SAVING THE RIVER GIANT: THE SOFTSHELL TURTLE COMEBACK STORY – 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

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

SUMMARY

In this live Conservation Nation lesson, students learn about the Cantor's giant softshell turtle (*Pelochelys cantorii*), a critically endangered freshwater turtle and India's only known breeding population, found along the Chandragiri River in Kerala. Through real conservation data, field experiences, and the firsthand story of Conservation Nation conservationist grantee and researcher Ayushi Jain, students explore why the species is endangered, how scientists use both ecological surveys and local ecological knowledge (LEK) to monitor populations, and how community-led conservation can prevent extinction.

The lesson emphasizes evidence-based reasoning, ecosystem interactions, and human solutions to biodiversity loss — showing students how science and community partnership work together to protect a species.

OBJECTIVES

Students will be able to:

- Describe the habitat needs and key characteristics of the Cantor's giant softshell turtle
- Analyze evidence explaining population decline (dam infrastructure, habitat loss, hunting, and bycatch)
- Interpret real conservation data on nesting success and population trends
- Explain the role of local ecological knowledge (LEK) in conservation science

- Evaluate conservation strategies such as nest monitoring, community alert networks, and dam management
- Identify actions communities can take to protect freshwater biodiversity

MATERIALS

Available at www.conservationnation.org/lessons

- Pre-Read article: In Cambodia, giant turtles come back from the brink (available at the link or to print in the lesson materials)
- Ayushi's Introduction Video for Pre Lesson: https://youtu.be/cPLTUTRHYl4
- Vocabulary List
- Conservation of the Cantor's Giant Softshell Turtle Lesson Video: https://youtu.be/g17h9sdxtqA?si=szQPn07Lr4mCe6u1

NEXT GENERATION SCIENCE STANDARDS

- MS-LS2-4 — Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- MS-LS2-5 — Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
- MS-LS4-4 — Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
- MS-ESS3-3 — Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.
- MS.NOS-I1 — Scientific Investigations Use a Variety of Methods
  Scientific investigations use diverse methods and do not always use the same set of procedures to obtain data.

INSTRUCTIONS

Pre Lesson Preparation – 45 minutes

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

Teacher introduces Ayushi Jain, a conservation biologist and PhD candidate at the University of Miami, whose fieldwork in Kerala, India has been central to discovering and protecting India's only known breeding population of the Cantor's giant softshell turtle. Ayushi will join the class for the live lesson.

Framing question for students:

"What do you think it would be like to search for an animal almost no one in its home region even knows exists?"

2. Pre-Read Article, Vocabulary-in-Context & Introduction Video (15 minutes)

a. Teacher displays or distributes the Pre-Read Article: "Cantor's Softshell Turtles Recovering in Cambodia" (National Geographic, 2022). Available at: https://www.nationalgeographic.com/animals/article/cantors-soft-shell-turtles-recovering-cambodia

b. Students read the article individually or as a class read-aloud, depending on classroom preference. While reading, students mark or note any vocabulary words they encounter and write down at least one question the article raises for them.

NOTE: If printing is not feasible, display the article on screen and conduct a read-aloud, pausing for students to note vocabulary and questions. The article can also be shared digitally via a class platform.

Vocabulary for Pre-Lesson:

- Critically Endangered
- Breeding Population
- Local Ecological Knowledge (LEK)
- Bycatch
- Dam Inundation
- Nesting Habitat
- Community-Based Conservation
- EDGE Species

- Apex Predator
- Biodiversity
- Taxa
- Estuary
- Stakeholder
- Incubate
- Participatory workshops
- Scavengers
- Extinction
- River infrastructure

c. Students watch Ayushi's Introduction Video (3 minutes, 59 seconds). Available at: https://www.youtube.com/watch?v=cPLTUTRHYl4

In the video, Ayushi explains her fieldwork along the Chandragiri River — including how camera traps are used to locate nests, how the Bavikara Dam raises water levels and floods nesting sandbanks, and how she collaborates with local fishers, farmers, government officers, and engineers to find solutions that protect both people and turtles.

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

- Ayushi mentions that the dam both helps people and harms the turtles. Can you think of other examples where something built for human needs affects wildlife?
- She says conservation takes teamwork, science, and listening to different voices. What did she mean by that?
- Which vocabulary words came up in the video? Which would you like to understand better before the live lesson?

3. "Would You Notice?" — Community Awareness Discussion Activity (10 minutes)

Purpose:

This no-materials activity helps students understand one of the most powerful and surprising elements of Ayushi's conservation work: when she surveyed residents along the Chandragiri River, only about 5% of 600 respondents even knew what a softshell turtle was. Students explore how awareness, or the lack of it, directly shapes a species' chance of

survival, which sets up the community-led conservation theme running through the entire lesson.

Activity Instructions:

a. Teacher reads the following three fast facts aloud to the class (no handouts needed):

- The Cantor's giant softshell turtle can grow to more than 3 feet long and weigh more than 100 pounds — making it one of the largest freshwater turtles in the world.
- It spends 95% of its life buried and motionless under the riverbed, surfacing only briefly to breathe.
- When researcher Ayushi Jain surveyed hundreds of people living along the river where this turtle breeds, fewer than 1 in 20 had ever heard of it.

b. Teacher poses the following prompt to the class — students can respond as a whole group, in pairs, or by a quick show of hands depending on class size and comfort:

"If an animal lived in your local river but almost no one in your community knew it existed — what do you think would happen to it? Could it be protected?"

c. After 3–4 minutes of discussion, teacher brings the class back together with a follow-up question:

"What would need to change — in your community or in how scientists work — for people to start caring about an animal they've never heard of?"

Debrief Questions:

- Does an animal need to be well-known to be worth protecting? Why or why not?
- Who in a community might be most likely to notice a rare animal — and why?
- How does awareness connect to conservation? Can scientists protect a species alone?

4. Article Discussion — Cause & Effect (10 minutes)

Purpose:

Students return to the National Geographic article with a more focused analytical lens.

Instructions:

a. Teacher asks students to look back at the article. They'll work in pairs to identify:

- One cause of the turtle's population decline (e.g., egg harvesting, habitat loss)
- One action someone in the story took to help the species recover
- One thing they still wonder about that the article did not answer

b. Student pairs discuss for 2-3 minutes, then the teacher calls on a few pairs to share with the class.

d. Teacher closes with the connecting question:

"The story in Cambodia took decades to turn around. What do you think made the difference — the science, the community, or both?"

5. Individual Reflection (5 minutes)

Purpose:

Students consolidate their thinking before the live lesson by writing a short individual response. This gives quieter students a chance to process and contributes to a question bank that can be used during the live Q&A with Ayushi.

Instructions:

a. Students respond in writing — in a notebook, on a scrap of paper, or digitally — to the following prompt:

"Based on what you have read and discussed today, write 2–3 sentences answering: What is one threat facing the Cantor's giant softshell turtle, and what is one thing a community can do to help?

Then write one question you want to ask Ayushi during the live lesson."

b. Teacher collects or reviews questions (even informally) to help facilitate the Q&A segment of the live lesson.

NOTE: Writing is not required for participation. Students who prefer can share their response verbally or draw a quick diagram instead.

End of Pre-Lesson Prep

LIVE LESSON CLASS -- SAVING A SPECIES: THE CANTO'S GIANT SOFTSHELL TURTLE (50-55 minutes)

1. Welcome & Lesson Framing (3 minutes)

Conservation Nation moderator opens the session, introduces Conservation Nation's mission, and introduces Ayushi Jain as a conservation biologist and PhD candidate at the University of Miami whose research is based on the Chandragiri River in Kerala, India.

2. Meet Ayushi & the Species (8 minutes)

Ayushi introduces herself, her background, and the Cantor's giant softshell turtle. Students learn the basics of the species — its size, behavior, habitat, and why it is so rarely seen and studied — as well as why softshell turtles as a group are especially vulnerable, with 70% of species threatened with extinction globally. Ayushi shares how she came to work on this species and what drew her to the Chandragiri River.

Student Prompt:

"What do you think conservation scientists actually do day-to-day? What surprised you about Ayushi's work or the species she studies?"

3. The Chandragiri River & India's Only Known Breeding Population (7 minutes)

Ayushi introduces the field site and explains the significance of her findings. Since 2019, her project has identified the Chandragiri River as India's first-known breeding population of the Cantor's giant softshell turtle — a major discovery for a species that has seen an 80% population decline over the last 30 years. Students learn about the river's geography, the communities that live along it, and what makes its sandbanks critical nesting habitat.

Student Prompt:

"The turtle's range spans many countries, but a breeding population in India was only just confirmed. What does that tell us about how much we still don't know — even about large, critically endangered animals?"

4. Fieldwork & How Scientists Find Hidden Species (7 minutes)

Ayushi walks students through the fieldwork methods she uses to document a species that spends most of its life hidden under the riverbed. This includes camera traps to capture nighttime nesting activity, tracking signs on sandbanks, nest monitoring, and how local ecological knowledge (LEK) from fishers and farmers helped locate nesting sites that formal surveys alone could not find.

Student Prompt:

"Why might local community members know things about a rare species that trained scientists with formal tools might miss?"

5. The Bavikarra Dam: Conservation in Conflict (8 minutes)

This section presents the central challenge of Ayushi's work — the Bavikarra Dam, built in 2020, provides irrigation water, drinking water, and saltwater intrusion protection for surrounding communities. But when the dam operates during the January–February nesting season, rising water levels flood the sandbanks where turtles lay their eggs, destroying entire clutches. Ayushi presents data on how nesting habitat has changed since the dam was built and what is at stake for both the turtle population and the people who depend on the river.

Facilitation note: This is the lesson's central trade-off moment. The dam serves real human needs — it is not a villain. Help students sit with the complexity before moving toward solutions.

Think–Pair–Share:

"The same dam that threatens the turtle also provides clean water for thousands of people. Is there a right answer here? What would you need to know to decide?"

6. Community Voices & the Social Dimension of Conservation (7 minutes)

Ayushi broadens the lens from turtles to people, sharing findings from her community research. She presents data on how local residents experience the dam's benefits and harms — and how excluded many felt from the decision-making process that led to its construction. Students learn how conservation cannot succeed without understanding who is affected, who has a voice, and who does not.

Facilitation note: This is a strong environmental justice moment. Encourage students to connect the pattern of exclusion from decision-making to examples in their own communities.

Student Prompt:

"What do you notice about who had a voice in dam decision-making, and who didn't? Why might that matter for both people and conservation?"

7. Solutions & Multi-Stakeholder Partnerships (5 minutes)

Ayushi presents the path forward — not a single fix, but a coalition. She convened a multi-stakeholder partnership bringing together local fishers, farmers, government forest officers, dam engineers, and conservation scientists to find solutions that protect both human water needs and turtle nesting habitat. Interventions include nest protection, hatchling releases, and negotiations to adjust dam water release schedules during the nesting season.

Student Prompt:

"If you were at that stakeholder meeting, what role would you want to play — scientist, community member, engineer, or government officer? What would you argue for?"

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

Students ask Ayushi questions directly. Teachers should draw from the question bank generated during the pre-lesson reflection activity. Suggested prompts if students need a starting point:

- What was the hardest part of doing fieldwork in a place where you were an outsider?
- Has anything changed in how the dam is managed since you started working with the communities?
- What do you hope happens to this turtle population in the next 10 years?

- How can students take action to protect freshwater biodiversity in their own communities?

9. Reflection — Kahoot! Quiz (5 minutes)

Class completes the Kahoot! quiz together as a group reflection on lesson content.

10. Close (1 minute)

Conservation Nation moderator thanks Ayushi and closes the session.

Learn more about Conservation Nation at www.conservationnation.org