

## SOL LS.6 - INTERACTIONS AND INTERDEPENDENCE

## LS.6 Interactions and Interdependence

- Relationships exist between predators and prey and these relationships are modeled in food webs
- The availability and use of resources may lead to competition and cooperation
- Symbiotic relationships support the survival of different species
- The niche of each organism supports survival



Predator and Prey

## PREDATOR AND PREY

- The life processes of plants and animals are **interdependent** and contribute to the **flow of energy** and **cycles of matter** within an ecosystem.
- The interaction between a consumer that captures and consumes another consumer is

the **predator-prey** relationship.

- Many animals exhibit **social behaviors** that help them obtain resources.



Predators often work to hunt

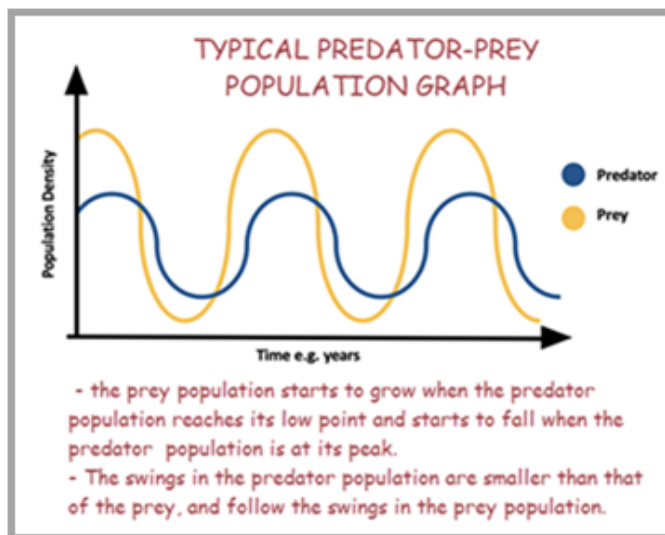
- Herbivores** often exhibit **herding** behaviors, which can **protect** the group from predators.
- Predators** often **work together** to hunt, capture, and share their prey as well as to raise offspring.
- Organisms may exist as members of a **population**; populations interact and are **interdependent** with other populations in a **community**.



Herbivores often use herding behavior for protection

## COMPETITION &amp; COOPERATION

- Members of a population **interact** with other populations in a community.
- They **compete** to obtain the matter and energy they need for basic **resources**, **mates**, and **territory**, and **cooperate** to meet **basic needs** and carry out life processes.
- Organisms or populations that rely on each other for basic needs form **interdependent communities**, where a change in the population of one organism will **affect the survival of others**.
- Environmental factors** (biotic and **abiotic**), which determine the **types** and **number** of organisms of a species in an ecosystem, are called **limiting factors**.
  - Many **limiting factors** affect the **growth of populations** in nature.



*You should:*

- from graphs like the one above understand the relationship between **predator** and **prey populations**
- explain the effects of **resource availability** on organisms and populations in an ecosystem.
- predict the effect of **limiting factors** on organisms, populations, and/or communities in a food web/ecosystem.

## SYMBIOTIC RELATIONSHIPS



mutualism



commensalism



parasitism

**Symbiosis** is a **close relationship** between individuals of two different species living together. **Symbiotic relationships** include.

- **mutualism** (whereby **both** organisms **benefit**)
- **commensalism** (whereby one organism **benefits** and the other is **unaffected**), and
- **parasitism** (whereby one organism **benefits** and the other is **harmed**).

- *know the types of symbiosis and give examples of each*

## NICHE

The physical location where organisms live is called their **habitat**.

- Each living thing fills a **specific role**, or **niche**, in its habitat.
- A **niche** helps an organism meet **basic needs** for life processes.

- *infer the niche of organisms from their physical characteristics.*



**NICHE** - An organism's specific role in the ecosystem (what it eats, what eats it).