

# GRADE 5

FINICKY FISH FINISH...LAST!

**POST-VISIT LESSONS • SUPPORT MATERIALS**

## Teacher Reference: SAMPLE INTERPRETIVE WAYSIDE EXHIBITS

### ONLINE RESOURCES

#### **Ecos Communications**

Ecos Communications specializes in creating various types of exhibits for science and cultural history themes.

[www.ecos.us/project\\_interp\\_golden.html#](http://www.ecos.us/project_interp_golden.html#)

- ▶ Move the mouse over “Portfolio;”
- ▶ Move the mouse over “Interpretive Signage;”
- ▶ Click on individual project titles;
- ▶ Click on “Start Slideshow” under the first image in each project to see more interpretive panels from the project.

#### **Interpretive Graphics**

Interpretive Graphics specializes in the development of interpretive and historical signs, markers, and exhibits:

[www.interpretivegraphics.com/view.html](http://www.interpretivegraphics.com/view.html)

- ▶ Click on each project listed on the left side of the page.

#### **National Park Service**

Harpers Ferry Center creates all types of interpretive media for units of the National Park Service. This link web page provides examples of Harpers Ferry Center wayside exhibit panels and bases:

[www.nps.gov/hfc/products/waysides/way-products.htm](http://www.nps.gov/hfc/products/waysides/way-products.htm)

#### **Ormsby and Thickstun Interpretive Design**

This company creates all types of interpretive products with natural history themes.

[www.ormsbythickstun.com/](http://www.ormsbythickstun.com/)

- ▶ Click on “Wayside Exhibit Panels” in the left frame.

#### **State of Vermont**

The Lake Champlain Basin Program recently created numerous wayside exhibits. View two examples at the following links:

[www.anr.state.vt.us/champ/wayside/PDFS/Phosphorus\\_Reduction/Industrial\\_Waste.pdf](http://www.anr.state.vt.us/champ/wayside/PDFS/Phosphorus_Reduction/Industrial_Waste.pdf)

[www.anr.state.vt.us/champ/wayside/PDFS/Poultney\\_Mettowee/Stormwater.pdf](http://www.anr.state.vt.us/champ/wayside/PDFS/Poultney_Mettowee/Stormwater.pdf)

## Student Reference: PLANNING AN INTERPRETIVE PANEL

**You** are a famous designer and you've been hired by the National Park Service to create a new wayside exhibit at Lake Mead National Recreation Area. What is the topic? Razorback Suckers, of course!

### *WHAT DO WE KNOW?*

In class and on your Forever Earth field trip, you have studied the razorback sucker and learned about:

- what makes it so cool
- why it is endangered
- what environmental factors affect its survival and what its range of tolerance is
- what challenges exist to reintroduce this species into an altered ecosystem
- what environmental factors need to be considered for its successful re-establishment

### *WHAT DO WE DO?*

Your teacher has shown you some samples of interpretive wayside exhibits. An interpretive wayside exhibit is more than a sign. It doesn't just list information or give someone rules to follow (e.g., No Trespassing!). The artwork and text are especially chosen to guide an audience to know something, feel something, and do something based on what they've been shown.

The first step in creating a wayside exhibit is to select a theme, which will be the main concept or take-home message of your panel. Next you will define the objectives for your creation. It helps to draw comparisons between the information you present and ideas (such as family, home, loss, etc.,) that anyone can understand.

### *OUR TOPIC IS RAZORBACK SUCKERS...WHAT IS OUR THEME?*

A good theme for your interpretive panel should:

- be stated as a short, simple, complete sentence;
- contain one main idea;
- be interesting and inspiring; and
- answer the question "So what?"

It is possible to think of many themes for a particular topic. First, brainstorm possible themes based on what you know about razorback suckers. Don't worry about wording each theme perfectly. Once you have a list of possible themes, pick out the most interesting ones to reword and develop.

*POSSIBLE THEMES FOR THE TOPIC "RAZORBACK SUCKERS"*

Brainstorm at least four ways to complete the following sentence:

*When it comes to razorback suckers, I think it is really important that visitors understand...*

1.

2.

3.

4.

*OUR THEME:*

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*After visiting and viewing our wayside exhibit, most visitors will...*

*Know:*

*Feel:*

*Do:*

## Teacher Reference: NEVADA STATUTES

TITLE 45. WILDLIFE CHAPTER 503. HUNTING, FISHING AND TRAPPING;  
MISCELLANEOUS PROTECTIVE MEASURES. PROTECTION AND PROPAGATION OF NATIVE FAUNA  
(Animal Legal and Historical Center [n.d.] Retrieved March 31, 2006 from  
[http://www.animallaw.info/statutes/stusnv503\\_584.htm](http://www.animallaw.info/statutes/stusnv503_584.htm))

Citation: Nev. Rev. Stat. Ann. §§ 503.584-89(1969)

Citation: N. R. S. 503.584; NV ST 503.584-89

Summary: These statutes provide that the Legislature of Nevada has an interest in protecting native species from extinction and sets forth the authority to establish programs to protect designated species. However, if a native species is found to be destructive under the statute, the statute provides for removal if appropriate. Under statute, the ultimate responsibility for management rests with the governor for reviewing state programs and entering into interstate and federal agreements.

Statute in Full:

503.584. Legislative finding; conservation, protection and propagation of selected species

1. The legislature finds that:

(a) The economic growth of the State of Nevada has been attended with some serious and unfortunate consequences. Nevada has experienced the extermination or extirpation of some of her native species of animals, including fish and vertebrate wildlife. Serious losses have occurred and are occurring in other species of native wild animals with important economic, educational, historical, political, recreational, scientific and aesthetic values.

(b) The people of the State of Nevada have an obligation to conserve and protect the various species of native fish and wildlife that are threatened with extinction.

2. The purpose of NRS 503.584 to 503.589, inclusive, is to provide a program for the:

(a) Conservation, protection, restoration and propagation of selected species of native fish and other vertebrate wildlife, including migratory birds; and

(b) Perpetuation of the populations and habitats of such species. 503.585. Placement of animal threatened with extinction on list of fully protected species; special permit for capture, removal or destruction. A species or subspecies of native fish, wildlife and other fauna must be regarded as threatened with extinction when the commission, after consultation with competent authorities, determines that its existence is endangered and its survival requires assistance because of overexploitation, disease or other factors or its habitat is threatened with destruction, drastic modification or severe curtailment. Any animal so declared to be threatened with extinction must be placed on the list of fully protected species, and no member of its kind may be captured, removed or destroyed at any time by any means except under special permit issued by the division.

503.586. Translocation or destruction of endangered species found to be destructive

Where any bird, mammal or other wildlife which is declared to be in danger of extinction pursuant to NRS 503.585 is found to be destructive of domestic animals or fowl or a menace to health, the division may provide for its destruction or its removal, alive, for translocating.

503.587. Utilization of commission's authority to manage land

The commission shall use its authority to manage land to carry out a program for conserving, protecting, restoring and propagating selected species of native fish, wildlife and other vertebrates and their habitats which are threatened with extinction and destruction.

503.588. Governor's responsibilities

The governor shall review the programs which he administers and, to the extent practicable, utilize such programs in furtherance of the purpose of NRS 503.584 to 503.589, inclusive, and shall encourage other state and federal agencies to use their authorities in such a manner. 503.589. Administrator's powers and duties In carrying out the program authorized by NRS 503.584 to 503.589, inclusive, the administrator shall cooperate, to the maximum extent practicable, with other states and with the counties in the State of Nevada, and he may enter into agreements with such other states and counties and with other legal entities for the administration and management of any area established pursuant to NRS 503.584 to 503.589, inclusive, for the conservation, protection, restoration and propagation of species of native fish, wildlife and other fauna which are threatened with extinction.

## **Teacher Reference: THREATENED AND ENDANGERED SPECIES IN NEVADA**

### **THREATENED SPECIES IN NEVADA**

There are sixteen threatened plant and animal species in Nevada (see Student Reference: THREATENED SPECIES IN NEVADA). The Federal Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), as of 23 January 2003 defines a threatened species as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, and an endangered species as any species which is in danger of extinction throughout all or a significant portion of its range.

(Nevada Natural Heritage Program, Department of Conservation and Natural Resource, October, 2003. Retrieved April 3, 2006 from <http://heritage.nv.gov/threatnd.htm>)

### **ENDANGERED SPECIES IN NEVADA**

There are twenty-five endangered plant and animal species in Nevada (see Student Reference: ENDANGERED SPECIES IN NEVADA). The Federal Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), as of 23 January 2003 defines an endangered species as any species which is in danger of extinction throughout all or a significant portion of its range.

(Nevada Natural Heritage Program, Department of Conservation and Natural Resource, October, 2003. Retrieved April 3, 2006 from <http://heritage.nv.gov/endanged.htm>)

Note: The U.S. Fish and Wildlife Service keeps the gray wolf (*Canis lupus*) on the Nevada state list of endangered species, even though agency biologists acknowledge the animals have been extinct in the state for decades.

**Student Reference:  
THREATENED SPECIES IN NEVADA**

		<b>COMMON NAME</b>	<b>SCIENTIFIC NAME</b>
<b>PLANT</b>		Ash Meadows milkvetch	<i>Astragalus phoenix</i>
		Spring-loving centaury	<i>Centaureum namophilum</i>
		Ash Meadows sunray	<i>Enceliopsis nudicaulis var. corrugata</i>
		Ash Meadows gumplant	<i>Grindelia fraxinoprattensis</i>
		Ash Meadows ivesia	<i>Ivesia kingii var. eremica</i>
		Ash Meadows blazingstar	<i>Mentzelia leucophylla</i>
		Ute lady's tresses	<i>Spiranthes diluvialis</i> (possibly extirpated in NV)
<b>INVERT.</b>		Ash Meadows naucorid	<i>Ambrysus amargosus</i>
<b>FISH</b>		Warner sucker	<i>Catostomus warnerensis</i>
		Railroad Valley springfish	<i>Crenichthys nevadae</i>
		Desert dace	<i>Eremichthys acros</i>
		Big Spring spinedace	<i>Lepidomeda mollispinis pratensis</i>
		Lahontan cutthroat trout	<i>Oncorhynchus clarki henshawi</i>
		Bull trout	<i>Salvelinus confluentus</i>
<b>REPTILE</b>	▶	Desert tortoise	<i>Gopherus agassizii</i>
<b>BIRD</b>		Bald Eagle	<i>Haliaeetus leucocephalus</i>

▶ Federally Listed Threatened Species in Clark County

**Student Reference:  
ENDANGERED SPECIES IN NEVADA**

	<b>COMMON NAME</b>	<b>SCIENTIFIC NAME</b>
<b>PLANT</b>	Steamboat buckwheat	<i>Eriogonum ovalifolium var. williamsiae</i>
	Amargosa niterwort	<i>Nitrophila mohavensis</i>
<b>INSECT</b>	Carson wandering skipper	<i>Pseudocopaeodes eunus obscurus</i>
<b>FISH</b>	Cui-ui	<i>Chasmistes cujus</i>
	White River springfish	<i>Crenichthys baileyi baileyi</i>
	Hiko White River springfish	<i>Crenichthys baileyi grandis</i>
	▶ Devils Hole pupfish	<i>Cyprinodon diabolis</i>
	Ash Meadows Amargosa pupfish	<i>Cyprinodon nevadensis mionectes</i>
	Warm Springs Amargosa pupfish	<i>Cyprinodon nevadensis pectoralis</i>
	▶ Pahump poolfish	<i>Empetrichthys latos latos</i>
	▶ Bonytail chub	<i>Gila elegans</i>
	Pahranagat roundtail chub	<i>Gila robusta jordani</i>
	▶ Virgin River chub	<i>Gila seminuda</i>
	White River spinedace	<i>Lepidomeda albivallis</i>
	▶ Moapa dace	<i>Moapa coriacea</i>
	▶ Woundfin	<i>Plagopterus argentissimus</i>
	Independence Valley speckled dace	<i>Rhinichthys osculus lethoporus</i>
	Ash Meadows speckled dace	<i>Rhinichthys osculus nevadensis</i>
	Clover Valley speckled dace	<i>Rhinichthys osculus oligoporus</i>
	▶ Razorback sucker	<i>Xyrauchen texanus</i>
<b>BIRD</b>	▶ Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>
	▶ Wood stork	<i>Mycteria americana (accidental to Nevada)</i>
	Brown pelican	<i>Pelecanus occidentalis (accidental to Nevada)</i>
	Yuma clapper rail	<i>Rallus longirostris yumanensis</i>
	▶ Least tern	<i>Sterna antillarum (accidental to Nevada)</i>

▶ Federally Listed Endangered Species in Clark County

## Student Reference: WRITING INTERVIEW QUESTIONS

**Y**ou are a well-known radio host, and your future guest is a member of a threatened or endangered species. You must prepare yourself to conduct the upcoming interview by learning about your guest and writing interview questions!

### *FINDING OUT*

Type the name of the species into a search engine such as **www.google.com** or **www.Ask.com**. You can use the common name or scientific name. As you read the web pages, keep your eyes peeled for information that would interest your listening audience.

### *KEEPING TRACK*

As you read, take notes. Use your interview organizer worksheet to keep track of your facts: Remember: Who? What? When? Where? Why?

### *LET'S THINK IT THROUGH!*

Hmmmm....What might a member of a threatened or endangered species say if he or she could talk? Think about what message you want your interview to make clear to the public. This is your chance for the public to learn about a species—from the species itself!

Also, think about your audience. You design your interview to interest the audience of your choice! If your audience is made up of sports fans, maybe you could make comparisons to sports; if your audience loves the outdoors, be sure to thoroughly describe the lands where the species lives. What do you want your audience to know, feel, and understand after they've listened to the interview? What do you want them to do?

Look for a "hook" for your interview such as humor, an attention-grabbing fact, or a frightening prediction; it is important to immediately capture the attention of the listener/viewer.

## *WRITING THE QUESTIONS*

### **Introduction**

Your first questions should help your plant, animal, bird, fish, reptile, or invertebrate to relax. Write questions that help your subject introduce itself. For example:

- What is your scientific name and your common name? Do you know what your names mean or how you got them?
- Where do you live?
- Can you describe yourself to our listening audience?

### **Digging Deeper...about the past**

Write questions that help your subject to talk about its experiences. For example:

- What was life like for you in the “good old days” before you became threatened or endangered?

### **Digging Deeper...about what happened**

The next set of questions you write should allow your interviewee an opportunity to explain in detail what happened to him or her. For example:

- Your name is on the federal and Nevada state Endangered Species List, which means that you are in danger of extinction. Why is your life endangered?
- Your name is on the federal and Nevada state Threatened Species List, which means that you are likely to become endangered or extinct. Why is your life threatened?

Now write some follow-up questions that call for details, clarification, or more explanation:

- I understand that your worst enemy is \_\_\_\_\_. Would you agree with that? Why or why not?

### **Digging Deeper...about your guest's feelings**

Write questions that also explore your subject's feelings of happiness, anger, fear, or hope.

For example:

- What are your fears for your children?
- Who, if anyone, has given you hope?

## **Digging Deeper...about the big picture**

Finally, write questions that give this member of the species an opportunity to comment on the "big picture," to judge, predict, or summarize. For example:

- What do you think humans should have done differently?
- What can humans do now to help you, in your opinion?
- Do you really think that you can be re-established into \_\_\_\_\_?
- What would your ideal home be like?

### *TIPS FOR THE INTERVIEW*

- Refer to your questions during the interview so you don't forget anything.
- During the interview, some of your guest's responses may make you think of additional questions. Write them down as you think of them and come back to them or immediately ask them.

**Student Worksheet:**  
**BACKGROUND NOTES FOR THE INTERVIEW**

*MY SPECIES:* \_\_\_\_\_ *MY AUDIENCE:* \_\_\_\_\_

*HOOK IDEAS:* \_\_\_\_\_

*WHO?*

*WHAT?*

*WHEN?*

*WHERE?*

*WHY?*

## Teacher Reference: CREATING A PODCAST

### *Getting the Gear*

- You will need a laptop or desktop computer with an Internet connection.
- Be sure to have a microphone on the laptop or computer you are using.
- Find and download free software programs to record your podcast (Refer to “My Podcast Resources” below for software suggestions).

### *Recording the Podcast*

- Be sure the students have a quiet place to record.
- On your computer, open the sound recording program and begin recording the podcast.
- Students may add background music and sound effects to make the podcasts more entertaining.
- Some software has sound editing tools. You can experiment with these to improve the quality of the podcast.
- Save the podcast as an MP3 file.

### *Publishing the Podcast*

- When the podcasts are finished you will upload them to a hosting service.
- Be sure to remind student to share their podcasts!
- You may also wish to advertise your students’ podcasts.

### *Podcast Resources*

#### **The Education Podcast Network**

This site contains a wide range of podcast programming that may be helpful to teachers looking for content to teach with and about. It also provides several examples of podcasts that teachers and students can listen to on a variety of topics in a wide range of subjects areas.

<http://epnweb.org>

#### **Interactive Voices**

This site provides a wide array of voices and sound effects that can be used in a podcast production. It also provides several resources to assist in the development of a podcast.

[www.interactivevoices.com/](http://www.interactivevoices.com/)

**O'Reilly Media, Inc.**

This website provides information on how to develop a podcast. It covers such topics as the audio sources needed, tools of the trade, troubleshooting challenges, and putting the podcast together.

[www.macdevcenter.com/pub/a/mac/2005/01/25/podcast.html](http://www.macdevcenter.com/pub/a/mac/2005/01/25/podcast.html)

**The Podcasting EBook: Your Complete Guide**

This EBook (available for purchase) provides an informative look at podcasting. The site offers the latest information about podcasting along with samples of professional podcasts.

[www.thepodcastingebook.com/](http://www.thepodcastingebook.com/)

**Podsafe Music Network**

This site provides several examples of podcasts integrated with different styles of music. This site also provides a variety of music to sample for podcast production.

<http://music.podshow.com/>

**Teaching Ideas Website**

This site provides very specific teaching ideas for implementing podcasts. It offers examples of podcasts produced by children along with simple guidelines of how to teach children about podcasts. The sample podcasts provided include a children's radio show with music, jingles, and an interview.

[www.teachingideas.co.uk/ict/podcasting.htm](http://www.teachingideas.co.uk/ict/podcasting.htm)

**Yahoo Podcast Site**

The Yahoo Podcast site gives a step-by-step guide to creating a podcast in very simple terms. Instructions for creating a podcast are broken down into very easy steps. The site also offers suggestions on where to house the podcast once it has been developed.

<http://podcasts.yahoo.com/publish?i=2>

## Student Reference: CREATING A PODCAST

### *What is a Podcast?*

**A** Podcast is a presentation (audio or video) that is put on the Internet for people to download. Once a person downloads a podcast, he or she can play it anytime on a personal computer, MP3 player, Ipod, or other device. An audio podcast sounds just like a radio program. You can make an audio podcast with a standard computer, a microphone, free software, and a web site for posting your program. A podcast can be downloaded to any computer connected to the Internet.<sup>1</sup>

### **Your job**

In class and on your Forever Earth field trip, you learned answers to the questions:

- What threatens or endangers a species?
- What environmental factors affect an organism's survival?
- What is an organism's "range of tolerance"?
- Can endangered/ threatened species be re-established into an ecosystem?

You and your partner will bring the answers to these questions to life by creating a podcast interview. You have written the script to an interview with a member of a threatened or endangered species. One of you will play the role of the host and the other will play the guest. It's time to podcast your script of an interview with a threatened or endangered species!

### **Planning the Podcast**

Get ideas by listening to the podcasts your teacher plays for you. Taking notes about what you like and dislike about the shows.

### **The Icing on the Cake**

- Select background music to make your podcast appealing. Check out the Podsafe Music Network site at <http://music.podshow.com/>
- If you plan on using video, select appealing scenery and photographs.
- After you have written your script, practice reading it. Read with expression!!
- Give your podcast a "catchy" title like "Save that Sucker" for an interview with a razorback sucker.

<sup>1</sup> The Education Podcast Network. Retrieved March 31, 2006 from [http://epnweb.org/index.php?view\\_mode=what](http://epnweb.org/index.php?view_mode=what)