

PROTECTING SPECIES IN THE SMOKIES

Tennessee Heritage at Junior 4-H Camp

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Skill Level
Beginner

Learner Outcomes

The learner will be able to:

- Identify endangered fish species in the Great Smoky Mountains National Park.
- Describe the ways human activities affect species.
- Create a poster to encourage people to protect endangered fish.

Educational Standard(s) Supported

Tennessee Science	Tennessee ELA
GLE 0407.2.1	4.RI.KID.1
GLE 0507.2.3	5.RI.KID.1
GLE 0607.Inq.3	6..RI.KID.1

American Camp Association
PD.3, PD.5, and PD.7

Success Indicator

Learners will be successful if they:

- Complete an Endangered Species Profile
- Answer questions about human activity, fish habitats, and why the species are endangered
- Create an advertisement for protecting the given endangered species

Time Needed
45 Minutes

Materials List

Endangered Species Profiles, Pencils and Markers, Flip Chart Paper

Introduction to Content

Campers will learn about how human activities affect species by studying two endangered fish species in the Great Smoky Mountains National Park. They then will think of ways to encourage people to protect endangered fish and create a poster advertising protection for the species.

Introduction to Methodology

Campers learn about how human activity affects species, and they complete an Endangered Species Profile using an official recovery plan for the given species. After reviewing information about the relationship between human activity and endangered species, campers will then create an advertisement to raise awareness about an endangered fish species.

Sources

nps.gov/grsm/learn/nature/te-species.htm

nps.gov/grsm/learn/nature/threatened-species-abrams.htm

sciencenetlinks.com/student-teacher-sheets/save-our-animals-project/

explorermaps.com

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Tips for Engagement

During this time, leaders should be actively engaged with the campers to help them complete the activity.

Remember, your enthusiasm for the activity makes a big difference in how the campers feel about it!

Leaders should visit each group to check on their progress during the lesson. If campers are stuck, ask them questions to help them figure out the answers.

Terms and Concepts Introduction

The duskytail darter and the smoky madtom are two fish species in the Abrams Creek area of the Great Smoky Mountains National Park. Humans polluted their environment, and they are now endangered. Awareness of human activity's impact and advocacy are crucial for protecting these endangered species.

Setting the Stage and Opening Questions

Start by asking campers if they know of any parks here in Tennessee. Hopefully, campers mention the Great Smoky Mountains National Park. Ask students where the mountains are located or tell students that the Great Smoky Mountains are located in both Tennessee and North Carolina.

Play the [video](#) on slide 1 of the PowerPoint. Then, go to slide 2 of the PowerPoint and read the learning objectives to campers.

Go to slide 3 of the PowerPoint. Ask campers,

“What is the name of the most popular national park in Tennessee?”

Great Smoky Mountains National Park

“What are some of the things you see in the national park?”

Mountains, Animals, Plants, etc.

“Did you know that some animals in the national park are endangered?”

Hopefully campers will say yes!

“Today we are going to learn about some species that are endangered in the Smokies.”

Go to the slide 4 of the PowerPoint and say, **“These are pictures of some endangered species in the Abrams Creek area of the Great Smoky Mountains National Park. We are going to learn more about two fish species that are endangered in Abrams Creek. Some leaders are now going to pass out information about these species. Work with the person sitting next to you to learn about the species.”**

Allow seven minutes for this part of the lesson.

Experience

Pass out an Endangered Species Profile and pencils to each pair of campers.

Tell campers, **“This is an official recovery plan from the United States Fish and Wildlife Service that has information about the fish species. Look through it and see what you can discover about the species. We are especially interested in learning why the fish is endangered and what its habitat is like.”**

Allow seven minutes for this part of the lesson.

Tell campers, **“Now that you have learned about the species, use that information to complete the *Endangered Species Profile Page* with your partner.”**

Allow five minutes for this part of the lesson.

Share

Tell campers, “**Now, find another pair with the same species as you. Once you have a group of four, check your answers. After you have checked your answers, talk in your group about the ways human activities affect species.**”

Help campers find another group with the same species. Then, check in with each group to see if their answers were similar. If they answered correctly, congratulate the campers for doing the activity correctly. If they missed an answer or two, help campers to find the correct answer and then congratulate them for a job well done. Before you leave the group, remind them to talk about the ways human activities affect species.

Allow five minutes for this part of the lesson.

Process

Go to slide 5 and ask, “What is one way that human activity affects endangered species?”

Go to slide 6 and ask, “How would you describe the habitat of the endangered fish in Abrams Creek?”

Generalize

Go to slide 7 and ask, “What is one reason why these two fish species are endangered?”

Apply

Go to slide 8 and say, “Park rangers in the Great Smoky Mountains National Park have asked you to create online advertisements to raise awareness about the endangered species in Abrams Creek. These advertisements will be featured on Facebook and the National Park Service’s website. Be sure to include these things:

- Both common and scientific names of animal.
- Brief description of its habitat.
- Description of the main reason why the animal is endangered.
- Drawings or pictures of the animal.

Make sure that your advertisement is interesting and informative! You will have 10 minutes to create your advertisement!”

Pass out a piece of flipchart paper and a pack of markers to each group. Encourage them to think creatively about how to best tell the story of their endangered species.

When five minutes remain, say, “If you are finished, please bring it to the front of the room so a leader can help you hang it on the wall.”

Life Skill(s)

4th Grade, Heart

Improve communication skills and develop a sense of belonging.
Actively listen to what others are saying; be able to restate or summarize what has been said.

4th Grade, Hands

Demonstrate the characteristics of leadership, citizenship, and teamwork.

Communicate information effectively about a given topic.

5th Grade, Heart

Improve communication skills and develop a sense of belonging.
When reading, consider ideas, thoughts, information, or messages that have been written.

5th Grade, Hands

Demonstrate the characteristics of leadership, citizenship, and teamwork.

Define issues of a given problem or situation.

6th Grade, Head Thinking

Learn to form ideas, make decisions, and think critically.
Understand the meaning of the information.

6th Grade, Heart Relating

Send and receive information using speech, writing, gestures, and artistic expression.

6th Grade, Hands Working

Coordinate the interaction to complete the task (work together).

Supplemental Information

Educational Standards Met

Tennessee Science, Grades 4-6

GLE 0407.2.1 Analyze the effects of changes in the environment on the stability of an ecosystem.

GLE 0507.2.3 Establish the connections between human activities and natural disasters and their impact on the environment.

GLE 0607.Inq.3 Synthesize information to determine cause and effect relationships between evidence and explanations.

Tennessee English & Language Arts, Grades 4-6

4.RI.KID.1 Refer to details and examples in a text when explaining what the text says explicitly; refer to details and examples in the text when drawing inferences from the text.

5.RI.KID.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

6.RI.KID.1 Analyze what a text says explicitly and draw logical inferences; cite textual evidence to support conclusions.

American Camping Association: Program Development

PD.3 Program Progression: Camp must allow for campers to experience progression, challenge, and success.

PD.5 Social Development: Camp programs should provide specific activities that are designed to help campers develop socially.

PD.7 Environmental Activities: Camp must provide program activities that help develop comfort, appreciation, awareness, and responsibility toward the natural environment.

Clyde Austin 4-H Center

Campers will have the opportunity to enjoy, respect, and understand the basics of nature through:

- Developing an appreciation for nature by learning about different plants and animals

Campers will learn new skills and enhance present talents and interests through:

- Encouragement to try new activities

Campers will develop an appreciation for their own skills and those of others through:

- Understanding the importance of all learning



Protecting Species in the Smokies Smoky Madtom

The smoky madtom (*Noturus baileyi*) is a small member of the catfish family. It was originally discovered in 1957 in Abrams Creek, a tributary of the Tennessee River, within the Great Smoky Mountains National Park found in Blount County, Tennessee. The Fish and Wildlife Service crew was treating the creek with a fish toxicant to remove unwanted fish species from the Chilhowee Reservoir Watershed prior to the closing of the Chilhowee Dam. This routine practice was done to enhance the chances of establishing trout fishery within this new reservoir. Fish and Wildlife Service crew members collected five individual specimens from smoky madtom during this project so the species would be identified.

It is believed that the smoky madtom became extinct in 1957 when it was wiped out from Abrams Creek within the Great Smoky Mountain National Park. The smoky madtom was rediscovered in Citico Creek in 1980, and a research study tells us that the species is now limited to only 6.5 miles (10.5 km) within Citico Creek as part of the Cherokee National Forest in Monroe County, Tennessee. Since the smoky madtom are restricted to such a small space, one major environmental event, like a fire, flood or earthquake, would lead to the species' extinction.



Conservation Fisheries, Inc. photo (www.nps.gov/grsm/learn/nature/threatened-species-abrams.htm)



Protecting Species in the Smokies Duskytail Darter

The duskytail darter (*Etheostoma percnurum*) is found in rocky areas with gently flowing, shallow pools and runs to large creeks and large rivers within the Tennessee and Cumberland River systems. A run is a deep-water area with a moderate to fast current, where the water surface generally remains unbroken.

The duskytail darter has a broken distribution, but it was once more widespread throughout the upper Tennessee and middle Cumberland Rivers. They were known to once inhabit Abrams Creek in Blount County, Tennessee, and South Fork Holston River in Sullivan County, Tennessee. Sadly, as of April 21, 1993, the US Fish and Wildlife Service listed the duskytail darter on its endangered species list. Currently, you might spot duskytail darters in only four locations – the Little River in Blount County, Tennessee; Citico Creek in Monroe County, Tennessee; Big South Fork in Scott County, Tennessee; and Copper Creek in Scott County, Virginia. Researchers say populations of duskytail darters were reduced due to poor water quality and poor land use. It is thought that the current population is at risk of extinction if a chemical spill occurred in any of its known waterways.



Photo Credit: Conservation Fisheries, Inc
https://www.fws.gov/endangered/map/ESA_success_stories/TN/TN_story2/index.html



Protecting Species in the Smokies Worksheet

<p>What are the common and scientific names of the species?</p>	<p>How would you describe the habitat of the species?</p>
<p>Why is this species endangered and how can you save its population?</p>	<p>Draw a picture of the species.</p>



Protecting Species in the Smokies Answer Key

What is one way that human activity affects endangered species?

The smoky madtom could become extinct from the human activities of logging, road and bridge construction and maintenance, mineral exploration and mining, and other projects that are not planned with the species' survival in mind. This species is also affected by recreational activities in the creek. The duskytail darter is affected by water pollution from poor land use practices and coal mining. It is also hurt by agricultural, residential and commercial development.

How would you describe the habitat of the endangered fish in Abrams Creek?

The smoky madtom is found in the tributaries of the Little Tennessee River in Abrams Creek and the Citico Creek. The area of the creek where they live has a gradient of 13.2 feet per mile, and it has many flat, palm-sized, slab rocks; shallow pools; pea-sized gravel; scattered flat rocks; and deep pools with silty or sandy bottoms and large boulders. The duskytail darter lives near the edges of gently flowing shallow pools and slow running areas in the clear water of large creeks that are between 33 and 264 feet. They are found over pea gravel, rubble, slab rock, and boulder substrates.

What is one reason why these two fish species are endangered?

The smoky madtom was found in Abrams Creek before it was treated with a fish toxicant, and now it is only found in Citico Creek. Because there are so few smoky madtoms, they could become extinct by a single catastrophic event that could be caused by humans or nature. The duskytail darter was found in Abrams Creek before 1957 when it was treated with a fish toxicant that was supposed to improve the trout population, but it removed most native species like the duskytail darter. In the Little River, this species is affected negatively by agricultural, residential and commercial development.