Click and Learn
Gorongosa Timeline

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Environmental Science
Student Worksheet

GORONGOSA TIMELINE – ENVIRONMENTAL SCIENCE WORKSHEET

ABOUT THIS WORKSHEET

This worksheet complements the Click and Learn "Gorongosa Timeline" (http://www.hhmi.org/biointeractive/gorongosa-timeline) developed in conjunction with the short film *The Guide: A Biologist in Gorongosa* (http://www.hhmi.org/biointeractive/the-guide-a-biologist-in-gorongosa) and provides questions related to environmental science. The worksheet starts with two questions on Gorongosa's geographic location, followed by a chronologically organized table with blanks. The second half contains six free-response questions and two extended learning questions.

PROCEDURE

Use the Gorongosa Timeline Click and Learn to fill in the blanks in the table and answer the questions that follow. Questions 1 and 2 may require you to do some research or to go to the Gorongosa National Park Interactive Map (http://www.hhmi.org/biointeractive/gorongosa-national-park-interactive-map). **To fill in the table, go to the timeline entries that correspond to the time, entry headline, or content specified in each row. Once the table is complete, answer the free-response questions that follow.**

HOW TO USE THE TIMELINE

You can customize how stories are viewed by clicking on the buttons in the bottom right and left corners of the Click and Learn. The 2D/3D button on the left lets you toggle between a two- and three-dimensional view of the timeline; the tool button on the right opens a window where you can filter events by category, change how categories are displayed, and zoom in or out. Use the search function to find specific events using relevant keywords or phrases. **To read more about an event, click on the image (3D view) or the "More" button in the bottom right corner of the entry (2D view).**

1. On which continent do you find Gorongosa National Park?

_____

2. In which country do you find Gorongosa National Park?

_____

TIME	ENTRY HEADLINE	CONTENT SUMMARY
300,000 BC	Earliest Evidence of Humans	People lived in Gorongosa 300,000 years ago.
922–1100	Bantu Settlers	
1500	Portuguese Colonization	
1858–1864		David Livingston embarks on an expedition in Mozambique.

1920		
		The Gorongosa Reserve is expanded to protect antelopes and rhinos.
	A National Park is born	
	War of Independence	
1966	Park Reduction	
		Scientists counted animals from airplanes. They counted _____ elephants, _____ lions, _____ buffalo, _____ wildebeest, _____ zebras, _____ waterbuck, _____ impalas, and _____ hippos.
1971		The Pygmy chameleon can only be found on Mount Gorongosa.
1975		
1976		_____ elephants and _____ lions are counted in the park.
	War of Destabilization	
1993–1996		As few as _____ elephants, _____ reedbucks, _____ waterbucks, and _____ zebras and antelopes are counted.
	Rebuilding the Park	
Mar 2004		
		The Gorongosa Restoration Project starts.

Nov 2005		
	Mountain Community	
		Animals begin to be reintroduced to Gorongosa.
	Wildlife Numbers on the Rise Again!	
Jan 2008		
	Mount Gorongosa Protected	
		Community Education Staff teach children from the surrounding area in Mozambique about conservation.
Nov 2010		
	A Bioblitz with E. O. Wilson	
		Scientists discover a rare shrew that is found only in and around Mozambique.
2012		
	First on-the-ground survey on Cheringoma Plateau	
April 2013		
		The park is now home to 7 new zebras and 35 elands.

2014		
	Latest Wildlife Survey	_____ buffalos, _____ hippos, _____ waterbucks, _____ wildebeest, _____ antelope, _____ hartebeest, _____ zebras, and _____ lions are counted.
	Ongoing Challenges	
	Future Plans	

FREE-RESPONSE QUESTIONS

1. The data in the 1994 graph entitled **"Rebuilding the Park"** presents information about the changing populations of *animals* in Gorongosa. The **"Ongoing Challenges"** graph from 2014 presents the changing population data for *humans* within the park. Describe the relationship between the two graphs and offer an explanation for this relationship.

2. Explore the section called **"War of Destabilization"** (1977–1992).
   (a) Identify <u>two</u> specific human activities due to the civil war in Mozambique that resulted in a loss of biodiversity.

   (b) Explain how each activity lowered the biodiversity in Gorongosa National Park.

3. For <u>each of the two</u> human activities above, describe <u>two</u> strategies that were used to reduce the loss of biodiversity in the park.

4. E. O. Wilson has played a prominent role in improving biodiversity within the park, and the biodiversity lab at Gorongosa National Park is named after him. Learn more about E. O. Wilson's role in improving biodiversity within Gorongosa National Park by clicking on the **"Edward O. Wilson Biodiversity Lab Opens"** link and exploring the information there. Outline the goals of the program in the space below.

5. Read the 2010 entry **"Mount Gorongosa Protected"** and explore the associated link.
   (a) Explain the human activity that has changed how water flows on Mount Gorongosa.

   (b) Explain what is being done to alleviate the problem.

6. Explore the section called **"Future Plans"** (2014).
   (a) Describe the role of wildlife corridors in preserving and increasing biodiversity in fragmented habitats.

   (b) Describe your own plan to establish wildlife corridors in Gorongosa Park and identify two species that would benefit from the implementation of your plan.

EXTENDED LEARNING QUESTIONS

Write your answers in the space below, on a separate sheet of paper, or in your notebook.

7. Describe <u>two</u> ecological benefits of having greater biodiversity in an ecosystem.

8. Taking into account that the poor are said to be both victims and causes of environmental degradation, identify and describe the challenges that Gorongosa will continue to grapple with as it transitions into becoming "the most diverse park in the world."