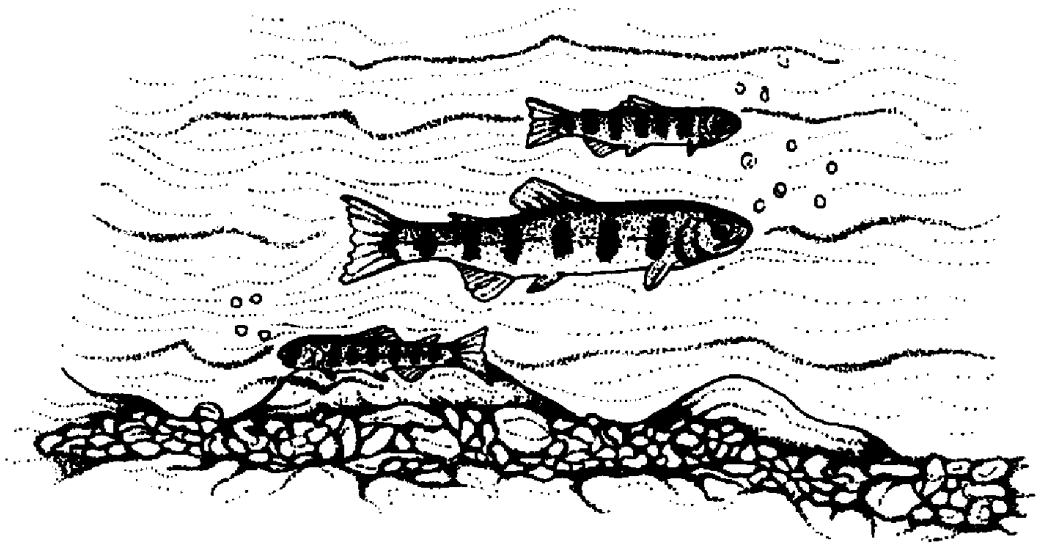
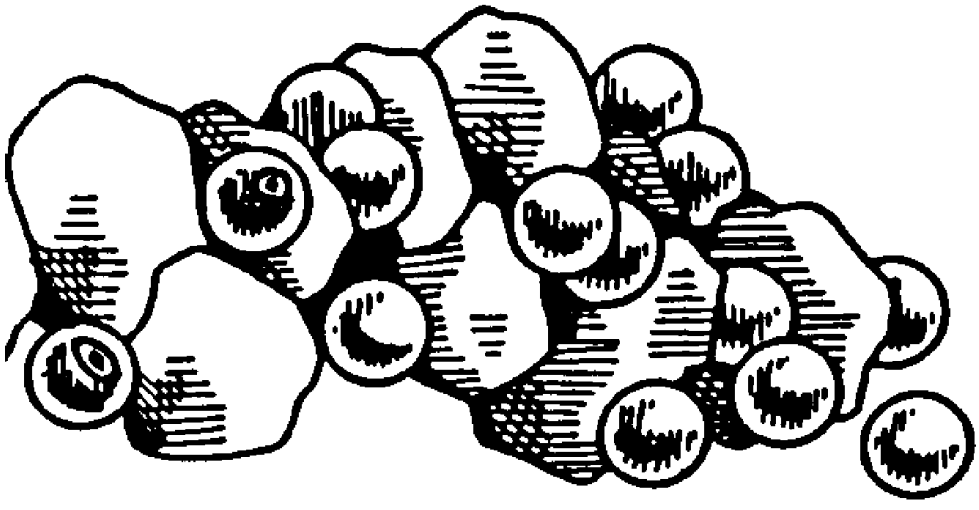
Classroom Aquarium Education Program, Grade 2 Thematic Unit
California Department of Fish & Wildlife, Central Region

My Trout Book



Name_____



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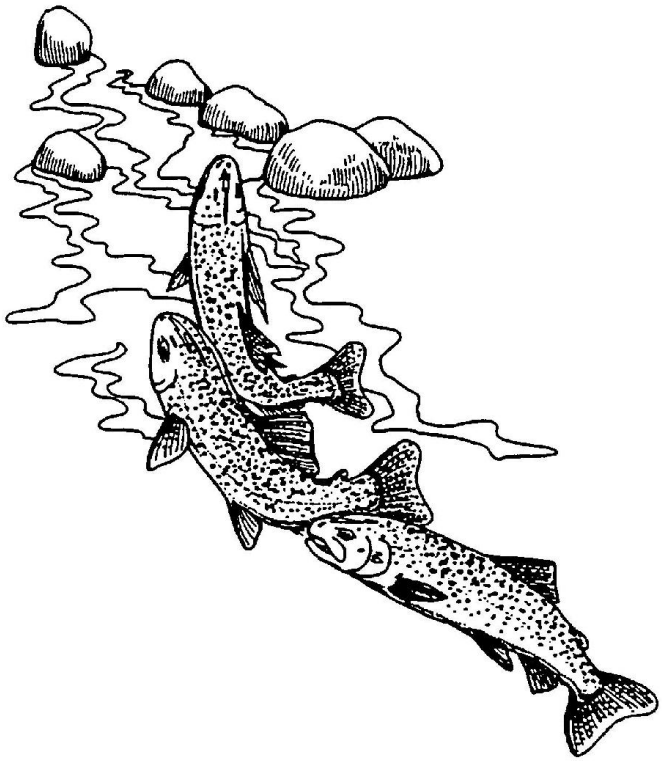

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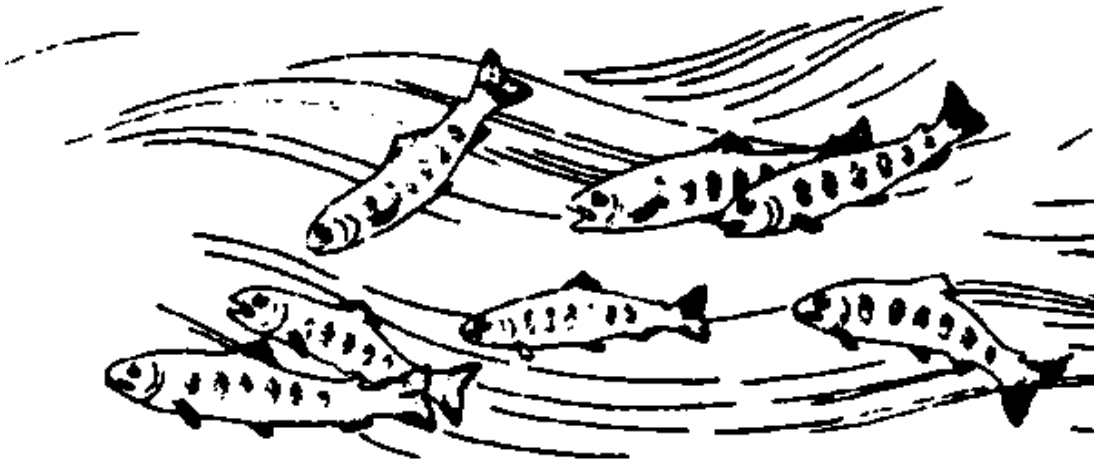

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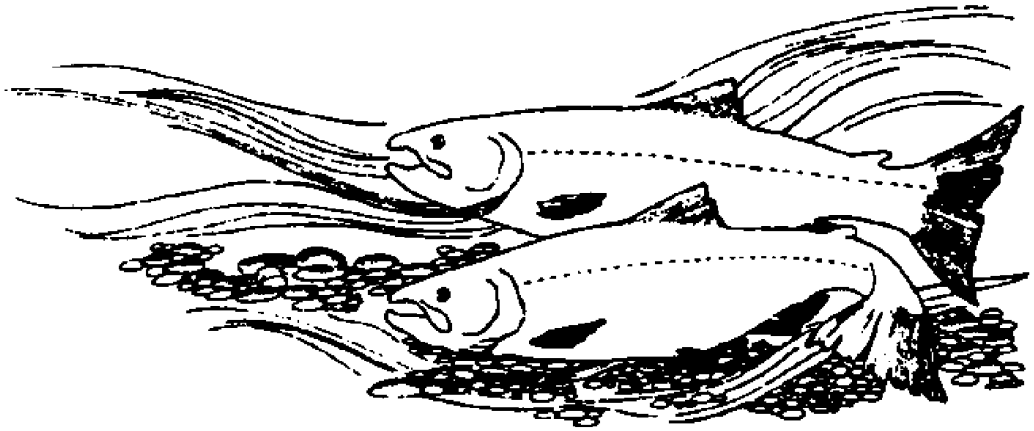

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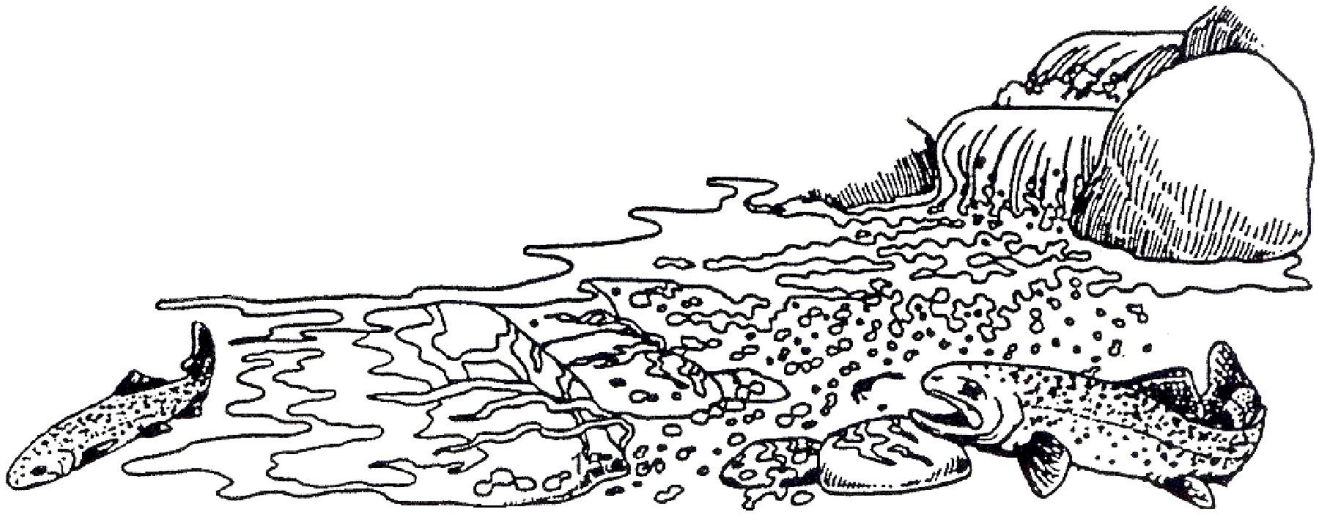

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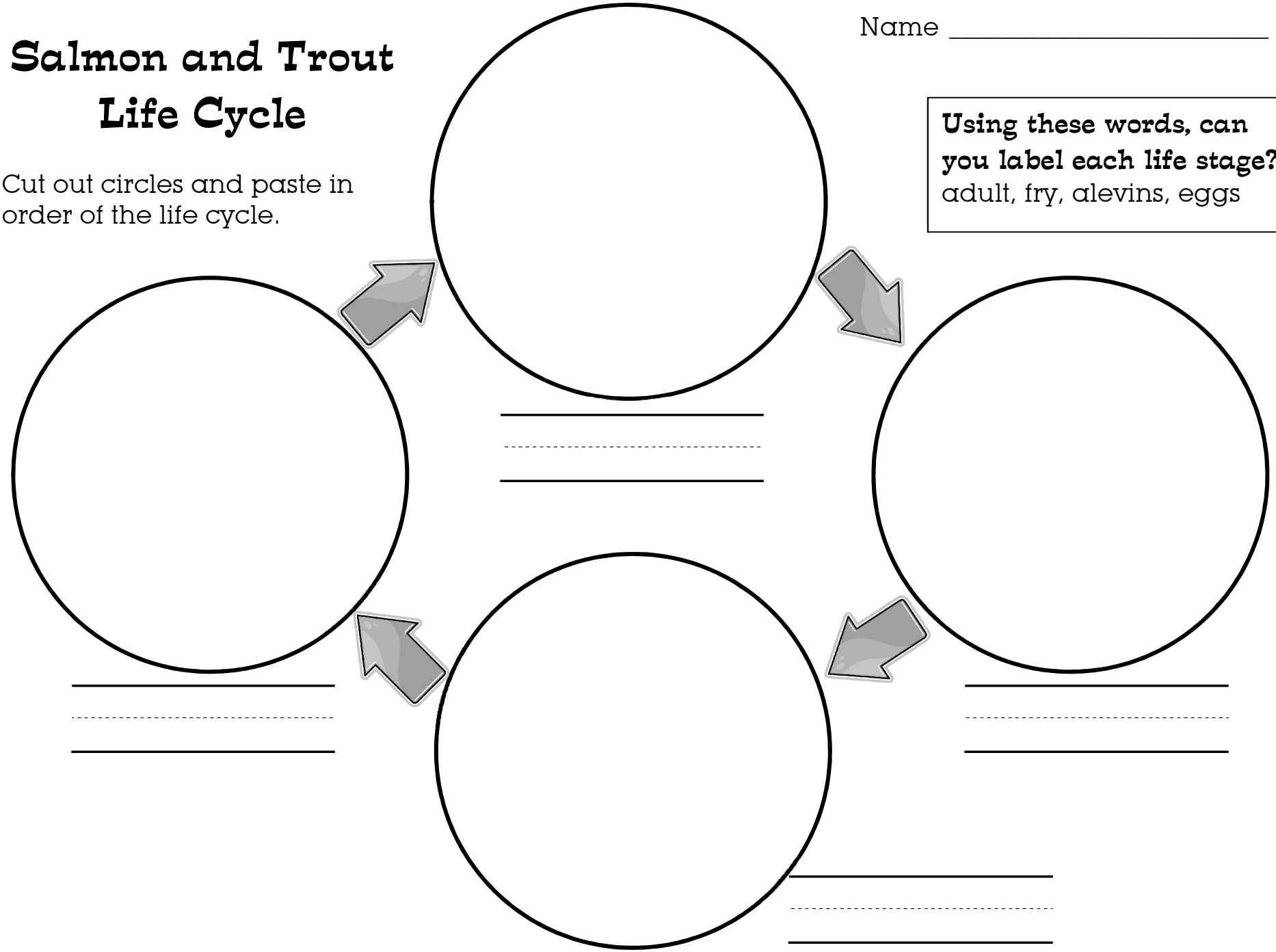
Classroom Aquarium Education Program, Grade 2 Thematic Unit
California Department of Fish & Wildlife, Central Region

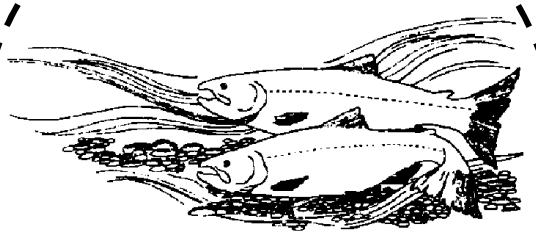
Salmon and Trout Life Cycle

Name _____

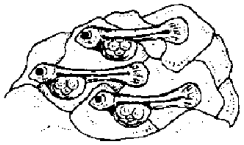
Cut out circles and paste in order of the life cycle.

Using these words, can you label each life stage?
adult, fry, alevins, eggs

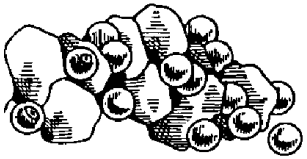




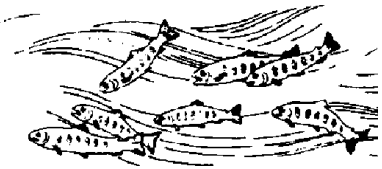
Adults lay their eggs in their nest in the gravel.



Newly hatched alevins hide in the gravel.



Eggs stay in their nest made of rocks in the river.



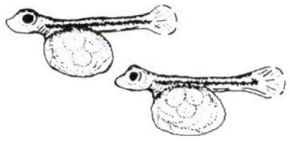
Now that their yolk sacs are gone, these little fry have to look for food in the river.

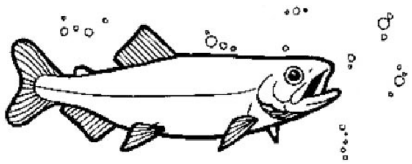
Habitat Match

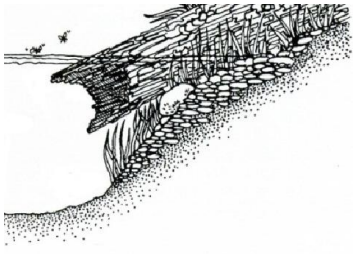
Name _____

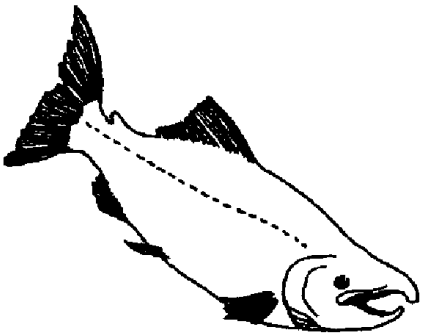
Just like humans, salmon have different needs as they get older. Look at the clues and decide what each of the salmon needs. Draw a line from each salmon to its habitat need.

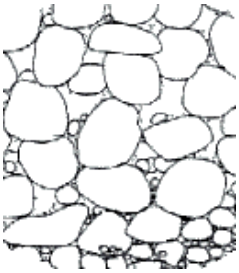
- Alevins need small spaces between rocks without sand or silt.
- Smolts need to be able to get to the ocean.
- Fry need places to hide from predators.
- Adults need water in their river so that they can find their way back home.





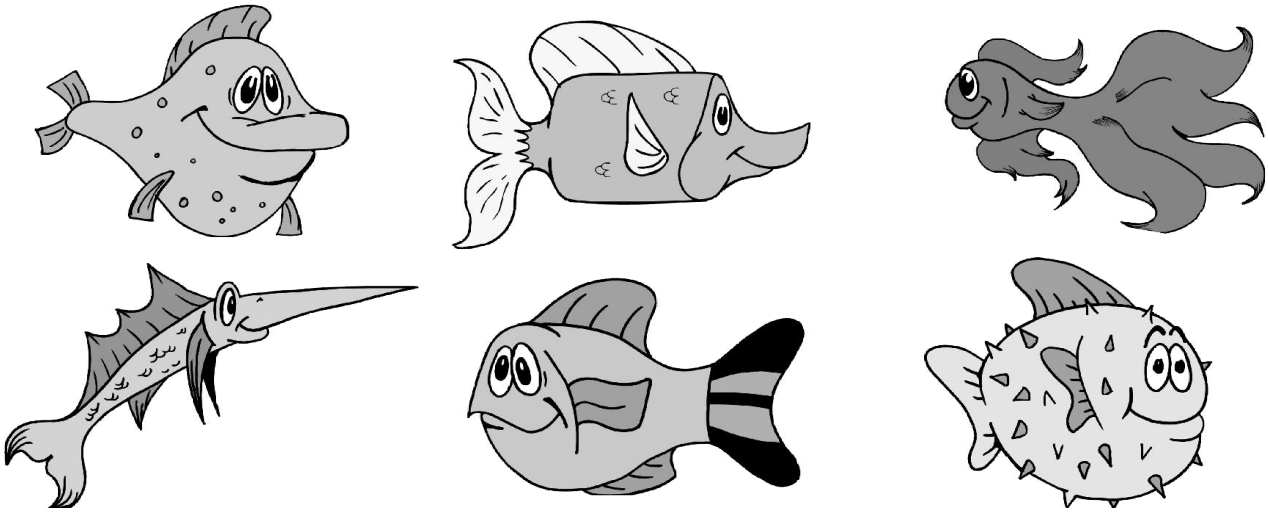


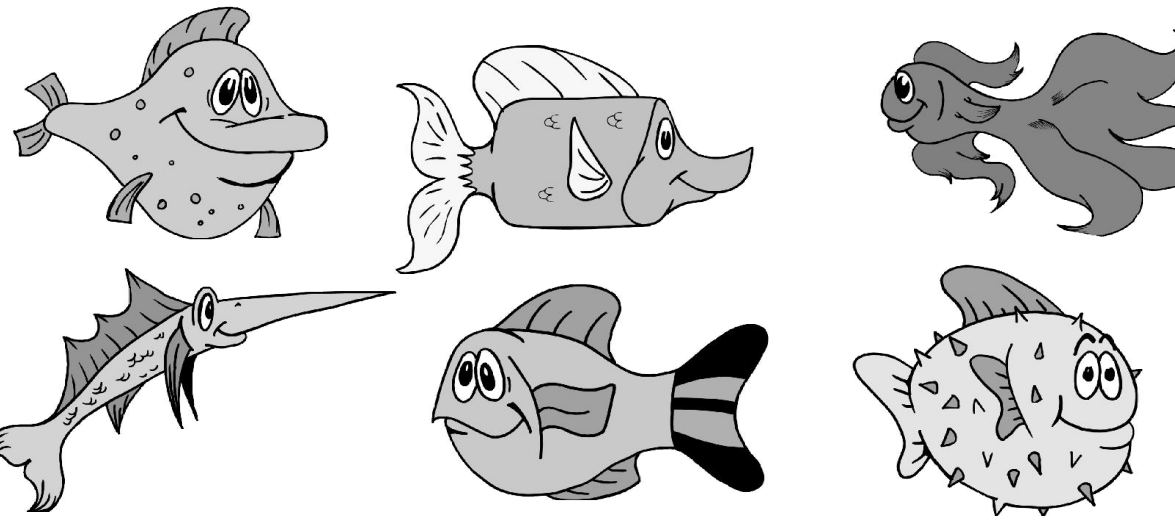




This is _____'s book.

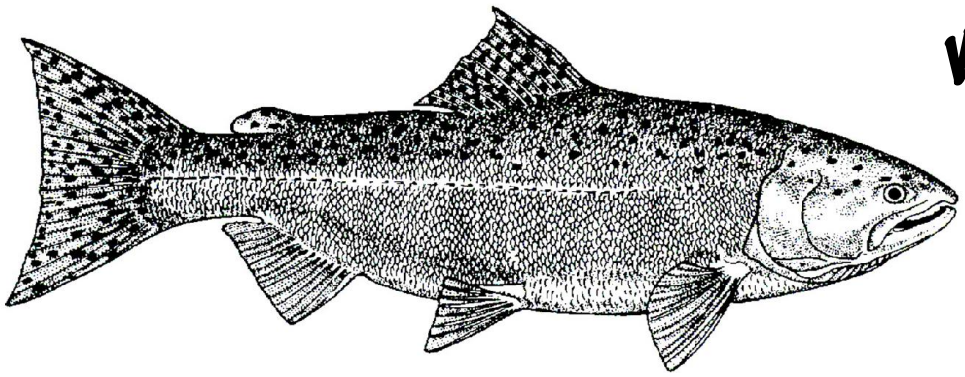
Fish Have Fins

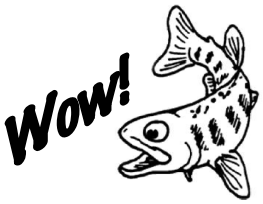




Fish have fins. All of these fish have fins. Fins help fish swim. Different kinds of fish have fins of different shapes.

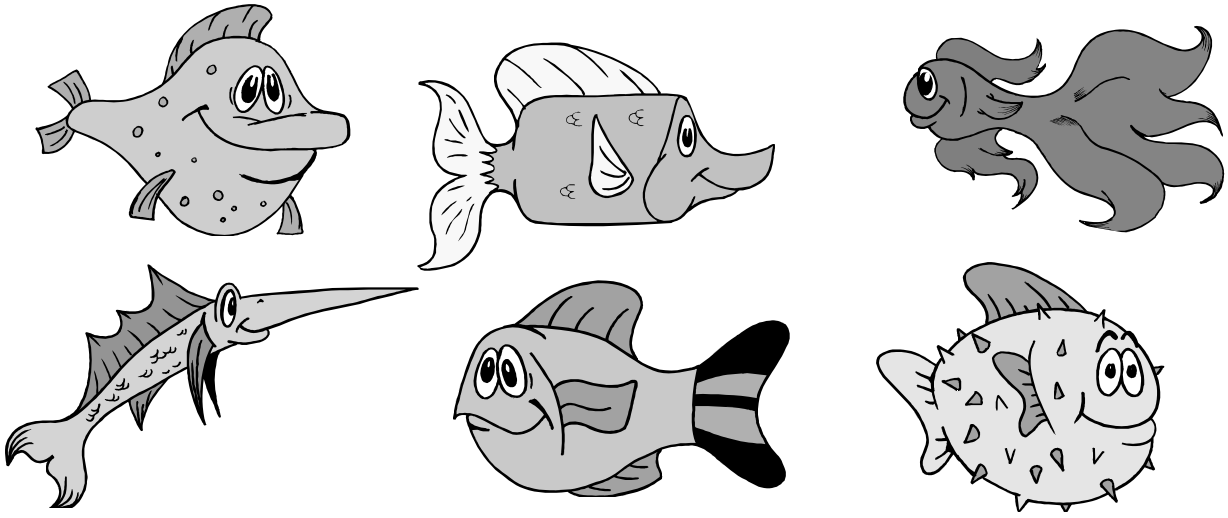
1





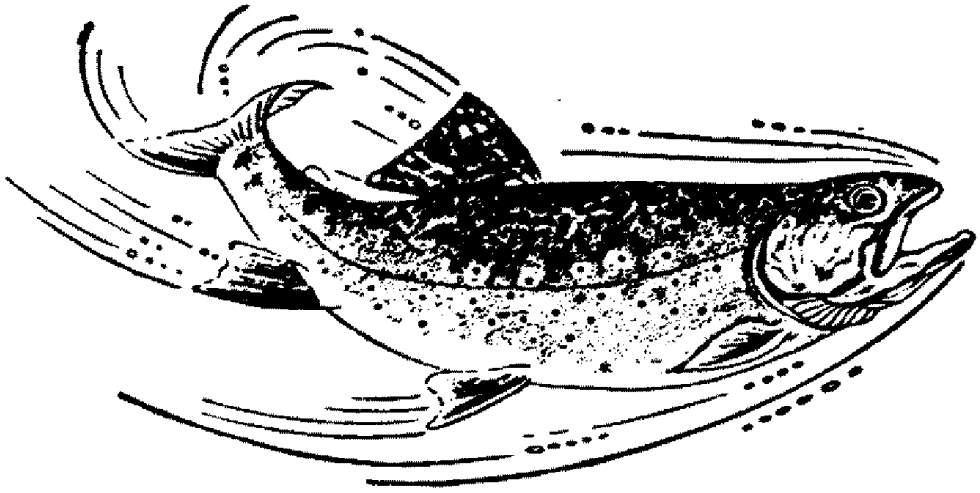
Fins help fish steer themselves. They can turn left of right with their fins. Fins keep fish from falling over as they swim. The tail is a fin too.

2



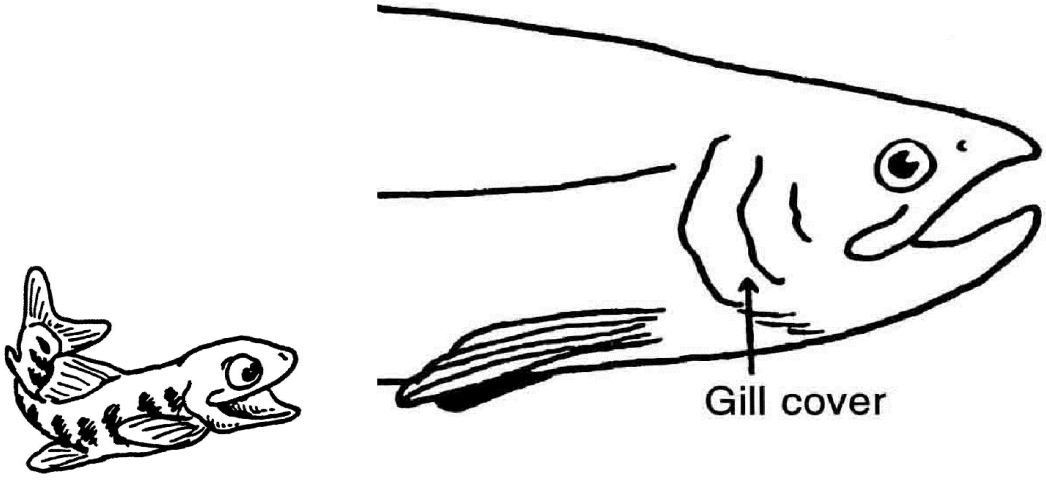
Different kinds of fish have bodies that are different shapes. Different body shapes help the fish move in different ways .

3



Salmon and trout have long flat bodies for moving fast in the water. They live in rivers and the ocean.

4



Fish do not have lungs. Fish breathe with gills. They take air from the water. Gills are on both sides of the fish. They are hidden by the gill cover.

5

Name_____

Questions about *Fish Have Fins*

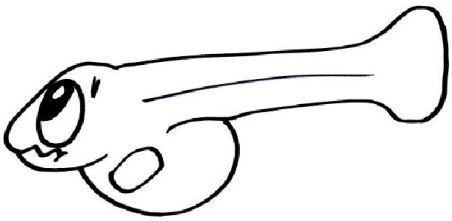
1. How do fins help fish?

2. What is the shape of a salmon's body?

3. What do gills do?

Name_____

Can you give him advice?

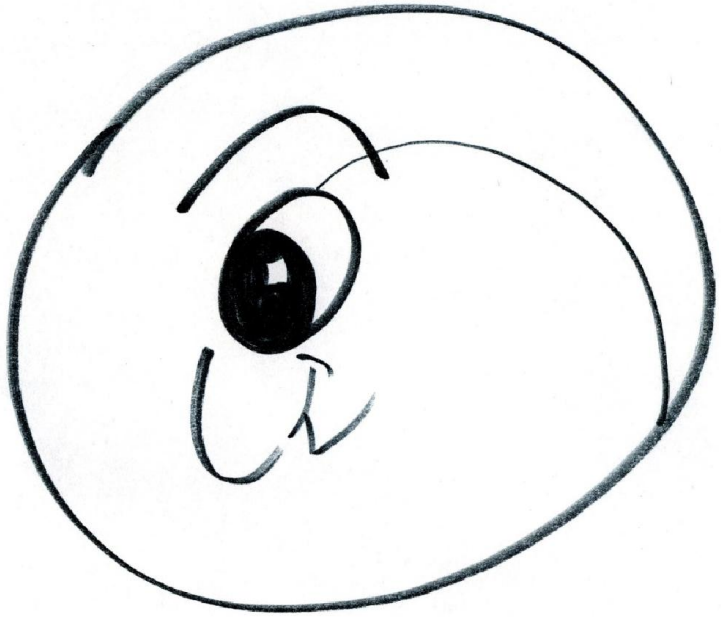


This alevin just hatched and is a little scared. Will you please write a letter to him and give him some advice?

Thanks!

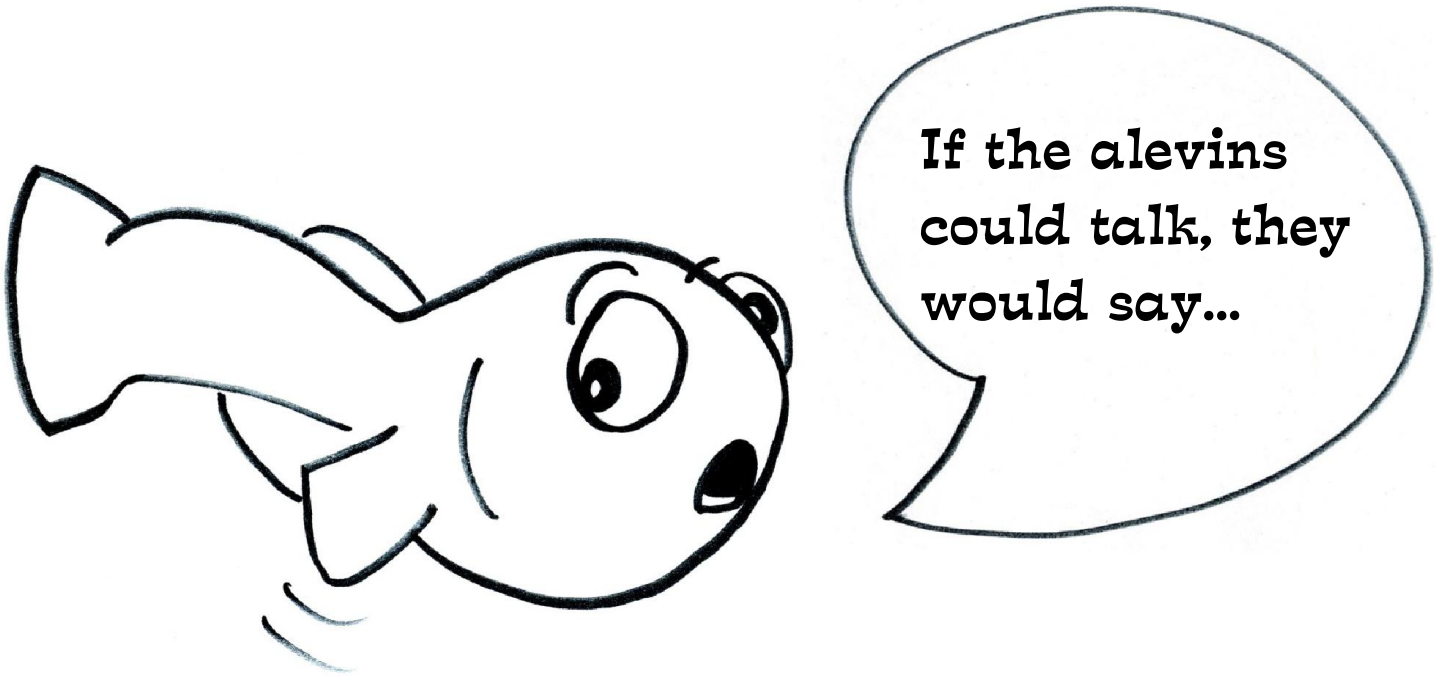
Name_____

If salmon eggs could talk, they would say...



Write what you think the eggs would say.

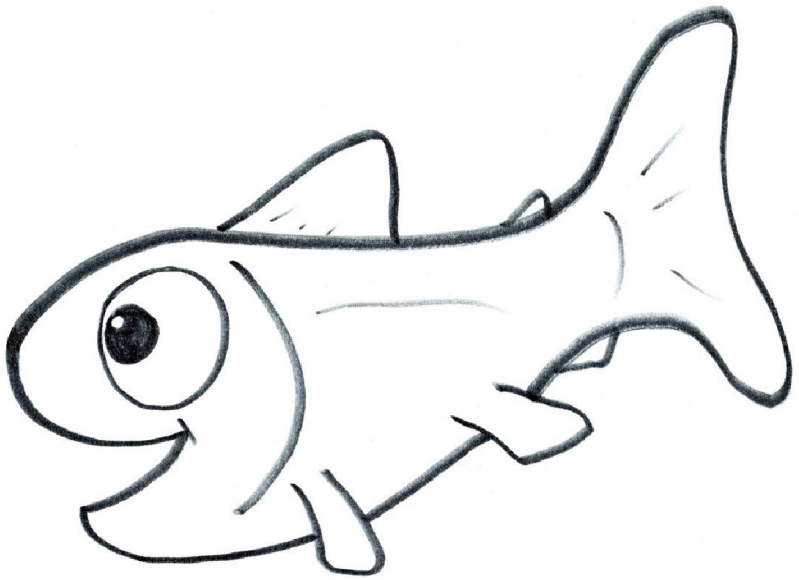
Name_____



Write what you think the alevins would say.

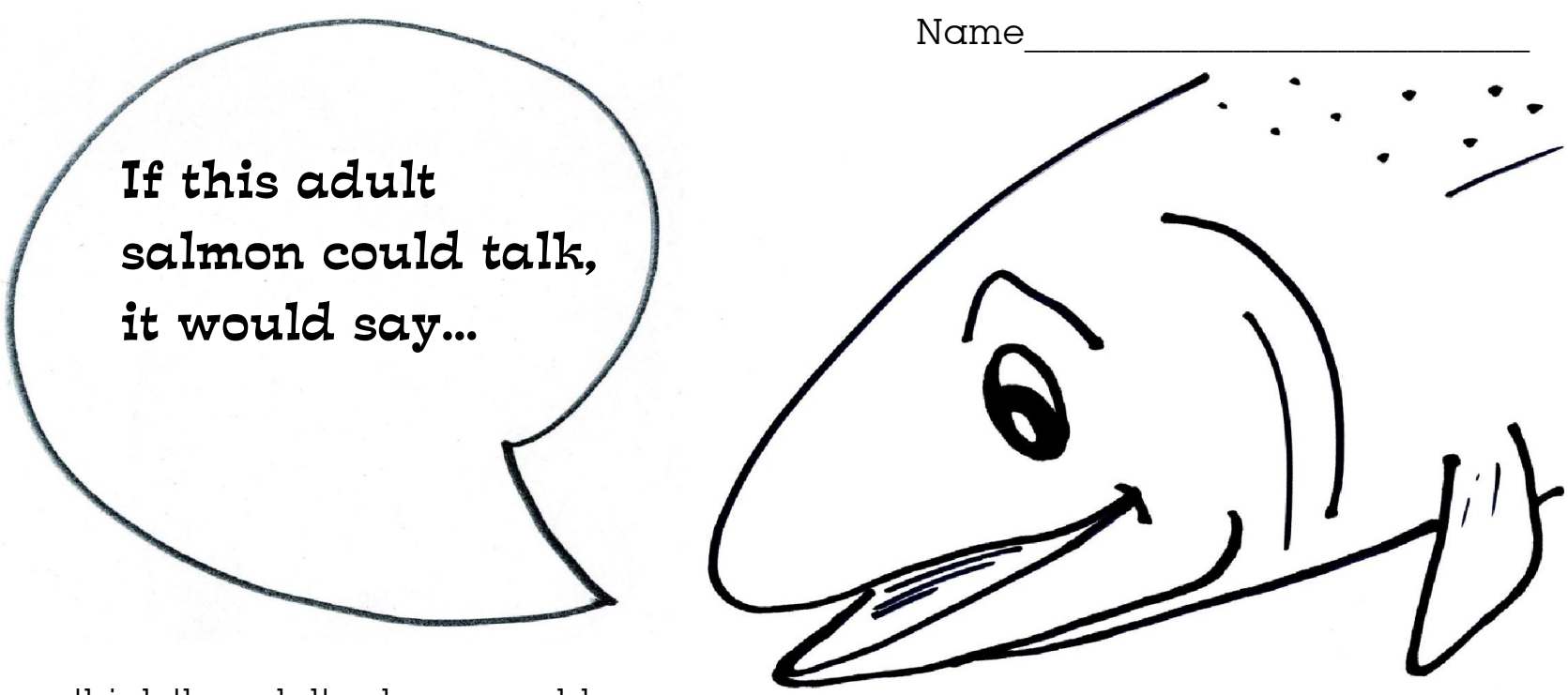
Name_____

If the fry could talk, they would say…



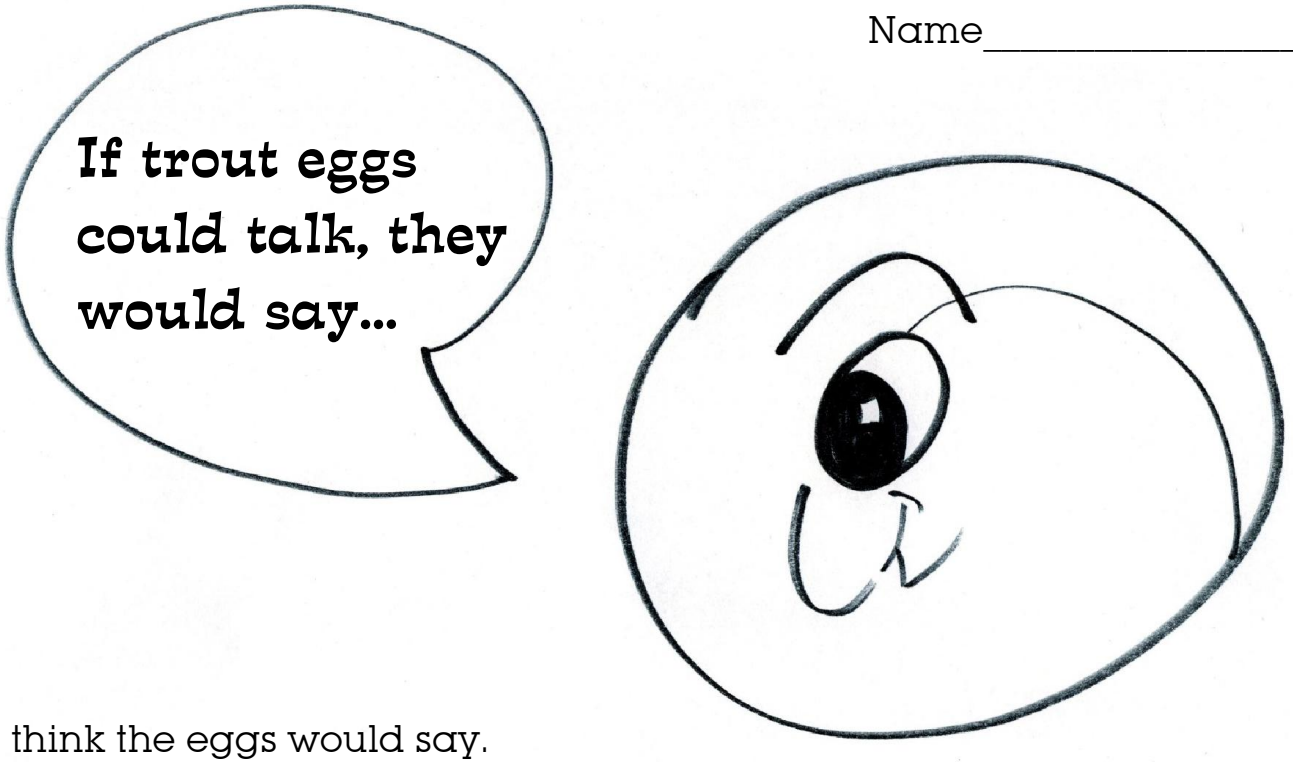
Write what you think the fry would say.

Name_____



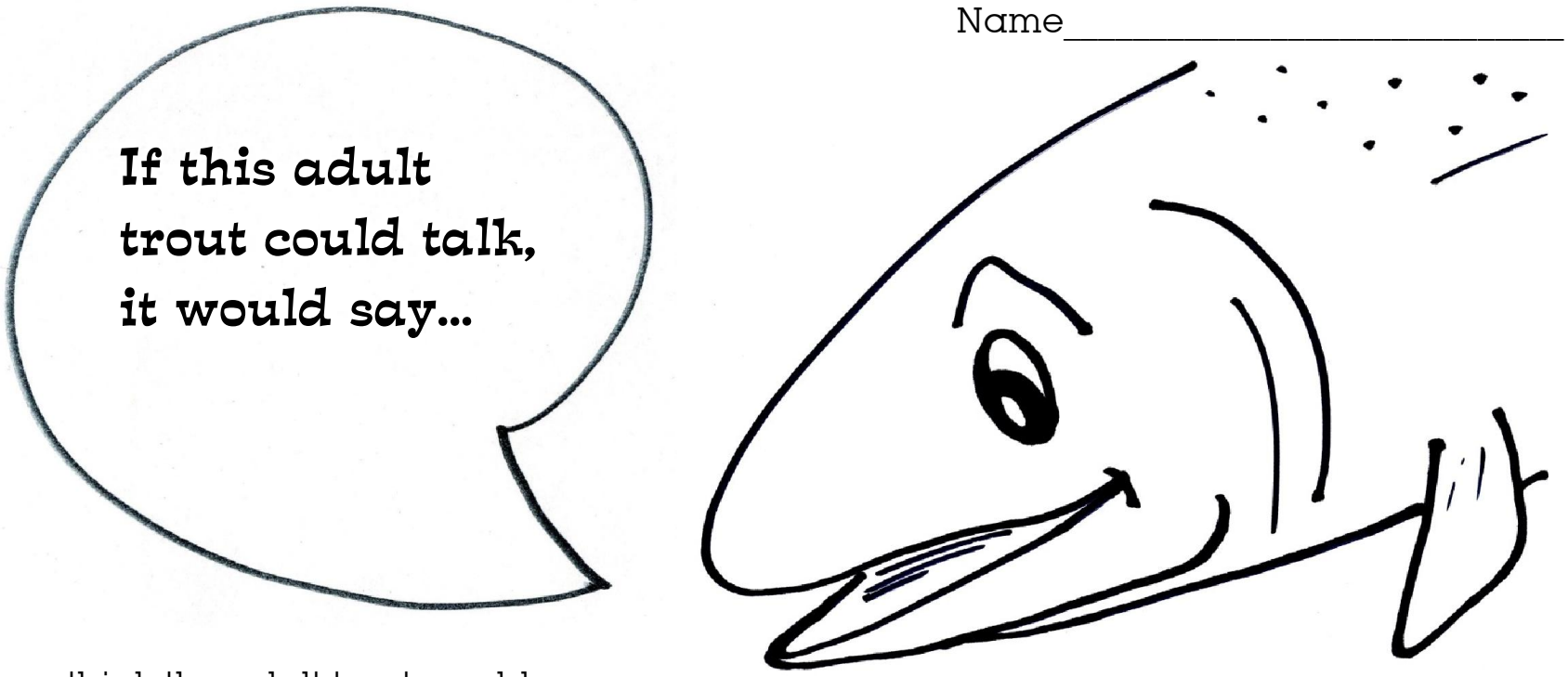
Write what you think the adult salmon would say.

Name_____



Write what you think the eggs would say.

Name_____

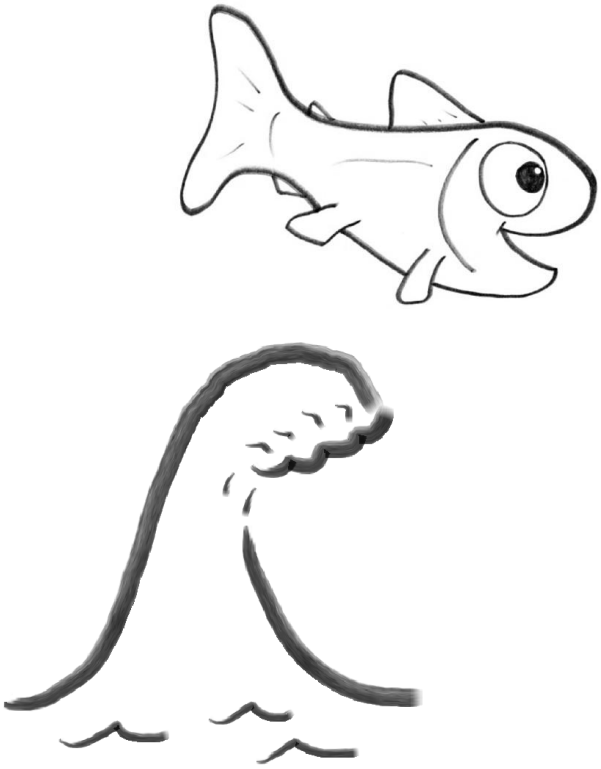


Write what you think the adult trout would say.

Name _____

Splashing Action

Use one noun and one verb from each list to finish the sentences.



Nouns

alevins
fry
eggs
smolt
trees
water
trout
mother

Verbs

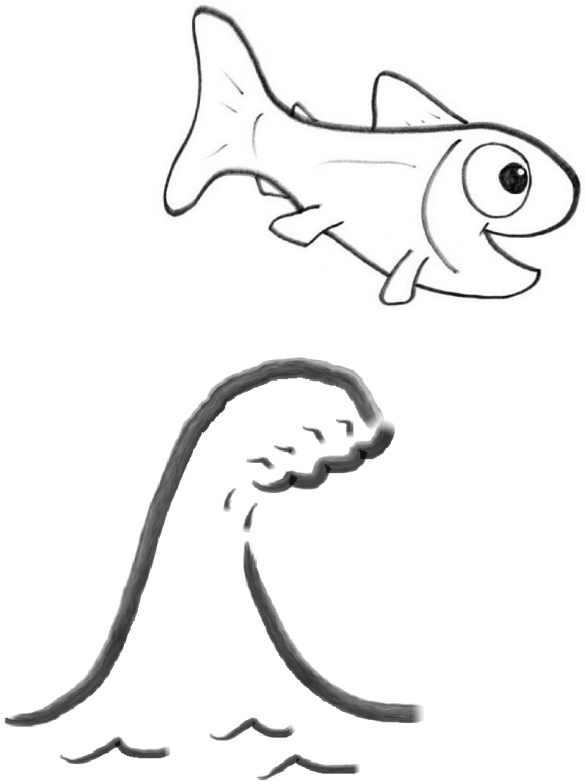
hide
hatched
built
migrated
hunted
shaded
flows
jumped

1. The salmon _____ _____ a redd for her eggs.
2. The _____ _____ in the redd.
3. The young _____ _____ to the ocean.
4. The cold _____ _____ down the river to the ocean.
5. The _____ _____ the river and kept it cool.
6. The healthy _____ _____ toward the sky.
7. The baby _____ _____ in the rocks.
8. The small _____ _____ for insects to eat.

Splashing Action

KEY

Use one noun and one verb from each list to finish the sentences.



Nouns

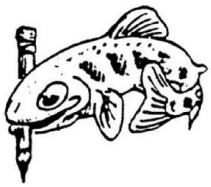
alevins
fry
eggs
smolt
trees
water
trout
mother

Verbs

hide
hatched
built
migrated
hunted
shaded
flows
jumped

1. The salmon **mother** **built** a redd for her eggs.
2. The **eggs** **hatched** in the redd.
3. The young **smolt** **migrated** to the ocean.
4. The cold **water** **flows** down the river to the ocean.
5. The **trees** **shaded** the river and kept it cool.
6. The healthy **trout** **jumped** toward the sky.
7. The baby **alevins** **hide** in the rocks.
8. The small **fry** **hunted** for insects to eat.

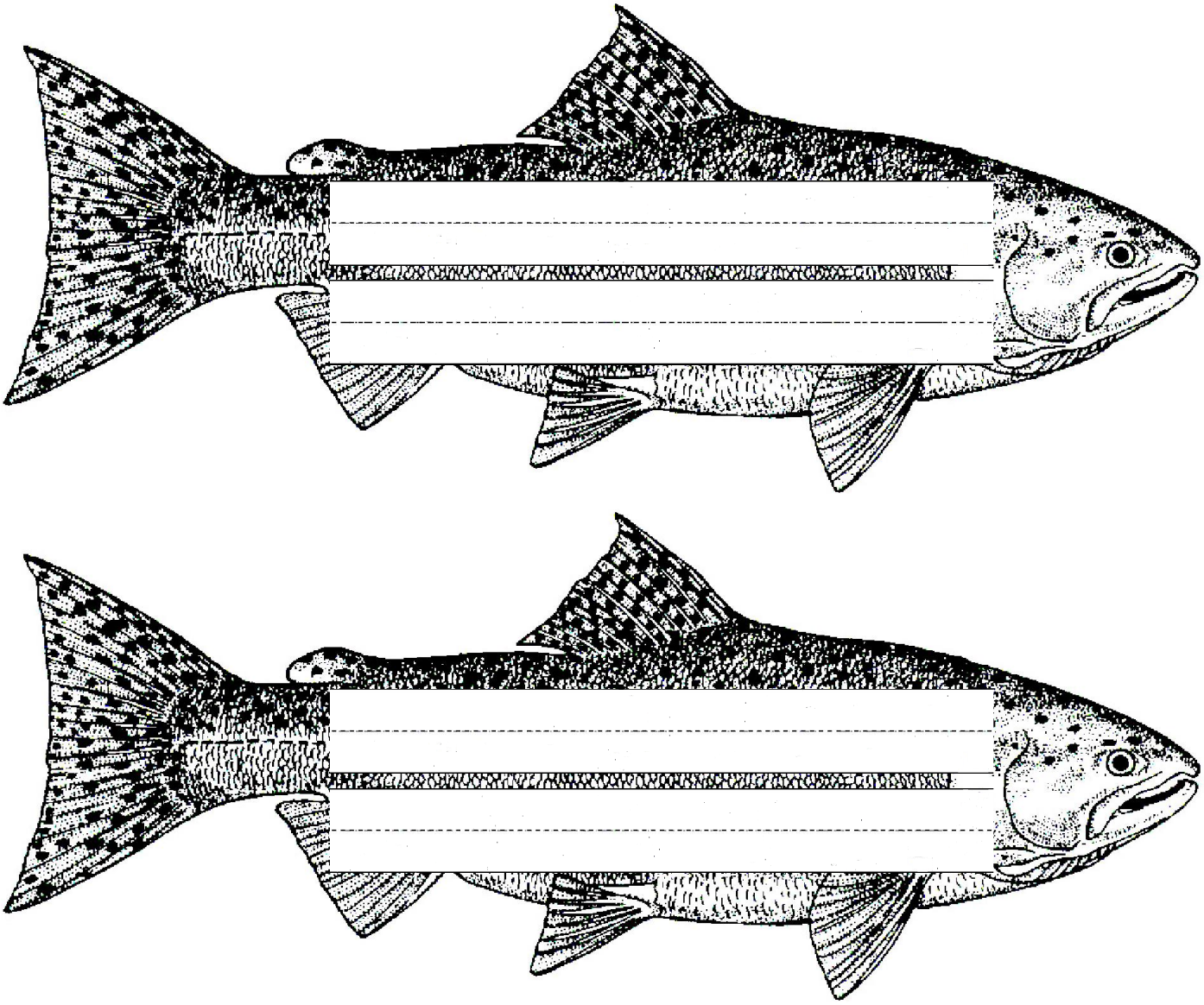
Pisciform Paragraph



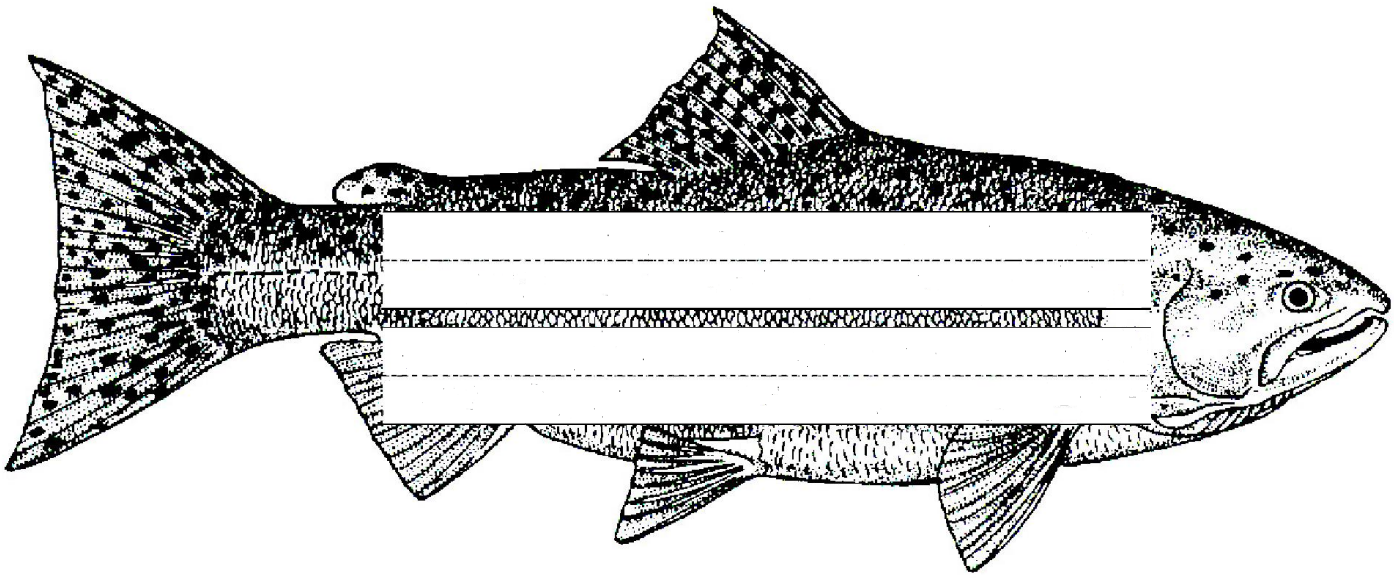
Name_____

You have learned a lot about salmon and trout.
Now write a paragraph to tell us some great things you have learned.

Your Topic Sentence:
In second grade we learned many things about salmon and trout.
Write a supporting fact in each fish.

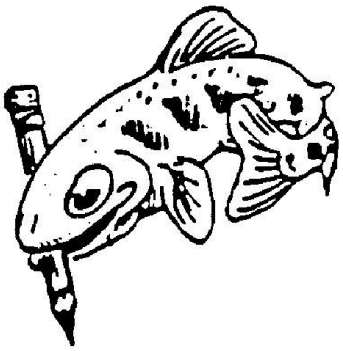


Name_____



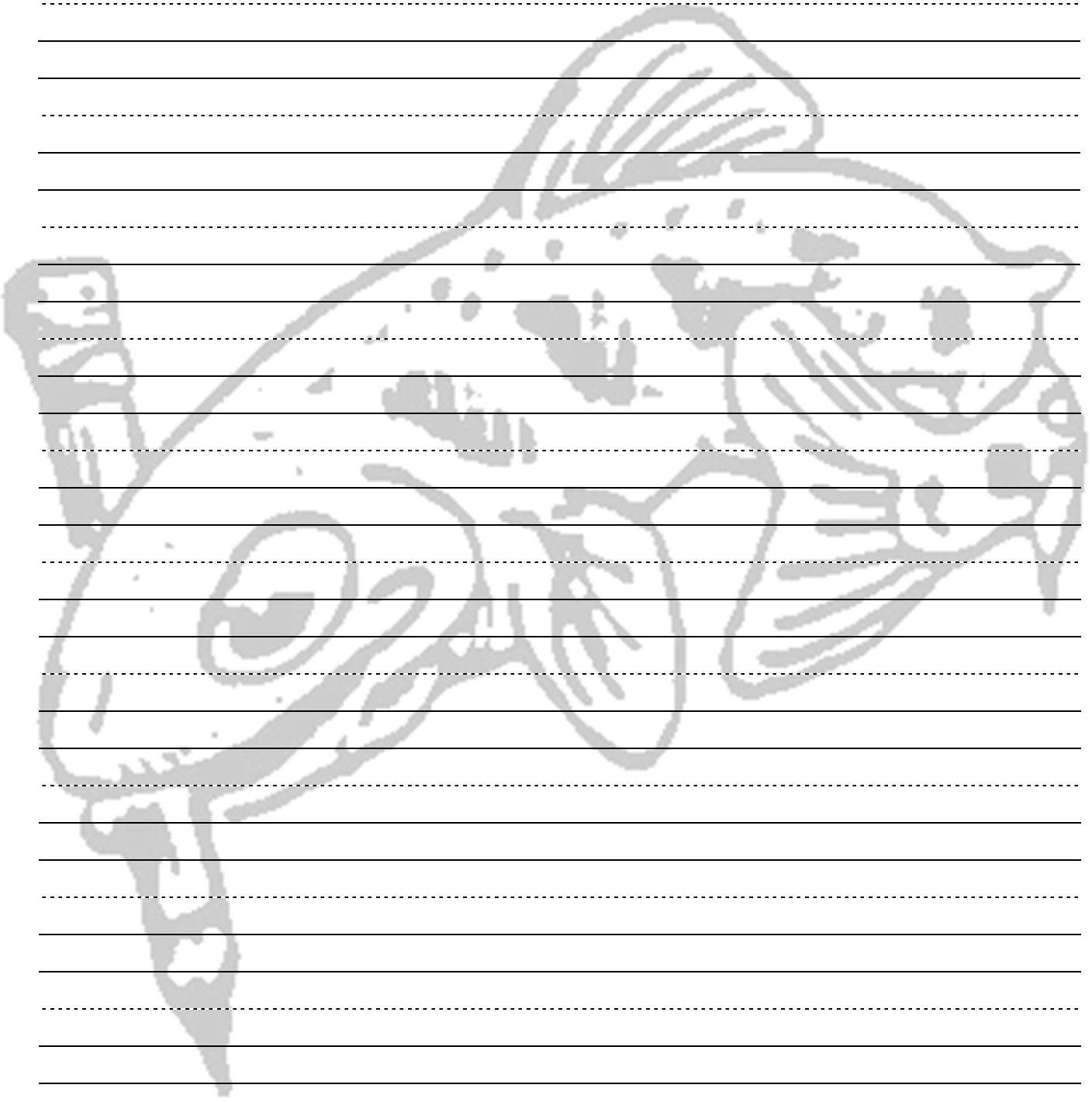
Your Concluding or Final Sentence:

Now it's time to write your paragraph on the next page.



Name_____

Rewrite your topic sentence. Add your three supporting sentences. Then add your final sentence to make a proper paragraph form.



Haiku

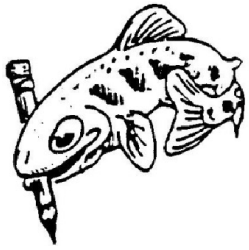
Haiku is a form of Japanese poetry. It is often about nature.

Haiku poems don't rhyme but they do follow a pattern. The pattern for haiku is the following:

Line 1: 5 syllables

Line 2: 7 syllables

Line 3: 5 syllables

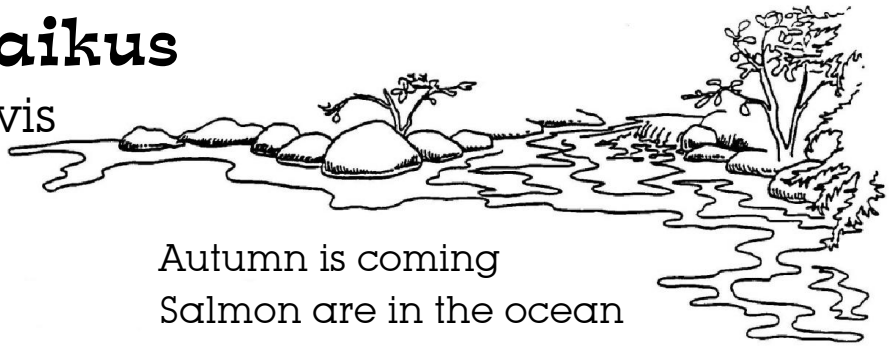


How to write your haiku.

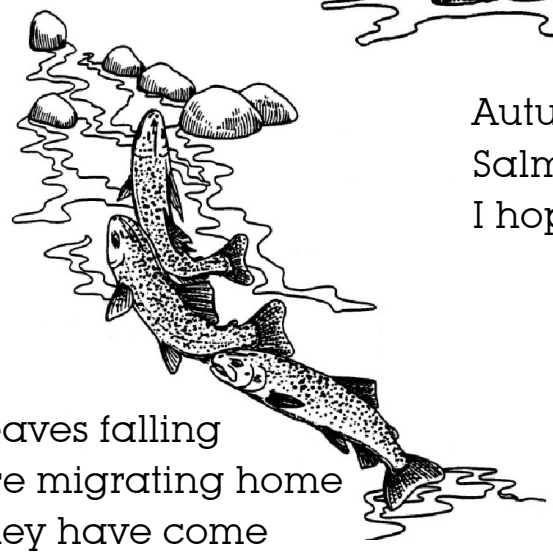
1. Make a list of words that are about the subject of your haiku.
2. Choose the words that you like from this list.
3. Count the syllables (parts) of the words.
4. Put them together using the pattern.

Examples of Haikus

by Gail Hickman Davis



Autumn is coming
Salmon are in the ocean
I hope they come home



Autumn leaves falling
Salmon are migrating home
How far they have come

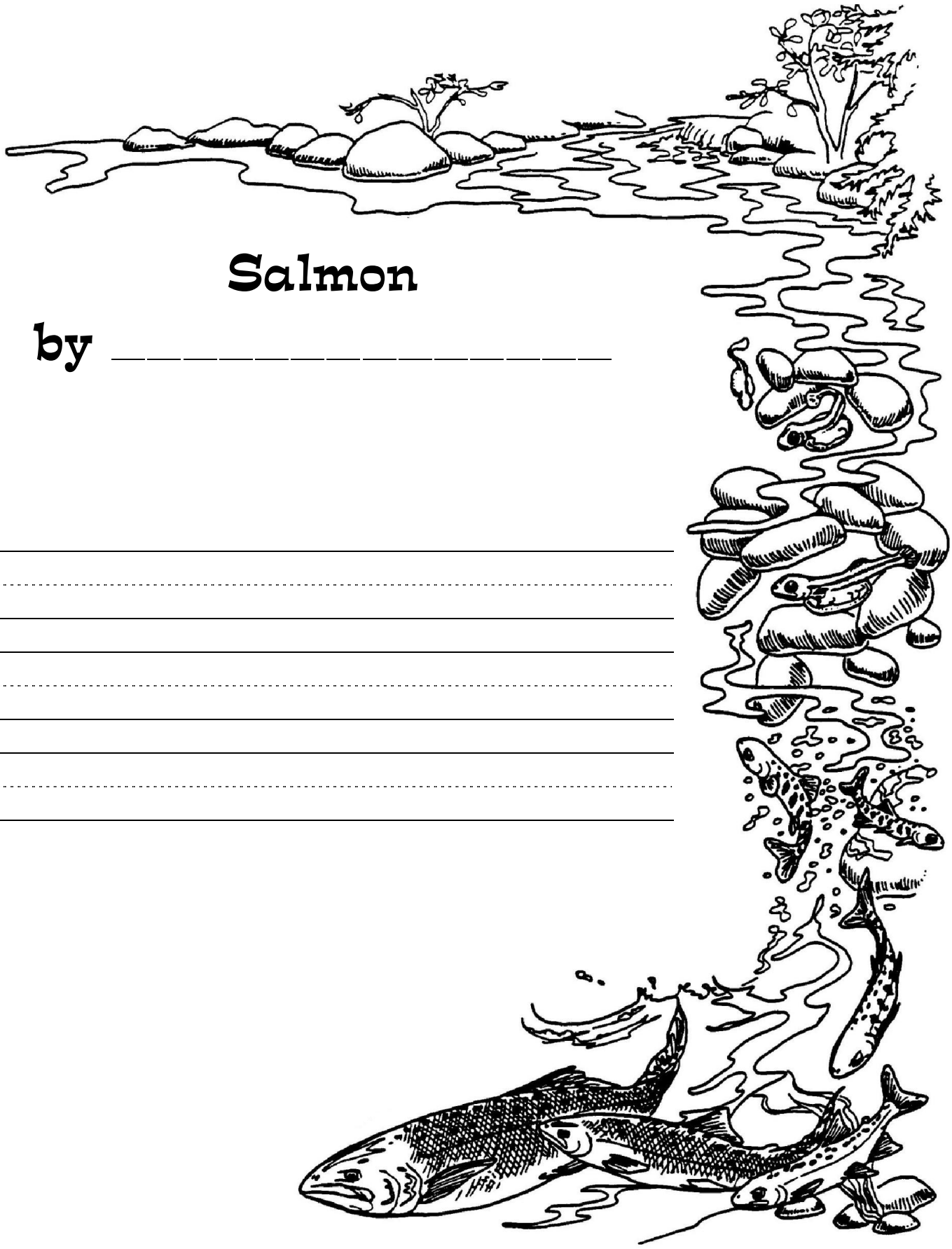
Blue skies and white clouds
Swirling water clean and cool
Tiny salmon hatch

Shady stream flowing
Salmon fry swimming and playing
Look for bugs to eat

Springtime is coming
Smolts are going to the sea
Food will be plenty

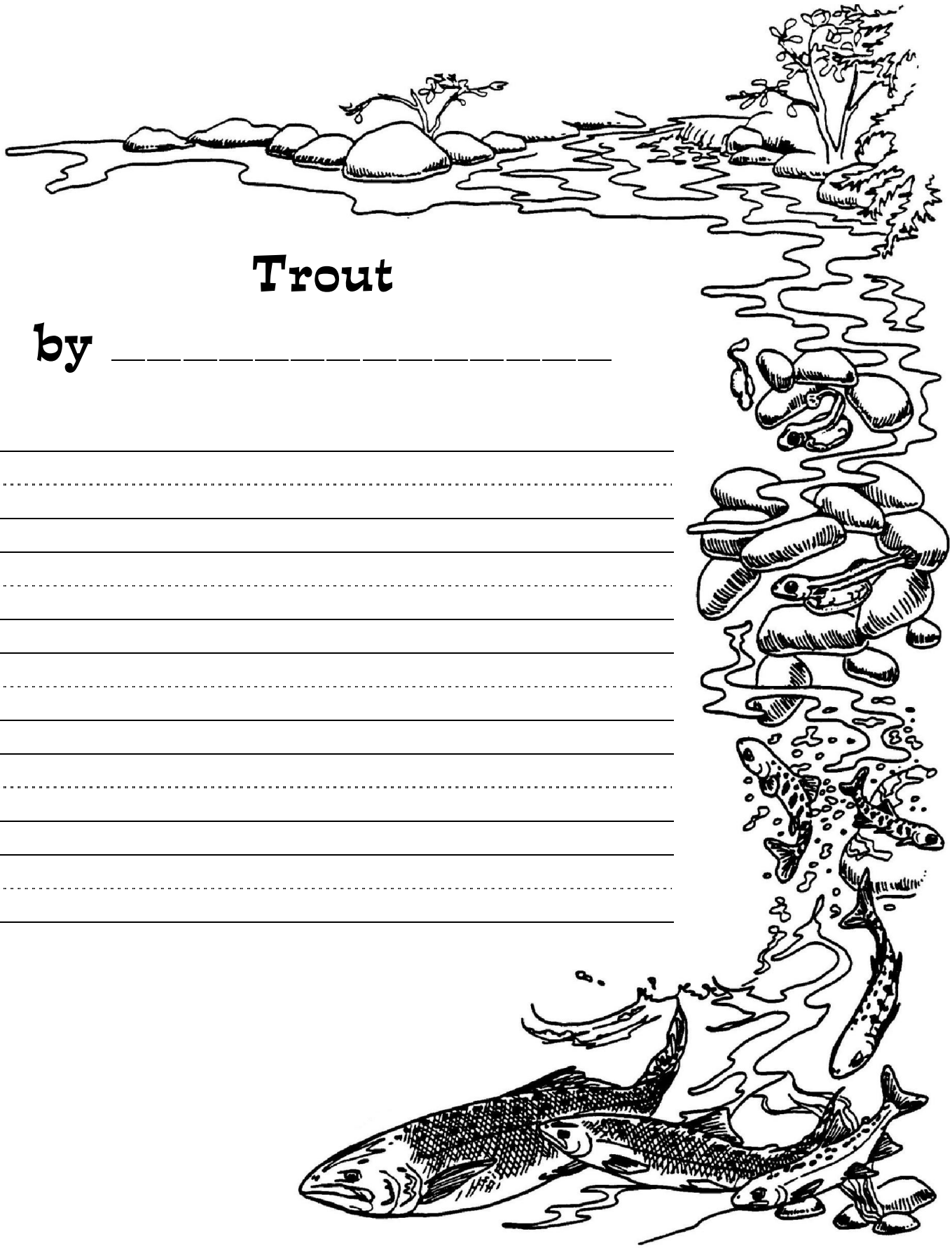
Salmon

by _____

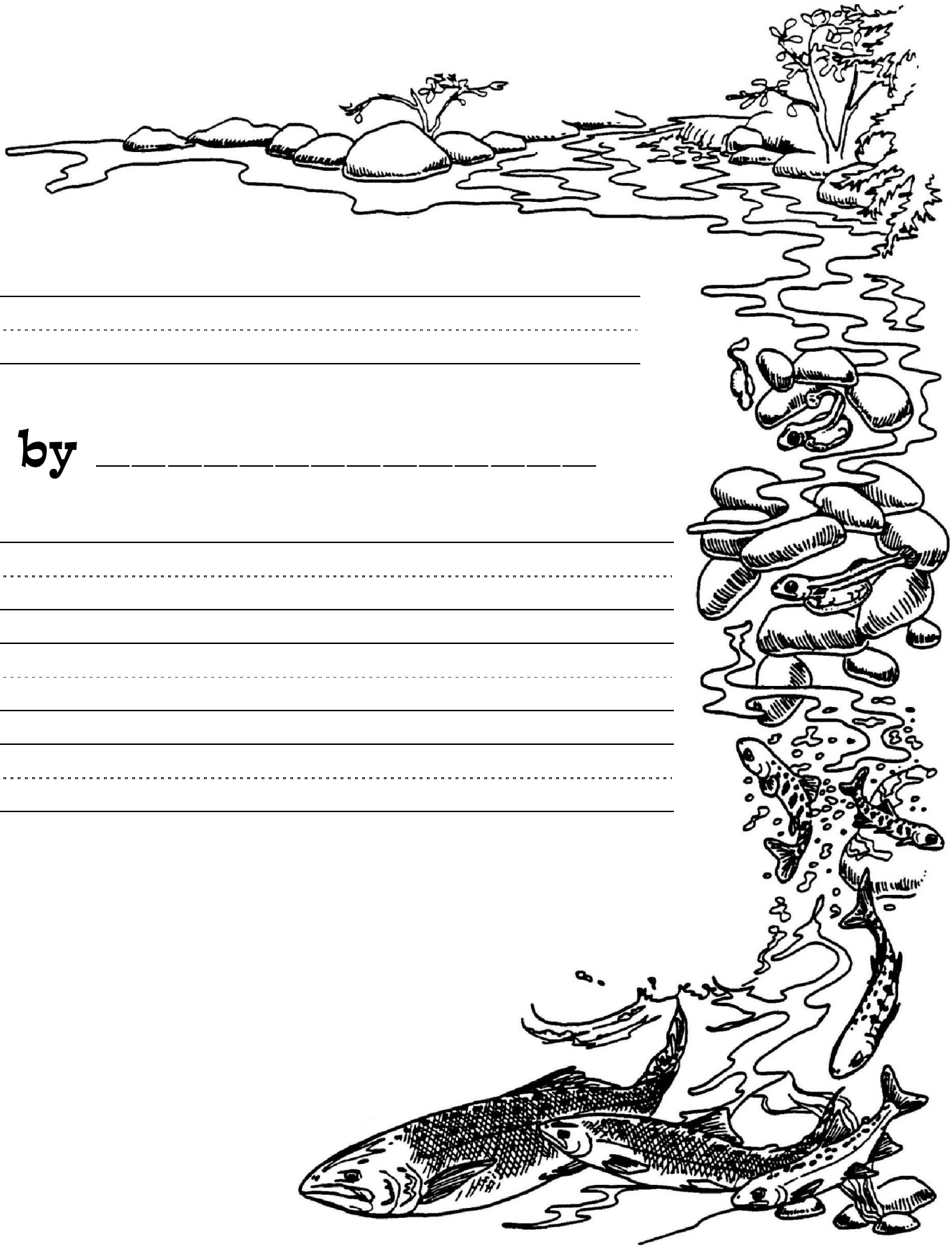


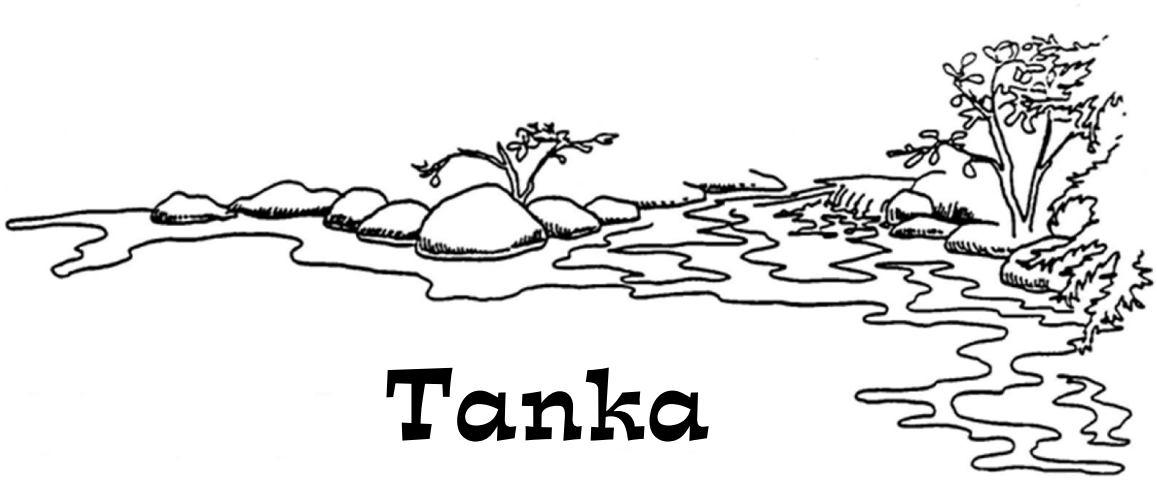
Trout

by _____



by _____





Tanka

The **tanka** is a form of Japanese poetry. It has existed for about 1,200 years. It can be about anything, not just about nature. A **kyoka** is a funny or playful **tanka**.

A tanka contains five lines. Tankas don't have to rhyme but they do follow a pattern. The pattern for a tanka is the following:

Line 1 = 5 syllables
Line 2 = 7 syllables
Line 3 = 5 syllables
Line 4 = 7 syllables
Line 5 = 7 syllables

How to write your tanka:

1. Make a list of words that are about the subject of your tanka.

2. Choose the words that you like from this list.

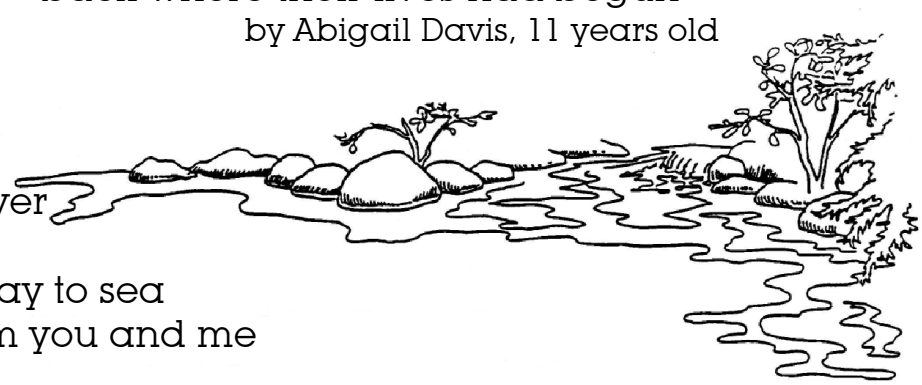
3. Count the syllables of the words.

4. Put them together using the pattern.

Examples of Tankas

by Gail and Abigail Davis

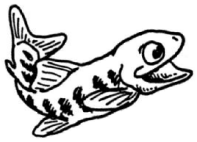
salmon are swimming
returning from a journey
to the ocean blue
for it is time to lay eggs
back where their lives had begun
by Abigail Davis, 11 years old



egg, alevin, fry
beginning in the river
so small, so fragile
grow and swim away to sea
they need help from you and me

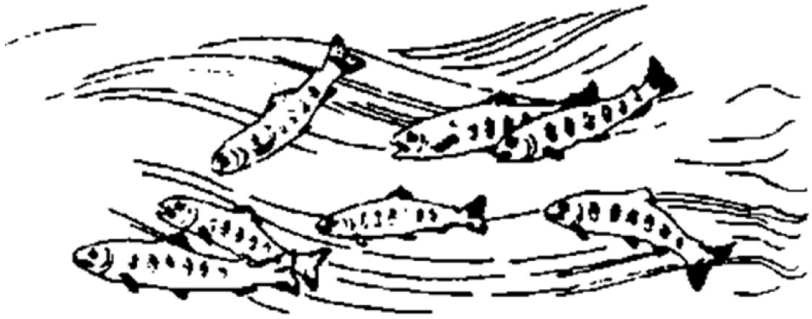
river is flowing
gentle breezes are cooling
autumn leaves falling
chinook salmon coming home
they bring so much, give it all

hidden in the rocks
with my brothers and sisters
use our yolk, we grow
someday soon swimming above
learning about our river



have you ever thought
do you wish you could ask fish
Do bubbles tickle?
Do you play "Marco Polo"?
Have you ever played "Go Fish"?

My Tanka



written by .....

My Tanka

written by

My Tanka

written by

Cinquain

Adelaide Crapsey

A cinquain is a five-line poem that was invented by Adelaide Crapsey. She lived from 1878-1914. She was an American poet who took her inspiration from Japanese haiku and tanka. A book of poems was published in 1915 that included her cinquains.

Cinquain is pronounced "sing-kane". The name "cinquain" comes from the French word "cinq," meaning "five," because this type of poem consists of a five-line stanza.

Cinquains are vivid in their imagery and are meant to convey a certain mood or emotion.

Cinquains don't have to rhyme but they do follow a pattern. There are many ways to write a cinquain. For one way, you must count the number of words in each line. For another way, you must count the number of syllables in each line.

For a cinquain that counts the number of words, follow this pattern.

Line 1 = one word (this is your title, your topic)

Line 2 = 2 words (describe your topic)

Line 3 = 3 words (describe an action relating to you topic)

Line 4 = 4 words (describe a feeling relating to your topic)

Line 5 = one word (a word that refers back to your title)

For a cinquain that counts the number of syllables, follow this pattern.

Line 1 = 2 syllables

Line 2 = 4 syllables

Line 3 =6 syllables

Line 4 = 8 syllables

Line 5 = 2 syllables

How to write your cinquain:

1. Make a list of words that are about the subject of your cinquain.
2. Choose the words that you like from this list.
3. Put them together using the pattern you chose.

If you really like writing cinquains...

learn about other patterns of cinquains and try using them. How about the **reverse cinquain**? It uses the syllable pattern backwards.

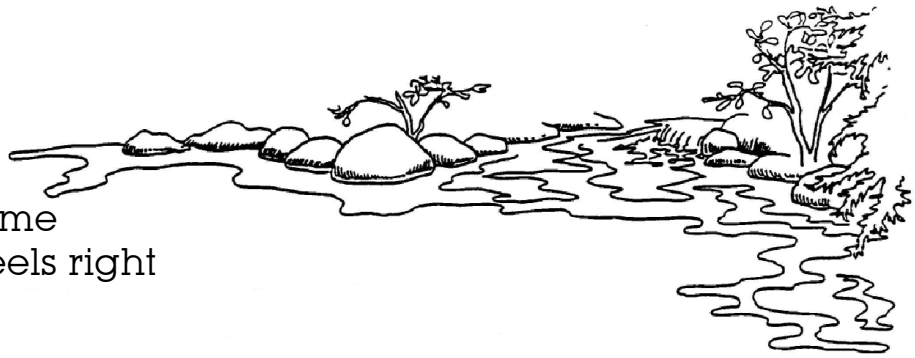
Line 1 = 2 syllables
Line 2 = 8 syllables
Line 3 = 6 syllables
Line 4 = 4 syllables
Line 5 = 2 syllables

Examples of Cinquains

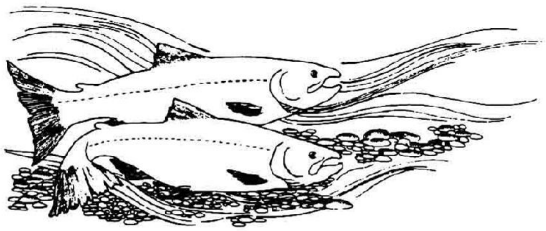
by Gail Hickman Davis

word count cinquains

River
Winding water
Flows to ocean
Promises to bring salmon
Home

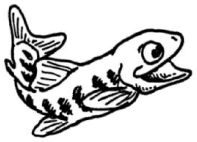


Salmon
Red green
Swims towards home
Family tradition feels right
Chinook



Stream
Burbling water
Bubbles dancing everywhere
Rocks slimy cold wet
Beauty

Rainbow
Colors shine
Swim eat splash
Lazy spring day ahead
Trout



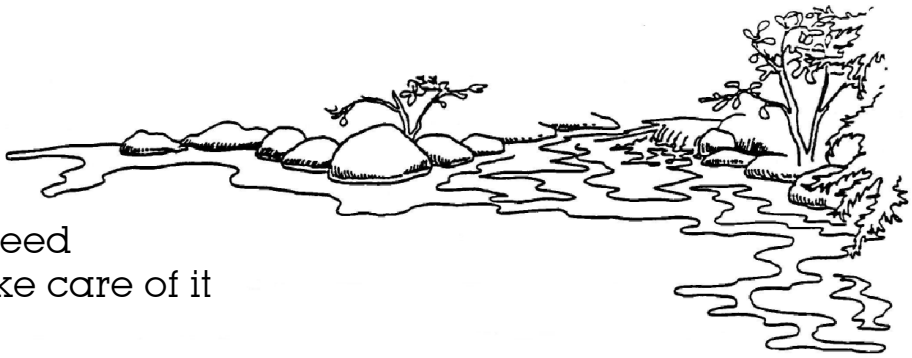
Curious
Salmon fry
New to swimming
Worried, scared, happy, sad
Wonder

More Examples of Cinquains

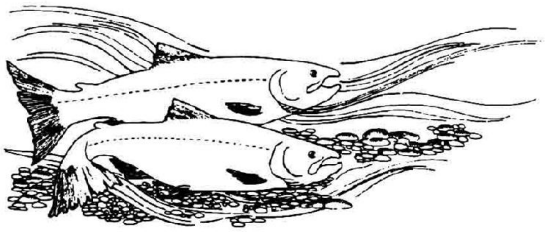
by Gail Hickman Davis

syllable count cinquains

Salmon
They bring hope home
Work struggle strive migrate
They bring life back to the river
They're back

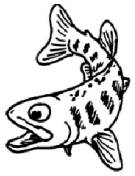


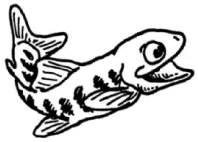
My home
Clean, cold water
Has everything I need
I hope humans take care of it
River



Salmon
Legends, folklore
Stir curiosity
History, myths, mysterious
Chinook

School bus
Happy small fry
Going to learn lessons
Wise salmon fills them with wonder
Learning

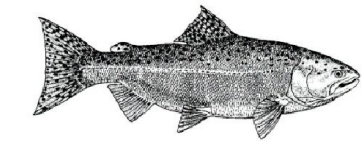


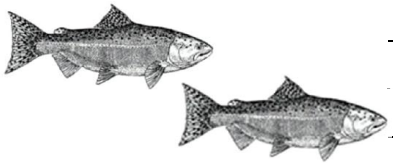


Smiling
Giggling salmon
Wiggling, giggling, laughing
Do salmon think we are funny?
Fish jokes

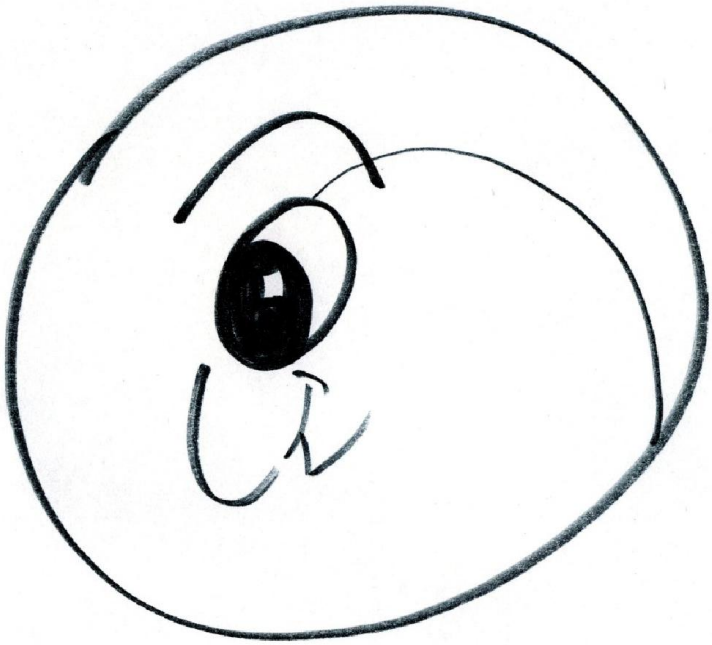
A cinquain

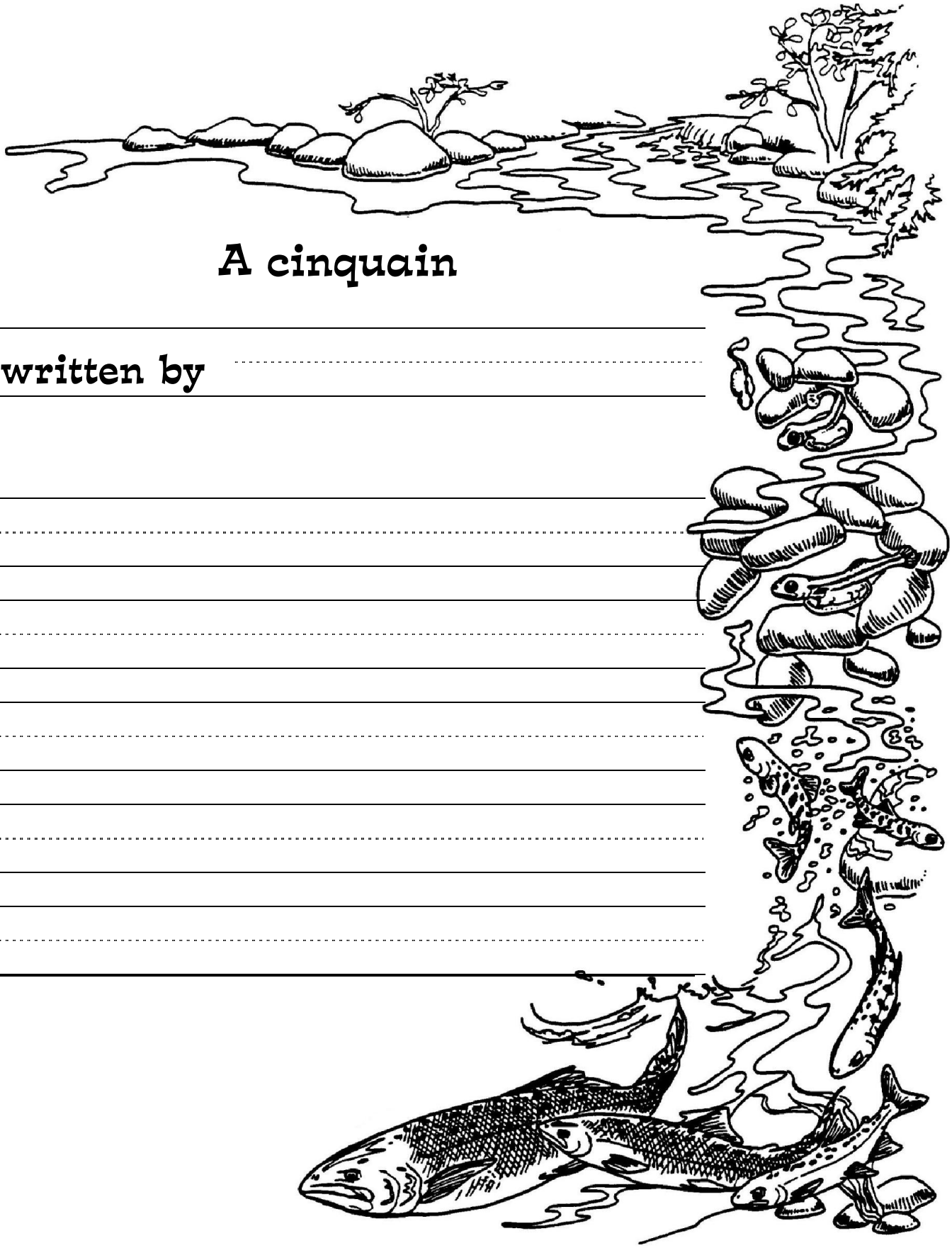
written by _____





A cinquain written by



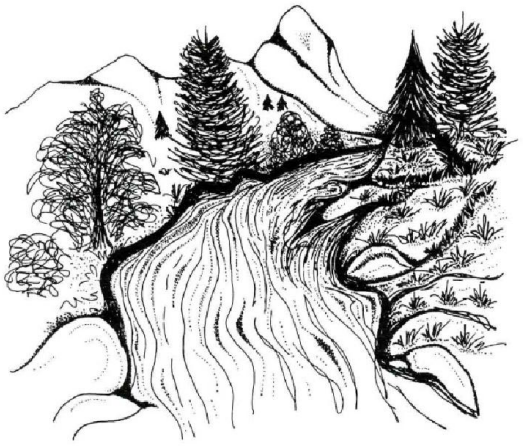


A cinquain

written by

Name _____

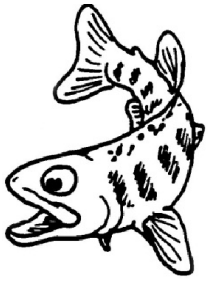
Have you ever been to a river?



Ask 12 boys and girls, "Have you ever been to a river?"
Have the boys and girls put their names in the box under their answer yes or no.

Yes	No

1. How many boys and girls have been to a river? _____
2. How many boys and girls have not been to a river? _____
3. Have more girls or boys been to a river? _____
4. Have you ever been to a river? _____



Name _____

Have you ever been to a river?

Write about a time that you went to a river or about what you would do if you did go to the river.

Name _____

Have you ever gone fishing?

1. Collect information:
   Ask 10 people, "Have you ever gone fishing?"

2. Record information:
   Color one box on your graph for each answer. Start with the box by the number 1 at the bottom.

3. Read your graph to answer these questions:
   How many people said yes? _____
   How many people said no? _____
   Did more people say yes or no? _____

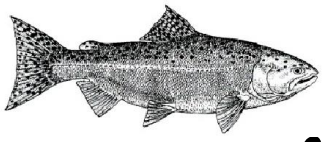
10		
9		
8		
7		
6		
5		
4		
3		
2		
1		
	Yes	**No**

Name _____

Have you ever gone fishing?

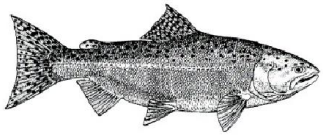
Write a sentence that explains your results.

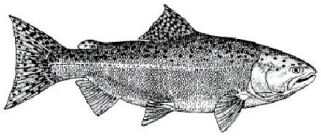
Are your results different from other students in your class? Explain why.



Name_____

How many fish did they see?





The salmon have started to migrate home. The biologists went out to the river to see how many live fish they could see. You can read the line graph to find out what they saw.

1. How many salmon were seen during week 1? _____

2. How many salmon were seen during week 2? _____

3. How many salmon were seen during week 4? _____

4. How many salmon were seen during week 3? _____

5. Is the number of salmon seen in week 4 greater than the number seen in week 3? _____

6. Is the number of salmon seen on week 6 less than the number seen in week 5? _____

7. In which two weeks were the same number of salmon seen?

_____ _____

Name_____

What the Biologists Saw

Biologists went to check rivers where salmon spawn. They were looking for four different things to count. They were looking for adult salmon, redds, riffles, and pools. Redds are salmon nests made in rocks in the stream bed. Pools are places in the stream where the water flows slowly and the surface is smooth. Pools are usually deeper than other areas. Fish can rest there.

Riffles are places in a stream where the water flows quickly over rocks. The surface of the water is choppy. Lots of oxygen gets stirred into the water in riffles.

Name of the biologist	number of adult salmon	number of redds	number of pools	number of riffles
Sarah	32	12	5	4
Dennis	28	12	7	3
Steve	35	15	8	3
Crystal	34	16	10	5
Tim	29	14	9	4

1. Who saw the least number of salmon? _____

2. Who saw the most redds? _____

3. How many riffles and pools did Dennis see altogether? _____

4. Who saw the same number of redds? _____

5. How many salmon did Tim and Sarah see altogether? _____

6. How many fewer riffles than pools did Crystal see? _____

7. How many adults and redds did Sarah see? _____

8. How many redds did Dennis and Steve see? _____

9. How many fewer salmon did Sarah see than Steve? _____

10. Who saw a total of 13 riffles and pools? _____

11. How many more salmon did Steve see than Tim? _____

12. How many more redds did Crystal see than Sarah? _____

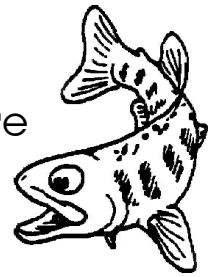
13. Is the number of pools that Tim saw less than the number of pools that Dennis saw? _____

14. Is the number of redds that Sarah saw equal to the number of redds that Dennis saw? _____

15. Is the number of salmon that Crystal saw greater than the number of salmon that Dennis saw? _____

Name_____

Where are they now?



Sid, Sally, Cindy, and Sam are Pacific salmon. They are all different ages and so they live in different places. Use the clues to help you decide who lives where.

	alevin	fry	smolt	adult
Sid				
Sally				
Cindy				
Sam				

Put an "X" in the box if you think that choice might be wrong. Put a check (✓) in the box if you think that choice might be right.

1. Sally must be careful and stay away from orcas.
2. Sam is still afraid of the light.
3. Cindy loves to hide in the plants and look for food.
4. Sid is excited to be heading to the ocean.

KEY

Where are they now?

	alevin	fry	smolt	adult
Sid	x	x	✓	x
Sally	x	x	x	✓
Cindy	x	✓	x	x
Sam	✓	x	x	x

Compare and Contrast
Pacific Salmon and Steelhead

Pacific Salmon

Pacific salmon are anadromous.

Pacific salmon die after they lay their eggs.

Pacific salmon live in the colder, northern part of the Pacific Ocean. They live along the coasts of northern California, Oregon, and Washington. They are also in the ocean along Russia and Japan.

When Pacific salmon are in the ocean, they are food for many animals including seals and orcas.

The largest Pacific salmon is a chinook salmon. People like to fish for and eat salmon. Fishing for salmon creates jobs for people.

Pacific salmon are threatened when people hurt their habitat. They rely on clean, cold water in the rivers and the ocean.

Steelhead

Steelhead trout are rainbow trout that are anadromous.

Steelhead trout are related to Pacific salmon.

When salmon and trout build nests and lay eggs, it is called spawning. Steelhead do not die after they lay their eggs.

Steelhead live along entire Pacific Coast of the U.S.

When steelhead are in the ocean, they are food for many animals including seals and orcas. Humans also like to eat trout.

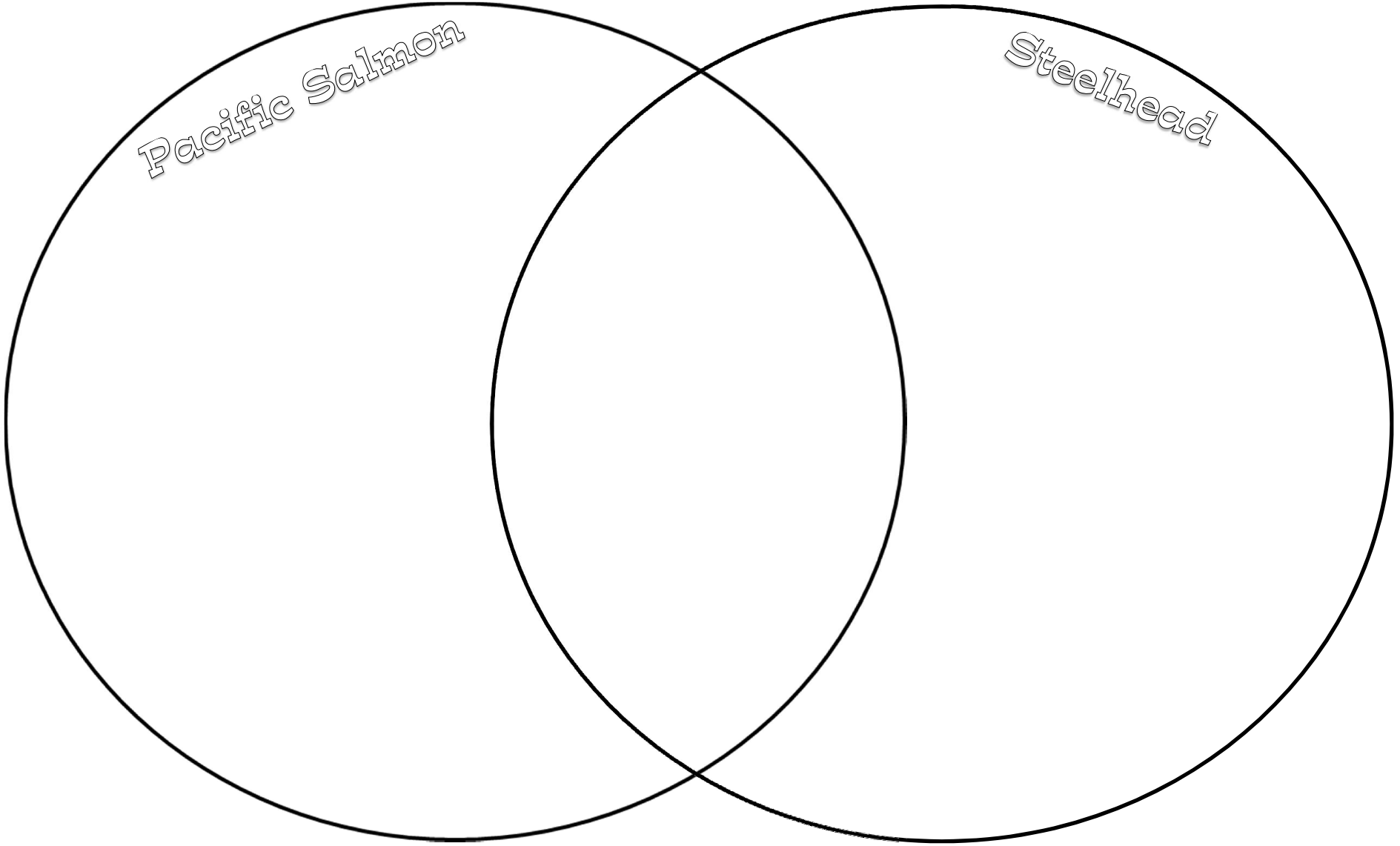
Trout fishing creates jobs for people.

Steelhead rely on clean, cold water in the rivers and the ocean. They are threatened when people hurt their habitat.

Name_____

Compare and Contrast Pacific Salmon and Steelhead

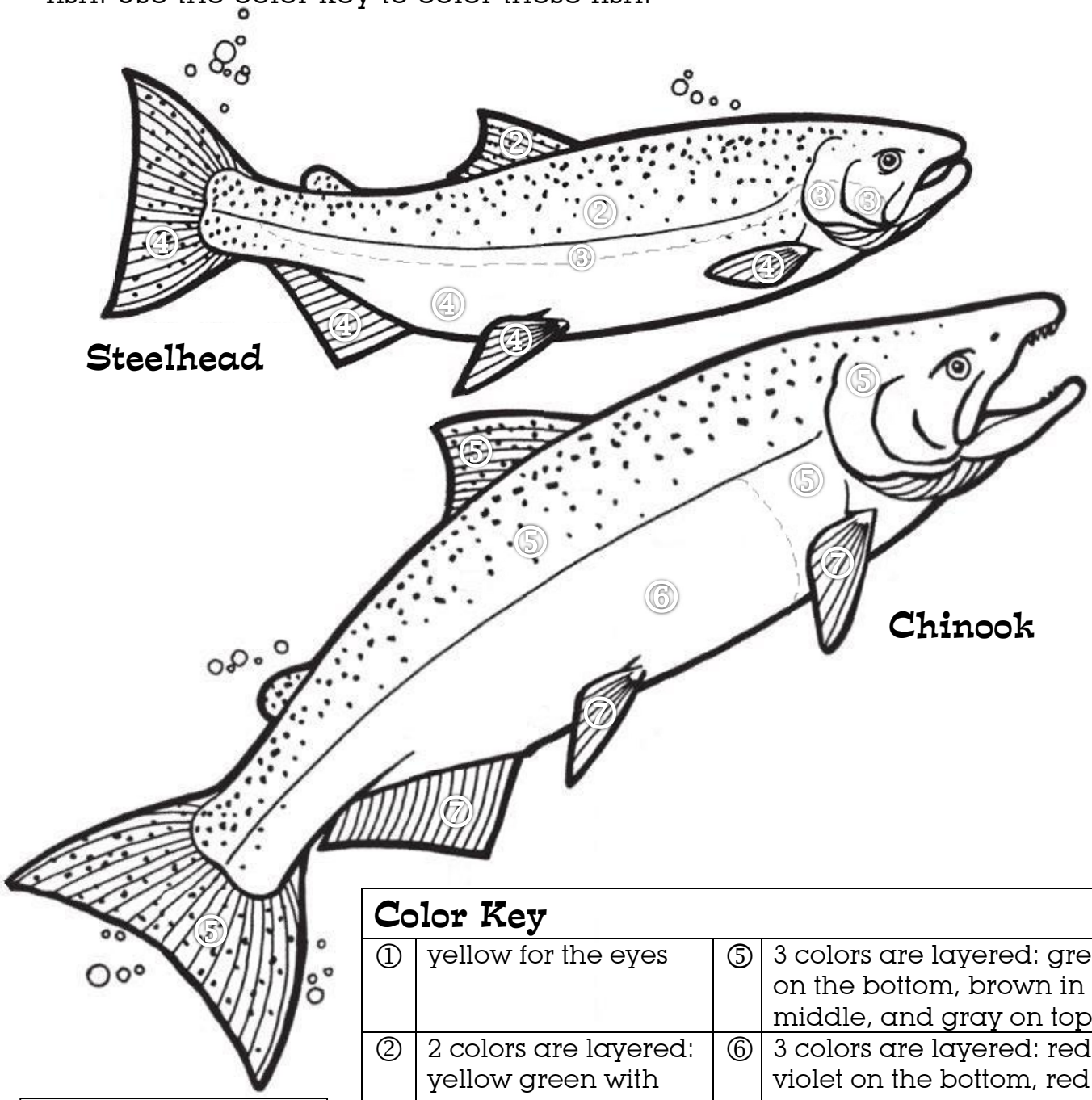
Read the page about salmon and steelhead and write the facts in the correct circle. If the fact is true for both Pacific salmon and steelhead, write the fact where the circles overlap.



Colorful Fish

Name _____

You can color these fish to show the colors they are during spawning time. You will need to put colors on top of other colors for parts of the fish. Use the color key to color these fish.



The names of the colors used on this page are the names used by Crayola.

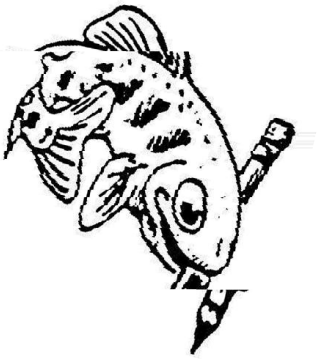
Color Key			
①	yellow for the eyes	⑤	3 colors are layered: green on the bottom, brown in the middle, and gray on top.
②	2 colors are layered: yellow green with brown on top	⑥	3 colors are layered: red violet on the bottom, red in the middle, gray on top.
③	carnation pink	⑦	4 colors are layered: green on the bottom; brown is next to the bottom; black is the next color; gray on top.
④	gray		

Fish drawn by Gary Whitley from the *Pacific Salmon and Steelhead Coloring Book*, published by the U.S. Fish and Wildlife Service, Pacific Region.

Name _____

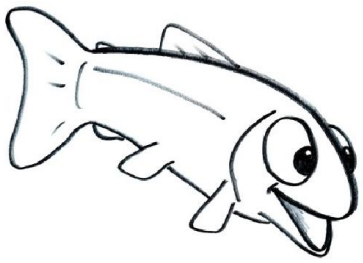
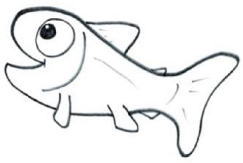
Salmon and Trout Word Criss Cross

Complete the puzzle using the clues shown on the next page.



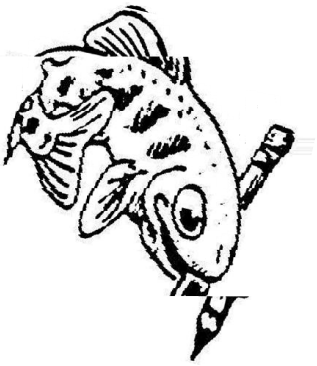
Clues

for the Salmon and Trout Word Criss Cross

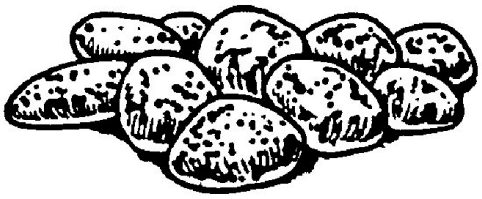
3 Letters	4 Letters	5 Letters
fry 	eggs odor swim yolk	adult cycle hatch ocean river smolt trout
6 Letters	**7 Letters**	**8 Letters**
alevin gravel salmon	estuary insects migrate	spawning
9 Letters		
incubator thousands		

KEY

Salmon and Trout Word Criss Cross



					a			c											
g	r	a	v	e	l			y	o	l	k			e	g	g	s		
					e			c									p		
					v			l					s				a		
					i	n	s	e	c	t	s		m				w		
					n					r			o	c	e	a	n		
							m			o			l				i		
							i	n	c	u	b	a	t	o	r		n		
							g			t					i		g		
						f	r	y							v				
				s			a								e				
				a	d	u	l	t			e	s	t	u	a	r	y		
		h		l				e											
		a		m					o										
		t	h	o	u	s	a	n	d	s									
		c		n		w			o										
		h				i			r										
						m													



Name_____

Salmon and Trout Habitat Word Search

Circle the hidden words and mark them off the list as you find them.

S T B D K S E Y C N O C E A N

X Z D E L Y R S H R O Q F A K

L E E V E E N P I Q I M R T A

R R V D H S I A N Y D V L T P

C K E C M M V W O L A D E A A

A G T O K X E N O G E F O R S

G A L X S O L F K N H K N O M

H T E F Y E A T V I L D U K F

D A M O E S D B Q K E I H D J

Y R A U T S E I Q G E F Z B A

S A L M O N I D M S T P R A U

U P X Y G X A R C E S H N Y W

N G Z N J N H M E H N R T L L

I O C R L B E H S I F T C Q J

U P I Y K C U U H H B Q B L K

alevin
chinook
creek
dam
estuary
eyed egg
fish
food
fry
hatchery
king
ocean
redd
river
salmon
salmonid
sediment
smolt
spawn
steelhead

Salmon and Trout Habitat Word Search

KEY

Circle the hidden words and mark them off the list as you find them.

S T B D K S E Y C N O C E A N
X Z D E L Y R S H R O Q F A K
L E E V E E N P Q I M R T A
R R V D H S A N Y D V L T P
C K E C M M V W O L A D E A A
A G T O K X E N O G E F O R S
G A L X S O L F K N H K N O M
H T E F Y E A T V L D U K F
D A M O E S D B Q K E I H D J
Y R A U T S E I Q G E F Z B A
S A L M O N I D M S T P R A U
U P X Y G X A R C E S H N Y W
N G Z N J N H M E H N R T L L
I O C R L B E H S I F T C Q J
U P I Y K C U U H H B Q B L K

alevin
chinook
creek
dam
estuary
eyed egg
fish
food
fry
hatchery
king
ocean
redd
river
salmon
salmonid
sediment
smolt
spawn
steelhead

Salmon and Trout Anatomy Word Search

Name_____

Circle the hidden words and mark them off the list as you find them.

D V C T P S E L A C S L C S R

S O A E E E S A T C A A L E D

L Z U E C N Q S A T S L V O H

I S D T T O U L E K I O R E Y

R T A H O B E R L G C S A N X

T O L S R S A O I L A R W I P

S M F J A L Y H L L T X J F F

O A I H L S N I F C I V L E P

N C N I F W G I M O U T H S E

T H N K I U N I A R B L A O U

T E P R N L J D A V B Y H P G

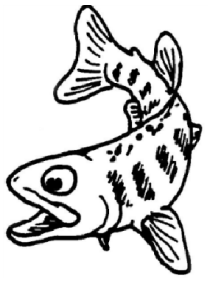
H K Y H S U G A H P O S E I N

P A R R M A R K S M E O P D O

H A N A L F I N Y Y Z I K A T

S L O F J O I H E A D U Y D A

alevin
chinook
creek
dam
estuary
eyed egg
fish
food
fry
hatchery
king
ocean
redd
river
salmon
salmonid
sediment
smolt
spawn
steelhead

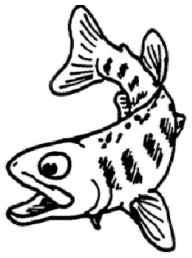


Salmon and Trout Anatomy Word Search KEY

Circle the hidden words and mark them off the list as you find them.

D V C T P S E L A C S L C S R
S O A E E E S A T C A A L E D
L Z U E C N Q S A T S L V O H
S D T T O U L E K I O R E Y
R T A H O B E R L G C S A N X
T O L S R S A O I L A R W P
S M F J A L Y H L L T X J F F
O A H L S N I F C I V L E P
N C N I F W G I M O U T H S E
T H N K U N I A R B L A O U
T E P R N L J D A V B Y H P G
H K Y H S U C A H P O S E N
P A R R M A R K S M E O P D O
H A N A L F I N Y Y Z I K A T
S L O F J O I H E A D U Y D A

alevin
chinook
creek
dam
estuary
eyed egg
fish
food
fry
hatchery
king
ocean
redd
river
salmon
salmonid
sediment
smolt
spawn
steelhead



Name_____

We're going on a scavenger hunt!

When you find an item on your list, make a check in the box.

- ❑ rough bark
- ❑ a pointy leaf
- ❑ a round leaf
- ❑ leaves with pointy edges
- ❑ a plant with thorns
- ❑ a seedling
- ❑ moss
- ❑ lichen
- ❑ ripples in the water
- ❑ bubbles in the water
- ❑ creatures in the water
- ❑ insects flying together
- ❑ a squirrel
- ❑ feather
- ❑ a duck
- ❑ a Stellar jay
- ❑ a Scrub jay
- ❑ a red-winged blackbird
- ❑ a robin
- ❑ a mockingbird

- ❑ something white
- ❑ something yellow
- ❑ something black
- ❑ something pink
- ❑ sound of the wind
- ❑ sound of running water
- ❑ sound of a bird chirping
- ❑ sound of a bird tweeting
- ❑ something chewed by an animal

- ❑ a gray rock
- ❑ a brown rock

What else did you find?

- ❑_____
- ❑_____
- ❑_____
- ❑_____

What did you smell while you were on your scavenger hunt?

_____

_____

_____

_____

_____

How did you feel when you were on your scavenger hunt?

_____

_____

_____

_____

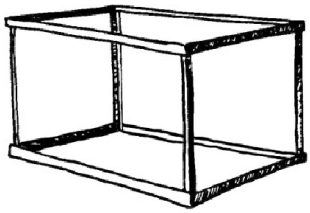
_____

_____

Glossary

alevin: A newly hatched salmon or trout with a yolk sac attached to its stomach. The alevin lives in the rocks in the streambed. They are sometimes called sac fry.

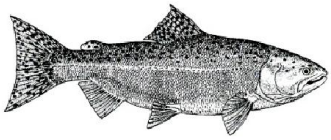
anadromous fish: A fish that spawns in fresh water and the young migrate to the ocean to grow and return to fresh water as adults to spawn.



aquarium: A tank for keeping fish and other aquatic plants and animals.

aquatic: Anything that lives in the water. Something that happens on or in the water.

bubble curtain: Where you cannot see through the water because there are lots of bubbles.



chinook: One of five species of Pacific salmon. They are also known as king salmon.

cobbles: Stream rocks that are 2-10 inches across. (From the size of a person's fist to the size of a person's head)

ecology: The relationships or the study of the relationships of plants and animals to their environment.

egg: a "package" produced by a female animal that contains food and protecting envelopes that may develop into a new baby animal.

erosion: The process of water, wind, and temperature breaking down rock and soil into small loose particles. They may be swept away by wind or water or both.

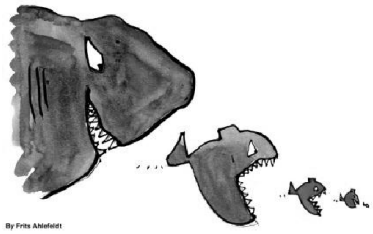
estuary: The area where the river meets the ocean and the fresh water mixes with the salt water.

eyed eggs: Salmon and trout eggs that have developed eyes. The eyes show as big dark spots in the egg.

female: the animals that can have the babies or lay the eggs; girls and women

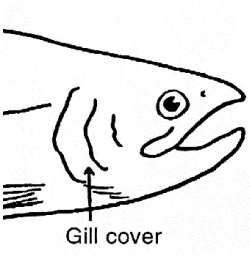
fingerling: A small fish up to one year old. A small fish about the size of a man's little finger.

fish ladder: A series of climbing pools of water constructed by humans to help salmon or other fish to swim upstream around or over a dam.



food chain: A chain or series of plants and animals where some feed on certain ones and are then eaten by others.

fry: A small young fish after the yolk sac has been absorbed.



gill covers: The skin that covers fish's gills

gills: Feathery organs on both sides of fish's head that take oxygen from the water so fish can breathe.

gravel: small stones and pebbles

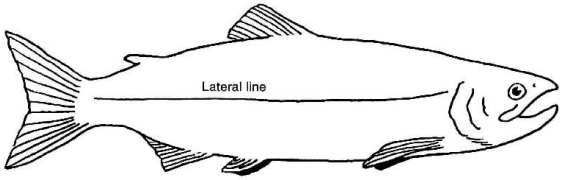
hatchery: A place where fish are raised and then put into streams or lakes.

habitat: The place where an animal lives. It must include enough food, clean water, shelter, and space for the animal.

homing: When salmon return to the stream where they hatched after they have spent years in the ocean.

imprinting: When young animals learn quickly to recognize and be attracted to a specific individual or object. The smells of a river and watershed are "stamped" into a salmon's brain. The salmon make a scent memory.

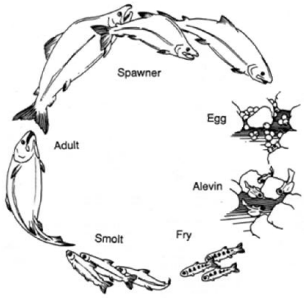
incubate: To keep eggs or young animals at the best conditions so they will hatch and grow.



lateral line: A special line on each side of a salmon or trout's body. The lines are used to sense motion and magnetic fields.

license: In wildlife terms, a legal permit, to hunt, fish, trap, transport, keep captive wildlife or perform taxidermy.

life cycle: The changes of a plant or animal as it gets older until the identical stage in the next generation



male: The animal that can fertilize the egg; boys and men

migration: The movement of a group of animals to find better habitat; this often happens in specific seasons of the year. Salmon migrate out to sea and then back to the river where they were hatched.

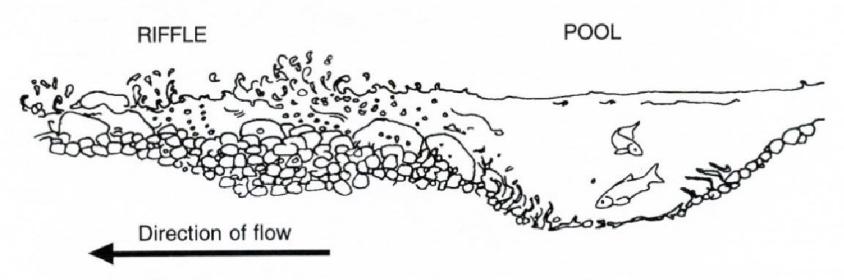
mucus: The slimy substance made by the body for protection.

oceans: Very large bodies of salty water that make up most of the earth.

parr marks: Marks on the sides of a salmon and trout fry that are almost round. They help the fish hide from predators by making it look like its surroundings.

pollution: harmful substances in the environment:

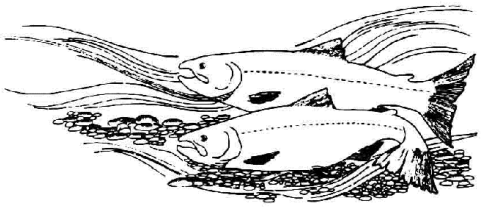
pool: A place in the stream where the water flows very slowly and the surface is smooth. Pools are usually deeper than other areas.



predator: An animal that eats other animals.

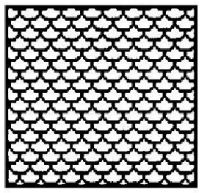
prey: An animal that is eaten by other animals.

redd: A salmon nest made in rocks in the stream bed.



riffle: A place in a stream where the water flows quickly over rocks. The surface of the water is choppy. Compare a riffle to a pool.

run: A group of salmon that come back to a river together to spawn.

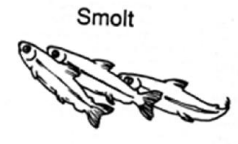


scales: Small, plate-like things that cover a fish's body. The scales are made of material like fingernails.

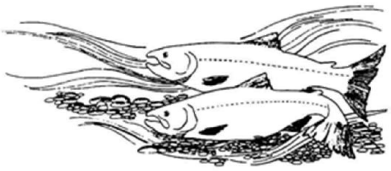
school: A group of fish that swim together for protection.

sediment: Very small pieces of rock, sand and silt that collect in the bottom of streams. Too much sediment is not good for fish.

silt: Very, very small particles of soil.

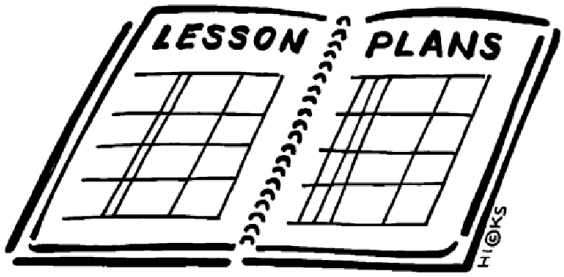


smolt: A salmon whose parr marks have faded and is ready to go out to sea; (a "teenage" fish)



spawn: Making new life. A female fish lays eggs and a male fish fertilizes them.

yolk sac: A "bag" of food that is connected to the stomach of a very young salmon.



Common Core Standards met by this Thematic Unit

Reading Standards for Literature K–5

Key Ideas and Details

1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

2. Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.

3. Describe how characters in a story respond to major events and challenges.

Craft and Structure

4. Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song. (See grade 2 Language standards 4-6 for additional expectations.) CA

5. Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.

6. Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.

Integration of Knowledge and Ideas

7. Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

9. Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.

Range of Reading and Level of Text Complexity

10. By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Reading Standards for Informational Text K–5

Key Ideas and Details

1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

2. Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.

3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

Craft and Structure

4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject rea.(See grade 2 Language standards 4-6 for additional expectations. CA

5. Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

6. Identify the main purpose of a text, including what the author wants to answer, explain, or describe.

Integration of Knowledge and Ideas

7. Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

8. Describe how reasons support specific points the author makes in a text.

9. Compare and contrast the most important points presented by two texts on the same topic.

Range of Reading and Level of Text Complexity

10. By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Reading Standards: Foundational Skills K–5

Phonics and Word Recognition

3. Know and apply grade-level phonics and word analysis skills in decoding words both in isolation and in text. CA

   a. Distinguish long and short vowels when reading regularly spelled one-syllable words.
   b. Know spelling-sound correspondences for additional common vowel teams.
   c. Decode regularly spelled two-syllable words with long vowels.
   d. Decode words with common prefixes and suffixes.
   e. Identify words with inconsistent but common spelling-sound correspondences.
   f. Recognize and read grade-appropriate irregularly spelled words.

Fluency

4. Read with sufficient accuracy and fluency to support comprehension.
    a. Read on-level text with purpose and understanding.
    b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings.
    c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary**.**

Writing Standards

Text Types and Purposes

1. Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.

2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

3. Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.

Production and Distribution of Writing

4. With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.) CA

5. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.

6. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

Research to Build and Present Knowledge

7. Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

8. Recall information from experiences or gather information from provided sources to answer a question.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. CA

Speaking and Listening Standards

Comprehension and Collaboration

1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
    a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
    b. Build on others' talk in conversations by linking their comments to the remarks of others.
    c. Ask for clarification and further explanation as needed about the topics and texts under discussion.

2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
    a. Give and follow three- and four-step oral directions. CA

3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

Presentation of Knowledge and Ideas

4. Tell a story or recount an experience with appropriate facts and relevant, descriptive details, peaking audibly in coherent sentences.
    a. Plan and deliver a narrative presentation that: recounts a wellelaborated event, includes details, reflects a logical sequence, and provides a conclusion. CA

5. Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

6. Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 for specific expectations.)

Language Standards

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
    a. Use collective nouns (e.g., group).
    b. Form and use frequently occurring irregular plural nouns (e.g., feet, children, teeth, mice, fish).
    c. Use reflexive pronouns (e.g., myself, ourselves).
    d. Form and use the past tense of frequently occurring irregular verbs (e.g., sat, hid, told).
    e. Use adjectives and adverbs, and choose between them depending on what is to be modified.
    f. Produce, expand, and rearrange complete simple and compound sentences (e.g., The boy watched the movie; The little boy watched the movie; The action movie was watched by the little boy).
    g. Create readable documents with legible print. CA

2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

a. Capitalize holidays, product names, and geographic names.
b. Use commas in greetings and closings of letters.
c. Use an apostrophe to form contractions and frequently occurring possessives.
d. Generalize learned spelling patterns when writing words (e.g., cage → badge; boy → boil).
e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.

Knowledge of Language

3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.

a. Compare formal and informal uses of English.

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies.

a. Use sentence-level context as a clue to the meaning of a word or phrase.
b. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., happy/unhappy, tell/retell).
c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., addition, additional).
d. Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., birdhouse, lighthouse, housefly; bookshelf, notebook, bookmark).
e. Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases in all content areas. CA

5. Demonstrate understanding of word relationships and nuances in word meanings.

a. Identify real-life connections between words and their use (e.g., describe foods that are spicy or juicy).
b. Distinguish shades of meaning among closely related verbs (e.g., toss, throw, hurl) and closely related adjectives (e.g., thin, slender, skinny, scrawny).

6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy that makes me happy).