

Chapter 57

Evolutionary Aside 57.1--Herbivore Synchronized Breeding Thwarts Predator Population Response

In many prey species, very young individuals are particularly vulnerable to predators. By synchronizing births, the prey population overwhelms the predator population's ability to capture and eat all of the young, and by the time the predator population can increase through their own births, it is too late, as the prey young have outgrown their vulnerability. Such synchronized breeding occurs, for example, in the wildebeest populations of the Serengeti, where hundreds of thousands of wildebeest give birth within a few weeks. Some trees employ the same strategy, synchronously producing huge numbers of seed at the same time and only once every few years, ensuring that many will sprout before seed predator populations can increase enough to eat them all.

This strategy is taken to the extreme by cicadas, which have evolved a life history in which the immature stages remain underground for either 13 or 17 years (varying in different species), then all emerge simultaneously in enormous numbers for a brief orgy of breeding, laying eggs, and starting the cycle anew. Scientists have noted that the cicada cycles of 13 and 17 years are both prime numbers and have speculated that this prevents a predator from developing its own periodic cycle—perhaps every 3 or 5 years—such that the predator population would be high at the same time as the cicada outburst.