Bat Research and Conservation

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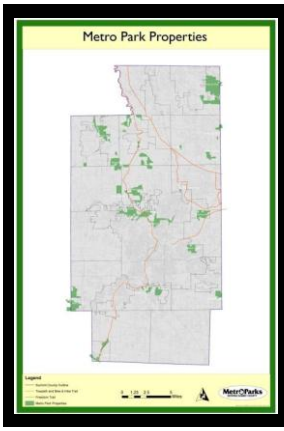
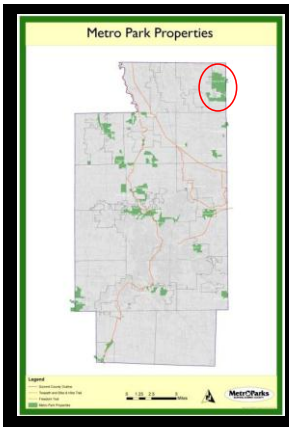


Metro Parks, Serving Summit County

To acquire, conserve and **sustainably manage natural resources** to provide the public with passive **outdoor recreation**al and **education**al opportunities through a regional system of **natural- area parks**.

- Established in 1921
- Currently manage nearly 12,000-acres
- 14 Developed Parks and 6 Conservation Areas
- 125-miles of trails including a 33-mile Hike and Bike Trail and 22 - miles of O&E Towpath Trail
- One Nature Center (two others planned)
- District-wide 5 millions visits/year

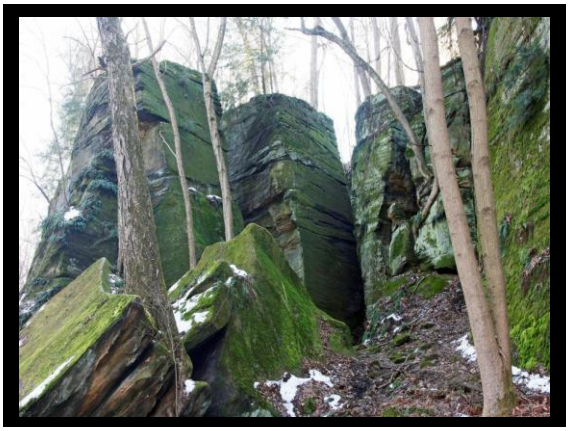


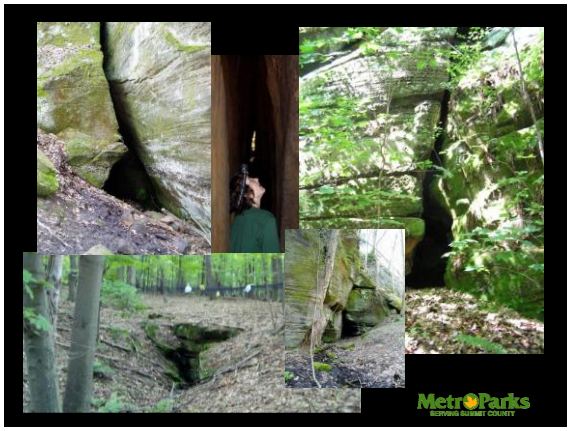
Liberty Park

- Largest Park at 2,000-acres
- First purchase in 1999
- Partnership Park between Metro Parks and City of Twinsburg
- City maintains control over 100-acres of old agricultural fields for active recreation
- Metro Parks controls all natural areas and manages for natural resources

Getting Started …

- 2002 – Contract Ecological Survey
- EnviroScience of Stow, Ohio discovered bats swarming at sandstone ledges at Liberty Park, Twinsburg, Summit County OH.





Getting Started .

- 2003 – Confirmed late fall swarming (November) activity at 4 caves, including:
  - Little Brown
  - Northern Long Eared
  - Tri-colored
  - Big Brown
  - Indiana Bat

2004 Research Project…

City of Twinsburg
Summit County, Ohio

DAVEY

Cleveland Metroparks

Thank You!

2004 Bat Research Project

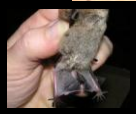
- Early spring mist netting and trapping around cave portals to identify bats emerging from hibernacula
- Summer mist-netting throughout Liberty Park and other city or state property to identify summer distribution
- Radio-telemetry of lactating females to identify and characterize maternity roost sites and to determine home range of nursing females
- Fall installation of data loggers to monitor environmental conditions in cave and crevices suspected of harboring bat hibernacula
- An interpretive program to introduce people to the world of bats
- A workshop for naturalists, resource managers, and other professionals

2004 Bat Research Project

- Spring Emergence Studies – 841 bats captured and banded
  - Little Brown Bat
  - Big Brown Bat
  - Northern Long-eared Bat
  - Tri-Colored Bat
- Summer Studies – 310 bats captured and banded
  - Little Brown Bat
  - Tri-colored Bat
  - Northern Long-eared Bat
  - Red Bat
  - Big Brown Bat
  - Hoary Bat
  - One post-lactating Indiana Bat
- Fall Swarming Studies – 1,258 bats captured and banded
  - Little Brown Bat
  - Big Brown Bat
  - Northern Long-eared Bat
  - Tri-Colored Bat
  - Indiana Bat

2004 Bat Research Project

- Confirmed Hibernacula (4 Caves)
  - Little Brown Bat
  - Big Brown Bat
  - Northern Long-eared Bat
  - Tri-Colored Bat
- Swarming and Presumed Hibernacula
  - Indiana Bat



- 2004 - Results
  - Bats in Bridges
  - Indiana bat captured here

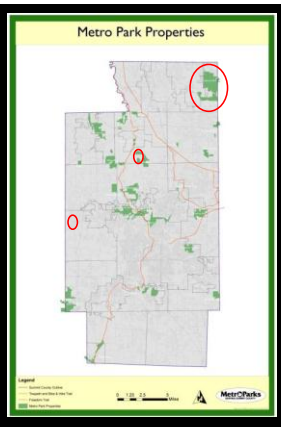
Pennsylvania (Sanders, pers. comm. 2004)

Indiana (Kiser, et. al. 1998)

Kentucky (Wilson, 2001)

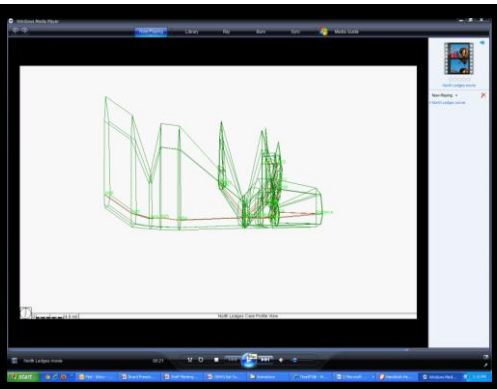
Moving on from 2004

- Began to reconsider sandstone geology as significant hibernacula
- 2005 Camp Christopher hibernacula confirmed
  - Summer survey work
  - Spring and Fall emergence work at caves

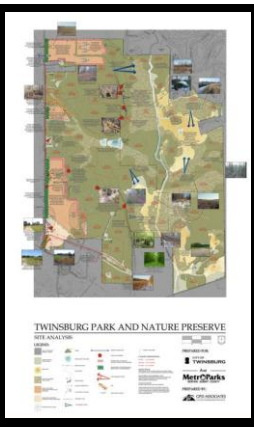


Moving on from 2004

- Contracted Ohio Department of Natural Resources – Division of Natural Areas and Preserves to perform cave mapping.
- Aided in park development.

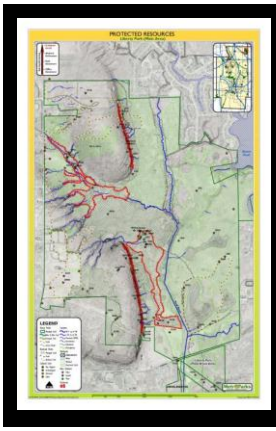


The caves at Liberty Park are significant natural features of northeastern Ohio, where, up until this point, known caves were generally of the shelter-type being largely open to the light and having little horizontal development. Although there are unvisited caves in the vicinity of Liberty Park (indeed three additional caves were documented in 1973 by Warren Luther just northwest of the park in an area dubbed "Stone Ledges"), it is our opinion that the caves at Liberty Park are the most extensive sandstone caves in the State visited to date, rivaling the length of many true-karst carbonate caves in western Ohio.



Park Master Plan

- Scraped Park Master Plan in light of new findings
- Re-evaluated trail types, locations, and possible impacts to natural resources (especially the bats)
- Six years additional study and planning



Ecologically Inspired Park Plan

- Greater focus on wetlands protection
- Had to provide access to the ledges
- Recognized need to completely set aside one set of ledges
- Reduced trail length and footprint
- Concentrated active recreation in former ag fields
- Relocated Nature Center

Ecologically Inspired Park Plan

- Shortened Ledges Trail
- Moved trail to avoid hibernacula
- Allowed access to one cave (no bats)
- Developed interpretive signage
- Increased Ranger patrol
- Experimented with volunteer trail patrol

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WNS Response

- Ledges trail opens in October 2011
- WNS Confirmed February 2012
- Coordinated with USFWS, Ohio DNR, and University of Akron
  - Close Park
  - Close Trail
  - Gate Caves
- Installed new signs

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WNS Response

- Installed surveillance cameras

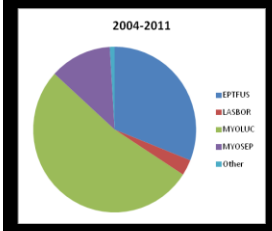
WNS Response

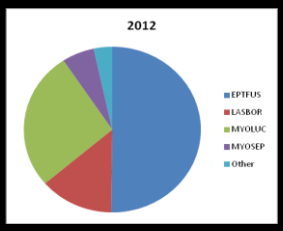
- Funding from Ohio DNR and USFWS
- Began gating caves
- 2 caves gated in 2012
- 2 caves planned for gating in 2013
- 1 cave will remain ungated

Continued Bat Conservation and Research

- Continued surveys in all parks as part of standard park inventories
- Bat surveys now standard part of new park acquisition survey and analysis
- Compliance surveys for park (and partner) development projects
- Emphasis on public education and professional training – BAT CAMP !
- Interactive Key
- Bat houses ☹
- Lots of data (over 5,000 banded bats) we don't fully know what to do with !!!

Bat Surveys





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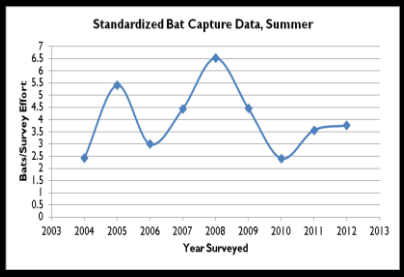

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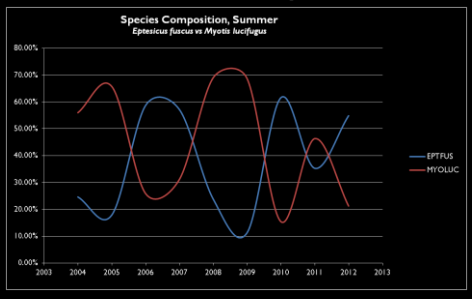
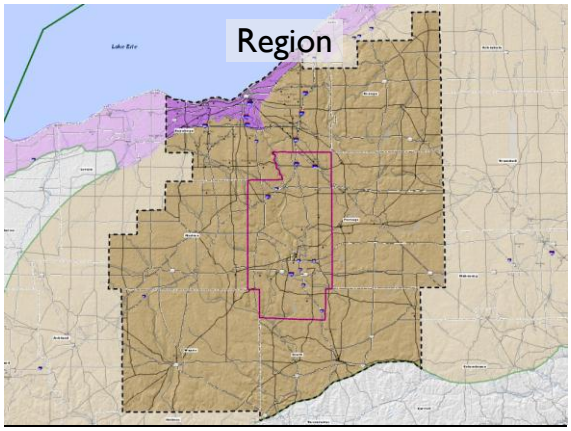


Regional Conservation Area Prioritization

Attempts to remotely identify highest quality natural areas throughout region



10-11 Metrics

- Metric 1a – Landcover
- Metric 2a – Forest Quality
- Metric 2b – NonForest Quality
- Metric 2c – Cave and Ledge Potential
- Metric 3a – Natural Area Size
- Metric 3b – Core Natural Area Size
- Metric 4a – Forest Interior
- Metric 5a – Watershed Prioritization
- Metric 5b – Aquatic Resources
- Metric Option – Priority Species Concentration

10-11 Metrics

- Metric 2c – Cave and Ledge Potential

•A GIS model was developed by University of Akron and Metro Parks to predict potential cave habitats within a 7-county region

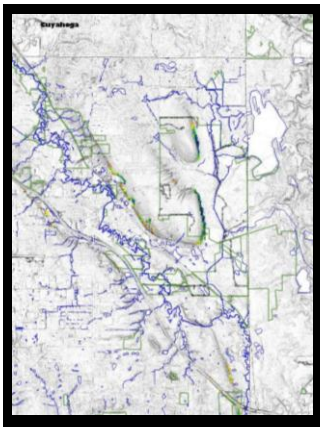
•10 parameters were tested to determine their individual ability to predict 68 known caves throughout the region

•Weighted scores for each parameter were combined to produce the model

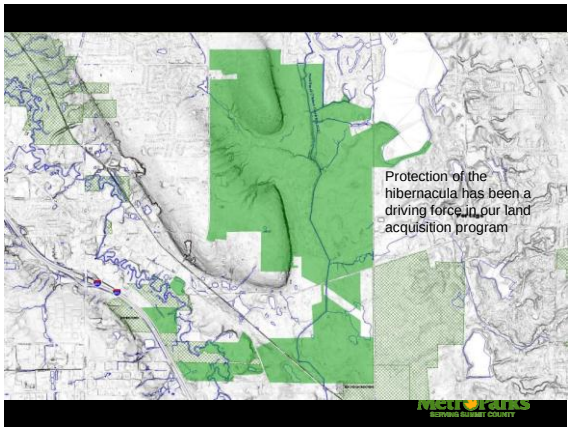
•Primary components utilized were slope, aspect, and bedrock elevation and depth

Regional Cave Model

•The landscape is scored 0-10 according to potential to harbor caves



Metric 2c – Liberty Park Area Cave and Ledge Potential



Protection of the hibernacula has been a driving force in our land acquisition program

Hibernacula protection has driven land acquisition since 2005

Original park (1,200-acres) now stands at nearly 2,000-acres

Adjacent protected properties stand at over 6,000-acres!

Acquired a fifth cave and hibernacula in 2010

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Attempting to conserve area around 5th cave

Thank You !
Questions ?