Executive Summary

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The City of Poughkeepsie is a small urban area of about 30,000 people located approximately 75 miles north of New York City. It is located mid-way between New York City and Albany and is one of two cities in Dutchess County. The Hudson River borders the City on the west, and the Town of Poughkeepsie borders its remaining sides. In recent years the availability and proximity to natural resources has contributed to the revitalization of Poughkeepsie. Most notably, the scenic beauty of the Hudson River, including the opening of the Walkway Over the Hudson State Park, has increased the visibility of Poughkeepsie as a tourist destination.

Urban and suburban areas worldwide have gained recognition as important contributors to landscape-level conservation efforts. While often regarded as lacking in ecological value, research has shown that small patches of habitat in backyards, tree-lined streets, and in open spaces found in parks are important for many species and perform significant ecosystem services (Bolund & Hunhammar, 1999; Aronson, et al., 2014; Langellotto, et al., 2018). Ecosystem services are the benefits that nature provides for people, and are often divided into categories based on type of service provided (Table 1) (Bolund & Hunhammar, 1999; WWF, 2016; Costanza, et al., 1997). A Natural Resources Inventory (NRI) for the City of Poughkeepsie is a first step at documenting the areas in the City of Poughkeepsie that provide these important ecosystem services and will help us to understand how to become better stewards of our land, air, and water.

Table 1 Ecosystem Services (WWF, 2016)

Ecosystem Services	Examples
Cultural	Recreation and ecotourism, mental and physical health, aesthetic values, spiritual and religious values
Supporting	Nutrient cycling, photosynthesis, soil formation
Regulating	Air quality regulation, climate regulation, water purification and waste treatment, disease and pest regulation
Provisioning	Food, raw materials, medicinal resources, fresh water

What is in the NRI

The Environmental Cooperative at the Vassar Barns completed the Poughkeepsie Natural Resources Inventory over three years, between 2016 and 2019. We worked closely with Vassar College students, faculty, and staff to create maps and write the narrative contained in this report. Throughout the process, the Environmental Cooperative engaged local stakeholders through community meetings and presentations to the City of Poughkeepsie Common Council, Shade Tree Commission, Historic District and Landmark Preservation Commission, and the Waterfront Advisory Council. Hudsonia a local environmental education and research non-profit, completed the habitat map and report titled *Significant Habitats in the City of Poughkeepsie* in 2018, which we have summarized in Chapter 4 of this report, Biological Communities and Habitats. Funding for the NRI and the Significant Habitat Assessment and report was provided in part by a grant from the New York State Environmental Protection Fund through the Hudson River Estuary Program of the New York State Department of Environmental Conservation.

Natural Resources Inventory Web Map

To facilitate a holistic understanding of natural resources in the City, Vassar student Rebecca O'Dell created a web-map version of the NRI available at https://arcg.is/KWXOG (O'Dell & Cunningham, 2019).

This web-based tool allows a user to find a specific parcel within the City and see all the layers of the NRI for that specific site.

There are seven broad categories in the final Natural Resources Inventory: Geology, Water Resources, Biological Communities and Habitats, Land Use, Recreational Resources, Historical Resources, and Climate Change. In reality, however, these resources are strongly linked, influence one another, and are hard to separate. We have organized this document so the reader can investigate them within stand-alone chapters; however, the reader can gain a more complete assessment of the City by reading the entire document and understanding that each chapter is part of a whole. In total, there are 26 maps in the NRI each highlighting the natural, historic and cultural resources of the City of Poughkeepsie.

Over the years various local organizations have conducted studies about the Natural Resources of Poughkeepsie. We have included some of the past reports in the Appendix of this document, as well as new reports that were created in tandem with this project. We have attempted to reference and provide links to prior work within relevant chapters; however, this is not a complete compilation of all existing information about natural resources in the City of Poughkeepsie. New reports produced for this inventory, and included in full in the Appendix, are:

Appendix A: *Significant Habitats in the City of Poughkeepsie* (Heffernan & Stevens, 2018)

Appendix B: Emerald Ash Borer Management Recommendations for the City of Poughkeepsie (Futterman & Rubbo, 2017)

Appendix C: College Hill Park Invasive Species Survey (Manring, Blass, Curri, & Rubbo, 2018)

Appendix D: Poughkeepsie Scenic Resources Inventory (Land Use, Environmental Planning and Urban Design Workshop, Cornell University, 2018)

Using the NRI

An NRI facilitates a proactive approach to land-use planning. It helps to identify areas that are ecologically important in order to inform development and revitalization in the City. It provides the basis for making decisions in a larger context and assists with issues and goals such as climate resilience, walkable communities, park management, and the equitable distribution of resources across the municipality (Haeckel & Heady, 2014). City officials can use the NRI to revise and update the natural resources section of the City's comprehensive plan, which is the blueprint for future growth and land use in the City. Comprehensive planning offers an important opportunity to recognize, conserve and protect a municipality's natural areas. Planners may use the NRI as a starting point for site development review. Its broad landscape view of natural resources is helpful when paired with site-specific information provided in parcel development (Haeckel & Heady, 2014). NRIs also provide the basis for open space inventories and planning, which prioritize areas for conservation or recreation based on many factors including scenic beauty, historical significance, habitat value, and ecosystem services (Haeckel & Heady, 2014). The NRI can help to encourage intermunicipal coordination of natural resource management with neighboring municipalities. For example, as interest grows in the Fall Kill as a community resource, the NRI will assist Poughkeepsie and adjacent communities in updating the Fall Kill watershed management plan.

To be effective an NRI should be actively used. The City Common Council can formally adopt the NRI by local law to assure its use. Adoption of the NRI would formally integrate it into municipal decision-making (see Appendix G of Haeckel and Heady, 2014 for an example of a Model Local Law to Adopt the NRI). For more information about the uses of an NRI in municipal government and public outreach please see Chapter 6 of "Creating a Natural Resource Inventory: A Guide for Communities in the Hudson River Estuary Watershed" (Haeckel and Heady, 2014).

Perhaps the most impactful action the City of Poughkeepsie can take in regard to natural resources is the development of a Conservation Advisory Council (CAC). A CAC could oversee future environmental, conservation and sustainability initiatives and help to engage residents in the community. A CAC would be responsible for updating of the NRI as well as facilitating future conservation projects.

Natural Areas in Poughkeepsie

As we compiled the maps and narrative for this report, certain areas of the City emerged as "hot spots" of natural and cultural resources. We have briefly described these areas below along with the ecosystem services they provide. Further descriptions of their importance are found in the later chapters of this report. The Poughkeepsie community should not assume that areas left out of this summary are less important. All natural, historic, and cultural areas, regardless of size, have intrinsic value and serve to maintain connections between residents, local history, and the natural environment

Hudson River

The Hudson River is the largest contiguous habitat in the City of Poughkeepsie as well as an important generator of tourism and economic development. With a history of industrial pollution, efforts continue in the cleanup of this important natural resource. The Hudson is home to several threatened and endangered species and is the drinking water source for the City. As an estuary the hydrology of the Hudson is greatly affected by tides. In light of projections for sea level rise and increased flooding, planners should carefully consider development and use of the Hudson River shoreline.

View of the Mid-Hudson Bridge from Waryas Park, Poughkeepsie.
Photo credit: Sarah Salem

Ecosystem Services- Hudson River

Beautification, Habitat, Water Source, History, Recreation, Climate Resilience.

Fall Kill

The last 2.5 miles of this 38-mile creek flows through the City of Poughkeepsie before entering the Hudson River just under the Walkway Over the Hudson. Due to Poughkeepsie's location at the mouth of the Fall Kill, the City's section of the creek receives inputs from the entire 19.5 square mile watershed, influencing the amount of water entering the stream and the water quality. In the City, impervious surfaces, littering, and combined sewer overflows contribute negatively to this stream's water quality and aesthetic value. Local organizations and officials are realizing the potential of this important natural resource to the revitalization of the City. Local non-profits, residents, and City officials are recognizing that stewardship of the stream for habitat, water quality, flood mitigation and a connection to nature in the highly developed Northside neighborhood is increasingly important.

The Fall Kill at Malcolm X Park during a spring creek clean up.
Photo credit: Karl Rabe

Ecosystem Services – Fall Kill

Beautification, Habitat, Flood Control, History, Recreation, Climate resilience

Vassar Farm and Ecological Preserve

Bridging the Town and the City of Poughkeepsie, nearly half of the Vassar Farm and Ecological Preserve is located in the City of Poughkeepsie and is the second largest contiguous natural area within city limits. In addition to providing a variety of habitat types, the Preserve also offers community gardens and hiking trails for public use.

Farm road at the Vassar Farm and Ecological Preserve.
Photo credit: Jen Rubbo

Ecosystem Services – Vassar Farm and Ecological Preserve

Habitat, Flood Control, Water Quality, History, Recreation, Climate Resilience.

Springside (and adjacent privately owned parcels to the south)

Springside is a National Historic Landmark and offers carriage roads and interpretive trails free of charge allowing visitors to experience nature and history together. Alone, Springside offers open space and recreational opportunities. If we combine the adjacent parcels further south that are privately owned and currently undeveloped with the Springside property, the ecosystem services and value of these open spaces increases dramatically.

The Porter's Cottage/Gatehouse at Springside in the City of Poughkeepsie.

Ecosystem Services - Springside

Beautification, Habitat, History, Recreation, Climate Resilience

College Hill Park

College Hill Park is the largest City-owned park as well as the highest point in the City of Poughkeepsie. The park is one of the largest natural areas in the City. It offers residents impressive views of the surrounding landscape, walking trails, a playground, and a basketball court. Additionally, it is a local historic landmark; home to the Guilford Dudley Memorial Shelter and the Clarence Lown Memorial Rock Garden. It is also the site of the City's water storage.

The pollinator garden at the Clarence Lown Memorial Garden at College Hill Park.
Photo credit: Camelia Manring

Ecosystem Services – College Hill Park

Beautification, Habitat, History, Recreation, and Climate Resilience

Urban Trees

As a Tree City USA for over 40 years, the City of Poughkeepsie has a proud history of tree-lined streets. In recent years, invasive species and pests such as the Emerald Ash Borer have affected trees in the City. In 2018, the City of Poughkeepsie received a grant for a tree inventory, which will facilitate planting and maintenance in the future. Trees can be one of the most cost-effective ways to improve communities: they cool the air, slow runoff, reduce flooding, and beautify neighborhoods. In addition to street trees, trees in backyards, church properties, school yards, and other private areas are equally important and both City officials and residents should consider public education about the maintenance and management of trees

Little Market Street, one of the many tree-lined streets in the City of Poughkeepsie.
Photo credit: Camelia Manring

Ecosystem Services – Urban Trees

Beautification, Habitat, Flood Control, Water Quality, History, Recreation, Climate Resilience

City Department of Public Works and Parcel south

The City Department of Public Works (DPW) is home to one of the only segments of the Fall Kill within City boundaries that is not channelized by stone walls. Located on the DPW site is a portion of an important riparian wetland area that continues north (outside of the City boundary). Just south of the DPW site is a parcel that is undeveloped and contains stream-side forests and wetlands within the floodplain. Due to the lack of channelization, this area floods readily without harming buildings or roads. It is an important flood mitigation area as it is the only segment of the creek in the City of Poughkeepsie where flooding can naturally occur.

Volunteers sampling the Fall Kill near the City of Poughkeepsie DPW during the 2018 AquaBlitz.
Photo credit: Jen Rubbo

Ecosystem Services – City Department of Public Works

Flood control, Water Quality, Habitat, Climate Resilience

Opportunities and Future Projects

Several opportunities for future research and gaps in data were identified in the process of developing this inventory.

Addressing sustainability, climate resilience and adaptation, and environmental stewardship as part of the planning and revitalization of Poughkeepsie will help to increase the quality of life of residents. Residents and City officials should use the information in this NRI alongside site-level assessments, on-the-ground reconnaissance, and local information and knowledge to support responsible decision-making. As with most mapping projects, the data used to create the maps in this report changes quickly. These maps and supporting materials provide a baseline to facilitate future inventories and assessments and identify subjects that merit closer study. To be most effective in the long term, the NRI should be actively used and routinely updated. It is our hope that this document can be guidance for sustainable and conservation-minded development and revitalization of the City of Poughkeepsie.

Additional projects and initiatives that the City might want to pursue include, but are not limited to:

1. Mapping the sewersheds of the MS4 stormdrains in the City of Poughkeepsie.
2. More consistent and frequent water quality monitoring of the Fall Kill and Morgan Lake.
3. Updating the Fall Kill Management Plan.
4. Creating an inventory of and mapping flood occurrences based on records from the City Fire Department on basement pump-outs after large storm events.
5. Inventorying Green Infrastructure sites and identifying and prioritizing future potential sites
6. Surveying invasive plants in parks and along the Fall Kill and creating management plans for the control of these species.
7. Inventorying and managing empty lots that could serve as habitat (even temporarily through the planting of pollinator friendly plants).
8. Using tools such as iTree to determine the value and importance of the City's Urban Forest.

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