

PLANT and ANIMAL SURVEY of  
WOODLANDS and WETLANDS  
on 25 DISTRICT PROPERTIES

A TERRESTRIAL BIOLOGICAL SURVEY  
on PROPERTIES OWNED by the  
METROPOLITAN  
WATER RECLAMATION DISTRICT  
of GREATER CHICAGO

IRWIN POLLS  
JUNE 28, 2013

# ACKNOWLEDGEMENT

- **Plants** (Paul Bollinger, Gayle Tonkovich, and Margo Milde)
- **Butterflies** (Douglas Tarron)
- **Dragonflies/Damselflies** (Craig Stettner, Nicholas Block, and Richard Day)
- **Amphibians/Reptiles** (Robert Carmichael, Michael Knoerr, Rebecca Brezinsky, and Mathew Most)
- **Birds** (Walter Marcisz, Samuel Burckhardt, and Jason Weckstein)

# ACKNOWLEDGEMENT

## (continued)

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- **Urban GIS** (Keith Searles and David Rohr)
- **CDM Smith** (Christopher Albrecht and Ronald French)
- **District** (Jennifer Wasik and Thomas Minarik)

# OUTLINE of PRESENTATION

- District Land Holdings
- Site Selection Process
- Field Survey Methodology
- Survey Results from 10 Selected Properties
- Physical Habitat Summary
- Biodiversity Summary
- Endangered, Threatened, and Uncommon Species
- Enhancement and Protection Recommendations



# INTRODUCTION

- **Biological diversity** or **biodiversity** refers to the varieties of life forms in a particular habitat, and the ecological processes that support the species.
- Globally, we continue to lose biodiversity especially in urban areas **at a rate never witnessed before**.
- Consequently, urbanization results in **simplified physical habitats** and a biological community with few native species **dominated by abundant, non-native plants and animals**.
- If **decision makers** are to fully understand how the social, economic and environmental qualities of urban cities work together, the **dynamics of ecological processes** must be fully understood.

# DISTRICT LAND HOLDINGS

- Principal goal of the District is to be a **responsible steward** of its land holdings.
- District is one of the largest landowner in Cook County.
- Approximately **9,500** acres are owned by the District.
- **57%** of land is for plant operations.
- **23%** of land is for public recreation.
- **10%** of land is leased to private sector companies and municipal governments.
- **10%** of land is vacant.

# STUDY OBJECTIVE

- The overall goal of this study was to conduct a **terrestrial field survey** of a number of plant and animal communities on selected **District properties** including riparian areas along the Chicago Area Waterway System (CAWS).

# SITE SELECTION PROCESS

- District identified 59 properties for preliminary reconnaissance.
- Goal was to select 25 locations that represent the **diversity** of biological communities.
- Criteria for selecting properties included:
  - Vegetative cover/physical habitat type
  - Property size
  - Adjacent land use(s)
  - Historical data on biological communities
- Preliminary field reconnaissance was conducted during April/May 2010.

# 25 PROPERTIES SELECTED for BIOLOGICAL SURVEY

- 7 Water reclamation plants (WRPs)
- 8 Locations along riparian corridor of CAWS
- 2 Solids processing areas
- 5 Flood control reservoirs
- 2 Supplemental aeration stations
- 1 Pumping station







# BIOLOGICAL COMMUNITIES SURVEYED

- Plants
- Dragonflies (adult)
- Damselflies (adult)
- Butterflies (adult)
- Amphibians
- Reptiles
- Birds
- Mammals

# FIELD SURVEY METHODOLOGY

- **VEGETATIVE SURVEY** included observations by a meander search line and linear transects during May-September.
- **DRAGONFLIES & DAMSELFLIES** were observed during June-September on walking routes through different physical habitat types.
- **BUTTERFLIES** were observed in summer along walking transects of major physical habitats.

# FIELD SURVEY METHODOLOGY

## (continued)

- **AMPHIBIANS & REPTILES** were surveyed by observations and collections during June-September utilizing quadrant and transect walking, drift fence lines with funnel and pitfall traps, cover boards, turtle traps, and frog call surveys.
- **BIRD** surveys were conducted by slowly walking along established terrestrial transects and observed along the riparian corridor of selected CAWS waterways by traveling on District boats during April-October.

# FIELD SURVEY METHODOLOGY (continued)

- **MAMMALS** were assessed by visual observations, motion-activated cameras near bait or scent stations, and traps during spring and fall periods.





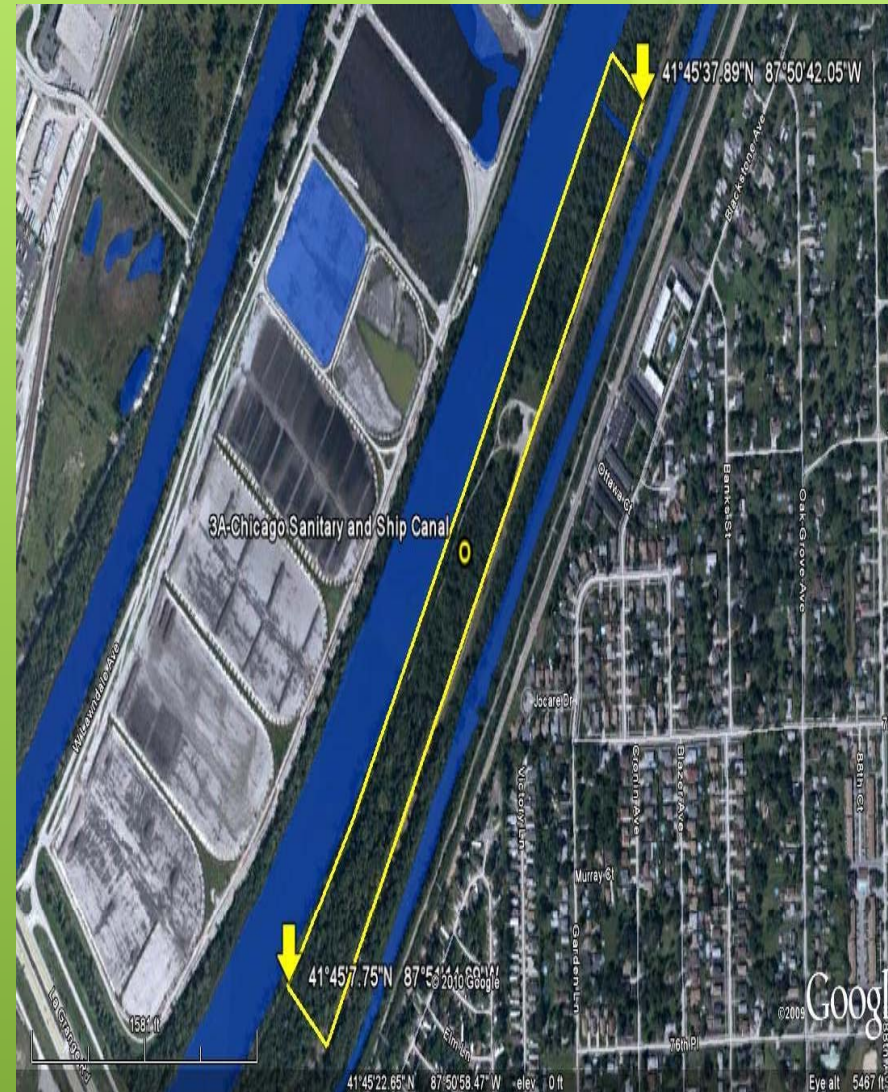




# SITE 3A

## CHICAGO SANITARY and SHIP CANAL

- Downstream from Stickney WRP discharge
- Biodiversity includes **272** species
- Plants (**192**) and birds (**36**) dominant biota
- **67%** of plants native species









# SITE 4B

## CALUMET-SAG CHANNEL

- Upstream from junction with Chicago Sanitary and Ship Canal
- Biodiversity includes **98** species
- Birds (**53**), plants (**22**), and butterflies (**15**) dominant biota
- **59%** of plants native species
- Threatened bird species







# SITE 5

## HANOVER PARK WRP

- 2 locations surveyed
- Biodiversity includes **264** species
- Plants (**192**) and birds (**31**) dominant biota
- **62%** of plants native species
- Endangered bird species









# SITE 10

## CALUMET WRP

- 2 locations surveyed
- Biodiversity includes **222** species
- Birds (**131**) and plants (**53**) dominant biota
- **43%** of plants native species
- Endangered and Threatened bird species





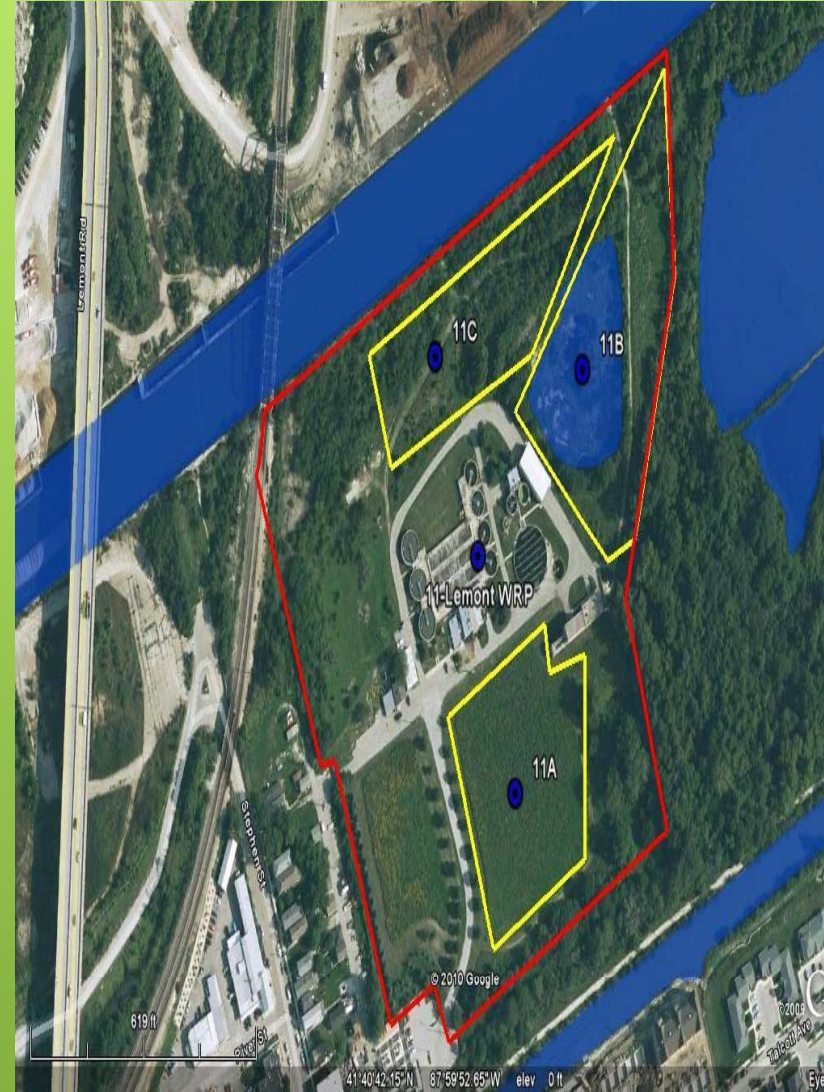




# SITE 11

## LEMONT WRP

- 3 locations surveyed
- Biodiversity includes **211** species
- Plants (**127**), birds (**33**), and dragonflies (**21**) dominant biota
- **56%** of plants native species
- Endangered dragonfly species









# SITE 20

## STONY ISLAND SOLIDS PROCESSING AREA

- 1 location surveyed
- Biodiversity includes **148** species
- Plants (**71**) and birds (**47**) dominant biota
- **45%** of plants native species
- Endangered bird species





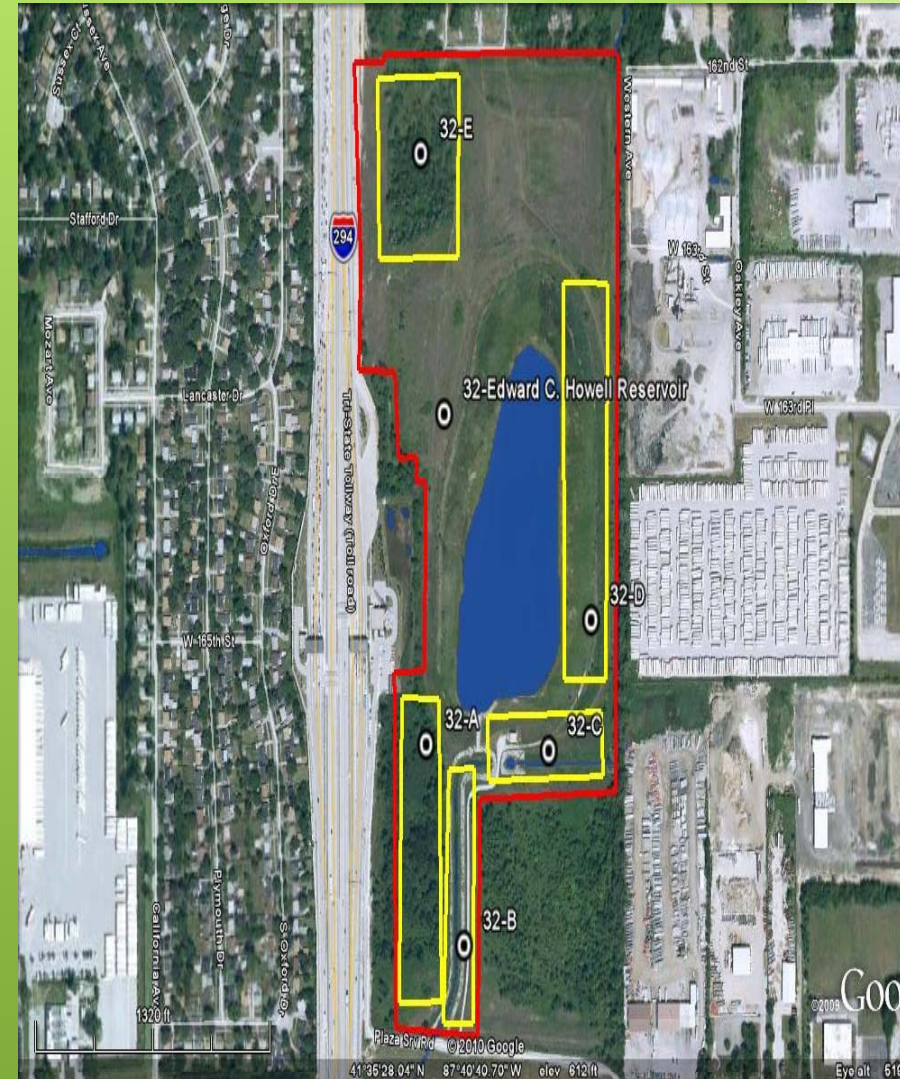




# SITE 32

## EDWARD HOWELL RESERVOIR

- 5 locations surveyed
- Biodiversity includes **315** species
- Plants (**226**) and birds (**41**) dominant biota
- **68%** of plants native species
- Endangered bird species





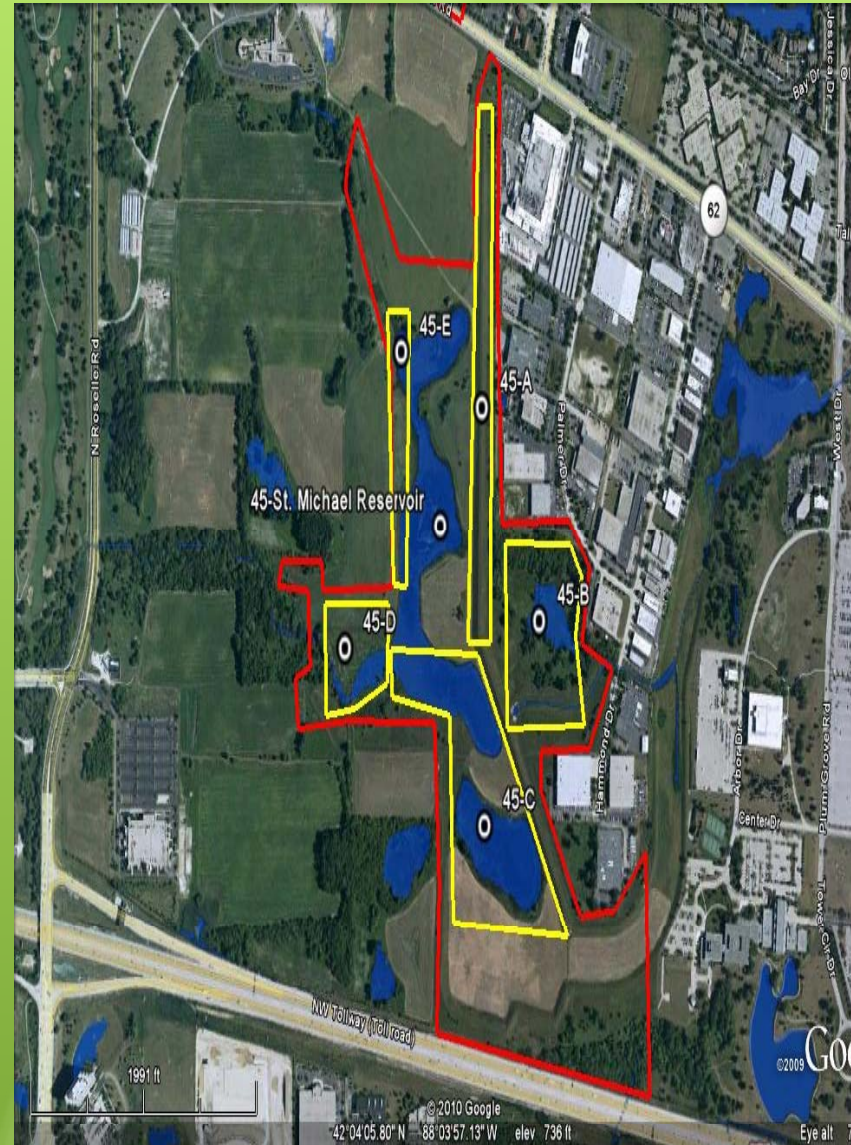




# SITE 45

## ST. MICHAELS RESERVOIR

- 5 locations surveyed
- Biodiversity includes **309** species
- Plants (**163**), birds (**79**), and dragonflies (**22**) dominant biota
- **64%** of plants native species
- Endangered bird species



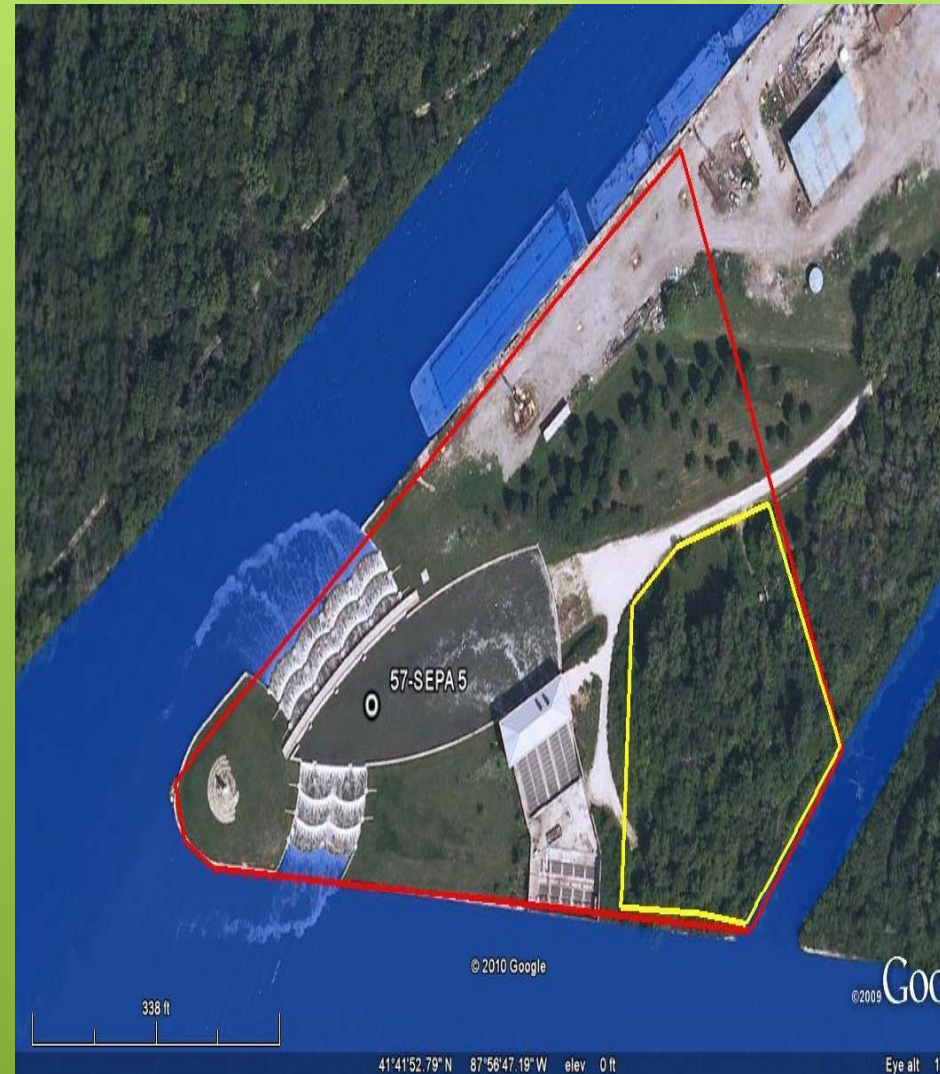




# SITE 57

## SEPA #5

- 1 location surveyed
- Biodiversity includes **134** species
- Plants (**85**) and birds (**26**) dominant biota
- **64%** of plants native species
- Endangered bird species







# TERRESTRIAL PHYSICAL HABITAT

- Before early settlers, terrestrial habitats in northeastern Illinois were dominated by prairies, oak savannahs, woodlands, marshes, and sedge meadows.
- Over the years, almost all District properties have been *severely altered*.
- *Dominant* terrestrial habitats observed on District properties during the surveys included:
  - **Disturbed woodlands/forests**
  - **Scrub/shrub plants**
  - **Fallow fields**

# TERRESTRIAL PHYSICAL HABITAT (continued)

- *Limited sections* of damaged **sedge meadows** (North Branch Chicago River, Hanover Park WRP, Terry O'Brien WRP, O'Hare reservoir, and St. Michael reservoir) and *small areas* of degraded **native prairie remnants** (Calumet-Sag Channel, Hanover Park WRP, and Edward Howell reservoir) were observed during the study.



# BIODIVERSITY

- 911 plant and animal species were identified during field surveys on 25 District properties.
- Plants (588 species) and birds (198 species) were the dominant taxa (86%) observed during the surveys.
- Minor taxa included dragonflies (3%), damselflies (3%), butterflies (3%), mammals (3%), amphibians (1%), and reptiles (1%).
- Biodiversity ranged from *excellent to poor* with some properties with *rich species composition* (Edward Howell reservoir, St. Michael reservoir, Chicago Sanitary and Ship Canal riparian corridor, and Hanover Park WRP).

# BIODIVERSITY

## (continued)

- Total number of plants and animals varied from a low of **97** species (SEPA 1) to a high of **315** species (Edward Howell reservoir).
- Many of the common plant and animal species observed at the 25 sites are considered **generalists** because of their broad preference and tolerance for a variety of terrestrial habitats.
- Even though the biodiversity on District property was less than observed in other areas in northeastern Illinois, the **diversity** of animals and plants at the 25 sites is **encouraging**.



# BIODIVERSITY (continued)

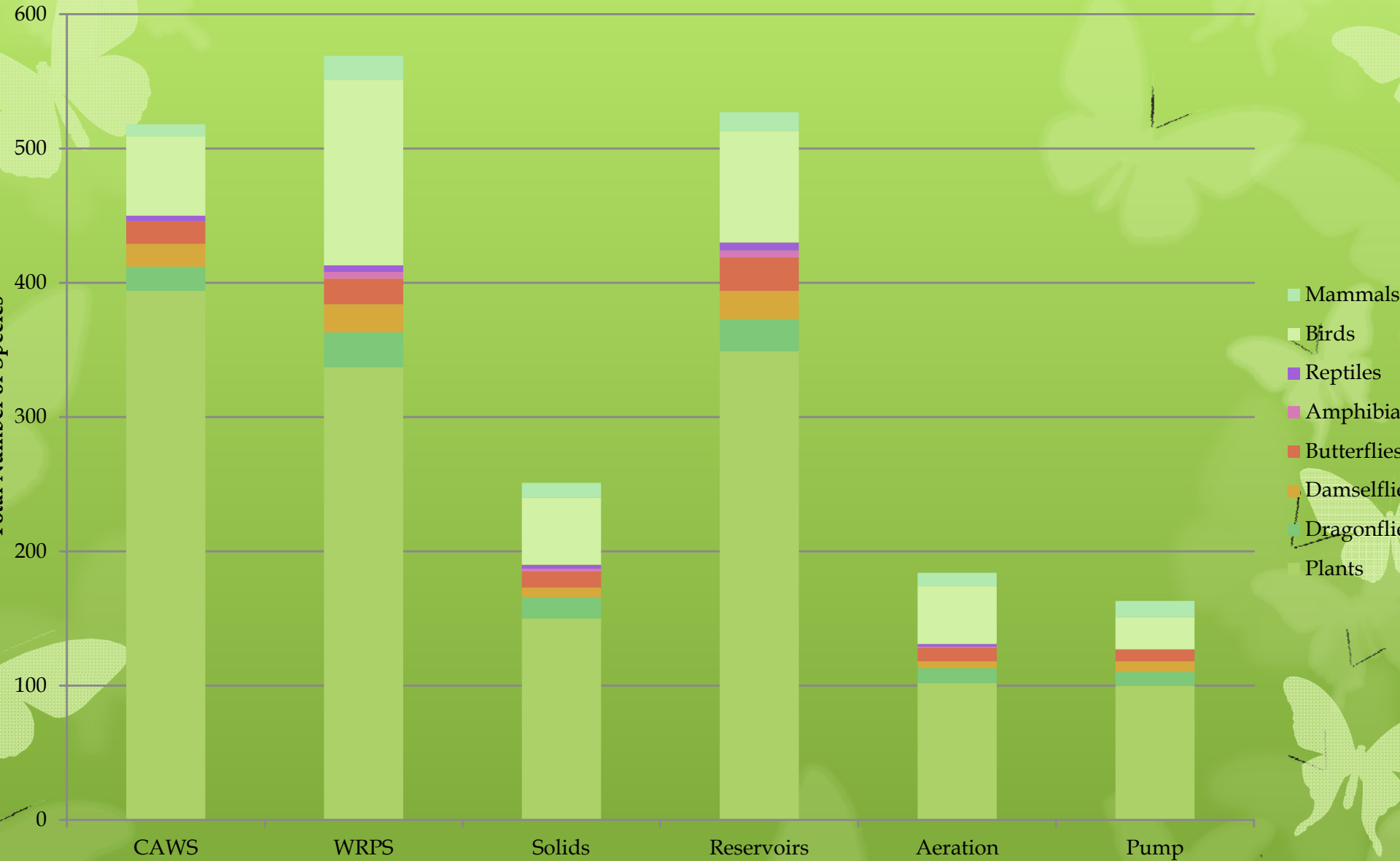
- 588 species of plants
- 29 species of dragonflies
- 26 species of damselflies
- 29 species of butterflies
- 6 species of amphibians
- 12 species of reptiles
- 198 species of birds
- 23 species of mammals

# MAXIMUM NUMBER of SPECIES

- Plants (226), Edward Howell reservoir
- Dragonflies (22), St. Michael reservoir
- Damselflies (14), Chicago Sanitary & Ship Canal, site 3A
- Butterflies (15), Calumet-Sag Channel, site 4B
- Amphibians (4), St. Michael reservoir
- Reptiles (4), St. Michael reservoir
- Birds (131), Calumet WRP
- Mammals (13), St. Michael reservoir



# Comparison of the Total Number of Plant and Animal Species Observed at Six Facility Categories on District Properties



# ENDANGERED, THREATENED, and UNCOMMON SPECIES

- 9 endangered, 3 threatened, and 11 uncommon/rare species were observed on 11 District properties (sites 4B, 5, 7, 10, 11, 20, 32, 45, 49, 54, and 57).
- Endangered species included 1 dragonfly (Hine's Emerald dragonfly) and 8 birds (American Bittern, Black-Crowned Night-Heron, Common Moorhen, Foster's Tern, Little Blue Heron, Osprey, Wilson's Phalarope, and Yellow-Crowned Night-Heron).



# ENDANGERED, THREATENED, and UNCOMMON SPECIES (continued)

- **Threatened** species included 3 birds (Black-Billed Cuckoo, Least Bittern, and Peregrine Falcon).
- **Uncommon/rare** species included 4 dragonflies (Band-Winged Meadowhawk, Comet Darner, Dot-Tailed Whiteface, and Unicorn Clubtail), 3 turtles (Common Map turtle, Northern Cricket frog, and Spiny Softshell turtle), and 4 mammals (American Mink, Long-Tailed weasel, Prairie vole, and Thirteen-Lined Ground squirrel).

# ENHANCEMENT & PROTECTION

- **Natural, undisturbed** habitats are more beneficial and valued than disturbed areas for **sustaining** biotic communities and species diversity.
- Restoration involves the **elimination** of ecological degradation and the **re-establishment** of natural ecological processes.
- A list of general and site specific recommendations for the **preservation, enhancement, and protection** of biological diversity of District properties were included in the scientific report and include the following activities.



# ENHANCEMENT & PROTECTION

- Prescribed **burns**
- Reducing frequency of **grass mowing** in edge habitat areas
- Removal of non-native, **invasive** plant species
- Establishment of **butterfly gardens**
- Limiting herbicide/pesticide applications to **spot treatments**
- Limiting **vehicle access** to undisturbed areas
- Preserving remaining limited remnant prairies and sedge meadows