Cliffs with shaded cool areas at base.

Please give generously to support Hudsonia's research and education programs!

The current rate of sea level rise requires rapid adjustment that soils and plants of Hudson River tidal habitats may find challenging. Tide-affected habitats can shift up gentle and undeveloped slopes, but can they shift quickly enough? Twenty years ago we studied vegetation and soils in fifteen Hudson River tidal marshes from low tide level to high tide level. We hope to repeat those studies to discern if vegetation is keeping up with sea level rise or being slowly drowned. This information can help identify conservation priorities along the tidal shoreline, and emphasizes the urgency of mitigating climate change.

Donations to Hudsonia are deductible to the fullest extent allowed by law. Hudsonia's most recent Form 990 is available from the New York State Department of Law Charities Bureau or the Hudsonia office.

Hudsonia conducts research and produces information for environmental professionals who plan, manage, and conserve the landscape where you live, work, and play. The basic natural history, ecology, and management that we study, combined with climate science from other researchers, provides building blocks for strategies and actions that we hope will allow nature, including humans, to flourish in this era of rapid change.

Tidal marshes are vulnerable to sea level rise

Mountain masses have cool climates, Photo: Ingrid Haeckel

Visit our website: www.hudsonia.org

We welcome inquiries for copies of reports, publications, and data; technical assistance; and research.

Hudsonia

Spring Funds Appeal

2019

Spring salamander, a species of cool streams
Photo: Jason Tesauro

Environmental Research and Education
Science for Conservation

Our work in this time of climate change

Pitcher plant, *Sarracenia purpurea*

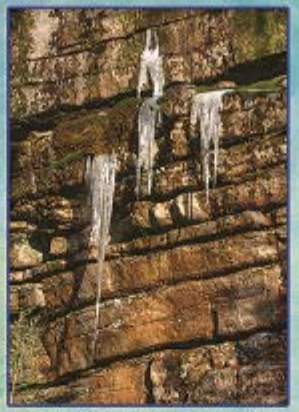
In 2001, we wrote in the Biodiversity Assessment Manual that the "cool ravine" habitat often supported plants and wildlife of northern affinities, including leatherwood, spikenard, American yew, and breeding winter wren, blue-headed vireo, and dark-eyed junco. Yet we did not mention global climate warming in the Manual.

Since then, the fact that the climate in the northeastern states is becoming warmer and wetter, with more intense storms and a rapidly rising sea level, has brought increased urgency to the work we do. Here's how our research plays a central role in developing strategies amid growing concern about the effects of global change in our region.

Saw-whet owl breeds in the northern U.S., Photo: Esther Kiviat

The "cool spots" we mentioned above provide refuge for the persistence of organisms that cannot otherwise withstand warming temperatures, and are a crucial area of our studies. Many of the cooler habitats, large or small, have microclimates conditioned by shade, groundwater, elevation, or other factors. Important shade may be cast by forest, a hill or cliff, a stone wall, a building, or the trunks of large trees. In shady places, snow and ice last longer and organisms of cool habitats survive.

Lungwort lichen may decline as climate warms.



Early-persisting ice on cool exposure, Minnewaska State Park, NY

Discharging groundwater, in springs or seeps, is at mean annual temperature about 47-55° F. It cools the immediate environment in the growing season in trout streams, fens, and the moats bordering peaty wetlands. Plants and animals can find shelter from the summer heat in these places.

Cliff, Thacher State Park, NY

Cool ravine at Stone Church Preserve, NY

Some northern species are persisting in cool spots. The high Catskills, for example, support spruce-fir forests, snowshoe hare, and Bicknell's thrush. Northern species are also shifting their ranges northward or upwards via pathways across the landscape where land cover is favorable. Are we observing fewer, or more, yellow-bellied sapsuckers, winter wrens, and sora rails compared to the 1970s? Information from Hudsonia studies of plant and animal occurrence is helping other scientists and conservationists understand which species are under threat from climate change, where those species occur, and how to protect them.

Question mark butterflies fly earlier as climate warms Photo: Julianna Zdunich

Please donate generously, Nature needs Hudsonia more than ever!

 design by Julianna Zdunich