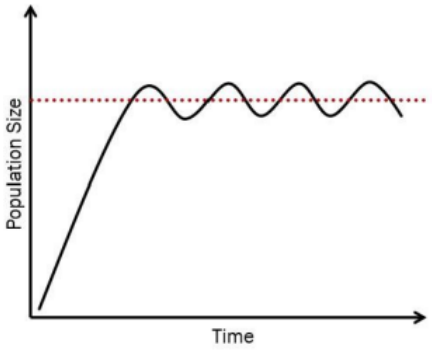
CARRYING CAPACITY and LIMITING FACTORS

Organisms need resources to survive. They also require space to live. There are limited resources and only so much space in an ecosystem. These features are called limiting factors. **Limiting factors** regulate how many organisms live in an ecosystem. Space, food, oxygen, and water are limiting factors. Temperature and precipitation determine the climate of an ecosystem, which impacts the organisms that can live in an ecosystem.

An ecosystem can support only so large of a population. The maximum population size that an ecosystem can support is called **carrying capacity.** Limiting factors determine carrying capacity. The availability of abiotic factors (such as water, oxygen, and space) and biotic factors (such as food) dictates how many organisms can live in an ecosystem. Carrying capacity is also impacted by the availability of decomposers. Decomposers break down and recycle dead organisms and organic matter. They prevent dead matter from accumulating and taking up space in an ecosystem.

In an ecosystem, the population of a species will increase until reaches the carrying capacity. Then the population size remains relatively the same. If abiotic or biotic factors change, the carrying capacity changes as well. Natural disasters can destroy resources in an ecosystem. If resources are destroyed, the ecosystem will not be able to support a large population. This causes the carrying capacity to decrease. Humans can also alter carrying capacity. Our activities can decrease or increase carrying capacity. We alter carrying capacity when we manipulate resources in a natural environment.



If a population exceeds carrying capacity, the ecosystem may become unsuitable for the species to survive. If the population exceeds the carrying capacity for a long period of time, resources may be completely depleted. Populations may die off if all of the resources are exhausted.