

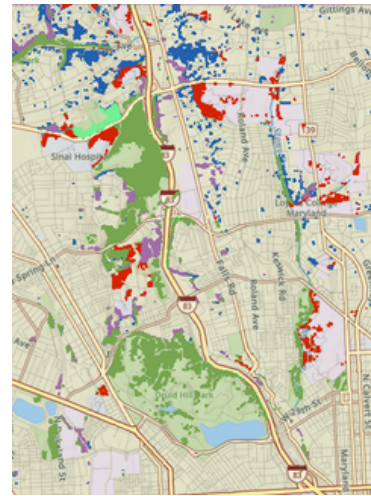


# Mapping Urban Forested Natural Area Roadmaps



## **Introduction**

The Mapping Urban Forested Natural Areas Roadmap provides an overview of how to map the spatial extent of urban forested natural areas in your city. Mapping is crucial because without a map, it is difficult to protect resources or prioritize management. Location information is the first step to understanding jurisdiction and ownership—a crucial piece of information we can leverage to protect and manage our natural resources. Knowing the extent of forested natural areas also allows us to study their condition, develop spatially explicit management plans, and calculate helpful statistics that can be used to advocate for funding and awareness.



This Figure is from the [Urban Forest Patch Viewer](#)

The following are some key considerations for mapping urban forested natural areas. Your process may not occur in the order listed; this is a cyclical process with contextual considerations.

## **Urban Forested Natural Area Roadmaps**

These roadmaps provide guidance for local organizations across the country to protect, restore, maintain, and increase access to millions of acres of urban forested natural areas. Informed by the experience of the [Forests in Cities Network](#), over 40 practitioners from 20 cities around the country contributed to their development.

To access the other roadmaps visit [fic.naturalareasnyc.org](http://fic.naturalareasnyc.org).

# Before a Mapping Project

## **Define scale**

Begin by determining the study area. For example, a specific forested natural area, [a certain jurisdiction](#), or [the whole city](#). We recommend creating a map of all forested natural areas in your city if possible.

## **Define goals and outputs**

Your goals for mapping should be clearly defined in advance because your goals will determine the components and methods of your mapping efforts. Goals should be specific, measurable, achievable, relevant, and time-bound (SMART). Include how often you plan to map, and what specific outputs you plan to produce. Ensure land cover classes (i.e. ecological cover type) align with management needs and reflect land cover within the ecoregion. At a minimum, forested natural areas should be distinguished from other tree canopy or vegetative types.

- Mapping forested natural areas requires funding for acquiring input data (e.g., satellite imagery or LiDAR data), processing data, and evaluating data. This can entail equipment costs including servers capable of processing data or storage space. The funding required will be determined by your methods.
- Determine staffing requirements, particularly technical expertise. Your organization may have expertise in-house, or you may have to utilize contractors or academic partners.

## **Gather training and reference data**

Training and reference data should cover the full study area and include natural and nonnatural vegetation along with non-vegetative areas. This may be LiDAR or satellite imagery, for example. Data from national databases such as the National Agricultural Imagery Program (NAIP) and or the National Oceanic Administration's Coastal Change Analysis Program (NOAA C-CAP) may be used as additional reference layers but will not be sufficient for identifying natural areas.

# Conducting a Mapping Project

## **Conduct mapping**

Once you have your funding, staffing, equipment, goals, and data in place, you can begin to make a map. Some common components of mapping to consider include:

- Extent: mapping should extend to the full study area you identified.
- Resolution: ensure your resolution is fine enough to capture small forest patches. We recommend achieving as fine resolution as technically possible for mapping urban forested natural areas. Note: canopy mapping is often at a finer resolution, but is likely not needed for the purposes of this roadmap.
- Classification: forested natural area extent is identified, and classified into subtypes (e.g., forested wetland, mangrove forest); other classes such as grassland or wetland can also be included.

## **Assess accuracy**

Once you have created a map, begin to assess how accurate your map is. The accuracy of a map determines appropriate use cases. For example, a very accurate map can be used for management purposes while a less accurate map may be sufficient to identify broader trends.

## **Document your process**

Include detailed information on how landcover classes were selected and identified, training and reference data used, and mapping methods. Ensure that your process is repeatable and replicable.

## **Digitize your data**

Make products (e.g., maps, raster data, shapefiles) available for download on a publicly hosted website. Some common components to include in the upload are:

- End user agreements on fair data usage should be included when data is downloaded.
- Raw data used to create maps and output files should be stored securely in case older maps need to be re-evaluated.
- Metadata and fact sheets that explain the data.

# After a Mapping Project

## **Disseminate the information**

[Making maps public](#) and sharing them with key audiences including land managers, policymakers, and nearby communities, is a great way to raise awareness about forested natural areas and can improve access. Be sure to exclude ecologically sensitive and rare species information.

## **Utilize the data**

Mapping can be used for a variety of purposes, including [assessment and monitoring](#), prioritizing tree planting, [targeting investments](#), supporting grant applications, and [monitoring climate change goals](#).

## **Repeat on a regular basis**

Set a regular cadence to update the maps. Document any changes in methodology and keep records of previous methods and maps. We recommend mapping roughly every five years, but it depends on the update frequency of underlying data, budget, and scale. Cities experiencing rapid growth or shrinkage should consider mapping their urban forests more frequently.

## **Examine temporal change**

Archiving previous versions of maps for comparison is important. In addition to creating new maps, comparisons between new and pre-existing maps can highlight changes in forest extent or quality over time.

## **Access the Other Roadmaps**

- [Management Planning](#)
- [Assessing and Monitoring](#)
- [Ordinances, Laws, and Policies](#)
- [Community Engagement and Stewardship](#)
- [Trails and Public Access](#)