Public Outreach

PowerPoint Slide Show: Invasive Plants and the National Wildlife Refuge System

Slide 1: Invasive Plants and the National Wildlife Refuge System
Today I'll be talking about Invasive Plants and the National Wildlife Refuge System.

Slide 2: Today's Presentation
The purpose of this presentation is to provide you with a look at:

- What the Refuge System all about
- What is an invasive plant
- Why invasive plants are a problem
- What's being done
- How citizens are helping

After the presentation, I hope you'll have a better understanding of the problem refuges face, and some ideas about how you can help.

Slide 3: A Network of Habitats
The National Wildlife Refuge System is a network of habitats that support a diversity of wildlife and provides outstanding outdoor experiences for people. The U.S. Fish and Wildlife Service is the federal agency that manages refuge lands. The Refuge System encompasses more than 545 wildlife refuges and thousands of small prairie wetlands that serve as waterfowl nesting areas. In all, it comprises 96 million acres of protected lands.

Slide 4: The Mission
The mission of the Refuge System is to protect hundreds of wild species including fish, migratory birds, other animals, and plants. The Refuge System gives priority to wildlife, but also encourages people to use refuges for fishing, wildlife observation, photography, environmental education, interpretation, and hunting, as well as other activities.

Slide 5: What is an invasive plant?
Before we talk more about invasive plants we need to define what they are.

Slide 6: Executive Order Definition
A presidential Executive Order enacted in 1999 defines an invasive species ("invasive plant" for our purpose), as an alien species ("nonnative plant" for our purpose) whose introduction does or is likely to cause economic harm, environmental harm, or harm to human health. Other terms used to describe an invasive plant include noxious weed, exotic, and aquatic nuisance species.

Slide 7: Nonnative and Native
For clarification, the definition of a nonnative species is a species that, other than as the result of an introduction, did not historically occur in an area, and was purposely or accidentally introduced into a new environment. In the Refuge System, nonnative seeds

may become established and grow into plants that are invasive in the native plant communities we are trying to protect. It's important to note that just because a plant is nonnative doesn't mean it is invasive. There are many nonnative plants that we grow, such as crops and garden plants, that may become established but do not become invasive.

Slide 8: What's the problem with invasive plants?
What's the problem with invasive plants on refuges?

Slide 9: Impacts
There are many ways invasive plants may affect the Refuge System. Invasive plants can decrease biological diversity by making the habitat less suitable for native plants and animals, which can affect their survival. They can alter natural ecosystem processes such as fire regimes, nutrient cycles, and flooding. They can impede efforts to restore threatened and endangered species, and are very expensive to control. Let's look at specific examples.

Slide 10: Threats to biodiversity
Along the left side of the graph are the types of threats to biodiversity and along the bottom of the graph is the percentage of biodiversity affected by the different threats. In this case, biodiversity is referring to imperiled and federally protected plant and animal species in the United States. The bottom bar shows that habitat degradation and destruction threatens 85% of the these imperiled and federally protected plant and animal species. The second greatest threat is alien or invasive plants and animals. These alien species threatened half or 49% of the imperiled and federally protected species.

Slide 11: Impede efforts to restore threatened and endangered species
At the Mississippi Sandhill Crane National Wildlife Refuge efforts are under way to protect the endangered Mississippi sandhill crane, which has lost much of its native habitat through land modification. An invasive plant called cogongrass is degrading the remaining nesting and foraging habitat of the sandhill crane. To protect the crane's remaining habitat, refuge managers apply herbicides which is an effective control method that reduces the cogongrass and prevents it from spreading.

Slide 12: Alter ecosystem processes
To show how ecosystem processes can be altered by invasive plants here is a simplified version of a complex process. An invasive grass called cheatgrass is prevalent in some National Wildlife Refuges of the arid western United States. As cheatgrass dries out it becomes highly flammable and acts as fuel for wildfire. An area infested with cheatgrass burns hotter and more frequently. And as a result, the native plants decline because they are not adapted to the new fire regime. As more native vegetation burns, the cycle of continues: cheatgrass moves in and becomes established, and the area becomes more prone to frequent and hotter fires.

Slide 13: Expensive to control

Invasive plants cost a lot of money to control. Of the 2 million acres of refuge lands that are infested with invasive plants, managers only were able to treat 14% of those lands in 2006. The cost of controlling invasive plants is high, and due to tight budgets refuge managers only can treat a small percentage.

Slide 14: How do invasive plants get around?
How do invasive plants get around?

Slide 15: Pathways
Invasive plants (and other species) move along what scientists call “pathways.” A pathway is a progression in which plants or a plant’s reproductive parts are moved. A pathway could be global, which is a route that goes from one country to another, or it could be local, such as a route from a road to your favorite hiking trail.

Slide 16: Human-created pathways
There are human-created and natural pathways, but most invasive plants are moved or introduced along human-created pathways. These pathways include waterways, shipping routes, train tracks, roads, importing plants as crops and ornamentals, and through recreation and travel. And, of course, there are many others.

Slide 17: Human-created pathways
In this example, nonnative plant seeds are carried from their native habitat across the ocean in the ballast of a ship. After being dumped in a new environment, the soil is picked up by a truck and carried to a newly built house for use as landscaping soil. The nonnative plants become invasive because they are introduced into a new environment where the native vegetation has been disturbed by construction. Without much competition from the remaining native plants, the newly introduced plants grow well within the disturbed site.

Slide 18: Human-created pathways
Another example of a human-created pathway is the introduction of nonnatives as garden or landscaping plants. Not all introduced ornamentals become invasive. However, some species adapt well to the new environment, are able to leave the confines of a garden or yard, and can spread onto adjacent lands if environmental conditions are just right. Purple loosestrife is a good example. This species was brought to the United States as an ornamental in the early 1800s and is now found throughout Canada and the United States.

Slide 19: Natural pathways
In addition to human-created pathways, natural pathways can also aid in dispersing plants. Plants and their reproductive parts can be moved by air, ocean, and river currents.

Slide 20: Natural pathways
As an example of how plants are spread along natural pathways, we can look at Old World climbing fern which occurs primarily in Florida. This invasive plant is threatening to destroy the tree islands at A.R.M. Loxahatchee NWR (light green areas). Old World

climbing fern is a vine-like plant that climbs up tree trunks, stems of other plants, or along the forest floor, forming dense mats that can smother native plants. It reproduces by creating a huge number of spores. These very lightweight spores can travel great distances on wind currents. Scientists are concerned that Old World climbing fern spores could be blown great distances and become invasive in many new areas with similar environmental conditions to Florida.

Slide 21: How do refuges manage invasive plants?
Let's look at the big challenge of what refuge managers do about invasive plants.

Slide 22: Survey and Map
Refuge managers start by finding out where the plant infestations are located on the refuges by conducting surveys. When an infestation is found, its location and other data are recorded with handheld computers. Maps of the infestations are then created from this information. Volunteers frequently help with surveying and mapping.

Slide 23: Determine Infestations to Manage
If infestations are found when they are small, managers can usually act quickly and eradicate the plants. Numerous large infestations on a refuge require prioritization because of tight budgets. Prioritizing which infestations to manage and how to manage them depends on many factors: the level of threat to natural resources, the size and location of the infestation, the target plant's biology, the ecology of the site, available treatment methods, and the cost of management.

Slide 24: Select Management Methods
In treating individual invasive plants or infestations, managers may select one or a combination of these methods.

- Physical: hand pulling or mowing weeds
- Chemical: careful application of herbicides
- Biological: release of insects to feed on specific parts of the plant
- Fire: burning the plants
- Grazing: animals that eat the plants

Slide 25: Restore Native Plant Communities
In some situations, managers have to plant native seeds or seedlings in areas where invasive plants were treated or removed. If an area is not too impacted or altered by invasive plants, native plants may grow back on their own and no restoration is needed.

Slide 26: Prevention
The most effective way to manage invasive plants is to not let them get established in the first place. Through presentations, brochures, and signs, refuge managers implement prevention strategies such as informing hikers, hunters, boaters, and other visitors about actions they can take to prevent the spread of invasive plants. Managers also prohibit activities that might damage native vegetation, which can make the area more vulnerable to invasion.

Slide 27: How do refuges accomplish their work on invasive plants?

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Slide 28: Volunteers
To accomplish some of the work, the Refuge System relies on volunteers. Volunteers help with surveying and mapping, control, restoration, outreach efforts such as weed pulling events, and much more. Volunteers may be individuals, interns, or organized groups. Many refuges have what are called "Friends groups." Friends groups are volunteers that work to support a local refuge. They are dedicated to protecting, enhancing, and expanding the Refuge System.

Slide 29: Making A Difference
Volunteers are invaluable to the Refuge System and are making a difference in protecting habitat and wildlife from the impacts of invasive plants. At Florida Keys National Wildlife Refuges, long-term Americorps and local volunteers have been responsible for successfully reducing invasive plant infestations. Their hard work benefits wildlife such as the endangered Key deer, which is only found in Florida.

Slide 30: Making A Difference
At Silvio O. Conte National Fish and Wildlife Refuge, volunteers are working to protect the Connecticut River. Volunteers return every year to hand pull an invasive plant called water chestnut that floats on the water's surface. In 700 hours of work, volunteers and cooperators pulled 25 tons of the plant! Sites that were once heavily infested with water chestnut now only have a few plants.

Slide 31: How You Can Help
As we near the end of today's presentation, I would like to say that although there are many challenges to managing invasive plants, there are many success stories, and many opportunities for each person to make a difference. You can help stop the spread of invasive plants by preventing them from moving from place to place:

- Wash fishing equipment, boats, ATVs, and car and bike tires. Check hiking boots/shoes, clothes, and even your dog—seeds stick to everything.
- Landscape with native plants or non-invasive ornamentals. Talk with your nursery concerning the sale of invasive plants. This applies to plants for sale on the Internet too.
- Get informed—know how to identify the native and invasive plants in your area.
- Become a volunteer on an invasive plant project at your local refuge

Slide 32: "Learning and Lending A Hand" website
To learn more about invasive plants visit the "Learning and Lending A Hand" website for volunteers. It can be accessed from the National Wildlife Refuge System website.

Slide 33: Wildlife and Habitats Are National Native Treasures
Thank you for coming to the presentation today. I would be happy to answer any questions and feel free to share any comments you may have.