Lesson Guide: Trout

Vocabulary:

- Trout
- Spawn
- Migration
- Dam
- Hatchery

Engage:

- Read the story 'The Legend of the Lahontan: A Story from the Great Basin Paiute' as a class. This story is inspired by the documented traditions of the Northern Paiute people, for whom fish, especially the Lahontan cutthroat trout, were a vital First Food. The Paiute of Pyramid Lake have fished these waters for thousands of years and continue to do so today.
- **Before reading**, discuss with students:
  - "Have you ever seen a fish in a river or lake? What did you notice about it?"
  - "Why do you think fish might be important to people who live near a lake?"
  - "What does it mean to 'take care' of an animal that lives in the wild?"
- **After reading**, ask students:
  - "What happened to the trout in Pyramid Lake? Why did they disappear?"
  - "How did the Paiute people feel about the return of the trout?"
  - "What can people do today to help bring the trout back?"

  Special Note for Educators: This story highlights the resilience and cultural importance of the Lahontan cutthroat trout (Oncorhynchus clarkii henshawi), the largest inland trout in North America. For thousands of years, the Northern Paiute people have relied on this fish, known as "agai", a vital food source, particularly at Pyramid Lake in present-day Nevada. Revered for its size and strength, with some individuals historically exceeding 60 pounds, the trout remains deeply connected to Paiute traditions and identity. Today, the Pyramid Lake Paiute Tribe continues restoration efforts in partnership with the U.S. Fish and Wildlife Service to bring this remarkable species back to its native waters across the Lahontan Basin.

- Show students these videos for a deeper understanding of Lahontan Cutthroat Trout:
  - Fish of the People: Lahontan Cutthroat Trout at Summit Lake
  - The Desert Trout | A Short Documentary Film About the Lahontan Cutthroat Trout and Livestock Grazing
  - Bringing Back the Ancient Lahontan Cutthroat Trout at Pyramid Lake

- Additional Reading:
  - Cutthroat trout facts for kids
  - Lahontan cutthroat trout facts for kids
  - Pyramid Lake (Nevada) facts for kids
  - Lake Lahontan facts for kids

Explore and Explain:

- **Activity 1: Indigenous Language Vocabulary and Sentence Building**
    - Students will utilize the student worksheet, to review the 5 vocabulary words, fill in definitions and discuss connections to the story, then add a word from their own Indigenous language or research the Paiute word terminology. Students will write a sentence or two utilizing vocabulary words to explain what they have learned from the lesson, thus far. Interchange native terms in sentences, where possible.
    - This activity builds academic vocabulary, strengthens language connections, and helps students understand how cultural knowledge and meaning are embedded in words.

- **Activity 2: Drawing the Lahontan Cutthroat Trout**
    - Students will utilize the student worksheet to draw a trout with at least 3-4 distinct characteristics of the Lahontan Cutthroat Trout. The students will then write or share their response to the thought-provoking questions: "The original Lahontan cutthroats could weigh 60 pounds… "How big do you think that would be compared to you?" and "What do you think helped them survive in Pyramid Lake?"
    - This activity reinforces observation skills, the Lahontan trout characteristics and how their characteristics have helped with survival over time.
    - Additional resource for this activity: Color & Learn: Lahontan Cutthroat Trout

Elaborate:

- **Activity 3: Activity 3: Trout's Journey — Life Cycle Sequence**
    - In this activity, students utilize the activity worksheet to sequence the major life cycle stages of the Lahontan trout (eggs, alevin, fry, juvenile, adult in Pyramid Lake, and spawning adult).
    - This activity encourages students to strengthen their observation skills while learning how the Lahontan cutthroat trout grows, migrates, and returns upstream to reproduce. It reinforces key science concepts about animal life cycles and supports student comprehension of how the Lahontan's survival depends on its ability to move between mountain streams, the Truckee River, and Pyramid Lake.

- **Activity 4: Trout Adaptations Matching**
    - Students explore how different physical features (adaptations) help the Lahontan cutthroat trout survive in its environment. Using the matching worksheet, students draw a line connecting each trout body part—such as the streamlined body, spotted camouflage, forked tail, cold-water preference, and large body size—to the correct explanation of how that adaptation supports survival.
    - This activity builds foundational life-science understanding by helping students recognize the connection between structure and function. Students learn how each feature of the Lahontan trout plays a role in swimming, hiding, feeding, migrating, and thriving in the cold waters of Pyramid Lake and the Truckee River.
    - Students then explain, in their own words, how one or more adaptations helped the Lahontan cutthroat trout persist over time. This deepens comprehension and encourages students to apply scientific reasoning to real ecological challenges the species faced.

- **Activity 5: Trout Power! A Healthy First Food**

- Students learn why trout has been an important First Food for Indigenous people for thousands of years by exploring the nutrients found in trout, including protein, healthy fats, vitamins, and minerals. Using the worksheet, students match nutrients to the jobs they perform in the body and identify how trout helps people grow strong and stay healthy.

- This activity builds nutrition literacy while reinforcing the cultural importance of trout as a traditional food. Students learn that foods from rivers, lakes, forests, and homelands provide nourishment, support healthy bodies and brains, and connect people to place, culture, and community.

- **Activity 6: Lake Tahoe — Where the Journey Begins**
  - In this geography- and science-integrated activity, students learn that the Lahontan cutthroat trout once swam an incredible 120 miles upstream from Pyramid Lake to the cold, clean streams near Lake Tahoe—their historic spawning grounds. Students read a short description of this journey, then answer comprehension questions and complete simple map-based tasks to reinforce understanding.
  - Students identify the direction of the trout's migration, calculate the total distance traveled, and explain what prevented the trout from reaching Lake Tahoe after the construction of Derby Dam in 1905. Using a map, they color the Truckee River, mark where the dam blocks the spawning run, and identify where scientists later found surviving trout with the original genetics.
  - A bonus question for Grades 3–5 encourages deeper reasoning, asking students to explain why the cold mountain streams near Lake Tahoe provided ideal habitat for trout eggs—connecting back to earlier learning about adaptations such as cold-water preference, oxygen needs, and gravel spawning beds.
  - *This activity strengthens map skills, reinforces historical cause-and-effect relationships, and deepens understanding of how physical geography shaped the Lahontan cutthroat trout's ancient journey.*

Evaluate

- **Activity 7: Then and Now — A River's Story**
  - In this reflective activity, students compare the history of the Lahontan cutthroat trout and the Truckee River ecosystem before 1905 with efforts being made today to restore the species. Using the worksheet, students illustrate or describe what the river, the fish, and the surrounding community looked like "Then", when giant trout filled Pyramid Lake and the Paiute people harvested them each spring, and "Now", when dams, hatcheries, scientific discoveries, and habitat restoration all play a role in recovery.
  - This activity helps students understand how human actions can change ecosystems over time and how people, tribes, and scientists can work together to repair what was lost. It builds historical awareness, environmental literacy, and empathy for the challenges of bringing an endangered species back.
  - A final discussion prompt invites students to think critically about stewardship: "What would YOU change if you were in charge of restoring Pyramid Lake? What would be the hardest part?"
  - *This activity encourages problem-solving, creativity, and connection to real restoration efforts.*

- **Activity 8: Letter to the River**
    - In this reflective writing activity, students build empathy and environmental awareness by writing a personal letter to the Truckee River or to the Lahontan cutthroat trout, imagining that the river or trout can "hear" their words. Students use what they have learned throughout the unit about the river's history, challenges, and ongoing restoration to inform their writing or drawing (K-2).
    - Prompts guide students to
      • explain what they learned about what happened to the river or the fish,
      • make a promise about how they can help protect water and wildlife, and
      • ask one question they would want the trout or river to answer.

- **Activity 9: Story Comprehension**
    - In this activity, students demonstrate their understanding of the Lahontan cutthroat trout story by answering comprehension questions tailored to their grade band.
    - Grades K–2 complete a simple multiple-choice version where they circle the correct answer. These questions reinforce key ideas from the story—such as what kind of fish lived in Pyramid Lake, why the trout disappeared, and how the Paiute people and scientists are helping today. This format strengthens early reading comprehension, listening skills, and recall of main ideas.
    - Grades 3–5 answer short-response questions in complete sentences, explaining concepts in more depth. Students reflect on cultural importance, historical changes, ecological challenges, and recovery efforts. They also make connections to other tribal stories and consider their own role in caring for rivers and fish. This format supports critical thinking, written expression, and understanding of cause-and-effect relationships.
    - Together, these comprehension tasks help students synthesize historical, cultural, and scientific learning from the story while practicing age-appropriate literacy skills.

Suggested Lesson Activities:

- Indigenous Language Vocabulary and Sentence Building
- Drawing the Lahontan Cutthroat Trout
- Trout's Journey Through the Life Cycle Sequence
- Trout Adaptations Matching
- Trout Power! A Healthy First Food
- Lake Tahoe--Where the Journey Begins
- Then and Now--A River's Story
- Letter to the River
- Story Comprehension Worksheet

Additional Educator Resources:

- Fish of the People: Lahontan Cutthroat Trout at Summit Lake
- The Desert Trout | A Short Documentary Film About the Lahontan Cutthroat Trout and Livestock Grazing
- Bringing Back the Ancient Lahontan Cutthroat Trout at Pyramid Lake
- Cutthroat trout facts for kids
- Lahontan cutthroat trout facts for kids

- Pyramid Lake (Nevada) facts for kids
- Lake Lahontan facts for kids
- Paiute Indians
- Color & Learn: Lahontan Cutthroat Trout
- Trout in the Classroom
- Pyramid Lake Fish Hatchery
- Lahontan Cutthroat Trout
- 'Monster' Lahontan cutthroat making a comeback
- Lahontan Cutthroat Trout NV Dept of Wildlife
- Trout Nutrition Facts
- Fish Facts: Lahontan Cutthroat

The Legend of the Lahontan

A Story from the Great Basin Paiute

Begin by reading the story 'The Legend of the Lahontan: A Story from the Great Basin Paiute' as a class. This story is inspired by the documented traditions of the Northern Paiute people, for whom fish, especially the Lahontan cutthroat trout, were a vital First Food. The Paiute of Pyramid Lake have fished these waters for thousands of years and continue to do so today.

Historical Context for Educators: The Pyramid Lake Paiute Tribe has lived along the shores of Pyramid Lake, Nevada, for thousands of years. The Lahontan cutthroat trout ('agai') was their most important food fish, growing up to 60+ pounds before Derby Dam blocked the spawning run in 1905. By 1940, the fish had disappeared from the lake. In 1970, it was declared a federally threatened species. Today, the Pyramid Lake Paiute Tribe and the U.S. Fish and Wildlife Service are working together to restore the trout using fish whose genes trace back to the original Pyramid Lake population, discovered surviving in mountain streams near Pilot Peak, Utah. Restoring the trout requires restoring the Truckee River, which is one of Nevada's most important waterways.

Before Reading, Ask Students:

- Have you ever seen a fish in a river or lake? What did you notice about it?
- Why do you think fish might be important to people who live near a lake?
- What does it mean to 'take care' of an animal that lives in the wild?

After reading, Discuss:

- What happened to the trout in Pyramid Lake? Why did they disappear?
- How did the Paiute people feel about the return of the trout?
- What can people do today to help bring the trout back?

Long ago, and not so long ago, the great blue waters of Pyramid Lake shimmered in the Nevada desert like a giant mirror. And in those deep, cold waters lived a fish unlike any other, the Lahontan cutthroat trout.

A young boy named Numpa sat on the rocky shore with his grandfather, watching the still surface of the lake. It was spring, and Grandfather had promised that something wonderful was about to happen.

'Is it time?' Numpa asked, shading his eyes against the desert sun.
'Almost,' said Grandfather. 'Watch the river. Watch where it meets the lake.'

Numpa watched. And then, he saw them. Dark shapes moving beneath the surface. Silver flashes like lightning underground. The trout were coming home.

Every spring before the great dams were built, the Lahontan cutthroat trout swam up the Truckee River from Pyramid Lake to lay their eggs in the cold, clear gravel of the mountain streams. Some of these fish were the size of a man's leg. Some weighed as much as sixty pounds! More than Numpa himself! They were the largest trout in all the world, and they belonged to this place.

'Our people have known this fish since before memory,' Grandfather said. 'We call it 'agai.' It is more than food --it is our relative. When the agai return, we know the world is still working as it should.'

For generations, the Paiute people fished at the mouth of the Truckee River each spring. They used nets and weirs (fences woven from willow branches) to guide the giant trout. They dried the fish in the desert sun, storing enough for the long, cold winter. They shared with elders first, then families. They wasted nothing. And every year, the trout returned.

But then the world changed.

In the early 1900s, settlers built a great dam across the Truckee River. Water was diverted to farms and growing cities. The river that the trout had followed for ten thousand years was blocked. The fish could no longer reach their spawning grounds. Year by year, there were fewer trout. And by 1940, the great Lahontans of Pyramid Lake were gone.

'Gone?' Numpa whispered.
'From this lake, yes,' Grandfather said quietly. 'But not from the earth. And not from our hearts.'

He told Numpa that some long-ago fishermen had carried live trout to distant streams near a place called Pilot Peak, in Utah, hoping to keep the ancient fish alive. There, in cold mountain creeks far from any dam, those trout had survived for decades, unnoticed, unchanged, carrying the old genes of the giant Pyramid Lake fish.

Grandfather's eyes grew bright. 'And now, the tribe is working to bring them home. Scientists are studying the old fish. The government has put money toward restoring the river. And our fishery, right here at Pyramid Lake, is raising the young trout until they are big enough and strong enough to live in the wild.

'Will it work?' asked Numpa.

‘It will take patience,’ said Grandfather. ‘The river must heal. The dams must get fish ladders so the trout can pass. The cold, clean water must come back. And the people, all the people, not just ours, must care enough to make it happen.’

Numpa thought about all of this. He thought about the fish that were bigger than he was, fighting their way upriver through cold rapids and rushing water. He thought about the fishermen who had once walked door to door in Model-T cars, selling trout two and three feet long. He thought about his grandfather, who had never seen the great fish in real life but carried their memory like a stone in his chest.

‘What can I do?’ Numpa asked.
Grandfather smiled. ‘Learn. Remember. Tell others. And when you eat the trout from this lake, taste more than fish. Taste the river, the desert mountains, the patience of the people who worked for years to bring it back.’

He put his hand on Numpa’s shoulder.

‘The agai are not gone. They are coming home. And when they are here again, when the great cutthroat trout swims once more through the middle of Reno and fights its way up the river to Pyramid Lake, that day will belong to everyone who chose to care.’

And far out on the blue water of the lake, something dark and silver broke the surface for just a moment, and it was gone.

Name: _____ Date: _____

Activity 1: Vocabulary Sheet and Sentence Building

Directions: Write each vocabulary word in your own words. Then write the word in your own Native language (if available). If unavailable, use the Northern Paiute example shown, or ask a community member.

Example: Trout — a freshwater fish with spots and a colorful stripe; Northern Paiute: 'agai'

Vocabulary Word	Definition	Paiute / Your Language
Trout	A freshwater fish with spots and a colorful stripe on its side; it lives in cold, clean rivers and lakes.	"Agai"
Spawn	When fish lay eggs in gravel at the bottom of a river, new fish can be born.	
Migration	A long journey an animal makes, often each year, to find food or lay eggs.	
Dam	A wall built across a river to hold back water, which can block fish from swimming upstream.	
Hatchery	A place where fish eggs are hatched and fish are raised before being released into the wild.	

Write one or two sentences below, using one or some of the vocabulary words to explain what you've learned about the Lahontan Cutthroat Trout.

Name: _____ Date: _____

Activity 2: Drawing the Lahontan Cutthroat Trout

Draw and color a Lahontan cutthroat trout, identifying and labeling:

- The red-orange slash marks under the jaw (the ‘cutthroat’ markings)
- The black spots on the back and fins
- The streamlined body shape built for powerful river swimming
- The forked tail and the lateral line running along the side

The original Lahontan cutthroats could weigh 60 pounds!

How big do you think that would be compared to you?

What do you think helped them survive in Pyramid Lake?’

Name: _____ Date: _____

Activity 3: Trout's Journey — Life Cycle Sequence

Observe pictures below, then **place the number of the sentence next to the picture which best matches** the sentence description of the Lahontan's life cycle

1: Eggs are laid in cold gravel at the bottom of a mountain stream.

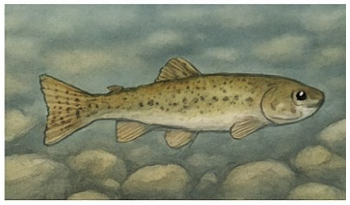
2: Alevin hatch — tiny fish still attached to their yolk sac.

3: Fry emerge and begin feeding on insects near the surface.

4: Juvenile (fingerling) trout grows in the stream or is raised in a hatchery.

5: Adult trout swims down to Pyramid Lake and grows large feeding on tui chub fish.

6: Adult fights upriver through the Truckee River to spawn. And the cycle continues.



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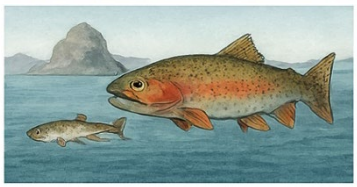

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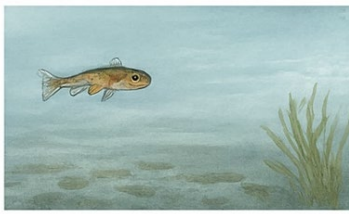

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Name: _____ Date: _____

Activity 4: Trout Adaptations Matching

Match each trout body part to how it helps the fish survive:

Directions: Draw a line from each **Body Part** to the correct **How It Helps**.

Body Part		How It Helps
Streamlined body shape		Hides from predators in dappled, rocky water
Spotted camouflage coloring		Stores energy for long spawning migration
Forked tail fin		Moves easily through fast river currents
Cold-water preference		Thrives in clean, cold mountain-fed rivers and lakes
Large body size (up to 60 lbs!)		Provides power and precise steering

Connection to the Story:

Write an explanation of how one or more of the Lahontan trout's body part/s has helped them survive.

Name: _____ Date: _____

Activity 5: Trout Power! A Healthy First Food

Did you know, that for thousands of years, trout has been an important food for many Indigenous communities.

Trout helps our bodies because it has:

- Protein – helps build muscles and repair the body
- Healthy Fats (Omega-3s) – help support the brain, heart, and eyes
- Vitamin D – helps build strong bones and teeth
- Iron – helps carry oxygen throughout the body

Directions: Draw a line from the nutrient to what it helps your body do.

Nutrient	What It Helps Your Body Do
Protein	Helps your brain, heart, and eyes
Omega-3 Healthy Fats	Builds strong bones and teeth
Vitamin D	Helps muscles grow and repair
Iron	Carries oxygen through your body

Directions: Circle YES or NO on if the sentence below is correct.

Trout can help build strong muscles	YES	NO
Healthy fats are important for our brains.	YES	NO
Vitamin D helps make bones stronger.	YES	NO
Trout is only important because it tastes good.	YES	NO

If you could choose one "superpower" from trout, which would you choose and why?

☐ Strong muscles

☐ Healthy brain Why: _____

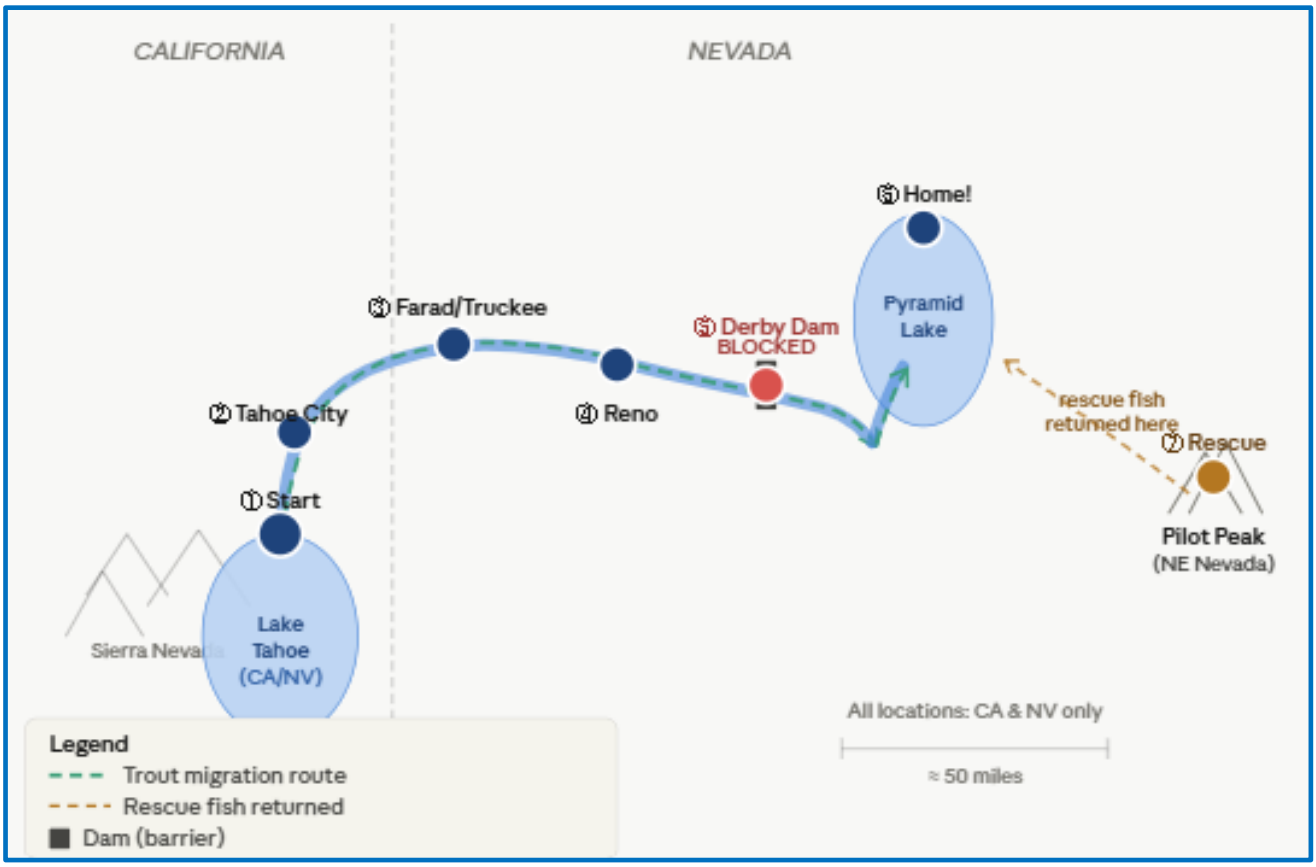
☐ Strong bones _____

☐ Lots of energy _____

Name: _____ **Date:** _____

Activity 6: Lake Tahoe — Where the Journey Begins

Lake Tahoe sits on the California–Nevada border high in the Sierra Nevada mountains. Before Derby Dam was built in 1905, the Lahontan cutthroat trout could swim all the way here from Pyramid Lake--a 120-mile upstream journey through the Truckee River. The cold, clean, gravelly streams near Lake Tahoe were their ancient spawning grounds.



Locations above: 1. Lake Tahoe, 2. Tahoe City, 3. Farad/Truckee, 4. Reno, 5. Derby Dam, 6. Pyramid Lake, 7. Pilot Peak

1. The trout start their journey at **Pyramid Lake** each spring.
Which direction do they swim — toward Lake Tahoe or away from it?

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2. How many miles was the trout's full migration route from Pyramid Lake to Lake Tahoe?

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3. What stopped the trout from reaching their spawning grounds after 1905?

4. Color the Truckee River blue on the map. Draw a big red X where the dam blocks the fish.

5. Where did scientists find trout that had survived? Draw a star on that spot.

Bonus (Grades 3–5): Why do you think cold mountain streams near Lake Tahoe were the perfect place for trout to lay their eggs? Use what you know about trout adaptations to explain.

Name: _____ Date: _____

Activity 7: Then and Now — A River's Story

Use this worksheet to draw or write bullet points to show or describe what the river, the fish, and the surrounding community looked like "Then", when giant trout filled Pyramid Lake and the Paiute people harvested them each spring, and "Now", when dams, hatcheries, scientific discoveries, and habitat restoration all play a role in recovery.

Then (Before 1905):	**Now (Working Toward Recovery):**
• Giant trout fill Pyramid Lake • Paiute fishermen harvest trout each spring • The Truckee River runs freely from Lake Tahoe • Trout spawn in cold mountain gravel • 60-pound fish are common	• Derby Dam blocks the spawning run • Paiute Tribe raises trout in a hatchery • Scientists discover fish with old genes in Utah • Fish ladders and restored riverbanks give hope • The tribe and scientists work together to bring the fish back

Discuss: 'What would YOU change if you were in charge of restoring Pyramid Lake? What would be the hardest part?'

Name: _____ Date: _____

Activity 8: Letter to the River

K–2 option: Draw a picture to give to the river or trout. Imagine the river could understand your message from the picture, what would you draw to tell the river or the fish that you care? Perhaps you can show a promise to the river, showing one thing you will do to help protect water and fish, or draw an image that asks the trout or river that you want answered.

Explain your picture:

Name: _____ Date: _____

Activity 8: Letter to the River

Grades 3–5: Students write a short letter (2–3 paragraphs)TO the Truckee River or the Lahontan trout, imagining it can hear you. What would you say?

Perhaps you may:

- Tell the river what you learned about what happened to it.
- Promise the river one thing you will do to help protect water and fish.
- Ask the trout one question you would want to answer.
- *Bonus points: Use at least 3 vocabulary words from the sheet.*

Name: _____ Date: _____

Activity 9 : Story Comprehension

Grades K–2 | Circle the Correct Answer

1. What kind of fish lived in Pyramid Lake before the dam was built?

- a) Salmon
- b) Giant Lahontan cutthroat trout
- c) Goldfish

2. Why did the trout disappear from Pyramid Lake?

- a) People ate them all at once
- b) A dam blocked their path upriver
- c) They swam to the ocean

3. What is the tribe doing to help bring the trout back?

- a) Building a bigger dam
- b) Raising young trout in a hatchery
- c) Catching all the fish they can

4. What does ‘agai’ mean to the Paiute people?

- a) A kind of desert plant
- b) The Lahontan cutthroat trout, a sacred and important food fish
- c) The name of Pyramid Lake

5. What did Grandfather say would happen if people chose to care?

- a) The lake would dry up
- b) The trout would come home
- c) The dam would disappear

Name: _____ Date: _____

Activity 9: Story Comprehension

Grades 3–5 | Answer in 2–4 Complete Sentences

1. Why were the Lahontan cutthroat trout so important to the Pyramid Lake Paiute people?

2. What happened to the trout after Derby Dam was built in 1905? Explain the chain of events.

3. What is a threatened species, and why was the Lahontan cutthroat trout given that status in 1970?

4. How did trout survive in Pilot Peak, Utah, and why does that matter for the recovery effort?

5. What does Grandfather mean when he says, ‘the river is ours to care for, not ours to take from’?

6. What is a hatchery, and how is the Paiute Tribe using one to help the trout?

7. Name TWO challenges scientists and the tribe face in bringing the Lahontan back.

8. Think about another animal, place, or natural thing in your community or region that people work hard to protect or restore. How is that effort like what the Paiute Tribe and scientists are doing to bring back the Lahontan cutthroat trout? What do you think makes people want to protect living things that are in danger of disappearing?"

9. What is one thing you could do in your daily life that might help fish and rivers stay healthy?

10. If the Lahontan cutthroat trout fully recovered and 20-pound fish were again running through downtown Reno, what do you think that would mean for the Paiute people? For Nevada?