

# Enhancing Community Resiliency to Climate Hazards:

## What are Hudson Valley communities doing now to adapt?

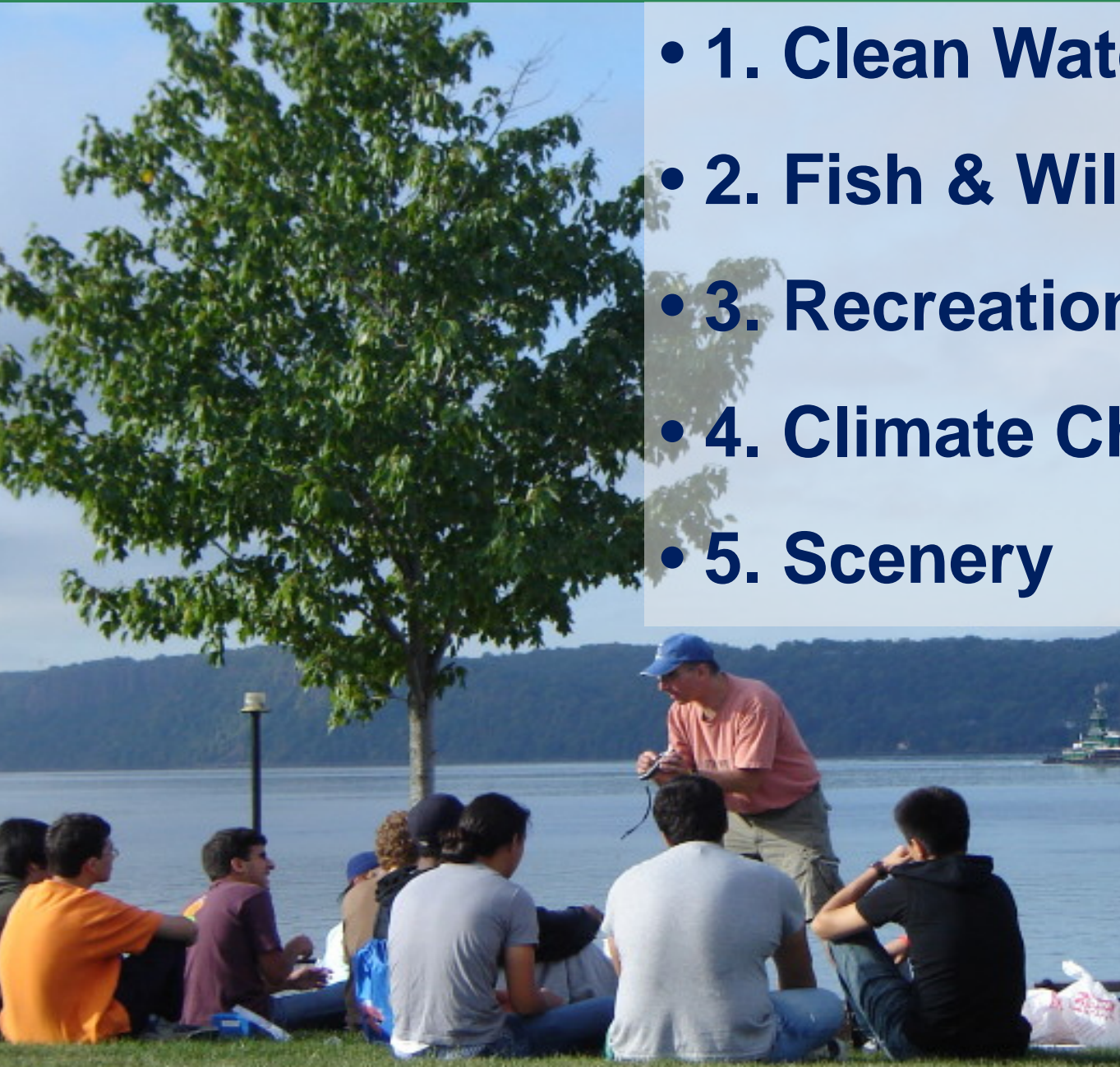
Kristin Marcell

Hudson River Estuary Program/Cornell WRI



# Hudson River Estuary Program works on:

- 1. Clean Water
- 2. Fish & Wildlife Habitats
- 3. Recreation & Access
- 4. Climate Change
- 5. Scenery



## Hudson River Estuary Action Agenda 2010 - 2014

*"Helping people enjoy, protect and revitalize the Hudson River and its Valley"*



Hudson River Estuary Program  
New York State Department of Environmental Conservation  
In partnership with participating federal and state agencies as well as local  
municipalities, non-profits, universities and businesses.



40 years of stewardship 1970-2010



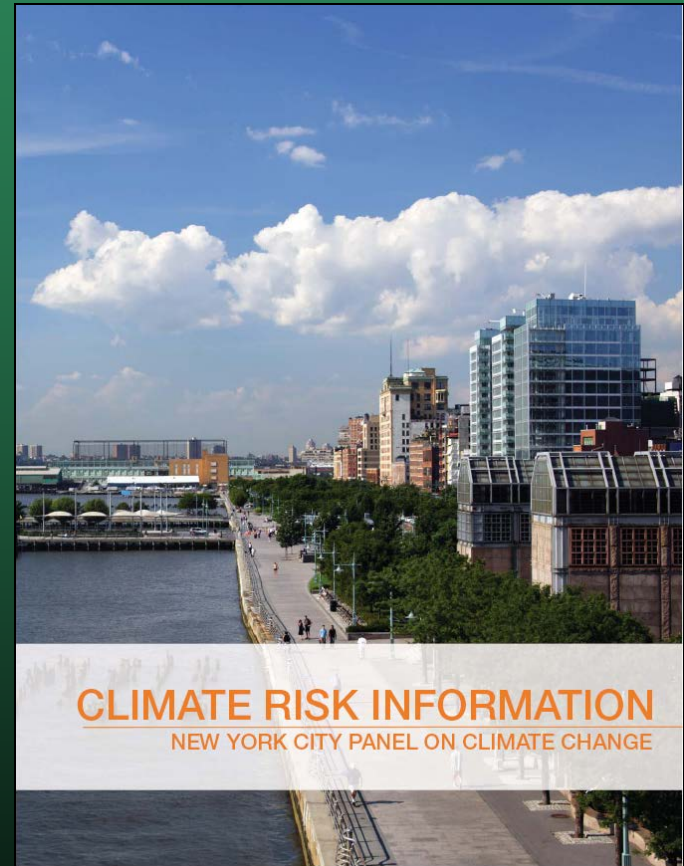
# Adaptation Examples



# Evaluate Risk and Plan for Adaptation

## New York City

- PlaNYC 2030
- NYC Panel on Climate Change
- NYC Adaptation Task Force
- Infrastructure focus
- <http://nyc.gov/planyc2030>





# Evaluate Risk and Plan for Adaptation

- City of Albany
- Developing a vulnerability assessment and adaptation plan.
- Will be incorporated into Albany's Comprehensive Plan - Albany 2030
- <http://albanyustainability.org/climate.asp>



For the rest of us....



# Climate hazards relevant to towns based on best available science

- Sea level rise
- Intense downpours
- Extreme storms
- Extreme heat
- Short term drought
- Changes in Great Lakes levels







What are communities doing  
now at low cost?





# Conserve and emphasize “Green” Infrastructure

## Town of Bethlehem Rain Garden

- Treats parking lot and sidewalk runoff through infiltration prior to entering storm drain
- Cost: Plants (\$850) covered by Albany SWCD. Cornell COOP Ext. in-kind services for design. Town covered excavation and mulch costs.
- Maintained by Town



# Green Infrastructure Examples in the Hudson Valley

<http://www.dec.ny.gov/lands/58930.html>



DEPARTMENT OF  
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## Vassar College Rain Garden

### Description

This rain garden is an example of green infrastructure in an institutional setting. The runoff from the maintenance building is directed to the rain garden where it is infiltrated into the ground.

### Site Location

- **Site Address:** Hooker Ave. Poughkeepsie, NY 12601
- **Town:** Poughkeepsie
- **County:** Dutchess
- **Land Use of Site:** College Campus
- **Can Site be visited?:** Check with College
- **Location on Site:** North of first building on the right after entering the athletic complex from Hooker Avenue

### Practice Information Details

- **Intent of Design:** Treat parking lot runoff through infiltration and biological uptake.
- **Stormwater Management Capacity:** 152 Cubic Feet



Page Applies To:



### Related Links:

[Better Site Design Program for the Hudson River Estuary](#)

[NYSDEC Construction Stormwater Toolbox](#)

[NYSDEC Stormwater Public Review Documents](#)

### Offsite Links:

[Low Impact Development Center](#)

[Environmental Institute of America](#)

[Outdoor Activities](#)

[Animals, Plants, Aquatic Life](#)

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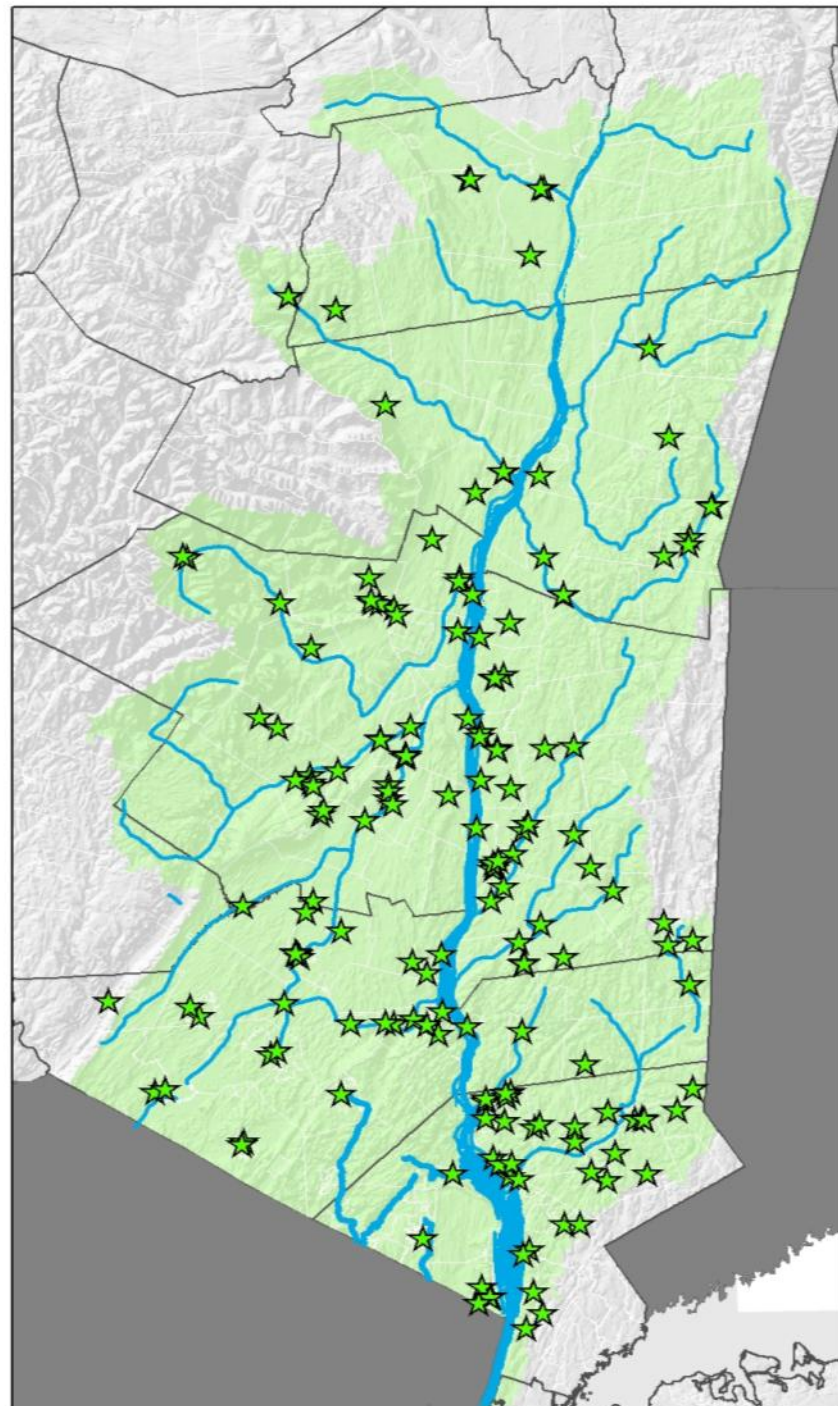
# Trees for Tribs

## Restoring streambanks

- 205 sites
- 180 partners
- 26,000 native plants
- 69,000 ft of streambank
- 2,700 volunteers



TREES FOR TRIBS  
Hudson Estuary



# Conserve and emphasize “Green” Infrastructure



## Town of Poughkeepsie

- Stream buffer restoration in local park
- Design and plant material by Hudson River Estuary Program. Planting by local volunteers.





# Allow Room for Rivers

- **Town of Pleasant Valley**
  - **Floodplain Protection: Zoning code limits uses in 100 yr floodplain to agriculture, forestry, recreation, and other uses minimally affected by high water (housing and bldgs sited elsewhere).**
  - **Requirement for no net loss of groundwater infiltration for a 10 year storm in most zoning districts.**
  - **<http://pleasantvalley-ny.gov/>**

# Allow Room for Rivers



## Village of Tarrytown

- Shoreline “eco-corridor” with swales and native grasses
- Shoreline restoration at Andre Brook
- <http://www.scenichudson.org/news/article/ribbon-cutting-hudsons-newest-riverfront-park-opens-tarrytown/2011-10-5>





# **Don't drown wetlands!**

- **Town of North Salem**
  - **Policy statement on importance of protecting wetlands of the town**
- **Town of Greenburgh**
  - **Wetlands Inspector**
  - **Regulated activities**
  - **Permit applications reviewed by CAC**
- **Also Pawling, Poughkeepsie, Clinton, Lewisboro, Philipstown and others**

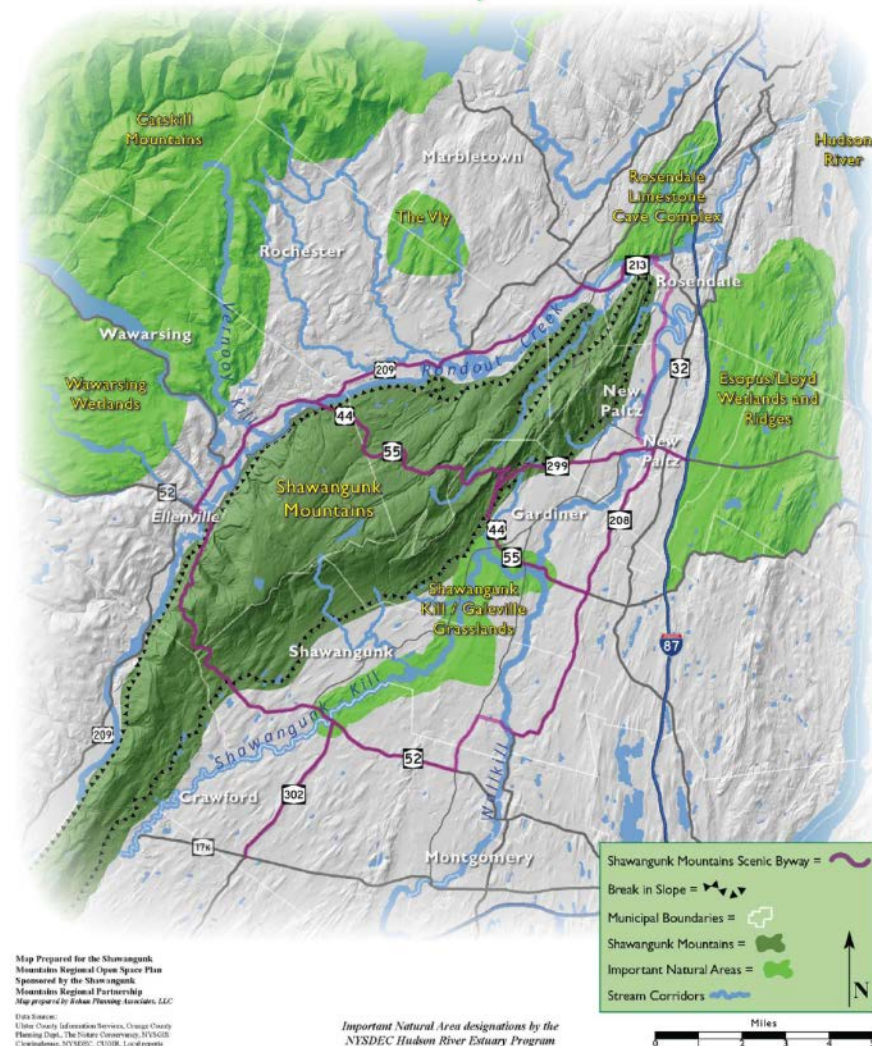


# Foster Habitat Connectivity

Town of Gardiner  
Shawangunk Ridge zone

- PB findings based on required Conservation Analysis
- Conservation subdivision required unless the PB finds that conventional subdivision has less impact
- 100ft stream, wetland, seep buffer

Connections Between the Shawangunk Mountains and Other Important Natural Areas





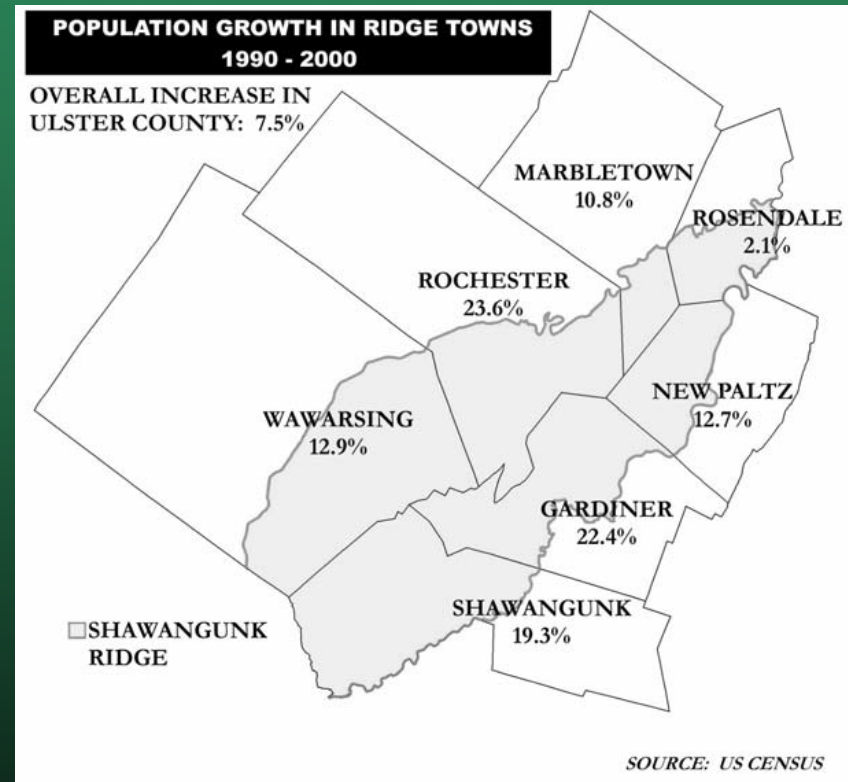
# Work with neighbors

## Shawangunk Biodiversity Partnership Green Assets

- Engaged >7 communities in plans to protect natural assets
- <http://www.mohonkpreserve.org/pdf/Community.pdf>

## Intermunicipal watershed planning

- Fallkill, Casperkill, Wappingers, Fishkill Creeks
- <http://www.dutchesswatersheds.org/watersheds>



# Plan Across Agencies

## Town of Cortlandt

- Established an employee green team across divisions to initiate green actions in Town departments.

## City of New Rochelle

- Sustainability Advisory Board and Plan
- Done by volunteers under City Sustainability Coordinator
- <http://www.newrochelleny.com/greeNRdraft>





— HUDSON RIVER —  
**SUSTAINABLE**  
**SHORELINES**

NYS Department of Environmental Conservation











- Engineering studies
  - Mapping high, med, low energy shorelines
  - 10 treatments at 3 sites in 3 time periods with sea level rise
- Demonstration site design @ Cocksackie
- Interviews & case studies of decision-makers
- Legal opportunities study
- Evaluating habitat value of built shorelines



# Questions?



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