



4th GRADE  
LESSON PLAN  
*ENDANGERED SPECIES,  
GOODALL, SCIENTISTS  
AT WORK*

1 - 2 DAYS

Google

# ENDANGERED SPECIES, GOODALL, SCIENTISTS AT WORK

## 4th Grade: 1 - 2 Day Inquiry Based Lesson Plan

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### GOOGLE EARTH USAGE OVERVIEW:

Teachers will use the Google Earth Voyager Stories, [Goodall, Gombe and Google, Endangered Species Around the World](#), and [Scientists at Work](#) as sources of information for students to consider in this **inquiry investigation**.

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### LESSON SUMMARY:

- Teachers will present students with the inquiry, *does human interaction with wild animals and their habitats help or hurt the animals?*
  - Teachers will introduce three sources of information on the topic of human interaction with wild animals and their habitats.
  - Students will work to **identify and classify evidence** from each source in one of two categories: “help” or “hurt”.
  - After reviewing the evidence, students will **form a hypothesis** that they will share with the class.
  - With each new source of information, students will add to their evidence chart and make adjustments to their hypothesis.
  - Finally, students will **write an opinion essay** using their final hypothesis as the claim and referring to specific evidence from the sources used.
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### INQUIRY:

- Does human interaction with wild animals and their habitats help or hurt the animals?
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# ENDANGERED SPECIES, GOODALL, SCIENTISTS AT WORK (continued)

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## LEARNING OBJECTIVES:

- Students will **identify the point of view** being expressed in each source **and the key details** that support it.
- Students will determine which side of the argument evidence supports.
- Students will **form their own hypothesis based on evidence** found in each source.
- Students will **participate in a discussion using accountable talk**.
- Students will **revise their hypothesis** based on new sources and evidence.
- Students will **write an opinion essay** using specific evidence from all three sources to support their thinking

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## CULMINATING TASK:

- Students will write an opinion essay in response to the following prompt: *does human interaction with wild animals and their habitats help or hurt the animals?*
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# SUGGESTED STANDARDS

## Lesson Outline

SUGGESTED STANDARDS:  
GRADE RANGE - 4th GRADE

[CCSS.ELA-LITERACY.RI.4.1](#)- Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

[CCSS.ELA-LITERACY.RI.4.3](#)- Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

[CCSS.ELA-LITERACY.RI.4.7](#)- Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

[CCSS.ELA-LITERACY.RI.4.9](#)- Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

[CCSS.ELA-LITERACY.W.4.1](#)- Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

LESSON OUTLINE WITH  
ESTIMATED TIME ALLOTMENT:

Total time: 1-2 days

Day 1:

Introduction- 5 minutes

Source 1

Explore - 25 minutes

Engage - 20 minutes

Extend- 10 minutes

Source 2

Explore - 25 minutes

Engage - 20 minutes

Extend- 10 minutes

Day 2:

Source 3

Explore - 25 minutes

Engage - 20 minutes

Extend- 10 minutes

Culminating Task - 60 minutes



# Lesson Outline (continued)

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## MATERIALS NEEDED:

- Access to the Voyager Stories, [Goodall, Gombe and Google](#), [Endangered Species Around the World](#), and [Scientists at Work](#).
  - Access to Youtube Videos embedded in the Voyager Stories, [Goodall, Gombe and Google](#), [Endangered Species Around the World](#), and [Scientists at Work](#).
  - Student copies of the Text from the Voyager Stories, Evidence Chart and Argument Writing Template (below) OR teachers can share documents with students using [Google Classroom](#).
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## VOCABULARY:

interact (verb) ([reference here](#))

1. act in such a way as to have an effect on another; act reciprocally.

habitat (noun) ([reference here](#))

1. the natural home or environment of an animal, plant, or other organism.

deterioration (noun) ([reference here](#))

1. the process of becoming progressively worse.

watersheds (noun) ([reference here](#))

1. an area or ridge of land that separates waters flowing to different rivers, basins, or seas.

uninhabited (adjective) ([reference here](#))

1. (of a place) without inhabitants.

degrade (verb) ([reference here](#))

1. lower the character or quality of.

decimate (verb) ([reference here](#))

1. kill, destroy, or remove a large percentage or part of.
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# LESSON PLAN

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## INTRODUCE (5 minutes)

There are accounts of humans interacting with wild animals and their habitats dating back hundreds of years. In this investigation, we will look at some examples of the ways that humans are interacting with wild animals and their habitats today to answer the question:

*Does human interaction with wild animals and their habitats help or hurt the animals?*

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## EXPLORE (25 minutes)

1. Jane Goodall is considered to be the world's expert on chimpanzees. Goodall is best known for her over 55-year study of social and family interactions of wild chimpanzees since she first went to Gombe Stream National Park, Tanzania in 1960 ([reference here](#)).
  2. Present the first source of information in this inquiry investigation: the Voyager Story, [Goodall, Gombe and Google](#), Slides 1-3. Read the text and prompt students to follow along on using the Student Copy of the Text from the Voyager Story, [Goodall, Gombe and Google](#) (below).
  3. Read the text and watch the video on Slide 4 of [Goodall, Gombe and Google](#). Prompt students to record evidence of human interaction with wild animals and their habitats and chart it under "help" or "hurt."
  4. Recommend skipping Slides 5-6.
  5. Read the text and watch the video on Slides 7-10 of [Goodall, Gombe and Google](#). Prompt students to record evidence of human interaction with wild animals and their habitats and chart it under "help" or "hurt."
  6. Read the text on Slide 11. Prompt students to record evidence of human interaction with wild animals and their habitats and chart it under "help" or "hurt."
  7. After gathering information from the Voyager Story, [Goodall, Gombe and Google](#), have students work independently to form their first hypothesis in response to the inquiry, *does human interaction with wild animals and their habitats help or hurt the animals?* Encourage students to site specific examples to support their answer.
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# LESSON PLAN (continued)

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ENGAGE (20 minutes)

1. Organize students into small groups or partners to share their hypothesis and discuss similarities or differences.
  2. Ask students to move to either sides of the classroom designated as “help” or “hurt”. Call on volunteers to share their evidence in support of their hypothesis. Encourage students to use accountable talk by agreeing or disagreeing with the ideas that a classmate shared and providing new evidence as to why.
  3. Consider posing the following questions to foster student discussion:
    - What motivated the human interaction with wild animals and their habitats in this example?
    - Is it ever worth hurting animals and their habitats for the sake of helping humans?
    - Is it possible for humans to have contact with animals and their habitats but not interact with them?
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EXTEND (10 minutes)

1. Prompt students to make any final adjustments to their hypothesis following the discussion.
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# LESSON PLAN (continued)

**Next, repeat the process with a second source of information.**

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EXPLORE (25 minutes)

1. Present the second source of information in this inquiry investigation: the Voyager Story, [Endangered Species Around the World](#).
  2. Present Example 1: [Pygmy Three Toed Sloth](#). Read the text and prompt students to follow along on using the Student Copy of the Text from the Voyager Story, [Endangered Species Around the World](#). Prompt students to record evidence of human interaction with wild animals and their habitats and chart it under “help” or “hurt.”
  3. Example 2: [Golden Lion Tamarin](#). Read the text and prompt students to follow along on using the Student Copy of the Text from the Voyager Story, [Endangered Species Around the World](#). Prompt students to record evidence of human interaction with wild animals and their habitats and chart it under “help” or “hurt.”
  4. Example 3: [Fiji Crested Iguana](#). Read the text and prompt students to follow along on using the Student Copy of the Text from the Voyager Story, [Endangered Species Around the World](#). Prompt students to record evidence of human interaction with wild animals and their habitats and chart it under “help” or “hurt.”
  5. After gathering information from the Voyager Story, [Endangered Species Around the World](#), have students work independently to make any changes to their hypothesis in response to the inquiry, *does human interaction with wild animals and their habitats help or hurt the animals?* Encourage students to site specific examples to support their answer.
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ENGAGE (20 minutes)

1. Place students back into the same small groups or partners to share their updated hypothesis and discuss similarities or differences.
  2. Ask students to move to either sides of the classroom designated as “help” or “hurt.” Ask students who are now on a different side of the room than in round 1 to raise their hands. Call on volunteers to share their evidence in support of their hypothesis. If a student changed their mind, ask them what specific evidence caused the change. Encourage students to use accountable talk by agreeing or disagreeing with the ideas that a classmate shared and providing new evidence as to why.
  3. Consider posing the following questions to foster student discussion:
    - What motivated the human interaction with wild animals and their habitats in this example?
    - Is it ever worth hurting animals and their habitats for the sake of helping humans?
    - Is it possible for humans to have contact with animals and their habitats but not interact with them?
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# LESSON PLAN (continued)

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EXTEND (10 minutes)

1. Prompt students to make any final adjustments to their hypothesis following the discussion.
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**Next, repeat the process with a third source of information.**

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EXPLORE (25 minutes)

1. Present the third source of information in this inquiry investigation: the Voyager Story, [Scientists at Work](#).
  2. Select the chapter, [Lions in Mozambique](#) from the table of contents. Slide 1- Read the text and prompt students to follow along on using the Student Copy of the Text from the Voyager Story, [Scientists at Work](#). Watch the Youtube Video, [Tracking Lion Recovery in Gorongosa National Park](#). Prompt students to record evidence of human interaction with wild animals and their habitats and chart it under “help” or “hurt.”
  3. For Slides 2-3, read the text and prompt students to follow along on using the Student Copy of the Text from the Voyager Story, [Scientists at Work](#). Prompt students to record evidence of human interaction with wild animals and their habitats and chart it under “help” or “hurt.”
  4. After gathering information from the Voyager Story, [Scientists at Work](#), have students work independently to make any changes to their hypothesis in response to the inquiry, *does human interaction with wild animals and their habitats help or hurt the animals?* Encourage students to site specific examples to support their answer.
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ENGAGE (20 minutes)

1. Place students back into the same small groups or partners to share their updated hypothesis and discuss similarities or differences.
  2. Ask students to move to either sides of the classroom designated as “help” or “hurt.” Ask students who are now on a different side of the room than in round 2 to raise their hands. Call on volunteers to share their evidence in support of their hypothesis. If a student changed their mind, ask them what specific evidence caused the change. Encourage students to use accountable talk by agreeing or disagreeing with the ideas that a classmate shared and providing new evidence as to why.
  3. Consider posing the following questions to foster student discussion:
    - What motivated the human interaction with wild animals and their habitats in this example?
    - Is it ever worth hurting animals and their habitats for the sake of helping humans?
    - Is it possible for humans to have contact with animals and their habitats but not interact with them?
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# LESSON PLAN (continued)

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EXTEND (10 minutes)

1. Prompt students to make any final adjustments to their hypothesis following the discussion.
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**(Option to repeat this process with additional sources of information, each time resulting in an updated hypothesis.)**

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CULINATING TASK  
(80 minutes)

1. Students will use their completed Evidence Chart (below) to write an opinion essay in response to the following prompt: does human interaction with wild animals and their habitats help or hurt the animals?
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# OPINION ESSAY RUBRIC

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## EXCEEDING:

- Clearly stated claim that fully addresses prompt.
  - 3 or more pieces of evidence to support claim.
  - Evidence is cited from all three sources of information.
  - Interpretation of all evidence clearly relates to claim.
  - Information is organized in a purposeful, logical way.
  - Strong connection between ideas.
  - Use of a variety of linking words or phrases.
  - Use of domain specific vocabulary.
  - Strong command of conventions.
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## MEETING:

- Clearly stated claim that fully addresses writing prompt.
  - 3 pieces of evidence supporting claim.
  - Evidence is cited from 2 of the three sources of information.
  - Interpretation of 2 pieces of evidence clearly relates to claim.
  - Information is loosely organized.
  - Connection between some ideas, but not all.
  - Adequate use of linking words or phrases.
  - Use of domain specific vocabulary.
  - Adequate command of conventions.
- 

## APPROACHING:

- Clearly stated claim.
  - 2-3 pieces of evidence loosely supporting claim.
  - Evidence is cited from 1 of the three sources of information.
  - Interpretation of evidence does not relate to claim.
  - Weak connection among ideas.
  - Inconsistent use of linking words or phrases.
  - Unclear use of domain specific vocabulary.
  - Partial command of conventions.
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## BEGINNING:

- Claim is unfocused or does not address the writing prompt.
  - Evidence is minimal, absent, or irrelevant.
  - Evidence is not cited and/or does not come from any of the three sources of information.
  - Interpretation of evidence is absent.
  - Little or no organizational structure.
  - No use of linking words or phrases.
  - No use of domain specific vocabulary.
  - Lack of command of conventions.
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# RESOURCES

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## ADDITIONAL RESOURCES:

- Use this Newsela.com article as an additional source for students to consider: [Animal Endangerment and its Causes](#).
  - Watch the National Geographic Documentary about the life and work of Jane Goodall, [Jane](#).
  - Use the related Google Earth Voyager Story, [What's Missing?](#)
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## OPTIONS FOR DIFFERENTIATION:

- Provide students with [Accountable Talk Sentence Stems](#) from educationcloset.com.
  - Use a text coding strategy for students to identify examples of human interaction that helps (+) or hurts (-) animals and their habitats.
  - Provide students with an opinion essay writing template (below).
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## CREDITS:

Written by Sarah Schwartz Johnson in collaboration with Kelley O'Connor and Dennis Puhr.

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\*Note - this template is designed for teachers to modify for use with their grade level and standards.



# Student Copy of the Text from the Voyager Story, [Goodall, Gombe and Google](#)

## **Slide 1- Introduction from Jane**

I'm excited to take you on a geographic journey to Tanzania's Gombe National Park and introduce you to some of the chimpanzees I have observed over the years, including one of Gombe's newer residents, a charming little fellow aptly named Google.

I hope to give you an up-close-and-personal look at major milestones in my life and career while opening a window into the lives of Google and the other Gombe chimpanzees. I know that, once you learn more about Google and the plight of endangered chimpanzees like him, you'll want to join me in doing everything you can to protect and preserve this amazing species and its habitat, the tropical forests of Africa.

## **Slide 2- Jane's Youth**

Growing up in Bournemouth, England, I was fascinated by all kinds of animals. When I was young, my favorite books were Dr. Dolittle and the Tarzan series. All I wanted to do was go to Africa, observe the incredible animals living there, and write stories about them. Everyone laughed at my dream because I was a poor girl of little means living in England during World War II. My family couldn't afford to buy a bicycle, let alone send me to college.

## **Slide 3- Jane's Peak**

I was given the opportunity to travel to Kenya, where I met Dr. Louis Leakey who would become my mentor. Dr. Leakey was looking for someone to begin a study of chimpanzees to gain insight into human beings' evolutionary past. He thought I would be a good person for the job because of my patience and persistent desire to understand animals. He also thought I would yield a fresh perspective because I hadn't been to college yet, and my mind hadn't been cluttered by rigid academia.

Once I arrived in Gombe, armed only with my binoculars and a notebook, I would climb to Gombe's highest peak in search of the chimpanzees. At the beginning, the chimpanzees ran away from me in fear because they had never seen a 'white ape' before.

## **Slide 4- Chimp Discoveries**

As the days dragged into months and I hadn't made any significant observations, my spirits sank. Then came the day I shall never forget. In the fall of 1960, I came across the chimpanzee I named David Greybeard near the Peak. As I watched, David began to strip leaves off twigs to fashion a tool for fishing termites from a nest, similar to what you see in the 360 photo on the map. Until then, scientists thought humans were the only species to make and use tools, but here was evidence to the contrary. When I sent word back to Dr. Leakey, he replied via telegram and wrote: "Now we must redefine 'tool,' redefine 'man,' or accept chimpanzees as humans." This would be one of my most important discoveries.

## **Slide 5- The G-Family**

During my field research, I also documented strong family bonds among chimpanzees, particularly between mothers and children. In addition, I observed the chimpanzees demonstrating a wide range of emotions much like human love, joy and greed. One family of chimpanzees, the 'G

Family' exemplified these traits from generation to generation. Gremlin, a female born in 1970, is a matriarch in Gombe. These days she is the only living member of the early generation of the G Family. Gremlin is a very intelligent chimpanzee and is considered an excellent mother by many who have observed her over the years.

Gremlin has given birth to eight children. Of her surviving five children, they and their own children are a central part of life in Gombe. Gremlin's first daughter, Gaia, is Google's mother. Born in 2009, Google is a healthy active youngster now headed into his adolescence. Golden and Glitter, the only twin chimpanzees known to have survived in the wild, are Gaia's younger sisters. Gimli and Gizmo, two brothers, make up the rest of the family.

### **Slide 6- Google the Miracle**

Like her mother Gremlin, Gaia has a strong maternal instinct. In 2006, Gaia gave birth to her first son, Godot. For some reason, which we do not fully understand, Gremlin took young Gaia's baby from her and tried to raise him on her own. Sadly, without his mother, Godot died before he turned one.

In 2008, Gaia again gave birth, this time to tiny twins. Despite Gaia's attempt to defend the infants, Gremlin returned to the group after a prolonged absence and took the newborns. Unlike when Gremlin took Godot, Gaia made a great fuss when her mother grabbed the twins. Despite Gremlin's care, the first infant died. Gaia was grief-stricken and carried the lifeless body around for some time. Eventually, the other infant passed away as well.

Finally, in June 2009, Gaia gave birth to a healthy baby boy named Google. Fortunately, this time Gaia kept Gremlin away from the infant, and she is raising the baby on her own. Today, Google is a healthy, active youngster and an integral member of the G Family.

In August of 2013, producer and director Denise Zmekhol and cinematographer Bob Poole captured this amazing footage of little Google who was 4 years old at the time.

### **Slide 7- Threats to Chimpanzees: Habitat Loss**

Although habitat within Gombe remains well-protected, outside the park the trees and forests that were there when I first arrived in 1960 were quickly being cut down as human populations in the surrounding villages continued to grow and the people needed land to build their homes and grow their food. This destruction of habitat has had a devastating effect on chimpanzees inside and outside the park.

### **Slide 8- Community Centered Conservation**

To address the rapid deterioration of forests, the Institute began working with the local communities around Gombe in 1994 through the Lake Tanganyika Catchment Reforestation and Education (TACARE) project. In 2000, we started to apply cutting-edge satellite imagery, Geographic Information Systems (GIS), mobile and cloud mapping technologies to design and implement land use plans with communities and local governments that work better for both people and chimpanzees.

First, we designed priority habitats for restoration outside the park that would protect both critical watersheds and chimpanzee habitats (in yellow on the map). These were identified as part of a Conservation Action Plan (CAP). Guided by one conservation vision and map, JGI then facilitated village-by-village participatory land use plans where people delineated their village boundaries

(shown in red) and established village forest reserves (in green). Each village government selected forest monitors to patrol and enforce land use bylaws on their forest reserves.

### **Slide 9- Community Forest Monitoring**

With support from the Jane Goodall Institute, the forest monitors use Android smartphones and tablets running the Open Data Kit (ODK) application to record their observations in the areas they patrol. They make note of illegal human activities, as well as the presence of chimpanzees and other wildlife. The forest monitors' data are uploaded into the Google cloud where the information is stored, visualized and exported to a Forest Monitoring Dashboard to be shared with the local stakeholders and decision makers.

### **Slide 10- Reforestation Outside Gombe**

The Institute combines on-the-ground community monitoring data with very high-resolution DigitalGlobe satellite imagery to assess implementation of village land-use plans and to measure conservation success. Images featured here show the impact of community conservation efforts and natural regeneration of woodlands in the Kigalye village forest reserve using May 2005 and June 2014 satellite imagery from DigitalGlobe.

This work is made possible by the generous support of the American people through the United States Agency for International Development (USAID) and the government of Tanzania.

### **Slide 11- Looking Ahead**

The more than 50 years of chimpanzee observations collected at Gombe is the longest-running study of great apes in the wild, providing extensive insights into our closest relatives' social structures, behavior and conservation needs.

Today, we are scaling up our conservation efforts to conserve key habitats and genetic and cultural diversity of chimpanzees across their entire range in Africa. Numbering in the millions only a century ago, fewer than 300,000 chimpanzees remain. The reduction in their population size is largely due to habitat destruction and illegal commercial bushmeat, along with disease and the pet trades.

Like in Gombe, the Jane Goodall Institute is working with the local communities, governments and other partners to develop and implement conservation action plans that combine local knowledge, science and innovative, high-tech geospatial tools to combat the threats and protect the forests so critical to chimpanzee and human survival.

Every individual matters. Every individual has a role to play. Every individual makes a difference. Join us to learn how you can make a difference for people, chimpanzees and forests.

## Student Copy of Text from the Voyager Story, [Endangered Species Around the World](#)

### Example 1: Pygmy Three Toed Sloth

**Status:** Critically Endangered

**About:** With only a small population confined to a single tiny island off the coast of Panama, the pygmy three-toed sloth is the most endangered of all Xenarthra. As its name suggests, this recently discovered species is a dwarf compared with its mainland relatives. In addition to its small size, the pygmy three-toed sloth is characterised by usually blotchy, pale grey-brown fur and a tan-coloured face with a distinctive dark band across the forehead, from which long, shaggy hair hangs over the face, giving a hooded appearance.

**Threats:** The pygmy three-toed sloth has an extremely restricted range on one very small island. Although the island is uninhabited, fishermen, farmers, lobster divers and local people are all seasonal visitors, and are thought to hunt the sloths illegally. The growing tourism industry is also a potential threat to the species, by degrading its habitat.

**Location:** The pygmy three-toed sloth is confined to a single tiny island, the Isla Escudo de Veraguas, off the coast of Panama.

### Example 2: Golden Lion Tamarin

**Status:** Endangered

**About:** The golden lion tamarin, one of the world's most striking mammals, is so-called because of the beautiful mane of silky golden hair that frames its face. The fur is a lustrous golden colour, apart from the tail and forepaws, which may be brown or black. The digits are long and delicate with claw-like nails, which are perfectly adapted to forage for small prey items.

**Threats:** A staggering ninety percent of the original area of Atlantic coastal forest has been destroyed through logging and clearance for cultivation and development. The habitat of the golden lion tamarin has therefore been drastically reduced and fragmented into isolated patches. A former threat to the species in the wild came from the collection of live individuals for private collections and zoos, but this practice became illegal in the 1970s, and subsequently decreased.



**Location:** Poco das Antas Biological Reserve in Brazil is one of the last areas of forest where the endangered golden lion tamarin can still be found in the wild.

### **Example 3: Fiji Crested Iguana**

**Status:** Critically Endangered

**About:** The Fiji crested iguana is a large stocky lizard, which was first discovered in 1979. Dr John Gibbons found the iguana whilst researching the, more common, banded iguana (*B. fasciatus*) that is also found on the Fijian islands. The crested iguana is green with three narrow white bands crossing its back, whilst the bands of the banded iguana are much broader and are blue in colour.

**Threats:** Iguanas are often feared by local people and are therefore treated with little tolerance. The main threat to survival of the crested iguana however, comes from habitat destruction. Particular devastation is caused by introduced goats, which were brought to Fiji in an effort improve the quality of life of local people. Goats have been released on fairly uninhabited islands where they graze on native trees and shrubs, making these tropical paradises uninhabitable for iguanas.

**Location:** Yaduataba is one of the Fijian Islands on which the Fiji crested iguana may be found, and the site of the Crested Iguana Sanctuary.

# Student Copy of Text from the Voyager Story: Scientists at Work: [Lions in Mozambique](#)

## **Slide 1- Tracking Lion Recovery, Gorongosa National Park, Mozambique**

Gorongosa National Park was once famous for its lion population, attracting tourists from all over the world. But during Mozambique's civil war, the park's iconic wildlife was decimated. In 2008, a large-scale ecosystem restoration project began. Today, many animals are bouncing back in large numbers, but it's unclear whether the lion population is also recovering. Paola Bouley heads the Gorongosa Lion Project to study lions' response to the park's restoration. Working with Mozambican scientists Celina Dias and Domingas Aleixo, Bouley is using GPS satellite collars and trail cameras to identify lions and gather data about their behavior.

## **Slide 2- Using GPS Collars, Gorongosa National Park, Mozambique**

Paola's team collars one lion per pride, which gives them an idea of the territory an entire pride occupies. The GPS collars emit signals to a satellite several times a day so they can map the lions' daily movements. Using these locations, they map each pride's territory: the total area that the lion pride occupies and the male defends. The map shows territories of the prides represented by four of Gorongosa's GPS-collared lions, named Cheza, Helena, MO2, and Nginga.

Researchers in Africa have discovered that the territory defended by a male lion for its pride can extend up to 330 square kilometers. How do Paola and her team use GPS collars, satellites, and computers to determine the size and geographic distribution (shape) of a lion pride's territory?

## **Slide 3- Using Trail Cameras, Gorongosa National Park, Mozambique**

Trail cameras use motion sensors to snap photos when an animal moves in front of them. The map shows the locations of over 50 trail cameras the lion researchers have set up around Gorongosa National Park. They use the photos taken by these cameras to identify new lions, track their movements, and study how other park species interact with lions. The cameras have also proved useful for identifying other animals in Gorongosa, including new elephants and species that have not been seen in the park for decades, such as hyenas and jackals.

WildCam Gorongosa is a citizen science website where you can help Gorongosa's scientists by identifying animals in the trail camera images. Visit the site and identify animals. As you analyze each photo, make observations about the animals and their environment. What do you notice? What questions do you have?

Making observations and asking questions are important first steps in designing a study.

Students can use the following chart to record evidence found to answer the question: *Does human interaction with wild animals and their habitats help or hurt the animals?*

### EVIDENCE CHART

Source	Help	Hurt
<a href="#">Goodall, Gombe and Google</a>		
Hypothesis:		
<a href="#">Endangered Species Around the World</a>		
Hypothesis		
<a href="#">Scientists at Work</a>		
Hypothesis		

## Opinion Essay Writing Template

Introduction:

Claim:

Evidence:

How does this evidence support your claim? Explanation:

Evidence:

How does this evidence support your claim? Explanation:

Evidence:

How does this evidence support your claim? Explanation:

Conclusion: