

TRUNK TALK

Activities to Accompany
Our Elephant Neighbours
By Lise Levy
Target ages: PreK – Grade 6



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OUR
ELEPHANT
NEIGHBOURS

 **WILD NATURE INSTITUTE**

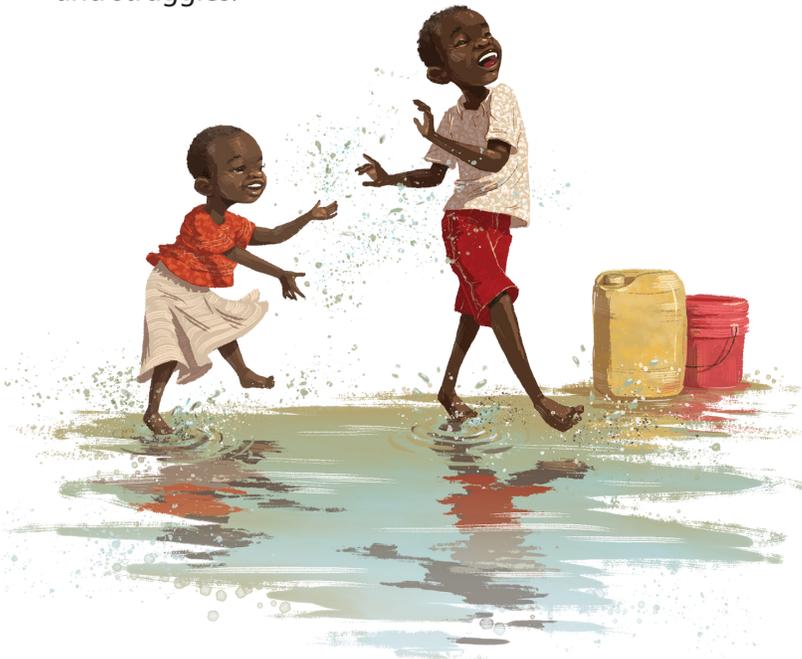
Overview:

This collection of six activities is designed to complement and expand upon the concepts raised in the picture book *Our Elephant Neighbours*. The activities are aimed at all ability levels and use a multidisciplinary approach. Where appropriate, more in-depth activities are provided for older/advanced participants. *Our Elephant Neighbours* presents a number of facts on various aspects of elephant biology. These activities are designed to organize those facts into logical groups, putting them into proper perspective with related environmental concepts. The activities can be completed independently from each other or in sets. The “Introductory Reading Comprehension Activity,” with its three general summary questions, should be used as a lead-in to all activities, or an activity sequence, followed by the culminating comprehension question at the beginning of each procedure, to help identify the specific fact about elephants introduced by that activity.

Further information on instructional strategies and correlation to current standards can be found in the ADDITIONAL INSTRUCTIONAL RESOURCES section located on the final pages.

Background:

The activities in this collection follow the storyline of *Our Elephant Neighbours*, which takes the reader from developing an understanding of elephants and their behavior by recognizing the similarities between people and elephants, to explaining the difficulties that elephants encounter, which threaten their survival. These activities allow participants the opportunity to identify with and appreciate an elephant’s daily life and struggles.



Overall Objectives: Upon participating in the following activities related to the reading of *Our Elephant Neighbours*, the participant will be able to:

1. Identify, demonstrate, and *classify the daily activities and behavior of elephants in their natural environment of the savanna ecosystem.
2. Distinguish from all of the elephant's daily activities and behaviors, those that are similar to humans, to develop an appreciation for and understanding of the needs of elephant populations.
3. Define the matriarchal structure of elephant society by comparing elephant family structure with human family structure.
4. *Recognize the levels of social groupings in elephant society from a given description, then analyze the information on each level to construct a diagram to illustrate the relationships of family and social groupings in elephant society.
5. Identify unique characteristics of elephants and the way those characteristics are useful to them.
6. Characterize the eating behavior of the elephant as a **herbivore** after collecting information on its diet and determining that it consumes only plant material.
7. *Give a definition for **adaptations** as characteristics or behaviors that help organisms survive in their environment, and give examples of adaptations in the elephant using the unique characteristics identified.
8. Identify the characteristics of a savanna ecosystem and the natural resources available for both humans and wildlife.
9. *Connect elephants' daily activities and behaviors to the essential role that elephants play in the savanna ecosystem as **ecosystem engineers** and **keystone species**, or animals responsible for creating and maintaining components of the environment in which they live, to their benefit and that of some of the other organisms in that environment.
10. Determine how human activities affect elephants' daily activities and behaviors and how human behavior can be adjusted to ensure the continued success of the elephants and the savanna ecosystem.
11. *Define and give examples of the terms **limiting factor** and **carrying capacity**, by relating them to the difficulties experienced by elephants and to the resources of the savanna ecosystem.

*Suitable for Upper Elementary (Grades 3 – 6) participants

Complete Materials List: *optional for some activities

Our Elephant Neighbours

Chalk/white board

Paper for drawing*

Crayons, colored pencils, markers, poster paint, or pencils/pens*

Elephant Behavior Pictures from Save The Elephants “Living in Harmony with Elephants Manual – Revised 2015”, Lesson 1 – Discover African Elephants, pp. 21 – 25, Appendices A – E.

Writing paper or copy of Appendix F

Writing paper or copy of Appendix G

Appendix H: Folding Paper Elephants

Origami paper (optional)

World map and world biome map (optional)

Blank sheets of copy paper for drawing, or a long roll of paper for a mural, or a pre-drawn savanna diagram

15 hoops or 15 chairs

Appendix I: Threats to Wildlife Game Scenarios



INTRODUCTORY READING COMPREHENSION ACTIVITY

Levels: PreK – Grade 6 (Middle School Transition)

Subject Area: Reading

Duration: 1 hour

Setting: Classroom

Skills: Reading Comprehension



Summary:

This activity is designed to begin a discussion of *Our Elephant Neighbours*, as an introduction to the various topics addressed in Activities 1 – 6. Each of the activities that follow will continue from this common beginning.

Refer to the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages for ELA/Literacy standards that may be supported by this activity when used with the associated activities.

Materials:

Our Elephant Neighbours

Chalk/white board

Drawing paper (optional)

Pencils, crayons, markers (optional)

Procedure:

Pre-Reading Preparation:

Prior to reading the story the presenter should give a brief introduction to the book to give the participants an idea of what details they should listen for or find in their reading. This could be done by saying, as well as writing on the board, the general comprehension questions in Step #2 below and the specific question for the lesson being addressed. Have the participants repeat together or retell these questions to the presenter or to a partner.

1. Reading of *Our Elephant Neighbours*

Non-Readers: Book read to them, with answers to questions given orally and recorded by drawing pictures.

Early Readers: Book read to them, with answers to questions given orally and written by presenter.

Readers: Book read by them, either silently, or out loud to the group, by taking turns. The answers can be given in writing by the participants, either individually or in a group, or as a class by recording on a chalk/white board.

2. Discussion of the story should begin with summarizing what happens in the book, using the following simple questions as a guide:

A. Who is this story about? Who are the characters in this story?

B. Where does this story take place? What are some of the things that would be seen in this place?

C. What is the surprising thing that happens?

3. From here the question becomes...What did Robert and Mary learn from Tomas and Teresa about...? This is where each activity will ask for different elephant facts that are to be grouped and addressed to develop a related specific concept.



ACTIVITY 1: CALL OF THE WILD - ELEPHANT DAILY ACTIVITIES AND BEHAVIOR

Levels: PreK – Grade 6 (Middle School Transition)

Subject Area: Reading, Science

Duration: 1 – 1.5 hours (depending on the extent of coverage desired)

Setting: Classroom

Skills: Reading Comprehension, Identification, Classification



Summary:

In this activity, the participants are asked to identify the way elephants live and behave in their natural savanna environment, from the conversations in the story between Robert and Mary, and Tomas and Teresa. To reinforce an understanding of elephant actions/behaviors, participants are given the opportunity to demonstrate them. Upper elementary participants can further discuss how elephant actions/behaviors benefit elephants and their society and classify them according to those benefits.

Objective: Upon participating in the following activity related to the reading of *Our Elephant Neighbours*, the participant will be able to:

Identify, discuss, and *classify the daily activities and behavior of elephants in their natural environment of the savanna ecosystem.

*EXTENSION FOR GRADES 3 – 6 (Middle School Transition)

Refer to the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages for the **Next Generation Science Standards** that can be met using this activity to support instruction.

Materials:

Our Elephant Neighbours

Chalk/white board

Drawing paper (optional)

Pencils, crayons, markers (optional)

Procedure: Complete Introductory Reading Comprehension prior to beginning.

ALL GRADE LEVELS:

1. Beginning question:

What did Robert and Mary learn from Tomas and Teresa about how elephants live their lives and what elephants do where they live?

2. Depending on the ability level of the participants, the answers to this question can be listed in pictures or words, and this exercise can be done individually, or in small or large groups.

The following answers are discussed in the story:

They eat grass and leaves.

They swim and play in the water.

They sometimes stand in the shade of trees.

They are frightened of people.

They live in family units.

Grandmothers and aunties help mothers give birth.

Mothers, grandmothers, and aunties show babies how to get food, find water, and watch out for lions.

They love and protect their babies from harm.

The families are sad when an elephant family member dies, and they visit their remains.

Elephants call to each other to communicate.

3. If you want to go into more detail with older participants, the Elephant Facts pages can be used.

The following additional answers can be found in these pages:

They live in a matriarchal society.

They eat roots, grasses, fruits, and bark.

They use their trunk for smelling, breathing, trumpeting (calling), drinking, and grabbing things.

They dig for food and water and strip bark from trees with tusks.

They create waterholes.

To keep cool, they flap their large ears, and suck water up in their trunks and spray it over themselves.

They take mud baths to protect themselves from the hot sun and to clean off bugs and ticks.

4. A physically active exercise to reinforce an understanding of elephant activities and behavior is to divide the participants into small groups and give each group one or more of the activities listed above, written on folded sheets of paper, or whispered to non-readers. Each group is then instructed and given time to prepare a way to demonstrate their given action for the other groups of participants. At the completion of the preparation time, each group takes a turn presenting to the other groups of participants, who are asked to watch the demonstration and try to identify the elephant behavior.

Evaluation Exercise:

Working with partners, have participants list on a slip of paper or tell the partner as many elephant activities as they can recall in a given amount of time. Have the partner verify how many they have identified correctly. If desired, give a small reward to the team who had the most verified activities.

*EXTENSION FOR GRADES 3 – 6 (Middle School Transition):

5. Once elephant daily activities and behaviors have been identified, further discussion can be started by asking participants to explain how these actions are beneficial to elephants and their society. Elephant facts can also be grouped into areas, such as Nutrition, Safety/Protection/Health, and Community Interaction/Bonding.

Additional exercises and resources for this activity can be found in the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages.



ACTIVITY 2: JUST LIKE ME - HOW ELEPHANTS AND HUMANS ARE ALIKE

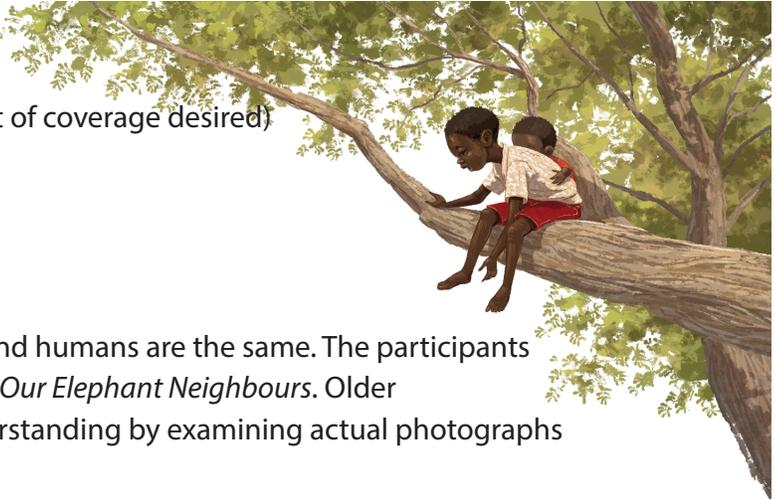
Levels: PreK – Grade 6 (Middle School Transition)

Subject Area: Reading, Science

Duration: 1 – 1.5 hours (depending on the extent of coverage desired)

Setting: Classroom

Skills: Reading Comprehension, Identification



Summary:

This activity addresses ways in which elephants and humans are the same. The participants are asked to find examples of these similarities in *Our Elephant Neighbours*. Older and advanced participants can further their understanding by examining actual photographs of elephant behavior.

Objective: Upon participating in the following activity related to the reading of *Our Elephant Neighbours*, the participant will be able to:

Distinguish from all of the elephant’s daily activities and behaviors, those that are similar to humans, to develop an appreciation for and understanding of the needs of elephant populations.

Refer to the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages for the **Next Generation Science Standards** that can be met using this activity to support instruction.

Materials:

Our Elephant Neighbours

Chalk/white board

Elephant Behavior Pictures from Save The Elephants “Living in Harmony with Elephants Manual - Revised 2015”, Lesson 1 - Discover African Elephants, pp. 21 – 25, Appendices A – E.

Procedure: Complete Introductory Reading Comprehension prior to beginning.

ALL GRADE LEVELS:

1. Beginning question:

What did Robert and Mary learn from Tomas and Teresa about how elephants and people are alike?

2. The answers to this question can be gathered orally and participants asked to identify book illustrations that represent the similarities. This exercise can be done individually, or in small or large groups. With older participants, the similarities can also be listed on a chalk/white board to refer back to in the extended exercise that follows.

The following are the most direct answers from the story:

They swim and play in the water.

They are scared of each other.

They live in family units.

Grandmothers and aunties help mothers give birth.

Their families teach them important things.

They love and protect their babies from harm.

The families are sad when a family member dies, and they visit the burial site.

They both like to eat beans and vegetables.

Other similarities are implied and may not be as obvious. They can be developed by asking participants to consider the following:

Why were Robert and Mary visiting the waterhole? (*To fetch water.*) Other than playing and swimming at the waterhole, what do you see elephants doing? (*Drinking.*)

Conclusion: Both Humans and Elephants need to find and use water.

When Mary and Teresa touched each other, trunk to hand, they discovered that they could do the same action with them. What was that action? (*Pick up things.*)

Conclusion: Both Humans and Elephants can hold things.

Why did Tomas and Teresa have to leave? (*Their mother was calling them.*)

Conclusion: Humans and Elephants communicate with those around them.



EXTENSION FOR GRADES 3 – 6 (Middle School Transition):

3. The following extension exercise adapted from Save The Elephants “Living in Harmony with Elephants Manual - Revised 2015”, Lesson 1 - Discover African Elephants, pp. 16 – 25, can reinforce the understanding of these similarities by asking participants to determine which of the identified similarities are being exhibited in each of five selected photographs.
 - A. Participants are divided into small groups.
 - B. Each group is given one of the five pictures from Appendices A – E.
 - C. The group is instructed to discuss the three questions located underneath the picture and ultimately determine which of the similarities to humans is being shown.
 - D. Each group will then present their discussion and decision to the larger group for consideration.

Evaluation Exercise:

Have each participant draw a picture showing or write a short paragraph explaining how their daily activities and behavior are similar to elephants.

Additional exercises and resources for this activity can be found in the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages.



ACTIVITY 3: ALL IN THE FAMILY - STRUCTURE OF ELEPHANT SOCIETY

Levels: PreK – Grade 6 (Middle School Transition)

Subject Area: Reading, Science, Environmental Science

Duration: 1 – 1.5 hours (depending on the extent of coverage desired)

Setting: Classroom

Skills: Reading Comprehension, Observation, Research, Analysis

Summary:

Elephant family structure and social structure are addressed in this activity. The participants are asked to draw pictures of Tomas and Teresa’s elephant family and Robert and Mary’s human family, using the conversations in the story as a reference. The participants may also draw a picture of their own family. The participants are then asked to make observations of the pictures to compare the family structures and to ultimately identify the matriarchal structure of elephant society. An extension exercise provides opportunity for upper elementary participants to investigate intraspecies interactions, applying simple research techniques to further explore elephant society structural levels and social groupings. They are then challenged to make a diagram showing the relationships among elephant social levels.

Objectives: Upon participating in the following activity related to the reading of *Our Elephant Neighbours*, the participant will be able to:

Define the matriarchal structure of elephant society by comparing elephant family structure with human family structure.

GRADE 6 (Middle School Transition) EXTENSION:

Recognize the levels of social groupings in elephant society from a given description, then analyze the information on each level to construct a diagram to illustrate the relationships of family and social groupings in elephant society.

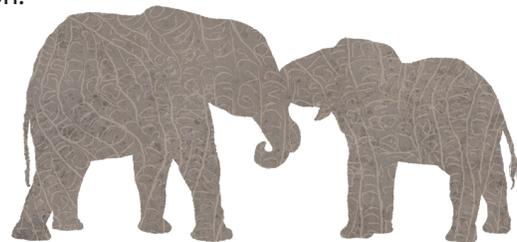
Refer to the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages for the **Next Generation Science Standards** that can be met using this activity to support instruction.

Materials:

Our Elephant Neighbours

Writing paper or copy of Appendix F

Crayons, colored pencils, markers, or pencils/pens



Procedure: Complete Introductory Reading Comprehension prior to beginning.

ALL GRADE LEVELS:

1. Beginning question:
What did Robert and Mary learn from Tomas and Teresa about elephant families?
2. To answer this question, ask the participants to either draw a picture or create a word diagram on the top third of a sheet of paper, or top section of Appendix F, to show the members of Tomas and Teresa's family as described in the story.
3. Next, have the participants refer to the book for information about the members of Robert and Mary's family and have them draw a picture or create a word diagram of the members of that family in the middle third of the same sheet of paper, or middle section of Appendix F.
4. Then, if desired, have the participants draw a picture or create a word diagram of the members of their own families using the bottom third of the same sheet of paper, or bottom section of Appendix F.
5. When these tasks are completed, ask the participants to compare the families and explain what they observe about the make-up of the different families. It should be noted that if participants' families are included in this exercise, consideration should be made for all types of non-traditional family structure.
6. Ultimately, the idea of there being no mention of adult males or "fathers" in the elephant family should be addressed. With young participants, it can be explained that in elephant society the fathers live away from the mothers and children. With older participants, the topic of matriarchal society should be discussed using the second elephant fact at the end of the book.

Evaluation Exercise:

Have each participant draw a picture or explain in writing one way elephant and human families are alike and one way they are different.



EXTENSION FOR GRADE 6 (Middle School Transition):

7. Give participants the following reference information on a sheet of paper or written on a board:

Social Organisation:

(Source: https://en.wikipedia.org/wiki/Elephant#Social_organisation Accessed October 2018)

Female elephants spend their entire lives in tight-knit matrilineal family groups, some of which are made up of more than ten members, including three pairs of mothers with offspring, and are led by the matriarch which is often the eldest female. She remains leader of the group until death or if she no longer has the energy for the role; a study on zoo elephants showed that when the matriarch died, the levels of faecal corticosterone ('stress hormone') dramatically increased in the surviving elephants. When her tenure is over, the matriarch's eldest daughter takes her place; this occurs even if her sister is present. The older matriarchs tend to be more effective decision-makers.

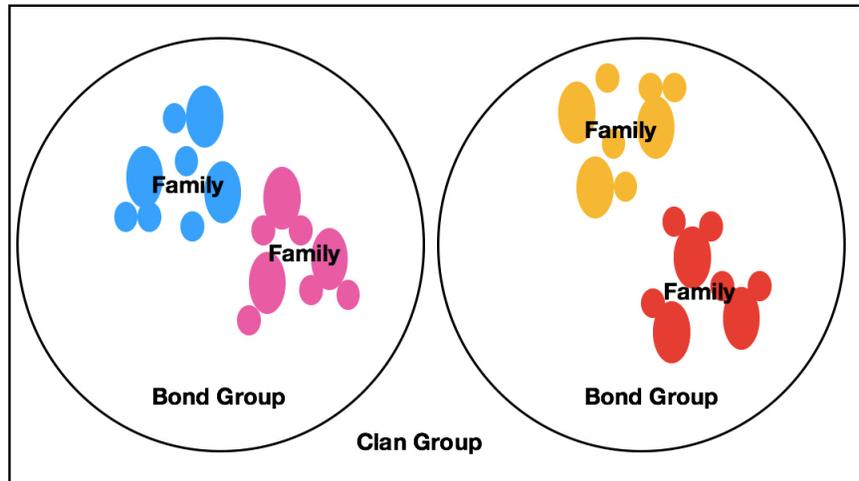
The social circle of the female elephant does not necessarily end with the small family unit. In the case of elephants in Amboseli National Park, Kenya, a female's life involves interaction with other families, clans, and subpopulations. Families may associate and bond with each other, forming what are known as bond groups. These are typically made of two family groups, which may be closely related due to previously being part of the same family group which split after becoming too large for the available resources. During the dry season, elephant families may cluster together and form another level of social organisation known as the clan. Groups within these clans do not form strong bonds, but they defend their dry-season ranges against other clans. There are typically nine groups in a clan. The Amboseli elephant population is further divided into the "central" and "peripheral" subpopulations.

Exercise:

- A. Individually (if given to participants on a sheet of paper), or in a large group (if written on a board), have participants search the above text for references to the following elephant social groupings/levels: **Family, Bond Group, and Clan**. Participants can underline these words in the text.
- B. From those identified references, have the participants create a definition of each relationship grouping/level.
- C. In a discussion of the definitions, ask the participants to explain how these groupings/levels are related.
- D. Finally, ask the participants to show this relationship by producing a logic diagram to illustrate how each social group is related to the others. (See possible logic diagram for this exercise pictured on the next page.)

The logic diagram can be used as the evaluation exercise for the extension activity.

Example of a logic diagram for elephant social relationships as described in the “Social Organisation” reference:



Additional exercises and resources for this activity can be found in the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages.



ACTIVITY 4: FROM TRUNK TO TAIL - THE ELEPHANT, A MEGAHERBIVORE

Levels: PreK – Grade 6 (Middle School Transition)

Subject Area: Reading, Science, Environmental Science

Duration: 1 – 1.5 hours (depending on the extent of coverage desired)

Setting: Classroom

Skills: Reading Comprehension, Observation, Analysis

Summary:

In this activity, the unique physical characteristics of the elephant are identified on a drawing. Then, the way that elephants use these characteristics is discussed. The term **herbivore** is introduced to describe the plant-only diet of elephants. The concept of **adaptations** is introduced to upper elementary participants, as adaptations relate to elephant characteristics.

Objectives: Upon participating in the following activity related to the reading of *Our Elephant Neighbours*, the participant will be able to:

Identify unique physical characteristics of elephants and the way those characteristics are useful to them. Characterize the eating behavior of the elephant as a herbivore, after collecting information on its diet and determining that it consumes only plant material.

GRADES 3 – 6 (Middle School Transition) STEP 5 EXTENDED DISCUSSION:

Give a definition for adaptations, as characteristics or behaviors that help organisms survive in their environment and give examples in the elephant using the unique characteristics identified.

Refer to the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages for the **Next Generation Science Standards** that can be met using this activity to support instruction.

Materials:

Our Elephant Neighbours

Writing paper or copy of Appendix G

Crayons, colored pencils, markers, or pencils/pens

Origami paper (optional)



Procedure: Complete Introductory Reading Comprehension prior to beginning.

ALL GRADE LEVELS:

1. Beginning question:
What did Robert and Mary learn from Tomas and Teresa about elephants' bodies?
2. To answer this question, start by doing one or more of the following:
Draw an elephant outline on the chalk/white board;
Have the participants draw an elephant body on a piece of paper;
Give them the elephant silhouette diagram in Appendix G for their use.
3. Using the diagram from step 2, have the participants orally state/identify (or, if necessary, draw them in) as many unique body parts of the elephant as they can. Have them explain how these structures are unique to the elephant. They can use both what they learned from the conversations in the story and from the Elephant Facts pages at the end of the book.

This should include:

Trunk – only elephants have this structure

Skin – wrinkly

Ears – very large

Tusks – are present on both males and females

4. For Non-Readers: As a participant offers a body part, have them point to the structure on the diagram and draw an X on the diagram. The presenter can write the name of the structure beside each X to help introduce its written name. Then, as the activity continues, each time before that body part is discussed, the presenter should point to it and have the participants orally identify it again. With Readers: As each of these body parts is identified, it should be labeled on the diagram.
5. Once the basic body parts are identified, the participants can be asked how each identified part is useful to the elephant.

Trunk: Used for smelling, breathing, trumpeting, drinking, and grabbing things (especially food).

Skin: Wrinkly skin has a lot of surface area to help cool their bodies.

Ears: Large ears help in cooling by releasing heat.

Tusks: Used to dig for food and water (in dry season they are used to create waterholes from dry river beds) and to strip bark from trees.

For older/advanced participants, these structures can be used to define and discuss elephant **adaptations**: *characteristics or behaviors that help organisms survive in their environment*. This discussion can be extended to include reference to those behaviors discussed in previous activities.

6. To begin a discussion of elephant feeding behavior, ask the participants the following:

Which of the elephant's body parts:

- Is the most noticeable or different from any other animal?
- Has the most uses?
- Is the most important for getting food?

The answer to all of these is the TRUNK.

- A. Have the participants refer to *Our Elephant Neighbours* to find and reread the part where Mary and Teresa are talking about picking things up. Ask them to identify the body part that Mary uses (*fingers*) and the one that Teresa uses (*trunk*). Then ask them to be specific about the part of the trunk that Teresa uses to pick off a tiny leaf (*the end of her trunk*).
- B. On a picture of the elephant (See Appendix G), have the participants find the end of the trunk and identify the two projections that serve as "fingers" for the elephant. Explain that these projections allow an elephant to pick up very small or thin objects, as precisely as people can do with their fingers.
- C. Have the participants make a list of all of the things that an elephant eats and then propose how an elephant would gather each of those things. Also, ask participants to identify what all of the foods that elephants eat have in common (*they are plants*).
- D. At this point in the activity, the term **herbivore** can be introduced to describe the elephant's eating behavior. Ask the participants to give a definition of that term from what has been learned about what elephants eat. Participants should be able to determine that a herbivore is an animal that eats (only) plants.

EXTENDED DISCUSSION FOR GRADES 3 – 6 (Middle School Transition):

- E. Explain to upper elementary participants the adaptations that herbivores such as elephants have (e.g., teeth that can grind plant matter, special stomachs to obtain nutrients from plant matter) and ask why these are considered adaptations.

Refer to the ADDITIONAL INSTRUCTIONAL RESOURCES section on the last pages for an entertaining, yet informative exercise to conclude this activity.

Evaluation Exercise:

In small groups, have each participant give a unique characteristic of an elephant and how it is useful to the elephant. Each participant needs to give a different characteristic from those previously stated.

Extended Art Activity: Make an Origami Elephant

Lower elementary participants can follow the directions for making a folded paper elephant in Appendix H.

Upper elementary participants and those with an artistic interest may want to attempt to make an origami elephant, furthering their exploration of elephant anatomy. The following webpage link provides instructions for making one design, along with further links for other designs and some interesting information on elephants:

<https://origami.me/elephant-origami-challenge/>

Additional exercises and resources for this activity can be found in the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages.



ACTIVITY 5: A HOME ON THE SAVANNA - EXPLORING THE SAVANNA ECOSYSTEM

Levels: PreK – Grade 6 (Middle School Transition)

Subject Area: Science, Environmental Science, Geography

Duration: 1 – 1.5 hours (depending on the extent of coverage desired)

Setting: Classroom

Skills: Reading Comprehension, Observation, Analysis



Summary:

The savanna ecosystem is explored in this activity using the illustrations in *Our Elephant Neighbours*. The components of the ecosystem are first identified, then either included in an individual drawing, a collective mural, or simply by labeling a diagram. In the context of this exercise, available natural resources are discussed. Upper elementary participants then use this and reference material to explain the essential role that elephants play in the savanna.

Objectives: Upon participating in the following activity related to the reading of *Our Elephant Neighbours*, the participant will be able to:

Identify the characteristics of the savanna ecosystem and the natural resources available for both humans and wildlife.

GRADES 3 – 6 (Middle School Transition) EXTENSION:

Connect elephants' daily activities and behaviors to the essential role they play in the savanna ecosystem as **ecosystem engineers** and **keystone species**, or animals responsible for creating and maintaining components of the environment in which they live, to their benefit and that of some of the other organisms that live in the same environment.

Refer to the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages for the **Next Generation Science Standards** that can be met using this activity to support instruction.

Materials:

Our Elephant Neighbours

World map and world biome map (optional)

Blank sheets of copy paper for drawing, or a long roll of paper for a mural, or a pre-drawn savanna diagram

Crayons, colored pencils, markers, poster paint, or pencils/pens

Procedure: Complete Introductory Reading Comprehension prior to beginning.

ALL GRADE LEVELS:

1. Give the following information to the participants:

Robert and Mary and Tomas and Teresa live in a savanna ecosystem in Tanzania, which forms part of the savanna biome.

An **ecosystem** is a large community of living organisms (plants, animals and microbes) in a particular area. The living and physical components are linked together through nutrient cycles and energy flows. Ecosystems can be of any size, but usually they are in particular places.

(Source: <https://simple.wikipedia.org/wiki/Ecosystem>, Accessed September 2018)

This may be an opportunity to have the participants locate Tanzania on a world map and then on a biomes map showing the geographic location of grasslands savannas or subtropical grasslands.

For younger participants, the following word substitutions may need to be made to simplify the description:

physical: not living

components: parts

through nutrient cycles and energy flows: by sharing important materials and energy

2. Next, ask the participants to look through the book once more, taking notice of all of the pictures.

3. Beginning question:

What did you learn from looking at the pictures with the story about the parts that make up the savanna ecosystem?

To help participants begin to answer this question, the presenter should encourage each participant to orally give one part that they noticed from the pictures in the book and discuss whether each is a living or non-living part. This may involve guiding each participant (especially younger ones) to a particular picture and asking a leading question to get them to focus on a given part.

4. Participants can then be given one of the following ways to summarize their understanding of the savanna ecosystem from what has been discussed:
- A. Younger participants, especially Non-Readers, can be asked to draw a picture that shows their impression of the savanna with all of its parts, and then have them orally identify the specific parts that they have drawn.
 - B. In a group, on a long roll of paper, participants can together contribute ideas on the parts they have identified, to create a mural of the savanna ecosystem that incorporates all of its components, with labels.
 - C. Give participants an unlabeled diagram of the savanna ecosystem that already includes grasses, shrubs, trees, a waterhole, predators (lions and cheetah), ungulates (hoofed animals such as impala, zebra), dung beetles, and other components. Have participants add labels.
5. Use the following to explain a natural resource to participants:
A **natural resource** is something that is found in nature and can be used by people. Earth's natural resources include light, air, water, plants, animals, soil, stone, minerals, and fossil fuels.
(Source: <https://kids.britannica.com/kids/article/natural-resource/399553>, Accessed October 2018)
- Once explained, ask them to look at the picture of the savanna ecosystem that they created and/or labeled and identify the natural resources. This should include all that they have identified. Additional components that they may have missed, such as light and air, can be labeled at this time.
- Also, have the participants identify which are living components and which are non-living. For upper elementary participants, the term **biotic** can be introduced as meaning living and **abiotic** as meaning non-living.
6. When all of the resources are identified, the participants should be reminded that both Robert and Mary, and Tomas and Teresa live in the savanna ecosystem, and because of that, both humans and elephants are using the resources of the savanna. On their picture of the savanna, ask the participants to **circle** the resources that Robert and Mary's family use and **put an "X"** on the resources that Tomas and Teresa's elephant family would use. Then, have the participants discuss their observations and what they can say about the resource needs of both humans and elephants.

Evaluation Exercise:

Have participants list five living and three non-living parts of the savanna ecosystem. Then have them identify which of those parts are natural resources used by both humans and elephants.

GRADES 3 – 6 (Middle School Transition) EXTENSION FROM THIS POINT:

7. Extended discussion for participants can start with them being asked to consider how the elephant uses these resources to look at the important role the elephant plays in the savanna ecosystem. Use the following set of questions:
- A. What living (**biotic**) natural resources does the elephant use to nourish its body and provide it with energy for its activities?
ANSWER: Trees, Shrubs, Grasses
 - B. Are there more of some of these savanna resources than others? If so, what resources are more plentiful?
ANSWER: Yes, in most places in savanna ecosystems there are more grasses.
 - C. How does the elephant collect these resources?
ANSWER: With its trunk, either by pulling things like trees and shrubs with the entire trunk, or by picking things like grasses up with the end of its trunk.
 - D. When the elephant collects the resources, what happens to the area around it?
*ANSWER: The plants that are eaten are cleared away and those parts that are not eaten are disturbed in some way. **The area is changed.***
 - E. What non-living (**abiotic**) natural resource does the elephant need in order to keep it surviving in the hot environment of the savanna?
ANSWER: Water
 - F. How does the elephant collect this resource?
ANSWER: It uses its trunk to suck up the water, then squirts it in its mouth to drink or sprays its body to keep cool.
 - G. When this resource is not easily available, what does the elephant have to do to get access to it?
ANSWER: It uses its tusks, trunk, and feet to dig for water in dry riverbeds.
 - H. What happens to the area around it when this happens?
*ANSWER: **It changes the area** by creating waterholes, which provide water for other animals and people.*



8. Give the participants the following reference information:

Why are Elephants Important?

(Source: <http://www.savetheelephants.org/about-elephants-2-3-2/importance-of-elephants/>, Accessed October 2018)

Elephants are among the most intelligent of the creatures with whom we share the planet, with complex consciousnesses that are capable of strong emotions. Across Africa they have inspired respect from the people that share the landscape with them, giving them a strong cultural significance. As icons of the continent elephants are tourism magnets, attracting funding that helps protect wilderness areas. They are also keystone species, playing an important role in maintaining the biodiversity of the ecosystems in which they live.

During the dry season, elephants use their tusks to dig for water. This not only allows the elephants to survive in dry environments and when droughts strike, but also provides water for other animals that share harsh habitats.

When forest elephants eat, they create gaps in the vegetation. These gaps allow new plants to grow and create pathways for other smaller animals to use. They are also one of the major ways in which trees disperse their seeds; some species rely entirely upon elephants for seed dispersal.

On the savannas, elephants feeding on tree sprouts and shrubs help to keep the plains open and able to support the plains game that inhabit these ecosystems.

Wherever they live, elephants leave dung that is full of seeds from the many plants they eat. When this dung is deposited the seeds are sown and grow into new grasses, bushes and trees, boosting the health of the savanna ecosystem.

Ask participants if this description of an elephant's activities fits with what they have been discussing about the role of the elephant from Step 7. Ask them to explain the effects of those activities on the savanna ecosystem using this information.

9. Next, introduce the following definition to participants and ask them to explain the definition in their own words:

An **ecosystem engineer** is any organism that creates, significantly modifies, maintains or destroys a habitat. These organisms can have a large impact on the species richness and landscape-level heterogeneity of an area.

(Source: https://en.wikipedia.org/wiki/Ecosystem_engineer, Accessed September 2018)

For a certain level of participant, the following word substitutions may need to be made to simplify the description:

species richness: variety (different types) of species

landscape-level heterogeneity: variety (different types) of habitats

10. Once the presenter is satisfied that the participants understand the term, ask them to discuss the ways in which elephants are an example of an ecosystem engineer using this definition and the discussion from Steps 7 and 8 of how elephants use resources and how they impact their ecosystem.
11. Finally it should be explained that because of its role as an ecosystem engineer of the savanna, the elephant is considered one of its keystone species and introduce the following definition:

A **keystone species** is a species which has a big effect on its environment relative to its numbers. The ecosystem depends on them, and would be much changed if they were not there. This is because they affect many other organisms in the ecosystem. They affect the types and numbers of other species in the community. (Source: https://simple.wikipedia.org/wiki/Keystone_species Accessed October 2018)

The way elephants fulfill that role in the savanna ecosystem can be explained with the following:

(Source: <https://www.nationalgeographic.org/encyclopedia/keystone-species/>, Accessed September 2018)

Herbivores can also be keystone species. Their consumption of plants helps control the physical and biological aspects of an ecosystem. In African savannas, elephants are a keystone species. Elephants eat shrubs and small trees, such as acacia, that grow on the savanna. Even if an acacia tree grows to a height of a meter or more, elephants are able to knock it over and uproot it. This feeding behavior keeps the savanna more open.

With elephants to control the tree population, grasses thrive and sustain grazing animals such as antelopes, wildebeests, and zebras. Smaller animals such as mice and shrews are able to burrow in the warm, dry soil of a savanna. Predators such as lions and hyenas depend on the savanna for prey.

12. After sharing this information with participants, ask them to explain in their own words, in writing or orally, what elephants do in the savanna ecosystem to be called a keystone species and identify what parts of the savanna ecosystem are affected by these actions. Depending on the level of participant, certain effects can be discussed in more detail (e.g., grasses thrive with fewer trees because grasses need sunlight to survive.). Connections can then be made as to how it relates to elephants being ecosystem engineers.
13. Finally, have the participants consider what the savanna ecosystem that they pictured at the beginning of this activity would look like if there were no elephants, and what that would mean to the humans living there as well. This may be an opportunity to draw a revised picture, if desired.

This step can serve as an evaluation exercise for this extension by having the participants draw a revised picture or write a short essay on “The Savanna Without Elephants”.

14. Participants might be encouraged to explore the origin of the word keystone to describe these organisms. This can be done by researching the purpose of a keystone in a building or structure and discussing how this is an appropriate term to describe the role of a keystone species within an ecosystem.

Additional exercises and resources for this activity can be found in the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages.



ACTIVITY 6: SHARING A HOME ON THE SAVANNA - BEING A GOOD NEIGHBOUR

Levels: PreK – Grade 6 (Middle School Transition)

Subject Area: Science, Environmental Science

Duration: 1 – 1.5 hours (depending on the extent of coverage desired)

Setting: Classroom and large indoor or outdoor space

Skills: Reading Comprehension, Observation, Analysis, Problem Solving

Summary:

The parting words between Robert and Mary and Tomas and Teresa in *Our Elephant Neighbours* are explored in this activity. Tomas tells of the difficulties that elephants are having each year and gives their reasons. The exercises in this activity first help the participants consider the problems elephants face and then propose ways to help through a game that has participants experience some of the situations impacting elephant populations in the savanna ecosystem. Upper elementary participants can explore the concepts of **limiting factors** and **carrying capacity** as they relate to the difficulties elephants experience and the available resources in the savanna ecosystem.

Objectives: Upon participating in the following activity related to the reading of *Our Elephant Neighbours*, the participant will be able to:

Determine how elephants' daily activities and behaviors are affected by human behavior and how human activities can be adjusted to ensure the continued success of elephants, and that of the savanna ecosystem.

EXTENDED DISCUSSION : GRADES 3 – 6:

Define and give examples of the terms **limiting factor** and **carrying capacity**, by relating them to the difficulties elephants experience and the resources available in the savanna ecosystem.

Refer to the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages for the **Next Generation Science Standards** that can be met using this activity to support instruction.

Materials:

Our Elephant Neighbours

15 Hoops placed in a circle on the ground in an outdoor area or large indoor area;

or, alternatively, 15 Chairs placed in a circle in a large indoor area.

Scenario sheets for presenter - Appendix I (3 pages)

Procedure: Complete Introductory Reading Comprehension prior to beginning.

ALL GRADE LEVELS:

1. Beginning question:

The presenter should ask the participants to find the page in the book with the illustration shown here, then pose the question:

Tomas tells Robert and Mary about the difficulties for elephants at the end of the story. What does this picture from the book show about what Tomas explains to Robert and Mary, and what were some of the suggestions that both Tomas and Robert give to help the elephants?



The following are the answers to this question from the story:

The main difficulty that is stated and represented by the picture is that some areas where elephants used to roam freely to find food and water are now converted to farmland. This gives elephants fewer places to go. It is also stated that people hurt elephants because of this.

Robert suggests that when he grows up and has his own farm, he will put it in a place that is away from where elephants usually roam and feed and he will tell family and friends to do the same. He also says that they should report anyone who is known to hurt elephants or to take and sell their tusks.

Tomas suggested before this that people should try not to scare elephants so that they won't fight to protect themselves and accidentally hurt people. He also told them that elephants don't like chili pepper powder and it keeps them from eating a farmer's crops if it is put on fences around farms.

2. Once these things are established, the participants can be asked to propose reasons why elephants need a lot of space in which to live. A good first answer to this question is that elephants are the largest land animal. From that point, discussion should include that elephants need a large amount of resources to support their bodies and that they need to travel long distances to find enough food. Remind them that elephants are not the only wildlife group living in the savanna, so there are other animals needing food and water resources as well.
3. Now ask the participants how that compares to the space and resource needs of people. To help with this comparison, use some of the information in the Elephant Facts pages at the end of the book.

4. As an introduction to the next exercise, to help the participants identify the elephant's need for space, tell the participants that they are going to do an exercise that will let them experience what Tomas was trying to explain to Robert and Mary. It will also show how some of the suggestions that Robert made could affect the elephants.
5. The following exercise is taken and adapted from the Save The Elephants "Living In Harmony with Elephants Manual - Revised 2015", Lesson 2 - Save the Savanna, pp. 37 – 39. It is stated to have been adapted for their purpose from the "Bushmeat Crisis Task Force Educational Activities". As the rules are somewhat similar to "Musical Chairs", an adaptation could be made to use chairs in a large indoor space, in place of hoops in an outdoor space, to represent habitat areas.



“THREATS TO WILDLIFE” GAME:

Materials/Preparation:

15 Hoops placed in a circle on the ground in an outdoor area or large indoor area;
or, alternatively, 15 Chairs placed in a circle in a large indoor area.
Copy of scenario sheets for presenter – Appendix I (3 pages)

Procedure:

- A. Have participants pick a savanna animal that they would like to be. Be sure that some of the participants are elephants.
- B. Have each participant stand in a hoop or sitting/holding on to a chair.

Participants start the game by standing in their own hoop or sitting/holding on to a chair. The hoops/chairs represent the animals' habitat. (If you have more participants than the number of hoops/chairs, you can start with 2 participants in some of the hoops/chairs.)

Rules:

Participants must have at least one foot fully in a hoop or one hand on a chair to be safe. Sharing of habitat is allowed, and encouraged.

If only one foot is inside of the hoop or one hand on a chair, then that animal is considered endangered. No more than 3 people per hoop/chair.

- C. While each scenario is being read, participants will walk around the circle of hoops/chairs, passing through each hoop or touching each chair as they go along.
- D. After each scenario has been read, and the appropriate number of hoops/chairs has changed, the participants must find habitat to live in. When the leader says “STOP” participants should move into the nearest habitat/hoop/chair. If there are no hoops available for the participant to put at least one foot into, they have lost their home and are out of the game for now.
- E. Follow the instructions on the scenario sheet and adjust the hoops/chairs accordingly.

Note: At the beginning of the game, you will be removing hoops/chairs. However, half way through the game, you will be adding hoops/chairs back into the circle. So, participants who may have lost their habitat will be able to rejoin the game.

- 
6. When the game is finished, talk to the participants about what they have learned and how they feel. Many will have lost their home, and others will be very crowded in the remaining habitat. Have them explain what they lose when their home is gone or they are crowded in their home area, and connect that to the discussion of resource needs. Discuss solutions, compromises, and actions, which could benefit wildlife and the people who share these same resources.
 7. Have the participants look again at the picture in the book that started this activity. Ask them to explain why the lack of space and resources is especially difficult for elephants. Have them focus on the size of the elephant and what that means about the amount needed to support one individual. Then remind them of the societal structure of elephant families.

Evaluation Exercise:

In small groups, have the participants discuss and record ideas for solutions, compromises and actions that can be taken to help elephants and humans share the same home. Then have them identify a similar situation in their area.

EXTENDED DISCUSSION FOR GRADES 3 – 6:

8. Continue the discussion with older/advanced participants by explaining that there are two terms they experienced the effects of in the game, thereby introducing the following definitions for **carrying capacity** and **limiting factors**. Give and briefly explain the terms, then ask the participants to explain where in the game these terms were experienced.

Carrying capacity: the maximum population size of the species that the environment can sustain, given the food, habitat, water and other necessities available in the environment.

Limiting factor: a factor that controls an organism's population, size, or distribution.

(Source: NatureBridge Lesson: Oh Deer, Updated 7/19/2011, p. 1, https://naturebridge.org/sites/default/files/Oh%20Deer_1.pdf)

Answers should be:

Carrying capacity was represented by the number of people able to be in the hoops/chairs.

Limiting factors were represented by each of the scenarios.

9. Have the participants consider these terms in relation to what they have learned about the elephant's life on the savanna and answer the following questions:

What are the limiting factors for elephants in the savanna ecosystem?

ANSWER: Water and food (trees and grass) availability, space, predators (mainly humans)

Would the carrying capacity of the elephant be higher or lower in comparison to other animals on the savanna?

ANSWER: Lower, because of their size and their need for large amounts of food and water.

Considering the importance of the elephant in shaping the savanna for the others that live there that was discussed in Activity 5, how could the elephant's presence affect the carrying capacity of the other animals?

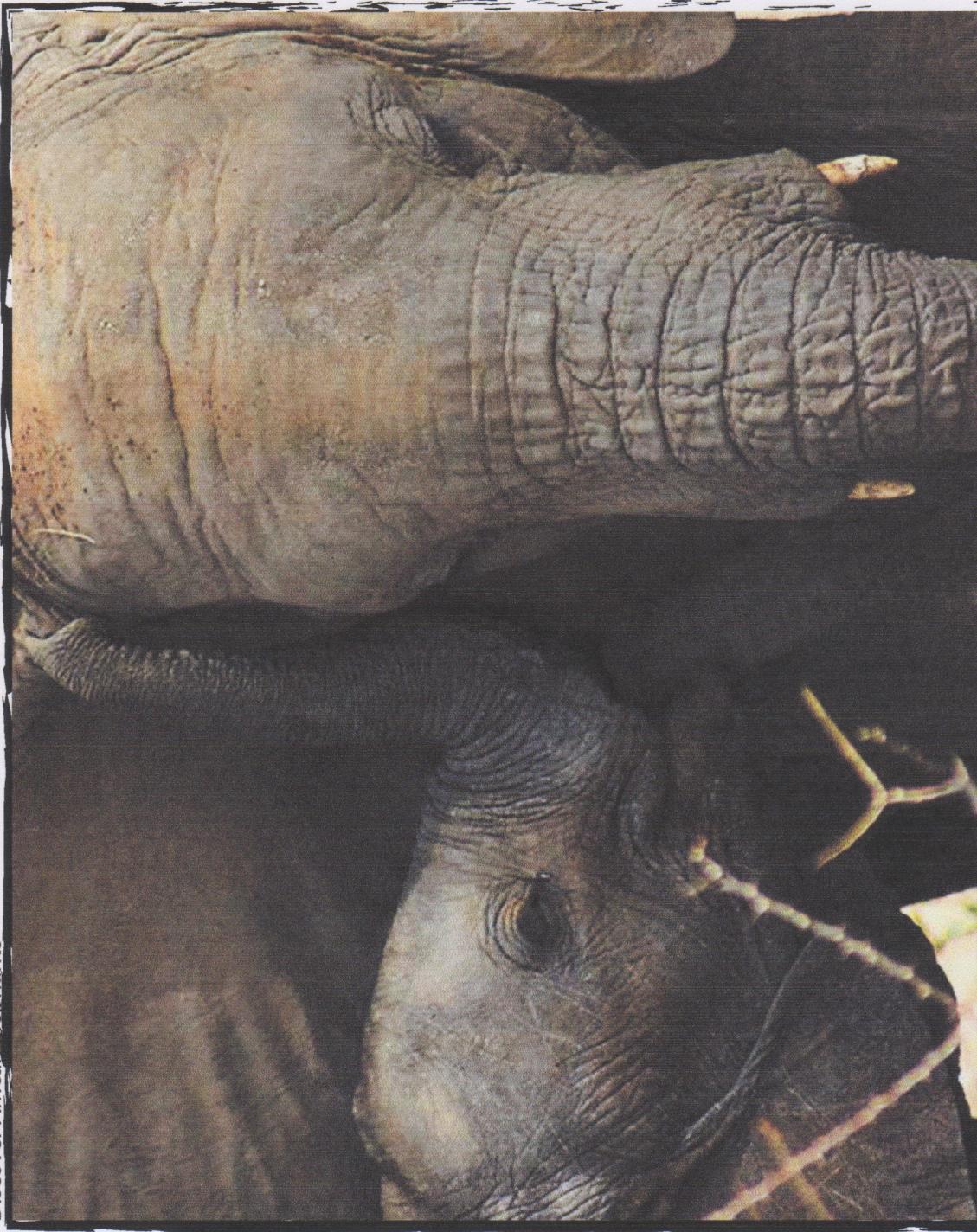
ANSWER: The elephant's presence could increase the carrying capacity for the other animals by increasing food supply, exposing minerals, and creating waterholes.

Participants' answers to the questions in Step 9 can serve as an evaluation exercise for this extension.

Additional exercises and resources for this activity can be found in the ADDITIONAL INSTRUCTIONAL RESOURCES section on the final pages.



Lesson 1 - Discover African Elephants



- What are the elephants doing in this photo? • Why is this interaction/behaviour important?
- How is this similar to the interactions/behaviours of people?

Lesson 1 - Discover African Elephants



- What are the elephants doing in this photo? • Why is this interaction/behaviour important?
- How is this similar to the interactions/behaviours of people?

Lesson 1 - Discover African Elephants



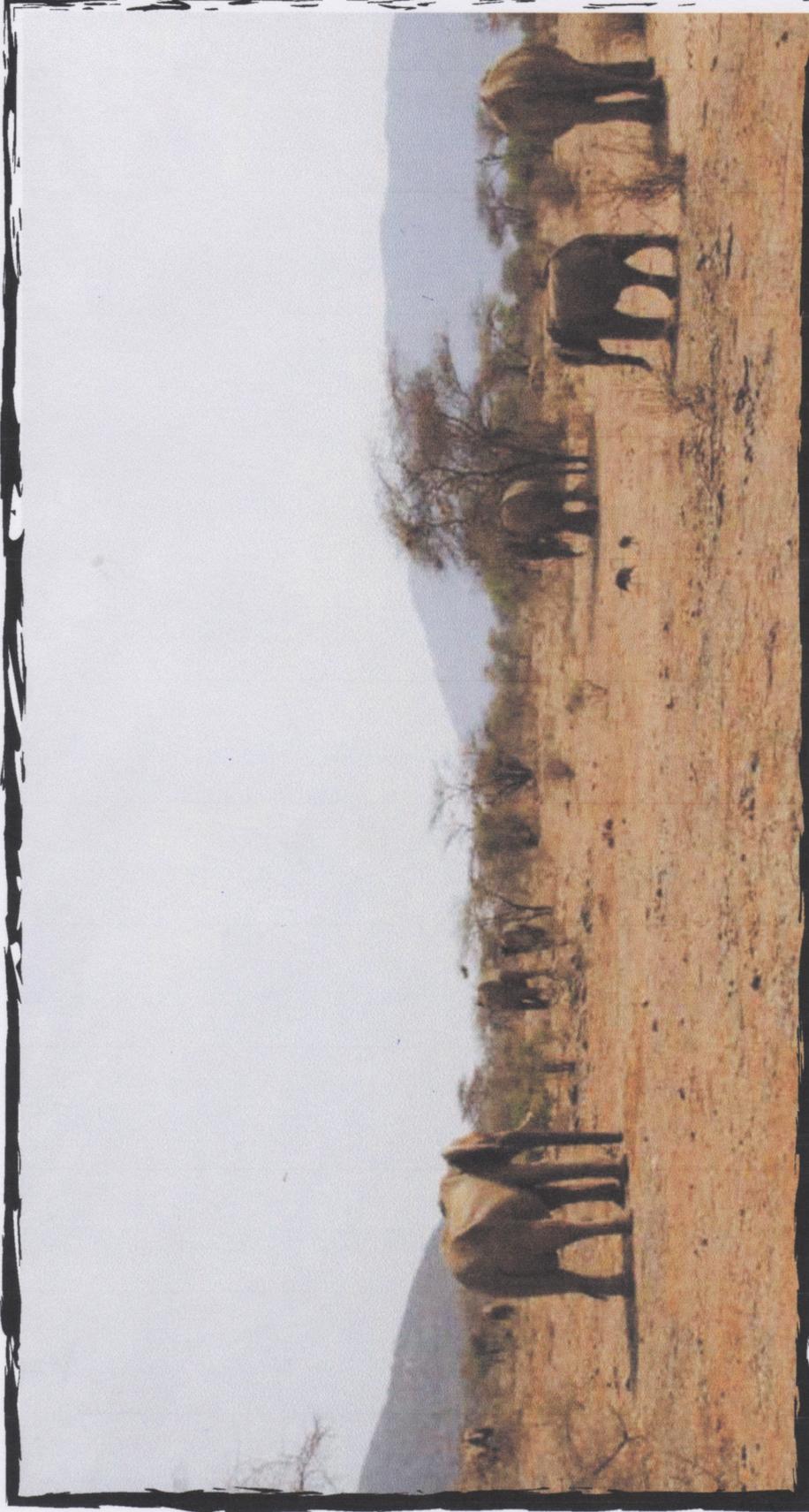
- What are the elephants doing in this photo?
- Why is this interaction/behaviour important?
- How is this similar to the interactions/behaviours of people?

Lesson 1 - Discover African Elephants



- What are the elephants doing in this photo? • Why is this interaction/behaviour important?
- How is this similar to the interactions/behaviours of people?

Lesson 1 - Discover African Elephants



- What are the elephants doing in this photo?
- Why is this interaction/behaviour important?
- How is this similar to the interactions/behaviours of people?

Appendix F

Tomas and Teresa's Family



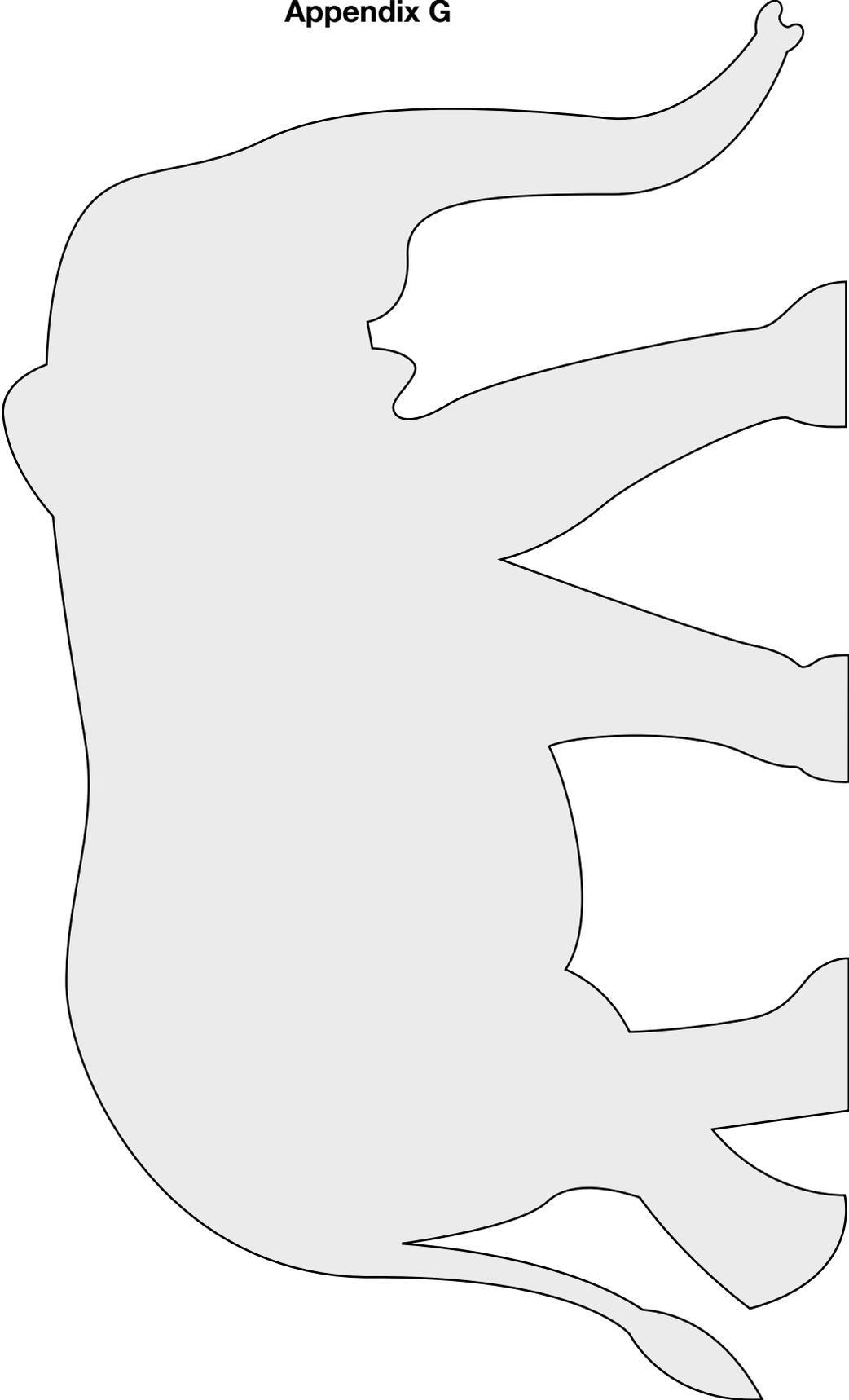
Robert and Mary's Family



Your Family

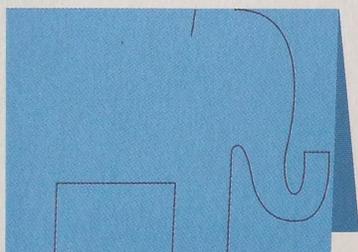
The Elephant

Appendix G

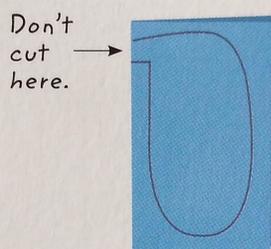


Folded paper animals

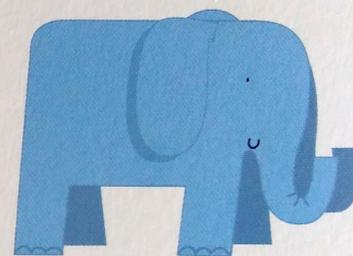
204 Elephant



1. Fold a rectangle of thick paper in half. Draw an outline of an elephant against the fold, like this. Add a line for the ears. Then, cut out the elephant.



2. Cut a smaller rectangle from the same paper and fold it in half. Draw an elephant's ear against the fold. Then, keeping the paper folded, cut out the ear.



3. Draw eyes, toenails and tusks with felt-tip pens. Then, cut along the line for the ears. Open the ears, stand the elephant up and slot the ears onto the body.

Appendix I

Threats to Wildlife Game Scenarios

Read these scenarios out loud to the participants as they walk from hoop to hoop.

Start everyone walking. Read Scenario #1.

1. A local farmer expands his crops to an area that is frequently used by migrating elephants.

Remove 2 hoops. Ask participants to stop walking and step into the nearest hoop. Two (or more) participants will have to share a habitat with others.

Start everyone walking. Read the Scenario #2.

2. People begin hunting elephants and other wildlife in the protected area for meat.

Remove 2 hoops. Ask participants to stop walking and step into the nearest hoop. Two (or more) participants will have to share a habitat with others.

Start everyone walking. Read the Scenario #3.

3. With new roads and settlements being built, wildlife habitats become fragmented, separating elephants from the food and water sources that they depend on for survival.

Remove 2 hoops. Ask participants to stop walking and step into the nearest hoop. Two (or more) participants will have to share a habitat with others.

Start everyone walking. Read the Scenario #4.

4. A group of poachers hunt and kill mature bull elephants for their large tusks.

Remove 2 hoops. Ask participants to stop walking and step into the nearest hoop. Two (or more) participants will have to share a habitat with others.

Have everyone stop for a moment and look around.

Ask the participants:

“What has happened to your habitat?”

(Response: It has gotten smaller. All habitats have more animals depending on the same food, water, and shelter.)

Appendix I (Continued)

Start everyone walking. Read the Scenario #5.

5. While walking to get water, school children yell and throw stones at the animals to frighten them away. Throwing stones at animals may cause them to become angry and charge.

Remove 2 hoops. Ask participants to stop walking and step into the nearest hoop.

Have everyone stop for moment and look around.

Ask the participants:

How many animals are endangered?

(Response: The number depends on how many participants started the game.)

As negative actions occur, animals may become extinct in the area or forced to leave in search of another suitable habitat.

Start everyone walking. Read the Scenario #6.

6. Participants learn about the importance of elephants at school and share what they have learned with their families and friends.

Give back 1 hoop. Ask participants to stop walking and step into the nearest hoop.

Start everyone walking. Read the Scenario #7.

7. Local farmers put up beehive fences around their crops as a safe way to deter elephants.

Give back 1 hoop. Ask participants to stop walking and step into the nearest hoop.

Start everyone walking. Read the Scenario #8

8. A community works with conservation organizations and the wildlife service to create corridors that allow elephants to travel at a safe distance from villages.

Give back 2 hoops. Ask participants to stop walking and step into the nearest hoop. Participants that were out of the game may rejoin and find a habitat to share.

Start everyone walking. Read the Scenario #9.

9. A community member learns about poachers in the area and quickly notifies the proper authorities.

Give back 2 hoops. Ask participants to stop walking and step into the nearest hoop. Participants that were out of the game may rejoin and find a habitat to share.

Appendix I (Continued)

Have everyone stop for moment and look around.

Ask the participants:

How did the positive actions of the community help elephants and the savannah habitat?

(Response: Elephants and other wildlife were protected by people sharing what they've learned about the importance of elephants to the ecosystem.)

Conservation Actions:

Beehive fences and wildlife corridors help to protect elephants, people and their crops. Notifying authorities about illegal hunting saves wildlife and helps to maintain healthy populations for future generations and tourism

Big Time Help for Elephants!

What can you do to help elephants?

1. **Trumpet it Everywhere!** Tell everyone you know that elephants are endangered and need help.
2. **Give money or time** to an organization that works to save elephants.
3. **Grow trees!** Elephants and lots of other animals need native trees, and deforestation hurts these animals. Planting native trees wherever you live helps animals and the environment.
4. **Refuse** to buy anything made with elephant body parts, including ivory or skins.



ADDITIONAL INSTRUCTIONAL RESOURCES

Instructional Background and Resources:

Trunk Talk activities are designed to reinforce and expand the concepts that are addressed in **Our Elephant Neighbours** using a multidisciplinary approach to engage different learning styles. The activities can be used separately or in groups, and each individual activity can be used in sections to provide the appropriate amount of concept development for the level of instruction desired. This allows the presenter the flexibility needed for differentiated instruction and scaffolding.

Although these activities address common life science and environmental science concepts, they are using subjects that may be unfamiliar to most. It is for this reason that these activities be thought of as **supplements** to support initial traditional instruction that uses familiar subject matter. As such they can be used to expand the scope of concept development to assist in meeting Next Generation Science Standards (NGSS) to the extent desired. NGSS call for demonstrations of understanding such as constructing arguments and explanations, developing models, determining patterns and making observations using examples from different and wide-ranging aspects of a given concept. These activities can assist in achieving those outcomes by providing reinforcement, structured/guided thinking skills practice, and/or depth of coverage with additional examples from a different perspective. A table showing overall NGSS alignment by Trunk Talk activity and grade can be found on the page immediately following this Instructional Background and Resources explanation. Specific NGSS supported by each activity are given in this ADDITIONAL INSTRUCTIONAL RESOURCES section at the beginning of the page dedicated to each specific activity.

The use of the book as a literary instructional vehicle for these activities provides further support to instruction in meeting ELA/Literacy Standards. Just as with NGSS, ELA/Literacy Standards require the use of multiple sources to achieve the desired outcomes. These materials provide those resources. A listing of the ELA/Literacy standards that could possibly be supported by these activities can be found on the Introductory Reading Comprehension Activity page of this ADDITIONAL INSTRUCTIONAL RESOURCES section.

Most concepts are generally defined and explained within the procedure of each activity. If further information is desired, the following websites can provide additional resources and reference material to help with background on the many aspects of the elephant that are covered in the book and these activities:

General Resources:

<https://www.hhmi.org/biointeractive/elephants>

<https://www.hhmi.org/biointeractive/gorongosa-national-park>

These two sites are collections from the Howard Hughes Medical Institute's BioInteractive website. They include instructional material on elephants and Gorongosa National Park in Mozambique which is a savanna ecosystem. They contain a wealth of resources on these two topics. These two collections provided the reference material that guided the direction for the development of this set of activities.

Communication:

<https://www.elephantvoices.org/elephant-communication.html>

This Elephant Voices site is good for all things elephant, but this page in particular is all about communication.

Behaviour and Social Structure:

<https://www.elephantvoices.org/elephant-sense-a-sociality-4/elephants-are-socially-complex.html>

This is the same Elephant Voices site as above, just a different section.

Anatomy:

<http://www.asianelephantresearch.com/about-elephant-anatomy-and-biology-p1.php>

Although this site is about Asian elephants, basic anatomy information is good for elephants in general.

<https://animalcorner.co.uk/elephant-anatomy/#teeth>

This site contains general anatomy information as well as distinguishing features for both African and Asian elephants. It is written in a manner that would be useful to young readers.

Savanna Ecology:

<https://www.hhmi.org/biointeractive/africas-savanna-ecosystems>

This Howard Hughes Medical Institute first of a series of six researcher lectures on savanna ecology for high school students is a perfect introduction to the topic and provides excellent background information.

<https://www.nationalgeographic.org/media/african-savanna-illustration/>

<https://www.nationalgeographic.org/encyclopedia/keystone-species/>

These two National Geographic Society websites provide visual and written information that can be used in presentation.

<https://sites.google.com/site/savingtheelephants/Keystone-Species>

This website gives concrete explanations on elephants as keystone species. It would be useful for younger readers.

Wildlife - Human Interactions:

http://www.soselephants.org/about_elephants.html

The difficulties that elephants are facing and the reasons for addressing these issues are covered on this webpage in a very understandable manner.

<https://populationeducation.org/what-carrying-capacity/>

A good explanation of carrying capacity with some good analogies to use in instruction.

Next Generation Science Standards Supported by Trunk Talk Activities by Grade

| | TT #1: Call of the Wild | TT #2: Just Like Me | TT #3: All in the Family | TT #4: From Trunk to Tail | TT #5: A Home on the Savannah | TT #6: Sharing a Home on the Savannah |
|--------------|-----------------------------------|------------------------------------|--------------------------|---|--|---------------------------------------|
| KINDERGARTEN | NGSS: K-LS1-1, K-ESS2-2, K-ESS3-1 | NGSS: K-LS1-1, K-ESS2-2, K-ESS3-1. | NGSS: K-LS1-1 | NGSS: K-LS1-1, K-ESS2-2, K-2-ETS1-2 | NGSS: K-ESS2-2, K-ESS3-1 | NGSS: K-ESS3-1 |
| GRADE 1 | NGSS: 1-LS1-2 | NGSS: 1-LS1-2 | NGSS: 1-LS1-2 | NGSS: 1-LS1-1, K-2-ETS1-2 | | |
| GRADE 2 | NGSS: 2-LS4-1 | NGSS: 2-LS4-1 | NGSS: 2-LS4-1 | NGSS: 2-LS2-2, K-2-ETS1-2 | NGSS: 2-LS4-1 | |
| GRADE 3 | NGSS: 3-LS2-1, 3-LS1-1 | NGSS: 3-LS2-1, 3-LS1-1 | NGSS: 3-LS2-1 | NGSS: 3-LS4-3 | NGSS: 3-ESS2-2 | NGSS: 3-LS4-4. |
| GRADE 4 | NGSS: 4-LS1-2 | NGSS: 4-LS1-1, 4-LS1-2 | | NGSS: 4-LS1-1 | NGSS: 4-ESS3-1 | |
| GRADE 5 | | | | NGSS: 5-PS3-1, 5-LS2-1 | NGSS: 5-PS3-1, 5-LS2-1, 5-LS2-1, 5-ESS2-1 | NGSS: 5-ESS3-1. |
| GRADE 6 | NGSS: MS-LS1-4 | NGSS: MS-LS1-4 | NGSS: MS-LS2-2 | NGSS: MS-LS1-6, MS-LS1-7, MS-LS2-2, MS-LS1-4, MS-LS4-2. | NGSS: MS-LS1-6, MS-LS2-1, MS-LS2-3, MS-LS2-2, MS-LS1-4 | NGSS: MS-LS2-4, MS-ESS3-3, MS-ESS3-4 |

The following ELA/Literacy standards may be supported by this activity when used with the associated activities:

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

RI.1.1 Ask and answer questions about key details in a text.

RI.1.2 Identify the main topic and retell key details of a text.

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.

RI.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

W.3.7 Conduct short research projects that build knowledge about a topic.

W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

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.

RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-PS3-1)

W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

W.5.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.

W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

WHST.6-8.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

ACTIVITY 1: CALL OF THE WILD - ELEPHANT DAILY ACTIVITIES AND BEHAVIOUR

This activity can be used to support instruction to meet any one or more of the following *Next Generation Science Standards*:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

1-LS1-2. Read texts and use media to determine patterns in behaviour of parents and offspring that help offspring survive.

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

3-LS2-1. Construct an argument that some animals form groups that help members survive.

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviours and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

Additional Exercises and Resources:

EXTENSION FOR GRADES 3 - 6 (Middle School Transition):

6. The following website links and video can be consulted and used for more detailed investigation on the topics of Elephant Communication and Behaviour if desired. These will also be good sources of information for other activities:

Elephant Communication:

<https://www.elephantvoices.org/elephant-communication.html>

Gives general information about various aspects of elephant communication.

<https://www.elephantvoices.org/multimedia-resources/elephant-gestures-database.html>

This is a database of elephant gestures from "Poole, J.H. & Granli, P.K. 2009. ElephantVoices Elephant Gestures Database, <https://www.elephantvoices.org>".

<https://www.elephantvoices.org/multimedia-resources/elephant-call-types-database.html>

This is a database of elephant call types from "Poole, J and Granli, P. 2009. Database of African elephant acoustic communication, www.elephantvoices.org".

<https://www.hhmi.org/biointeractive/studying-elephant-communication>

This video from the Howard Hughes Medical Institute BioInteractive “Elephants” collection shows a scientist’s work on determining how elephants can detect other elephant’s calls by using more than just their ears.

Elephant Behaviour:

<https://www.elephantvoices.org/elephant-sense-a-sociality-4/elephants-are-socially-complex.html>

Gives information on various aspects of elephant social behaviour

Video: **The Secret Life of Elephants**

“The Secret Life of Elephants is a BBC nature documentary series following the lives of elephants and the work of the conservation charity Save the Elephants in Samburu National Reserve, Kenya. The series was released on DVD by BBC Worldwide on 9 February 2009. The three part series follows the lives of African elephants in Samburu, Northern Kenya, focusing on the stories of individual elephants to show the most dramatic moments of their lives. Their hidden world is revealed, from the complexities of family life and their intelligence to the depth of their emotions.” (Description taken from Wikipedia, the free encyclopedia)

Associated website: <https://www.bbc.co.uk/programmes/b00h3m6k>

ACTIVITY 2: JUST LIKE ME - HOW ELEPHANTS AND HUMANS ARE ALIKE

This activity can be used to support instruction to meet any one or more of the following *Next Generation Science Standards*:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

1-LS1-2. Read texts and use media to determine patterns in behaviour of parents and offspring that help offspring survive.

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

3-LS2-1. Construct an argument that some animals form groups that help members survive.

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behaviour, and reproduction.

4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviours and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

Additional Exercises and Resources:

EXTENSION FOR GRADES 3 - 6 (Middle School Transition):

3 e. (Optional) To reveal the proper identification, the presenter can play the following video clips from **The Secret Life of Elephants**:

Appendix A - Care For Their Young: 0:02:14-0:03:28; 1:31:50-1:31:31; 0:02:14-0:03:28

Appendix B - Communications, Social Relationships: 32:31-32:51; 1:16:06-1:16:29; 2:55:40-2:56:30

Appendix C - Mourning: 41:30-41:45; 43:00-44:15; 45:50-48:14

Appendix D - Digging for Water: 1:43:00-1:44:26

Appendix E - Teaching Young to Find Food and Water: 25:52-28:13; 1:17:45-1:18:00

4. For those interested in further exploration of the similarities between elephants and humans the following website link provides a number of interesting possibilities:

<https://www.elephantvoices.org/elephant-sense-a-sociality-4/elephants-are-extraordinary.html>

ACTIVITY 3: ALL IN THE FAMILY - STRUCTURE OF ELEPHANT SOCIETY

This activity can be used to support instruction to meet any one or more of the following *Next Generation Science Standards*:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

1-LS1-2. Read texts and use media to determine patterns in behaviour of parents and offspring that help offspring survive.

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

3-LS2-1. Construct an argument that some animals form groups that help members survive.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

Additional Exercises and Resources:

EXTENSION FOR GRADE 6 (Middle School Transition):

7. The following are websites that can be used for additional/alternate reference material:

<https://www.elephantvoices.org/elephant-sense-a-sociality-4/elephants-are-socially-complex.html>

From this site the relationship groupings. (Families, Bond Groups, and Clans)

<https://sites.google.com/site/savingtheelephants/Social-Structure>

A shorter, but more detailed explanation of relationships, along with a diagram using human familial relationship terms can be found at this website link.

ACTIVITY 4: FROM TRUNK TO TAIL - THE ELEPHANT, A MEGAHERBIVORE

This activity can be used to support instruction to meet any one or more of the following *Next Generation Science Standards*:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behaviour, and reproduction.

5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviours and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

MS-LS4-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.

Additional Exercises and Resources:

6 B/C. At this point the following video clip about the elephant's trunk from the National Geographic Channel can be accessed and played. It should be cautioned that there is a dissection of an elephant's trunk started at about 1:00, so presenters should preview to determine the appropriateness for their

participants and may want to show only certain parts. After viewing the participants can be asked if they have any more uses for the trunk to add.

http://channel.nationalgeographic.com/u/kdvOstqYenE17rQgUqLa41fymTT2hAbwo2hykq3_dhx1AoAZ94CISkQVkb2_Voc7PSf/

6 F. To conclude this lesson the following simple, informative and entertaining video called “Elephant Grows the Forest” can be shown to all levels of participants. After it is viewed allow them to tell what they learned about the elephant as a herbivore. It can be used to develop concepts in other activities as well.

<https://www.youtube.com/watch?v=UMFWdTVtQw0>

ACTIVITY 5: A HOME ON THE SAVANNA - EXPLORING THE SAVANNA ECOSYSTEM

This activity can be used to support instruction to meet any one or more of the following *Next Generation Science Standards*:

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.

4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment.

5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviours and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

Additional Exercises and Resources:

4. C. An unlabeled diagram of the savanna ecosystem, such as the one found at the following National Geographic Society webpage link can be used:

<https://www.nationalgeographic.org/media/african-savanna-illustration/>

The presenter can use the key at this website to help guide the participants to identify all of the living components and most of the important non-living components. There is also a description explaining the interactions that occur. It is a good reference for information on the savanna ecosystem. This can also be used to give the participants a way to help them discover more or less obvious components.

GRADES 3 - 6 (Middle School Transition) EXTENSION:

15. The following webpage link is a video “3 Animals That Keep Their Whole Ecosystem Together” that explains and illustrates all of these concepts and can be used to reinforce what has been discussed. The elephant is covered from 2:23 to 3:41:

<https://www.youtube.com/watch?v=JGcIp4YEKrc>

16. Additional Exercises on the Savanna Ecosystem:

Further exercises on the savanna ecosystem can expand from these concepts by connecting important environmental concepts such as food and energy relationships in food chains and webs using the components of the savanna. The following webpage links contain activities from the Howard Hughes Medical Institute BioInteractive website, the Gorongosa National Park collection, that are specific to the savanna ecosystem and contain downloadable materials that can be adapted for use with upper primary participants to explore these topics:

Activity: Creating Chains and Webs to Model Ecological Relationships:

<https://www.hhmi.org/biointeractive/creating-chains-and-webs-model-ecological-relationships>

Activity: Lesson 4 - Gorongosa’s Food Webs:

<https://www.hhmi.org/biointeractive/lesson-4-gorongosas-food-webs>

This is part of a series of exercises using actual webcam data from Gorongosa National Park in Mozambique.

ACTIVITY 6: SHARING A HOME ON THE SAVANNA - BEING A GOOD NEIGHBOUR

This activity can be used to support instruction to meet any one or more of the following *Next Generation Science Standards*:

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

Additional Exercises and Resources:

EXTENDED DISCUSSION: GRADES 3 - 6:

9. Additional Exercise on Carrying Capacity:

Further development of the concept of carrying capacity and limiting factors can be explored with the exercise "How Many Bears Can Live in this Forest?" at the following website:

<http://idahoptv.org/sciencetrek/topics/bears/activity12.cfm>