



# Applied Urban Forestry and Urban Ecology for Land Conservation in Massachusetts

Nick Long, Urban Wilds Foreperson, City of Boston  
Erica Holm, Urban Ecologist, Mass Audubon

2023 Massachusetts Land  
Conservation Conference

Saturday, March 25, 2023  
2:30 pm - 3:55 pm



# Mass Audubon

- Protect the nature of Massachusetts for people and wildlife
- Founded in 1896
- 160,000 members
- 14,000 volunteers
- Over 40,000 acres protected



Protect and Steward  
Resilient Landscapes



Advance Inclusive and  
Equitable Access to  
Nature



Mobilize to Fight  
Climate Change

# City of Boston Urban Wilds Program

- Protected natural areas throughout the City
- Wide variety of habitats
- Ecosystem services include
  - storing floodwater
  - filtering stormwater runoff
  - Capturing carbon and producing oxygen
  - reducing the "urban heat island" effect



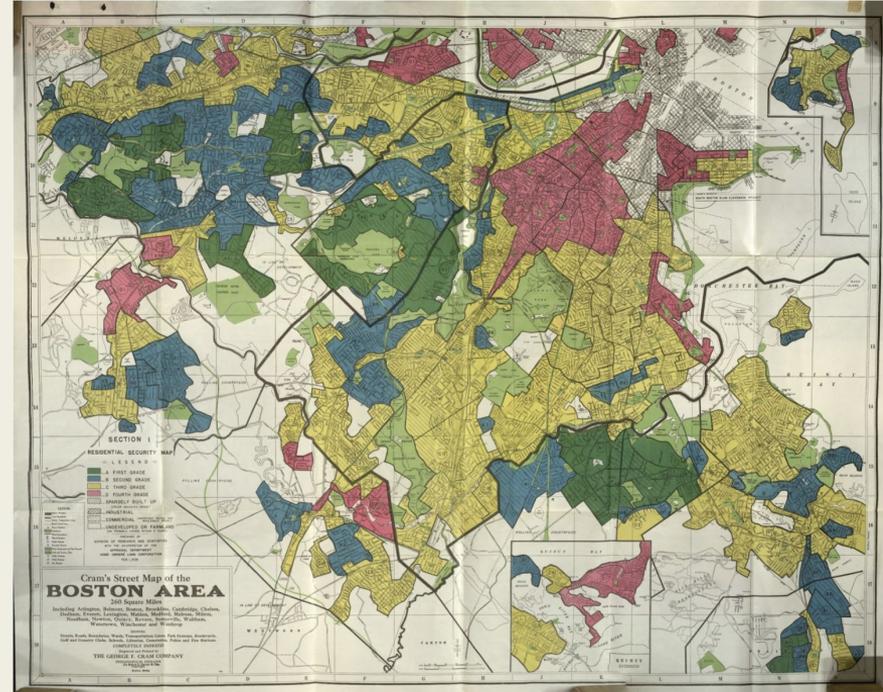
City of Boston  
*Parks and Recreation*



**CITY of BOSTON**  
Conservation Commission

# Acknowledgements

- Credit to urban ecologists and activists whose dedication laid foundations for modern efforts
- Our positioning as land stewards, scientists, and Boston residents now
- Residents and communities now and in the future are a priority
  - Historic marginalization of environmental justice communities
  - Spatial distribution of climate impacts in cities

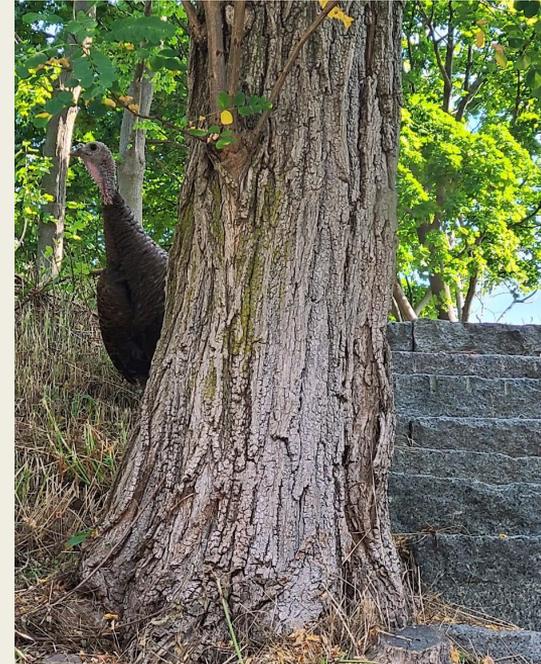


Source: Ofulue, C. (2021). Redlining in Boston: how the architects of the past have shaped Boston's future. Boston Political Review. [link](#)

# Definitions - Why Urban?

**Urban ecology**: studying the ecology of a city, including further consideration of the “built environment” as an abiotic factor and being interdisciplinary with social studies

- Cities are complex and biodiverse
- Increasingly important with climate change and population distribution shifts towards cities



Source: Pickett, S. T. A., Cadenasso, M. L., Grove, J. M., Rosi, E. J., & Swan, C. M. (2019). Science for the sustainable city: Empirical insights from the Baltimore School of Urban Ecology. Yale University Press.

Breuste, J., H. Feldmann, and O. Uhlmann, editors. (1998). Urban Ecology. Springer-Verlag, Berlin ; New York.

**Trees are the charismatic megafauna of urban ecology!**



**Urban forest:** “Urban and community forests are the trees, plants, and associated ecosystems anywhere people are”

[MA DCR Urban & Community Forestry Program](#)

**Urban forestry:** “The planting, maintenance, care and protection of tree populations in urban settings”

[American Forests](#)

**Tree canopy:** “From an aerial view, the leaves and branches covering the ground make up our tree canopy.”

[Boston Urban Forest Plan](#)



# Urban Forestry in Boston

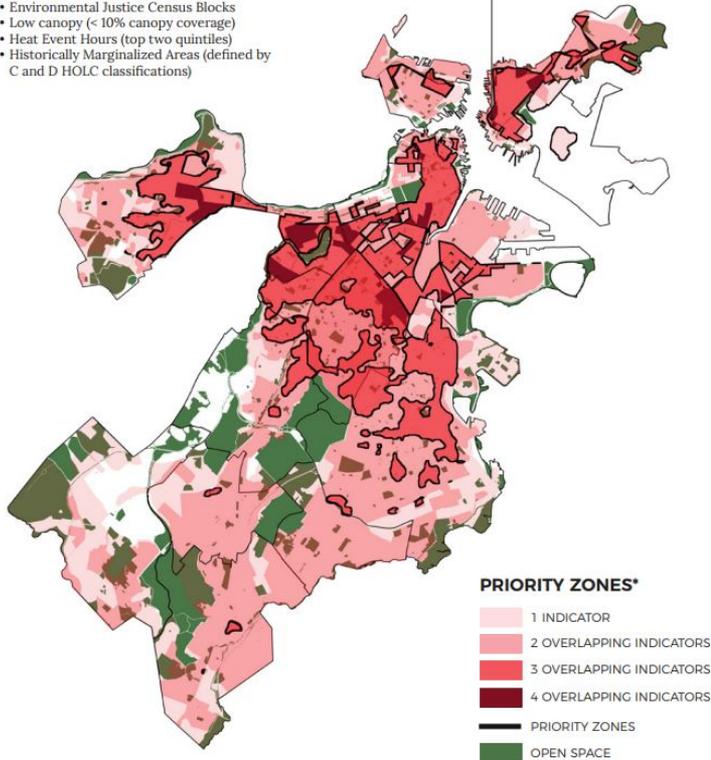
Source: Boston Urban Forest Plan Neighborhood Strategies and Boston Urban Forest Plan Appendix

## WHAT IS A PRIORITY ZONE?

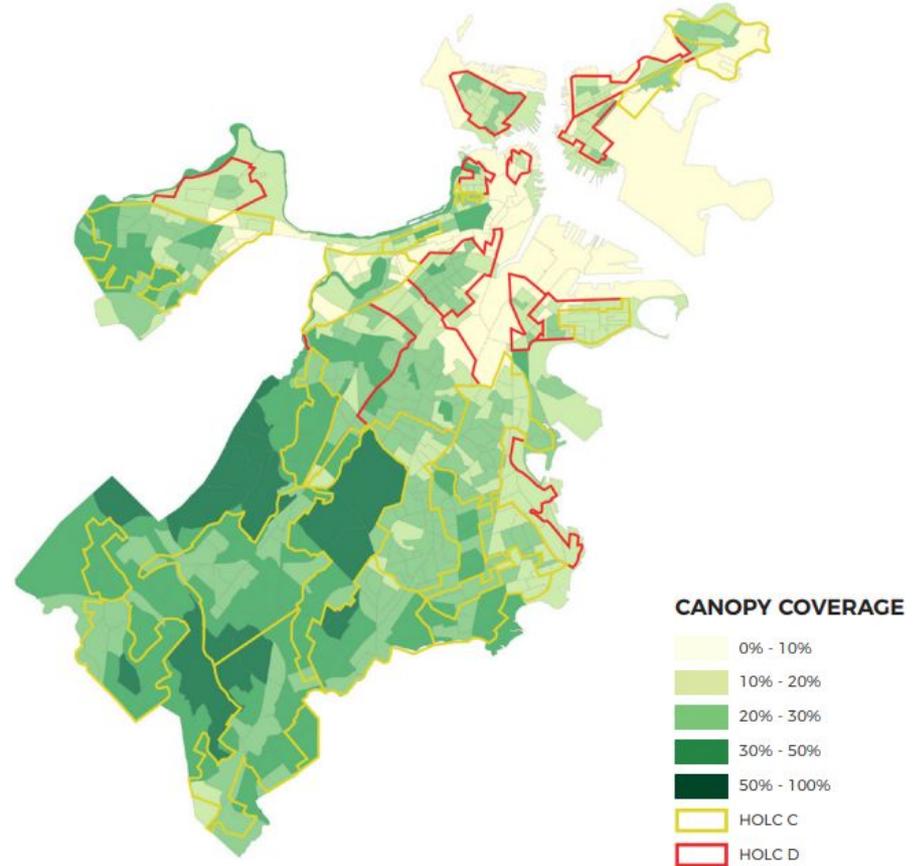
Priority zones are a way to focus efforts, but should not prevent action in areas not highlighted in this map. Many priority populations, for example, live in areas with relatively high overall canopy, but in which canopy cover is declining.

Priority zones are determined by three or more overlapping prioritization indicators, which include:

- Environmental Justice Census Blocks
- Low canopy (< 10% canopy coverage)
- Heat Event Hours (top two quintiles)
- Historically Marginalized Areas (defined by C and D HOLC classifications)



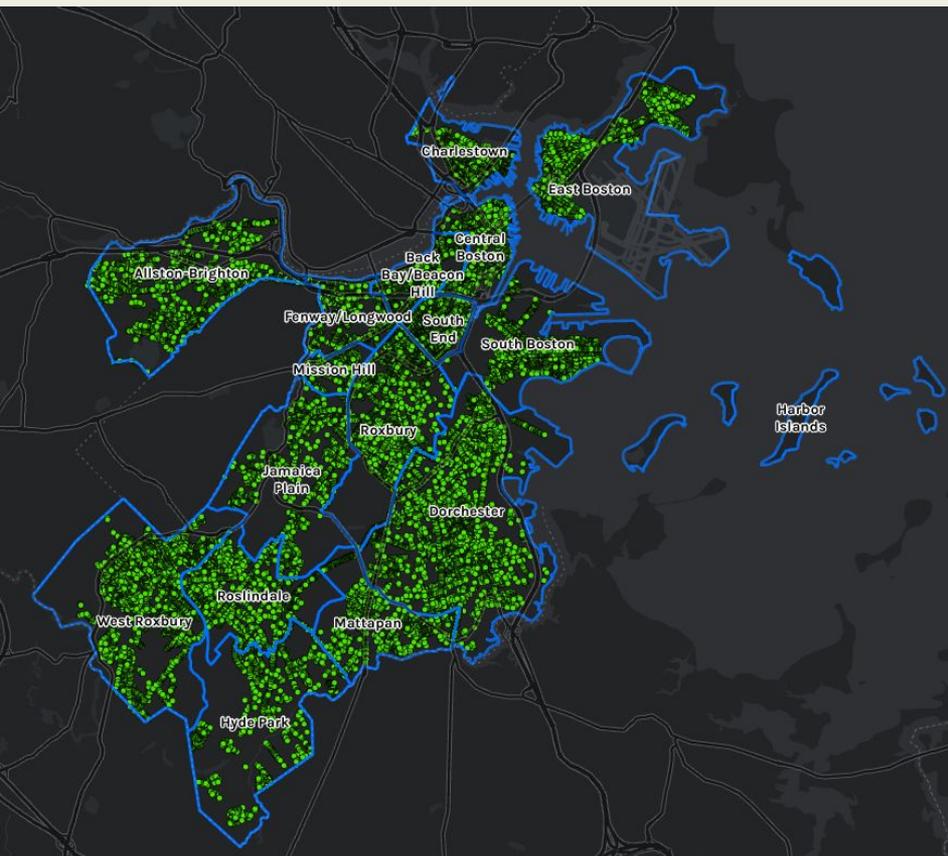
\*Priority zones are areas with three or more overlapping indicators.



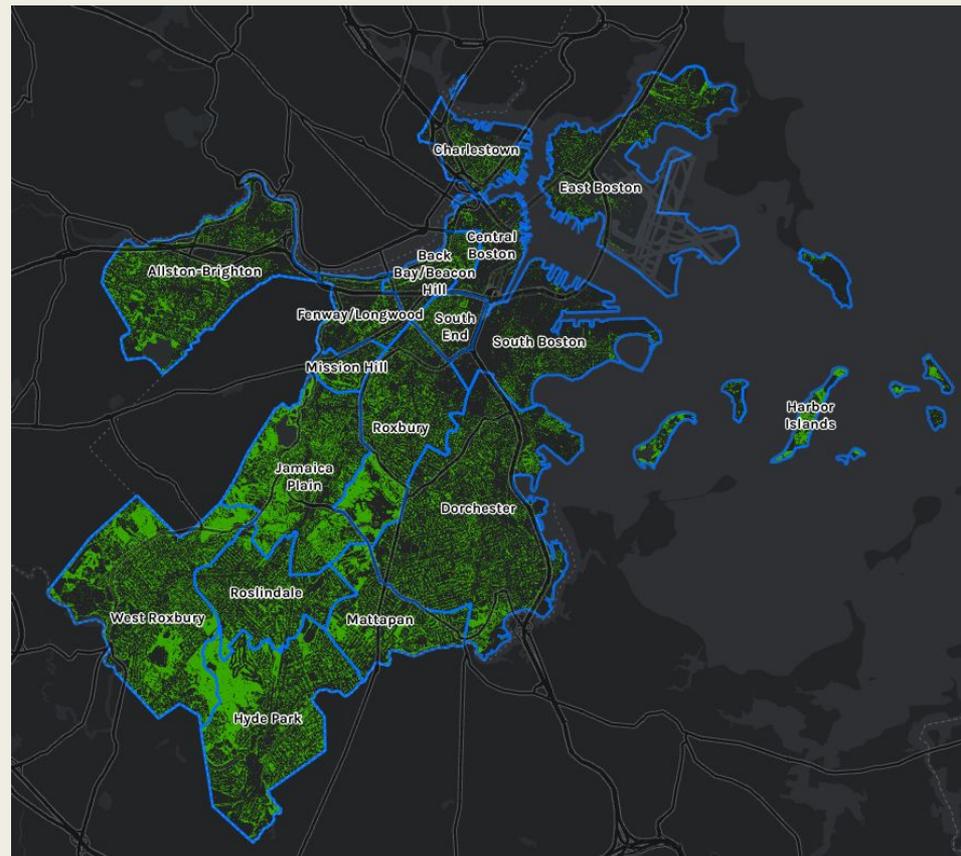
HOLC Boundaries with canopy coverage by census block

# Urban Forestry in Boston

Source: AnalyzeBoston public data layers with neighborhood boundaries updated as possible to match Urban Forest Plan



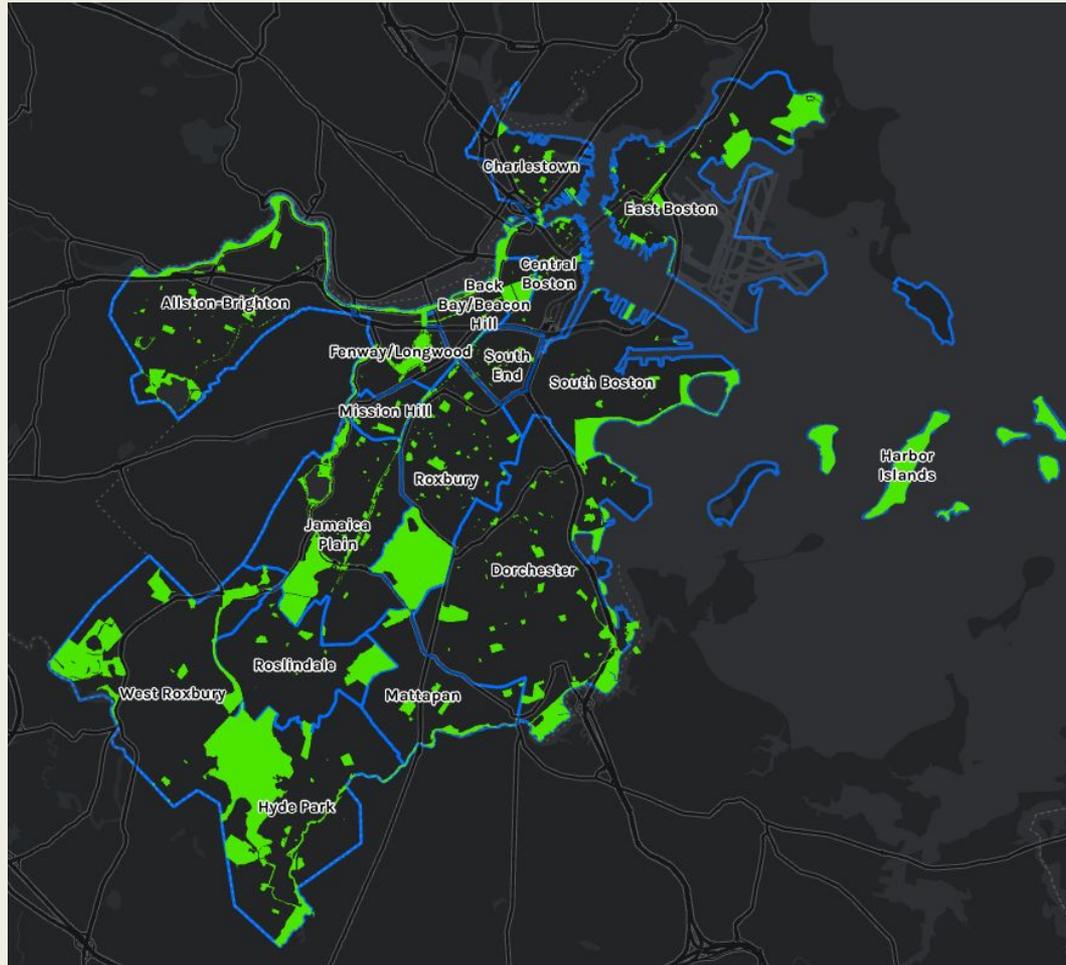
2021 Boston Street Tree Inventory Points



2019 Boston Tree Canopy Polygons

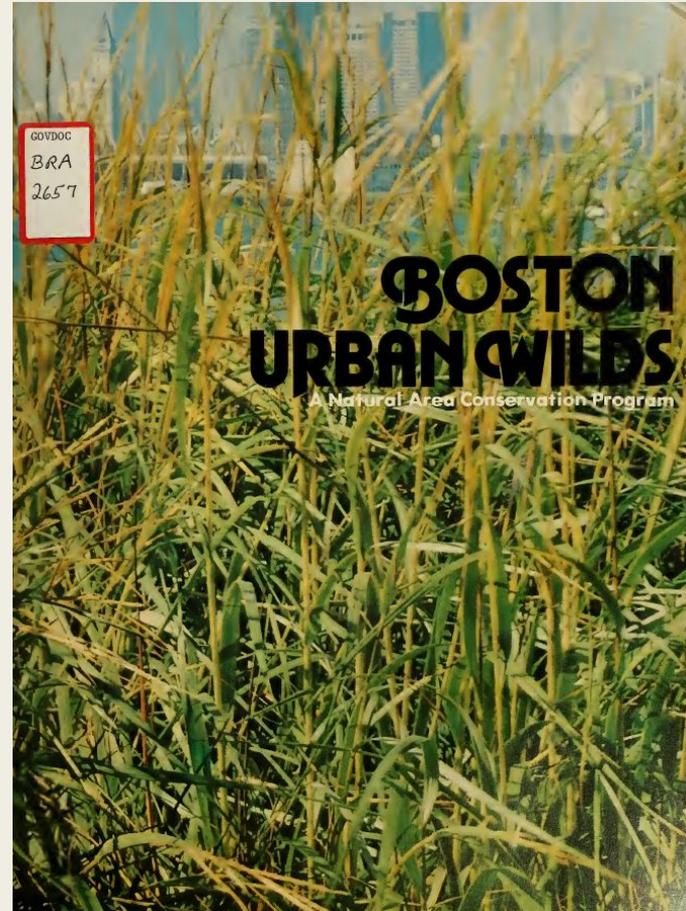
# Public Open Space in Boston

Source: MassGIS Protected Open and Recreational Space layer clipped to Boston and filtered for public ownership



# Urban Wilds History

- 1976 report - Boston Redevelopment Authority
  - **First step** for City in protecting these natural areas
    - “areas of land or water that have retained or re-established considerable natural character even though they may not be completely undisturbed.” (p. 18)
  - 143 sites (2,000 acres) identified for having “significant amounts of”
    - flora, fauna and/or
    - features of geological importance
    - scenic, recreational, educational or esthetic value.” (p. 19)
  - All unprotected, many private



# A Diversity of Sites Identified in 1976

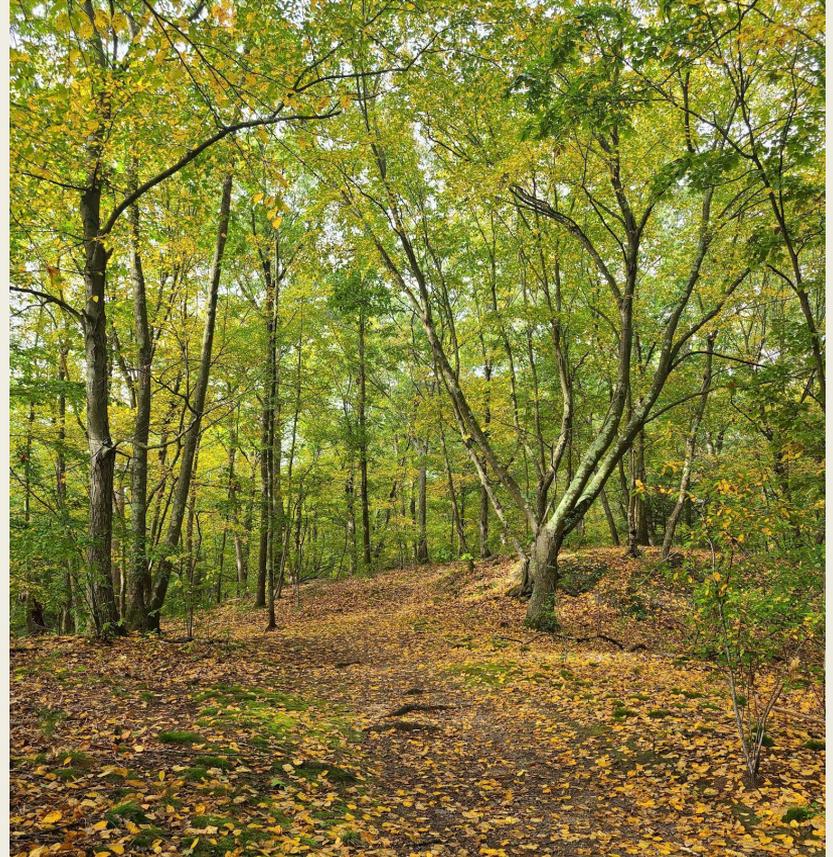
No “one size fits all” for Urban Wilds

1. Most significant natural area
  - a. “Undisturbed”, 25-100 acres, etc .
2. Significant
  - a. Some landscape reclamation needed, 5-25 acres
3. Less significant
  - a. Small and disturbed, often waterfront and post-industrial

# A Diversity of Sites - Most Significant

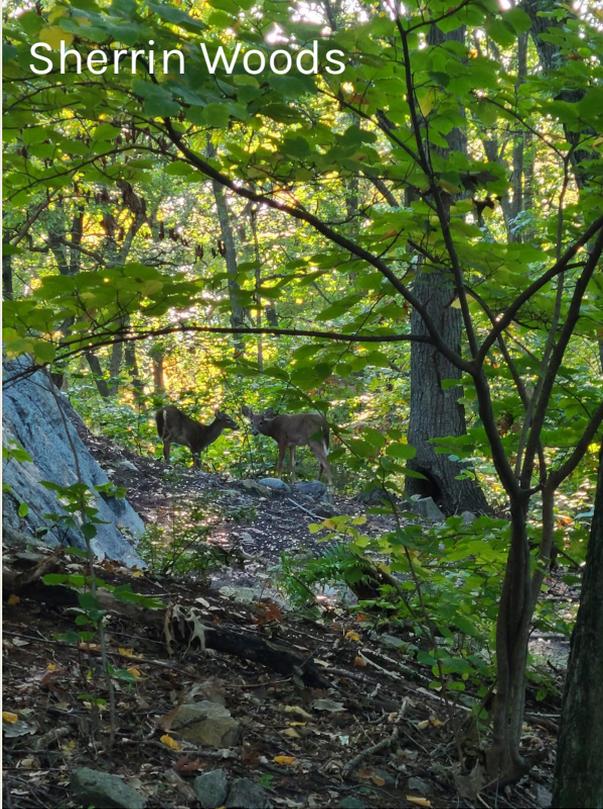
## Allendale Woods, West Roxbury

- Early-late colonial estates and farms □ large-scale woodlands and wetlands
- 100 acres, mix of public and private



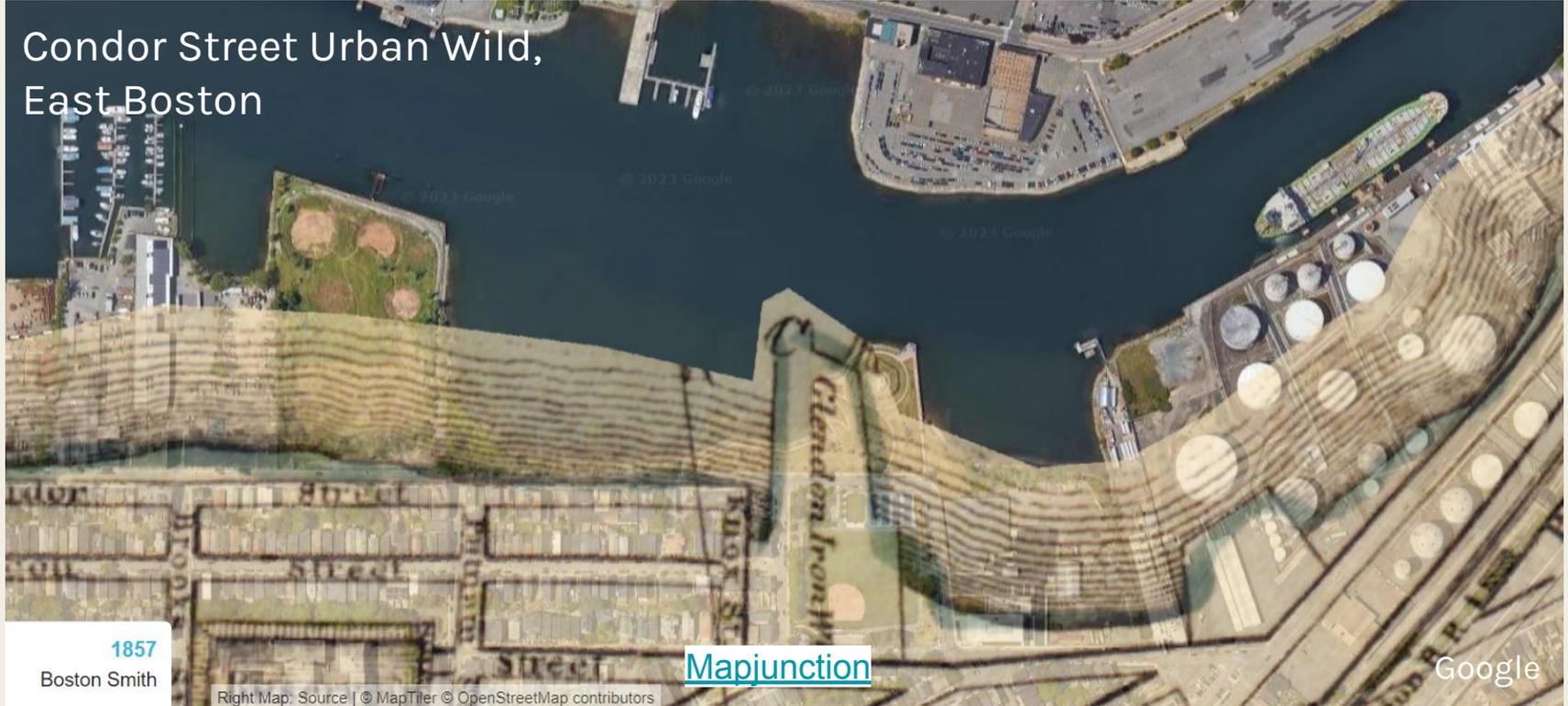
# A Diversity of Sites - Significant

Sherrin Woods



# A Diversity of Sites - Less Significant

Condor Street Urban Wild,  
East Boston



1857

Boston Smith

Mapjunction

Right Map: Source | © MapTiler © OpenStreetMap contributors

Google

# A Diversity of Sites - Less Significant

Condor Street Urban Wild,  
East Boston



# Prioritization of protection

1. Sites currently threatened by development
2. "Most Significant" sites in High-Need Neighborhoods
3. All remaining "Most Significant" sites
4. "Significant" sites in High-Need Neighborhoods
5. All remaining "Significant" sites
6. All remaining sites

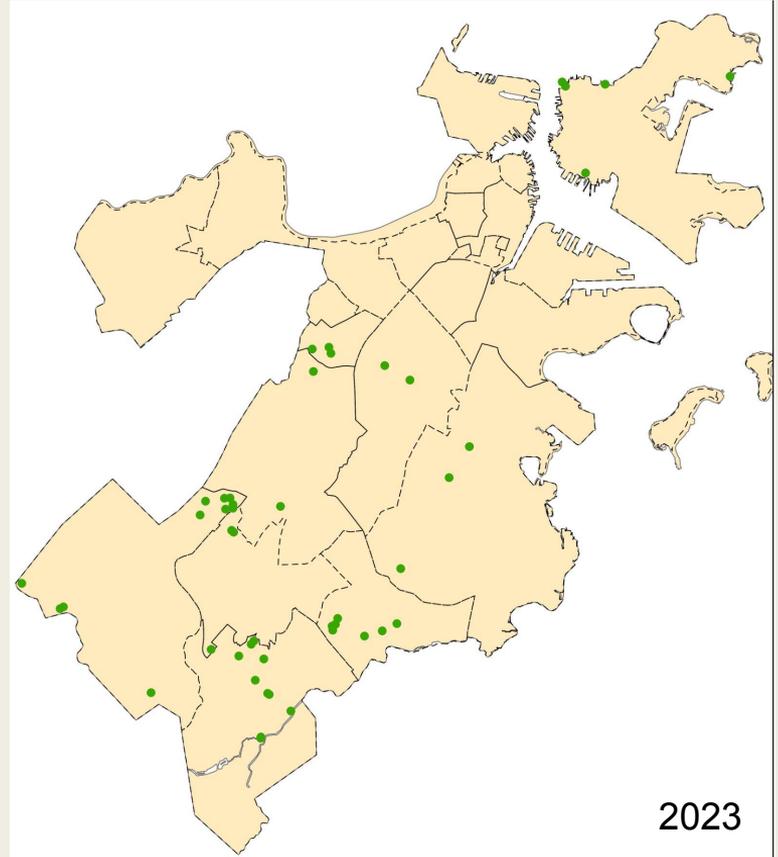
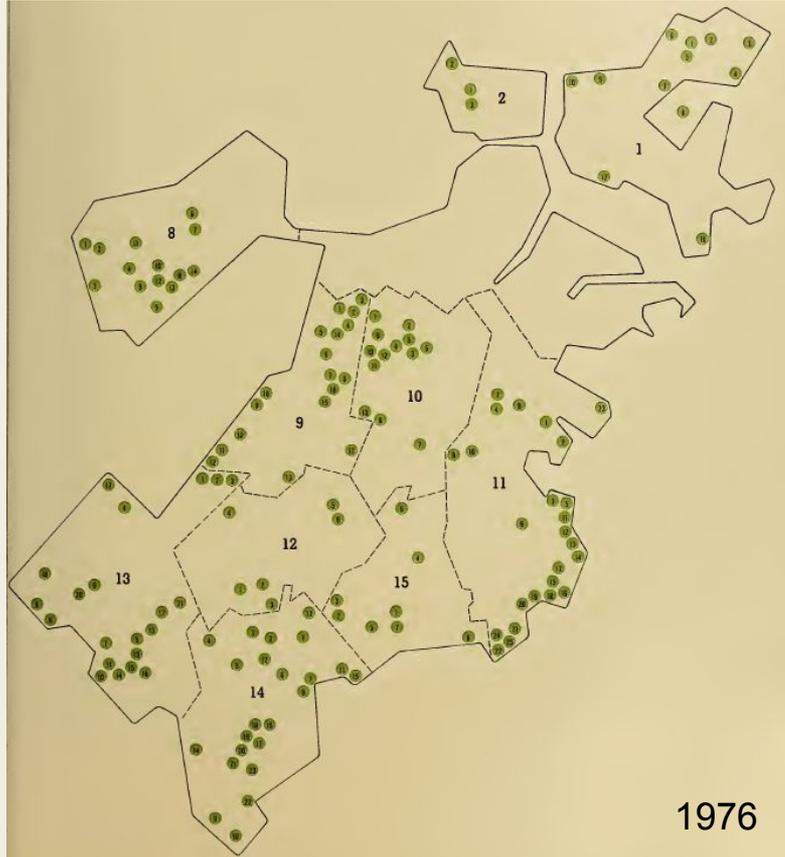
# Urban Wilds History

- 1977 - Citizens establish the Boston Natural Areas Fund (BNAF)
  - Led in part by Eugenie Beal
  - **BNAF purchased, then turned over to Conservation Commission**
- 1988 - BNAF puts more focus into outreach and education to generate broader knowledge of and support for Urban Wilds
  - Also research into new tools and strategies for their protection
- 1990 - another Urban Wilds Report published, further guiding land use decisions and documenting remaining Urban Wilds

# Urban Wilds Acquisition and Protection

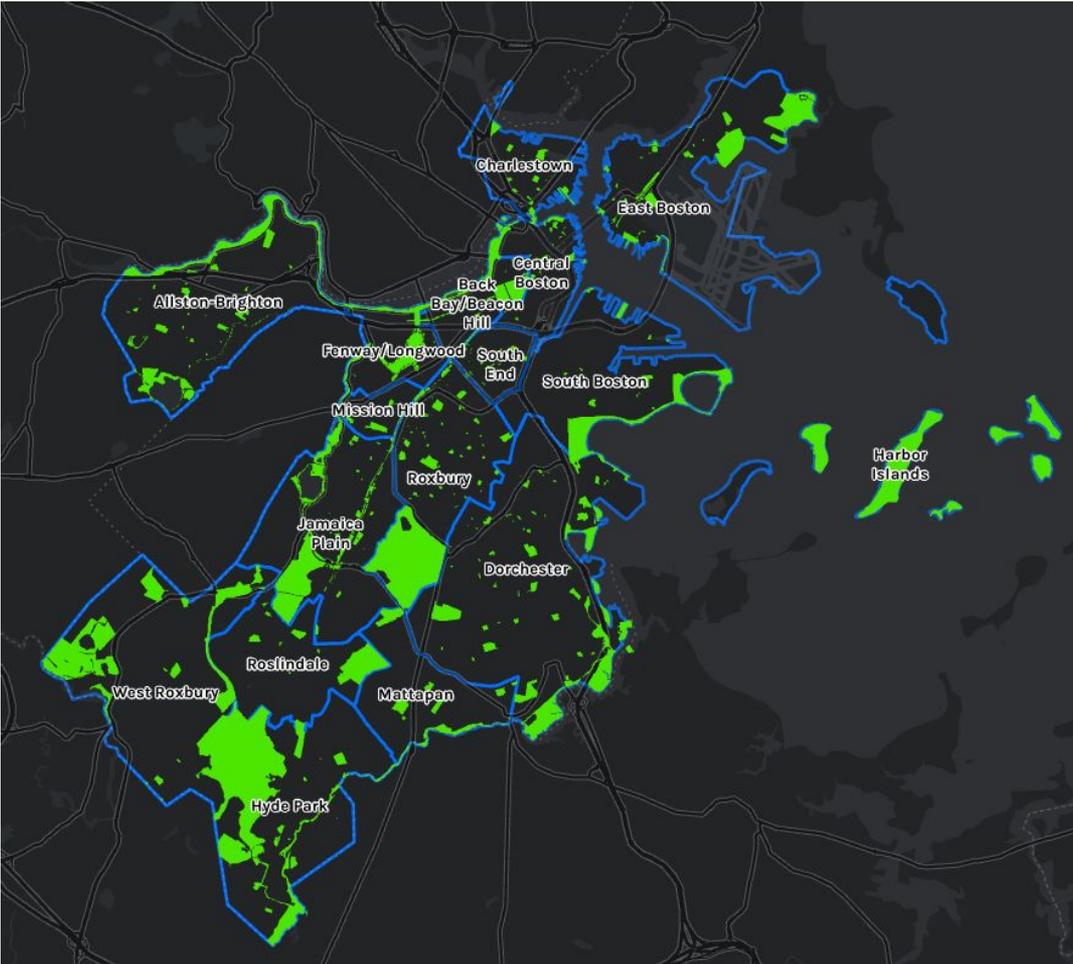
- Acquisition
  - City purchases from private landowner or has transfer from private party (BNAF)
  - Eminent domain, tax foreclosure
  - Departmental transfer
- Protection
  - Wetlands Protection Act
  - Land and Water Conservation Fund
  - Massachusetts Constitution
    - Chapter 91
    - Article 97
  - Private conservation restrictions
  - Area of Critical Environmental Concern

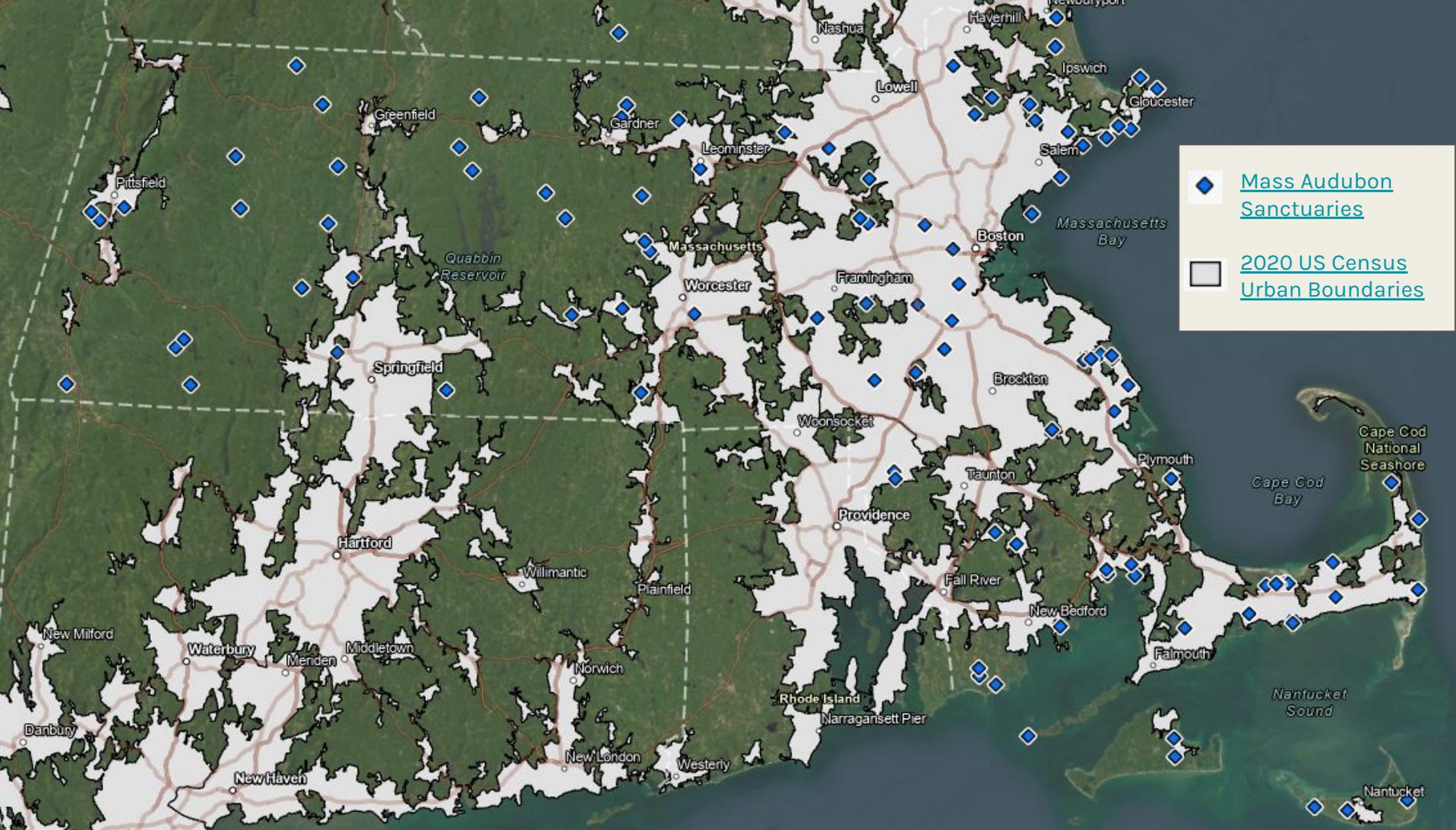
# Urban Wilds



# Public Open Space in Boston

Source: MassGIS Protected Open and Recreational Space layer clipped to Boston and filtered for public ownership





# Mass Audubon's Conservation Science Department

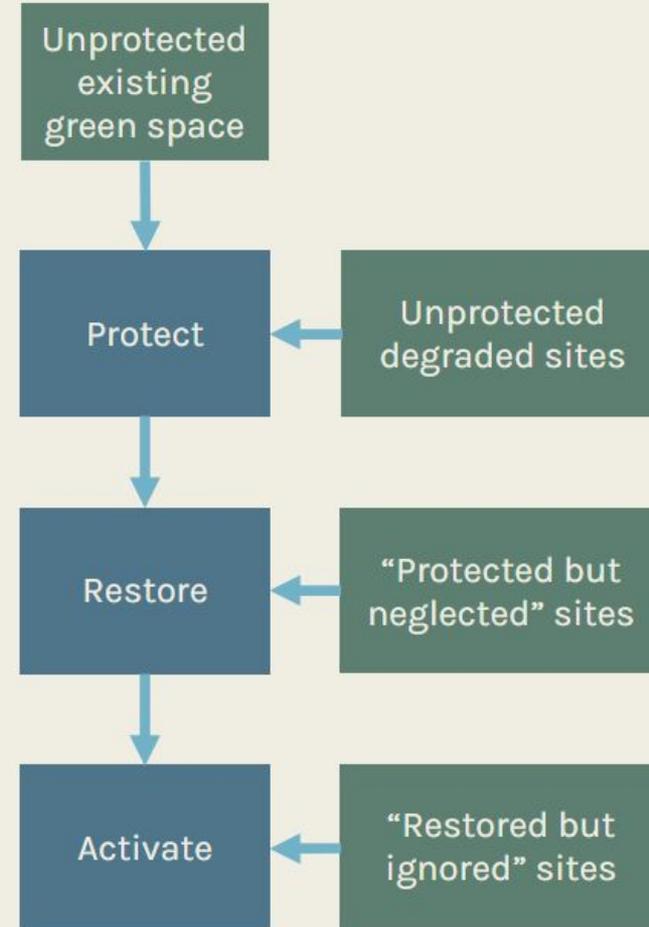
## Urban Ecologist

- Listen to and engage directly with urban communities
- Conserve, restore, maintaining, and activating urban green spaces
- Advance research and practice of urban ecology with partners across sectors and disciplines
- Support urban ecology and urban forestry education, advocacy, and community science
- Make resources people can use! Like maps!



# Mass Audubon's Nature in the City Program

- Stacey Beuttell, Senior Director
- Community-based, including land protection, restoration, and activation projects
- Integrated with education, policy, land protection, and ecological management



## GOAL 2: LISTEN + ENGAGE

### Inclusive and Equitable Access to Nature



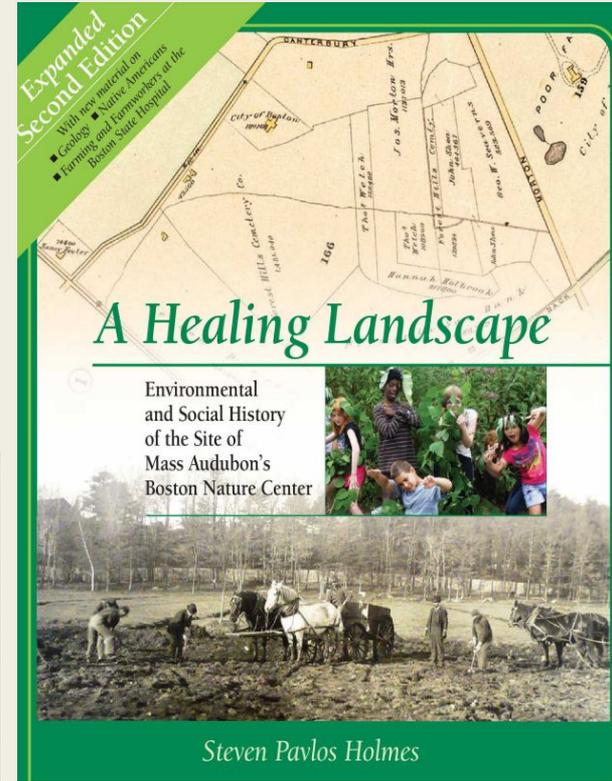
Protect **20** new urban green spaces and wildlife sanctuaries by 2026

Grow the number of children from low-income families and communities of color who participate in our nature-based educational programs from 35,000 to **90,000**

Double the total number of children who benefit from our educational, preschool, and camp programs from 150,000 to **300,000**

Increase low-income families' access to our programs by growing our scholarship fund to **\$2 million**

# Mass Audubon's Boston Nature Center



Source: Holmes, S. P. 2016. A healing landscape: environmental and social history of the site of Mass Audubon's Boston Nature Center. [link](#)

Mass Audubon's [Boston Nature Center](#)

1832



# Mass Audubon's Boston Nature Center

1938



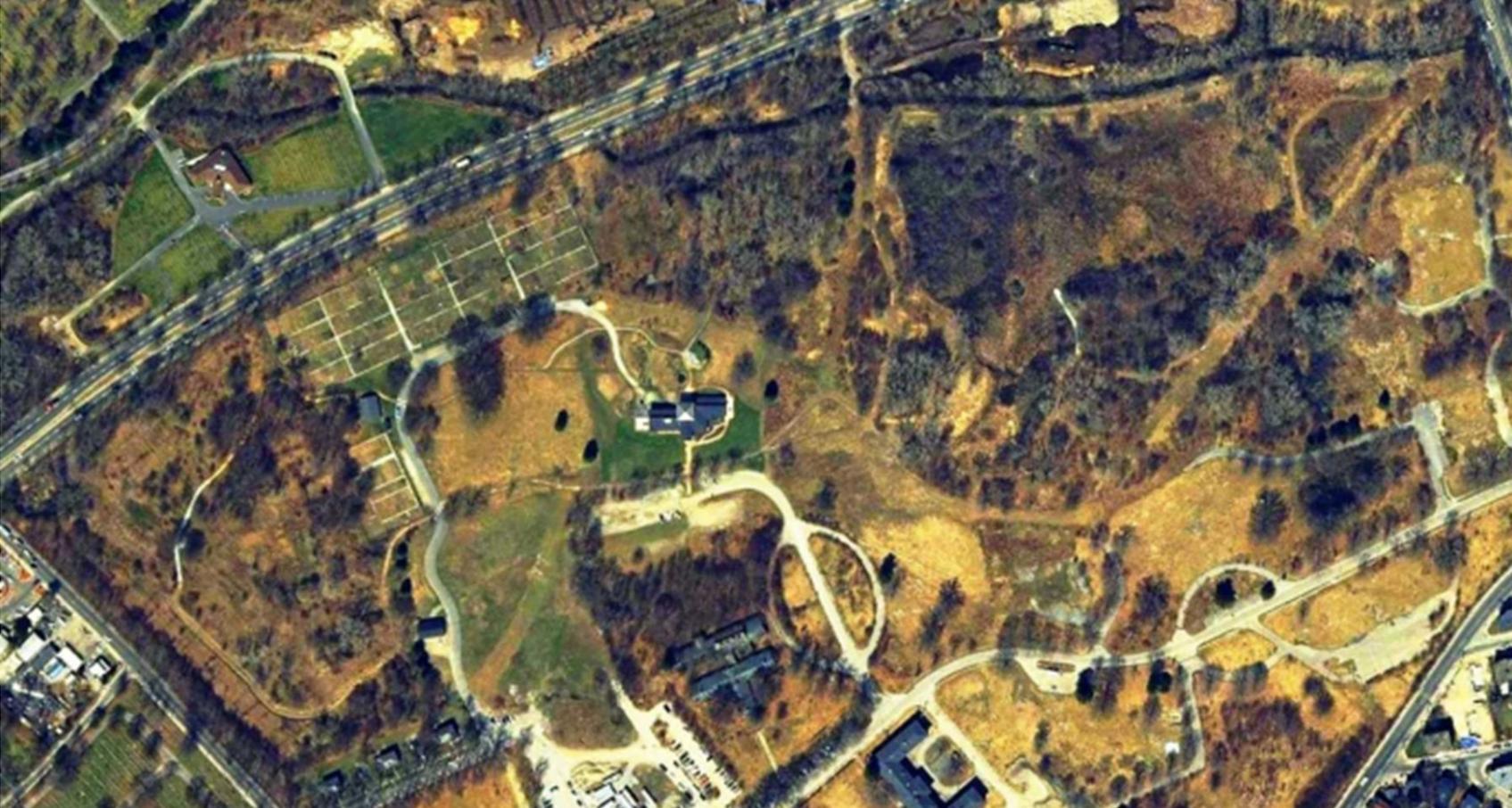
# Mass Audubon's Boston Nature Center

1995



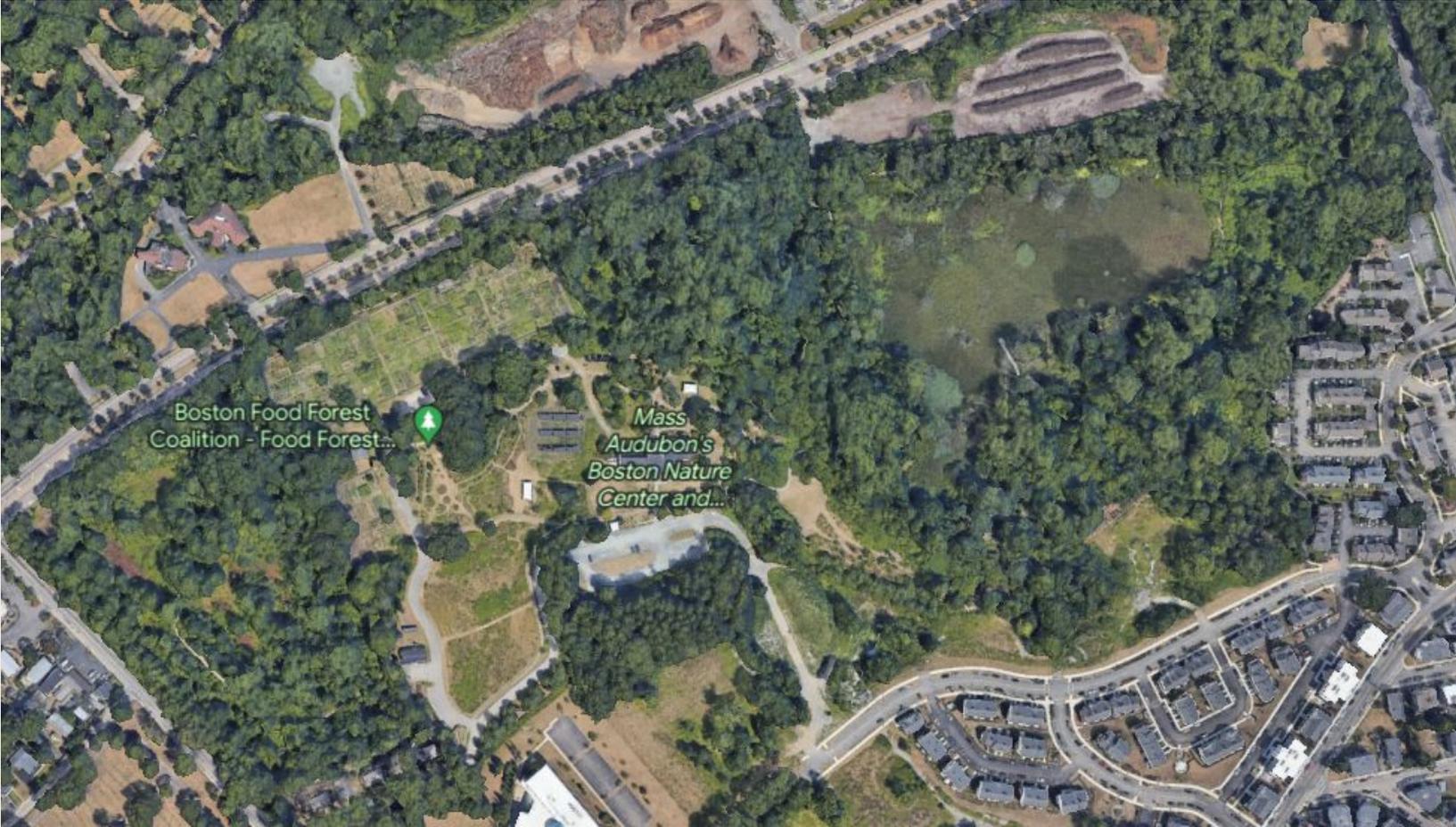
# Mass Audubon's Boston Nature Center

2005



# Mass Audubon's Boston Nature Center

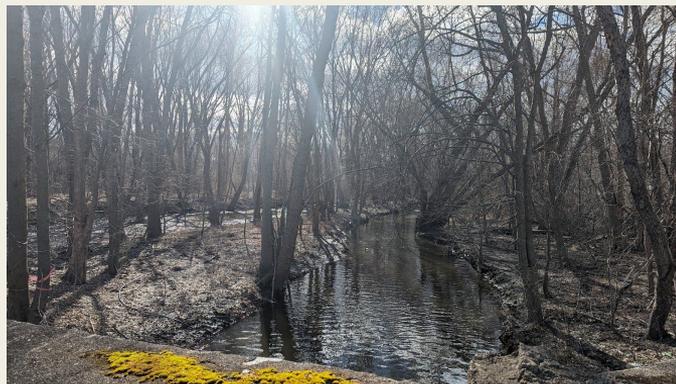
2022



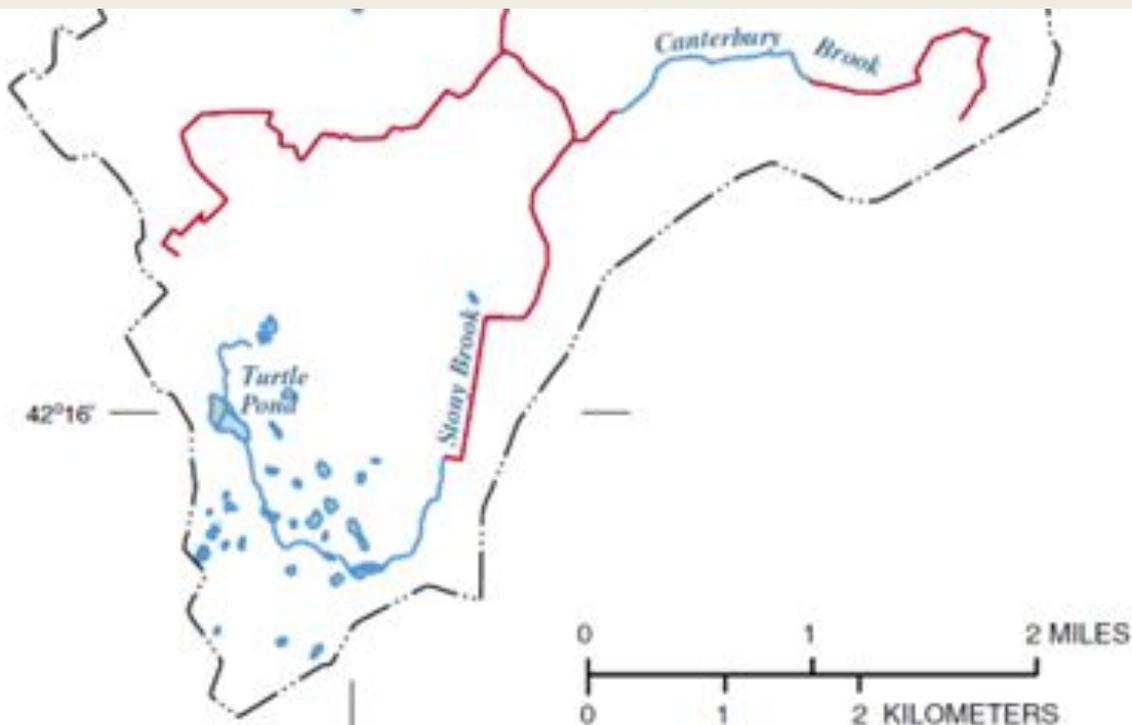
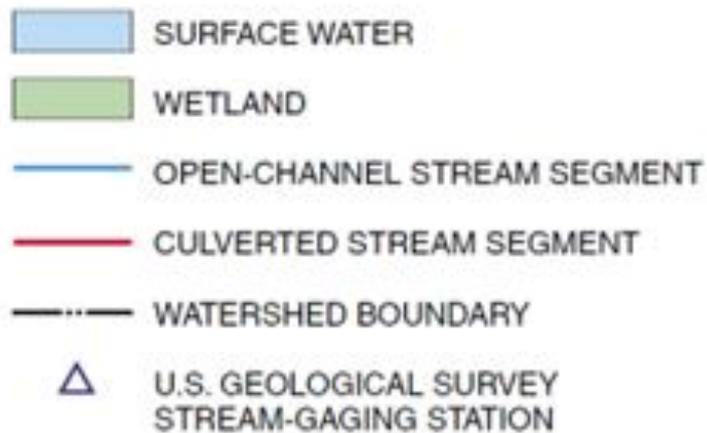
# Mass Audubon's Boston Nature Center



# Canterbury Brook



# Canterbury Brook



Soil coverages digitized from National Resource Conservation Service soil maps, Massachusetts State Plane Projection, NAD 83

# Urban Stream Syndrome

“consistently observed ecological degradation of streams draining urban land”

Stormwater, legacy pollutants,  
sedimentation, oh my!



Source: WALSH, C. J., A. ROY, J. W. FEMINELLA, P. D. COTTINGHAM, P. M. GROFFMAN, AND R. P. MORGAN. THE URBAN STREAM SYNDROME: CURRENT KNOWLEDGE AND THE SEARCH FOR A CURE. P. Silver (ed.), JOURNAL OF THE NORTH AMERICAN BENTHOLOGICAL SOCIETY. North American Benthological Society, Lawrence, KS, 24(3):706-723, (2005).

# Crane Ledge Woods

- [Crane Ledge Woods Coalition](#)-led resistance to development threat
- Largest remaining urban green space to protect in Boston (24 ac woods)



# Crane Ledge Woods

- Unprecedented ch.80 process win
- Mass Audubon is an active partner with CLWC, advocating for a conservation outcome that protects nature for people and wildlife while seeking to partner to make the current owner whole



*Residents said the woods are a habitat for wildlife and a natural barrier to flooding and the urban heat sink effect.*

PHOTO BY JEFF SULLIVAN

## Crane Ledge Woods Coalition

### MAJOR UPDATE!

February 6, 2023

On Friday Feb. 3, 2023, **the BPDA issued an Adequacy Determination\*, DISAPPROVING the 990 American Legion development proposal as designed!**

**But MORE must be done to get to full conservation of Crane Ledge Woods.**



NATHAN KLIMA FOR THE BOSTON GLOBE

# Boston Private Land Urban Forestry Alliance



# Boston Private Land Urban Forestry Alliance

## Urban Tree Inventory Dashboard

trees inventoried

164

inspections

4

open work orders

2

completed work orders

0

number of living Mass Audubon-owned trees

61

1 of 50

tree details

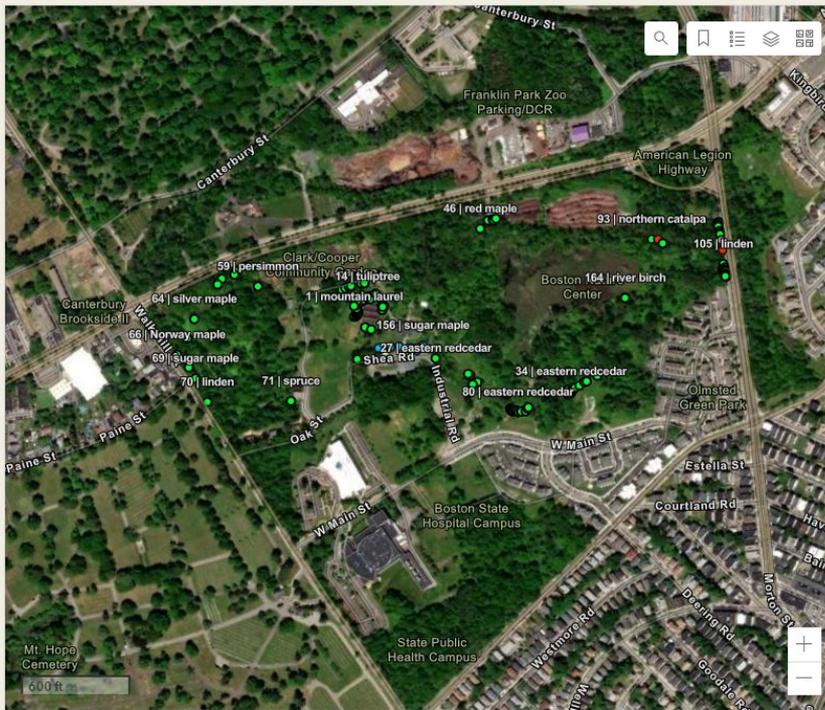
OBJECTID	1
GlobalID	56fb608-b1c5-421d-9328-c620553e0a77
Status	standing live
Form	shrub
Common Name	mountain laurel
Latin Name	Kalmia latifolia
Family	Ericaceae
Genus	Kalmia
Last update: 3 minutes ago	

1 of 4

inspections

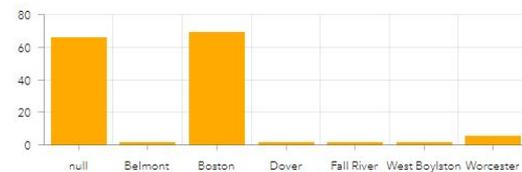
3/16/2023, 8:00 PM

OBJECTID	1
GlobalID	2f2bbd97-1fab-48e5-9b11-335895b5ab89
Date	3/16/2023, 8:00 PM
Inspector	Erica Holm
DBH	4
Condition	good
Notes	
Last update: 3 minutes ago	

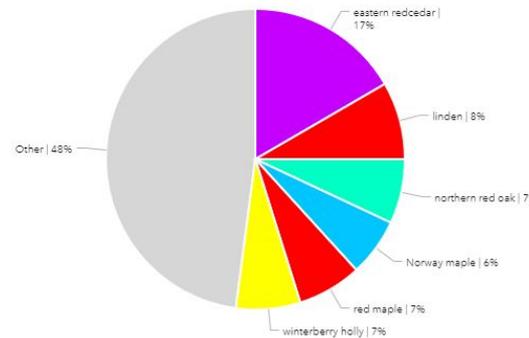


Maxar | Esri Community Maps Contributors, City of Boston, MassGIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, Safe... Powered by Esri

number of inventoried living trees by city



species composition of inventoried living trees



Last update: 1 minute ago



# Allendale Woods Urban Wild - case study



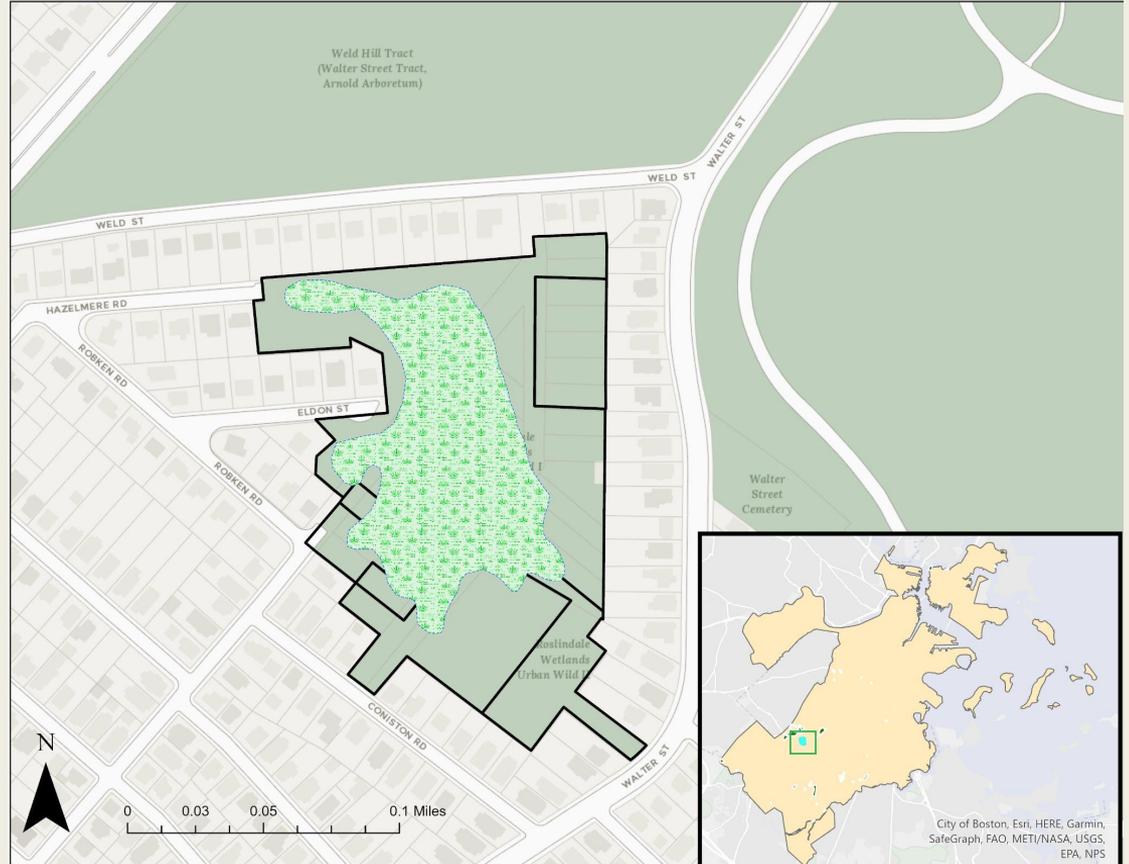
# Allandale Woods Urban Wild - case study



# Roslindale Wetlands Urban Wild - case study

Community-led land protection and restoration alongside affordable housing

- “Giant rain garden”



# Roslindale Wetlands Urban Wild - case study



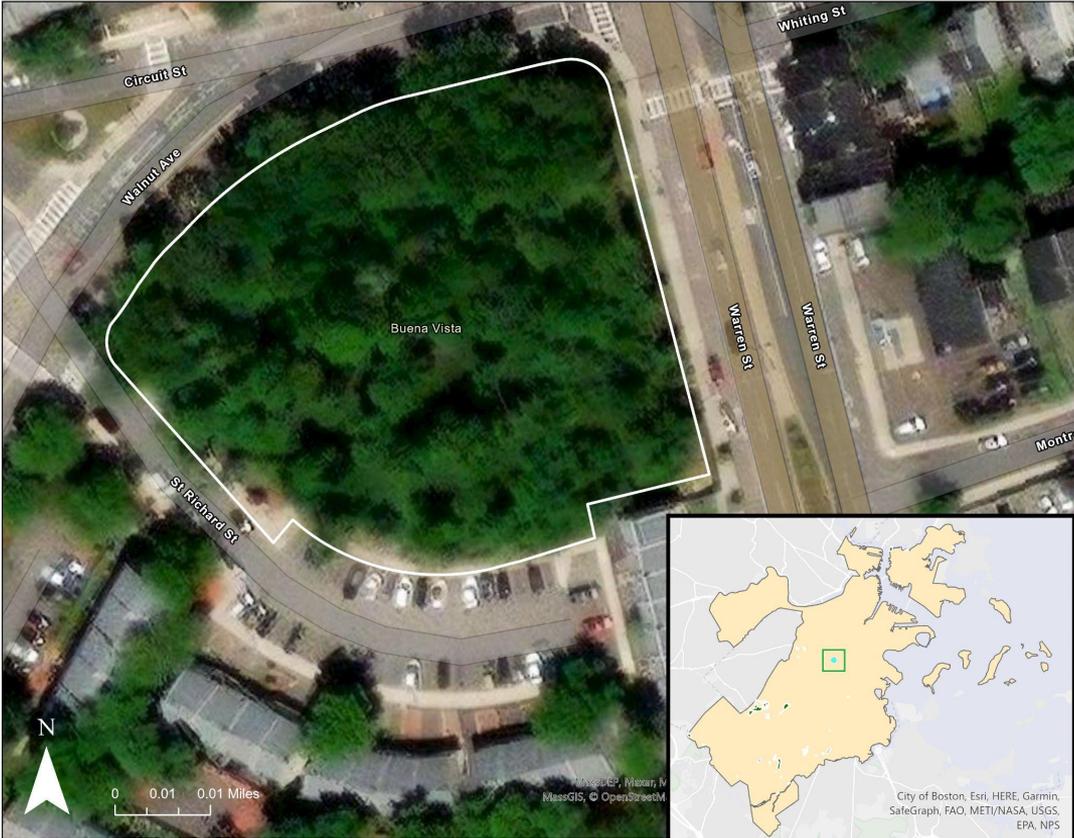
# Hillside Urban Wilds - case studies

Monterrey Hilltop and  
Back of the Hill



# Buena Vista Urban Wild - case study

Former mansion, estate left  
in trust to City



# Buena Vista Urban Wild - case study



# Buena Vista Urban Wild - case study



# Supportive Environmental Employment



- [PowerCorps Boston](#)
- [Mass Audubon Early Career Programs](#)
  - Now hiring 5 urban MCC staff 10 weeks this summer!
- [Southwest Boston Community Development Corporation Youth Green Team](#)
- [Speak for the Trees Teen Urban Tree Corps](#)

# City Nature Challenge

Started in 2016 as a competition between Los Angeles and San Francisco, the City Nature Challenge (CNC) has grown into an international event, motivating people around the world to find and document wildlife in their own cities.

Join us to participate on Sat, 4/29  
at the Roslindale Wetlands!!



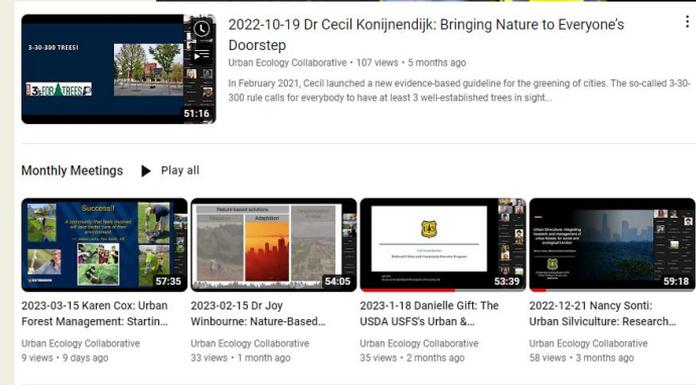
## 2023 City Nature Challenge (CNC)

CITY NATURE CHALLENGE IS ORGANIZED BY



# Even more urban ecology!

- [Boston Biodiversity Consortium](#)
- [Boston Urban Forest Friends](#)
- [Urban Ecology Collaborative](#)
- [Urban Waters Learning Network](#)
- [Urban Bird Treaty Cities](#)
- [Forests in Cities Program](#)



## Urban Bird Treaty

Springfield is one of 27 communities across the country to receive designation as an Urban Bird Treaty city. Please plan to attend this special event, at which the Treaty will be formally signed. The ceremony kicks off the 2017 Valley Bird Festival. Please plan to join us.

Friday, May 6, 2017  
11:00 AM

Springfield Science Museum  
at the Quadrangle  
21 Edwards Street  
Springfield, MA

For more information, please visit  
[www.orgspringfield.org](http://www.orgspringfield.org)



# Thank You!

## Questions & discussion?

Erica Holm

Urban Ecologist

Mass Audubon

[eholm@massaudubon.org](mailto:eholm@massaudubon.org)

Nick Long

Urban Wilds Foreperson

City of Boston Urban Wilds Program

[nicholas.long@boston.gov](mailto:nicholas.long@boston.gov)