

# Alien Invasion



**Zebra Mussels** first came to North America in the 1980s as stowaways in cargo ships. Large cargo ships are often top-heavy if they are not fully loaded, so people pump water into their holds to stabilize them for long ocean voyages. This ballast water, which may contain billions of tiny plants and animals, is then pumped out at the destination port. Scientists believe this is how zebra mussels first made their way to North America from their native waters in Western Asia.

Zebra mussels begin their lives as tiny swimming larvae, which are carried by water currents. As they mature, the larvae attach themselves to hard substances like rocks, other mussels, logs, boat hulls, and even the inner walls of pipes. They are a major problem for power plants, public water systems, and other water users because they accumulate very thickly. In Lake Erie, 700,000 mussels per square yard have been found in some utility water intake pipes.

Mussels feed by filtering water and removing plankton (tiny plants and animals) from it. The water in invaded lakes looks very clean after Zebra mussels take over because they have finer filters than native populations. The problem is that they can filter out all the plankton from a lake or stream, leaving nothing for native animal species to eat.

One adult zebra mussel may release up to a million eggs each year! Adults can also reattach themselves if they break off, and can survive out of water for days by closing their valves and slowing their metabolism. Zebra mussels can move to new locations as larvae, and attach to boat hulls, anchors, or ropes when they are adults.



**Purple Loosestrife** is a lovely plant—or so it first seems. It has a tall stalk of pinkish, purple flowers that bloom in the late summer. But ever since it was brought to North America in the early 1800s as an ornamental garden plant, this plant has earned its nicknames—beautiful killer, marsh monster, and purple plague.

Soon after coming to the United States, purple loosestrife started spreading into natural areas. By 1830, it could be found all along the New England coast. The construction of the Erie Canal and other canals in the 1880s allowed it to spread further inland. Today it is in wetlands throughout all the lower 48 states except Florida, and in some areas it grows so densely that scientists have counted up to 20,000 seedlings in one square meter.

In Europe, where it is a native plant, purple loosestrife is not invasive because a variety of insects feed on it and keep it in check. None of these insects occur naturally in North America. This, and the fact that a single plant can produce more than 2.5 million seeds annually and grow very quickly, has allowed purple loosestrife to spread uncontrollably.

When purple loosestrife invades a wetland area, it crowds out native plants, reduces the food and cover available to wildlife, and chokes waterways.



**Nutrias**, at first glance, seem harmless enough. Like their slightly larger cousins, the beavers, nutrias are water-loving mammals with big incisors (front teeth), prominent whiskers, and cloaks of dense, warm fur. But without enough predators to keep them in check, these rodents have destroyed thousands of acres of marsh plants in the United States. This has led to a decline in habitat for nesting waterbirds and songbirds, as well as for fish and crab that depend on the marsh.

Nutrias are originally from South America, where they are called coypu. They were brought to the United States in the 1930s to be raised for their fur. People intentionally released some of them into the wild because they wanted to clear out the plants from a lake or stream. Nutrias soon became established residents in a number of marshes and are now found in 15 states across the United States.

Vegetarians with large appetites, nutrias eat about one-fourth of their body weight every day. They are not picky when it comes to food and will eat almost any land or water plant. Their favorite food is the roots of marsh plants. They dig underneath and overturn the plants to eat just the root mat, a habit which usually kills the plant.

Nutrias breed year-round and, for a mammal, can reproduce very quickly. An adult female can have two or three litters a year, with up to eleven young per litter.

*(continued on next page)*

## Alien Invasion (continued)



**Hemlock Woolly Adelgid** (*uh-DEL-jid*) has killed eighty percent of the hemlock trees in Virginia's Shenandoah National Park. These tall trees with thick, evergreen foliage were destroyed by the tiny sucking insect related to aphids. The hemlock woolly adelgid feeds on sap at the base of the hemlock needles, causing them to fall off. Without needles, the tree starves to death, usually within a few years of the initial attack.

Native to Japan and China, the hemlock woolly adelgid was accidentally brought to the western United States in 1924 on imported wood. Western hemlocks have a natural resistance to the insect. But when it traveled to the eastern United States in the 1950s, it became clear that eastern hemlocks are not resistant to it. The adelgid now threatens entire hemlock forests in the eastern United States. As the trees die, the plants and animals that depend on the hemlock forest are also put at risk.

Hemlock woolly adelgids are spread by wind or are carried by migratory birds, mammals, and humans. Infested nursery plants have carried the insects into some areas. Once infested, adelgid populations can increase dramatically since one individual can yield up to 90,000 new adelgids in one year.

Balsam woolly adelgid, which is related to the hemlock woolly adelgid, has also destroyed three-quarters of spruce and fir trees in the southeastern United States.



**Tamarisk** trees guzzle so much water each year in the dry southwestern United States, that the total amount of water could cover 5 million acres with a foot of water. Their roots can grow deep into the desert earth, sucking springs dry. When rain does fall, tamarisk causes flooding by blocking natural flows of water with its dense growth. And as its alternate name—saltcedar—suggests, tamarisk secretes salt from its leaves, making the soil around it unsuitable to native plants.

Originally from Eurasia, this tree was first brought to the region by western settlers in the 1800s as a source of wood and shade. It has now spread to over one million acres, primarily in the Southwest. The numbers and variety of birds, small mammals, and other animals greatly decrease when tamarisk replaces native woodland species.

Tamarisk has been successful largely because there are no natural predators or disease to keep it in check. It is also very quick to multiply—each plant produces up to a half million seeds per year and can grow as much as 10 feet a year. Cattle raising also seems to give tamarisk an edge over native plants. Because cattle prefer native cottonwood and willow trees to tamarisk, the uneaten plant is able to outcompete the natives.



**European Starlings** came to the United States in 1890 when a drug manufacturer, Eugene Scheiflin, released 40 pairs of them in New York's Central Park. He said he wanted to bring to America all the birds mentioned in the writings of William Shakespeare. The birds quickly established themselves in the wild, and by 1930 had spread all the way to the western states. Two hundred million starlings are now found over most of North America, Mexico, and parts of the Caribbean.

The starling is an intelligent and interesting bird, but is bad news for native bird species such as woodpeckers, bluebirds, and swallows. Starlings compete with these birds for nest cavities in trees, often destroying eggs and young birds in the process. Also, because they have a habit of forming large wintering flocks, they are an unwelcome pest to people.



**Gypsy Moths** were first brought to the United States in 1869 by a scientist who wanted to see if he could use them to produce silk. By accident, several of the caterpillars blew off the window sill of his home in Massachusetts and escaped. Twenty years later, there was a gypsy moth outbreak in the surrounding areas. Today the gypsy moth is one of the most damaging forest pests in Northeastern United States, removing the leaves from millions of acres of trees each year.

Tree damage is caused by the insect larvae, or caterpillars, which emerge from their eggs beginning in early spring. The larvae move to the leaves of trees and begin to eat and eat and eat.À

Gypsy moth caterpillars are not fussy eaters. While they prefer oak, maple, and elm tree leaves, they will feed on approximately 500 different plants. When food is scarce, the larvae will eat almost any vegetation.

Gypsy moths are spread in two different ways. Newly hatched caterpillars spin short lengths of silken thread, which allow them to be blown by the wind. But, most new outbreaks occur because people move their outdoor household belongings—cars, RVs, firewood, lawn furniture, and the like—to new places, not knowing that they hold gypsy moth eggs.