

PRESERVING A BIOLOGICAL TREASURE

Conservation in the Binnewater Hills
Ulster County, New York



Joppenbergh Mountain in the shadow of the Trestle at the southern end of the Binnewater Hills.

A Landscape with Many Roles

Many of the thousands of hikers, cyclists and runners who visit the historic Wallkill Valley Rail Trail every year remark on the striking, verdant vegetation and silver cliffs along the trail's northern stretch. This distinctive landscape—part of an area called the Binnewater Hills—has long been of interest to biologists, geologists, historians and conservationists, yet no full environmental inventory had ever been conducted there.

Seeing the need for a coordinated conservation blueprint, the Open Space Institute (OSI), Wallkill Valley Land Trust (WVLT) and Rondout Esopus Land Conservancy (RELC) engaged the environmental sciences nonprofit Hudsonia Ltd. to identify critical areas in the Binnewater Hills. Encouraged by the findings, the organizations are redoubling efforts to protect the ecologically significant landscape.



Photo: Adam Mann, USFWS



The Binnewater Hills' caves and abandoned mines are one of the top 10 wintering sites in the country for the Indiana bat (which is on both federal and state lists of endangered species) and one of the top 15 wintering sites in the world for the eastern small-footed bat (a New York State species of special concern).

The complex system of limestone caves provide habitat for the Indiana Bat.

Photo: Brett Cole



Historic Rosendale cement kilns near Joppenbergh Mountain and the Rosendale Trestle.

Photo: Joe Doherty / USFWS
twistedstir.com/videos/guided-meditation-with-profanity



The Red-Shouldered Hawk frequents the Binnewater Lakes.

A Geologist's Paradise

Running five miles through the eastern Ulster County towns of Rosendale, Hurley and Ulster, New York, the Binnewater Hills consists of more than 7,300 acres of steep crests, ledges, boulders and layered sedimentary rock. With Nature as engineer, water filters through and slowly dissolves the rocky crust, pooling in wetlands and streams before sinking into an intricate web of fissures, caves and abandoned mines. The area's rugged ravines and ridges, ranging from 4 to 480 feet above sea level, are part of a belt of similar karst topography spreading from New Jersey to Albany. The resulting landscape entices visitors and supports many diverse and critical habitats.

A Biological Treasure

The cluster of regionally uncommon and even novel features creates an oasis of microhabitats for sensitive and endangered plants and animals (Table 2, page 5). The rocky terrain, full of calcium, supports many uncommon organisms, such as goldenseal and yellow harlequin flowers, anise millipedes and the northern slimy salamander. A network of wetlands, lakes and above-and below-ground streams are critical for connecting habitats for the pied-billed grebe, great blue heron and red-shouldered hawk. Caves and abandoned mines—the legacy of a once-thriving cement industry that operated from 1825 to 1970—make a premier home for hibernating bats. These areas create a national biological treasure right in the Hudson Valley.

Taken together, the web of adjacent and largely intact natural areas is vital for many plants and animals. The slow and steady spotted turtle is just one of many species that depend on the Binnewater Hills' mosaic of connected wetland and upland habitats: it may use marsh, wet meadow, hardwood forest, shrub understory, swamp, pool and open water habitats—all in a single year.

Despite the area's many values to humans, plants and animals, only 12 percent of the Binnewater Hills region is officially protected from growing development.

A Climate Haven

Under a shifting and unpredictable climate, many lands that shelter wildlife today may not harbor the same species tomorrow. One new approach to conservation uses climate resilience science to identify areas with the complex geology and landforms needed to support biodiversity under changing temperatures. And the Binnewater Hills is just such a place: its complex landscape will make it a highly effective haven for the animals and plants most vulnerable to climate shifts. What is more, the area is part of a regional wildlife corridor—one of only two such relatively intact areas stretching across the Hudson River south of the Adirondacks—giving animals room to roam, spread out and thrive.

An Economic Asset

The Binnewater Hills also helps nearby towns save money on costly infrastructure, since its wooded slopes naturally help prevent floods and its wetlands filter local drinking water, among many other benefits.

The area's many recreational and educational values draw visitors who support the local economy:

- On its journey through Ulster County and the Binnewater Hills, the 22-mile Wallkill Valley Rail Trail routes recreationists through the hearts of Gardiner, New Paltz and Rosendale, directing economic benefits to local businesses there and throughout the region. The Wallkill Valley Rail Trail was recently named one of the nation's top-10 rail trails, and it ranks in the top 4 percent in the Rails-to-Trails Conservancy national database. The trail also connects a regional network of more than 100 miles of hiking, mountain-biking, and cross-country skiing trails.
- The Binnewater Hills' seven lakes support boating, fishing and ice fishing.
- Joppenbergh Mountain's rugged slopes are ideal for educational field trips.



The Northern slimy salamander's preferred habitat is moist soil or leaf litter beneath stones, near a permanent water source.

Photo © Michael Benard / www.mister-toad.com



Yellow Harlequin flowers thrive in the microhabitats of the rocky terrain in the Binnewater Hills.

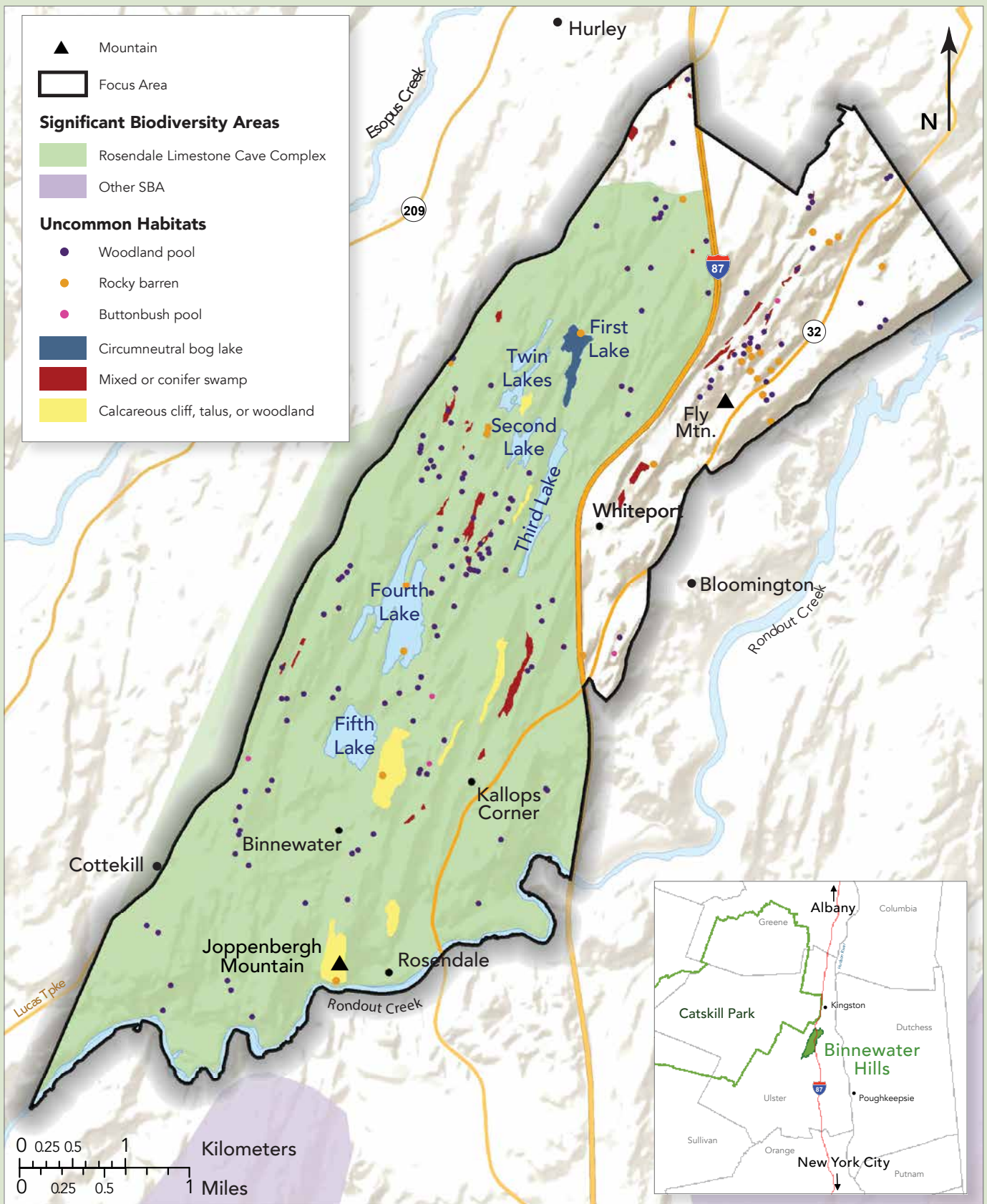
Photo: Christopher Graham



Bikers cross the Rosendale Trestle.

Photo: Brett Cole

Significant Biodiversity Areas and Uncommon Habitats



What Gets Measured Gets Done: Creating a Plan for Preservation

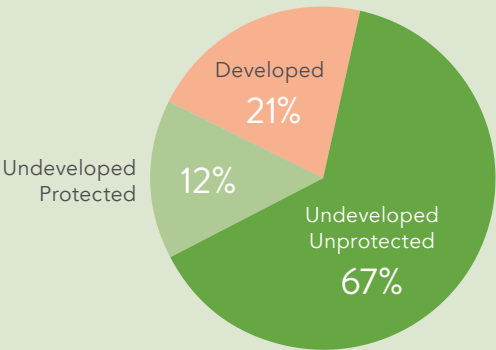
Using information on wildlife, vegetation, geology, wetlands and other features, Hudsonia Ltd. conducted an extensive field study to develop fine-scale maps of ecologically significant habitats and priority protection areas in the Binnewater Hills. Table 2 (below) provides more information about these areas within the Binnewater Hills.

Preservation is paramount, but much remains to be done. Despite the Binnewater Hills’ ecological significance, only 12 percent of the area has been conserved, due to the efforts of OSI, WVLT, RELC and the New York State Department of Environmental Conservation.

Land development is an immediate threat: not only does it divide forests and other habitats into small blocks unsuitable for many native species, it also blocks recreational access and hinders nature’s ability to filter air and purify water.

Going forward, OSI, WVLT, and RELC will use the report’s findings to work with the local communities to catalyze protection of key portions of the Binnewater Hills. The effort will strengthen partnerships among the many organizations, public and private, dedicated to protecting this vital landscape.

Table 1
Protecting the Binnewater



The assessment prioritizes portions of the Binnewater’s undeveloped, unprotected lands for conservation.

Table 2 Binnewater Hills (Total 7,300 acres) Priority Habitats for Conservation

Priority habitat	Extent	Associated species	Human benefit
Forest	4,550 acres	Forest-interior birds	Sequesters carbon, filters drinking water, filters air, mitigates flooding
Crest, ledge, talus	2,852 acres	Eastern racer, eastern rat snake	Provides geological research, educational and scenic value
Wetland complex	240 acres of lakes, ponds; extensive wetland complexes	Spotted turtle	Sequesters carbon, filters water
Circumneutral bog lake	21 acres	Northern cricket frog	Filters drinking water
Intermittent woodland pool	116 pools totalng 20 acres; largest cluster in Hudson Valley	Pool-breeding amphibians	Provides educational opportunities
Buttonbush pool	4 acres	Pool-breeding amphibians, spotted turtle	Sequesters carbon
Mine, cave	Many unmapped caves and abandoned cement mines	Indiana bat, small-footed bat, northern long-eared bat	Offers historic, educational and research value; filters and conveys drinking water

Table and Map Definitions:

- Talus:** a sloping accumulation of rock fragments below a ledge
- Intermittent woodland pool:** a small, shallow, isolated wetland surrounded by forest
- Buttonbush pool:** a seasonal or permanent pool with shrubby vegetation (particularly buttonbush)
- Circumneutral bog lake:** a wetland with nearly pH-neutral water and floating mats of bog vegetation



Organizations Protecting the Binnewater Hills

Hudsonia Ltd.

New York State
Department of
Environmental Conservation

New York State
Office of Parks, Recreation
& Historic Preservation

Open Space Institute

Rondout-Esopus
Land Conservancy

Town of Hurley

Town of Rosendale

Ulster County

Wallkill Valley Land Trust

The Open Space Institute, Wallkill Valley Land Trust and Rondout-Esopus Land Conservancy in the Binnewater Hills

OSI, WVLT and RELC are committed to protecting the Binnewater Hills, where they first elected to undertake this conservation planning effort two years ago. The groups have long been involved in protecting the area: in December 2010, OSI acquired a 118-acre tract at the southernmost extension of the Binnewater region, which includes Joppenbergh Mountain. OSI then transferred the land to WVLT, which is engaged in a planning effort to make the rugged mountain available for public recreation and education. Over the last several years, RELC has also acquired two contiguous conservation easements, totaling over 520 acres, in the southern Binnewater Hills, to protect important bat habitat and two of the region's seven lakes.

The Binnewater Hills and Lakes Conservation Assessment Report by Chris Graham, Erik Kiviat & Gretchen Stevens, Hudsonia Ltd., June 2014

The Binnewater Hills Conservation Assessment was completed in 2014 by Hudsonia Ltd., for OSI, WVLT and RELC. Funding for this project came from the New York Environmental Protection Fund and the New York State Conservation Partnership Program administered by the Land Trust Alliance, in partnership with the state Department of Environmental Conservation.

For more information about conservation in the area, and to see the *Binnewater Hills and Lakes Conservation Assessment* in its entirety, please visit **www.osiny.org/binnewater**



Open Space Institute

The Open Space Institute protects scenic, natural and historic landscapes to provide public enjoyment, conserve habitat and working lands and sustain communities. Founded in 1974 to protect significant landscapes in New York State, OSI is a leader in environmental conservation, having partnered in the protection of nearly 2.2 million acres in North America, from Alabama up the spine of the Appalachians to southeastern Canada.

Wallkill Valley Land Trust

The Wallkill Valley Land Trust's mission is to enhance the quality of life in Southern Ulster County by conserving lands of scenic, agricultural, ecological, recreational and cultural significance.

Rondout-Esopus Land Conservancy

Rondout-Esopus Land Conservancy was founded in 1987 to protect open spaces in the Rondout and Esopus valleys. We have protected nearly 3,200 acres in perpetuity.

