

Wildlife Express

January 2022 – Burbot

Activities:

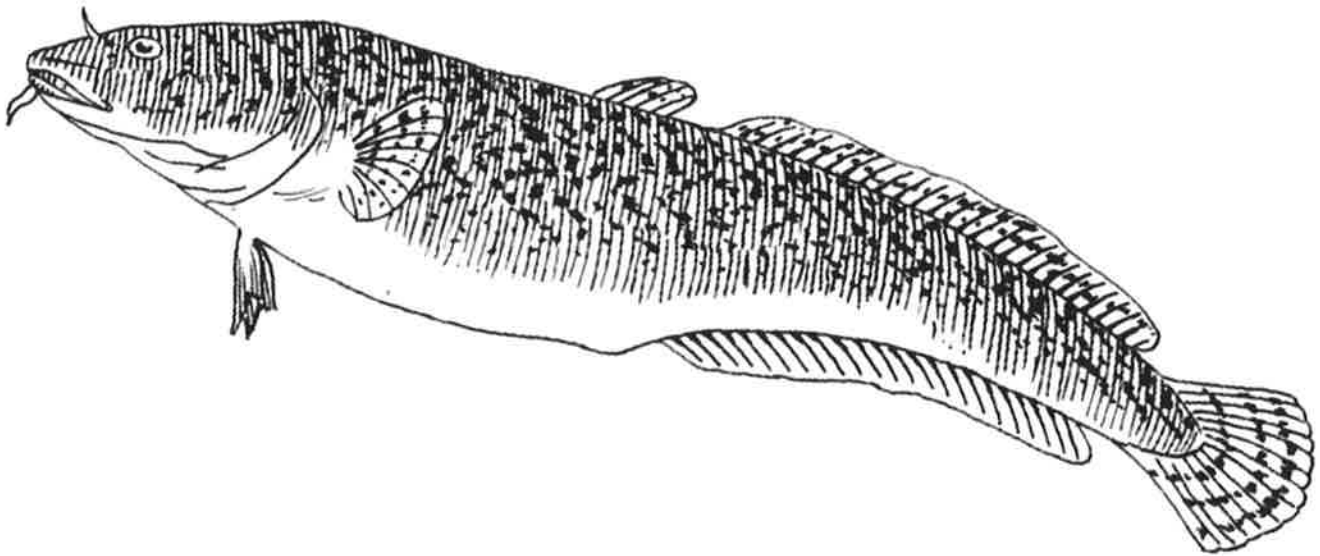
Nighttime Activities: Enjoy this nighttime scavenger hunt and acrostic poem!

Compare and Contrast: Fill out the chart to compare and contrast three of Idaho's most unique fish.

Project WILD's Fashion a Fish: Create a fish with specific adaptations for survival.




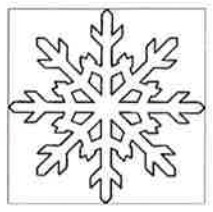
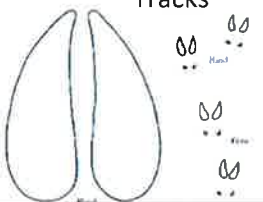






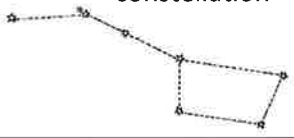




Idaho Rivers: Label rivers on a map.

Burbot Conservation Timeline: Outline the events which led to the need for burbot conservation and the measures taken to ensure success. Then illustrate the events on adding machine tape (or construction paper) to create a visual timeline.



Nighttime Scavenger Hunt

How many things can you find, see or hear? Can you cross off 4 in a row?

<p>Count ten stars!</p> 	 <p>A warm hat</p>	<p>A flashlight</p> 	<p>S N O W</p> 
<p>Tracks</p> 	<p>The stars or moon behind a cloud</p> 	<p>A fishing pole</p> 	
<p>Listen silently for 5 minutes</p> 	<p>A burbot or other fish!</p> 	<p>Someone in a coat</p> 	<p>Big dipper or other constellation</p> 
<p>Campfire</p> 	<p>An owl or other bird sound</p> 	<p>A mammal</p> 	 <p>Car headlights</p>

Write a Night Acrostic Poem. Using the letters provided, either write a full sentence or word starting with that letter.

N _____

I _____

G _____

H _____

T _____



Fill in the chart below comparing unique fishes of Idaho.

Use this month's Wildlife Express *Burbot* issue and other Wildlife Express issues (dates included).

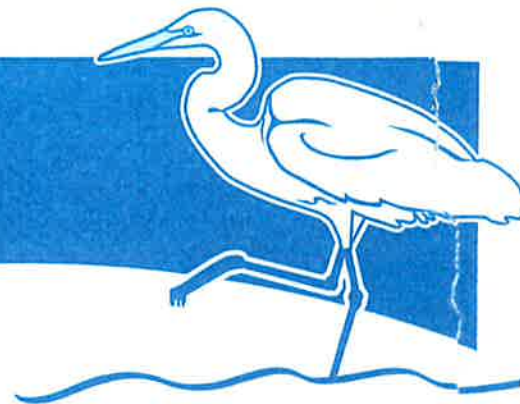
Reproduction	Food	Unique Characteristic(s)	Physical Description	Where found
				BURBOT (January 2022)
				STURGEON (January 2015)
				PACIFIC LAMPREY (October 2013)
				SCULPIN (November 2017)

Fill in the chart below comparing unique fishes of Idaho.

Use this month's Wildlife Express *Burbot* issue and other Wildlife Express issues (dates included).

	BURBOT (January 2022)	STURGEON (January 2015)	PACIFIC LAMPREY (October 2013)	SCULPIN (November 2017)
Where found	Kootenai River + Canada Montana	Snake River Salmon River Kootenai River Pacific Ocean	Snake River Clearwater River Pacific Ocean	bottoms of rivers many species across state
Physical Description	long body flattened head looks like an eel w/ long fins	no scales covered by thick skin that feels like sandpaper HUGE!	looks like a snake or eel skeleton is cartilage	camouflage like a rock. no scales no swim bladder
Unique Characteristic(s)	only freshwater cod in N. America Nocturnal	longest lived + largest fish live up to age 100! anadromous	anadromous (fresh + salt water) suction cup mouth for attaching to host	"hops" indicator species front fins are like little feet
Food	young eat zooplankton or Aq. Insects Adults eat crayfish + other fish	crayfish, mussels small fish worms suck up food like a vacuum	parasitic (lives off other animals)	insects
Reproduction	winter spawning form spawning balls eggs drift to bottom No Nest	females don't lay eggs til 15-20 yrs. old female deposits very many (300,000-4 million) eggs males spray with milt and eggs sink to bottom	similar to salmon go to ocean to grow but lay eggs in fresh water in shallow reefs female lays 10,000-200,000 eggs!	lay eggs in spring male choose spot to guard. Female lays eggs. Male sculpin devoted fathers

Fashion a Fish



Grade Level: Lower Elementary,
Upper Elementary

Content Areas:
Science, Expressive Arts,
Environmental Education

Method: Students design a fish
adapted for various aquatic habitats.

Materials:

Lower Elementary: Body
shape and coloration are the
only *Fish Adaptation Cards*
needed (masters provided at
the end of this activity). The first
three steps in this activity are
optional. Steps 4–7 can include
adaptation cards for body shape
and coloration; reproduction and
mouth cards are optional.

Upper Elementary: Art materials;
paper; *Fish Adaptation Cards*:
mouth, body shape, coloration,
reproduction

Activity Time: one or two
20-minute sessions for younger
students, two 30- to 45-minute
sessions for older students

People Power: any; groups of four
students each

Setting: indoors or outdoors

Conceptual Framework

Topic Reference: CAIIA1b,
CAIIA1c, CAIIB

Terms to Know: adaptation,
coloration, camouflage, habitat

Appendix: Let's Go Fishing!

*Thousands of years of adaptations can be used to
design the perfect fish.*

Objectives

Lower Elementary

Students will classify fish according to body shape and
coloration.

Upper Elementary

Students will (1) describe adaptations of fish to their
environments, (2) describe how adaptations can help fish
survive in their habitats, and (3) interpret the importance of
adaptation in animals.

Background

Aquatic animals are the products of countless adaptations
over long periods of time. Those adaptations, for the
most part, are features that increase the animals' likelihood of
surviving in their habitat.

When a habitat changes, either slowly or catastrophically,
the species of animals that have adaptations that provide for
fluctuations in their environment are the ones most likely to
survive. Some species have adapted to such a narrow range of
habitat conditions they are extremely vulnerable to change.
These species are usually more susceptible than other animals to
death or extinction.

In this activity, students design a fish. Students choose the
adaptations that their fish will have; each choice would actually
take countless years to develop. As these adaptations become
part of the fish's design, the fish becomes better suited to the
habitat in which it lives. Because of the variety of conditions
within each habitat, many different fish can live together and
flourish. Some adaptations of fish are shown on pages 101–102.

Procedure

1. Assign students to find a picture or make a drawing of a species of animal that has a special adaptation. For example, giraffes have long necks for reaching vegetation in tall trees, while owls have large eyes that gather light and aid with night vision.

2. Conduct a class discussion on the value of different kinds of adaptations to animals. As a part of the discussion, ask students to identify different kinds of adaptations in humans.

3. Collect the students' pictures or drawings of adaptations. Categorize them into the following groups:

- protective coloration and camouflage,
- body shape or form,
- mouth type or feeding behavior,
- reproduction or behavior, and
- other (one or more categories students establish, in addition to the four above that will be needed for the rest of the activity).

4. Divide *Fish Adaptation Cards* into five groups of four cards each: one for coloration, mouth type, body shape, and reproduction.

5. Pass one complete set of cards to each group of students. There might be five groups with four to six students in each group. If the class size is larger than about 30 students, make additional sets of adaptation cards.

6. Ask students to “fashion a fish” from the characteristics of the cards in the set they receive. Each group could:

- create an art form that represents their fish,
- name the fish, and
- describe and draw the habitat for their fish.

7. Ask each group to report on the attributes of the fish they have designed, including identifying and describing its adaptations. Ask students to describe how this kind of fish is adapted for survival.

Upper Elementary

Ask students to make inferences about the importance of adaptations in fish and other animals.

Extensions

1. Take an adaptation card from any category, and find a real fish with that adaptation. **NOTE:** A collection of books about fish is useful. Do not be as concerned about reading level as much as the accuracy of the illustrations.

WILD Work

For information on the related careers of **Hatchery Manager**, **Fisheries Technician/Culturist**, and **Fisheries Biologist**, head to: www.projectwild.org/aquatic.

Explore this information with students, or have students do a guided exploration on their own.

In Step with STEM

- Diagram the anatomy and internal organs of a fish. Consider dissecting a fish specimen. See www.projectwild.org/aquatic for a video link to a fish dissection.
- See www.projectwild.org/aquatic for web links that allow you to build a fish electronically.

*When a habitat changes,
either slowly or
catastrophically, the
species of animals that
have adaptations that
provide for fluctuations
in their environment
are the ones most
likely to survive.*

2 Look at examples of actual fish. Describe the fish and speculate on its habitat by examining its coloration, body shape, and mouth.

Evaluation

Lower Elementary

Circle the fish with vertical stripes. Circle the fish with the horizontal, flat shape. Circle the fish that would be difficult to see from above. (Use the masters provided for drawings of fish.)

Upper Elementary

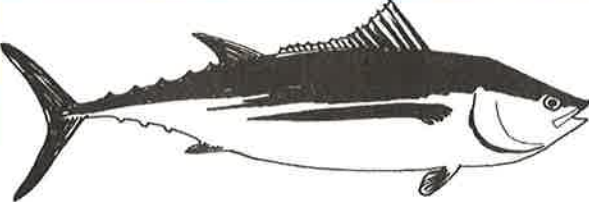
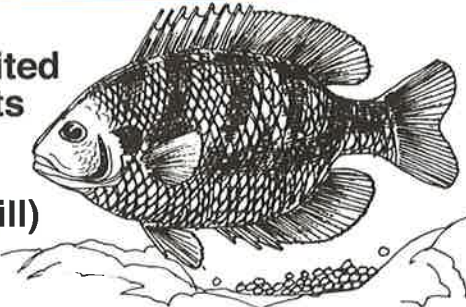
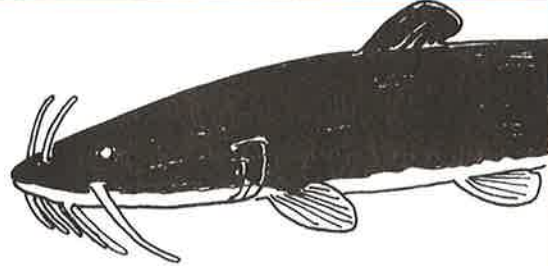
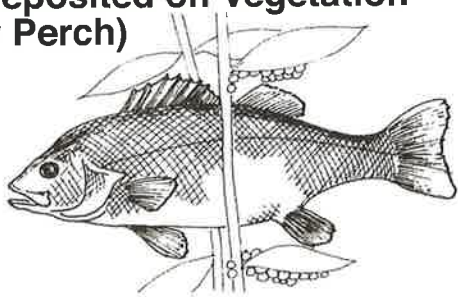
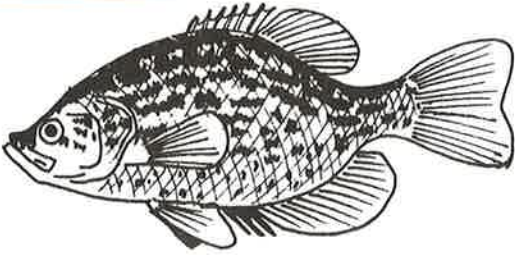
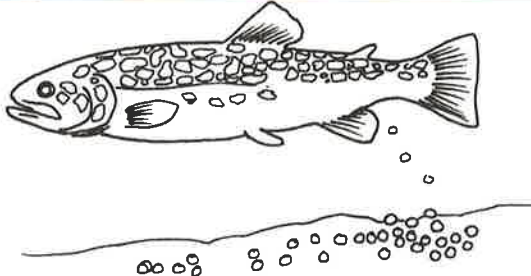
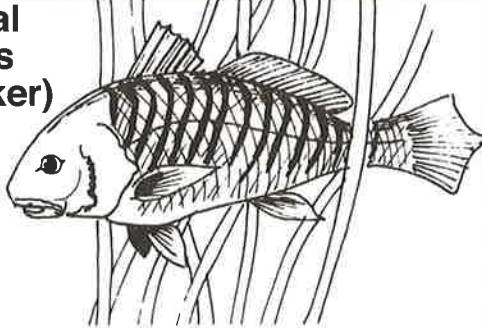
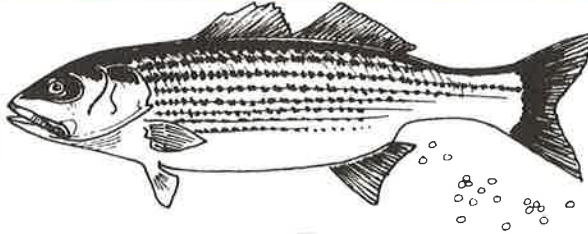
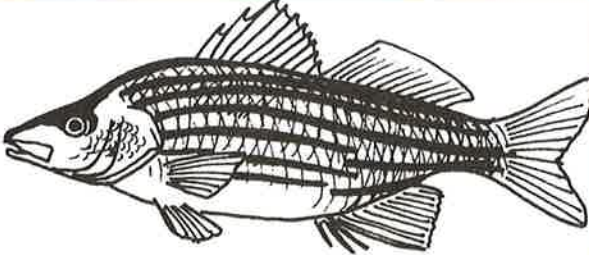
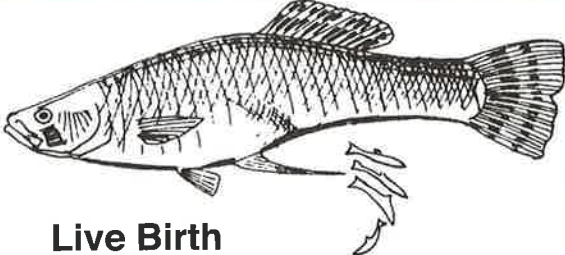
1 Name two fish adaptations in each of the following categories: mouth and feeding, shape, coloration, and reproduction. Then describe the advantages of each of these adaptations to the survival of fish in their habitats.

2 Invent an animal that would be adapted to live in your community. Consider mouth, shape, coloration, reproduction, food, shelter, and other characteristics. Draw and describe your animal.

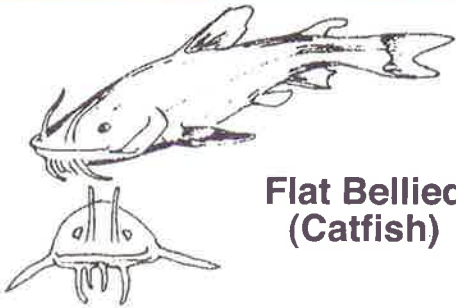
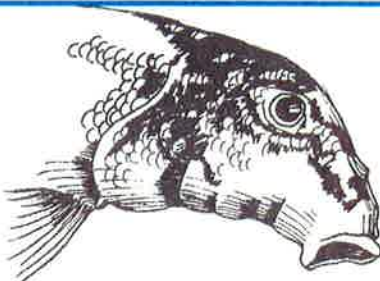
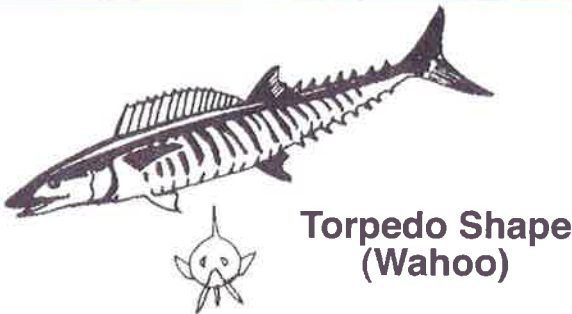
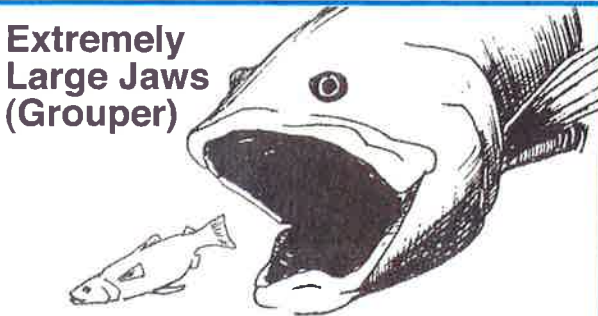
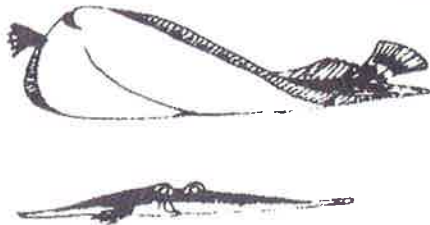
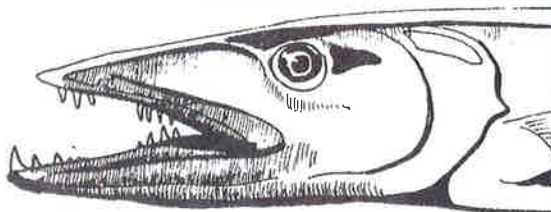
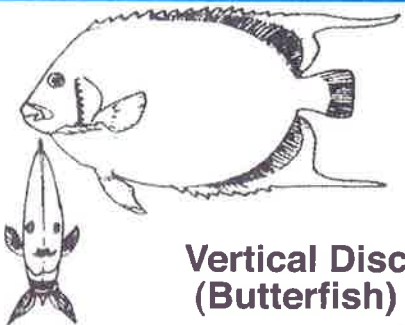
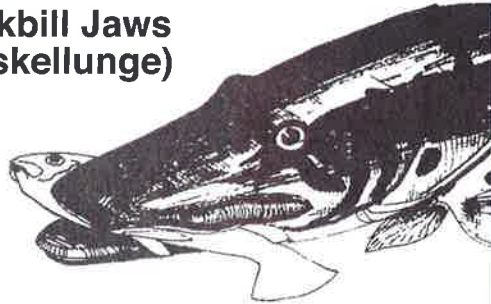
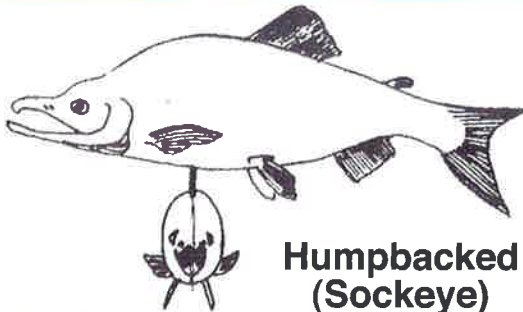
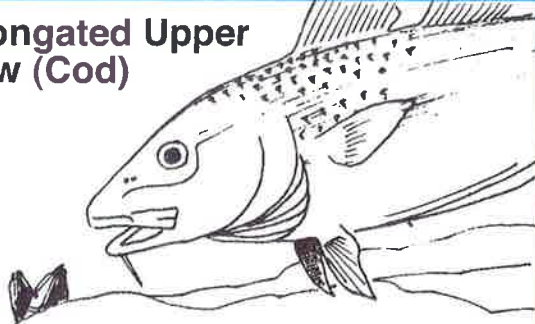
Adaptation	Advantage	Examples
Mouth		
Sucker-shaped mouth	Feeds on very small plants and animals	Sucker, carp
Elongated upper jaw	Feeds on prey it looks down on	Spoonbill, sturgeon
Elongated lower jaw	Feeds on prey it sees above	Barracuda, snook
Duckbill jaws	Grasps prey	Muskellunge, pike
Extremely large jaws	Surrounds prey	Bass, grouper
Body Shape		
Torpedo shape	Fast moving	Trout, salmon, tuna
Flat bellied	Bottom feeder	Catfish, sucker
Vertical disk	Feeds above and below	Butterfish, Bluegill
Horizontal disk	Bottom dweller	Flounder, halibut
Hump backed	Stable in fast-moving water	Sockeye Salmon, chub, razorback
Coloration		
Light-colored belly	Predators have difficulty seeing it from below	Most minnows, perch, tuna, mackerel
Dark upper side	Predators have difficulty seeing it from above	Bluegill, crappie, barracuda, flounder
Vertical stripes	Can hide in vegetation	Muskellunge, pickerel, Bluegill
Horizontal stripes	Can hide in vegetation	Yellow and White Bass, snook
Mottled coloration	Can hide in rocks and on bottom	Trout, grouper, Rock Bass, hogsucker
Reproduction		
Eggs deposited in bottom	Hidden from predators	Trout, salmon, most minnows
Eggs deposited in nests	Protected by adults	Bass, stickleback
Floating eggs	Dispersed in high numbers	Striped Bass
Eggs attached to vegetation	Stable until hatched	Perch, Northern Pike, carp
Live bearers	High survival rate	Guppies

Fish Adaptation Cards

FOR STUDENTS

 <p>Light Colored Belly (Albacore)</p>	<p>Coloration</p>	<p>Eggs Deposited in Nests</p>  <p>(Bluegill)</p>	<p>Reproduction</p>
 <p>Dark Upper Side (Catfish)</p>	<p>Coloration</p>	<p>Eggs Deposited on Vegetation (Yellow Perch)</p> 	<p>Reproduction</p>
 <p>Mottled (Crappie)</p>	<p>Coloration</p>	 <p>Eggs Deposited on Bottom (Trout)</p>	<p>Reproduction</p>
<p>Vertical Stripes (Croaker)</p> 	<p>Coloration</p>	 <p>Free Floating Eggs (Striped Bass)</p>	<p>Reproduction</p>
 <p>Horizontal Stripes (Yellow Bass)</p>	<p>Coloration</p>	 <p>Live Birth (Gambusia)</p>	<p>Reproduction</p>

Fish Adaptation Cards

Shape	 <p>Flat Bellied (Catfish)</p>	Mouth/Feeding	 <p>Sucker Shaped Jaw (Sucker)</p>
Shape	 <p>Torpedo Shape (Wahoo)</p>	Mouth/Feeding	 <p>Extremely Large Jaws (Grouper)</p>
Shape	 <p>Horizontal Disc (Halibut)</p>	Mouth/Feeding	 <p>Elongated Lower Jaw (Barracuda)</p>
Shape	 <p>Vertical Disc (Butterfish)</p>	Mouth/Feeding	 <p>Duckbill Jaws (Muskellunge)</p>
Shape	 <p>Humpbacked (Sockeye)</p>	Mouth/Feeding	 <p>Elongated Upper Jaw (Cod)</p>

Idaho Rivers

Subject: Social Studies

Objectives: Students will label the major rivers and towns of Idaho on a map.

Materials:

- ☐ *Wildlife Worksheet* (Idaho map)
- ☐ colored pencils
- ☐ Reference map of Idaho or internet access

Procedure:

1. Ask students to brainstorm names of rivers in Idaho. They should come up with a pretty extensive list.
2. Tell the students they will be learning where major rivers of Idaho are located and labeling them on a map.
3. Handout the *Wildlife Worksheet* (Idaho Map). Using the internet and maps from the library locate and label the following rivers and towns (Add some of your own too!):

Rivers:

Henrys Fork
Bear River
Snake River
Boise River
Salmon River
Big Wood River
Bruneau River
Payette River
Kootenai River

Cities:

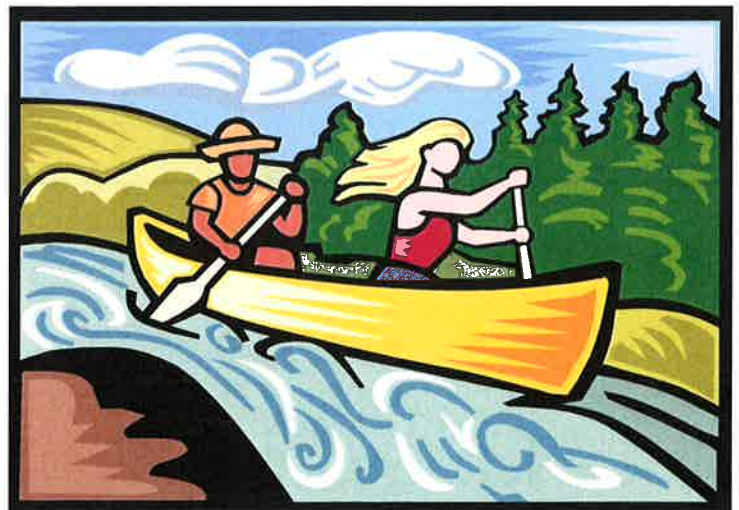
Twin Falls
McCall
Stanley
Salmon
Pocatello
Idaho Falls
Coeur D'Alene
Bonners Ferry (location of hatchery)

Also Label:

Continental Divide
45th Parallel
Bordering States
Lake Pend Oreille
Coeur D'Alene Lake
Capital City: Boise

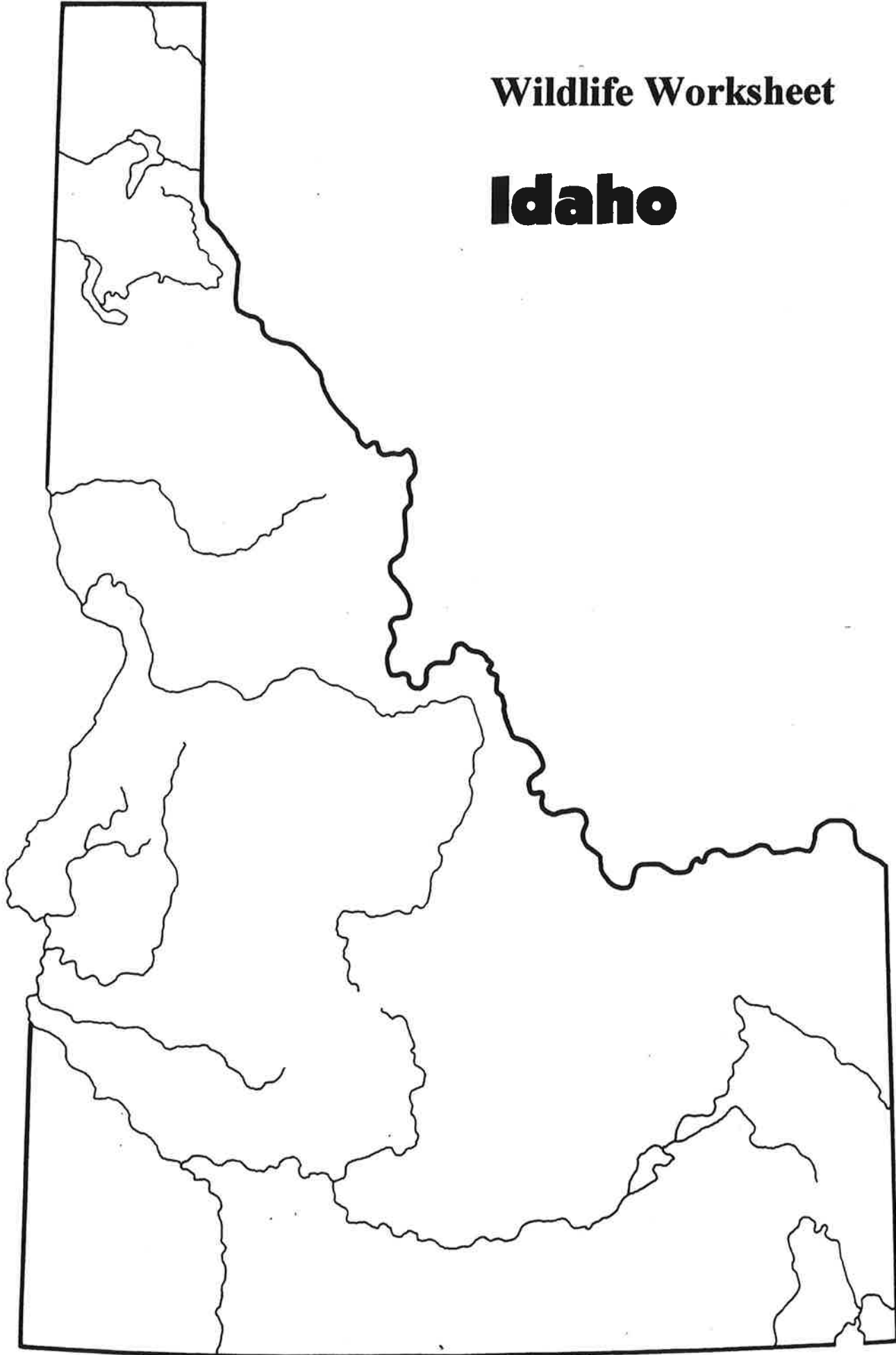
4. When they're all finished, ask them to highlight the river where the burbot are found and to draw a building to represent the hatchery and label both of them on your key.
5. Have students keep their maps in their binders for reference.

*Many of the rivers have forks.
Depending on level of students,
you might want to have them draw
them in and label them.



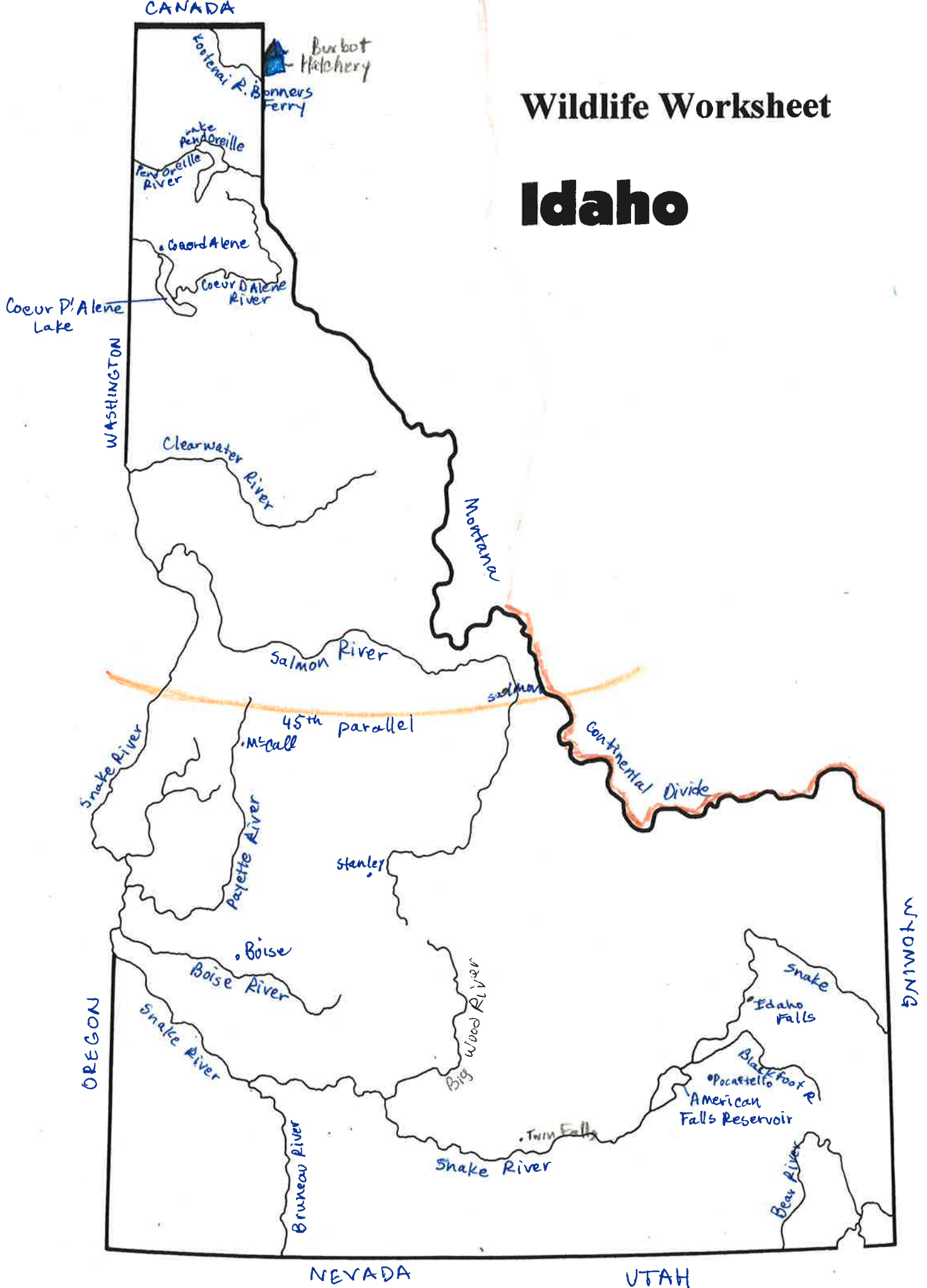
Wildlife Worksheet

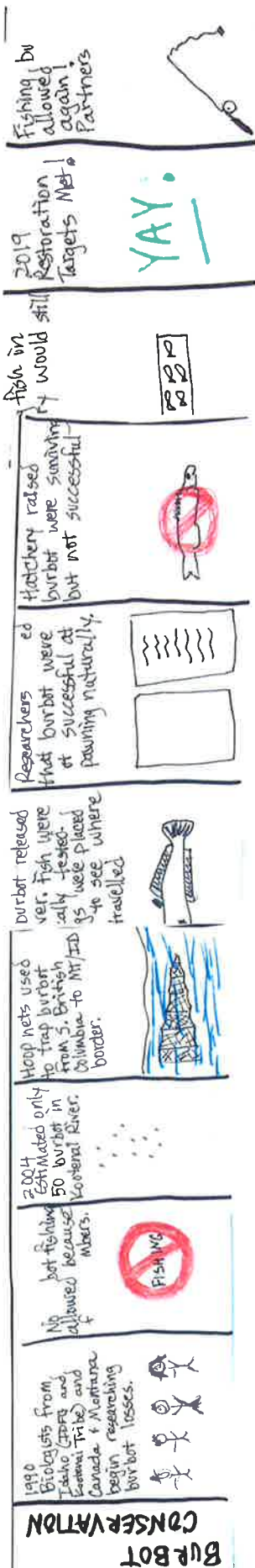
Idaho



Wildlife Worksheet

Idaho





Burbot Conservation Timeline

Subject: Science

Objective: Students will be able to outline key events in the conservation of burbot.

Materials:

- ☐ adding machine tape (about 24" for each student) or construction paper cut two to four inches wide.
- ☐ scissors
- ☐ Wildlife Express (Burbot Conservation article)
- ☐ coloring tools

Procedure:

1. Reread the article on burbot conservation. Highlight key events. (Instructor should set how many are required – at least 10 are recommended). To start with add a title to the timeline. Then for each event highlighted, write a short sentence, illustrate & color the event.
2. Share on a bulletin board.
3. Research other animals that have a “conservation timeline.”

Other Idaho species with conservation timelines:

Chinook salmon
Peregrine falcon
Bald eagle
Gray wolf
Sage grouse