Enhancing Baltimore's wilderness using open data to achieve forest preservation
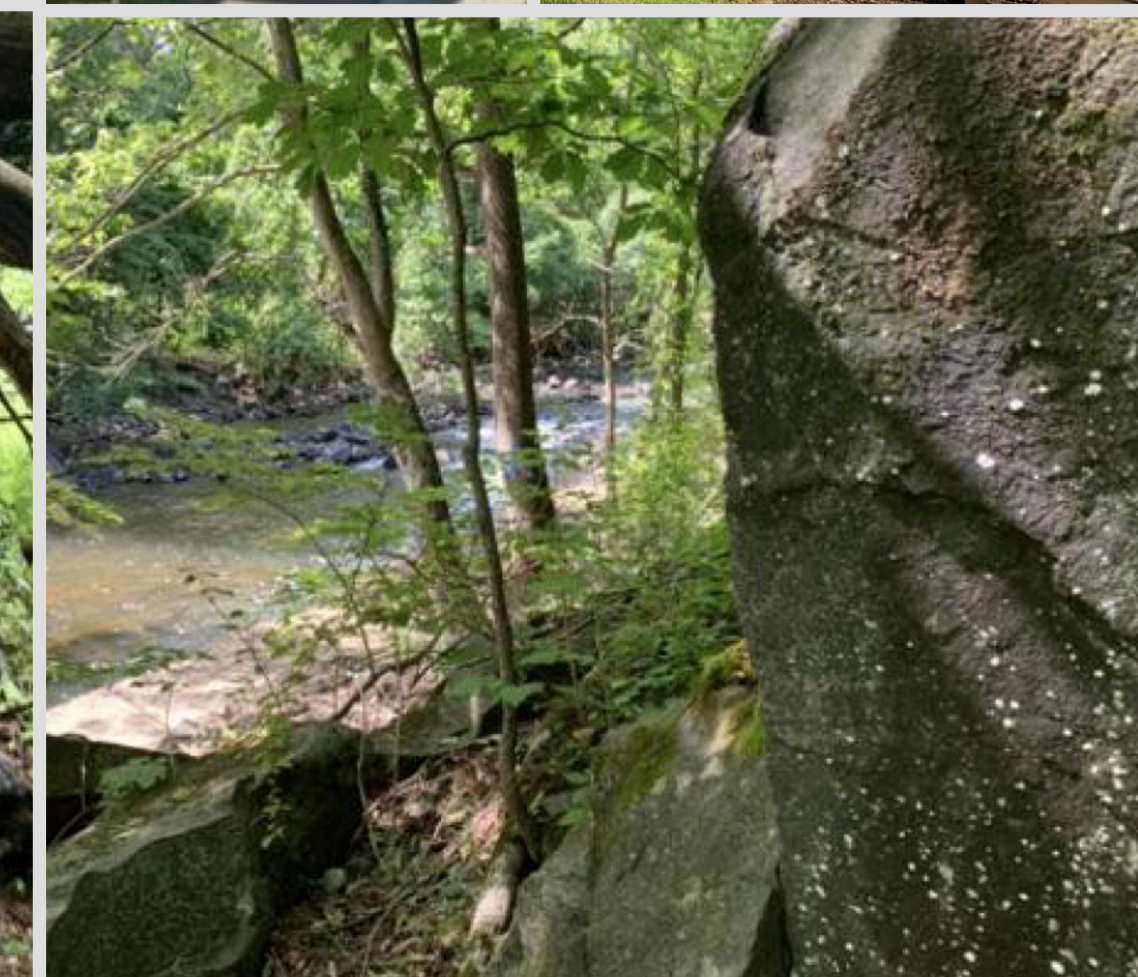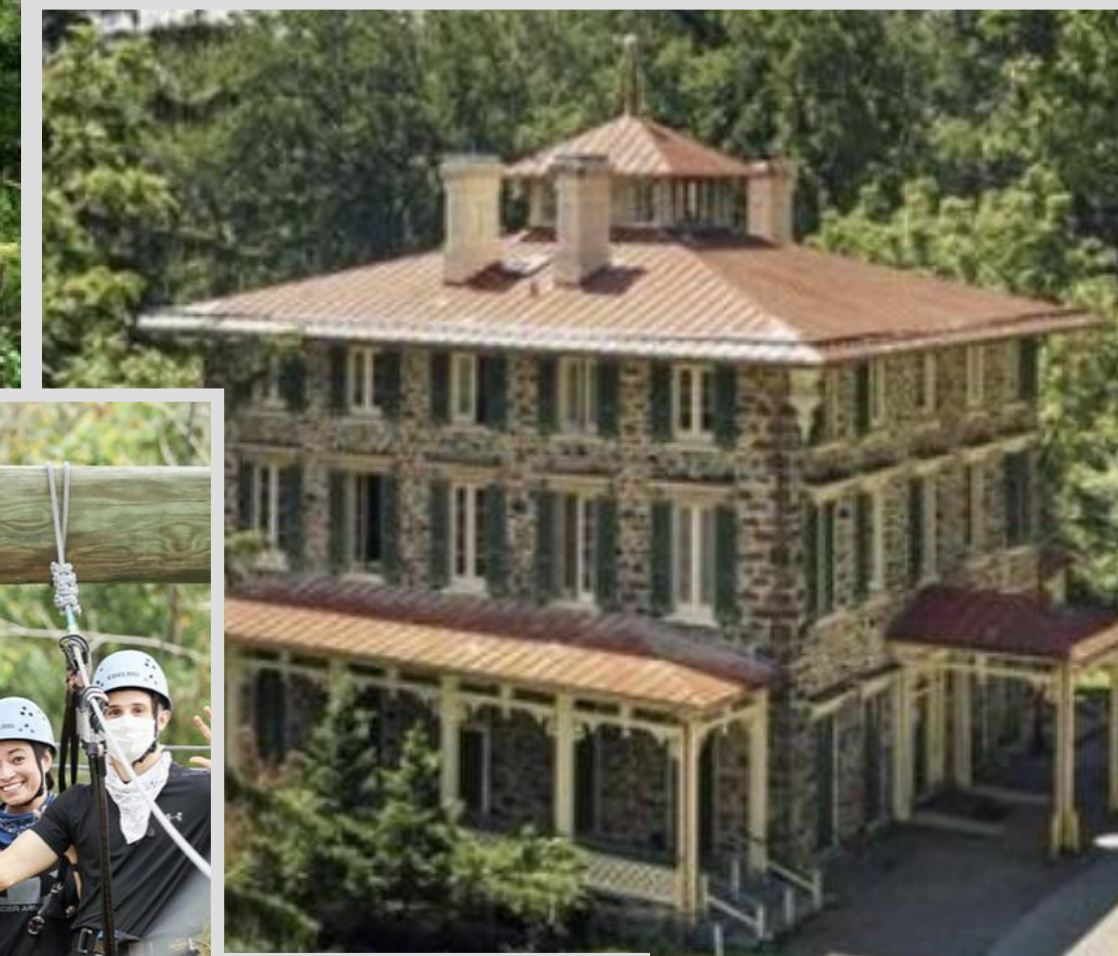
Thayer A. Young

To download a PDF of this presentation:
https://cicadagis.com/data_week.html

Outline

- Gwynns Falls/Leakin Park

    - Friends of Gwynns Falls Leakin Park

- Old-Growth Forest Network

- A Forest Preserve in Baltimore?

- Three examples of how data are used to advance the Forest Preserve

    - High Resolution Land Cover → Rationale for preserving the forest

    - OpenStreetMap   → Park visitor experience and outreach

    - Land records, old maps   → History of the park

- Resources

Gwynns Falls/Leakin Park

- Baltimore's wilderness park

- One of the largest municipally owned urban forests on the East Coast
  - 999.3 acres of park
  - 842 acres of forest

- 18 miles of trails

Friends of Gwynns Falls Leakin Park

- All volunteer

- Board members are from the surrounding communities

- Voice of the community → Recreation and Parks

- Activities include:

  - Trail maintenance

  - Cleanups

  - Invasive plant removal (TreeBaltimore certified)

  - Organizing events

Overview of the Old-Growth Forest Network

The OGFN mission is to designate — One forest in every county in the USA.

Each forest must be — Open to the public,

will — Never to be logged again,

and have a — Network of people inspired to protect it.
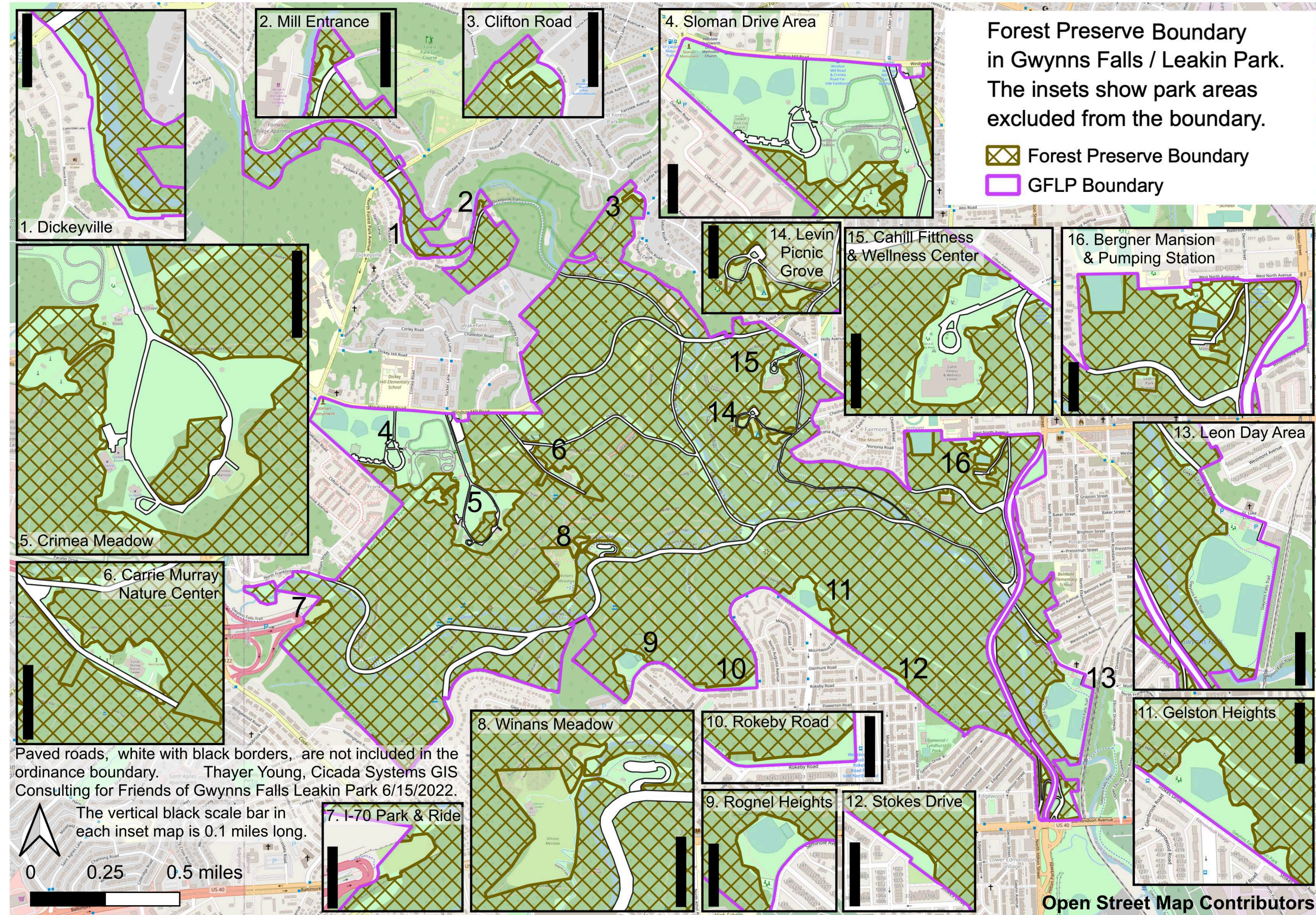
OGFN is the — Only national organization

focused solely on — Identifying, protecting & restoring Old-Growth Forests.

A Forest Preserve for Baltimore?

What?

- FoGFLP & OGFN propose:

- Gwynns Falls/Leakin Park
  - all 842 acres of forest (brown crosshatched area)

- Protect the forest from
  - logging
  - development

- In perpetuity (forever)

- Allow maintenance & repairs
  - existing structures
  - roads
  - utility lines

Forest Preserve Boundary in Gwynns Falls / Leakin Park. The insets show park areas excluded from the boundary.

Forest Preserve Boundary
GFLP Boundary

1. Dickeyville
2. Mill Entrance
3. Clifton Road
4. Sloman Drive Area
5. Crimea Meadow
6. Carrie Murray Nature Center
7. I-70 Park & Ride
8. Winans Meadow
9. Rognel Heights
10. Rokeby Road
11. Gelston Heights
12. Stokes Drive
13. Leon Day Area
14. Levin Picnic Grove
15. Cahill Fittness & Wellness Center
16. Bergner Mansion & Pumping Station

Paved roads, white with black borders, are not included in the ordinance boundary.   Thayer Young, Cicada Systems GIS Consulting for Friends of Gwynns Falls Leakin Park 6/15/2022.

The vertical black scale bar in each inset map is 0.1 miles long.

0   0.25   0.5 miles
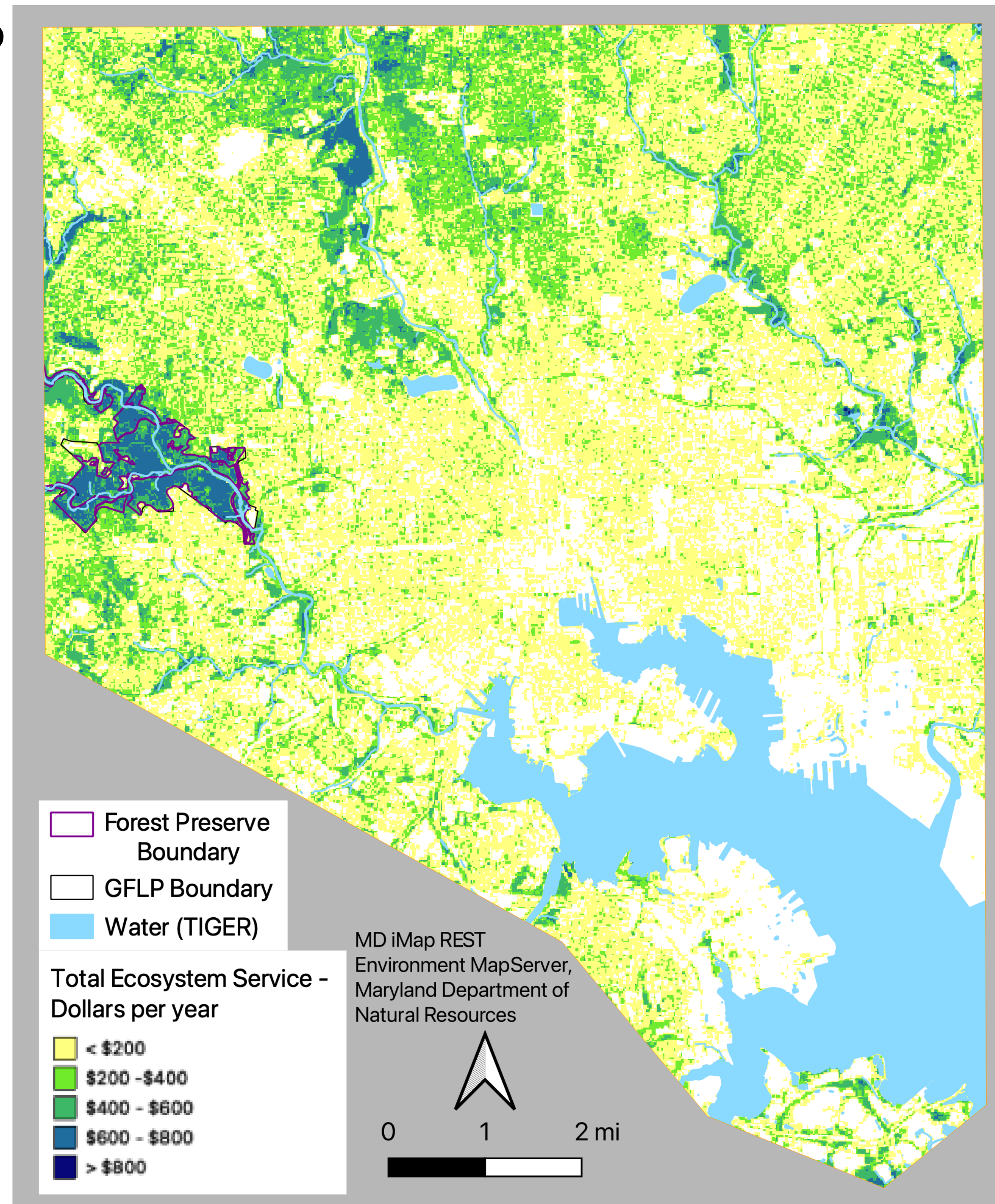
Open Street Map Contributors

A Forest Preserve for Baltimore?

Why?

- So Baltimore can join the Old-Growth Forest Network
  - national attention
  - tourism

- To GUARANTEE future generations a natural place for:
  - outdoor activities
  - education

- A critical habitat for wildlife, especially birds

- The city's "green lungs" cool and clean the air

- A stream valley that absorbs and filters stormwater

- $2.3 Million of ecosystem services per year
  - Maryland DNR, Greenprint, Parcel Evaluation Tool
    Elliott Campbell, PhD, Rachel Marks
  - Ecosystem Services (total of):

	Removal of:
Net Carbon Sequestration	Carbon Monoxide
Groundwater Recharge	Nitrogen Dioxide
Nutrient Removal Potential	Ozone
Flooding and Stormwater Mitigation Potential	Particulate Matter 10
Surface Water Protection	Particulate Matter 2.5
Wildlife and Biodiversity Potential	Sulfur Dioxide

Forest Preserve Boundary

GFLP Boundary

Water (TIGER)

Total Ecosystem Service - Dollars per year

- < $200
- $200 -$400
- $400 - $600
- $600 - $800
- > $800

MD iMap REST Environment MapServer, Maryland Department of Natural Resources

0   1   2 mi

Data Examples
and how to use them to advance the Forest Preserve

- High Resolution Land Cover → Rationale for preserving the forest

- OpenStreetMap → Park visitor experience and outreach

- Land records, old maps → History of the park

High Resolution Land Cover

➡ **Rationale for the Forest Preserve**

Chesapeake Bay Program

• Chesapeake Conservancy

    • Conservation Inovation Center

• University of Vermont

• 1 meter Land Cover and Land Use

• How to get the data:

1. https://cicgis.org/portal/home/gallery.html

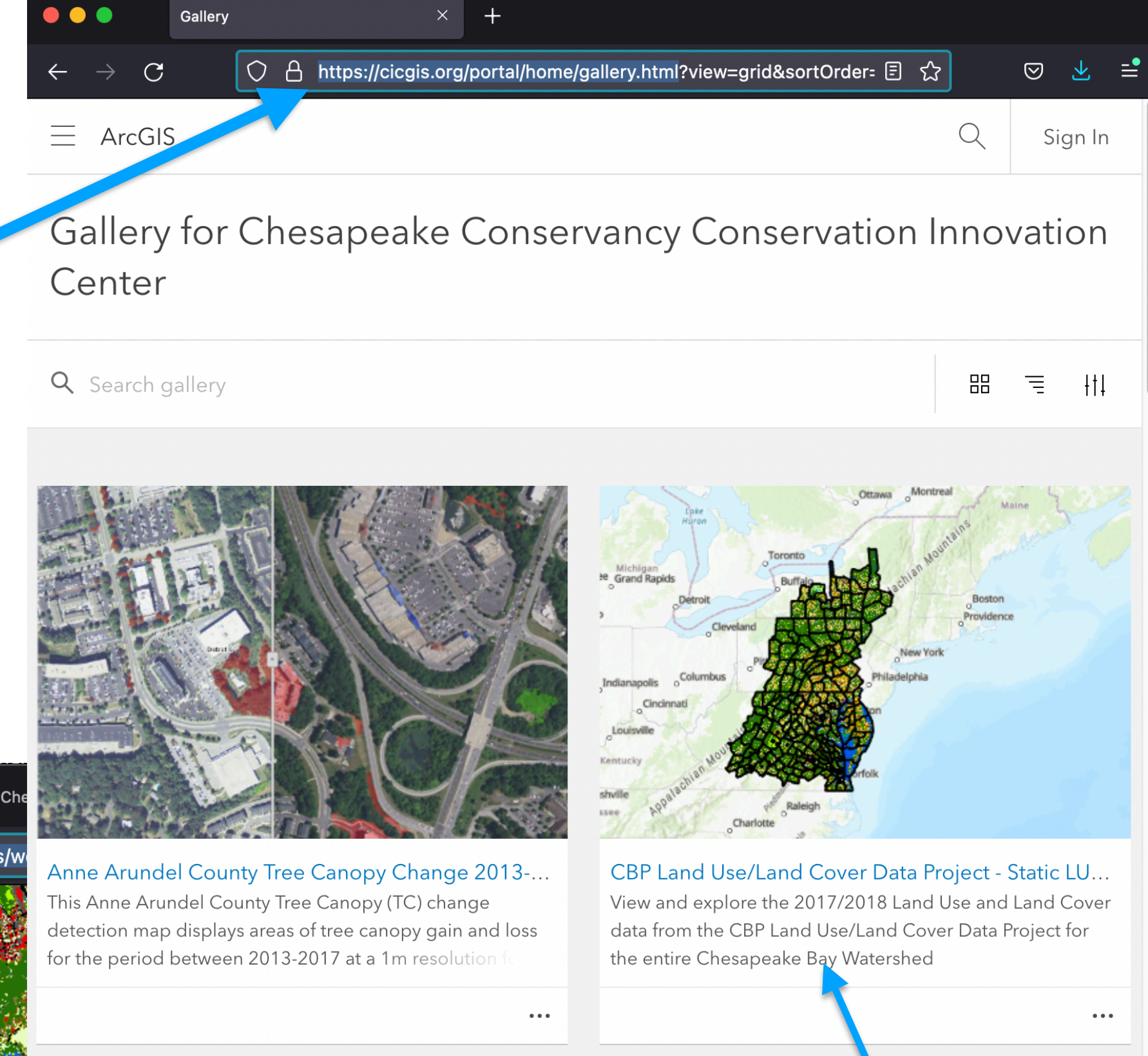2. On the top row click on

    CBP Land Use/Land Cover Data Project

3. In the viewer click on Baltimore in the map
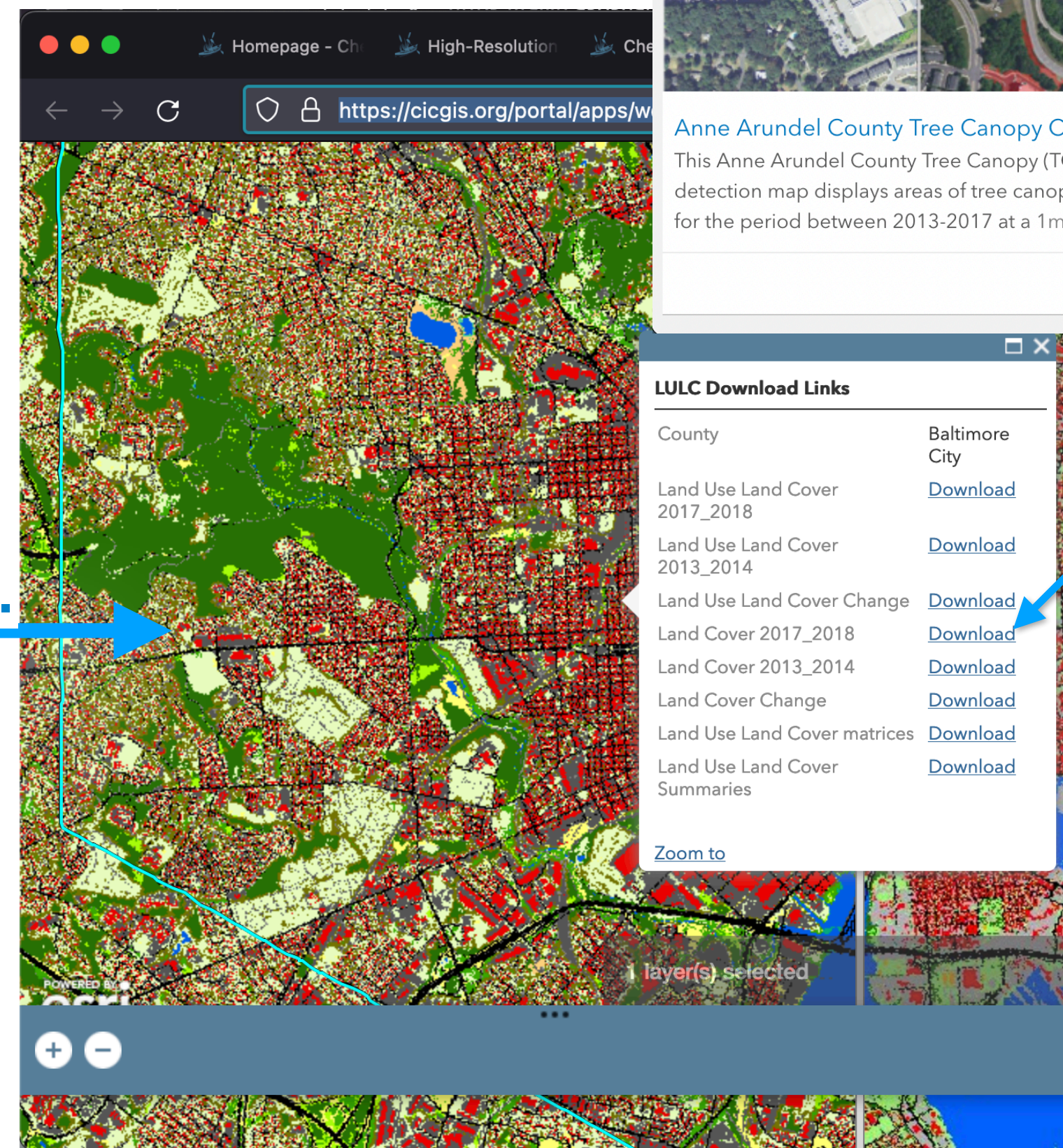
4. Then choose a download link from the popup

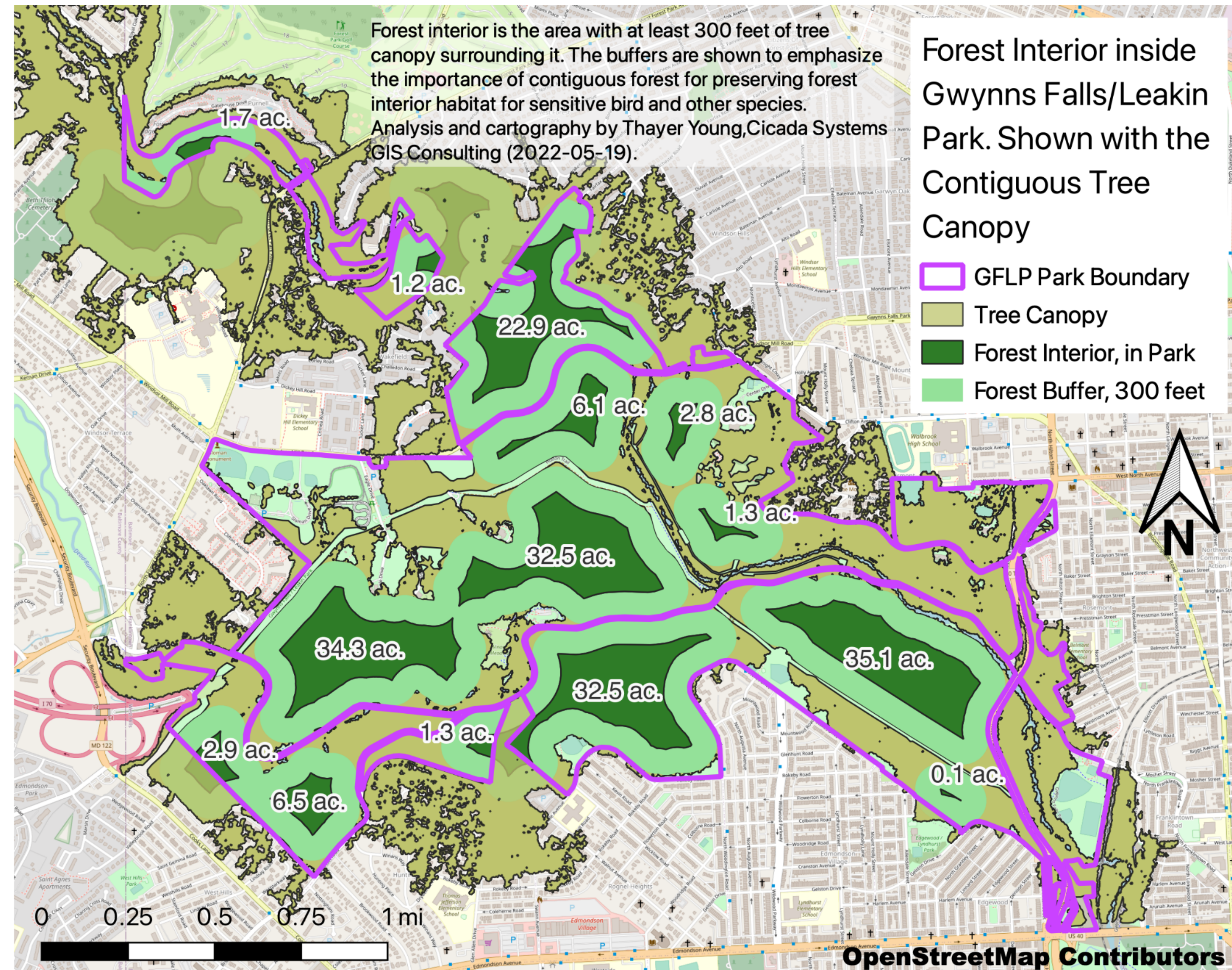• e.g. Land Cover 2017_2018

Find more information here.

Gallery for Chesapeake Conservancy Conservation Innovation Center

Anne Arundel County Tree Canopy Change 2013-...
This Anne Arundel County Tree Canopy (TC) change detection map displays areas of tree canopy gain and loss for the period between 2013-2017 at a 1m resolution ...

CBP Land Use/Land Cover Data Project - Static LU...
View and explore the 2017/2018 Land Use and Land Cover data from the CBP Land Use/Land Cover Data Project for the entire Chesapeake Bay Watershed

LULC Download Links

County	Baltimore City
Land Use Land Cover 2017_2018	Download
Land Use Land Cover 2013_2014	Download
Land Use Land Cover Change	Download
Land Cover 2017_2018	Download
Land Cover 2013_2014	Download
Land Cover Change	Download
Land Use Land Cover matrices	Download
Land Use Land Cover Summaries	Download

Zoom to

• 1 meter Land Cover

• 12 classes, for example:

    • Tree canopy

    • Tree canopy over:

        • Building

        • Road

        • Other impervious

    • Wetlands

    • Land Use has 42 subclasses

High Res Land Cover → **Rationale for the Forest Preserve**

- Sensitive birds need forest interior
  - To nest & breed

- Forest Interior
  - The deep forest

- Sensitive birds need large areas of intact forest

- Roads and pipelines
  - Interrupt the interior
  - Disturb sensitive species

- Pipeline projects
  - BGE
    - Gas pipeline
    - Cut down 16 acres of forest
  - DPW
    - Sanitary sewer
    - 2.9 acres
  - Old-Growth Forest Network
    - Postponed Baltimore's admission

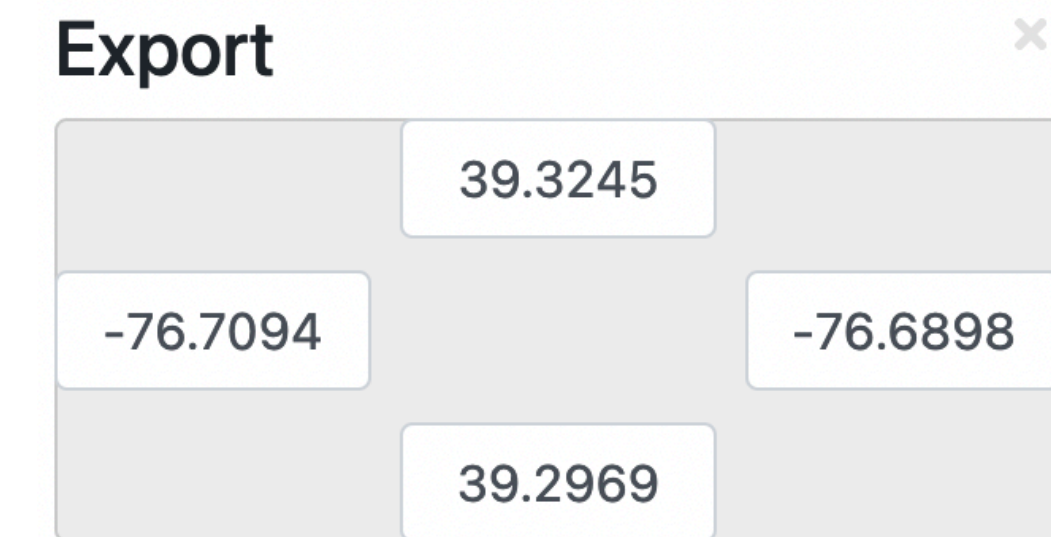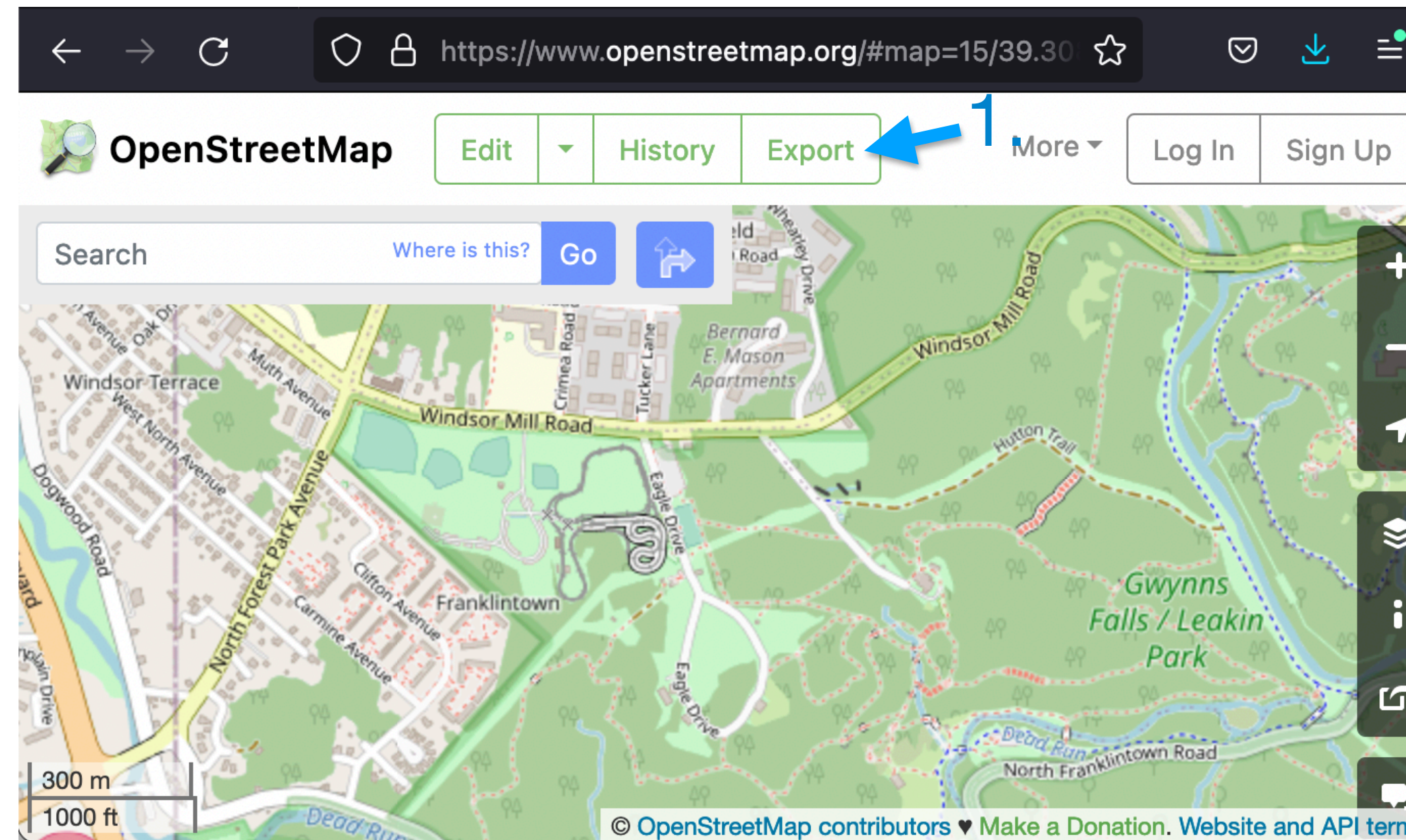- Preserve the remaining interior and its buffer

Forest interior is the area with at least 300 feet of tree canopy surrounding it. The buffers are shown to emphasize the importance of contiguous forest for preserving forest interior habitat for sensitive bird and other species. Analysis and cartography by Thayer Young, Cicada Systems GIS Consulting (2022-05-19).

Forest Interior inside Gwynns Falls/Leakin Park. Shown with the Contiguous Tree Canopy

- GFLP Park Boundary
- Tree Canopy
- Forest Interior, in Park
- Forest Buffer, 300 feet

1.7 ac.
1.2 ac.
22.9 ac.
6.1 ac.
2.8 ac.
1.3 ac.
32.5 ac.
34.3 ac.
32.5 ac.
35.1 ac.
2.9 ac.
1.3 ac.
0.1 ac.
6.5 ac.

0   0.25   0.5   0.75   1 mi

OpenStreetMap Contributors

Data Examples
and how to use them to advance the Forest Preserve

- High Resolution Land Cover → Rationale for preserving the forest
- OpenStreetMap → Park visitor experience and outreach
- Land records, old maps → History of the park

OpenStreetMap → **Park visitor experience and outreach**

- The Wikipedia of maps

- Anyone can edit

- But data can have gaps

  - Better in urban areas

- How to get the data:

  - https://www.openstreetmap.org

- Search or zoom to a small area

1. Click Export
2. Click Export again
3. You get:

  - a save dialog if it is small enough

  - an error message if it's too big

Export

| 39.3245 |
| -76.7094 | -76.6898 |
| 39.2969 |

Manually select a different area

Licence

OpenStreetMap data is licensed under the Open Data Commons Open Database License (ODbL).

Export 2.

If the above export fails, please consider using one of the sources listed below:

Overpass API
Download this bounding box from a mirror of the OpenStreetMap database
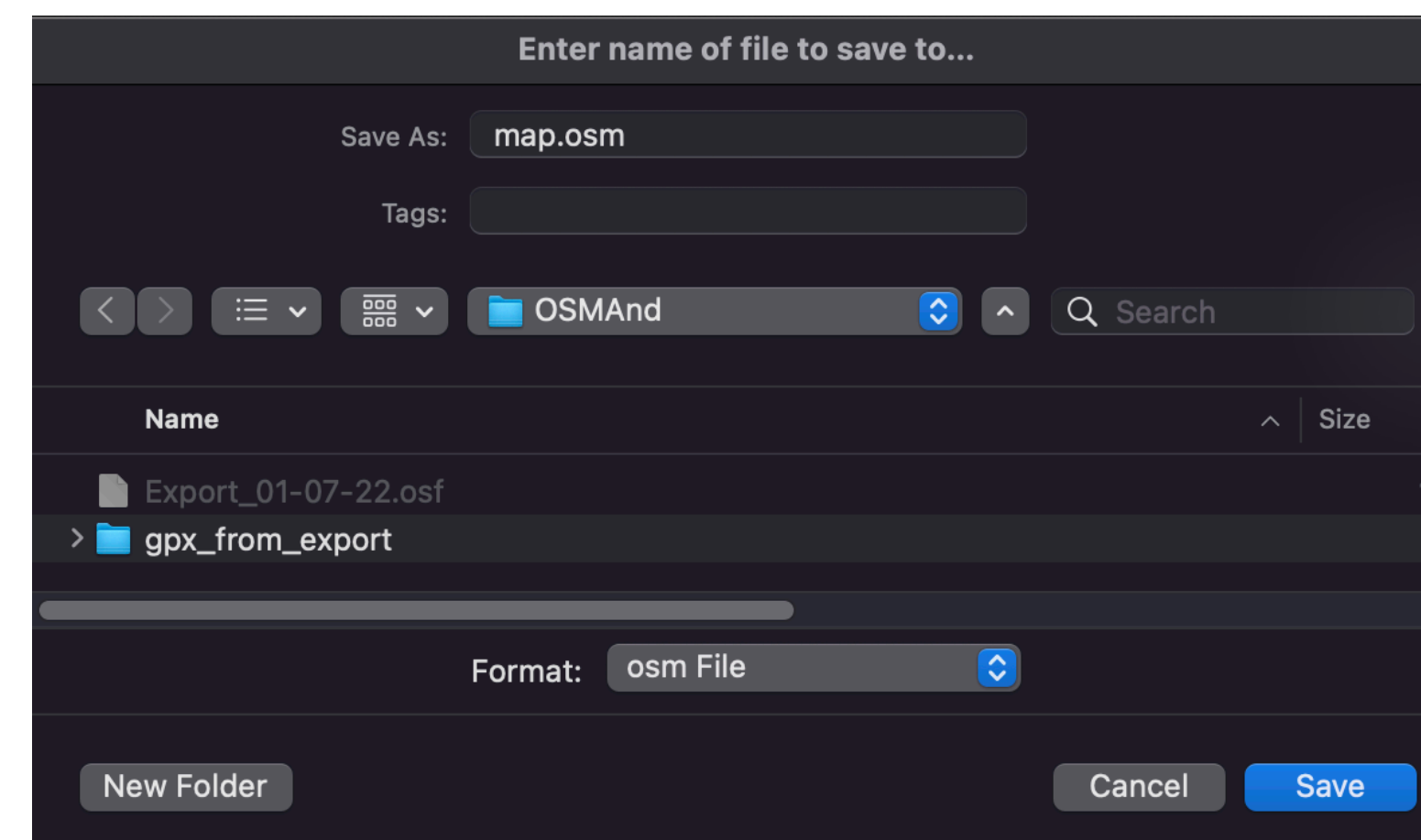
Planet OSM
Regularly-updated copies of the complete OpenStreetMap database

Geofabrik Downloads
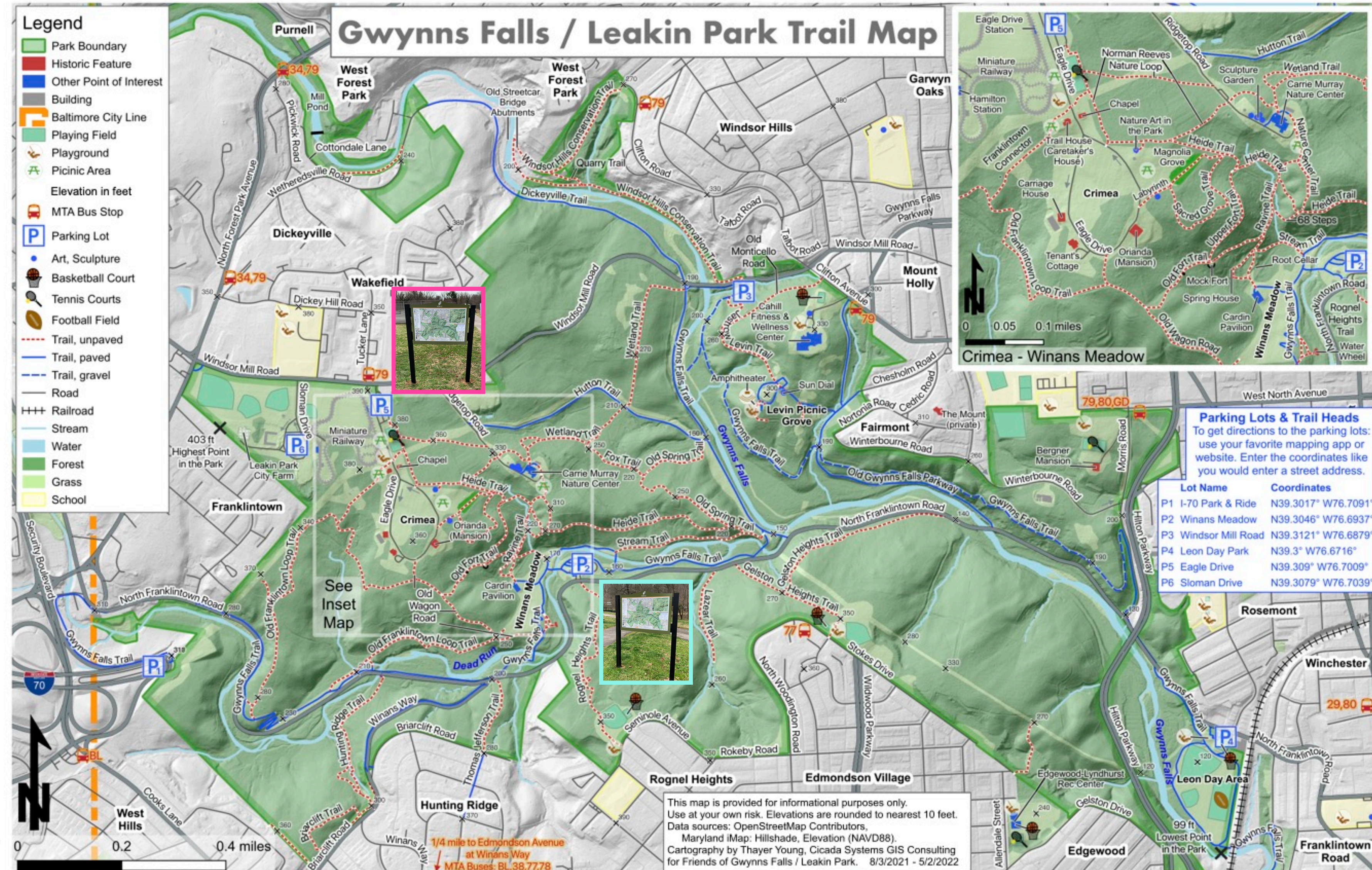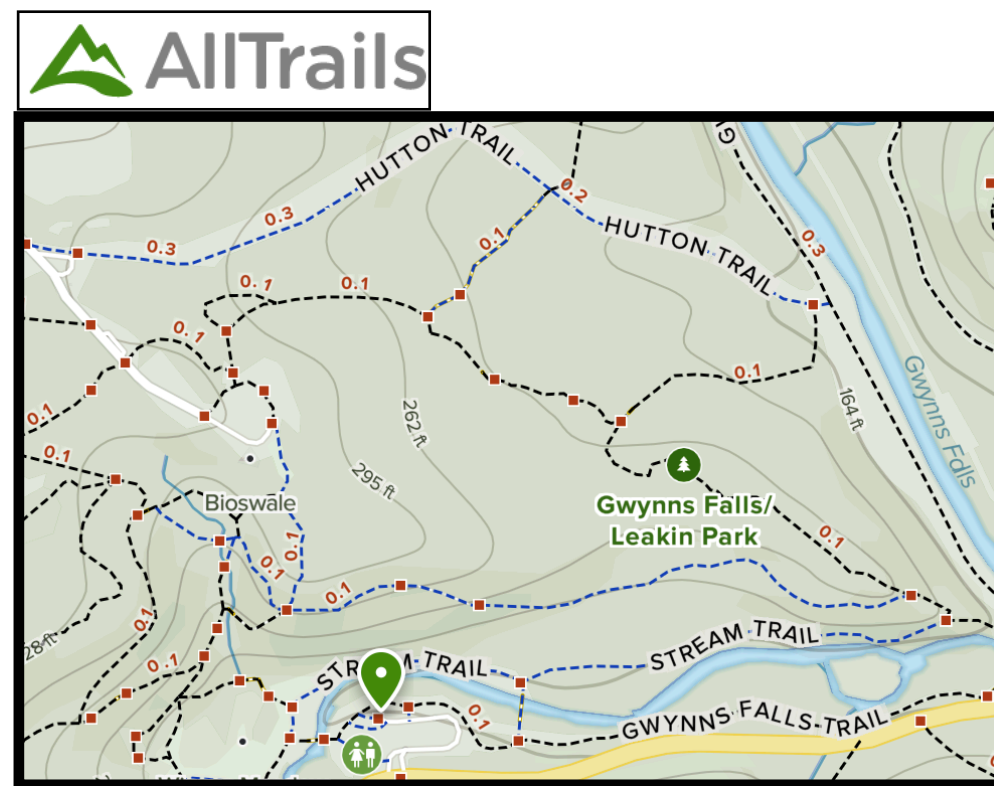Regularly-updated extracts of continents, countries, and selected cities

Other Sources
Additional sources listed on the OpenStreetMap Wiki

You requested too many nodes (limit is 50000). Either request a smaller area, or use planet.osm

- Old trail map
  - Very nice map
  - Needed to be updated
  - No trail map sign in the park

- OpenStreetMap
  - Good source of basemap data
  - Easy to edit/update
    - current trail alignment
      - of GPSed trails
  - Source for AllTrails basemap
    - Popular outdoor app
    - Users find GFLP through AllTrails

- Now 2 installed trail map signs in parking lots
  - Eagle Drive
  - Winans Meadow

Gwynns Falls / Leakin Park Trail Map

Data Examples
and how to use them to advance the Forest Preserve

- High Resolution Land Cover → Rationale for preserving the forest

- OpenStreetMap → Park visitor experience and outreach

- Land records, old maps → History of the park

Land records & old maps → History of the park's growth

Land Records: MDLANDREC.NET

- Maryland Archives
- Land records for all 23 counties & Balto City
  - Deeds, mortgages, etc.

- How to get the data:
  - https://mdlandrec.net
  - Create account: name, email, address
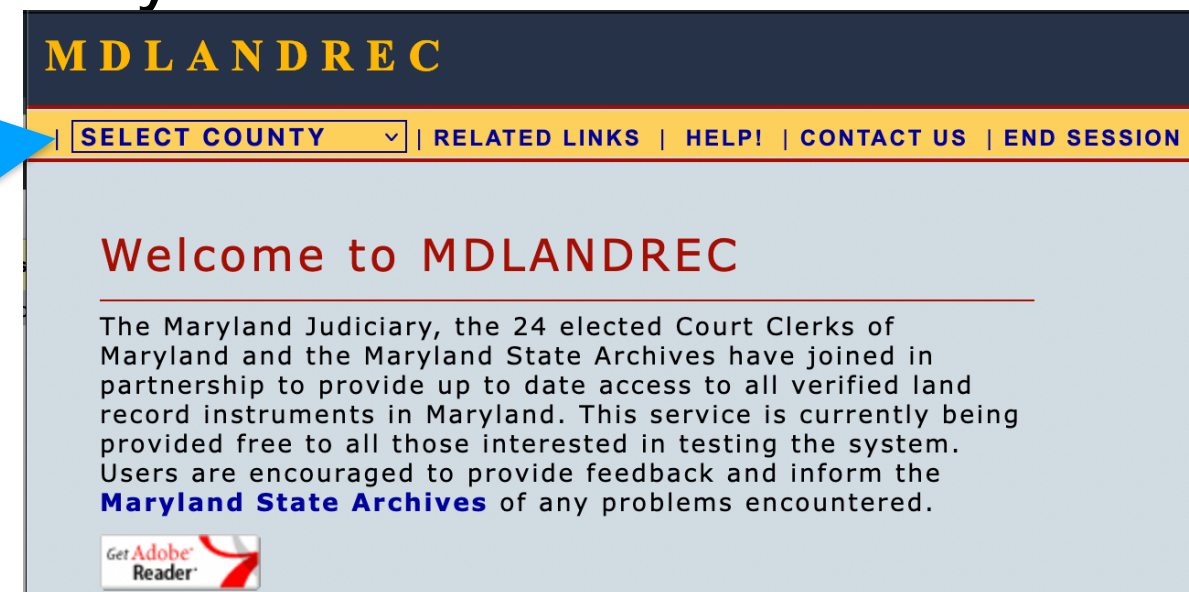 - Log in
  1. Click on SELECT COUNTY
  2. Enter the Book and (first) Page and click Go!

(from parcels, or CoDeMap v2 webpage click SDAT in a parcel's popup)
Parcels: (Book = Liber = DR1LIBER) (Page = Folio = DR1FOLIO)
  3. If you don't know the clerk, you may get multiple results, take your best guess from the dates, or look at each one.

1.

MDLANDREC

| SELECT COUNTY ∨ | RELATED LINKS | HELP! | CONTACT US | END SESSION |

Welcome to MDLANDREC

The Maryland Judiciary, the 24 elected Court Clerks of Maryland and the Maryland State Archives have joined in partnership to provide up to date access to all verified land record instruments in Maryland. This service is currently being provided free to all those interested in testing the system. Users are encouraged to provide feedback and inform the **Maryland State Archives** of any problems encountered.

Get Adobe Reader

| HOME | SELECT NEW COUNT∨ | RELATED LINKS | HELP! | CONTACT US | END SESSION |

Search Baltimore City Land Record Indices

» Block
» Address

» Instruments
» Individual Search

» Corporation Search
» Corporation Soundex
» Individual Soundex
» SDAT
» Block Books
» Active Indices
» Retired Indices
» Plats.net

Jump to new volume

Clerk [ ] Book * [ ] Page * [ ] [Go!] [Clear]

NOTE: Search returns single page.

Block Search

Jul. 1, 1972-Jul. 15, 2022 (verified through Jul. 15, 2022)
* Required fields
  Block No.: * [ ] Letter: [None ∨] Street: [ ]
  NOTE: House number is not required. Do not enter street types (avenue, street, lane, etc.)
  AS: [Both ∨]
  Date Range: [All dates ∨]
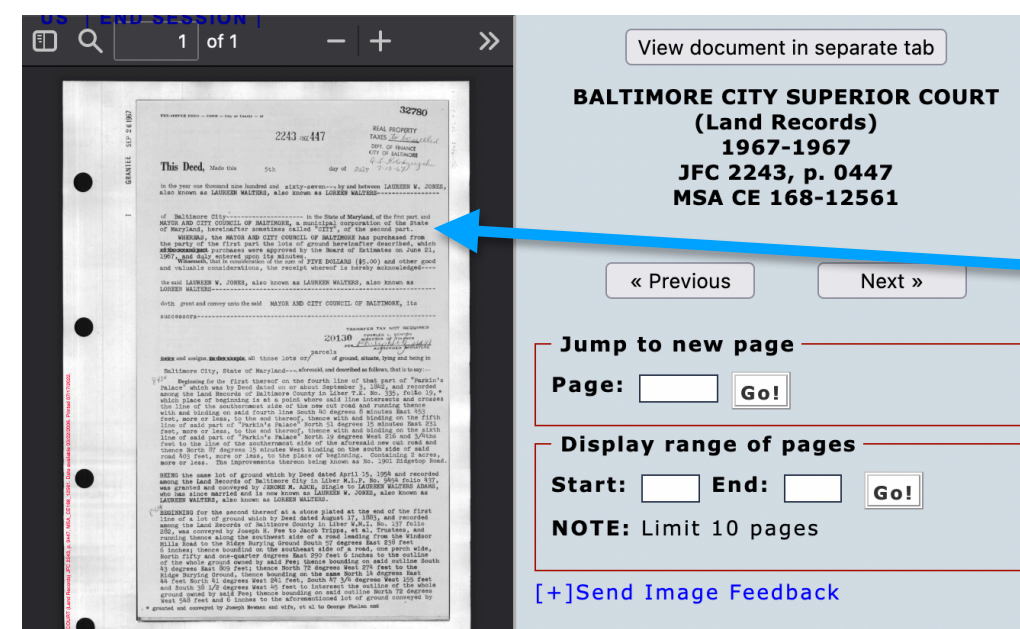 Sort By: [Date Ascending ∨]
  [Search!]
  [Clear]

2.

Your search criteria resulted in multiple volumes. Please select from the list below.

Agency (Series)	Dates	Description	MSA Number
CIRCUIT COURT (Land Records)	1989-1989	SEB 2243	**MSA CE 164-2243**
CIRCUIT COURT (Land Records)	2002-2002	FMC 2243	**MSA CE 164-11394**
SUPERIOR COURT (Land Records)	1906-1906	RO 2243	**MSA CE 168-2251**
SUPERIOR COURT (Land Records)	1967-1967	JFC 2243	**MSA CE 168-12561**

3.

View document in separate tab

BALTIMORE CITY SUPERIOR COURT
(Land Records)
1967-1967
JFC 2243, p. 0447
MSA CE 168-12561

« Previous   Next »

Jump to new page
Page: [ ] [Go!]

Display range of pages
Start: [ ] End: [ ] [Go!]
NOTE: Limit 10 pages

[+]Send Image Feedback

4. Your deed.
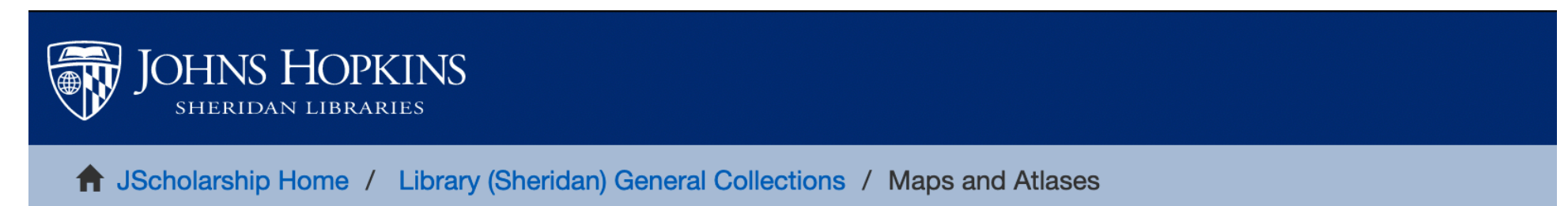Now learn real estate jargon

Old Maps: JScholarship

- JHU Eisenhower Library
  - Comprehensive historic maps of Baltimore
    - Paper & digital

- How to get the data:
  - JScholarship: Maps & Atlases
    https://jscholarship.library.jhu.edu/handle/1774.2/32585

JOHNS HOPKINS
SHERIDAN LIBRARIES

🏠 JScholarship Home / Library (Sheridan) General Collections / Maps and Atlases

Collections in this community

Aerial Photography - Baltimore (1924-1925, 1927, 1937-1938, 1948, 1952-1953, 1957, 1964, 1972)
Aerial Photography

Aerial Photography – Ocean City (1952-1964)

Aerial Photography- Other Maryland Counties

Baltimore City Sheet Maps
Baltimore City Sheet Maps

Baltimore County Sheet Maps
Baltimore County Sheet Maps

Baltimore Development Plans
Baltimore Development Plans

Hackerman Map Collection
Coming in Fall 2019

Maryland Historical Shorelines Map Series

Maryland Historical Topographic Maps (Scales 1:62,500; 1:31,680; 1:125,000)
Maryland Historical Topographic Maps

Maryland Orthophoto Quadrangle Map Series

Maryland State Sheet Maps & State Map Series
Maryland State Sheet Maps
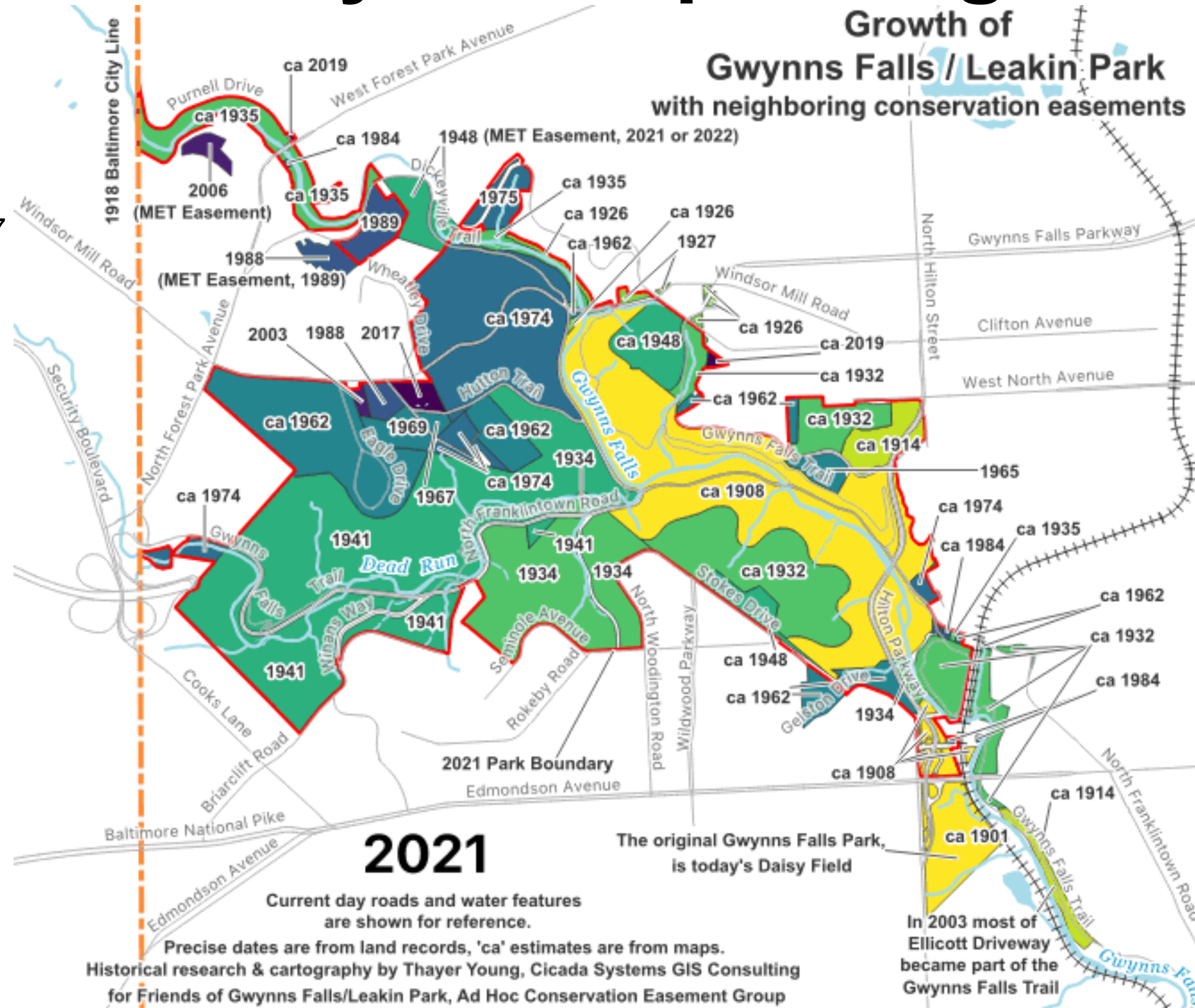
Maryland State, County and Baltimore City Atlases
Maryland Atlases

Good Stuff!

History of the park's growth

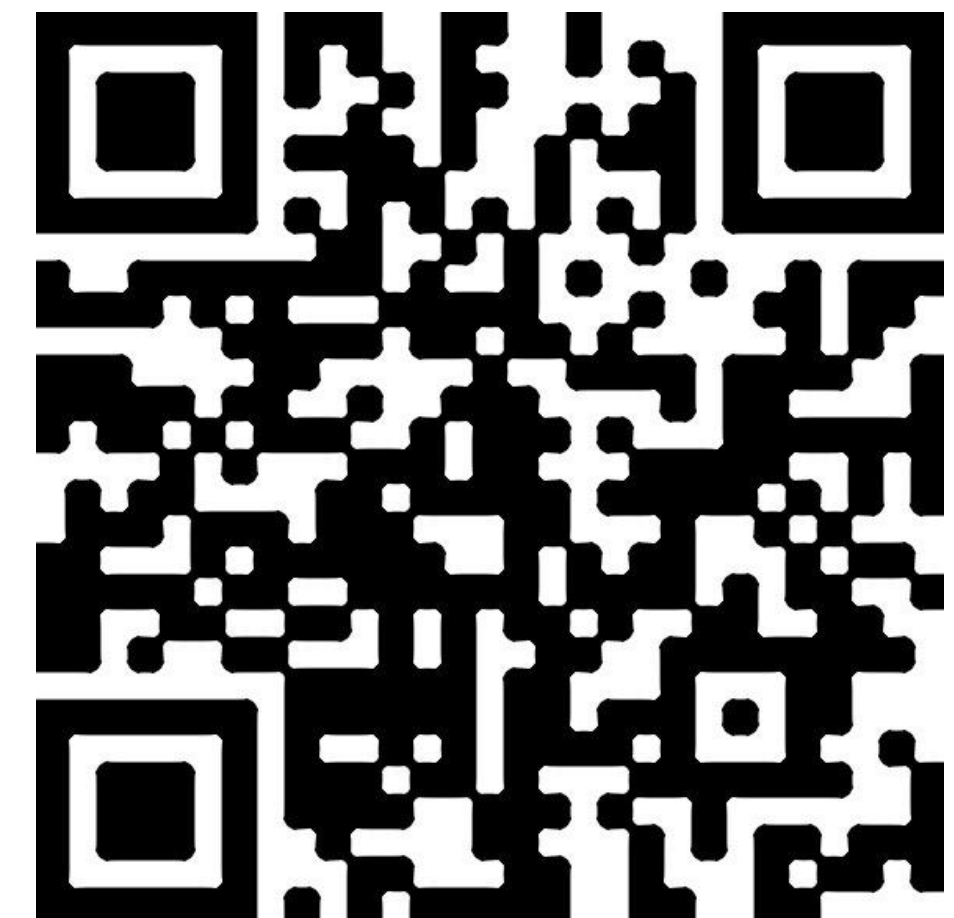- The park was assembled:
  - from 69 parcels
  - between 1901 and 2017

Growth of
Gwynns Falls / Leakin Park
with neighboring conservation easements

2021

Current day roads and water features
are shown for reference.

Precise dates are from land records, 'ca' estimates are from maps.

Historical research & cartography by Thayer Young, Cicada Systems GIS Consulting
for Friends of Gwynns Falls/Leakin Park, Ad Hoc Conservation Easement Group

The original Gwynns Falls Park,
is today's Daisy Field

In 2003 most of
Ellicott Driveway
became part of the
Gwynns Falls Trail

Resources

- Friends of Gwynns Falls Leakin Park
  https://friendsofgwynnsfallsleakinpark.org/

- Old-Growth Forest Network
  https://www.oldgrowthforest.net/

- High Resolution Land Use/Land Cover 2017-18 (click on CBP Land Use/Land Cover Data Project)
  https://cicgis.org/portal/home/gallery.html
  Documentation:
  https://www.chesapeakeconservancy.org/conservation-innovation-center/high-resolution-data/lulc-data-project-2022/

- Greenprint Parcel Evaluation Tool
  https://geodata.md.gov/greenprint/

- OpenStreetMap
  https://openstreetmap.org
  AllTrails basemap of Gwynns Falls Leakin Park
  https://www.alltrails.com/explore/us/maryland/gwynn-oak?b_tl_lat=39.31192054544738&b_tl_lng=-76.70213118987841&b_br_lat=39.297890464812724&b_br_lng=-76.68713227706695

- Land records, Maryland Archives
  https://mdlandrec.net

- CoDeMap v2 (click on a parcel then on SDAT in popup)
  https://cels.baltimorehousing.org/codemapv2/

- State Department of Assessment & Taxation (deed references)
  https://sdat.dat.maryland.gov/RealProperty/Pages/default.aspx

- Old maps
  https://jscholarship.library.jhu.edu/handle/1774.2/32585

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https://www.cicadagis.com

To download a PDF of this presentation:
https://cicadagis.com/data_week.html

Support the Forest Preserve
Sign the online PETITION!

https://cicadagis.com/wordpress/survey/