Green Corridors Plan

for the

Eastern Highlands of New York

February 2022

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Photo: J. Milne, Lighthawk

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Project Consultants

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**The opinions, results, findings and/or interpretations of data contained herein are the responsibility of HHLT and do not necessarily represent the opinions, interpretations or policy of New York State.*

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Executive Summary

This **Green Corridors Plan** (the "Plan") was created to address the need for wildlife and people to move across New York's Eastern Highlands landscape. Ensuring connectivity---or movement paths---is one of the best ways to support the health of the wildlife, ecosystems, and people of the New York Highlands.

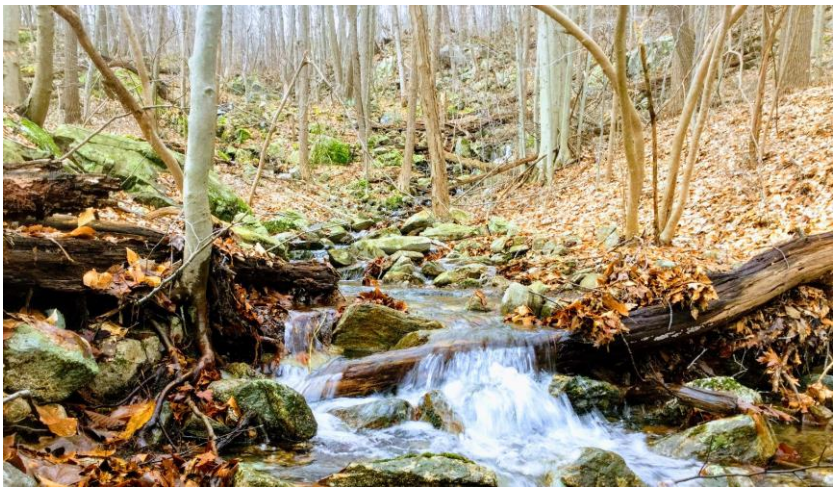
Wildlife can't wait. We learned in 2019 that animal populations are declining faster than ever. According to the United Nations, "One million animal and plant species are now threatened with extinction—many within decades."[1] More than three billion birds have been lost since 1970. Insects like butterflies—which are the core of our ecosystem—are declining even faster than birds. Conservation is part of the solution, but we need to first identify what lands to conserve, and in what ways.

People move, too. A connected, walkable community with green corridors in the form of linear parks and linkages between other conserved areas can benefit both wildlife and people. Helping people move on the land can help us reach climate change mitigation goals and keep us healthy.

This **Green Corridors Plan** includes:

- Scientific analysis of the areas that are most important for wildlife movement
- Input from communities and experts who reside in, use, and/or know the area well
- Input from organizations that work in, and recognize the importance of, this region
- Prioritized green corridors and recommendations to conserve them using a variety of tools
- A tailored list of financial resources so the Plan's vision can be realized

This Plan is both a resource and a starting place. The ecological landscape is constantly changing, as are the economic and political landscapes. We can only be fully successful in protecting green corridors if the full community---municipal officials, nonprofit organizations, state agencies, residents, recreational users, and volunteers---apply their energy to the tools available to them. Many of those tools and resources are summarized in this Plan.



[1]Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES secretariat, Bonn, Germany. 1148 pages. https://doi.org/10.5281/zenodo.3831673

Introduction

What are Green Corridors? "Green Corridors" are the lands and waters that wildlife---and people---need in order to move and thrive across the landscape. Wildlife require connected habitats to seek food, refuge, and mates, but roads and development that sever natural areas can threaten wildlife's ability to move safely. The effects of unconstrained development, coupled with those of climate change, increase the urgent need for wildlife and ecosystems to shift and move across the landscape.

What is the Green Corridors Plan? The Green Corridors Plan is an intermunicipal plan for protecting the most important lands and waters for current and future connections across New York's Eastern Highlands landscape. It identifies "green corridors," or links of natural lands like forests, marshes, and meadows between existing conserved lands in the Eastern Highlands region. The Plan prioritizes green corridors for protection based on natural resource maps, land use, and scientific data on at-risk species and habitats, as well as input from user groups, elected officials, and residents.

What is the vision of the Green Corridors Plan? This Plan was developed as a resource for decision-makers, landowners, residents, visitors, the New York Highlands Network (NYHN), and its member organizations. The NYHN is a collaborative of conservation groups that is coordinated by the Hudson Highlands Land Trust, Inc. (HHLT). It supports the vital work of protecting wildlife and aiding in human movement across the landscape by facilitating the conservation of "green spaces," or undeveloped lands and waters.

How was this Plan created? This Plan was created using a multi-step process. By combining existing conservation plans from municipalities and conservation organizations, and soliciting insight from wildlife experts, important areas for wildlife connectivity were identified across this landscape. The draft was then reviewed digitally and on the ground by wildlife experts from the New York Natural Heritage Program. Simultaneously, feedback from the Philipstown and Putnam Valley communities was collected via publicly-accessible town-wide workshops, a public survey, and small group meetings. Input collected during the meetings was digitized and incorporated into the Plan's priority areas.

The Green Corridors plan also includes ***wildlife priorities.*** The wildlife priorities were created by combining datasets from the New York Natural Heritage Program Important Areas for known populations of animals of conservation concern and the lands and waters or "Important Areas" needed to support their continued presence. To help envision the full ecosystem's needs in terms of connectivity, a variety of habitats and movement paths were selected to safeguard. The model included Important Areas for nine local species, including a top avian predator (bald eagle), a sensitive amphibian (spotted salamander), and an aquatic species that connects our streams to the ocean (American eel).

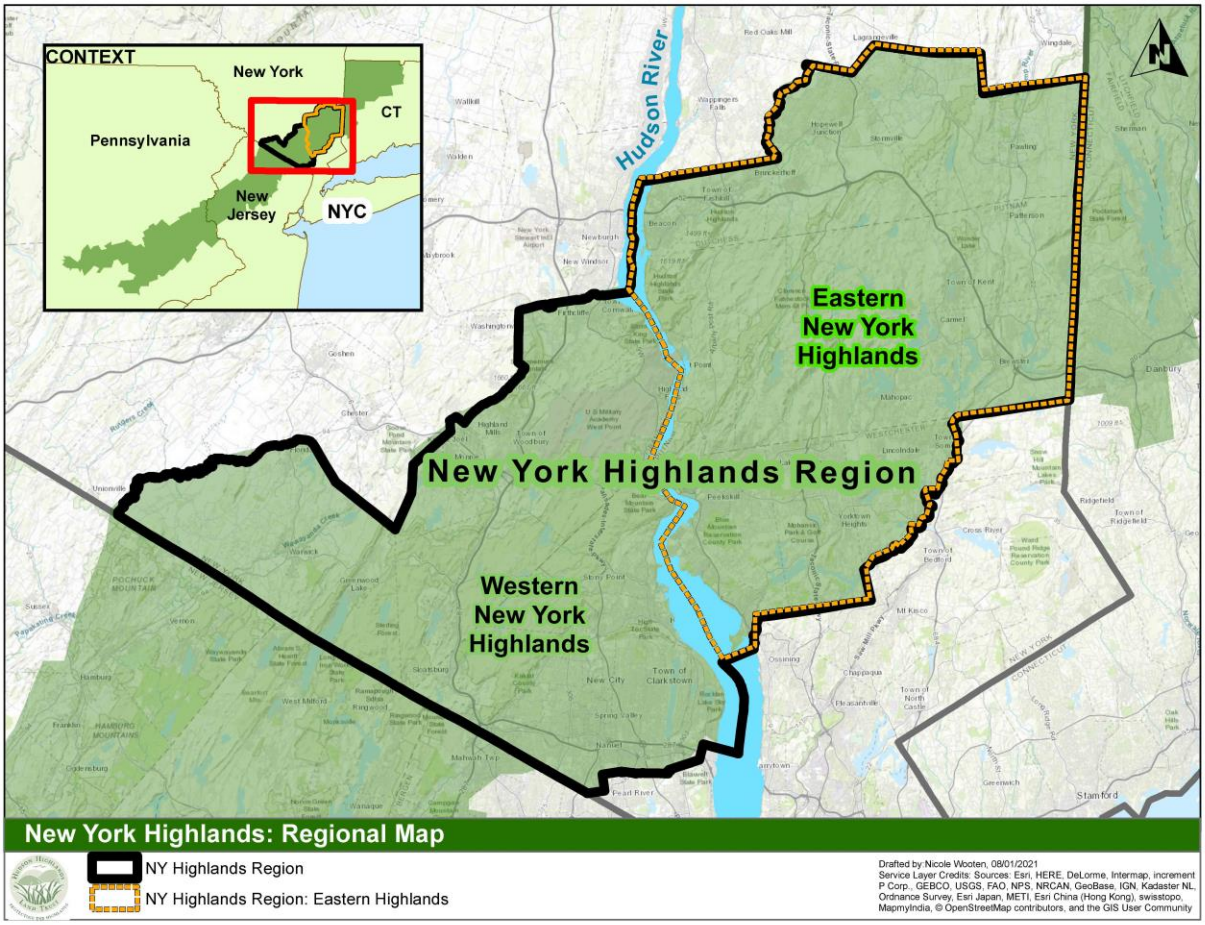
What data was used to create the Green Corridors Plan priorities? In addition to the stakeholder data gathered in Philipstown and Putnam Valley, existing partner priorities were used as a foundation for the Green Corridors ***stakeholder priorities***. The stakeholder data and some of the partner data were weighted toward the pilot area of Philipstown and Putnam Valley. They included datasets like:

- Municipal priorities, such as Open Space Index priorities and Comprehensive Plan priorities;
- Studies of lands that are important to preserving water quality; and
- Existing conservation organization's priorities, like the Hudson to Housatonic (H2H)'s highest priority conservation areas, the Northern Appalachian Trail Landscape Partnership's top priority areas, and The Nature Conservancy's resilient and connected climate corridors data and resilient biodiversity data.

NY's Eastern Highlands: Scope

The geographic scope of this Green Corridors Plan is the **Eastern Highlands region of New York.** In New York, the Highlands Region is part of the Appalachian Mountain range. It stretches across the Hudson River, and is part of the traditional lands of the Delaware Tribe, Delaware Nation, (the latter both also known as the Lenape Tribe or Lenape Nation) Stockbridge-Munsee Mohican Nation, and Ramapough Lenape Nation. The Eastern Highlands region of New York lies to the east of the Hudson River and includes all of Putnam County, as well as portions of Dutchess and Westchester Counties.

A similar plan, the Highlands West Trail Connectivity Plan, covers the western portion of the New York Highlands region. The Highlands West Trail Connectivity Plan, which was created by Open Space Institute, Orange County Land Trust, and the New York - New Jersey Trail Conference, can be found here: openspaceinstitute.org/research/highlandswestplan.



Due to limited resources, the stakeholder engagement portion of this Plan was focused on a subset of the Eastern Highlands region, specifically the Towns of Philipstown and Putnam Valley. Recommended next steps with this project include expanding stakeholder input to the full Eastern Highlands region, as well as comparing the methodologies of the Eastern Highlands Green Corridors Plan and the Highlands West Trails Connectivity Plan, which put a larger focus on recreational connectivity. Comparing Eastern Highlands and Highlands West plan methodologies could uncover new priorities for both areas.

The eastern and western Highlands regions of New York are part of the larger, four-state "Highlands Region."

The Highlands Region was defined by the federal Highlands Conservation Act of 2004. The region includes the majority of the forested Appalachian Mountains corridor that runs through four states:

- Pennsylvania
- New Jersey
- New York
- Connecticut

As stated in the Highlands Conservation Act, the Highlands region's waters, forests, agricultural areas, wildlife, recreational opportunities, and cultural resources are of national significance.

Above: *Four-state Highlands Region*

For more information on the importance of the New York Highlands Region, including the New York Highlands Network, please visit hhlt.org/programs/new-york-highlands-network.

For more information on the Highlands Conservation Act, please visit: fws.gov/northeast/highlands-conservation-act/grant-process.html.


Above: New York Highlands Region. Photo courtesy of Lighthawk, JAC, 2014.

Connectivity Science Review

General Introduction

As part of the "Green Corridors Project," drafts of wildlife connectivity priority areas were created along with associated maps. The goal of conducting this draft prioritization was to know which lands and waters are most vital for wildlife movement across the landscape. To identify the draft priority areas, the locations and habitats of nine focal wildlife species were analyzed. The species were selected to represent an array of habitat needs and movement ranges within the New York Highlands region.

The nine focal species were selected based on input from wildlife experts at agencies, municipalities, and organizations within the New York Highlands Network. To find the lands and waters that are most important for those species, data was analyzed, including (1) known populations of the species within the New York Highlands region and (2) known or estimated important habitat areas that those wildlife may reside in or access. For more information, please see **Appendix C: Maps and Data Analysis**.

Review of Draft Wildlife Connectivity Priorities

The New York Natural Heritage Program (NYNHP) reviewed the draft wildlife connectivity priority areas to determine how they compared with previous studies and current conditions. The NYNHP also conducted a field evaluation of the relative conservation value of draft priority areas and produced a corresponding report of the results, the highlights of which are summarized here**.** A synopsis of each section of the report follows.

Data Review, Collection, and Assessment

Prioritizing lands and waters for its connectivity or other conservation value is a multilayered process. In the case of the Green Corridors project, the NYNHP review process involved three parts:

1) **Review of methodology and draft priorities**. This was a multifaceted review of the data analysis used to generate the draft wildlife connectivity priority areas. The value of isolated areas was considered in the context of the eastern New York Highlands landscape.

2) **Remote assessment of individual parcels independent of landscape context**. This step included virtual analysis of entire parcels from aerial imagery.

3) **Local assessment of individual parcels**. This was the "ground-truthing" portion of the process, which entailed rapid assessment of local habitat value (including forest structure, important habitat features, and human impacts) and landscape context (including surrounding development).

Part I: Review of Methodology and Draft Priorities

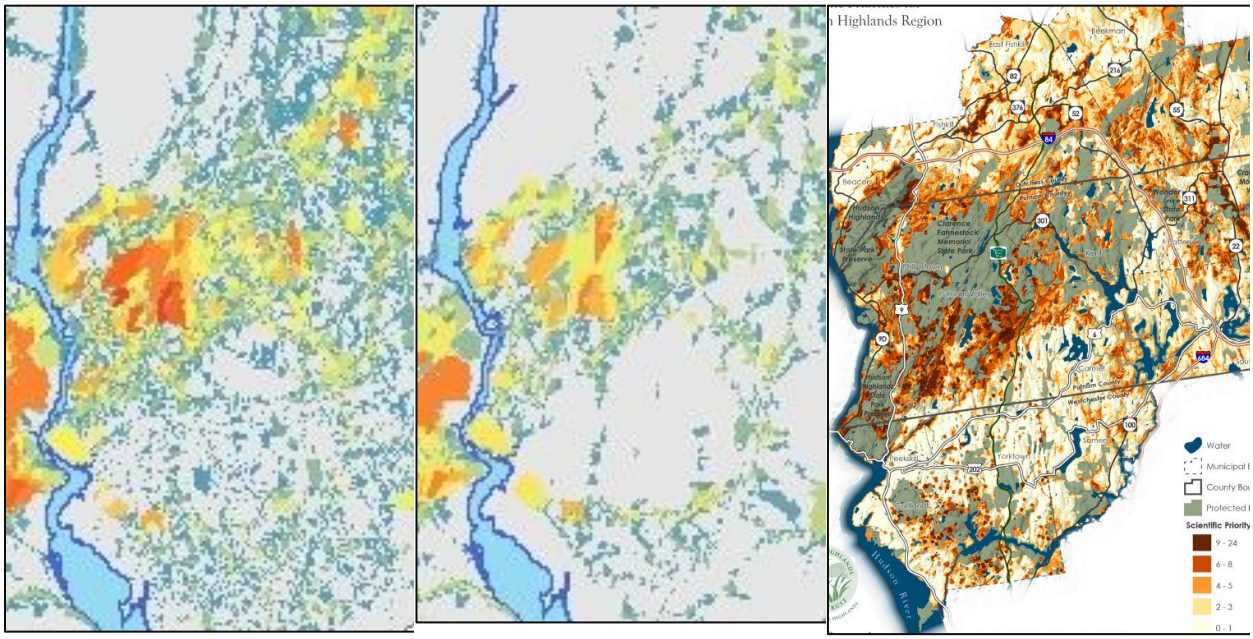
The review of the draft wildlife connectivity prioritization involved two main actions:

1) A review of the methodology used to create the draft wildlife connectivity prioritization, including suggestions for (and when possible, comparison to) additional data layers, focal species, the weighting system, the grouping into tiers, and other considerations; and

2) A review of the areas from the draft wildlife connectivity prioritization that were rated as highest priority to confirm their connectivity value using aerial photography and landcover data.

Part I: Results

The draft wildlife connectivity priority areas were compared to modeling compiled in *PATHWAYS: Wildlife Habitat Connectivity in the Changing Climate of the Hudson Valley* (see figures below). Overall, comparison of the two map sets found no areas (i.e. wildlife corridors) highlighted in the PATHWAYS project that were "missed" by the Green Corridors draft prioritization.



Above: Part I: Figures from the PATHWAYS project (left and middle; Howard and Schlesinger 2011) compared with the draft priority areas from the Green Corridors project (right). In PATHWAYS, the number of species for which a parcel was deemed important as a habitat patch or path was determined for 2012 (left; with lower rankings in gray to blue-green and higher rankings in orange and red) and for three time periods with consideration for climate change projections (middle).

Part II: Remote Priority Parcels Review

The draft priority areas were reviewed using aerial images, the 2016 National Land Cover Database, and NYNHP's Landscape Condition Assessment (LCA; nynhp.org/modeled-data/#LCA). The LCA depicts the presumed impacts from a suite of anthropogenic stressors across the landscape of the state, including declining impacts with increasing distance from stressors.

Tax parcel boundaries were applied to the draft priority areas, and parcels were visually analyzed to assess their conservation value and tier ranking. Within each Tier, parcels were given three rankings:

- Relatively unfragmented
- Somewhat fragmented
- Relatively fragmented

These rankings were applied based on the relative percentage of the parcel that was unsuitable for wildlife habitat and/or wildlife movement areas due to the relative amount of development and fragmentation or other land use. Parcels in the draft priority areas that ranked as "highest priority" were reviewed with stricter suitability requirements than parcels that ranked as "high priority."

Part II: Results

NYNHP found the Green Corridors draft prioritization to be well designed and useful for guiding conservation action. Optional improvements to weighting schemes and choice of inputs were described for future consideration, with recognition that agreement on methodology by conservation partners is critical. The conclusion noted that the methodology used to create the Green Corridors draft wildlife connectivity priority areas is reasonable and appears to produce results in line with earlier assessments with similar goals.

Part III: Ground-truthing

NYNHP then ground-truthed the conservation value of draft wildlife connectivity priority areas using rapid field assessments. NYNHP's goal was to visit every highest-ranked priority area possible to evaluate if the draft prioritization assessment successfully ranked the most valuable parcels (for wildlife connectivity use) as the highest priorities. Tax parcel boundaries were applied to the draft priority areas, and parcels were grouped by their overall priority categorization. Not all highest-priority areas were accessible due to a lack of nearby public roads or trails. NYNHP staff also visited lower priority areas, where time and access permitted, to compare with the most highly ranked areas.

Chosen areas were most frequently assessed from the road due to lack of access from private ownership. Areas, as grouped by tax parcels, were reviewed and assessed by NYNHP staff using a tablet with a form containing a set of attributes. At each review point, the observer took a GPS point and picture(s), and evaluated the parcel using seven attribute categories:

1. Habitat type
2. Habitat features
3. Surrounding landscape use
4. Terrestrial connectivity barriers
5. Aquatic connectivity barriers
6. Invasive species (incl. relative percentage)
7. Visible pollution

Part III: Results

NYNHP found that the majority of the areas they accessed appeared to be classified correctly. However, some highest-ranked areas appeared more impacted by humans, relatively, than expected, while some lower-ranked areas seemed to be in better relative ecological condition than anticipated. This may be influenced by compounding factors, like greater accessibility to the edges rather than cores of each area.

Conclusion

NYNHP suggested that these factors may be considered alongside the NYHN's long-term goals of land conservation, with an understanding that even relatively impacted lands can be restored over time, and that wildlife may return to previously impacted areas. In conclusion, the remote and in-field reviews did not confirm or reject the draft prioritization, but rather built upon it with local data.

Stakeholder Engagement in Philipstown and Putnam Valley

Introduction

Gathering input from those who live, work, and play in the Eastern Highlands area---that is, conducting **stakeholder engagement**---helped us tailor the Plan to existing community needs, as well as to incorporate local knowledge that may not be reflected in existing scientific data. As a pilot project for a holistic stakeholder assessment, the engagement portion of this Plan was limited to a subset of the Eastern Highlands region: the Towns of Philipstown and Putnam Valley. Next steps might include expanding stakeholder engagement to the full Eastern Highlands region, as well as comparing the methods of the Eastern Highlands Green Corridors Plan and the Highlands West Trails Connectivity Plan, to ensure more interested stakeholders' perspectives, ideas, and values are captured in the Green Corridors project across the NY Highlands. Additionally, further outreach could be conducted to under-represented community members to create more holistic results.

Purpose and Methods

To collect stakeholder input on conservation priorities for this Plan from the Philipstown and Putnam Valley communities, HHLT planned a series of workshops and surveys with support from consultant Karen Strong of Strong Outcomes, LLC. As a result of the Covid-19 pandemic, it wasn't safe for people to gather in groups for in-person mapping workshops during the term of the project, thus the approach was modified and the workshops were conducted online via Zoom. Two types of workshops were conducted: community information workshops and online mapping workshops.

Community informational workshops were held in each town to introduce people to the Green Corridors project and invite them to take the survey. The online **community conservation surveys** gathered information about what kinds of natural resources are most important to people who live, work, and/or play in Philipstown and Putnam Valley, and asked respondents to prioritize several potential connections for people and wildlife. Lastly, individual community leaders/members were invited to one of three **online mapping workshops** to gather additional data about potential connections, adding to the scientific priority data gathered in the first phase of mapping. In all, 46 stakeholders participated in the introductory workshops and 26 in the mapping workshops.

Conceptual Results: Why People Support Conserving Green Corridors

The survey revealed that many kinds of natural resources are important to the people of Philipstown and Putnam Valley. The resources that consistently came up as a top priority were drinking water, wildlife habitat, forests, streams, and connected conserved lands for wildlife and trails. These results indicate that protecting land that meets multiple conservation objectives is likely to be highly supported by the public.

> **Drinking Water**: Drinking water was consistently rated the highest priority in both towns, with more than 80% of the respondents saying it was essential to expand or improve its protection, and more than 75% saying that it was important that additional land conserved should protect water quality. And when asked to choose among resources, respondents had a clear preference for drinking water.
>
> **Wildlife Habitat**: Survey respondents also strongly supported land conservation to protect wildlife habitat. It was consistently the second highest ranked priority resource, with more than 70% in both towns saying it was essential to expand or improve protection of habitat. A large

majority said that wildlife was an important consideration when protecting new lands, with more than 75% of the respondents from each town saying that any additional land conserved should safeguard wildlife habitat connections between existing conserved lands. Half of Putnam Valley respondents and 71% of Philipstown respondents said that newly protected land should also help plants and animals adapt to a changing climate. Protection of forests and streams was also highly rated.

Although conserving new open spaces for hiking and walking were a lower priority than water and wildlife (59% Philipstown, 50% Putnam Valley), about 65% said it was important that any additional land conserved should include trail linkages between existing open space areas (66% Philipstown, 64% Putnam Valley). In Philipstown, many residents noted a specific desires for trail linkages among particular sites (such as the train stations, Boscobel, schools, and the library), the need for safe pedestrian passage, and the desire to reduce reliance on motorized vehicles for transportation.

For input gathered from the online mapping workshops, as well as full results of the community informational workshops and community conservation surveys, see Appendix B: Stakeholder Input Report. An example table below with responses to Survey Question 4 ("How important is it to you that any additional land conserved in Putnam Valley include the following? Choose up to five.") demonstrates that water quality, wildlife habitat linkages, ecosystem adaption to a changing climate, and trial linkages are high on the minds of participants in both Philipstown and Putnam Valley.

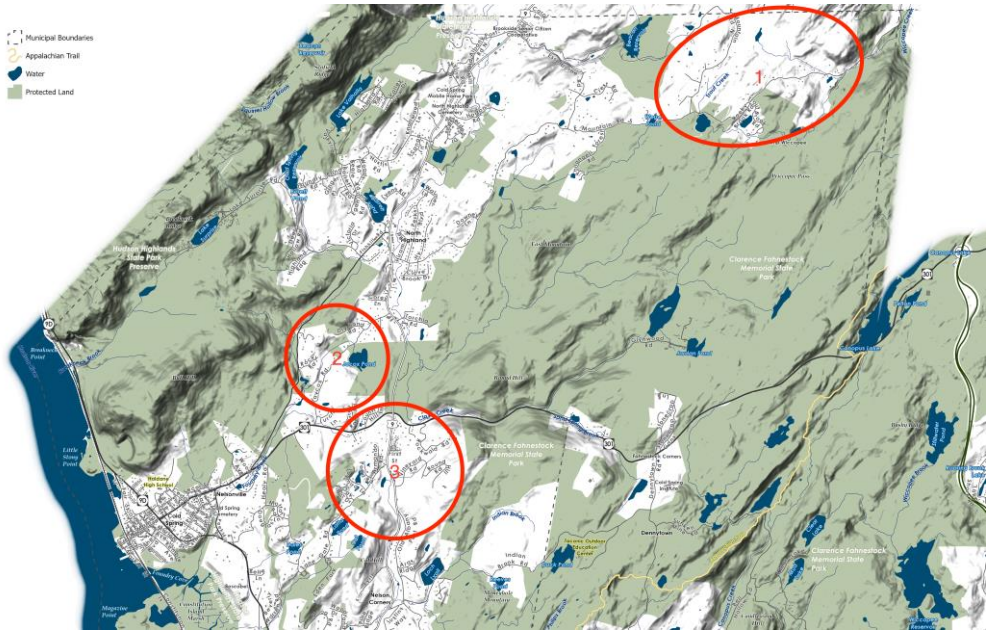
Survey Question 4: "How important is it to you that any additional land conserved in Putnam Valley/Philipstown include the following? Choose up to five."

Philipstown		**Putnam Valley**	
New land conserved in town…	**% respondents**	**New land conserved in town…**	**% respondents**
Protects water quality	81%	Protects water quality	77%
Connects wildlife habitats between existing conserved lands	78%	Connects wildlife habitats between existing conserved lands	77%
Help plants and animals adapt to a changing climate	71%	Link trails between existing open space areas	65%
Link trails between existing open space areas	66%	Help plants and animals adapt to a changing climate	50%

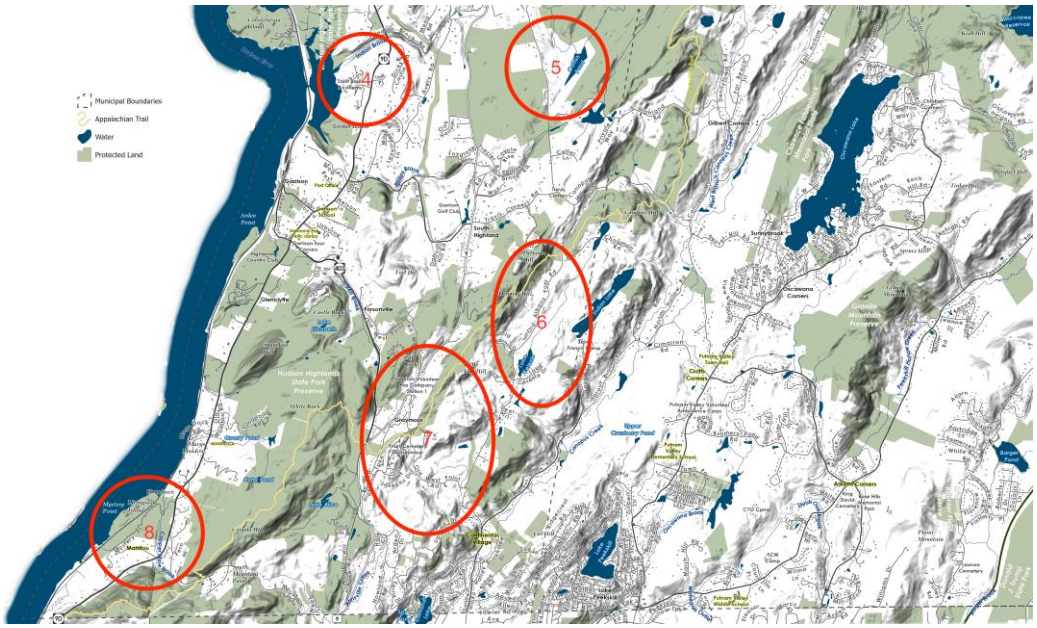
Geographic Results: Prioritizing Potential Philipstown Green Corridor Linkages

The Philipstown survey asked respondents to prioritize areas of linkages for people and wildlife in their towns using maps that showed conserved lands and potential connections, with each potential linkage assigned an identifier from 1 to 8 on the map. In addition to the eight mapped linkages, respondents suggested three additional unmapped linkages. Overall, people in Philipstown prioritized trail connections between areas of interest, with 79% selecting connections in/between the Village of Cold Spring and Garrison.

Potential Linkage	% Response
Area 9 - Cold Spring Village to Boscobel/Cold Spring Farmers Market (not depicted on map)	42%
Area 10 - Cold Spring Train Station to Garrison Train Station (not depicted on map)	37%
Area 4 - Saint Basil's Academy and surrounding area (Map 2)	32%
Area 3 - Intersection of Route 9 and Route 301 (Map 1)	31%
Area 2 - Jaycox Pond and surrounding area (Map 1)	28%
Area 1 - Northeastern portion of Philipstown (Map 1)	22%
Area 5 - Catfish Pond and surrounding area (Map 2)	18%
Area 8 - Mystery Point and surrounding area (Map 2)	18%
Area 11 - Garrison School to Desmond-Fish Public Library (not depicted on map) (Map 2)	18%
Area 6 - Indian Lake / Lake Celeste and surrounding area along Old Albany Post Road (Map 2)	17%
Area 7 - Graymoor and surrounding area (Map 2)	13%



Map 1: Potential Linkages of Northern Philipstown, as included in Survey



Map 2: Potential Linkages of Southern Philipstown, as included in Survey

Fewer than half of the people that took the survey shared why they chose those linkages (70/162). Those who did cited many reasons, including scenery, practicality, as well as connecting wildlife habitats. About half of the responses mentioned safeguarding existing trails on private lands or creating new connections for people. The most cited reason was to provide safe alternative transportation options to driving. Several specifically mentioned reducing car use; others appreciated opportunities to walk between natural areas and between a variety of destinations.

For example: *"My idea is that this would allow people to walk to the post office and library and train station instead of driving to do errands or commute and then driving to a hiking area the two could be*

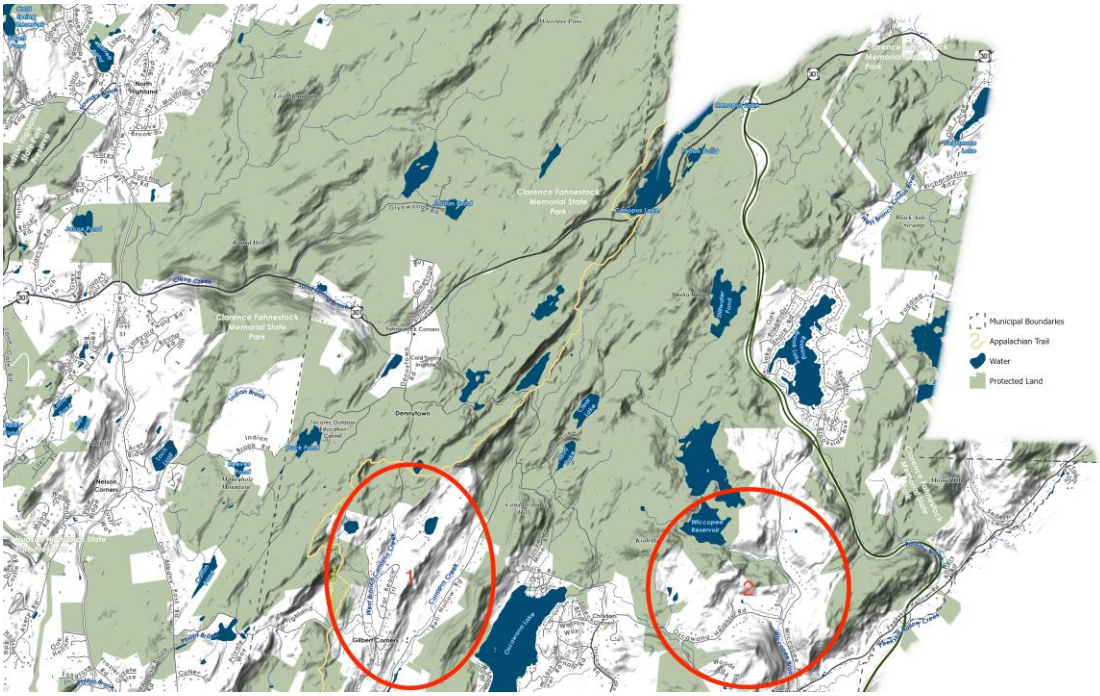
combined. Less use of cars and a more natural way of moving through the land could help create connections with wildlife."

Wildlife habitat was the second most frequently cited reason to prioritize connections. That may be surprising because respondents rated wildlife habitat more highly than trail connections earlier in the survey. It is possible respondents answered this way because they know more about human connections than wildlife corridors, which is captured in this survey comment: *"I do not know enough about needed wildlife corridors to answer well."*

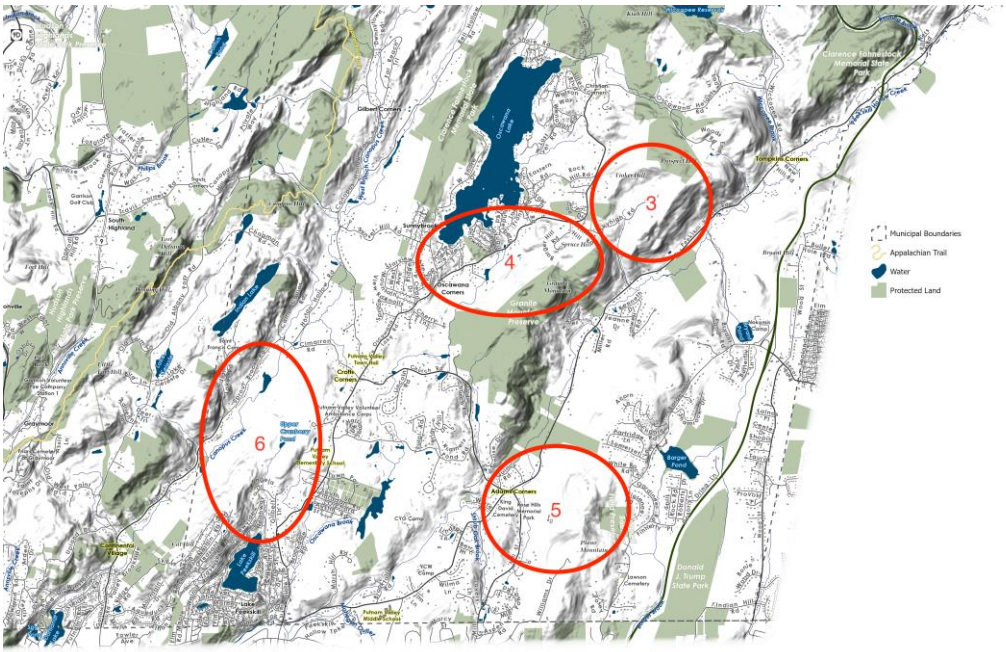
Geographic Results: Prioritizing Potential Putnam Valley Green Corridor Linkages

People who took the Putnam Valley survey were asked to prioritize the protection of six potential connections. A majority chose the Eastern Putnam Valley Ridgeline, just northeast of Granite Mountain Preserve, a nature preserve that is owned and managed by HHLT.

Potential Linkage	% Response
Area 3 - Eastern Putnam Valley Ridgeline / Peekskill Hollow Road Corridor to Tinker Hill (area to the northeast of Granite Mountain Preserve) (Map 4)	65%
Area 2 - Area around Wiccopee Reservoir (Map 3)	38%
Area 1 - Gilbert Corners / Area between Appalachian Trail and Canopus Creek/Oscawana Lake (Map 3)	36%
Area 4 - Oscawana Corners to Spruce Hill (area to the west of Granite Mountain Preserve) (Map 4)	35%
Area 5 - Adams Corners to Piano Mountain (Map 4)	29%
Area 6 - Canopus Creek Corridor / Area around Upper Cranberry Pond (Map 4)	26%
Other (please specify)	17%



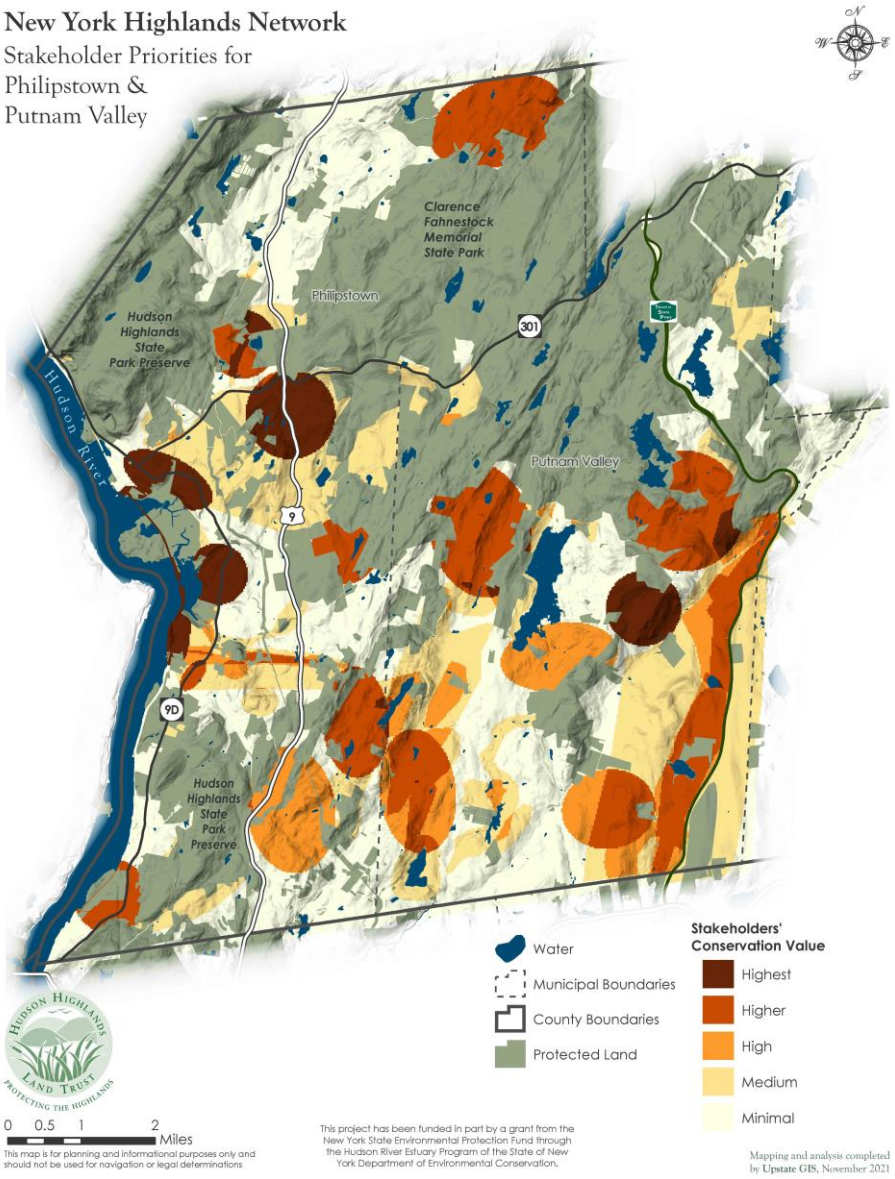
Map 3: Potential Linkages of Northern Putnam Valley, as included in Survey



Map 4: Potential Linkages of Southern Putnam Valley, as included in Survey

Fewer than half of the people who took the Putnam Valley survey shared why they chose certain linkages (34/82). Half of the comments prioritized these connections because of the benefits to wildlife and only a few mentioned the potential of trail connections. For example: *"These areas now have great integrity of forest and wildlife; it should not be lost,"* and *"They connect large areas with large areas, thus minimizing edge effects on the habitats."* The relative lack of prioritization of trail connections may be due, in part, to Putnam Valley having less of a Town center and more of a dispersed population.

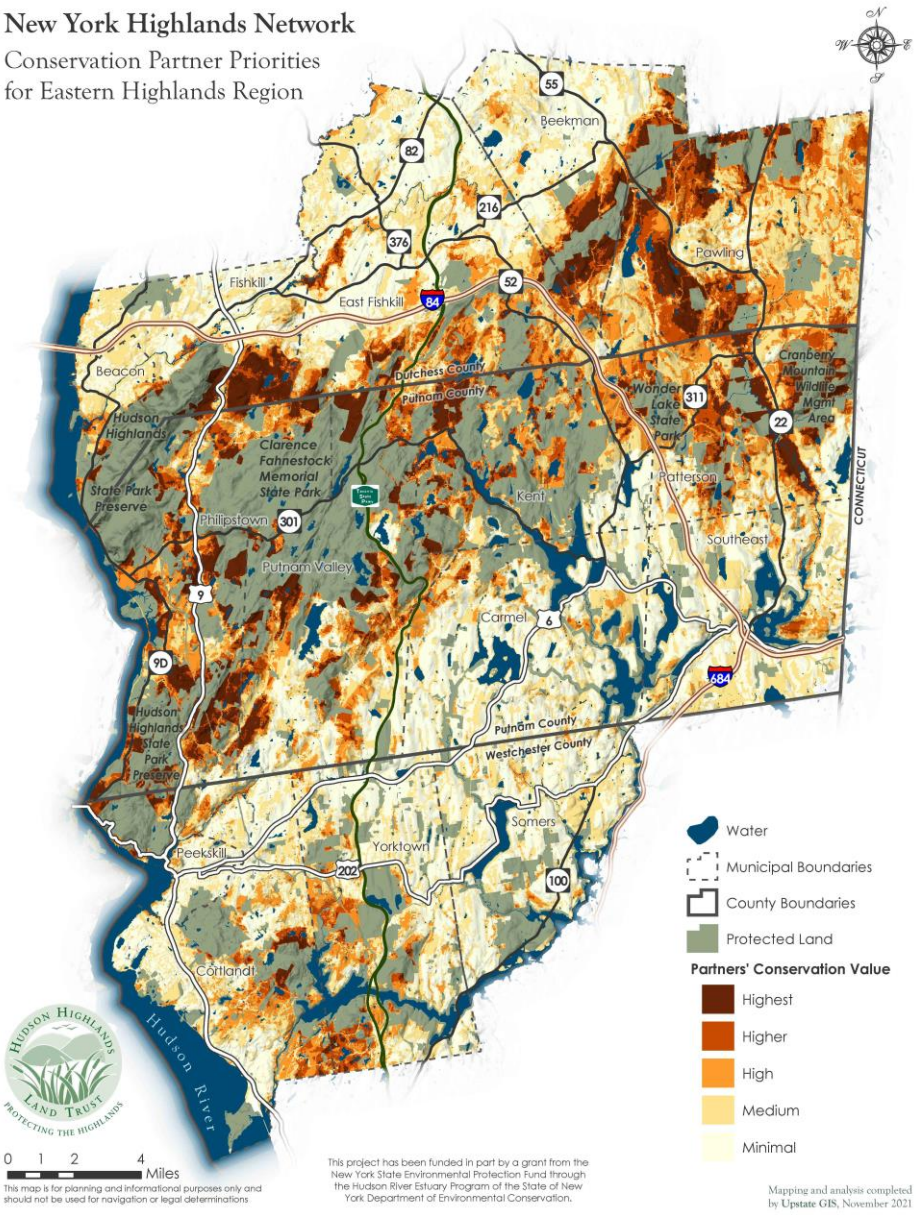
Results: Stakeholder Engagement Priority Areas



The Stakeholder Engagement Priorities Map covers the Towns of Philipstown and Putnam Valley. This represents just a fraction of the Eastern Highlands region. Future iterations of the Green Corridors Plan would benefit from input solicited from the full region. The data displayed on the map represents the data from the community conservation surveys and the online mapping workshops, weighted in a manner so that all input was included.

The highest priorities include multiple linkages among, and buffers to, existing protected areas. There are also some highly-ranked areas that are current or proposed walking and biking routes.

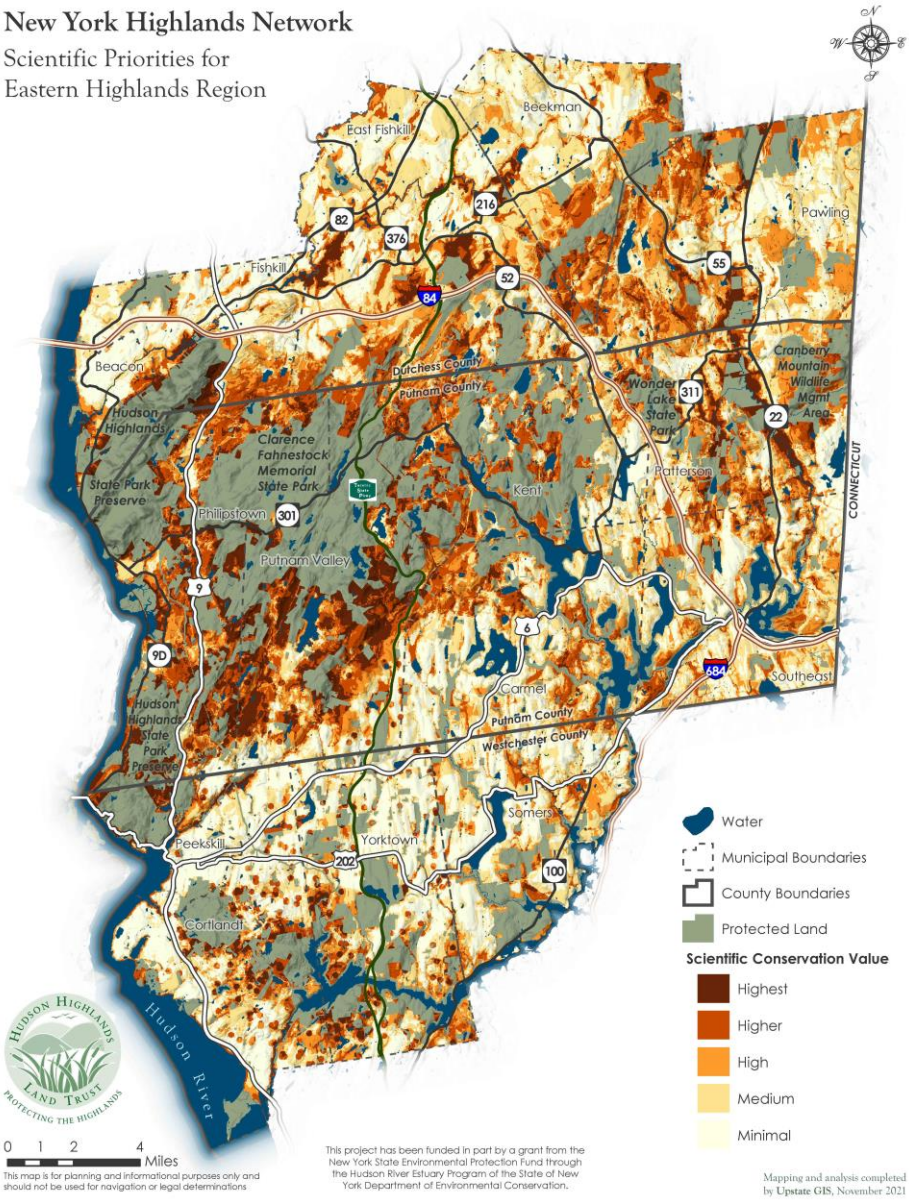
Results: Conservation Partner Priority Areas



The Conservation Partners Priority Areas map was created by combining existing conservation plans from Eastern Highlands municipalities and partners within the New York Highlands Network. These included datasets like open space inventory priority areas, comprehensive plan priority areas for conservation, studies of lands that are important for preserving water quality, and existing prioritization systems used by land conservation groups like The Nature Conservancy's resilient and connected climate corridor data as well as resilient biodiversity data.

As seen in the map above, conservation partner priorities tend to group around existing protected areas, like state-owned parklands and the Appalachian Trail corridor, where wildlife as well as people move across the landscape. They are also grouped around important water resources, like the Great Swamp and the New Croton Reservoir.

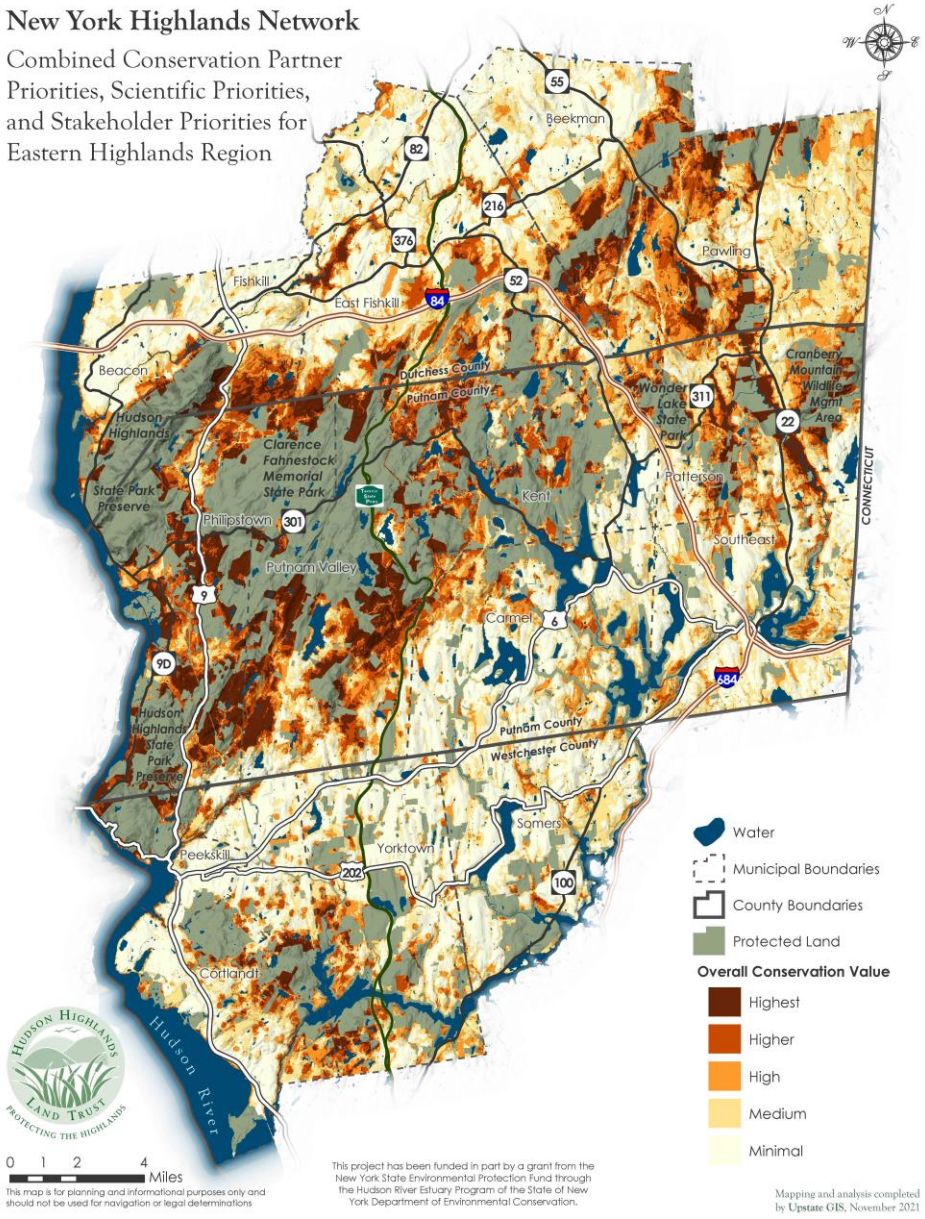
Results: Wildlife Connectivity Science Priority Areas



The Wildlife Connectivity Science Priority Areas (or "Scientific Priorities") map was created by identifying important areas for nine focal wildlife species that move across the landscape at different scales and to different habitats. The nine species included a top avian predator (bald eagle), a sensitive amphibian (spotted salamander), and an aquatic species that connects our streams to the ocean (American eel). Data layers corresponding to those wildlife species and habitats were combined to highlight the most important lands and waters for movement.

As seen in the map above, scientific priorities are concentrated around existing protected areas and important water resources, with some distinct areas where important species or habitats exist.

Results: Combined Priority Areas



The Combined Priority Areas map was created by combining the Conservation Partner Priorities, Scientific Priorities, and Stakeholder Priorities. The data weighting process recognized that each aspect—the expertise of conservation partners, wildlife connectivity science, and the concerns of stakeholders—are vital for protecting green corridors. It also recognized that more work, like collecting stakeholder engagement data in the western, northern, and southern Highlands regions, remains to be done. For details on the data weighting process, see Appendix C: Maps and Data Analysis.

The results reflect the component pieces. The highest-ranked areas are near large existing protected areas, including where people move across the landscape, and near important water resources.

Tools for Protecting Green Corridors

Introduction

There are many opportunities to restore, protect, or learn more about priority connections identified in the Green Corridors Plan. Direct land conservation, education, outreach, municipal policies, and municipal planning are all helpful tools. Different stakeholders—residents, educators, landowners, visitors, municipalities, counties, and conservation organizations—can all play a role. More details on the tools and opportunities are discussed below.

Conservation Easements and Conserved Lands Purchases

Conservation-minded landowners who wish to protect their land can use various tools to direct the type, amount, and location of future development. These tools are private and voluntary, and they provide an avenue for more permanent land protection than is possible using current governmental regulations. If you are interested in learning more, staff at land conservation organizations such as HHLT, Scenic Hudson Land Trust, Putnam County Land Trust, Dutchess Land Conservancy, Orange County Land Trust, Open Space Institute, and the Trust for Public Land may be able to discuss these options further in depth.

One tool for conservation-minded private landowners is a voluntary "**conservation easement"**. A conservation easement is a legal agreement recorded at the County Clerk's office that permanently limits uses of the land in order to protect its conservation values. A conservation easement is between:

- the landowner (also called grantor or donor) who commits to restricting the uses on the land in order to preserve the property's conservation values; and
- the conservation organization or public agency (also called grantee), which has the right and obligation to monitor the property and enforce the terms of the agreement.

Each conservation easement is voluntary and tailored to meet the needs of the landowner while protecting the property's conservation values. Conservation easements are intended to preserve:

- open space, where such preservation is for the scenic enjoyment of the general public or pursuant to clearly delineated governmental policy;
- relatively natural habitat of fish, wildlife, or plants;
- historically important land/certified historic structures; or
- land for outdoor recreation by, or for the education of, the general public.

Conservation easements provide a benefit to the public by conserving open lands, forests, wildlife habitat, scenic vistas, farmland, stream banks, and other significant natural resources. Because of this public benefit, landowners who donate conservation agreements may be eligible for significant federal and state tax incentives. In addition, under special circumstances land trusts or other agencies may be willing to purchase conservation easements from landowners who have eligible property but are not in a position to donate the development potential of their land.

Land trusts are responsible for monitoring conserved properties they hold to ensure compliance with easements. If a violation is discovered, they often work with the landowner to remedy the situation and can take legal action to correct the violation, if necessary. In order to ensure they have the financial capability to monitor and enforce easements, a land trust often requests an endowment to be held in a restricted fund.

Land donations and bargain sales of property are also tools for conservation in certain cases. These may also bring tax benefits to property owners. Consultation with tax experts is advised.

Land donation: In some cases, landowners wish to donate their property in its entirety to a land trust. If the land has significant conservation values, the land is highly appreciated, or the landowner has substantial real estate holdings that may result in high capital gains or estate tax burdens, a donation of land to a land trust may be an attractive alternative. The donation of any interest in land to a qualified charitable organization may provide substantial income, property, or estate tax benefits, as well as avoidance of taxation on capital gains. Because federal regulations may limit a taxpayer's ability to fully utilize a deduction, a property owner should seek professional legal and tax advice when considering this conservation option. Forms of donation can include fee simple (or "entire property") donations, reserve life estates, last will and testament, and tradelands. For more information on these options, contact a land trust.

Bargain sale: If the landowner is willing to sell the land for less than its market value (a "bargain sale") to a land trust, then the landowner may claim a federal tax deduction and state tax credit for the difference between the sale price and the appraised value. Like any other sale of property, sales proceeds may be subject to capital gains taxes.

Once the land trust owns the land, either through a donation or bargain sale fee transaction, it may manage it as a preserve or park, conserve the property and sell it to a conservation buyer (which can be a government agency like New York State Office of Parks, Recreation and Historic Preservation), or subdivide and conserve the new parcels and sell them to adjacent land owners.

A local land trust can be a helpful resource in weighing the various conservation options. Land trusts actively working in the Eastern Highlands region include:

- Dutchess Land Conservancy: dutchessland.org
- Hudson Highlands Land Trust: hhlt.org
- Open Space Institute: openspaceinstitute.org
- Putnam County Land Trust: pclt.net
- Scenic Hudson: scenichudson.org
- Trust for Public Land: tpl.org
- Westchester Land Trust: westchesterlandtrust.org

To learn more, visit the Land Trust Alliance: https://www.landtrustalliance.org/what-you-can-do/conserve-your-land/questions.

Education and Outreach

A variety of programs exist to raise awareness about, and contribute to the understanding and protection of, important green corridors in our landscape. The following list includes just some of the many programs that many Eastern Highlands communities may consider exploring:

- Pollinator Pathways Northeast: An initiative to encourage the creation of native plant corridors that support the health and movement of pollinators like butterflies, birds, and bees.
- Amphibian Migrations and Road Crossings Project: A program of the NYS Department of Environmental Conservation (DEC) Hudson River Estuary Program that enlists volunteers to find

locations where migrations cross roads; document weather and traffic conditions; record migrating amphibians; and help them across the road.

- Community Choice Aggregations, specifically Hudson Valley Community Power: Energy consumption has a major impact on the environment, including through fragmentation of landscapes via development of energy infrastructure. Community Choice Aggregations are programs that give groups of residents and small businesses more influence on electricity supply and sourcing.
- Aquatic Connectivity and Barrier Removal: The DEC Hudson River Estuary Program and many partners are working towards restoring free flowing tributaries to the Hudson River through projects including the Culvert Assessment Program. To review the current status of culverts in Philipstown and Putnam Valley, see Appendix D: Road-Stream Crossings in Philipstown and Putnam Valley.
- Climate Smart Communities (CSC): A New York State program that helps local governments take action to reduce greenhouse gas emissions and adapt to a changing climate. Implementation of climate smart land use actions, including conserving natural areas through zoning or acquisition, are included in the CSC Certification process. The program offers free technical assistance and grants.
- Water Assessment by Volunteer Evaluators (WAVE): A community-based water quality assessment developed by DEC. The purpose of WAVE is to enable citizen scientists to collect biological data for assessment of water quality on wadeable streams in New York State.

Individuals can also contribute to scientific research by getting involved in the community science projects listed below, as well as additional national community science initiatives that are listed on the Community Greenways Collaborative website.

- iNaturalist and Seek: Mobile apps for identifying and recording flora and fauna sightings.
- eBird: Mobile app for recording bird sightings.
- Audubon Winter (Christmas) and Breeding Bird Counts
- Great Backyard Bird Count
- Hummingbirds at Home
- Monitoring and Managing Ash
- Globe at Night
- North American Butterfly Count

Municipal Planning and Policies

Municipal planning and policies are important tools for protecting green corridors that can create long and lasting impacts. By inventorying natural areas, identifying priorities, and developing conservation strategies, local land-use plans and policies can help a community protect its valuable natural assets. In addition, local land-use decisions and conservation efforts can support *regional* conservation priorities, including landscape connectivity. While municipalities are divided by political boundaries, natural systems cross over large regions irrespective of private property or town lines. By sharing a collective vision like the Green Corridors Plan, communities in the Eastern Hudson Highlands can all contribute to the protection and restoration of important lands and waters and wildlife habitat connectivity.

Some of the key conservation and land-use planning tools and strategies available to municipalities include:

- **Comprehensive Plans**: Comprehensive plans establish a community's vision for the future and outline a roadmap for achieving that future by guiding land-use patterns and development. If your municipality's comprehensive plan does not already consider natural areas and wildlife, a future plan update can provide the opportunity to incorporate conservation principles and recommendations, including those that support the goals of the Green Corridors Plan. For example, descriptions or maps of priority areas can be included along with strategies to conserve unfragmented forest and stream buffers. By considering natural resources during the comprehensive planning process, towns and villages have the opportunity to create strategies to conserve sensitive habitats while planning for future growth and development. All local zoning and land-use regulations must be in accordance with the comprehensive plan, and therefore it provides an important opportunity for pro-active conservation planning.
    - Learn more: Conserving Natural Areas and Wildlife in Your Community: Smart Growth Strategies for Protecting the Biological Diversity of New York's Hudson River Valley by DEC Hudson River Estuary Program and Cornell University (2008; chapter 8, page 49).
    - Learn more: Comprehensive Planning page from *Conservation Planning in the Hudson River Estuary Watershed* website by DEC Hudson River Estuary Program and Cornell University.
    - Learn more: Zoning and the Comprehensive Plan by NYS Department of State (2015).
- **Natural Resource Inventories**: A natural resources inventory (NRI) compiles mapes and information about naturally occurring resources within a given locality (e.g., municipality, watershed, or region). Cultural resources, such as historic, scenic, and recreational resources, are often included in an NRI, as well. The inventory has two basic purposes: 1) to provide the building blocks for comprehensive land-use and conservation planning, and 2) to allow natural resource information to be included in local planning and zoning. NRIs can provide a basis for proactive planning and policies that consider community priorities like habitat connectivity, source water protection, and trail networks.
    - Learn more: Creating a Natural Resources Inventory: A Guide for Communities in the Hudson River Estuary Watershed by DEC Hudson River Estuary Program and Cornell University (2014, Ch. 1, pg. 1).
- **Open Space Inventories and Open Space Plans**: "Open space" can be publicly or privately owned, and can include parks, recreational sites, scenery, trails, forests, wetlands, stream corridors, rare or important habitats, farms, and historic properties. A list of priority open spaces in an "open space inventory" provides a municipality with goals for acquisition and preservation, based on criteria established by the community. The "open space plan" outlines the best options and strategies for use and protection of those priorities. Land acquisition programs and other open space protection mechanisms (e.g., designation of critical environmental areas) can be used to link existing or future natural areas into a network of habitats useful for wildlife.
    - Learn more: Conserving Natural Areas and Wildlife in Your Community: Smart Growth Strategies for Protecting the Biological Diversity of New York's Hudson River Valley by DEC Hudson River Estuary Program and Cornell University (2008, Ch. 11, pg. 67).
    - Learn more: Local Open Space Planning Guide by DEC and NYS Department of State (2004).

- **Community Preservation Plans (CPP)**: CPP plans are similar to an open space plan but with additional specific requirements that prepare an eligible municipality to generate funding through a real estate transfer tax. The CPP must be adopted by the municipality and the tax must be approved by voters through a public referendum. The resulting Community Preservation Fund (CPF) can be used for local land conservation. According to the NYS Senate, "This plan shall list every project which the designated community plans to undertake pursuant to the community preservation fund. It shall include every parcel which is necessary to be acquired in the designated community in order to protect community character," including "establishment of wildlife refuges for the purpose of maintaining native animal species diversity." The CPP must also include an evaluation of land-use alternatives that can be used to achieve community preservation goals.
    - Learn more: New York State Senate, "Community Preservation Funds," General Municipal Ch. 24, Article 2.
    - Learn more: Conservation Financing page from *Conservation Planning in the Hudson River Estuary Watershed* website by DEC Hudson River Estuary Program and Cornell University.
- **Planning and Zoning Boards** can refer to comprehensive plans, NRIs, open space plans, CPPs, and the Green Corridors Plan during routine project reviews to ensure they are considering all important resources and are avoiding new development that severs habitat connections, fragments forests, or otherwise degrades habitat values. Best practices like pre-application meetings, site review checklists, and site visits can help to streamline the review process and provide opportunity to reconfigure land-use proposals as necessary to avoid and minimize impacts to important lands and waters. In addition, a municipal conservation advisory council or board can contribute to environmental reviews, update NRIs, and assist planning and zoning boards with interpreting conservation plans and priorities.
    - Learn more: Planning and Zoning Boards page from *Conservation Planning in the Hudson River Estuary Watershed* by DEC Hudson River Estuary Program and Cornell University.

Municipal Policy

The following policy options can help municipalities to implement the conservation priorities identified in the plans described above. (Adapted from *Conservation Planning in the Hudson River Estuary Watershed* website by DEC Hudson River Estuary Program and Cornell University, including the Connectivity Planning page).

Introduction to Local Conservation Policy

In New York State, local governments have broad authority for pursuing policy actions to protect their conservation priorities. The following list includes some examples of policies used by municipalities in the Hudson River Estuary watershed.

- **Critical Environmental Areas.** Municipalities may designate conservation priorities that meet certain criteria under State Environmental Quality Regulations (SEQR) as **critical environmental areas** (CEAs). For example, characteristics of CEAs may include exceptional or unique natural setting, recreational value, or ecological sensitivity. The designation serves to alert project sponsors of the community's concern for the CEA's resources, which then need to be considered and addressed during environmental review. The DEC describes the process of adopting and

implementing CEAs in Chapter 2 of The SEQR Handbook (2020) and maps of existing CEAs can be viewed on the DEC website.

- **Conservation Overlay Districts.** Overlay zoning adds new enhanced standards to the existing, underlying zoning and can allow a municipality to direct development away from environmentally sensitive areas. Like CEAs, overlay district boundaries can be drawn around natural features or resource areas of value; however, unlike CEAs, the overlay zone gives the municipality greater regulatory authority over density, use, and other factors that might impact the quality of the area. The publication Conservation Area Overlay District: A Model Local Law (Metropolitan Conservation Alliance 2002) provides a template for municipalities to customize in their efforts to protect natural areas and site future development.

- **Wetland and Watercourse Protection.** To increase protection of wetlands, streams, and floodplains, municipalities in New York can use their home rule authority to adopt their own laws. Local laws can fill in the gaps left by limitations in State and Federal protections, by having broader definitions, larger buffer areas, and more regulated activities. Options for municipalities to protect their wetlands and watercourses, including setbacks, overlay districts, zoning standards, and laws, are described in detail in Chapter 2 of NYS Department of State's *Model Local Laws to Increase Resilience* (2019). Another relevant publication is the *Planner's Guide to Wetland Buffers for Local Governments* (2008) from the Environmental Law Institute. Local wetland laws can offer protection to woodland or vernal pools, which are typically excluded from State and Federal regulations. Local policies provide opportunity to protect vulnerable water resources like intermittent streams, which flow only during the wetter times of the year.

Local Conservation Policy: Helpful Links

- Connectivity Planning: Conservation Planning in the Hudson River Estuary Watershed (DEC Hudson River Estuary Program and Cornell University 2021)
- Conservation Area Overlay District: A Model Local Law (Metropolitan Conservation Alliance 2002)
- Model Local Laws to Increase Resilience (NYS Department of State 2019), especially Part 2: Wetland and Watercourse Protection Measures
- Planner's Guide to Wetland Buffers for Local Governments (Environmental Law Institute 2008)
- Conservation Thresholds for Land Use Planners (Environmental Law Institute 2003)
- Conserving Nature in Your Community: Critical Environmental Areas (Video - Hudson River Estuary Program 2020)
- Fact Sheet on Critical Environmental Areas (Hudson River Estuary Program)
- The SEQR Handbook (NYS Department of Environmental Conservation 2020)
- Pace University's Land Use Law Center and Searchable Land-Use Database Gaining Ground

Financial Resources

Introduction

Conservation financing is needed to underwrite the projects that will ultimately protect green corridors in the NY Highlands region. To this end, this Green Corridors Plan project involved researching potential funding sources.

Research process

Several databases that provide funding opportunities/prospective funders were reviewed for any prospective funders, both private (foundations and corporations) and public (state and federal governments), with goals related to the Green Corridors project and that serve the New York Highlands region. Out of a wide-net prospect list of 800+ funders, the list was narrowed down to funders with stated giving interests similar to the Green Corridors project's goals, including natural resources, climate change mitigation, resilience, and biodiversity protection.

The list was then narrowed down to the top prospects based on the prospective funders' giving histories, demonstrated giving interests, grant eligibility requirements, the funders' capacity for making grants, and if the funder accepts unsolicited inquiries. To complete the process, top prospects were reviewed and re-ranked once more.

Funding Prospects

The final group of top prospects are summarized in **Appendix A: Conservation Finance Resources**. The prospects include the following categories of funding and funders information:

- **Federal Grant Programs**, with information on eligibility, core focus areas, award amount, and application deadlines
    - Department of the Interior (1 program)
    - Environmental Protection Agency (3 programs)
    - US Fish & Wildlife Service (4 programs)
    - US Forest Service (2 programs)
    - National Park Service (1 program)
    - US Department of Agriculture (2 programs)
    - Department of Defense (1 program)

- **State Grant Programs**
    - NYS Consolidated Funding Application: 14 grants with award amount, match requirement, deadlines, and link to more information
    - NYS Department of Environmental Conservation: 5 grants with description, eligibility, core focus area, award amount, application deadline, and link to more information

- **Foundations & Corporate Charitable Funds**
    - 33 grants with description, eligibility, core focus area, award amount, application deadline, and link to more information

Appendices

The following Appendices are included in this document:

- Appendix A: Conservation Finance Resources
- Appendix B: Stakeholder Input Report
- Appendix C: Maps and Data Analysis
- Appendix D: Road-Stream Crossings in Philipstown and Putnam Valley

Appendix A: Conservation Finance Resources
Federal, State, and Foundation Prospects

FEDERAL

Department of the Interior: Land and Water Conservation Fund (LWCF)

This federal program supports the protection of federal public lands and waters – including national parks, forests, wildlife refuges, and recreation areas – as well as voluntary conservation on private land. LWCF grants secure public access, improve recreational opportunities, and preserve ecosystem benefits for local communities. Other federal agencies such as the National Park Service, Bureau of Land Management, USFWS, and Forest Service (see below) leverage these LWCF funds and work in partnership with land trusts and other entities to identify opportunities for the acquisition of property or conservation easements.

- *Who is eligible:* Nonprofits and other entities that can partner with federal agencies
- *Core focus areas*: Habitat conservation via acquisition of property, conservation easements
- *How Much*: Use link below to access grant guidelines
- *Applications:* Multiple/annual; check this page for info
- *Grant Information*

Environmental Protection Agency (EPA): Environmental Justice & Environmental Education Grants

Environmental Justice: The Environmental Justice Small Grants Program supports and empowers communities working on solutions to local environmental and public health issues. The program is designed to help communities understand and address exposure to multiple environmental harms and risks. The Environmental Justice Small Grants program funds projects up to $75,000, depending on the availability of funds in a given year. All projects are associated with at least one qualified environmental statute.

- *Who is eligible*: Incorporated non-profit organizations, Tribal governments, Tribal organizations
- *Core focus areas*: Environmental justice
- *How Much*: Varies
- *Application:* Check this page for info

Environmental Education: The Environmental Education Program supports projects that promote environmental awareness and stewardship and help provide people with the skills to take responsible actions to protect the environment. This grant program provides financial support for projects that design, demonstrate, and/or disseminate environmental education practices, methods, or techniques.

- *Who is eligible:* U.S.-based groups only; must be a local education agency; state education or environmental agency; college or university; non-profit organization (501(c)(3) only); noncommercial educational broadcasting entity; or tribal education agency
- *Core focus areas*: environmental education practices, awareness, stewardship, skill-building
- *How Much*: Varies
- *Application:* Check this page for info

(New in 2021) Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program: The Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program seeks to improve the environment (and public health conditions) of low-income communities and communities of color through the advancement of racial equity and environmental justice. The current emphasis is on COVID-19 impacts as well as climate and disaster resiliency. This program provides support to community-based organizations in their efforts to

collaborate and partner with local stakeholder groups to develop community-driven solutions that address environmental issues for underserved communities.

- *Who is eligible:* Any local 501c3 nonprofit/educational entity
- *Core focus areas*: Environmental justice
- *How Much*: Varies
- *Application:* Annual
- *Environmental Justice Grant Information*
- *Environmental Education Grants Information*
- *Environmental Justice Collaborative Problem Solving Grant Information*

Fish & Wildlife Service (USFWS)

Highlands Conservation Act (HCA): The Highlands Conservation Act authorizes the U.S. Fish and Wildlife Service and the U.S. Forest Service to work together to help the Highland states, local governments, non-profits and private forest and farm landowners to conserve the land and natural resources of the Highlands region. The U.S. Fish and Wildlife Service works closely with states and partners to safeguard wildlife and connect people with nature. Since the passage of the Highlands Conservation Act in 2004, more than 9,000 acres of vital conservation land have been permanently protected. This funding is appropriated annually under the Land and Water Conservation Fund, and each grant is matched dollar for dollar by the recipient.

- *Who is eligible:* See above (state agencies)
- *Core focus areas*: Wildlife, forests, water, recreation, agriculture resources
- *How Much*: Varies each year re: U.S. government allocation
- *Application:* Annual
- *Grant Information*

Cooperative Endangered Species Conservation Fund (CESCF): The USFWS CESCF provides funding to states and U.S. territories for conservation of habitat and federally listed species on non-federal lands. The Habitat Conservation Plan (HCP) and Recovery Land Acquisition (RLA) grants under CESCF are funded through the Land and Water Conservation Fund (LWCF) with state, local, and private contributions. Both programs fund the acquisition of habitat from willing sellers. HCP grants support habitat protection while allowing development to proceed in other areas. RLA grants fund habitat acquisition in support of approved species recovery plans.

- *Who is eligible:* See website; varies by program
- *Core focus areas*: Endangered species, wildlife habitat
- *How Much*: Varies; use link to access grant guidelines
- *Application:* Annual; check this page for info
- *Grant Information*

North American Wetlands Conservation Act (NAWCA): The USFWS NAWCA grant program funds projects to acquire, restore, or enhance habitat for the benefit of migratory birds associated with wetlands.

- *Who is eligible:* Nonprofits
- *Core focus areas*: Migratory birds, wetlands habitat
- *How Much*: Varies; use link to access grant guidelines
- *Application:* Annual
- *Grant Information*

Neotropical Migratory Bird Conservation Act (NMBCA) grant program: This grant program funds projects in the U.S., Mexico, and Canada that benefit neotropical birds, such as management and protection of habitat.

- *Who is eligible:* Nonprofits
- *Core focus areas*: Migratory bird habitat
- *How Much*: Varies; use link to access grant guidelines
- *Application:* Annual
- *Grant Information*

United States Forest Service (USFS)

Community Forests Program (CFP): This program provides financial assistance to local and tribal governments and qualified nonprofits to acquire and conserve forests for habitat protection and other purposes. From the website: It "offers a unique opportunity for communities to acquire and conserve forests that provide public access and recreational opportunities, protect vital water supplies and wildlife habitat, serve as demonstration sites for private forest landowners, and provide economic benefits from timber and non-timber products."

- *Who is eligible:* Community Forests can be owned by local governments, tribal governments, and qualified nonprofit entities.
- *Core focus areas*: Forest conservation, wildlife habitat, water resources
- *How Much*: Varies; use link to access grant guidelines
- *Application:* Annual
- *Grant Information*

Forest Legacy Program (FLP): Program goal is to identify and conserve environmentally important forest areas that are threatened by conversion to non-forest uses. Grants are for permanent protection of private working forests -- through state acquisition or conservation easements between land trusts and willing landowners. FLP projects typically restrict development, require sustainable forestry practices, and protect public values like habitat. Landowners may participate in this program by selling their property outright, or by retaining ownership and selling a portion of the property's development rights. (Both are held by state agencies or another unit of government.) The use of a conservation easement, a legal agreement between a landowner and a non-profit land trust or governmental agency, allows the land to remain in private ownership while ensuring that its environmental values are retained.

- *Who is eligible:* Owners of private working forests and their land-trust partners
- *Core focus areas*: Forest conservation, wildlife habitat
- *How Much*: Varies; use link to access grant guidelines
- *Application:* Annual
- *Grant Information*

National Park Service

Outdoor Recreation Legacy Partnership Program (ORLP): Established by Congress in 2014 and administered through the National Park Service, the Outdoor Recreation Legacy Partnership (ORLP) grant program helps urban communities (population 50,000+) address outdoor recreation deficits by supporting projects in cities and urbanized areas that create new outdoor recreation spaces, reinvigorate already existing parks, and form connections between people and the outdoors. ORLP provides grants directly to cities and localities, giving easier access to necessary funding and bypassing the state granting process. Priority is given to projects located in economically disadvantaged areas and places lacking in outdoor recreation opportunities. ORLP is the only federal program focused exclusively on supporting parks and outdoor recreation opportunities in cities.

- *Who is eligible:* Cities, localities, state/local agencies, federally recognized tribes
- *Core focus areas*? Creating new outdoor recreation spaces, revitalizing existing parks

- *How Much:* Project proposals: $250K-$750K; planning grants for up to $75K
- *Application:* September (in 2021)
- *Grant Information*

United States Department of Agriculture (USDA)

Agricultural Conservation Easement Program (ACEP): The Natural Resources Conservation Service (NRCS) is an agency within the USDA. The NRCS ACEP provides matching funds that land trusts can use to purchase conservation easements on agricultural lands, grasslands, and wetlands at risk of development. ACEP grants help protect, restore, and enhance wetlands, grasslands, and working farms and ranches through conservation easements.

- *Who is eligible:* Nonprofits, American Indian tribes, state and local governments
- *Core focus areas*? Conservation easements: wetlands, grasslands, agricultural lands
- *How Much:* Varies; see link below
- *Application:* Rolling/ongoing
- *Grant Information*

Healthy Forests Reserve Program (HFRP): Program grants help landowners restore, enhance, and protect forestland resources on private lands through easements and financial assistance. HRFP aids the recovery of endangered and threatened species under the Endangered Species Act, improves plant and animal biodiversity, and enhances carbon sequestration. Overarching goals: To fund the protection and restoration of private forest lands to benefit at-risk species, improve biodiversity, or enhance carbon sequestration through habitat restoration and permanent or 30-year conservation easements.

- *Who is eligible:* Landowners, nonprofits, American Indian tribes
- *Core focus areas*? Conservation easements: forest habitat, biodiversity, carbon sequestration
- *How Much:* Varies; see link below
- *Application:* Rolling/ongoing
- *Grant Information*

For projects near West Point/other military facilities:

Department of Defense (DOD)

Readiness and Environmental Protection Integration (REPI) and Sentinel Landscapes: The DOD's REPI provides funds to enter into agreements with partners such as land trusts to acquire property or property interests such as conservation easements from willing sellers that preserve critical buffers and habitat areas near military installations.

- *Who is eligible:* Landowners, nonprofits/land trusts
- *Core focus areas*? Conservation easements: habitat areas near military facilities
- *How Much:* Varies; see link below
- *Application:* Rolling/ongoing
- *Grant Information*

STATE

NYS Consolidated Funding Application (CFA)

Grants are available through diverse state agencies (Parks, DEC, EDS, etc.) to support environment, habitat, climate resilience, and more. Below, dates and information are provided for 2021 as a reference; deadlines can change year to year. Use the links below to access detailed information about agency CFA grant programs and resources that may prove helpful to project managers and grants management staff.

- *2021 CFA Resources Available Guide (PDF)*
- *Informational webinars on 2021 CFA grants*
- *2021 CFA application - online*

Summary of CFA Grants Available in 2021

Grant	Category	Amount	Match	Deadline
Local Stewardship Planning (DEC)	Planning	$50,000	15%	June, via NYS Grants Gateway
River Access & River Education (DEC)	Planning & Implementation	$40,000-$50,000	15%	June, via NYS Grants Gateway
Climate Smart Communities (DEC)	Planning & Implementation	$50,000-$2M	50%	July, via the CFA
Water Quality Improvement Project (DEC)	Implementation	$250,000-$10M	0-25%	July, via the CFA
Non-Ag Nonpoint Source Planning & MS4 Mapping Grant Program (DEC)	Planning	$30,000-$75,000	10%	July, via the CFA
Local Waterfront Revitalization Program (DOS)	Planning & Implementation	No max	15-25%	July, via the CFA
Brownfield Opportunity Area Program (DOS)	Planning	$300,000	10%	July, via the CFA
Green Innovation Grant Program (EFC)	Planning & Implementation	$3M	10-25%	July, via the CFA
Wastewater Infrastructure Engineering Planning Grant (EFC)	Planning	$30,000-$100,000	20%	July, via the CFA
Parks, Preservation and Heritage (OPRHP)	Planning & Implementation	$500,000-$750,000	25-50%	July, via the CFA
Recreational Trails Program (OPRHP)	Planning & Implementation	$250,000	20%	July, via the CFA
NYS Community Development Block Grant Program (HUD)	Planning & Implementation	$50,000-$1M	5%	July, via the CFA
Empire State Development Grant Funds	Implementation	No max	75%	Open
Clean Energy Communities grants (NYSERDA)	Planning & Implementation	$5,000-$150,000	N/A	Open

NYS Department of Environmental Conservation (DEC)

Hudson River Estuary Management Program (HREP): Created in 1987 through the Hudson River Estuary Management Act, this program focuses on the tidal Hudson and adjacent watershed from the federal dam at Troy to the Verrazano Narrows in New York City.

These grants are designed to increase resiliency to flooding, protect water quality, fish, and wildlife habitat, and improve recreational access and education for all, including people with disabilities and New Yorkers living in environmental justice communities.

- *Who is eligible*: Nonprofits, government/education entities, American Indian tribes, etc.
- *Core focus areas*: Hudson River Estuary, water resources, fish/wildlife habitat, recreation
- *How Much*: Varies
- *Application*: Annual
- *Grant Information*

Pollution Prevention Institute Community Grants: The NYS Pollution Prevention Institute (NYSP2I) promotes cost effective methods to conserve energy, reduce wastes and improve performance. NYSP2I helps businesses incorporate sustainability into everyday practices, to improve productivity and reduce carbon footprints. **Community Grants** are available to NYS nonprofits, institutions, and local governments to fund community-based pollution prevention programs and may include research, education, outreach, implementation, and training.

- *Who is eligible*: NYS community organizations, nonprofits and local government agencies; community organizations do not need to be 501(c)(3) organizations.
- *Core focus areas*: Pollution prevention
- *How Much*: Varies
- *Application*: Annual
- *Grant Information*

Environmental Justice Community Impact Grants, $4.1M available in 2021: This program funds projects that provide assistance to communities historically and disproportionately impacted by environmental issues. Community-based organizations can submit grants that address a community's exposure to multiple environmental harms and risks; this year the program includes a new research component that will be used to expand the knowledge of the affected community. Note: Previous EJ project grants awarded by DEC supported public participatory science, locally led water and air quality monitoring, urban farming, habitat restoration, alternative energy projects, curriculum development, and green infrastructure installation. For a complete list of previously funded projects, visit Open Data NY.

- *Who is eligible*: Community-based nonprofits that prequalify in NYS Grants Gateway
- *Core focus areas*: Environmental issues, harms, and health hazards; building community consensus & setting EJ priorities; improving EJ public outreach and education
- *How Much*: Up to $100K
- *Application*: Annual (due July 1 in 2021)
- *Grant Information*

(New) Regenerate NY Forestry Cost-Share Grant Program, $450K available in 2021: This grant program is designed to assist private landowners growing the next generation of forests, which are crucial for mitigating climate change, providing wildlife habitat, protecting air and water quality, and supplying an important renewable resource. Eligible projects include: planting trees, soil scarification, removing competing vegetation that would interfere with seedling establishment and growth, and installation of deer fence. Applicants must work with a private forester to develop their project. Up to two applications may be submitted per applicant, provided the applications are for separate properties.

- *Who is eligible*: Private landowners with 10 to 1,000 acres in NYS
- *Core focus areas*: Forests, climate resilience, habitat, air/water quality, renewable resources
- *How Much*: $3K to $50K (25% match is required)
- *Application*: Annual (Rolling through Oct. 8 in 2021)
- *Grant Information*

New: State grant info resource: Cornell's "NYS Funding Climate Adaptation and Resilience" webpage: Over $170 million of these state grant programs support local governments and non-profits building resilience and adapting to flooding, sea-level rise and other climate risks.

- The Funding Climate Adaptation and Resilience webpage summarizes these assistance programs, including when and where to apply.
- Eligible activities include municipal planning, resilient infrastructure and structures, emergency management, economic revitalization, public outreach, and natural solutions like sustainable shorelines, green infrastructure and floodplain protection.

FOUNDATIONS & CORPORATE CHARITABLE FUNDS

Acorn Foundation
This family foundation supports community-based organizations working to advance environmental conservation, sustainability, and environmental justice. It is particularly interested in small and innovative community-based projects that: advocate for environmental health and justice, particularly in low-income communities, communities of color and indigenous communities; preserve and restore habitats supporting biological diversity and wildlife; or prevent or remedy toxic pollution.

- *Who is eligible:* 501c3 nonprofits in the U.S.
- *Core focus areas*: Wildlife habitat, biodiversity, wildlife, environmental health/justice
- *How Much:* $5K-$10K
- *Application:* Starts with online Letter of Interest (LOI), see link below (via Common Counsel Foundation)
- *Grant Information*

American Express Foundation ($43M) and AmEx Company Contributions
AmEx provides funding through its foundation and company contributions. Generally, grants are made to protect important natural sites around the world. Overarching goal: To help preserve natural resources for future generations and limit the environmental impact of our operations. Funding priorities are: Developing Leaders, Engaging Citizens and Sustaining Communities.

- *Who is eligible:* 501c3 nonprofits in the U.S.
- *Core focus areas*: Sustainability, ecosystems, climate change; NYC area is a priority location.
- *How Much:* Foundation grants at $5K; Company grants vary widely
- *Application:* Most grantmaking is on pause in 2021; keep checking the website
- *Grant Information*

Anderson-Rogers Foundation, $17M assets
Funds environmental education and activism, with an emphasis on restoring and preserving habitat and protecting endangered animals. Preference given to innovative projects or GOS requests from small, hands-on organizations that lack financial support from other organizations.

- *Who is eligible:* Nonprofits in U.S.
- *Core focus areas*: Wildlife and habitat
- *How Much:* Varies; up to $100K, most grants are $10K-$50K
- *Application:* Rolling deadline; must submit LOI first
- *Grant Information*

Ben & Jerry's Foundation
Offers competitive grants to grassroots organizations throughout the U.S. that promote progressive social change by addressing underlying conditions of environmental problems.

- *Who is eligible: Grassroots/all-volunteer nonprofits in U.S. with operating budgets <$500K*
- *Core focus areas*: Environmental justice, community-based initiatives
- *How Much:* Up to $30K
- *Application:* Online, with deadlines in February, June, October
- *Grant Information*

Center for Health, Environment, & Justice (CHEJ)

- *Who is eligible:* Grassroots/community-based groups. Grassroots communities of color, low wealth, rural and urban groups are encouraged to apply.
- *Core focus areas*: Small Grants Program focuses on environment/health/justice issues.
- *How Much*: $1,000 – $20,000
- *Application*: Annual (June deadline in 2021)
- *Grant Information*

Climate Resilience Fund: Coordination and Collaboration in the Resilience Ecosystem (CCRE)

The CCRE Program provides grants for projects that improve, combine, align, or scale existing resources, services, and tools to support climate adaptation and resilience planning and implementation. In keeping with the input from a broad cross-section of climate adaptation and resilience practitioners, the CCRE grant competition for 2021 will provide up to $300,000 in strategic investments in the following areas: (1) Integrating Diversity, Equity, and Inclusion into Climate Resilience Planning; (2) Integrating Nature-Based Solutions with Resilience Planning; (3) Defining Characteristics for Finance-Ready Resilience Plans and Projects; and (4) Measuring Success: Tracking Performance & Results of Climate Resilience Plans and Projects. Applicants' proposals must also fit within the framework of the U.S. Climate Resilience Toolkit (USCRT)'s Steps to Resilience, and align with the Resilience Ecosystem's Theory of Change.

- *Who is eligible:* Nonprofits, educational/research institutions
- *Core focus areas*: Climate change, sustainability
- *How Much:* Varies
- *Application:* Spring
- *Grant Information*

The Conservation Alliance

The Alliance is a group of outdoor businesses that support efforts to protect wild places for their habitat and recreation values. Funded projects should seek to secure lasting and quantifiable protection of a specific wild land or waterway. Priority is given to landscape-scale projects that have a clear benefit for habitat. All funded projects must have a clear recreational benefit. **Important:** Before applying for funding, an organization must be nominated by one of the Alliance's member companies. Nomination deadlines are generally in the spring (May, in 2021). The Alliance then sends each nominated organization a request for proposal, including instructions on submitting a full proposal (due in June, in 2021).

- *Who is eligible:* Nonprofits
- *Core focus areas:* Habitat/waterway conservation with recreational benefits; particular emphasis in 2021 on BIPOC/indigenous led efforts & projects that mitigate climate change
- *How Much:* Up to $50,000
- *Application:* Spring (see above)
- *Grant Information*

Doris Duke Charitable Foundation, $1.8B assets

The Environment Program's mission is to ensure a thriving, resilient environment for wildlife and people, and foster an inclusive, effective conservation movement. (Environmental Stewardship program is based in the Tri-State area and supports green projects that "improve the built and natural environment of NYC.")

- *Who is eligible:* 501c3 nonprofits in the United States
- *Core focus areas:* Climate resilience, stewardship, strengthening the conservation field, wildlife & energy development, natural climate solutions special initiative

- *Amount:* Varies widely
- *Application:* Open rolling application; program focus changes YOY, check website
- *Grant Information*

Educational Foundation of America, $178M assets

EFA's Environment Program supports multiple strategies to reduce greenhouse gasses in the atmosphere. One focus is the just transition to a net-zero electricity system with an interest in organizations and communities pursuing local, state, and regional carbon emissions reduction strategies.

- *Who is eligible:* 501c3 nonprofits
- *Core focus areas:* Currently: Regional policies on reducing carbon emissions (includes NY); clean energy, net-zero electricity, coal-ash containment. Programs change; check website.
- *Amount:* $15K to $500K
- *Application:* To start: Submit a 250-word LOI online at the link below
- *Grant Information*

Fields Pond Foundation, $12M assets

Provides financial assistance to community-based nature and land conservation organizations that increase environmental awareness by involving local residents in conservation issues.

- *Who is eligible:* Nonprofits; awards primarily in the U.S. Northeast/New England
- *Core focus areas*: Climate change, sustainability, water resources, development finance, special initiatives (separate grant program for Flint area)
- *How Much:* Varies widely
- *Application:* February, June, October
- *Grant Information*

Fund for Wild Nature, <$1M

The Fund provides **small grants** for North American campaigns to save native species and wild ecosystems, with emphasis on actions designed to defend threatened wilderness and biological diversity – with special attention to ecological issues not currently receiving sufficient public attention and funding.

- *Who is eligible:* Nonprofits, emphasis on "feisty grassroots" groups
- *Core focus areas*: Wildlife, wilderness, biodiversity
- *How Much:* $5K
- *Application:* May 1, October 1
- *Grant Information*

Green Mountain Energy Sun Club Grant, $1M assets

The Green Mountain Energy Sun Club Grant is committed to sustainability projects that make a positive environmental impact in a community.

- *Who is eligible*: 501c3 nonprofits in the United States
- *Core focus areas:* Projects involving water conservation and protection
- *How Much:* Up to $140,000
- *Application:* Open rolling application
- *Grant Information*

Impact Fund (Revolving Fund)
Awards recoverable "Just Earth" grants that fund legal fees for actions that advance environmental justice. Since 1992, the Impact Fund has made 700+ recoverable grants totaling nearly $8 million for impact litigation.

- *Who is eligible:* Legal-services nonprofits, private attorneys, and/or small law firms working on environmental justice cases
- *Core focus areas:* Environment, environmental justice
- *How Much:* Grants awarded four times per year; most are $10K-$50K
- *Application:* Online application
- *Grant Information*

Kohlberg Foundation, $211M assets
Based in Westchester County (Mt. Kisco), the Kohlberg Foundation is a family foundation with big capacity that is interested in health and medical research, education, and the environment. There is an unfettered, roll-up-your-sleeves quality to their grantmaking that's all about moving things ahead. Recent grants indicate a giving interest in environmental justice and serving under-resourced communities.

- *Who is eligible:* Nonprofits
- *Core focus areas:* Environment, environmental justice, social justice
- *How Much:* From $1K to $10M (yes, $10 million)
- *Application:* Must start with an LOI; see FAQ's on file and online (link below)
- *Grant Information*

Kresge Foundation, $3.7B assets
The Kresge Foundation awards grants in eight areas including the environment. The foundation uses an RFP process to fund specific efforts, and grant opportunities are posted on the website, at the Current Funding Opportunities page. Recent grants show a strong interest in environmental justice projects. A habitat-protection project in New York was recently awarded funding.

- *Who is eligible:* Nonprofits
- *Core focus areas:* Environment, environmental justice, social justice (intersectional projects)
- *How Much:* From $50K to $1M
- *Application:* Must watch for RFPs (link below)
- *Grant Information*

Laura Jane Musser Fund, $18.5M assets
Helps nonprofits to initiate or implement projects that enhance the ecological integrity of publicly owned open spaces, while encouraging compatible human activities. Promotes public use of open space to improve quality of life and public health, while also ensuring the protection of healthy, viable and sustainable ecosystems by protecting or restoring habitat for a diversity of plant and animal species.

- *Who is eligible:* Eligible counties in New York: Delaware, Greene, Otsego, Schoharie, Sullivan, and Ulster.
- *Core focus areas:* Wildlife habitat, biodiversity, and passive use of parklands
- *How Much:* $8K (planning) to $35K (implementation)
- *Application:* Online application, usually open Feb-March
- *Grant Information*

Lawrence Foundation, $3.6M assets
This private family foundation based in Santa Monica, CA. makes grants to support environmental, human services, and Covid-19 related issues. Established in mid-2000, it makes program and operating grants and does not have any geographical restrictions re: applications.

- *Who is eligible:* Nonprofits in the U.S.
- *Core focus areas:* Environment (see link for ineligible requests)
- *How Much:* $5K to $25K
- *Application:* Online application, due April 30 or October 31
- *Grant Information*

National League of Cities: Leadership in Community Resilience Grant Program
This program provides cities with funds for capacity building and climate resiliency. From the NLC website: "City plans and programs designed to increase community resilience and connectivity in advance of climate shocks and other events can save lives and reduce recovery costs. These efforts can take many forms including community engagement, regional collaboration, reducing resident vulnerability to climate impacts, or capacity building for staff and elected officials."

- *Who is eligible:* U.S. cities (often in partnership with nonprofits)
- *Core focus areas:* Climate resiliency for U.S. cities
- *How Much:* Varies; see 2021 NLC press release re: awards
- *Application:* Usually due in December
- *Grant Information*

Mosaic
Mosaic is a new national initiative to power the environmental movement by bolstering critical infrastructure at nonprofits that are working to deliver clean air and water, a stable climate, healthy and just communities for all, and protection of our natural heritage. Mosaic invests in field-wide connections and shared resources that enable people and organizations to work together -- like communications, advocacy tools and training, leadership development, field knowledge, backbone services, and networks. **Note:** During COVID-19, Mosaic listened and responded when environmental groups told them what they needed to be effective during the pandemic: TOOLS & TECHNOLOGY **for remote work & communications;**
TRAINING **for effective remote work, advocacy & connection; and** RESOURCES **for adaptive organizational operations & planning.** In response, Mosaic allocated $1.4M of its first year's grantmaking to support these emergent needs to help grassroots environmental groups remain effective. (Funded by Tides Foundation)

- *Who is eligible:* U.S. nonprofits
- *Core focus areas:* Tech & infrastructure for community-based environment/EJ groups
- *How Much:* Varies
- *Application:* Contact funder, see website
- *Grant Information*

National Fish and Wildlife Foundation (NFWF), $317M assets
The NFWF is dedicated to sustaining, restoring and enhancing the nation's fish, wildlife, plants, and habitats for current and future generations. The foundation awards competitive grants through our programs to protect and conserve our nation's fish, wildlife, plants and habitats. The Foundation works with public and private partners in all 50 states and U.S. territories to solve the most challenging conservation problems.

- *Who is eligible*: Federal, state, and local governments, educational institutions, nonprofits
- *Core focus areas*? Multiple grant programs serving diverse species/habitats/geographic areas

- *How Much:* Range from $20,000 to $100,000
- *Application:* Multiple grant programs, see current/active list of grants
- *Grant Information*

Network for Landscape Conservation: Catalyst Fund Grants
The Fund strives to accelerate the pace and practice of collaborative landscape conservation across the U.S. by investing in landscape conservation partnerships. The Fund couples financial support through a competitive grant program with capacity-building support through in-depth peer learning for funded Partnerships. A portion of the Fund is reserved to advance Indigenous landscape conservation priorities.

- *Who is eligible:* U.S. landscape conservation partnerships
- *Core focus areas:* Collaborative landscape conservation
- *How Much:* One- to two-year grants of $10,000-$25,000
- *Application:* Online proposal, once a year (generally spring)
- *Grant information*

New-Land Foundation, $35M assets
A family foundation based in California that makes grants in support of environmental initiatives, conservation, and natural resources protection.

- *Who is eligible:* U.S. nonprofits
- *Core focus areas:* See above.
- *How Much:* Up to $100K; most grants are $10K-$25K
- *Application:* Letter proposal, two cycles, deadlines on Feb. 1 and Aug. 1
- *Grant information on file (no website)*

Norman Foundation, $21M assets
This NYC-based foundation funds in two broad areas: economic justice and environmental justice. The foundation is interested in community-based organizing projects that could have a potentially national impact as well as provide potential models for social change. Collaborative projects are welcome. Note: The foundation is a signatory to Philanthropy's Promise, an initiative of the National Committee for Responsive Philanthropy (NCRP) and has committed to allocating the majority of its grantmaking dollars to marginalized communities and at least 25% to social justice strategies such as advocacy, community organizing, and civic engagement.

- *Who is eligible:* U.S. nonprofits
- *Core focus areas:* Environmental justice projects and initiatives
- *How Much:* Most grants are $10K-$20K
- *Application:* Letter proposal, rolling (board meets 3x per year)
- *Grant information on file (no website)*

Oak Foundation, $40M assets
Oak Foundation commits its resources to address issues of global, social, and environmental concern, particularly those that have a major impact on the lives of the disadvantaged. With offices in Europe, India, and North America, it make grants to organizations in approximately 40 countries worldwide. The foundation will fund initiatives that: target the root causes of problems; are replicable either within a sector or across geographical locations; include plans for long-term sustainability, such as co-funding; strive to collaborate with like-minded organizations; demonstrate good financial and organizational management; and value the participation of people (including children) and communities.

- *Who is eligible:* U.S. and international nonprofits
- *Core focus areas:* Climate change mitigation, marine/estuary habitat, carbon sequestration
- *How Much:* $10K to $1M+
- *Application:* Must start with letter of inquiry; see link below.
- *Grant Information*

The Overbrook Foundation, $148M assets

A progressive family foundation, with an Environment Program funding innovative initiatives that tackle some of today's biggest environmental challenges, including corporate and consumer practices, climate change, and waste. The Program's Movement Building portfolio aims to support movements – rather than specific organizations or issues – to make them stronger, more resilient, and more impactful.

- *Who is eligible:* U.S. nonprofits
- *Core focus areas:* Production/consumption of materials, climate change, energy efficiency
- *How Much:* $5K to $500K
- *Application:* LOI to NYC office, ideally with foundation board backing; see website
- *Grant Information*

Patagonia

Patagonia pledges at least 1% of sales or 10% of pre-tax profits, whichever is more, to make donations at the grassroots level to innovative groups often overlooked or rejected by other corporate donors. It funds activists who take radical and strategic steps to protect habitat, wilderness, and biodiversity.

- *Who is eligible:* Nonprofits, with preference to grassroots/all-volunteer/community-based
- *Core focus areas:* Wildlife habitat, biodiversity, wilderness conservation, EJ
- *How Much:* $5K - $20K
- *Application:* Online application, usually open Feb-March
- *Grant Information*

Shumaker Family Foundation, $19M assets

Environmental grants go to organizations that promote conservation, sustainability, and animal welfare, and/or educate human beings to work toward these purposes.

- *Who is eligible:* Nonprofits in the U.S.
- *Core focus areas:* Wildlife habitat, biodiversity, environmental justice
- *How Much:* $10K - $40K
- *Application:* LOIs are due on Feb. 15 each year, see link below
- *Grant Information*

Robert and Patricia Switzer Foundation, $18M assets

The Leadership Grant and Network Innovation grant programs give non-profits greater access to Switzer Fellows -- individuals with high-level technical and scientific expertise. Grants are awarded to nonprofits re: designing/implementing programs with Fellows that actively address issues of environmental quality.

- *Who is eligible:* 501c3 nonprofits
- *Core focus areas*: High impact projects with measurable improvement (led by the Fellow)
- *How Much:* Leadership: up to $40K/year & up to 3 years; Network Innovation: $5K-$10K
- *Application:* Open application
- *Grant Information*

Tides Foundation: (WE LEAD at $3M assets)
Tides is a major funder re: environment and EJ. Tides organizes its grantmaking into campaigns. In April 2020, Tides launched its current environmental campaign, called the Women's Environmental Leadership Fund -- WE LEAD -- to elevate, center, and resource women's grassroots leadership on the frontlines of climate disruption in the U.S. WE LEAD promotes a shift in power and resources to those making a tangible impact on the ground: Women who are taking on big polluters with local, community-based action.

- *Who is eligible:* 501c3 nonprofits led by women, with emphasis on Black, Indigenous, and/or Women of Color (BIWOC)
- *Core focus areas*: Community actions vs. big polluters
- *How Much:* Varies
- *Application:* Open application, starts with LOI, see website
- *Grant Information*

Wallace Global Fund, $129M assets
Current environmental priorities are: (1) Break the fossil fuel cartel, divest from fossil fuel, invest in climate solutions and end dirty energy subsidies; (2) Build local community power to confront corporate dominance (re: fracking, tar sands, etc.); and (3) Confront deep anti-environment bias in our legal and political system, and work to frame new rights of individuals, such as access to water and protection for public health.

- *Who is eligible:* 501c3 nonprofits
- *Core focus areas*: "Climate Crimes"
- *How Much:* Varies
- *Application:* Must submit LOI: Mar., June, Sept., and Dec.
- *Grant Information*

Wildlife Conservation Society: Climate Adaptation Fund ($2.5M in 2021)
For more than 10 years, the WCS Climate Adaptation Fund has made grants to conservation nonprofits to help wildlife, ecosystems, and the people who depend on them, adapt to the impacts of climate change. In 2021, awards will be made to non-profit conservation organizations applying in one of two grant categories: **(1) Adaptation Implementation** projects that apply innovative approaches to conservation actions designed to help wildlife and ecosystems adapt to climate change (must include evidence gathering and results sharing to advance learning in the field. **(2) Adaptation Mainstreaming** projects that pursue pathways to unlock the potential of an adaptation approach with known benefits to be adopted at a large scale. Adaptation Mainstreaming grants will be up to $100,000 for 2 years.

- *Who is eligible:* Nonprofits
- *Core focus areas:* Use the link below to access information.
- *How Much:* Up to $300K per project over three years
- *Application:* Online applications
- *Grant Information*

William P. Wharton Trust, $3.5M assets
The trust supports projects that directly promote the conservation, study, and appreciation of nature. Goals (in order of priority) include: (1) Conservation of renewable resources (water, soil, wild animal life, forest resources, etc.), primarily in Massachusetts and New England, including funding land acquisitions; (2) Management techniques designed to improve environmental quality and species diversity; (3) Bird and forestry research and management,

especially at the applied level; and (4) Materials/projects that foster an appreciation of and a concern for wildlife and natural systems.

- *Who is eligible:* 501c3 nonprofits in the U.S.
- *Core focus areas*: See above.
- *How Much:* Up to $15K; trustees can make larger multi-year grants for acquisitions
- *Application:* See website; two grant cycles annually, deadlines March 1 and Sept. 15
- *Grant Information*

Woodard & Curran Foundation, <$1M assets

This family foundation supports nonprofits working to protect water resources and the environment. Since its founding in 2010, W&C has committed $791,700 in grants to 70 nonprofits. Their core focus is clean water and projects that promote a clean and sustainable environment, including new technology.

- *Who is eligible:* 501c3 nonprofits that are within 100 miles of one of these locations.
- *Core focus areas*: Protecting water and the environment; environmental justice
- *How Much:* Impact Fund grants are $100K over 3 years; other grants are $10K
- *Application:* Open application, but see website for current guidelines
- *Grant Information*

Appendix B: Stakeholder Input Report
July 2021

Purpose and Methods

To get stakeholder input on the "East Highlands Green Corridors Plan" project from the Philipstown and Putnam Valley communities, the Hudson Highlands Land Trust planned a series of workshops and surveys with support from consultant Strong Outcomes, LLC. As a result of the Covid-19 pandemic it wasn't safe for people to gather in groups for in-person mapping workshops during the term of the project, thus the approach was modified and the workshops were conducted online via Zoom.

The survey and workshops had different purposes. **Community informational workshops** were held in each town to introduce people to the Green Corridors project and invite them to take the survey. The **community conservation surveys** gathered information about what kinds of natural resources are most important to people who live, work, and/or play in Philipstown and Putnam Valley and asked respondents to prioritize several potential connections for people and wildlife. Lastly, individual community leaders/members were invited to one of three **online mapping workshops** to gather additional data about potential connections, adding to the scientific priority data gathered in the first phase of mapping. In all 46 stakeholders participated in the introductory workshops and 26 in the mapping workshops.

Figure 1. Table of Stakeholder workshops

Green Corridors Stakeholder workshop	Date	Participants	Notes
Philipstown Green Corridors Workshop	April 21, 2021	32 participants plus project team	Public; Co-hosted by Town of Philipstown
Putnam Valley Green Corridors Workshop	April 29, 2021	14 plus project team	Public; Hosted by HHLT
Philipstown Green Corridors Mapping Workshop #1	May 18, 2021	4 plus project team	Invite only; Hosted by HHLT
Putnam Valley Green Corridors Mapping Workshop	May 20, 2021	12 plus project team	Invite only; Hosted by HHLT
Philipstown Green Corridors Mapping Workshop #2	May 24, 2021	12 plus project team	Invite only; Hosted by HHLT

Survey Results

About 250 people responded to the community surveys, 167 from Philipstown and 82 from Putnam Valley. Over 90% of survey responses were from town residents (91% in each survey). People aged 45 and older were overrepresented in both surveys, and younger people were underrepresented. There were no participants under 18 in either survey, and only 1% of respondents were aged 18-24 in Philipstown and 3% in Putnam Valley.[1]

Why People Support Conserving Green Corridors

The survey revealed that many kinds of natural resources are important to the people of Philipstown and Putnam Valley, and the resources that consistently came up as a top priority were drinking water,

[1] The 2019 American Community Survey population estimates about 20% of people in both towns are under 18 and 8% between 18-24.

wildlife habitat, forests, streams, and connected conserved lands for wildlife and trails. These results indicate that land that meets multiple conservation objectives is likely to be highly supported.

> **Drinking Water**: Drinking water was consistently rated the highest priority in both towns, with more than 80% saying it was essential to expand or improve its protection, and more than 75% saying that it was important that additional land conserved should protect water quality. And when asked to choose among resources, respondents had a clear preference for drinking water.
>
> **Wildlife Habitat**: Survey respondents also strongly supported land conservation to protect wildlife habitat. It was consistently the second most popular resource, with more than 70% in both towns saying it was essential to expand or improve protection of habitat. A large majority said that wildlife was an important consideration when protecting new lands, with more than 75% in both towns saying that any additional land conserved should safeguard wildlife habitat connections between existing conserved lands. Half of Putnam Valley respondents and 71% of Philipstown respondents said that newly protected land should also help plants and animals adapt to a changing climate. Forests and streams were also highly rated.

Although conserving new open spaces for hiking and walking were a lower priority than water and wildlife (59% Philipstown, 50% Putnam Valley), about 65% said it was important that any additional land conserved include trail linkages between existing open space areas (66% Philipstown, 64% Putnam Valley).

Prioritizing Potential Philipstown Green Corridor Linkages

The Philipstown survey asked respondents to prioritize areas of linkages for people and wildlife in their towns using maps that showed conserved lands and potential connections. Overall, people prioritized trail connections between areas of interest, with 79% selecting connections in/between the Village of Cold Spring and Garrison.

Figure 2. Table of Philipstown Green Corridor Linkages

Potential Linkage	% Response
9 - Cold Spring Village to Boscobel/Cold Spring Farmers Market (not depicted on map)	42%
10 - Cold Spring Train Station to Garrison Train Station (not depicted on map)	37%
4 - Saint Basil's Academy and surrounding area	32%
3 - Intersection of Route 9 and Route 301	31%
2 - Jaycox Pond and surrounding area	28%
1 - Northeastern portion of Philipstown	22%
5 - Catfish Pond and surrounding area	18%
8 - Mystery Point and surrounding area	18%
11 - Garrison School to Desmond-Fish Public Library (not depicted on map)	18%
6 - Indian Lake / Lake Celeste and surrounding area along Old Albany Post Road	17%
7 - Graymoor and surrounding area	13%

Fewer than half of the people that took the survey shared why they chose those linkages (70/162). Those who did cited many reasons, including scenery, practicality, as well as connecting wildlife habitats. About half of the responses were about trails and connections for people. The most cited reason was to provide safe alternative transportation options to driving. Several specifically mentioned reducing car use, others appreciated opportunities to walk between natural areas and between a variety of destinations. For example: *"My idea is that this would allow people to walk to the post office and library and train station instead of driving to do errands or commute and then driving to a hiking area the two could be combined. Less use of cars and a more natural way of moving through the land could help create connections with wildlife."*

Wildlife habitat was the second most frequently cited reason to prioritize connections. That may be surprising because respondents rated wildlife habitat more highly than trail connections earlier in the survey. It is possible respondents answered this way because they know more about human connections than wildlife corridors, which is captured in this survey comment: *"I do not know enough about needed wildlife corridors to answer well."*

Prioritizing Potential Putnam Valley Green Corridor Linkages

People who took the Putnam Valley survey were asked to prioritize the protection of six potential connections. A majority chose the Eastern Putnam Valley Ridgeline, just northeast of Granite Mountain Preserve.

Figure 3. Table of Putnam Valley Green Corridor Linkages

Potential Linkage	% Response
3 - Eastern Putnam Valley Ridgeline / Peekskill Hollow Road Corridor to Tinker Hill (area to the northeast of Granite Mountain Preserve)	65%
2 - Area around Wiccopee Reservoir	38%
1 - Gilbert Corners / Area between Appalachian Trail and Canopus Creek/Oscawana Lake	36%
4 - Oscawana Corners to Spruce Hill	35%
5 - Adams Corners to Piano Mountain	29%
6 - Canopus Creek Corridor / Area around Upper Cranberry Pond	26%
Other (please specify)	17%

Fewer than half of the people who took the Putnam Valley survey shared why they chose certain linkages (34/82). Half of the comments prioritized these connections because of the benefits to wildlife and only a few mentioned the potential of trail connections. For example: *"These areas now have great integrity of forest and wildlife; it should not be lost,"* and *"They connect large areas with large areas, thus minimizing edge effects on the habitats."*

About Town Natural Resource Protection

In Philipstown, 38% of survey respondents reported not knowing how the town is involved in protecting natural resources, though 30% said the town is doing enough to protect them. In Putnam Valley, 32% of respondents said they didn't know how the town is involved in protecting natural resources and 42% thought the town isn't doing enough to protect them.

Regardless of how well people think resources are being protected, more than 7/10 want to know more about what their towns are doing to protect natural resources (79% in Philipstown and 73% in Putnam Valley). To get the word out, Philipstown might focus on local newspapers, which is where 61% of survey respondents said they learn about local issues. In Putnam Valley, town leaders could try several channels; respondents reported learning about local issues from social media groups (36%), closely followed by word of mouth (21%), and local newspapers (19%).

Concerns about Visitor Management

Throughout the survey, people shared comments that included concerns about visitor management to existing and/or proposed public parkland. The main themes of these comments were concerns about overcrowding, hunting and fishing access, and land management.

A clear theme that emerged in the Philipstown survey was the concern about the number of visitors to trails in the town causing more traffic, crowded trails, and impacts to natural areas. Several noted the potential of new conservation areas reduce congestions existing sites and trails to improve safety and reduce reliance on cars.

“Creating open space for public access brings crowds that ironically spoil the very nature of the open spaces that are being conserved.”

"These areas would help to spread out already congested areas for visitors where road walking/biking is unsafe"

"Important for people to have bike and foot path access to take pressure off other access points and reduce emissions from cars."

"for me, i work and play at hudson highlands state park and see a lot of use in these areas. the volume of people utilizing those three corridors is so high that it presents dangers and frustrations to vehicle travel. i envision a safer way to walk between these attractions."

“As difficult as it may be, there needs to be limitations on how many people are allowed to climb Breakneck Ridge. So many people climb it that it is ruining the soil, creating ruts and widening foot paths. Also, the presence of so many visitors on the weekend must be very disturbing to wildlife.”

When prioritizing connections, Philipstown respondents expressed interest in places that would enhance walkability that serves the residents of town, rather than visitors. For example, *“These areas would offer alternatives to visitors and residents who want to avoid some of the more trafficked trails and who can move around the area on foot instead of in vehicles.”*

The most frequently mentioned concern raised in the Putnam Valley survey was that additional land protected allow access for hunting and fishing (7 comments total):

“It is extremely important that there is land available for hunters and fisherman in Putnam Valley. Many people in this town hunt for recreation as well as an essential source of food. It is already difficult to find quality land to hunt on in Putnam Valley.”

“My concerns on the protection and preservation lie in the waterways, and most importantly the ability to hunt and fish in the waterways as well as hunting in the woods/forests. People need to understand the legacy and traditions hunters pass on to their children and how important it is to residents who live in Putnam Valley.”

Both Putnam Valley and Philipstown survey respondents were concerned about management, and the issue of the lack of forest management for healthy forests was also raised at a mapping workshop. From the comments, it was clear that people have different ideas about conservation land management. Ideas included tree harvesting, removing old trees, invasive species control, creating young forest habitat for wildlife.

“I hope Philipstown acts quickly to save more land for wildlife and also to restore habitats by removing invasive species and restoring native species so wildlife can survive in the open space that has been preserved.”

“What you are doing is great, I would be interested in seeing some focus on wildlife habitat that has been phased out, such as young forest habitat. With all the wetlands Putnam Valley has these wet areas that are acquired could be great potential habitat for species that thrive in young growth such as the American woodcock, a variety of songbirds, etc. check out the American woodcock society and what they do for young forests.”

Additional Tables and Figures
The following tables and figures provide further details from the survey responses.

Figure 4. Age Distribution of Survey Respondents

This was in response to Q11: What is your age? We are asking because we'd like to know how natural areas are appreciated by people of different ages.

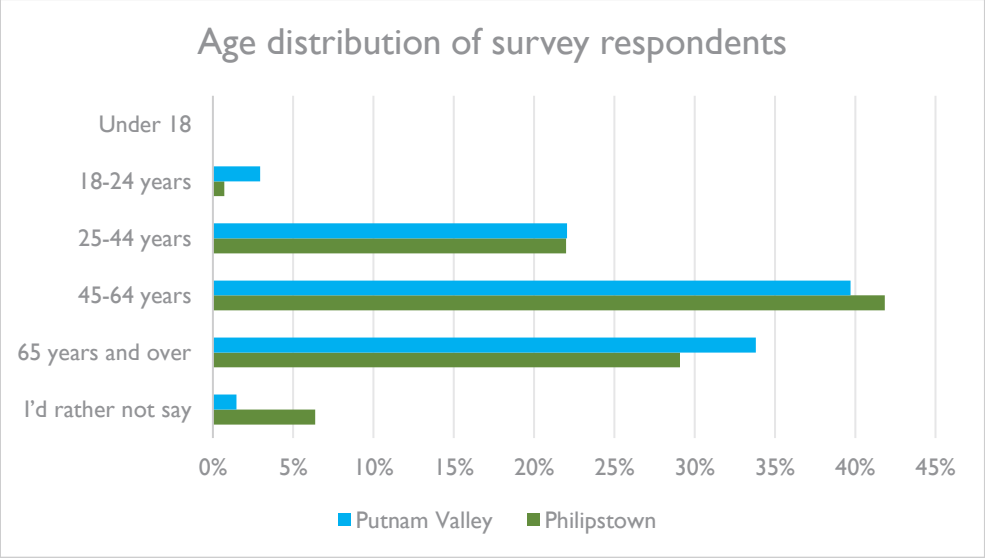


Figure 5. Survey Respondents Association with Their Respective Town

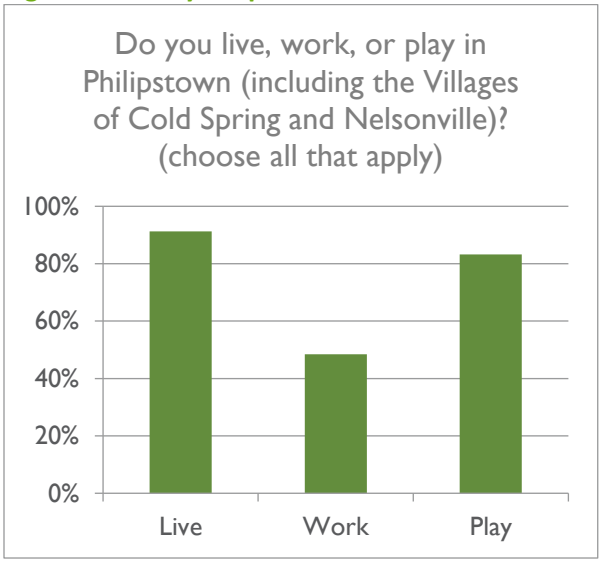


Figure 6. Prioritizing the Kinds of Resources to Protect

How important is it to you to expand or improve protection of the following resources?		Prioritize the resources using an imaginary $100		How important is it to you that any additional land conserved in town include the following?	
Philipstown	**Putnam Valley**	**Philipstown**	**Putnam Valley**	**Philipstown**	**Putnam Valley**
Drinking water sources	Drinking water sources	Drinking water sources	Drinking water sources	Protects water quality	Protects water quality
Wildlife and their habitat	Streams and land along streams	Wildlife and their habitat	Wildlife and their habitat	Connects wildlife habitats between existing conserved lands	Connects wildlife habitats between existing conserved lands
Forests and woodlands	Wildlife and their habitat	Open spaces for passive recreation (i.e., hiking, walking)	Streams and land along streams	Help plants and animals adapt to a changing climate	Link trails between existing open space areas
Streams and land along streams	Forests and woodlands	Forests and woodlands	Forests and woodlands	Link trails between existing open space areas	Help plants and animals adapt to a changing climate

The next two graphs (Figures 6 and 7) are based on the following question (No. 2 on survey): How important is it to you to expand or improve protection of the following resources in town?

Figure 7. Important Resources to Philipstown Respondents

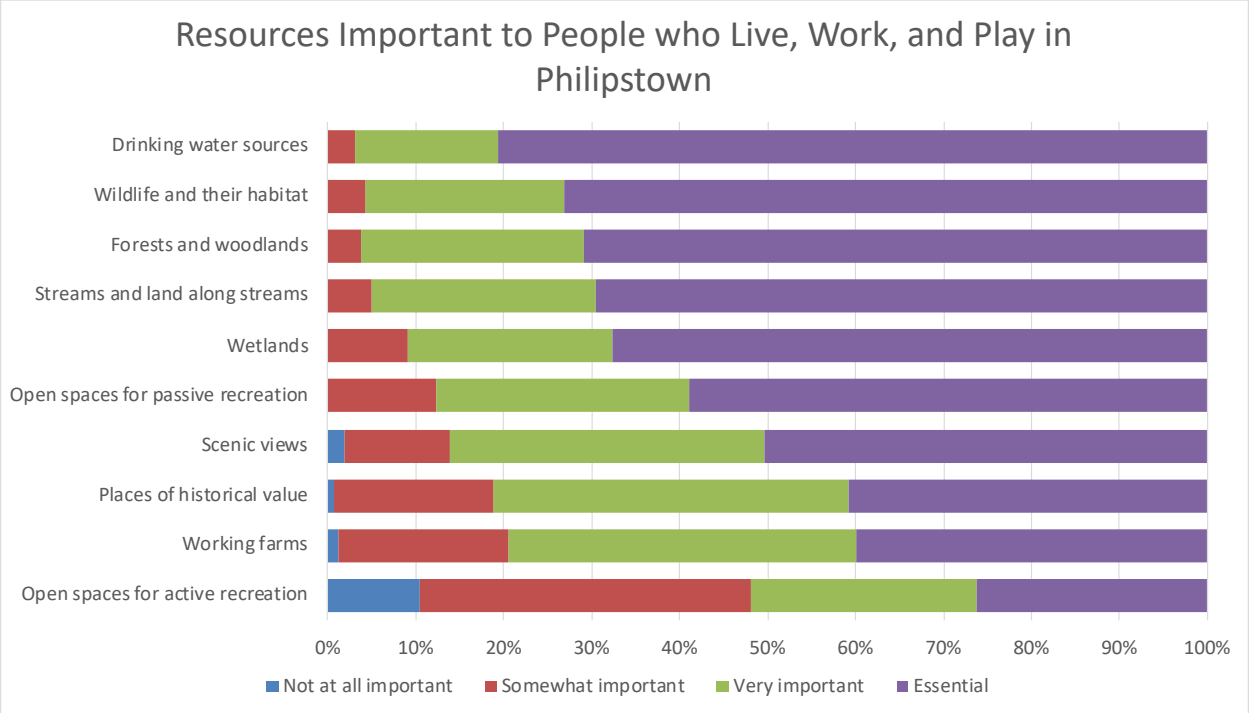


Figure 8. Important Resources to Putnam Valley Respondents

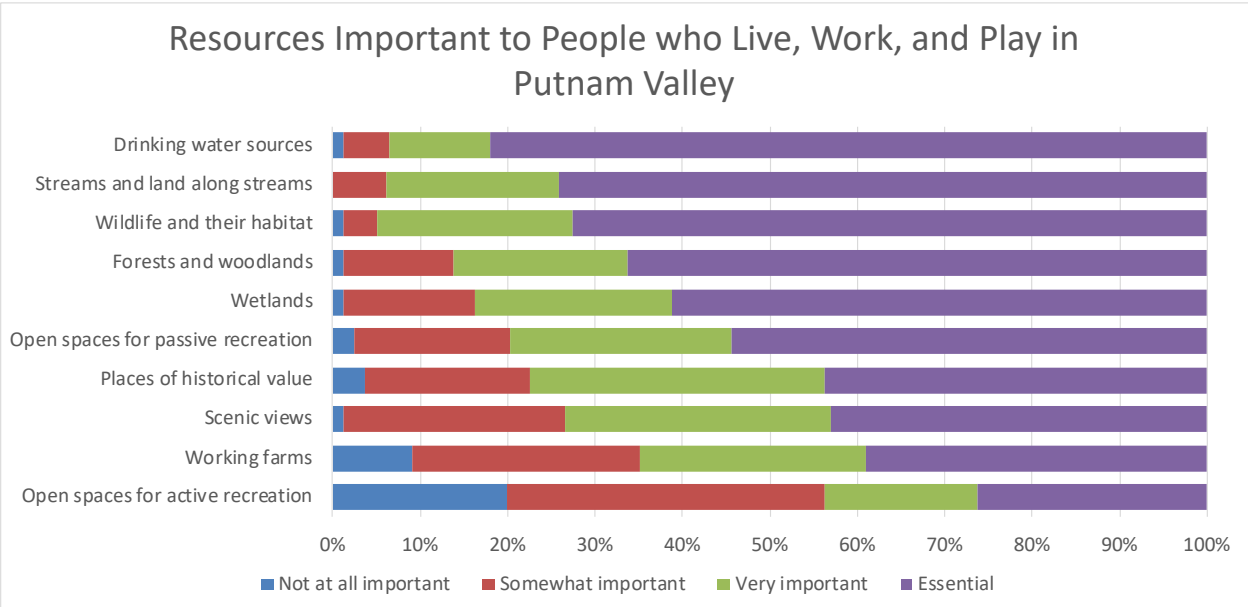


Figure 9. Importance of expanding or improving protection of natural resources

These are the responses to question (No. 2 on survey) “How important is it to you to expand or improve protection of the following resources in town?” presented in a different way.

Relative Ranking	Philipstown	Putnam Valley
1	Drinking water sources	Drinking water sources
2	Wildlife and their habitat	Streams and land along streams
3	Forests and woodlands	Wildlife and their habitat
4	Streams and land along streams	Forests and woodlands
5	Wetlands	Wetlands
6	Open spaces for passive recreation (e.g., hiking, walking)	Open spaces for passive recreation (e.g., hiking, walking)
7	Scenic views	Places of historical value
8	Places of historical value	Scenic views
9	Working farms	Working farms
10	Open spaces for active recreation (e.g., ballfields)	Open spaces for active recreation (e.g., ballfields)

Figure 10. Prioritizing Natural Resources (Combined town data)

This graph summarizes the responses based on the following question/request (No. 3 on survey): Now, please prioritize the resources by using an imaginary $100 to invest in them. You can "spend" as much as you want on any one resource or any combination of resources, by adding a number in the space next to the resources listed, up to a maximum of $100. For example, you could assign 100 to drinking water, distribute 25 among four resources, or give a different number to each resource.

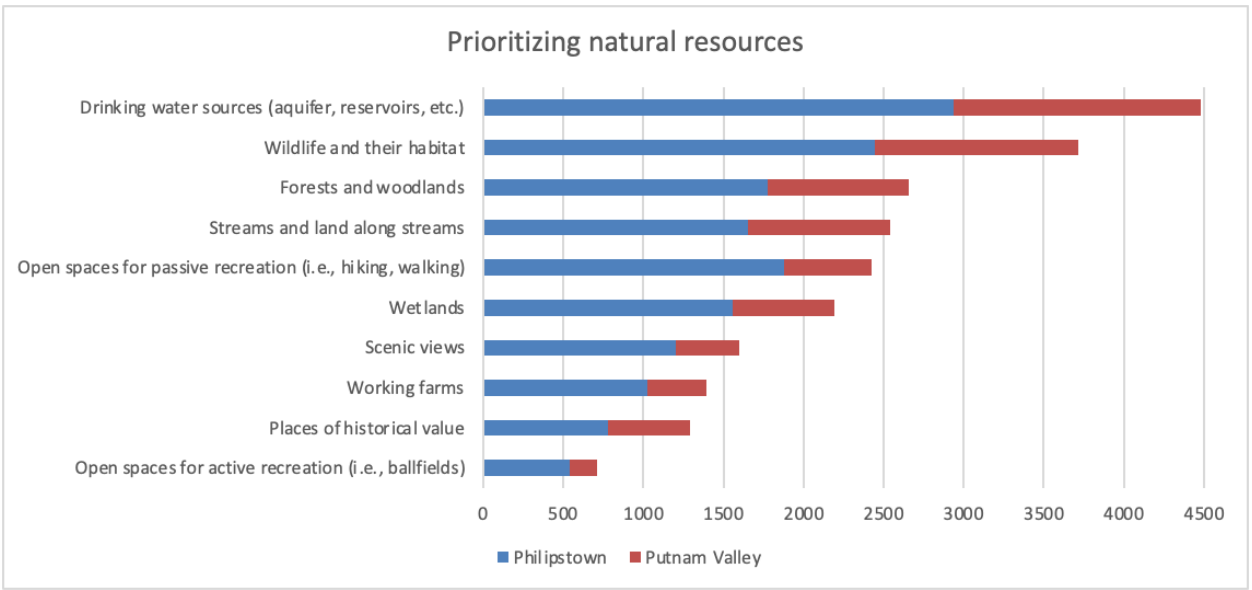


Figure 11: Importance of Additional Land Conservation

This table summarizes responses to the following question (No. 4 on survey): How important is it to you that any additional land conserved in Putnam Valley include the following? Choose up to five.

Philipstown		Putnam Valley	
New land conserved in town…	% respondents	New land conserved in town…	% respondents
Protects water quality	81%	Protects water quality	77%
Connects wildlife habitats between existing conserved lands	78%	Connects wildlife habitats between existing conserved lands	77%
Help plants and animals adapt to a changing climate	71%	Link trails between existing open space areas	65%
Link trails between existing open space areas	66%	Help plants and animals adapt to a changing climate	50%

Appendix C: Maps and Data Analysis

Overview

A data analysis was conducted to identify priority connectivity areas in the New York Highlands region. This analysis involved four major components: Partner Priorities, Scientific Priorities, Stakeholder Priorities, and Combined Priorities. Recognizing the limitations of this project, which only allowed for stakeholder engagement in a subsection of the area---and recognizing that an area that rated highly for conservation partners (perhaps for cultural / historic reasons) may have rated lower for scientific priorities, all four maps---Stakeholder, Partners, Scientific, and Combined---should be considered for different purposes.

The following are descriptions of the analyses for each category's data analysis and resulting map. Also included is a section describing the values weighting process, and the biases inherent in that particular data analysis choice.

Categories:

- Partner Priorities
- Scientific Priorities
- Stakeholder Priorities
- Combined Priorities
- Data Layers by Category
- Data Layers by Focal Species

Partner Priorities

Many of the New York State agencies, conservation organizations, and municipalities within the New York Highlands region have already identified conservation priorities. These priorities have different focal areas. They also focus on different conservation values that often include, but are not specific only to, connectivity.

Although the Green Corridors Plan focuses on connectivity, it also recognizes that a common successful component of a conservation project is having an interested, experienced, and dedicated conservation partner. Therefore, existing partner priorities were taken into account. Specifically, partners within the New York Highlands Network were asked if they had existing conservation priorities, and if that data could be incorporated into this Plan.

Through interviews and research, we attempted to identify the existing prioritization systems of each partner within the New York Highlands Network, as well as the two municipalities. In the cases where more than one prioritization system existed, we selected the system most closely aligned with the connectivity goals of this project.

Certain partner priorities are represented by multiple layers, such as Philipstown's Open Space priority areas and clean drinking water priority areas. Other partner priorities are represented here by a single layer, such as Putnam Valley Comprehensive Plan "Priority Areas for Conservation." The Towns of Philipstown and Putnam Valley both have Natural Resource Inventories, and the connectivity-relevant layers from those plans were captured in the Scientific Priorities analysis (see below).

Weighting of data layers: We attempted to give each layer equal weight. The assignment of a relative number of points to each layer varied due to the nature of the layer (e.g. raster versus vector data). It also varied due to the layers' overall coverage. For instance, the United States Forest Service's Highlands Conservation Act important areas, an eligibility layer which is important to all NY Highlands Network partners, was given a weight of "1" (eligible) or "0" (not eligible). The eligibility layer covers a very large portion of the Highlands, so the top weight was only 1. In comparison, for the NYS Parks "Habitat Index Top Tiers", areas that scored above 70 were awarded two (2) points; areas lower than 70 that appeared were awarded one (1) point, and areas that did not rank in the system were awarded zero (0) points.

Biases: Repetition of underlying datasets is prevalent, as many partners use similar datasets to create their prioritization systems.

Scientific Priorities

To help envision the full New York Highlands ecosystem's needs in terms of wildlife connectivity, a suite of local focal species were selected that represent a variety of habitats and movement paths in this region. Datasets of those focal species populations and their habitats were incorporated into a model. This model is called "Scientific Priorities" in recognition of the data layers basis in ecological data and scientific modeling. Many of the "Partner Priorities" are also based fully or partially on ecological science, but may also contain elements of stakeholder interests.

This model included datasets from the New York Natural Heritage Program Important Areas for known populations of animals of conservation concern, as well as the lands and waters that support their continued presence.

A group of possible species of interest was initially selected using a matrix tool for identifying suites of focal species whose needs represent a wide variety of important habitats. The list was then discussed and edited through calls with NY Highlands Network partners, with particular assistance from staff at the Department for Environmental Conservation and the Department for Environmental Protection. The New York Natural Heritage Program also reviewed the list during their connectivity analysis.

Ultimately, nine focal species were selected to represent the array of wildlife needs across the landscape. Those species included a top avian predator (bald eagle), a sensitive amphibian (spotted salamander), and an aquatic species that connects our streams to the ocean (American eel). When data layers specific to the species were not available, habitat needs were used as a proxy.

Weighting of data layers: We attempted to give each focal species equal weight, as well as equal weight for overarching layers. The assignment of a relative number of points to each layer varied due to the nature of the layer (e.g. raster versus vector data). Also, in the instances where certain species have both known population data and modeled habitat data (which may incorporate known population locations), weighting was distributed across the layers so that species without modeling did not receive less points overall. In general, two points were given to known population data ("Important Areas") and one point was given to modeled habitat data ("EDM Thresholds"), with the exception of two points being awarded to the EDM Threshold for Tiger Spiketail, as

Biases: Areas of known importance for connectivity, such as areas near a rare species population, tend to be located on lands that are already protected, especially state-owned lands.

Stakeholder Priorities

As a pilot project for a holistic stakeholder assessment, the engagement portion of this Plan was limited to a subset of the Eastern Highlands region: the Towns of Philipstown and Putnam Valley. The data incorporated in this section was gathered from online community conservation surveys and three online mapping workshops.

The community conservation surveys asked respondents to prioritize areas of linkages for people and wildlife in their towns using maps that showed conserved lands and potential connections, with each potential linkage assigned an identified from 1 to 8 on the map. In addition to the eight mapped linkages, respondents could suggest additional linkages, which were then translated into geographic areas and incorporated in the mapping process.

During the online mapping workshops, participants were able to draw areas of connectivity importance using the Google Jamboard platform. If participants were unable to use the platform, the facilitators helped make sure their feedback was captured and incorporated into the mapping process.

This map has more sharp contrasting lines and areas due to the nature of the data collection methods, as described above.

Weighting of data layers: More representatives from Philipstown participated in the Green Corridors surveys and workshops than representatives from Putnam Valley. To correct for this and include a relatively even amount of priorities within each Town, weighting of each response was adjusted relative to the total number of responses within that Town, with each Town getting an equal final weight. The raw data can be made available for either Town to better suit other purposes they may have.

Biases: As stated above, more representatives from Philipstown participated in the Green Corridors surveys and workshops than representatives from Putnam Valley despite similar population sizes around 10,000 residents (US Census data, 2018). HHLT attempted broad outreach through use of our communication channels, outreach to the Towns, public presentations, and tailored emails to interested individuals. We also created multiple paths for sharing information, including surveys, workshops, and emails. Larger participation would have helped further eliminate bias in responses. Participation is described in more detail in the Stakeholder Summary section of this report.

Combined Priorities

The Partner Priorities, Scientific Priorities, and Stakeholder Priorities were combined to produce a final "Combined Priorities" map. As a pilot project that includes stakeholder priorities within a subset of the Eastern Highlands region, Philipstown and Putnam Valley, this map is most useful for those towns. The map gives an idea of the connectivity areas identified by stakeholders within that area, as well as the partner and scientific priorities across the region.

Weighting of data layers: To create the Combined Priorities map, Scientific Priorities were triple weighted, Partner Priorities were double weighted, and Stakeholder Priorities were single weighted. This weighting ensures that the Green Corridors Plan Combined Priorities are guided by science and supported by the community-based conservation partners that can help with successful conservation projects (as well as previous stakeholder engagement from codified plans), and also includes up-to-date observations and interests of current stakeholders in Philipstown and Putnam Valley.

Biases: The Combined Priorities map is most useful for the Towns of Philipstown and Putnam Valley, as stakeholder engagement was only conducted within those two municipalities through this limited pilot study. Additional studies that include stakeholder input and priorities from the full Eastern Highlands region would be beneficial.

Data Layers by Category

Partner Priorities	**Raster**	**Values**
Scenic Hudson's Hudson Valley Conservation Strategy	Reclass_SHHVSC	0-2
Hudson Highlands Land Trust's Tier I Legacy Landscapes	Reclass_HHLTT1	0,2
United States Forest Service's Highlands Conservation Act important areas	USFS_HCA_IA_UTM	0-1
Berkshire Wildlife Linkage priority connectivity areas	BWL_UTM	0-1
Appalachian Trail and proposed Side Trail, buffered by 1 mile	AT	0-1
Highlands Trail, buffered by 1 mile	HT	0-1
NYS Parks priority parcels	NYSParksPP	0-1
Philipstown OSI priority areas	PhilOSI	0-1
Philipstown clean drinking water priorities	PhilDWP	0-1
Croton-Highland Corridors	CHC	0-1
Putnam Valley Comprehensive Plan priority areas for conservation	PVComp	0-1
Hudson to Housatonic's highest priority areas	Reclass_Hudson_Housatonic_Full	0-2
Northern Appalachian Trail Landscape Partnership's top priority areas	Reclass_NorthernAT	0-2
United States Forest Service's Highlands Conservation Act eligible areas	Reclass_USFS_HCA_Eligible	0,2
The Nature Conservancy's connectors data (Resilient & Connected)	Reclass_TNC_Connections_Full	0-2
NYS Parks habitat index top tiers	Reclass_NYS_Parks_HI	0-2
Within DEP Cat-Del watershed	*Pending*	*0-1*
Adjaceny to protected lands	*Pending*	*0-2*
Scientific Priorities	**Raster**	**Values**
Vernal Pools	VernalPools	0,3
Wetlands	WetlandComposite	0-3
Forest Core and Edges by Index Patches	Forests	0-3
American Eel/Riperian	EelRiparian	0,1,3
Important Areas - Rattle Snake	IATimberRS	0,2
Important Areas - Wood Turtle	IAWoodTurtle	0,3
Important Areas - Bald Eagle	IABaldEagle	0,3
Important Areas - New England Cottontail	IANECottontail	0,2
Important Areas - Eastern Wormsnake	IAWormSnake	0,2
EDM Threshold - New England Cottontail	EDM_NECottontail	0-1
EDM Threshold - Tiger Spiketail	EDM_TigerSpiketail	0,2
EDM Threshold - Eastern Wormsnake	EDM_Ewormsnake	0-1
EDM Threshold - Timber Rattlesnake (combined)	EDM_RSnake	0-1
Plants by Species	IAPlants	0-1
Communities by Type	IAComm	0-1
Animals - Wetlands and Terrestrial	AIAnimals	0-1
Animals - Bat foraging	IABatForaging	0-1
Animals - Fish	IAFish	0-1
Results	**Raster**	**Values**
Sum of Priority Partner Raster Scores	PartnerScore0828	0-17
Sum of Scientific Priority Raster Scores	ScieneScore1112	0-24
Parcels (polygons) with scores	PriorityParcels_111220 (not Raster)	N/A

Note that all nine focal species have a maximum score of 3 points: Timber Rattlesnake, New England Cottontal, and Eastern Wormtail receive 2 pts for IA and 1 pt for EDM (so overlap = 3pts), Tiger Spiketail 2 pts EDM and 1 pt IA Wetland and Terrestrial Animals (as it was not seperated out in IA data), Wood Turtle and Bald Eagle 3 pts IA as there is no EDM, American Eel 3 pts for Eel area/adjacent riparian area, Spotted Salamander 3 pts for vernal pool used as proxy, and Wood Thrush 3 pts for Forest cores as proxy.

Data Layers by Focal Species

Green Corridors Focal Species Data		
Species	**Data Layers**	**Data Source**
New England cottontail (Sylvilagus transitionalis)	Important Areas*, EDM Threshold**	DEC Hudson River Estuary Program, NY Natural Heritage Program
Bald eagle (Haliaeetus leucocephalus)	EDM Threshold	NY Natural Heritage Program
American eel (Anguilla rostrata)	EDM Threshold	NY Natural Heritage Program
Timber rattlesnake (Crotalus horridus)	Important Areas, EDM Threshold	DEC Hudson River Estuary Program, NY Natural Heritage Program
Tiger spiketail dragonfly (Cordulegaster erronea)	EDM Threshold	NY Natural Heritage Program
Eastern wormsnake (Carphophis amoenus)	EDM Threshold, forest core data	NY Natural Heritage Program, DEC Hudson River Estuary Program
Spotted salamander (Ambystoma maculatum)	Vernal pool model locations used as a proxy	Teatown Lake Reservation modeling
Wood turtle (Glyptemys insculpta)	Important Areas, wetlands as habitat proxy	DEC Hudson River Estuary Program, National Wetlands Inventory
Wood thrush (Hylocichla mustelina)	Forest core data as habitat proxy	DEC Hudson River Estuary Program
Various	Plants by Species	DEC Hudson River Estuary Program
Various	Communities by Type	DEC Hudson River Estuary Program
Various	Animals - Wetlands and Terrestrial	DEC Hudson River Estuary Program
Various	Animals - Bat foraging	DEC Hudson River Estuary Program
Various	Animals - Fish	DEC Hudson River Estuary Program

*Note: What is an "Important Area"? As per the New York Natural Heritage Program: "Natural Heritage Important Areas (IAs) are lands and waters that can play a critical role in the conservation of rare species and significant natural communities. IAs are derived using Important Area GIS models (IA models) applied to known occurrences of rare plants and animals and significant natural communities documented in the New York Natural Heritage database, or applied to observation locations of other species obtained from other sources. The Natural Heritage Important Areas in the Hudson River Valley factsheet (https://www.nynhp.org/documents/9/nynhpiafs.pdf) provides a summary of Important Areas and how they can be used in local conservation planning." (https://www.nynhp.org/projects/hudson-river-important-areas/)

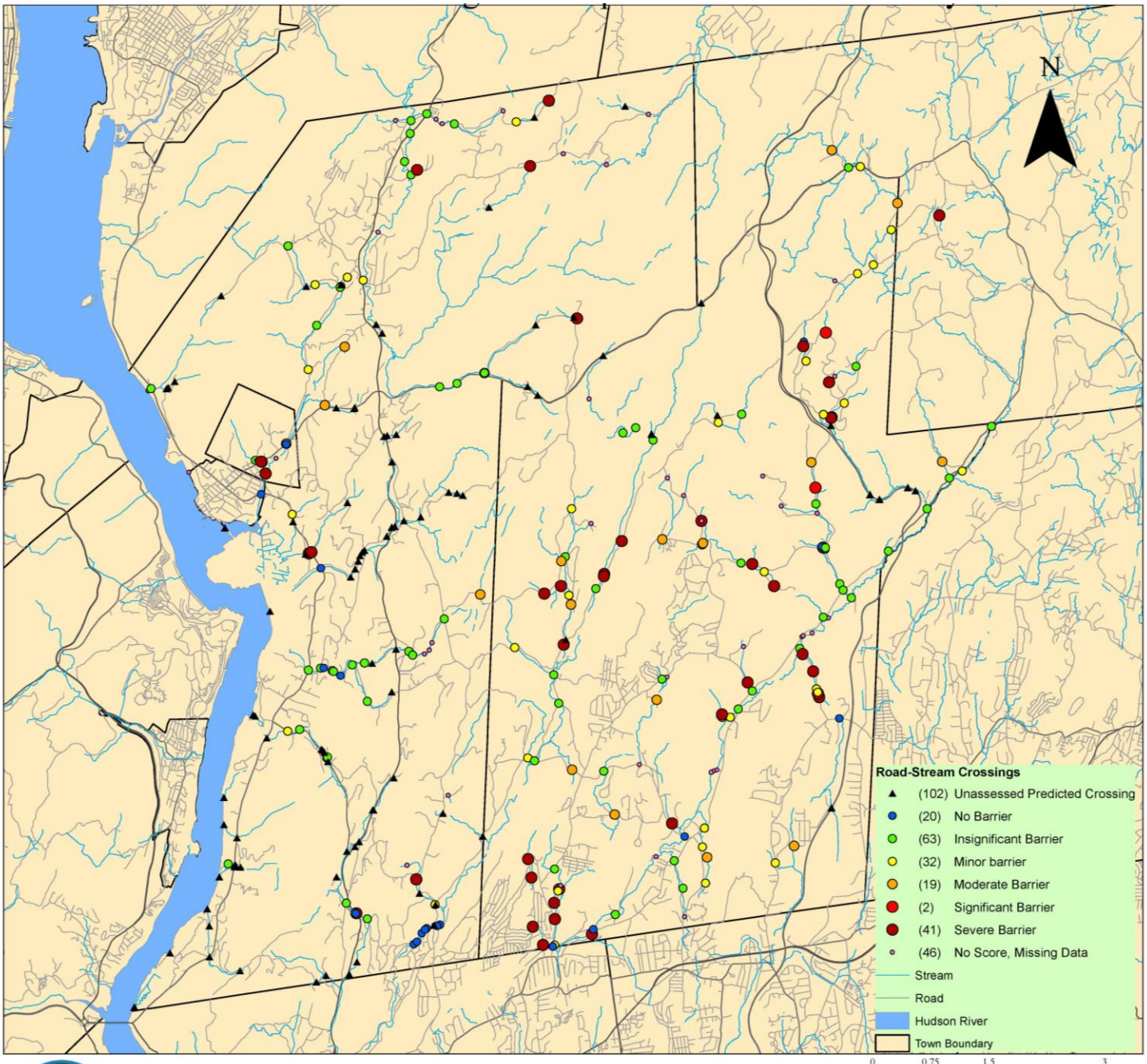
**Note: What is an "EDM Threshold"? Empirical Dynamic Modeling, or "EDM", is a type of data analysis that infers patterns based on confirmed data and parameters. The EDM Threshold layers used in this study incorporate known species locations with information on what habitats are suitable for those species.

Data Layer Sources

Partner Priorities	Source
Scenic Hudson's Hudson Valley Conservation Strategy	Scenic Hudson Land Trust, "Hudson Valley Conservation Strategy." 2020; updated regularly. Internal data layer: HVCS_Hex10ac_MultipleObjectives.
Hudson Highlands Land Trust's Tier I Legacy Landscapes	Hudson Highlands Land Trust, "Legacy Landscapes." 2020. Internal data layer.
United States Forest Service's Highlands Conservation Act important areas	United States Department of Agriculture, Forest Service. December 2002. Marcus Phelps, Martina Hoppe (compilers). "New York - New Jersey Highlands Regional Study: 2002 Update." Newtown Square, PA. Digital PDF; data layer digitized by Hudson Highlands Land Trust.
Berkshire Wildlife Linkage priority connectivity areas	Staying Connected Initiative. "Green Mountains to Hudson Highlands Linkage." 2020. The Nature Conservancy.
Appalachian Trail and possible side trail (buffered by 1 mile)	Appalachian Trail Conservancy (ATC). 2018. Appalachian Trail centerline data, provided by ATC staff.
Highlands Trail, existing and possible route (buffered by 1 mile)	New York - New Jersey Trail Conference and Hudson Highlands Land Trust. 2020. Data on existing and potential Highlands Trail route compiled by NYNJTC Highlands Trail East chair, Gary Haugland, NYNJTC cartographer, Jeremy Apgar, and HHLT staff, Nicole Wooten.
NYS Parks: Priority Lands (parkland buffers)	OPRHP: Office of Parks, Recreation and Historic Preservation. 2019. Areas of interest based on existing parkland. Internal data layer.
Town of Philipstown Open Space Index: Priority Areas	Town of Philipstown, Open Space Index. 2016. Municipal data layer. Plan available at: https://philipstown.com/Open%20Space%20Index.pdf
Philipstown clean drinking water priorities	Village of Cold Spring, Town of Philipstown and The Chazen Companies: Cold Spring update to "Town of Philipstown Groundwater Report and Planning Resource, Jne 2007." 2018. Accessible at: bit.ly/cs-water-study
Croton-Highland Corridors (referenced by Town of Putnam Valley's Natural Resources Inventory and other documents)	Croton-to-Highlands Biodiversity Plan. 2004. Miller, N.A. and M. W. Klemens, Metropolitan Conservation Alliance, Wildlife Conservation Society. Rye, NY. As referenced in Putnam Valley Natural Resources Inventory.
Putnam Valley Comprehensive Plan: Priority Areas for Conservation	Town of Putnam Valley, "Comprehensive Plan and Generic Environmental Impact Statement." 2007. Digitized data from digital PDF. Putnamvalley.com/comprehensive-plan-documents/
Hudson to Housatonic's highest priority areas	H2H: Highstead Foundation. Hudson to Housatonic Strategic Conservation Plan. July 2018. Online webmap and data.
Northern Appalachian Trail Landscape Partnership's top priority areas	Northern Appalachian Trail Landscape Partnership. 2019. Appalachian Trail Conservancy and partners.
United States Forest Service's Highlands Conservation Act eligible areas	USFWS: United States Fish & Wildlife Service data layer, from United States Department of Agriculture, Forest Service. December 2002. Marcus Phelps, Martina Hoppe (compilers). "New York - New Jersey Highlands Regional Study: 2002 Update." Newtown Square, PA. Digital PDF.
The Nature Conservancy's Resilient & Connected Network	TNC: Resilient Land Mapping Tool. North Atlantic Landscape Conservation Cooperative(funder), Mark G. Anderson (Principal Investigator), 2018-01-09 (creation), 2018-01-09 (last update), 2016-12-12 (publication), Resilient and Connected Landscapes for Terrestrial Conservation. Data layers: Climate corridor, Resilient with confirmed biodiversity.
NYS Parks habitat index top tiers	OPRHP: New York State Office of Parks, Recreation and Historic Preservation. 2016. The OPRHP Website (online). Accessed 2020 at http://nysparks.com/environment/biodiversitytool.aspx. NYS OPRHP, 625 Broadway, Albany, NY 12207.
Scientific Priorities	
Vernal Pools	Teatown Modeled Woodland Pools from "Mapping Woodland Pools in the Hudson Hills and Highlands," February 2013, report prepared by Michael J. Rubbo, Ph.D.
Wetlands (DEC and NWI)	(1) NYS DED: Published 19990101. Regulatory Freshwater Wetlands - New York State - 2002 (NYSDEC). Edition 1.0; NAD 83. New York State Department of Environmental Conservation (NYSDEC), Albany, NY. https://gis.ny.gov/gisdata/metadata/nysdec.fwwetlands_cugir.xml (2) USFWS: Published 2020. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/

Forest Core and Edges by Index Patches	NYNHP: Forest Condition Index, Hudson Valley Forest Patch Update and Assessment. New York State Department of Environmental Conservation, Division of Water. 2020. https://www.nynhp.org/projects/hudson-valley-forest-patches/
American Eel/Riparian	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Important Areas - Rattle Snake	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Important Areas - Wood Turtle	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Important Areas - Bald Eagle	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Important Areas - New England Cottontail	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Important Areas - Eastern Wormsnake	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
EDM Threshold - New England Cottontail	NYNHP: Empirical Dynamic Modeling. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. Internal data layer.
EDM Threshold - Tiger Spiketail	NYNHP: Empirical Dynamic Modeling. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. Internal data layer.
EDM Threshold - Eastern Wormsnake	NYNHP: Empirical Dynamic Modeling. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. Internal data layer.
EDM Threshold - Timber Rattlesnake	NYNHP: Empirical Dynamic Modeling. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. Internal data layer.
Plants by Species	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Communities by Type	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Animals - Wetlands and Terrestrial	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Animals - Bat foraging	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/
Animals - Fish	NYNHP: Natural Heritage Important Areas for the Hudson River Valley. New York Natural Heritage Program, New York State Department of Environmental Conservation. 2018. https://www.nynhp.org/projects/hudson-river-important-areas/

Appendix D: Road-Stream Crossings in Philipstown and Putnam Valley



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