



# *White-tailed Deer in Mill Creek MetroParks Part I*

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*Last Edited: 02/10/23*

The following presentation outlines;

- Mill Creek MetroParks:
  - Our Mission
  - Our Master Plan
  - Our Facilities
- White-tailed Deer in MCMP
  - Visual Confirmation
  - Historical Data
  - Current Data
  - Carrying Capacity
  - Critical Impacts
  - We Are Not Alone
  - How to Learn More
- Q& A Session



*Presentation Overview*

# Mission Statement

The mission of Mill Creek MetroParks is to provide park, recreational, educational and open space facilities of regional significance. In fulfilling this mission our objectives are:

- To be responsive to community needs
- To be environmentally sound
- To be adaptable
- To be economically feasible

Link to Mission Statement:

<http://www.millcreekmetroparks.org/contact/about/mission-statement/>



***MCMP: Our Mission***

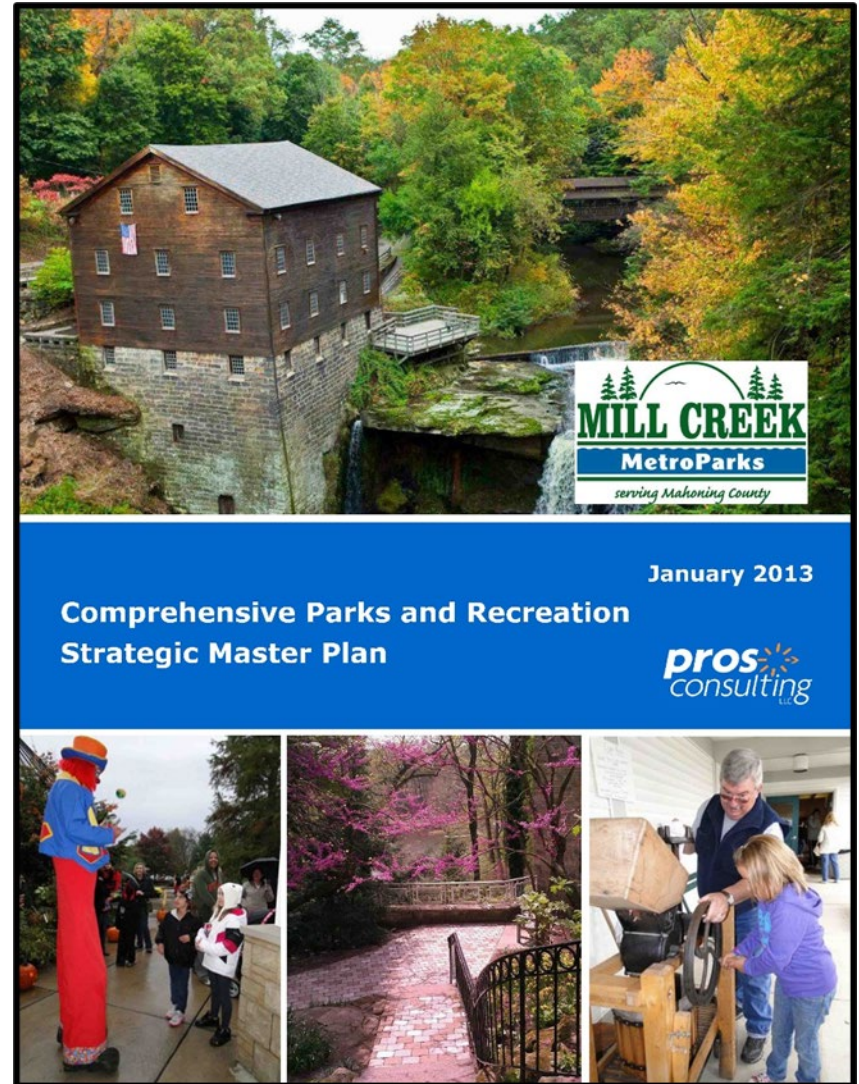


# Strategic Master Plan

- Community Engagement
- Stewardship
- Our People
- **Natural Resources**
- Recreation & Education
- Infrastructure

Link to Strategic Master Plan:

<http://www.millcreekmetroparks.org/wp-content/uploads/2013/11/Mill-Creek-MetroParks-Strategic-Master-Plan-FINAL.pdf>

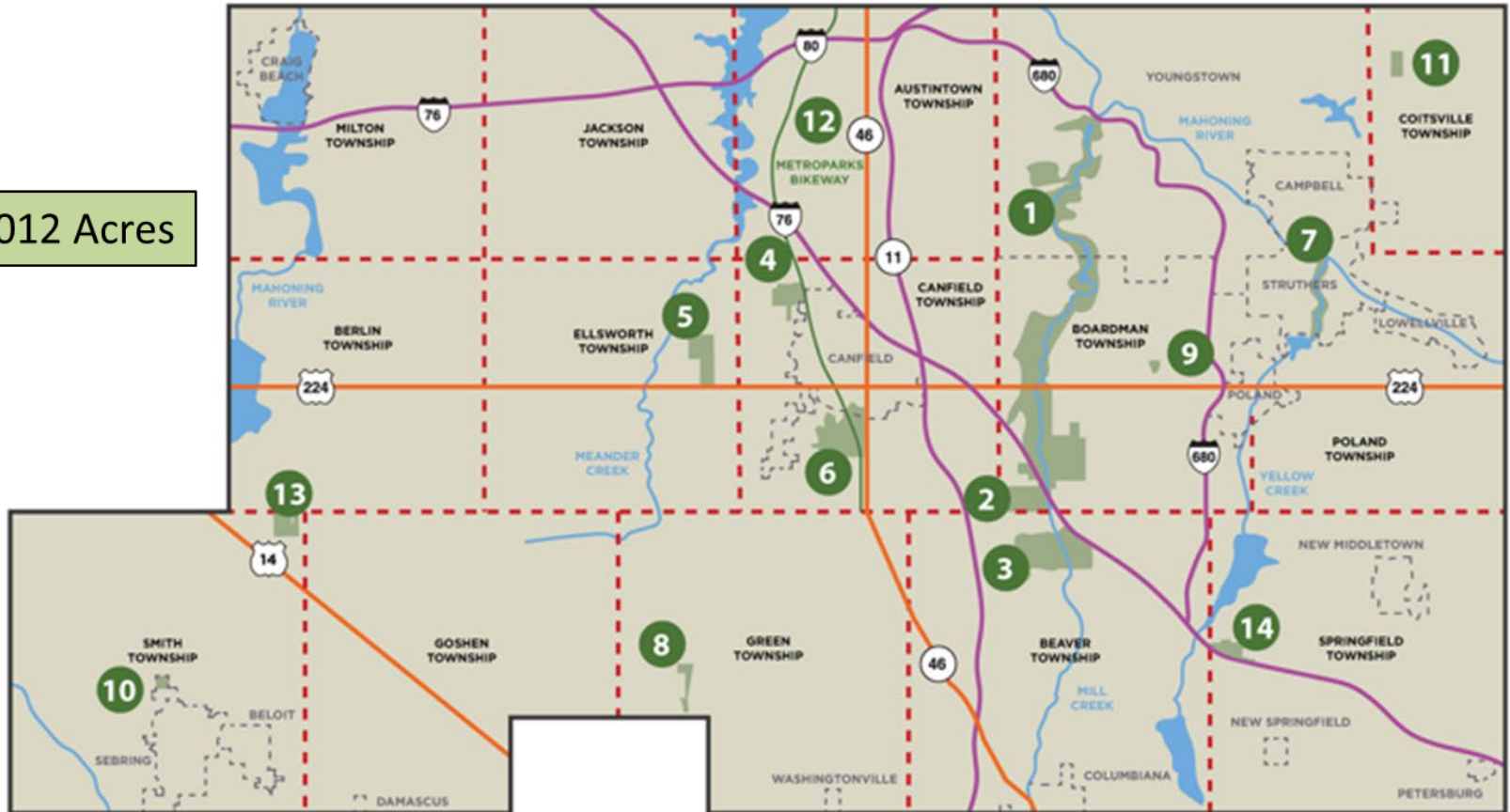


***MCMP: Our Master Plan***

[millcreekmetroparks.org](http://millcreekmetroparks.org)



5,012 Acres



- |                                  |  |                                |
|----------------------------------|--|--------------------------------|
| 1. MILL CREEK PARK               | 6. METROPARKS FARM/METROPARKS ADMINISTRATION | 11. MCGUFFEY WILDLIFE PRESERVE |
| 2. MILL CREEK PRESERVE           | 7. YELLOW CREEK PARK                         | 12. METROPARKS BIKEWAY         |
| 3. MILL CREEK WILDLIFE SANCTUARY | 8. EGYPT SWAMP PRESERVE                      | 13. HAWKINS MARSH              |
| 4. SAWMILL CREEK PRESERVE        | 9. CRANBERRY RUN HEADWATERS                  | 14. SPRINGFIELD FOREST         |
| 5. VICKERS NATURE PRESERVE       | 10. SEBRING WOODS                            |                                |



***MCMP: Our Locations***

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*Presentation Overview*





























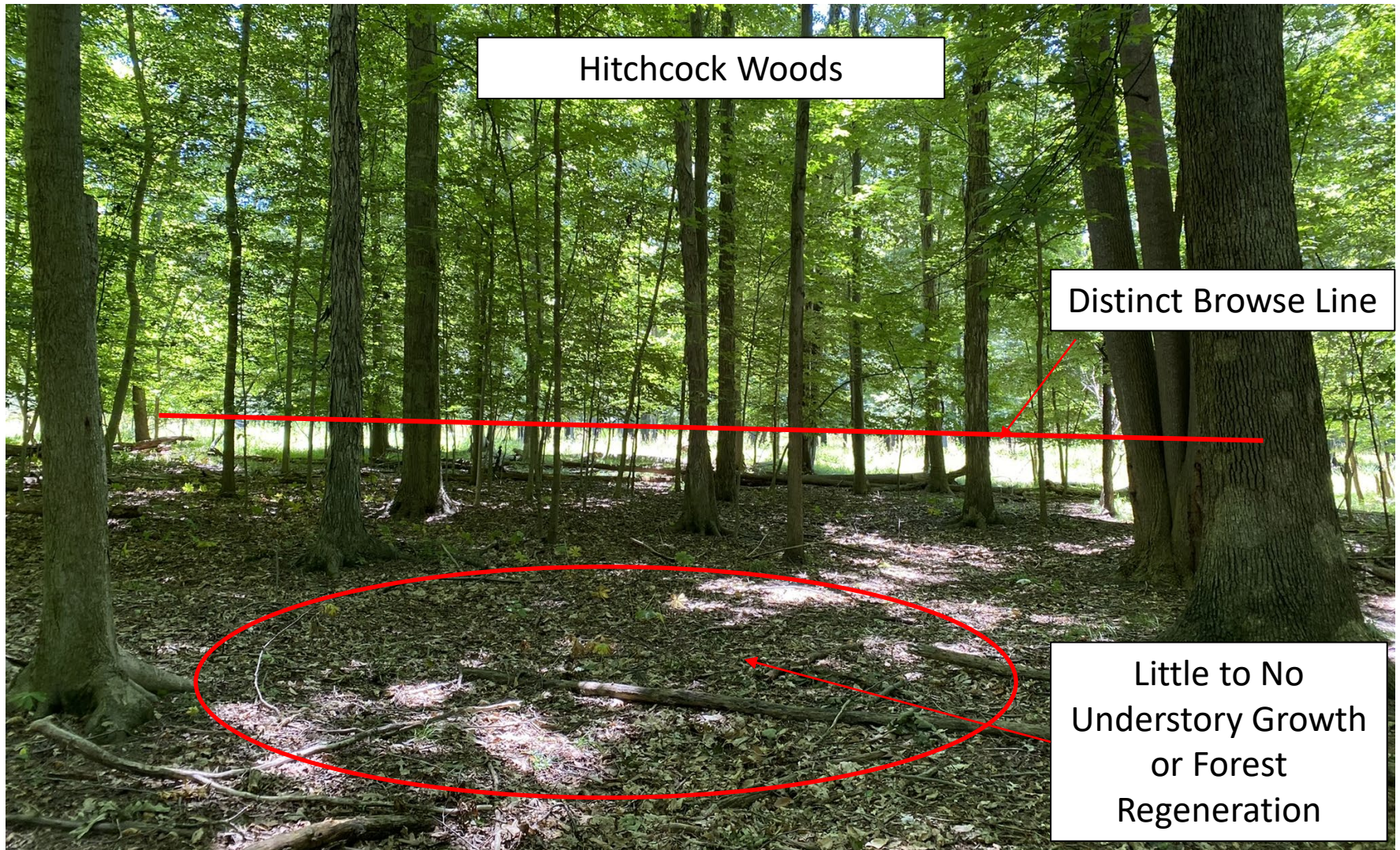




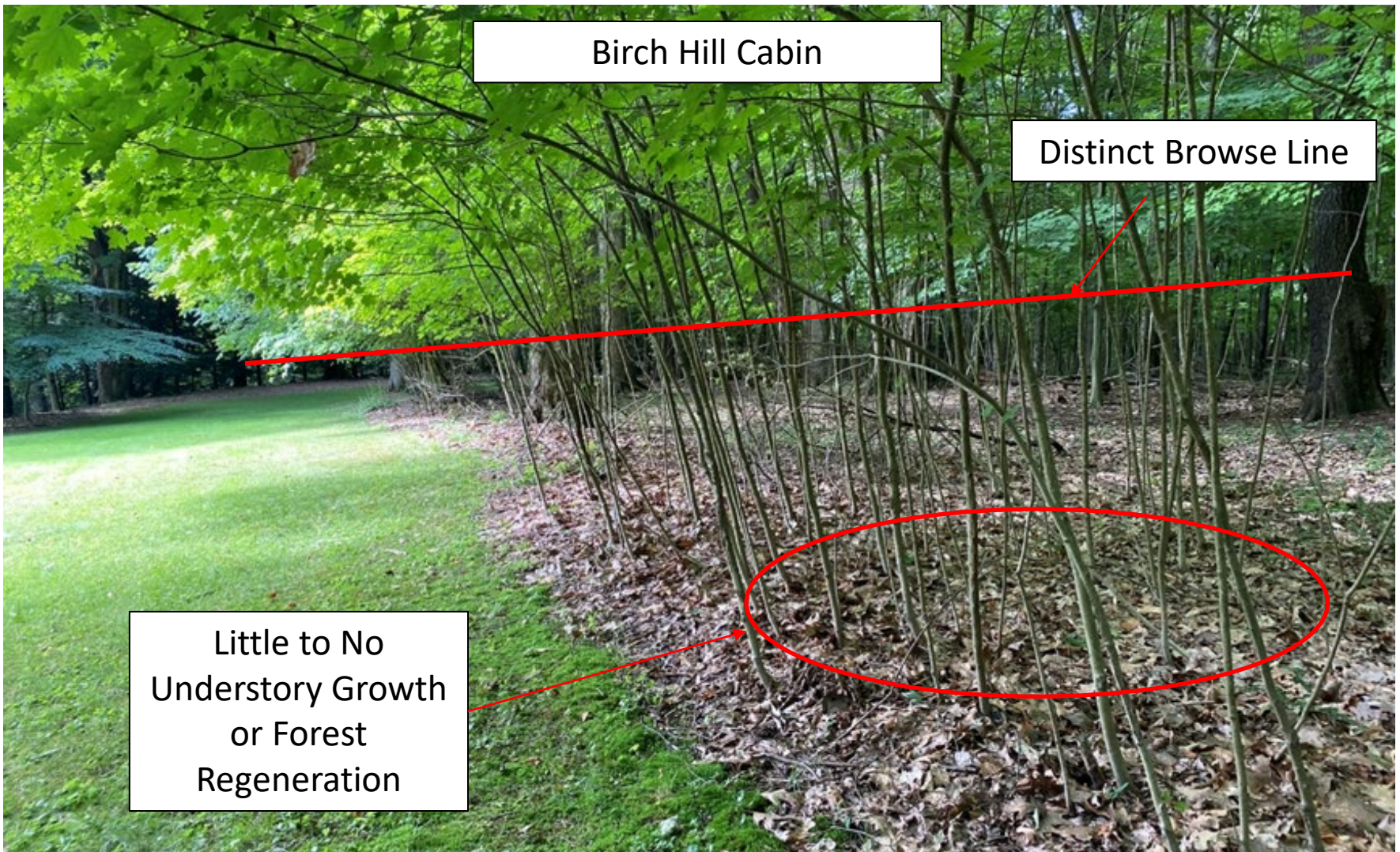












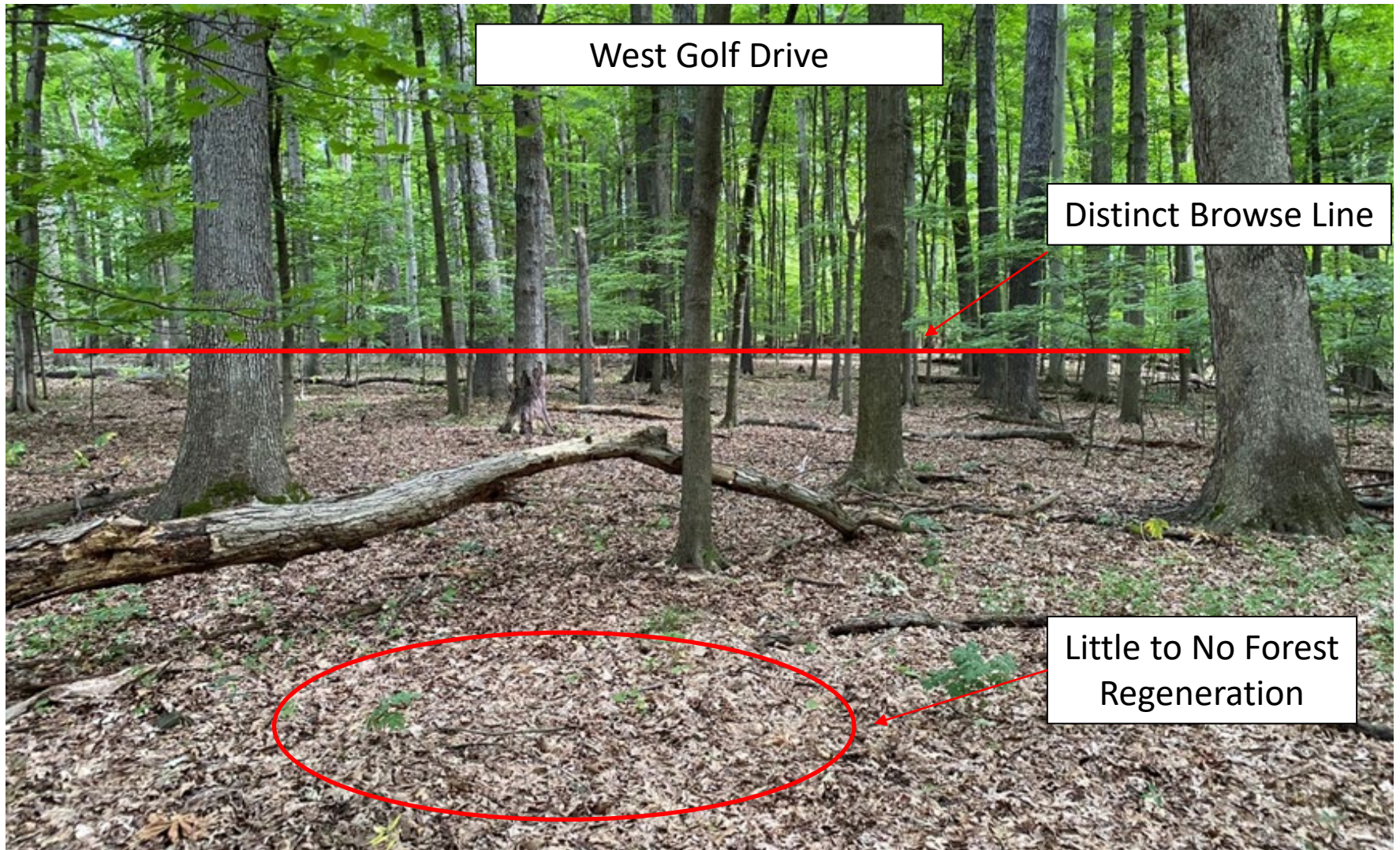




Scholl Recreation Area

Distinct Browse Line







# Historical Aerial Survey Data

*Survey Area – Mill Creek Park (South of Shields Rd.), Huntington Woods, and Hitchcock Woods (~1660 Acres or 2.59 Sq Mi)*

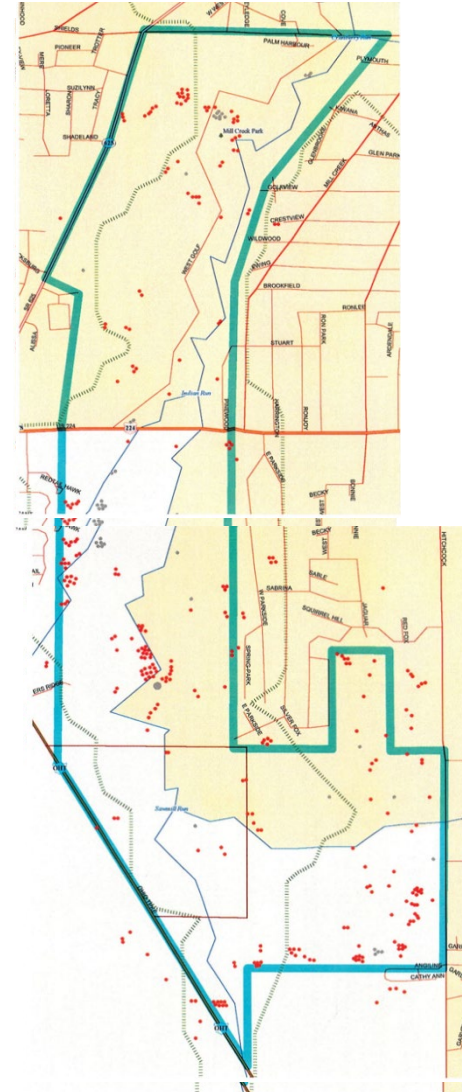
The MetroParks commissioned eleven (11) aerial surveys between February 1997 and January 2002 using both helicopter and fixed wing aircraft.

February 7, 2000 – Fixed Wing Aircraft (Infrared)

- 255 Deer Detected = 98.4 Deer/Mi<sup>2</sup>

Recommended Population Densities Are 10-20 Deer/Mi<sup>2</sup> to Remain Below Ecological Carrying Capacity

No Aerial Survey Data Available from January 2002 – January 2022



***Deer in MCMP: Historical Data***



## Deer Exclosure:

Deer-proof exclosures are a common tool used to gauge the effects of browse pressure on forest regeneration and overall biodiversity by examining vegetation growth inside vs. outside of the exclosure.

A deer exclosure was erected in Hitchcock Woods in ~2000 but fell into disrepair over the following decades and was not refurbished until 2018.

A clear difference can be seen in the density and height of understory vegetation inside the deer exclosure.



## ***Deer in MCMP: Historical Data***

## Helicopter Survey:

In partnership with USDA Wildlife Service, an aerial helicopter survey was attempted in 2020, but was not performed due to the lack of suitable weather conditions. This survey method is conducted during the day and documents visual observations of deer with the naked-eye which requires adequate snow cover during relatively tight time-windows.

While considered a viable survey method, the MetroParks decided conducting an aerial survey which utilizes FLIR infrared technology would provide the most accurate and comprehensive data, an aerial infrared survey is less dependent upon weather conditions and timing.



## ***Deer in MCMP: Current Data***



## Roadway Infrared Survey:

In partnership with USDA Wildlife Services, roadway infrared surveys were completed in 2021 and 2022, which utilized FLIR imaging technology from a vehicle along roadways in Mill Creek Park.

This method was trialed as a cost-effective survey option, but was deemed unsuccessful due to multiple factors – these include:

- Limited vehicle accessibility to some areas of the Park.
- Limited visibility from the roadway due to topography.
- Requiring vehicular access, this method would not be applicable outside of Mill Creek Park.



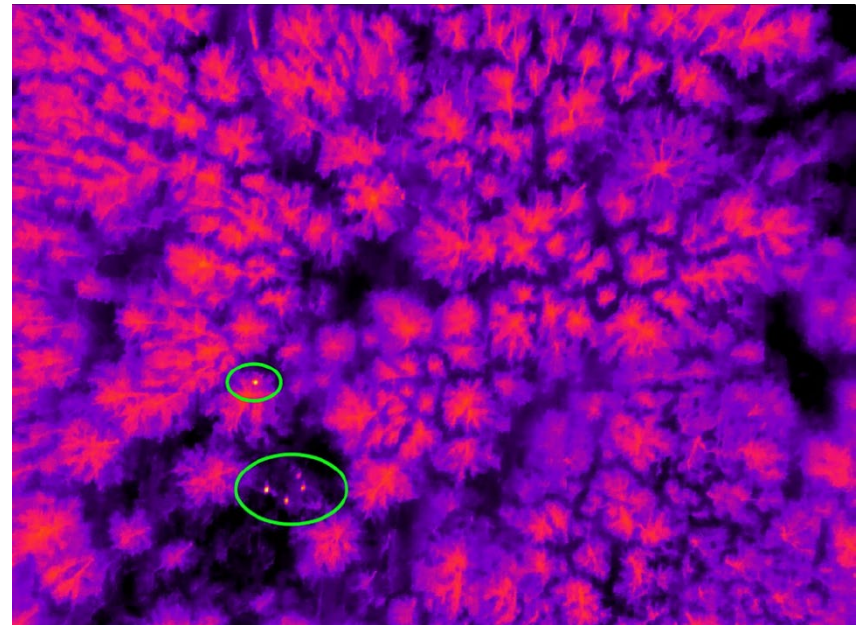
***Deer in MCMP: Current Data***



# Aerial Infrared Survey:

In 2022, an aerial infrared survey was conducted on January 21<sup>st</sup> (Central Area) and January 26<sup>th</sup> (Regional Facilities) utilizing FLIR thermal imaging technology mounted to a fixed-wing aircraft.

- Snow Cover on Ground
- Sub 10 Degree Temperatures
- Lowest Possible Flight Altitude for Increased Resolution and Accuracy
- Total Survey Area Included (8,908) Acres.
- Survey Area Included All MCMP Properties Plus a ~400' Buffer.
- Confidence Interval  $\geq 85\%$



\*Survey Footage is Reviewed in Video Format from Multiple Angles to Provide Increased Accuracy



## ***Deer in MCMP: Current Data***



# Aerial Infrared Survey: Hitchcock Woods

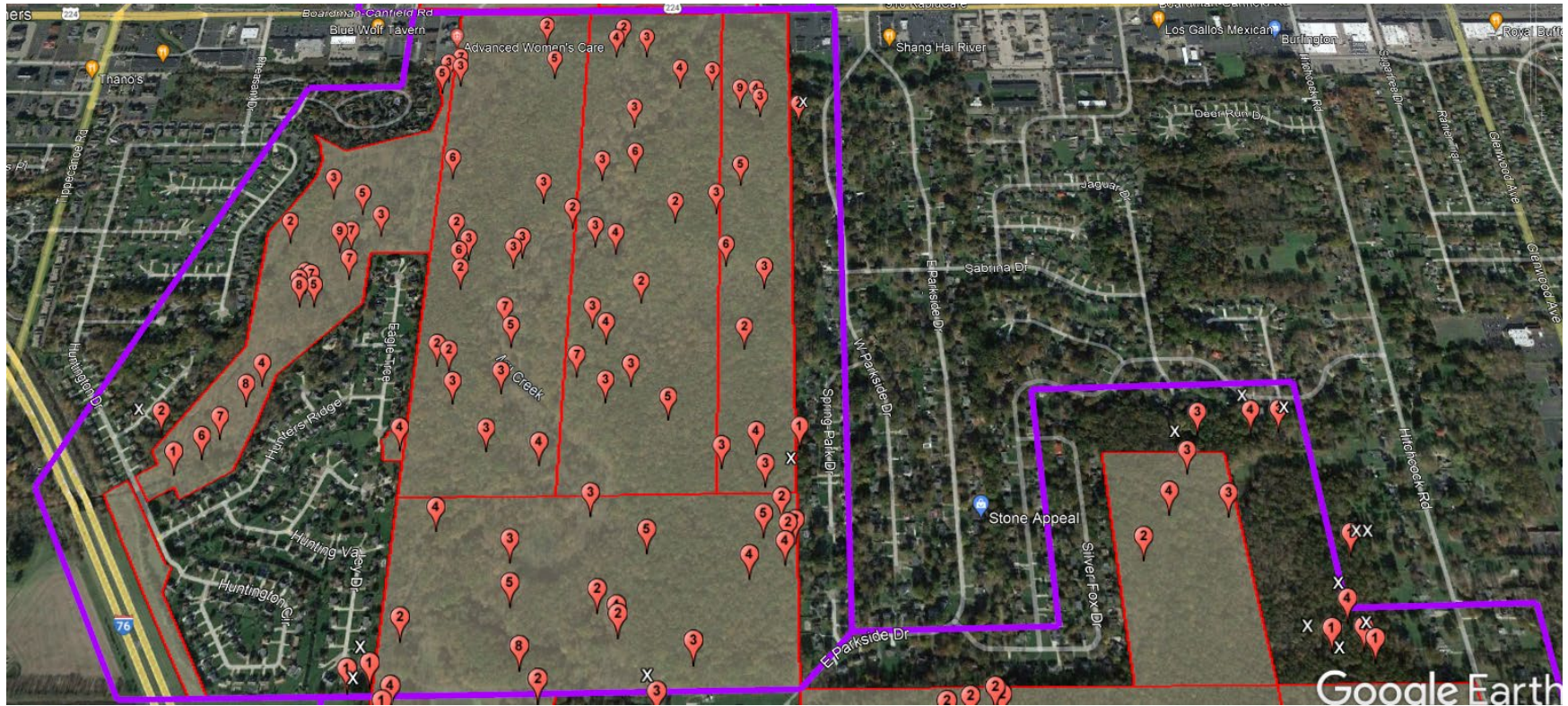


- Each Pin Represents a Heat Signature Consistent with that of a Deer with a Confidence Interval  $\geq 85\%$
- The Number Inside Each Pin Indicates the Number of Heat Signatures Present
- Pins Marked With "X" Fall Outside MCMP Boundaries but Within the ~400' Buffer Area
- Pins Marked With "XX" Fall Outside of the Buffer Area

**689 Acres Surveyed (1.06 Mi<sup>2</sup>)**  
**429 Deer Detected**  
**398 Deer/Mi<sup>2</sup>**



# Aerial Infrared Survey: Huntington Woods



- Each Pin Represents a Heat Signature Consistent with that of a Deer with a Confidence Interval  $\geq 85\%$
- The Number Inside Each Pin Indicates the Number of Heat Signatures Present
- Pins Marked With "X" Fall Outside MCMP Boundaries but Within the ~400' Buffer Area
- Pins Marked With "XX" Fall Outside of the Buffer Area

**383 Acres Surveyed (0.60 Mi<sup>2</sup>)**  
**354 Deer Detected**  
**592 Deer/Mi<sup>2</sup>**



- 1626 Acres Surveyed (2.54  
Mi<sup>2</sup>)**  
**903 Deer Detected**  
**355 Deer/Mi<sup>2</sup>**  
**(MCP Totals)**





# Aerial Infrared Survey: Shields Road to SR 62



- Each Pin Represents a Heat Signature Consistent with that of a Deer with a Confidence Interval  $\geq 85\%$
- The Number Inside Each Pin Indicates the Number of Heat Signatures Present
- Pins Marked With "X" Fall Outside MCMP Boundaries but Within the ~400' Buffer Area
- Pins Marked With "XX" Fall Outside of the Buffer Area

**1626 Acres Surveyed (2.54 Mi<sup>2</sup>)**

**903 Deer Detected  
355 Deer/Mi<sup>2</sup>  
(MCP Totals)**



# Aerial Infrared Survey: Mill Creek Park North of SR 62



- Each Pin Represents a Heat Signature Consistent with that of a Deer with a Confidence Interval  $\geq 85\%$
- The Number Inside Each Pin Indicates the Number of Heat Signatures Present
- Pins Marked With "X" Fall Outside MCMP Boundaries but Within the ~400' Buffer Area
- Pins Marked With "XX" Fall Outside of the Buffer Area

**1626 Acres Surveyed (2.54 Mi<sup>2</sup>)**

**903 Deer Detected  
355 Deer/Mi<sup>2</sup>  
(MCP Totals)**



# Aerial Infrared Survey: Mill Creek Wildlife Sanctuary

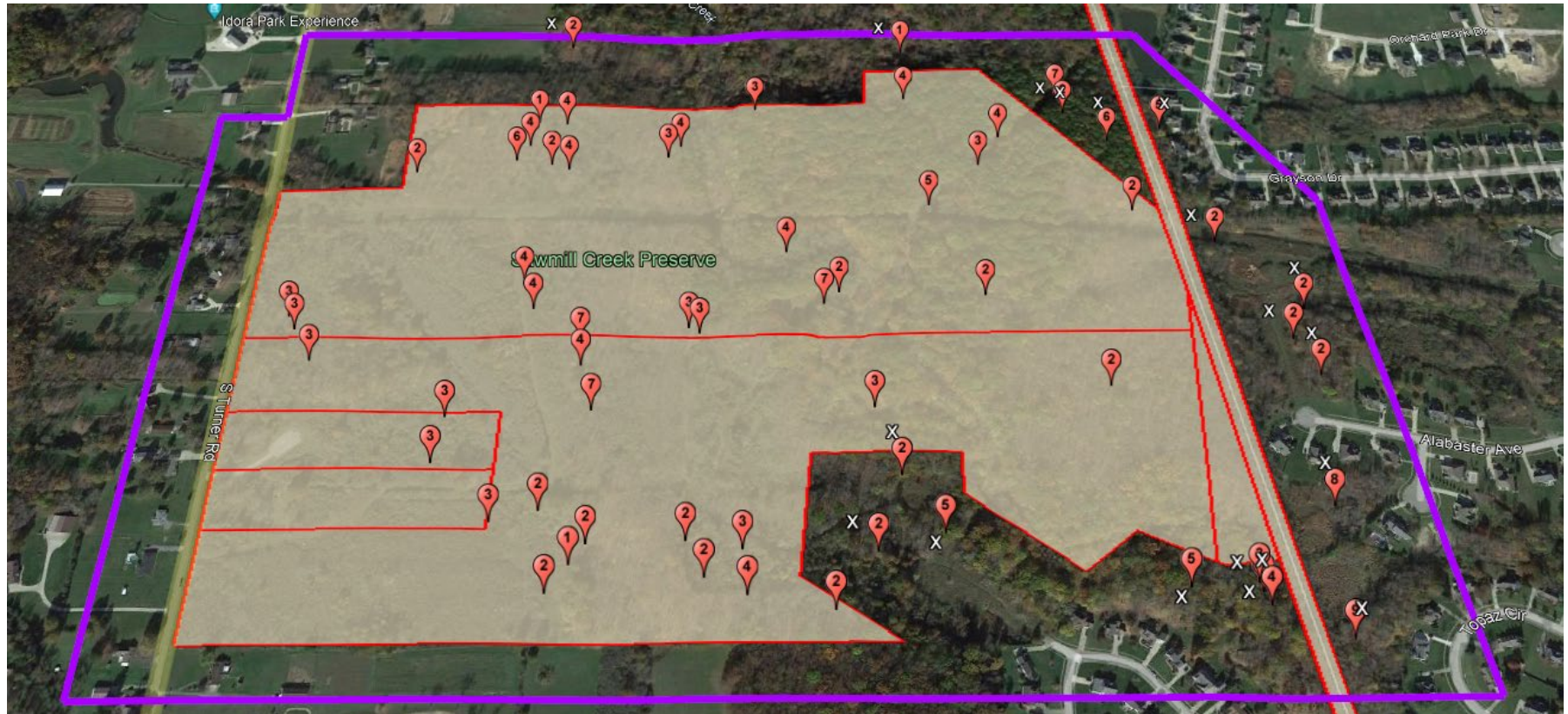


- Each Pin Represents a Heat Signature Consistent with that of a Deer with a Confidence Interval  $\geq 85\%$
- The Number Inside Each Pin Indicates the Number of Heat Signatures Present
- Pins Marked With "X" Fall Outside MCMP Boundaries but Within the ~400' Buffer Area
- Pins Marked With "XX" Fall Outside of the Buffer Area

**482 Acres Surveyed (0.75 Mi<sup>2</sup>)**  
**267 Deer Detected**  
**355 Deer/Mi<sup>2</sup>**



# Aerial Infrared Survey: Sawmill Creek Preserve



- Each Pin Represents a Heat Signature Consistent with that of a Deer with a Confidence Interval  $\geq 85\%$
- The Number Inside Each Pin Indicates the Number of Heat Signatures Present
- Pins Marked With "X" Fall Outside MCMP Boundaries but Within the ~400' Buffer Area
- Pins Marked With "XX" Fall Outside of the Buffer Area

**167 Acres Surveyed (0.25 Mi<sup>2</sup>)**  
**97 Deer Detected**  
**386 Deer/Mi<sup>2</sup>**



# Aerial Infrared Survey: Results for All Parks

				Thermal Signatures Observed within Park Boundaries			
	Park	Park Size (acres)	Park size (sq miles)	Count	Acres per Deer	Deer per Acre	Deer per Sq Mile
Central	Mill Creek Park	1,626	2.54	903	1.80	0.56	355
	Hitchcock Woods	689	1.08	429	1.61	0.62	398
	Huntington Woods	383	0.60	354	1.08	0.92	592
	Mill Creek Wildlife Sanctuary	482	0.75	267	1.81	0.55	355
	Collier Preserve	303	0.47	124	2.44	0.41	262
East	McGuffey Wildlife Preserve	78	0.12	48	1.63	0.62	394
	Yellow Creek	76	0.12	80	0.95	1.05	674
	Springfield Forest	89	0.14	69	1.29	0.78	496
	Cranberry Run Headwaters	27	0.04	19	1.42	0.70	450
West	Vickers Nature Preserve	262	0.41	116	2.26	0.44	283
	Sebring Woods	39	0.06	37	1.05	0.95	607
	Egypt Swamp Preserve	75	0.12	54	1.39	0.72	461
	Sawmill Creek	167	0.26	141	1.18	0.84	540
	MetroParks Farm	402	0.63	197	2.04	0.49	314
	Hawkins Marsh	161	0.25	97	1.66	0.60	386
Totals and Averages:		4,859	7.59	2,935	1.66	0.60	387

Recommended Population Densities Are 10-20 Deer/Mi<sup>2</sup> to Remain Below Ecological Carrying Capacity.

**Our Results Average 387 Deer/Mi<sup>2</sup>**

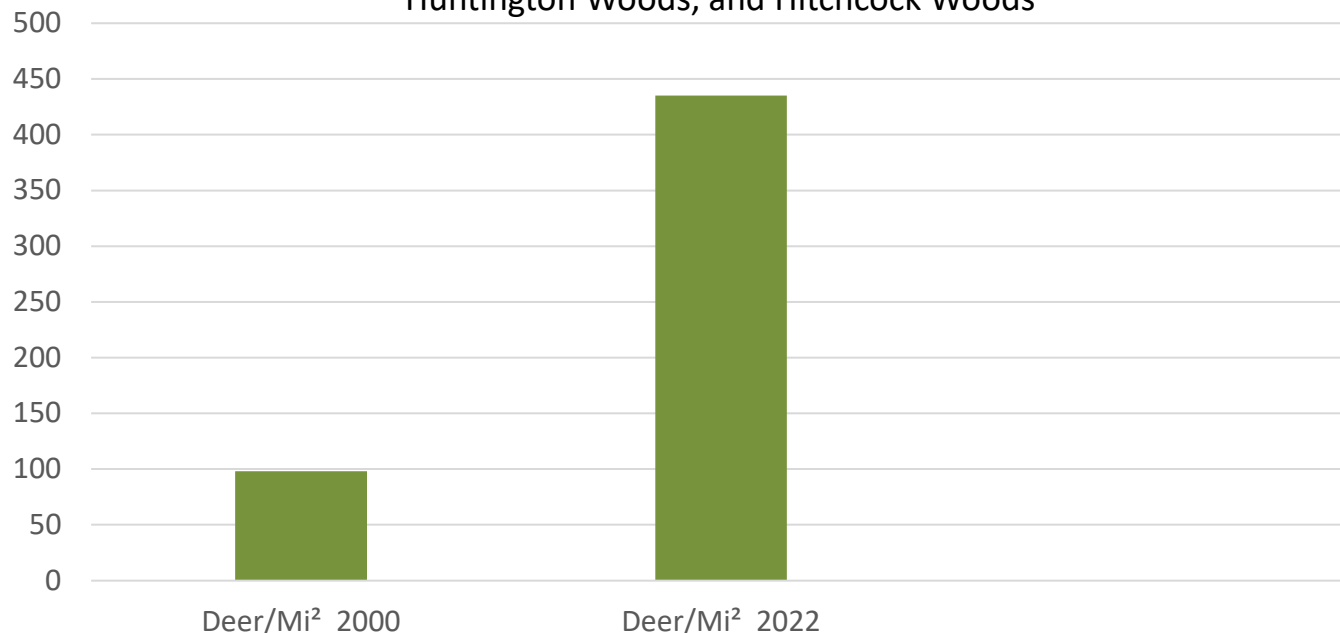


***Deer in MCMP: Current Data***



## Then vs Now:

Comparison of Deer Density 2000 – 2022 in MCP (South of Shields Rd.),  
Huntington Woods, and Hitchcock Woods



**~442% Increase in Population Density Over 22 Years**

Current Population Densities are on Average More Than **19x Greater** Than the Generally Accepted Estimate of Ecological Carrying Capacity (10-20 Deer/mi²) Across All MetroParks Properties

***Deer in MCMP: Current Data***



# Trail Camera Surveys:

First utilized by the MetroParks in 2019, trail camera surveys have proven to be a cost-effective survey method to survey wildlife populations.

Under research guidelines provided by Mississippi State University and the National Deer Association, trail camera surveys can be used to:


- Estimate population densities
- Estimate sex ratios
- Gain insight into the overall health and condition of the herd



## ***Deer in MCMP: Current Data***



**NDA's Trail-Camera Survey Computation Form**



Bucks<sup>U</sup> (unique) **14** → Bucks<sup>U</sup> **14** ÷ Bucks<sup>T</sup> **262** = Pop. Factor **0.053**

Bucks<sup>T</sup> (total) **262**

Does<sup>T</sup> (total) **1447** → **1447** × **0.053** = Does<sup>U</sup> **76.69**

Fawns<sup>T</sup> (total) **130** → **130** × **0.053** = Fawns<sup>U</sup> **6.89**

**Correction Factor**

Bucks<sup>U</sup> **14** × **1.11** = Bucks **15.54**

Does<sup>U</sup> **76.69** × **1.11** = Does **85.13**

Fawns<sup>U</sup> **6.89** × **1.11** = Fawns **7.65**

**Adjusted Population Estimates**

For a 14-day survey, enter a correction factor of **1.11**  
 For a 10-day survey, enter a correction factor of **1.18**  
 \*Assuming camera density of 1 per 100 acres.

Carry Down to Additional Formulas

**NATIONAL DEER ASSOCIATION**  
 ©Copyright 2015 by NDA

Does **85.13** ÷ Bucks **15.54** = Does per Buck **5.48**

Fawns **7.65** ÷ Does **85.13** = Fawns per Doe **0.90**

Acreage Surveyed **300** ÷ Total Pop. **108.32** = Acres/Deer **2.77**

Total Pop. **108.32** × **640** = **69325** ÷ Acreage Surveyed **300** = Deer/Square Mile **231**





# Carrying Capacity Defined:

## Biological Carrying Capacity (BCC)

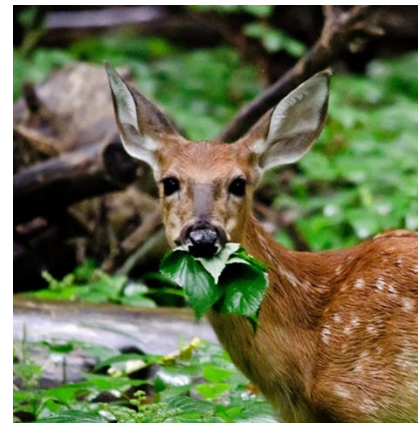
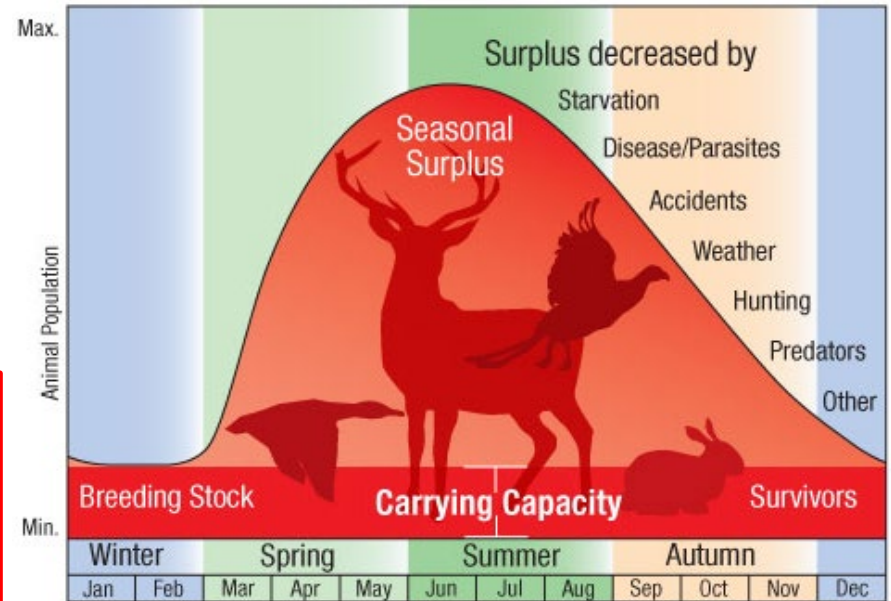
- The density in which a population (in this case white-tailed deer) can sustain themselves on the landscape over the long-term based upon available resources (food, water, shelter).

## Ecological Carrying Capacity (ECC)

- The density in which white-tailed deer populations have no negative impacts to their surrounding environment and allow for natural regeneration of flora.

## Cultural Carrying Capacity (CCC)

- The density in which white-tailed deer populations are socially tolerated in a community, this figure can vary greatly based upon public opinion and commonly exceeds both biological and ecological carry capacities.



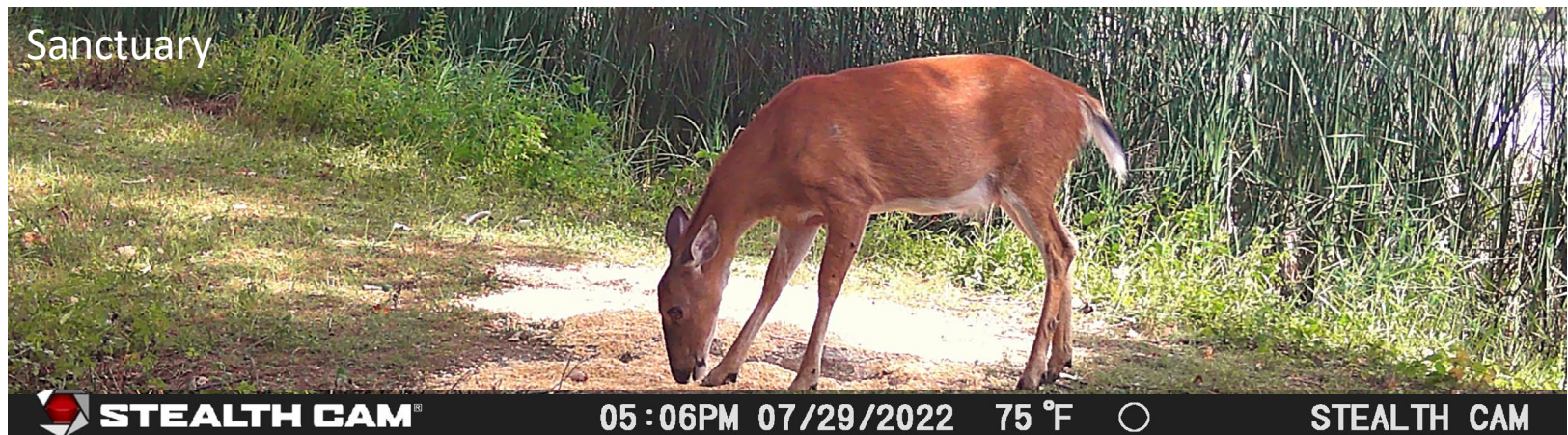
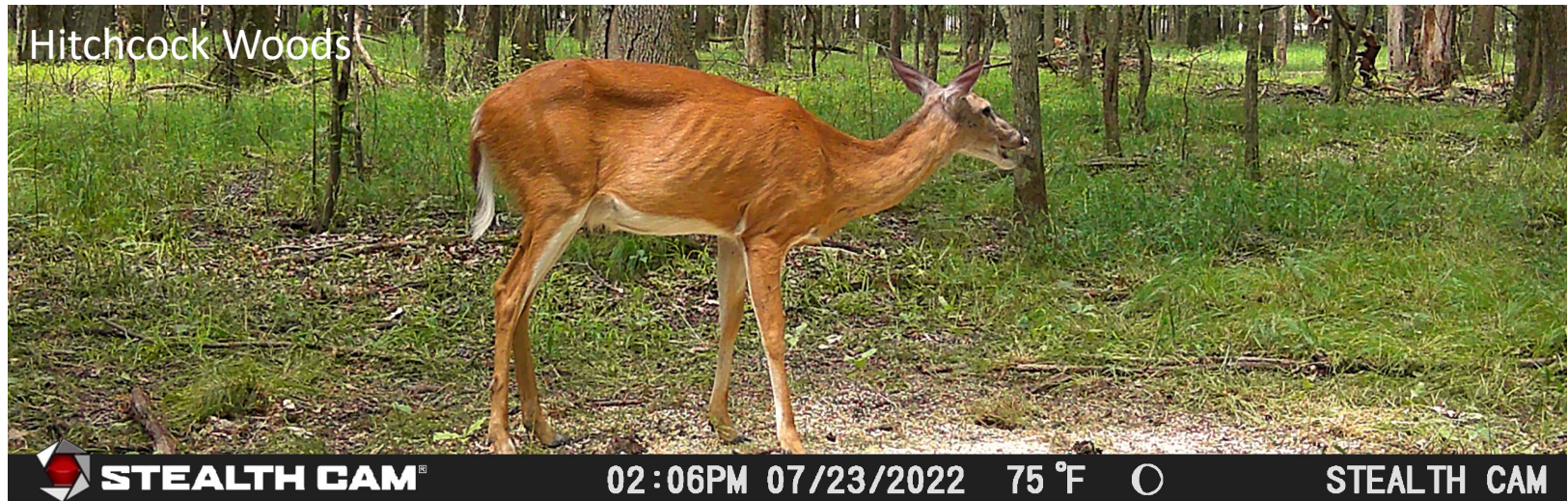


## Ecological Damage:





## Poor Herd Health:

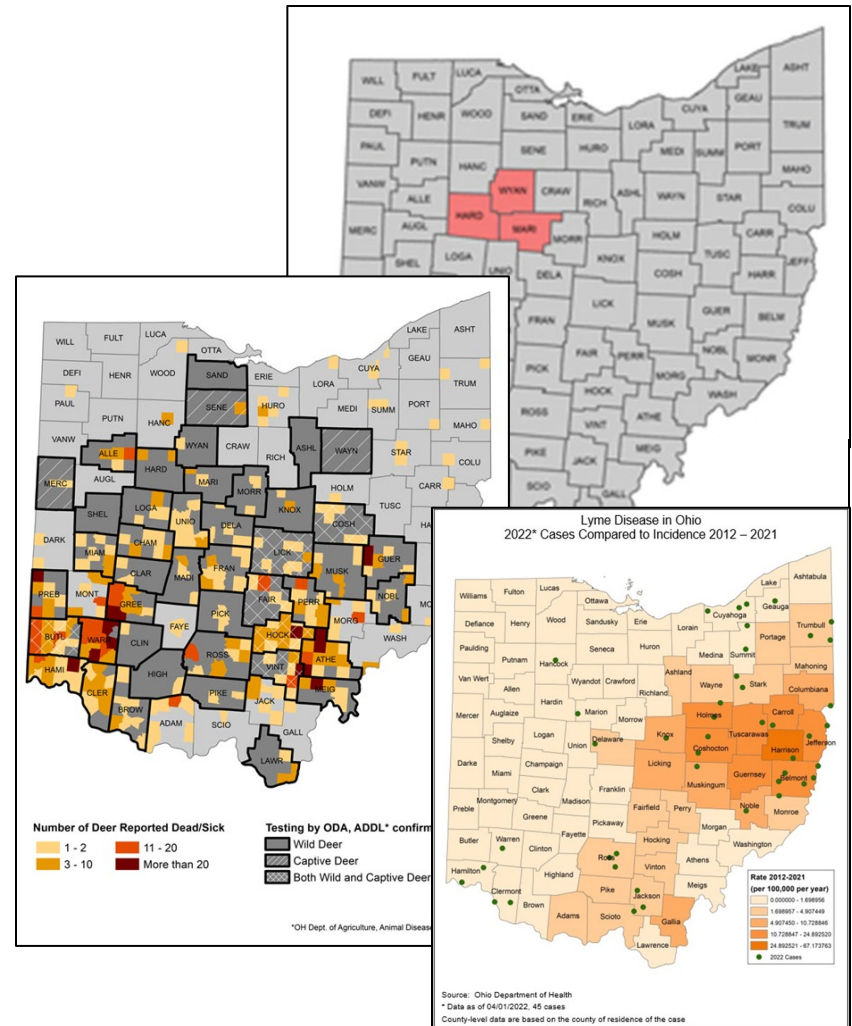




# Disease Concerns:

The overpopulation of any animal can lead to increased concern for the spread of disease and in the case of the white-tailed deer the primary concerns are:

- Chronic Wasting Disease (CWD)
- Epizootic Hemorrhagic Disease (EHD)
- Lyme Disease and Other Tick-Borne Pathogens





## Property Damage:



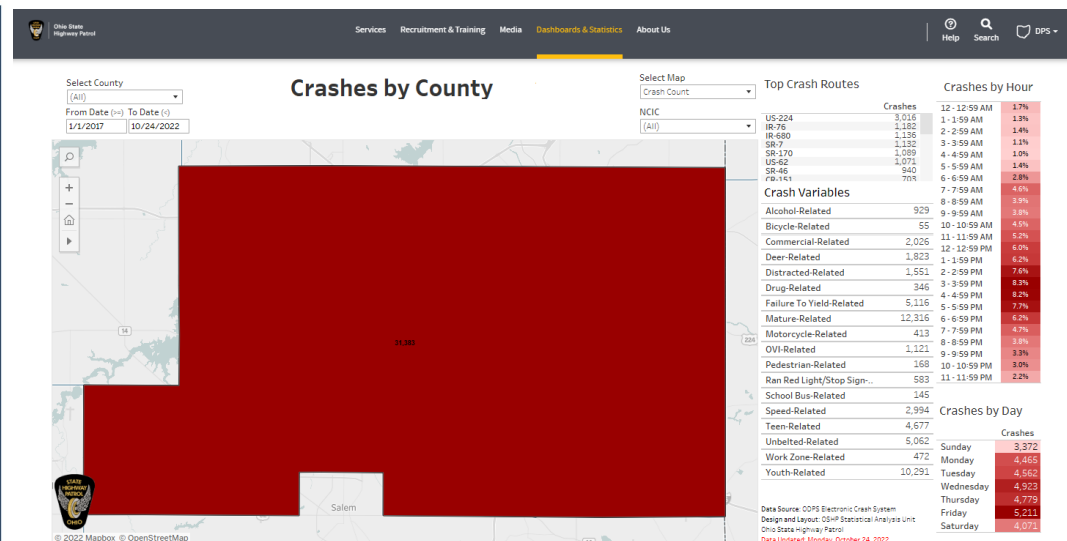
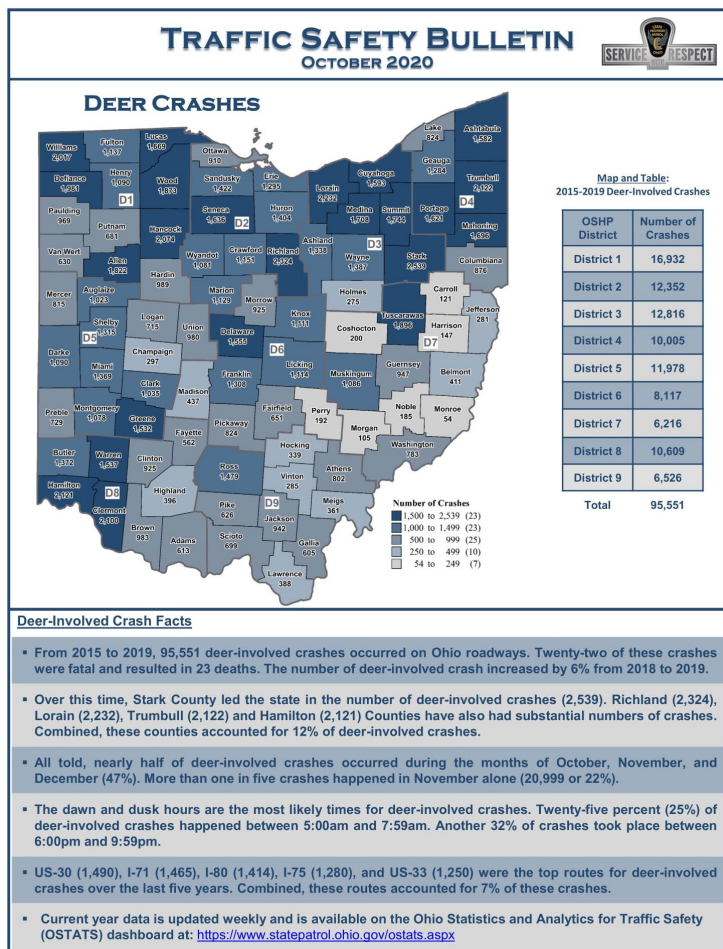


## Property Damage:





# Property Damage:



2015-2019 crash data from the Ohio State Highway Patrol shows Mahoning County as having a high incidence of deer-vehicle collisions ranking 15<sup>th</sup> out of 88 counties with a total of 1,696 collisions (~424 per year).

- ~\$4000 of Damage Caused per DVC

## Deer in MCMP: Critical Impacts





# Community Concerns:

## ≡ The Vindicator

Austintown

Which Mahoning County commissioner or Mill Creek MetroParks board member needs to spend thousands of dollars repairing, hopefully, only their car to realize the deer overpopulation in this area is a public safety problem?

### LOCAL NEWS

## Deer goes through school bus windshield, hurts driver

By: Michael Reiser  
Posted: Feb 10, 2023 / 11:42 AM EST  
Updated: Feb 10, 2023 / 11:42 AM EST



## JOINT PRESS RELEASE - Ohio Heads into Peak Time for Deer-Related Crashes

October 03, 2022



Share this



### Joint Media Release

COLUMBUS – AAA, The Ohio Department of Insurance, Ohio State Highway Patrol and Ohio Department of Natural Resources want to remind motorists of the increase in deer-related traffic crashes this time of year.

### NEWS

## Motorcyclist dies after striking deer in Milton Township

As of 7:25 a.m., Mahoning Avenue was closed in the area of the crash near the Dollar General.

3 hrs 19 mins ago

Updated: 2 hrs 39 mins ago

By Mike Gauntner

### NEWS

## 3 dead after SUV hits deer, then truck on Indiana Toll Road

State police say three people died and two others were injured when an SUV struck a deer along the Indiana Toll Road and crashed into an oncoming pickup truck.

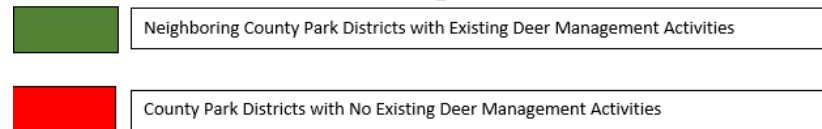
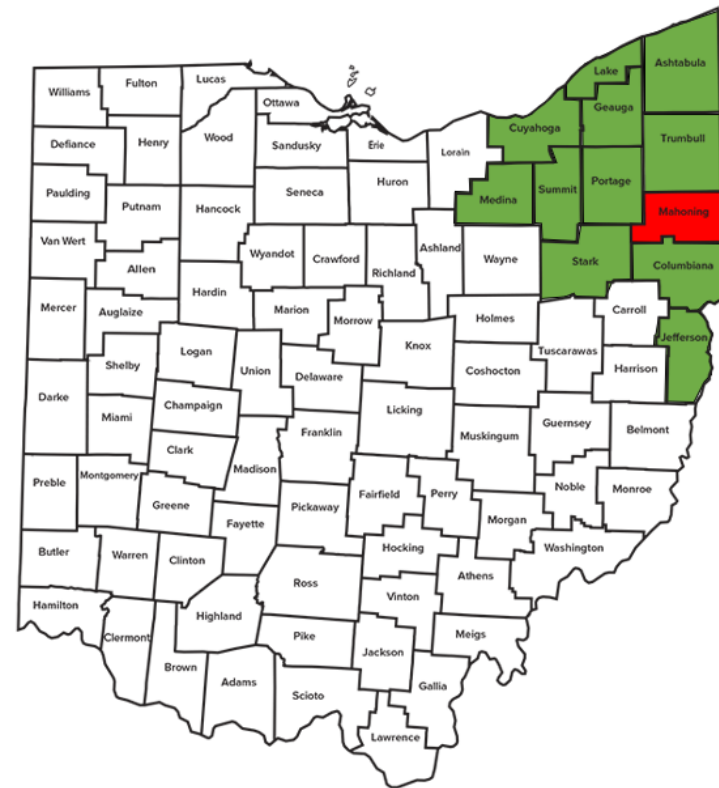
Tuesday, October 4th 2022, 5:57 AM EDT

Updated: Tuesday, October 4th 2022, 5:58 AM EDT

## *Deer in MCMP: Critical Impacts*



# MetroPark Systems Across Ohio:



***Deer in MCMP: We Are Not Alone***



# WE WANT YOUR INPUT ►

Scan the code with your mobile device to learn more and have the opportunity to provide comments.

[www.millcreekmetroparks.org/  
white-tailed-deer-in-mill-creek-metroparks/](http://www.millcreekmetroparks.org/white-tailed-deer-in-mill-creek-metroparks/)

