



News from Hudsonia

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Mountain Lions and Humans: *Sharing a Fragmented Landscape*

By Laura T. Heady

The mountain lion -- also called catamount, cougar, painter, panther, and puma -- once had the widest distribution of any mammal in the Western hemisphere.

"How about coming out this weekend to chase cats?" John asked. I could hardly believe it -- I was going to have the opportunity to witness my first mountain lion. With the aid of radiotelemetry and well-trained hounds, a grueling pursuit over steep ridges and draws finally led us to the young female cougar in need of a radiocollar replacement. Looking down at us from the limbs of a giant conifer, she was the embodiment of grace, strength, and beauty.

After administering a tranquilizer, taking measurements and a blood sample, and replacing her (*continued on next page*)



This anesthetized cat, shown with the author, was radiocollared and tracked in a study of mountain lions living in fragmented habitats in southern Idaho. The mountain lion was later killed by a hunter.

"Smart Growth": The View from the Science Department

Part 1

By Melissa Everett and Erik Kiviat

Imagine that you are standing on Fishkill Ridge in Dutchess County, the site of a bitter controversy involving the impacts of a proposed soil mine on rattlesnake habitat. Or, if you prefer, try Prickly Pear Hill in Westchester County, where a golf course was recently installed; or High Tor in the Palisades, site of mines and subdivisions; or the banks of the Esopus Creek near Saugerties, proposed home of the Empire-Besicorp paper recycling and cogeneration project. All these sites are under intense scrutiny right now. But what can be

seen in any of them -- and what is considered worth looking at -- depends upon the vantage point of the beholder.

* To a real estate developer, the important questions to be asked might concern water and sewer access, drainage, proximity to roads, and zoning.

* To a planner, the questions would revolve around usefulness of this land in relationship to the spectrum of community needs.

* To an open space advocate, the most (*continued on p.4*)

Inside: An AmeriCorps Educator's Story, p.6; Research Notes, p.7



Mountain lions give birth to litters of 2 to 3 kittens. Most litters are born in late summer to early winter. When a cub is a year or two old, it leaves its mother's territory to establish its own home range.



Photo credits: left, © 1999 Laura T. Heady; right, Dr. John W. Laundré

radiocollar, we waited for the cougar to stir, and then watched as she headed back to the hills.

Mountain lions in the Northeast?

Although this thrilling experience occurred in a small mountain range in southern Idaho, it is not hard to imagine a similar moment sometime in the future, right here in southeastern New York. Unverified reports, often submitted by reliable sources, suggest the presence of cougars in the Catskill and Taconic mountains, western Connecticut, and possibly as far south as the lower Hudson Valley. Despite these reported sightings, however, there has been little opportunity to study cougars in the Northeast, due in large part to their highly elusive nature.

Under these circumstances, we need to consider studies of western cougar populations for an understanding of their ecology and conservation needs, and to formulate effective questions as we begin to address the possibility of cougars reclaiming a niche in the wildlife communities of the Northeast.

Before leaving New York for my first venture over the Continental Divide, I

had romantic notions of Idaho as a rugged frontier state, vast, untainted, and populated by more pronghorn antelope than humans. During my five years in Pocatello, I found many of these images to hold true. But also, I witnessed the rapid expansion of the state's populated regions.

Although its total 1998 human population was estimated at only 1.2

Cougar populations suffer when towns and roads fragment their habitat.

million (compared to 18.2 million in New York), Idaho ranks among the five states with the greatest percentage population growth in the country. Over the last nine years, Idaho experienced a population increase of 20% (compared to 1% in New York) and the expanding human population is slowly taking its toll on the wild Idaho landscape I had envisioned.

In particular, I observed the impacts on wildlife, including the large carnivore that epitomizes the wildness of the West, the mountain lion. Although mountain lion populations in northern Idaho have access to large contiguous areas of wilderness, populations in the southern portion of the state are limited

to habitat that has been drastically reduced and fragmented.

Dr. John W. Laundré of Idaho State University has been conducting a long-term study of these southern subpopulations to better understand habitat use, population dynamics, and genetics of cougars in a fragmented landscape. During the time I spent working with John, I began to

appreciate the conservation challenges presented at the interface of a large mammalian predator and a growing human population. Southern Idaho's expanding towns, agricultural lands, and roadways have contributed to the restriction of cougar movement and an overall reduction in average home-range size.

Mountain lions are territorial, and juveniles will remain in their natal range for 12 to 24 months before they begin to emigrate to establish their own home ranges. In a fragmented habitat, however, long-distance dispersal can become limited. This, in turn, affects the population on a genetic level. Without corridors of available habitat, dispersing cougars are subject to

increased mortality risk and may be artificially selected out of the population.

For the southern Idaho cougars, preliminary data have translated into reduced effective population size and reduced genetic variation. With human population growth in Idaho at its current rate, these negative impacts are likely to worsen unless strong conservation plans are implemented.

The idea of mountain lion presence in the Northeast has received both skepticism and support among biologists. Although some reported sightings appear to be authentic, many are thought to involve zoo escapees, abandoned pets, or mistakenly identified bobcats or coyotes.

If cougars are calling the mountains of the Northeast home, however, the important question is not where did they come from, but *are they breeding?* In areas of the Northeast where white-tailed deer and other smaller mammals are proliferating, the prey

base appears adequate to support breeding mountain lions, and the south Idaho population has demonstrated that cougars will live near humans if necessary.

Habitats for mountain lions provide areas for other species such as songbirds.

In addition, current genetic research indicates that there may be far fewer subspecies of *Puma concolor* than previously recognized. From a management standpoint, this preliminary finding further supports the need to shift concerns from whether or not cougars in the Northeast are native, to questions about the population size, available critical habitat, and management needs.

If a breeding cougar population is in fact present, what are the implications for the expanding human population and for the management of a large,

area-sensitive predator in the fragmented habitat of the Northeast? Conservation of a wide-ranging animal like the mountain lion requires landscape-scale efforts, which in turn could benefit other area-sensitive species, such as the bobcat, bear, and even forest-interior songbirds. Return of cougars to the top of the food chain could also have great impact on community dynamics, for both prey species and competing predators, as well as the myriad associated organisms.

And, as pressures of human development and growth increase, the presence of cougars may provide us with the inspiration needed to protect and preserve our remaining wild places.

Please send any information on mountain lion sightings or sign (scat, tracks), with photographs if available, to Laura T. Heady, Research Assistant, Hudsonia, Bard College, PO Box 5000, Annandale, NY 12504-5000.

Mark Your Calendar for 2000

January 28

Friday Forum at the Field Station: "Green Mapping for Community Awareness and Citizen Stewardship," with Wendy Brawer, Modern World Design, creator of the Green Apple Map and many others. 4:00 - 5:30 p.m. Free. Call (914) 758-7053 to pre-register and find out about winter parking options.

March 15-16

Hudson River Environmental Society conference. Erik Kiviat will present on Hudsonia's Biological Surveys of State-Owned Dredge Spoil Areas in Columbia and Greene Counties, the first broad study of the biology of dredge spoil in the Hudson. Phone (518) 861-8020 for information.

March 24-25

Special event with Susan Morse, founder of Keeping Track. "Wildlife

Event" with mega-display of specimens and orientation to wildlife tracking, Friday evening, 7:30 p.m. Field workshop Saturday, 9:00 a.m., to learn basics of animal tracking and habitat awareness. "Keeping Track" has been featured in *Amicus Journal* and other publications. This Vermont-based training organization brings together outdoor enthusiasts, trappers and hunters, landowners, foresters, government officials and interested citizens to learn about habitat in a nonpartisan, hands-on manner. Wildlife event: free. Field workshop, suggested donation \$45. Call (914) 758-7053 for location and pre-registration (required).

March 30

Thursday. Invasive Plants Volunteer Observer Network training, 7:30 p.m., Westchester location TBA. Call (914) 758-7053 for application materials and further information.

April

Biodiversity Manual release events:
* Press briefing
* Donors' briefing
* Symposium: Biodiversity Assessment and Protection in the Hudson Valley
Watch for details in the spring 2000 *News from Hudsonia*, or call (914) 758-7053 for more information.

May 21

Gala luncheon, Sunday, 12:30 - 4:00 p.m., to benefit Hudsonia's programs. The new owners of the magnificent Callendar House, on Tivoli North Bay, request the honor of your presence. Watch for details in the next *NFH!*

“Smart Growth”

continued from p.1

compelling questions might concern the land's history, recreational potential, viewshed and other scenic features.

* To an ecologist, however, another set of questions would be primary -- questions regarding the geology, soils, hydrology, vegetation and animal life in the area; questions about sensitive species and habitats; questions about ecosystem services such as maintenance of good air and water quality. An ecologist would ask what is exemplary for study and conservation, as well as what is useful.

As Hudson Valley communities face mounting development pressures, there are more and more conversations among these disciplines and the world views they represent. This is healthy, and reflects an interest in the emerging concept of "smart growth." While eluding precise definition, "smart growth" has become the organizing principle for a national coalition that includes local officials, developers, architects, environmentalists and others seeking to base development choices on a more informed analysis of ecological and social benefits. However, too many dialogues about development are full of mistrust. That mistrust is often fueled by the difficulties of communicating across the boundaries of professional disciplines, and the unavoidable disparities in people's access to information.

Since Hudsonia is often called upon to fill the "ecologist" role in land use disputes, the next few issues of *News from Hudsonia* will explore aspects of ecological functioning that are related to the next era's economic development. We hope that the continuing conversation among disciplines will make it easier for disputes to be resolved more cordially and creatively, and for communities to make their own informed choices about the use of their valuable resources.

Numerous ecological concepts come into play in assessing the impact of any development decision on a region's

Erin Kiviat



A stream and riparian wetland reflect the impacts of our land use.

ecological integrity. Here are a few to consider.

Habitat Loss

First, we have lost, and are continuing to lose, habitats and species at a rapid rate. We need to remember how much the region's environment has already been disturbed by previous generations' farming, forestry, fishing, hunting, manufacturing, road building, mining and other impacts. Today we are rapidly losing oligotrophic habitats, those low-nutrient streams, lakes and wetlands that support so many rare and declining species. There has been significant loss of lowland natural areas with intermediate moisture, the kinds of land that make the best farms or building sites. (This is one reason why there are such development pressures on mid-Hudson farmlands.)

Countless animal and plant species are in decline or nearly extinct -- some literally, while others are, in the words of our colleague Michael Klemens, "reproductively senile." This refers to once-prevalent species that are reduced to a few isolated, aging individuals in seriously deteriorated habitats. In light of this degree of deterioration, "smart growth" will need to protect current

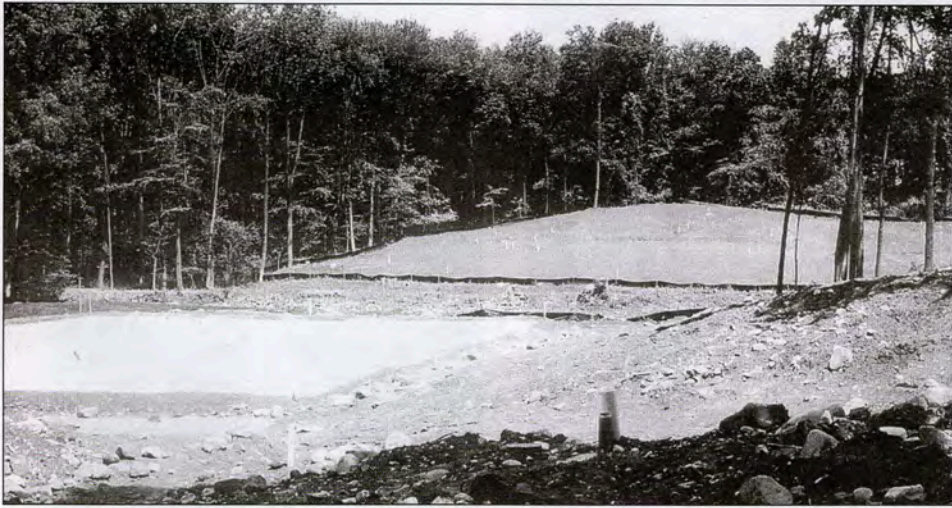
habitat and hold out the possibility of restoring some degraded lands.

Habitat Fragmentation

Secondly, the ecological hazards of habitat fragmentation cannot be overstated. Many of the at-risk animals that live in our region are "area-sensitive." That is, like some of us, they are not very good at staying put, but require large areas of relatively undisturbed habitat to fulfill the life history needs both of individuals and populations. These include not only large animals such as bobcat and bear, but also smaller animals such as many species of migratory songbirds. If we want to keep these creatures among us, our planning strategies must protect and restore large habitat complexes that can support area-sensitive species.

Regional Complexity

Thirdly, the natural complexity of the region must be taken seriously in policymaking. Hudson River Valley counties have highly complex geology and soils. This, combined with the diversity of the vegetation and habitats, means that generalizations can be hazardous to ecological health.



Erin Kovat

Generations of human activity have disrupted habitats.

the U.S., projects are underway to design golf courses that use fewer pesticides and provide more wildlife habitats. Michael Soule, a co-founder of the Society for Conservation Biology, is one of a number of prominent ecologists now working to create a map-based network of proposed nature reserves for the North American continent. Closer to home, in the New York metropolitan area, the newly formed Metropolitan Conservation Alliance is devoted to educating and supporting local officials in the methodologies of ecologically sound land use, even those as simple as subdivision design strategies that minimize habitat fragmentation.

Development planning must be based on site-specific data about geology, soils, hydrology, vegetation and animal life.

New strategies for ecologically sound land use

Viewed across the great divides among professional subcultures, ecologists are sometimes regarded as gadflies at the

margins of the development planning process. Historically, it has been the developers who propose and the ecologists who counsel restraint.

Increasingly, however, ecologists are rising to the challenge of creating a new vision for development -- one that takes the land and life forms into account up front, and seeks not just to minimize harm but to maximize benefit. This, too, is taking varied forms. In Europe and

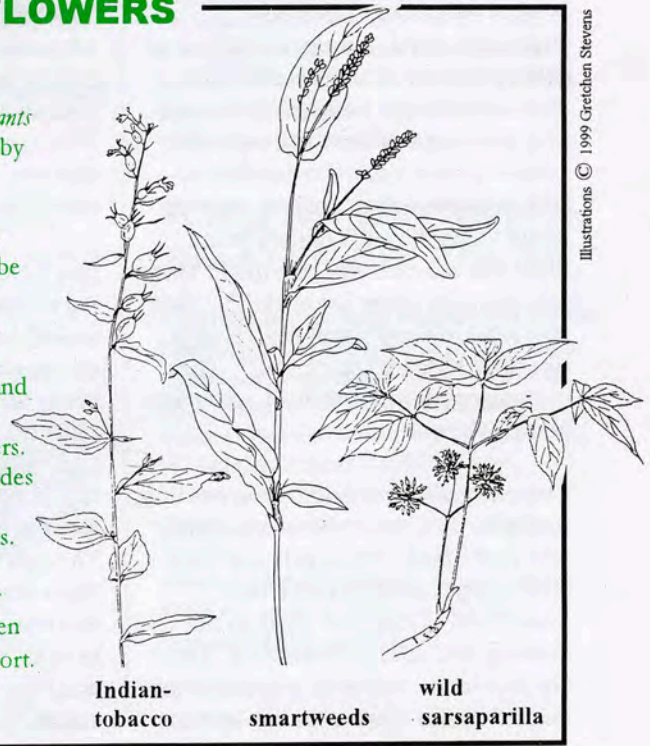
From the vantage point of the science department, the potential for "smart growth" in the Hudson Valley is linked to the ability of decision makers to understand living systems and the full ecological impacts of human activity. Only then can we go beyond choices that marginally reduce harm, toward choices that actively protect natural areas and natural systems as a long-term investment in our common future.

A BOUQUET OF WILDFLOWERS

A Beginner's Guide to Wild Plants of the Northeast, co-authored by Hudsonia biologist Gretchen Stevens and Mary-Alice White of the Salisbury Association, will be available in 2000. This readable guide provides an introduction to field botany, using habitat, leaf, and flower characteristics to identify common wildflowers. Fully illustrated, it also includes anecdotes, folklore, and etymologies of plant names. Thanks to the Salisbury Association, Sweet Water Trust, and Millbrook Garden Club for their financial support. (Illustrations shown here are not to scale.)



wood anemone bladder campion blue-eyed grass



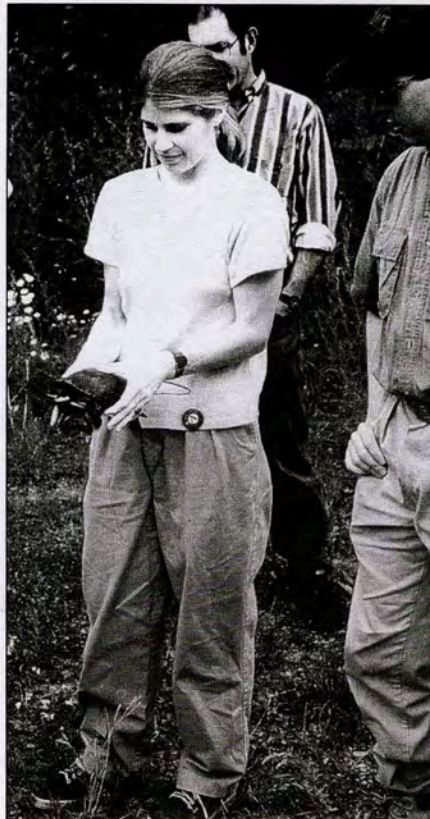
Indian-tobacco smartweeds wild sarsaparilla

Illustrations © 1999 Gretchen Stevens

Krista Munger graduated from Prescott College in Arizona in 1997, with a self-designed major in Conservation. She has spent the last year working with Hudsonia's Blanding's Turtle Team, monitoring our habitat restoration project in the Town of LaGrange (See NFH Summer 1999). Her work ranges from gathering field data to mending fences to educating students and the community. Krista particularly enjoys her educational role. She says:

When I emerged from my utopian college experience into the world of New York, it seemed that there had been no progress in the American mind concerning the environment while I was in school.

I became an AmeriCorps member. Within that network, I began to understand a more concrete movement toward environmental improvement, if not utopia. I learned the "how-to" of



Matt Levy

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Reflections on an AmeriCorps Year By Krista Munger

organizing projects in a community. Soon, I found myself hustling up AmeriCorps members from other agencies to work with Hudsonia on the side!

When I tell students about the Blanding's turtle, they seem hesitant to believe that something special lives in Dutchess County. I especially love the kids who come out into the wetland imitating New York City hoodlums, with beepers in their pockets, looking afraid to get the cuffs of their jeans dirty. But the curiosity gets them. They ask questions about the turtle. But they also want to know about me: "So you like this? It doesn't scare you?" Their eyes are opened to somebody who cares about nature.

I use the analogy of finding a jewel in a rock pile, each time you see something new in the field. When kids ask what other species we see around here, I invite them to come out early in the morning and see for themselves. There are deer in the wetlands; a heron in one. Painted turtles climb over one another

to capture frogs. Several kids have become fascinated by these wetlands and the discovery of nature in their community.

Teachers have brought their classes to our research site. The Arlington High School Environmental Club came, and took on a service project as a result. They created a trail from one wetland to another, not to mention picking up enormous amounts of litter.

One time, a woman stopped to ask how the turtles were doing. She said she wished her daughter could come talk to me, as a college-educated female biologist. I remember what a difference role models made for me a few years back. That's the kind of conversation that arises naturally, when we're out doing science in the community. Through this experience, my ideas about utopia have changed a lot in a short time -- mostly because I've learned so much more about what it takes to make the connection between vision and action.

Research Notes

Invasive Plant Research Funded

Hudsonia has just been notified of a \$21,909 grant award from the New York City Environment Fund to study the ecology of the invasive marsh plants phragmites and purple loosestrife in New York City and selected lands in Westchester County. One of the greatest threats to habitat and biodiversity, invasive plants are a challenge for management and a rich topic for ecological research.

This funding will allow us to formalize our **Volunteer Observer Network** of amateur and professional naturalists who can send us observations about the ecological relationships of these plants to various plant and animal species. Proposals are pending to expand this research in Westchester County.

If you would like to join the Invasive Plants Volunteer Observer Network, please contact Laura T. Heady at (914) 758-7053 or heady@bard.edu.

Invasive Plants Management Conference

Hudsonia Science Director Erik Kiviat recently spoke at a conference on managing invasive plants (sponsored by the Morris Arboretum in Philadelphia). He comments, "After a period of understandable emphasis on slowing the proliferation of these plants at almost any cost, there seems to be a rising appreciation of the ecological subtleties involved. Phragmites and purple loosestrife, for example, are used by many kinds of animals, bind soil, and reduce nitrogen and phosphorus levels in surface water. These plants are beneficial in some wetlands and detrimental in others, depending upon management goals, local biota, land use, and other factors."

Illustrations: purple loosestrife at top © 1999 Gretchen Stevens; Blanding's turtle © 1999 Kathleen A. Schmidt

Herp Study Launched in CT River Marshes

Hudsonia has also been awarded funding to compare reptile and amphibian communities in Connecticut River freshwater tidal marshes, in collaboration with herpetologist Hank Gruner, Education Director of the Science Center of Connecticut. This research is financed by the Long Island Sound License Plate Fund.

Our study will focus on reptiles and amphibians of phragmites stands vs. other plant communities. The results will be useful in decisions about stewardship of degraded tidal wetlands.

Cultural Resource Inventory Begins Along River's Edge

Christopher Lindner, Bard College's Archaeologist in Residence, will soon begin a major project under Hudsonia's sponsorship. With a group of Bard College students, he will identify cultural resources from both historic and prehistoric eras at Stockport Flats and Tivoli Bays. The research, funded by a grant from the New York State Department of Transportation, will involve Lindner's team in analysis at the Grouse Bluff and Spicebush sites at Bard College,

as well as testing at Nutten Hook and Stockport Creek.

A traveling exhibit and a special issue of *News from Hudsonia* will tell the story of past land use and archaeologically important areas. This research will provide critical information for long range land use planning.

Alewife Study Nears Completion

Hudsonia's Associate Director Robert E. Schmidt and Advisory Board member Tom Lake are wrapping up a two-year investigation of the use of Hudson River tributaries by alewife. They have documented alewife runs in about twenty tributaries and have tracked runs in four tributaries throughout the season by netting adults and collecting eggs and larvae. They have also observed spawning runs of several other species including white sucker, yellow perch, white perch, golden shiner, and smallmouth bass. The Hudson River Foundation has funded this project.

Kiviats Win Kudos

The Winnakee Land Trust, an organization dedicated to land conservation in Dutchess County, presented its Good Land Award to Esther Kiviat and her son, Erik Kiviat, in December 1999. Esther's recent book, *Changing Tides*, is a chronicle of seasonal ecological changes in the Tivoli Bays. Erik is one of the best-known wetlands researchers in the region.

Publications and Programs; Phone (914) 758-7053 for...

Flyer on protecting Blanding's turtle habitat: If you are engaged in any form of real estate development, involved in local government, or own land in Dutchess County, please call us to request a free copy of our informational handout, *Some Conservation Measures for Blanding's Turtles in Dutchess County, New York*.

Hudsonia programs: Call us to bring a Hudsonia program into your school, community group or workplace.

Hudsonia T-shirts !!!

Spread the word: Support Hudsonia!

This Blanding's turtle on the back of our T-shirt will tell people that you support Hudsonia's programs. Turtle is dark green with yellow throat, on white or buff background. Adult S,M,L,XL short-sleeved \$15; long-sleeved \$18, child S,M,L short-sleeved \$13; plus tax and shipping. 100% cotton.

