

Teacher's Guide**Frogs and Amphibians: Crisis and CSI**
NATURE Science Education Series**Grade Levels:**

7-12

Subject Areas:

Sciences
Life Sciences
Biology
Ecology

Synopsis:

This episode explains that frogs have adapted, evolved, and survived for over 250 million years but now, about one-third of their species are collapsing. It investigates the ways human populations are encroaching on amphibian habitats and how diseases are also affecting amphibian populations. Biologists are followed on fieldwork as they take samples for analysis in the lab, and study the effects of chytrid fungus on frog populations. It also films how infected frogs are treated with a form of chemotherapy. One sequence models a CSI investigation as biologists discover that toxic runoff has caused frog deformities in the Salinas Valley. The final sequence captures the efforts of an Australian couple helping endangered frogs survive drought conditions that have resulted from climate change.

Learning Objectives: Students will:

- Explain why frogs are a bellwether of environmental health.
- Describe conditions that have depleted one-third of the world's amphibians.
- Describe the efforts of biologists to re-establish the health of frog populations.
- Understand that habitat loss affects the restoration of frog and amphibian populations.
- Appreciate the detailed investigative procedures that are common practice in wildlife biology.

Vocabulary:

bellwethers, permeable, species collapse, translucent, pristine, metamorphosis, insidious, eradication, amphibian chytrid fungus, domino effect, stealthy, replicate, chemotherapy, invasive, metamorphose, deformities, parasites, pesticides, chloropicrin, methyl bromide, atrazine, immune systems, immuno-suppression, chemical runoff,

carnivore, decimated, toxins, African clawed frog, invasive, female chromosome, reproductive anomalies

Pre-Viewing Discussion:

Have you ever gone frog hunting? What kinds of frogs have you been able to catch? Did you keep a frog as a pet or did you let the frog go? Were there lots of frogs where you went frog hunting?

Why are frogs such fascinating creatures?

Can you recall folktales, legends or fairy tales about frogs? What does this tell us about human beings and their relationship with frogs throughout the ages?

Are frogs amphibians? What characteristics do they share with all amphibians? Are there as many amphibians today as there were a hundred years ago? What makes you think so?

Post-Viewing Discussion:

Why are frogs a bellwether of the health of an environment? What is the significance of their position at the center of the food chain?

Why are biologists so concerned about Chytrid and its effect on frog populations? What are they doing to reverse the effects of Chytrid?

Do you think biologists will be able to control the spread of Chytrid? What other factors, besides the control of the disease, will influence whether or not frog populations can be restored?

What was causing the deformities in frog populations in California? What other causes had upset the balance in amphibian populations in the Salinas Valley?

Further Activities:

Further investigate the anatomy and physiology of frogs. If possible, observe or participate in the dissection of a frog.

Investigate the role of European research projects in studying amphibian diseases.

Find out how some South American frogs use mimicry to avoid predators. Your investigation should include the adaptations of poison dart frogs and their close relatives.

Further investigate the causes of frog deformities.

Related New Dimension Media Titles:

Frogs and Other Amphibians