Yale School of Forestry and Environmental Studies

URBAN ECOSYSTEM MODULE 2019

New Haven, Connecticut

Week 1: August 5-8
Week 2: August 12-15
Week 3: August 19-22
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I. WHAT TO BRING (AND NOT BRING)

Every Day:

1. Mods Urban Ecosystem Manual (i.e. this book)!
2. Lunch/snacks/drinks (On Monday, Tuesday, and Wednesday, you can also purchase food at the carts, *but bringing food is quicker and greatly preferred*.)
3. Rain gear or sun block depending on weather
4. Comfortable footwear - *You will be walking and biking*
5. Notebook/clipboard and pencil or pen

**Thursday: Rehabilitation of an Urban Park**

The rehabilitation of Cherry Ann and Beaver Ponds Parks will require hard physical work. We will provide you with work gloves and the necessary tools. Please wear sturdy footwear and appropriate clothes to get dirty in. You will likely be in contact with poison ivy and biting insects, wearing long pants and closed-toed shoes will minimize your exposure.
II.  SCHEDULE

<table>
<thead>
<tr>
<th>Monday</th>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
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<tbody>
<tr>
<td></td>
<td>8:00 – 8:15</td>
<td>Coffee, tea, light breakfast</td>
<td>Bowers Auditorium, Sage Hall</td>
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<tr>
<td></td>
<td>8:15 – 9:00</td>
<td>Welcome, introductions and overview</td>
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<td></td>
<td>9:15 – 10:00</td>
<td>Environmental Justice and New Haven history</td>
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<td></td>
<td>10:15 – 10:45</td>
<td>Plant Identification Introduction</td>
<td></td>
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<tr>
<td>Noon – 12:30</td>
<td>10:45 – noon</td>
<td>Plant ID in Field</td>
<td>Beaver Ponds Park</td>
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<tr>
<td></td>
<td>Noon – 12:30</td>
<td>Park Observation Introduction</td>
<td>Bowers Auditorium</td>
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<tr>
<td></td>
<td>12:30 – 3:00</td>
<td>Lunch/Park Observations (1&amp;2)</td>
<td>Multiple Public Parks</td>
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<td></td>
<td>3:00 – 4:00</td>
<td>Park Observation Discussion/report out</td>
<td>Bowers Auditorium</td>
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<td></td>
<td>6:00</td>
<td>Dinner at Yale Farm</td>
<td>Edwards Street</td>
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<tr>
<td>Tuesday</td>
<td>8:00 – 8:15</td>
<td>Coffee, tea, light breakfast</td>
<td>Bowers Auditorium, Sage Hall</td>
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<td></td>
<td>8:15 – 8:30</td>
<td>Introductions/ice breaker</td>
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<td></td>
<td>8:30 – 9:30</td>
<td>Plant talks</td>
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<td></td>
<td>9:30 – 11:45</td>
<td>Beaver Ponds Park Tour</td>
<td>Beaver Ponds Park</td>
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<td></td>
<td>11:45 – 12:45</td>
<td>Lunch break</td>
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<td></td>
<td>12:45 – 1:15</td>
<td>Stormwater Intro</td>
<td></td>
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<td>1:15 – 3:45</td>
<td>Litter exercise in field</td>
<td>Beaver Ponds Park (BPP)</td>
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<td></td>
<td>3:45 – 4:00</td>
<td>Return to Bowers</td>
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<td>6:00</td>
<td>Dinner at East Rock Park/College Wood Pavilion*</td>
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<td>Wednesday</td>
<td>8:00 – 8:15</td>
<td>Coffee, tea, light breakfast</td>
<td>Bowers Auditorium, Sage Hall</td>
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<td></td>
<td>8:15 – 8:30</td>
<td>Introductions/ice breaker</td>
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<td>8:30 – 9:30</td>
<td>Plant talks</td>
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<td></td>
<td>9:30 – 10:00</td>
<td>Intro to GPS Field Data Collection</td>
<td>Neighborhoods near to BPP</td>
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<td></td>
<td>10:00 – noon</td>
<td>GPS Field Data Collection</td>
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<tr>
<td>Noon – 1:00</td>
<td>Noon – 1:00</td>
<td>Lunch break</td>
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<td>1:00 – 4:00</td>
<td>GIS Workshop (heat, trees, census, stormwater)</td>
<td>Sage Hall/CSSSI computer labs</td>
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<td></td>
<td>4:00 – 8:00</td>
<td>Bus to dinner at Lighthouse Point Park*</td>
<td>Depart from Bowers</td>
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<tr>
<td>Thursday</td>
<td>8:00 – 8:15</td>
<td>Coffee, tea, light breakfast</td>
<td>Bowers Auditorium, Sage Hall</td>
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<td>8:15 – 8:30</td>
<td>Introductions/ice breaker</td>
<td></td>
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<td></td>
<td>8:30 – 9:30</td>
<td>Plant talks</td>
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<td></td>
<td>9:30 – 10:00</td>
<td>Introduction to Community-based Restoration</td>
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<td>10:00 – 3:30</td>
<td>Habitat restoration/community lunch</td>
<td>BPP/Cherry Ann Park</td>
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<td></td>
<td>3:30 – 4:00</td>
<td>Wrap/closing</td>
<td>Bowers Auditorium</td>
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*Schedule above is for weeks 2-3. Week 1 dinner on Tuesday will be at Lighthouse and at East Rock on Wednesday.
III. MONDAY MORNING

OVERVIEW

Comparing Mods: Urban vs. Yale-Myers Ecosystem Measurement

The purpose of this module is to familiarize you with field methods for analyzing urban ecosystems. It is intended to complement the Yale-Myers Forest Ecosystem Measurement module, which examines undeveloped ecosystems. Another important difference is that the Yale-Myers module focuses on the scientific method and quantitative analysis, while the urban ecosystem module gives qualitative analysis greater prominence. This division of topics is largely arbitrary and does not reflect an underlying difference in the nature of urban and non-urban ecosystems. Importantly, both modules share a focus on the ecosystem as a framework and unit of analysis. Because of this overlap, you should read the introduction to the Yale-Myers module if you have not done so already.

The Development of Urban Ecology

Traditionally, ecosystems have been studied in the absence of human influences. Today, it is more widely recognized that humans can be considered as any other species, albeit one with a major impact on ecosystem structure and function. In geology, we increasingly talk about the “anthropocene,” an era dominated by human influences. Today, an effort is underway to apply classical principles of ecology to understand human-influenced ecosystems. In this module, we will explore standard ecological concepts such as succession, ethnology, community organization, limiting and regulating factors, biogeochemical processes, biodiversity, gradients, spatial heterogeneity, and population characteristics (e.g., life history strategies, growth) in the greater New Haven ecosystem with a special focus on the Beaver Ponds system and the park and neighborhoods that surround it.

The concept that urban areas can be viewed and studied as ecosystems is relatively new and still not widely practiced. Only 2.5% of papers published in nine top ecological journals between 2005 - 2010 concerned urban systems. Nevertheless, the ecological study of people within the built environment is growing rapidly and will be important during your professional careers.

At FES, we examine urban and industrial systems with both top down and bottom up approaches. The former, often employed by industrial ecology, uses large databases, works at a regional to global scale, considers people as populations (i.e., demographically), and is of necessity empirical. The bottom up approach, which includes most urban ecology, works at spatial scales from plots to neighborhoods, generates new data, considers

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humans as individuals or small groups (e.g., families), and is able to conduct experiments (because of the smaller
spatial scale). We consider these two approaches to be complementary, and their coexistence within the School
is indeed one of our strengths. Our students are encouraged to integrate these analytical frameworks. However,
because Mods is about field activities, our work this week will be urban ecology rather than industrial ecology.

A Note on Sites: Beaver Ponds and Other New Haven Parks

The field methods you use in this module all provide means to characterize ecosystems and to
understand their structure and how they function. Most of this module’s exercises take place in public spaces of
New Haven with a particular focus on the areas around and associated with Beaver Ponds Park. These areas were
selected for logistical reasons. They are nearby, have a long and varied history, and exhibit a variety of urban
neighborhood types. The goal is to apply a range of ecosystem analysis tools at a few locations, building several
layers of understanding and looking across a spectrum of temporal and spatial scales. Almost any urban area
could be evaluated in a similar manner. In fact, the last exercise on Thursday applies these learned skills to nearby
park sites within Beaver Ponds Park.

Environmental Justice and Social Ecology

Monday morning will include a short lecture on two topics related to environmental justice and social
ecology. First, we begin with a broad look at the history of the environmental movement, focusing on both the
positive and negative aspects of the movement. We will celebrate the protection of wildlands and decades of
strong environmental protection policies that grew out of the work of environmentalists and scientists. At the
same time, we will also note racist elements in the history of the environmental movement and reflect on how
the ways in which we designate the “right” use of resources will inevitably impact people differently. Second, we
will narrow our focus and learn about the social ecology of two neighborhoods surround Beavers Ponds Park:
Newhallville and Beaver Hills. Understanding the history of urban development in these areas will help you
understand the present-day landscape of New Haven as well as some of the environmental challenges the city
now faces. We will return to concepts of environmental justice and social ecology including those depicted in
Monday’s lecture and the mandatory reading, *The White Space*, throughout the week.

2 Addition readings and useful information on USA housing policies and the effects of redlining on housing and violence in
American cities see the Appendix section
In 1908 the Beaver Hills neighborhood grew out of farmland on the rural fringe of the city. The growth of the neighborhood was emblematic of a period of urban development when trends favored increased coordination and control. Dr. Irving Mead, who inherited the 100 acres of farmland from his father, founded the Beaver Hills Company and sought to achieve a private mode of community regulation by placing restrictive covenants on the property deeds that shaped the urban landscape in distinct ways.

1911 Sanborn insurance map shows the absence of development in the Beaver Hills area

Undeveloped building lots under the name of “Beaver Hills Company”
The Beaver Hills Company articulated its vision of a planned community in its advertising brochure:

"The neighborhood will be developed as a whole, so that it may be harmonious, and the effect of each house heightened by the general plan. A uniform building line will add to the attractiveness of the wide streets by broad lawns. While individuals will be given every reasonable freedom in securing a house to his own taste, eccentricities and undesirable cheapness of design will be barred from the neighborhood."

~Beaver Hills Company Advertising Brochure, 1908


Compare this 1973 Sanborn fire insurance maps with the 1911 map (on previous page).

Note the uniformity in housing lots and in placement of houses within the lots.

Also note the creation of new streets after Ellsworth, Colony, Bellevue and Boulevard.

Note the extension of streets from Dyer to Crescent.

Restrictive Covenants and Social Norms

Buying a home in the Beaver Hills neighborhood required signing a contract that specified that all houses must be set back 30 feet from the curb, all building plans had to be approved by the company’s architect, the minimum cost of the house had to be $7000 (later this was raised to $9000), houses had to be single-family only, and had to be built within a specific time period. These restrictions effectively signaled social norms of acceptable types of people and quality of homes that would be allowed in the Beaver Hills community.

Credit: Amity Doolittle, 2011
Ellsworth Avenue with mature street trees and large, even set-backs between houses and sidewalk is a emblematic of the homes built in the Beaver Hills neighborhood.

"The neighborhood will be developed as a whole … A uniform building line will add to the attractiveness of the wide streets by broad lawns."
~Beaver Hills Company Advertising Brochure, 1908

Large-single family homes on Winthrop Street in the Beaver Hills neighborhood with even set backs between the houses and the side walks.

Credit: Amity Doolittle, 2011
This page from a Beaver Hills Company deed illustrates how buyers chose to have the Company manage the details of the construction of their new homes. Thus the Company could ensure that “cheapness of design” was avoided and that the house met the standards articulated in the restrictive covenant.

In 1937 Beaver Hills received a favorable rating (blue color) by the Home Owners Loan Corporation, which categorized neighborhoods as good or bad investments for federally backed mortgages based on race and housing conditions.

"Blue areas, as a rule, are completely developed. They are like a 1935 automobile still good, but not what the people are buying today who can afford a new one. They are the neighborhoods where good mortgage lenders will have a tendency to hold loan commitments 10-15% under the limit."

~ http://salt.unc.edu/T-RACES/colormap.html

Credit: Amity Doolittle, 2011
Newhallville Background

Early Expansion:
Industrialization and Newhallville

The Newhallville neighborhood grew up as the industrial heart of New Haven. In the late 1800s houses were built to meet the ever-growing labor force for companies such as George Newhall’s Carriage Emporium and Winchester Repeating Rifle.

~Right: 1879 Map of New Haven by O.H. Bailey and J.C. Hanzen

Newhallville illustrates the relationship between industrial growth and the emergence of a large working-class, residential neighborhood emblematic of the late 19th century.

The 1911 Sanborn Fire Insurance map (above) shows the density of long and narrow, or shotgun, houses which developers favored as it allowed them to maximize the number of houses built on one street. The construction of shotgun houses slowed during the early 20th century, driven in part by the widespread ownership of cars that allowed people to live farther from their work.

Credit: Amity Doolittle, 2011
In an era where nearly 75% of new Haven’s industrial workers relied on walking as the principle mode of transportation there was a high demand for houses near industrial plants. Boarding houses and multi-family houses were built in the mid 1880s by land speculators who anticipated the growing need for workers’ houses.

1914-1918—Workers at shift change at Winchester (left) and building Browning machine guns (right)

As demand for the rifle that “won the west” swelled so did the residential portion of Newhallville. By 1887 the company had a plant covering several blocks and employed more than 600 workers. By the early 20th century, the firm ranked among the nation's largest and most successful armorers. The plant covered more than six city blocks, and employed over 1000 people.

Credit: Amity Doolittle, 2011
PLANT IDENTIFICATION

Plants (especially woody plants) are all around us, visible every day all the time. Therefore, some common knowledge about plants should be a part of the basic curriculum at F&ES. Most of the activities at F&ES relate in one way or another to plants. Birds sit in them, insects eat them, and industry hopefully tries not to damage them via air or water pollution. Some people try to grow them to make money and others try to simply save them from being cut down. Knowledge of local plants of southern New England has both short range and long-range implications. First, a considerable number of our graduates continue to work east of the Mississippi, where these species grow and thus will be around them for life. Second, many of our classes use the local plants as examples of ecological and silvicultural patterns and processes. Woody plants are used in Mods because they are the only group of organisms suitable to identification in the time frame and resource frame available in the Mods. The plants we identify do not require the use of microscopes, thick technical books, or the presence of flowers.

In plant ID we emphasize that plants have strategies and life histories which fit them into the land they are growing on. Thus, in addition to determining the names of the plants (common and scientific), their ecology is extremely important. The School has courses about conservation and species diversity. The trick to all the theoretical and mathematical approaches is that someone somewhere and somehow has to be able to identify the organisms which comprise “biodiversity”. Knowledge of the methods of doing this is one of our objectives.

The tool for identifying plants is the use of the plant identification key, sometimes called a dichotomous key. This is simply a tool and I hope we stress that it is meant to be used as such. It is a means to an end. In and of itself using a key can be very boring and very simple. Yet sometimes it can be very difficult. Keys are often full of technical jargon and the user must use her best judgment to decide whether a feature matches that described in the text. Not every plant will key out perfectly every time and often the user must decide if the description is "close enough". The key provided for you uses very little technical jargon.

The approach we use in plant ID involves calmness and patience and is a continuous flow. I encourage people to work in small, “socially functional groups” in which students work together identifying plants in the field.

Lastly, the plant ID exercise requires just a bit of public speaking practice. For this, each student is assigned a common plant species on which they give a 2-minute presentation to the rest of the group. This is a kick off to the sorts of communication skills you will be required to use throughout your time at the F&ES.

There is a certain citizenship component to plant ID. A lot of our students end up on various boards and commissions on the local or state level. They involve themselves in these activities after graduation because of their interest in the environment. Many times, they are called upon due to their “forestry education” to be knowledgeable about various land planning and wetlands and other citizenship activities for which knowledge of the plants is more than helpful.

Plant ID Talks

What: On Monday, all MODsters are assigned a woody plant. On one of the following three mornings, you each will give a 2 min talk about that plant for your classmates. It is suggested that you take some time in the late afternoon/evening and search out some data about your assigned plant in preparation for the talk. The
list below includes some of the kinds of information you may want to include in your presentation. You can be as creative or as straightforward as you wish – either way, you will be in good company.

**Why:** This activity has two primary goals: 1.) to teach each other sometime about the trees that are commonly found in Connecticut, and 2.) to practice making short oral presentations – something that will undoubtedly be a part of your F&ES academic experience. The more you do it, the easier it becomes!

**When:** Tues, Wed and Thurs at 8:15 we will gather in SAGE Bowers and one third of you will give your short talks each morning. We will keep strictly to the 2min time cap, so we suggest you practice your talk in advance! If you have specific slides or other media you want to present with, send them to Laura (laura.green@yale.edu) **before 7:45am** the morning of your presentation. If you do not submit anything in advance, you will be presenting in front of a beautiful pre-made slide with the name of your plant.

A note to consider: We celebrate creativity and silliness in the plant ID talks. However, it is wise to consider how your jokes will feel for all of your classmates. If you’re unsure about whether something you’re considering for your presentation is offensive, your TAs are available to use as a sounding board.

**Characteristics of Plants Species**

<table>
<thead>
<tr>
<th>1) Scientific name</th>
<th>13) Quick identification features (smells, color, thorns, etc.)</th>
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<tr>
<td>2) Common names</td>
<td>14) Tolerance of shade</td>
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<td>3) Typical habitat (i.e., upland woods, old fields, roadsides, marshes, etc.)</td>
<td>15) Historical importance</td>
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<tr>
<td>4) Growth form (tree, shrub, herb, vine)</td>
<td>16) Wildlife implications &amp; relationships with other non-human species (habitat for migrating birds, harbors disease-vector insects, relies on fungal association to gain additional nitrogen, etc.)</td>
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<td>5) Form or shape of mature individual (vase-shaped, sprawling, rounded)</td>
<td>17) Undesirable characteristics (from human perspective)</td>
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<td>6) Growth rate (fast, slow)</td>
<td>18) Aesthetic characteristics (leaf color, flower scent, etc.)</td>
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<td>7) Longevity and health</td>
<td>19) Resistance to (aka tolerance of) urban pollution</td>
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<td>8) Height at maturity</td>
<td>20) Native or introduced species – where did it evolve?</td>
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<tr>
<td>9) Mode of reproduction and dispersal (ex: pollinated by wind and fruits dispersed by water) and their ecological implication</td>
<td>21) Known susceptibility to disease or insects</td>
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<td>10) Protective mechanisms (from a plants point of view) such as thorns, spines, toxins, etc.</td>
<td>22) Human uses &amp; perceived value</td>
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<td>11) Successional stage with which typically associated</td>
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<td>12) Where to find it on the landscape &amp; whether it is an indicator species (i.e. of wetlands, dry lands, disturbed sites, salty soil, etc.)</td>
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**Plant Identification Exercise**
The primary goal of this exercise it to practice using a dichotomous identification key: a tool that is used in many field and laboratory contexts to develop the data sets that underpin much of our understanding of ecology. In our case, we will be using a key to identify some of the woody plants that grow commonly in New Haven. We are NOT testing how quickly or accurately you can ID the plants; the point is to work together to learn how to use the dichotomous identification key. Some of the plants we are practicing on are easier than others to key out. If you get stuck on a plant and can’t figure out the next step in the key, just move on to the next plant. If you are more experienced with plant ID and all questions seem way too easy, feel free to help your classmates.

Consider the nine plants as nine opportunities to try a new skill; they are not a list you are expected to complete. Any plants you learn today can become friendly faces during your time at F&ES – they are found in many of the street tree pits, backyards, and parks throughout New Haven.

**Instructions:** Your TAs put labels on nine plants throughout the site. Work together to identify the plants using the dichotomous key book (one for each group). Use the space on the next page for notes as you work through the key. At the end of the exercise, we will come back together as a group and teach each other the plants we’ve ID’d.

**Tips for using the dichotomous key:**
1. Read the introduction if you’re unfamiliar with how the key works.
2. Go step by step – each decision point in the key must be worked through sequentially. Don’t skip ahead! Writing down each step through the key may help you to not get lost.
3. If you don't know the meaning of a word:
   a. Look it up in the glossary;
   b. Read the rest of the description and pick based on the other features described;
   c. Ask a TA for help.
### Plant ID Exercise Notes

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IV. MONDAY AFTERNOON

PARK OBSERVATION

New Haven has a variety of public spaces within the Yale campus and well beyond. As one of the most demographically diverse cities in the nation, New Haven offers students a unique opportunity to reflect on civic space. This exercise will develop your skills in public space observation, assessment, and analysis. It follows the framework developed by sociologist William Whyte. This exercise also draws from research of Dr. Elijah Anderson, Yale Professor of sociology, and one of the nation’s foremost urban ethnographers.

For examples of how William Whyte performed his analysis, see his book *The Social Life of Small Urban Places*, and/or visit the website for the *Project for Public Spaces*, a nonprofit organization in New York City begun by members of Whyte’s research team.

For this exercise, students will be split into smaller groups to compare pairs of public spaces. Part of the reason we break up into different teams is to identify differences in qualitative data collection. The spaces we will visit are:

- Criscuolo Park
- Dover Beach Park
- De Gale Field
- New Haven Green
- Scantlebury Park
- Wooster Square
- Jocelyn Square

At each park site, groups should pay close attention to five factors:

- **Survey Information**—How are people using/interacting with the park?
- **Park Patronage**—Who is in the park? Does it reflect the surrounding population?
- **Context**—What is in the park’s surrounding areas? Along the street? The neighborhood?
- **Mapping**—What is the park’s layout? Where are people entering/exiting the park?
- **Introspection**—How do you feel in the park? Does it feel like a cosmopolitan space (*sensu* Anderson)?

The following pages include observation sheets and maps for each park that we will be visiting, as well as additional park information and a context map of the study sites within the city. Thumb through all of the observation sheets to see how your public space compares to the others.

The observation sheets are meant to help gather information and frame your analysis. Use them as best you can to collect data, and don’t worry about making them look perfect or neat. Feel free to gather additional data through pictures, as this will greatly inform your description of park design elements and surrounding context. Remember to be respectful when taking pictures of the space.

On each observation sheet you will also see a brief summary of the surrounding neighborhood’s census data. These data are meant to help you analyze park patronage as it relates to the surrounding community, and it should provoke analysis of what park features are actually driving usage. Following the observation exercise, each of the park teams will compare their notes for the two parks with their group. Then each group will join another park pair group to see how their spaces and their findings differed.
Criscuolo Park is a waterfront park that lies at the intersection of the Mill and Quinnipiac Rivers. The park sees a diverse array of uses. Youth and adult soccer leagues compete on its athletic fields, adult softball leagues use its diamond, and fishermen congregate on its waterfront. Students from nearby schools enjoy its fields and playscape for recess. A beautiful memorial for the Connecticut Twenty-Ninth Colored Regiment C. V. Infantry that once trained on the site was installed in 2008 with fundraising efforts from a Descendants group.

After the Civil War, site barracks were either taken down, converted to tenement housing, or ornamented for Yale Navy Boat Houses. The New Haven Park Commission purchased the property in 1890 and began converting it for recreational purposes. Additional temporary housing was installed on the site during WWII, which was removed after the war. The park has since had several iterations of redevelopment, from Fair Haven Project Area Committee efforts in the 1970s to contemporary bids by the New Haven Parks department and local area schools.
Observation Site

Criscuolo Park
Dover Beach Park is a recently renovated park that lies along the Quinnipiac River in the Fair Haven neighborhood. Once a popular spot for swimming and canoeing in the 1910s and 1920s, the riverside lost its appeal with the overpass construction and increasing industrialization. In fall 2010, Dover Beach became the focus of city and volunteer efforts, transforming the area from desolate coastline to a vibrant park space.

Dover Beach is part of an “urban oasis” program, one of seven sites throughout the city where green restorations are taking place thanks to a partnership between the U.S. Fish and Wildlife Service, Yale’s Urban Resources Initiative, Audubon Connecticut and the city. The community organizers, Friends of Dover Beach Park, is a URI Park Friends group founded in 2008 from members of the long serving Riverview Greenspace group. The friends group seeks to make the area around the site more walkable and curb dumping from the I-91 overpass. Great impetus and efforts come from the Quinnipiac Terrace development across the street an example of mixed income and ownership that replaced a former project.
Observation Site

Dover Beach Park
De Gale Field—also known as Goffe Street Park—lies close to Beaver Ponds Park, separated by Hill House Highschool. The park has a Friends Group that stewards the ground and hosts a variety of events. Founded in 2017, Friends of Goffe Street Park is the newest among 15 park advocacy and stewardship groups across the city.

The park has been the center of many activities over the years, including Little League games, the Black Expo, the annual New Haven Caribbean Heritage Festival, women’s softball league tournaments, CT Basketball Shoot Outs, Gospel and Unity in the Community festivals. The park is also well amenitied thanks to the work of multiple advocacy groups like New Haven Rising and local little league and church groups.

### NEIGHBORHOOD PROFILE (ACS CENSUS 2010)
- **Age of Residents:** < 35: 60%, 35–64: 28%, 65+: 12%
- **Home Ownership:** 84% Rent, 16% Own
- **Highest Educational Attainment:** < High School: 18%, High School or Higher: 82%, Bachelor’s or Higher: 18%
- **Race:** Black/African American: 66%, White: 16%; Hispanic or Latino origin: 13%

### OBSERVATION TIMESTAMP
- **Day of Week:**
- **Start Time:**
- **Stop Time:**
- **Weather:**
- **Team Members:**

### USER BEHAVIOR OBSERVATIONS (survey)
- **Activities and Behavior** (Are people sitting, reading, taking photos, texting, walking, etc.?)
- **Human Interaction** (How are inhabitants of the space interacting? Are they interacting?)
- **Destinations and Origins** (From where do people enter the site? Where are they going?)

### SITE OBSERVATIONS (context and mapping)
- **Context** (Is the surrounding area residential, commercial, highway, roads, water? Are there neighbors watching the park? Are people gathering on porches or adjacent private property?)
- **Condition of the Park** (Is the park clean? Are there trashcans, and if so, full or empty? Does vegetation seem to be healthy? Is graffiti present?)

### SELF REFLECTION (introspection)
- Do you feel comfortable visiting this park? Do you think others feel equally comfortable using the park? Does the park feel like a “cosmopolitan canopy”, where anyone could expect civility? Is it a pluralistic space that creates opportunities for diverse people to come together?
Observation Site

De Gale Field
**NEIGHBORHOOD PROFILE (ACS CENSUS 2010)**

- **Age of Residents:** < 35: 59%, 35–64: 33%, 65+: 7%
- **Home Ownership:** 75% Rent, 25% Own
- **Highest Educational Attainment:** < High School: 31%, High School or Higher: 69%, Bachelor's or Higher: 10%
- **Race:** Hispanic or Latino origin: 63%; Black/African American: 21%; White: 13%, Other: 2%

**Jocelyn Square Park**

Jocelyn Square Park is a 2.61-acre public park that lies just east of Interstate 91 at the northwest corner of the Fair Haven Neighborhood.

The park was donated to the city in 1836 and named after 19th-century abolitionist and neighborhood planner Simeon Jocelyn. Once more closely connected to the Wooster neighborhood, the construction of Interstate 91 in the 1950s isolated this area from its western context.

The park contains both a basketball court, splash pad, and several jungle gyms.

---

**OBSERVATION TIMESTAMP**

<table>
<thead>
<tr>
<th>Day of Week:</th>
<th>Start Time:</th>
<th>Stop Time:</th>
<th>Weather:</th>
<th>Team Members:</th>
</tr>
</thead>
</table>

**USER BEHAVIOR OBSERVATIONS (survey)**

- **Activities and Behavior:** (Are people sitting, reading, taking photos, texting, walking, etc.?)
- **Human Interaction:** (How are inhabitants of the space interacting? Are they interacting?)
- **Destinations and Origins:** (From where do people enter the site? Where are they going?)
- **Demographics:** (Do the demographics of the park reflect the neighborhood profile?)

**SITE OBSERVATIONS (context and mapping)**

- **Context:** (Is the surrounding area residential, commercial, highway, roads, water? Are there neighbors watching the park? Are people gathering on porches or adjacent private property?)

- **Landscape Elements:** (Are there benches? Play features? Bus shelters? Tables? Lights? Is the park accessible? Where do people gather? Where do people stand? Are there fences, and if so where? How do these define use and access? Do features appear designed to cater to specific demographics and age ranges?)

- **Condition of the Park:** (Is the park clean? Are there trashcans, and if so, full or empty? Does vegetation seem to be healthy? Is graffiti present?)

**SELF REFLECTION (introspection)**

- Do you feel comfortable visiting this park? Do you think others feel equally comfortable using the park? Does the park feel like a “cosmopolitan canopy”, where anyone could expect civility? Is it a pluralistic space that creates opportunities for diverse people to come together?
Observation Site

Jocelyn Square Park
The Green is a 16-acre park and recreation area located in New Haven’s downtown district. Completed in 1638, it comprises the central square of the nine-square settlement plan of the original puritan colonists.

Since its founding, the Committee of the Proprietors of Common and Undivided Lands at New Haven has maintained ownership and stewardship of the Green. The Proprietors are a self-electing group of five private individuals drawn from the ranks of prominent city residents.

The Green is host to numerous public events, such as the Festival of Arts and Ideas and New Haven Jazz Festival, summer jazz and classical music concerts that can draw thousands of people, as well as typical daily park activities.

### NEIGHBORHOOD PROFILE (ACS CENSUS 2010)

- **Age of Residents:** < 35: 82%, 35–64: 15%, 65+: 4%.
- **Home Ownership:** 92% Rent, 8% Own
- **Highest Educational Attainment:** < High School: 6%, High School or Higher: 94%, Bachelor’s or Higher: 74%
- **Race:** White: 56%, Asian: 19%, Black/African American: 11%, Hispanic or Latino origin: 10%, Other: 5%

### OBSERVATION TIMESTAMP

- **Day of Week:**
- **Start Time:**
- **Stop Time:**
- **Weather:**
- **Team Members:**

### USER BEHAVIOR OBSERVATIONS (survey)

- **Activities and Behavior** (Are people sitting, reading, taking photos, texting, walking, etc.?)

- **Human Interaction** (How are inhabitants of the space interacting? Are they interacting?)

- **Destinations and Origins** (From where do people enter the site? Where are they going?)

- **Demographics** (Do the demographics of the park reflect the neighborhood profile?)

### SITE OBSERVATIONS (context and mapping)

- **Context** (Is the surrounding area residential, commercial, highway, roads, water? Are there neighbors watching the park? Are people gathering on porches or adjacent private property?)


- **Condition of the Park** (Is the park clean? Are there trashcans, and if so, full or empty? Does vegetation seem to be healthy? Is graffiti present?)

### SELF REFLECTION (introspection)

Do you feel comfortable visiting this park? Do you think others feel equally comfortable using the park? Does the park feel like a “cosmopolitan canopy”, where anyone could expect civility? Is it a pluralistic space that creates opportunities for diverse people to come together?
New Haven
Green
The Ella B. Scantlebury Park was named after New Haven's first African-American and first woman City Treasurer. It is a community park on the border of the Dixwell neighborhood, Yale University's campus, the Farmington Canal Heritage Greenway, and the Monterey Place Affordable Housing Development.

An historical public amenity, the Greenway traverses the city and covers approximately 84 miles from New Haven to Northampton, MA. Monterey Place also has an interesting history. Built in 1998 with a $45 million Hope VI grant, it is a mixed-income and ownership development that replaced the notorious Elm Haven high-rises, New Haven’s first public housing project.

The park was expanded and renovated in 2008, adding additional land and improvements to an existing basketball court on the site. Stewarded by the Dixwell Management Team Greenspace Group, the Urban Resources initiative has been working with the community group as a Park Friend since 2003.

### Observation Site

**Scantlebury Park**

- **NEIGHBORHOOD PROFILE (ACS CENSUS 2010)**
  - **Age of Residents:** < 35: 55%, 35–64: 35%, 65+: 10%
  - **Home Ownership:** 78% Rent, 22% Own
  - **Highest Educational Attainment:** < High School: 29%, High School or Higher: 71%, Bachelor’s or Higher: 17%
  - **Race:** Black/African American: 68%, Hispanic or Latino origin: 15%, White: 13%, Asian: 2%, Other: 3%

### User Behavior Observations

**Activities and Behavior** (Are people sitting, reading, taking photos, texting, walking, etc.?)

**Human Interaction** (How are inhabitants of the space interacting? Are they interacting?)

**Destinations and Origins** (From where do people enter the site? Where are they going?)

**Demographics** (Do the demographics of the park reflect the neighborhood profile?)

### Site Observations

**Context** (Is the surrounding area residential, commercial, highway, roads, water? Are there neighbors watching the park? Are people gathering on porches or adjacent private property?)

**Landscape Elements** (Are there benches? Play features? Bus shelters? Tables? Lights? Is the park accessible? Where do people gather? Where do people stand? Are there fences, and if so where? How do these define use and access? Do features appear designed to cater to specific demographics and age ranges?)

**Condition of the Park** (Is the park clean? Are there trashcans, and if so, full or empty? Does vegetation seem to be healthy? Is graffiti present?)

### Self Reflection

Do you feel comfortable visiting this park? Do you think others feel equally comfortable using the park? Does the park feel like a "cosmopolitan canopy", where anyone could expect civility? Is it a pluralistic space that creates opportunities for diverse people to come together?
Observation Site

Scantlebury Park
Wooster Square lies in the center of a neighborhood of the same name. The park fills with cherry blossoms in the spring and festivals and a farmer’s market in the summer. The neighborhood is known as a bastion of Italian American culture and cuisine, and is home to some of New Haven's best-known apizza. The square was established in 1825 to provide a new “Green” for the expanding eastern part of the town. Successful industrialists built their houses around it, and named it after New Haven's Revolutionary hero, General David Wooster.

Wooster Square has survived several demolition attempts, from redevelopment plans in the 1930s as “commercial activity damaged the neighborhood's reputation”, to the mid-1950s when plans to build Interstate 91 through the Square were diverted southward and eastward. Much of the neighborhood was designated on the National Register of Historic Places in 1970 as New Haven’s first historic district.

**NEIGHBORHOOD PROFILE** (ACS CENSUS 2010)

- Age of Residents: < 35: 59%, 35–64: 32%, 65+: 8%
- Home Ownership: 76% Rent, 24% Own
- Highest Educational Attainment: < High School: 8%, High School or Higher: 92%, Bachelor's or Higher: 51%
- Race: White: 49%, Hispanic or Latino origin: 26%, Black/African American: 20%, Asian: 3%, Other: 2%

**Observation Site**

**Wooster Square**

**OBSERVATION TIMESTAMP**

- Day of Week: 
- Start Time: 
- Stop Time: 
- Weather: 
- Team Members: 

**USER BEHAVIOR OBSERVATIONS** (survey)

- Activities and Behavior (Are people sitting, reading, taking photos, texting, walking, etc.?)
- Human Interaction (How are inhabitants of the space interacting? Are they interacting?)
- Destinations and Origins (From where do people enter the site? Where are they going?)
- Demographics (Do the demographics of the park reflect the neighborhood profile?)

**SITE OBSERVATIONS** (context and mapping)

- Context (Is the surrounding area residential, commercial, highway, roads, water? Are there neighbors watching the park? Are people gathering on porches or adjacent private property?)
- Condition of the Park (Is the park clean? Are there trashcans, and if so, full or empty? Does vegetation seem to be healthy? Is graffiti present?)

**SELF REFLECTION** (introspection)

Do you feel comfortable visiting this park? Do you think others feel equally comfortable using the park? Does the park feel like a “cosmopolitan canopy”, where anyone could expect civility? Is it a pluralistic space that creates opportunities for diverse people to come together?
Observation Site

Wooster Square
V. TUESDAY MORNING

BEAVER PONDS PARK TOUR

This morning’s activity will give you and your classmates a chance to explore this park and its storied past, because it will serve as our main field site for the week. At 109 acres, Beaver Ponds Park is large enough to be considered a boundary park, because it is located between neighborhoods rather than inside of a single community (see map). As context, 109 acres is a quarter the size of East Rock Park and an eighth the size of New York’s Central Park. Ecologically, it’s the largest green space and water body between New Haven’s East and West Rocks, and some of New Haven’s most densely populated neighborhoods are its immediate neighbors. Ten stormwater culverts replenish the park’s namesake ponds with runoff from these neighborhoods.

Beaver Ponds Park is a good example of how views of a particular urban landscape can vary among different interest groups and change over time, and how those perspectives shape what happens with open space. When you visit the park today, you will see both well-manicured athletic fields and relatively wild natural areas surrounding a red maple floating bog, but it hasn’t always been this way. This morning’s exercise will help you uncover clues in the park to its hidden past, and connect that past to build a broader understanding of how the park came to be as it is today, both in terms of its ecological and social functions. In addition, it offers you a chance to enjoy a New England summer day with your new classmates!

Although this activity is an unrestricted exploration of the park, we are providing a framework to help you observe the park with a group of your classmates in a systematic way. The structure of the activity is as follows: you will visit six stations throughout the park, each with a TA; and you will use a provided worksheet and map with a couple of guiding questions for you to think about as you walk and make observations. At the end, each group will share some of their most interesting finds with the rest of the class on a large map.

Your new understanding of Beaver Ponds Park will serve as a baseline for the remaining activities this week. Throughout the week’s activities, the Park will serve as a geographic focus, tying separate approaches and topics together.

The following map shows Beaver Ponds Park and its surrounding neighborhoods. As you explore the park, we will discuss how this history shapes what we see today.
Park Tour Worksheet

During the tour, you will explore various areas within and around Beaver Ponds Park. The MODs TAs will guide you through the various stations mentioning the following points among other things.

1. Fournier St. Entrance
   - There are actually two entrances to Beaver Ponds Park near this location: the formal Fournier St. entrance and another entrance across the road which is an informal fishing access point for New Haven residents.
   - The differences between these two entryways into Beaver Ponds Park illuminate the differing park uses for those visiting.
   - The types of vegetation and the way in which vegetation is maintained within these park entrances can have a direct impact on visitors’ sense of safety, security, and comfort while visiting the park.

2. Water Outlet
   - New Haven has both separate and combined sewer systems. This joint system affects Long Island Sound and the surrounding waterways. The ponds receive only stormwater.
   - New Haven has many water management schemes that aim to reduce the flow of stormwater runoff into the Beaver Ponds Park system (e.g. bioswales, rain gardens, etc.)
   - Water quality is likely better at this outlet than at the West Division Outfall because of natural filtration, phytoremediation, and other natural cleansing phenomena that occur within the Beaver Ponds Park system. The pond provides ecosystem services.

3. Cherry Ann Park
   - Miss Connie advocated for a decade to transform the 4-acre former dumping ground into ‘Cherry Ann Park’ which is actually part of Beaver Ponds Park.
   - Everything you see is the product of the neighbors’ effort or according to their decisions, including the playground equipment which was installed by the city in 2015 and the benches which were installed by URI using funds raised by F&ES students in 2019.
   - Urban MODsters work in this park is an example of addressing environmental justice because it and it is entirely directed by the historically marginalized community that will experience the environmental benefits.

4. Sherman Parkway Access
   - This side of the park is located next to Newhallville. It used to have a chain link fence that was ostensibly erected to prevent dumping.
   - The current “living” fence of trees and boulders provides the same benefit without preventing convenient access to the park for Newhallville residents.
   - Nearby examples of encroachment into the park (police department firing range, animal shelter, police academy, Hillhouse High School) help illuminate the historic relationship the city of New Haven has had with Beaver Ponds Park.
5. West Division Outfall
   - Although Beaver Ponds Park has nine stormwater outfalls, only this one has any form of water “treatment.”
   - The small treatment screen cost $150,000 to install but clogs quickly after big storms, limiting its effectiveness.
   - If the screen was installed at the end of the pipe rather than at the opening to the outfall, its effectiveness would likely improve dramatically.

6. Urban Oasis & Invasive Species
   - Depending on what goals people have for the park, their opinion on invasive species may differ. Some invasive plants have berries that provide food for birds or look nice, but they may not host the same biomass and richness of insects that are also essential for migratory birds in spring & to feed chicks.
   - The Beaver Ponds Park Urban Oasis was created in 2013 explicitly to help provide native plant species that provide essential habitat for migratory birds.
   - The location of the Urban Oasis tucked behind a football field in a secluded area has a significant impact on the people who have “access” to it and how those people interact with it.
VI. TUESDAY AFTERNOON

LITTER ANALYSIS

Introduction

Litter is probably the most visible form of pollution and maybe the easiest to understand. At the same time, litter may be associated with just as serious but less visible forms of pollution and may have significant direct negative impacts on society. Litter can harm urban wildlife via ingestion, entanglement and the like and trash can be indicative of a negative neighborhood environment, often associated with social problems like drug use, mugging, and vandalism (Latkin and Curry 2003). These problems may be especially challenging for the elderly who can lose access to community as well as the freedom to accomplish everyday tasks such as shopping, travel, and socialization when perceptions of neighborhood environmental quality are harmed by litter and related factors (Balfour and Kaplan 2002).

In the urban environment, litter may be found where it was discarded, but more frequently it is carried by stormwater, sometimes to distant locations. Beaver Ponds receives street runoff via nine separate outfalls covering a large area of the city you will see in the GIS exercise. Much of the litter carried to the park ends up in the riparian zone of the ponds. In today’s activity, you will collect, characterize, and quantify the litter in small standard plots adjacent to the pond. This will have two benefits: (1) you will help clean the park, a key desire of the Friends of Beaver Ponds Park, and (2) the data may be useful in establishing a management strategy to minimize future litter.

Figure 1: Pilot litter inventory conducted by Friends of Beaver Ponds Park
**Procedure**

Select one of the 2 m × 2 m plots that have been marked off by the TAs, and spread a tarp nearby. Wear gloves and change them as needed during the exercise. Collect all litter from the plot and from any area that can be reached directly offshore.

**IMPORTANT: If you find any potentially hazardous sharps (hypodermics or glass)**

REPORT THEM TO THE TAs, who will be responsible for their removal.

Place the litter in piles matching the categories in Data Table 1. When all litter has been removed from your plot, count the items in each category and weigh them. Do not bother to count unidentifiable plastic fragments, just weigh them in aggregate. Whenever possible, find “sell by” or “freshness” dates and record them as well. This provides approximate age information. Some items may fit into more than one category, e.g., is a cigar wrapper smoking related or drug paraphernalia? Use your judgement, part of qualitative analysis.

**Data Table 1**

<table>
<thead>
<tr>
<th>Waste Category</th>
<th>Quantity</th>
<th>Weight</th>
<th>Dates</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styrofoam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snack wrappers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(check freshness dates!)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic bottles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(deposit refundable?)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottle caps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(deposit refundable?)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juice pouches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking related</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(lighters, butts)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol related</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Classification can help environmental scientists, managers, and educators understand where the dominant litter type might be generated and why, as well as how it could be traveling to the collection site. The states of Texas and California did extensive research before starting their “Don’t Mess with Texas” and “Don’t Trash California” anti-litter campaigns. Quantitative regression models have been created to predict litter amounts along highways (Syrek et al. 2003). This is a science!

**Discussion Questions**

- What general conclusions can we draw from this activity about waste types and flows into Beaver Pond Park?

- Can you make inferences about the sources of the litter? For example, do brands suggest specific fast-food establishments? Are some items likely to come from domestic trash rather than littering? (Litter can be intentional or unintentional, e.g., blown from trucks and open trash containers).

- What advice might we offer to environmental managers based on these findings? Should control be preventive (public awareness, trash receptacles), reactive (clean-up), or corrective (enforcement)?


VII. WEDNESDAY MORNING

GPS FIELD DATA TOOL

Tree Inventory

Using GPS enabled iPhones or Android phones, student teams will gather street tree data to contribute to a street tree inventory dataset. GIS is a very powerful tool, and allows us to perform statistical analysis on spatial relationships, as well as compare areas such as neighborhoods, blocks, and zoning categories to one another. We can use the tree inventory information to run analyses useful to the city and URI in making management decisions, to target outreach to particular neighborhoods and blocks, and to monitor our planting and survival progress. Moreover, if a disease or pest infestation occurs, knowing the spatial distribution of species is crucial in addressing such problems.

A hand out with detailed instructions for using Collector for ArcGIS app for iPhone and Android will be provided during MODS for editing the URI street trees database. The Collector app allows users to efficiently gather point-based data in the field.

VIII. WEDNESDAY AFTERNOON

GIS WORKSHOP

Introduction

The goal of this workshop is to provide an overview of the fundamentals and applications of GIS (Geographic Information System), a framework for managing, analyzing, and visualizing geospatial data. Using a variety of spatial datatypes and tools, we will explore how the built environment affects natural ecosystem functioning and relates to the environmental quality of urban residents.

The first module of the workshop focuses on the spatial patterns of urban temperatures in New Haven and examines how vegetation mitigates urban heat at the local scale. We will also explore whether different demographic groups in the city are exposed to different temperature levels, and thus, heat stress. We first analyze these relationships using data collected on the ground (tree inventory and mobile meteorological measurements), and then scale up the analysis to the entire city using satellite and census data.

The second module of the workshop is focused on urban hydrology. The urban hydrologic cycle is redirected and changed in other ways by the street drain system. In most cases, this urban infrastructure is well documented, which is fortunate because most of it is out of sight, buried under the street. We will use specialized geospatial tools to trace the flow of water through New Haven’s storm sewer system. Additionally, we will use elevation data to delineate an urban watershed.
By the end of this workshop, students will have a basic understanding of geospatial analysis as applied to the urban ecosystem. Students will learn how to visualize and analyze different spatial datatypes related to ecosystem function and urban infrastructure. More generally, students will learn how to use and apply geospatial data to answer their own environmental questions.

**Workshop Overview**

*Introduction*
- Introduction to projection and coordinate systems, georeferenced data, geospatial data types, and their sources
- Usage and applications of geospatial data to address environmental questions
- Case study: Learn about the drivers of high urban temperatures, strategies for heat mitigation, and the disparate impacts on different demographic groups

*Hands-on GIS Activity*
- Explore the relationship between street trees and mobile meteorological measurements
- Use satellite-derived products to investigate these patterns at the city-scale
- Use census data to understand the spatial patterns between environmental quality and socioeconomic demographics
- Delineate the Beaver Ponds Park sewershed and watershed using geospatial tools

*Instructions and Data*
- Go to https://tinyurl.com/2019modsGIS and click ‘Download’ and then ‘Save File.’
- Go to your Downloads folder. Right-click the “Urban MODS 2019 GIS Workshop” zip file and then click on “Extract All.” Next, click “Extract.”
- Open the file “MODs_GIS_2019.pdf”. This pdf document provides all the instructions you’ll need for today’s workshop.

*Wrap-up*
- Discussion of workshop results
- Geospatial resources at Yale
- Questions?

**Definitions**

**GIS (Geographic Information Systems):** A computer-based system that allows us to manage, analyze, and visualize any information that is spatially-referenced (AKA make maps). In its most simple form, a GIS handles a collection of data that have locations (i.e., latitude and longitude) attached to each item.
ArcGIS: A computer software program created by Environmental Systems Research Institute (ESRI) for managing, analyzing, and visualizing spatial information. It enables the creation and maintenance of a geodatabase and is the most commonly-used program to work with GIS.

Spatial data: Any information that is tied to a specific location on Earth (AKA: anything that could be put on a map). For example, election results, supermarket locations, and information about roads are all spatial data if they are tied to specific places.

Vector data: Spatial data that represents discrete locations such as points, lines, or polygons.

Raster data: Spatial data that is represented by pixels with each pixel containing a different value (like a satellite image or a map of temperatures).

Cartography: The science and practice of making maps; combining design and science to communicate spatial information.

Examples of GIS in Use at Yale

Yale Climate Opinion Maps | Yale Program on Climate Change Communication
http://climatecommunication.yale.edu/visualizations-data/

Map of Life | Jetz Lab, BGC
https://www.mol.org/

Radical Cartography | Yale University Professor Bill Rankin
www.radicalcartography.net

Global Surface UHI Explorer | TC Chakraborty, F&ES, YCEO
https://yceo.yale.edu/research/global-surface-uhi-explorer
GIS Resources at Yale

Student Interest Groups:

- The Spatial Collective
- Earth Engine @ Yale
- Environmental Data Science

Centers and Programs:

- Center for Science and Social Science Information (CSSSI) GIS Services
  https://guides.library.yale.edu/GIS/
- Yale Center for Earth Observation (YCEO)
  https://yceo.yale.edu/
- Data-Driven Yale
  https://datadrivenlab.org/
- Digital Humanities Lab
  http://dhlab.yale.edu/
- Yale Center for Research Computing (YCRC)
  https://research.computing.yale.edu/
- Center for Biodiversity and Global Change
  https://bgc.yale.edu/
- Yale Program on Climate Change Communication
  https://climatecommunication.yale.edu/

People:

- Miriam Olivares, GIS Librarian, CSSSI
- Giuseppe Amatulli, Research Scientist, F&ES, YCRC
- Dana Tomlin, GIS Professor, F&ES
- Xuhui Lee, Professor of Meteorology, F&ES & Director, YCEO
- Natalie Schultz, Associate Research Scientist, F&ES, YCEO
- Jennifer Marlon, Research Scientist, F&ES, YPCCC
- Karen Seto, Geography and Urbanization Professor, F&ES
- Ron Smith, Professor of Atmospheric Science, G&G
- Timothy Gregoire, Professor of Forest Management, F&ES
- Walter Jetz, Associate Professor of Ecology, F&ES/EEB
- Bill Rankin, Assistant Professor of Geography and Cartography, History
- Laura Barraclough, Associate Professor, American Studies
- Scott Rumage, IT Supervisor, F&ES

Courses:

- Modeling Geographic Objects (Fall) – Dana Tomlin
- Modeling Geographic Space (Spring) – Dana Tomlin
- Geospatial Software Design (Fall) – Dana Tomlin
- Observing Earth from Space (Spring) – Xuhui Lee, Ron Smith
- Remote Sensing with Drones (e/o Fall) – Xuhui Lee
• Applied Spatial Statistics (Spring) – Tim Gregoire, Jonathan Reuning-Scherer
• Cartography, Territory, and Identity (Fall) – Bill Rankin

Workshops:
• GIS Workshops (CSSSI): https://guides.library.yale.edu/GIS/gisworkshops
• Remote sensing (YCEO): https://yceo.yale.edu/education/remote-sensing-workshops
• Geo-computation & programming (YCRC): https://research.computing.yale.edu/training

IX. THURSDAY MORNING & AFTERNOON

INVASIVE REMOVAL AND HABITAT PLANTING

We will be removing invasive species and planting native vegetation alongside and in support of community volunteers, who have identified these projects as a priority in their community.

Cherry Ann Park Restoration

Miss Connie Vereen lobbied city officials for years to reclaim 4 acres of derelict park land into a community resource. At her invitation, URI and other organizations have partnered with Miss Vereen and her neighbors since 2014 to tirelessly remove invasive species, plant native vegetation, create trails and restore Cherry Ann Park to create recreational opportunities and improve habitat. The City installed playground equipment in 2015, but the community still hopes for additional infrastructure. F&ES students and alumni raised funds and with URI staff installed three benches in the park in 2019. During MODS we will consider the park amenities at this park compared to other parks visited earlier in the week. Alumnus Jackie Fouse will visit with Miss Vereen to share their hopes for the park’s future. To learn more about the community reclaiming Cherry Ann Park visit:


Friends of Beaver Ponds Park & the Urban Oasis

The Friends of Beaver Ponds Park (FoBPP) group formed in 2004, and have worked continuously with URI for the past 15 years. A weekly email with a follow-up report that was sent out to members of the FoBPP group from leaders Nan Bartow is shared below. The email gives a sense for what the group accomplishes on a weekly basis and how Nan acknowledge the contributions of each volunteer. This volunteer group works primarily by the Crescent & Fournier Street entrance, and in 2013 a subset of these volunteers broadened their efforts to create The Urban Oasis. The FoBPP Urban Oasis is part of a network of Urban Oases in the New Haven Harbor Watershed supported by URI, US Fish & Wildlife Service, Audubon, Common Ground and volunteer groups to provide habitat for wildlife.
Dear FoBPP,

Our summer Greenspace group will meet for **Wednesday Evening at the Park, Session #6, July 17, 6 to 8 PM, in Beaver Pond Park.** Look for us by the high benches just beyond the gate off of Fournier St. near Crescent St. The group will weed and mulch our garden beds, spread wood chips where needed, and collect litter. Jamie will bring us some perennials to plant, and I will a few flowering plants also. We always enjoy working with our friends and neighbors to improve our beautiful Beaver Ponds Park. The friendliness of our group along and the exuberance of our children's group always raise our spirits.

On this evening, the children from our group will work with Jamie. They will decorate a large sandwich board with images that represent our park. They should wear easily washable clothes since they are likely to get paint on them.

**Wednesday Evening at the Park--Report #5, 7-12-19**

**Attendees:**
- Judy Hopkins
- Frank Pannenborg
- Elaine Piraino-Holevoet
- Claire Rowe and Eileen
- Lin
- Jim Hopkins
- Intern: Jamie Chan

We had a hot but lovely evening for our fifth work session! We met at 6 pm at the circular benches. After discussing the work that needed to be done for the evening, we then disbursed to make the best use of the time that we had. Jamie brought a good selection of flowering plants, and I brought some also. Joan, Frank, and I started weeding the pondside butterfly garden. Patrick worked on clearing the low bench area of litter and invasive growth. Claire, Eileen, Lin, Elaine, Jamie, and Kate all worked on the front gardens. Daniel filled the wheelbarrows with garden debris, wheeled them down the long access road to our debris pile, emptied the barrows, and returned them to be filled and emptied again and again. Jim and Laura delivered wood chips and pine bark mulch to the gardens that needed them. Judy tackled the tree branches and bushes with her loppers and her usual vigor. Where needed, Jamie and I gave direction and advice to the various groups and helped out in each project area. Jamie took photos. At 7 pm we gathered for our annual group photo.

Happy July, Nan
**X. APPENDIX**

**POISON IVY IDENTIFICATION**

Poison ivy (*Rhus radicans*) is a very common shrub species in the NE region, and it is one plant you have to know how to identify. There are some individuals who are not allergic to poison ivy, but most of us are (more than 50% of U.S. population). The leaves come in variety of shapes and colors, and their colors may change over the course of the year. Here are some simple tips to ID it.

1. “Leaves of three? Let them be!” – Poison ivy leaves grow in a cluster of three at the end of a long stem. The leaves also alternate and the middle leaflet is usually longer than the lateral leaflets.
2. The center leaflet usually has a short petiole and the lateral leaflets don’t.
3. Poison ivy at times has small white berries
4. The leaves can turn red in autumn.

People’s reaction to poison ivy varies, but usually it is more of an annoyance than something more serious. It is to be avoided not feared.
ADDITIONAL READING AND USEFUL WEBSITES FOR FUTURE REFERENCE

General


Redlining and U.S. Housing Policies

1. Interactive maps (including New Haven):
   a. “Mapping Inequality: Redlining and the New Deal in America”

2. Radio:
      i. https://www.npr.org/programs/fresh-air/2015/05/14/406699263/fresh-air-for-may-14-2015

3. News articles:
      i. https://www.theatlantic.com/business/archive/2014/05/the-racist-housing-policy-that-made-your-neighborhood/371439/
   b. Bouie, Jamelle. 2014. “How We Built the Ghettos”. *Daily Beast*
      i. https://www.thedailybeast.com/how-we-built-the-ghettos

4. Policy Papers:
      i. https://www.epi.org/publication/making-ferguson/
b. Seaberry, Camille. May 05, 2018. “CT Data Story Housing Segregation in Greater New Haven: How patterns of racial residential segregation are shaped by discriminatory federal, state and local policies. Data Haven

5. Video:
      i. https://www.youtube.com/watch?v=ETR9qrVS17g

Websites

1. City of New Haven Homepage

2. Census Bureau

3. Urban Oasis