

Urban Natural Areas

Tim Shuck

Regional Parks and Urban Habitat



Schmitz Park, Seattle, WA
This image shows how diverse a native ecosystem is. Every part of the forest is utilized, from nurse logs to the thick layer of duff on the forest floor. This natural area is one of two public areas that retain old growth forest within the city of Seattle. Parts of this park are very sensitive to human influence. Visitors are instructed to stay on path so as not to negatively impact the different ecosystems just of the trail.
http://static.flickr.com/32/42794642_8a40926baa.jpg

Urban Natural Areas serve as essential parks and open spaces in any city. These areas are not only important for humans, but for many other species as well. In many cases urban natural areas are more important for the flora and fauna of a given area, as their species are restricted to these small patches. Natural areas are unlike typical parks in that they harken to a pre-developed state. These areas are maintained by removing invasive species and are shaped to provide maximum habitat for plants and animals. Many urban natural areas serve as educational tools, teaching visitors how they can help be stewards of these important public assets.

Natural Areas can be found in varying stages of maturity in many cities. Some examples were gifted early in a cities' history and contain a very mature ecosystem. In some cases tracts of land are given to cities or institutions with designations of being converted into natural areas. These areas are less mature and need to be managed closely to ensure that the site is remediated and establishes at an appropriate rate to allow for succession. Wikipedia defines ecological succession as, a fundamental concept in ecology, is the process by which a natural community moves from a simpler level of organisation to a more complex community. Succession is a natural process that occurs after some form or disturbance which simplifies the system. Succession is essential to all natural areas because they lead to greater complexity.

“The time will come when New York will be built up...converted into...rows of monotonous straight streets, and piles of erect, angular buildings. There will be no suggestion left of its present varied surface, with the single exception of the few acres contained in the Park. Then the priceless value of the present picturesque outlines of the ground will be more distinctly perceived, and its adaptability for its purpose more fully recognized.”
Frederick Law Olmstead, 1858

"In many parts of the country, these small urban refuges have been shown to harbor surprising populations of rare species and communities and have responded well to initial efforts to restore them."

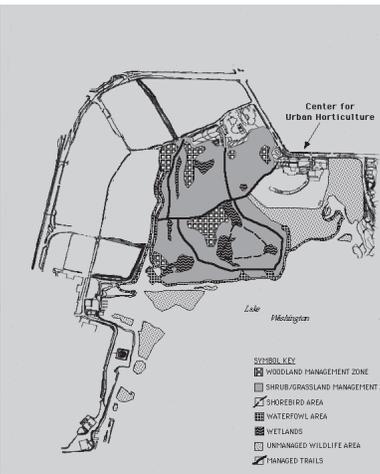
Context

Urban natural areas are most effective when they are linked by some form of corridor. A corridor is "a linear habitat, embedded in a dissimilar matrix, that connects two or more larger blocks of habitat and that is proposed for conservation on the grounds that it will enhance or maintain the viability of specific wildlife populations in the habitat blocks." In an urban context finding viable corridors is difficult. They are essential for many terrestrial species as they are often required for hunting, migration, safety and breeding. The importance of corridors is related to some degree on the size and importance of the natural area itself. This is because it will serve its function only for the species present, in the given natural area.

All urban habitat areas are classified as patches. Large patches (natural areas) are the most beneficial. They are able to function as near complete ecosystems and rely less on corridors and linkages. They are home to a greater diversity of plants and animals and represent many different habitat types, from a savanna to a marsh. Small patches are good, but they need to be close to other small areas to collectively support a lot of biodiversity. An isolated patch is not as useful because it traps all the plants and animals within its borders. There is no gene sharing going on so the species are likely to become inbred and lose genetic diversity.



Above: Two pheasants found in Union Bay Natural Area. **Below:** Deciduous forest restoration project...3 yrs. old.



Map of the different habitat zones found in the Union Bay Natural Area. <http://depts.washington.edu/ubna/UBNA%20management%20map.gif>

Case: Union Bay Natural Area, Seattle

The Union Bay Natural Area is located on the West side of Lake Washington and is managed by the University of Washington's Center for Urban Horticulture. The site is 55 acres. This Natural Area is relatively young as it was a landfill until 1966. In 1972, a management plan was initiated that outlined the goals for the newly formed natural area.

- o maintain educational, recreational, research, wildlife, and aesthetic values
- o provide limited shoreline access
- o allow subsidence and plant establishment
- o provide ecological demonstration area
- o retain ponds/wetlands
- o convert E5 parking lot to natural habitat
- o ecologically improve site
- o allow minimal building construction

This site is the best bird watching area in the Seattle Area, boasting over 180 species of migratory and resident birds each year.

The site is managed by the University of Washington so it uses the area as an outdoor classroom for teaching and testing effects of restoration on the site. There are a number of ongoing experiments from the development of wetlands to the effectiveness of spreading mulch over planting areas. The Union Bay Natural Area is important because it allows students and professors alike the opportunity to discover the best way for managing restoration sites.

Essential Elements

Connectivity

Linkages to other urban natural areas...provide corridors for movement and assist in maintaining the health of natural communities including diversity and genetic health.

Regeneration

The extent of natural regeneration of canopy trees is indicative of a healthy, self-sustaining urban natural area.

Disturbance

Physical disturbance within habitats significantly reduces native biodiversity, the quality of ecological functions and ecological integrity within natural habitats. The physical condition of the area is a good indicator of overall natural quality and significance.

Size & Shape

The area of the urban natural area often affects the diversity and value of the ecological functions that the urban natural area can support. The shape of the urban natural area is also considered in this factor, as shape determines the extent of wooded edge relative to potential interior habitat.

Habitat Maturity

Although optimal conditions include a good distribution and mixture of habitats at various ages, more mature habitats are generally less common, less disturbed and contain a greater number of more valuable functions.

Natural Communities

A greater number of natural community types should result in more diverse and ecologically-important natural heritage functions.

Representative Flora

Species of higher coefficient of conservation and a lower tolerance to disturbances are generally good indicators of areas with less disturbance, greater biodiversity and more ecological functions.

Significant Flora & Fauna

Such species are rare in occurrence and/or ecologically important species are generally found in less disturbed urban natural areas or those areas with greater rehabilitation potential.

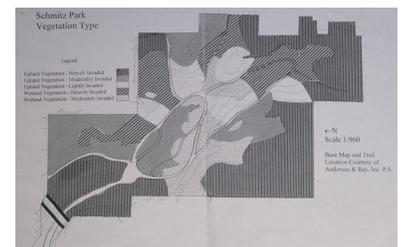
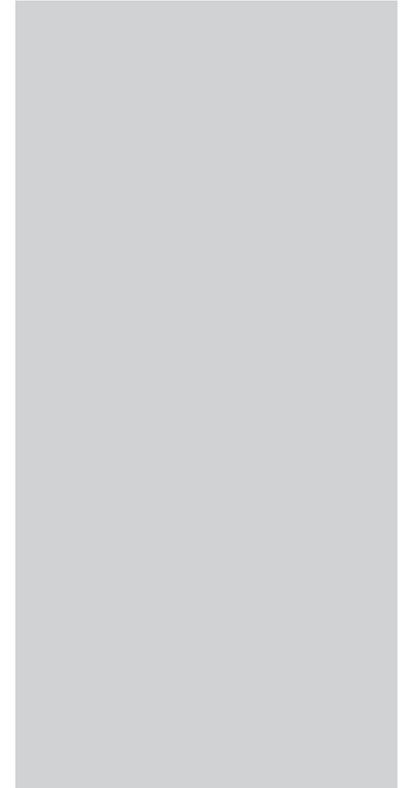
Wildlife Habitat

This factor considers high quality habitat and exceptional faunal characteristics such as interior habitat and seasonal wildlife concentrations. Interior habitat is less disturbed and supports disturbance-intolerant ecological features and assets, including rare species.

Case: Schmitz Park

Schmitz Park represents one of two sections of old growth forests in the city of Seattle, the other being Sewerd Park. The park was given to the city by Ferdinand Schmitz, an early pioneer of Seattle. He thought that it was essential to preserve a remnant of the "cathedral" of forests when everyone else was fulfilling the Oregon Donation Land Claim Act which instructed to "cultivate and occupy the land."

Today the natural area is still 50.4 acres and is home to many old growth trees. The site is interacted with a lot by visitors each day as gravel paths wind around the park. Visitors are encouraged to stay on the paths to protect the fragile ecosystem around them. Several rare species of bird can be found on the site as well as a small list of mammals.



Above: Vegetation map of Schmitz Park. **Below:** A large Maple found in Schmitz Park. Epiphytic ferns are growing through the moss.





Above: Natural stream flowing Fresh Kills site. **Below:** Aerial photo of plan for Fresh Kills restoration and park project.



Aquisition / Implementation Mechanisms

Site Selection

Find/ acquire land to be designated as the natural area.

Assess current conditions

Complete tests to determine extent of remediation necessary to bring site to a healthy state.

List Goals

Decide how the site will function. How many species? How much interior habitat will you have? Do you want to establish any corridors nearby?

Feasibility Study

Examine similar sized areas to see if your goals are appropriate for your site. If necessary have tests performed to see if your goals will work. Such as a soil percolation test.

Design natural area

Begin to work on designing the site. Take time to consider how to design for natural succession to take place over time, connections between habitat types and how humans will influence the site.

Implement & monitor with low intensity management

Begin initial succession and development of the natural area. While plants are establishing be active in preventing weeds to overtake your plants.

Case: Fresh Kills, New York



Above: Vignette of bike path through restoration site.

Below: Vignette of canoers accessing Fresh Kills through coastal wetland.



Fresh Kills on Staten Island, New York is a 2,200 acre site. It is similar to the Union Bay Natural Area in that it is a retired landfill, only much larger. Some 45% of the site was used as a landfill, leaving the majority of the site as wetlands, open waterways and unfilled lowland areas. Although the site is largely unnatural because it is so large it has developed its own ecology. Succession has been playing an important role for years as trees begin to establish in this unnatural setting. Forty-five species of birds have been documented on the site, even before restoration. The site will be very important for many more birds as it is along the Fresh Kills estuary, directly under the Atlantic Flyway, the main route for migrating bird species from North to South.

The site is being designed to create a large public open space that will be renowned not just for its huge size, but as a massive restoration site. It will integrate natural systems with everyday human uses. It will boast, one of the largest urban sustainable open spaces in the world and will act as an additional Central Park for the city, and Staten Island. Many studies have been completed showing the importance of restoration of the site for its habitat qualities.

Pattern:

Today urban natural areas are essential to all cities specifically Seattle. Preserving and managing our existing natural areas is important to preserve the diversity of wildlife that we have in the city. Failing to do so will result in the migration of many species to less populated areas. Natural areas operate the best when they are connected to each other through corridors. This allows species to migrate and travel with out having to cross lanes of traffic or fly over buildings.

Aquiring sites like brownfields or other large vacant tracts would be useful in creating an open space natural area system throughout the city. Designating these sites as future natural areas will be much better than allowing the sites to continure leeching toxins into waterways and neighboring sites. This should be done as frequently as possible. Several small patches is almost as good as one very large natural area.



Above: Schmitz Park
Below: Sunset with birds taking off at Fresh Kills.



Resources

Web Related Resources:

- <http://www.tk421.net/essays/park.html>
- <http://www.ofnc.ca/conservation/UNAs/UNA-evaluation-criteria.html>
- <http://www.heinzctr.org/ECOSYSTEMS/urban/patches.shtml>
- <http://www.environment.research.umich.edu/downloads/grese.pdf>
- <http://depts.washington.edu/ubna/>
- <http://www.washington.edu/research/field/union.html>
- http://www.washington.edu/alumni/columns/march02/place_unionbay.html
- <http://research.amnh.org/users/nyneve/EarthcareEssay.html>
- <http://www.ci.seattle.wa.us/parks/parkspaces/Schmitz.htm>
- <http://www.ci.seattle.wa.us/parks/history/SchmitzPreservePk.pdf>
- <http://www.schmitzpark.org/>
- http://www.nyc.gov/html/dcp/html/fkl/ada/about/1_0.html
- http://www.nyswaterfronts.com/downloads/pdfs/sig_hab/nyc/Fresh_Kills.pdf
- http://www.nylcv.org/Programs/WPC/blueprint/boroughs/staten_island/pages/5_fresh_kills/
- http://www.nyc.gov/html/dcp/html/fkl/fkl_index.shtml
- <http://www.worldchanging.com/archives/000525.html>
- http://en.wikipedia.org/wiki/Fresh_Kills_Landfill



Geese, feeding at the Union Bay Natural Area.