ANSWER KEY.

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Predators, Prey, and Keystone Species

Biology | ANSWER KEY

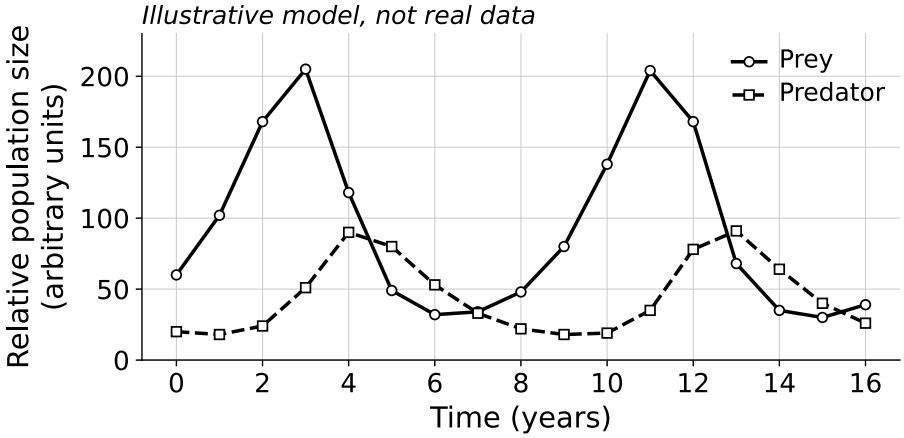
Answer in complete sentences where asked. Show your work for calculations and use the data as evidence.

1. Match each description with a term: keystone species, trophic cascade, or prey.

Description	Term
(a) A species with an effect on its community far larger than its numbers	
(b) A change at the top of a food chain that spreads down to producers	
(c) An organism that is eaten by another	

(a) **Keystone species** (b) **Trophic cascade** (c) **Prey**

2. The graph shows an illustrative model of a predator and its prey.



(a) Which population reaches its first peak earlier, the predator or the prey?

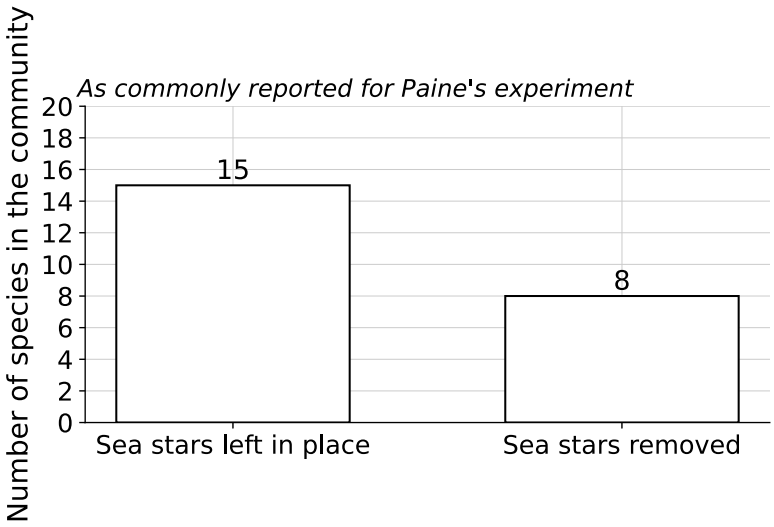
(b) Explain why the predator population rises after the prey population rises, and why it later falls.

(a) **The prey** (year 3, compared with year 4 for the predator).

(b) **When prey are abundant, predators have more food and can increase. Then the larger predator population eats more prey, so the prey fall, and the predators later have less food and decline.**

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3. In a rocky shore experiment, sea stars were removed from one area and left in another.



(a) Calculate the percent of species lost where the sea stars were removed. Show your setup.

(b) Write a claim, evidence, and reasoning to explain whether the sea star is a keystone species.

(a) $(15 - 8) \div 15 \times 100 = 7 \div 15 \times 100 =$ **46.7%**

(b) **Model answer: The sea star is a keystone species in this community. When the sea stars were removed, the number of species dropped from 15 to 8, a loss of 7 species (46.7%). Sea stars eat mussels, so without them the mussels spread and crowded out other species, which shows that one predator can keep a community diverse.**

A correct answer must include: a claim that it is a keystone species; values from the graph with units or counts; a reason linking the predator to a dominant prey that would otherwise crowd out others.

4. Road surveys in Everglades National Park compared sightings from 1996 to 1997 with 2003 to 2011, when invasive pythons had spread.

Species	Decrease in observations
Raccoon	99.3%
Opossum	98.9%
Bobcat	87.5%

(a) A route once recorded 400 raccoon observations. How many would you expect after a 99.3% decrease? Show your setup.

(b) The data show a pattern, but do not prove that pythons caused it. Name one piece of evidence that supports pythons as the cause.

(a) $400 \times (1 - 0.993) = 400 \times 0.007 =$ **2.8 observations**

(b) **Examples: the declines were largest where pythons had been present the longest; several different species declined at once, so a single disease is unlikely; the species were more common where pythons were not yet established.**

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