

# NYBG

The Nature of Gardening at NYBG

Todd Forrest  
Arthur Ross VP for Horticulture and  
Living Collections

NEW YORK BOTANICAL GARDEN





# NYBG





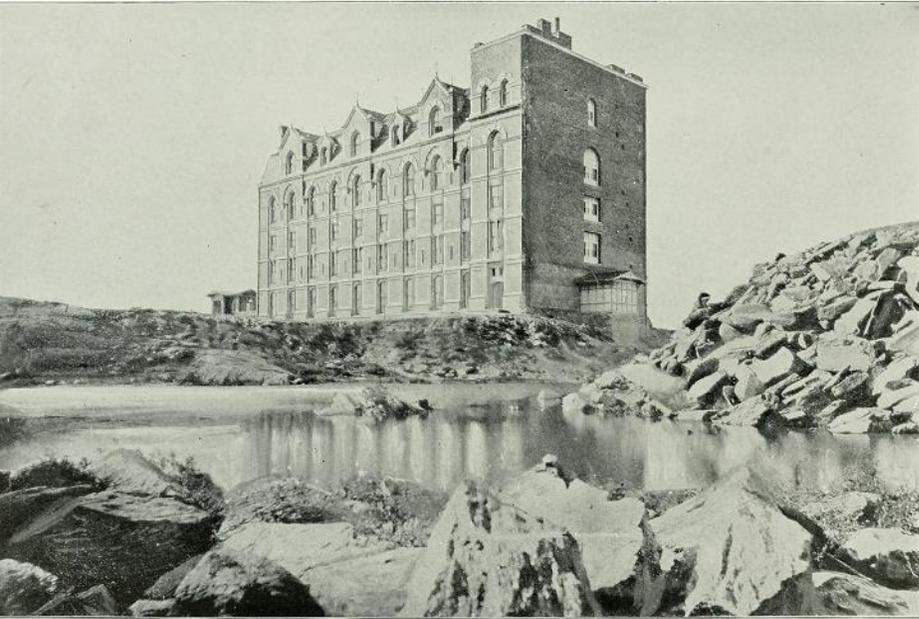
Nathaniel Britton



Kew



Elizabeth Britton



AMNH, 1869



The Met, 1870



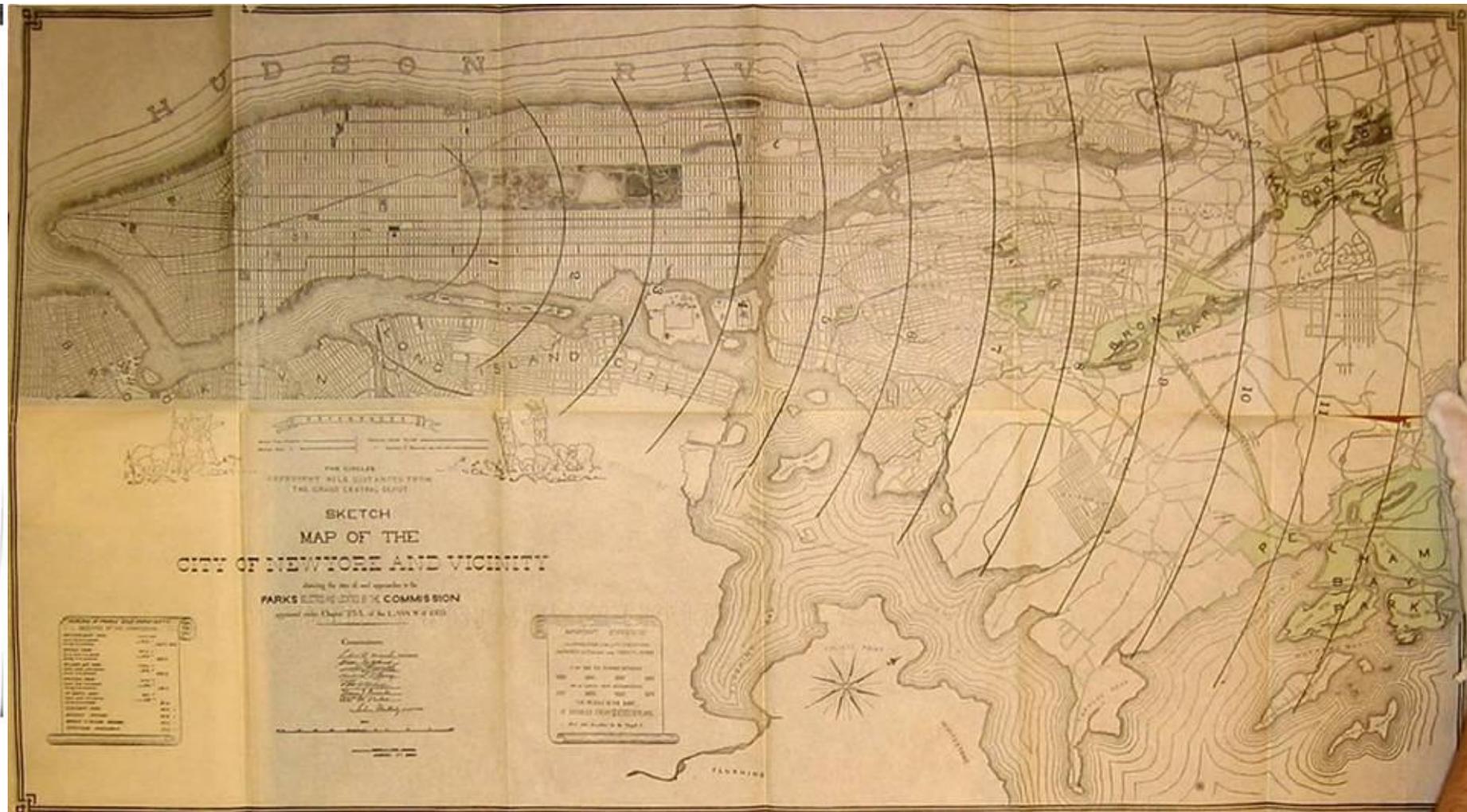
NYBG, 1891

**THE NEW PARKS**  
**beyond the HARLEM**  
 with thirty illustrations  
 and Maps  
 Descriptions of Scenery  
 Nearly 4000 Acres  
**OF FREE PLAYGROUND**  
 for the People

Abundant space for a Parade Ground, a Rifle Range,  
 Base Ball, Lacrosse, Polo, Tennis and all  
 athletic games; picnic and excursion  
 parks, and nine miles of water front  
 for bathing, fishing, yachting, rowing,  
 &c.

By JOHN MULLALLY

Published by RECORDS GUIDE,  
 431 Broadway,  
 Paper Covers, 50 cents. 1887. In Cloth, \$ 1.00.





Botanical Science



Education



Horticulture



Genomics & Molecular  
Systematics



Economic Botany



Floristic and Systematic  
Botany

DEUTSCHE KAKTEEN-GESELLSCHAFT



*Mamillaria centricirrha* Lem. var.  
*Nach der Natur gezeichnet von T. Gürke.*

*Tafel 32.*

LuEsther T. Metz Library



Children's Education



Continuing Education



School of Professional  
Horticulture



Doctoral Students and  
Interns



Natural Areas



Gardens, Collections, and Displays



Exhibitions



Community Horticulture

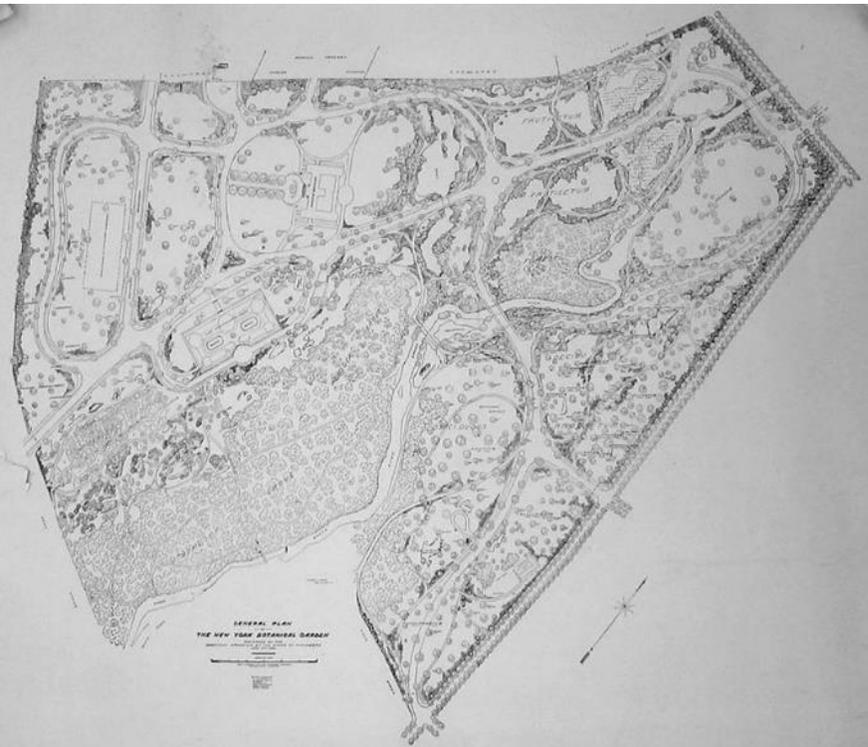
# The Evolution of The Garden



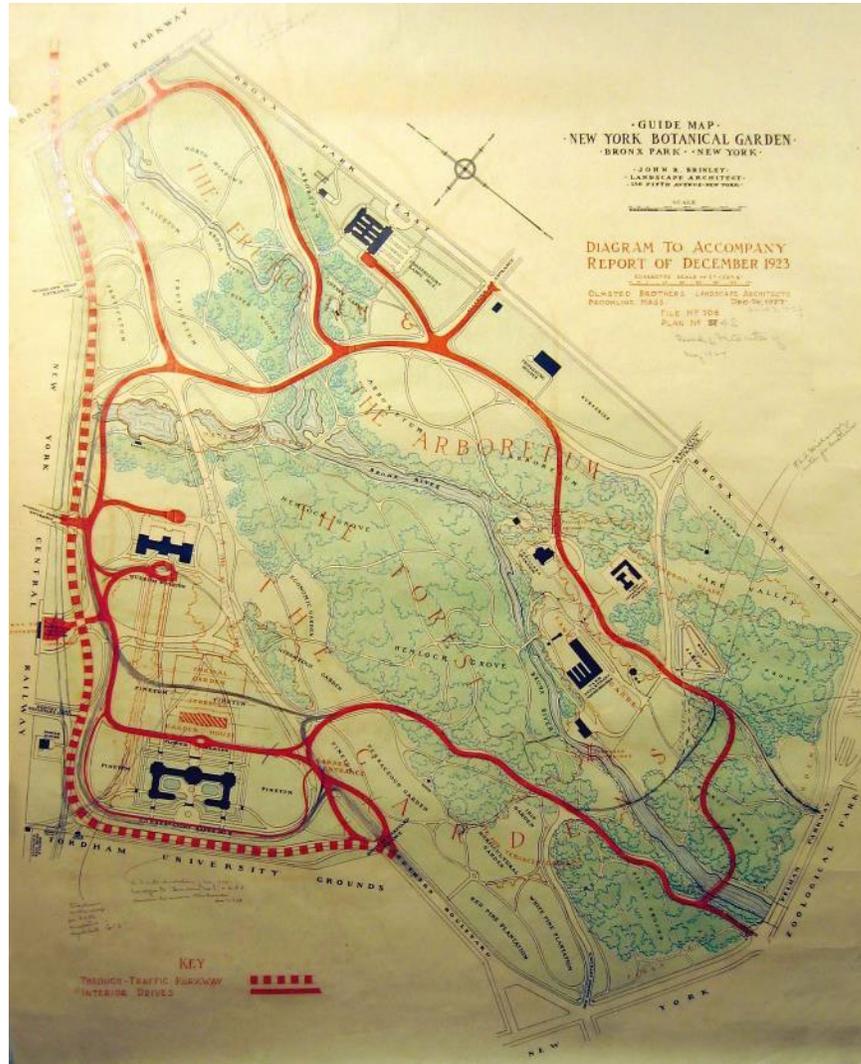
“No city in the world possesses more beautiful scenery or a park area more thoroughly characteristic of what is most delightful in the landscape of the part of the world in which it is situated than does New York in Bronx Park....The city spent money like water to create some charming natural scenery in what is now Central Park by blasting out ridges of rock, filling in the spaces with soil, and turning this desert of stone into tree-flecked meadow-land. Now that it has come into possession of scenery far more beautiful and ready-made, it would be folly to destroy it”

Charles Sprague Sargent, 1897,  
Editorial in *Garden and Forest*





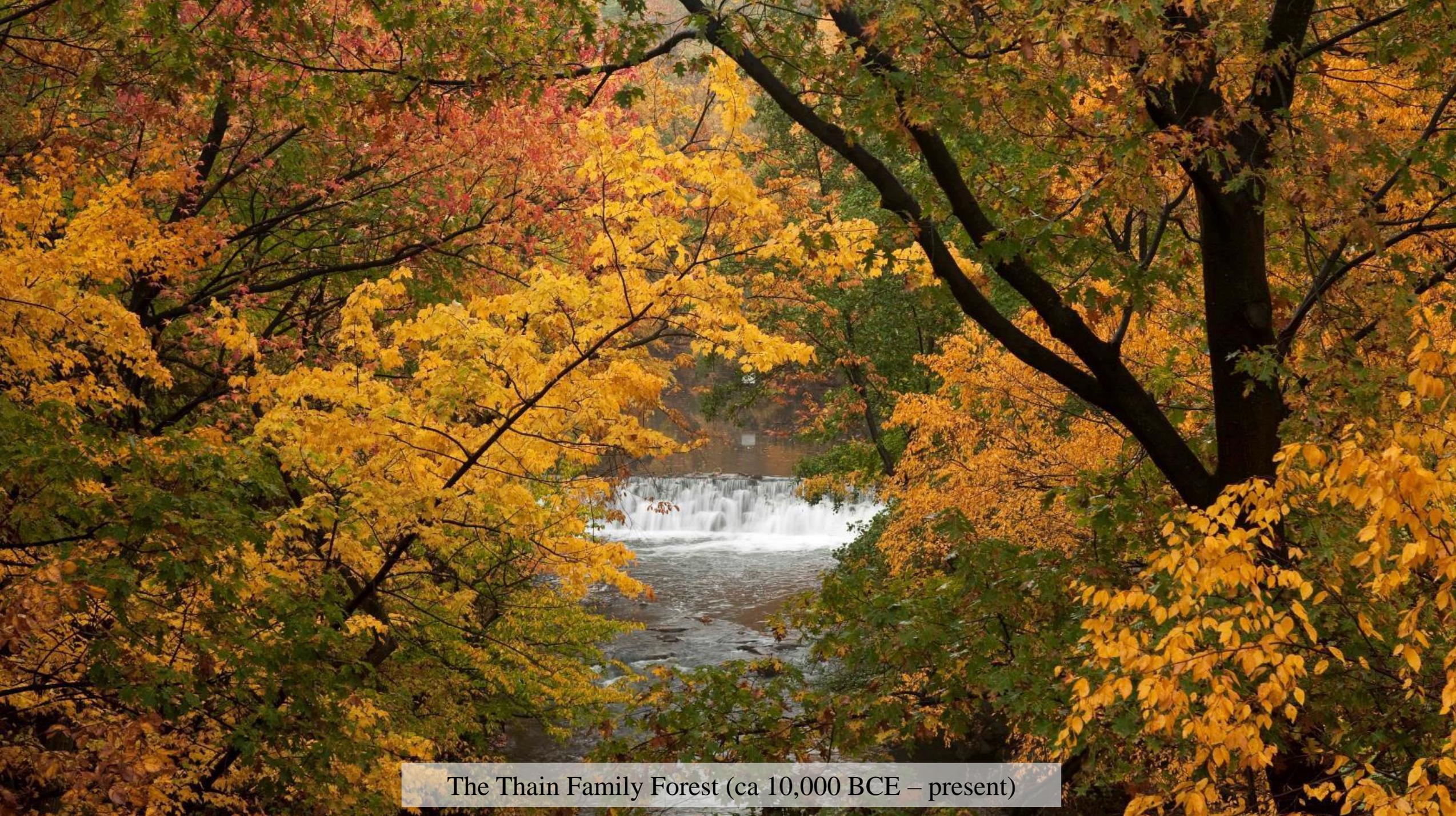
1895



1924



2023



The Thain Family Forest (ca 10,000 BCE – present)



The LuEsther T. Mertz Library\Hoffee Tulip Tree Allee (1901/2023)



The Enid A. Haupt Conservatory (1902/1997)



The Conifer Arboretum (1899\1999)



The Burke Oak Collection (1899\2022)



Peggy Rockefeller Rose Garden (1916\1988)



Daffodil Hill, NYBG (1925\2015)



Rock Garden (1932)



Burn Family Lilacs (1950/2016)



Irwin Perennial Garden (1987)



Chilton Azalea Garden (2011)



The Native Plant Garden (1940/2013)



Rosen Seasonal Walk (2014)



Edible Academy, NYBG (2018)

# The Nature of Gardens

**Opinions**

[Editorials](#)

[Columns](#)

[Guest opinions](#)

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# Opinion I'm no genius with genuses, but your garden is killing the Earth



By [Dana Milbank](#)

Columnist | [+ Follow](#)

April 7, 2023 at 7:46 a.m. EDT





Milesi C, Running SW, Elvidge CD, Dietz JB, Tuttle BT, Nemani RR. Mapping and modeling the biogeochemical cycling of turf grasses in the United States. *Environ Manage.* 2005 Sep;36(3):426-38. doi: 10.1007/s00267-004-0316-2. PMID: 16086109.



# Gardens and Managed Landscapes in the US

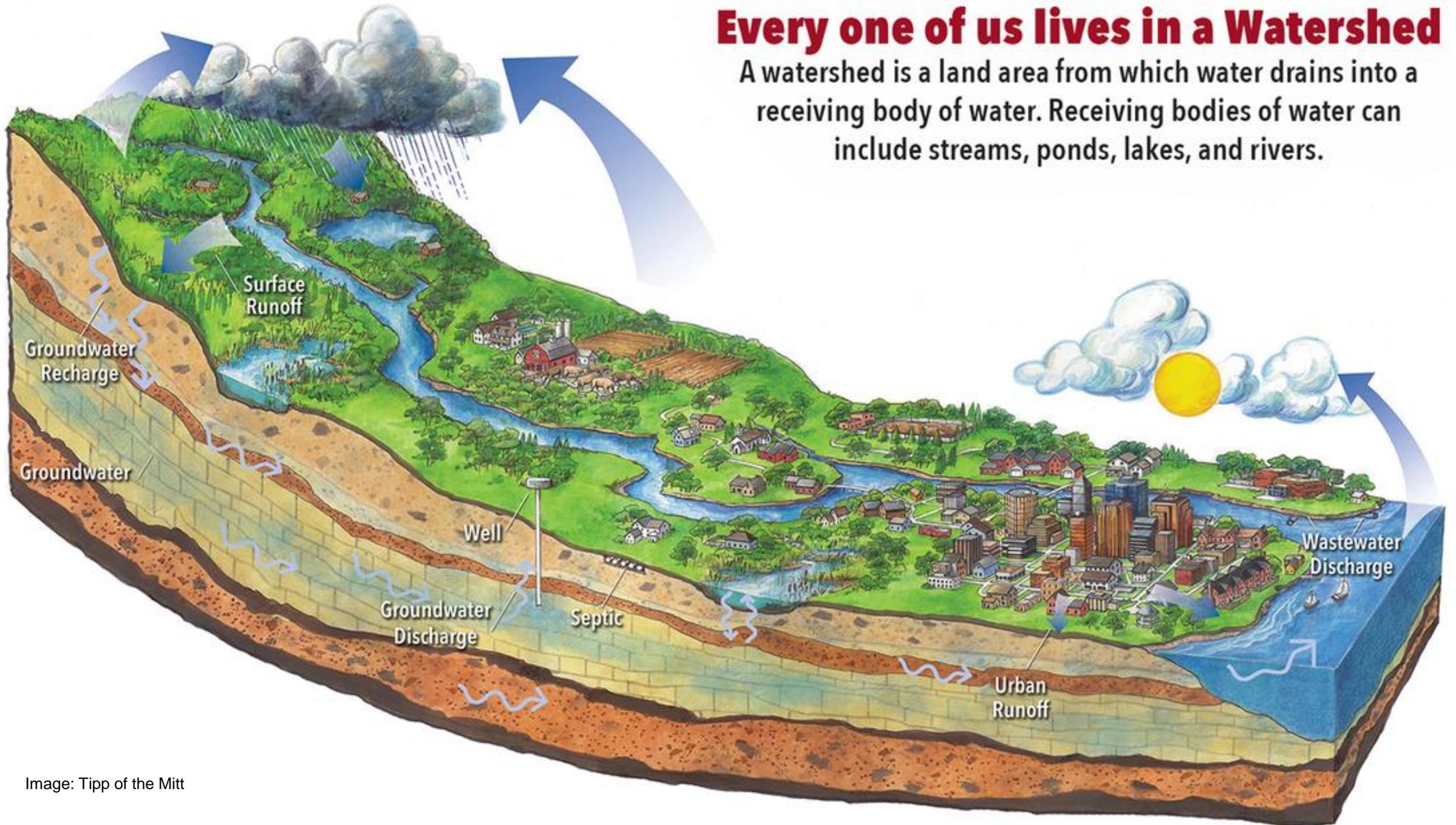
Resource	Lawns\Gardens
Land	40 million acres
Fertilizer	90 million lbs
Pesticides	75 million lbs
Water	3 trillion gallons

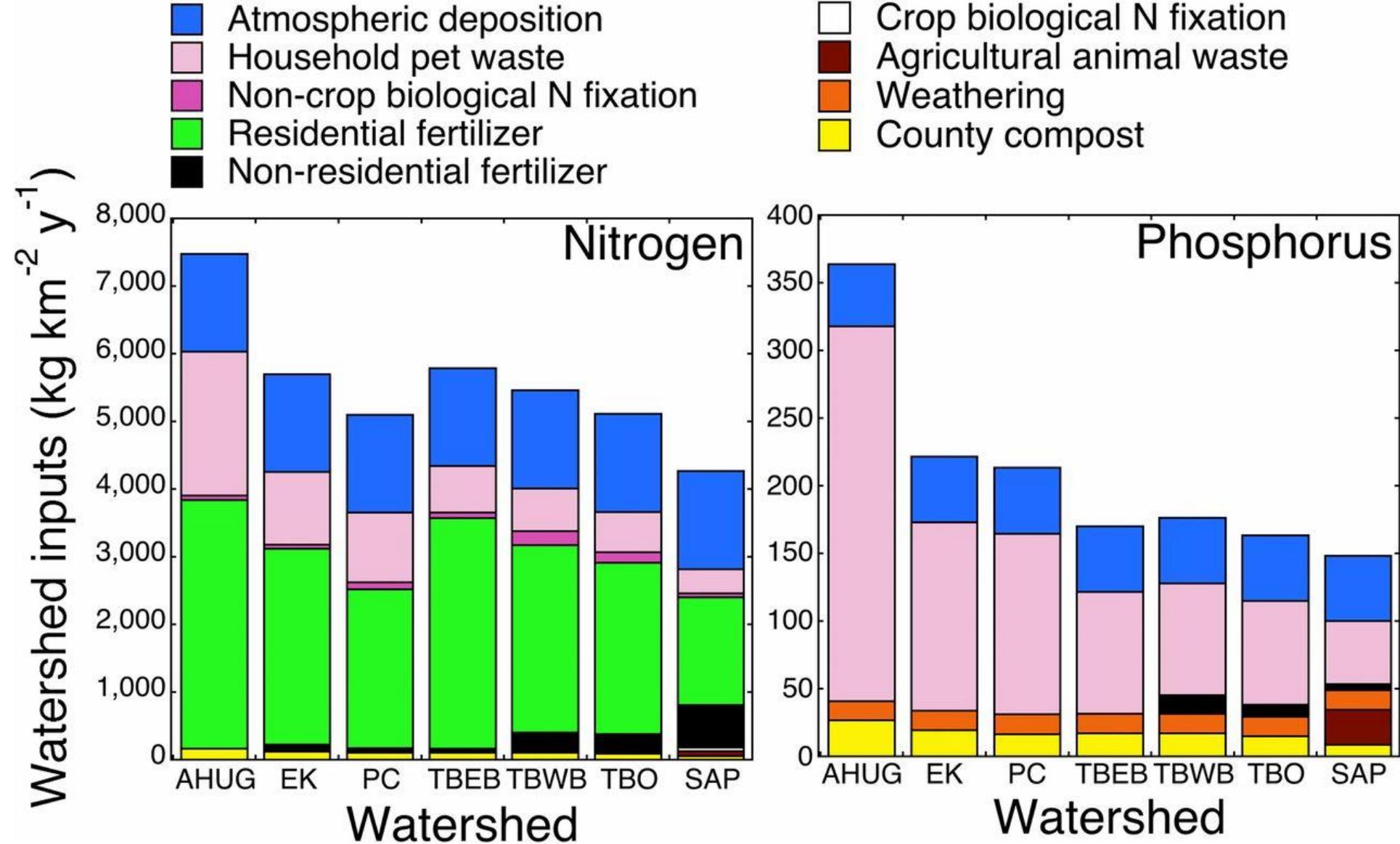


Gardens in Phoenix, Arizona

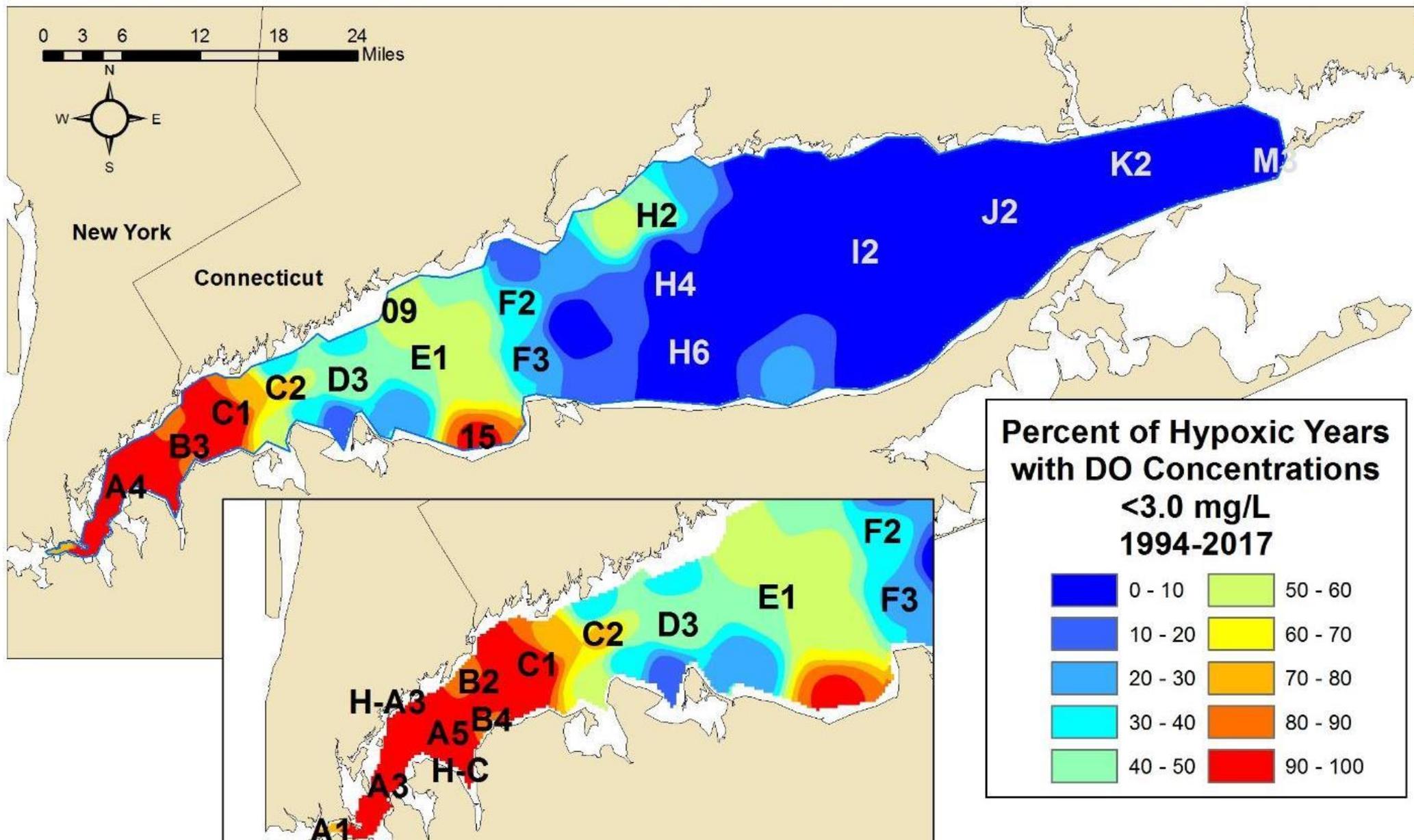
# Every one of us lives in a Watershed

A watershed is a land area from which water drains into a receiving body of water. Receiving bodies of water can include streams, ponds, lakes, and rivers.





# THE FREQUENCY OF HYPOXIA IN LONG ISLAND SOUND BOTTOM WATERS

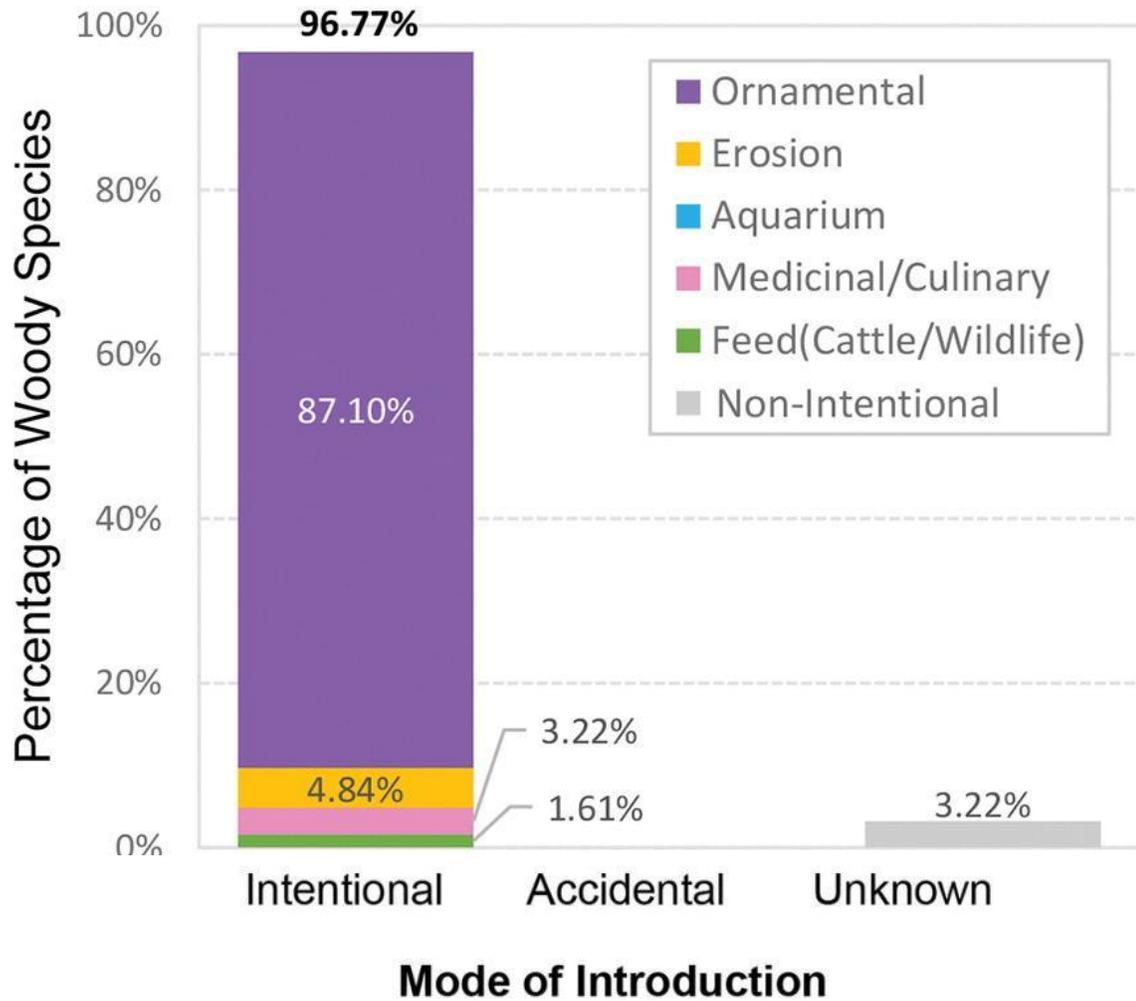


Product	Active Ingredient	Toxicity
Halts® Crabgrass Preventer	Pendimethalin	Fish, aquatic organisms, possible carcinogen
Preen® Weed Preventer	Trifluralin	Fish, aquatic organisms, possible carcinogen
Bioadvanced® 12 Month Tree and Shrub Insect Control	Imidicloprid	All invertebrates, including bees, butterflies, mayflies, etc.
Daconil® (Fungicide)	Chlorothalonil, Acibenzolar	Fish, aquatic organisms, possible carcinogen



# Invasive Species Mode of Introduction

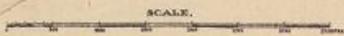
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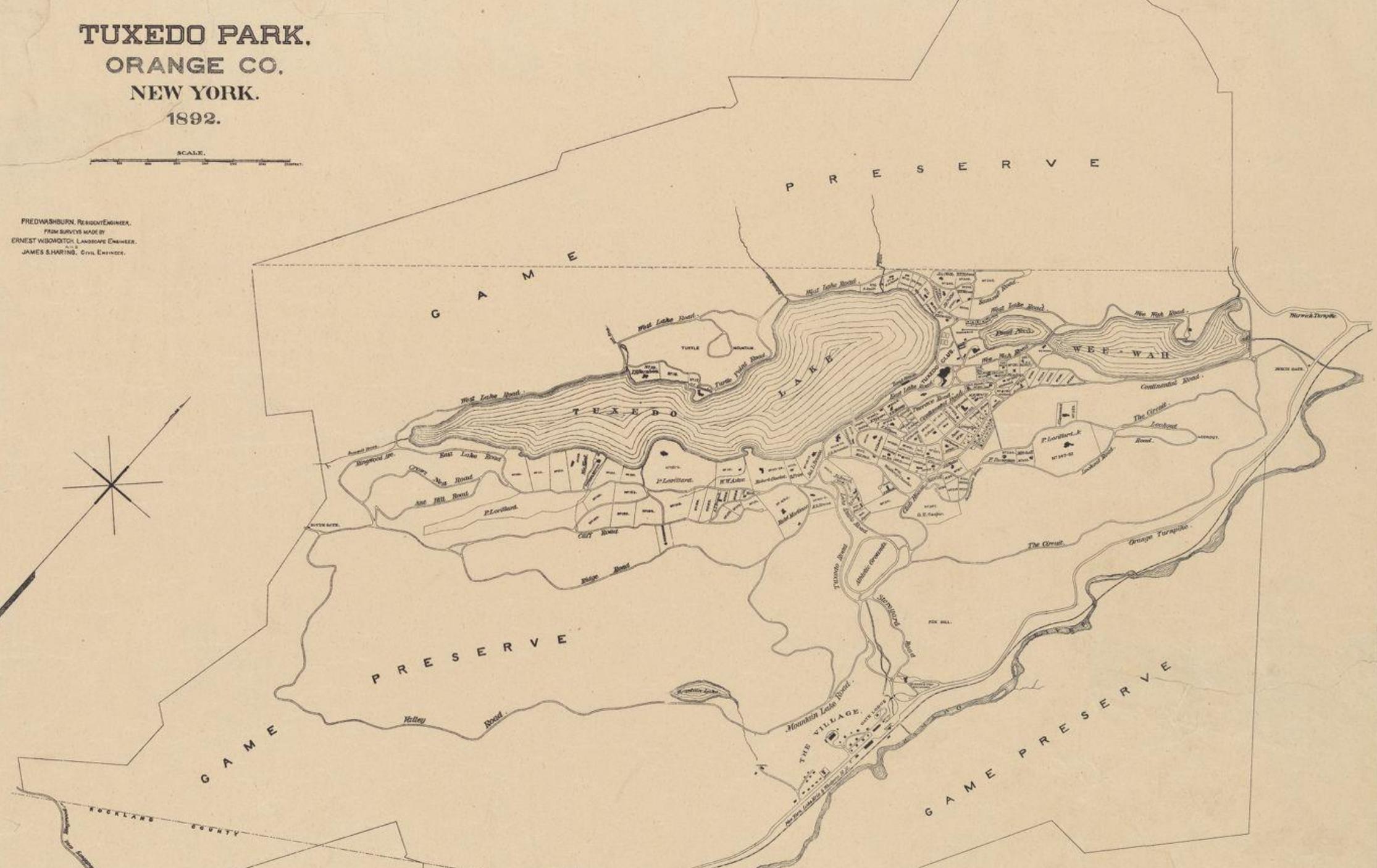
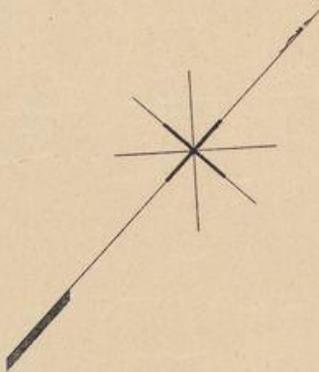
Porcelain berry

Cully TM, TH Feldman 2023 The Role of Horticulture in Plant Invasions in the Midwestern United States. International Journal of Plant Sciences 184:4, 260-270.

**TUXEDO PARK.**  
**ORANGE CO.,**  
**NEW YORK.**  
**1892.**



FRED WASHBURN, RESIDENT ENGINEER,  
 FROM SURVEYS MADE BY  
 ERNEST WIDOWITZ, LANDSCAPE ENGINEER,  
 AND  
 JAMES SHARING, CIVIL ENGINEER.



4810

# HILDALE AT TUXEDO PARK

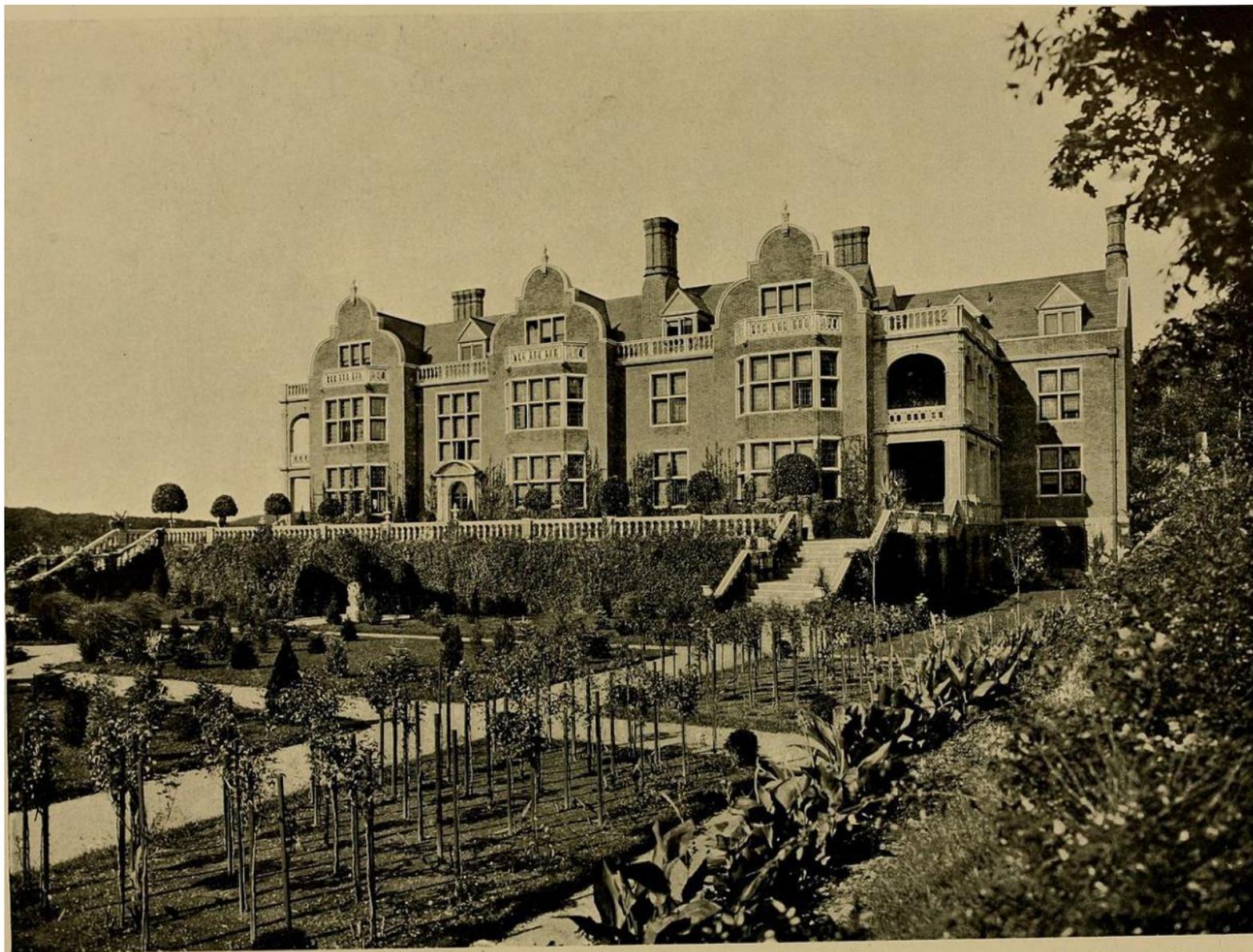
The Country Home of Mr. and Mrs. Charles E. Mitchell



M. E. Hewitt

Walley & Gillette, architects

INSPIRED BY THE EARLY SCOTCH PRIORIES, THE HOUSE IS FINELY ADAPTED TO THE LANDSCAPE. As the east elevation shows, this particularly interesting structure has a slightly location with views of the surrounding hills and of Tuxedo Lake. The soft gray stucco, finished in a manner all its own with deep trowel marks, and the hand-hewn crude slate roof make an agreeable combination. Local stone is used for the coping.



Tuxedo, New York.

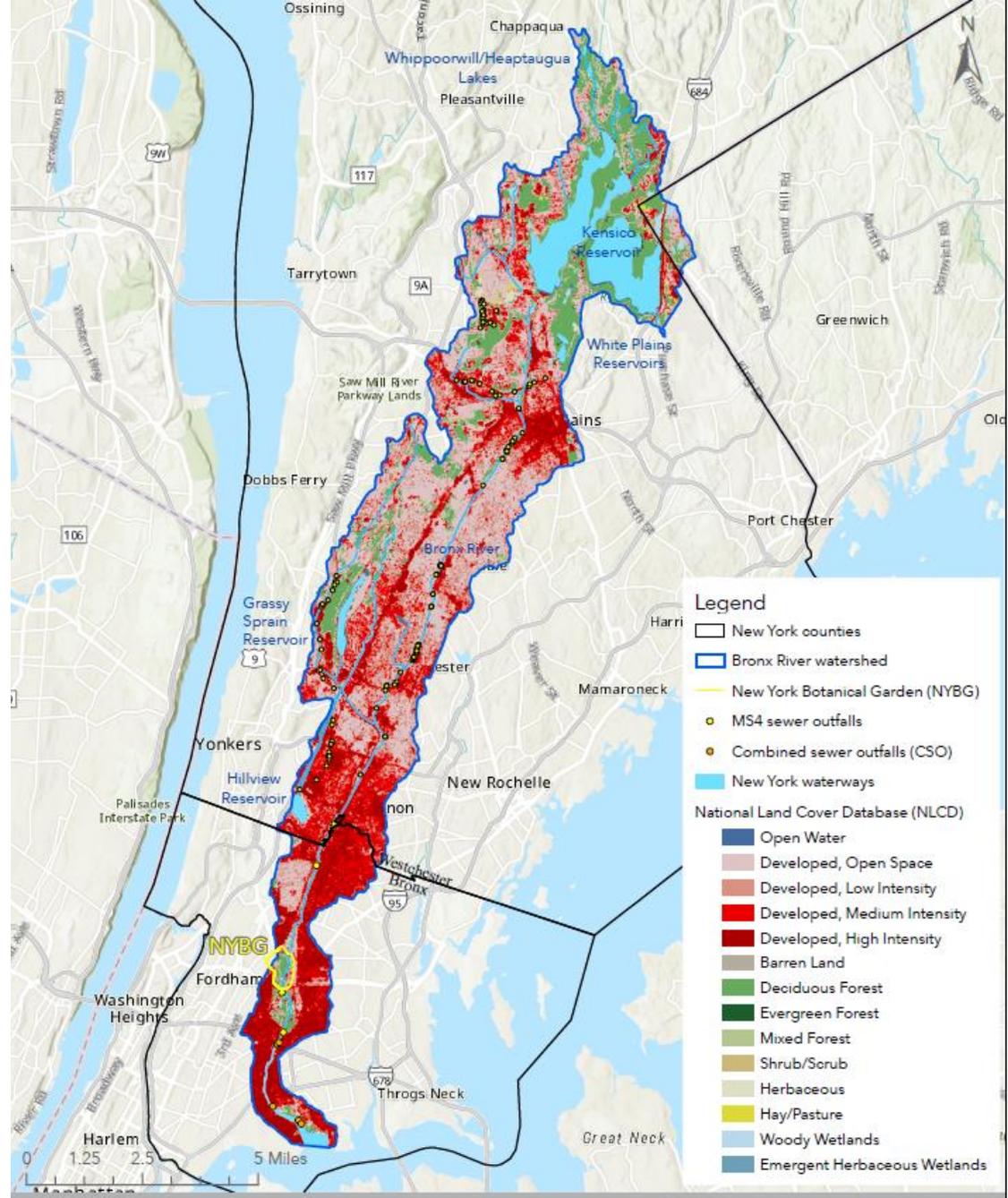
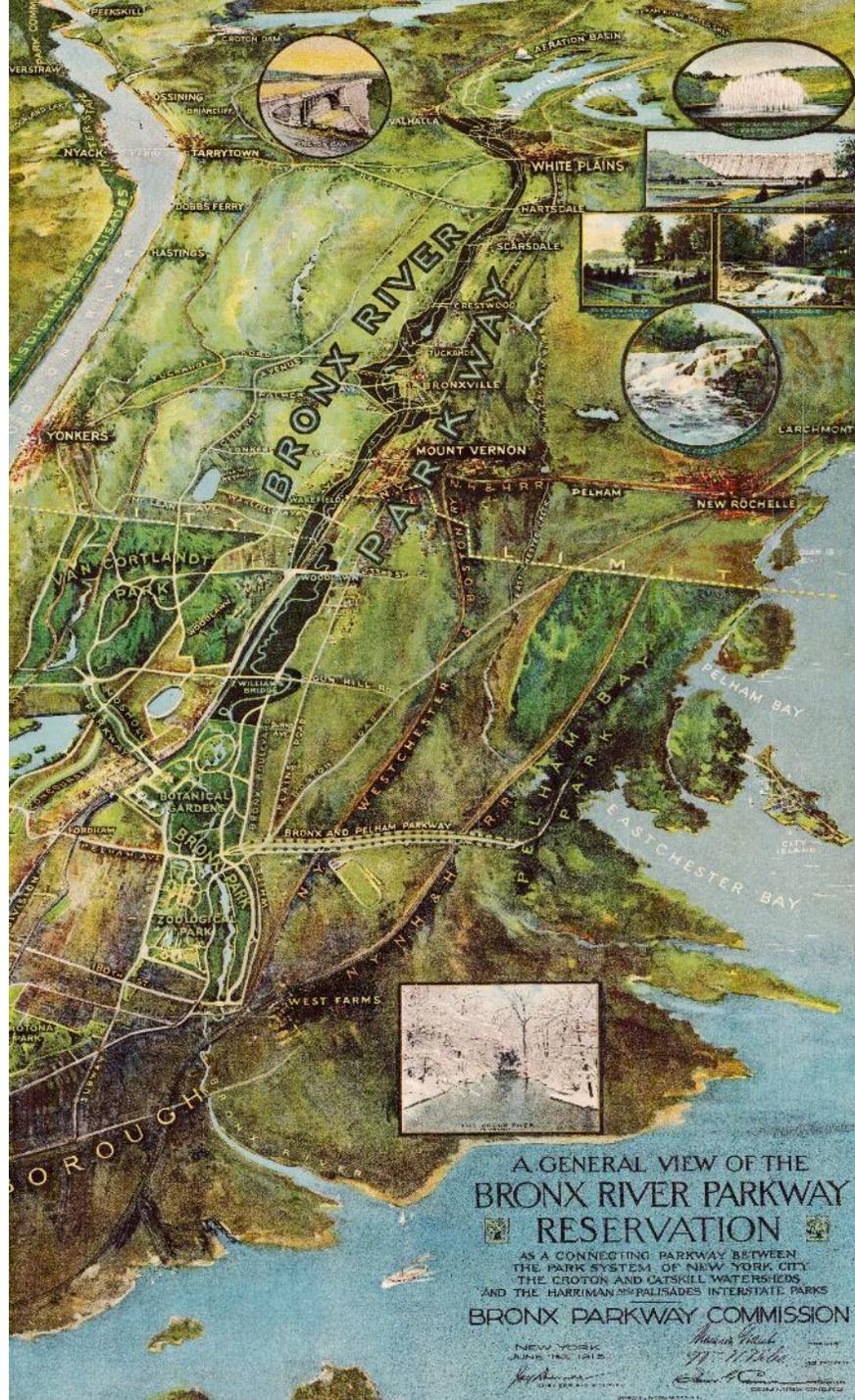
THE HOUSE OF HENRY W. POOR, ESQ.

T. Henry Randall, Architect.





What's an Enlightened Gardener to Do?



# Bronx River Watershed

County of Westchester, Esri, HERE, Garmin, SafeGraph, METANASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS

Map created by the New York Botanical Garden, May, 2023







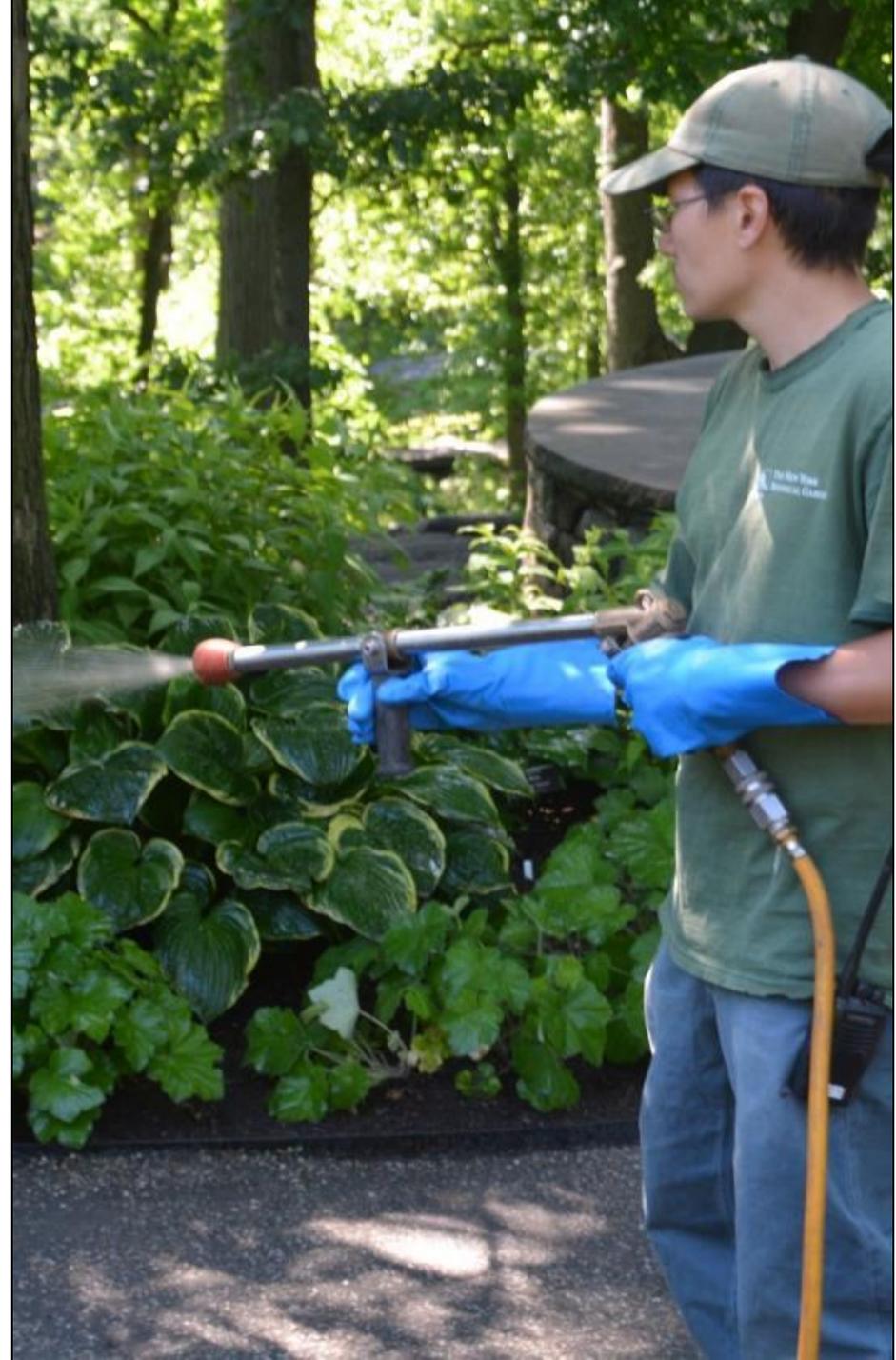
‘KOSMOS’



‘Rosanna’

## Using Natural Products to Promote Plant Health

- Compost Tea
- Fish Emulsion
- Kelp
- Molasses
- Phosphite 30
- Adams Earth
- Foliar Minor Nutrient Package
- OMEGA



# Novel Approaches to Weed Management: Foaming Unit

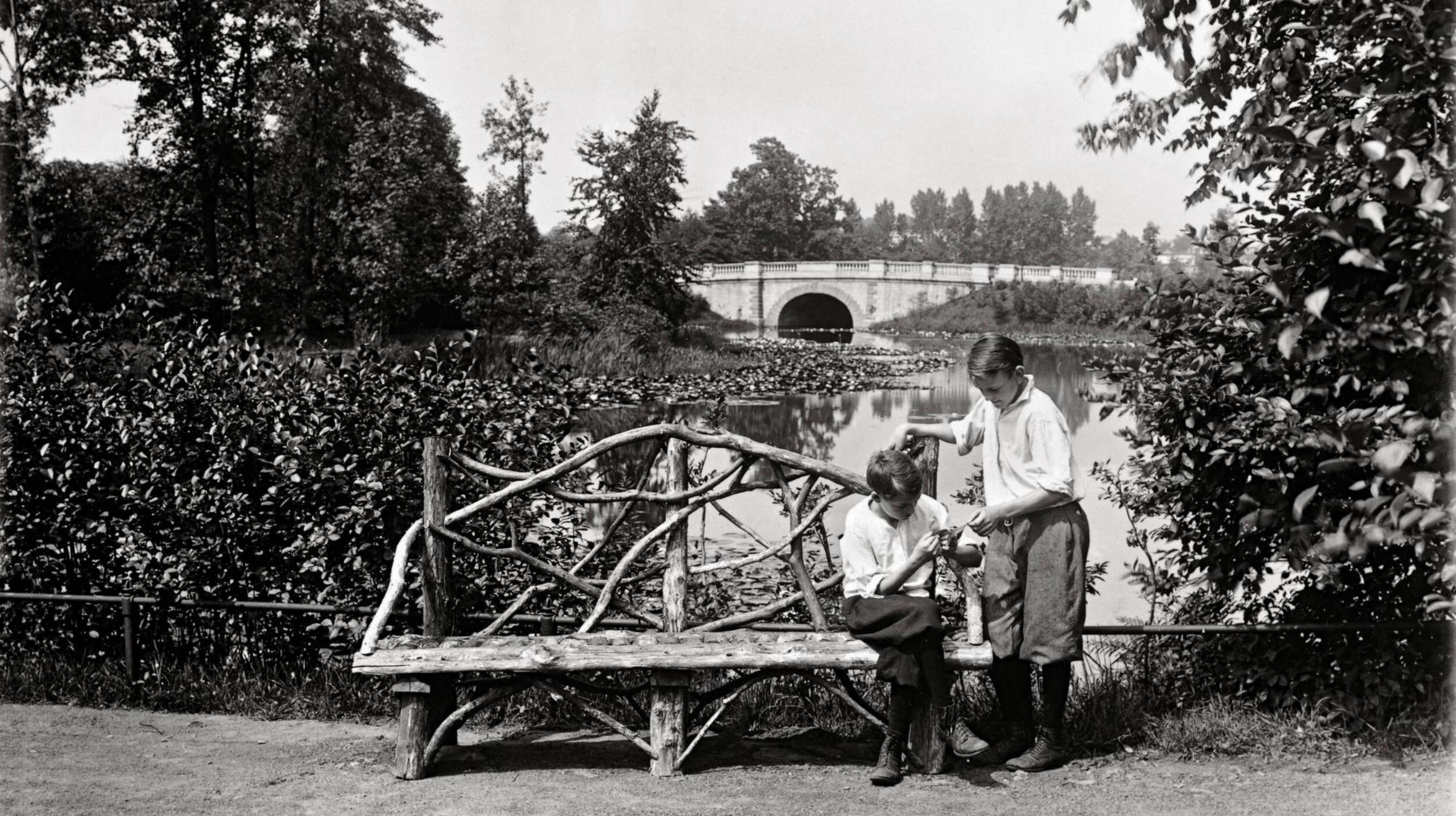


## Novel Approaches to Weed Management: Mugwort control in the Native Plant Garden Meadow



Protecting Twin Lakes

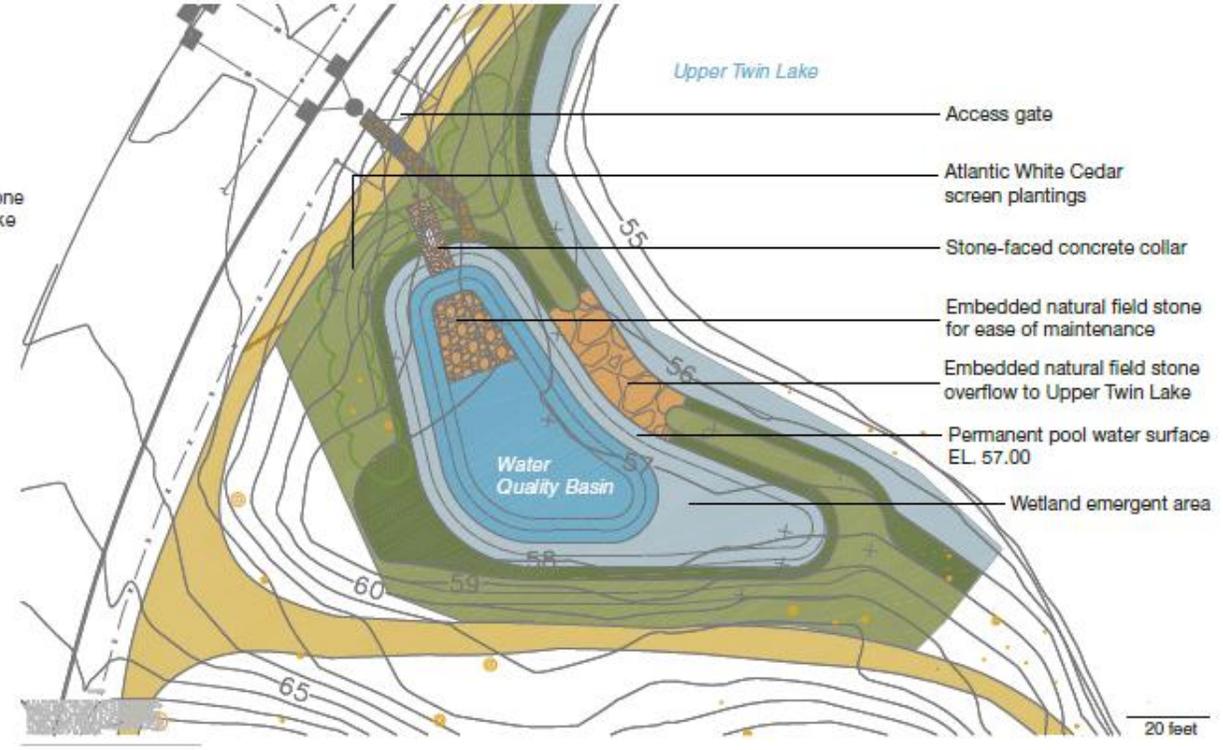
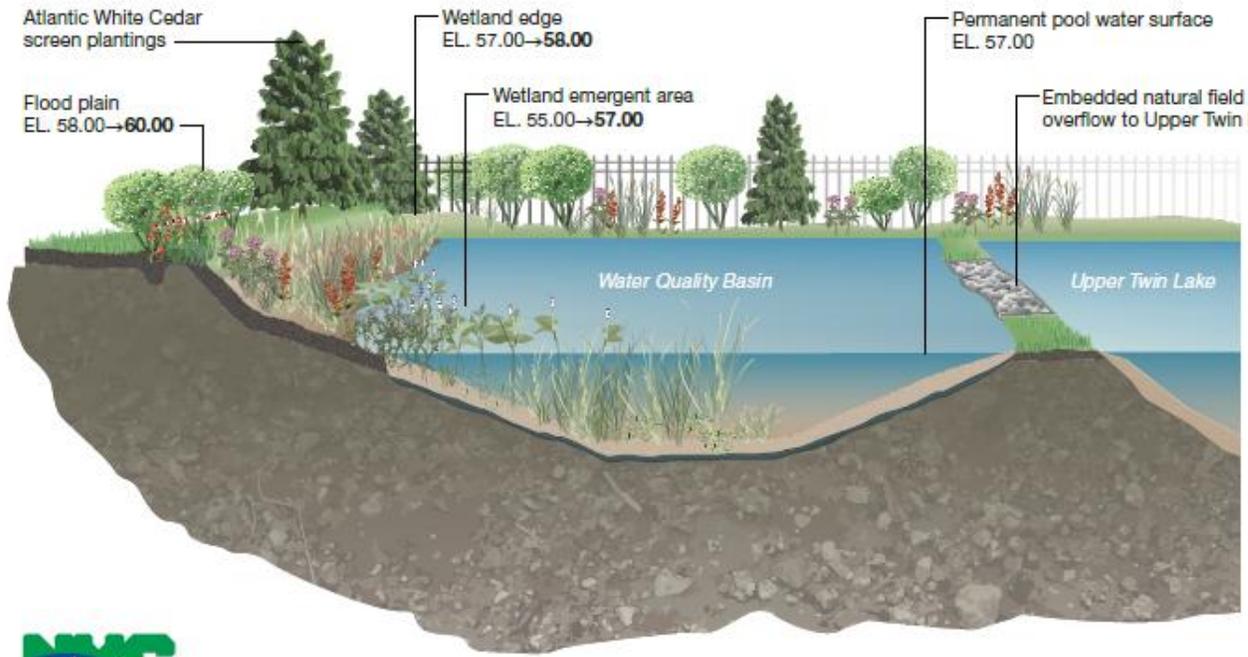






THE NEW YORK BOTANICAL GARDEN









Ecological Restoration of The Thain Family Forest

“...all natural woodlands  
should be treated in accordance  
with [a] policy of let alone.”.

N. L. Britton, 1905



## HEMLOCK GROVE

This grove is situated near the southern limit of the region in which hemlock trees grow naturally near the coast, and its preservation is a matter of special interest. As the roots of the hemlock trees are near the surface of the ground and the soil is thin, trampling over the ground may cause the death of the trees. Visitors are therefore requested to keep to the paths and trails and to abstain from injuring the trees in any way. If this caution is not observed the use of the forest will have to be materially restricted.

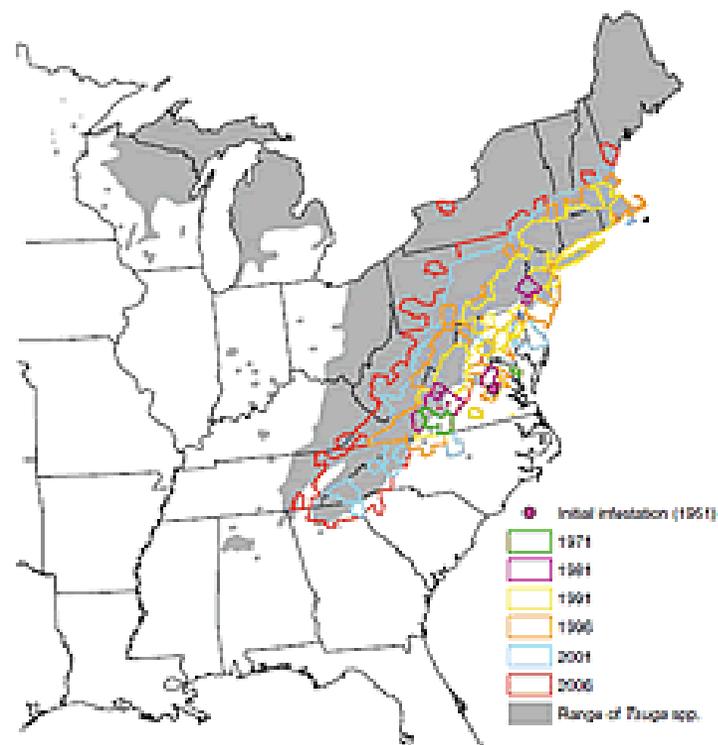
410 plants of  
illegally collected  
*Arisaema*  
*triphyllum* by  
school children in  
1911.

A very small  
population of *A.*  
*triphyllum* remains





Fig. 1. Map of historical (1951–2006) spread of hemlock woolly adelgid in the USA. Boundaries of scale distributions are based upon county-level records assembled by US Forest Service Forest Health Protection





*Ficaria verna*



*Aralia elata*



*Prunus* spp.



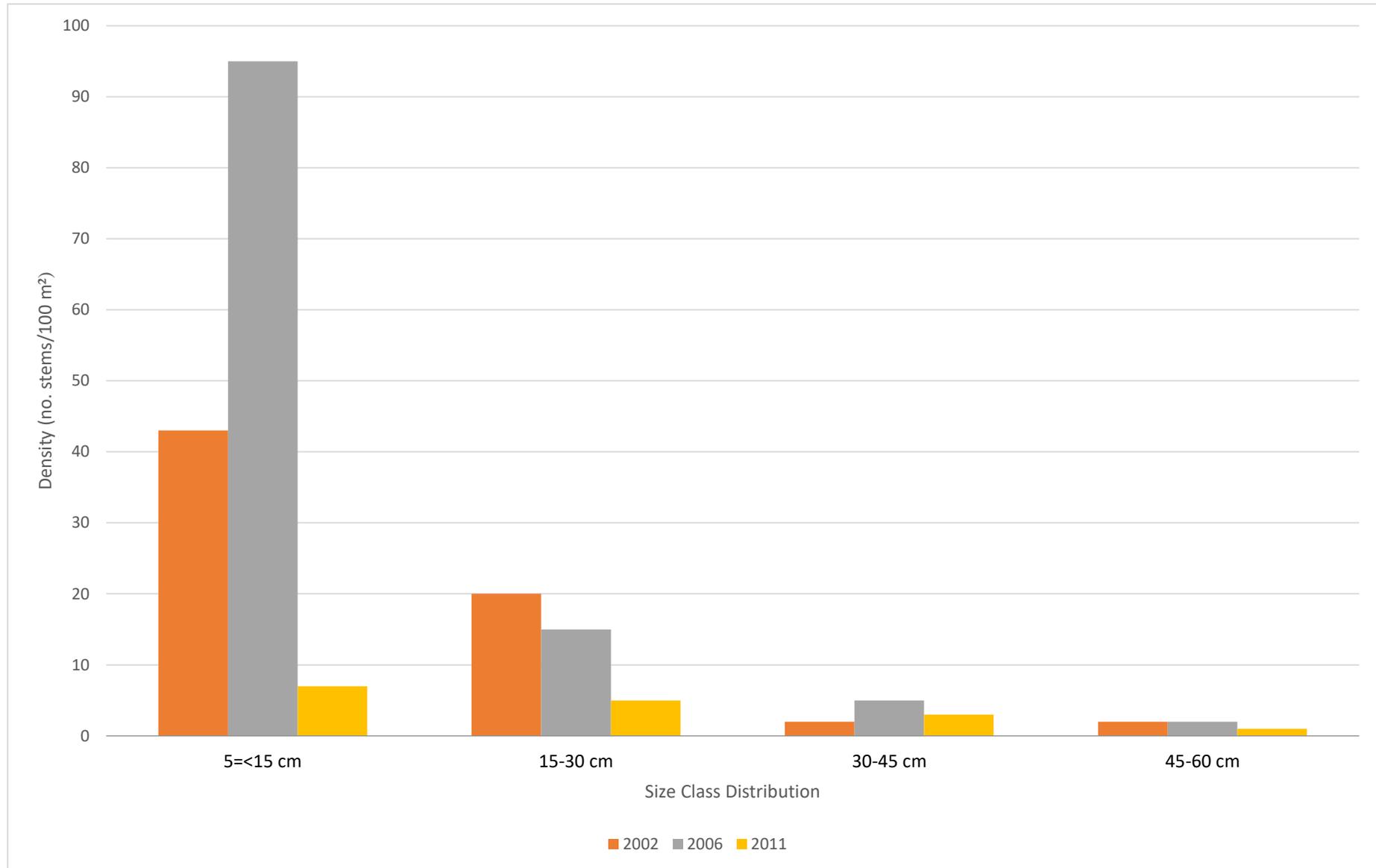
*Phellodendron amurense*

- In 1898, native flowering plant species composed 82.8% of the spontaneous flora of the Garden. Today, native species comprise just 58.2% of the spontaneous flora.
- Exotic species have increased from 96 species to 184 today, an increase of 92%.





# Amur Cork Tree Canopy Change 2002-2011







The Native Plant Garden



AN  
ILLUSTRATED FLORA

OF THE  
NORTHERN UNITED STATES, CANADA  
AND THE BRITISH POSSESSIONS

FROM NEWFOUNDLAND TO THE PARALLEL OF THE SOUTHERN BOUNDARY OF  
VIRGINIA, AND FROM THE ATLANTIC OCEAN WESTWARD  
TO THE 100° MERIDIAN

BY

NATHANIEL LORD BRITTON, Ph.D., Sc.D., LL.D.  
DIRECTOR-IN-CHIEF OF THE NEW YORK BOTANICAL GARDEN; PROFESSOR IN COLUMBIA UNIVERSITY

AND

HON. ADDISON BROWN, A.B., LL.D.  
PRESIDENT OF THE NEW YORK BOTANICAL GARDEN

THE DESCRIPTIVE TEXT

CHIEFLY PREPARED BY PROFESSOR BRITTON, WITH THE ASSISTANCE OF SPECIALISTS IN  
SEVERAL GROUPS; THE FIGURES ALSO DRAWN UNDER HIS SUPERVISION

SECOND EDITION—REVISED AND ENLARGED

IN THREE VOLUMES

VOL. I.

OPHIOGLOSSACEAE TO POLYGONACEAE

FERNS TO BUCKWHEAT

NEW YORK  
CHARLES SCRIBNER'S SONS

1913

117  
G63  
1913  
and ea  
v.1









Birch Grove

Wet Meadow

Dry Meadow

Split Rock

MEADOW PATH

Education Pavilion

Meadow









*Pycnanthemum tenuifolium*



*Scutellaria incana*



*Asclepias purpurascens*



*Solidago rugosa*



Britton Rock

Woodland

ROSEBAY TRAIL

WOODLAND PATH

Overlook

Wetland

Magnolia Grove









*Spigelia marilandica*



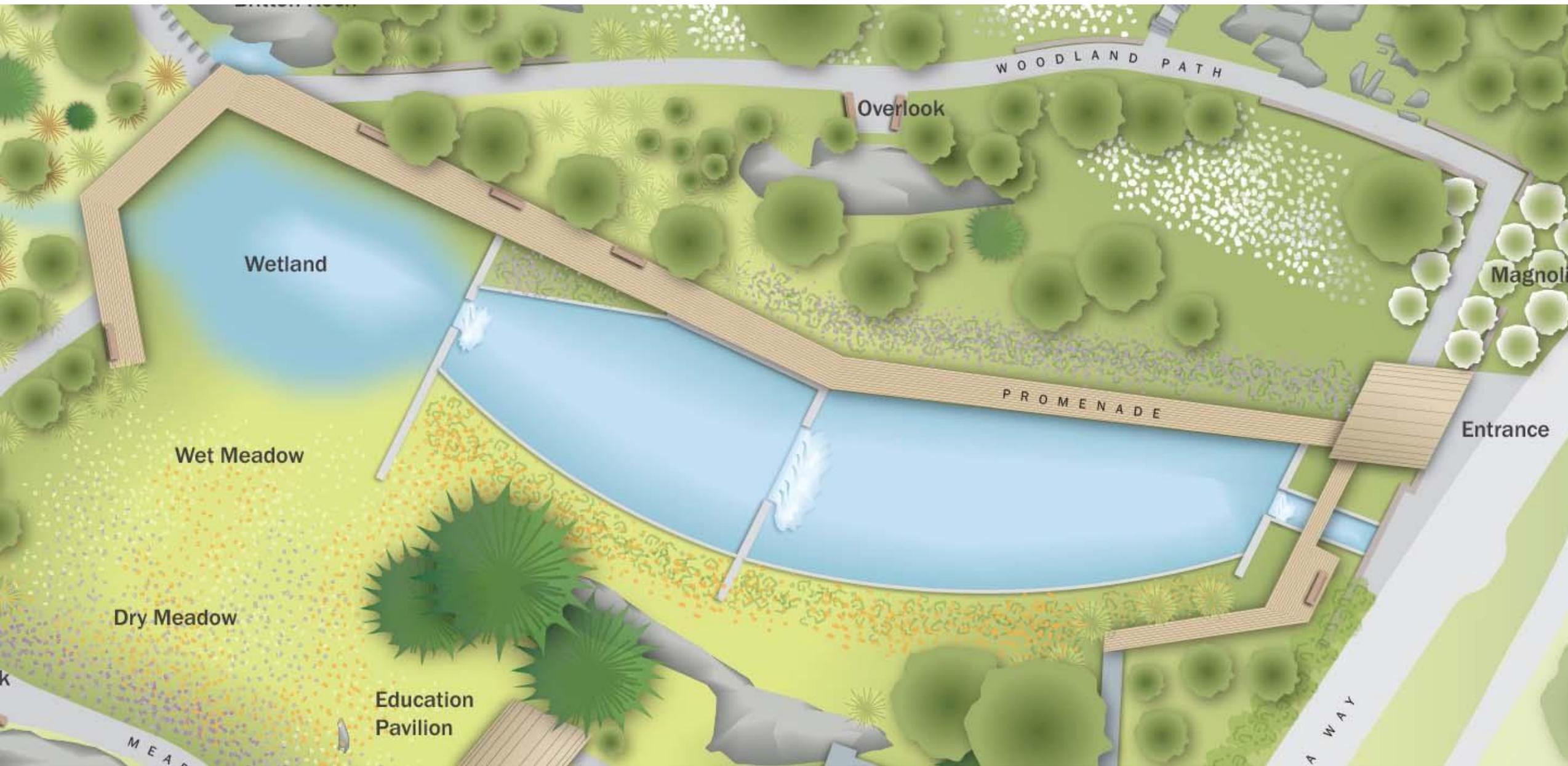
*Trillium grandiflorum*



*Polystichum acrostichoides*



*Symphyotrichum  
cordifolium*



Wetland

Wet Meadow

Dry Meadow

Education Pavilion

Overlook

WOODLAND PATH

PROMENADE

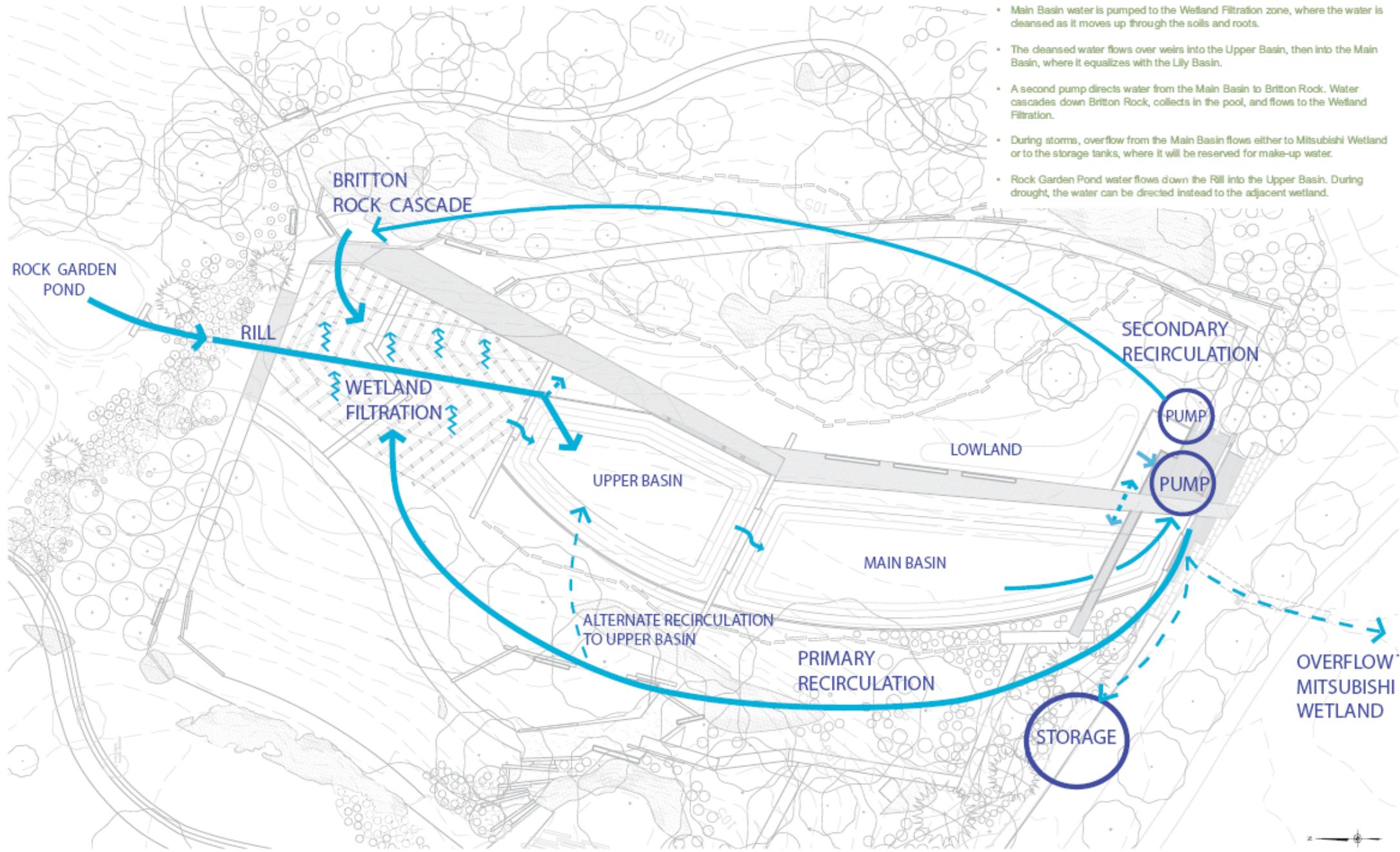
Magnolia

Entrance

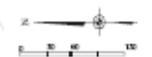
MAGNOLIA WAY



# WATER RECIRCULATION



- Main Basin water is pumped to the Wetland Filtration zone, where the water is cleansed as it moves up through the soils and roots.
- The cleansed water flows over weirs into the Upper Basin, then into the Main Basin, where it equalizes with the Lily Basin.
- A second pump directs water from the Main Basin to Britton Rock. Water cascades down Britton Rock, collects in the pool, and flows to the Wetland Filtration.
- During storms, overflow from the Main Basin flows either to Mitsubishi Wetland or to the storage tanks, where it will be reserved for make-up water.
- Rock Garden Pond water flows down the Rill into the Upper Basin. During drought, the water can be directed instead to the adjacent wetland.







*Calopogon tuberosus*



*Sarracenia leucophylla*



*Sabatia kennedyana*



*Spiranthes odorata*



Glade

Native Border

4244





*Phlox paniculata* 'Jeana'



*Helianthus* 'Lemon Queen'



*Baptisia alba*



*Symphyotrichum oblongifolium*  
'Raydon's Favorite'

- I. Do no harm
  - I. Don't plant known invasives
  - II. Be aware that your garden is connected to your local wetlands and waterbodies and apply chemicals, fertilizers, and water thoughtfully
- II. Garden for the Greater Good
  - I. Plant appropriate natives
  - II. Preserve\create habitat for pollinators
- III. Apply your skills more broadly
  - I. Ecological restoration
  - II. Citizen science





Thank You!