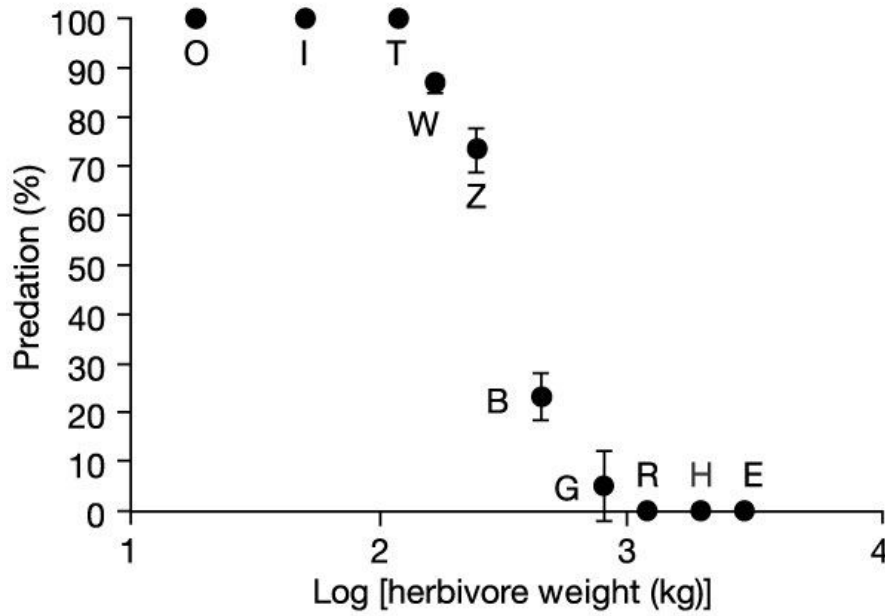




# Patterns of Predation



**Caption:** Percentages of adult herbivores in the Serengeti that die due to predation. The herbivore species shown are the oribi (O), impala (I), topi (T), wildebeest (W), zebra (Z), African buffalo (B), giraffe (G), black rhino (R), hippo (H), and African elephant (E). Error bars represent 95% confidence intervals.

## OBSERVATIONS, NOTES & QUESTIONS

BACKGROUND INFORMATION	BIG IDEAS, NOTES & QUESTIONS
<p>All populations have limits to how large they can grow. As a population grows larger (population density increases), its size may be limited by the availability of food and other resources, which is known as bottom-up regulation. Alternatively, the size of the population may be limited by predators, which is known as top-down regulation. Ecologists have investigated bottom-up and top-down regulation in many ecosystems. However, most studies have focused on only one or a few species at a time.</p> <p>In this study, scientists examined the factors that regulate the population sizes of multiple species in the diverse Serengeti ecosystem of East Africa. This ecosystem is home to many different species of predators and herbivores. The predators include 10 species of large carnivores, such as lions, hyenas, and cheetahs. The herbivores include 28 species of mammals, such as elephants, hippos, giraffes, and antelope.</p> <p>To determine whether the population sizes of these herbivore species are regulated by bottom-up or top-down factors, the scientists analyzed 40 years of data on the causes of death for members of each species. In particular, the scientists looked at the percentages of adults in each herbivore species that died due to predation. They compared these percentages to the adults' body sizes (as measured by weight) to see if there was a relationship between an herbivore's size and its chance of being killed by predators.</p>	