

Name: _____

Community Biology: Recovery of Animal Populations: Gorongosa

A community includes all the _____ of different species that
_____ at the same time.

There are two components to biodiversity of communities.

Species Richness: The number of different species

- Look at the species of mammals found in Gorongosa. How many different species are there?

Species Evenness: The relative abundance of each species

- Are all the species evenly distributed in population size?
- How is species evenness related to the overall diversity of a community?
- Do you think it's more advantageous to have a higher or lower species diversity and why?

Vegetation refers specifically to plant communities. Gorongosa has many different vegetation types.

- What are the different vegetation types found in Gorongosa?
- Predict which vegetation type would have the highest biodiversity. What information was important/helpful in making this prediction?

Each species lives in a specific habitat that includes its resources, like food, water, shelter, and tolerable conditions, like temperature or soil type (for plants). These requirements comprise a species' ecological niche.

- What do you think would happen if two species' ecological niches are highly similar? Give two examples/outcomes.

Species interactions strongly affect the community structure. Some of these interactions exist for a prolonged amount of time, thus the two species involved are closely associated. These types of interactions are called symbiotic relationships. One example of symbiosis is predator-prey.

In Gorongosa, lions and crocodiles are considered apex predators since they are at the top of their food chain/web.

- What are some physical adaptations that help predators be successful (to eat)?
- What are some defensive adaptations that prey species have to be successful (not eaten)?
- Can you think of other types of symbiotic relationships in addition to predator-prey?

- What do you think the effects to a community are when a keystone species is removed?

- Scientists do not understand why the lions have not recovered even though there is plenty of prey species for food. What do you think?

Mammals at Gorongosa

The following mammals are very likely to be seen currently on a safari with us in Gorongosa:

1. WARTHOG
2. BUSHPIG
3. ORIBI *
4. BUSHBUCK
5. NYALA
6. REEDBUCK
7. IMPALA
8. WATERBUCK
9. BABOON **
10. VERVET MONKEY
11. SAMANGO (BLUE) MONKEY
12. PORCUPINE
13. CIVET
14. GENET
15. LARGE GREY MONGOOSE
16. SLENDER MONGOOSE ***
17. CROCODILE (a reptile, not a mammal – but still a very important species in Gorongosa’s ecosystem)
18. WATER MONITOR (also a reptile of course, but very common)

* A threatened species that does very well in Gorongosa - there is a belief that the Park has the highest concentration of ORIBI in Africa

** We currently believe the Gorongosa baboons to be a cross-over population between the larger and more aggressive CHACMA BABOON of Southern Africa and the more timid, diminutive YELLOW BABOON of East Africa. We have sent through our speculations to mammal experts and are awaiting some feedback on this interesting phenomenon...

*** A red version of this cute critter occurs in the Park leading to its nickname: Fire Mongoose

The following are mammals that you have a good chance of seeing at the moment on safari in Gorongosa:

19. SABLE
20. LICHTENSTEIN’S HARTEBEEST
21. KUDU
22. RED DUIKER
23. GREY DUIKER
24. HIPPO *
25. ELEPHANT
26. BUFFALO *
27. LION
28. SERVAL
29. THICK-TAILED BUSHBABY
30. WATER (MARSH) MONGOOSE
31. WHITE-TAILED MONGOOSE
32. DWARF MONGOOSE
33. BANDED MONGOOSE
34. TREE SQUIRREL

* These species are part of the ongoing re-introduction plan for the Park, particularly focused on increasing the populations of the mega-herbivores that were so synonymous with Gorongosa in its heyday

These mammals we see from time to time and, particularly in the case of the wildebeest, are more often seen in the dry months (July-October). It must be noted that the chances of seeing these species increases with the amount of time you spend exploring Gorongosa:

35. BLUE WILDEBEEST *
36. SUNI
37. SHARPE'S GRYSBOK
38. BLUE DUIKER **
39. BUSHY-TAILED MONGOOSE ***
40. RED (FIRE) SQUIRREL **
41. HONEY BADGER (RATL)

* Wildebeest are part of the ongoing re-introduction plan for the Park, particularly focused on increasing the populations of the mega-herbivores that were so synonymous with Gorongosa in its heyday

** Found in the forests of Mount Gorongosa

*** Endemic to the central Mozambique/eastern Zambia & Zimbabwe region

These mammals are currently present in Gorongosa in very limited numbers (or at least they should be!). We hope these populations should increase steadily as the Park becomes recognised as a place of sanctuary for these animals (and with ongoing re-introductions), so we should be seeing more and more in time:

42. ZEBRA *
43. ELAND *
44. KLIPSPRINGER
45. STEENBOK
46. LEOPARD
47. SPOTTED HYENA *
48. WILD DOG

* These species are part of the ongoing re-introduction plan for the Park, particularly focused on increasing the populations of the mega-herbivores that were so synonymous with Gorongosa in its heyday

There were a number of animals that were present in the Park in the past but were locally extinct (or have not been seen) since the current Park restoration project began.

- CHEETAH: Disappeared in the 1950s – we hope to re-introduce these incredible cats in the near future
- RHINO - both species: Disappeared in the 1950s. There were efforts to re-introduce Rhino in the early 1970s but these were lost during the early years of the civil conflict. There are plans to bring back the Rhino to Gorongosa.
- ROAN ANTELOPE: Not certain when these highly vulnerable antelope were exterminated but they should occur in the region.
- SIDE-STRIPED JACKAL: Probably lost to distemper, rabies, mange or a related disease that resulted from domestic dogs being present in the Park during the conflict years.

Finally there are a number of African savanna animals that were never found in the Gorongosa region. These include GIRAFFE which, for what appears to be a multi-faceted series of reasons (floods, soil type, toxicity of vegetation, disease, etc), was not recorded in Mozambique between the Rovuma River in the north and the Save River in the south. A handful were introduced in the colonial era but these did not survive, furthering the understanding that the Gorongosa region is just not suitable for these classic safari icons.

Gorongosa Vegetation Types

Floodplain Grassland

Gorongosa's grasslands are made up of nearly 90 different grass species and cover almost 20% of the park's area. The grasslands are maintained by the seasonal flooding of Lake Urema and its rivers, natural fires in the dry season, and grazing by herbivores. Elephants also play their part by knocking down trees along the edge of the floodplain to reach the leaves and fruit at the tops of trees. Without these natural processes occurring, the surrounding trees would quickly take over and the grassland would become forest.

Grasslands are an extremely productive ecosystem, providing food to support a vast diversity of species. Gorongosa's large grazers, including hippos, buffalo, wildebeest, zebra, and waterbuck, eat a staggering amount of grass each day and help "mow" tall grasses, creating patches of short grass. Smaller antelope, like impala, reedbuck, and oribi, feed on the lush, green grass shoots that grow in these short patches. Grasslands are also home to less conspicuous animals, like birds, reptiles, amphibians, and insects. The fact that grasslands support so many large animals makes the open plains prime feeding ground for Gorongosa's predators, like lions.

Miombo Woodland

The most common type of forest in Gorongosa is called miombo woodland. Miombo (*Brachystegia*) is the Swahili name for the most prevalent type of tree. The small-leaved *Brachystegia* trees can grow in poor soils and are commonly found in the rocky plateaus to the east and west of the rift valley.

Miombo woodlands are home to many of Gorongosa's antelopes that feed on leaves (browsers), including impala, bushbuck, nyala, kudu, eland, and sable antelope. Some of these antelopes are mixed feeders that also eat grass. Primates, like baboons, vervet monkeys, and bushbabies, are commonly found in woodland habitat, foraging on the ground or high in the trees. Birds, reptiles, amphibians, and insects, also found in miombo woodlands, are an important food source for small carnivores, like mongooses, genets, and civets.

Mixed Savanna and Woodland

The rift valley is made up of a patchwork of different types of savanna, woodland, and grassland. The tree canopy of a savanna is open, allowing enough light to reach the ground for grasses and herbs to blanket the ground, whereas woodland trees form a closed canopy and the forest floor is covered with a sparse layer of herbs and shrubs.

This mosaic of landscapes includes distinct forest patches—including bright yellow fever trees, tropical palm trees, and miombo woodland—which provide habitats for many different wildlife species, from the smallest creatures, like insects, to the largest, like elephants.

Montane Grassland

The peaks of Mount Gorongosa, which reach above 1,600 meters (5,250 feet), are covered in montane grassland. This grassland is very different from the floodplain grassland of the rift valley. It is made up of species of short montane grasses, flowers, and ferns and is home to small rodents, birds, lizards, and insects that are well adapted to this high-altitude ecosystem.

Rainforest

Mount Gorongosa is topped with a tropical rainforest that can only grow in high-rainfall areas. This forest is thought to be the largest continuous montane forest in southern Africa. The mountain captures moisture coming off the Indian Ocean, which rises and forms clouds around the mountaintop, producing more rainfall here than at the lower elevation areas around the mountain, covered in mostly dry woodland, savanna, and grassland.

The huge tropical trees of this rainforest tower to heights of 20 to 30 meters (about 60 to 100 feet) and form a closed canopy that creates a cool, dark, moist environment for mosses and ferns that cover the ground and rocks. Historically, Mount Gorongosa's rainforest covered the zone from about 700 meters (2,300 feet) to 1,600 meters (5,250 feet). In the past decade, more than one-third of the forest has been cut down for agriculture, and the entire forest will likely be lost within 10 years if this trend continues.

Mount Gorongosa is truly an island of biodiversity. Some of the animal species here are found nowhere else on Earth, such as the Mount Gorongosa pygmy chameleon and the green-headed oriole. Scientists who have recently explored the mountain have found some species new to science, including some new species of katydid and a new shrew species. While the larger mammals of the rift valley are not found here, this rainforest is home to a diversity of birds, insects, reptiles, amphibians, monkeys, and rodents.

Montane Woodland

Montane woodland forms a transitional zone between the moist rainforest of Mount Gorongosa and the dry miombo woodland of the western plateau. Historically, this region was dominated by *Brachystegia* tree species that formed a gradient from lower elevation dry species and species that prefer moist areas on the fringes of the rainforest. Today, most of this forest has been removed for agriculture. The farmland that is abandoned after years of use is slowly transforming to grassland and then secondary-growth forest.