

CASE STUDY 4

Giant Salvinia

Giant salvinia
(*Salvinia molesta*)

GIANT SALVINIA IS an aquatic plant native to South America that was first found in the United States in 1995. It forms mats as it floats freely on the surface of slow-moving or still freshwater and reproduces asexually

when fragments break off to form clones. The plant can double in size in as little as two days, and its mass can double in a week. As the mats grow they form layers as much as a meter thick. The buds of giant salvinia can withstand dry conditions, and the plants can tolerate freezing air temperatures—but not ice—on the surface of the water where they grow.

Giant salvinia can spread on moving water or by clinging to boats and other recreational craft. A single plant can spread over an area of more than 100 sq km (about 40 sq mi) within a three-month period.

The floating mat formed by giant salvinia blocks sunlight from the water and prevents oxygen mixing at the surface. This change in conditions reduces the number and variety of microorganisms living in the water, which in turn means less food for the organisms that feed on them. The rapid spread of giant salvinia can threaten crops, such as rice, and clog irrigation and drinking-water lines. The thick mats can clog waters to the extent that swimming, boating, and fishing become impossible. The mats are also breeding grounds for mosquitoes. ■



This pond has been taken over by a population of giant salvinia.

Part B

In this section you will read about the benefits and risks of the possible introduction of a nonnative species to try to replenish a fishery. The balance between these benefits and risks is known as a trade-off. A **trade-off** is an exchange of one thing in return for another, giving up something that is a benefit or an advantage, in exchange for something that may be more desirable.

6. Read the summary of a report about the possible introduction of nonnative oysters into Chesapeake Bay.
7. Use a Discussion Web to analyze the statement “nonnative oysters should be introduced into Chesapeake Bay as soon as possible.” In the Discussion Web, make sure to discuss the characteristics of invasive species the class listed in Step 5. For the Discussion Web, have two members of your group take the role of fishermen who make their living from harvesting oysters in the Bay, and two should act as conservationists who wish to return the Bay to its original state.
8. When you have completed the Discussion Web, with your same-role partner, compare your comments and conclusions with the members of your group who took the other role. In your science notebook, write down any questions that you would want answered before making a final decision on whether to introduce the nonnative oyster species into the Bay.
9. Under your teacher’s direction, discuss as a class the questions that you recorded for Step 8.



Oysters are growing on floats in a creek near Chesapeake Bay as part of an aquaculture education project.

Analysis

1. What characteristics increase the likelihood that a nonnative species will become an invasive species?
2. What conditions in an ecosystem are likely to allow a species to become invasive there? How might scientists use biomes to study this?
3. Biological control involves the introduction of a natural enemy to control the spread of an organism that is considered a pest. What are the trade-offs in introducing a nonnative species to control an established invasive species?
4. Summarize the position taken by either the fishermen or the conservationists about the oysters in Chesapeake Bay. Include the evidence that supports that position. Weigh the evidence to make a recommendation for or against the introduction of the nonnative oysters into Chesapeake Bay. Include at least two trade-offs associated with your recommendation.

KEY VOCABULARY

ecosystem

evidence

habitat

invasive species

nonnative species

trade-off