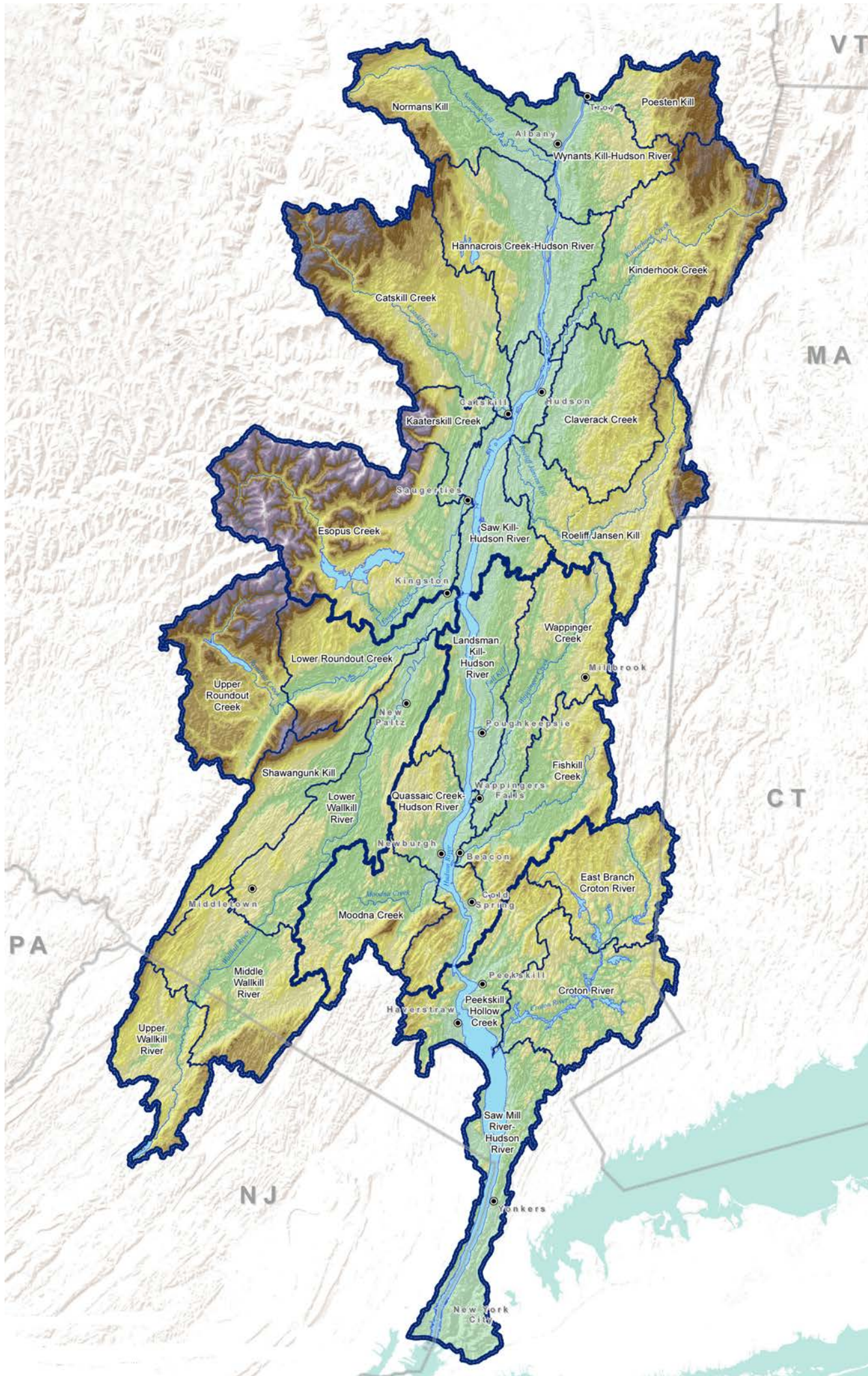


Reinhabit the Hudson Estuary

A Bioregional Atlas of Places and Peoples



Mough-hikan-ituck
The arm of the sea that flows both ways
The Hudson Estuary

Acknowledgements

Reinhabit the Hudson Estuary – A Bioregional Atlas of People and Places is an ongoing publication of maps, text and photographs inspiring living-in-place or reinhabitory practices.

We think of this effort as “Dreaming Indigenous”: map and image making which does not constrain the imagination or the movement of ideas and that encourage a sense of place and ecologically responsible membership in it.

This Bioregional Atlas is being undertaken by a loose collective of artists, ecologists and designers of many sorts who have come together to collaborate on various projects as this Bioregional Atlas demonstrates.

The primary Atlas makers, besides its contributors, are George Tukel, Mikhail Horowitz and Carol Zaloom. Helping along the way were Evan Pritchard and Anita and Spider Barbour.

A constant source of information and insight are David D. McCloskey of the Cascadia Institute and Jason King of the website Hidden Hydrology.

A special debt of gratitude is owed to Sean Carroll who lent his time, skills and vision to the creation of the GIS-based maps.



Carol Zaloom

Reinhabit the Hudson Estuary

A Bioregional Atlas of Places and Peoples

Table of Contents

The Lower Hudson River Basin as a Bioregion

Text by Thomas Berry / Page 1

The Hudson Estuary as Bioregion

Map by Gary Allen / Page 4

Watersheds of the Hudson Estuary

Map by Sean Carroll / Page 6

Tribes and Tributaries

First Peoples of the Hudson Estuary Bioregion

Text by Evan Pritchard / Page 7

Map by Sean Carroll / Page 10

Linocut by Carol Zaloom / Page 9

Forest Communities of the Hudson Estuary Bioregion

Map by Sean Carroll / Page 12

Cores and Corridors Planning from the Wild Center Out

Text by George Tukel / Page 13

Map by Sean Carroll / Page 16

Our Oldest Neighbors

Photographs by Art Murphy /

Pages 1,2,7,8,11,13,14,15,17,18

Text and Poem by Mikhail Horowitz / Page 17

Daylighting the Buried Hydrology The Saw Mill River Reappears

Text and Photographs by George Tukel /
Pages 19,20

Scoured Rocks on the Shawangunk Ridge

Photographs by George Tukel / Page 21

Watershed Councils

Text by George Tukel / Page 23

Riverkeeper

Linocut by Carol Zaloom / Page 24



Egbert Viele

The Lower Hudson River Basin as a Bioregion

Thomas Berry

Along the Mid-Atlantic coast of the North American continent, at the 41st north latitude, the pull of the moon draws the Atlantic tide a hundred miles westward past the Montauk-Cape May region, across the sandbar off Sandy Hook through the narrows between Staten Island and Long Island, into the upper bay of New York Harbor, then northward into the channel of the Hudson between the Palisades and Manhattan Island. Some twelve miles upstream, the tide passes the Harlem River where it meets the mainland of the continent, to the east, for first time. Another thirteen miles north, the tide widens into the Tappan Zee; then, after a slight narrowing, the river again widens out into Haverstraw Bay, the broadest part of the river. Beyond the Bay come the highlands, the grandest section of the river, where the tide pushes its way through the mountains on to the Newburgh-Poughkeepsie region. There the estuary changes to a tidal river, the ordinary salt line is passed, the fresh water begins. After another forty miles passing through a pastoral region of rolling hills on both sides of the river, the tide passes Albany. Then on to Troy where, still some two feet high, the tide breaks against the Troy Dam. Here ends the lower Hudson Basin. The upper section of the river continues north beyond Fort Edwards then turns west to Glen Falls and north in a winding course to its origin on the heights of Mt. Marcy in the Adirondack Mountains.

The river is paralleled, on the east, by the Berkshire and Taconic mountains, which extend down into lower Westchester where the rolling contours of the land extend across the western Bronx. From the east, the Wappinger flows into the river at New Hamburg, the Fishkill comes below Beacon, the Croton above Ossining. On the west, the Helderberg, Catskill and Shawangunk Mountains dominate the skyline until the Palisades begin below Tallman Mountain to continue on southward until they disappear below the surface past Hoboken. In the lowlands, back of the Palisades, are the Hackensack and Passaic Rivers. The Hackensack flows some forty miles south from the Parkland area of the Palisades across the Meadowlands into Newark Bay.

The waters of Newark Bay flow into the upper New York Bay through the Kill van Kull along the north side of Staten Island. On the south side of Staten Island, Raritan Bay receives the waters of the Raritan River flowing eastward some seventy miles across central New Jersey. Raritan Bay, in turn, flows into the Lower Bay. Across the Upper Bay, the East River, a tidal strait between Manhattan and Long Island, brings the waters of Long Island Sound down into the Upper Bay with the ebbing of the tide.

The region from Troy to the southern limits of the Lower Bay functions as a bioregion that is generally known as the lower Hudson River Basin. This term "bioregion" designates "an identifiable region of interacting life systems that is relatively self-sustaining in the ever-renewing processes of the natural world." Although the earth is a single integrated life system, it articulates itself in differentiated regions, each of which has its own distinctive qualities. The life system of a mountainous bioregion is different from the life systems of coastlands, or prairies, or tropical forest. In most cases, bioregions are associated with watershed areas since fresh water is such a central need for survival.

Crinoid Stems



The main theme of these writings is the urgency for understanding the distinctive mode of functioning of the lower Hudson River Basin as such a bioregion and for developing a life-style integral with this bioregion as a self-propagating, self-nourishing, self-educating, self-governing and self-fulfilling community of all its physical characteristics and biological and human members. None of these have any meaning whatsoever apart from the others.

One of the main obstacles to bioregional understanding of the Hudson River Basin is seeing the basin simply as “environment.” If the basin is seen as having its identity, its value and its proper role primarily in its relation to the human, then it will continue to be subject to the type of industrial exploitation that has already brought about so much disturbance in both the natural and humans worlds. The alternative is to see the entire natural community of the basin as the primary reality, and the human as component members of this community. Such a comprehensive understanding of the physical and biological functioning of the Hudson Basin as a bioregional community has never been attempted in any significant or sustained manner. Yet the only real hope for the Hudson community is to see itself within the context of the physical and biological functioning of the tidal river and its tributaries, of the estuary, the basin, the tidal straits, the wetlands, the shorelines and the related land formations with the great variety of living forms—from the plankton to the sturgeon, from the shore grasses to the forests of the Catskills, from the earthworms to the humans—to our civic communities and to metropolitan New York; this is precisely the understanding we need if we are to survive in any satisfying manner. The mechanistic model whereby the Hudson community is seen simply as objective reality, or as natural resource for human use, needs to be changed to the organic model of a regional community with its value in itself. The human appreciation of the region must be seen as an effort of self-understanding of the community, carried out by the community, in and through its human mode of expression. In its human identity, the region celebrates its own mystery and its own glory. The mystery and the glory belong primarily to the community.

In this context, every member of the community, without exception, from the smallest physical fragment to the most elaborate ecosystem of the entire basin, has its essential role which cannot be thwarted without damaging the entire community. The more elaborate life forms, especially the human, have the most to lose. The inorganic nutrients are washed down from the Taconics and Catskills onto the land and into the waters, the elementary life forms in Haverstraw Bay carry out photosynthesis, liberating oxygen into the atmosphere and creating organic foods for other life forms. The bacteria in the bottomlands continually decompose organic substances to make nutrients available for vegetation. Vegetation, in turn, sustains other life forms all the way to the human. Whether organic or inorganic, every element in the basin is interacting constantly with every other reality in the basin. The insects assist in pollination, the worms enrich the soil, the trees hold the soil and the moisture on the hillside, preventing the sudden runoff in floods and the consequent periods of drought. So too, the clouds, above the basin, hold and diffuse the light and warmth of the sun. Such a wondrous display takes place here in the basin in this great complex of activities. Such incomparable efficiency amid such splendor of expression!

Gastropod



This is not a romantic or utopian view of the basin. Movement from the inorganic to the organic mode of being is also a movement into the sensitive world of feeling, with all its consequent struggle for survival amid the inherent pain as well as the exuberance of life. As with all organic process, bioregional processes are both a struggle and play, a process with anxieties and difficulties as well as delight not entirely dissimilar to the complex of emotions involved in living out our individual lives or in raising families.

Sensitivity to the prevailing winds, precipitation, temperature, sunshine and all their seasonal variations in the basin is of primary importance. Indeed, these determine human activities in a most basic manner, even though our attention is more on the defenses we erect against the natural world and the mechanisms whereby we establish our independence from these forces, shielding ourselves from heat and cold, bringing food from the distance through elaborate transportation systems and water from far-away mountain streams.

A central event taking place, that is forcing a new appreciation of the Hudson River Basin as a bioregion, is the increasing need for a basic self-sufficiency of human communities, each within the resources of its own bioregion. If formerly the Hudson region could so occupy itself with its global role in financial and cultural affairs to the neglect of its role within its proper bioregion, this time is passing. While the exchange between different regions, especially with the neighboring bioregions to the east and west of the basin, is often good and even necessary, this easily leads, if not limited in its scale, to wasteful mass production and excessive transportation, especially in those human activities that should be distinctive to each region. Each region needs to articulate its own identity and to function properly in its space. New York City has drawn excessively on other bioregions. Such a metropolitan area requires an extended basis on which to function. This passes over into burdening of food from afar in a way that plunders other parts of the planet and other ecosystems. Limitation and proper distribution of the human communities in the basin, in relation to the effective functioning of the area as integral bioregional complex, is the urgency that is upon us.

We must begin to see that our basic identity is not primarily the political unit but the bioregional community in one or several of its distinctive articulations. To say Poughkeepsie or Kingston or Peekskill or Tarrytown should be understood primarily as a geographical rather than a political designation. The real difficulty of the various declining communities along the river is precisely that they think of themselves too much in political or commercial terms. Consequently, they look for their renewal through these agencies rather than through an effective relation to the land and the river and their fertility. To be surrounded by such a bountiful land and teeming river and propitious climate, all abundantly suited for prosperous local communities with ordinary abilities in land cultivation, craft skills, village industries, community cooperatives and cultural creativity, and to see such communities look for their renewal from industrial establishments that are oppressive to the life of the region, is to observe the deep paradox of our times.

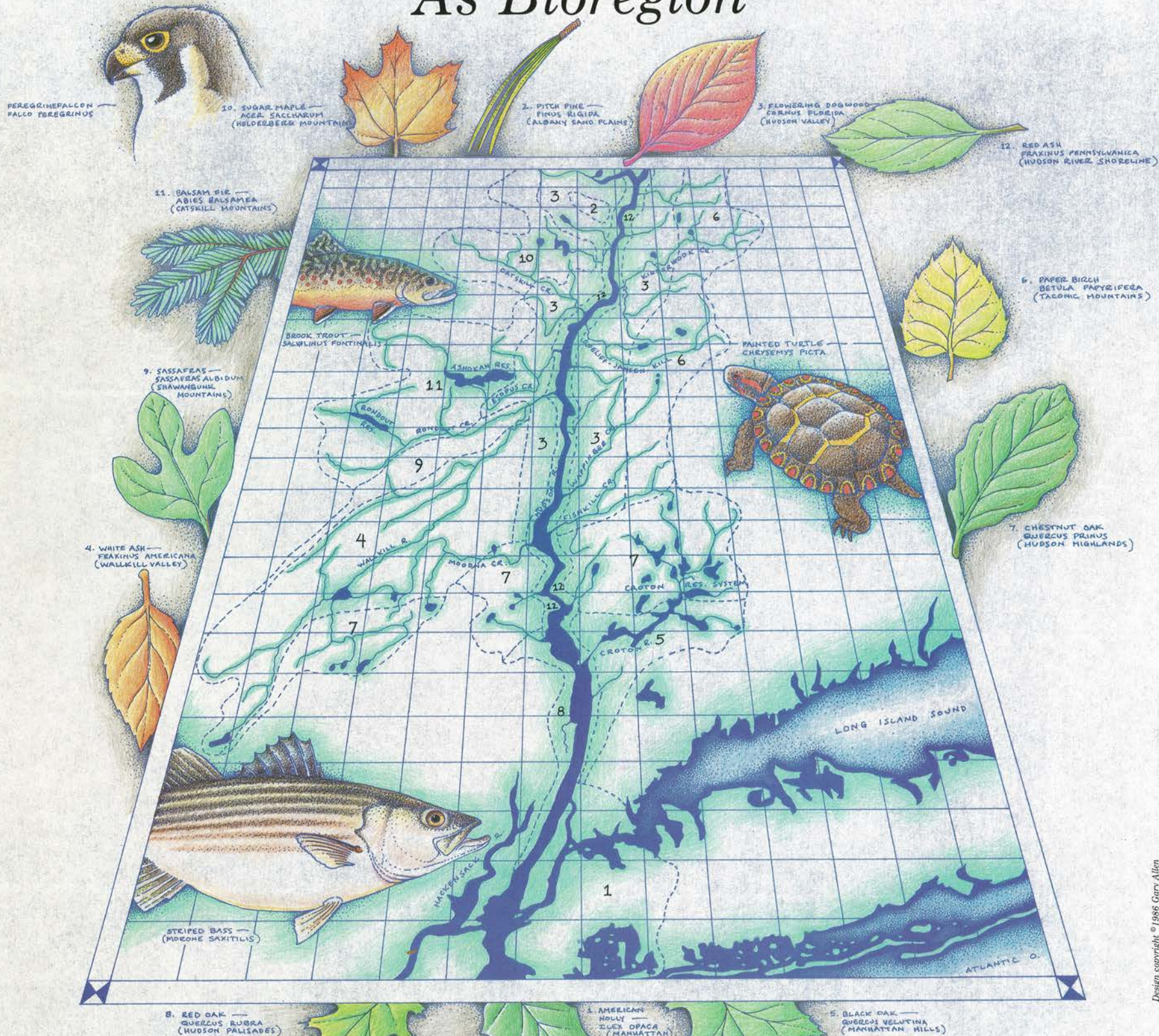
That this paradox is now so obvious and so painful is already a sign that something new has begun. The critical phase is well advanced, the creative phase has arrived. A widespread awareness of the need for human concern for the river and the land, with all its flora and fauna, now exists. Motivation for this care of the basin has varied over the years from aesthetic and emotional fulfillment, to economic advantage, to health concerns, to recreation and even to a sense of the sacred as manifested in the natural splendor of the region.

All of these are invaluable in establishing a truly human presence and response to the river. But they are not fully adequate in dealing with the more ultimate issues involved. In every instance, a human-centered attitude is dominant. The novelty of the present is the development of a biocentric consciousness, a realization that the ultimate value is in the integrity of the life processes of the region as a whole and that the true grandeur of the human is attained in this larger context, not simply in the human in itself or in its dominance over the larger community.

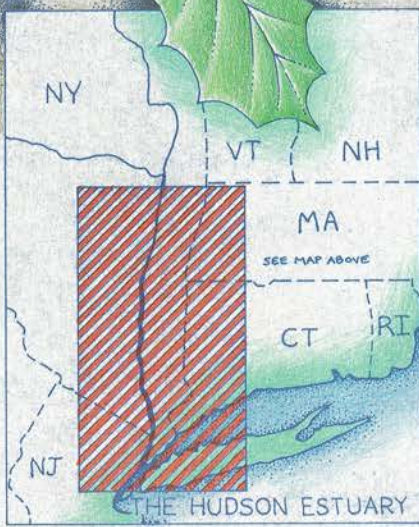
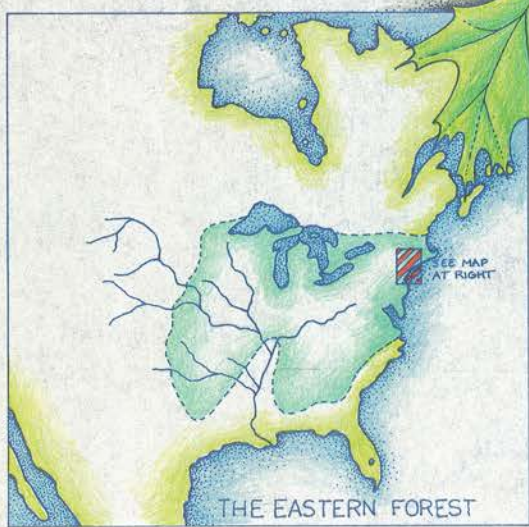
What is most needed in the immediate future are guiding visions of what the basin might be in its future, when the air is again refreshing and the water pure and the soil fertile within its own organic processes; when the shellfish and finfish are again abundant and edible; when the osprey and peregrine falcon and the bald eagle are again familiar features of the landscape; when the animals of the region have their own undisturbed habitat; when the river banks are more readily available for human presence in the evening.

Only in such a florescence of its grandeur and in celebration of its mystery can the long course of the formation of the basin be justified. We cannot think of failure at this order of magnitude since here we are faced with ultimacy. What can be said is that the dream drives the action and whatever bountiful future awaits, the river must first appear in our dreams.

THE HUDSON ESTUARY As Bioregion



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Aged landforms, glacial soils and waterways, the life of a mixed hardwood ecosystem: this helps identify the diverse community within the reaches of the Lower Hudson River Basin.

Surrounding the flux of daily events within our bioregional community are deeper patterns that steady and heal - get to know the food web and water cycle - patterns that preserve the continuity of natural process whose well-being is intimate with our own. While ecology instructs about how intact this community is, there is also communication about the stability of our life-place from those plants and animals whose very lives have come to embody and mirror the entire bioregion, granting them status as totems.

A bioregional culture learns from the sciences but is also capable of listening to totems. It is an aware adaptation undertaken with the understanding that human beings have accepted and relish their interdependent relationship with the

biosphere and intend to pursue creative and appropriate ways to live within it. These ways, Earth ancient and immediately present, practical and long term, are the stuff of reinhabitation.

From their own backyards to local watersheds to forest communities, Hudson Estuary reinhabitants look for ways and work hard to restore and sustain the home ground. It matters to them what's going on here because they identify so strongly with it. Reinhabitants don't expect to move on to greener pastures after making the quick buck, they know the green pasture is under their feet and in the world around them, right now, and want it that way.

Waterways and Watersheds of the Hudson Estuary

From Webster's:

Water/n: The liquid that descends from the clouds as rain, forms streams, lakes and seas, issues from the ground in springs and is a major constituent of all living matter.

Shed/n: a separation of one thing from another.

Watershed/N: 1. Water Parting 2. A region or area bounded peripherally by a water parting and draining ultimately to a particular water watercourse or body of water: The catchment area or draining basin from which the waters of a stream or stream system are drawn.

Southern Portion of the Main Stem

Saw Mill River
Minisceongo Creek
Peekskill Hollow Creek
Annsville Creek
Putnam Creek
Popolopen Creek

Croton River

Cross River

Moodna Creek

Black Meadow Creek
Otter Kill Creek
Satterly Creek
Woodbury creek
GidneyTown Creek
Cromline Creek

Fishkill Creek

Sprout Creek

Wappinger Creek

Central Portion of the Main Stem

Maritje Kill
Crum Elbow Creek
Black Creek
Stony Creek
Casper Creek
Twaaltskill
Fall Creek
Landsman Kill

Wallkill River and Rondout Creek

Rutgers Creek
Catlin creek
Pochuck Creek
Quaker Creek
Lon house Creek
Shawangunk Kill Creek
Dwaar Kill

Esopus Creek

Saw Kill
Plattekill Creek

Roeliff Jansen Kill

Doove Kill

North Portion of the Main Stem

Coxsackie Creek
Hannacrois Creek
Onesquethaw Creek
Coeymans Creek
Muitzez Kill
Moordener Kill
Vloman Kill
Mill Creek
Wynants Kill
Poesten Kill

Catskill Creek

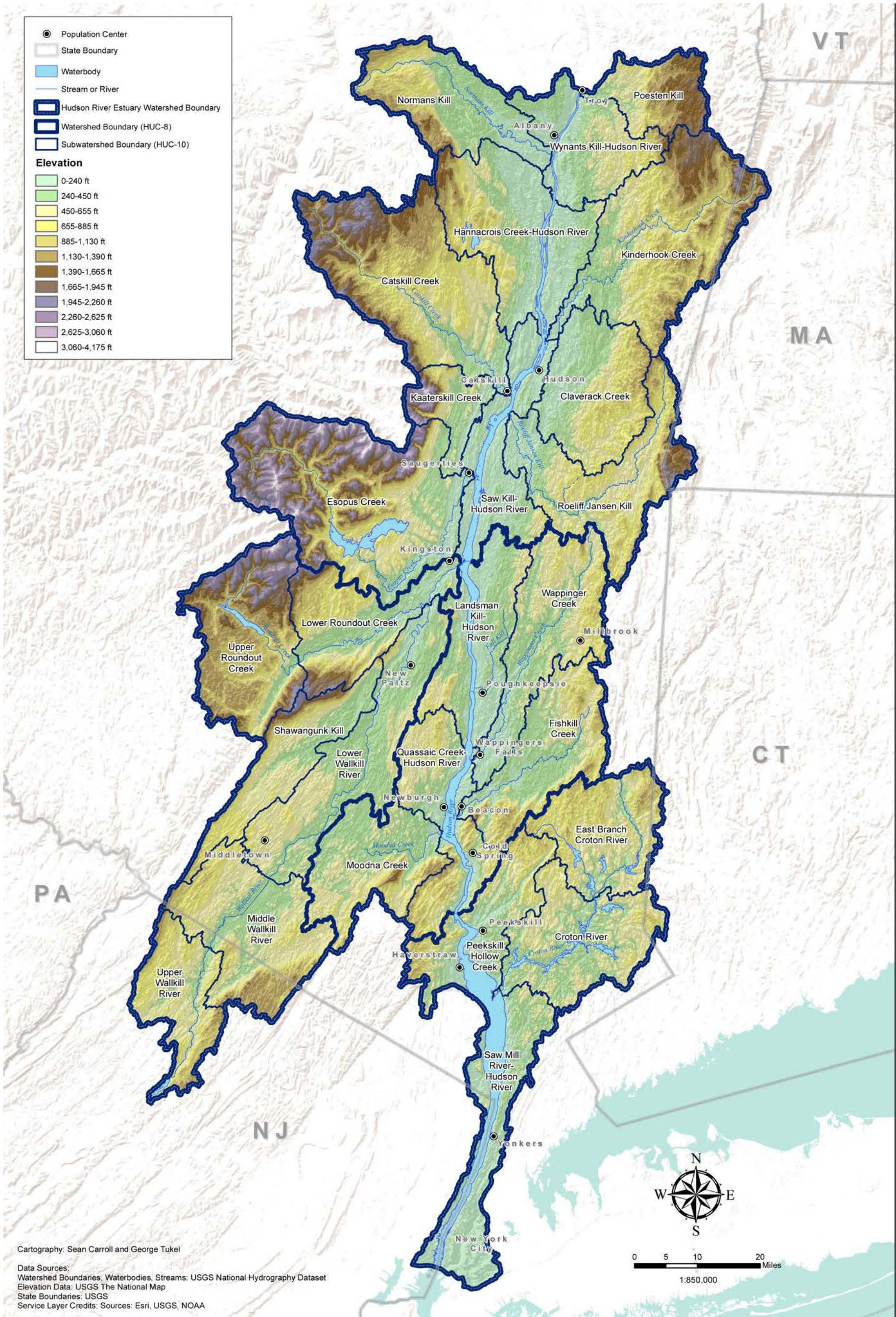
Fox Creek
Ten mile Creek
Cornwallville Creek
Bowery Creek
Basic Creek
Platte Kill
Shingle Kill
Jan de Baker
Grapeville Creek
Cob Creek
Potic Creek
Kaaterskill
Beaver Kill
Vly Creek
Kiskatom
Hans Vosen Kill

Kinderhook Creek

Valatie Kill
Stony Kill
Kline Kill Agawamuch Creek
North Creek
Hollowville Creek
Taghkanic Creek
Claverack

Normans Kill

Bozen Kill
Black Creek
Hunger Kill



Cartography: Sean Carroll and George Tukul

Data Sources:
 Watershed Boundaries, Waterbodies, Streams: USGS National Hydrography Dataset
 Elevation Data: USGS The National Map
 State Boundaries: USGS
 Service Layer Credits: Sources: Esri, USGS, NOAA

Tribes and Tributaries

Evan Pritchard

Before the arrival of Henry Hudson to our region in 1609, the Hudson River was called Moughhikan-ituck, literally “the greatest of estuaries, the arm of the sea that flows both ways.” In the aeons before the arrival of Europeans, the Algonquins of the Hudson River Valley possessed a keen sense of living in place. They had to--the details of their daily lives were determined by where they lived and the resources that place offered. Take water, for example. Virtually every Algonquin lived within about fifty feet of a source for drinking water, because the further you carry water, the heavier it seems and the more of a burden it is to carry. If closer than fifty feet, a home or village might be subject to floods several times a year, but further away and you have a daily problem of transporting it, as water weighs over 8 pounds per gallon. Some Algonquins lived in rock shelters, using an overhang in a rock formation and fashioning a covering out of woven reeds to make a home, and only the rock formations with nearby water were used, whereas the other rocks or caves would only be used for overnight camping. So water determined where you lived and what you drank. Water was the official beverage of the Algonquin people of New York, before there was a New York. In order to add flavor and enhance the healing qualities that water already possesses, they would add leaves and roots from certain herbs to the pot and boil it, to make delicious and medicinal-strength teas. They also had access to honey, but in a much more limited way than we do today.

Water was also the principal mode of transportation, and almost everyone lived near a canoe route. No fossil fuels were used or needed. If you had lived in the Hudson Watershed before 1609, everyone you knew also lived on a canoe route, and all were connected by tributaries of the Hudson. Birchbark canoes have very little displacement; they are buoyant and ride high in the water, so that an expert oarsperson could travel by water upstream high into the mountains on small streams that would be deeper in the spring, shallower in the summer. With a canoe you could visit your mountain cousins as well as your tidewater cousins. The problem with birchbark is that it dissolves over time in salty or brackish water. For travel at sea level, you needed a dugout canoe carved out from a tulip tree, as this kind of wood does not rot in salt water, and is usable for more than a century. Both the tulip tree and the dugout were called, in the highly metaphoric language of the Lenape, “mooxool.” One could ask, “Would you like to ride in my tulip tree?” and everyone knew you were referring to the dugout canoe. The mooxools, which were too heavy to lift and therefore had to be carved next to the water, were shared communally and left about at the shoreline for the next user, the way shopping carts are used today. Nonetheless, some enterprising young men would often take over a mooxool for a while and run a ferry service across the Hudson, asking only a few beads or furs for the trouble. Those on foot would come to the bottom of the trail at the landing, wave a white cloth on a pole, and await prompt ferry service across the estuary.

Trilobite Pygidium



While just about all the nations of the Hudson River Watershed were called “River Indians”, tribal groups were generally defined by the watershed of the tributary they lived on. These sub-tribes identified strongly with that tributary and usually lived on both sides of its flowing waters. They would name their tribal group after the name of the tributary, as well, and sometimes visa versa. Often, the sachem (or chief) of the tribe would name himself after the tributary or another body of water. Colonists talked of a Chief Gowanus (“Young Pine”) in Brooklyn, recording that Gowanus Bay was named after him; however, the word actually means “the small tributary surrounded by pine trees,” so it’s clear he named himself after the water, as did another tribal group, Kitchewan, which means “Great Tributary.” The Wappingers Nation of the Kitchewan named themselves after what is now called the Croton River (after Chief Croatan, aka Kenotan, sometimes translated as “Wind in His Hair”). The Wappingers Nation of the Mattewan named themselves after the stream they called “Mettawan” (“Trout Stream”), which translates in Dutch as “Fishkill.” (Mattewan may be a play on words, as it means “humble, shallow stream,” which it is not, perhaps in contrast to the proud Kitchewan.) The Wappingers’ name is a variant on Wapping, “People of the East,” which is related to Wabanaki, “Dawn Land.” The Wappingers Creek was named after them, but its real name is Mawenawasig, meaning “where beautiful waters gather and flow together,” and its people could be thusly named as well. The stream that flows through Poughkeepsie, Valkill, is still properly called the Winnakee, “Lovely Land,” named after the original citizens of Poughkeepsie, a word that refers to a “safe sheltered spring,” a different nearby source of drinking water. The Sepasco village of northern Dutchess County was named after the stream called Sepasco, “Place of the Small River.”

Trilobite Pygidium and Coral

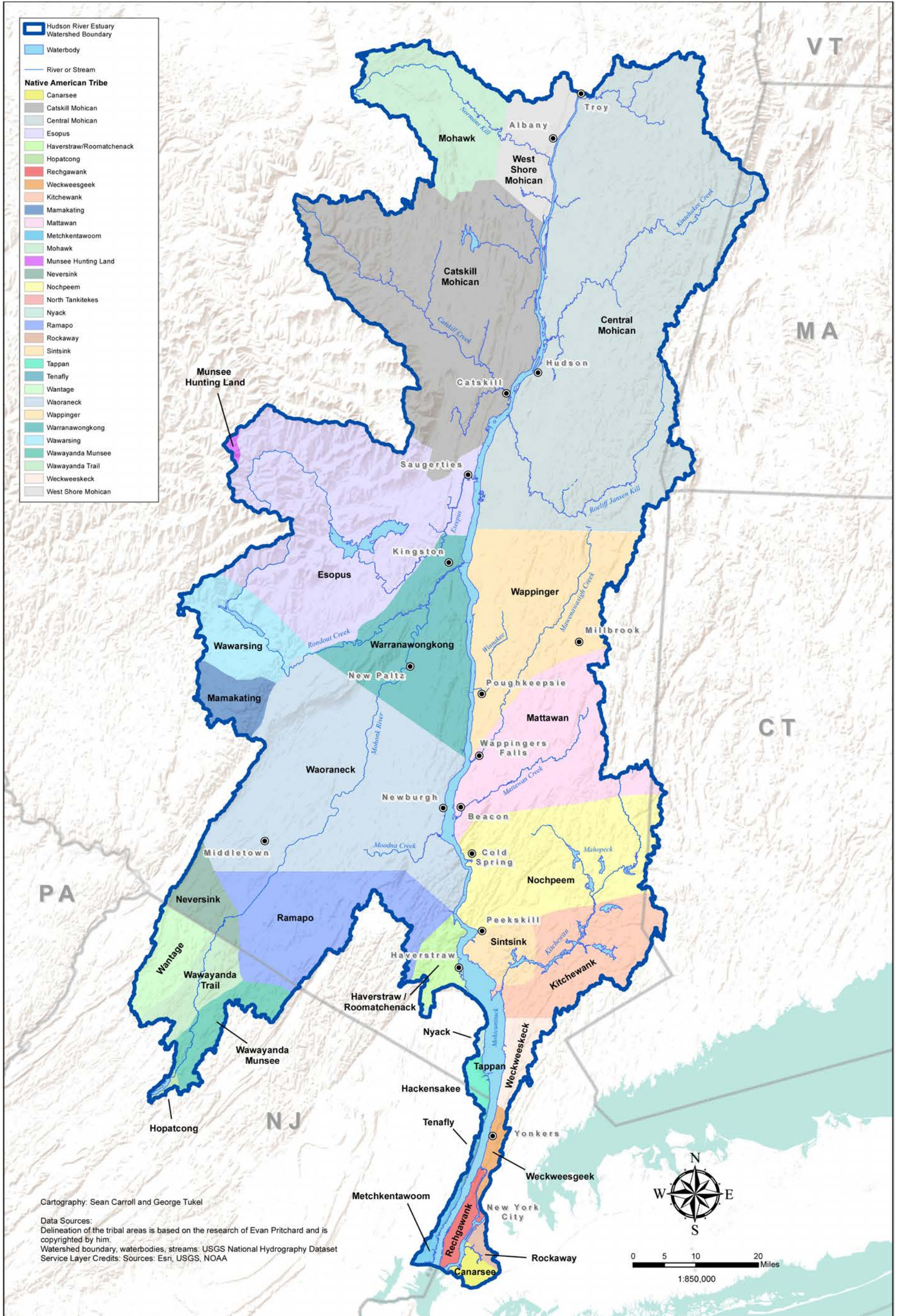


Down around what is now Westchester, the land between the Hudson and Long Island Sound narrows, and near its center is a ridge. Along the ridge was a pathway called “The Common Path,” because everyone on both sides used it. Developed from animal trails, almost certainly following trails left by mastodons, this path is now Route 22, The White Plains Road. On the west side are the tributaries of the Hudson and the people called Rechawanis (Sandy Stream People), and on the other side the tributaries of the sound, and the people called the Siwanoy (Wampum Shell People). If a single drop of rain water fell on that Common Path and it rolled to the east, it would end up in the Sound. If it rolled to the west it would end up in the Hudson. Although the Siwanoy and the Rechawanis are both Wappingers people, and rather similar, over time they saw themselves differently because of their terrain; the Siwanoy wampum was quite a bit more in demand than the Rechawanis sand, as you can imagine. Some say it was the “haves” versus the “havenots,” although in this case the haves often helped the have-nots when they could. But the Siwanoy were all interconnected by the various tributaries on their side of the ridge, all leading to the sound, while the Rechawanis were all interconnected by the many complex tributaries on their side of the ridge in what is now Westchester, and with the Hudson. So one can understand how strongly they identified with their waterways, not only with their estuary or their sound, but with smaller local streams as well. The Wampus Indians named themselves after Wampus Pond, which was named after Wanpus Creek, meaning “a small stream flowing from a pond.” The Canopus Indians were named after the Quanopius (“Long, Shallow Drinking Stream”), now called Canopus Creek. The Neperhan Indians named themselves after the Neperhan, “fish trapping tributary,” which is now called the Saw Mill in Yonkers. All these waters are part of the Hudson Estuary Watershed.

The Rechawanis were people of a sandy tributary in Westchester, flowing into the Hudson, but we no longer know which stream they were referring to. They were so inseparable from their watershed that the most likely way they would meet Siwanoy People, who did not live in the Hudson Watershed, was on top of the ridge, walking along the Common Path, which today still marks the edge of the watershed. Of course, they could also grab their respective mooxools and meet at the southern tip of Manhattan at Bowling Green and exchange “stock” near what is now Wall Street, but that would be planned out well in advance. Perhaps they would discuss it while standing in the sun on top of the ridge, as they met on the Common Path, before rolling back down in their canoes, down their respective tributaries, like two raindrops, to their “Wiccopee,” or “Homes by the Water,” another common place name in New York’s Hudson River Valley.



Birch Bark
Carol Zaloom



Forest Communities of the Hudson Estuary Bioregion

Representative Trees

New York City: American Holly

Albany Sand Plains: Pitch Pines

Hudson Valley: Flowering Dogwood

Wallkill Valley: White Ash

Manhattan Hills: Black Oak

Taconic Mountains: Paper Birch

Hudson Highlands: Chestnut Oak

Shawangunk Mountains: Sassafras

Helderberg Hills: Sugar Maple

Catskill Mountains: Balsam Fir

Hudson River Shoreline: Red Ash

Hudson Palisades: Red Oak

Representative Animals

New York City: American Crow

Albany Sand Plains: Karner Blue Butterfly

Hudson Valley: White Tailed Deer

Wallkill Valley: Wood Turtle

Manhattan Hills: Eastern Garter Snake

Taconic Mountains: New England Cottontail
Rabbit

Hudson Highlands: Timber Rattlesnake

Shawangunk Mountains: Blue-Tailed Skink

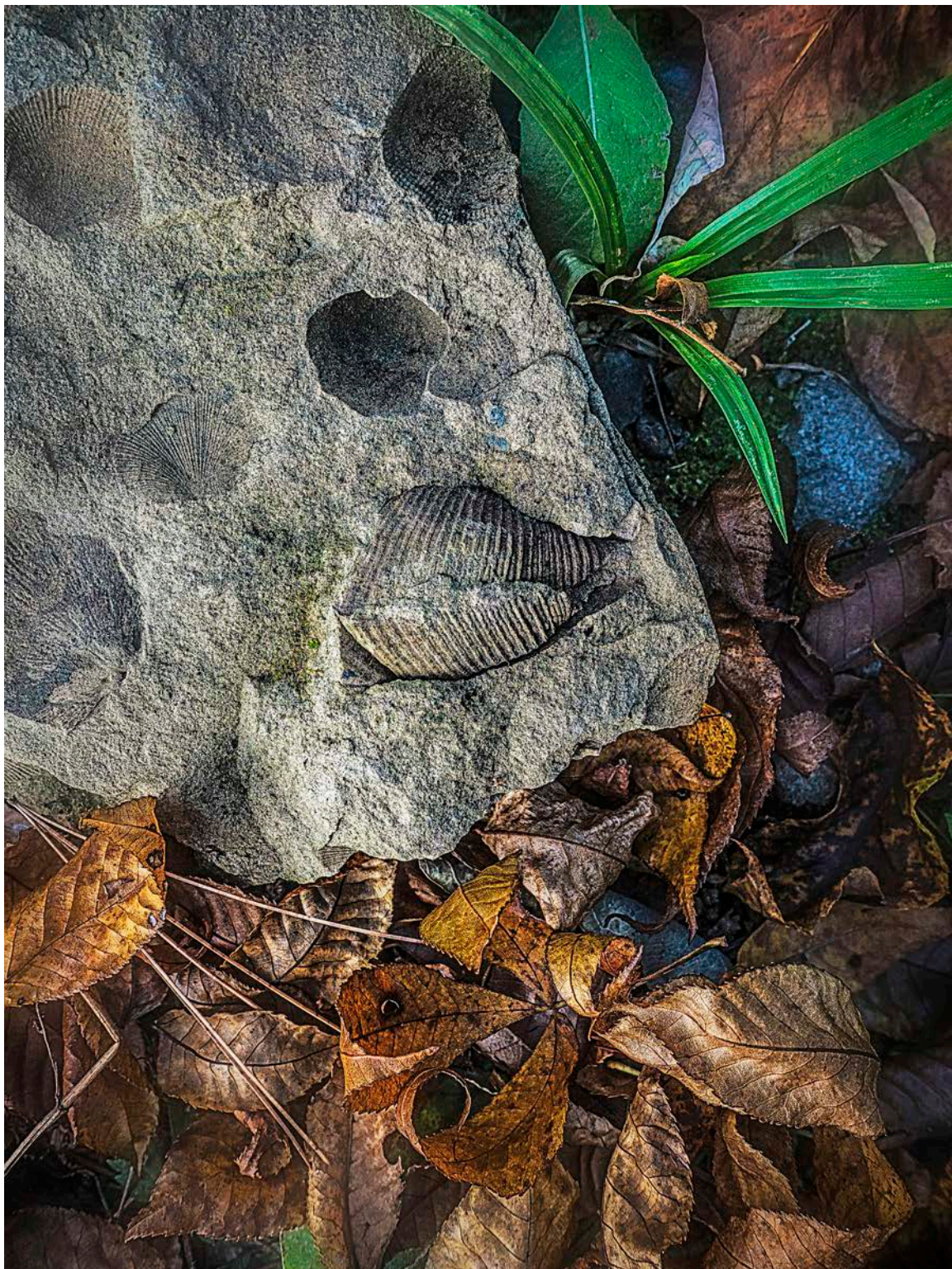
Helderberg Hills: Porcupine

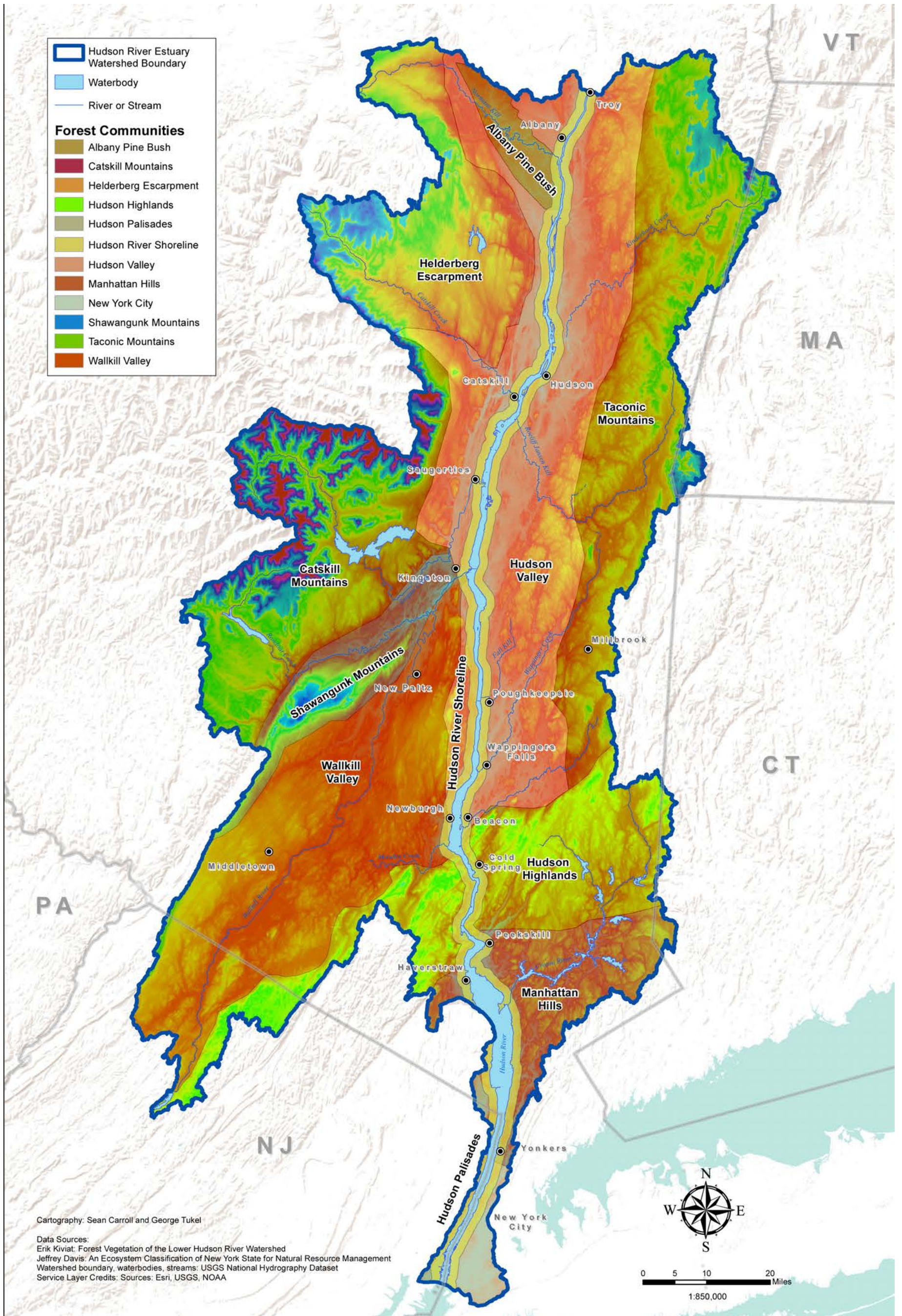
Catskill Mountains: Eastern Black Bear

Hudson River Shoreline: Striped Bass

Hudson Palisades: Pipevine Swallowtail
Butterfly

Rostroconch





Cores and Corridors

George Tukel

Wilderness, alive and well, at the center of regions. Social cooperation woven into the life cycle of natural systems. A return to beauty and ecological health as guides for community growth. These would be changes you would feel in your bones – transforming the regional landscape by exchanging industrial sources of guiding values for wild ones.

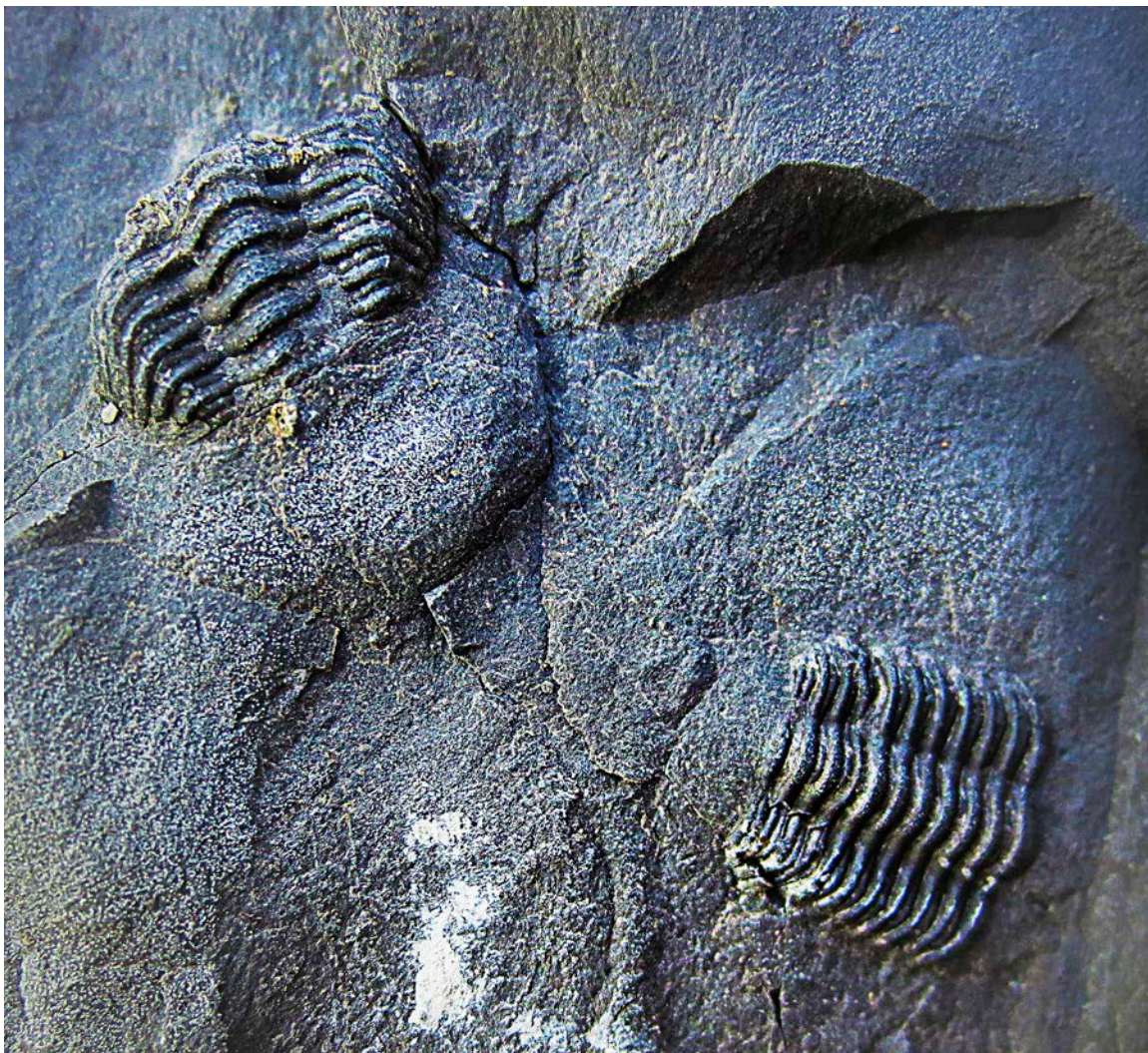
But that means tricky currents to navigate. Realistically, to get there, we need to shift our point of reference to wilderness as Thoreau described it: as a landscape of sacred places, as home to native species and entire biotic communities, as the teacher of enduring ethics. But to make this choice, we have to be prepared to say good-bye to the urban landscape as the primary reference point for living-in-place.

This present and dominant landscape pattern, the result of autonomous bioregions becoming “functional urban” areas, is by now familiar. The city center gives way to the suburbs, suburban sprawl pushes into the countryside, picturesque countryside ends at the edge of parkland designed as a refuge for the stresses of city living. So endemic is this urban-based configuration to our everyday view of regions that both reformers and defenders take its existence for granted. There might be fervent arguments over whether growth or “greening” should be given higher priority, but the specific context of place for this debate remains a constant: the urban centered regional landscape.

Changing from an urban to a wild region is within our grasp, but we’re not going to get there by simply amending a few zoning laws to mask the effects of urbanization. Drawing upon the wilderness that remains, we need choices that aren’t disguises for urban-centered industrial expansion. That choice could be a bioregional green infrastructure of cores and corridors.

The basic building block of bioregional vitality and resilience can be understood as the core area of wilderness, the protected regional place where natural diversity survives. Core areas differ radically from the usual land preservation efforts, which tend toward single species or scenery. Instead, core areas conserve multiple vegetation types and species within intact and representative ecosystems. Surrounding this wild heartland would be a buffer area, and beyond the buffer would be multiple land uses that provide for human needs but which are based on the natural characteristics of the core zone. Let’s call this climax sustainability (after the trustworthy ecological process of natural succession moving towards a climax state characterized by species diversity, high biomass, energy efficiency and stability) and avoiding the current use of sustainable development as sugar-coated (sub)urbanization.

Trilobite Pygidia



For those who understand the worth of perennial resources, this approach is well suited as a practical starting point for transforming urban regions into bioregions – where wild systems supplant the city as the center. But how does this sense of ecological region emerge out of urban-dominated developed areas, where large natural areas have been smashed and fractured. For example, in built-up North American regions, we need to compensate for the urbanized condition that most of us live with every day, in which there remain only fragments of native ecosystems. We can do that by modifying the concept of core areas to include smaller patches of wildness and by introducing natural corridors as bridges between them.

As the science of landscape ecology has taught us, wild core zones of bioregions don't require just one huge area to be alive enough to maintain diversity, even though that might be ideal. Instead, there could also be clusters of smaller core zones, a choice that becomes especially important given the pervasive distribution of human populations, which have cut up wild areas and left few intact. Still, these islands of wildness, no matter how strengthened by diversity and buffer zones, will become extinct over time if they are not connected by bridges of land and waterways.

Corridors are a key to the long-term health of the bioregion because they allow natural diversity within the cores to flourish. Balancing for the lack of core land mass with broad corridors would open breathing space for plant communities and watershed processes to invigorate themselves. While large wilderness preserves should be established wherever possible, cores and corridors will be the practical solution for realizing the goals of preserving climax diversity where industrialization has left its mark.

Consider the possibility: wild regional configurations, with human settlements growing within them. If this is to remain a realistic choice, there will have to be a shift in efforts at land preservation. Rather than from the present emphasis on creating pleasant pieces of recreational green space, we need to create the core-and-corridor network that can marry wildness to restoration and sustainability. But where to start?

Brachiopod Mix



Mapping could kick things off. To different degrees, there are many undisturbed areas which include county, state, or federal lands; privately held properties with conservation easements on them; and land trusts. A big job. But, in many cases, important information already exists on the locations and specifics of natural systems including wetlands, areas of high biodiversity, and homes to endangered species.

Combining local knowledge with the power of cartographic image making and analysis, it's possible to identify core areas for the bioregion, heartlands that include full ranges of ecological conditions and landscapes. We can map these different areas and see how they are positioned in relation to each other within the bioregion. Sometimes they will overlap, other times they will be scattered all over, but under any circumstances, we will be seeing the outlines of core areas. The visualization of core areas, based on reliable information, can be the basis for locally created efforts to preserve land, building on existing reserves wherever possible, so as to fortify centers of biodiversity required for regional rejuvenation.

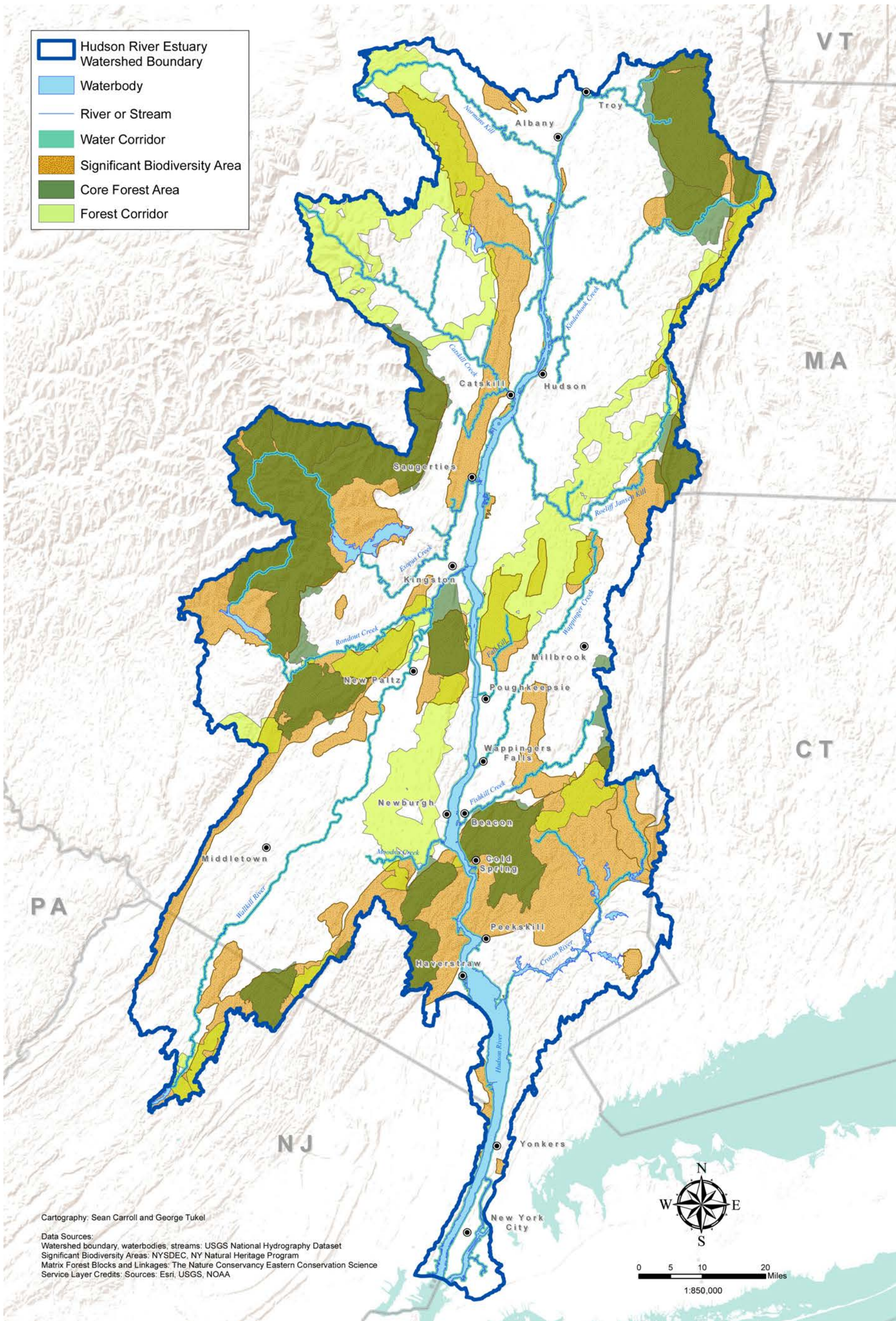
Once we have a sense of the location of core areas, we can begin to suss out the corridors that could connect them. Designing corridors and making them work will be complex. They will require a different kind of effort from that of creating core areas, which benefit from being visible and large enough to be a clear priority of daily preservation activities. (Some core areas, in fact, will already be partially intact as parklands.) On the other hand, corridors will probably be molded from myriad landscape pieces, crossing the boundaries of public and private properties and local governments.

Map making can help this process along. Politically realistic routes for corridors can be mapped by analyzing land ownership patterns and tailoring corridors to undeveloped lands under friendly public and private stewardship. Waterways are always important to consider; they can be overlaid onto other corridor candidates to broaden the design choices. The location of highways and roads within the proposed corridors can be plotted, with strategies formed to overcome the effects on wildlife of what is probably the most severe of habitat fragmenters.

Building a green infrastructure of cores and corridors opens a dialogue between the nonhuman world and communities that want to bypass the poverty and ecological ruin of industrialization. This dialogue could guide human land use and invigorate wildness, because the principles of biodiversity lay the groundwork for climax sustainability. The emphasis on climax sustainability reduces the shock to wild systems. Natural systems, in turn, point the way for restoration, and restoration brings the system full circle by enhancing biological richness. Herein lays a coevolutionary sense of placed-based sustainability: what we do outside of cores and corridors is as essential to the richness of habitats as the cores and corridors themselves.

Coral





Our Oldest Neighbors

Photographs by Art Murphy
Text and Poem by Mikhail Horowitz

They were here before the Dutch and English colonists; here before the Lenape tribes of the Algonquin people—Munsee, Unami, Unalatchigo, and many others. Going even farther back, they were here before the deer, the bears, the possums, the skunks, the owls, hawks, and crows. The marine creatures of the Devonian period, when the region that is now the Catskills was wedged between the epicontinental Kaskaskia Sea and the long since vanished Acadian Mountains in the Southern Hemisphere, constitute our most ancient coinhabitants of the Hudson Valley, our oldest neighbors. Between 358 and 416 million years ago, they swam and flourished in the great marshy sea that covered this part of the world, and they died, leaving the ghostly imprints of their existence in sedimentary rock.

These stunning photographs by Art Murphy of trilobites, brachiopods, coral molds, rostroconches, and other extinct creatures were taken from specimens he collected in the town of Catskill, near or along the Kaaterskill Creek. They are a humbling reminder that many, many lives have preceded ours in the place that we call home, and that the past, no matter how impossibly distant, is still with us, an indissoluble part of our shared narrative. Hiking through these woods and mountains, we also traverse a vanished landscape—vanished but for these shapely traces in stone—that is every bit as rich and beautiful as the one made famous by the painters of the Hudson River School.

Trilobite Pygidium

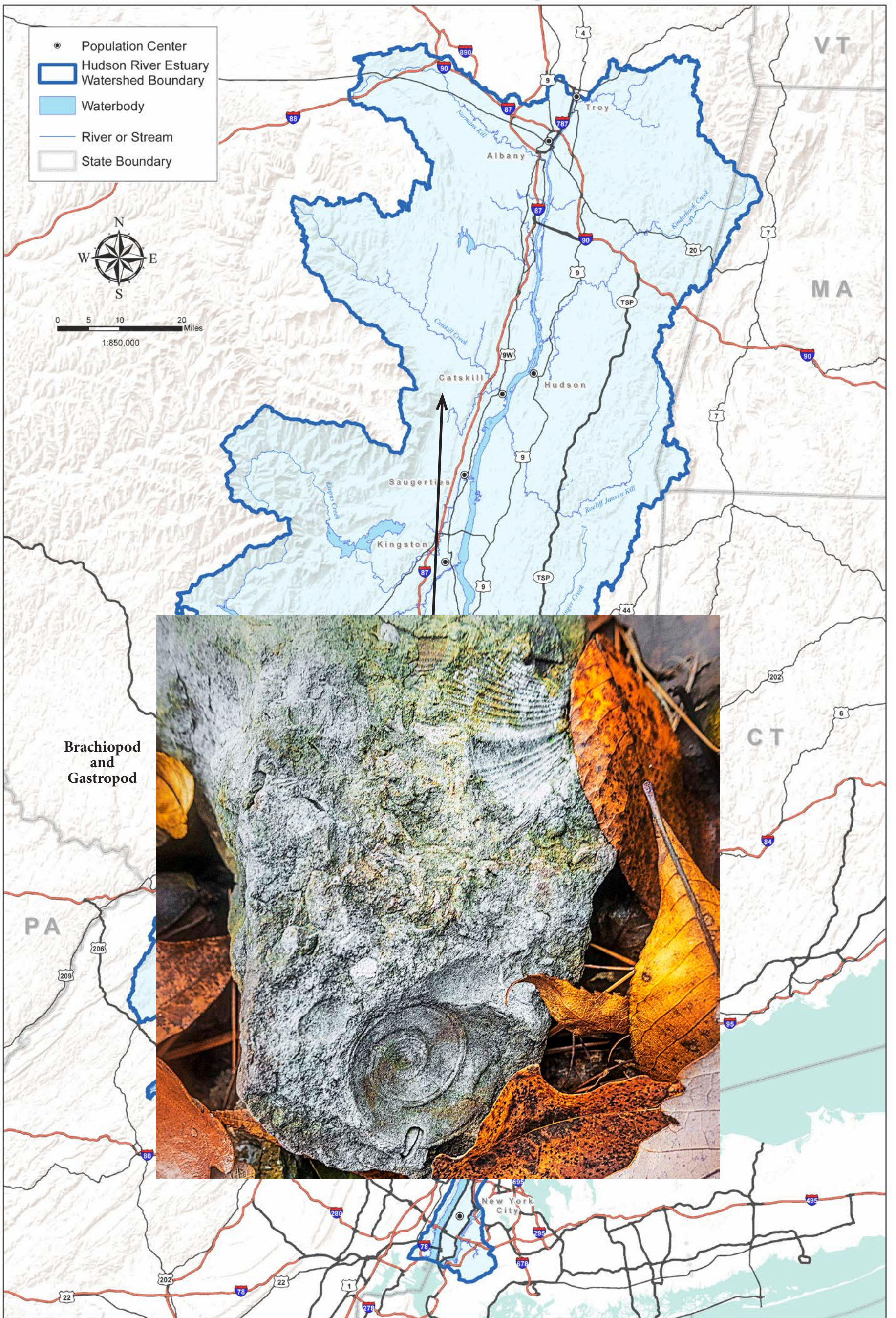


Trilobite: A Triolet

Though having shed its flesh & bone
the fossil throbs within the rock.

A presence animates the stone;
though having shed its flesh & bone,
this ancient creature is no block
of cold, unfeeling, lifeless stone.

Though having shed its flesh & bone
the fossil throbs within the rock.



Daylighting the Buried Hydrology

George Tukel

The Saw Mill River Reappears

The Saw Mill River is a tributary of the Hudson River, part of which flows through Yonkers, a city that directly borders the Bronx, both just north of Manhattan.

As with Yonkers, the history of cities has much to do with how flowing waters are controlled. Inside most urban environments, the current approach is to bury the smaller natural water network believing that is the best way to manage it as a potential hazard. The result is that this network is a ghost in the lives of most city people even though it is what makes life possible. That's why the day lighting of streams and creeks - their release from underground pipes and culverts to the surface - should be viewed as realistic opportunities especially when underground channels need replacement or repair.

In December 2010, Yonkers completed its first daylighting phase of the Saw Mill River by resurfacing it from underneath a parking lot in its downtown district. Daylighting strives to recreate natural stream ecology, usually with historic hydrologic conditions, that are joined, with native vegetation, to adjacent riparian corridors and habitat.

As part of its overall design, the daylighting includes, along with stream restoration, aquatic habitat for migratory fish, typically American eel, white perch, and herring, which will pass through rock structures called "riffles" and fish ladders.

Daylighting is a fine example of a Green City project. It combines the restoration of natural landscapes and habitat conservation areas with a green infrastructure program that can help with stormwater run-off and the improvement of water quality. The neighborhood becomes a more beautiful place to live and work benefiting nearby businesses (and also creating jobs, especially for the lucky ones who tend to the maintenance and overall well-being of the daylighted river or stream).

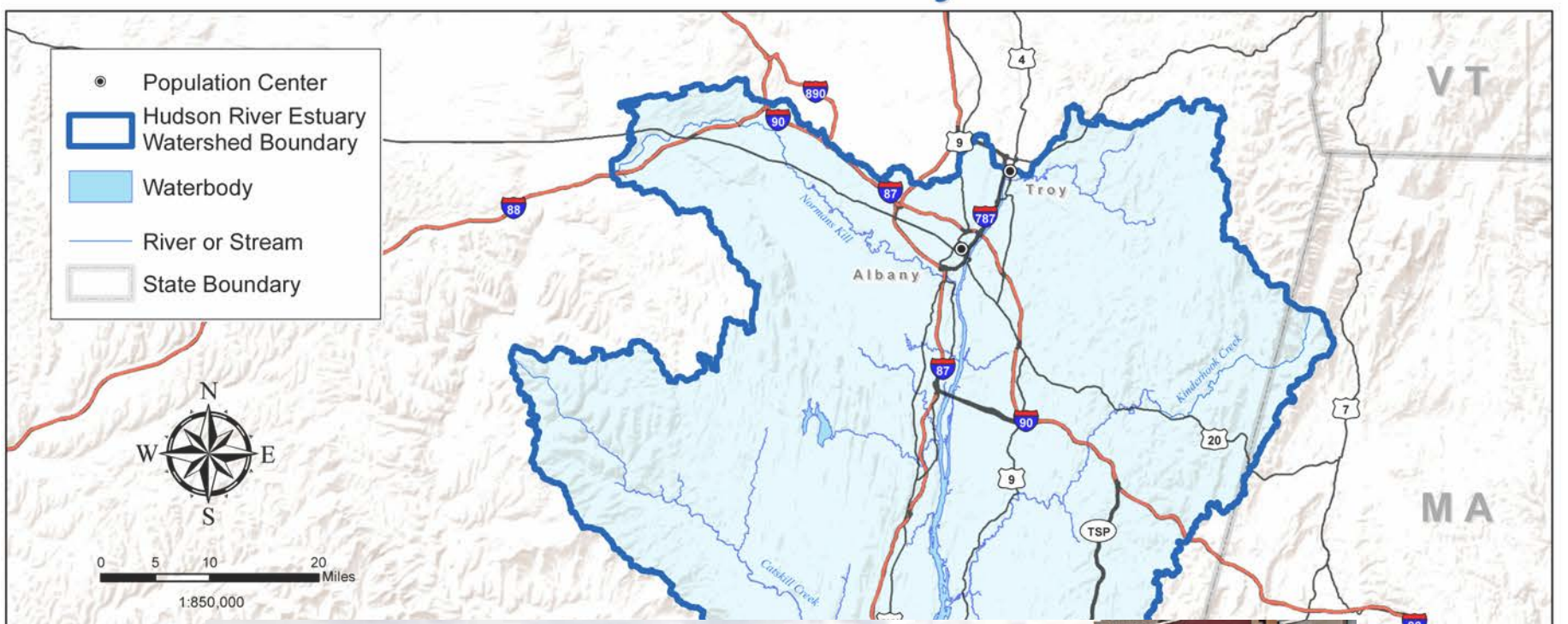
From the essential perspective of living-in-place, daylighting can help foster the elementary association with, and sanctification of, flowing water and the hydrological cycle as everyday experiences.



Coming to the Surface



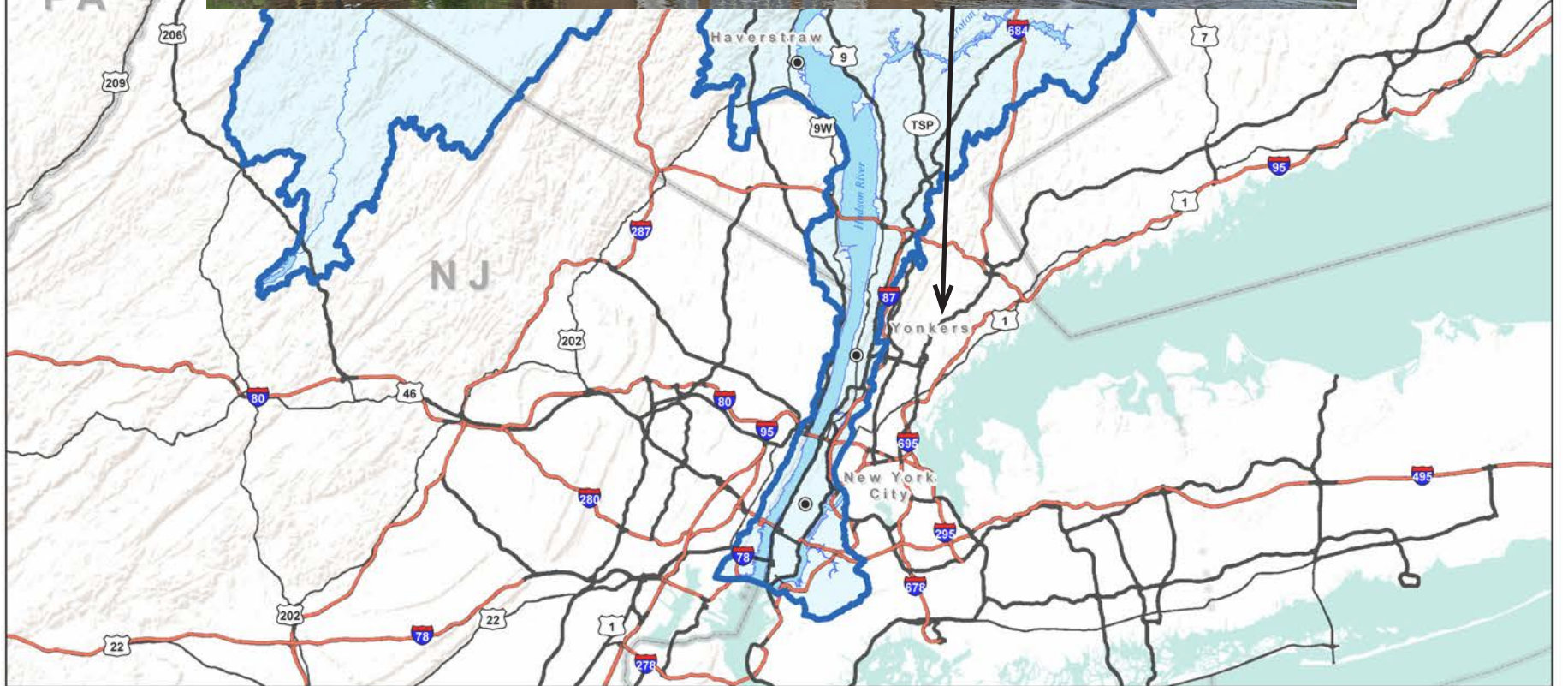
Looking Downstream



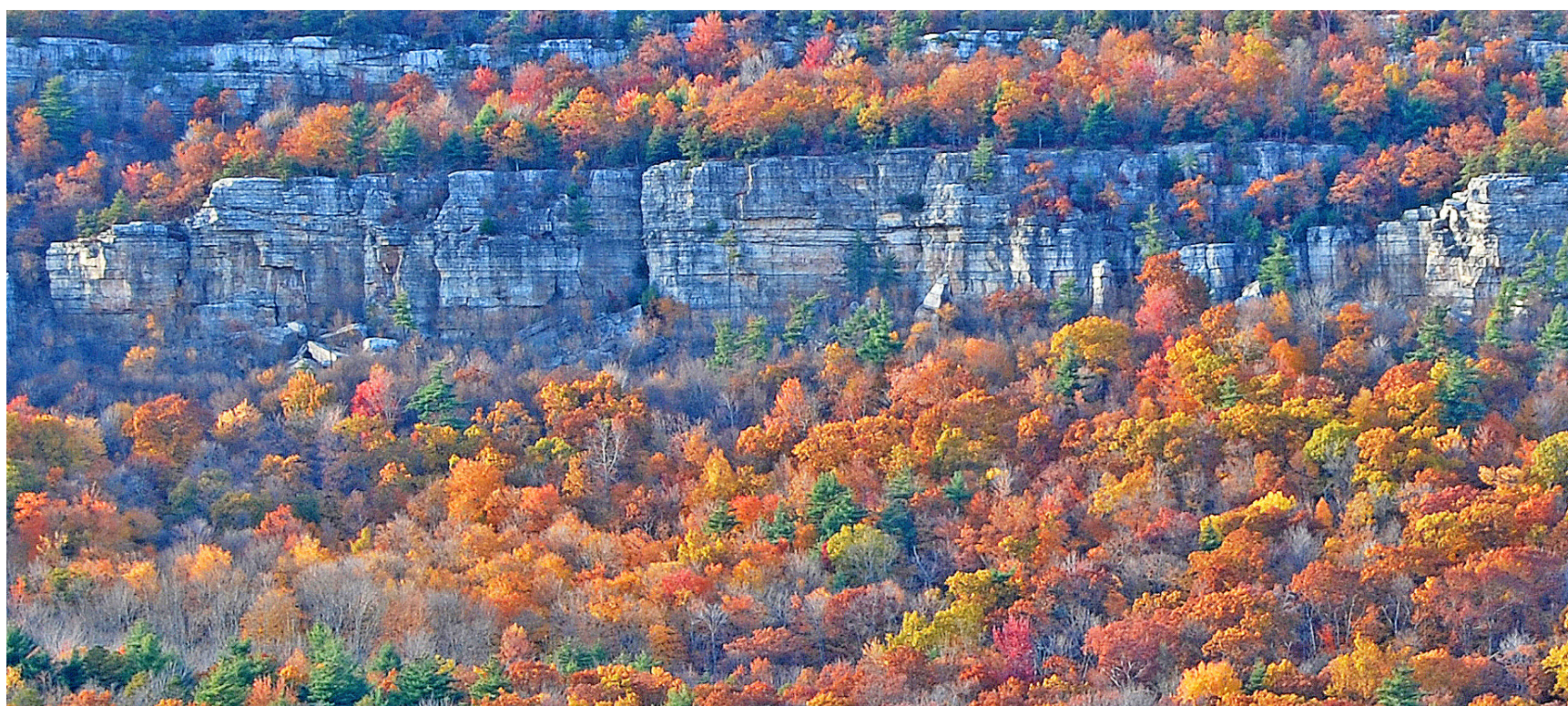
Looking Upstream

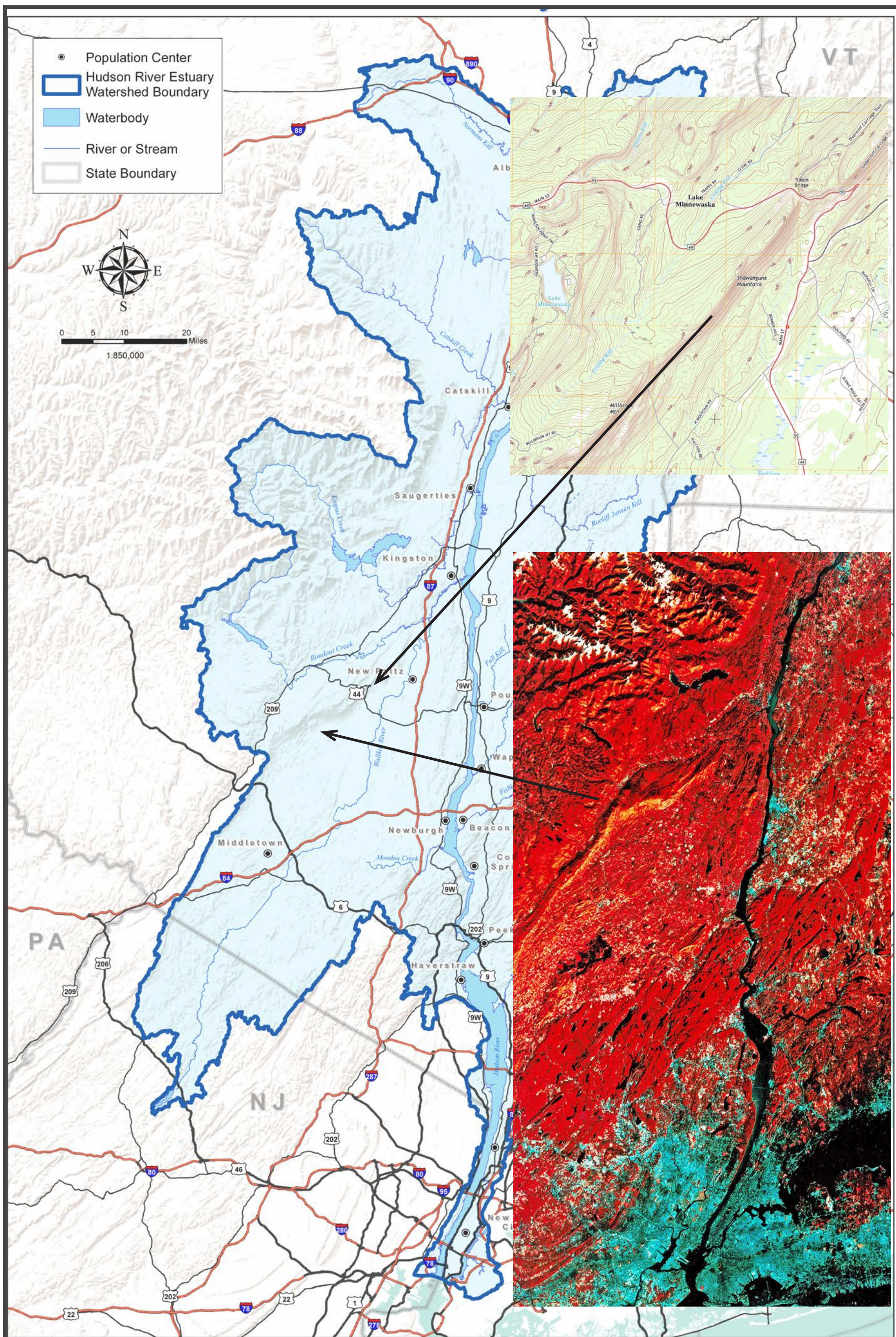


Going Back Underground



Scoured Rocks on the Shawangunk Ridge
George Tukel





Watershed Councils

George Tukel

Why watershed?

Because you can see all of it happening: touch it, smell it. Because the size and natural organization of a watershed corresponds to people living there as natives, not as occupants. Look at the watersheds that drain into the Hudson River from the shore towns of Poughkeepsie to Red Hook. They range from 11 to 22 square miles. These basins, including the Stony Kill, Crum Elbow, and Landsman Kill make ideal natural areas for ongoing care.

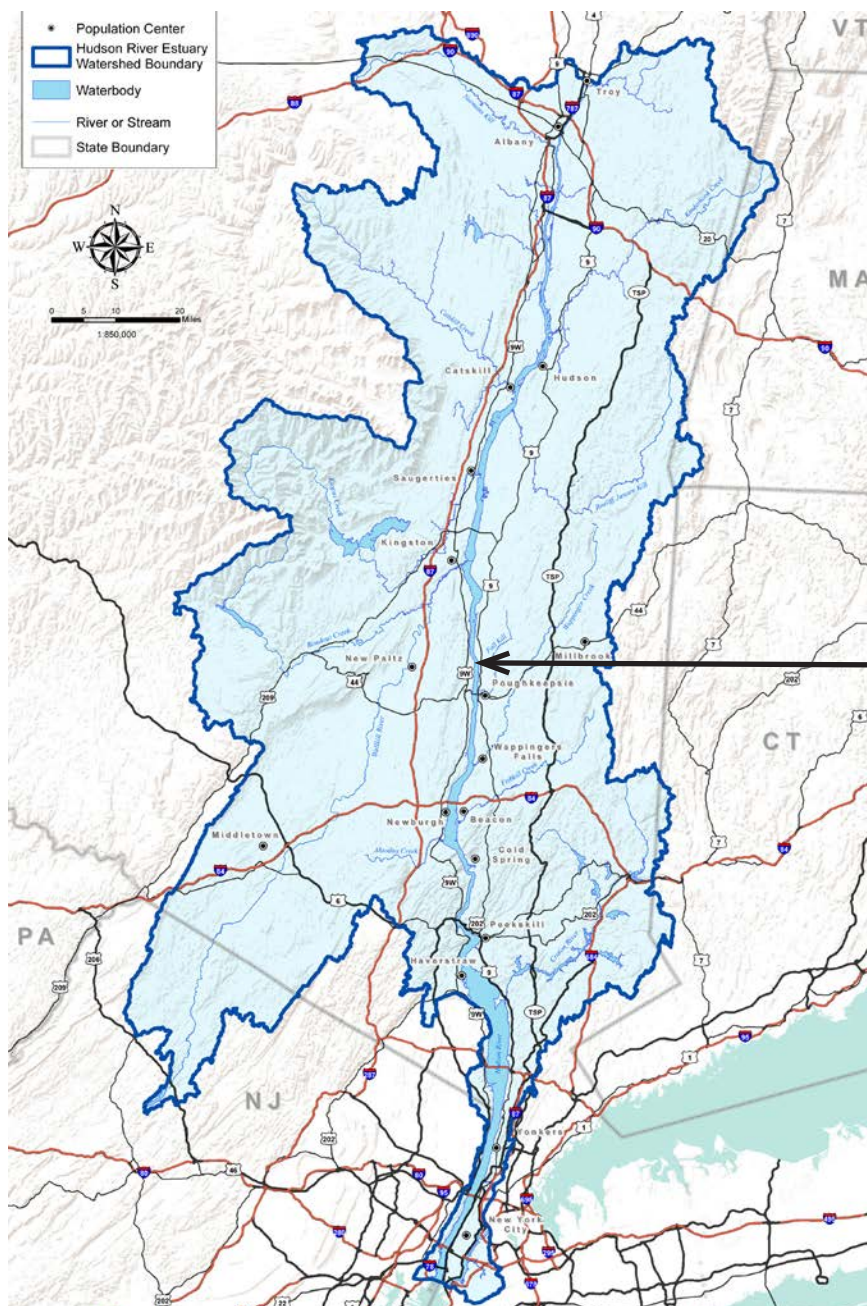
Watershed. It makes sense. A specific geographical area to know intimately and identify with, given character by the drainage basins of streams, creeks, and rivers. All moving water. Water which has scraped, carved and littered to create soil and landform. Held together and animated by sunlight, plants, animals, nutrients and minerals, blending into ongoing ecological processes, and each blend is one-of-a-kind.

Marry sun and water in the home of landform and the offspring is watershed. And you are part of it, from season to season, from year to year. The biology of the human species is intimate with the local ecology, and that is the way it has always been. Our species' senses and intellect allow us a unique view of the natural order, flesh knowing flesh.

This includes living and seeing up close the effects of human activities on the entire life community. If the water upstream is spoiled by garbage, or if pesticides have polluted groundwater supplies, everyone (you, the beaver, your family, the bacteria in the soil) will be poisoned by it. This is probably the best reason why watershed councils are best suited to look after the health of the watershed, which is the daily work of reinhabitation.

What would be the actual concerns of watershed councils? At present, the planning for and shape of human settlements is mostly defined by market forces constrained by building codes, zoning regulations and environmental controls. This has more to do with the profits of developers and the politics of land usage than it does with individual and community well-being, human services and the integrity of local ecosystems. Painting in broad strokes, watershed councils would seek to turn this pattern upside down. Communities could begin to see themselves as aligning human requirements with natural ones.

Watershed councils can undertake the hard work to set the foundations for community life, which, like the natural world, provides and renews at the same time. By putting all life before property and profit, watershed councils become integral to a cultural politics that locates wildness—a felt sense of place—as the basis for cooperative agreements that do not rely on power, fear, or manipulation for their legitimacy and effectiveness. For those whose values have matured past the fevered pursuit of growth-based affluence, watershed councils have become the decentralized leg of biocentric decision-making.



Natural Resource Inventory of Dutchess County, NY
Dutchess County Planning and Development

Riverkeeper
Carol Zaloom

