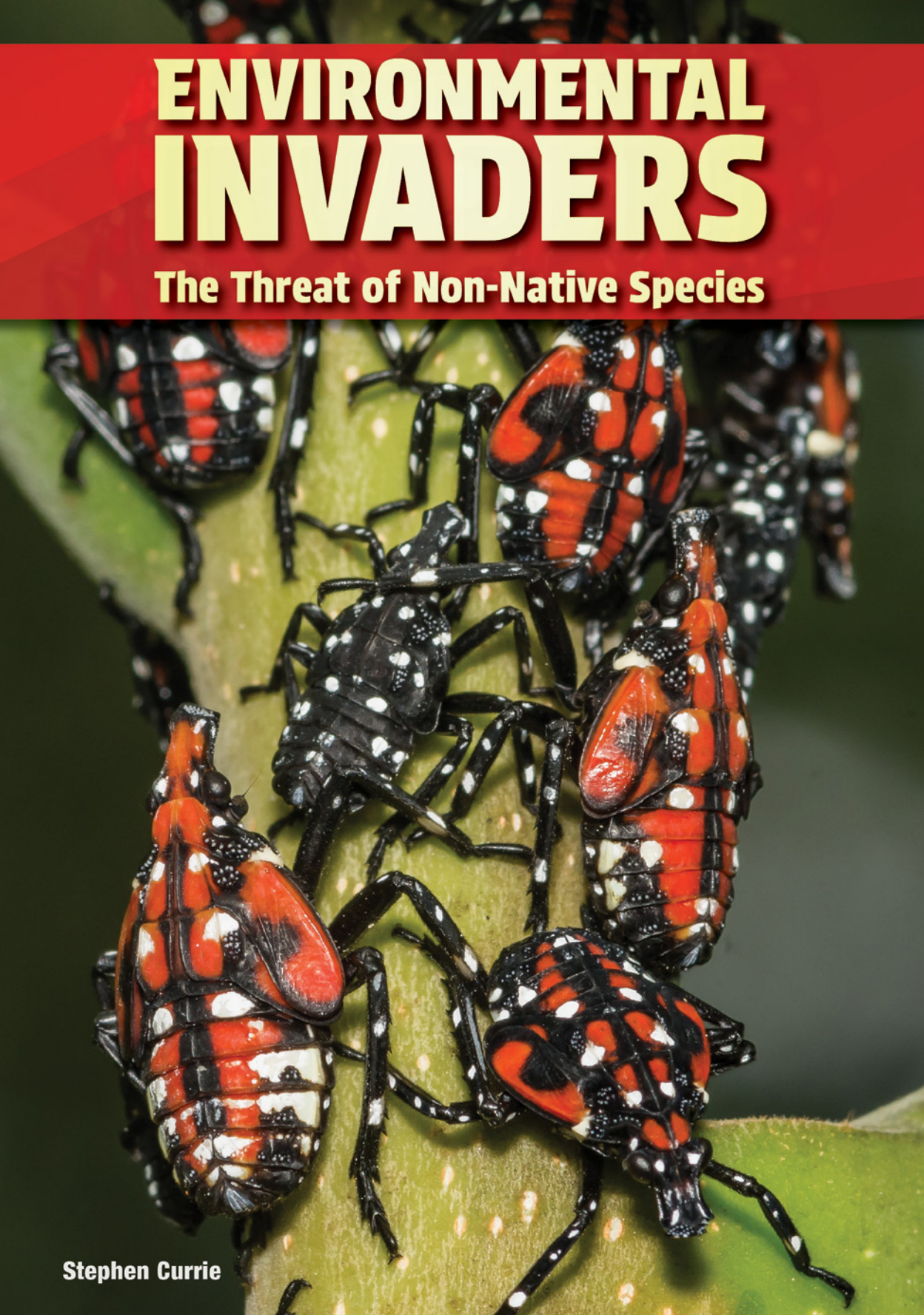
ENVIRONMENTAL INVADERS

The Threat of Non-Native Species



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CHAPTER ONE

How Invasive Species Spread

From trees to dinosaurs and from mammals to flowering plants, species have been on the move for as long as life has been present on the earth. Long before human beings appeared on the planet, plants and animals were routinely expanding their range and crowding out native species that preceded them. This spread of species dates back hundreds of millions of years. It includes the first dandelion to spread its seeds on the wind, the first fish to swim into an unfamiliar lake, and the first insect to hitch a ride on a migratory bird. In this sense the spread of species is a basic part of nature.

ecosystem
A community of living things, such as animals and plants, interacting with each other and their environment

Usually, the conditions of the new place were unfavorable to recent arrivals. Unable to compete with existing species, or finding the ecosystem inhospitable, they died out or abandoned the new territory. But in other cases the newcomers thrived. Indeed, many of these early introduced species are still common today. For example, maple trees expanded from their original home in Asia into Europe and North America about 60 million years ago. Beginning long before humans appeared on the planet, the movements of plant and animal species helped create a diverse and often well-balanced natural world.

The march of introduced species throughout prehistory moved slowly. That began to change, though, with the arrival of humans. Through human history, groups of people have moved around on foot, by boat, and via many other means of transpor-

tation. Even thousands of years ago, they often brought animals and plants along with them. Most frequently, the species were transported by accident, but on occasion humans deliberately carried plants or animals for hunting or agricultural purposes. The dingo, a doglike Australian mammal, for example, was introduced to Australia by seafaring humans perhaps five thousand years ago, and the potato, native to South America, was intentionally spread into the American Southwest by various peoples beginning around 8000 BCE.

But these early examples of human intervention are trivial compared to what has happened in the past few centuries. Since the beginning of the age of European exploration in the 1400s and 1500s, there has been a huge increase in the numbers of species being moved to new locations—and a sharp rise in the number of species that create chaos upon arrival. The problem has only gotten worse as humans have become more mobile. By the mid-1800s plant and animal species were being transported around the globe via ships and trains. Later, cars and airplanes made the issue even more acute. Humans are the primary vector in the spread of invasive species—and the issues created by these invasives are more significant now than ever before.

Nutrias and Money

In part the spread of invasive species has been the result of deliberate actions by people. Humans have often brought species into new territory in hopes of making money, for instance. A good example is the nutria, a swamp-dwelling mammal similar to a beaver. Native to South America, the nutria has thick fur that humans discovered worked well for fashioning into coats and hats. In the 1800s most fur clothing on the market in places like the United States and Europe came from the pelts of North American mammals such as foxes and mink, but nutria furs were in demand as well. As a result, nutrias were hunted and trapped in their native environment for many years.

Hoping to earn money from nutria pelts, farmers brought these swamp dwellers to the United States in the late 1800s. When demand died, thousands of nutrias were released into the wild where they destroyed native plants and animals.

Beginning in 1899, sensing business opportunities, American farmers imported colonies of nutrias from South America. Their goal was to ensure a steady supply of nutria fur by keeping the animals in captivity and breeding them. At first these farmers made good money from selling nutria pelts, but when fashion trends changed in the 1930s demand for nutria fur crashed. With their animals essentially worthless, fur farmers released tens of thousands of nutrias into the wild. The animals thrived in their new surroundings. The humid, marshy regions of Louisiana, in particular, were prime territory for these semiaquatic mammals.

Nutrias have an enormous appetite—they are known to eat a quarter of their body weight in plant food every day—and they reproduce quickly. The invaders soon began crowding out native animals, causing severe damage to farms and destroying native vegetation. Today nutrias are a recognized pest, especially in the South. As a state government agency puts it, “Nutria burrowing causes extensive damage to water infrastructure, banks, and levees, and creates a hazard for people, livestock, and machine

operators."[5] The American nutria population is currently estimated at 25 million animals—and it all began as a scheme by fur ranchers to make money.

Flowers and Beauty

Humans have also brought species to new places for other reasons, only to have the introduced species turn invasive. In some cases the original intent was to add to the beauty of a landscape or environment. The lesser celandine, an ornamental flower native to the Eastern Hemisphere, is noted for its bright yellow petals. Because the flower is among the first plants to blossom in the early spring, it is also known as a sign of seasonal change. English poet William Wordsworth called the celandine a "prophet of delight and mirth,"[6] and other European writers and painters celebrated the plant as well.

In the 1860s celandine was introduced to the United States by an unknown individual, most likely to add beauty to formal gardens in the area around Philadelphia. The flower did what its importer intended, bringing its bright spring color to existing garden plots. Soon after its introduction to the United States, though, celandine seeds escaped the confines of the Northeast's gardens and established the plant in the wild. Once there, it proved difficult to eradicate, due to what one website calls "aggressive growing behavior."[7] By blossoming early in the spring, celandine grows more quickly than native species and deprives nearby plants of nutrients and sunshine; moreover, once it appears in an ecosystem, it spreads rapidly.

Celandine has presented problems mostly in the Northeast and the Pacific Northwest. In an effort to limit the damage celandine can do to native plants, many of the affected states have laws that prohibit the sale of the flower in plant nurseries and garden centers. In other sections of the country, though, celandine has not yet reached the status of an invader. In these states it remains commercially available and is occasionally featured in civic and private gardens. Even so, many largely unaffected states are tracking the spread of celandine. In Michigan, for example, residents are

encouraged to report sightings of the plant in the wild to scientists in the state's university system. No one wants to see this invasive species become more of a problem than it already is.

Pythons, Boars, and Toads

Burmese pythons, wild boars, and cane toads also demonstrate why people import a species into new territory. The Burmese python, a snake native to Asia, became a popular pet in the United States during the late twentieth century. Though pythons are small and manageable in the early stages of their lives, they grow up to 18 feet (5.5 m) in length and 1 foot (30 cm) in diameter. Realizing that they could no longer care for their growing pythons, many pet owners simply released their snakes into the wild. Cold weather kills pythons, but in warmer parts of the United States such as southern Florida, the released pythons have thrived. They eat native squirrels, mice, songbirds, and even deer and alligators. Today the Florida Everglades swamp alone is home to as many as three hundred thousand Burmese pythons, causing tre-

Tumbleweed

Tumbleweed plants are common features in movies, cartoons, and television shows set in the Western United States. They are depicted rolling across deserts while being pushed by the wind. But most species of tumbleweed in the United States are invasive. They interfere with the growth of native plants and cost farmers millions of dollars in eradication efforts and crop losses.

Invasive tumbleweeds spread in several ways. The natural method involves the rolling that is frequently shown in films. Tumbleweeds disperse their seeds by breaking off from their roots and moving with the wind. As they travel, they release up to 250,000 seeds apiece, some of which take root and grow into new plants.

But tumbleweed has also used people to travel to new areas. Tumbleweed seeds are the same size as the seeds of several important crops, and it proved difficult to pick them out from the seeds farmers wanted. As crop seeds were shipped through the West, tumbleweed increased its range. And with the growth of railroads in the late 1800s, the reach of the plant became ever larger. A historical museum's website calls tumbleweed "one of the fastest plant invasions in the history of the United States."

Emily Osterloff, "Tumbleweeds: The Fastest Plant Invasion in the USA's History," Natural History Museum. www.nhm.ac.uk.

Many Americans adopted young Burmese pythons (shown) as pets in the late 1900s. As the snakes grew, these pet owners found they could no longer care for them. Once released, the pythons decimated native animal populations.

mendous damage to the environment. "It's an ecological mess,"[8] says scientist Michael Dorcas.

Wild boars, also known as feral hogs, were also deliberately introduced into the United States. Native to Europe, Asia, and North Africa, boars were first brought to the Americas in the 1500s. They arrived on sailing vessels to serve as food for explorers and settlers. Some of these boars escaped into the wild, where they spread out into the North American interior. Like other invasive species, wild boars have caused turmoil by dominating their new environment. They breed quickly, eat voraciously, and have few natural enemies in North America. Experts estimate that there may be as many as 9 million feral hogs in the United States today, with the greatest number in Texas. As one farmer puts it, "In Texas there are two kinds of landowners; those who have wild hogs, and those who will get them."[9]

amphibian

A cold-blooded vertebrate that lives part of its life on land and part in the water; frogs and toads are examples of amphibians

As for the cane toad, this South American amphibian represents a particularly interesting path to becoming an invasive species: pest control. Sugarcane is a major crop in many parts of the

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