

Vegetation Management

In Restored Floodplain/Wetland Complexes

Nick Myers, Maintenance Manager.



Importance of Maintenance

- No such thing as “no maintenance”
- Types of Maintenance

Benefits

Challenges

Equipment and Techniques

Other Considerations



Maintenance Misconceptions

Native plant ecosystems **DO** require maintenance; No such thing as “no maintenance”

However, frequency and cost of maintenance is often **reduced** when completed properly

Maintenance Misconceptions



Inadequate Maintenance



- **Establishment Maintenance**
 - Promote desirable species
 - Prevent/suppress undesirable species
 - Critical stage for new sites
- **Preventative or Routine Maintenance**
 - Promote desirable species
 - Prevent/suppress undesirable species
 - Early detection
 - Lower cost?
- **Corrective or Rehabilitative Maintenance**
 - Difficult
 - Common
 - Variable results
 - Variable cost

Importance of Maintenance

Benefits (of scale)

- Ecological
- Economic

Challenges

Equipment and Techniques

Other Considerations



07/29/2014

Landis Homes Senior Living Community



Brubaker Run



X

X

X

Importance of Maintenance

Benefits

Challenges (of scale)

- Budget
- Invasive Species
- Knowledge/Skill Requirements
 - Plant ID
- Tech requirements

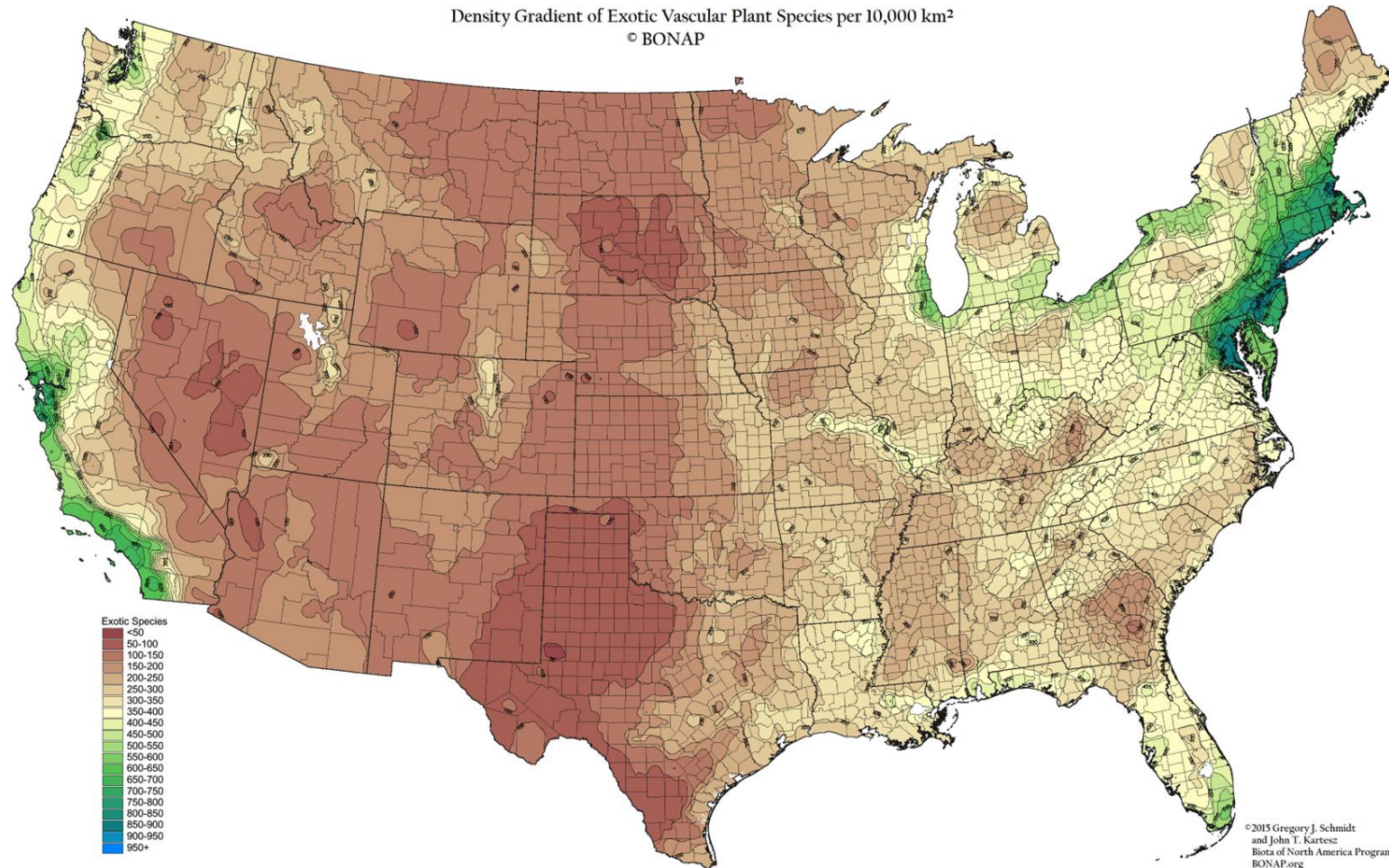
Equipment and Techniques at Scale

Other Considerations

Brubaker Run at Lime Spring Square



Invasive Species



Kartesz, J.T., The Biota of North America Program (BONAP). 2014. North American Plant Atlas.
(<http://bonap.net/napa>). Chapel Hill, N.C.

Specialized Skills

Plant biology and identification

Ecology

Control techniques

Appropriate
herbicide use

Timing

Native Blue Vervain



vs.

Invasive Purple Loosestrife



Treatment based on plant biology: how they spread and store energy

- **Annuals and Biennials**

- Seed

- **Herbaceous Perennials**

- Tubers/bulbs/nutlets
- Fibrous roots
- Tap roots
- Rhizomes/Stolons
- Vines
- Seed
- Fruit
- Vegetative propagation

- **Methods**

- Wind
- Water
- Animals
 - Fur
 - Scat
- People

- **Woody Perennials**

- Seed
- Roots
- Fruit
- Suckering
- Vegetative propagation

Example: Arthraxon hispidus



- Small Carpetgrass or Hairy Joint Grass
- Annual
- Wet sunny sites



Example: Humulus japonicus



- Japanese Hops
- Annual
- Wet sunny sites



Plant ID challenge!

Lesser Celandine
(*Ficaria verna*)

OR

Marsh Marigold
(*Caltha palustris*)



Plant ID challenge!

Japanese
Stiltgrass
(*Microstegium
vimineum*)

OR

Nimblewill
(*Muhlenbergia
schreberi*)



And Typha

T. latifolia (native)

vs.

T. angustifolia
(non-native)

vs.

T. x glauca
(hybrid)



Rob Routledge, Sault College, Bugwood.org

Importance of Maintenance

Benefits

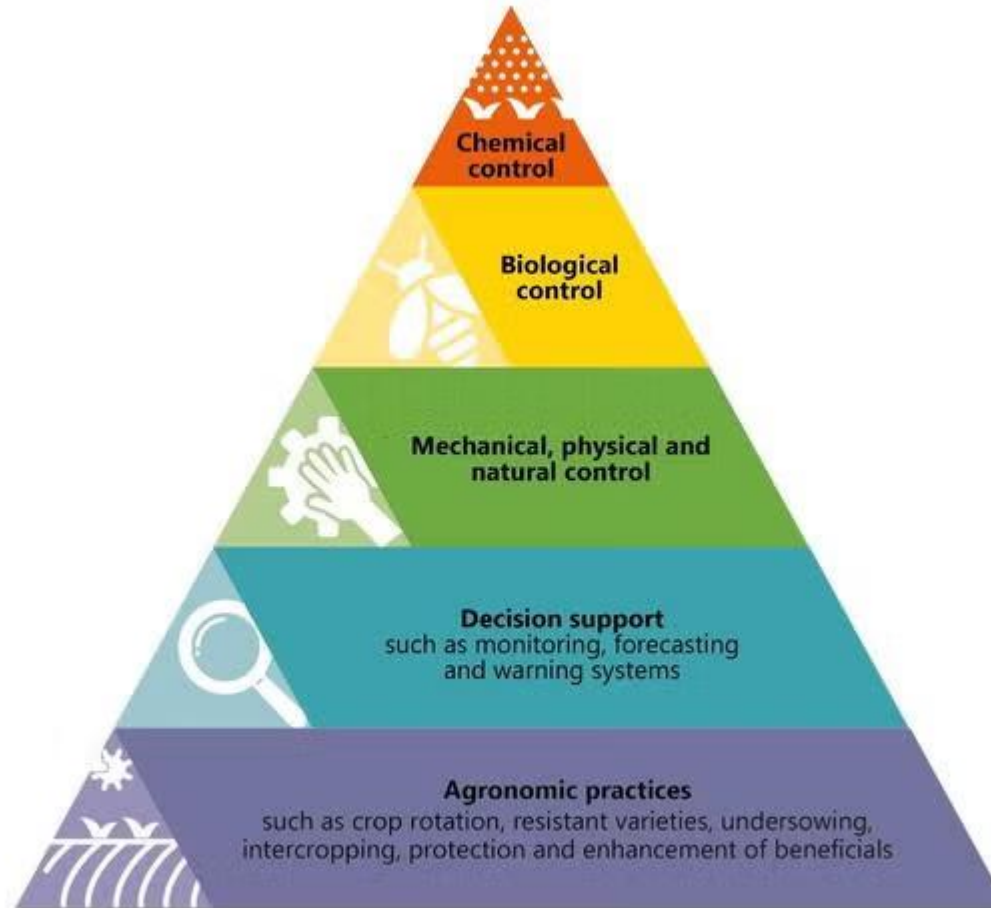
Challenges

Equipment and Techniques

- IVM
- Aggressive natives
- Fire
- Mowing
- Biocontrols
- Herbicide
- Drones
- Stacking Techniques

Other Considerations

Integrated Vegetation Management



<https://www.portland.gov/>

Aggressive Natives



- Pros:
 - Native
 - Self-sustaining
 - Socially acceptable
 - Off-site spread?
- Cons:
 - Unproven
 - Not appropriate for all sites
 - Sourcing?
 - Limited appropriate species



Fire

- Pros:

- Burning things is fun
- Non-chemical
- Ecologically beneficial
 - Promote fire-adapted
 - Damage non-adapted
- Economical?
- Socially “acceptable?”

- Cons:

- Extensive training
- Logistics
- Liability
- Conditions need to be perfect
- Non-selective (plants and animals)
- Disturbance
- Smoke
- Use in wet sites? (RCG & cattail biomass removal)

Mowing





Biocontrols

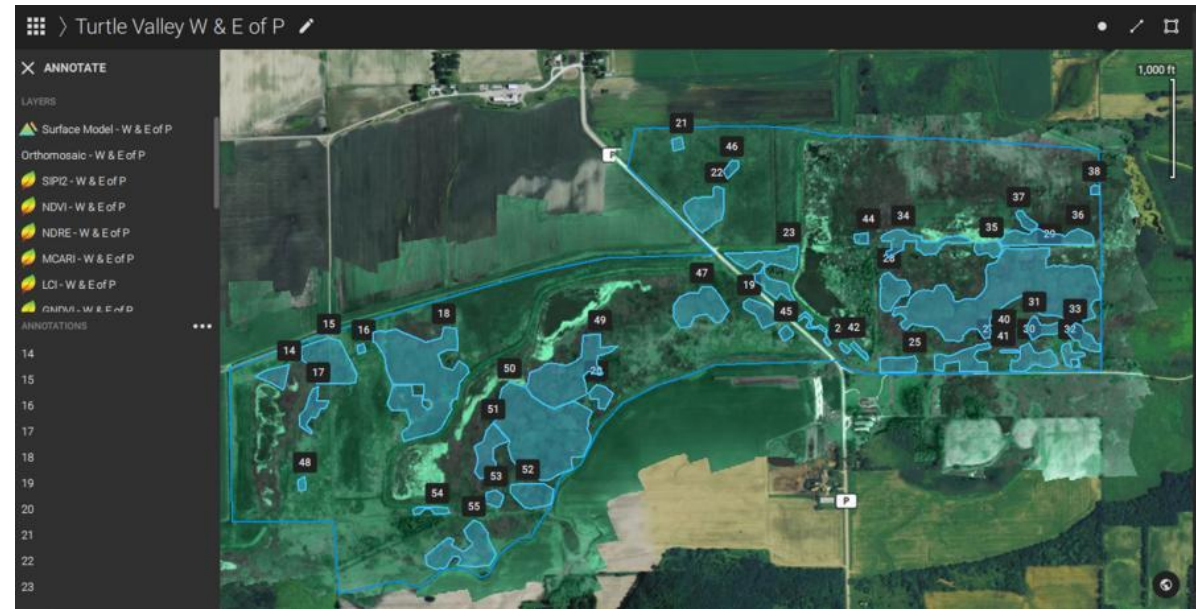
- Pros:
 - Non-chemical
 - Self-sustaining?
 - Socially acceptable
 - Economical?
- Cons:
 - Limited availability
 - Historic failures
 - Few shown to be effective
 - Unlikely to control 100% of target

Herbicide Application



- Pros:
 - Cost-effective
 - Reduced soil disturbance
 - Effective
 - Targeted
- Cons:
 - Public perception
 - Training needs
 - Product limitations
 - Unknown effects

Drones?



Combining Techniques



Importance of Maintenance

Benefits of Scale

Challenges of Scale

Equipment and Techniques at Scale

Other Considerations

- Training
- Monitoring
- Realistic conditions, imperfect decisions
- Trade-offs (time, techniques)
- *Adaptive Management*

Internal Training Programs

Government Agencies (DCNR, NRCS, municipalities)

Non-profits (Conservation groups, etc.)

Private Companies (LandStudies)

Training or Professional Programs

PA Landscape and Nursery Association (PLNA)

Sustainable Landscape Certification (SLC)

www.PLNA.com/page/Sust_Land_Cert

Chesapeake Conservation Landscape Assoc. (CCLC)

Chesapeake Bay Landscape Professional (CBLP)

CBLPro.org

Monitoring Reports (MS4, etc.)

FQAs

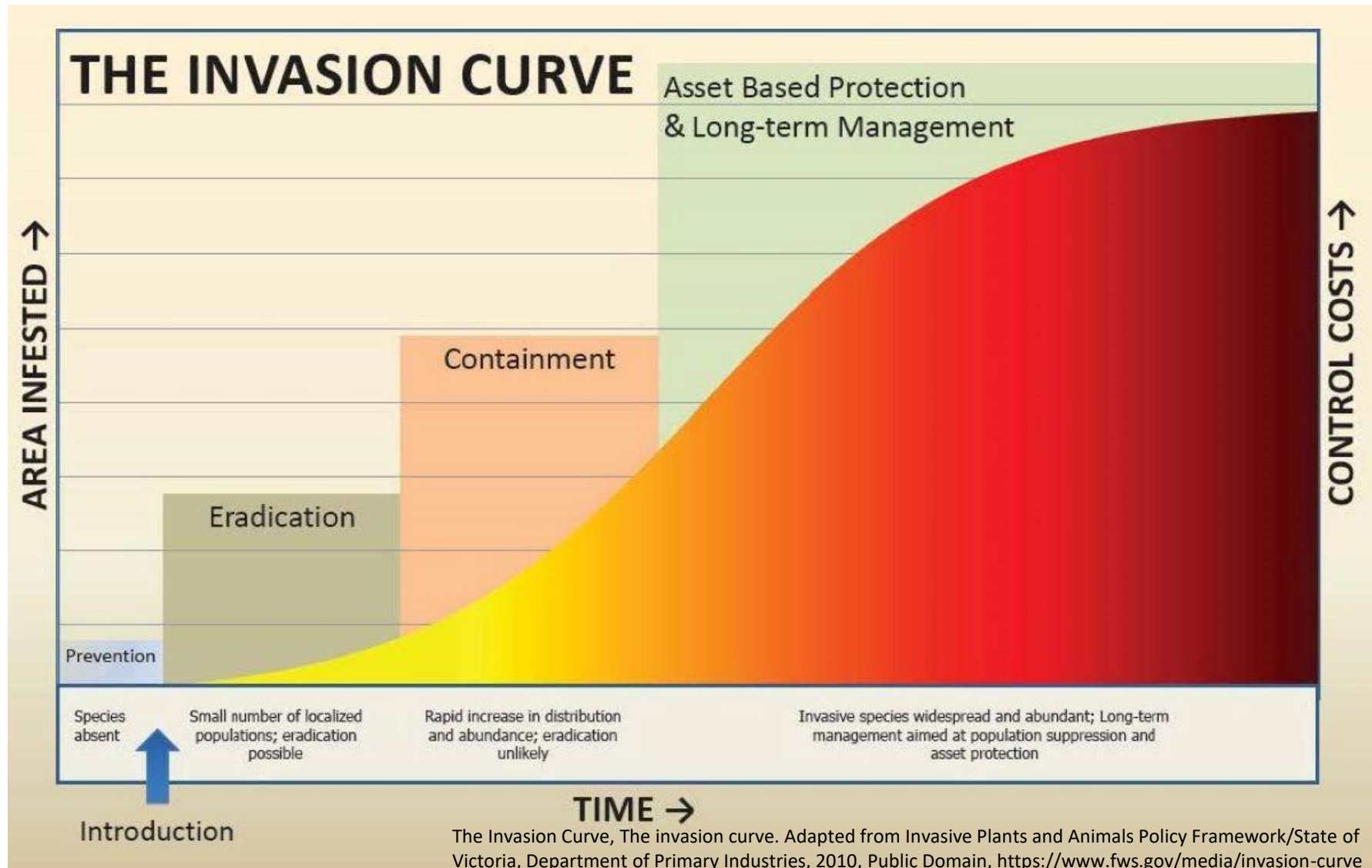
Early Detection

Maintenance Reports

Spray Reports



Early Detection





ArcGIS Survey123




ArcGIS Field Maps

Synchroteam
by nomadia

Stratifyx

go canvas
A NEMETSCHKE COMPANY

Maintenance/Monitoring Report Samples

**Land Studies**
f t in

Site Maintenance Form
315 North St. Lititz, PA 17543
Phone: (717) 627-4440 Fax: (717) 627-4660
www.landstudies.com

No. 00562
Date: 01/05/2021


Project Name:
Sample

Foreman's Name:
Nick Myers

Work Completed
Invasive Plant Control (Herbicide Application)
Invasive Plant Control (Hand Removal)
Debris Removal (Vegetation)
Debris Removal (Trash Cleanup)

Maintenance Notes
Spot sprayed thistle in meadow, picked up trash at grates, pulled weeds in R
1 & 2.


Future Maintenance Needed
All work completed until next maintenance visit

**Land Studies**

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Image 2 Description
Nutsedge

Image 2


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Trade-offs

- Good and bad
- Budget limitations
- Time limitations

Adaptive Management

**Living systems
change over time**

**Maintenance needs
change over time**

**Specialized skills to
manage over time**



*Grater Park Wetland
Ephrata PA*



Realistic conditions, Imperfect decisions

- The reality is that most sites are not pristine. In fact, because waterways are wonderful corridors for invasives, finding one where management decisions are simple and maintenance isn't a challenge are a rarity. We are often starting with Corrective/Rehabilitative Maintenance.
- Use the best knowledge you have about the site (goals, budget, species present) to make the best decision you can, knowing that there may be setbacks and unforeseen circumstances.

Questions?

