

Name _____ Date _____ Period _____

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NTI DAY 7

Competition

When the word competition is used in sports, we think of how athletes battling for the top spot in a game, but when we use the word competition in reference to ecosystems, the game involved is life and death for organisms. Competition within the ecosystem results from different organisms requiring the same resources.

One resource, which organisms are in competition for is space. An organism, which deserves talking about concerning competition for space, is the zebra mussel. Its scientific name being *Dreissena polymorpha*, the zebra mussels were originally transported to the North American waterways by foreign ships. The Zebra mussels are currently devastating several fresh water ecosystems. The organism's ability to easily adapt to different areas of the world has made it a major competitor to native species. In recent years Zebra mussels have made their way to the headwaters of the Chesapeake Bay. In addition to space, the zebra mussels are competing for food.

The zebra mussel is a filter feeder, and it feeds on plankton. As each individual zebra mussel filters approximately one liter of water per day, this takes away food which would have been available for native mussels and other filter feeders. The zebra mussel is not the only organism to invade the state of Maryland and produce competition for native species. Another example of a non-native species adding competition to organisms within the Maryland ecosystem is the mute swan. The mute swan not only feeds on food, which would have been a resource for native tundra swans, but the mute swan has also fed on submerged aquatic vegetation which is needed for other organism's survival.

Anything, which restricts the growth of a population, is known as a limiting factor. In the case of mute swans, a limiting factor may be the food supply for their population, but as we have discussed the limiting factor can affect more than just one organism. As was noted, because the swans feed on underwater vegetation, which may provide cover for other organisms, the lack of this resource becomes a limiting factor for more than the swans.

A population may grow so large that the ecosystem can no longer sustain the species. In Western Maryland, many people hunt deer in order to fill their freezers with meat, but is availability of meat the only reason for hunting whitetailed deer? If the white-tailed deer population would go unchecked, the population would spike. As a result of an overpopulation of deer, the food supply during the winter months would be exhausted before the following spring could replenish it. The deer which could not find food would either move out of the area or die from starvation. The carrying capacity of an ecosystem is the largest amount of individuals from one species which an ecosystem can support.

1. Due to a very snowy winter, the white-tailed deer in Garrett County Maryland are facing a shortage of food. How will the heavy snow and shortage of food affect the white-tailed deer?

- A The carrying capacity of the white-tailed deer will decrease
- B The carrying capacity of the white-tailed deer will increase

- o C The carrying capacity is not affected
- o D The carrying capacity will remain the same

2. A fish which is native to India's fresh water streams is being sold in a pet store. On the tank, which the small freshwater fish is being held, there is a sign which reads "do not release in local waterways". Which of the following would be the best reason the fish should not be released in local streams?

- o A the fish will most likely die in the local waterways
- o B there is no harm, the store is likely being too cautious
- o C the local stream must not have the same characteristics as India's
- o D a non-native species will result in competition for local species

3. A debate is being held as to whether there should be a black bear season in Western Maryland. Which of the following choices would be a legitimate scientific concern for either side of the debate?

- o A Black bears are cute and no one should kill them
- o B There is already a white-tailed deer hunting season
- o C The space available for black bears has been reduced
- o D Black bear hunting will increase tourism

The zebra mussel is an invasive species to Maryland's waterways. Describe how the introduction of such an invasive species can affect the native organisms. Within your response be sure to

- Include key terms; population, carrying capacity.
