LOST TOADS OF THE CLOUD FOREST – LESSON PLAN

Please visit www.conservationnation.org/lessons for complete lesson materials including the lesson video, worksheets, and vocabulary list.

GRADES

5-8

TIME REQUIRED

20 minutes for pre-lesson prep
50-55 minutes for live virtual lesson

SUMMARY

In this live Conservation Nation lesson, students learn about the Mindo Harlequin Toad, a Critically Endangered amphibian found only in the cloud forests of Ecuador. Through real conservation data, images, and firsthand fieldwork experiences shared by conservationist Gabriela (Gaby) Sandoval, students explore why the species declined, how scientists monitor populations, and how community-led land protection can prevent extinction. The lesson emphasizes evidence-based reasoning, ecosystem interactions, and human solutions to biodiversity loss, showing students how science and people work together to save species.

OBJECTIVES

Students will be able to...

- Describe the habitat needs and key characteristics of the Mindo Harlequin Toad
- Analyze evidence explaining population decline (disease, deforestation, pollution)
- Interpret real conservation data on population size and trends
- Construct evidence-based explanations for why habitat protection is necessary
- Identify actions communities can take locally and globally to protect biodiversity

MATERIALS

Available at www.conservationnation.org/lessons

- Pre-Read article: ‘Extinct’ toad rediscovery offers hope amid amphibian apocalypse (available at the link or to print in the lesson materials)
- Gaby’s Introduction for Pre Lesson
- Vocabulary List
- Lost Toads of the Cloud Forest Lesson Video
- Small Object for I-Spy Activity about 1 inch in size (e.g., eraser, tiny toy)

NEXT GENERATION SCIENCE STANDARDS

- K-ESS3-3 — Communicate solutions that reduce human impacts on the environment.
- 3-LS4-3 — Construct an argument that habitat characteristics affect organism survival.
- 3-LS4-4 — Make a claim supported by evidence about solutions to environmental changes.
- 4-LS1-1 — Use evidence to explain how the structures of organisms support survival.
- 5-ESS3-1 — Obtain and combine information about how communities protect Earth’s resources.
- MS-LS2-4 — Construct an argument using evidence that ecosystem changes affect populations.
- HS-LS2-7 — Design and evaluate solutions to reduce human impacts on biodiversity.

INSTRUCTIONS

Pre Lesson Preparation – 15-20 minutes

1. Introduction: Meet Gaby & the Species (3 minutes)

a. Teacher introduces **Gabriela (Gaby) Sandoval**, a wildlife conservationist working to save the Mindo Harlequin Toad, who will join the class during the next session.

b. Framing question for students:

“What do you think it would be like to search for an animal that might only exist in a few places on Earth?”

2. Vocabulary-in-Context and Preview Video (5 minutes)

a. Students receive the vocabulary list and review it individually.

b. While watching the video, students highlight, circle, or mark any words they are unsure about or have questions on.

NOTE: If printing vocabulary lists for each student isn't feasible, the teacher can post them on screen and ask students to write down any of interest or any they want to learn more about during the next class.

Vocabulary Heard in the Intro Video:

- habitat
- species
- endangered
- critically endangered
- conservation
- biosafety measures

c. Students watch Gaby's Introduction Video.

d. After the video, teacher leads a brief whole-class discussion:

- What stood out or surprised you about the toad or Gaby's work?
- Which of the vocabulary words did you hear? Which would you like to learn more about?

3. I-Spy Activity: "Finding the Toad" (10 minutes)

Purpose:

This activity helps students physically experience how difficult it can be to locate a tiny, endangered species, mirroring Gaby's real-life fieldwork. The Mindo Harlequin Toad is typically .8 to 1.1 inches long!

Setup:

a. The teacher hides a very small object (tiny toy, eraser, penny, or paper cutout about 1 inch in size) somewhere in the classroom.

b. Lights are dimmed or turned off (if safe and permitted) to simulate low-visibility field conditions.

Activity Instructions:

a. Students are told they are "conservation scientists" searching for a rare species.

b. Students quietly scan the room using **only their eyes** (no touching or moving objects).

c. When a student spots the object, they raise their hand instead of calling out.

Debrief Questions:

- Was it easy or hard to find the object? Why?
- How did the size of the object affect your search?
- How does this relate to Gaby's work searching for the Mindo Harlequin Toad in the wild?

End of Pre-Lesson Prep

<u>Live Lesson – Saving a Species: The Mindo Harlequin Toad (50-55 minutes)</u>

1. Welcome & Lesson Framing (3 minutes)

a. Conservation Nation moderator introduces its work and role in supporting conservationists around the world. Moderator then introduces **Gaby** as a conservation biologist working in Ecuador.

2. Meet the Species: The Mindo Harlequin Toad (8 minutes)

Using slides, **Gaby** leads students through:

- Species description (size, coloration, habitat needs)
- Endemic to the Mindo Cloud Forest
- Explanation of "Critically Endangered" status

Student Prompt: Gaby asks students

Why might a species that lives in only one place be more vulnerable to extinction?

3. Why Did the Population Collapse? (10 minutes)

Students examine multiple lines of evidence presented in the slides:

- Chytrid fungus pandemic (up to 99–100% mortality)
- Deforestation for agriculture and ranching
- Water pollution and trout introduction

Facilitation:

- Pause after each threat to connect cause and effect.
- Emphasize that multiple stressors often act together in ecosystems.

4. Field Science & Population Data (10 minutes)

Using slides and video, Gaby explains:

- What a fieldwork day looks like
- How scientists monitor amphibians (swabbing, sanitation protocols)
- Population data: **16 individuals found since 2019** (males, females, tadpoles)

Student Prompt:

Why is finding even a small number of individuals important for conservation?

5. Community-Led Solutions (10 minutes)

Students learn how conservation moved from science to action:

- Creation and expansion of the Arlequín Reserve
- Role of local community members (park ranger, monitoring)
- Global partnerships and support

Think–Pair–Share:

How does protecting land help protect species without directly touching the animals?

6. Student Q&A (8 minutes) TEACHER FACILITATED

Students ask Gaby questions about:

- Being a conservationist
- Fieldwork challenges
- How students can help wildlife in their own communities

7. REFLECTION (5 minutes)

Kahoot! Quiz as a class

8. CLOSE (1 minute)

Conservation Nation moderator thanks Gaby and closes the session.