



WINTER 1988-89

News from..

Hudsonia

Bard College Field Station
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SEVEN YEARS

This fall, Hudsonia Ltd. reached the lucky age of seven! After 120 projects, we want to tell you about our efforts to bring good science to the environmental planning process.

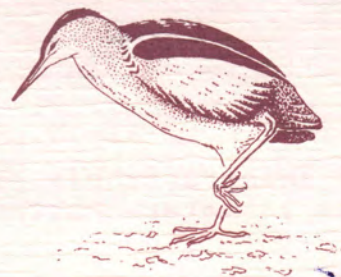
In 1980, Hudsonia's co-founders Jim Stapleton, Bob Schmidt and Erik Kiviat had collectively seen the inside of the environmental establishment from academia to consulting firms to government agencies. We wanted a new institution with a mandate to conduct scientific research that would encourage the wise management of natural resources.

Our first project was the Hudson River National Estuarine Research Reserve planning study for the New York State Department of Environmental Conservation (DEC) and the U.S. Department of Commerce ("a" on Map). We also analyzed solid waste from cider mills (b), the state's water pollutant discharge permit system, curation and cataloging techniques for larval fishes, and air pollution from home heating. Between projects in the Northeast, we made research excursions to Guyana (South America) and northern Ontario.

We always returned to the Hudson Valley: beautiful, biologically diverse, but poorly known despite 350 years of scientific exploration. The pace of economic development here forces us to evaluate mountains, rivers and plains and their living wealth.

Biological Survey

A diversity of native wild plants and animals and their habitats can coexist with economic activities such as residential and commercial development, utilities, mining, logging and waste processing, if environmental planning is explicit, knowledgeable, and organized. On every development site study, we fully and accurately survey an area and assess the presence of important



Least bitterns are more often heard than seen

natural features and the site-specific potential of habitats to support rare or otherwise valuable plants, plant communities, and animals. Information is then shared with state and local resource agencies and other parties with a relevant scientific or regulatory interest, as well as with the grantor or client. Regulatory agencies such as the DEC and planning boards prefer to work with developers who have done their environmental homework.

As consultant to municipalities, businesses, or citizens' groups, Hudsonia is currently studying proposed developments such as the Maybrook Highway in southern Dutchess County (c), a mine near Dover Plains (d), a coal-fired power plant (e), a gas pipeline (f), several major residential subdivisions (e.g., g-l), and a county landfill. We have identified and documented landscape features, habitats and species in need of conservation attention, discussed the likely impact of development upon these, and recommended project design to eliminate, reduce or offset these impacts.



Kristi Inserra-Echols netting fish in water-chestnut



Kristin Westad sampling aquatic vegetation

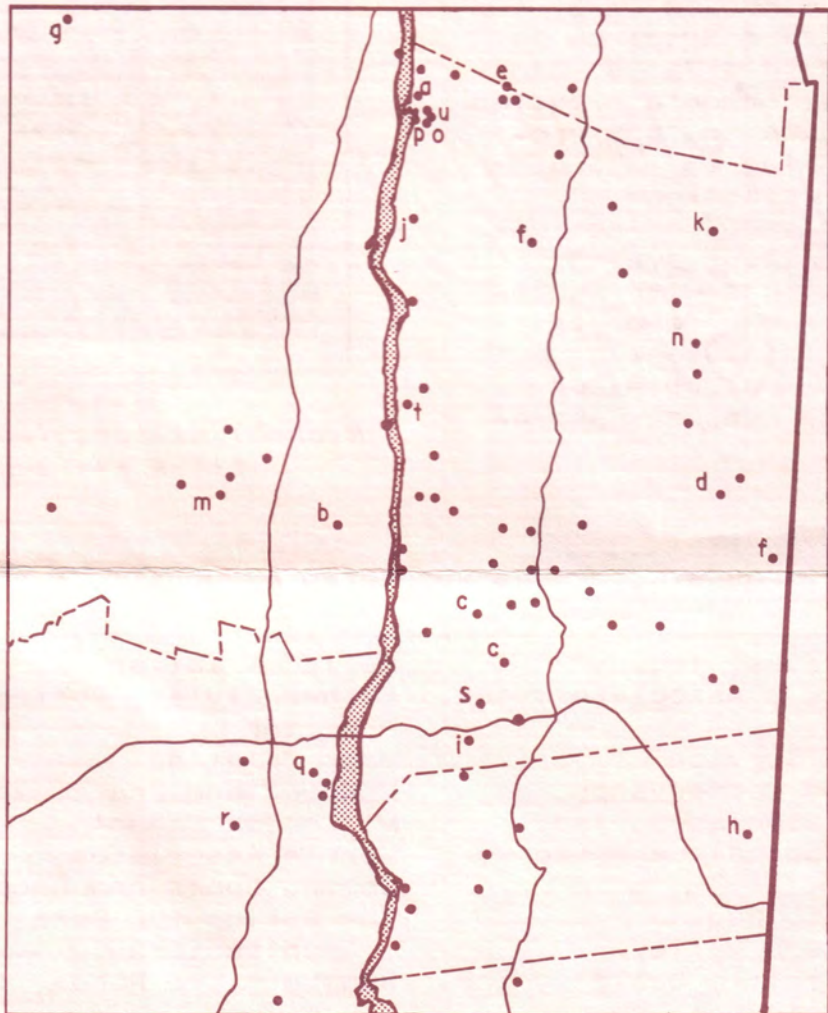
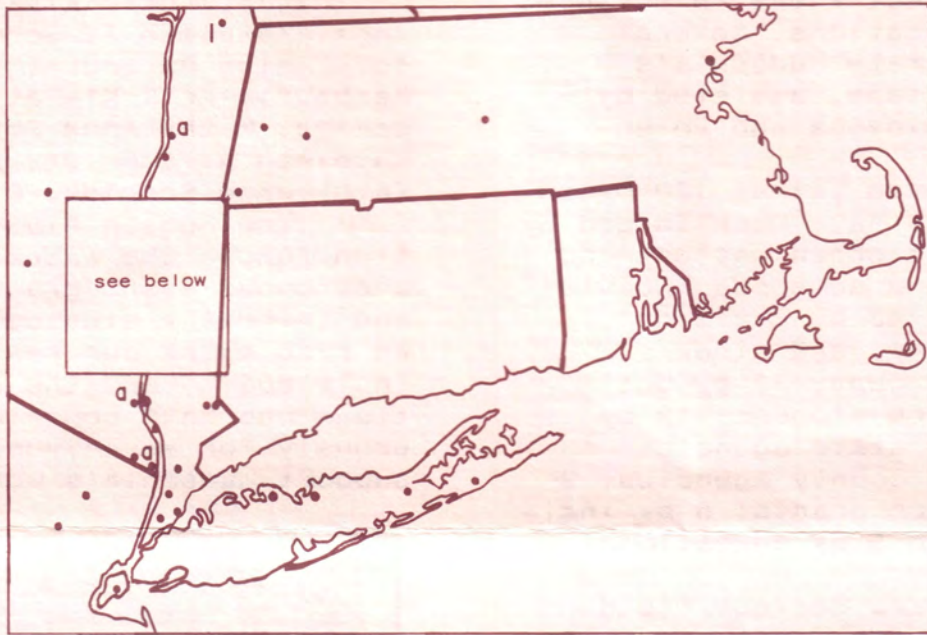
In 1988, Jim Stapleton worked with a forward-looking developer at Outlook Partnership to create a trail guide to the commonly owned lands of Riverpark (m), a proposed residential subdivision on the Wallkill River. We hope this cooperation will inspire developers and planners to a greater environmental sensitivity.

We are also taking a preventive approach with important resources, such as the natural areas of the Millbrook Marsh watershed (n) (see November 1987 *News*), and we have cooperated with the Nature Conservancy and the DEC in the selection, design, and management of scientific reserves.

Too Rare or Too Common

Many rare plants and animals occur where it is too wet or too dry for intensive human

Locations of Hudsonia projects (letters refer to the text)



Hudsonia is a non-profit corporation founded to promote better scientific understanding of human-environment interactions in the Hudson Valley. Donations are tax-deductible; we welcome your support.

activities, or in remnant habitats saved by some fluke of land use. Kristin Westad's eye for the unusual has led to the discovery of notable rare plants including Bush's sedge in the Millbrook Marsh watershed, winged monkeyflower at Montgomery Place (o), and two rare bur-marigolds at Tivoli Bays (p).

Spider Barbour has spent several springs studying populations of the spottily-distributed falcate orange-tip butterfly along ridgetops in Ulster County. This research offers insight into the behavior of organisms near their geographic range limits, as well as helping to conserve this beautiful animal and its habitats (see April 1987 News). In 1988, Spider documented several populations of the Threatened cricket frog in Orange County during surveys for the New York Natural Heritage Program.

At the opposite end of the spectrum from the rare species just mentioned are organisms so common we often consider them pests. Two such plants are purple loosestrife and European water-chestnut, both Old World invaders that displace native plants to the detriment of some native animals and human activities.

Water-chestnut, a rooted floating plant, covers quiet shallows of the Hudson River so thickly that important waterfowl food plants are shaded out, and boating and fishing are virtually impossible from June to September. A 1987 study by Bob Schmidt and Erik Kiviat showed, however, that water-chestnut beds are excellent nursery areas for larval and juvenile fish.

Kathleen Schmidt conducted a 1986 population study of the water-lily leaf beetle, an insect that eats water-chestnut. This beetle may one day be use-

ful for biological control of the plant. For now, water-chestnut could be removed from lanes that would allow boating and fishing without eliminating fish nursery habitat.

Purple loosestrife is displacing cattails, sedges, and bulrushes in many marshes of the northern states and southern Canadian provinces, thereby reducing essential nesting habitat for nine species of birds that depend on this grass-like vegetation. Loosestrife, though, is used by valued native animals such as the cecropia moth and American goldfinch. Observations on loosestrife ecology by Spider Barbour and Erik Kiviat will contribute to the development of sensible methods for selectively regulating this plant.



Cecropia caterpillars, purple loosestrife, and Spider Barbour

Hudson River Fish

Naturalists have known that Hudson River tributary mouths are rich in variety and numbers of invertebrates, fishes, birds and plants. Last spring, Bob Schmidt and Karin Limburg conducted a study of fish spawning in the mouths of 16 Hudson River tributaries. Fishes like alewife herring swim up estuaries and streams from the ocean to spawn (they are "anadromous"), and their eggs and larvae (small baby fish) can be sampled with fine nets.

Should fish ladders be built to allow alewives to migrate around the dams and other barriers that are so common just above the tributary mouths? Should we be more concerned about pollution at stream mouths than elsewhere? The results of Hudsonia's study will help scientists and citizens know how to better protect, restore, and use these habitats.



A little-known insect, the jumping bristletail

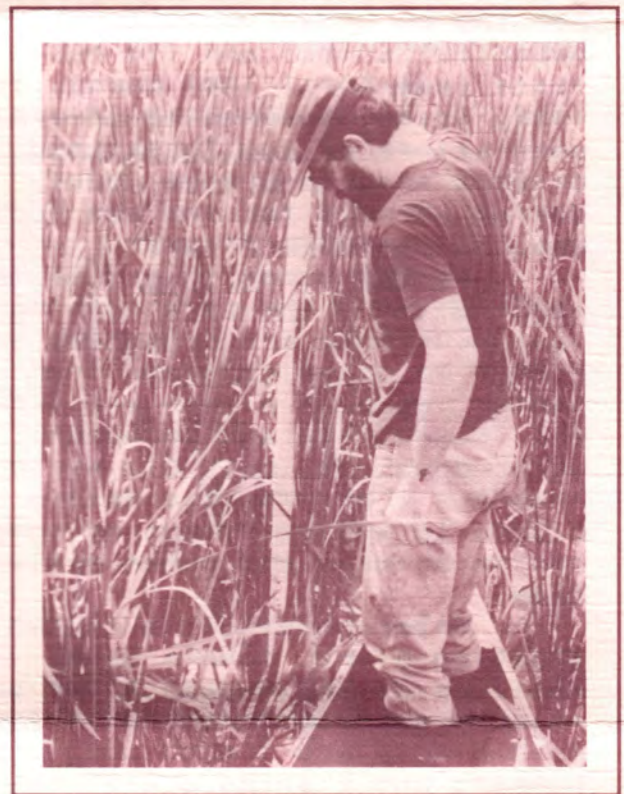
Stream Ecology

Jay Tashiro is studying three Hudson River tributaries: Quassaic (q), Moodna (r) and Fishkill (s) creeks. Using data on water chemistry, aquatic insects, diatoms (algae) and fish, Jay is characterizing habitat differences within and between streams.

The stoneflies, for example, are insects that grow up in

unpolluted, rocky streambeds and emerge from the water (sometimes in winter!) to mate and lay their eggs. Stoneflies are good indicators of chemical and physical conditions. Trout and bluebirds feed avidly on stoneflies. Indicators help us analyze the impacts of economic development on streams, and the influences of streams in turn upon the Hudson River.

Previous Hudsonia work focused on Crum Elbow Creek (t), the Saw Kill (u), and six other streams. A future issue of *News from Hudsonia* will be devoted to Hudson River tributaries.



Roy Budnik coring sediments in a millpond on the Saw Kill

How Does Hudsonia Work?

A Board of Directors governs Hudsonia, assisted by an Advisory Board of leaders in business, science, conservation and education. Forty-five

Research Associates provide technical expertise from a variety of subject areas in science and communications. Several persons operate Hudsonia's office and labs, assisted by student employees and volunteers.

In seven years, 120 Hudsonia projects have been funded by 94 different organizations and agencies, and numerous individual donors: 43 by citizens', environmental, and other nonprofit groups; 32 by businesses and developers; 13 by federal and state agencies; 13 by town and county agencies; 9 by foundation grants; 5 by individuals; and 5 by educational institutions.

The Bard College Field Station is Hudsonia's base, and also houses the Hudson River National Estuarine Research Reserve, and Bard's Master of Science in Environmental Studies and undergraduate ecology programs. The sharing of laboratories, offices, classroom, libraries, specimen collections and equipment allows synergy among organizations with a common interest in environmental studies. The Field Station is the only ecological research facility on the Hudson's shoreline.

Newsletter Credits

Text: Erik Kiviat; *drawings:* Kathleen A. Schmidt; *photos:* Anita Barbour (Spider Barbour), Erik Kiviat (others); *design:* Kathy Anne Schmidt, Kathleen A. Schmidt; *production:* Kathy Anne Schmidt, Linda Nyman.

The Hudson River Foundation funded the water-chestnut, anadromous fish, grass shrimp, and tributary studies mentioned. We also thank our readers, other individuals, and the organizations who have contributed generously for seven years to support Hudsonia's work.



Michael Klemens looking for reptiles and amphibians

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