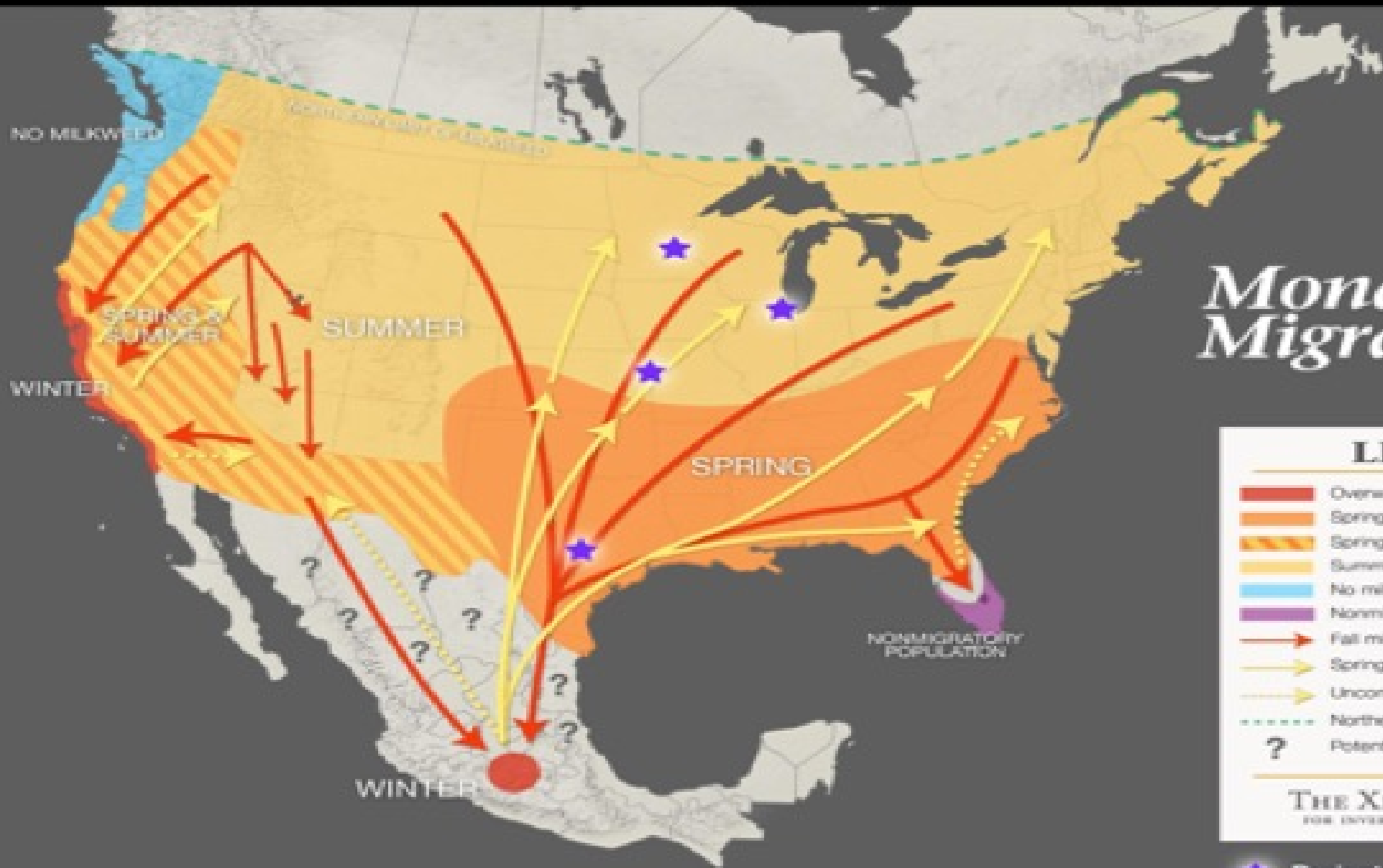




A Monarch's View of the City:

Conservation Design for Monarchs in Metropolitan Areas





Monarch Migration


Spring & Fall



LEGEND

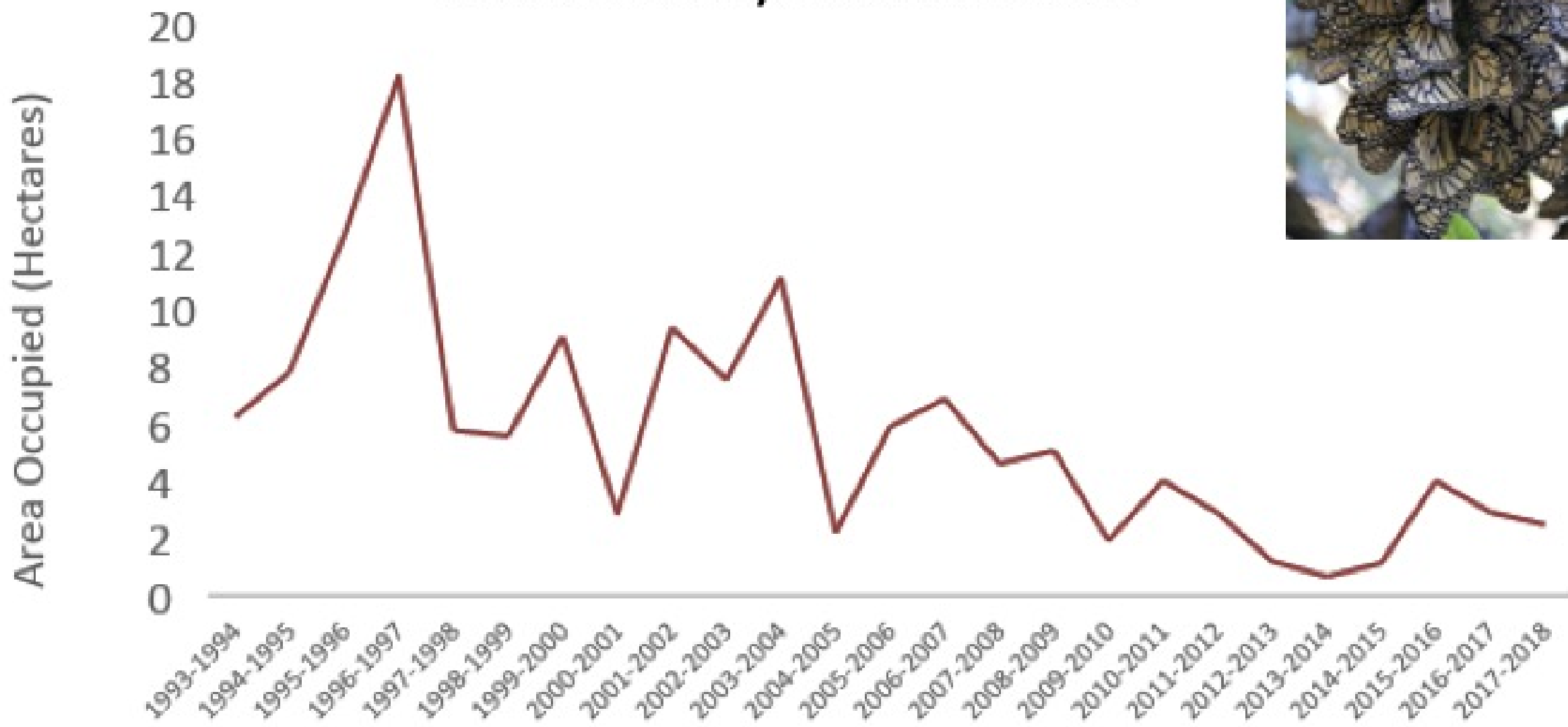
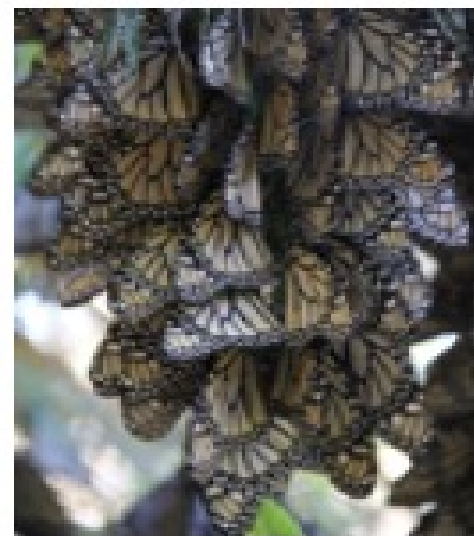
-  Overwintering areas
-  Spring breeding areas
-  Spring & summer breeding areas
-  Summer breeding areas
-  No milkweed - no breeding area
-  Nonmigratory population
-  Fall migration
-  Spring migration
-  Unconfirmed migration
-  Northern limit of milkweed
-  Potential monarch breeding habitat

THE XERCES SOCIETY
FOR INVERTEBRATE CONSERVATION

 Project pilot cities

Population Decline

Winter colony size in Mexico



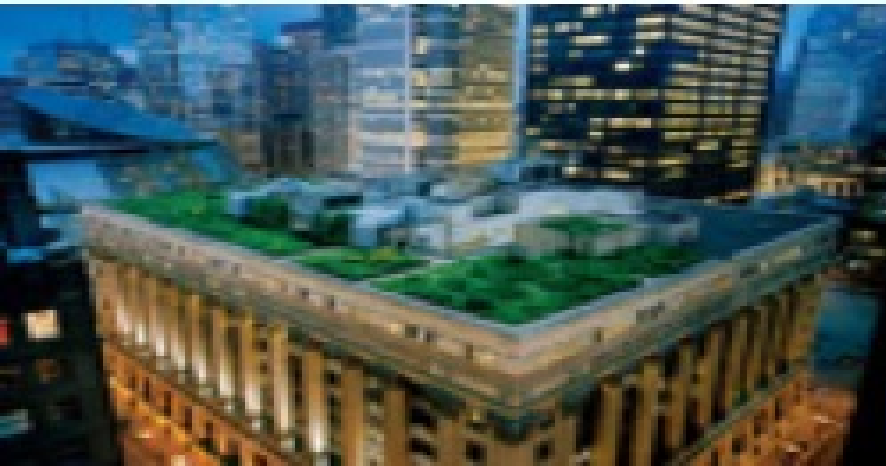
By 2020...

- 225 million monarchs in Mexico (~6 hectares)
- 1.8 billion additional milkweed stems





Does nature need cities?



Guides & Templates

Framework for Planning

- Urban Monarch Conservation Guidebook
- Social Survey and Interview Guide (English & Spanish)
- Best practices by land use type
- Rapid Color Guide: Creating monarch habitat in your Midwestern garden

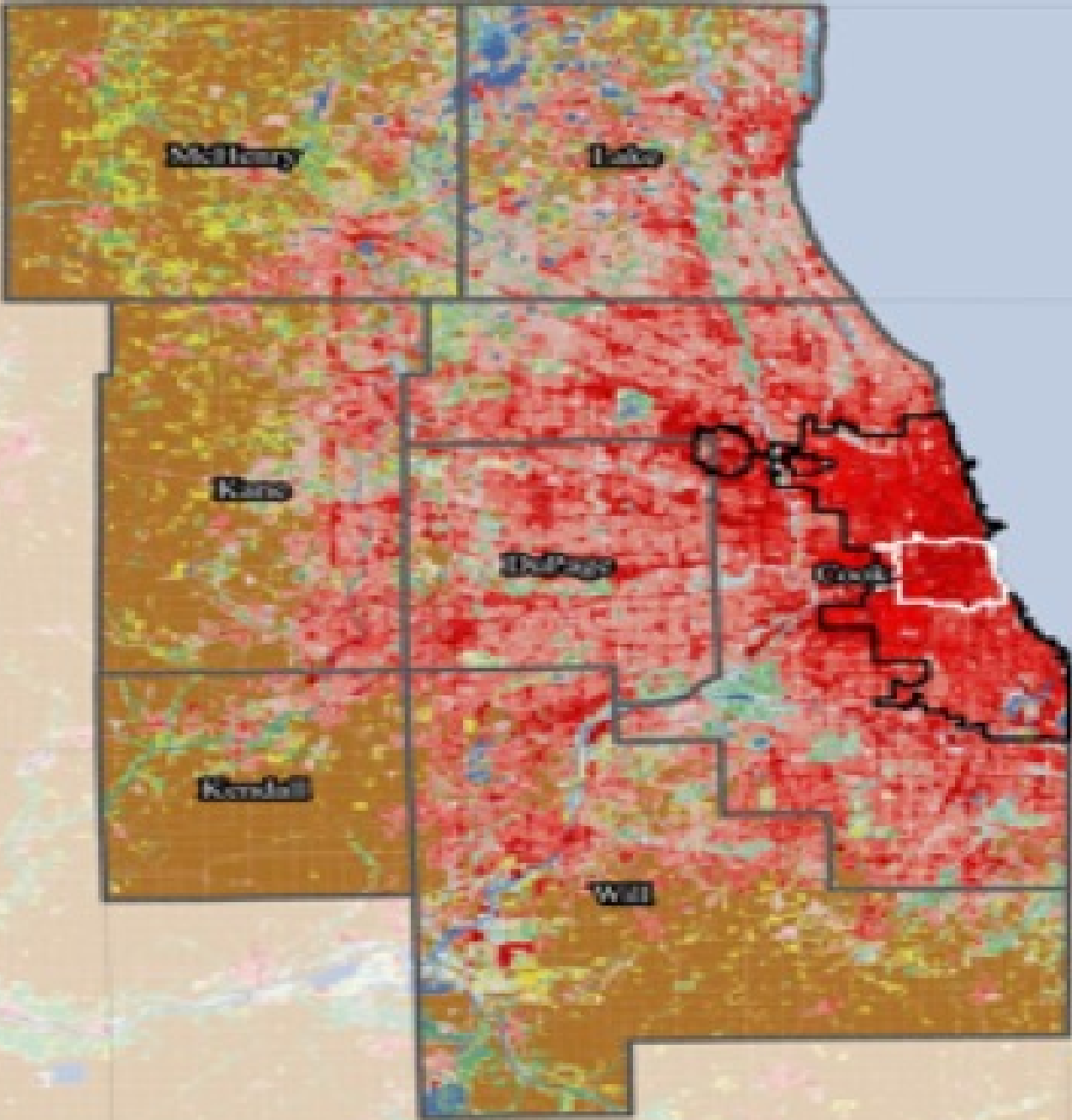


Sampling & Mapping Tools

- Urban Milkweed Baseline Tool
- Urban Scenario Planning Tool
- Natural areas sampling protocol
- Metro transect methodology
- Maps and conservation designs for pilot cities

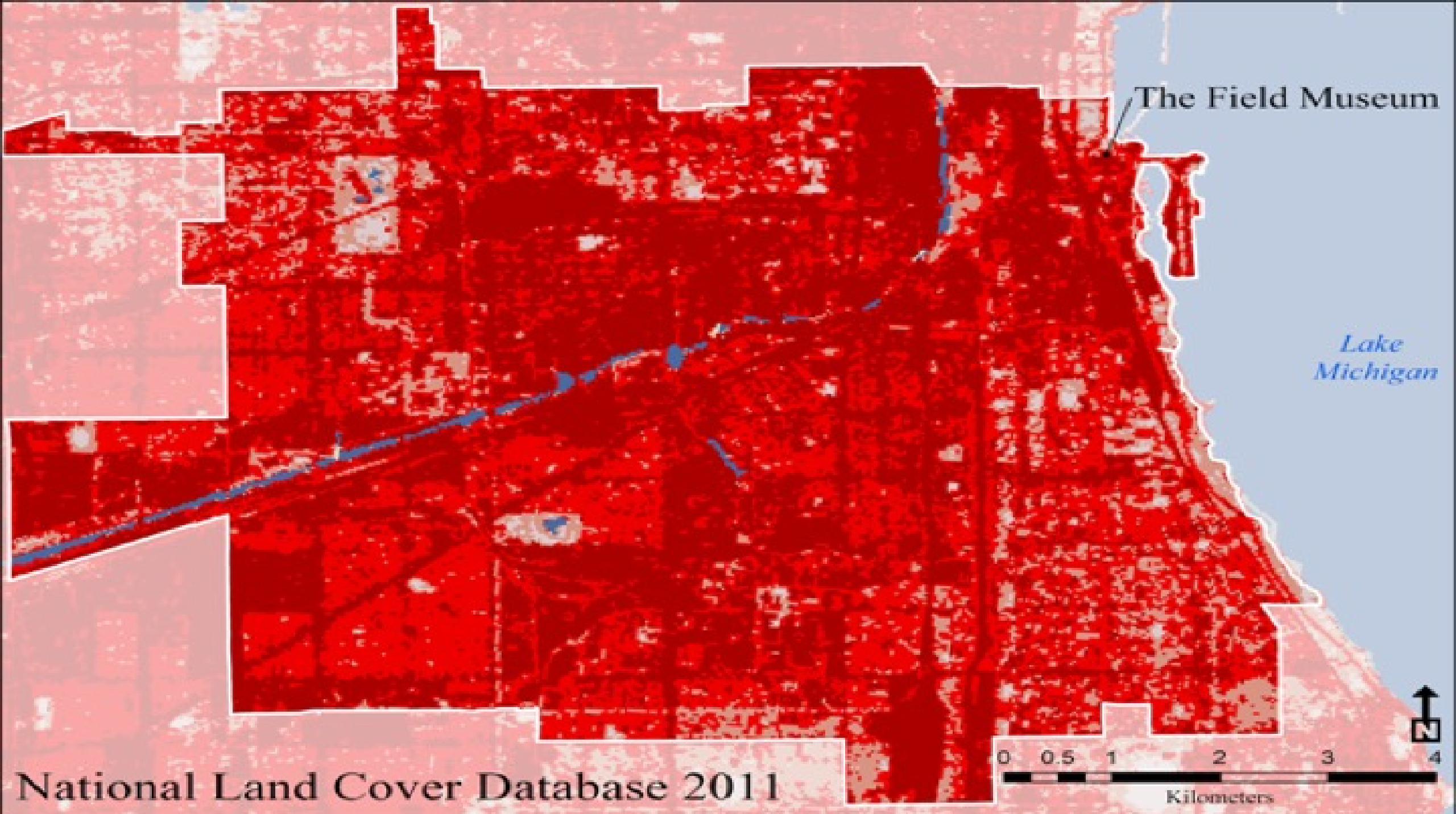
Wisconsin
Illinois

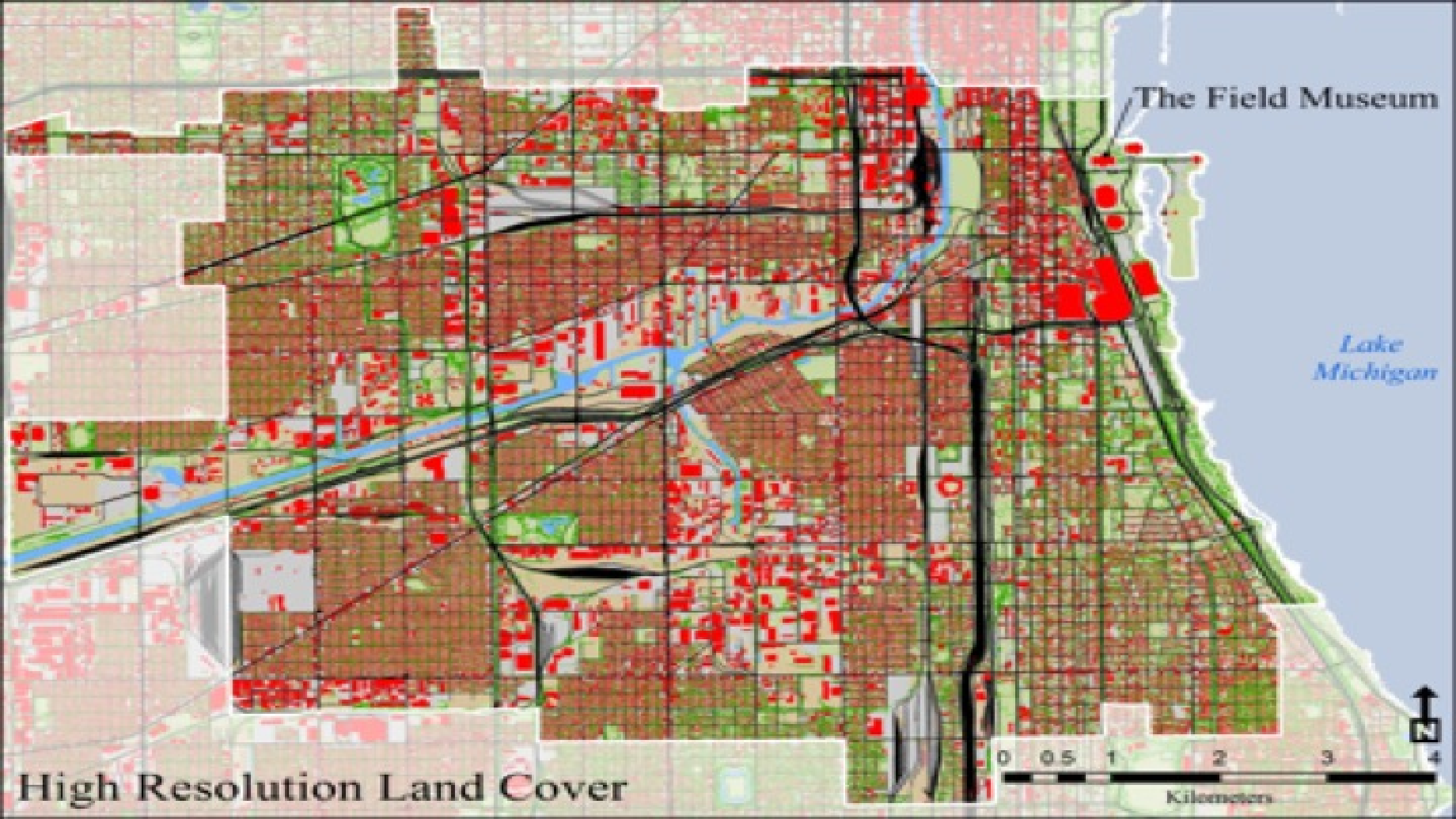
National Land Cover Database 2011



Lake Michigan

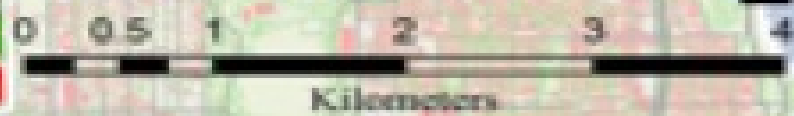
Illinois Indiana



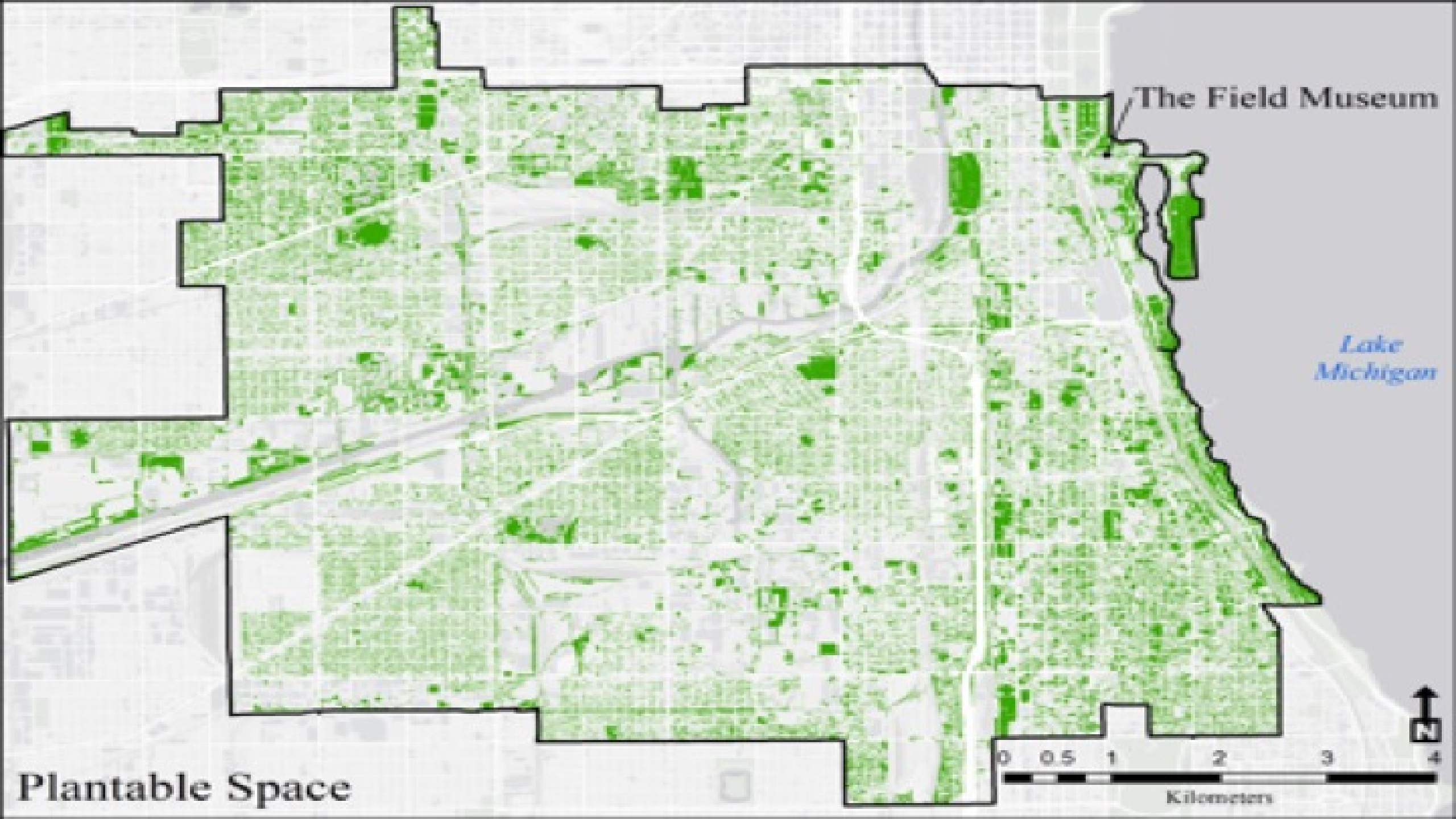


The Field Museum

Lake Michigan

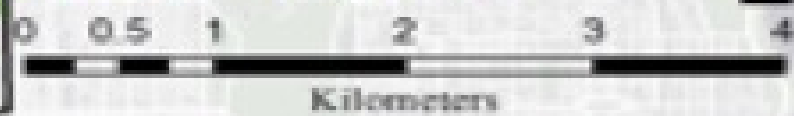


High Resolution Land Cover

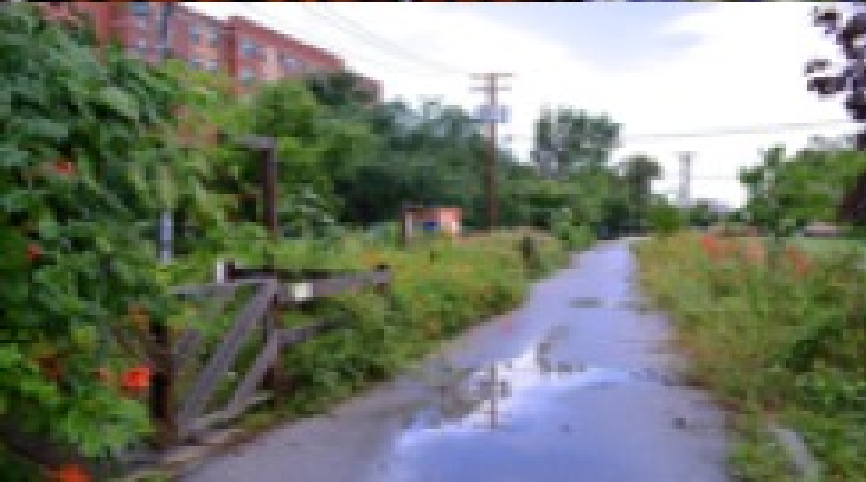
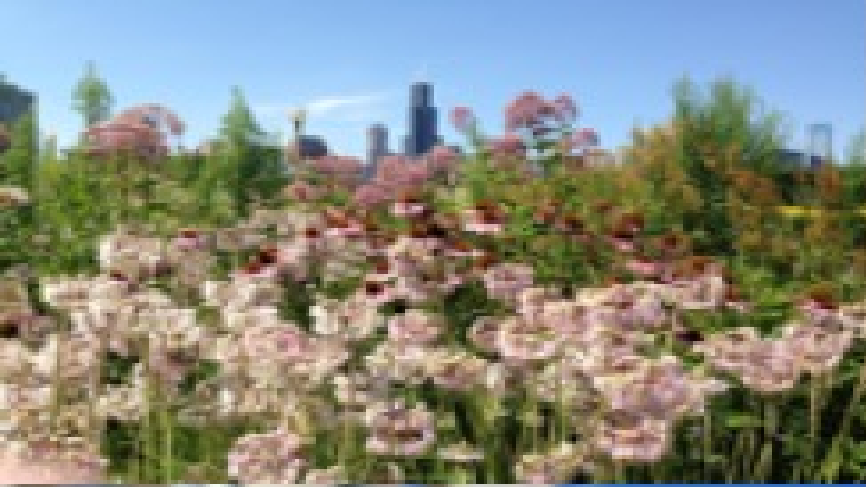


The Field Museum

Lake Michigan

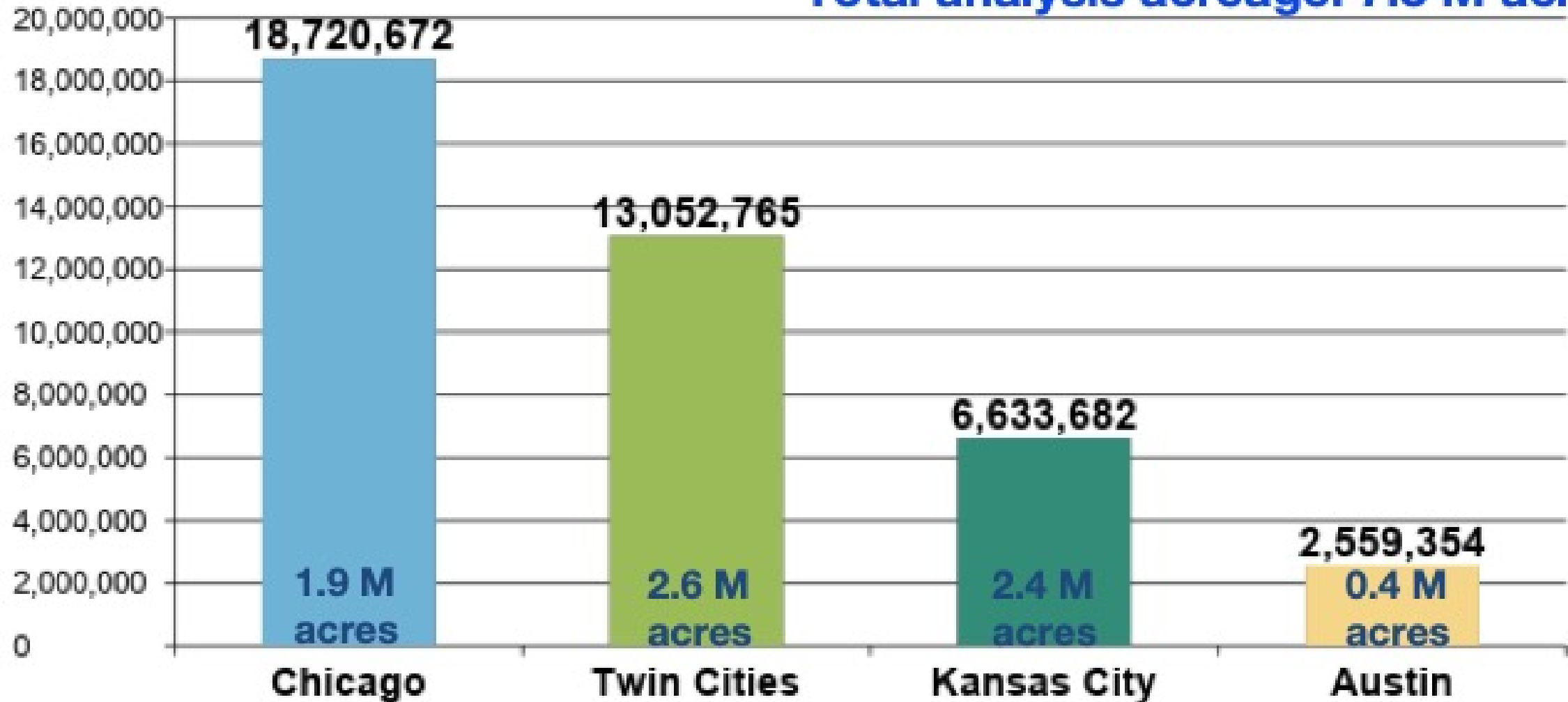


Plantable Space

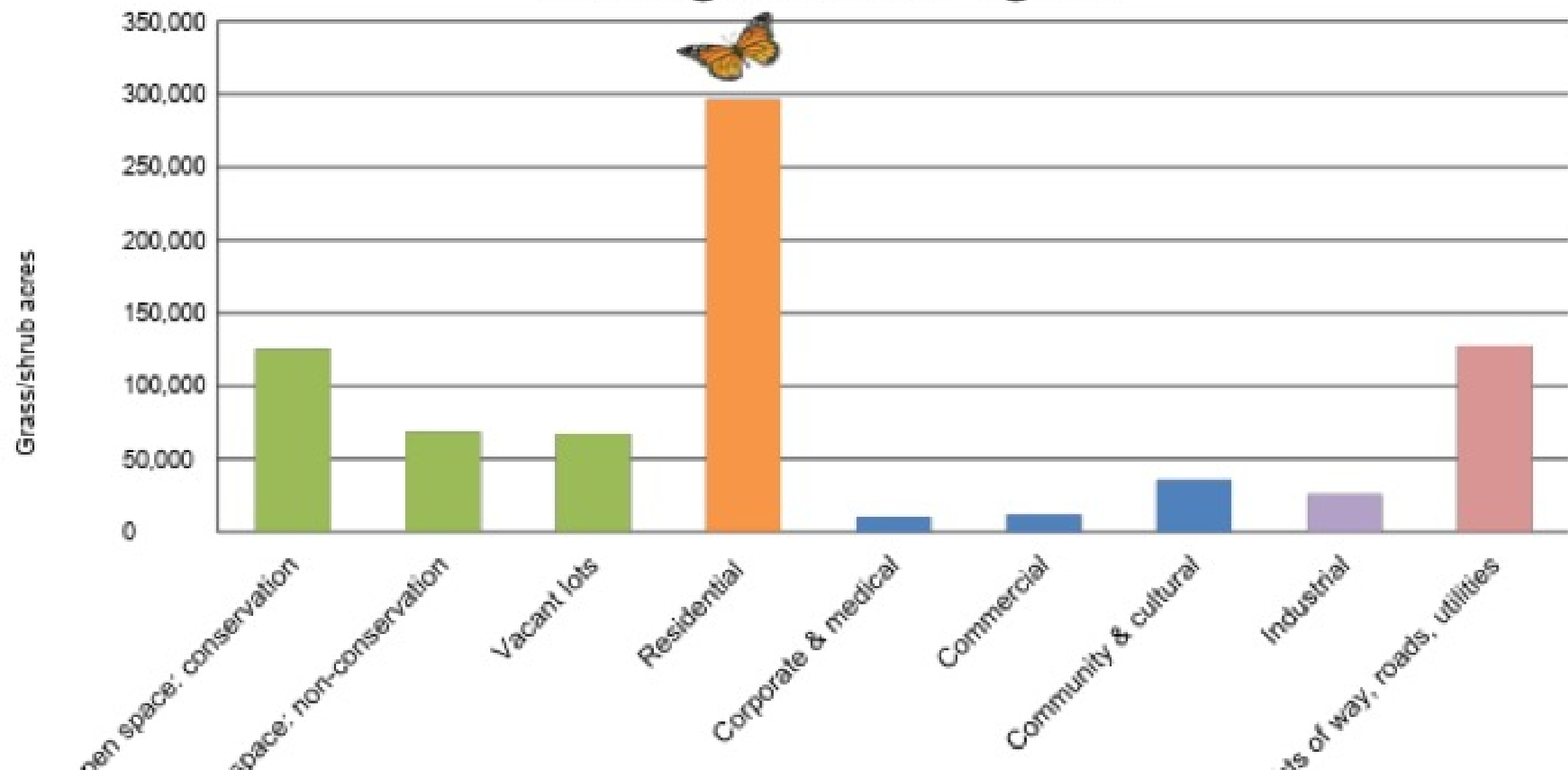


Baseline milkweed stems by metropolitan area

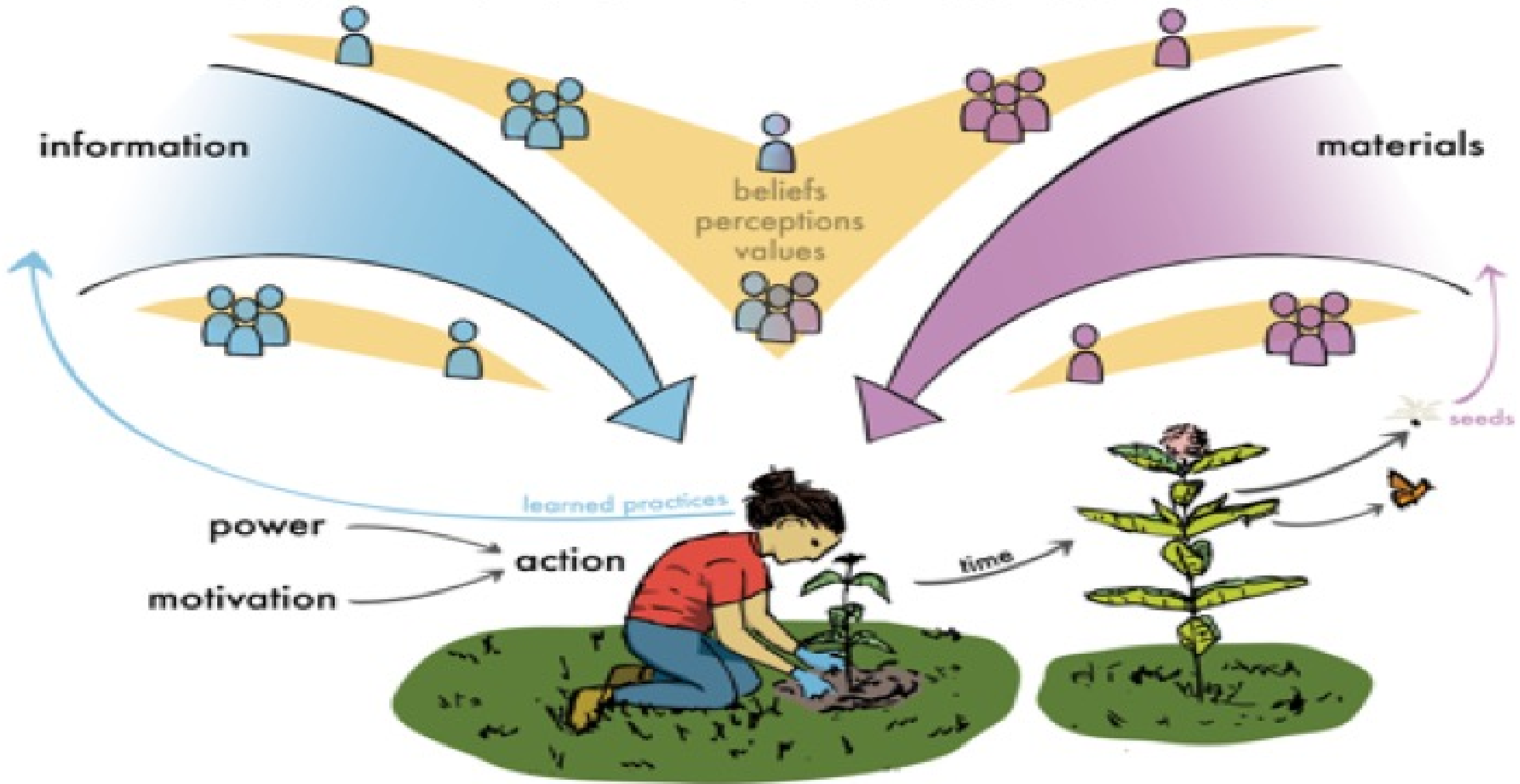
Total estimated stems: 41,000,000
Total analysis acreage: 7.3 M acres



Potential plantable space by land use type: Chicago metro region



Social world of monarch conservation



Best practices and insights by land use type

Best practices and engagement insights

Example/demonstration habitat spaces go far in educating others and encouraging them to create monarch habitat.

Home gardens and adjacent green space often function as informal **environmental education** spaces. Native plants spark conversation among neighbors and may inspire others to create monarch habitat. These conversations may build local **social cohesion**.

Creating habitat for monarchs or pollinators may seem less daunting and more concrete than other, broader ecosystem services where the results are less immediately visible or tangible (e.g., **conserving water**).

However, focus on a particular species may deter those concerned about restrictions that official "threatened" or "endangered" designations could bring. In these cases, it may be more effective to frame a project in terms of **overall ecological health** and/or connect it to practical concerns like **occupational safety** and **decreased mowing costs**.

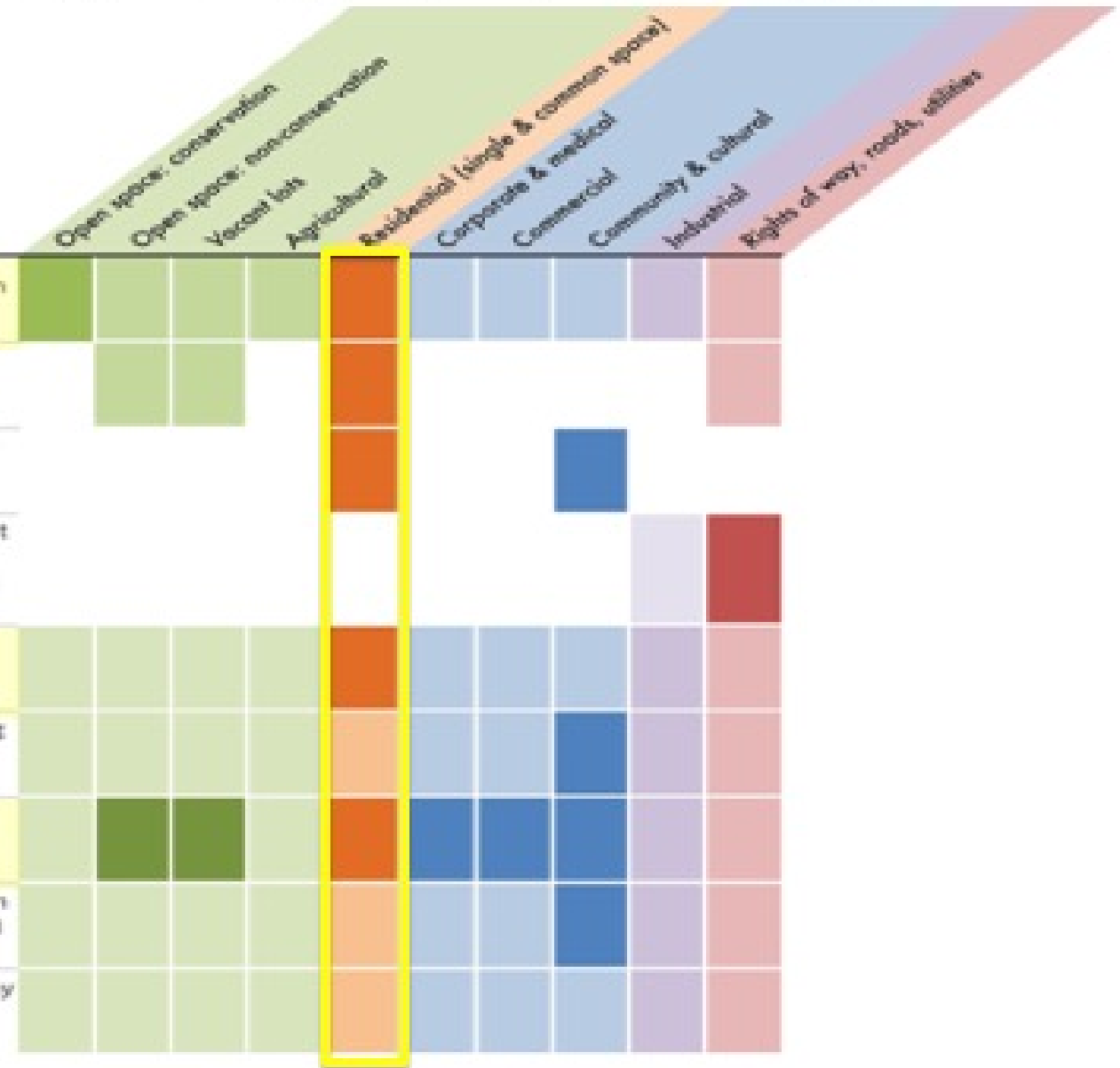
One-on-one in-person communication is a highly effective method of education/promotion of monarch-friendly practices.

Hands-on, up-close encounters with monarchs and their host plants are most compelling when educating people about monarchs and creating habitat. The next best option is compelling video and/or photos.

To create a landscape that will be received well by its occupants and neighbors, be flexible and willing to balance native plants with more manicured plantings that signal awareness of mainstream aesthetic conventions.

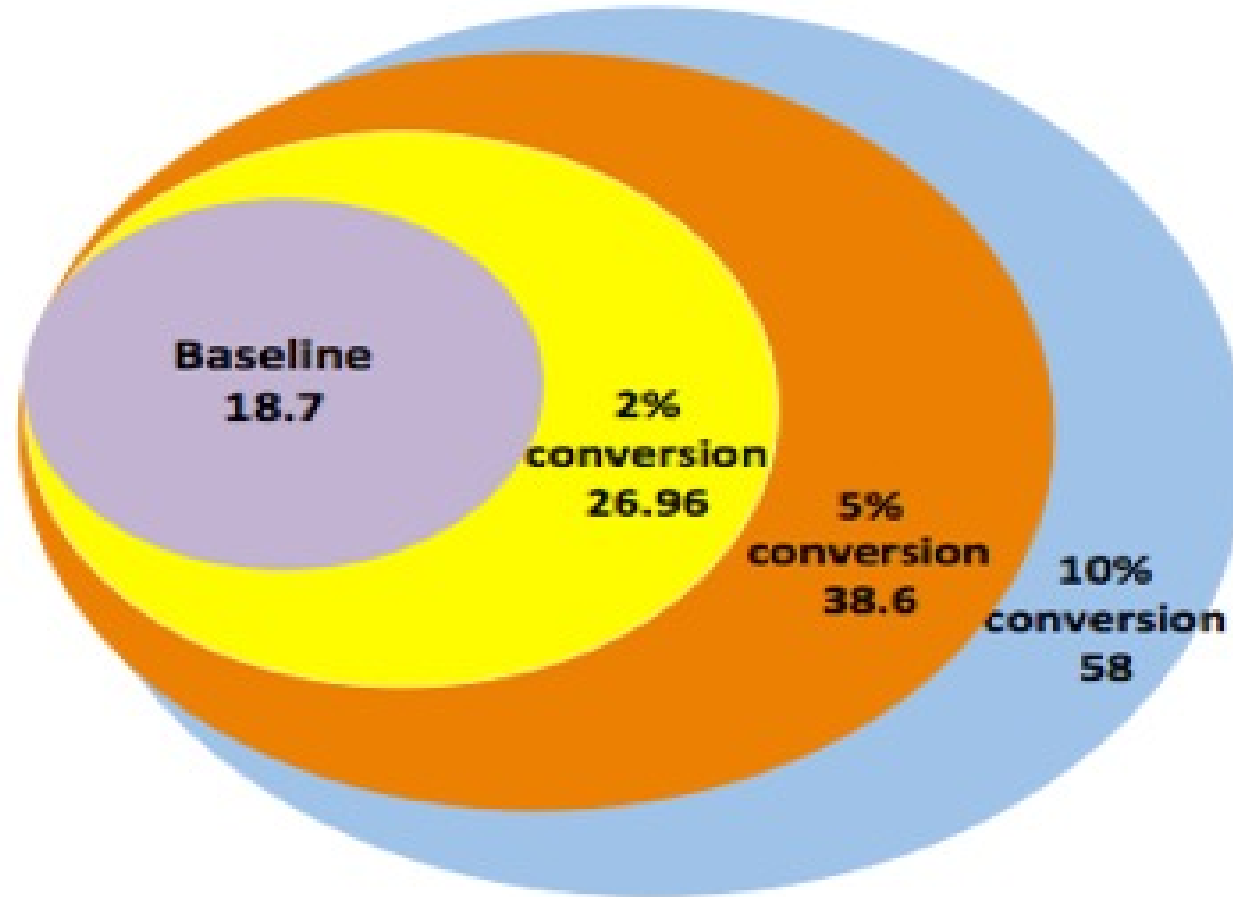
Learning about monarchs promotes **observational skills** and **knowledge of geography** in youth. Children end up learning about more ecology and conservation more broadly, and that they can have a positive impact on their environment.

Plants used for **stormwater management** efforts such as bioswales and rain gardens may also provide monarch habitat; thus stormwater related grants and resources may be leveraged to help the monarch.



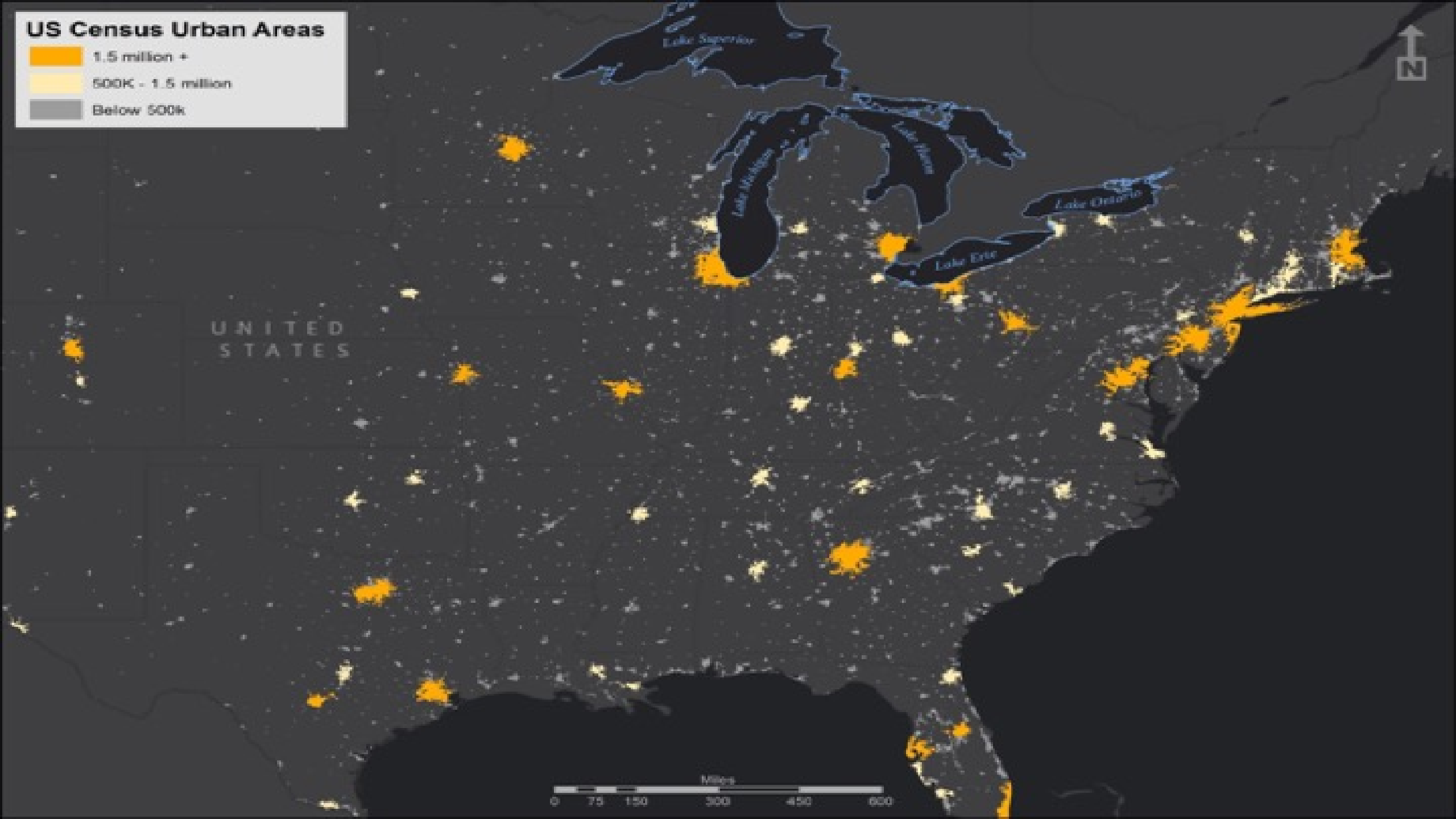
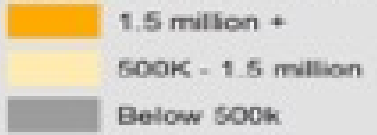


Milkweed Scenario Modeling

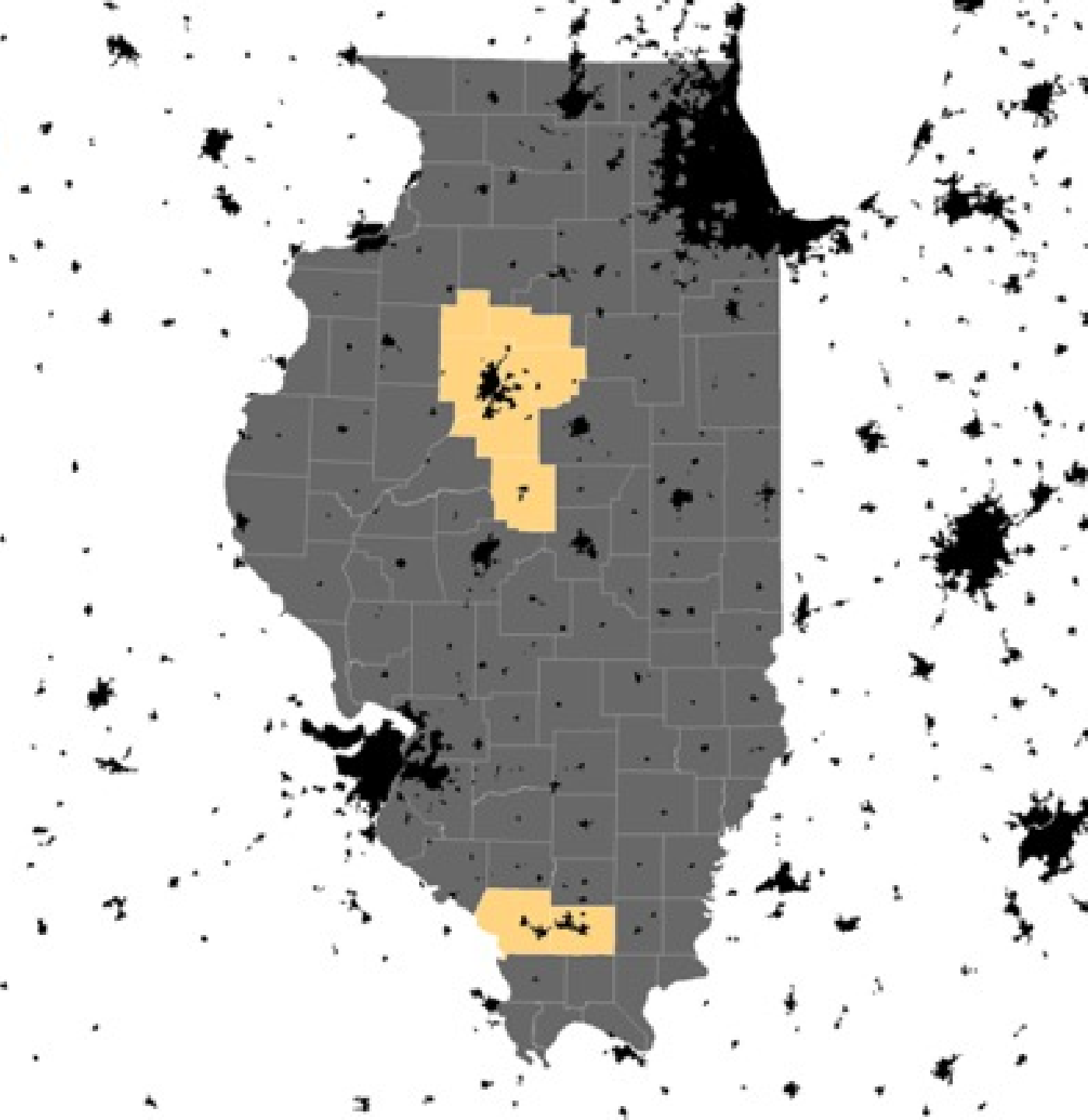


**Millions of stems of milkweed
[Chicago Metropolitan area]**

US Census Urban Areas



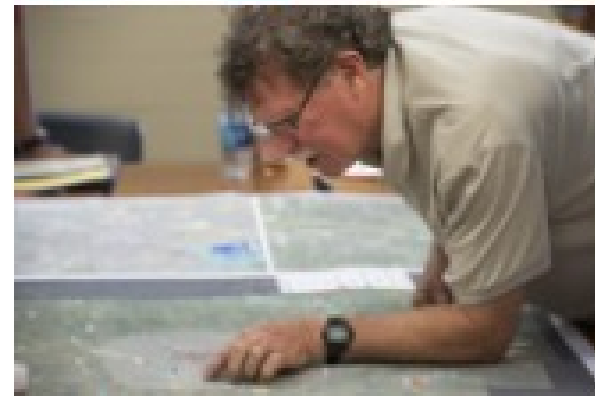
Urbanized areas
> 50K population



Small and mid-sized cities



SIU
CARBONDALE



Stakeholder Groups	# of people
Conservation Organization/Friends Group	26
Master Gardener/Naturalist	22
College/University	15
City staff	12



3 workshops
~100 Participants

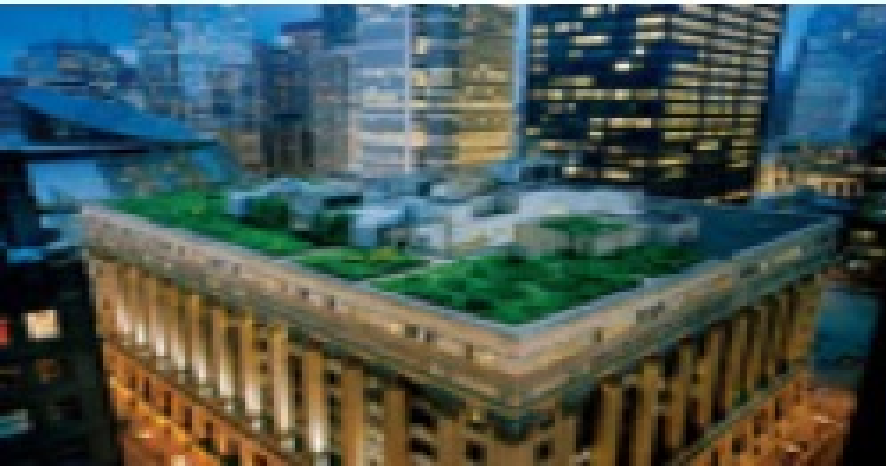
Stakeholder Groups	# of people
Park District	7
State DNR	4
Agriculture	4
National Heritage Area	2
County Board	2
US Soil & Water Conservation	1
National Forest	1
Utility	1
Economic Development	1
Business	1
Elementary School	1
4H	1

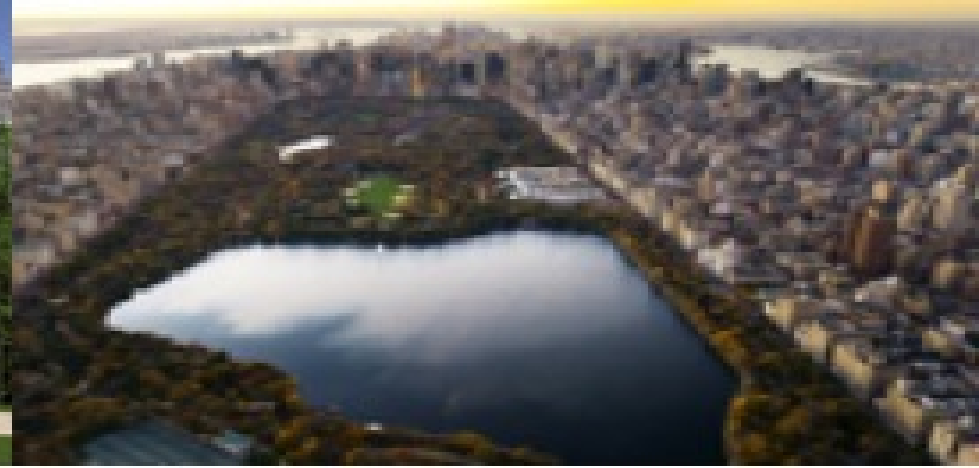
Field Data: Milkweed Baseline

Urban clusters sampling	Total stems	Total area sampled (acres)	Mean stem den/acre	Natural area sampling	Total Stems	Total area sampled (acres)	Mean stem den/acre
Peoria	1,786	2,235.5	0.8	Peoria	55	9.9	0.6
Lincoln	996	3,293.5	0.3	Lincoln	13	167	0.1
Carbondale	20,098	2,976.3	6.8	Carbondale	1,607	57.6	27.9
Chicago	9,763	5,862	1.7	Chicago	43,783	2,271	19.3

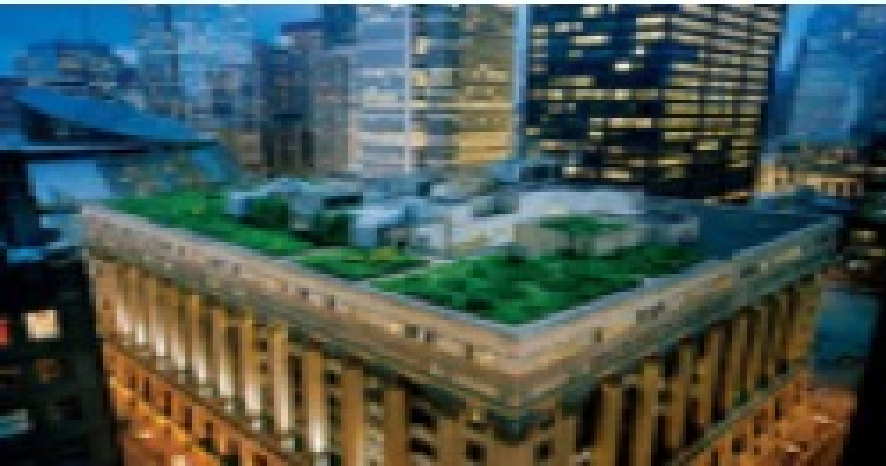


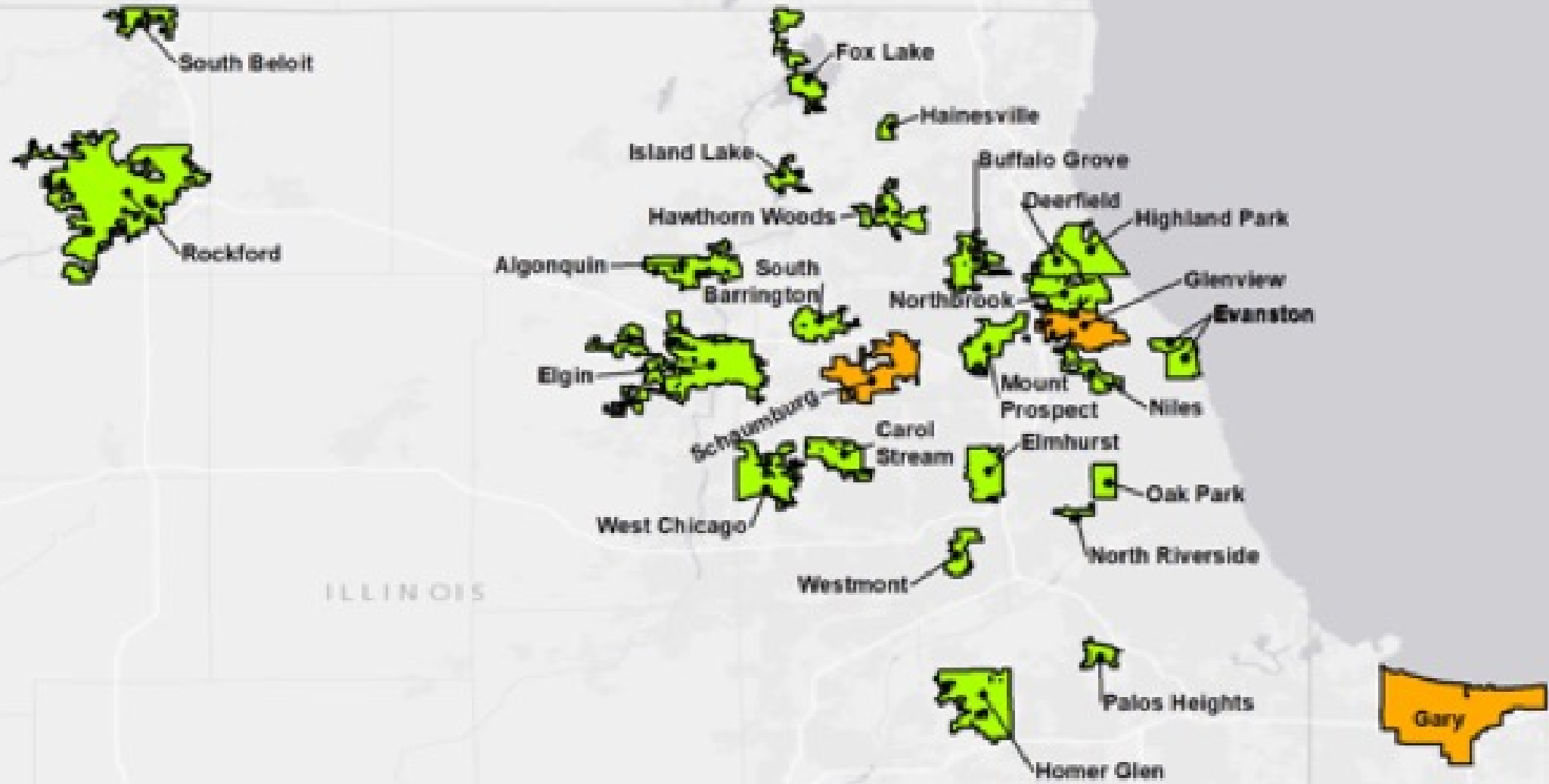
Nature DOES need cities





What we **plant** **MATTERS**





Mayor's Monarch Pledge Signatories

Case study - Schaumburg

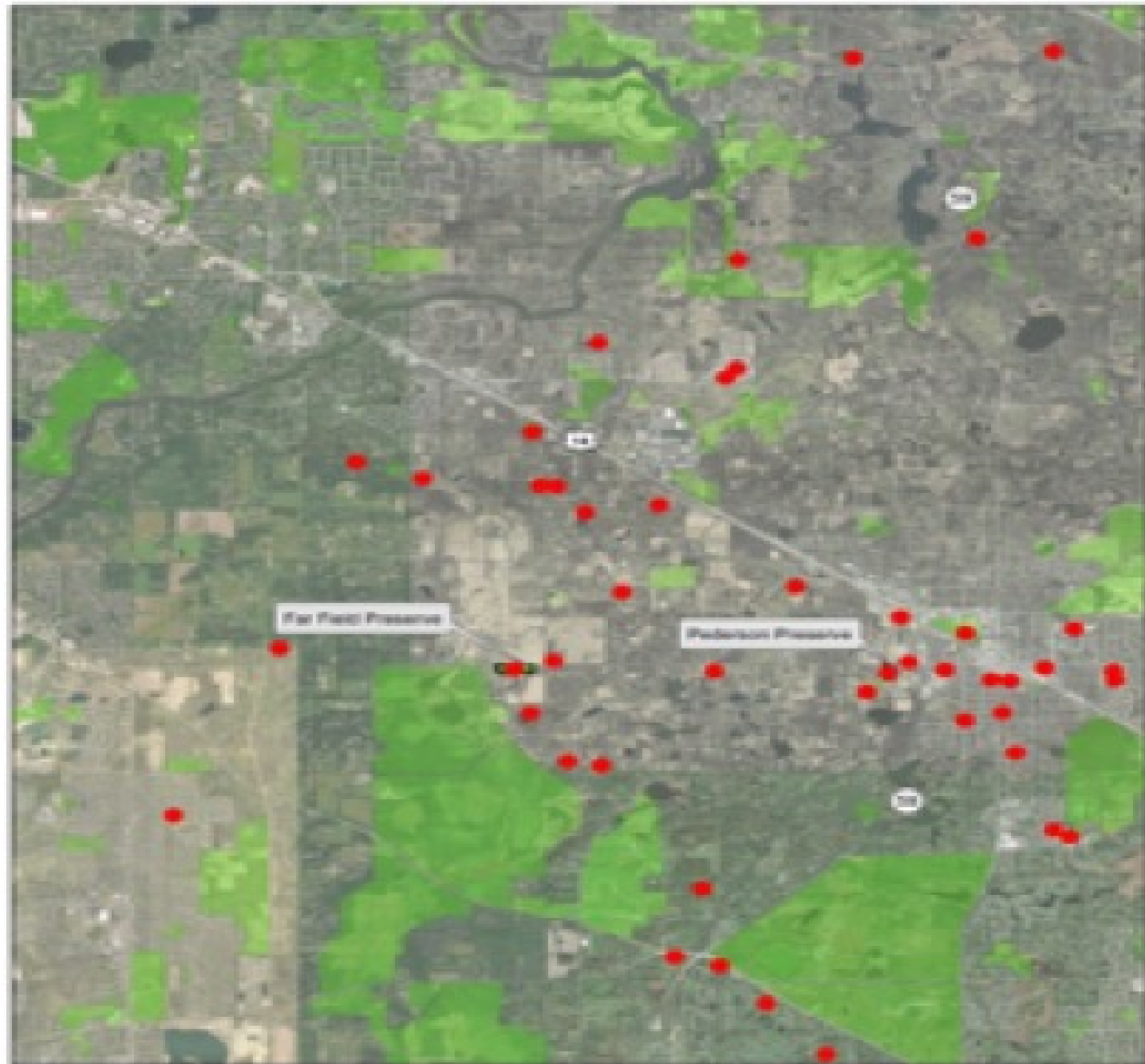


Tools in action

- Develop monarch conservation strategy as a road map for meeting their commitments in the Mayors Monarch Pledge
- Communicate with public to increase interest and opportunity to take action
- Develop policies for increasing habitat
- Use the spatial planning tool to look at where the biggest opportunities are for increased habitat.



Monarch Habitat Corridor



MONARCH WAYSTATION

Create, Conserve, & Protect Monarch Habitats!



BEFORE



AFTER

As featured provided by
lingers
LANDSCAPE ARCHITECTS

Create your own **Monarch Waystation!**



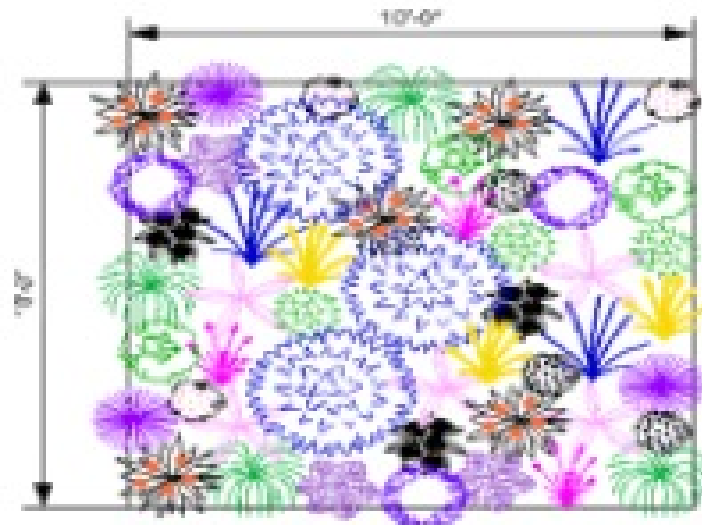
Plants in the Garden


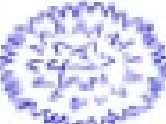













- A** - Swamp Milkweed *Asclepias incarnata*
- B** - Butterfly Weed *Asclepias tuberosa*
- C** - Wild Blue Indigo *Baptisia australis*
- D** - Pale Purple Coneflower *Echinacea pallida*
- E** - Joe Pye Weed *Eupatorium purpureum*
- F** - Prairie Blazing Star *Liatris pycnostachya*

- G** - Wild Bergamot *Monarda fistulosa*
- H** - Showy Black-eyed Susan *Rudbeckia fulgida var. speciosa*
- I** - Prairie Dropseed *Sporobolus heterolepis*
- J** - Little Bluestem *Schizachyrium scoparium*
- K** - Mountain Mint *Pycnanthemum virginianum*
- L** - Rattlesnake Master *Eryngium yuccifolium*

Artwork provided by:

fingers
LANDSCAPE SERVICES, INC.

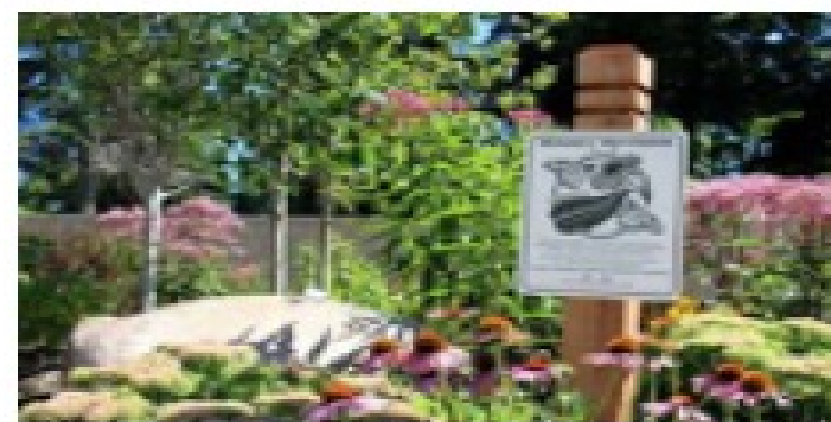
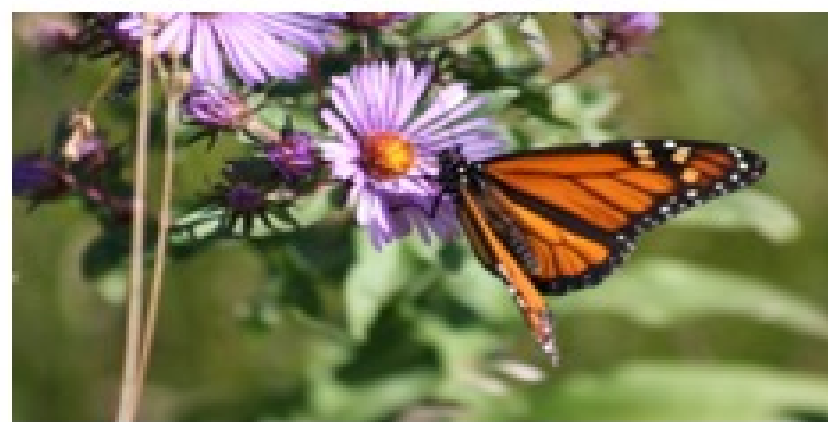


-  Purple Coneflower - 3
-  Wild Blue Indigo - 3
-  Swamp Milkweed - 5
-  Ratibida Mastor - 3
-  Rudbeckia hirta - 5
-  Flat-topped Purple Coneflower - 3
-  Blowing Pennywort - 3
-  Blackfoot - 3
-  Prairie Dropseed - 4
-  Black-eyed Susan - 3
-  Wild Bergamot - 3
-  Prairie Blazing Star - 3
-  Wild Petunia - 3
-  Aster - 3
-  Golden Alexander - 3

**Monarch Waystation
Planting Plan**

1/4" = 1' - 00"





Certify your yard!



Acknowledgments

