



Parks & Recreation  
CITY OF ANN ARBOR

# Integrated Pest Management City of Ann Arbor

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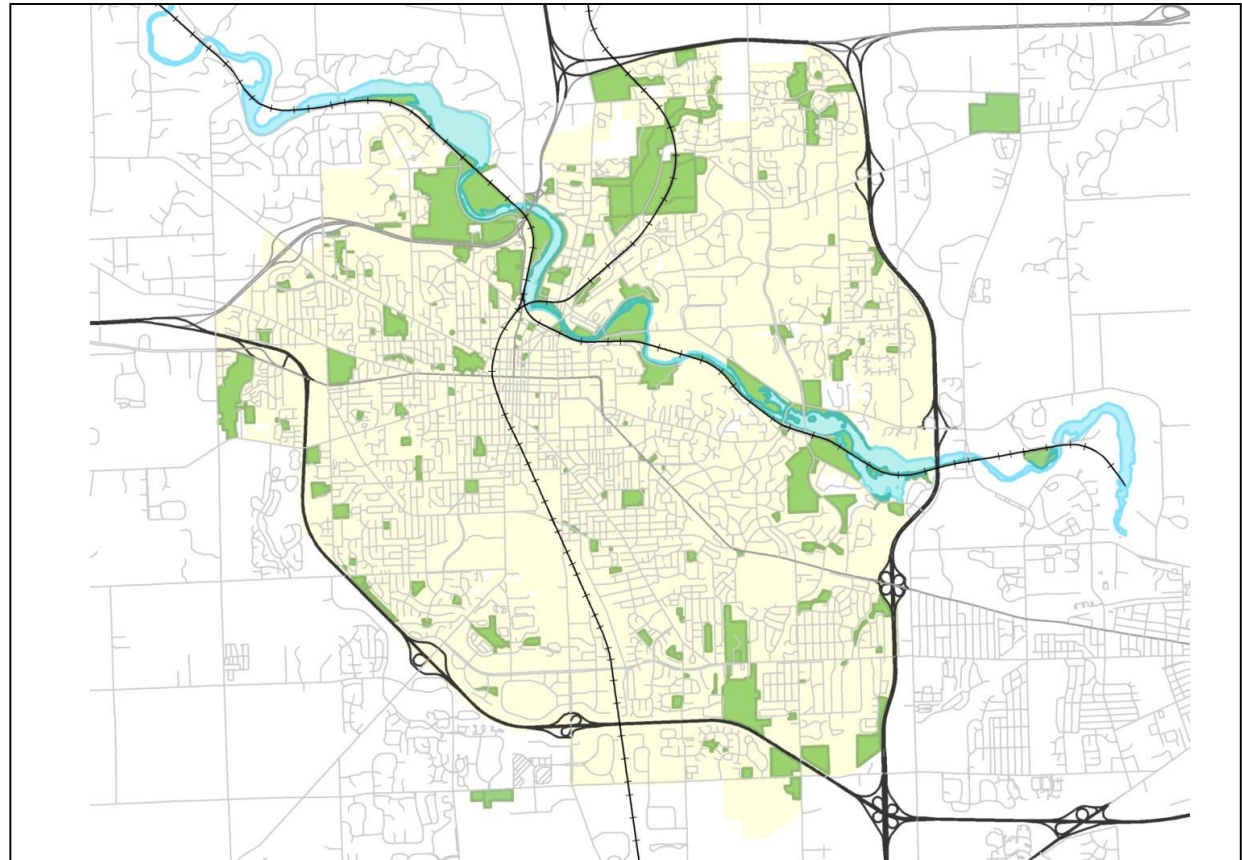
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# Ann Arbor Parks

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- **163 Parks**
- **2,188 acres**



# Ann Arbor Parks and Nature Areas

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# Pests in our Parks

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Any noxious/invasive plant, problem insect, plant disease, rodent, nematode or microorganism that is detrimental to the environment or the management plan for the selected park or facility.



# What is IPM?

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**Integrated Pest Management** – A long-term pest management system that uses all suitable techniques for the prevention or suppression of pests that are harmful to the health, function or aesthetic value of City-owned landscapes, buildings and facilities in an efficient, effective and environmentally responsible manner. We can accomplish this through accurate pest identification, by frequent monitoring for pest presence, by applying appropriate action thresholds and by making the habitat less conducive to pests using mechanical, cultural, physical and biological controls.



# What is IPM?

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## Integrated Pest Management

### 1. Prevention



# What is IPM?

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## Integrated Pest Management

1. Prevention
2. Mechanical Controls



# What is IPM?

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## Integrated Pest Management

1. Prevention
2. Mechanical Controls
3. **Cultural Controls**





# What is IPM?

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## Integrated Pest Management

1. Prevention
2. Mechanical Controls
3. Cultural Controls
4. **Physical Controls**




# What is IPM?

## Integrated Pest Management


1. Prevention
2. Mechanical Controls
3. Cultural Controls
4. Physical Controls
5. Biological Controls

THE ITTY BITTY...  
**PURPLE PLANT EATER**




**LOOSESTRIFE BEETLE**  
Purple Loosestrife is an alien plant which is choking out our native wetland plant & animal species. A tiny beetle, with a name longer than it is, may be our only hope to stop the spread of the deadly purple plant. *Galerucella* is a leaf-eating beetle from Europe - where the Loosestrife is from originally. They feed only on Purple Loosestrife and will not eat other plants.  
The Marshlands Museum & Nature Center is part of a project sponsored by Michigan State University & Sea Grant to raise and release the beetles. They will control the Loosestrife and give native plants a chance to compete.  
Take a look at some of the beetles we are raising.

**WHAT YOU SEE**




**FEEDING LARVAE**  
The hungry yellow larvae feed on the stem & leaves for three weeks until they are about 1/4 in. long. They have three tiny pair of legs and a big appetite.

**WHAT YOU DON'T SEE**



**EGGS**  
A female beetle can lay up to 500 tiny eggs. She lays them in small clusters & attaches a bit of feces to each one.

**PUPAE**  
When the larvae reaches full size, it burrows into the soil and pupates. The new adults emerge in a few weeks.



# What is IPM?

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## Integrated Pest Management

1. Prevention
2. Mechanical Controls
3. Cultural Controls
4. Physical Controls
5. Biological Controls
6. **Innovative Solutions**

- **Goats at Gallup**

Goats cleared two of Gallup Park's islands in summer of 2019

- **Vinegar Spray**

1 gal. household vinegar : 1 cup of table salt : 1 tsp dish detergent

- **Buckthorn Baggies**

Non-chemical solution to killing invasive shrubs piloted by NAP in two parks with ~75% success rate



# What is IPM?

## Integrated Pest Management

1. Prevention
2. Mechanical Controls
3. Cultural Controls
4. Physical Controls
5. Biological Controls
6. Innovative Solutions
7. **Chemical Controls**



# What is IPM?

## Integrated Pest Management

1. Prevention
2. Mechanical Controls
3. Cultural Controls
4. Physical Controls
5. Biological Controls
6. Innovative Solution
7. Chemical Controls
8. **Evaluation**

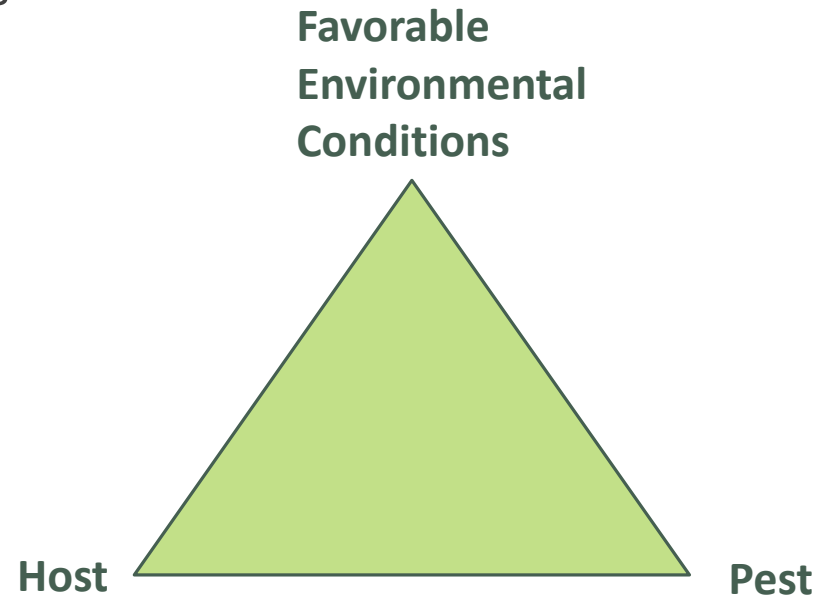


# IPM – Golf Courses

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## Guidelines

- Employ sound cultural practices
- Select thresholds
- Scout and monitor
- Accurately identify problem & management strategy
- Proper timing
- Evaluate results
- Keep records



# IPM – Golf Courses

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Compared to other 100% weed/disease free golf courses, LPGC and HHGC have a higher tolerance for weeds and turf diseases

## ★ Cultural Practices

- Constant mowing
- Rolling
- Sand-top dressing
- Vertical mowing
- Dew removal
- Plugging

AUDUBON  
INTERNATIONAL



Certified Audubon Cooperative Sanctuary



# Case Study: Stiltgrass

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Stiltgrass is a **highly aggressive** invasive species that has ravaged many forests in parts of the southeastern US

- First documented in MI just west of Ann Arbor, 2016
- Displaces native vegetation
- Takes away resources for wildlife
- By 2018, it had reached the west edge of the city, at the Botsford Preserve





# Stiltgrass – Impacts

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Stiltgrass is an aggressive invader that has just arrived in the region, failing to quickly and effectively control it would pose a serious threat to our natural areas.



Photo: Chris Evans, University of Illinois



Photo: Leslie J. Mehrhoff, University of Connecticut

# Stiltgrass – IPM Approaches

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First thing: Form a Stiltgrass Working Group



Jackson Lenawee Washtenaw Cooperative Invasive Species Management Area



*The Stewardship Network*  
Connect to Conserve

**Plus private landowners!**

# Stiltgrass – IPM Approaches

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Control efforts tried:

1. Burning with propane torches to kill young plants in July  
Slow and inefficient



# Stiltgrass – IPM Approaches

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Control efforts tried:

1. Burning with propane torches to kill young plants in July
2. **Prescribed fires**  
Spring is too early; fall is too late



# Stiltgrass – IPM Approaches

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Control efforts tried:

1. Burning with propane torches to kill young plants in July
2. Prescribed fires
3. **Hand-pulling**  
Slow and inefficient



# Stiltgrass – IPM Approaches

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Control efforts tried:

1. Burning with propane torches to kill young plants in July
2. Prescribed fires
3. Hand-pulling
4. **Mowing**  
Not effective; spreads the plant



# Stiltgrass – IPM Approaches

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Control efforts tried:

1. Burning with propane torches to kill young plants in July
2. Prescribed fires
3. Hand-pulling
4. Mowing
5. **Goats**  
no assurance that they would target this species; concern that they would spread seeds, as deer now do



# Stiltgrass – IPM Approaches

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Control efforts tried:

1. Burning with propane torches to kill young plants in July
2. Prescribed fires
3. Hand-pulling
4. Mowing
5. Goats
6. **Grass-specific herbicides**  
Too slow-acting



Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



# Stiltgrass – IPM Approaches

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Control efforts tried:

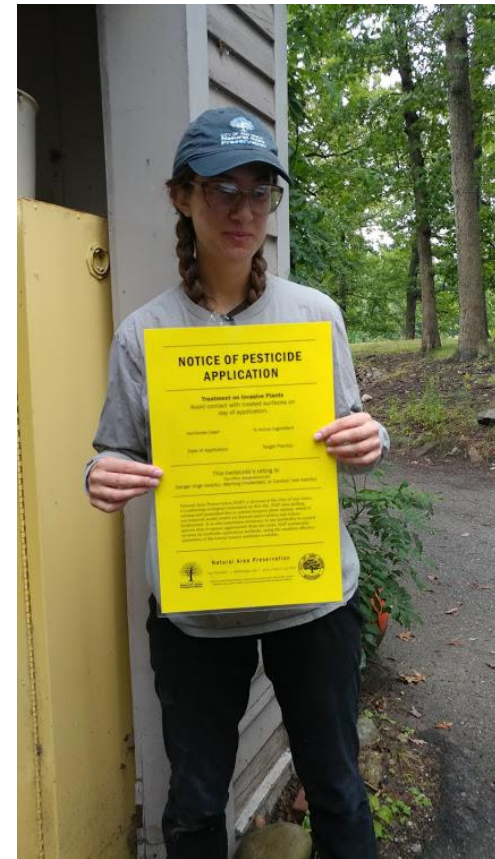
1. Burning with propane torches to kill young plants in July
2. Prescribed fires
3. Hand-pulling
4. Mowing
5. Goats
6. Grass-specific herbicides
7. **Weak solution of glyphosate**  
killing non-target species  
AND resistance issues



# Stiltgrass – IPM Approaches

**Chemical solution:** Scythe  
“contact herbicide”

- Non-systemic. Only “burns” the foliage
- Long-term impacts on **annuals** only
- More effective and efficient control method than any of the non-herbicide methods



# Case Study: Poison Ivy

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Poison ivy control near paths and structures in the parks



# Poison Ivy – IPM Approaches

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Control efforts tried:

1. Hand-pulling (summer)  
Causes rash



# Poison Ivy – IPM Approaches

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Control efforts tried:

1. Hand-pulling (summer)
2. **Hand-pulling (winter)**  
Slow and inefficient.  
(can still cause rash)



# Poison Ivy – Chemical Solution

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## **Chemical solution:** Glyphosate

Translocated to roots, kills whole plant

## Without Glyphosate:

- Park users and staff would be subject to the rash that comes from contact with this plant
- Some park users can be very vocal about removing this plant



Photos from MSU Extension

# Herbicides We Use – Golf Courses

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## Mirimichi Green Pro Weed Control

(Ammonia-based alternative to Glyphosate):

Non-specific, *Warning*

- **HOW:**
  - Foliar spray applied with backpack sprayers  
Clovers and dandelions
- **WHEN:** late summer/fall
- **WHERE:** high quality areas such as greens, tees, and fairways
- **HOW MUCH:** 10 gal concentrate/year



# Herbicides We Use – Golf Courses

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## Clopyralid (Lontrel):

Broadleaf specific, *Warning*

- **HOW:**
  - Foliar spray applied with backpack sprayers  
Clovers and dandelions
- **WHEN:** late summer, fall
- **WHERE:** high quality areas such as greens, tees, and fairways
- **HOW MUCH:** 0.5 gal concentrate/year



Photo from MSU Extension



# Herbicides We Use – Park Maintenance

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## Three product combination of 2,4-D Acid, Clopyralid, and Dicamba (15-0-8 with Millennium Ultra)

Broad spectrum, *Caution*

- **HOW:**
  - Foliar Spray,  
Weeds in turf grass
- **WHEN:** once a year, in the fall
- **WHERE:** Baseball/softball and soccer fields – only those we rent
- **HOW MUCH:** <1oz/1000 sq. ft.
  - (on 3.7% of total mowed fields)



Photo from Ann Arbor Soccer Association

# Herbicides We Use – Park Maintenance + NAP

## Glyphosate

(Rodeo, AquaNeat – water approved):  
Broad spectrum, *Caution*

- **HOW:**

- Sponge applicator to cut stumps,  
27% A.I. solution  
Woody: buckthorn, honeysuckle...

- Hand wick and spot treat,  
2-5% A.I. solution  
Herbaceous: purple loosestrife,  
Canada thistle, teasel, Phragmites...

- **WHEN:** May - February
- **WHERE:** City parks and nature areas,  
highly used areas (A2 Fix-It)
- **HOW MUCH:** 7 gal concentrate/year



# Herbicides We Use - NAP

**Pelargonic Acid** (Scythe):  
Broad spectrum, *Warning*

- **HOW:**
  - Foliar spray applied with backpack sprayers,  
5-10% A.I. solution  
Japanese Stiltgrass
- **WHEN:** Mid-July through mid-September
- **WHERE:** Botsford Preserve
- **HOW MUCH:** 1/2 gallon used in a typical year



# Herbicides We Use - NAP

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## Triclopyr

(Garlon 3A, Element 3A, Pathfinder II):

Broadleaf specific, *Danger*

- **HOW:**

- Basal bark application, 13.6% A.I. solution

Woody: black locust and tree of heaven

- Hand-wicking and/or spot treating,

2-4% A.I. solution

Herbaceous plants: sweet pea, Canada thistle, leafy spurge, Asian bittersweet, Vinca, English ivy...

- **WHEN:** all year

- **WHERE:** City parks and nature areas

- **HOW MUCH:** 5 gal concentrate/year



# Herbicides We Use - NAP

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## Imazapyr

(Arsenal, Habitat – water approved):

Broad spectrum, *Caution*

- **HOW:**
  - Spot treating, .75% A.I. solution  
Japanese knotweed
  - Cut and treat, 2% A.I. solution  
Japanese knotweed
- **WHEN:** August-September
- **WHERE:** small patches and mature stands of knotweed
- **HOW MUCH:** <10 oz. concentrate/year



# IPM keeps our natural areas beautiful and ecologically functional

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# Thank you!

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**Parks & Recreation**  
CITY OF ANN ARBOR



CITY OF ANN ARBOR  
**Natural Area  
Preservation**



**HURON HILLS**  
GOLF COURSE

