

# The Serengeti Rules

## Study Guide

“Beginning in the 1960s, a small band of young scientists headed out into the wilderness, driven by an insatiable curiosity about how nature works. Immersed in some of the most remote and spectacular places on Earth—from the majestic Serengeti to the Amazon jungle; from the Arctic Ocean to Pacific tide pools—they discovered a single set of rules that govern all life.” <https://www.theserengetirules.com/>

### **Pre-film questions:** (What do you know already?)

#### **Where is the Serengeti ?**

*The Serengeti ecosystem is a geographic region in Northern Tanzania, Africa spanning 12,000 sq. miles.*

#### **What is an ecosystem?**

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** are of any size, but usually they are in particular places.

Some questions the film asks: (great discussion questions before the film)

#### **How does Nature operate?**

*The water, water temperature, plants, animals, air, light and soil all **work** together. ... If the animals that depend on the plants die, any animals that depend on those animals will die. Ecosystems in nature work the same way. All the parts **work** together to make a balanced system!*

#### **Quote discussion :**

**“All animals are equal, but some are more equal than others.” George Orwell**

The movie suggests that the keystone species are very important.

#### **Do you think that there is anywhere on Earth untouched by human activity?**

John Terborgh, one of the Scientists went to a National Park in Peru and was impressed by the number of animals species running free where no traces of human interference was evident.

#### **Are humans destroying nature, and can nature restore itself?**

(Climate change movement, pollution from industries, garbage in our oceans, ... to name a few)  
The film gives us insight how nature can restore itself.

### **During the Film questions:** ( What you may want to discuss before the film)

#### **What are the Serengeti Rules?**

The Serengeti rules are rules of logic that govern how ecosystems and other biological systems work, many of which have been studied in the Serengeti ecosystem. They help explain how organisms interact with one another and what controls population sizes.

**What is a trophic cascade?**

A trophic cascade is a phenomenon where species impact other species even if there are no direct interactions among them.

**What is a keystone species, why are they important to the ecosystem?**

A keystone species is a species that has an outsized influence on an ecosystem and if it were removed the ecosystem would change drastically.

**What is down grading?**

Downgrading is a term used when ecosystems are disrupted because of the elimination of species at the top of a food web, which in many cases are predators.

**What is upgrading?**

Upgrading refers to the recovery of an ecosystem through the reintroduction of a species at the top of a food web and leads to a restorations of the system.

**After the Film: (What have you learned)****What happens when keystone species are removed?****How does nature restore itself?****How did humans help store nature?****What do the five scientists and the author of the book, “The Serengeti Rules,” Sean B. Carroll have in common?**

(They all were passionate about helping the planet and how nature works and devoted their professional lives to study nature)

- Mary Power: River Biologist- studied food webs in river systems
- John Terborgh: Topical Ecology – studied trophic cascades in the artic and tropics – ecosystems all work in the same way
- Jim Estes: Research scientist, studies the sea otters as keystone species
- Tony Sinclair: researcher and scientist studied the Serengeti ecosystems for 52 years following the wildebeest
- Bob Paine: keystone species- starfish study , “There are rules, no one can escape it. If you have to fix something, you have to know what’s broken, that’s what rules provide.”

**Looking at the discoveries the scientists in this film made, how did they flip our understanding of nature and offer new hope for restoring our world?****Do you have any passions, or things that you feel deeply about that could help change the world or our view of how the natural world operates?****Was this a story of saving the planet, or more then that?**

**“Predators and keystone species may become our greatest allies in the coming fight to protect our biosphere.”**

**Reference:** <https://www.theserengetirules.com> – excellent resource – look at “science tab” for classroom activities and more information on the scientists. Many of the questions came from this site.