Episode: **Invaders Among Us**

EXPLORING NORTH CAROLINA

Viewing Guide 15 FOR TEACHERS

USEFUL VOCABULARY

adelgid
blight
botany
deciduous
detritus
displace
ecosystem
evergreen
exotic
forest productivity
fungus
genetic diversity
horticulturist
hybrid
invasive
native
non-native
ornamental
piscivorous
predator
seasonal cycle
sediment
spawn

CHAPTER 2 (0:00–6:31)

1. List some common North Carolina birds that are non-native invasive species and describe where they came from and when.

Some possible answers:
- *Starlings: Native to Europe; brought to New York City's Central Park in the 1890s.*
- *Pigeons, also known as rock doves: Native to Europe and North Africa; brought by the French in the 1600s.*
- *House sparrows: Native to England; brought to New York in the 1850s.*
- *House finches: Native to Mexico and the southwestern United States; brought to Long Island, New York, in the 1940s.*

2. Why is it a problem for non-native birds to take up residence in North Carolina?

They outcompete native species in the struggle for food and habitat; for example, starlings displace bluebirds and woodpeckers.

3. How and why were non-native plants brought to this country?

Early European settlers brought many of their native plants intentionally—the settlers had specific purposes for these familiar plant species. Other plants were accidentally transported on clothing and livestock.

4. Why are non-native invasive plants so successful in spreading?

They tend to mature quickly and have a high reproductive output. Natural checks and balances that exist in their native land, such as predation, may be absent in their new environment.

5. List some non-native plant species that are considered to be very invasive and the problems associated with these species.

Some possible answers:
- *Princess tree: One tree can produce 20 million seeds.*
- *Bradford pear: It is a horticultural hybrid, meaning that the offspring may exhibit features not present in the parent plants, such as large thorns. It has a weak branching form and tends to succumb to storms, costing time and money to repair or remove.*
- *Kudzu: It reduces forest productivity and weakens structures to which the vines attach.*
- *Japanese honeysuckle: It displaces native coral honeysuckle.*
- *English ivy: It can drape trees and suffocate plants on the forest floor.*
- *Russian olive: It is adapted to high amounts of nitrogen, so it grows aggressively and displaces plants adapted to low nitrogen.*
- *Privet* (Ligustrum)*: It grows in places (e.g., bottomlands) that primarily contain deciduous species. It creates a dense evergreen layer that shades the ground, stifling the growth of native species that cannot survive in shade.*
- *Japanese stilt grass (Asian bamboo): It can choke out native vegetation.*

6. List some non-native plant species that are not very invasive and are an asset to our landscapes? Name their places of origin.

Gingko (China); deodar cedar (Himalayas); crape myrtle (Asia).

7. List some non-native animal species and describe why they are essential or important.

The European honey bee: It is an essential pollinator of crops and a source of honey. Rainbow trout/brown trout: They are attractive to sport-fishermen and a source of income for regions where they are stocked.

Spotted knapweed photo courtesy of Joseph M. DiTomaso, University of California, Bugwood.org.

CHAPTER 3 (6:31–11:10)

8. What is North Carolina's only native freshwater trout?

Brook trout.

9. What does it mean to say a plant is non-invasive?

It does not displace native vegetation.

CHAPTER 4 (11:10–13:28)

10. Why do so many of our invasive plants come from Japan?

We share similar climate (e.g., humidity) and the same latitude.

11. What is chestnut blight? What harmful effects has it had?

A fungus that affects chestnut trees; wiped out native chestnut trees, which provide nuts for wildlife and humans and is also a source of lumber.

12. How did pest species such as the balsam woolly adelgid and diseases such as the chestnut blight spread to our native ecosystems?

They are often transported on infected nursery stock. When horticulturists bring non-native plant species to this country, these plants sometimes harbor diseases and pests. Once here, these hitchhikers may attack native species that are defenseless.

13. What tree species have been infested with balsam woolly adelgids? What ecosystem has suffered because of the insect?

Fraser fir, balsam fir; red spruce forests.

CHAPTER 5 (13:28–18:07)

14. When were carp brought to the United States and for what purpose?

In 1877; for food and to control aquatic vegetation.

15. What problems do carp cause?

As they feed on detritus and vegetation at the bottom of the water column, they stir up sediment, muddying the water. Native fish species requiring clean sediment on which to spawn can no longer use these places.

16. What are some catfish species that have invaded North Carolina waters? Why are they a problem?

Some possible answers: blue catfish, giant flathead catfish. These non-native catfish are top-line predators. When non-native top predators are introduced into areas that already have top predators, they can quickly outcompete the native species for prey. Flathead catfish are solitary ambush hunters, preying exclusively on fish, including sunfish, catfish, shad and largemouth bass, which are prized as game fish. Some native species also beneficially co-exist with other native aquatic species.

17. What is the most aggressive invasive fish?

Giant flathead catfish.

18. How large can a flathead catfish get?

80 pounds.

CHAPTER 6 (18:07–23:41)

19. Why is it so easy to "go native" when landscaping?

Possible answers: North Carolina has a great diversity of native plants; therefore, gardeners and landscapers have many native options. Whether one wants plants that bloom in the spring or fall, produce fruit in summer or winter, or thrive in wet or dry environments, there are many native alternatives to exotics.

20. What non-native species would we hate to lose in North Carolina?

European honeybee, rainbow trout, Chinese ginkgo.