Photo by Delta Institute

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# *SOUTH MERRILL COMMUNITY GARDEN BIOBLITZ REPORT*

FALL 2024

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# *EXECUTIVE SUMMARY*

Chicago's South Side neighborhoods are disproportionally impacted by flooding and degraded stormwater infrastructure, which has a myriad of impacts on health, water quality, overall neighborhood wellbeing, and economic opportunity. Vacant lots are common in these neighborhoods, further degrading community outcomes.

Residents of Chicago's South Shore neighborhood have identified a pressing need to reduce stormwater flooding and the number of vacant lots in their community. Green Infrastructure (GI) installed on vacant lots may improve urban stormwater management by capturing and filtering excess runoff from high-volume rainfall events. GI installations that mimic natural assemblages of plants also provide habitat for insects, pollinators, and birds, thus improving local biodiversity. Enhanced biodiversity, in turn, may improve the functionality and resilience of GI installations. However, knowledge gaps exist as to whether GI installations demonstrably improve biodiversity in Chicago's neighborhoods and whether these improvements extend to the efficacy of GI. Therefore, Delta Institute and our community partners performed a ***BioBlitz***, an on-the-ground assessment of existing flora and fauna, to create a baseline of biodiversity on four parcels within the South Shore neighborhood. This baseline data is the first step in accomplishing this project's primary objectives:

1. Create a database of critical data measuring the impact of nature-based GI on the following indicators: Biodiversity and Ecosystem Quality; Stormwater and Flooding Mitigation; and Community Health Outcomes.

2. Provide recommendations for the implementation, assessment, evaluation, and monitoring of nature-based GI in the Chicago region.


*Participants of the South Shore BioBlitz on September 28th, 2024, at the 71st and Crandon Organic Garden (2301 E 71st St, Chicago, IL 60649). Image Source: Delta Institute.*

## About Delta Institute

Delta Institute collaborates with communities to solve complex environmental challenges throughout the Midwest. Delta exists because environmental, economic, and climate issues hit communities—urban and rural—through disinvestment, systemic inequity, and policy decisions. We collaborate at the community level to solve our home region's new and legacy issues, by focusing on the self-defined goals and needs of our partners.

Delta Institute improves the living conditions of more than five million Midwesterners by transitioning one million acres to more resilient, conservation-focused practices, and by improving water quality and reducing flooding by capturing 100 million stormwater gallons. By 2025 we will achieve these goals through our agriculture, climate, water, and community development projects.

This is what a more resilient, equitable, and innovative Midwest looks like. Visit us online at www.delta-institute.org.

## Acknowledgements

This project was produced with generous support from Walder Foundation, the Gaylord & Dorothy Donnelley Foundation, the McDougal Family Foundation, and two anonymous donors.

We are grateful to partner with community-based and -focused organizations:

- Chicago Park District, South Shore Nature Sanctuary, which contains over six acres of dune, beach, wetland, pond, woodland, prairie, savanna, and shrubland habitats within South Shore Cultural Center Park, a microcosm of habitats native to the Chicagoland region.
- City of Chicago Department of Public Health - Community Safety Coordination Center, which works across City agencies and in service to community to implement a comprehensive approach to address the root causes of violence - trauma, lack of educational and job opportunity, and community blight.
- South Merrill Community Garden, which educates and promotes a sacred space for the health and wellbeing of the intergenerational members of the South Shore community through gardening, engagement and accessibility to nature's bounty.
- The 71st and Crandon Organic Garden, whose mission is to cultivate relationships with the community by connecting to one another through nature.

This document and the tools provided aim to be action oriented and to provide the most current, correct, and clear information possible, but some information may have changed since publication. We encourage practitioners to reach out to us at delta@delta-institute.org with questions, corrections, or to discuss implementation challenges.

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# DOCUMENT GLOSSARY

A brief glossary of key terms related to the content in this overview:

- **Abundance**: the total number of organisms found in an area.
- **Biodiversity**: the variety of living things in an area. All living things interact with and influence one another as well as the environment in which they live.
- **Relative Abundance**: the evenness of distribution of individuals among species. An area may have a higher abundance of species, but less evenness of distribution of species.
- **Species Richness**: the number of different species found in an area.

In the Table below, the biodiversity of two parks is compared using the above measurements. We see that Park A has a greater Abundance of trees, but Park B has a greater Species Richness. Park A has a higher Relative Abundance of trees than Park B because the 100 individual trees in Park A are more evenly distributed among their species than Park B.

***Table 1: Worked Example of Biodiversity Criterion Comparing Trees in Two Parks.***

| Assessment Metric | Park A | Park B |
|---|---|---|
| Abundance | 100 Trees | 20 Trees |
| Species Richness | 50 White Oaks and 50 Elms | 2 White Oaks, 4 Spruces, 1 Elm, 1 Bald Cyprus, 1 Pine, 1 Maple, and 3 Sycamores |
| Relative Abundance | Higher | Lower |

# INTRODUCTION

The City of Chicago owns approximately 10,000 vacant lots, the majority of which are located in neighborhoods on the South and West sides (Bloomberg, 2022). These same neighborhoods are disproportionately affected by stormwater flooding, exacerbated by climate change and aging stormwater infrastructure (Chicago-Kent Journal of Environmental and Energy Law, 2022). GI can be installed on vacant lots to mitigate local flooding. Prior research suggests transferring vacant lots to private ownership for greening and reuse may also positively affect neighborhoods by reducing violence and crime (Branas et al., 2018), improving health outcomes (South et al., 2018; Sivak et al., 2021), increasing home values (Lin et al., 2022) and, if properly managed and monitored, enhance local biodiversity (Anderson & Minor, 2017). However, knowledge gaps exist as to whether these benefits extend to vacant lots in Chicago's South and West sides. Delta Institute is investigating the aforementioned benefits of installing GI on vacant lots in the South and West side neighborhoods of Chicago. Here, we begin the process of investigating the effects, if any, of GI installation on vacant lot biodiversity and the effects, if any, of biodiversity on the efficacy of GI installations.

South Merrill Community Garden has identified a city-owned vacant lot in the South Shore

community - 7048 S. Paxton Ave, Chicago, IL 60649 - that may be converted to GI and mitigate stormwater flooding. To create a baseline of biodiversity and investigate the effects of GI on local biodiversity, South Merrill Community Garden and Delta Institute organized and hosted a BioBlitz – an event in which participants identify as many living things as possible in an area in a short period of time to produce a snapshot of an area's baseline biodiversity. Civic scientists who participated in the BioBlitz not only collected valuable data about the species present in the study area prior to GI installation but also learned about GI and helped South Merrill Community Garden and Delta Institute envision what sustainable and inclusive development in South Shore may look like.

# *METHODOLOGY*

## BioBlitz Sites

The BioBlitz took place on Saturday, September 28th, 2024, within the northeastern portion of Chicago's South Shore neighborhood (*Figure 1*). Participants first convened at the South Merrill Community Garden for an educational level-setting discussion on GI and biodiversity. Participants then determined the goals of the BioBlitz and reviewed data collection methods. The BioBlitz occurred from 10am – 1pm across the following four sites:

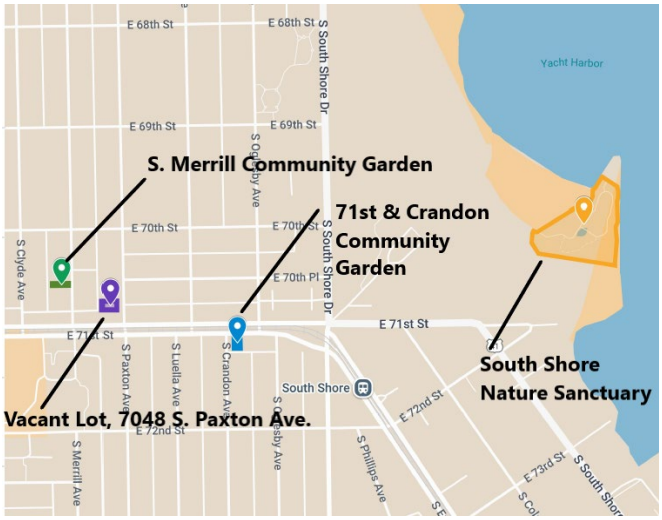


*Figure 1: Map of BioBlitz Sites in South Shore, Chicago IL.*

### South Merrill Community Garden

The South Merrill Community Garden (*Figure 2*) is located at 7030 South Merrill Avenue, Chicago, IL, 60649. It was transformed from a vacant lot into a garden in 2006 to memorialize Troy Law, a student of nearby O'Keeffe Elementary School. The Garden lost funding in 2010 and fell into disrepair. In 2013, area homeowners, in partnership with the South Shore United Methodist Church Women's Auxiliary Board and the Genesis Cooperative, established the South Merrill Community Garden as a land trust through Neighborspace to revitalize the site. The site is characterized by a mix of raised beds for vegetables, flowers, and herbs, programming areas, and perennial vegetation around the perimeter.

*Figure 2: South Merrill Community Garden (7030 South Merrill Avenue, Chicago, IL, 60649). Image Source: Delta Institute.*

## South Shore Nature Sanctuary

*Figure 3: South Shore Nature Sanctuary (7059 S South Shore Dr, Chicago, IL 60649). Image Source: Delta Institute.*

The South Shore Nature Sanctuary (*Figure 3*) is located at 7059 S South Shore Dr, Chicago, IL 60649. In 2001, the Chicago Park District began construction on the sanctuary, including the installation of native plants, a small wetland, and a looped trail system. The sanctuary opened in 2002. The site is characterized by native, bird-friendly species of shrubs and trees including oaks, hawthorn, American plum, serviceberry, hazelnut, viburnum, and native roses. The prairie meadow includes plants such as butterfly milkweed, blazing star, and purple coneflower. Scattered oaks were established as key canopy and habitat for birds and insects. The wetland edge contains a variety of native shrubs and plants such as indigo bush, button bush, cardinal flower, bulrushes, and blue iris. Sandy spaces along Lake Michigan within the nature sanctuary footprint contain regionally rare dune and beach habitat with native plants such as sea rocket, marram grass, and sand reed (Chicago Park District, n.d.).

## 71st and Crandon Community Garden

*Figure 4: 71st and Crandon Community Garden (2301 E. 71st St., Chicago, IL 60649). Image Source: Delta Institute.*

The 71st and Crandon Community Garden (*Figure 4*) is located at 2301 E. 71st St, Chicago, IL 60649 and was established in May 2016. Volunteers planted a total of 19 trees and shrubs: 2 black cherry trees, 5 American plum trees, 1 black walnut tree, 1 pecan tree, 5 hazelnut shrubs, 2 bald cypress,  2 swamp white oaks, and 1 linden tree to help clean the air, reduce runoff into combined sewers, and create a gathering space for the community (71st and Crandon Garden, n.d.). The site is characterized by a mix of raised beds for vegetables, flowers, and herbs, programming areas, and perennial vegetation around the perimeter.

## Vacant city-owned lot, located at7048 S. Paxton Avenue, Chicago, IL 60649

This city-owned lot covers several lots from approximately 7038 S. Paxton Ave – 7050 S. Paxton Ave (*Figure 5*). Therefore, the Project Team uses the approximate address of 7048 S. Paxton Ave to identify its location in this report. It's PIN is 20-24-424-022-0000. More information can be found on the City of Chicago's ChiBlockBuilder website: https://chiblockbuilder.com/city-owned-lots/?communityArea=SOUTH+SHORE&pin=20-24-424-022-0000. The site is characterized by mowed turfgrass and several common urban forbs (e.g., dandelion and pigweed).

*Figure 5: Vacant city-owned lot (7048 S. Paxton Ave. Chicago, IL 60649). Image Source: Delta Institute.*

## Data Collection

BioBlitz participants (e.g., community members, civic scientists, Delta staff) used various tools and techniques to identify and document as many species as possible present across the four sites. First, participants performed walking surveys on each site and used the free mobile phone app, iNaturalist, to identify and inventory as many organisms at the species level as possible (Figure 6).

*Figure 6: BioBlitz participants performing a walking survey and using iNaturalist to identify species. Image Source: Delta Institute.*

Species Richness of each site was estimated by the number of unique species identified by iNaturalist. Abundance was estimated by visual survey with large organisms readily counted. However, smaller and more abundant organisms – such as Red Clover or Common Dandelion – were estimated by counting the number observed in a $1m^2$ quadrat and multiplying that number by 10 for the whole site (*Figure 7*). For example, five Red Clovers observed in one quadrat were recorded as n = 50 for the entire site. It should be noted, while this method was useful to standardize estimations of Abundance across all sites for comparison, the resulting counts of species may be misleading.

*Figure 7: Use of 1m2 quadrat to estimate abundance of common plant species. Image Source: Delta Institute.*

Second, the Project Team deployed insect traps along a random 10m line transect at each site 24 hours prior to the BioBlitz. On the day of the

Bioblitz, participants collected, identified and inventoried the trapped insects using iNaturalist (*Figure 8*). Insect counts were included in Species Richness and Abundance.

Finally, BioBlitz participants measured the percent cover – a measure of the Relative Abundance – of vegetation at the South Merrill Community Garden, South Shore Nature Sanctuary and the Vacant Lot sites using 1m$^2$ quadrats positioned along a random 10m line transect (*Figure 9*). Percent cover provided the Project Team with an idea of how much space a certain plant species occupies in a site.

*Figure 9: BioBlitz participants identifying insects from traps with iNaturalist. Image Source: Delta Institute.*

*Figure 8: Example of a 1m2 quadrat used to estimate floristic abundance via "percent cover". Quadrats were deployed across a 10m transect. Source: Sampling Vegetation Attributes, Bureau of Land Management (1999).*

## Data Analysis

The Project Team employed the two following indices to calculate and compare biodiversity:

First, **Simpson's Diversity Index** (SDI) was used to quantify and compare the biodiversity among all four BioBlitz sites. SDI provides a value between 0 and 1, where high scores (close to 1) indicate high biodiversity, and low scores (close to 0) indicate low biodiversity (Simpson, 1949). To calculate SDI, both *Species Richness* and *Abundance* of a site must be measured. The formula for calculating SDI is as follows - where $n$ is the number of individuals of one species and $N$ = the total number of all individuals:

$$\frac{D = 1 - \Sigma n(n-1)}{N(N-1)}$$

**Worked example:**

| Species | Site 1 | | | Site 2 | | |
|---|---|---|---|---|---|---|
| | ***n*** **(number of individuals)** | ***n*** **- 1** | ***n*** **(*n* - 1)** | ***n*** **(number of individuals)** | ***n*** **- 1** | ***n*** **(*n* - 1)** |
| American Crow | 12 | 11 | 132 | 6 | 5 | 30 |
| Blue Jay | 3 | 2 | 6 | 5 | 4 | 20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Northern Cardinal | 4 | 3 | 12 | 2 | 1 | 2 |
| American Goldfinch | 10 | 9 | 90 | 15 | 14 | 210 |
| House Sparrow | 15 | 14 | 210 | 11 | 10 | 110 |
| ***N* (total number of individuals)** | **44** | | | **39** | | |
| | | **Σ** | **450** | | **Σ** | **372** |

For "Site 1": $D = 1 - \frac{450}{44*43}$ ➡ $D = 1 - \frac{450}{1892}$ ➡ $D = 1 - 0.237$ ➡ ***D* = 0.763**

For "Site 2": $D = 1 - \frac{372}{39*38}$ ➡ $D = 1 - \frac{372}{1482}$ ➡ $D = 1 - 0.251$ ➡ ***D* = 0.749**

One value of *D* does not tell us much about biodiversity at a site. However, when compared among sites, two *D* values help tell a larger story. Here, we see that "Site 1" has a higher *D* value than "Site 2". Therefore, we can infer that "Site 1" is more biodiverse than "Site 2".

The **Shannon-Weiner Species Diversity Index** (SWSDI) was also employed to calculate and compare biodiversity among the four BioBlitz sites. The SWSDI calculates biodiversity by taking the total number of each species in the area, the proportion of each species to the total number of individuals, and sums the proportion multiplied by the natural log of the proportion for each species. The higher the number, the higher the diversity of species. Ideally, one should compare populations that are the same size in numbers of individuals (Nolan & Callahan, 2006). The formula to calculate SWSDI is as follows where ($i$) represents species, $\Sigma$ is to "sum", $ln$ is the 'natural log', and $p_i$ is the proportion of the entire community made up of species ($i$).

$$H = -\Sigma p_i * ln(p_i)$$

**Worked Example:**

| | **Site 1** | | | | **Site 2** | | | |
|---|---|---|---|---|---|---|---|---|
| Species | Number (*i*) | $p_i$ | $\ln(p_i)$ | $p_i * \ln(p_i)$ | Number (*i*) | $p_i$ | $\ln(p_i)$ | $p_i * \ln(p_i)$ |
| American Crow | 3 | 0.14286 | -1.94591 | -0.278 | 8 | 0.28571 | -1.2528 | -0.3579 |
| Blue Jay | 6 | 0.28571 | -1.25276 | -0.3579 | 4 | 0.14286 | -1.9459 | -0.278 |
| Northern Cardinal | 7 | 0.33333 | -1.09861 | -0.3662 | 5 | 0.17857 | -1.7228 | -0.3076 |
| American Goldfinch | 3 | 0.14286 | -1.94591 | -0.278 | 2 | 0.07143 | -2.6391 | -0.1885 |
| House Sparrow | 2 | 0.09524 | -2.35138 | -0.2239 | 9 | 0.32143 | -1.135 | -0.3648 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Total** | **21** | | | **-1.5041** | **28** | | | **-1.4969** |
| | | | ***H*** | **1.5041** | | | ***H*** | **1.4969** |

In the above worked example, Site 1 is shown to have a higher SWSDI score than Site 2, which suggests it has greater biodiversity.

**Percent cover** – or Relative Abundance – of plant cover at all sites was determined by first visually estimating the percentage of space that each plant species occupied within a $1m^2$ quadrat along a randomly placed 10m transect across all four sites (Figure 8). The estimated percentage was then converted to cm (1% = 1cm). Next, the sum of each plant species' coverage per transect was combined to provide each plant species' total coverage (cm) across the 10m transect. The total coverage (cm) was then divided by 10m and multiplied by 100 to provide a percentage. Plant species were then categorized into functional groups – trees, shrubs, forbs and grasses. The percentage cover of each functional group per site was then calculated.

# *RESULTS*

Overall, BioBlitz participants made 148 observations and identified 104 unique species across the four South Shore BioBlitz sites (see, Appendix I for full inventory). The vast majority of species identified during the BioBlitz were plants (*Figure 10*). Of those plants identified, the majority were forbs – herbaceous, non-woody flowering plants (*Figure 11*). Trees and shrubs were the other most commonly identified functional groups of plants among the South Shore BioBlitz sites.

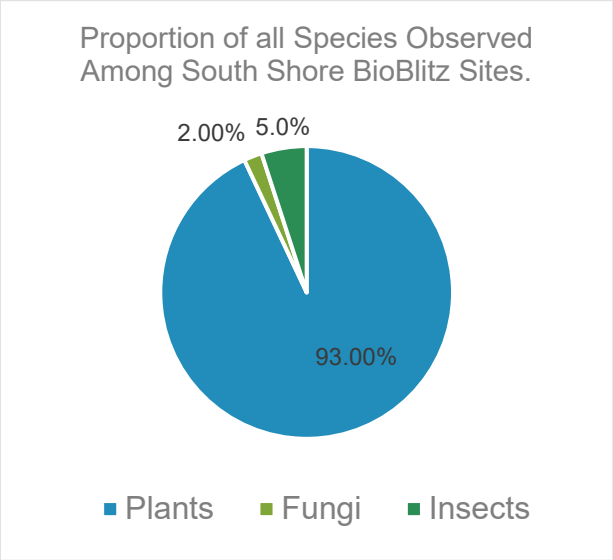


*Figure 10: Proportion of all species observed among South Shore BioBlitz sites on September 28, 2024.*

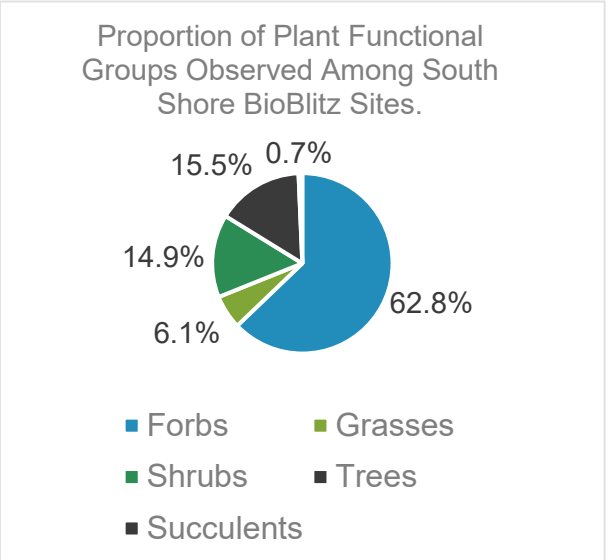


*Figure 11: Proportion of plant functional groups observed among South Shore BioBlitz sites on September 28, 2024.*

Floristic cover – a measurement of the Relative Abundance of plant species – was analyzed at

South Merrill Community Garden, the South Shore Nature Sanctuary, and the Vacant Lot. Among these four sites, the South Shore Nature Sanctuary had the greatest diversity of floristic cover (*Table 2*).

***Table 2: Comparison of percent cover of plant functional groups among three sites in South Shore on September 28, 2024.***

| Site | Plant Functional Group | Floristic Cover (%) |
|---|---|---|
| S. Merrill Community Garden | Grass | 37.10% |
| S. Merrill Community Garden | Forb | 26.50% |
| South Shore Nature Sanctuary | Grass | 52.00% |
| South Shore Nature Sanctuary | Forb | 5.00% |
| South Shore Nature Sanctuary | Tree | 16.00% |
| Vacant Lot | Forb | 22.00% |
| Vacant Lot | Grass | 78.00% |

The Table below summarizes the measurements taken to quantify the biodiversity of all four BioBlitz sites (*Table 3*). The South Shore Nature Sanctuary had the highest Abundance of organisms. South Merrill Community Garden, 71st and Crandon Garden and the South Shore Nature Sanctuary all had high Species Richness compared to the Vacant Lot. The Relative Abundance of species was shown to be higher in the South Shore Nature Sanctuary and Vacant Lot compared to the two Gardens. When all four BioBlitz sites were compared using both the Simpson's Diversity Index and Shannon's Diversity Index, the South Shore Nature Sanctuary was shown to have the greatest biodiversity index scores.

***Table 3: Comparison of biodiversity among BioBlitz sites in South Shore using different biodiversity indices.***

| | S. Merrill Community Garden | 71st & Crandon Garden | South Shore Nature Sanctuary | Vacant Lot |
|---|---|---|---|---|
| **Abundance** (number of organisms found in an area) | 373 | 389 | **2440** | 326 |
| **Species Richness** (number of different species found in an area) | High | High | **High** | Low |
| **Relative Abundance** (evenness of distribution of individuals among species) | Low | Low | **High** | High |

| | | | | |
|---|---|---|---|---|
| **Simpson's Diversity Index** | 0.96 | 0.96 | **0.97** | 0.88 |
| **Shannon-Weiner Species Diversity Index** | 3.66 | 3.71 | **4.01** | 2.19 |

# *DISCUSSION*

Differences in biodiversity index scores among BioBlitz sites may be explained by variations in site management and site characteristics. The South Shore Nature Sanctuary was shown to have the highest Abundance, high Species Richness, high Relative Abundance and the highest biodiversity index scores. This may be explained by the fact that the Nature Sanctuary is the oldest and largest site in this study – meaning plant assemblages have had longer to establish and cover more area than the other sites.

*Figure 10: Eastern Pricklypear (Opuntia cespitosa) observed at the South Shore Nature Sanctuary during the BioBlitz on September 28th, 2024.*

Additionally, since 2001, the stewards of the South Shore Nature Sanctuary have fostered assemblages of native plants adapted to Chicago's coastal region – a mix of wetland, savanna, and dune habitats. Given that rare, native plants are typically only found in high quality habitats, the observation of natives such as Eastern Pricklypear Cactus (*Figure 12*) and Pickerelweed (*Figure 13*) during the BioBlitz suggests the Nature Sanctuary is a well-established, thriving ecosystem.

*Figure 11: Pickerelweed (Pontederia cordata) observed at the South Shore Nature Sanctuary during the BioBlitz on September 28th, 2024.*

Taken as a whole, the Nature Sanctuary had the overall highest biodiversity among the BioBlitz sites likely due to it's plant communities being well-suited to the Chicago coastal region, having had more time and space to establish, and being supported by a high-quality habitat.

Both the South Merrill Community Garden and the 71st and Crandon Garden had high biodiversity index scores, too. However, many of the plant species observed in the two Gardens were non-native ornamentals, fruits and vegetables (*Figure 13*). At both Gardens, high degrees of Species Richness and low Relative Abundance were observed, meaning that many individual species were identified but the distribution of individuals among those species was low. For example, a handful of Milkweed, Coneflower, and Asters were observed in both Gardens while many dozens were identified in the Nature Sanctuary (*Figure 14*).

It should be noted that both Gardens have only had about 10 years to establish native, perennial vegetation. Given time, both Gardens may incorporate more native plant assemblages to develop a more robust Relative Abundance.

Both Gardens were notable for their flying insect and pollinator populations, with BioBlitz participants observing thriving communities of Honey and Bumble Bees (*Figure 15*). It is likely that flying insects and pollinators are drawn to the many flowering ornamental plants in both Gardens, which were blooming even in late September.

Regular mowing appeared to be the extent of management that occurs at the Vacant Lot. Turf grass and common weedy herbaceous forbs such as Smooth Pigweed and Common Dandelion dominated the vacant lot. The vacant lot was notable for a similar Species Richness to the Gardens, low Species Richness, but high Relative Abundance – meaning the few species that were represented there were abundant across the site and evenly represented across species.

Finally, the fact that this BioBlitz occurred in late September should also be considered. While many plants were still growing, it is no doubt that if the BioBlitz occurred earlier in the growing seasons, more plants would have been identified due to the greater presence of flowers.

*Figure 13: Common Foxglove (Digitalis purpurea) observed at the South Merril Community Garden during the BioBlitz on September 28, 2024.*

*Figure 14: Drummond's Aster (Symphyotrichum drummondi) observed at the South Merril Community Garden during the BioBlitz on September 28, 2024.*

*Figure 15: Common Eastern Bumble Bee (Bombus impatiens) observed at the South Merril Community Garden during the BioBlitz on September 28, 2024.*

# *LESSONS LEARNED & NEXT STEPS*

## Vacant Lot Access, Acquisition, and Community Visioning

As previously mentioned, South Merrill Community Garden seeks to purchase the vacant lot at 7048 S. Paxton Ave. from the City of Chicago and install GI to reduce flooding, improve community health, provide a safe space for children to play and explore nature, and stabilize property values. This initiative represents a critical step in addressing flooding challenges and enhancing South Shore's resilience through sustainable, community-driven solutions. The

collaboration between South Merrill Community Garden and its partners underscores the importance of collective action in creating a healthier, more vibrant community for current and future generations.

However, access to the Vacant Lot for collection of baseline environmental conditions site data (e.g., soil testing, hydrology) has proven to be a major barrier to eventual site acquisition. This testing is critical to assess environmental conditions and ensure the property meets health and safety standards prior to community visioning of GI installation. Therefore, the Garden and Delta have submitted a letter to Alderman Desmon Yancy (5th Ward) for permission to begin site testing.

While this crucial step may take months to complete, the Project Team has taken advantage of this time to develop strong relationships with crucial community groups and develop monitoring and evaluation standards. Convening with other nonprofits and community organizations performing similar research has led the Project Team to prioritize standardization of assessment tools. This will ensure that data collection will be technically sound, easily replicable, and inclusive of community priorities.

South Merrill Community Garden fosters community by actively listening and involving neighbors in its development, promoting health and well-being through gardening and nature. Therefore, South Merrill Community Garden has identified community visioning aimed at designing and installing flood mitigation measures and GI on the vacant lot as an immediate next step. To do so, the Garden will be collecting Letters of Support for upcoming community visioning efforts along with distributing an informational one-page overview of GI and possible installation designs for the Vacant Lot at upcoming community events.

The Project Team will also continue to meet with key decision-makers such as Alderman Desmon Yancy to ensure all the correct steps are taken to access and acquire the Vacant Lot for GI installation.

## Data Collection

While iNaturalist is a free and easy-to-use smartphone application, it sometimes requires substantial time for participants to download and install on their smartphones. Therefore, the Project Team suggests ensuring an additional 30-minutes are reserved before the BioBlitz kickoff to address these technological realities. When planning future BioBlitz events, teams would also do well to have several volunteers on hand that are familiar with iNaturalist to assist new users.

Additionally, iNaturalist provides recommendations of species identification based on crowdsourced data and user input. For this reason, and that many BioBlitz participants are not trained ecologists, identification of species during the BioBlitz may not be completely accurate. To remedy this, the Project Team recommends securing several local experts to assist with species identification during future BioBlitz events. The Project Team also recommends double-checking and amending, if need be, species identifications that were made during the BioBlitz after the event using the iNaturalist web platform.

Data collection itself is time intensive and requires careful coordination among BioBlitz participants. Volunteer participants of the South Shore BioBlitz were able to perform visual

surveys on all four sites before a community lunch was scheduled. However, more time would have allowed more thorough data collection. Therefore, the Project Team has identified a need to extend the timeframe of future BioBlitz events from 3 hours to 5 hours, with regularly scheduled breaks.

Beyond species richness, abundance and percent cover, measurements of biomass, plant heights and floristic abundance should be included in measurements during future BioBlitz events. These measurements may help explain differences in insect, mammal and bird communities among sites.

Finally, the Project Team has identified the need to collect information on each site's history to better infer observations from the BioBlitz. For example, without knowledge of a site's soil substrate (e.g., texture, water holding capacity) or management history (e.g., mowing, watering), it is difficult to suggest reasons for differences of plant community succession among the sites. While the plant communities observed in the Vacant Lot were largely similar, there may be nuanced differences among sites below the surface, with possible ramifications to GI implementation.

# *APPENDIX I: SPECIES INVENTORY*

The following species were identified during the South Shore BioBlitz on Saturday, September 28, 2024, held from 10am – 1pm. This inventory by no means represents the breadth of biodiversity present in South Shore, especially recognizing both time-of-day and -year.

| Site | Scientific Name | Common Name |
|---|---|---|
| S. Merrill Community Garden | Lumbricidae | Earthworms |
| S. Merrill Community Garden | Lumbricus terrestris | Common Earthworm |
| S. Merrill Community Garden | Anemone | anemones and thimbleweeds |
| Crandon Gardens | Mentha | mints |
| Crandon Gardens | Apieae | dill |
| Crandon Gardens | Potentilleae | strawberries, cinquefoils, and allies |
| Crandon Gardens | Salvia | Sages |
| Crandon Gardens | Petroselinum | parsley |
| Crandon Gardens | Mentha | mints |
| Crandon Gardens | Rubus | brambles |
| Crandon Gardens | Anystis | Whirligig Mites |
| Nature Sanctuary | Hosta | hostas |
| Nature Sanctuary | Vitis | grapevines |
| Nature Sanctuary | Calamagrostis breviligulata | American marram grass |
| Nature Sanctuary | Solidago | goldenrods |
| Nature Sanctuary | Bidens bipinnata | Spanish needles |
| Nature Sanctuary | Asclepias syriaca | common milkweed |
| Nature Sanctuary | Megalographa biloba | Bilobed Looper Moth |
| Nature Sanctuary | Eupatorieae | bonesets, blazingstars, and allies |

| | | |
|---|---|---|
| Nature Sanctuary | Symphyotrichum | American asters |
| Nature Sanctuary | Symphyotrichum novae-angliae | New England aster |
| Nature Sanctuary | Baptisia | Wild Indigos |
| Nature Sanctuary | Asclepias syriaca | common milkweed |
| Crandon Gardens | Hibiscus sabdariffa | Roselle |
| Crandon Gardens | Ipomoea alba | Moonflower |
| Crandon Gardens | Quercus bicolor | swamp white oak |
| Crandon Gardens | Panicum virgatum | switchgrass |
| Crandon Gardens | Achillea millefolium | common yarrow |
| Crandon Gardens | Helianthus annuus | Common Sunflower |
| Crandon Gardens | Bombus impatiens | Common Eastern Bumble Bee |
| Crandon Gardens | Fragaria | strawberries |
| Crandon Gardens | Symphyotrichum | American asters |
| Crandon Gardens | Lavandula angustifolia | Common Lavender |
| Crandon Gardens | Anemone | anemones and thimbleweeds |
| Crandon Gardens | Baptisia | wild indigos |
| Crandon Gardens | Rudbeckia hirta | black-eyed Susan |
| Crandon Gardens | Solidago | goldenrods |
| Crandon Gardens | Sambucus | elders |
| Crandon Gardens | Symphyotrichum | American asters |
| Crandon Gardens | Acer saccharinum | silver maple |
| Crandon Gardens | Cephalanthus occidentalis | buttonbush |
| Crandon Gardens | Artemisia vulgaris | common mugwort |
| Crandon Gardens | Trifolium pratense | Red Clover |
| Crandon Gardens | Corylus americana | American hazelnut |
| Crandon Gardens | Taxodium distichum | baldcypress |
| Crandon Gardens | Prunus serotina | black cherry |
| Crandon Gardens | Corylus americana | American hazelnut |
| Nature Sanctuary | Asclepias syriaca | common milkweed |
| Nature Sanctuary | Solidago | goldenrods |
| Nature Sanctuary | Quercus | oaks |
| Nature Sanctuary | Sporobolus rigidus | Sand Reedgrass |
| Nature Sanctuary | Rhus glabra | smooth sumac |
| Nature Sanctuary | Symphyotrichum drummondii | Drummond's aster |
| Nature Sanctuary | Mycena | Bonnets |
| Nature Sanctuary | Monarda fistulosa | wild bergamot |
| Nature Sanctuary | Prunus americana | American plum |
| Nature Sanctuary | Silphium perfoliatum | cup plant |
| Nature Sanctuary | Cornus drummondii | roughleaf dogwood |

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| Nature Sanctuary | Symphyotrichum novae-angliae | New England aster |
| Nature Sanctuary | Andropogon gerardi | big bluestem |
| Nature Sanctuary | Symphyotrichum | American asters |
| Nature Sanctuary | Symphyotrichum novae-angliae | New England aster |
| Nature Sanctuary | Maleae | Roses |
| Nature Sanctuary | Cynoglossum officinale | hound's-tongue |
| Nature Sanctuary | Crataegus | hawthorns |
| Nature Sanctuary | Rosa | roses |
| Nature Sanctuary | Vitis riparia | riverbank grape |
| Nature Sanctuary | Pycnanthemum | mountain mints |
| Nature Sanctuary | Vernonia missurica | Missouri Ironweed |
| Nature Sanctuary | Baptisia | wild indigos |
| Nature Sanctuary | Pontederia cordata | pickerelweed |
| Nature Sanctuary | Acorus americanus | American Sweet-Flag |
| Nature Sanctuary | Nymphaea odorata | American white waterlily |
| Nature Sanctuary | Baptisia | wild indigos |
| S. Merrill Community Garden | Setaria | foxtails and bristlegrasses |
| S. Merrill Community Garden | Lepidium | Pepperweeds |
| S. Merrill Community Garden | Persicaria longiseta | low smartweed |
| S. Merrill Community Garden | Panicum virgatum | switchgrass |
| S. Merrill Community Garden | Lilium lancifolium | tiger lily |
| S. Merrill Community Garden | Lysimachia nummularia | creeping Jenny |
| S. Merrill Community Garden | Melissa officinalis | lemon balm |
| S. Merrill Community Garden | Phlox | phloxes |
| S. Merrill Community Garden | Helianthus | sunflowers |
| S. Merrill Community Garden | Commelina | dayflowers |
| S. Merrill Community Garden | Viburnum | viburnums |
| S. Merrill Community Garden | Amygdaloideae | Rose family fruit trees |
| S. Merrill Community Garden | Apis mellifera | Western Honey Bee |
| S. Merrill Community Garden | Cynoglossum | Hound's-tongues |
| S. Merrill Community Garden | Pyrus communis | Common Pear |
| S. Merrill Community Garden | Asclepias syriaca | common milkweed |
| S. Merrill Community Garden | Cosmos | Cosmoses |
| S. Merrill Community Garden | Lavandula | Lavenders |
| S. Merrill Community Garden | Tagetes erecta | Mexican marigold |
| S. Merrill Community Garden | Phlox | phloxes |
| S. Merrill Community Garden | Aculeata | Ants, Bees, and Stinging Wasps |
| S. Merrill Community Garden | Abutilon | Indian mallows |
| S. Merrill Community Garden | Pyrus calleryana | Callery pear |
| S. Merrill Community Garden | Ulmus | elms |
| S. Merrill Community Garden | Celtis occidentalis | common hackberry |

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| S. Merrill Community Garden | Leucanthemum | Asters |
| S. Merrill Community Garden | Solidago altissima | tall goldenrod |
| S. Merrill Community Garden | Asclepias tuberosa | butterfly milkweed |
| S. Merrill Community Garden | Borago officinalis | Borage |
| S. Merrill Community Garden | Hylotelephium spectabile | Iceplant |
| S. Merrill Community Garden | Galinsoga | galinsogas |
| S. Merrill Community Garden | Juncus balticus | Baltic Rush |
| S. Merrill Community Garden | Digitalis purpurea | purple foxglove |
| S. Merrill Community Garden | Digitalis purpurea | purple foxglove |
| S. Merrill Community Garden | Leucanthemum | Asters |
| S. Merrill Community Garden | Achillea millefolium | common yarrow |
| S. Merrill Community Garden | Amaryllidaceae | amaryllis, onions, and allies |
| S. Merrill Community Garden | Dianthus | carnations |
| S. Merrill Community Garden | Tropaeolum | Nasturtiums |
| S. Merrill Community Garden | Spiraea | meadowsweet |
| S. Merrill Community Garden | Heliantheae | sunflowers and allies |
| S. Merrill Community Garden | Picea | spruces |
| S. Merrill Community Garden | Malus | apples and crabapples |
| S. Merrill Community Garden | Morus | Mulberries |
| S. Merrill Community Garden | Melilotus | melilots and sweetclovers |
| S. Merrill Community Garden | Rosa lucieae | Memorial Rose |
| S. Merrill Community Garden | Trametes | Turkey Tail Mushrooms |
| S. Merrill Community Garden | Persicaria longiseta | low smartweed |
| Vacant Lot | Plantago lanceolata | ribwort plantain |
| Vacant Lot | Malva neglecta | dwarf mallow |
| Vacant Lot | Taraxacum officinale | common dandelion |
| Vacant Lot | Trifolium pratense | Red Clover |
| Vacant Lot | Digitaria sanguinalis | Hairy Crabgrass |
| Vacant Lot | Amaranthus hybridus | Smooth Pigweed |
| Vacant Lot | Artemisia | wormwoods and sagebrushes |
| Vacant Lot | Rumex | docks and sorrels |
| Nature Sanctuary | Tilia americana | basswood |
| Nature Sanctuary | Bidens | Beggarticks |
| Nature Sanctuary | Callirhoe | poppymallows |
| Nature Sanctuary | Rhus | sumacs |
| Nature Sanctuary | Calamagrostis breviligulata | American marram grass |
| Nature Sanctuary | Oenothera biennis | common evening-primrose |
| Nature Sanctuary | Opuntia cespitosa | Eastern Pricklypear |
| Nature Sanctuary | Erigeron canadensis | horseweed |
| Nature Sanctuary | Populus deltoides | Eastern Cottonwood |
| Nature Sanctuary | Coreopsis lanceolata | Lance-leaved Coreopsis |
| Nature Sanctuary | Quercus | oaks |

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| Nature Sanctuary | Gleditsia triacanthos | honey locust |
| Nature Sanctuary | Xanthium | cockleburs |
| Nature Sanctuary | Symphyotrichum | American asters |
| Nature Sanctuary | Centaurea | knapweeds |
| Nature Sanctuary | Mirabilis | four o'clocks |
| Nature Sanctuary | Oenothera biennis | common evening-primrose |
| Nature Sanctuary | Pinus | pines |

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