

## Spotted Owls Face New Threat Educator Guide

A resource for using QUEST radio in the classroom

Listen at <http://science.kqed.org/quest/audio/spotted-owls-face-new-threat/> | 05:46 minutes

### QUEST SUBJECTS

**Life Science**      **Biology**  
Health  
Environment

**Earth Science**      Geology  
Climate  
Weather  
Astronomy

**Physical Science**      Physics  
Chemistry  
Engineering

### CA SCIENCE STANDARDS

**Grades 9-12**  
*Ecology (Biology)*  
6. (c) Fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration and death.

### PROGRAM NOTES

One of the most threatened species in the West is the iconic spotted owl. But despite almost 20 years of work to bring them back, their numbers are still declining. That may be due in part to a new threat -- not from humans, but from other owls. Join National Park Service ecologist Bill Merkle in a forest near Muir Woods as he discusses the plight of the spotted owl.



Photo credit: National Park Service

In this segment you'll find...

- ⦿ a description of the history and habitat of the spotted owl.
- ⦿ an explanation of why the barred owl is contributing to spotted owl decline.

### TOPIC BACKGROUND

Northern spotted owls are brown with white spots. They are smaller than you might imagine -- only about 16 inches long and weighing about a pound. They can be found from Washington State to the Bay Area.

Barred owls, commonly known as the hoot owl, are originally from the eastern U.S. In the West, this type of owl is an invasive species, a term used to describe a particular species that is not originally from the region it inhabits and negatively impacts habitats and other organisms that it invades. Also known as non-native species, these organisms can end up dominating a region because they often have no natural population controls, such as predators.

Owls prey on rodents, thereby helping to maintain the natural balance of plant and insect populations. Because their ecological roles are so similar, barred owls take over spotted owl territory and, in some cases, even attack them. In places like western Washington, the spotted owl population has been cut in half since the barred owl arrived.

In 2007, White House officials announced a proposal from the U.S. Fish and Wildlife Service that said shooting barred owls would help revive the spotted owl population. The proposal called for 18 sites to be constructed in spotted owl territory where a dozen or so owls could be shot at each site. Environmentalists fear that placing blame on the barred owls for causing the decline of spotted owls will result in less attention paid to habitat protection. It could also cause logging to resume in protected spotted owl regions.

#### Additional Resources:

Owls in Marin County <http://www.nps.gov/muwo/naturescience/life-of-spotted-owls.htm>

San Francisco Bay Area National Parks Science and Learning  
[http://www.sfnps.org/northern\\_spotted\\_owls](http://www.sfnps.org/northern_spotted_owls)

## VOCABULARY

### Barred owl

commonly known as the hoot owl, these owls are native to the eastern U.S.

### Conservation

the act of protecting or preserving living species

### Endangered species

a population of organisms whose numbers are so small that it is in danger of becoming extinct

### Invasive species

a species that is not native to a particular ecosystem and whose presence causes or is likely to cause harm to the environment or human health

### Muir Woods

part of the National Park Service north of San Francisco that is home to old-growth coastal redwood forests

### Spotted owl

a brown owl with white spots that is found from Washington State to the Bay Area

## PRE-VIEWING

- What do you know about different types of owls?
- What do you think the term “invasive species” means?

## VIEWING FOCUS

NOTE: You may choose to watch the video segment twice with your students: once to get an overview of the topic and again to focus on facts and draw out opinions.

- Where do spotted owls live?
- Contrast the barred owl and the spotted owl.
- Why are barred owls contributing to a decline in the number of spotted owls?
- What is one proposed solution for solving the problem of the barred owl invasion?

*For all media see:*

- Segment Summary Student Sheet  
[http://www.kqed.org/quest/downloads/QUEST\\_SegSum\\_StudentSheet.pdf](http://www.kqed.org/quest/downloads/QUEST_SegSum_StudentSheet.pdf)
- Personal Response Student Sheet  
[http://www.kqed.org/quest/downloads/QUEST\\_PersResp\\_StudentSheet.pdf](http://www.kqed.org/quest/downloads/QUEST_PersResp_StudentSheet.pdf)

## LESSON PLANS and RESOURCES from QUEST, PBS and NPR

### Owls PBS LearningMedia

<http://www.pbslearningmedia.org/content/idptv11.sci.life.oate.d4kowl/>

This video segment from IdahoPTV's **D4K** demonstrates how an owl's eyes, face, neck and wings are all specially adapted to help this predator hunt and survive.

### San Francisco Bay Invaders QUEST

<http://science.kqed.org/quest/video/san-francisco-bay-invaders/>

Invasive types of mussels and fish are choking out native species in and around San Francisco Bay. Learn about experts around California who are working to change the human behaviors that encourage the spread of invasive species.

### Biological Invaders PBS LearningMedia

<http://www.pbslearningmedia.org/content/tdc02.sci.life.eco.bioinvaders/>

This video segment from **Evolution: Extinction!** shows the impact of invasive species on native ecosystems.

### Population Growth PBS LearningMedia

[http://www.pbslearningmedia.org/content/tdc02.sci.life.eco.lp\\_popgrowth/](http://www.pbslearningmedia.org/content/tdc02.sci.life.eco.lp_popgrowth/)

In this lesson, students are introduced to the ecology of population growth by growing duckweed and learning about invasive species.

### Cool Critters: Great Horned Owls QUEST

<http://science.kqed.org/quest/video/cool-critters-great-horned-owls/>

In this video from **QUEST**, meet Olivia, a great horned owl, and learn about the adaptations that make owls such great predators.

## VISIT OUR PARTNERS

The Bay Institute  
[www.bay.org](http://www.bay.org)

California Academy of Sciences  
[www.calacademy.org](http://www.calacademy.org)

Chabot Space and Science Center  
[www.chabotspace.org](http://www.chabotspace.org)

East Bay Regional Park District  
[www.ebparks.org](http://www.ebparks.org)

Exploratorium  
[www.exploratorium.edu](http://www.exploratorium.edu)

Girl Scouts of Northern California  
[www.girlscoutsnorcal.org](http://www.girlscoutsnorcal.org)

Golden Gate National Parks Conservancy  
[www.parksconservancy.org](http://www.parksconservancy.org)

The J. David Gladstone Institutes  
[www.gladstone.ucsf.edu](http://www.gladstone.ucsf.edu)

Lawrence Berkeley National Laboratory  
[www.lbl.gov](http://www.lbl.gov)

Lawrence Hall of Science  
[www.lawrencehallofscience.org](http://www.lawrencehallofscience.org)

Monterey Bay Aquarium  
[www.mbayaq.org](http://www.mbayaq.org)

Monterey Bay Aquarium Research Institute  
[www.mbari.org](http://www.mbari.org)

Oakland Zoo  
[www.oaklandzoo.org](http://www.oaklandzoo.org)

Stanford University's Woods Institute for the Environment  
<http://woods.stanford.edu>

The Tech Museum of Innovation  
[www.thetech.org](http://www.thetech.org)

UC Berkeley Natural History Museums  
<http://bnhm.berkeley.edu/>

## MORE EDUCATIONAL RESOURCES FOR USING QUEST MULTIMEDIA TO ENHANCE 21<sup>st</sup> CENTURY SKILLS IN TEACHING AND LEARNING

### Why Use Multimedia in Science Education?

<http://science.kqed.org/quest/files/downloads/2011/06/QUESTWhyMedia.pdf>

- Read about the importance of using multimedia in the 21st century science classroom.

### How to Use Science Media for Teaching and Learning

<http://science.kqed.org/quest/files/downloads/2011/06/QUESTMediaTips.pdf>

- A collection of tips, activities and handouts to actively engage students with multimedia.

### Science Multimedia Analysis

<http://science.kqed.org/quest/files/downloads/2011/06/QUESTMediaAnalysis.pdf>

- Give your students the tools to recognize the purposes and messages of science multimedia.

### Create Online Science Hikes with Google Maps

[http://science.kqed.org/quest/files/downloads/2011/06/QUEST\\_ExplorationCreation.pdf](http://science.kqed.org/quest/files/downloads/2011/06/QUEST_ExplorationCreation.pdf)

- Do you like the science hike Explorations on the QUEST site? Use this place-based educational guide to create similar science-based maps with youth.

### Media-Making Toolkit for Science Education

<http://science.kqed.org/quest/education/media-making-toolkit/>

- Are you interested in integrating media making into your classroom or science education program? Find instructions, worksheets and rubrics for implementing simple media-making projects with students.

## OTHER WAYS TO PARTICIPATE IN QUEST

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Spotted owls are one of the most iconic endangered species in the West. But despite two decades of work to bring them back, their numbers are still declining. That may be due in part to a new threat—not from humans, but from other owls. Lauren Sommer has the story.

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You might picture spotted owls in a mossy Pacific Northwest forest, but they actually live right here in the Bay Area. That is, if you can find them...

That's a recorded spotted owl call being played by Bill Merkle, a National Park Service ecologist. It's almost dusk and he's standing in a forest near Muir Woods where a pair of owls had a nest last year.

MERKLE: I think they're just probably like 50 or 60 feet up there.

SOMMER: Was that an owl?

MERKLE: That was an owl.

Merkle runs up a steep slope that's covered in brush and poison oak. In the branches above him he sees two spotted owls.

MERKLE: So this would definitely be a pair. They're hanging out together.

Northern spotted owls aren't very big. They're a brown owl with white spots that's found from Washington state down to the Bay Area. They've also had the starring role in a decades-long battle between loggers and wildlife groups over their habitat. In many logging towns in the early 1990s, this owl was public enemy number one.

MERKLE: We more often hear the females doing these contact calls—the higher whistles. Sort of like that.

The owls use those whistles to check in with each other. Merkle says, in all, about 80 pairs of spotted owls are found on national park land in Marin County. And for 15 years, the park service has monitored the health of that population. But recently, Merkle says they've been hearing a new owl call, one like this...

PRESS: It's often described as "who cooks for you." Who who who who, who who who who, who whooooo

That's David Press, another ecologist with National Park Service. He's joining Merkle near Muir Woods to look for the owl that makes that call—the barred owl.

MERKLE: You see anything from there?

They peer into a hollow cavity high in a tree—a cavity that used to be a spotted owl nest.



MERKLE: Just at the very base of it you can see a little bit of that barred owl. It's a female barred owl, sitting on her eggs. Merkle looks concerned.

MERKLE: It's a troubling picture for the spotted owls.

Barred owls are an invasive species, originally from the Eastern U.S. They first arrived in spotted owl territory in Washington and have been moving south down the coast, which makes this owl the frontline of the invasion.

MERKLE: The barred owl is a little larger. It's a little more aggressive. And so in other areas where you have barred owls set up, the spotted owls aren't there anymore.

Barred owls take over spotted owl territory and in some cases, even attack them. In places like western Washington, the spotted owl population has been cut in half since the barred owl showed up. David Press is already seeing a change in Marin.

PRESS: Since the barred owls moved into the area, we've had a harder and harder time detecting spotted owls where they have been historically.

HENSON: The barred owls are really sort of adding insult to injury.

Paul Henson is with the US Fish and Wildlife Service, the agency overseeing spotted owl recovery.

HENSON: The injury for the spotted owl was 100 years of habitat loss, and the sort of insult, the more recent insult, is barred owls have now shown up and are really outcompeting spotted owls.

The Fish and Wildlife Service hopes to deal with the issue in a new plan expected to be released in a few weeks. It includes a barred owl study that's raising a few eyebrows. Robin Bown is a biologist with Fish and Wildlife.

BOWN: We identified the need to do a focused study where we could test the response of spotted owl populations to the removal of barred owls.

Which means...

BOWN: Well, basically it means permanent removal. We're going to look at all potential opportunities, but the most humane way to do it is to shoot them. A shotgun removal is extremely quick, it's almost instantaneous.

Bown says they plan to eliminate barred owls from a few study plots to see if the spotted owls there do better. They also want to see if it's even feasible to remove barred owls by shooting them. And yes, Bown says this is an idea that's not easy to consider.



## SPOTTED OWLS FACE NEW THREAT — QUEST RADIO TRANSCRIPT

## NOTES AND QUESTIONS

BOWN: Oh, it's a very difficult thing. I mean, even for those of us involved in this, it's a difficult concept to say I'm going to kill one species to try to save another species. But it's also something that in some cases we need to do.

Back in Muir Woods, Bill Merkle says a lot of people are waiting on the results of the study to see what's next. Budget cuts are also an issue. Just as more barred owls are arriving, Merkle says the park service's owl monitoring program has been cut.

MERKLE: Now the situation is getting a lot more challenging, just when I think the threats are getting more apparent with the barred owls. We know climate change is going to change things out here. It is a difficult time to be cutting off our monitoring.

If approved, the barred owl removal program would begin next year.

For QUEST, I'm Lauren Sommer, KQED News.