

# ENEMY INVADERS



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## INTRODUCTION

# THE INVADER NEXT DOOR

Just imagine: Creatures the size of your fingernail. Stowaways with shells stuck aboard freighters. They left the waters of Europe and Asia. These creatures sailed the high seas all the way to the United States. This was a pretty big adventure for tiny mollusks called zebra mussels. But this voyage turned out to be more than just a little vacation.

These tiny pirates crossed the Atlantic Ocean. They entered the locks of the Saint Lawrence Seaway and invaded the Great Lakes in 1988. They found their way all over the United States. The zebra mussel invaded the Mississippi and Missouri Rivers and the Gulf of Mexico.

The few multiplied into masses. They encrusted themselves onto anything solid in the water, such as rocks, boat hulls, or pilings. Over half a million mussels could pack into a three-foot square. They filled water intake pipes and clogged filtration systems. It cost the United States more than three hundred million dollars a year to

clean them up. But this invasion hurt more than our wallets.



This shopping cart was found underwater, where thousands of zebra mussels made it their home.

This invasive species is actually caught by fishermen. It is bred for commercial fishing. But walking catfish are known to invade other fish farms. Here, they eat lots and lots of fish! Barriers and levees must be raised in order to block them from entering fish farms in Florida. These catfish also carry dangerous bacteria that may infect the farmed fish.

Small, wetland areas are most at risk. In the dry season, the walking catfish can jump in and become the dominant species. They threaten native fish and other catfish. The long-term effects of the walking catfish are still unknown. But scientists agree that it is moving quickly, especially across southern Florida. They consider this invader to be one of the most harmful in North America.

Walking catfish are blacklisted in many countries. Poison controls are almost impossible because these crawlers simply walk away. Today, the United States government requires a permit to own a

Snakehead fish



walking catfish. But there are still pet stores that advertise them for sale. Scientists agree that if the walking catfish from the pet stores get out in the wild, their numbers could explode.

The snakehead fish is another foreign invader. It was first found in California in 1977. The snakehead was known to be a delicacy in its homelands of China, Russia, and Korea. They were brought here as a food source. Nobody knows exactly why they were released into rivers and ponds. They have now spread to bodies of water in Maryland, North Carolina, Florida, and Wisconsin. Once in the wild, snakeheads are difficult to control.

Snakeheads are big—between two and five feet long. They can lay 1,300–15,000 eggs several times a year. Like walking catfish, these predators eat a variety of animals. Fish, **crustaceans**, frogs, small reptiles, small birds, and even mammals fall prey to this invader. They threaten small fish populations and their food sources.

Snakeheads cannot walk on land. But they can survive out of water in a moist environment for several days. If oxygen levels are too low in their water, these hearty creatures may leave. They can wallow on land until they reach a better place. It's easy to become a top predator when you're a big fish with a grand appetite. Being able to move from place to place makes this fish even more dangerous!

Snakeheads are difficult to get rid of. Scientists are shocked at how fast they're multiplying. In some ponds, officials applied chemical treatments, but it killed all the fish. In some places, people are asked to report any snakeheads that they catch. The problem is much bigger than anyone imagined. Officials are working hard to come up with new methods to control this creepy, dangerous creature.

The creatures of the Black Lagoon are here. Now it's up to us to stop them from taking over our lakes, rivers, ponds, and streams! It is our responsibility to report any invasive fish that we discover. Most importantly, we can help teach others about the dangers of releasing any type of fish or animal into the wild.

## CHAPTER 5

# SMALL, YET DEADLY, PESTS

Just because they're small doesn't mean they're not mighty. Miniature invasive species still have a huge impact on ecosystems all over the country. They pose different types of threats to native plants and animals. The Chinese mitten crab's ravenous appetite is destroying freshwater species. The emerald ash borer, a tiny beetle, has killed millions of trees. Africanized bees have bred with honeybees to create a less productive **hybrid**. Scientists are working hard to come up with innovative ideas to battle these tiny-yet-deadly pests.

Don't get any ideas about the Chinese mitten crab. They may have fuzzy mittens, but they're not cuddly. It's easy to identify them. Just look for big claws covered with soft bristles. Originally from Asia, the Chinese mitten crab lives in rivers. They travel to the sea to lay their eggs. The female takes care of the eggs, which hatch into larvae in the spring. She can lay up to a million eggs! Six weeks later, the young crabs migrate back up the river. The life cycle is complete.

In China, mitten crabs have been known to travel over 200 miles along rivers. But they've made it even further hidden away on shipping freighters. From freighters, the Chinese mitten crab has invaded waterways in all parts of the world. After first being discovered in Germany in 1912, the crab spread widely across Europe. It went as far inland as the Czech Republic. The crab did not multiply as fast in England. But now, its numbers are on the rise in Britain and North America.

Over ten years ago, Chinese mitten crabs were found in San Francisco Bay. This marked the first place in North America where

the crab could reproduce. In 1988, breeding crabs in huge numbers blocked a screen that covered a water intake facility. Southern California almost ran out of water! Twenty thousand crabs a day had to be removed. In 2005, the crabs were first discovered on the East Coast. In Maryland, the invasions could have a huge impact on commercial crabbing.

This invasive crab burrows into the mud along riverbanks. Banks filled with holes can cause erosion and damage to **levees**. These pesky invaders are also a problem for commercial fishermen. They get stuck in fishing nets and damage the equipment. They are also a threat to fish in the nets. Chinese mitten crabs are sneaky bait stealers, too.

Chinese mitten crabs have big appetites for plants and animals. In many of their new habitats, there are no freshwater crabs. This invading crab reproduces quickly and eats a lot. Native species, like crayfish, are in danger.



Federal and state agencies on both coasts are tracking the Chinese mitten crab. California wants to prevent its spread. Owning or transporting one is illegal. But scientists worldwide have been looking into more-commercial methods of controlling the population. And one way seems to involve a Chinese mitten crab on a plate!

In Asia, these invaders are a gourmet delicacy. Zoologists in the United Kingdom first suggested that commercial fishermen target the Chinese mitten crab. Their goal? To send them back to Asia to be eaten, meal by meal.

Experts in California agreed. The crab is already sold illegally in Chinatowns across the state. Some experts believe the crab should be fished legally. They think the wild populations would decrease, as in China. Chinese mitten crab has already been served in British restaurants. It seems the best way to fight this pesky crab is to serve it up for dinner!

Unfortunately, experts can't battle other invasive critters by putting them on a menu. The emerald ash borer is a tiny beetle that has killed 20 million ash trees all over the country. Coming from



Larva and adult stages of an emerald ash borer



Asia, this bothersome bug was discovered in Michigan and Ontario, Canada in 2002. It infests and kills all North American green, white, black, and blue ash trees. The beetle is easily transported through infested trees at nurseries. It can also be found in cut wood. So far, it has spread to trees in Michigan, Illinois, Indiana, Ohio, Maryland, Wisconsin, and Ontario, Canada.

These beetles come from Japan, China, and Korea. They had never journeyed to North America until 2002. Scientists are not exactly sure how the emerald ash borer came so far. They think it hid away on ships in ash wood used for packing or crating products. Adult beetles are only about half an inch long. They have green, metallic wings and a red or purple body.

Young and old ash trees fall victim to this invader. The larvae feed in tunnels right under the bark. This stops the tree from absorbing water and nutrients. The branches die first. The entire tree can be dead within two years. When leaving the tree, the larvae leave holes in the bark shaped like the letter "D." Adults can only fly about a mile from their tree. But they are easily transported to different areas by people.

Local and federal agencies are working together to educate people about spotting infested trees. Experts urge citizens not to transport affected trees from nurseries. Campers are encouraged to buy only dry, local firewood near campsites. Programs to restore damaged forests in cities are also in place. Scientists are working hard to come up with chemical and biocontrol techniques to manage the emerald ash borer. This bug better watch out!

Sweet honeybees have changed, too. Brazilian scientists wanted to create a bee that made more honey. They bred honeybees with a more-aggressive bee from Africa. This new hybrid escaped into the wild. The Africanized bees have been buzzing northward for years. They established colonies in South and Central America. Now, Africanized bees have made their way up our continent. They were first discovered in southern Texas in 1990. They quickly spread across the South. Africanized bees are moving farther and farther north.

# KEEPING THE INVADERS OUT

Invasive species cause harm to ecosystems. They damage industries like fishing. They harm crops and can lead to safety and health concerns. Billions of dollars are spent each year to manage these invaders.

But because of us, enemy invaders are here to stay. Some were released on purpose, like the mongoose in Hawaii. Others stowed away on shipping freighters, like the emerald ash borer.

Native species have gone extinct and many more are in danger because of invasive species. Collaboration between federal, state, local and private organizations has made a dent in invasive populations. Three common goals are required to win the battle. Prevention and early detection. Rapid response. Control and management. Communication and education of the public are also key factors in protecting our natural habitats. Sharing information and using new technology are important ways to fight the battle.

Many organizations have gotten involved. Satellites that circle Earth are used to help track invasive species. Nonnative plants are usually monitored on land. But the U.S. Geological Society now takes observations from these satellites to monitor the spread of enemy invaders. This new tool is called the Invasive Species Forecasting System. It was recently used to make a map that predicts the spread of invading creatures.

But it's not just up to organizations to make a difference. It is up to us to change the choices we make in our everyday lives. We might never be able to win the struggle against enemy invaders. But by working together, natural ecosystems in the United States might have a chance.

## Things You Can Do to Help Stop the Spread of Invasive Species



**IN THE GARDEN** Be careful what you plant at home. Don't take plants from the wild and put them in your garden. Beware of invasive species like the purple loosestrife. Avoid buying or planting mixes/seeds labeled only "wildflowers." Some seeds are not labeled correctly. Grow native plants that will attract natural wildlife and use less water.



**AT THE LAKE** Never take animals, plants, or water from one body of water to another. Do not release live fish or bait into a new body of water. Be sure to remove all plants from all parts of your boat. Always clean your boat on land before putting it into another body of water. When fishing, clean all equipment on land before fishing elsewhere.



**AT HOME WITH PETS** Only buy pets from trusted breeders, or adopt from a local animal shelter or rescue group. Don't ever release aquarium fish into the wild. Keep all pets in captivity. Releasing small animals into the wild can threaten native ecosystems. Keep your home mosquito-free by draining any freestanding water.



**WHEN TRAVELING** Don't sneak any fruit, plants, soil, insects, or animals into or out of the United States. Wash your boots before and after hiking to avoid bringing seeds into new places. Follow all quarantine rules.



**VOICE YOUR OPINION** Share your knowledge of invasive species with family and friends. Join a conservation group that aims to help prevent the spread of enemy invaders. Learn to recognize invaders in your own backyard habitat. **YOU CAN MAKE A DIFFERENCE!**