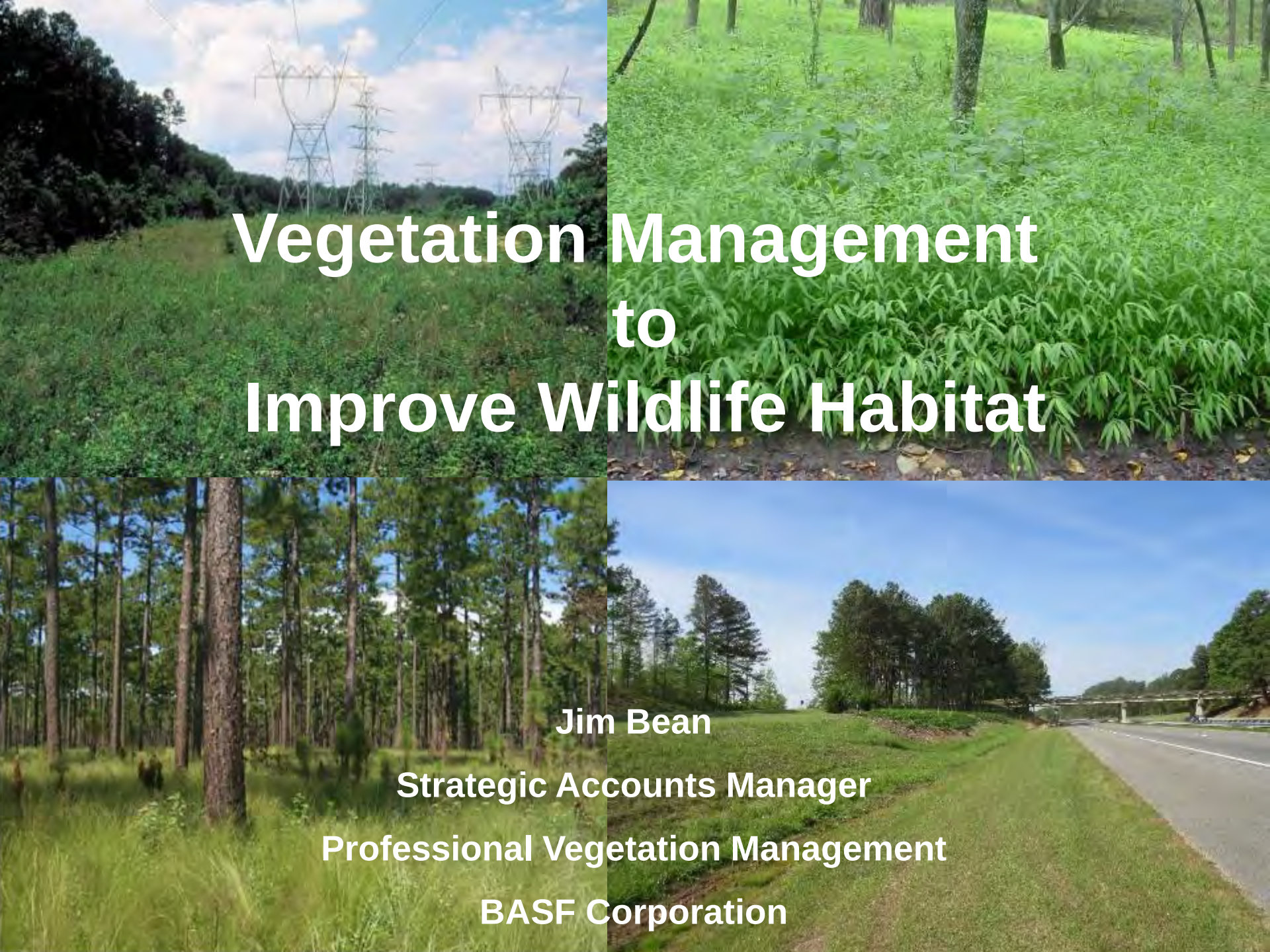

Vegetation Management to Improve Wildlife Habitat

Jim Bean

Strategic Accounts Manager

Professional Vegetation Management

BASF Corporation

Did you know?

- We have increased wood production by up to 5 times and created thousands of native vegetation food plots by controlling woody competition in our southern forests

Red Cockaded Woodpecker

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Did you know?

- We have created thousands of miles of enhanced wildlife corridors and connected valuable pockets of wildlife habitat by managing rights of way using herbicides?

Whitetailed deer, small mammals, non-game birds and pollinators

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Did you know?

- We have virtually eliminated invasive Melaleuca trees in the Everglades

Tree snail

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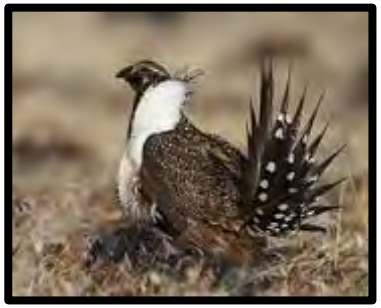
Did you know?

- We have increased the water supply and improved habitat by controlling saltcedar and giant reed in these river systems
- Colorado
- Missouri
- Pecos
- Rio Grande

Gecko lizard

Did you know?

- We have reduced the number and intensity of western wildfires by controlling invasive cheatgrass and medusahead



Sage grouse

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Did you know?

- We have been a leader in reducing phragmites in the Chesapeake Bay, Mobile Bay and San Francisco Bays

Improve critical wetland habitats

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We have a great story!

We are proud of the long history of habitat improvement from BASF ProVM!

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Topics

- Vegetation Management Principals
- Examples of Habitat Improvement
  - Forestry
  - Utility Rights of way
  - Roadside
  - Invasive Species
- Challenge
  - Share our stories

Vegetation Management Principals

- Restore and improve plant, animal and human habitats
- Strive to always make a positive environmental change
- Protect the habitat of threatened and endangered species
- Apply herbicide responsibly, using the appropriate products, amount and application technique to achieve the desired results

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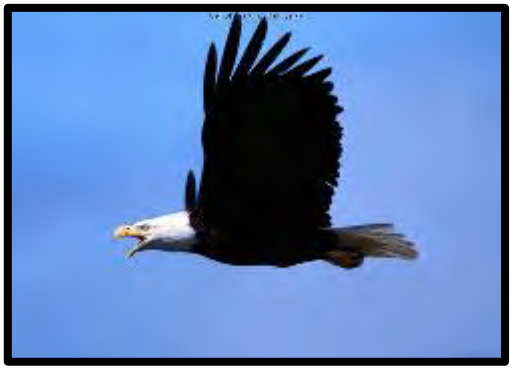
The Goal of Vegetation Management

- Manipulate plant composition to achieve our goals
- Provide habitat improvements that benefit a wide variety of plants and animals



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Habitat Enhancement Projects

- Red Cockaded Woodpecker Habitat Enhancement
  - Fort Bragg, NC

- Japanese stiltgrass control
  - Great Smokey Mts and Shenandoah, NP

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Habitat Enhancement Projects

- Wood Storks
  - Frog's bit control, SC

- Loggerhead sea turtles
  - Beach vitex control, GA, NC, SC

- Least terns
  - Patoka River NWR, IN

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Selective Weeding for Canada Thistle

1 WAT

Applied June 2018

16 oz. Transline + 1 oz. Detail

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Grass Friendly Products

2 oz. Detail + 1% MSO 50 gpa

Applied June 2016

Picture 11 MAT

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Selective Herbicide Placement

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Change Cultural Practices

- **Reduce Mowing**

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Change Cultural Practices

2019 Seedhead Suppression / Growth Regulation / Selective Weeding
3 oz. Plateau + 7 oz. Milestone + .3 oz. Escort – Ohio DOT

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Forest Vegetation Management

Landowner Objectives

- Timber Income
- Wildlife Management
- Recreation
- Legacy

Landowner objectives vary but all can be optimized through active forest management!

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Forests and Grassland for Wildlife

- Food
- Water
- Cover
- Nesting sites

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Early Successional Habitat Loss

- USFWS estimated grasslands loss in U.S.
  - 1982 to 1997 97,000 sq. Kilometers, 24M/Ac
  - Area larger than Indiana

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Wildlife Friendly
Early Successional Habitat

- Release forbs (flowering plants)
  - Increase in pollinators
- Release legumes
  - Nitrogen fixers
- Increase high quality food
  - Beautyberry
  - Rubus
- Provide Cover
  - Release warm season grasses
  - Cover for Turkey, quail and pheasant

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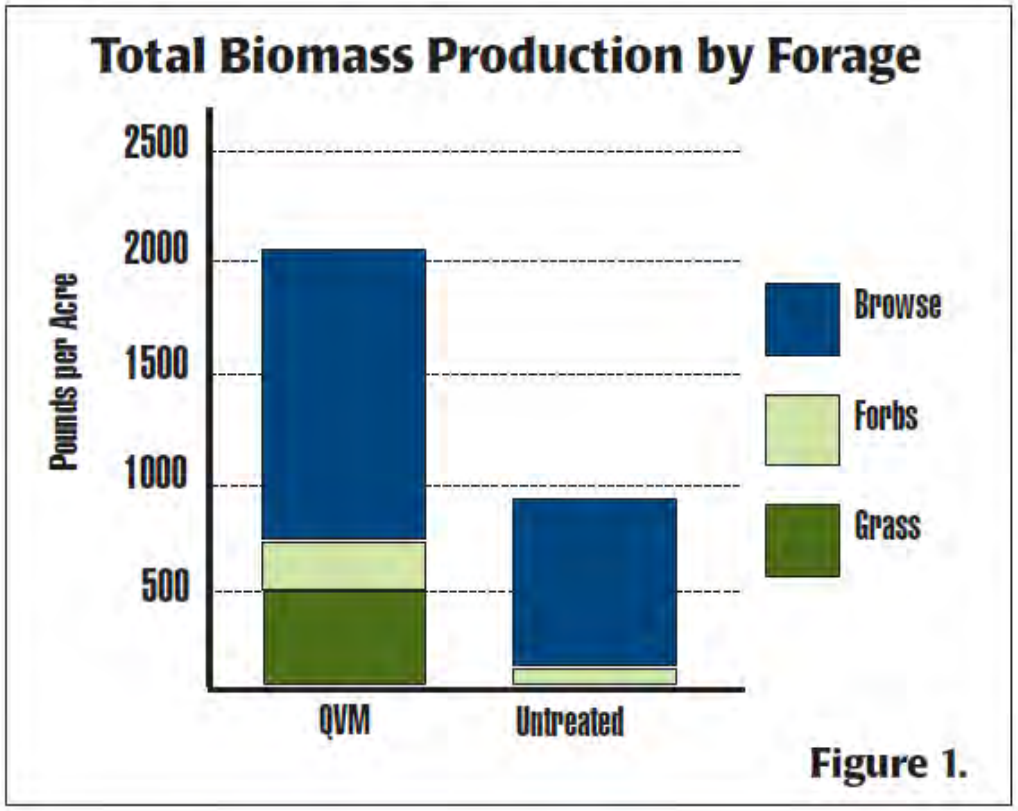
Wildlife Friendly Habitat

- Biomass doubled
  - More forbs and grasses
- Deer Browse Changed
  - From
    - Sweetgum
  - To
    - Beautyberry
    - Blackberry
    - Muscadine
    - Sparklelberry
    - Winged elm



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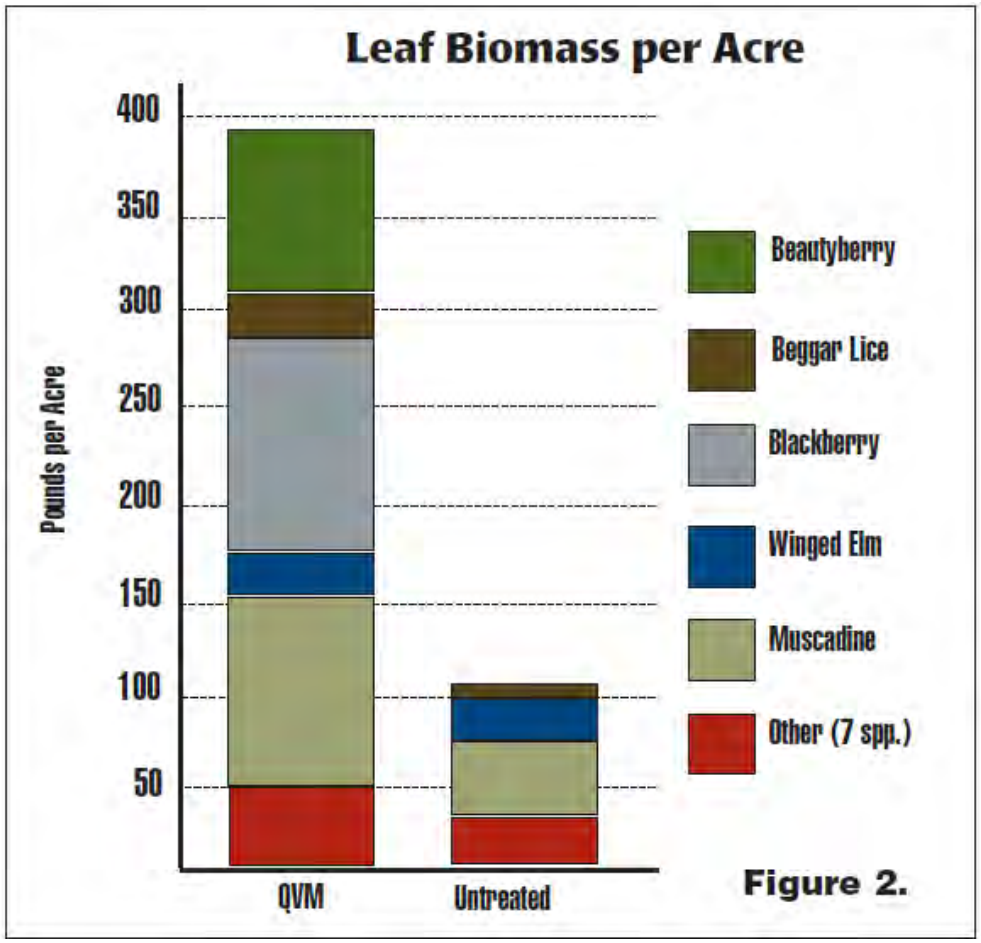
Wildlife Friendly Habitat

- Leaf biomass
  - 350% increase
- Digestible protein
  - 500% increase
- Plant diversity
  - Arsenal AC
    - 99 species
  - Untreated
    - 38 species
- Result in a high quality diet



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Wildlife Friendly Habitat

Increases Wildlife

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Forest Vegetation Management

- Provides quality habitat
- Improves financial returns from timber growth
- Improves aesthetics
- Increases carbon sequestration

Rights-of-Way Vegetation Management
Objectives

- Provide reliable energy
- Safe travel conditions
- Extend equipment life
- Improve wildlife habitat

We have application techniques for every situation!

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Why Spray?

Mowing with No Herbicides

Brush Resprouting 6 Months Later

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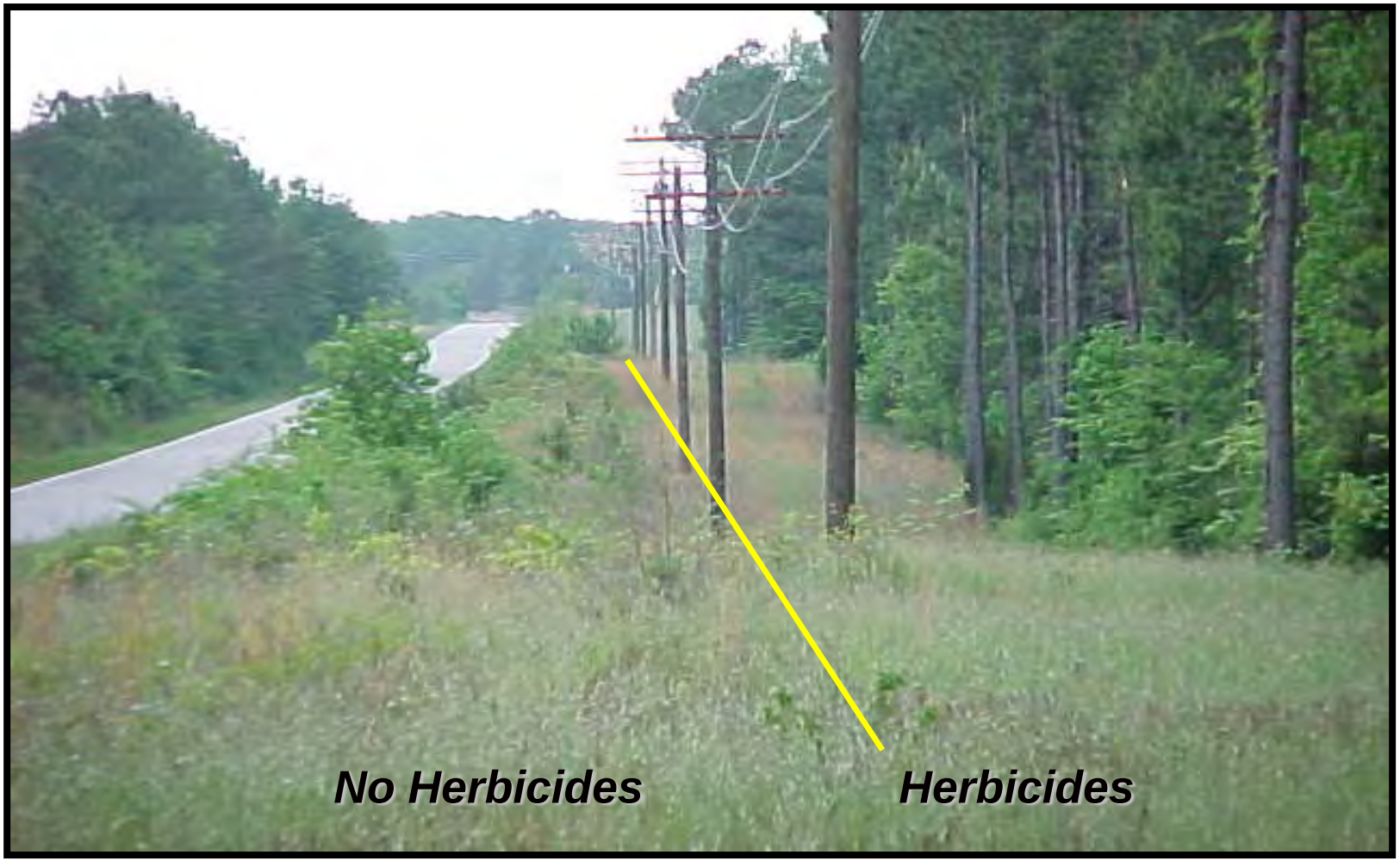
Which is Better for Wildlife?



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High Volume Foliar Applications

- **Initial cycle**
- **Taller brush**
- **Dense brush**
- **Selective**
- **Increase Production**

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Low Volume Foliar Applications

- Maintenance cycles
- Smaller brush
- Low density brush
- Less Herbicide
- Less Water
- Selective
- Increase Production
- Reduce Cost

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Low Volume Foliar
Duke Energy – Durham, NC

10 DAT (10-14-11)

9 MAT (7-31-12)

¼% Detail + ½% Arsenal PowerLine + 3% Accord XRT + .5% Escort

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Low Volume Foliar
Dominion Energy – Farmville, VA

1/8% Detail + ½% Arsenal + 4% Accord XRT
9 MAT

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Dormant Stem Applications

- **Extend spray season**
- **Crew utilization**
- **Reduce stem density**
- **Selective**

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Cut Stubble

- **Extend spray season**
- **Reduce stem density**
- **Sensitive areas**

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Basal Bark Applications

- Year round application
- Low density, taller brush
- No need to cut brush
- Reduce stem density
- Selective
- Sensitive areas
- Low visibility

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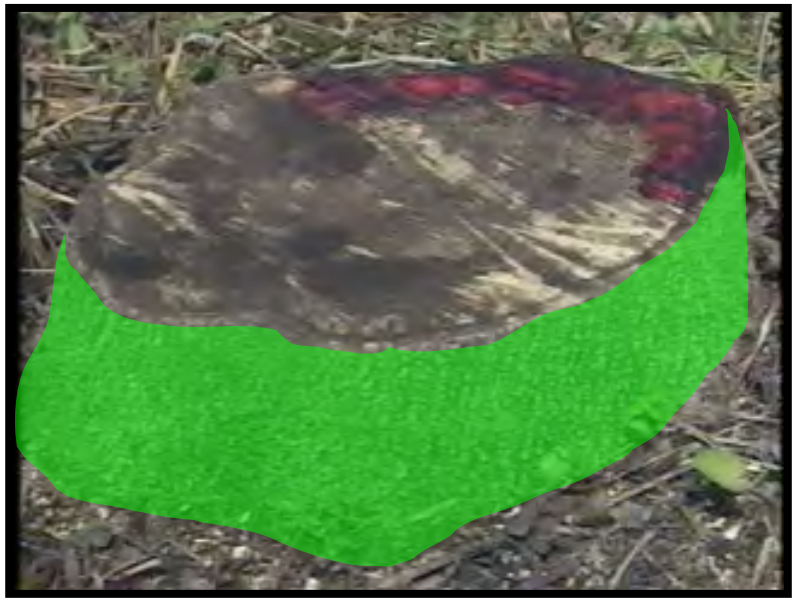
Cut Stump Applications



- Year round application
- Fresh cut stumps
- Older stumps – basal oil
- Reduce stem density
- Selective
- Sensitive areas
- Low visibility

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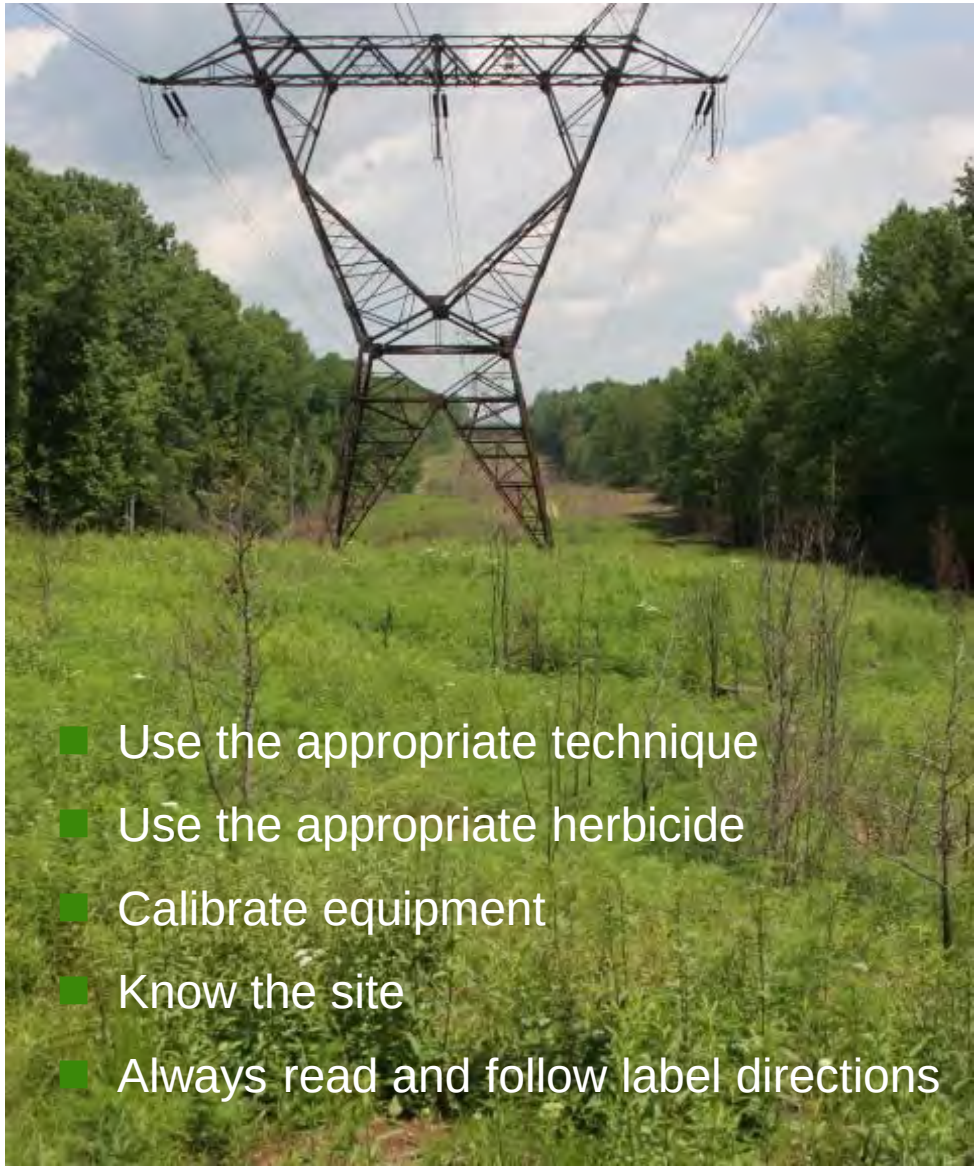
Keys To Success



- Use the appropriate technique
- Use the appropriate herbicide
- Calibrate equipment
- Know the site
- Always read and follow label directions

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Research
Research Overview
Research Focal Initiatives
Research Headlines
Meet Our Staff
Projects
Coastal Impoundments
Grasslands
Migration
Population Ecology Semipalmated Sandpiper
Radar Studies
Stone Harbor Point Restoration
Urban
NJ Breeding Bird Atlas
NJ Records Committee
New Jersey Birds
Citizen Science
Make a Donation to Support Our Research

Management of Utility Rights-of-Way

Management of Early Successional Habitat in Utility Rights-of-way in NJ Highlands to Benefit Golden-winged Warbler

NJA research staff work with PSEG to develop management strategies for utility rights-of-way

As a group, birds that rely on early successional scrub-shrub habitat for nest sites have experienced significant population declines. In fact, many species have been identified as species of conservation concern in New Jersey, and throughout the eastern US. Population declines of these species coincide with a reduction in the amount of early successional habitat in the region, and long-term conservation goals for these species require active management of disturbance-generated, early successional habitats.

Early successional habitat, or ESH, is quite a mouthful; what is it? Essentially, it refers to an area of rapid growing grasses, forbs, shrubs and trees which provide excellent food and shelter for wildlife, but requires "disturbance" to be maintained (now there's an oxymoron: disturbance to stay the same). Examples would be weedy areas, grasslands, old fields, pastures, shrub thickets (i.e. dogwood) and young forests. If these areas are left alone (i.e. not mowed, brush hogged, burned, cut or otherwise "disturbed"), over time they will, through succession, become forest.

Because utility rights-of-way (ROW) are permanently managed in an early successional stage, they have the potential to provide important habitat for early successional wildlife species, given the right management regime. New Jersey Audubon (NJA) is currently collaborating with Public Service Electric and Gas (PSEG) with several goals in mind. They include: 1) evaluate the effects of vegetation maintenance activities on target wildlife species in the New Jersey Highlands and 2) to develop management strategies for ROW corridors that provide the greatest benefit to target early successional wildlife populations. Of course, these management strategies must still satisfy the company's regulatory requirements for vegetation management of utility lines. NJ Audubon research staff will survey these sites before and after management, to determine effects on bird populations using these right-of-way (ROW) habitats.

Target bird species for this project include the state-endangered Golden-winged Warbler, as well as Blue-winged Warbler, Prairie Warbler, Chestnut-sided Warbler, Indigo Bunting, Eastern Towhee, and other species that rely on early successional scrub-shrub habitats. NJ Audubon staff members are also conducting surveys for reptiles and amphibians, along with vegetation surveys, to categorize habitat characteristics before and after management. The 2013 field season represents the second year of post-management survey results. But, in studies such as these, it may take several years to see the full response of wildlife species to the management activities. Ultimately, this project will allow us to develop management strategies that will fulfill PSEG's need to maintain vegetation, while benefitting target wildlife species using ROW habitats.

Early in the 2012 season, NJ Audubon staff had the opportunity to join state Endangered and Nongame Species personnel to color band Golden-winged Warblers in our study area. Golden-winged Warblers were safely captured using playback recordings and mist nets, banded, and released. The color bands placed on their leg will help biologists to identify individual Golden-winged Warblers in the field, track populations through time, and study nest productivity. In May of 2013, we have already found several Golden-winged Warblers, including two birds that were color-banded by our team in 2012.

Other species observed during the initial field season include: Chestnut-sided Warbler, Indigo Bunting, Eastern Towhee, Blue-winged Warbler, Kentucky Warbler, and a variety of other early successional bird species. Our Senior Research Scientist Kristin Munafo and her seasonal interns Andrew Burmester and Ben Sandstrom worked hard in many times hot and very buggy conditions this summer to collect the essential data on ESH wildlife species using these ROW areas, providing an important baseline for succeeding field seasons in the coming years. Here are a few photos of some of the highlights of the 2012 season. We will update this page later this summer as we continue the 2013 field surveys.

ALABAMA WILD POWER

Habitat between the towers.

Alabama Wild Power enhances wildlife habitat along transmission line corridors.

Property owners with transmission lines crossing their land are eligible to receive funds for brush removal and plantings that promote, attract, shelter and feed wildlife in the rights-of-way.

Local Conservationist
A local district conservationist will help eligible applicants develop a wildlife conservation plan. Alabama Power and Tennessee Valley Authority will verify transmission rights-of-way and issue their respective incentive payments at year end.

Apply
To apply for the program, complete the online form any time between May 1 through May 31. Qualified applicants will receive a $50 per acre incentive payment capped at $500. New applications will be given first priority over previously awarded applicants. Otherwise, qualifying applications will be funded in the order they are received until funds are depleted. We encourage any prospective property owners to apply.

Thanks for improving Alabama's rights-of-way. The program is the collaborative effort of

- Alabama Power
- Tennessee Valley Authority
- U.S. Department of Agriculture Natural Resource Conservation Service
- Local Soil and Water Conservation Districts.

Project Habitat
Alabama Power and Tennessee Valley Authority are also active members of the Project Habitat wildlife enhancement program. This program promotes rights-of-way management to protect habitat and promote biodiversity. Partners in the Project Habitat program include BASF and five wildlife associations: Quail Unlimited, National Wild Turkey Federation, Quality Deer Management Association, Buckmasters and Butterfly Lovers International. Project Habitat is a registered trademark of BASF.

Share Your Story

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Roadside Cultural Practice Changes

- **Reduce Cost**
  - **50% to 70% reduction versus mowing**
- **Increase Efficiency**
  - **50% increase**
- **Increase # of projects**
  - **Fewer seasonal personnel**
- **Improve Safety**
- **Improve Habitat**

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Improving Wildlife Habitat

We spend millions of dollars planting wildflowers

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Improving Wildlife Habitat

Native wildflowers without planting by selecting the right herbicides, timing applications and delaying mowing

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Invasive Species: What's All the Fuss?

Second greatest threat to T&E species!

$138 Billon in economic losses each year

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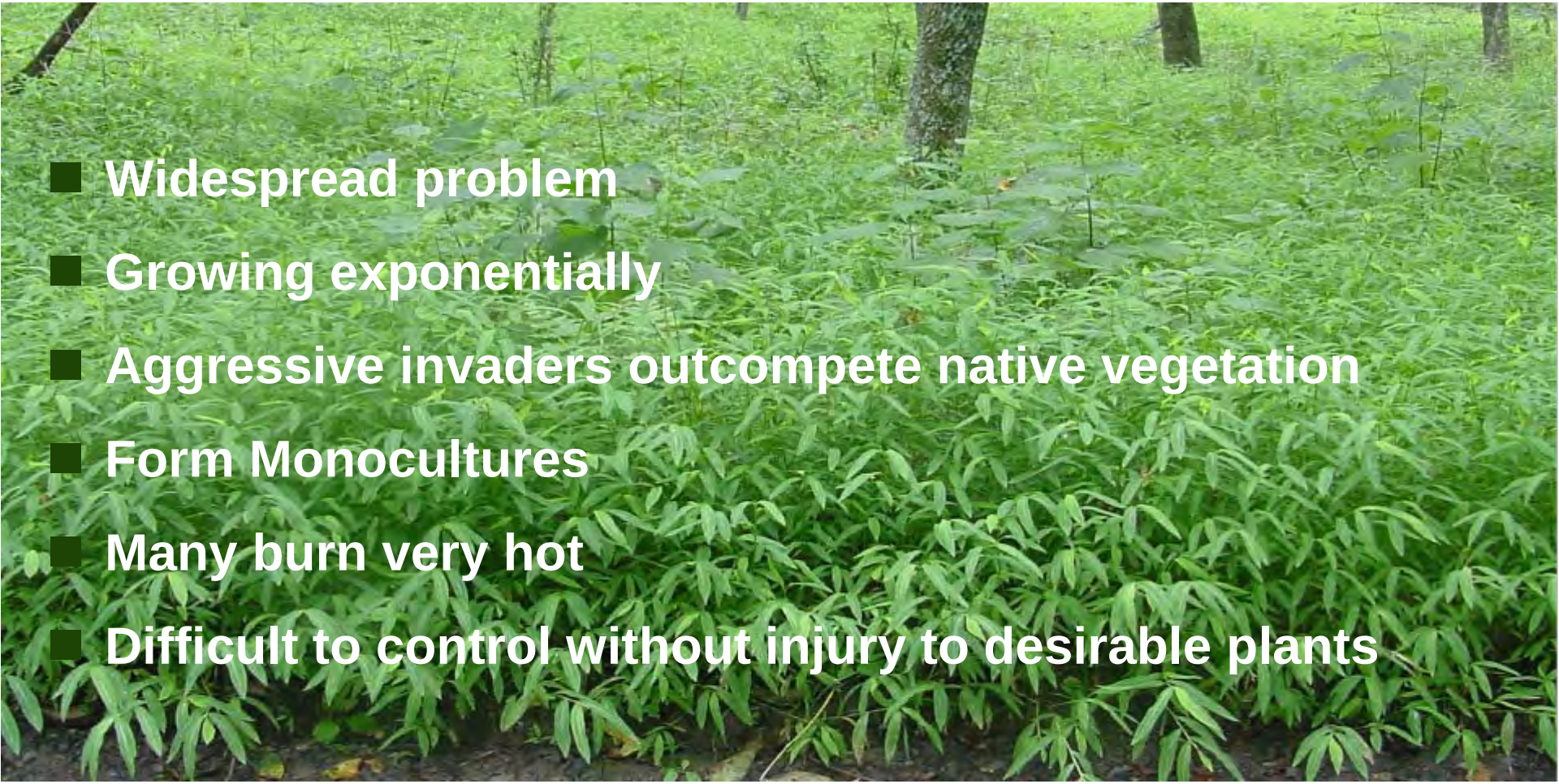
Invasive Species



- Widespread problem
- Growing exponentially
- Aggressive invaders outcompete native vegetation
- Form Monocultures
- Many burn very hot
- Difficult to control without injury to desirable plants

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Invasive Species Management Objectives

- Restore native plant communities
- Enhance resources
- Improve aesthetics
- Improve recreation experience

Key Invasive Species

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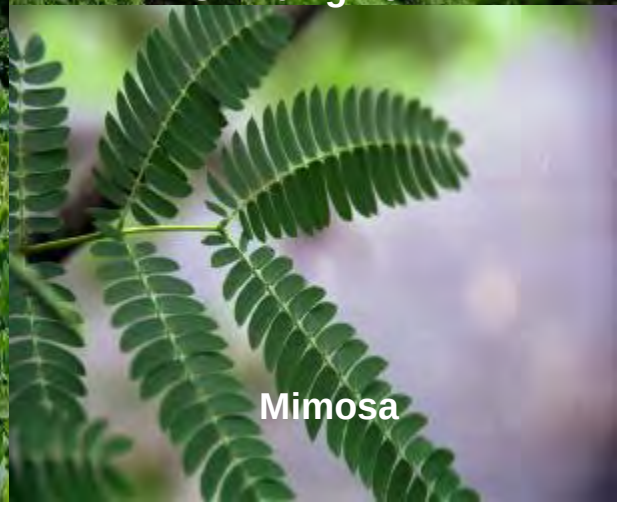
Key Invasive Species



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Key Aquatic Invasive Species

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Threat to Forest Habitat

- Cogongrass

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Threats to Pasture and Rangeland Habitat

- Leafy spurge

- Johnsongrass

Threat to Roadside Habitat

- Japanese knotweed

Threat to Roadside Habitat

- Johnsongrass

3 oz. Plateau + 1 oz. Detail 10 DAT

8 oz. Plateau 1 MAT

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Japanese Stiltgrass Control
Shenandoah NP

Check

6 oz. Plateau
Pre-emergent application

March 28th

Photo May 16th

Garlic Mustard Control

1 MAT

1/8% Detail

Applied June 2017

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Control Invasive Weeds and Release Native Plants

7 oz. Plateau + MSO for Medusahead

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Partners

Conservation, Wildlife and Natural Resource Organizations

Keys To Success

- Manage wisely
- Provide management guidance
- Partner with local wildlife and environmental groups
- Provide landowners incentives and options

Summary

- We have a great wildlife message
  - forest management
  - rights-of-way
  - invasive species

- Early successional habitat is the key
- Share your story

Share the Message

- Vegetation management provides….
  - Increased Timber supply
  - Reliable power
  - Carbon sequestration
  - Roadside safety
  - Improved water quality
  - Better recreation experience
  - Cost savings

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Share the Message

- While improving and increasing wildlife…..
  - Habitat
  - Food quality
  - Shelter
  - Native plants

BASF ProVM Podcasts

- **5 - 7 Minute Podcasts**
  - **Posted on the ProVM website**
  - **Multimedia tab**
  - **Timely subjects**

www.bettervm.basf.us

BASF ProVM Webinars

- **15 – 30 Minutes**
  - **Slides and Audio**
  - **Posted on the ProVM website**
  - **Multimedia tab**
  - **Timely subjects**

www.bettervm.basf.us

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Questions?

Jim Bean
James.bean@basf.com
901-496-2443

Thank You!

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