ISSN 1072–8244

Environmental Research and Education
Science for Conservation

News from Hudsonia

Bard College #1273
PO Box 5000
Annandale, NY 12504-5000
Telephone: (914) 758-7053
Facsimile: (914) 758-7033

Volume 14, Number 1 Spring 1999

Bernd Heinrich

Ravens Rebound

by Gail Mihocko *

Ravens are appearing in forests and on rocky cliffs in the Hudson Valley for the first time this century.

While I was living in central Pennsylvania in the 1980s, raven sightings were infrequent, and elicited great interest at bird club meetings. Most local sightings were from the higher elevations on the Allegheny Plateau. I was always thrilled to hear the rare call of the raven when I visited nearby Black Moshannon State Forest.

It wasn't until 1991 when I moved to New York State, that I saw my first raven nest with young. The large stick nest placed strategically on a rock ledge beneath an overhang, the towering dark eastern hemlocks obscuring the nest, the stillness broken by the raucous chorus of the still-pink nestlings being fed, and then the barrage of vocal insults flung at us by the adult disturbed by our presence—I was hooked. Or as raven authority Bernd Heinrich would describe it, "I had answered the call."

This nest turned out to be the first confirmed nesting of ravens in the Shawangunk Mountains in Ulster County.

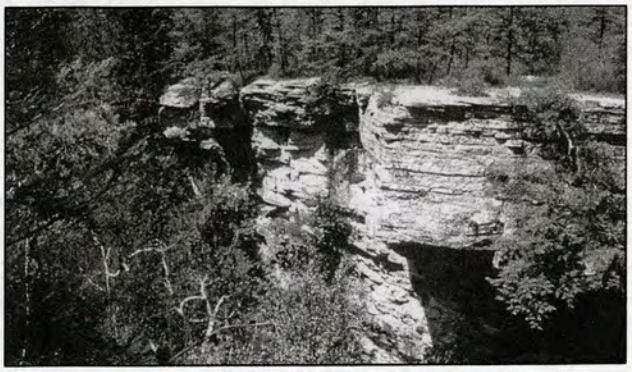
Over the next five years while working as Research Assistant for the Mohonk Preserve, I continued to monitor the nesting population of ravens in the Shawangunks. With the invaluable assistance of volunteers, I located seven active nests, leg-banded 33 nestlings, and made observations of adults and young.

Raven vs. Crow

What exactly is a raven and how is it different from a crow?

The common raven (*Corvus corax*) and the American crow (*Corvus brachyrhynchos*) are both in the crow family, Corvidae, along with jays and magpies. The corvids are considered to be among the most intelligent birds in the world, rivaled only by the mynas and parrots. Some laboratory studies with ravens indicate they may share the "cognitive capacities" of many primates.[10,12]

The common raven is found throughout the Northern Hemisphere while the American crow is found primarily in North America. In the northeastern United States, including New York, the American crow is much more abundant



Gail Mihocko

Ravens inhabit forested cliffs like these in the Shawangunk Mountains in Ulster County.

Photo at top: raven fledgling

* *Gail Mihocko is Research Assistant at Hudsonia.*

than the common raven. Large flocks of big, black birds seen in agricultural fields, or individuals seen in your back yard picking at cracked corn and delectable insects, are likely to be crows.

Unless they are side by side, ravens and crows are difficult to identify by their size difference. Ravens have a bill-to-tail length of 55-68 cm (21.5-27 inches) while crows are only 43-53 cm (17-21 inches) long.[6] The raven's bill is much heavier, its tail is wedge-shaped or rounded (the crow's tail is square), and it has a much deeper, throatier call, one that almost commands attention.

In general, while crows tend to do a lot of flapping and straight-line flying, the raven has a much more casual, soaring flight and appears to take the "back roads" to wherever it is going, enjoying the turns and loops, and adding a few dives.

The raven is currently listed as a Species of Special Concern by the New York State Department of Environmental Conservation. These are unprotected species for which there is a documented concern for their continued welfare in New York.

Ravens Rebound in New York

Why such an interest in the large, black, ominous-looking raven?

Well, to begin with, they have been experiencing a population change throughout the Northeast. Until recently, the common raven has been (contrary to its name) uncommon in New York State, and mostly limited to the higher elevations in the Adirondacks. The American crow, on the other hand, is common throughout the state and breeds in almost every habitat *except* for the wildest regions of the western Adirondacks.[4]

In pre-colonial times, about 98% of the state may have been covered by virgin forest [3,7] and the raven was common and well distributed.[4] By the turn of this century, settlements, forest clearing loss of food supply, and general persecution probably all contributed to the raven's near extirpation.

Today, ravens are no longer restricted to the high peaks of the Adirondacks and their population is rebounding not just in New York but in the entire Northeast. The reestablishment of the species began in earnest in the 1970s.

Of 600 reports of the common raven in New York since the turn of the century to 1979, 87% were from 1970 to 1979.[1,3] Sightings have continued to increase in frequency since then.

Despite an increase in numbers, ravens are still uncommon in the Hudson Valley. They are most likely to be seen along the ridges and higher elevations of the Catskill, Taconic, and Shawangunk mountains, the Hudson Highlands, at lower elevations on exposed cliffs along the Hudson River, and even on quarry cliffs.

We know of nesting sites in Ulster, Dutchess and Greene counties, and there are very likely some in Columbia, Putnam, and Orange counties. Breeding pairs can be seen regularly in their established territories, where they tend to stay year-round.

Raven Recovery Associated With Coyotes and Deer

The increase in the raven population seems to have followed the increase in populations of both white-tailed deer (*Odocoileus virginianus*) and coyotes (*Canis latrans*).

All three species use forest interspersed with open areas. None are permanent inhabitants of deep, extensive forest. They all habituate to and take advantage of human resources. They are opportunistic in a variety of ways, not unlike human beings themselves, but they are not indestructible.

Photos by Gail Mihocko

Ravens build stick nests 60 cm (2 feet) or more in diameter and usually line the nest with animal fur. This nest (top photo) is tucked away on a rock ledge beneath an overhang that protects the young from predators and the elements. A ravenous appetite sustains a young bird's rapid growth. In three weeks the four nestlings (middle photo) will develop into full grown, feathered birds like the 6-week old nestling (bottom photo) shown here preparing to fledge.

Deer were extirpated from most of New York in the late 1800s. Large carnivores such as wolves and mountain lions were killed off. But during the 1900s, deer populations rebounded due to curtailed hunting and reforestation of farmland that provided seedlings and tender saplings for grazing and browsing.

A newly arrived carnivore, the coyote, has established itself in New York to take advantage of the burgeoning deer population. Although small mammals and some vegetable matter make up a large part of a coyote's diet, coyotes are quite capable of killing fawns or weak or injured adult deer.

Ravens would seem to benefit from this triangle where they can scavenge at the remains of prey killed by large predators. In fact, it is believed that ravens follow predators to take advantage of potential large prey remains.

Omnivorous Diet

Photos by Gail Mihocko

Nasal bristles, pale eyes (which turn from blue to dark brown), soft whitish gape (base of bill) and tongue are visible in this month-old nestling (top photo). The 7-week old fledgling on the rock (bottom photo) shows the raven's typical deep, heavy bill used for striking blows and tearing carrion.

The raven is omnivorous and relies heavily on carrion but will eat "almost any kind of animal food that it can catch, kill, or find."[2] Smith described the raven's diet as ranging "from a worm to a whale."[11,13]

Ravens are opportunistic feeders and their diet varies with location and seasonal food availability. Studies in Britain and Ireland show that the greatest percentage of food consumed usually comes from large animal carcasses, such as sheep, when available.[11] Studies in Idaho showed that during the summer months, cereal grains made up most of the diet, followed by small mammals, grasshoppers, cattle carrion, and birds.[5] Vegetable matter also seems to be important in their diet.

It is very likely that ravens in the Hudson Valley are dependent on the abundance of white-tailed deer for both food and nesting. Most of the nests that I found in Ulster County were lined with deer hair, some with raccoon hair, and one was lined with polyester batting!

Although I found few food remains at nest sites, I did find deer remains and a crow skull, and I observed a female adult consuming several wild turkey (*Meleagris gallopavo*) eggs that she had apparently brought back to the nesting cliff. Another observer watched an adult raven pick off six fledgling robins over a 3-day period.

Ravens also feed at compost heaps and landfills. Because ravens are scavengers and are found in arctic climates, in Sweden they have been called 'northern vultures' because they fill the niche that carrion-eating vultures would at lower latitudes.

Nesting Habits

Ravens are elusive birds associated with wild areas, and tend to nest away from human activity.

The seven active nest sites I observed between 1991 and 1996 in Ulster County were located on rocky cliffs. None of the cliffs was especially high, but all the nests were placed on protruding ledges with substantial overhangs, making access to the nests by climbing predators difficult. All 17 nest sites in an Adirondack study were also on cliffs.[3] This seems to be their preferred nesting habitat, with coniferous trees and then deciduous trees used in the absence of suitable cliff ledges. In parts of Maine, where cliffs are not present, all the nests found by Bernd Heinrich, Professor of Zoology at the University of Vermont, were in white pine trees.[8]

Ravens are usually faithful to a nest site and often reuse nests. I have seen a pair move from one cliff to another and then back again the next year. One nest was abandoned for a year, and then reused with no obvious refurbishing. Twice, another pair simply moved about 50 feet away onto a new ledge and built a new nest. The old nest looked as though it was purposely dismantled and the sticks possibly reused.

Young Ravens

Ravens incubate eggs for about 21 days and young fledge (leave the nest) at about six and one half to seven weeks of age. They reach adult body size at about five weeks of age, although their feathers are still developing. Ravens reach sexual maturity in two or three years.

Young birds will disperse from their nest site and wander before pairing up and establishing a breeding territory. We have little information on where or how far immature birds travel, or how far from their birth sites they breed. Some immature birds tagged in Maine were later seen in Buffalo, Boston, and Nova Scotia.[8] Wandering immatures and non-breeding adults convene in flocks probably both for social reasons and for locating food.[9]

Gail Mihocko

This adult male raven calls aggressively, puffs out his throat feathers and spreads his tail feathers as part of a display, warning intruders away from his nesting territory.

These large, rapidly growing birds require an abundant food source. In 1996, each pair of adults that I observed raised three to five young. The minimum distance between nests was about 2.4 km (1½ miles). I watched all 21 of these young develop into what appeared to be healthy fledglings. The successful rearing of so many healthy young implies that there is an abundant food supply here in the Hudson Valley.

It has been suggested that raven populations are increasing in urbanizing areas where they have access to road kills. Only once, however, have I seen ravens at a road kill (in this case a gray squirrel [*Sciurus carolinensis*]) in Ulster County. Heinrich believes that ravens take advantage of road kills but that it is not a crucial part of their diet.[8]

Perceptions and Beliefs

From my viewpoint (and many others'), ravens have a special mystique and intrigue. The raven has been found worldwide in mythology, folklore, history, poetry, and paintings. It has been demonized and worshiped, persecuted and protected.

Native American peoples revered the raven and attributed supernatural powers to it. The raven is a teacher of morals in Aesop's *Fables*. The Norse god Odin had two ravens, Hugin and Munin, that traveled the world gathering information. The Vikings believed that a gathering of ravens before a battle was an indication of a bloody battle, as the ravens would feed on the corpses. A raven appears in several of Shakespeare's plays, usually as a symbol of evil and destruction. And in Poe's poem, *The Raven*, the bird portends unremitting grief.

Ravens have a greater variety of calls than perhaps any other animal in the world except human beings.[9] Searching for ravens is like searching for a prehistoric intelligence. Their repertoire of guttural 'craws', 'quorks', and 'knocks' conjures up images of primitive beasts, yet their calculated movements and choreographed flights seem to indicate a whimsical spirit.

An adult raven, with typical wedge-shaped tail, silhouetted against the sky
Photo by Gail Mihocko

It is difficult not to use anthropomorphic descriptions for these birds. Ravens seem bold, brazen, wary, elusive, cunning, playful, and graceful. In many ways they are like the wily coyote – clever and independent.

I suspect that a raven purposely dropped a small object not two meters from me while I was observing a flock of 30 or more ravens moving around a roost site. One raven flew quite low over me and dropped something from its bill. I tried to follow the object's path through binoculars but had lost sight of it when I heard a loud thud in the thick blueberry bushes nearby. I searched but didn't discover the object. I couldn't help but feel that I was a target. Perhaps I was not welcome.

Room for a Free Spirit

Ravens seem to signify wildness and a freedom of spirit. Their presence in the Hudson Valley means that there are still areas remote enough to attract them. The thrill of hearing the raven's call is one more reason to protect wild areas of the Hudson Valley, in the hope that wandering ravens will continue to find remote and hospitable habitat here.

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(Continued on page 6)

Erik Kiviat

House by a pond in Dutchess County

A group of appointed volunteers serve a research and advisory function on environmental matters for town boards.

Conservation Advisory Councils

by Michael Trimble *

If you have taken the opportunity to attend a planning board or zoning board of appeals meeting in your home town, you might be struck by the absence of attention to environmental issues in land use decision-making.

How septic systems can pollute groundwater; how paving a parking lot can contribute to non-point source pollution in local streams; how a new development can fragment wildlife habitat; these issues rarely get a hearing, despite their importance to the land, air, and water on which we all depend.

Cumulative impacts of development projects are often overlooked.

Furthermore, while a single development project may seem insignificant when considered in isolation, the cumulative impacts of many such projects can be immense. Assessment of cumulative impacts is essential to the protection of natural resources, but is often ignored in the environmental review of proposed projects.

Members of local regulatory boards are not unconcerned about environmental quality, but often lack the time or technical expertise to adequately assess environmental impacts. Staffed by volunteers from diverse backgrounds, these boards must address complex biological, hydrogeological, and engineering issues, and make regulatory decisions with far-reaching consequences to the town and region.

The most important planning and land use decisions are made not by state and federal agencies, but by local planning and zoning boards staffed by civic-minded volunteers.

For thousands of proposed development projects throughout the state, the environmental review begins and ends with these local boards. The workload of these boards is often formidable, however, and the technical environmental issues thorny.

The importance of conservation advisory councils (CACs) in this context cannot be overstated. CACs research local and regional environmental issues, contribute to local planning initiatives, and alert decision-makers to potential environmental impacts of proposed projects.

Michael Trimble's article describes the work of a CAC in Dutchess County.

—Gretchen Stevens

CACs Investigate Local Environmental Issues

In New York State, each town has the authority to establish a conservation advisory council (CAC) whose functions include: 1) advising town government on matters related to the natural environment; 2) compiling and maintaining a natural resource inventory (NRI) for the town; and 3) creating opportunities for citizen participation in protecting our air, land and water. Other northeastern states have provisions for similar advisory agencies at the local level.

* *Michael Trimble, a member of Hudsonia's Board of Directors, chairs the Conservation Advisory Council in the Town of Rhinebeck.*

I belong to the CAC in Rhinebeck, NY, where each CAC member is appointed by the town board to a two-year term, with the option of renewal. The CAC has a small annual budget, but the members serve as volunteers.

CACs throughout the county share information and expertise.

As an advisory group, we provide a number of services. One of our primary functions is to advise local decision-makers on land use and water resource issues. Whenever possible, CAC members attend both planning board and town board meetings. The town board can request that the CAC research an issue prior to board action.

In 1998, for example, we prepared a report and draft resolution on the issue of PCBs in the Hudson River in response to an EPA policy reassessment. The draft resolution was eventually adopted by the town board.

Through networking with other CACs and the county environmental management council (EMC), we have access to expertise in the fields of land use and natural resource management that can assist us in making our recommendations for avoiding or mitigating environmental impacts.

Computerized Mapping

Our CAC is responsible for conducting a natural resource inventory (NRI), and preparing a series of maps and narratives that describe the diverse aspects of the town's natural environment. We produce maps of natural features such as wetlands, aquifers, land use, streams, and steep slopes, overlaid on a United States Geological Survey topographic base map.

Laboriously prepared by hand in the past, these overlay maps are now produced using a computerized geographic information system (GIS) which improves the accuracy and efficiency of map-making, and increases the versatility of the maps. The Dutchess County EMC maintains a countywide GIS, and makes the data available to all Dutchess County CACs.

Erik Kiviat

Aerial view of farmland and forest in Dutchess County

The days of hand-drawn maps came to a close when a Dutchess County judge refused to accept them as suitable evidence in an environmental hearing, and told the presenters to come up with something better. That was the beginning of our EMC's GIS, which is one of the best in the state.

Opportunities for Citizen Participation

The Rhinebeck CAC has helped to initiate a number of projects which draw upon citizen participation. We are currently charged by our town board with establishing a Greenway Committee that will, we hope, draw local residents together in implementing important projects identified in our master plan.

Our CAC spearheaded a project that culminated in the purchase of conservation land that will be open to the public in summer 1999. Burger Hill Park, the highest point in Rhinebeck, has spectacular views of the Catskill Mountains. The park is now owned by Scenic Hudson and managed by the Winnakee Land Trust.

Future plans in Rhinebeck include: 1) drafting an implementable open-space plan; 2) establishing standard guidelines for planning board review of projects that include land use decisions; and 3) including local schools in projects that will advance our capacity to protect our town's environment.

CACs can play a significant role in determining how a town treats its natural resources. Readers with particular technical or organizational skills, a strong concern for conservation, and a willingness to commit themselves to an important public service should consider volunteering for membership on their local CAC or another municipal board.

Ravens Rebound, continued from p.4

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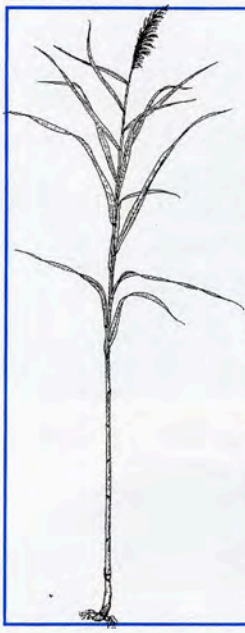
We welcome suggestions for articles, and offers of underwriting for future issues.



A REQUEST FOR INFORMATION

Hudsonia is compiling information on animal relationships to two invasive marsh plants, purple loosestrife and phragmites (common reed). We are interested in your observations of birds, mammals, insects, or other animals using these plants for food, nesting, shelter, or other purposes. Please write, telephone, or e-mail Erik Kiviat (kiviat@bard.edu).

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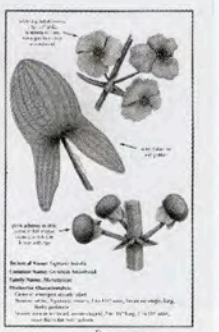
Book Notices

Changing Tides: Tivoli Bays, a Hudson River Wetland, by photographer and writer Esther Kiviat, unveils the changing face of this quiet freshwater marsh around the year. Purple Mountain Press, Fleischmanns, NY, 160 p. $25. Book signing at Tivoli Bays Visitor Center in Watts dePeyster Firemens Hall, Tivoli, May 8, 1999, 2-5 p.m.

Hudson River Field Guide to Plants of Freshwater Tidal Wetlands, by illustrator Linda Beckwith McCloskey, contains detailed drawings of plants along the shore from Newburgh to Troy. Published by New York State Department of Environmental Conservation, the guide is available at no cost from the Hudson River Research Reserve, ph. (914) 758-7010.



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Your generosity to Hudsonia has been wonderful. Look how crowded this page is.

These gifts enable us to learn more each day about species that inhabit the Hudson Valley, and to share these exciting discoveries with environmental decision-makers and with you. Your contribution will support the continuation of this important scientific work. Please remember Hudsonia in the coming year. Thank you.

Larry Weintraub
Chair, Board of Directors

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