Invasives:
Aliens Attacking Our Homeland

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Native vs. Invasive?

- The term native can be defined as being from somewhere specific. If you and your family have been in Georgia for many generations, you would probably consider yourself a native Georgian.

Ecosystem

An ecosystem includes all living things such as plants, animals, and other organisms in a given area interacting with each other and with their non-living environment. The non-living parts are weather, soil, sunlight, climate, and atmosphere.

Ecosystems can be very different from place to place. For instance, some plants like warmer climates, sandy soils and not much moisture. Other plants like cooler temperatures, rocky soils and lots of water. So over many thousands of years, plants, animals, fungus, bacterial and host of other things evolve to exist and thrive in a particular area for a long enough time to consider themselves native. A huge part of this being native is working well with others. In a completely undisturbed environment, ecosystems find balances. For example, if a plant does well in an area, there maybe be an animal that can use that plant to feed or house themselves utilizing that plant. In turn, the animal may bring pollen to that plant that helps it produce seeds to reproduce. When the animals nest falls and the plant sheds its leaves in the autumn of the year, a mushroom may grow on the decaying matter. The next animal may need that mushroom as it main source of food. And the cycle keeps going. Until the invasives arrive…..

- Invasives are non-native organisms that have been introduced by humans either purposely or by accident and have become serious environmental pests. They succeed at being a pest by out competing the native organisms for critical resources like sunlight, water, nutrients, soil and space. All of this added competition along with not having something out there to keep the alien in check can be detrimental to the environment.

- Invasives are like aliens. They are exotic species introduced from another part of the world. They aren't from around here and you don't know what you are going to get once they arrive. Just ask the guys from the television show "Stranger Things". We sometime know and sometimes aren't too sure how the invasives get here, but do know that some alien species can do major harm while others can go a long time without even being notice. In the Southeast, we are fighting many introduced species that are seriously harming our natural environment.

- Consider invasive plants. Many of the characteristics that make invasive plants invasive are the same ones that make them appealing as landscape plants. They are tough, adaptable, quite ornamental, and easy to propagate.

- Most invasive plants (85%)were introductions for landscape purposes. Others were introduced for agricultural purposes.

- Most non-native plants are not invasive. For every 100 plant species planted here, only ONE becomes invasive.

How Invasives Arrive

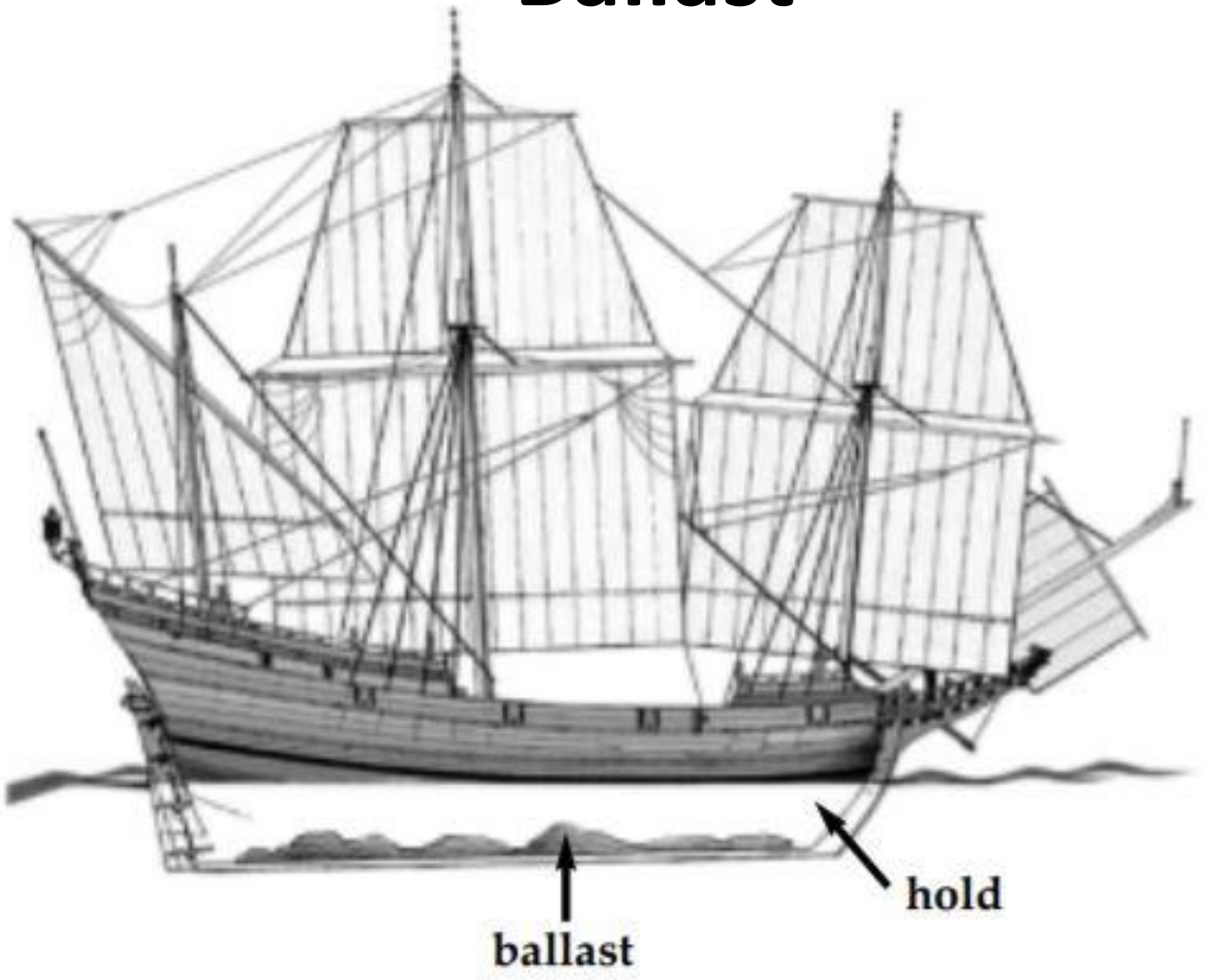
- So how do these bugs, critters, slimes and weeds get to our beautiful hometown? It doesn't usually happen overnight.

- These organisms arrive in all kinds of ways. From shoe strings to the ballast of a boat, these unwanted aliens arrive and outcompete. Take a look at some of the ways these pest find their way to our homeland.

Catches a Boat and Jumps Ship

- Long ago, cargo ships would use soil and rocks in the bottom of their boats to use as a ballast. Ballasting is placed low in a vessel to improve its stability. This soil and rock would get dumped at port and would have potential invaders mixed in the ballast material. Most of the cobblestone on River Street in Savannah is ballast stone.

Ballast



Attaching to Boats

- Aliens don't have to be purposely put into a boat and shipped from a foreign land. They can just attach and the boat can move from lake to lake. That is how a lot of nasty plants and mollusk get into bodies of water. If a boat's propeller or the boat trailer gets some invasive critters stuck to it, the alien can fall off when it visits another lake or river. The invasive can begin a life at its new home.

Boat Haul

Digging in the Dirt

- Construction equipment and the soils from the disturbing of the earth can move the wrong stuff to the wrong places. Hopping on a excavator or moving soil from one site to another can relocate some unwanted organisms to an unwelcomed area.

Moving A Lot of Soil

Off-Roading

- ATVs and Dirt Bikes can go many places most people and machines can’t. Sometimes the tread of a tire or mixed in with the mud that was being slung around can be something you might not want to take home with you.

Mudding

What Always Travels?

- Luggage. Luggage can go anywhere and take most anything you want in it. Sometimes things you want and sometimes things you don't even know you have. Microscopic spores or a tiny little egg can hop aboard on your trip to the Great Wall of China and bring home an unwanted traveler.

- Shoes. Shoes are on the ground and constantly picking up soil, seeds, germs, bacteria, fungus, etc. And these shoes are worn whether you are in your front yard or in the Amazon Rain Forest.

- Pets. Fur on a pet animal is a good place for a seed to hide. Dogs that accompany a hiker or swim in the river are good candidates for being a host for an unwanted tag-a-long.

- Mowers. Commercial mowers are constantly cutting down plants and disturbing the soil. A lot of these plants that are being cut have seed head on them and are immediately spread a million times over. The seed land on the mower where the pest gets carried from site to site.

Who are the Good Guys?

- There are several agencies l such as the US Department of Agriculture, US Forest Service, Center for Disease Control, National Wildlife Federation and the Georgia Department of Agriculture that all have large involvement in understanding and combating invasives. This is just a small list of organizations that battle these nasty aliens daily. The more knowledge they have, the better they can fight.

Who are the Bad Guys?

- We mentioned that there are invasives out there that can be harmful and some that we barely even notice. Our “Good Guys” have pinpointed some of these invasives that have the most harmful impact on our environment. We compiled a list 18 species that are considered the most dangerous of all. The list includes plants, insects and disease.

- The list we have below gives a little about what the pest is, where its real home is, how far it has spread and some of the damage they can cause.

Name	Picture	Type	Origin	Extent	Damage
Kudzu		Vine	Japan, China; promoted in U.S in 1920s and 30s for forage and erosion control	Estimated 7 million acres in the southeast US includingas far north as Pennsylvania and from Texas to Oklahoma in the west. The largest infestations are found in Mississippi, Alabama, and Georgia.	Grows up to one foot per day! Overgrows and shades out trees, covers houses, barns, road signs
Chinese Privet		Shrub	China; introduced in 1852 as an ornamental	Millions of acres in 20 states	Displaces native plants in wetlands, forests and fields; berries are less nutritious for wildlife than native species. Thrives in full sun or shade. Berries float.
Hydrilla		Aquatic plant	Africa & Southeast Asia; introduced as an aquarium plant in the 1950s	Most all of the Eastern US and in the West: Texas, Arizona, California and Washington	Clogs waterways, restricting recreation; kills other aquatic life by blocking sunlight and using oxygen. Has been know to drown people who get trapped in massings.
Japanese Honeysuckle		Vine	Japan; introduced in 1800s as an ornamental and for deer browse	Found in all of Eastern & Southwestern U.S. 41 counties in Georgia	Inhibits growth of native plants, including three federally listed species; Supports larvae of corn earworm and tobacco budworm (agricultural pests)
Chinese tallow		Tree	China; Ben Franklin sent seeds to a Georgia colonist in 1772	Coastal plains of SC, GA, AL, FL and TX	Displaces native trees; falling leaves contribute to nutrient loading in streams; Oily seeds toxic to cattle
Autumn Olive		Shrub	China and Japan; introduced in 1830, planted for wildlife habitat, and erosion	Found in Eastern, Midwestern, and Northeastern states	Displaces native species

Name	Picture	Type	Origin	Extent	Damage
Mimosa		Tree	Asia; introduces in 1745 as ornamental	Southeastern United States	Once established is difficult to remove because it reseeds and resprouts vigourously
Chinese Wisteria		Vine	Asia; introduced as ornamental in 1800's	Eastern United States	Destroys trees by growing over them reducing their photosythesis and in some cases breaking them, can change makeup of a forest by altering light availability to forest floor.
Golden Bamboo		Shrub	Asia; introduced as an ornamental, growing along old homesteads, grown for screening and fishing poles	Southeastern United States	Forms dense polulations where nothing else grows, displaces native species, extemely difficult to remove
Boll Weevil		Insect	South America;	Infested all cotton growing regions in U. S.; eradication began in 1978 and is no longer found in Georgia and South Carolina	Destroyed the cotton crop by laying eggs in flower bud and larvae feeds on newly formed cotton bolls
Emerald Ash Borer		Insect	Asia; moves by infested nursery stock and firewood	25 states including Georgia; over 10 of millions ash trees are dying;considered the most devastating forest insect to reacn North America in modern times	Larvae feed in the cambium of a tree between bark and wood killing the tree resulting in massive death of ash trees
Kudzu Bug		Insect	Asia, discovered in 2009 in Georgia	Southeastern United States;	Feeds on soybeans, nusiance pest infesting buildings in winter, have a strong odor ; also feeds on kudzu

Name	Picture	Type	Origin	Extent	Damage
Argentine Ant		Insect	South America	Southeastern U. S. and California	Form colonies consisting of a million or more worker ants; infest buildings in mass numbers; bite isn't painful, displace native species
Hemlock Woolly Adelgid		Insect	Japan	19 states from Maine to Georgia and west to Tennessee and Kentucky; discovered in 1951	Feeds on old growth forests of hemlock. Can weaken and kill the trees and is a threat to wildlife species that depend on them.
Fire Ant		Insect	South America; accidentally introduced to Alabama in 1930s	300 million acres of Southern U.S.; all of GA except in mountains	Aggressive, multiple biter with painful venom and chance of allergy; may also damage fruits, berries and young crops; also damage electric boxes; ant mounds are a hazard to farm equipment
Asian tiger mosquito		Insect	Asia & Pacific Islands; first U.S. discovery was in 1986. Breeds in old tires & tree cavities	Established in all counties of Georgia by 1994	Particularly aggressive and irritating biter; also a potential vector for LaCrosse encephalitis, yellow & dengue fevers.
Chestnut blight		Blight	From Asia. Imported on Asian chestnuts in 1880s into New York.	99.9% of all American chestnuts were killed to the ground.	Chestnuts were the dominant species of trees in the eastern US forests. It was also the most important commercial tree for the use of its rot resistant wood, edible nuts and rapid reforestation traits.
Dutch Elm Disease		Fungus	Brought from France to Ohio in 1930s	Most of the United States. Spread by spores attached to elm beetles.	Wilt disease that blocks water and nutrient movement in the elm trees. It is usually fatal to the tree.

The Damage

- Invasive alien species are recognized as one of the leading threats to biodiversity and impose enormous costs to agriculture, forestry, fisheries, and other human enterprises, as well as to human health. The cost to control invasive species and the damages they inflict upon property and natural resources in the U.S. is estimated at $137 billion annually. Invasives compete with native species for light, water, and nutrients and can lead to a decline in the native species.

- They change the structure of the community making it a less desirable for the existing organisms to live.
- After man made disturbances, such as construction and farming, they make it harder for the native species to recolonize an area.
- They decrease food sources and protective cover for wildlife by altering the plant diversity.
- They have a negative impact on recreational benefits of an area by decreasing the beauty and limiting accessibility.

Why are invasives so successful?

Our natural ecosystems have evolved over many thousands of years. While plants and animals have always moved around, their migration has historically been at a slow rate, allowing time for other members of the community to adapt to them. However, as human activity moves species at ever-increasing rates, there is insufficient time for natural plant communities to adapt to such rapid changes. In their new habitat, invasive species lack the natural controls (pathogens, predators and competition from other plants) with which they evolved. This often gives them a competitive edge over the species native to the area. Many invasive plants thrive on disturbed soil, and out-compete native vegetation. Furthermore, our southeastern climate is similar to the native habitat from which the invaders came, so they can readily adapt and establish new colonies.

Case Study: Fire Ants

- Red imported fire ants are not native to Georgia or South Carolina or the United States. They are native to Brazil and Argentina. In the late 1920s, the ants are thought to have been imported on a boat from Brazil that landed in Mobile, Alabama, loaded with products to sell in the United States. As the boat was being unloaded and then reloaded with materials to take back to South America, the dock workers removed soil that was used for ballast in the hold of the ship. The soil was dumped out at the port in Mobile. Unknown to the dock workers, fire ants were living in the soil that was dumped from the ship.

- Because of this accidental introduction of fire ants, we now see red imported fire ants across a large part of the southern United States and in isolated areas of southern California. Fire ants are somewhat limited by cold weather. As a result, areas where winter temperatures drop down to 15 °F may have few to no fire ants at all.

Potential harmful effects include:

- Reducing populations of insects with which they compete
- Reduced nesting of songbirds because they attack the babies
- Misuse of pesticides to control them
- Inflict painful stings and can kill human beings
- The mounds are unsightly and can damage equipment
- Get into electrical equipment and can cause failures causing short circuits and equipment failure
- Cause over 6 billion dollars of damage a year in the United States

Case Study: Kudzu

Kudzu is also called the plant that ate the South

This vine was introduced from Japan to the U.S. in 1876 as an ornamental plant. It has beautiful purple sweet-smelling blooms. Then in the 1930's through the 1950's, the Soil Conservation Service promoted it as a great tool to help prevent soil erosion. In fact, farmers in the southern U.S. were paid to plant kudzu on over one million acres. It is estimated that the plant covers seven million acres in the southeast. Some of the largest infestations occur in Georgia.

Kudzu is a legume which means it makes its own nitrogen which is as asset to plants. The roots are capable of storing large amounts of carbohydrates which is energy for the plant. They can grow down into the ground up to 9 feet which makes it easier for the plant to find water. It is a perennial and grows from late spring until frost and then the leaves die back. It grows best where winters are mild (40-60 degrees) and rainfall is plentiful. Because of the roots, it can survive drought.

New growth may exceed one foot per day. Forest edges or disturbed areas, such as abandoned fields and roadsides, are preferred habitats. Kudzu can persist on the floor of a closed canopy forest; the vines grow up trees toward light and take advantage of any openings.

How does it harm the environment? Kudzu scan outgrow and out compete native plants and can prevent other plants from growing across large areas where it is established. It also destroys native habitats for some animals.

What can you do about Kudzu? Continuous mowing will weaken the plant. Grazing by animal especially goats will also help. There are herbicides (plants that kill weeds) that are effective in managing this weed. A few years ago, scientists discovered the kudzu beetle that eats on and weakens the plant. The problem is it also feeds on soybeans, a crop that farmers depend on.