The Northern Forest Forum

Working for Sustainable Natural & Human Communities

Spring Equinox 1993

Volume I No. 3

Biologists Tell Northern Forest Lands Council

ESTABLISH ECOLOGICAL RESERVES

- *Forest Management Should Mimic Natural Disturbance Regimes*
- *Human Activity Should Complement, Not Oppose Laws of Nature*

ONLY A NETWORK OF LARGE, BUFFERED, CONNECTED RESERVES WILL PROTECT THE ECOLOGICAL INTEGRITY OF NORTHERN FOREST ECOSYSTEMS

SEE PAGES 6–14 FOR THE PROCEEDINGS OF THE NORTHERN FOREST LANDS COUNCIL "BIOLOGICAL RESOURCES DIVERSITY FORUM"

Printed on Chlorine-Free Paper

Ecological Integrity - How Much is Enough?

"I strongly believe that we are going to have to have preserved land. There's no question about that."
--Sharon Haines, Biologist
International Paper, December 9, 1992

"In order to stop the destruction of native biodiversity, major changes must be made in land allocations and management practices. Systems of interlinked wilderness areas and other large nature reserves, surrounded by multiple-use buffer zones managed in an ecologically intelligent manner, offer the best hope for protecting sensitive species and intact ecosystems."
Dr. Reed Noss
"The Wildlands Project: Land Conservation Strategy"

On December 9 the "Biological Resources Subcommittee" of the Northern Forest Lands Council (NFLC) hosted a one-day "Biological Resources Diversity Forum" at which nine biologists instructed policy-makers about biological diversity and why it matters. As expected, there was a wide range of opinions from nine "experts" from diverse backgrounds, but on one vital issue there was unanimity: **To protect the ecological integrity of the Northern Forest region we must create a system of buffered, connected ecological reserves**, and we must do it now, before the region suffers further irreversible loss of biological diversity. *(See pages 6-14.)*

In the wake of the December 9 forum, policy-makers now know the nature and scale of the regional and global crisis in biodiversity, and they know they must involve biologists in all decisions affecting the fate of the Northern Forests.

There remains much work to do, but it is of a quantitative nature: where should reserves be located? how big should they be? The qualitative issue--should there be a system of reserves?--has been answered with a convincing Yes!

The biologists told the NFLC and the 40 or so audience members that human activities--especially forest practices and development in the Northern Forests--do affect biodiversity and ecological integrity. They recommended that forestry practices mimic nature; individual tree or group selection logging is preferable to huge clearcuts and whole-tree harvests.

The biologists warned we must move beyond our concern with individual species that are on the brink of extinction to a concern with entire ecosystems and their processes. If we protect the integrity of ecosystems, we will provide the best protection for threatened and endangered species, and, most importantly, we will protect species and communities before a crisis arises. Ecosystem integrity dictates not only that we protect what's currently here, but that we take steps to facilitate the restoration of native species that have been extirpated. It is time for wolf, cougar, wolverine, lynx, caribou, pine marten and Atlantic salmon to return home to the Northern Forests.

To assure the habitat needs of the largest, widest-ranging native species such as wolves, we must create a network of large, connected wilderness refugia. Debate over size will rage on, but I urge everyone to avoid the minimalist trap of asking the question: "How small a reserve can we get away with?" This is the ecological equivalent of the Christian asking, "How many sins can I commit and still enter Heaven?" Remember, for over 99.9% of human history we have lived in wilderness. During that period 100% of Earth was wilderness, and that wasn't too much!

* * *

To adequately protect regional ecological integrity, we must address the issue both regionally and globally. I belong to a new group, the Wildlands Project, that does just that. Wildlands Project ecologist Dr. Reed Noss believes that a *minimum* of 50% of North America must eventually be incorporated in a continent-wide wilderness reserve system if we are to protect the evolutionary options of native biota. While we may quibble about the actual percentage, it is clear that the great evolutionary challenge for citizens of North America in the 21st century will be the rewilding of a continent that was almost entirely wild less than 400 years ago.

In our own region, 42% of the six million acre Adirondack Park is managed as publicly owned wilderness, yet this is not enough to support viable populations of many native species. In northern New England, there is virtually no designated wilderness, except for the overused 200,000 acre Baxter State Park in Maine. Our work is cut out for us.

How in the world can we create these reserves if 93% of northern New England is privately owned? By confiscating land from small land owners? Absolutely not! Today there are an estimated 3-5 million acres of land for sale from "willing sellers" in the Northern Forest region. As the NFLC "Land Conversion Subcommittee" has learned, large private buyers, including pension funds, can no longer be relied upon to purchase this land, much of it owned by absentee paper corporations and the heirs of 19th century timber barons.

The public can and must buy the bulk of these large holdings which can serve as the starting point for the ecological reserves we need. The price is affordable--less than one-fifth the price of rebuilding southern Florida after Hurricane Andrew. The benefits are incalculable.

At the conclusion of his December 9 presentation to the NFLC, Middlebury College biologist Dr. Steve Trombulak posed the real questions facing Northern Forest communities and policy makers: "(1) What must we do to restore and maintain the ecological integrity of the Northern Forests? and (2) What must we do to develop socio-economic policies that operate in conjunction with, rather than in opposition to, laws of nature."

It's time for us to roll up our sleeves. The fun work has begun.

--Jamie Sayen

Editorial Staff This Issue

Jamie Sayen - Editor
Andrew Whittaker - Assistant Editor
Deborah Brighton--Ad Hoc Associates
David Carle--RESTORE: The North Woods
Andi Colnes--Appalachian Mountain Club
Michael DiNunzio--Adirondack Council
Michael Kellett--RESTORE: The North Woods
Lowell Krassner--Sierra Club
Kit Kuntze--Friend of the Fungus
Mitch Lansky--Save Our Salamanders
Jym St. Pierre--The Wilderness Society
Steve Trombulak--Middlebury College Biology Dept.

Illustrations

Susannah Becker, Siri Beckman, Kit Kuntze, Jon Luoma, Rachel O'Meara, Cheryl Seal

Photographs

Alan Cederstrom, Steve Gorman, Alex MacLean, Gary Randorf, Jym St. Pierre

The Northern Forest Forum is a project of the David Brower Fund of Earth Island Institute.

Northern Forest Forum Statement of Purpose

The Purpose of the *Northern Forest Forum* is: To Promote Sustainable Natural and Human Communities in and beyond the Northern Forest Region.

The **Forum** will focus on:

*The Ecological Integrity of the region and strategies we need to adopt to restore and preserve it;

*The need for Economic Reform into an economy that is ecologically sustainable, equitable, and locally and regionally controlled;

*Community Empowerment; and

*Monitoring the Northern Forest Lands Council.

The **Forum** is the only publication devoted to exploring the Northern Forest as an area of local, state, regional, national and global significance. It will seek to involve all citizens and groups concerned about the future of the Northern Forests, especially groups working for economic and community revitalization, religious and cultural interests, local officials, planners, foresters, and citizens of the Northern Forest communities.

We believe we can find the common ground that unites the diverse elements of the Northern Forest communities--our love for the region. The **Forum** will provide an empowering forum for the unheard voices of the human and non-human communities of the region.

We hope to stimulate a healthy debate that will assist our search to find common ground, not more polarization. We hope the **Forum** will promote a sense of regional and cultural identity and celebrate the integrity, beauty and resiliency of the biotic community and the cultural diversity of the human communities of the region.

The **Forum** will seek to assure that political, economic, social and cultural strategies for the region's future be ecologically sustainable. In particular, we will promote forestry practices and wood products manufacturing that are ecologically sound, socially responsible and economically viable.

Articles published by the **Forum** will represent the views of the authors only, and will not necessarily represent the views of all supporting members of the **Forum** or its editorial staff.

Biologists Tell Council We Need System of Ecological Reserves

We need a system of regional ecological reserves that are designed to protect the ecological integrity of the Northern Forests a panel of biologists told the Northern Forest Lands Council (NFLC) on December 9. Current reserves, they agreed, are not adequately protecting all ecosystems and species native to the region.

The biologists warned that many current practices of industrial society--including forest management and development--are diminishing biological diversity and compromising the ecological integrity of the region. They agreed that our current emphasis upon protection of individual species that are threatened or endangered must be broadened to a focus upon ecosystem integrity, ecological processes and long-term trends affecting forest health. The biologists also agreed that although we urgently need more research on a myriad of issues, we already know enough to take many essential steps immediately.

This one-day "Biological Resources Diversity Forum" in Manchester, NH was indeed historic. For the first time since the creation of the Northern Forest Lands Study in 1988, and the NFLC in 1990, a panel of four biologists instructed policy makers--ten of the 16 members of the NFLC--about current threats to the ecological integrity of the region's forests.

The four biologists: Malcolm Hunter, Jr. of University of Maine-Orono, Sharon Haines of International Paper, Stephen Trombulak of Middlebury College, and Rainer Brocke of SUNY College of Environmental Science and Forestry, responded to a series of questions posed by the NFLC "Biological Resources Subcommittee" which hosted the forum. Their responses are printed in this issue of the **Forum** beginning on this page.

Next, a second panel of five expert commentators--biologists from a wide variety of backgrounds across the region--commented on the earlier presentations and offered some thoughts of their own.

Following a break for lunch, the expert commentators posed questions to the four featured presenters. Highlights of this illuminating give and take are printed beginning on page 10.

Members of the NFLC were then invited to pose questions to the invited biologists. And, finally, the audience challenged the panel with some insightful questions and comments.

The **Forum** is printing as much of this lively series of exchanges as space permits. In addition, three important issues--soils, old growth, and the need for innovative follow-up conferences to build trust amongst concerned parties, and the need to identify research priorities for conservation biology--are presented as special sidebars.

Tapes of the entire December 9 forum are available from the NFLC. I have attempted to transcribe and edit the three hours of questions and comments judiciously and fairly. Some statements and answers have been paraphrased, rather than presented verbatim. Paraphrasings are indicated by square brackets [].

I wish to thank the four panel members who all graciously permitted the **Forum** to reprint the papers they submitted to the Council. Special thanks is due to Charlie Levesque, Executive Director of the NFLC, for permission to reprint the papers and for sending the tapes to the Forum. The transcription of the question session is entirely my responsibility.

--Jamie Sayen

Biodiversity Forum - One View From the Peanut Gallery

by Jamie Sayen

The December 9 "Biological Resources Diversity Forum" was important for two critical reasons:

(1) for the first time a regional council that is shaping policy learned first-hand just how pressing our regional and global crises in biological diversity are; and

(2) the biologists, including Sharon Haines of International Paper, agreed that we need to create a system of ecological reserves that protect all ecosystems native to the region as part of an overall strategy to protect the ecological and evolutionary integrity of the region.

Consensus on Biodiversity

The panel of biologists--Rainer Brocke, Sharon Haines, Malcolm Hunter, Jr., and Steve Trombulak, reached consensus on a number of critical issues:

(1) A network of ecological reserves is a key element of any plan to protect biodiversity;

(2) We must focus our studies and actions on ecosystems, rather than merely on species near the brink of extinction;

(3) There is a critical need for more information regarding biodiversity within the region;

(4) Loss of biodiversity is a serious threat to our ecological and economic well-being;

(5) Many current human activities--especially forest practices and development in the Northern Forest region--contribute to the loss of biodiversity.

(6) Studying biodiversity on a regional scale, as the Northern Forest Lands Council is doing, is essential.

A number of other very important points were raised, and while there may not have been unanimous agreement, these points merit our attention.

The Status of Biological Diversity

The panel members agreed that loss of biological diversity is a problem. Overall, there was agreement with Malcolm Hunter's statement that the status of biodiversity is "poor and declining." Rainer Brocke disagreed in his opening remarks, but later in the proceedings, when shown a photograph of the massive clearcuts in Maine, he acknowledged "this Maine devastation." There also was general agreement that ecosystem resiliency (the ability to resist disturbance or to recover from it) declines with repeated abuse.

There was agreement that we must address the problem of biodiversity on an ecosystem level. The current focus on species near the brink of disaster fails to deal with ecosystem integrity and natural processes. It also fails to protect species not yet in trouble, and it fails to address the issue of the restoration of extirpated native species. Reserve designs should strive to protect representative examples of all native ecosystems.

Human Activities

Predictably, Sharon Haines of International Paper did not feel clearcuts are necessarily harmful. Steve Trombulak disagreed, and Malcolm Hunter pointed out that, at the very best, clearcuts are overused in northern New England. All agreed that timber harvesting should be ecologically responsible and that harvesting practices should mimic natural disturbance regimes. A fascinating discussion on natural disturbance regimes in the area revealed that the most common and frequent disturbance regimes involve small patches, not huge, contiguous swaths of forest. Accordingly, single tree or group selection more closely resembles natural disturbance regimes.

The panelists agreed that abusive development and forestry both pose serious threats to the region. In some cases--nearer other developed areas, along shorelines, and in places with scenic vistas--development is a more serious threat. But, in much of the remote Northern Forests, the gravest threat to biodiversity comes from unsustainable forestry.

Research Needs

All agreed with Dr. Hunter that we need a common classification system for the ecosystems of the region, and an assessment of which systems are adequately protected. Today only about 2-4% of these systems receive adequate protection. Dr. Haines noted that we need inventories of biological diversity on public and private land if we are going to manage land properly.

Currently, we know very little about: invertebrates, soils, how ecosystems function, and the long-term trends in ecosystems (and the impact of human activities). Dr. Trombulak proposed convening a conference of scientists conducting research in the Northern Forest region to identify what we know, and what we currently are studying so that we can identify the research priorities for conservation biology in the region. This idea was well-received.

Large Refugia

Current reserves do not protect the region's ecological integrity; the most important agreement reached at the forum was that we need to create a system of ecological reserves that will. There is not yet consensus on the size and design of such reserves, but future research will debate has now shifted from whether or not such a system is needed to questions of how we should design a reserve system.

These refugia must contain roadless areas large enough to support large native carnivores such as wolves, cougars, lynx and wolverines.

To restore intact ecosystems we must create a system of core reserve areas that are surrounded by buffer areas (which permit some human activity, so long as it does not compromise the ecological integrity of the core areas). And these reserves must be connected to other reserve areas.

In addition, it is imperative that we coordinate public and private land management activities so that the goals of one owner do not adversely impact the goals of another--or compromise regional ecological integrity.

The Northern Forest Lands Council deserves high praise for taking the critical first step in reversing the loss of regional biodiversity. But, this is only the first of many steps that must be taken swiftly. The December 9 biodiversity forum raised questions that can no longer be ignored, no matter how inconvenient it may be for us to reform our political and economic values and activities.

Temporary & Transitional: The Real Forest Primeval

The Evolution of Maine's Forests Over 14,000 Years

by George l. Jacobson and Ronald B. Davis

The mystique of an ancient and stable "forest primeval" is the popular concept of the landscape encountered by the first European settlers of North America. Since that time, North American landscapes have been increasingly affected by human activities, so that in our modern world, with its ever diminishing natural areas, the nostalgia for the "forest primeval" is understandably strong. There may be, however, a tendency to romanticize that ancient forest as one of uniform expanses of pristine growth, unchanged and undisturbed until the first pioneers began clearing the land.

What were those ancient forests really like, particularly in Maine? Is there any validity to the idea that they were free of perturbations, endlessly stable and unchanged until put to axe and saw? That this idealized concept of Maine is wrong has become abundantly clear in our paleoecological studies throughout the state. In this article, we try to explain how we carry out these studies and what we have learned about the changing environments and vegetation of Maine during the past 14,000 years.

Strange as it may seem, probably the most important evidence in our investigation of Maine's vegetational changes is pollen. Enormous numbers of pollen grains are produced by plants, and these microscopic particles are blown and washed into our lakes and wetlands, where they are well preserved in lake sediments and peats. Each species of tree, shrub, and herb produces a unique pollen grain; microscopic examination of the form and sculpturing of a grain's outer wall tells what kind of plant (e.g., beech, birch, grass, etc.) produced it. The soft living contents of the grains decay rapidly, but the hard wall is extremely resistant to decay. In the anaerobic (non-oxidative) sediments of lakes and bogs, these identifiable walls remain in fine condition for thousands of years.

Along with the pollen grains, seeds and leaves of the pollen-producing plants may also be preserved. Great numbers of identifiable spores of lower plants (e.g., fungi, mosses, ferns, etc.) usually occur in the sediments, too, occasionally with larger parts of the spore-producing plants. The changing abundance of these fossils at different depths in the sediments (and hence in time) provide reliable evidence for the changing nature of the vegetation. Furthermore, the physical and chemical characteristics of the sediment are useful indicators of past environmental conditions. The age of each layer (depth) is revealed when the sediment is analyzed for carbon-14, an isotope that undergoes radioactive decay at a known rate and thus provides a natural "clock." Studies of these and other biological and physical contents of sediment cores extracted from more than a dozen sites in Maine now allow reconstruction of past conditions in the state. During the past 14,000 years, these conditions included flooding of the coastal region by marine waters, landscapes with little or no vegetation cover, treeless expanses of tundra, and dense and relatively diverse forests that changed with time.

The Period of Deglaciation: 14,000 to 11,000 Years Ago

At most sites we have studied, the material at the bottom of the lake or wetland basin is a gray clay/silt nearly devoid of organic remains. This material settled out from the meltwater of glaciers, or from runoff that eroded recently deglaciated lands covered by glacial silt and clay. That such material can be of glacial origin is confirmed by studies of modern glaciers, whose meltwaters are milky-opaque with "rock-flour" generated in and beneath the ice by the grinding of rocks against one another.

At low-elevation sites in the coastal part of the state, the early clay/silt deposits--including the deepest sediment in lakes and wetlands--contain the remains of marine organisms such as clams, seaweeds, and marine plankton. These fossils were first deposited in Maine about 13,500 years before the present (BP), and from such evidence we conclude that the coastal zone was inundated by the sea during deglaciation. This happened because the last ice sheet had depressed the earth's crust. As glaciers around the world began melting, about 18,000 BP, the meltwater caused a worldwide rise in sea-level, which inundated the depressed landscapes of recently deglaciated coastal areas. While most marine fossil deposits in Maine are found within a few score miles of the present coast, they occur as far as 100 miles inland along major river valleys such as the Penobscot and Kennebec.

During the marine inundation, which lasted roughly between 300 and 1,500 years, glacial ice still remained in northern Maine. Glacial meltwater in river valleys carried huge amounts of rock-flour to the sea, where the material was deposited. Throughout this time the deglaciated land was rising in response to the removal of glacial weight. The rate of rise eventually outstripped the rise in sea level, and by about 12,500 to 12,000 BP, the coastline was (temporarily) at approximately the same position as it is today. At that time, fresh-water sediments began to accumulate atop the older marine deposits in lake and wetland basins in the coastal zone.

Farther inland, beyond the limits of the brief marine incursion, the earliest postglacial sediments in lake basins were deposited in freshwater. Around 13,000 BP in central Maine, and about 1,000 years later in northern Maine, glaciers were disappearing, leaving exposed landscapes that were in an unstable condition. For the first few decades--and possibly the first two or three centuries following deglaciation-- before a stable vegetational cover became established, large amounts of rock-flour were washed into lakes and streams. The barren condition of the landscape, along with what was probably a cold climate adjacent to the melting glacier, would have supported little animal life. As the melting ice-front became more remote, plants gradually were able to spread into the area from the south, and the vegetation cover became more complete. Spores, pollen, leaves and seeds of these plants became more abundant in the sediments of the lake bottom. With increasing plant cover also came increasing numbers of herbivores and carnivores to feed upon them.

Tundra and Open Woodlands: 13,000 to 9,000 BP

The earliest vegetation to cover the exposed landscapes of Maine was a treeless or nearly treeless tundra, similar to the vegetation that covers northernmost Labrador today. Vegetational remains in lake sediments indicate that arctic and subarctic species of herbaceous and shrubby plants (including sedges and grasses, dwarf willows, birch and alder shrubs, certain ferns and club mosses, and true mosses) were abundant in the early tundra. The first trees became established 1,000 to 2,000 years after deglaciation, depending on the area of the state. The earliest tree species to invade the tundra were aspen (poplar), spruce and paper birch. At first, these formed open woodlands, with tundra persisting between isolated individual trees or groves of trees, which may have been similar to the present vegetation near the northern tree line in central and northern Labrador. As tree populations expanded, tundra plants eventually were crowded out. In much of Maine, a spruce-dominated forest became established. Tundra-type growth probably persisted on the tops of our tallest mountains, however, and on certain exposed coastal headlands where conditions remained too severe for good tree growth--a condition that still exists today.

From glacier to forest: a vegetational continuum

The First Closed Forests: 12,000 to 9,000 Years BP

Closed spruce forests had formed in southwestern Maine by 12,000 BP. Forest closure progressed northward, and by 9,000 BP had reached northernmost Maine. In the north, though, a spruce-dominated forest stage was brief and perhaps non-existent in places; the initial closed forest there had considerable proportions of temperate tree species in addition to spruce. Plants characteristic of open areas flourished where disturbances such as fire and insect infestation killed the trees. Abundant charcoal particles in the sediment, along with fossils of plants such as paper birch and alder, testify to the frequency of fire and other natural disturbances. About 11,000 to 10,000 BP, maple, oak, and finally white pine arrived in southern Maine. They rapidly increased in abundance, replaced most of the spruce and fir, and brought about a dramatic change to a temperate forest.

As illustrated by the maps accompanying this article, the deglaciation of Maine and the establishment of vegetation was not simultaneous over the entire state; it took more than 2,000 years for these changes to progress from southern to northern Maine. The maps also show that the changes from tundra to open woodland to closed forest were delayed in the north.

Closed Temperate Forests of the Past 10,000 Years

The closed forests that first formed in southern Maine 12,000 years ago and in northern Maine 9,000 years ago have been anything but stable since then. The past 10,000 years or so are considered to be an interglacial period, one of 20 or more that have separated major periods of glaciation during the past two million years. Each of these interglacial periods has included significant changes in climate and vegetation. Superimposed on those broad-scale changes are many that are site-specific and probably related to biological interactions, local disturbance, and soil conditions. The forests of today, as well as those that were here in Colonial times, differ dramatically from those that covered the state at most other times since the last deglaciation.

The present interglacial can be divided into five periods in which the vegetation of Maine had distinctive properties. As noted previously, the period of deglaciation ended with a closed forest of spruce, fir, paper birch, and alder--vegetation not too different from what is seen today in the boreal forests of much of Canada's mid-latitudes.

Pine, Birch, and Oak Forests of 10,000 to 7,000 BP

Between 11,000 and 10,000 BP in southwestern Maine, and by 9,000 BP in the north, boreal tree species were largely (in the south) or partly (in the north) replaced by white pine and oak. Once present, these trees remained common in the forests for 3,000 to 4,000 years-- that is, until about 8,000 to 7,000 BP. Abundant fragments of sedimentary "charcoal," as well as fossils of disturbance indicators, such as gray and paper birch, suggest that fire continued to be important during that interval. As can be seen in the generalized pollen diagram for central Maine, white pine was strikingly more abundant then than it has been at any time since, including just prior to the massive logging of the past century.

Hemlock,Beech, and Birch Forests of 8,000 to 5,000 BP

Forests of white pine, birch and oak were greatly affected in Maine by the northward expansion of hemlock 9,000 to 7,000 years ago, and by the arrival of beech soon after that. Fossils also indicate that yellow birch became an important forest component for the first time just when the hemlock component increased. Charred plant fragments are much less abundant in the sediments deposited at that time, suggesting that fire frequency probably was much lower than during the earlier period dominated by pine. In much of the state, the dense, moist forests dominated by hemlock were widespread. With minimal undergrowth, such forests would have been poor habitat for large herbivorous mammals.

Sudden Decline of the Hemlock Forests, 5,000 BP

Pollen diagrams from across the northeastern United States reveal an abrupt drop in the abundance of hemlock 5,000 years ago. So great, rapid, and synchronous a decrease in the abundance of a major species-- across virtually its entire range-- is almost unprecedented in the paleoecological record for North America. Professor Margaret Davis, of the University of Minnesota, first noticed this unusual phenomenon and suggested that hemlock was probably hard-hit by a virulent (but unknown) pathogen that spread rapidly through the entire population. We are familiar with the similarly rapid devastation of chestnut forests by the chestnut-blight fungus early in this century; Professor Davis and several of her colleagues have recently shown that the sedimentary pollen record of the chestnut decline is the only other event in the past 10,000 years that resembles the hemlock decline.

Because hemlock was such an important forest component, its disappearance led to successional responses from many other species of vegetation. Our data suggest that each site had its own successional sequence after the hemlock decline, with immediate responses in several different species.

Not every hemlock tree was killed by the purported pathogen. Paleoecological studies of sites across the Northeast show that the local hemlock populations gradually recovered and, after a few hundred years, once again became an important forest component. The logical assumption is that a few individual trees were resistant to the pathogen and formed the core of the rebounding populations. This could be a case of natural selection leading to an increased abundance of a genetic strain that is fitter in the presence of new pathogens.

Recovery of Hemlock, Beech, and Birch Forests: 4,000 to 1,000

Once the hemlock populations began to recover, the forests came to resemble those present before the hemlock decline 5,000 BP. At several sites in Maine, these later forests had as much or more hemlock than the earlier ones, though this was not true in most other areas where hemlock occurs today. Thus, we can say that conditions in Maine were especially good for hemlock both before and after its dramatic decline. But these forests dominated by hemlock, yellow birch and beech, did not persist in high abundance up to the present. Long before European settlers began to cut the forests of Maine, such forests were already in decline.

Development of Maine's Modern Forests: The Past 1,500 to 1,000 Years

Beginning about 1,500 to 1,000 BP, elements of the boreal forest, notably spruce and fir, began to increase in abundance along the southern margin of their range from Maine and the Canadian Maritimes to Minnesota. The forests of abundant spruce and fir so notable in parts of Maine today had barely become prominent in our landscape by the time our Colonial predecessors arrived. The southward expansion of these boreal species may advance the theory that the climate of north-temperate latitudes has become increasingly cool over the past millennium.

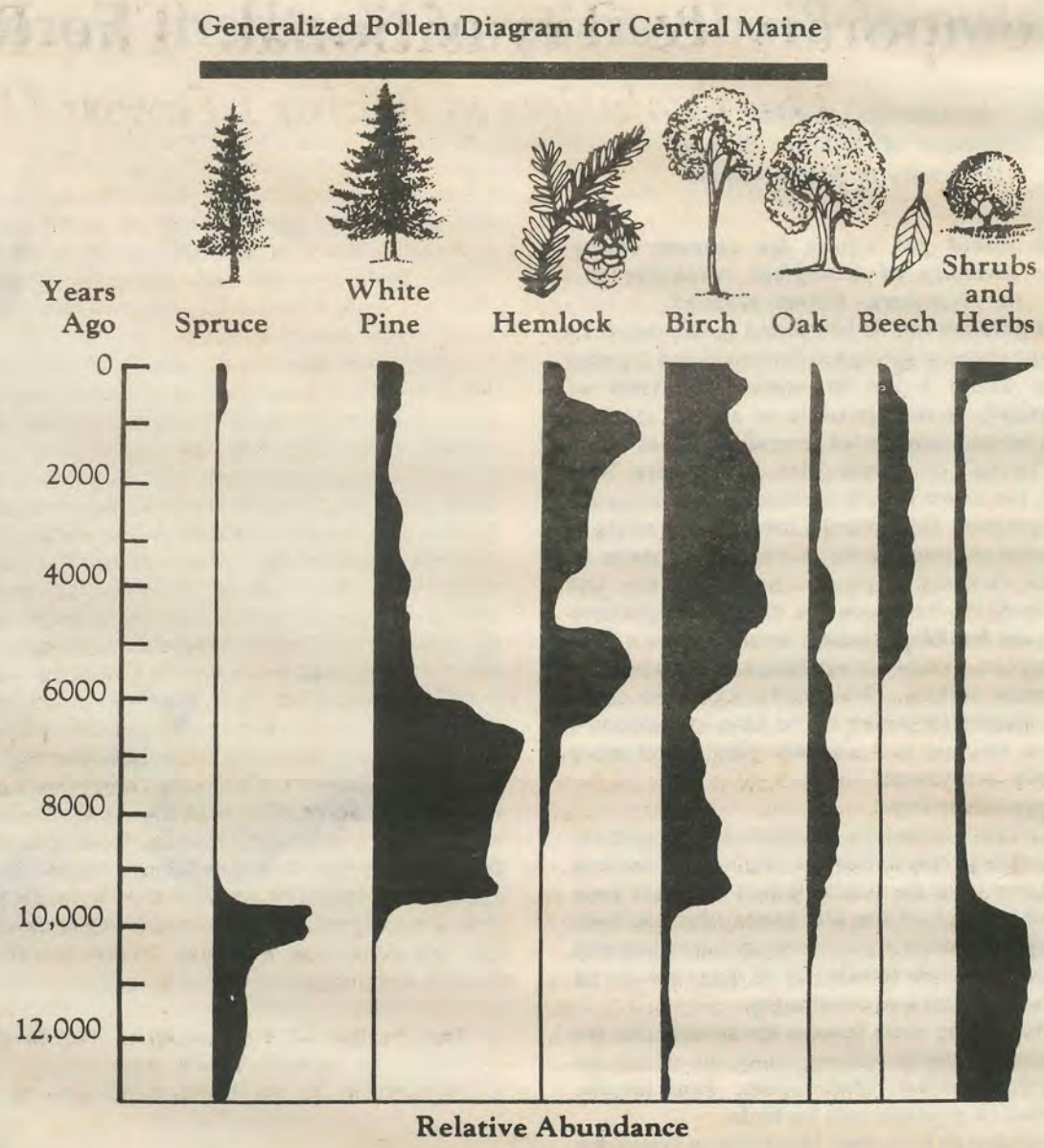
Another interesting insight from the fossil record is that hemlock populations had already decreased dramatically before they were so heavily cut for tanning bark during the last century. Nor was white pine nearly as abundant in Colonial times as it had been in the early part of this interglacial. Even though these two tree species were common enough to serve as the basis for major industries in Maine, they were relatively scarce compared with their populations at earlier times, when growing conditions evidently were more favorable for them.

The effects of various human disturbances in the last few centuries are also evident in paleoecological data. The clearing of forests for agriculture in southern and northeastern Maine is amply revealed in the sedimentary record, as is the reforestation of these same areas after farmlands were abandoned in this century. The great abundance of white pine today in southwestern Maine is unique in the past 7,000 years and is largely a result of agricultural abandonment.

Paleoecological studies have shown conclusively that the vegetation we see today is but one transient configuration in a sequence of vegetation that has changed dramatically and sometimes rapidly during the past 14,000 years. Although we are tempted to think of the "forest primeval" in remote areas of Maine as being ancient and long-lasting, the record shows that it has changed markedly many times since deglaciation.

Looking to the future, our forests and landscapes will probably continue to change as the end of the present interglacial approaches. And chances are high that thousands of years from now these changing landscapes will be overrun by another great ice sheet.

George L. Jacobson Jr., Department of Botany and Plant Pathology, and Ronald Davis, Institute for Quaternary Studies, University of Maine, Orono. *This article originally appeared in **Habitat: Journal of the Maine Audubon Society**, January 1988. We are grateful to the authors and William P. Hancock, editor of Habitat, for permission to reprint it.*



Status of Biodiversity of Northern Forests--'Poor & Declining'

by Malcolm L. Hunter, Jr.
Professor of Wildlife Biology,
University of Maine -Orono

1. How would you assess the current status of the diversity of biological resources in the Northern Forest region?

This question can be interpreted in two ways: 1.) what is the status of biological diversity? and 2.) what methods would I use to assess the status of biodiversity? It is impossible to answer the first question beyond some broad generality such as "poor, and declining" or "better than in southern New England, but worse than in Quebec." Answering the second question fully would involve describing a comprehensive program for surveying the status of biological diversity at the species, ecosystem, and genetic level for the region. A truly comprehensive survey is not feasible because it would involve a huge suite of species--notably invertebrates--about which we know almost nothing. More realistically, we could focus on species for which we do have information--vertebrate animals and vascular plants--and more importantly, ecosystems.

I suggest three steps:

(a) Collate a master list of species of management concern (endangered, threatened, etc.) in the Northern Forest region from the statewide lists that have been developed by each of the four states (this has been partially done; I think for all vertebrates and endangered plants) and assess the sensitivity of these species to current and projected land use changes.

(b) Repeat the same process for species that are not currently listed by state agencies, but which are known or suspected to be declining. Data for this exercise may be available only for birds.

(c) Develop an ecosystem classification system for the region and determine which ecosystem types are not well-represented in protected areas. Ideally, according to standards suggested by the World Conservation Union, 10% of the area of each ecosystem type should be protected in an array that is spread out across the region. Also, assess the sensitivity of different ecosystem types to current and projected land use changes.

I have listed these steps in order of the ease of implementation. In terms of their importance, the order is Step c, a, b.

2. If current land use patterns and trends continue in the Northern Forest, how will the diversity of biological resources be affected?

(a) Species associated with old forests will decline as more and more of the land base is managed for even-aged stands cut on short rotations.

(b) Opportunities for restoring forests as surrogates for old-growth forests will be lost as forests that have been minimally disturbed by previous harvesting become less and less common.

(c) More and better roads will allow people greater access and some species will be over-harvested such as pine martens and bobcats and many species of fish. The opportunity for restoring large, shy carnivores such as wolves and mountain lions will be diminished.

(d) Species associated with riparian ecosystems--shores of lakes, rivers and streams--will diminish due to second home development.

3a. What is the single most useful recommendation the NFLC could make to enhance biological resource diversity?

Protect a representative array of ecosystems broadly distributed to represent the region's geographic diversity.

3b. What is the single worst thing the NFLC could do, or fail to do?

The NFLC could assume that we have the knowledge to manipulate ecosystems in ways that protect or enhance all their values--economic, ecological, aesthetic, etc.--and that we have the will to act upon the knowledge. I think this assumption is optimistic at best, arrogant and dangerously wrong at worst. We need areas that we do not manipulate.

Biotic Integrity In The Northern Forest

Stephen C. Trombulak
Department of Biology
Middlebury College

Anyone who interprets scientific information is guided by an ethic that helps them determine whether the patterns they observe are good or bad. This is especially true for the remarks that you will hear today, because answers to the questions that the Council has asked include my analysis of good and bad actions on the part of the Council. Therefore, let me start by identifying the ethic that forms the context for my comments. After several years of work in the fields of ecology, wildlife biology, and conservation biology, I have come to accept the ethic formulated by the noted wildlife biologist and game manager Aldo Leopold. This ethic, the Land Ethic, is that something is right when it tends to preserve the integrity and stability of the biotic community and it is wrong when it tends to do otherwise. Therefore, I believe we should plan our activities to promote biotic integrity, which is best defined as nature operating under its own principles in its own time.

To understand the fundamental constraints ecological and evolutionary principles place on the human behaviors that can be sustained in the Northern Forest, the Council has asked four questions.

1. *How would you assess the current status of the biological resources in the Northern Forest region; specifically, what species, if any, are threatened? What information exists to support this assessment?*

The answer to the specific sub-questions here are fairly straightforward, and can easily be obtained from the wildlife departments of the four states in the region. These lists include such flagship species as the Bald and Golden Eagles, Peregrine Falcon, Canada lynx, and pine marten. Also included are several species of lesser public notoriety, such as the box turtle, chorus frog, northern bog lemming, small-footed bat, and Sedge Wren. All told, more than 100 mammals, birds, reptiles, amphibians, fish, invertebrates, and flowering plants are listed by the four states.

However, these lists are terribly incomplete if what we want to know is what species are at some level of ecological risk and therefore must be considered when making decisions regarding the biotic integrity of the Northern Forest. Rather than list them all, it is more straightforward to simply list the groups for which there is evidence of species decline in areas that include the Northern Forest. Most notable among these are songbirds and ducks. However, other groups have been identified as being generally threatened, including all vascular plants, in which a recent survey by the Center for Plant Conservation suggests that 10% of all known plants in the U.S. are at risk of extinction; fungi, where recent surveys have shown a decrease of species diversity in Europe of 50% in the past 40 years ; and amphibians, which due to their extreme sensitivity to water quality, soil pH, and soil moisture have shown dramatic declines worldwide.

Continued on Next Page

Biotic Integrity

Continued from Preceding Page

To the potential criticism that some of these patterns are documented only on a broad geographical scale and not specifically for the Northern Forest, I respond that the Northern Forest is not unique in any ecological way. The following factors have been shown to play a role in threatening biotic diversity: air pollution, changes in soil pH, changes in water quality, global warming, forest clearing, habitat fragmentation, overharvesting, and acid deposition. All of these environmental stresses occur in the Northern Forest, and this region has no intrinsic buffers against them.

I don't believe, however, that the specific question of what species are threatened is really the question that the Council ought to ask for at least three reasons. First, it places a focus solely on the status of a species: is it still present and what is its density? Biological diversity is more properly viewed as diversity at all levels of biological organization, including genetic, ecosystem, and landscape levels, as well as that of the species. A species may be fairly widespread, yet the loss of a genetically-unique population would still be a loss for biotic integrity. A species may have more than the minimum number of individuals necessary to maintain a population, but they may all be so genetically uniform that the species will not have the natural variability to survive some future environmental stress, such as a change in climate, a decrease in air quality, invasion by some exotic pest, or the spread of a disease. The maintenance of biotic integrity is also dependent on more than just retaining species. Maintaining the abiotic components of ecosystems (such as nutrients, water, and climate) and their links with biological communities, as well as maintaining the distributional patterns of ecosystem types across a landscape may be the most vital aspects of maintaining biotic integrity.

The second problem is that a focus on threatened species looks only at those that are currently at low population levels and are therefore at some kind of immediate risk. It ignores those species that have already been extirpated but may have been critical to ecosystem function. It also ignores those species that we simply have not and probably will not discover and name. As a conservative estimate, we have identified less than a fifth, and maybe less than a fiftieth, of all the species on Earth. It would be crazy to suggest that all restoration, management, and development plans be put off until a complete species inventory is made.

Third, a focus on species alone feeds into the incorrect thinking that the life on Earth can easily be compartmentalized and categorized as "resources." Think for just a moment about the title of this discussion: Biological Resources Diversity Forum. By definition, resources are things that humans put to use for a purpose. If we limited our concern to only "biological resources," we would be talking only about the diversity of a very small subset of organisms in the Northern Forest. Because the persistence of any species is dependent upon the integrity of the entire biological community, such a narrow focus is doomed to failure. What we must talk about here if we are to avoid wasting our time is the diversity of all life, whether we have a direct use for it or not, and how the actions of humans affect that diversity in the Northern Forest region. Consequently, I reject the idea that we ought to discuss only "biological resources" and use the term "biological diversity" throughout the remainder of my comments.

2. If current land use patterns and trends continue in the Northern Forests how will biological diversity be affected?

Several different patterns and trends in land use are found throughout the region, ranging from strict wilderness preservation to extremely large-scale clearcutting. With respect to the disruption of biotic integrity, the pattern that ought to concern the Council most (but not exclusively) is that of large-scale clearcutting and the use of ecologically disruptive timber-harvesting practices. When a significant fraction of the forest in an area is cut, not only are the trees removed, but so are the understory plants and animals that depend on the forest. We have only a rudimentary understanding of the effect of all of this on soil fungi and bacteria, both of which are vital to forest ecosystem processes. When heavy equipment, pesticides, and single-species/even-aged stands are used, the natural ecological processes that promote healthy forest ecosystems are given little chance to operate.

Humans have successfully practiced clearcutting since they first colonized tropical environments over 60,000 years ago. But because of low population densities, an emphasis on production for personal use, and minimal technology, all of these cuts were small, on the order of 100 acres or less. After the soil was no longer suitable for agriculture, the people moved on to other areas, not to return for perhaps several hundred years. The small size of the cut, the low-impact harvesting methods, the large size of intact forest, and the long rotation between cuts meant the area eventually returned to its primary condition and the biotic integrity of the entire forest remained unchanged.

When cuts become large and timber-harvesting impacts great, however, a different result occurs. Instead of small patches of disturbance in a sea of intact forest, we have small patches of forest in a sea of disturbance. Integrity is destroyed because the rate of extinction, genetic impoverishment, and ecosystem simplification drastically increase. Clearly the disturbed land is made unsuitable for species dependent on the forest. But extinction occurs even within the intact fragments due to changes in environmental conditions (edge effects), decreases in population size, increases in inbreeding, decreases in habitat diversity, increases in competition with species inhabiting disturbed areas, fragments smaller than minimum home range sizes, and secondary extinctions due to initial decreases in biological diversity.

The degree of ecological disruption depends almost completely on the size of disturbance, the size, shape, and distribution of the fragments, the patterns of connectivity among the fragments, and the degree of habitat heterogeneity within the fragments. The ability of the forest to recover from the disruption also depends on the presence of undisturbed habitat to act as source pools for recolonization and the time allowed for the disturbed areas to recover. It should be recognized that ecological disruption will occur whether the forest is cut for the trees or to make way for buildings. The critical element is the pattern of fragmentation.

No one would suggest that any type of land-use practice, except an aboveground nuclear weapons test, is harmful to all life. Forest clearing increases the density of species that thrive in open places, such as deer, coyotes, ground hogs, and blue jays, and also increases, at least initially, the number of species at the edges of clearings. But to assign a value of positive or negative to changes in the species found in an area one must ask whether the species being enhanced are themselves threatened with genetic or demographic reduction, and whether biotic integrity throughout the region is increased or decreased by the changes. It is not as hard has some might think to decide whether the rise in one species at the expense of another is good or bad. All you have to do is ask whether the species on the rise is part of the natural ecosystem, whether it is threatened globally or regionally, whether its rise will change the genetic makeup of its local population, disrupt ecosystem processes (such as rates of erosion or recycling of nutrients), or have negative impacts on species that naturally occur in the region. Such decisions have their basis in the effects of changes on biotic integrity, and not in moral relativism or public-opinion polls.

3. What is the single most useful recommendation the NFLC could make to enhance biological diversity?

We do not know enough, and will probably never know enough, to list all the specific rules for the successful operation of a natural system. To promote biotic integrity we are much better advised to develop policies that allow nature to function on its own. Such policies would allow natural ecological and evolutionary processes to occur; humanity and the rest of the biological world can then exist indefinitely within this sphere of ecosystem operation. The best recommendation the NFLC can make is that land-use policies should be implemented that promote biotic integrity. Such policies would have the following elements:

1. They should view the forest on a landscape scale. This would involve:

*the development of core areas of undisturbed forest large enough to allow persistence of ecological functions and evolutionary processes, and to act as source pools for the re-establishment of biological communities in disturbed areas.

*the establishment of buffered areas around the core reserves, in which human disturbance can occur but is minimal, to allow both for the minimization of fragmentation effects and for connections among core areas.

*consideration of practices on regional scales, such as watersheds, rather than over the entire Northern Forest.

*consideration of habitat diversity within each region.

B. They should minimize human disturbance. This would involve two important elements.

*Patterns of natural disturbance ought to be our guide for what constitutes acceptable land-use practices. These patterns should be modeled in terms of their size, frequency, and effect on soil and other ecological features.

*We should also have a proscription against pesticides.

C. They should promote restoration of intact ecosystems with full complements of native species, including the re-establishment of mixed species forests with natural physical and age structures and patterns of successional change, removal of exotic species, development of barriers to the introduction of exotic species, and the reintroduction of extirpated species.

4. What is the single worst thing the NFLC could do or fail to do?

The single worst thing the NFLC could do is to promote policies that ignore the basic principles of ecology. If we want to ensure long-term occupancy of humans within a healthy Northern Forest landscape, these principles are no more optional than is the Law of Gravity. Several aspects of current land-use practices exemplify the failure to consider the primacy of ecological principles. In addition to those I've already mentioned I would add the designation of wilderness areas too small to maintain intact ecosystems and the introduction of exotic species for recreation.

I complement the Council for arranging this Forum. I hope that as a result of all the comments you hear today you come to recognize that everyone involved in the debate over the future of the Northern Forest has little choice but to focus on two key questions: 1) What must we do to restore and maintain the ecological integrity of the Northern Forest? And, 2) what must we do to develop socio-economic policies that operate in conjunction with, rather than in opposition to, the laws of nature. These are the questions that demand our attention.

Traditional Land Uses & the Biological Diversity of the Northern Forest

by Sharon G. Haines
Manager, Forest Environment
International Paper

Most of my opening comments will relate to process rather than to technical issues. I'll be drawing on my recent experience in leading a consensus building exercise on biodiversity for the President's Commission on Environmental Quality. The PCEQ initiative is comparable to the NFLC effort because decisions were based on consensus and individuals with a wide range of views participated. I hope that the Council will find these comments useful as it moves forward with a biological resource initiative.

What is the current status of the diversity of biological resources in the Northern Forest region? What species, if any, are threatened? What information exists to support this assessment?

I'm compelled to defer to regional experts on the substantive response to this question. My panel colleagues have and will identify specific data bases within the region on the diversity and health of the resource. Some of these data bases are reasonably comprehensive while others have substantial gaps in coverage.

It is important to note that the need exists for continually more detailed information about the resource and the effects of traditional land uses on the resource. We need information that is reliable and will provide the necessary data to accurately monitor trends and identify species/communities of concern. Obviously, the earlier we can identify such species/communities of concern, the quicker we can respond. The equivalent of an "early warning system" would enable us to take action early enough to be effective biologically while responding in an economically realistic manner.

In this light, it's important for forest industry to examine effects of forest management practices on the overall health and productivity of the resource. In addition to the work we normally do to monitor silvicultural impact on tree growth, stand development and the like, we need to support research in other areas.

International Paper, for example, has funded research at Penn State University on the effects of clearcut size and shape in hardwood forests on breeding-bird communities. Yohn and Yahner have found that these communities in clearcut stands have higher densities and richness than those in non-clearcut stands. The majority of species nesting in clearcut stands are neotropical migrants. Their research leads Yohn and Yahner to conclude that clearcut size has little effect on the breeding-bird community. They also believe that even-aged management has contributed positively to maintaining populations of many songbirds that might otherwise be rare or absent.

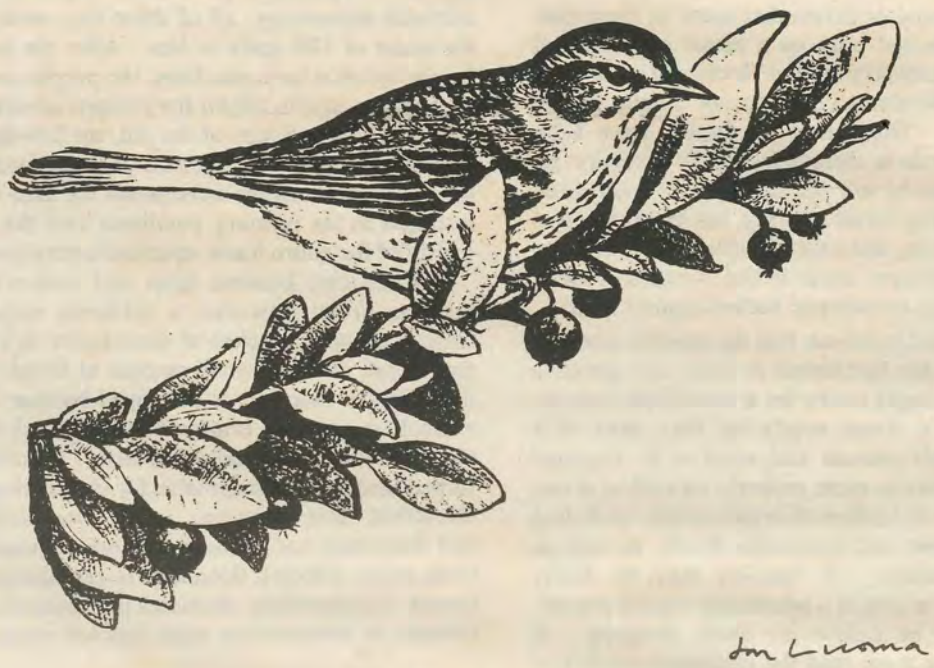
Forest industry as a whole is also supporting research on neotropical migrants looking at the impact of a broader array of practices on these populations in the Northern Forest. Clearly, these studies don't fill the entire knowledge gap on the resource overall. But they do make meaningful contributions in areas where information is limited.

If current land use patterns and trends continue in the Northern Forest, how will the diversity of biological resources be affected?

This one calls for a crystal ball, and I must say that my track record is not too good with this "scientific" method. When considering the future, one key question to ask is: "How reliable is the available information on current patterns and trends?" Is statistically defensible data available or do we simply have a lot of opinion, especially as far as future trends go.

One thing for sure, International Paper is aware of at least some of the ownership trends. Our nearly 100 years of continuous ownership in the northern forest is clear demonstration of our belief that ongoing forest ownership in this region is important both environmentally and economically.

We must remember that today's northern forest is the ever-changing result of several hundred years of man and nature's activities. Nonetheless, we often pay more attention to the impacts man has over the long term than to the natural processes at work. Natural processes change the forest in dramatic ways with or without the input of man. In looking at trends, we need to assure that neither changes caused by man nor nature are ignored.



What is the single most useful recommendation the NFLC could make to enhance biological resource diversity?

When dealing with a biological system, it's extremely difficult to single out anything, to identify the best or the worst, given all the interrelated processes at work. Additionally, it's one thing to recommend and another to make something happen. That said, the most useful result of the NFLC recommendations would be to continue accumulating the necessary data to make more informed decisions.

Yes, there is a pattern here. I firmly believe we must continue to broaden our understanding of the resource and ecological processes at work in the forest if we expect to make the best decisions. That does <u>not</u> mean inaction or continuing the status quo until we have all the answers.

It does mean a continuous, long-term commitment to research complemented with an ongoing commitment to implement changes into standard management practices as new information becomes available. Some people call this adaptive management. I call it continuing improvement--working to constantly improve forest resource management from my company's view.

This will require action on two fronts. First, research. We continue to need information about some of the basic ecological principles at work in the Northern Forest. In that sense, this region is no different than other sections of the country. Helping to assure that funds are available for the needed research will clearly be critical. Equally important will be the need to help assure that the best minds available are conducting the research. I'm a great believer in competitive grants research funding. Give the money to the best teams of people who have the capacity to do the best job.

Second, monitoring the results of implementing research findings into operational programs. Simply funding good research will be of little consequence unless the research is actually put to use. Monitoring needs to be approached in just as careful a way as the research. Systems for assessing impacts of various operational practices on the biological resource must be designed and implemented to assure that we obtain meaningful information. Only then will we be able to adapt management practices as new information becomes available.

What is the single worst thing the NFLC could do or fail to do?

In my view, the worst thing that NFLC could do would be to further exacerbate the "either-or" tone of the ongoing debate. The maintenance of a viable northern forest does not require an "all or nothing" solution because it is not an "all or nothing" situation. It is not harvest vs. preservation, business vs. environment, man vs. nature.

An either-or debate almost always leads to a lose-lose outcome. The overall goal should be to establish policies that will help the various groups of forest landowners maintain their forest ownership. These policies will out of necessity have to develop some kind of balance between economics and the environment. Or the environment and economics--whichever your perspective. To conserve environmental quality and to maintain the region's economic viability, we must have a balanced solution.

To make a real difference, all of us have to be a part of a central core of reasoning people who will solve the issues facing the Northern Forest. And the same holds true for other regions, the nation and the globe. All of us must be willing to listen and to carefully consider divergent views on the issues, as well as to clearly articulate our individual views and those of our constituencies. Then we must take the best parts of all the proposed solutions and develop the consensus solutions that will be most viable.

That means acknowledging the fact that no one of us has all the answers.---Not so easy to do! That means commitment to working toward viable solutions. Not so easy to do once we realize the solution isn't likely to give us all that we would prefer. And not so easy to do for groups whose very existence depends on controversy rather than solutions.

Consensus building. Not easy, but, in my mind, the best way to develop solutions that will conserve the environmental quality of the Northern Forest and maintain the region's economic viability.

Species Diversity Quiz

(Answers on Page 31)

How many species have humans named?

a) 100,000 b) 1.5 million
c) 10 million d) 50 million

How many of these are animals?

a) 50,000 b) 500,000
c) one million d) 5 million

How many of them are insects?

a) 150,000 b) 250,000
c) 500,000 d) 750,000

How many of them are beetles?

a) 25,000 b) 50,000
c) 200,000 d) 375,000

How many species do we estimate there are on Earth?

(a) Less than 2 million
(b) Approximately 5 million
(c) Between 10 and 30 million
(d) Nearly one billion

Enhancing Wildlife Diversity in the Northern Forest

by Rainer Brocke
Associate Professor of Wildlife Ecology, SUNY, College of Environmental Science and Forestry, Syracuse

First, I would like to thank the Northern Forest Lands Council for this invitation to serve as panelist. The fact that this interstate council exists at all is a testimony to exceptional foresight and dedication. Too often, potentially good solutions to conservation problems are compromised by the political boundaries of principalities, states or nations. Also, the council's approach is a refreshing look into the future. Dedicated to cooperation between public and private landowners to achieve its conservation ends, this approach may be the only viable one as we march into a gray future of starved state budgets and fiscally overspent governments.

Following is a brief commentary in response to the Council's three questions:

1. *How would you assess the current status of the diversity of biological resources in the Northern Forest region; specifically, what species are threatened? What information exists to support this assessment?*

Concerning biodiversity, there is good news in the Northeast! We are currently witnessing reforestation on a grand regional scale, a point completely missed by the news media as they focus on Brazilian deforestation. As successional forests have spread over our abandoned farmlands, a treed landscape is once again dominant in the Northeast, partially restoring to us conditions prevailing here before the 1800s. Now, within a few miles of the Boston-New York City corridor we have healthy populations of all kinds of wildlife, including fauna such as the black bear (*Ursus americanus),* moose *(Alces alces),* white-tailed deer *(Odocoileus virginianus),* and turkeys *(Meleagris gallopavo).* Aided by the return of their forest habitat and good management by our state wildlife departments, the presence of these species is a very positive indication of improving ecosystem health. These species are in effect ecological miners' canaries. Similarly, sensitive, threatened and endangered species such as the loon *(Gavia immer),* osprey *(Pandion haliaetus)* and bald eagle *(Haliaetus leucocephalus),* peregrine falcon *(Falco peregrinus)* are once again common in our forests. These management accomplishments are a testament to the high quality of existing state agency and university programs addressing the needs of individual species. One example of such a program is a computerized inventory of wildlife species developed by New Hampshire's Department of Fish and Game.

However, "there is trouble in River City." Even as we are encouraged by reforestation and the return of native wildlife, our forests continue to be threatened by ecological disasters. I am referring to the continued erosion of tree species as a result of imported pathogens from Eurasia. We lost the chestnut *(Castanea dentata)* to chestnut blight and most of our American elms *(Ulmus americana)* to Dutch elm disease. We are currently losing beech *(Fagus grandifolia)* to beech scale disease at a rapid rate and recently, eastern hemlock *(Tsuga canadensis)* stands are being devastated by hemlock woolly adelgid moving north from Shenandoah National Park. Some segments of the Adirondack wilderness forest resemble a hurricane aftermath as fully one quarter of the old growth--the beech component--has fallen. Losing the beech, a major component of the northern hardwood forest, renders the remaining species, particularly maple, more vulnerable to future disease. The loss of these trees will have major consequences for biodiversity of plants and animals in the Northern Forests. In my opinion, vulnerability of our tree species to imported pathogens is a major problem that needs to be addressed.

2. *If current land use patterns and trends continue in the Northern Forests how will the diversity of biological resources be affected?*

Much has been written about the potential effects of forest habitat fragmentation on wildlife diversity, particularly in its effects on bird species richness. However, in my opinion, the "forest island" paradigm has little value in the relatively continuous northern forests. Recent research in the central Adirondacks has shown that alpha (within habitat) bird species diversity was little affected by intensive logging (a shelterwood cut). Indeed, the logged area had a higher bird species diversity than an uncut (wilderness) northern hardwood stand. While there are a few bird species temporarily eliminated in a cut area, diversity on a beta (between habitat) scale would be relatively unaffected, given the normal distribution of rotated forest stands. In short, this and other studies suggest that for most wildlife, habitat fragmentation per se is not a problem in the Northern Forest.

However, penetration of managed forests or public natural areas by extensive road networks or intensive recreational development can have strong negative effects on megafaunal survival. Examples are species such as the moose and black bear. In our efforts to restore lynx, *(Lynx canadensis)* to New York's Adirondack region, we have found that most mortality (e.g., road kills, incidental human killing) occurs in and near developed areas or areas penetrated by extensive road systems. The problem is that movement distances of megafauna are so large that their probabilities of encountering death are greatly increased. For example, the average utilization area of male lynx in the Adirondacks is 1760 km sq. (690 mi. sq.).

One way to enhance megafaunal diversity in the Northern Forests (i.e., enhance survival of existing species and enhance conditions for restorations) is to identify large forested blocks of both public and managed private lands as refugia where recreational development is limited to hiking trails and logging roads on private land, closed to vehicular traffic for long intervals between cutting cycles. Logging roads would remain open to pedestrians for hiking, hunting, fishing, camping, etc. The private landowner would collect a fee for public use and a tax easement from the state for sacrificing vehicular access to recreationists. These roads would be opened periodically for logging. Under the shelterwood cutting scheme, these roads would be closed for periods up to 50+ years. An additional benefit of a long cutting cycle over selective cutting is less soil erosion by logging machinery.

If current trends in the accelerating sale of private forest lands continue (e.g. the Champion International Co. and the Lyons Falls Paper Co. recently put 115,000 Adirondack acres on sale), the integrity and biodiversity of Northern Forest lands will be seriously compromised. Tax reductions and conservation easements are essential to reverse this trend. They can be effectively used in the context suggested below.

3. *In the context of the NFLC Mission and Operating Principles:*

a. What is the single most useful recommendation that NFLC could make to enhance biological resource diversity?

My primary suggestion is entirely consistent with NFLC's excellent guiding principles and recommendations as put forth in the Governor's Report. The purpose of this recommendation is to enhance survival of megafauna, either existing or to be restored, in selected tracts of public and private land. The recommendation is as follows:

As a first step, identify strategically located tracts of juxtaposed public and private lands that can be consolidated into large blocks. These blocks may alternatively consist of private or public lands only. These blocks, selected by competent professionals, are designed to function as megafaunal refugia. Tracts with unique ecological features or unusual biota can be combined in such blocks.

The extent of vehicular road penetration would be minimized (possibly less than 0.2 mile of road/ sq. mi.). Logging road networks on private land would remain closed between cutting cycles. Some long-cycle cutting scheme (like shelterwood cutting) acceptable to the landowner would be specified in the agreement. The landowner could charge user fees for pedestrian recreation including hiking, hunting, fishing, and camping. The values of a high quality wilderness experience would be emphasized.

Estimated income foregone by the private landowner from intensive recreation, cabin leases and vehicular access would be reimbursed by state and local tax reductions and/or conservation easements. The unique feature of this strategy is its combination of tactics. Besides the suggestions made here, there are other alternative strategies for maintaining private open space within potential refugia, including imaginative approaches used by The Nature Conservancy and various Land Trusts.

Finally, I cannot resist making one additional recommendation. The Northern Forest Lands Council might strongly consider a strategy or program of monitoring and/or pressuring State and Federal agencies responsible for preventing importation of forest diseases. It is essential that we stop erosion of our tree species complex.

Oh yes--the last question. In light of NFLC's excellent judgements to date, the "single worst thing" it might implement is not conceivable!

Biological Diversity Forum - Questions to Panel from Expert Commentators

Q (from Charles Cogbill): What short-term recommendations would you make to the Council?

Malcolm Hunter (MH): We need to develop a common classification system for ecosystems across the region, and we need to undertake a survey to see which of those ecosystems are currently adequately protected in public land and which are not.

Rainer Brocke (RB): [We need long term studies, not just short-term studies.]

Sharon Haines (SH): I have to agree with an approach similar to Mac's. We need a summary of what we do know.

Steve Trombulak (ST): [In the short-term we need to] pull together a conference, advertise it widely, invite anybody who's done any kind of biological research in the very diverse ecological regions that make up the Northern Forests and find out what we do know and what we don't know.

Q (from Richard Dressler): How big should preserves be and what do we do in the areas that are not set aside and still address biodiversity?

ST: You have to establish the reserves so that they are large enough to protect the wide-ranging animals. [A reserve] 100 acres in size will not protect that many lynx. In terms of what you do with the other land, you definitely need to provide a buffer to the core reserves. You can't have clearcutting on a national forest that comes right up to the boundary of a national park and expect there not be some kind of effect on the park. In terms of any land use practice, you need to ask what's the impact of that practice instead of what's its relationship to some reserve set aside elsewhere. I'd hate to say "Can we have land use practice X, such as a toxic waste dump, and is that going to have an effect on the reserve?" The question ought to be what's the effect on biotic integrity right where that dump is.

SH: I strongly believe that we are going to have to have preserved land. There's no question about that. I support Mac's triad model... There clearly must be preserves and I think we have information available to us in terms of the experience of managing preserved areas, managing wilderness areas that can help us to make the right choices in terms of how much of an area and just as importantly, which ecosystems have to be preserved. Now in the area that is not preserved... We have got to begin more effectively getting what we do know into practice on those lands that are being actively managed... We need to be continually looking at our practices and find practices that are both economically viable and environmentally responsible....

RB: If you want to save a wildflower that's unique, a tract of a few acres is fine. But if you want to have mountain lions or lynx or refugia for moose, you really need large chunks of land.

MH: If we are concerned about protecting wide-ranging carnivores we don't need reserves in the millions of acres to have viable populations of wolves or mountain lions because we are talking about a landscape that is largely still semi-natural. I think that reserves on the scale of thousands to hundreds of thousands of acres bedded in a matrix of semi-natural ecosystems, lands managed for forestry production, would manage quite effectively.

ST: Asking the question "How large a reserve do we need is only asking half of the question. The other half is what are the connections among the different reserves?"

Q (from Carol Reschke): How would inventories benefit public and private owners and how could private owners use the information?

RB: The forest industry would not be suspicious or averse to something like an inventory if this was not at some future date used against them via the Endangered Species Act (ESA), or some such thing. So the first step in this process is building trust. I think [the suspicions of industry] can profitably be put aside if the forest industry itself feels that it has a stake in the processes and is involved in the processes of this consensus-building right from the start, not somewhere down the line.

SH: [You've got to have an inventory if you are going to be in compliance with the ESA.] Overall, the more you know about the resource you're managing, the better off you are.

ST: You can solve that problem by stopping casting inventorying in the light of looking for threatened and endangered species. If we start looking at an inventory in terms of trying to understand what the rich diversity is here on this continent, people might see this in a different light. [An inventory might uncover valuable resources such as new pharmaceuticals.]

Q (from Jeff Schloss): What is the most important piece of missing information that you think can better help us come to a consensus about what the state of biodiversity is in relation to the Northern Forests?

ST: We've got to stop putting it in terms of: "Tell me the one thing to do." We've got to do lots of different things. Some of the important things we need to do are: (1) It's very difficult to find any data on what the trends are.... We have to look at satellite imagery and looking at trends over time much more seriously. (2) I think we need to have a much better understanding of what the natural processes are in the ecosystems in order to understand what it is that we are doing to them. It's not to say we shouldn't do anything until we know everything. One of the panel members made the suggestion that we have to not make decisions unless we have all the data. If that were true, we wouldn't do anything. It's not that we have to have the data about how our ecosystems function before we can do anything, but we do need some more information to understand how our actions are going to effect those. I think we need more information on genetic variability within population within the area. We focus a whole lot on whether we save this stand that has three or four individuals of this one tree or this one pond of frogs, or this one northern-most extension of this population, but we are still focusing on the species level, which I think is inappropriate.

SH: We don't have to have everybody doing the same thing. For industry this focus on the impact of actual management activities is something that we could make a major contribution to that discussion while someone else is doing the genetic diversity work...

MH: I think its a two-tiered problem. (1) You've got to link what's happening to species with what's happening to ecosystems, how we're using ecosystems... And then to understand what is happening at the ecosystem level it's a matter of remote sensing. We can tell a lot in terms of land use changes very efficiently with remote sensing and GIS (Geographic Information Systems).

The Key to Intelligent Tinkering is to Save All the Parts

Carol Reschke of the New York Natural Heritage Program summarized available information on threatened and endangered species at the December 9 forum on Biological Resources Diversity. The heritage programs conduct statewide inventories of species and natural communities. They were developed by The Nature Conservancy as the first step in a three-step process to protect biodiversity. Steps two and three are: protection and management of habitat by public and private agencies. Heritage inventories are conducted on two scales: inventories of rare species and the best examples of all different types of communities that occur in the region.

Data from the four state Heritage Programs of the Northern Forest Lands region reveal:

**585 taxa are "species of concern" (this list includes a few subspecies and varieties, but primarily consists of species). Not all are legally listed by the states, but these are all species that are considered in the range of S1 or S2 or SH (historical). This means that there are fewer than 20 occurrences of a given species in the state, or the species has not been known recently in the state, but historically was present (f.i. wolves).*

**9 species are listed as federally endangered under the Endangered Species Act. Endangered animals are: peregrine falcon, bald eagle, Indiana bat, Karner blue butterfly, and dwarf wedge mussel. Endangered plants are: Furbish lousewort, Robin's cinquefoil, small whorled bagonia, and a bullrush. In addition, the white fringed orchid is listed as federally threatened.*

**Of the 67 types of natural communities documented in the Northern Forest region, 31 are forested communities.*

Ms. Reschke noted that there is a need to update field surveys, especially in the Tug Hill region. Community and rare plant inventories need updating in New Hampshire. Community inventories need updating in Maine.

She also stated that funding is needed to develop GIS (Geographic Information Systems)--a computerized mapping system that is an invaluable tool for reserve design work.

She warned the NFLC that "the single worst thing" it could do is: "To make blind or uninformed recommendations on land use management based on emotions or fears without adequate supporting data. The first step of wise management is to determine how much is available of each type of resource--species, communities, ecosystems, and then to plan the use of these resources so that you don't deplete the resource base."

The Northern Forest Lands Council Questions Biologists

Q (from Ted Johnston): [Asks about a National Academy of Science Ecosystem Management initiative that coordinates various independent initiatives and bring them under common initiative...]

ST: All of us agreed that we need to move the thinking about biodiversity away from this fixation on species as the be-all and end-all of everything. If we don't start looking at ecosystems, understanding how they operate, what the components at lower levels and how they connect at larger levels, we're not going to do anything except argue amongst ourselves about the next spotted owl. The focus on biodiversity is definitely the way we have to go.

Q (from Paul Bofinger): [Given that shelterwood harvesting permits you to shut down roads between harvestings, what do you think of a shelterwood approach as opposed to individual tree or group selection?]

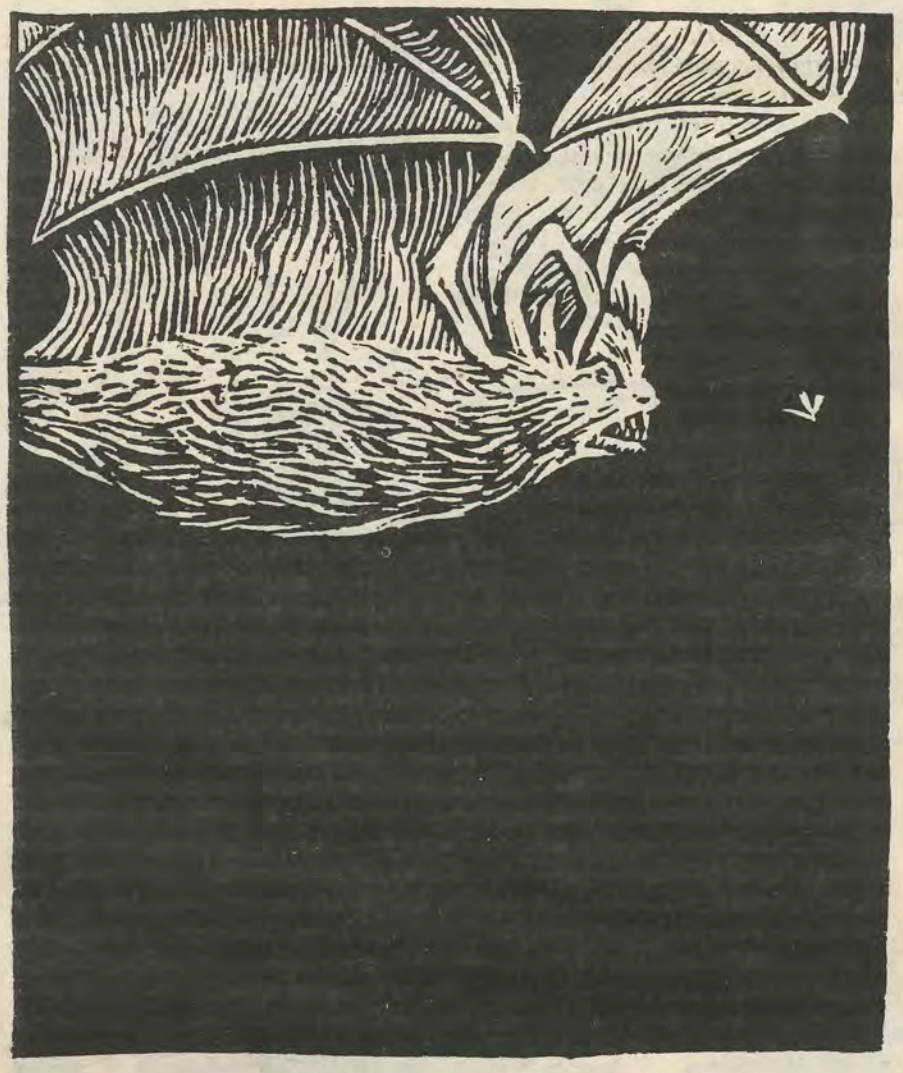
MH: We need to think of harvesting techniques as a tool chest, and no one tool is going to work best all the time. I would argue that clearcutting is being overused at this time, but I would not want to see it replaced with shelterwood cutting either. [The question should be:] "How good a job does the harvesting tool do in terms of imitating natural disturbance regimes?" If we are talking about true boreal forests, which we don't have in this part of the world, large clearcuts that imitate very large catastrophic fires might be most appropriate. If we are talking about a disturbance where individual trees grow old and fall down, then perhaps individual tree selection is most appropriate. If we are talking about a forest ecosystem that is disturbed by budworm and hurricanes, then shelterwood is probably oftentimes a pretty good mimic of the natural disturbances. As Charlie Cogbill said earlier, we don't have a monolithic forest out there in the Northern Forest region. We have different types of forest, different purposes in using that forest. We need a range of different silvicultural tools to do that.

Q: (from John Harrigan) [Noted that Professor Trombulak was against the use of pesticides yet wanted to control exotic pests.]

ST: You can protect against exotic pests, but you don't necessarily need pesticides to do that. One of the questions is why do a lot of these things spread now in these systems when they didn't before, and what are the natural checks and balances on these pests in areas where they came from. A lot of it has to do with having an intact ecosystem that has the natural predators, the natural checks and balances against the takeover of an ecosystem from some exotic. Think of what the problems are in an agricultural system. Why do we have to so intensively use pesticides? By and large they are large, genetically uniform monocultures of one single species. Why do these pests not take over natural systems? It's because they're not monocultures. There's a large diversity of species. It's been shown repeatedly that the ability of a pest to attack one species is very much restricted if there are other species within that ecosystem... As a general rule we have pests therefore we have pesticides. I'm not sure that's a good one.

Q: (from Jerry Bley) Of the two potential threats to biological diversity in the Northern Forests--development and forestry--is one of more concern than the other?

MH: They both concern me. The relative weight would be site-specific. If we are talking about the southern fringe of the Northern Forests, the places most accessible to urban areas, then its going to be development. When you start talking about areas the far side of the St. John River in northern Maine, development is not an issue, and it comes to an issue of forest practices.



RB: ...The more we learn about development, the more we find that it has very very profound effects upon the movements of animals in particular. And when we're speaking of development here, even a road that is open to vehicular traffic has effects because it carries in a segment of humanity that may cause problems... Building cabins that are all spread out all over and developments, these are major problems. And in terms of biodiversity, they cut off the movements of animals, like salamanders, from their ponds. In the case of megafauna, they are just plain sources of death. One of the biggest sources we've discovered [in the lynx recovery program] is just plain auto collisions. And when the reproductive capacity of the animal does not exceed the death rate of these various causes you just aren't going to have a population. And there are other effects too.

SH: Overall I would think that development would be the greatest threat. I think there are some things we can do in terms of modifying management activities can be done a lot more easily than dealing with losses as a result of development.

ST: Both concern me... Downtown New Jersey is a bigger problem for the dispersal of organisms than upstate Maine. [Bley clarifies his question asking which is the greater threat "as an aggregate" in the region.] As an aggregate, I'd say logging because there's far more of it going on now than there is development.

MH: I would probably lump the building of roads, the building of dams and a lot of things that have been associated with the development of the forest for logging [with the impacts of forestry rather than development].

Q: (from Brendan Whittaker [BW]) [Regarding the integrity of ecosystems, he noted that some exotics such as Norway spruce and red pine plantations are relatively common in the region. Is it inevitable that we'll have a "worldwide ecosystem"? And should we try to protect the "sacrosanctness" of native systems?]

Charlie Cogbill (CC): We live in a global ecosystem. It has been connected, and it always be connected...

MH: If you allow yourself always to bring the entire sweep of human activities under the word "natural", then you make the word natural completely useless. You have to remember that there has been life on this planet for three and a half billion years, and we've only been around for a couple of million years. Industrial humanity is a very recent phenomenon to which other organisms have had little time to adapt. Given that fact, we need to set aside pieces of our landscape where natural processes will continue. That doesn't have to be the whole landscape, but there've got to be portions out there that we try to keep them in that condition recognizing that our influence is a very recent phenomenon. It's analogous in geological history to the meteorite that hit the earth and took out the dinosaurs. And to make life better for us, we need to mitigate that kind of impact as much as possible.

RB: These species that we see as a problem are not good or bad, per se. They evolved in a given location and they evolved with a set of organisms and processes in nature that kept them to some level at which they didn't have major perturbations in the ecosystem. There's no problem with the zebra mussel in the Black Sea area, but now the zebra mussel is going to have apparently a major impact on our salmon fisheries and all sorts of things may happen as a result of that. If it hits a key species of our ecosystem we're going to have to live with an adjustment of that ecosystem for quite a few hun-

Continued on Next Page

Two Ideas Whose Time Has Come

During the December 9 forum on biodiversity Dr. Steve Trombulak proposed a conference of biologists to identify research priorities in conservation biology in the Northern Forests. Later, during the question period, Charles Niebling, Executive Director of the New Hampshire Timber Owners' Association suggested that representatives of various groups that have often been at loggerheads should retire to the woods to get to know each other, develop some trust and see if we can move beyond the "us vs. them" mode. Both ideas should be implemented as soon as possible. Here follow their comments on December 9.

Steve Trombulak: [Answering Charles Cogbill's question about short-term recommendations to the Council.] We need to pull together a conference, advertise it widely, invite anybody who's done any kind of biological research in the very diverse ecological regions that make up the Northern Forests and find out what we do know and what we don't know.

Charlie Niebling: I'd like to pose a suggestion to the Council. My question has to do with trust. It's my feeling--and this is certainly true of any divisive issue--that before you can arrive at any real consensus, especially one as complex and ill-defined as preserving and protecting biodiversity, you have to cultivate trust between all the divergent interests. Is it naive to think that a function of the Council would be to oversee, facilitate, organize a series of small group gatherings between key individuals, key thinkers, leaders in the Northern Forest lands debate, preferably over a day or two. Preferably overnight. Preferably with a good deal of the time spent in the woods to discuss and come to some agreement and build relationships between individuals. [What steps could the Council take toward facilitating trust on this issue?]

Sharon Haines: I think the Council could definitely take a role in this. I don't know if it's just a series of small meetings, or whether it's that in combination with the larger conference Dr. Trombulak has mentioned. The conference gives you an opportunity to bring together a wide array of people, get lots of ideas on the table and try to identify as many options as you can about things that you might be able to do. [The advantage of] smaller groups is it allows for a much more intimate exchange of information for actually going out into the woods and seeing what you're talking about, rather than sitting in a room.

ST: I think it's a great idea. I keep mentioning the [conservation biology research] conference only because I figure if I say it often enough it will happen. But as an educator, there's no substitute for getting the people who are out there living on the land to understand what these principles are.

Extinction Quiz

Take 10 points for every correct answer.
0-30 points-You're going extinct; 40-60 You're endangered;
70-80 You're threatened;
90 You're no longer a "species of concern";
100 You're capable of evolving into a new species
Answers on Page 31

(1) In what year did the last passenger pigeon die and the species go extinct?
(a) 1899 (b) 1914 (c) 1921 (d) 1941

(2) How many passenger pigeons were alive in 1880?
(a) fewer than 100 (b) 100,000 (c) over 100 million
(d) At least 10 billion

(3) Approximately how many African elephants were in East Africa in 1979?
(a) 15,000 (b) 150,000 (c) 1.5 million (d) 15 million

(4) About how many were there in 1989?
(a) 50,000 (b)500,000 (c) 5 million (d) 10 million

(5) Which is <u>not</u> one of the four main causes for species extinction?
(a) Direct harvesting (b) habitat destruction
(c) natural disturbance (d) habitat modification
(e) introduction of exotic species

(6) Which of these is responsible for the greatest number of extinctions?
a) Direct harvesting (b) habitat destruction
(c) natural disturbance (d) habitat modification
(e) introduction of exotic species

(7) True or False? After an area is disturbed by humans, the species in the intact habitats are safe from extinction?

(8) True or False: Extinction is a natural process?

(9) What is the rate of extinction separate from human activity?
(a) one a century (b) one a year (c) 30-1,000 a year
(d) 50,000 a year (e) 500,000 a year

(10) What is the rate of extinction including human activity?
(a) one a century (b) one a year (c) 30-1,000 a year
(d) 50,000 a year (e) 500,000 a year

Council Questions

Continued from Preceding Page

dred years maybe thousands of years, and who's willing to live with an adjustment of that ecosystem--the forest devastated? When you are eliminating diversity, you are increasing the susceptibility of what's left. It's a process of locally evolved groups of organisms that have been maintained there by natural barriers. By means of transportation and whatever we are breaking down that isolated system.

ST: I think there are two parts to your question: one is if we can't teil what's natural, how do we make decisions, and the other is since we live in this global economy if it's inevitable, why should we do anything? Horses evolved in North America. They went extinct about 10,000 years ago. They were reintroduced by the Conquistadores. They are now feral in parts of North America. Are they natural or are they not? Are we going to let that sort of moral conundrum to prevent us from trying to remove lamprey from the Great Lakes? Are we going to use that conundrum to cause us to not try to prevent the zebra mussel from coming in. We really are locked into this idea that unless we can define something to the point where everyone agrees, we can't do anything about it. There are lots of terms we use every day that we have no definitions for that everyone agrees on, but no one prevents us from doing something--like economic health, national security, democracy. Whether something is natural or not, I don't think that should prevent us from trying to stop it. Just because things are inevitably going to be a challenge does not mean we should not try to prevent it.

***BW**: Are Ringneck pheasants and Norway spruce benign exotics?*

ST: These are clearly examples of introductions that have had no noticeable effect on ecosystem integrity. Does that mean we should just blithely introduce exotics everywhere just because some of them turn out to be OK? I think we tend to get lucky. I think with more research we might become better at predicting those introductions that will have no obvious effect on natural processes and the persistence of those species that were there to begin with. And those introductions that have a devastating effect. I think we should be damn careful about the introductions that we make, and be grateful for the ones that didn't cause problems.

Q: (from Neil Woodworth) You all have convinced me how daunting the task of determining from a species perspective where we stand in terms of protecting these biological resources. However, the one thing I did gather... is that we are in much better shape in terms of determining natural communities and ecosystems... [Correct me if I'm wrong], we have only adequately protected 2-4% of the natural communities over the entire region, and New York shifted the percentage somewhat. [What's the best approach for a classification system and determining what is protected and what is not?]

MH: [We need a common classification system for the whole region. This could be done quickly and effectively by heritage program ecologists. Inventorying the distribution of those ecosystems on currently protected lands was done for Maine on public lands with three or four people.] What's out there in the public lands could be signed, sealed and delivered in less than a year. Once we know what we've got, going out and looking for the best examples of what remain in the private sector would be far more complicated. Clearly we would want to talk about a willing-seller basis... I'd be surprised if we finished it in ten years....

NW: [We have a whole range of protection strategies ranging from fee acquisition to voluntary partnerships that Dr. Haines spoke of] that we could employ once we know what the definition of adequate protection is.

MH: Absolutely.

NW: You have been extremely helpful in helping us boil that issue down. I thank you.

Audience Questions Biodiversity Panel

Q: (from Bill Butler): [The remark that] "industrial practice mimics natural process" is probably true if you mean catastrophe such as volcanoes, plate tectonics... If you haven't been in Maine, we'll show you some satellite photos of the scale at which Maine has been liquidated. [What is the relationship between productivity of a forest and biodiversity?]

MH: There is no relationship per se, but if you look at the very long picture, for example mycorrhizal fungi and the important relationship they have, clearly if you lose those species out of the forest stand, it might effect its productivity over the long term.

ST: There's no easy comparison between diversity and productivity over the short-term. However there are some ephemeral ecosystems, like bogs, that will fill in over a relatively short time, geologically speaking. By and large most ecosystems, if you look at sustained ability to produce biomass, if that's going to be your measure of productivity, that's going to be better off in a system that has its natural integrity as opposed to one that is heavily disturbed.

Q: (from Jamie Sayen): What are the natural disturbance regimes in the region and how do current forestry practices mimic them and diverge from mimicking them, especially large clearcuts in the industrial forest? How do large clearcuts mimic natural disturbance?

CC: A few studies of natural disturbance in presettlement forests: they are varied within the system, but they generally come down to three major ones: major wind, hurricanes coming through about once every hundreds years, 1938, 1815 in New England. Fire was a disturbance in some parts of the system, especially in northern Maine. It's not a boreal fire system; it has its own fire regime, the return time of fire is on the order of several hundred years. Finally, just the general wear and tear of winter rine, snow, ice reveals that the average age expectancy of species we have around here is around 150-200 years... You can compare that to what is being mimicked. Size, scale, time span of those disturbances, and yes on a very coarse in terms of scale and size, some of the numbers match, others do not at all. The way that fire, wind and general depreciation goes in a forest is very very different in cycling of dead wood, in removal of material, whether it's carbon dioxide and burning it up, or taking it off to the city and burning it off. And how it affects the regeneration of the forest at the same scale on the same stand can be entirely different... We do at least have some ideal of predictability of what will happen after certain disturbances human and otherwise.

RB: Just a comment about disturbance. Another form of disturbance that we've seen in New York now on a grand scale--some a number of acres in size--is the flooding by beaver. It's creating clearings and openings all over the region in New York in civilized areas. One thing I've observed visiting Five Ponds every year for the last 15 years--one of the last wilderness areas in the east, is how much it actually resembles a logged forest of a number of years. You have beaver flooding, you have insect damage of whole stands you've got single tree blowdowns. You've got blowdowns over a whole area. You have a patch work of young growth, you have a patchwork of old growth. My own impression was that how very

similar the pattern of this old growth forest is compared to a logged forest in its last stages of rotation, with disturbed tracts in it.

MH: A couple of clarifications, Rainer. First of all, your mention of beavers might give folks the impression this is biodiversity gone awry. But it's the absence of large carnivores in part that allow beaver populations to become as large as they have. With regard to your comment about the similarity of the Five Pond Wilderness and logging in that area. You're clearly talking about a different kind of logging that we see in other parts of the region.

RB: I think you must be right. This Maine devastation....

Q: (Peter Farrell, New England Forestry Foundation): Small landowners are frequently very concerned with the integrity of the forest. How would division of lands into small ownerships effect biodiversity--fragmentation vs. large ownerships with large clearcuts.

MH: The property boundaries, per se, are completely irrelevant to the biota out there. They don't recognize little red blazes on the trees. In that simple sense, subdividing into smaller ownerships is not an issue. But the problem is, if you have smaller woodlots, you're going to have more roads, you're more likely to have a hunting camp or some sort of development. And secondly, the other downside to small ownership is the difficulty of coordination over larger areas. To do an effective job of maintaining biodiversity you have to think at landscape sorts of scales. It can happen with small ownership, but it's just more difficult.

ST: [A little later in the proceedings]: Just a follow-up to Mac, which I'm sure he already knows. A fragment does not have to be small, completely surrounded by disturbance so it looks like a nice discrete chunk. You can have a piece of forest that is 100 km^2 in size, but if it's 100 km long and one km wide, it's still a fragment, it's one gigantic edge. So the issue is not do you see nice discrete little chunks flying over in an airplane, but what's the pattern of those and how much edge is there relative to the core area inside that fragment?

Q (from Mitch Lansky): Besides the call for more studies, I saw a lot of agreement amongst all the panel members, and I want to make sure that I actually saw this. First, I saw agreement that there is a problem with the loss of biodiversity and just two of the things cited were that it may take 10 million years to recover that loss... The other is that there could be an increase in perturbations as the ecosystems have problems with various losses or invasions. I see that as related to what Dr. Trombulak called "stability"--resistence to disturbance, or resilience from disturbance. Secondly, I think I heard an agreement that we need to insure that there is protection of examples of various types of ecosystems, with a system of cores, corridors and buffers and that the buffers should be managed in a way that mimic natural disturbance patterns to insure that those cores are not isolated islands, but indeed that there is some sort of ability of species to migrate due to whatever need that they may have. We've got to know what is the best management system in those buffer areas.

Q (from Jim Bernard): I agree that there is some consensus among all of you that there should be some protected areas, call them ecological reserves, call them whatever you want to. But, having done the ecological reserves design study at the request of the Maine legislature for Maine and only on public lands, I'd like to suggest that there are a number of steps beyond what Dr. Hunter suggested take place. And that is engaging the agencies that manage these lands or would manage lands that are like these in the future so that they understand more about biodiversity and more about managing ecologically special or representative areas. The other thing is all of those agencies, including my own, are absolutely strapped for cash and staff and will be for the foreseeable future. Also, all the four states have acquisition programs that have been very successful and are out of funds or are winding down. What I'd like to suggest to the Northern Forest Lands Council is that it take the time to lobby the federal government to provide funds for a number of those activities: (1) [For the sort of inventory Mac suggested for the other three states that has been done in Maine]; (2) to provide some management funds or some pilot project funds for agencies in states that are going to manage these type of areas; and (3) funds that are given to state acquisition programs [not Forest Legacy funds]. Either that they would have to meet a criteria or a set of constraints that the federal government would supply, or that they would outright give it to us to acquire areas that were identified through those processes as being outstanding or representativeness. A lot of us in the states have problems with the federal government coming in and we generally think that we have a better relationship with a number of parties that would be involved. I think it's essential that the Council think way down the road and start that ball rolling as well.

Richard Dressler: This is one of the issues that has been a problem at least in terms of fish and wildlife agencies. We've been focused on species management ever since we've started, really, and part of that process is the federal funding aspect of it. And that's sort of driven our process over the years. We've done a lot of things that have probably indirectly affected other species and benefitted species. But for us to move out of the current mode we

Continued on Next Page

Old Growth - A Form of Diversity

During the audience question period at the December 9 biodiversity forum, a number of people raised the subject of old growth forest ecology. Here are some of the comments regarding the kinds of forests that once covered the entire continent, but today cover less than 0.1% of the 26 million acre Northern Forest region today.

Q (from Dave Publicover, AMC): Due to management, the presence of older stands has been much reduced over what previously existed. (To Cogbill) Do you see the lack of older stands as a serious issue for the diversity of the forest?

Cogbill: I don't think old growth is a major issue. It's represented out there, but our concept of what its values are, I think, are extremely limited. However, it is part of the diversity of the system. It is part of what was there and as a representative of what was there I think that's important. It doesn't enter into my idea of an issue of biodiversity. There are not species that are in eastern old growth that we know about, not that there might not be species there. There are not any unique characteristics of old growth that are to be saved. It can't be saved... But it is not an essential component in the stability of the region.

Q (Publicover To Haines): Under what conditions might some of the industrial land owners consider managing some of their land under longer rotation systems? Or do you see the maintenance of "old growth" systems as primarily the responsibility of public land owners?

Haines: I don't necessarily agree with what Charles just said. I think there definitely is a place for old growth. It is a form of diversity. The age class distribution, the stand structure diversity and that sort of thing. It definitely has a place. If we have the opportunity to maintain old growth, then I definitely think we ought to take advantage of it, because we don't know everything there is to know right now. Now in terms of whether industry has the opportunity of working toward longer rotations, and protecting some old growth, that's a topic that's getting a lot of discussion within industry right now. And I think there may be some potential for us to do it in selective circumstances, perhaps along borders with public land that has old growth timber on it as a way of increasing the size of areas that are in old growth. But it is not realistic for anyone to expect that industry will maintain old growth supply for the sake of maintaining old growth. There has to be a reason to maintain it. We don't make every single decision on the basis of economics, but obviously we have to answer to our shareholders and economics drives us to a large degree. But I think there is the possibility, not only in the northern region, but other areas as well, where we might make a contribution.

Hunter: I'd like to take exception to what Charlie just said about old growth forests. To me they are exceedingly important as a component of biodiversity. Yes, we don't know of any specific species uniquely associated with it, but the one thing that is most clear in conservation biology is that maintenance of biodiversity is a very dynamic process. And just because trees grow old and die and are dynamic doesn't minimize in any way their value as a part of a continuing process. Having sites where these natural processes come and go and stands come and go uninterrupted is, I think, one of the most important components of biodiversity.

CC: I don't want to be taken wrong. I think that old growth is preserved in places, has values, but is not any more valuable than a whole sweep of other ecosystems of different development stages, of different types that are out there. Yes, it is part of the total biodiversity on the systems level and part of the development scheme, but it is just one stage of development of an ecosystem, and you can't freeze one stage by preserving it. Yes, we have old growth, we will continue to have old growth, and old growth will come and go in areas whether they are large or small.

Q (Mitch Lansky): There's been a suggestion, and I'm sure Charlie didn't mean this, that old growth doesn't matter. I think one thing Charles was talking about was a certain stage where all the trees are old, but old growth characteristics include not only old trees but also dead standing trees, dead down trees and even gaps. And in those gaps you have a whole range of species types. When Charles was talking about disturbance cycles [for instance, 100 years for major hurricanes], he wasn't being exactly accurate in terms of each site, because in the 1890s Austin Cary, a great forester in Maine, did a survey of the spruce logs that were taken to the mill, over a thousand of them. [He found] 72% of those logs were between the age of 175 and 250 years, and 33% of them were over 250 years. Only 5% were below 125 years old. There were a lot of trees out there that were quite old. But those characteristics of dead, standing trees, large old trees, dead down trees, and of vertical diversity seem to be things that are pretty important for habitats for a whole range of species. [He asks for comments on the need to maintain these in a managed forest.]

MH: Yes we need them.

Trombulak: I think they're important. They ought to be there, we can't ignore them.

Brocke: I would agree with that. The thing here that we can accomplish with public land ownership in conjunction with private land ownership is that you can have those old growth stands along with tracts of land that are privately owned and are being managed. If you combine the private land ownership with public land ownership, you can, in fact, have those old growth stands in large chunks.

CC: I'm tied in a semantic knot. The values of semantics and old growth are essential here. My understanding of what old growth is is based on a lot of different assumptions than what I assume is coming in. Old growth in any sense is rare; 0.07% of our present landscape in the Northern Forest lands area is uncut, representative of what was here before, natural--0.07%--it's very rare. That percentage, though not changing fast, is not increasing as it is being affected by both natural and human conditions. There are ecological processes going on in those areas that are not going on in other areas. Unique characteristics of those areas. And in that sense, increased diversity, taken at that level, yes, old growth is critical and worthy of exact consideration. At the same time, I think there are lots of other ecosystems with other characteristics that we have to look at. So old growth isn't the answer. There is the other 99.93% of the landscape to be considered.

We Know Next to Nothing About Soils

Q: (Jamie Sayen): What do we know about soils? Can we be confident that human practices we are engaging in are not going to interfere with soils? Does it matter if soils are degraded?

ST: I'm not a soil ecologist, but I've asked a lot of questions about it, and if I had to pick one abiotic component of the ecosystems out there that we need to know about, I'd say it's soils. I strongly suspect that [when we do this research priorities conference] the people that we've got to get to attend are the ones that know something about soils. I simply can't find good soil maps for the Northern Forest, ones that get it down to the site level. And its very difficult to find people that know something about the dynamics of the microorganisms and the fungi that live in the soil and their association with the regeneration of forests. It's easier to find someone who knows something about soils and fungi for the tropics than it is for the temperate zone.

SH: I wholeheartedly agree with that, and soils is my game. This is not unique to the Northern Forest either. We know a heck of a lot more about what's on top of the soil than we do about the soil system. About the biological processes that are going on within the system. We don't know a whole lot about the long-term sustainable productive capabilities of the soil. So if you thought from the earlier discussion today that we have limited knowledge about the vegetation, we've got even bigger limitations in our knowledge about soil and all of the processes going on there.

Audience Questions

Continued from Preceding Page

are in and into a system of ecosystem management approach is going to take a major shift in gears. And perhaps that does need to come from the federal level. But it's going to be difficult for any one agency to take that ball and run with it. It's going to have to be a cooperative effort within states and among states and with the federal agencies. I think the most important thing we can do out of this whole process is figure out where we want to be headed. It's still not clear to me what the NFLC's objectives are in this area and whether they have the information to make assessments of those objectives.

Q (from Dave Carle): Is there enough reserve area in the Northern Forest region today? And, because of the experience--regional, national, and international up here--is the state government, federal government or private industry the best at protecting these reserves or needed reserve areas?

MH: No to all the above. (Laughter) No, we don't have enough reserves and all of those groups should be involved.

ST: No there is not enough. And we need to define a new model for how different agencies can work together--local, state and federal. I'm not sure we have that model, but we need to do something because what we've been doing clearly isn't adequate.

The Northern De-Forest-ation Special

"Our Specialty is Ecological Abuse"

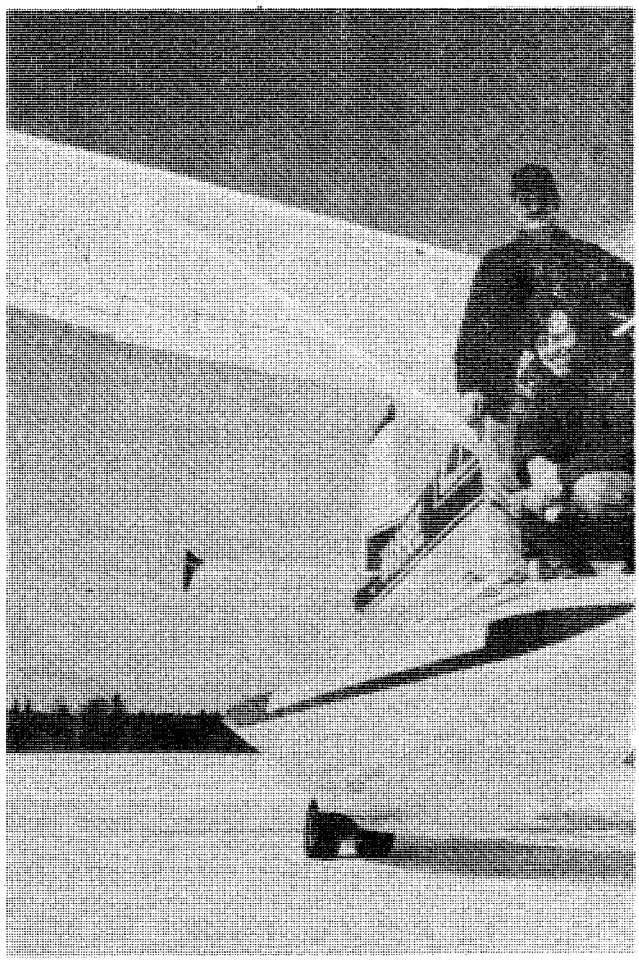
Maine - Land of Township-Sized Clearcuts

This high altitude photograph of the Maine Woods west of Baxter State park covers approximately 45-50 square miles. This is a common scene in Maine's 10 million acre industrial forest. It was taken in August 1991. Courtesy of ***Beyond the Beauty Strip: Saving What's Left of Our Forests****, by Mitch Lansky, Tilbury House, Publishers, 132 Water St., Gardiner, Maine 04345.* *(See page 138)* *Price $19.95 paperback; $35 hard.*

Deforestation is Legal in New Hampshire

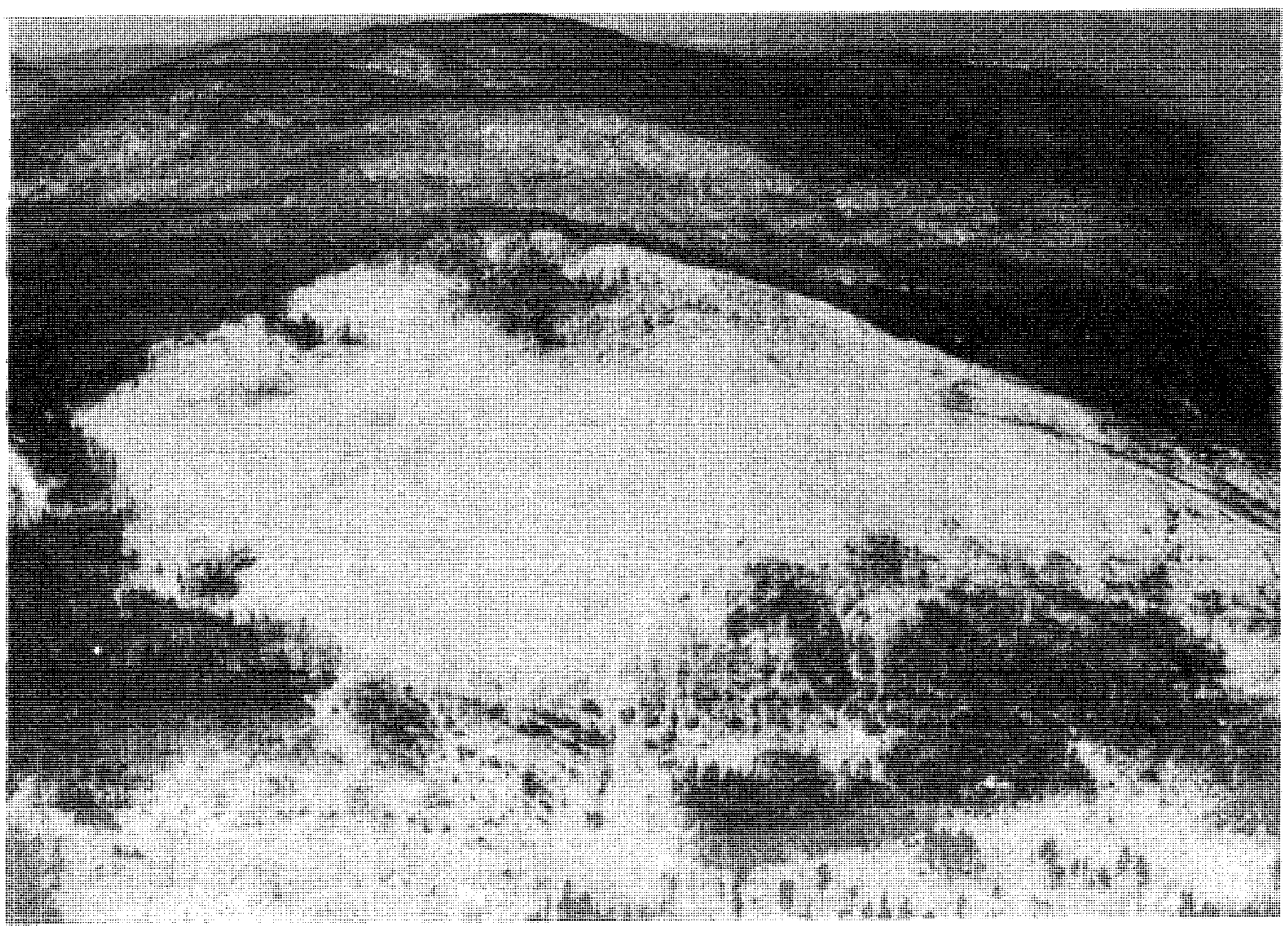
This 170 acre clearcut at the intersection of Routes 3 & 302 in Twin Mountain, NH abuts the White Mountain National Forest (the trees in the background). Now this cut over land is for sale to the WMNF!

Photos on
by Ste



Environmental Air Force pilot Rudy before takeoff. EAF provides an indisp you Rudy.

This sort of logging operation is all too common a sight for residents of the North Country. Apologists for the clearcutters claim that the only problems with such clearcuts are "visual". They aren't listening to residents of the region who hate these cuts because they know that clearcuts harm the integrity of forest ecosystems.



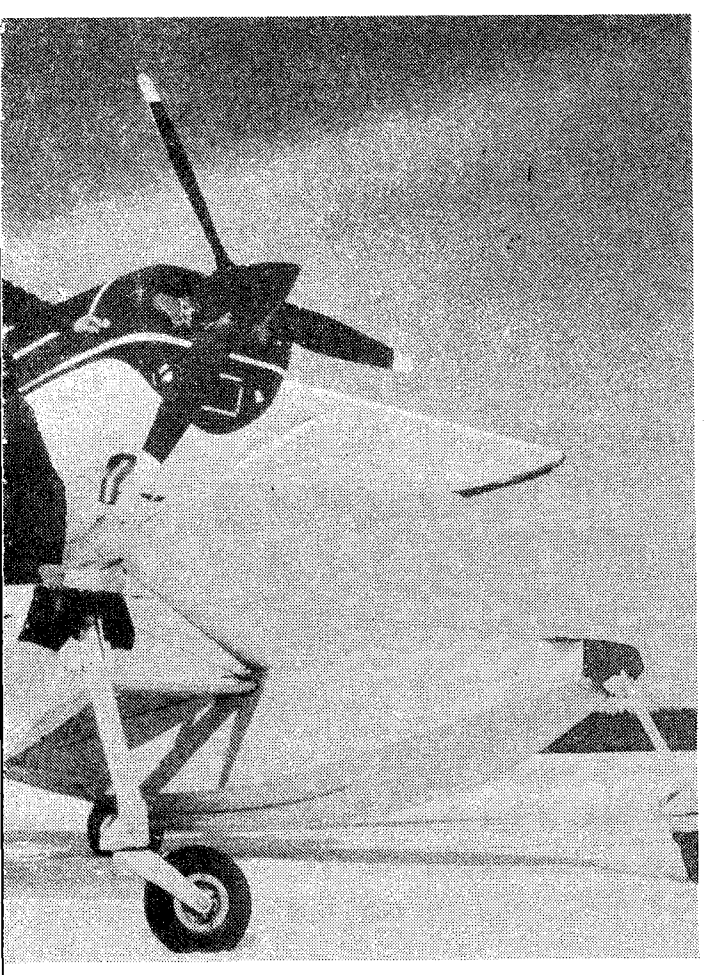
NH Clearcutti

by Tamm

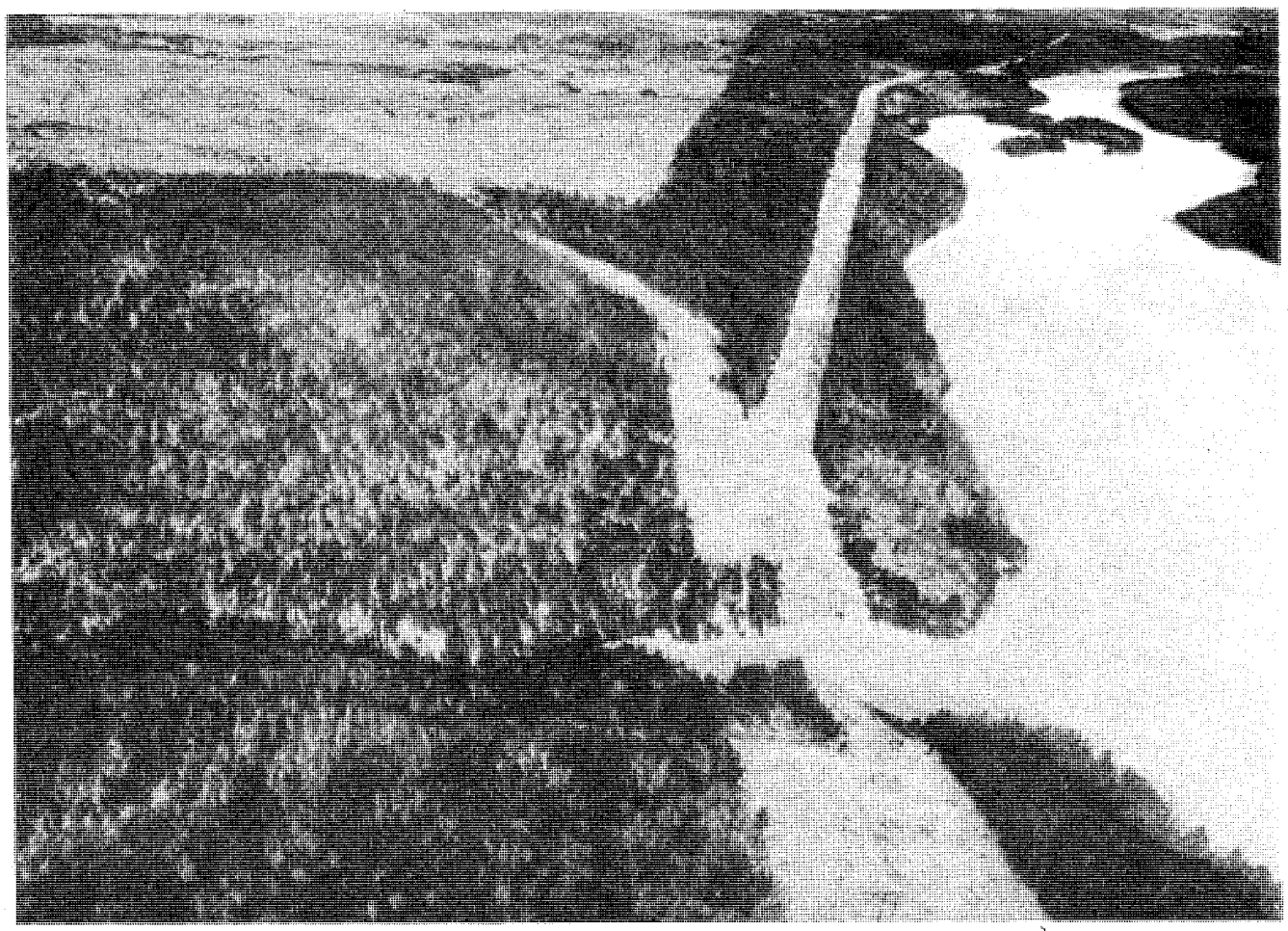
SB 128, sponsored by Sena
Richard Russman and Represe
Burnham, and Gary Gilmore, h
Senate. The bill, designed to re
clearcuts, receiv
If passed, SB 128 would requi
forester or approved by the Divis
above 2,700' in elevation, on slo
lower headwall at Tuckerman's R
than 20 acres. Harvest plans
silvicultural practices for clearcu
Department of Resources and Eco
makin
The bill requires a 300' buffe
sets in motion a process to create
The fate of this legislation
months. For more information ca
the Protection of N.H. Forests, 6
for this kind of legislation, call yo
senat

Vermont Permits Forest Liquidation Too

pages 16 & 17
ve Gorman

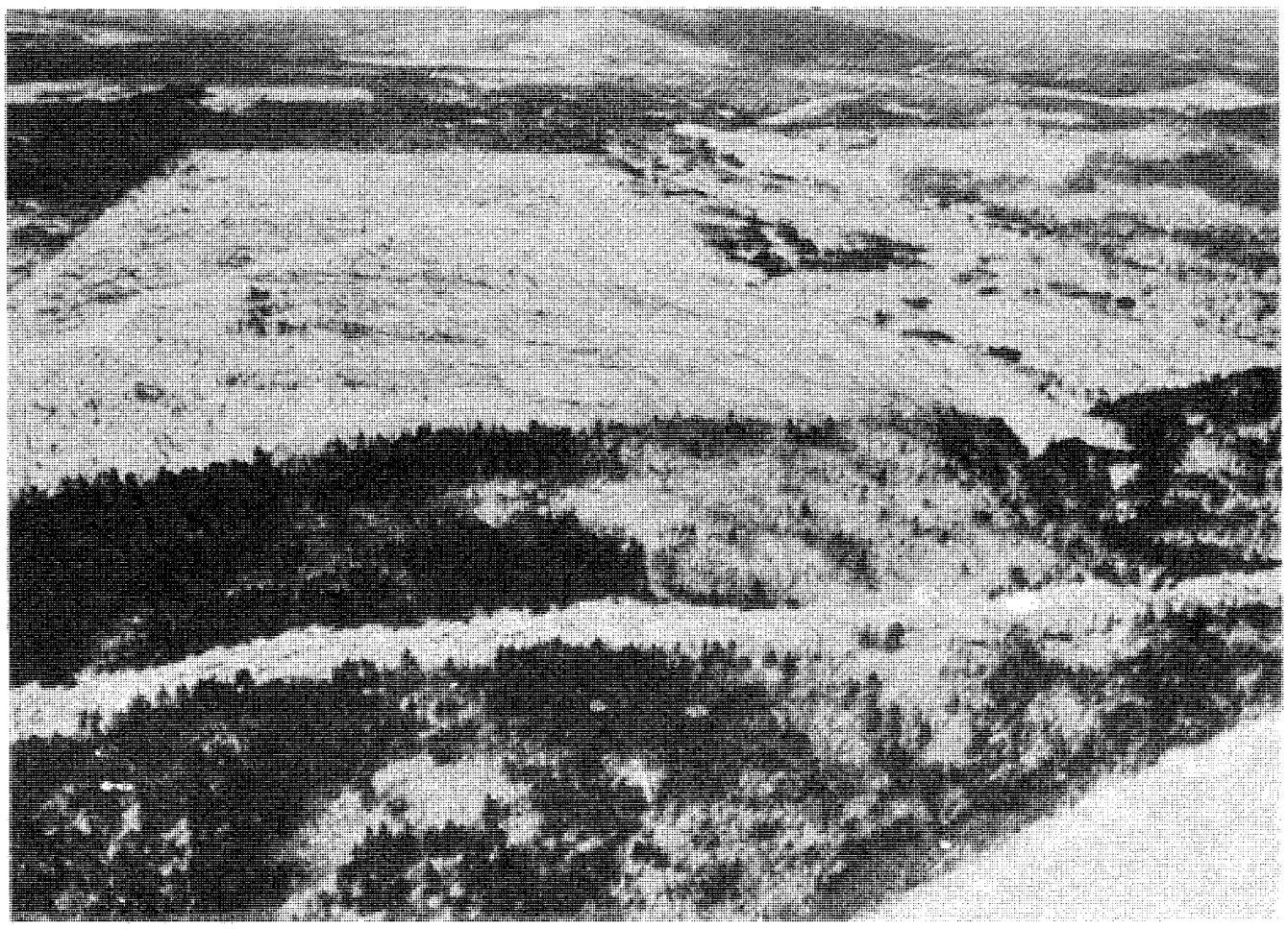


Engholm (standing) and Jamie Sayen just ensable service to forest defenders. Thank



Just north of the Moore Reservoir in Vermont (right) is a huge clearcut diagonally bisected by the Hydro-Quebec transmission line.

Another view of the clearcut north of Moore Reservoir. We counted seven high tension towers crossing this clearcut. It is difficult to estimate clearcut size from the air, but this one is easily more than 500 acres, and may exceed 1,000.

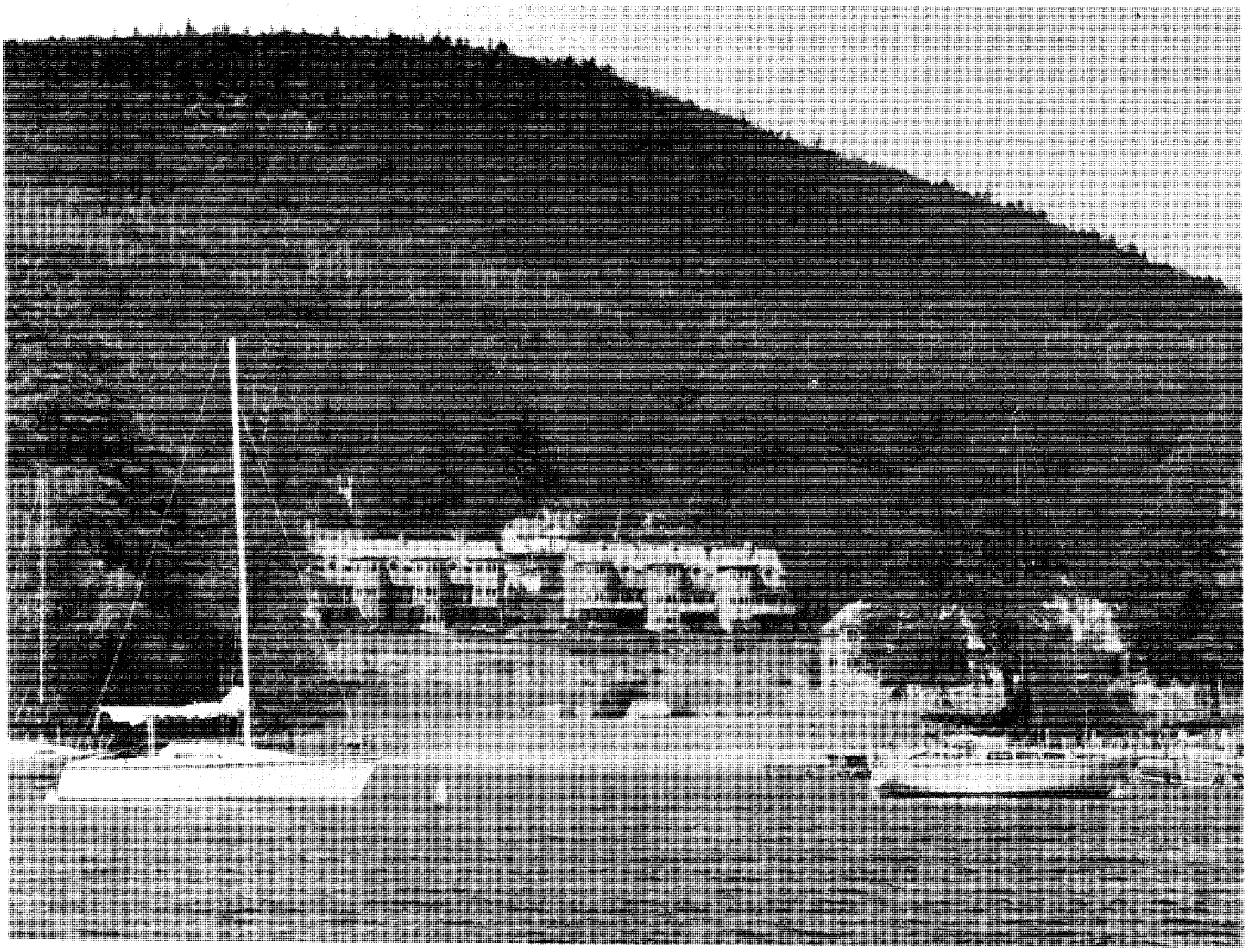


ng Bill Proposed

ıara Van Ryn

tors Susan McLane, Burton Cohen, ntatives Mary Ellen Martin, Daniel as already had a hearing in the NH quire planning for the most extreme d a lot of opposition.
*re a harvest plan, signed by a licensed on of Forests and Lands, for clearcuts pes greater than 35% [*Ed. note: the avine is 35%], *and for clearcuts larger would have to meet minimum best ts. These would be established by the nomic Development through the rule- g process.*
r between all other clearcuts. It also a comprehensive forest practices act. will be determined in the next few ll Tammara Van Ryn at the Society for 503-224-9945. To voice your support ur New Hampshire representatives and ors today.

Adirondack Park - Developer's Paradise or Healthy Landscape? It's Our Choice



Antlers Resort, Lake George. Photo © Alan Cederstrom, The Adirondack Council.

Adirondack wilderness. Photos by Gary Randorf, The Adirondack Council

Design & Management of Core Ecological Reserves

Questions We Must Answer

[Ed. Note: Readers of the inaugural issue of ***The Northern Forest Forum*** *will recall Dr. Reed Noss's "Wilderness Recovery: Thinking Big in Restoration Ecology." The following series of questions pertaining to the design of "core" ecological reserves is a portion of an appendix to an article by Dr. Noss in the special issue of* ***Wild Earth*** *on "The Wildlands Project." Dr. Noss' article "The Wildlands Project Land Conservation Strategy" (on pages 10-25) may be the most important distillation of land protection strategies yet assembled. Copies of this extremely important special issue are available for $6 from The Wildlands Project, POB 5365, Tucson, AZ 85703. Do yourself a favor and get a copy.]*

A regional reserve system consists of three basic ingredients: core reserves, multiple-use (buffer) zones, and corridors. Select your core reserves first, then interconnect and buffer them across the landscape. For many species, properly managed multiple-use zones will function as corridors. An archipelago of core reserves in a matrix with low road density and low-intensity human activities will function well for most native species. Multiple-use zones at a landscape scale can be corridors at a regional scale. Whenever possible, however, significant core reserves should be linked by corridors containing roadless interiors.

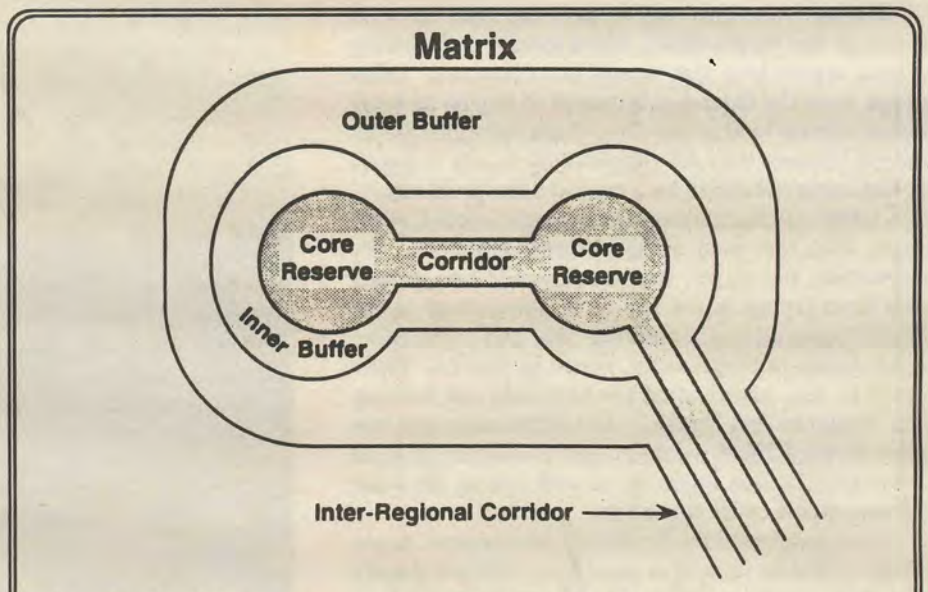
1. CORE RESERVES

A. Selecting Sites and Drawing Boundaries

1. If large reserves (e.g., national parks, large wilderness areas) already exist in the landscape, enlarge boundaries to encompass adjacent and nearby old growth stands, roadless areas, and other ecologically important patches.
2. If no large reserves presently exist in the landscape, draw boundaries to enclose geographic clusters of the following:
   a. managed areas (wilderness areas, RNAs, designated wildlife habitat areas, etc.)
   b. old-growth stands
   c. other natural (virgin) forest
   d. other natural areas and sensitive sites
   e. roadless areas
   f. rare species occurrences (e.g., as mapped by heritage programs)
   g. under-represented vegetation types
3. At a regional scale, be certain that the overall system of core reserves includes the following:
   a. representative examples of all major ecosystem (vegetation) types native to the region, and all seral stages within each type
   b. centers of species richness and endemism (as determined, for example, by gap analysis)
   c. population centers of large, wide-ranging species (especially large carnivores)
   d. populations of other rare species
   e. entire environmental gradients (all physical habitat types)

B. How Large Should a Core Reserve Be?

1. The basic issue is context. Core reserves surrounded by adequate buffer zones and/or well interconnected by corridors can be quite small (say, 10,000 to 100,000 acres) and still function effectively for most target species.
2. Assuming that core reserves are isolated and surrounded by hostile habitat (tree farms, agriculture, urban areas), they may need to be 1 to 10 million hectares (2.5 to 25 million acres) or more in size to maintain viable populations of large mammals in the long term.



A regional wilderness recovery network, consisting of core reserves, connecting corridors or linkages, and buffer zones. Only two core reserves are shown, but a real system may contain many reserves. Inner buffer zones would be strictly protected, while outer zones would allow a wider range of compatible human uses. In this example, an interregional corridor connects the system to a similar network in another bioregion. Matrix refers to the landscape surrounding the reserve network, but this is only true in the first stages of a wilderness recovery project in regions now dominated by human activity. Eventually, a wilderness network would dominate a region and thus would itself constitute the matrix, with human habitations being the islands. In regions where wildland is already the matrix, the inverted model should be implemented right away.

3. For vegetation types prone to high-intensity fire, core reserves millions of acres in size are needed to maintain seral stage diversity across the landscape. Silvicultural manipulations or prescribed fires will be necessary to maintain seral stage diversity in cases where core reserves are too small.

C. How Should Core Reserves Be Managed?

1. All else being equal, the smaller the reserve, the more management is necessary (particularly to protect the reserve from human activity and other external influences).
2. Core reserves should be managed as roadless areas (wilderness). All roads should be permanently closed. The more roads remain open, the less viable the reserve for many sensitive species.
3. Restoration will be the management emphasis in most cases. This is particularly true when a core reserve encompasses a cluster of relatively pristine sites in a matrix of human-disturbed habitat, or where no pristine habitat remains for a certain vegetation type.

[Ed. Note: The remainder of this "appendix" treats the design and management of multiple use zones (includes buffer zones) and corridors.]

1993 New Year's Resolution Lists 'Endangered Jewels' For Sale

Last year, our organizations called upon our federal and state government leaders to establish land acquisition and conservation easement funds to protect nine large tracts of critical lands for sale or projected for sale in the near future. These lands are vital to the future ecological, economic, and cultural integrity of the region.

In 1993, our resolution is even more urgent as our proposed projects still remain threatened by sub-division, real estate speculation and short-term profiteers. These projects are joined by several other large corporate and private landowner lands which have been put on the market recently. This past year the region's safety net to its natural and cultural heritage of the Northern Forest Region has not been strong governmental funding and programs, but rather a nationwide economic recession.

These lands listed represent only a snapshot of the large private lands which will be on the open market this decade. The region's multinational corporations are faced with serious long-term economic decisions regarding their land holdings. Certain large land transactions have been from one forest company to another with the goal of remaining in forest production, as in the Maine Bowater case. However, international competition and the growing interest of the real estate industry have brought new pressures to the region. Today's market has forced companies to separate their holdings into strategic and non-strategic categories. Companies like Champion International have admitted that it will be difficult to hold on to hundreds of thousands of acres of non-strategic lands in today's economic climate.

The cost of protecting these jewels is in the range of 50 to 100 million dollars, based on the average market price across the region. The cost at this time can only be a range with a distribution of title fee acquisition and conservation easements still to be determined. These approximate 600,000 acres of prime forestland will never be more affordable and can be protected through easements and fee acquisitions. Over the next decade, several hundred million dollars will be earmarked as other large parcels become available by willing sellers on the open market. Indeed, the costs to the nation if they are lost to sub-division and development is inestimable. Changes within the forest products industry, the downturn in the economy, and new funding mechanisms such as the Forest Legacy Program offer an unprecedented opportunity to purchase these valuable lands at affordable prices.

Property	Location	Acreage (approx.)
Morgan/White/Bird	Adirondacks	1,000
Follensby Pond	Adirondacks	14,000
Lyons Falls Pulp & Paper	Adirondacks/Tug Hill	20,000
Champion (non-strategic)	Adirondacks	95,000
Large Corporate Lands	Vermont	*250,000
Green Mountain Region	Vermont	25,000
NH Corporate Lands	New Hampshire	*100,000
Katahdin Iron Works	Maine	*70,000
Hearst Corp. Machias Lands	Maine	27,000
Estimated Total Acreage		**602,000**

*Approximate New England Corporate Holdings on Market or speculated to be on market in near future.

The Adirondack Council, Adirondack Mountain Club, Appalachian Mountain Club, Appalachian Trail Conferenee, Association for the Protection of the Adirondacks, Audubon Society of New Hampshire, Maine Audubon Society, National Audubon Society, National Wildlife Federation, Restore the Northwoods, Sierra Club, Trust for Public Land, Vermont Natural Resources Council and the Wilderness Society urge citizens from across the region to join with us to protect these and other jewels through this Northern Forest New Year's Resolution.

[Ed. Note: For further information, contact David Miller, National Audubon Society, 1789 Western Avenue, Albany, NY 12203.]

Saving Maine's Forest: Should We Regulate it or Should We Buy it?

by Mitch Lansky

Which is the best way to save the most forest in Maine as fast as possible? Some groups are working to pass regulations that would ban clearcuts. Other groups want the federal government to buy up as much industry forest land as possible. Both strategies are attractive because they are simple--easy to sell to a public that is overwhelmed by a myriad other problems.

A ban on clearcutting, for example, would, some argue, stop the most abusive forest practices. By maintaining tree cover, such a ban would help protect soils from frying in the sun or washing away in the rain. Fragmentation, simplification, and conversion, major threats to biodiversity, would be slowed. There would be less justification for herbicide use because there would be less "brush." And with continuous tree cover ensured, there would be less possibility of local timber shortfalls as might occur with rolling clearcuts that can engulf entire townships.

Land purchased by the federal government, argue others, would be subject to regulations that are already in place to assure multiple use and sustained yield. It would be far easier to justify and create wilderness areas and preserves to maintain wildlife diversity. Government ownership would end the threats of leveraged buy outs (LBOs) and land sales for development. Government control would allow continued public access to forests and public input to management plans.

There are, however, problems associated with both of these approaches. Creating these policies requires major organizational efforts and can lead to divisive battles. These battles are not just environmentalists against industry, but may include woodlot owners, loggers, and residents of local communities who feel that another layer of bureaucracy is being imposed on them by outside forces with no attention to their unique problems or special needs.

New regulations require more money, bigger bureaucratic staffs, more paperwork, and more taxes. Currently in Maine, the state is not even able to enforce regulations already on the books. Corporate lawyers have also proved adept at finding loopholes to weaken the force of existing legislation. There is thus a danger that a great-sounding piece of legislation will lead to minimal results.

Regulations do not encourage good management; rather they legitimize poor management. With current definitions, a landowner can remove 75% of a well-stocked forest and still not have created a "clearcut" if more than 30 square feet of basal area remains.

A ban on clearcuts would allow the landowners to remove the best-quality trees of long-lived species and leave the poorest-quality trees of short-lived species. These changes in quality can lead to stands dominated by trees, such as fir, that are vulnerable to catastrophic disturbances, such as spruce budworm outbreaks.

To the degree that public lands are surrounded by private lands subject to abusive management, they become more like isolated islands with less value for protecting wide-ranging species, such as large predators. To protect the public lands would require efforts to reform practices on private lands. Public acquisition would thus be the beginning, not the end, of forest reform struggles.

Such vulnerable stands have been a leading excuse for massive clearcuts over the last 15 years.

Although public lands in Maine are generally managed in a more sensitive manner than industrial lands, this pattern might change if public lands became a dominant feature of the landscape and a major source of wood for existing mills. The forest industry will then have an incentive to dominate the public lands management agenda, as it has done in many other parts of the country, to ensure a cheap fiber supply for their mills.

The last few decades have witnessed, in these areas, below-cost sales, subsidized road building, and intensive, unsustainable cutting. The Forest Service has overemphasized even-aged management methods and subsidized early-stand management (such as planting, thinning, and "release" (usually with herbicides).

To the degree that public lands are surrounded by private lands subject to abusive management, they become more like isolated islands with less value for protecting wide-ranging species, such as large predators. To protect the public lands would require efforts to reform practices on private lands. Public acquisition would thus be the beginning, not the end, of forest reform struggles.

Industrial forestry , Maine Style. Photo by Jym St. Pierre

While not subject to LBOs, public lands are subject to political takeovers. Indeed, Ronald Reagan's first appointment for Assistant Secretary of Agriculture to oversee the forest service was a former executive from Louisiana Pacific, a major buyer of wood from national forests. Activists would thus have to be ever vigilant to prevent an industrially-captured agency from straying too far from its public mandate.

While it may be easy to envision how these government fixes might help "save" the forest, it is not so easy to put them in place and make them work. Activists must make sure they are not operating on the level of the mice who thought they could be safe from the cat if only someone would tie a bell on the cat's tail. Who will tie on the bell and make sure it stays on?

Both of these government options require the existence of a permanent, highly-organized shadow government. The "elected" government, as many of us have discovered, is not always serving the needs of the public that elected it as much as the corporations that help fund the elections.

If activists are going to organize to such an extent, why not tackle some of the complexities missed by the simpler versions of these government solutions? Why not address the question of why landowners would even want to clearcut in the face of widespread public disapproval?

Despite disclaimers from some landowners, most clearcuts are not done to improve wildlife habitat, create jobs, enhance community stability, or protect biodiversity. Most landowners clearcut to make money over a short-term period. The justification may be to prevent a LBO of undervalued land, to pay off debt, to pay off taxes, or to liquidate the forest and invest the revenues into higher paying investments.

The returns on cutting are based on the volume cut and the prices paid by the mills. The less the mills pay, the more the landowner has to cut to earn the desired income.

The mills have a philosophy of buying cheap and selling dear. They are competing in a global economy with other mills that are subsidized, have cheap labor, and cheap raw materials. The mills employ various strategies to ensure that purchase prices of wood will remain low. It is in their best interest not to compete with one another for wood--this would raise prices for all involved. They are also vertically-integrated--i.e., they not only own mills; they also own forest land to supply the mills. Much of the wood used in the mills is purchased from off the industry lands. The industry lands are often used to ensure a "stable" market (i.e., flood the market at appropriate times to keep wood prices low).

Landowners, to keep costs down, hire "independent" contractors, rather than employees, to cut the wood. By doing so, the landowner avoids dealing with costs for insurance or benefits. The landowner pays the contractor based on the volume of wood cut. The contractor thus is primarily paid to remove wood, rather than to manage forests.

The contractor is caught in a squeeze between the price that the mill pays for delivered wood and the stumpage that the landowner requires. This spread has been declining in real terms (inflation adjusted) for years. The contractor also sometimes has to pay for the cost of building roads. These diminishing returns and high costs are an incentive to cut high volumes per acre.

The type of cutting a landowner or contractor might choose also has much to do with available markets. If there are no local markets for low-quality wood, the contractor will have an incentive to cut the best and leave the rest. If there are only markets for low-quality wood, there is no incentive to manage for quality--the forest may be converted to short-rotation junk. If there are markets for everything, there is an incentive to cut everything.

Instead of paying the workers a weekly wage to manage the forest, the contractor usually pays the workers on a piece-rate wage--i.e., the more you cut, the faster you cut, the more you make. This type of wage is supposed to encourage "productivity" (of tree removal, rather than forest growth).

The piece-rate wage is a disincentive to take time to take care. It is an incentive to rush, to damage the forest, and to have a high accident rate. As the forest becomes dominated by low-value, low-diameter trees, it becomes difficult for loggers to make a decent income on a piece rate. As accident rates rise, insurance rates rise, and contractors avoid practices with high accident potential, such as limbing trees in the woods.

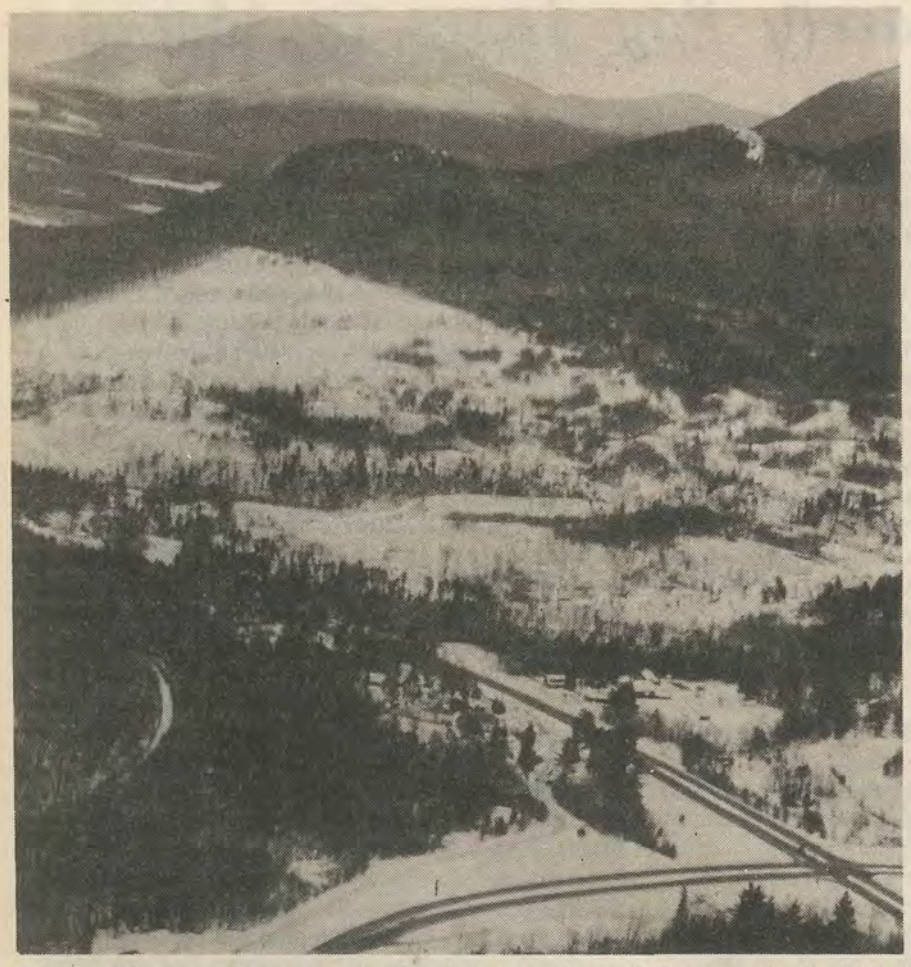
The result is a tendency to replace workers with machines that remove whole trees. Indeed, while there are many disincentives to use labor, there are incentives (such as investment tax credits and equipment depreciation) to use machines.

Once the contractor has purchased machinery, he is in debt to the banks. To pay off this debt requires cutting high volumes of wood, fast. The easiest way to use machines to cut high volumes fast is with even-aged methods, such as clearcuts, strip cuts, or shelterwood cuts.

These trends have led to a situation where it takes more and more land to support fewer and fewer workers. Unfortunately, there is only a limited amount of land--the fiber base is not expanding to assure a stable level of woods employment. The impact of these trends on local communities dependent on forestry and lacking economic diversity can be profound.

Neither clearcut bans nor government land purchase deal with the issues of available markets, market

Continued on Next Page



This 170 acre clearcut at the intersection of Routes 3 & 302 in Twin Mountain, NH is visible from both highways. It runs right along the boundary of the White Mountain National Forest. It dramatizes the problem of conflicting management strategies on private and public lands. Lest we grow too angry with the contractor who removed all above ground biomass on this tract, remember this logging operation is perfectly legal in New Hampshire. Photo by Steve Gorman

Saving Maine's Forest

Continued From Preceding Page

prices, labor policy, road construction, mechanization, insurance rates, bank policies, and the lack of local input into forestry policy. The system as it currently exists encourages landowners, contractors, and loggers to cut without thinking about the needs of the forest or the needs of future generations.

Mandating better management without accounting for the factors that encourage mismanagement does not seem to be a likely path towards success. It may, however, be a path towards divisiveness, as those who have little to gain but much to lose get into a defensive posture.

An alternative is to put forth a more comprehensive vision--a vision that accounts for the needs of local communities as well as the needs for a healthy forest, and diverse wildlife. The vision should start with the realization that all interest groups would benefit, in the long term, by living within the constraints of a sustainable forest ecosystem.

To achieve these goals requires organizing on many levels: conservation biologists, recreationists, woodlot owners, workers, local citizens... Indeed the solution is not to be found in any single policy, it is to be found in the organizing itself. The point is not merely to set up a powerful "shadow government" to keep perpetual watch on a corrupt government that tends to do the bidding of industry. The point is, rather, to establish a government of the people, by the people, and for the people--and forests.

To the extent that people understand the need for ecologically-directed forestry, and are motivated to do so, and have a system where it is viable to do so, they will do it without need for a complicated police state.

Unfortunately, we are a long way from this vision. Forest degradation on a vast scale is occurring now. Action to stop this destruction is needed now. Activists will try to use the government tools that bring the biggest results in the quickest amount of time. This is understandable.

Mandating better management without accounting for the factors that encourage mismanagement does not seem to be a likely path towards success. It may, however, be a path towards divisiveness, as those who have little to gain but much to lose get into a defensive posture.

But in using these tools, activists can still communicate from the broader vision, and can look for ways to form alliances, rather than enemies. Activists can seek out new models for using these old tools--models that take account of the needs for local communities as well as the needs of the forest.

Until we change the direction away from a non-sustainable global industrial growth society, we can not expect to find a stable solution to forestry problems. A government committed to endless industrial growth as a first priority will deal with ecological and social issues only insofar as they do not interfere with the primary goal--growth. Unless we change this direction, we will, as a Chinese sage once suggested, wind up where we are headed.

Mitch Lansky, a selectman from Wytopitlock, Maine, is author of the most important critique of industrial forestry yet written: ***Beyond the Beauty Strip: Saving What's Left of our Forests****, published by Tilbury House, 132 Water St., Gardiner, ME 04345. $19.95 (paper) $35 (hard)*

NH Legislature...
Not Behind the People, Just Behind the Times

by John Harrigan

Every now and then, public opinion is far ahead of the legislative branch's consciousness, and there is massive impatience over the government's slowness to understand or respond. Oddly enough, a parallel can be drawn between cigarettes and clearcutting.

Restaurant patrons and many of the people who run restaurants are sick of the hassle and futility of trying to segregate smokers and non-smokers and the air they breath, and want the Legislature to show the way by simply banning smoking in public dining places. This would give all restaurants a level playing field. Yet lawmakers have displayed nothing but timidness and delay on the issue, and have stuck their heads in the sand as the who-owns-the-air issue has ballooned into a major controversy. In the absence of any initiative by state government, local cities and towns have begun to adopt their own ordinances. This creates the kind of crazy-quilt regulation that wastes time and money and fosters widespread confusion.

The public is also far ahead of state government on the clearcutting issue. Clearcuts have always been with us, but now seem to be bigger, in more visible places, and most shockingly of all, startlingly evident in the high country where skidders have never been seen before. The public can see clearcuts all over the horizon, and people are aware that there is little or nothing on the books to regulate the size of a clearcut, soil considerations, the degree of slope, or public visibility.

The Legislature charged a special committee to look into the clearcutting issue last spring, but gave it neither enough time or money, let alone a clear sense of mission or urgency, to take more than a cursory look. Nothing was done, and clearcutting continues almost totally unregulated, except within the White Mountain National Forest where regulations on the size of the cuts, slope and aesthetics are key criteria that must be met--and have been, for years.

Even though clearcutting is an emotional issue in which human value judgements often outweigh scientific data, the fact is that the public is upset about the issue as never before and wants at least some basic rules in place. Once again, lawmakers are sadly out of step with changing times. Because of a lack of state leadership on the issue, there is every chance that smaller units of local government will tackle the job of regulation on their own. And once again, the lack of initiative in Concord will cause chaos and confusion for local government, industry and the public.

John Harrigan wrote this editorial for the ***Coös County Democrat*** *on December 16, 1992. John is a well-known outdoor columnist for the* ***New Hampshire Sunday News****. He also serves as a representative of landowners on the Northern Forest Lands Council.*

New England Environmental Conference
Features Northern Forest Lands Workshop

(Medford, MA) Bruce Babbitt, Secretary of the United States Department of the Interior, will deliver a keynote address at the Fifteenth Anniversary of the New England Environmental Conference on Sunday, March 20 and 21 at Tufts University, Medford, MA.

Among others who will address the plenary sessions of the conference are: Dr. Helen Caldicott, M.D., Co-Founder and President Emeritus of the Physicians for Social Responsibility; Dr. Russell Peterson, former Governor of Delaware and currently President Emeritus of the National Audubon Society; Winona LaDuke, President of the Indigenous Women's Network; and Jane Perkins, President of Friends of the Earth.

There will be over 200 exhibits and the conference will be co-sponsored by 500 organizations, businesses, and governmental agencies. Among the 60 subjects to be considered in workshops will be: the Northern Forest Lands issue, nuclear power, energy conservation, hazardous waste reduction, agricultural lands and pesticides, wetlands, biodiversity, and population.

The panelists for the Northern Forest Lands workshop are: Robert Bendick, NY Dept. of Conservation and Chairman of the Northern Forest Lands Council; Brock Evans, VP, National Audubon Society; Michael Kellett, Executive Director, RESTORE: the North Woods; Jamie Sayen, Preserve Appalachian Wilderness and Editor of **The Northern Forest Forum**; Cathy Douglas Stone, Esq., law firm of Foley Hoag and Eliot; and Dr. Stephen Trombulak, Biology Department, Middlebury College.

Issues to be discussed during this workshop include: protecting the ecological integrity of the Northern Forest region; public land acquisition; developing stable, diverse, environmentally sustainable local economies; the future of the region's paper industry; the role of the Northern Forest Lands Council.

The workshop meets both morning and afternoon on Saturday, March 20. For information, contact:

New England Environmental Network Conference
Environmental Citizenship Program
Lincoln Filene Center
Tufts Univ.
Medford, MA 02155
TEL: 617-627-3451

Large Timberland Owners Barely Pay Taxes in Maine

by William Butler

Taking up this knotty question from the interesting discussion of Vermont's property tax by Deb Brighton in the Winter 1992 **Forum**, let me present a view that differs in approach. First, this view is built on the Maine experience. Second, it attempts an integration of the several possible sources of money to conduct our governments.

Except in this paragraph, I will not invoke the word *fair;* it has possibly as many definitions as there are people affected by an actual or proposed tax levy. Forty years ago, the first assessor of Aurora told me that he felt it would be *fair* if each resident should pay the same local tax. He was third in area owned. We had a poll tax then, too, based on equal participation in bearing the cost of government. Some think it would be *fair* if no rich kids inherited great wealth, that the arena of competition and consumption were level. (Inheritance of large tracts of forest land is a subject of the Northern Forest Lands debate.) Let us agree that this abbreviated list is sufficient reason to avoid this criterion.

The great abstraction, the *State,* is both the source of the power of taxation, and the recipient of the revenues derived through taxation. Owning every thing and every body, the State easily extracts first what it needs to maintain itself, things like police, armies, tax collectors, as in absolute monarchies. To prevent civil unrest, it provides wealth and services to enough of its people to obtain the support or acquiescence of a majority. These services are paid for by additional taxes. (Politics is the dirty business of trading the services necessary or profitable to create one majority against the interests and will of other, possible majorities.) So much for theory, but this is fundamental to an understanding of what we do when we "tax." If you or one of the "sovereign property rights" people think you own real estate, try not paying your property tax to see who really owns it. The same applies to earnings.

What is most queer about Maine, the State, is that you would not know by looking at its revenue statement that half the state was industrial forest land, cut at such a rate that we are second in the manufacture of *papers in wide demand, magazine stock,* with mills owned by seven of the largest conglomerates. In our revenue budget of $1.5 billion, attached as Fig. 1, the corporate income tax contributes 3.7%. The State's property tax in the unorganized territory, 12 million acres predominantly industrial ownership, is less than 1% of the budget, 0.6% actually, and this is not spent on general purposes, but is dedicated to services to the landowners. One might conclude that those owning most of the forest of Maine are not paying much of any kind of tax. They aren't and they know it.

One of the fun parts of the Citizen's Advisory Committee (CAC) meetings with Maine's Northern Forest Land Council is to have this conflict acted out for us by the Councilors. Ed Meadows, as Commissioner of Conservation, misses some of our meetings and leaves early to work with the Governor's cabinet to cut further their budgets. Ed worked for the Schley family, the Pingree heirs, until he went to state government. He knows how little they pay, and, more important, how much wealth they extracted from over one million acres through heavy cutting. This may be the first time we have had someone who knew how the game was played advising any Governor, especially when the Governor can't pluck the sheep any more. If it isn't immediately evident, the sheep are those of us who pay 75% of the state's general revenues as sales and individual income taxes, plus our local property tax, of which about half is for school support.

At the recent Maine CAC meeting Ted Johnson, representing the Maine Forest Products Council, decidedly the big boys of timber, made a twenty-minute pitch for us to lobby the Governor not to cut further the appropriation for the Maine Forest Service (MFS). The irony is beautiful--landowners who have with unbelievable success avoided (and evaded) taxes now crying for public funding of the group which formerly acted as their handservants; some might say running dogs. If the paper industry wanted anything for the MFS, Ted and the Governor would put it through. When you have liquidated the forest, there isn't much a forest service can provide, other than camouflage.

In towns with local government (the other half of Maine), a form of the "current-use" tax reduces the levy on lands declared under what is quaintly termed the Tree-Growth Tax Law. The stated rationale at the time of its adoption was to allow a landowner to maintain a well-stocked (and, therefore, productive) timber stand without the local assessors' valuing his land higher than an otherwise similar piece not so well managed. In practice, this shifts 4/5 of the property tax on timberland to others, and more in communities where ocean or lake frontage is sheltered. Some towns lose revenue on this scale for three-quarters of their areas. *[Ed. Note: There is a reimbursement, both direct and through state aid to education, but some towns do lose some money.]*

In exchange for the tax reductions, we were promised the economic and aesthetic benefits of a forest. We are often told that the paper mills, with their great "value-added" to the raw material are the mainstay of our economy. The importance of value-added is unquestionably gospel to our economists. In Maine, the value added to a tree by manufacturing, for the greater part, is lost to the state as profits are exported to corporate headquarters.

Taxing only the current annual growth increment of land meant to grow trees sounds right; it is like a tax on interest, but not on principal amount. The implied premise is that the landowner wants to maintain and increase the annual growth increment, which is "productivity." Assuming good faith on the forest industry's part, we infer this premise. As the forest was clearcut, the annual increment has declined, just as interest on a savings account declines as one withdraws the principal. For the small Maine landowner, the principal wood market is characterized by depressed prices. To use a euphemism, they [prices] are "administered" by seven paper manufacturers. This depressed value for pulpwood is a major factor in assessing timberland value. Combine the artificially low wood price with the growth rate determined over an increasingly clearcut forest and you have the low land values dictated by the State Assessor for land sheltered under the Tree-Growth Tax law. A typical value under Tree-Growth can be as low as $37 per acre, while the market value is nearer $250.

If tax relief of this kind [current use, or Tree Growth] is proposed to the Northern Forest Council as a way to ease the cost of owning land, you are forewarned as to how a reasonable method of assessing land value can be perverted. The assumption of the NFL study is that forest land can't pay much tax. We must question this, rather than fall in line for the next act of faith. The Council can ask Steven Schley (who is lobbying NFLC) how much he and his company make by shipping their trees to a Quebec sawmill. Don't assume it is the published Maine price. Then ask the same of the other big landowners.

As in Vermont, funding of the local schools is a primary function of the local property tax. In Maine the "local" contribution is supposedly augmented by funds collected by the State, from the sources listed on our revenue sheet, Fig. 1. We discover that these sources of money are the same people who pay "local" property taxes. In that chart, we see that half of Maine, the industrial forest, doesn't contribute. Until the 1977 repeal of what was truly a Uniform Property Tax, the unorganized territory, aka the industrial forest, was taxed by the state for its general revenues, some of which came to smaller towns as support of education.

While the Uniform Property Tax was the law, towns were assessed for school support in proportion to their valuation, or tax base. Those with more valuable property might pay a school tax greater than their share of local school costs. The excess was apportioned among communities with a weaker tax base. The pitch in 1977, was that the UPT was unfair to Wiscasset, home of the Maine Yankee nuclear plant. In getting us to repeal the law, Mary Adams did a lot more than just to reduce taxes in Wiscasset. "Just a housewife," as she said, she may have intended no more, but she reduced taxes in many other high-value towns having lots of coastal property or even paper mills. This wasn't the worst part, either.

Within a year of Adams's success, the paper companies and other owners of the twelve million acres of the unorganized territory, with all its development, went to court to say that they were also exempt from inclusion in the state's tax base. They prevailed. *[Ed. Note: Paper company taxes do not pay for anything except for services rendered to that county.]* This was the greater mischief that Adams accomplished, wittingly or not. I support housewives who are concerned with tax policy, but I am cautious when I encounter one whose husband is a tax lawyer.

As one matures, matters such as tax policy seem to come full circle more frequently. Opponents of a Uniform Property assessing process argue that it forces on us a "state property tax." As I learned as an assessor, the existing property tax is and has been a state

Continued on Next Page

Figure 1

State of Maine

Undedicated Revenues - General Fund

Fiscal Year Ending 6/30/92

Tax	Total Budgeted FY Ending 6/30/92	% of Budget
Sales & Use Tax	$537,095,494	36%
Individual Income Tax	591,234,733	39%
Corporate Income Tax	52,249,780	3.5%
Cigarette & Tobacco Tax	55,691,589	3.7%
Public Utilities Tax	23,300,000	1.5%
Insurance Cos. Tax	47,027,075	3%
Inheritance & Estate Tax	10,427,174	0.7%
Property Tax - Unorg. Territory	***8,876,505***	***0.6%***
Income from Investments	800,000	0.05%
Harness Racing Parimutual	1,124,274	0.07%
Transfer from Liquor Commission	31,239,742	2%
Transfer from Lottery Commission	31,651,228	2%
Other Revenues	118,161,090	8%
Total Undedicated Revenue	**$1,508,878,684**	

[Ed. Note:Note that the property taxes paid by the large industrial and non-industrial owners of more than half of the State of Maine in 1992 was less than six-tenths of one percent. Many of these corporations are in the Fortune 500 and have assets in the $ Billions. According to Mitch Lansky's ***Beyond the Beauty Strip: Saving What's Left of our Woods****, p. 347, in 1989 (during a period of record profits for the paper industry) the paper industry contributed only 7% of the corporate income tax collected by the State of Maine. Since the book was written, this percentage of the general fund has declined.]*

Taxes

Continued from Preceding Page

tax, following the constitutional provision reserving to the state the power to collect money to support our community.

To attend our town meeting and to look at the town budget is to be aware that there is now little local control of local taxation; we vote on relatively minor items, things not mandated by state and federal laws. Citizens are seriously asking what this remnant of local control costs us. Several towns have determined that the cost of this token local government is an expensive luxury. It is possible to do without it, yet to receive the full range of local services, at less cost to the inhabitants. How this can be so is related directly to the idea of a tax rate applied uniformly to all the property in the tax base.

When a Maine town de-organizes, its taxable property is put into a tax pool with the rest of the property in the unorganized territory. It immediately has a larger tax base for the cost of its local services, but, better yet, it becomes part of an extensive one that had been exempt from supporting the broader community. Visualize what would be the situation if *all* towns de-organized--we would have one, broad tax base, and uniform taxation of that. Some towns have done this. Others are actively considering it.

Our task is to reconcile our needs and our tax revenues. The Uniform Tax is a tried approach. The sales and personal income taxes and the "sin" taxes on alcohol, gambling, and tobacco are "people" taxes. They constitute the bulk of state revenues. The local property tax in rural communities is also a people tax. It is about as high as it can go in what the Northern Forest Land Study shows is the poorest part of the region. The free ride that we gave to woodland owners didn't save our jobs or the forest. Why assume it will work better in the rest of the Northern Forest region?

William Butler has worked in the Maine Woods for over 40 years. He is a member of the Maine Citizens Advisory Committee of the Northern Forest Lands Council, Chairman of the Aurora Planning Board, and founder of Friends of Maine Woods.

A birds eye view of the Northern Forest. Photo by Alex MacLean--Landslides.

Temperate Forest Activists Meet in Tasmania

by Orin Langelle

The First International Temperate Forest Conference was held November 16-17, 1992, in Deloraine, Tasmania, Australia, and was attended by almost 200 representatives from the Southern and Northern Hemispheres. The representatives agreed in their mission statement, "To protect the remaining native temperate forests around the world to ensure they can survive, flourish and maintain their evolutionary potential." British botanist, Professor David Bellamy, was the keynote speaker.

Representatives and the media heard speakers from both hemispheres condemn multi-national corporations' profit before the planet practices, international reports of environmental destruction, and calls for a temperate forest action plan. The Second International Temperate Forest Conference is scheduled to take place in North America sometime in 1994 and in the latter part of 1993, a North American Continental Conference will be held somewhere on the eastern coast of the United States.

Native Forest Network Inaugural Strategy

Immediately following the conference, about 30 forest activists met in Jackeys Marsh, Tasmania, for the Native Forest Network (NFN) Inaugural Strategy Meeting. Participants in the three day session hammered out the details of the start of a global network designed to share information and foster activism on the grass-roots level. It was proposed that the NFN campaign on both tropical and temperate issues, with its first priority being the creation of a Temperate Forest Action Network.

The inception of the global NFN umbrella and the subsequent Action Network offers many possibilities for grass-roots activists to unite, while still remaining autonomous, by sharing information and tactics to non-violently combat the destruction of the earth by multi-national corporations or other entities. The NFN also provides the opportunity for activists to demonstrate solidarity world-wide when the need arises in the many crisis situations that are becoming ever more apparent as the present forest devastation further escalates.

NFN is a global, autonomous collective of forest activists, conservation biologists and non-governmental organizations that function on a consensus basis and is non-violent, non-hierarchical and non-patriarchal. The NFN intends to publish a newsletter in both English and Spanish.

NFN Shuts Down Forestry Commission Tasmania

The first international action of the NFN effectively stopped business as usual in the Devonport office of the Forestry Commission Tasmania (FCTAS) on 24 November, 1992. NFN chose FCTAS as a target due to FCTAS' jurisdiction, and the lack of responsibility, for logging on the Gog Range near Deloraine and the non-protection of *Astacopsis gouldii*, the world's largest freshwater crayfish, and a recognized IUCN threatened species.

International and local community activists dropped banners from the roof of FCTAS regional Working Circle headquarters, chained themselves to doors to blockade access, and dumped woodchips to show their outrage at FCTAS' blatant disregard of the habitat destruction of the Astacopsis and woodchip exportation to foreign markets at the expense of the Gog.

The action at Devonport promised not only non-violent civil disobedience concerning the Gog and other Australian hot spots, but global direct action by NFN groups in their bioregions who identify the need of protection against corporate encroachment and destruction.

A detailed account and extended coverage of the First International Temperate Forest Conference and the NFN Strategy Meeting will be in the spring editions of **Wild Earth** and the **PAW Journal**.

For further information contact: Native Forest Network, 112 Emu Bay Road, Deloraine, Tasmania 7304 AUSTRALIA--or Eastern North American Rep, Orin Langelle, Native Forest Network, POB 57, Burlington, VT 05402 USA (802)658-2403.

Environmental Air Force

Wings Over the Northern Forest

The photographs shown on pages 16-17 were taken during a flight donated by the New England Region office of the *Environmental Air Force*-- a non-profit organization whose sole mission is to make the "persuasive" power of aviation available to environmental and conservation groups nationwide. Many endangered and undeveloped regions of our country are not easily accessible from the ground. Consequently, airplanes are the only practical way concerned people can reach these areas to document and dramatize environmental problems or opportunities to scientists, land use planners, policymakers, potential land donors, and the media. *EAF* aircraft also provide grass-roots conservation workers with an unparalleled observation platform and can assist in tracking endangered species, surveying threatened or critical areas, and providing the aerial data necessary to design and monitor natural reserves.

EAF serves as a clearinghouse among FAA-certified general aviation pilots who wish to volunteer their services and conservation organizations whose activities could be leveraged by aviation. As a national organization with a home office located in Philadelphia, *EAF* participates in a number of regional organizations such as the Northern Forest Alliance.

EAF works with many conservation organizations , so that the cooperative synergy produces greater results than any organization could achieve on its own. And despite the name, *EAF's* volunteer pilots are neither airborne law enforcement officers nor environmental radicals. The volunteer pilot corps largely consists of responsible business people from all walks of life, including some highly seasoned former airline pilots. What they have in common is a love of flying and a desire to leave our world a better place.

Environmental and conservation organizations are invited to join *EAF* as Conservation Members on a local, regional, or national basis. Conservation members are eligible to receive *EAF's Wings for the Planet* services free of charge. *EAF* also seeks individuals who wish to donate their flying or photography skills.

In New England, contact:
C. Rudy Engholm, Regional Director
EAF New England Region
RR2, 2084A Gurnet Road
Brunswick, Maine 04011
Tel. or fax: (207) 721-0228

Will Small Dairy Farms Survive in the Northern Forests?

by Andrew Whittaker

Dairy farms are a cornerstone of the forest landscape and economy. The family-owned dairy farm has, over the years, helped define the scale of agriculture, and kept it in relative harmony with surrounding woodland ecology. True? or False?

Foresters may grumble that livestock and trees do not mix; water resource professionals and others may lament the occasional crumbled streambank; it is indeed a fact that manure is a serious source of non-point water pollution. These problems, though persistent, are not intractable, especially if dairying maintains its small scale.

Dubious, unproven economics are forcing milk production toward greater concentration. The family farm--and indeed the whole New England dairy industry--may be swallowed up by superfarms with access to credit enabling them to ride out the dairy depression.

Production on such farms may be marginally cheaper--perhaps by 50 cents a hundredweight according to a recent study. Such a savings to the individual operator comes at the expense of an entire landscape, quality jobs dispersed through rural areas that can ill afford their disappearance, and a more ecological, regional approach to food production.

In my own 20 mile stretch of the Connecticut River Valley, I count nine dairies--a number not altered much over the thirty years since the bulk tank rule squeezed out four or five dairies in this same area. Together, these nine operations, all family-run, number under 1000 cows, farm approximately 2000 acres, and employ, beyond family members, perhaps a half dozen farmhands. Additionally, they form part of a regional employment base by providing work for truckers, granaries and various supply stores.

That each and every one of these nine dairies is losing money, by most reckonings--reflected in volunteer labor, depreciation, and loss of equity--is a tribute to the farmers' economic fortitude. It is no tribute to our own march of empire, as we follow in the course of Britain and Rome and various Mesopotamian civilizations that all chose to urbanize and deplete their forest and agrarian resources.

The philosophic thrust of the de facto farm policy of the U.S. suggests we would be better off if all of these farms were eliminated, the cows concentrated on one farm, everything mechanized and all the various farm families encouraged to move to wherever in the United States they could find work.

The philosophic thrust of the de-facto farm policy of the U.S. suggests we would be better off if all of these farms were eliminated, the cows concentrated on one farm, everything mechanized and all the various farm families encouraged to move to wherever in the United States they could find work.

But anyone who knows geography also knows that New England's narrow valleys cannot support a massive agriculture. A policy of centralized milk production favors areas in the upper mid-West--an area in which small producers also feel themselves under the economic gun.

To return to the implications for the New England landscape, some might favor the disappearance of the cow. After all, we might then see a return to the ecology of the forested meadow, rather than that of the corn field; we could eliminate some pollution; and we could search for new uses for old farms that would somehow tie into the ex-urban economy of recreation and tourism.

Sustainable economics require that if we as a region consume something, we also produce it; that insofar as possible, we do not consume commodities that trash a distant place just so we can live cheaper.

But for several segments of people in rural New England, the demise of the dairy farm would be a serious blow. For people with roots in the Depression, dairying provided the promise of prosperity in return for hard work, investment, and production of a quality product. In short, milk put feet in shoes and kept roofs overhead. Why break this agreement now?

For others, with an interest in building toward sustainable economics, the dairy farm is seen as a key ingredient in the struggle to help rural areas avoid the status of third world nation. Sustainable economics require that if we as a region consume something, we also produce it; that insofar as possible, we do not consume commodities that trash a distant place just so we can live cheaper. This means that, yes, we accept a certain loss to the purity of our natural environment, in return for knowing the consequences of our own actions, rather than taking refuge in ignorance, as with our consumption of coffee, bananas, wheat or pineapple.

Finally, however, I would illustrate the symbiosis that has developed between the dairy farmer and the woodlot--although a neighbor of mine suggests that treadmill economics keep farmers too busy to cut wood.

An elder of mine and his wife used to bottle the milk from their small herd, peddle it, drive school bus morning and night, in addition to milking. At midday, he would also hurry out to cut wood with his hired man. They would be lucky to get out a hitch of wood a day. Partly they were in the woods for the love of the forest.

The farmers' woodlot is very seldom raided like the corporate or speculators' land. It provides a slow, steady yield of pulp or logs, often milled on the spot, that in no way precludes protection of other species or the integrity of the landscape. If everyone cut like the farmer who went out between milkings and school bus runs, there would be little urgency to the issue of who owns the woods.

The corporate forest is long divorced in time from the farmers' woodlot. But the same pressures that long ago brought mega-capital to pulp and paper production are knocking at the family farmers' door. Unfortunately, our urban population is too ignorant, and our politicians too timid, to care.

BEAR TREES

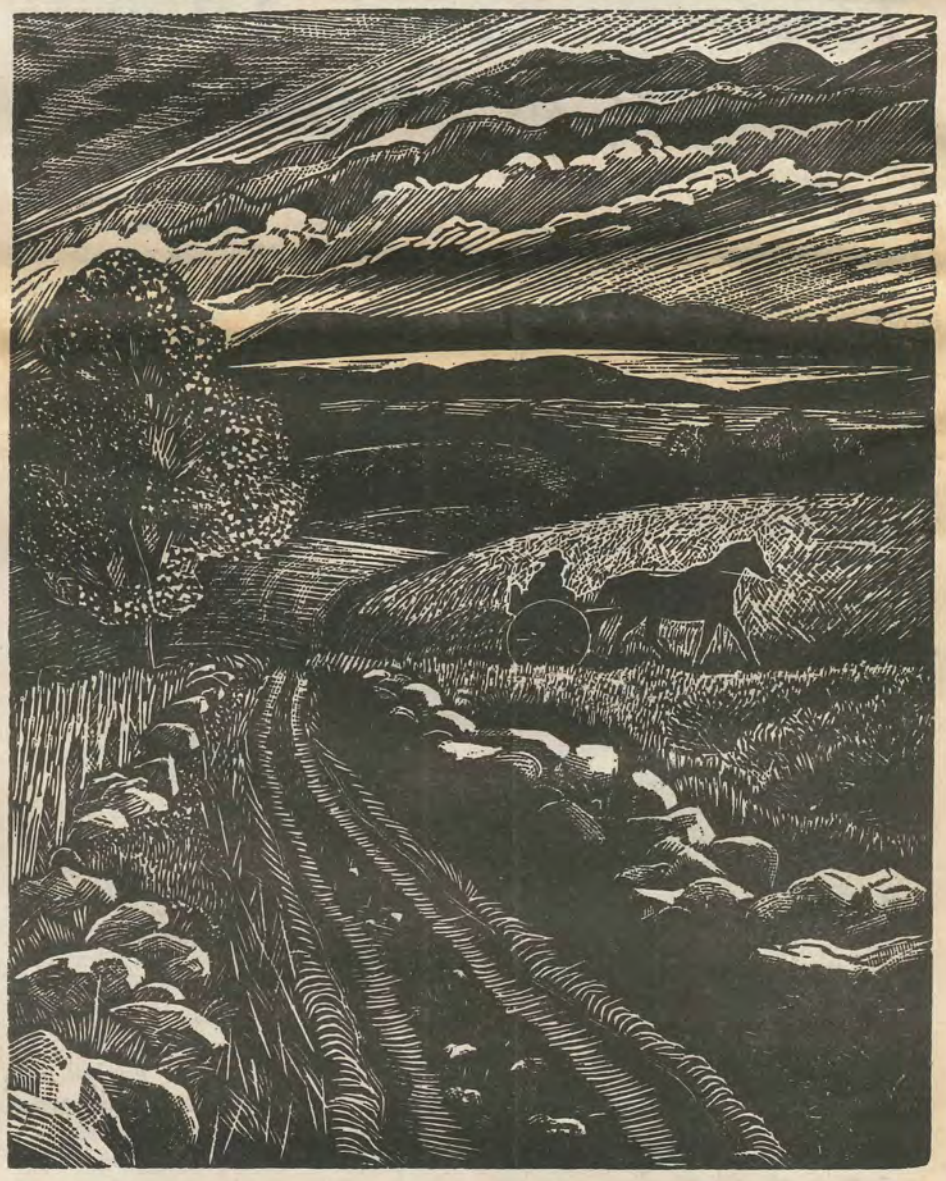
In February
all of a sudden there's a lot more light,
and it's a warm light.
Snow melts off the roof,
the hens start laying, the mare comes into season.
The earliest lambs are born in the barn cellar
where they bleat to their mothers in the half darkness
like bulbs that stir in the darkness underground.
On the southern windowsill, the old geraniums
push up new stalks and hang them with brick-pink blossoms
and every day I wake up earlier,
my bones cracking as I sit up to stretch.
The sap has begun running
and this morning, when I drove the pung up to the woodlot,
I saw three young maple trees
deeply scored by new bear scratches.

Oh warm light,
couldn't you have waited a little longer?
How safe we were in the dead of winter!
How gently we dreamed!
How beautiful it was to sleep under the snow!

--Kate Barnes

From **Crossing the Field**, by Kate Barnes, Blackberry Books, Chimney Farm, RR 1, Box 228, Nobleboro, ME 04555. Price $7.95 (pap.)

The Wood Engravings on pages 24-25 are by Siri Beckman. They are also from **Crossing the Field**.



Is there a Future for the Small Dairy Farm?

An Open Letter to Senator Leahy

The other day as I was doing evening chores at my neighbors'--a dairy farm that is considered one of the area's best--my neighbor and I began to discuss the low price of milk.

It is a conversation I have held with dairy farmers from Vermont to Massachusetts and Washington state. From the dairy magazines, I know the dynamics of the "cost-price squeeze" are similar for farmers in Minnesota, Wisconsin and New York.

What was unusual for this conversation was its tone of frustration--my neighbor's expressed readiness to throw in the towel. We went through the litany of familiar arguments. Distant from Washington, we perhaps only knew the broad outlines of federal actions, but after all, we were in a dairy barn milking cows--somewhat close to the center of things. "Leahy has said he's done what he can and can't get dairy farmers to agree," I offered.

"What is there to agree on?" replied my neighbor, with some exasperation. "It's simple: raise the price of milk."

We discussed a formal study of what my neighbor already knows: farmers are subsidizing the production of milk. This study concluded that the real cost of milk is $18 per hundredweight. Farmers in our part of New England are earning closer to $12--out of which come assessments for government surplus purchases and transportation. Anyone who knows this knows that the family dairy farm is doomed. No one is sure that leaders in government have heard the tone of desperation.

We also talked about the reluctance of consumers to pay for food. I mentioned how, as a store clerk in Boston, I had a customer angrily wave a gallon of milk in my face and say, "I paid 10 cents less for this at another store!" My neighbor and I agreed: that man has more voice in setting agriculture policy than the small farmer. Why? My neighbor expressed the idea that the declining number of farmers has hemorrhaged their political power.

We also went over some of the advice given by *experts*. "Why should a farmer have to earn outside income to stay farming?" Ludicrously, this is often suggested as a viable economic means of staying in farming, and, indeed, reflects the truth that off-farm income keeps many farm families afloat. But this outside work comes on top of the 14 and 16 and 18 hour days so many of them put in, 365 days a year. Do lawyers practice accounting to stay in law? True--everyone who works, works hard--but at least at the end of the week, there is some money left after bills.

Efficiency? I think the last inefficient dairy farmer went under long ago. Given the challenges, a farmer does well to stay afloat, while all the time working harder than most all his neighbors. Magazines and experts offer tons of advice on how to farm better--but most farmers don't have time to farm as well as they know how, today. The money to invest in more capital or outside labor just isn't there.

The surplus? My neighbor believes the low or negative return on milk is what drives the farmer to overproduce. Create an incentive to produce at a certain level, and farmers will put their energy into efficient production at that level. As it stands, each and every farmer I have ever worked for has had but one incentive: make more milk.

Since starting to work on dairy farms in 1986, I have gotten used to a certain amount of ritual pessimism such as one hears from loggers, commercial fishermen and others who work with natural resources. What is new to me is the talk of quitting--which I have also heard from the one optimist dairyman I do know. I wonder--is such talk what our dairy policy has aimed at all along?

I have also read of the difficulty of formulating a national dairy policy. From my own experience of working on small dairies in New England and in a community of small dairies in Washington state, I wonder if Washington, D.C. has listened to the wrong people. There seems be lots of agreement from family farmers everywhere--and this despite the fact that some say government is the root of the problem and that others say government simply does not do enough.

What I wonder is, has our government sat itself down and decided, yes, we *want* the 20 cow farm, the 50, 65 or 120 cow farm? When the small producers are all gone, who will be left? Is this who wields the influence in D.C.? When our senators look across the Senate floor, do they see representatives of the interests of family farmers, or do they see patrons of industries that stand to benefit by mega-production and big capital? Out here in the hinterland, there is no clear answer.

Yet I do not doubt the sincerity of my own Congressmen who have grappled with this issue. What I do doubt, is whether they have heard the tone of frustration in their constituency. Do they realize fully the implications for rural areas of a dairy depression?

Were dairy farms to disappear from my town, we would have absolutely no industry, not even the $5 and $6 an hour jobs that some of the larger farms offer.

On the other hand, if the farmers in my town were delivering dollars to their bottom line, I know that those dollars would be seen again: wages might inch up and procure some consumer goods and durables; some long overdue equipment might be purchased; there would be improvements to buildings. To me, that sounds like economic development. And, for some sizeable chunks of land, it also means an insured future of the open space, that, in a bald economic sense, means tourism.

Solutions? What I hear from people is that they don't see that our federal government has made the commitment to small, family -owned enterprises. They do see that government has pushed farmers toward debt and higher production. Politicians should capitalize on urbanites' desire for a greener environment and vote for the form of agriculture that best gets us there. A concrete first step would be for Congress to sanction and indeed encourage the formation of regional pricing compacts to raise the prices of farm products to the break-even level so that our small producers may remain in business.

As part of such legislation, there should be a nominal, short-term, federal milk tax, the proceeds of which would create a pool of capital available through the USDA to localities seeking to add value to their fluid milk. Across the river in New Hampshire, when a local milk bottler was bought out recently, several farmers had their market jeopardized overnight. Now some groups wish to capitalize these farmers to supply the local market. This excellent idea would stimulate our local economy, in no way add to the surplus, and demonstrate that our national problems can be solved locally. All that is lacking is the capital. Federal monies could create the necessary capital pool, which, as loans were re-paid, could be used by processors to upgrade facilities. In this way, the dairy industry could stem the loss of the smaller processor--yet another endangered business.

Second, let's let regions that generate surpluses of milk pay for them; let regions that require water projects to sustain agriculture pay for them, too. In short, let's combine the streamlining of the USDA with a regionalization of farm policy. The political face of the coalition necessary to accomplish such a reorientation of our goals probably looks very different in Washington than out here in the wilderness of sparse rural votes--where organized lobbies tend to portray their constituency as dyed-in-the-wool conservatives hostile to reforms, regulations and environmentalists. While this might be 60% true, the dynamism of the grassroots today is generating fruitful dialogue between left and right. The area of agreement is in the consensus on scale: government is too big, agribusiness too powerful. A regionalization of agriculture might be feared in Washington by those whom it would disenfranchise, but there is broad acceptance of it across the country by people with a variety of goals and backgrounds. Let's bring this communitarian approach, heard in Nebraska and California as well as Oregon and Vermont, to Capitol Hill.

Third, let's shift from characterizing farmers as being yet another special interest, more or less deserving of handouts, to keying in on their role as productive members of society whose efforts promote peace, prosperity and, with sufficient resources, environmental quality. This can be a normative assumption The wetlands issue, for instance, has been used by powerful lobbies to whip up sentiment against regulation. What's conveniently overlooked is that the small farmer is generally not the fellow who plows fence row to fence row. With some incentive, the small farmer is pre-disposed to conserve. This applies to the Western state where the small rancher is actually a valuable conservator of front range wintering areas as much as to Vermont's farmer owning a woodlot. Equally, as noted before, dairying is one of the few industries actually located in many rural areas, and, if maintained in the hands of the small producer, would re-direct profits into capital improvement that would benefit surrounding communities.

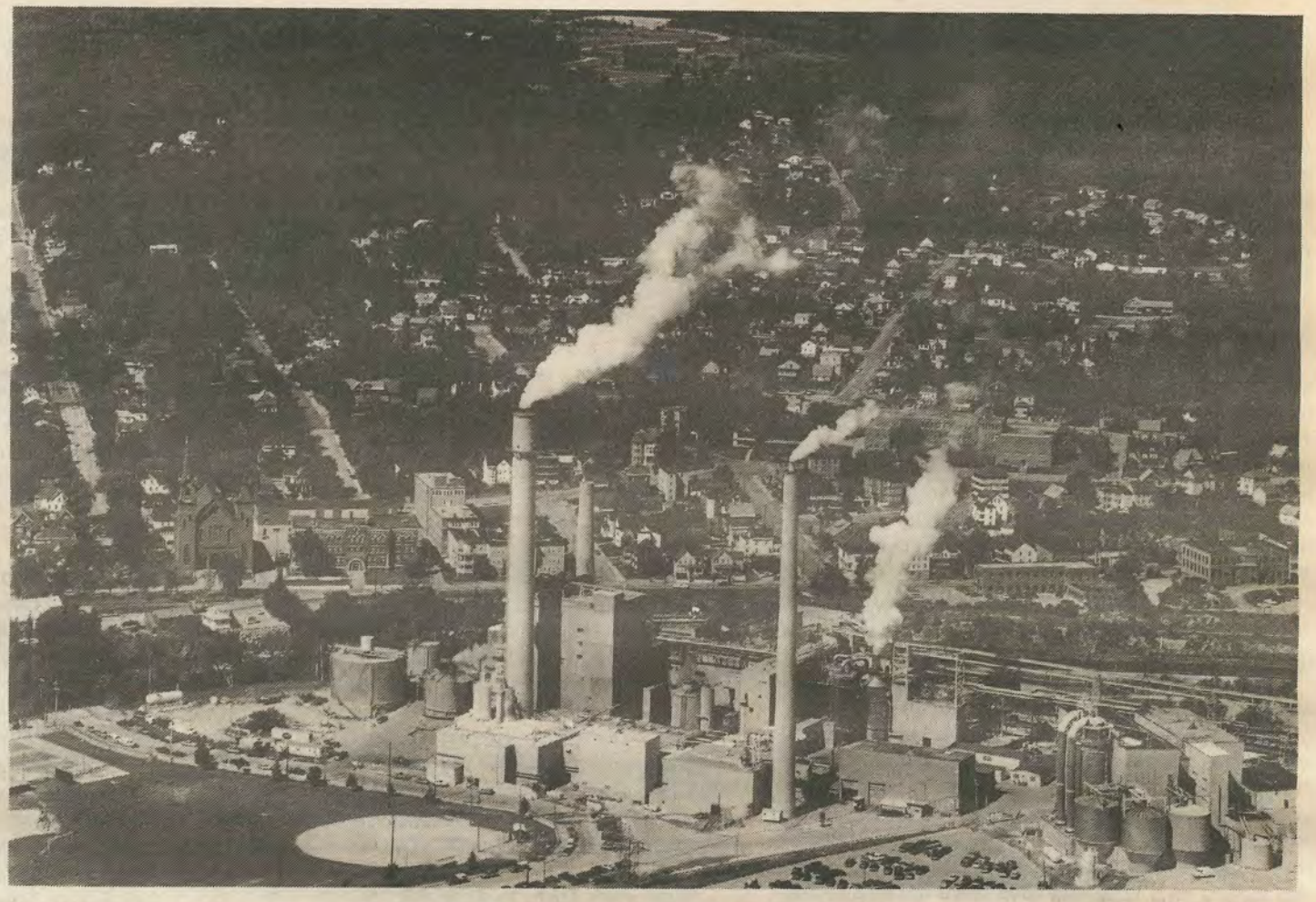
Finally, let's rid our foreign policy of the imperative to ram down the throats of foreign nations the surpluses that are the evidence of our own excesses. Instead, let's link arms with small farmers everywhere, from the small rice growers of Japan to the fledgling agriculturalists of Russia. Profits are to be had in domestic markets, if anywhere. The high costs of a foreign policy that does not care about honoring such markets are to be seen in Somalia today, where distribution of imported food must be a costly military enterprise, and a country such as Costa Rica, where local agriculturalists would as soon grow beans for domestic consumption as bananas for export, which are produced in ways that degrade the environment. The cheap commodity cheapens everything around it, so that consumers may benefit. What they lose, is viable agriculture.

Sound agricultural policy is not subsidy for farmers. An unsound ag policy that depletes the resources of rural areas is subsidy for the consumer. Washington must press for new policies, built on growing awareness and concern for the long term impacts of humanity on the planet, that reinforce the family farm.

Sincerely,
Andrew Whittaker

NH Mill Community Searches for Economic Diversity

by Barbara Tetreault



Dioxins and other organochlorines discharged from this James River Corp. mill in Berlin, NH into the Androscoggin River travel through Maine and out to sea. Photo by Alex MacLean--Landslides.

For over 100 years, Groveton has been a paper mill town and it was accepted as a given that residents could depend on a job at Groveton Papers Company.

When James River put its three northern New Hampshire mills, including the Groveton plant, on the market in August 1990, the action was a rude awakening for the entire region. By some estimates, 70 percent of the local economy revolves around those operations.

While the larger Berlin-Gorham operations attracted most of the media attention, the shock waves were felt just as strongly in Groveton and surrounding towns.

With little in the way of job diversity, the mere thought that the Groveton mill might close forced some residents to take a hard look at the economic structure that exists here.

An economic development corporation, STA-NORTH, was formed by residents of Northumberland (the official name of the town that encompasses Groveton), Stratford, and Stark. After a painfully slow birth, it moved this January to sponsor a series of strategic planning sessions.

Approximately 40 people, ranging from town officials and farmers to business people and blue collar workers attended the first session. Many participants were skeptical that the sessions would result in any positive returns.

But through a critical look and analysis of both the region's strengths and weaknesses, the sessions have fostered a needed self-examination.

Among the things identified as strengths are the beautiful physical environment, the outdoor recreational opportunities, the sense of community that exists here, and a diverse skilled labor pool.

Weaknesses ranged from an underappreciation of the natural environment and inconsistent land use controls, to alcoholism and a brain drain of young people leaving the area to find employment. Part of one session was spent discussing the need to foster a sense of entrepreneurship that appears to have been lost.

At the last session, participants divided into four groups to take the strengths and weaknesses and begin to develop them into opportunities and threats in specific areas.

The groups were agriculture and forestry, the development of community spirit, tourism and recreation, and business and industrial development. The hope is that each group will eventually come up with some specific projects that can be developed.

A fourth session was scheduled for Feb. 12 but was postponed by a development that seems promising for the group's efforts. North Country Council Executive Director Preston Gilbert, who has served as facilitator for the sessions, reported that the Northern New Hampshire Foundation has received a grant to help two communities in the state, and one of those chosen was the area encompassed by STA-NORTH

According to a letter sent to Sta-North, a project is being put together to study and assist in the development of sustainable economic activity in the communities. Since that goal is compatible with the objectives of the planning sessions, it was decided to look at how the two efforts could be merged.

On another front, STA-NORTH has been looking into the possibility of establishing a local dairy in Northumberland to bottle milk from two farms there. It may be too early to gauge the success of these efforts. Certainly, there is a need for more people to get involved. But by one measure, the fact that the planning session and the work of STA-NORTH have caused residents to look at their communities and future, is encouraging.

Throughout the sessions, there has been a growing realization that there will be no white knight riding into town with a factory of well-paying jobs.

While James River has signed a letter of intent to sell the Groveton mill to Wausau Paper Mills, it is clear that the erosion of jobs that has occurred thus far is unlikely to be reversed.

If job opportunities are to be created, they will most likely be by local efforts. The sessions have stressed the point that development of cottage industries and small forest-based industries emphasizing value-added products is the direction this region should take.

Local ownership returns control of the future to the region. One frustration for area people has been that decisions regarding the economic mainstay of the entire region are made in Richmond, Virginia.

Some famous person once wrote that a journey of a thousand miles begins with one step. Maybe the first step for this region to regain its economic independence has now been taken. That doesn't mean the journey ahead will be smooth and without pitfalls. It only means that we have begun the effort of moving forward.

A native of Groveton, Barbara Tetreault is a news reporter who frequently writes for the ***Union Leader****.*

Dioxin Decision Due

by Jamie Sayen

The Maine Board of Environmental Protection (BEP) will announce its decision on Governor John McKernan's proposal to relax the state standard on the discharge of dioxin (2,3,7,8 TCDD) into Maine's waterways on March 24.

Currently, the US EPA's standard of 0.013 parts per quadrillion (PPQ) is in effect in Maine. The paper industry--in yet another example of industrial blackmail--argued at tumultuous public hearings on November 5-6 and 24--that it would wreak economic hardship on the billion dollar, Fortune 500 corporations, even though only two of Maine's paper mills are out of compliance with the EPA standard. McKernan's proposal would weaken the standard by a factor of nearly 40 to 0.5 ppq.

At the November BEP hearings, paid industry "experts" assured the Board that the risk industry is taking with our lives and the lives of every organism that lives or feeds in the rivers and estuaries of Maine's largest rivers is "acceptable."

Citizens from all walks of life, led by a contingent of Penobscots who rely on subsistence fishing as a mainstay of their diet, declined the honor of being poisoned for the sake of industry profits that leave the state. The Natural Resources Council of Maine (NRCM) coordinated the opposition to the McKernan proposal. Their unpaid scientific experts told the BEP that dioxin is probably worse that feared. NRCM also helped coordinate grassroots participation in this process, demonstrating that when mainstream environmental groups work with grassroots activists, we form a very powerful coalition.

There were several disruptions during the emotion-charged hearings. At one point a stinky substance cleared the hearing room for over an hour on November 5. And, because so many ordinary citizens insisted on testifying against the poisoners, an additional day of testimony for opponents had to be scheduled.

Industry based its argument on the claim that other states also place profit ahead of public and ecosystem health, and if Maine were to act responsibly (and reject McKernan's proposal) Maine's paper mills would be at a competitive disadvantage. It's the familiar line of blackmail industry always trots out to oppose socially responsible legislation: "If you do something we don't like, we'll leave and you'll all lose your jobs."

Well, folks, they haven't left yet, and still the jobs are disappearing.

But the heart of the economic issue is: chlorine-free bleaching processes exist. Chlorine bleaching of paper produces dioxins and hundreds of other highly toxic organochlorines. So, who should foot the bill--the poisoners or their victims?

Please attend the March 24 BEP hearing and register--again--your absolute opposition to chlorine bleaching. It's 1993--time to be chlorine-free!

For more information contact Evelyn deFrees of NRCM at 271 State Street, Augusta, ME 04330. Tel. 207 622-3101.

A Talk with John Collins - Chairman of Adirondack Park Agency

John Collins was appointed Chairman of the Adirondack Park Agency (APA) in September 1992. He has served on the APA since 1984. From 1965 through 1984 John was chairman of the Town of Indian Lake Planning Board. Despite this lengthy and impressive record of public service, he views himself first and foremost as a fifth grade school teacher at Long Lake, a job he has held for 23 years. Every year he takes his fifth grade class on several day hikes and one overnight campout in the wilderness. John Collins is a fifth generation Adirondack resident.

Forum: The Adirondack Park is a mix of private lands and public lands owned by all citizens of New York. What are the benefits and problems created by a public-private park?

Collins: We have six million acres of land set aside as park. 42% is wilderness by law, if not in fact. That is wonderful. I hear people say "It can't be wilderness, we cut it all down a hundred years ago." I say it's wilderness. It may get wilder, it may get older, it may get better, but it's already a wilderness, and it's going to get more so as we go on. I think we need to be alert, concerned and smart about how we deal with that wilderness. We're going to squabble about how to manage or leave our wilderness alone.

When we move to the private land the argument is much broader. The concepts are much fuzzier and the understanding is much less certain about what's private land in the Blue Line as compared to private land in Saratoga County outside the Blue Line or private land anywhere in the country. Most of us recognize that because of the Park, we have great advantages, but we're just rural enough, just stubborn enough to think: "Well, so what are all those advantages, what about my one sore thumb? What about this disadvantage of having somebody tell me what to do with my land, or some of the things to do with my land? Isn't the sore thumb the thing that I should worry about and not all the rest of me that is well and healthy?"

Forum: Doesn't the development of private lands benefit the residents of the Adirondack hamlets?

Collins: Look at the people who have made money from developing the Park. It's not those of us who live here. There are a few and they are entitled to their success, but overall the money that's been made on the condominium development and on the summer second home development has gone into the pockets of outside financiers and outside developers. It has gone very little to help the local people.

Forum: Don't the residents of the Park have a right and need to make a decent living so that they aren't forced onto welfare?

Collins: The type of restrictions that the Adirondacks now have--the APA Act, the act I'm charged with administering--do not prevent people from developing their property. The Agency Act does require that development be done at certain standards. I don't think that there is a single example--when separated from the emotionalism that often accompanies all this--of land being devalued in any way by the restrictions put on that land by the APA Act. The restrictions are not very onerous. They are reasonable.

Yes, the Agency has taken shoreline wetlands that could probably have been sold to some sucker for a $1000 a front foot and said "you can't develop." If that's what somebody means by their heritage was taken from them, I would suggest they check in with God. He's the one who put the swamp there, or the beaver. The Agency just said, "If you're not sophisticated enough to know we shouldn't build in wetlands, we are."

Forum: What economic options and opportunities are there for native Adirondackers to support a family without damaging the environment or being reduced to poverty?

Collins: The word that concerns me in your question is "reduce" my ability to make a living. I think that if one wants a sustainable means of earning a living from Adirondack land, it's pretty reduced to start with due to factors such as the long winters, the glacial till, and the lack of transportation. This is not farming country. This is not land that is going to provide a high level of existence, if one depends on the land alone.

I think for local Adirondack people to be assured of being able to have a decent living in the park, they have to have some skills that they would have to have outside the park too. Skills that interface with the 21st century. Do you want to work for the tourist industry? Then you should think "that's what my land

My grandfather was the Caretaker at Sagamore from 1900 until 1924. One of his responsibilities was to have all this land and all land that JP Morgan owned at Uncas posted. His further responsibility was to keep his neighbors and some of his relatives off of it, because it was no longer open hunting and fishing ground. There was a great deal of hard feeling, there was also a great deal of sport in it. I'm speaking now from my family tradition. The sport was for my grandmother's brothers and sisters to beat RJ, my grandfather.

that isn't developed is doing. It's bringing people into the park to leave those hundred dollar bills..."

For lots of our local people, there are jobs available if they would prepare themselves. The DEC people have decent jobs in the Park. Those are available to local people if they want to prepare themselves.

It's hard for me to listen to Don Gerdts and others rant and rave about how this park is overwhelmingly poor people of the Adirondacks, when many people have not done a very good job of preparing themselves for life in the real world, whether it's in the Park or out of the Park. I'm sure that's a rural phenomenon, that's not just an Adirondack weakness.

Forum: Why was the APA created?

Collins: The APA is very definitely a child of the late 1960s economic boom. The 70 million or so people who are within one day's drive of the Adirondacks suddenly realized "Look at this!" So we built a Northway to make it easier for those people to visit for a day or a weekend or a week. Then we filled their pockets with money and taught them about credit cards and suddenly a lot of people thought they should have a second home in the Adirondacks. The Adirondacks suddenly became very popular and this put it under a lot of pressure. When faced with that huge push, there was a powerful pressure on the feds and the state to do something. Governor Nelson Rockefeller created the Temporary Study Commission on the Adirondacks in 1970.

At the time, some of the huge proposed development projects would have doubled the population of the Park. And these were fly-by-night companies. They had a poor track record even then. And they made the environmentalists work easier by being there. Even with all that, the realtors, the developers and the local politicians were very concerned about doing anything to stop development. At that time, and it's true to the present day, the local governments saw second home development as next year's increase on the tax base. They didn't look at it in five years down the road as an increase on the responsibilities of the town. But they sure saw that increase on the tax base in the first year...

Forum: Does the current resentment against the APA and the Park itself predate the creation of the APA in 1970?

Collins: There was hostility to the Agency primarily on the part of real estate developers, the attorneys who worked with and for the developers, and the outside interests who had their eye on the Park as a great real estate plum. The question I've never been able to resolve in my own mind is: why were the local people so hostile? Was it a lack of leadership on the part of the people charged with providing the protection the Park needed? Or was it just the natural rural, conservative distrust and lack of acceptance of governmental intervention in the affairs of men. Probably it was both.

Forum: Was there resentment against the creation of the Park in the 1880s and 1890s?

Collins: The first resentment that I'm aware of grew out of the game laws from around the 1920s. They were highly resented and almost universally ignored in the first few years. And it took some very tough game wardens to enforce them.

Everybody needs to be aware that although we celebrate the hundredth birthday of the Park this decade [from 1985-1994], there was no Park in the minds of the people until the APA was created. There was the state land, and it was forever wild. There was the AP sign law which didn't effect very many people. It angered some local merchants... There were the game laws, and although that was not necessarily the Park, they were obviously more a propos in the Park because that's where the game was.

The Agency was the first stab at trying to come to grips with private land within a state park. We were bound to have people who just didn't want any regulations. I'm a local person, and I came to see that we have to control and restrict and bureaucratize what we're doing with our land so that it is not just chewed up.

Forum: What are the principal tasks facing the APA?

Collins: There is no question that tomorrow's job for the APA is to regulate. If we don't regulate, we'll lose the whole thing. But, that can't be our singular role for the next hundred years. We have got to get into educating and leading so that we are informing and not regulating the people about the need to have a sustainable relationship with where they live, so that we can have a park and have people who live here. Let's regulate today because we have to, but let's work towards educating and teaching appreciation for what we have.

Somehow the Agency, the State of New York and the world at large have to show the people who live in the Park and the people who live outside the Park and support it what it's tremendous advantages are. We bus the school kids to New York City, supposedly to show them the greatness of the City, but it's not above me to point out the dirt in the air, the grime in the eye...

The third task of the Agency, the major task of the Agency, which we're not doing too well right now, is long range-planning. What should the Park be like? How can the Agency and the State best respond to the needs of the park, the people who live in the Park, and the people of the state who own the Park. What are the appropriate tools, what are the types of decisions, what are the questions that have to be asked for the agency and the State of New York for the long-term as they look at the Adirondacks.

One of the best things I can do is ask the Agency Commissioners and planning staff "What is sustainable? How can we stay here? What will make the people here understand and realize that it is their place and that they have to be responsible for it?" Those are the questions that have to be asked.

I know the agency can do a better job if we can get its morale back up. If I can get a sense that we are making progress on that enormous backlog. It's just overwhelming to that staff. There is about a six-month backlog.

Forum: What is your long-term vision for the APA?

Collins: The long-term vision of the APA is to steer development toward those areas in the park that are most appropriate for development. At the moment that appears to be the areas in the hamlets and just outside the hamlets. More and more I think the Agency's sense--although it is certainly not policy yet-

Continued on Next Page

Collins

Continued from Preceding Page

-is that resource management and rural use [the two most rural zoning areas of the park] are not areas that are appropriate for development, even though our law permits development there. Our law also talks about appropriate development and cumulative impact.

I think as the agency matures and looks at the park and sees where it has been and where it is going, it is becoming more and more apparent that there are places that are much more appropriate for development in the park. Our role is to steer development that way, to make the rules and regs read and work in such a way that developers are attracted to those areas, rather than to areas where development is not appropriate. We need to always, always, always keep in mind the economic needs of the people of the park and the people of the state. We need to look at value-added type of practices rather than just something that is going to give the quick fix of today and be gone tomorrow. We need to look at things that ought to be done in the park vs. things that ought not to be done in the park.

Forum: Does the APA have the power to factor cumulative impact into the permitting process?

Collins: We have the power. We don't have a thorough understanding of what it means, and we don't have the resources to measure. We use the concept of cumulative impact sometimes to call for a public hearing. There was a project on Lake George to put 150-200 more condominium in the town of Bolton Landing. One of the reasons we gave for taking that project to public hearing--which is what we have to do if we are going to deny it--was somebody needs to stop and look at current use. Yes, the density says you could have 150 condos here, but it also says you could have 150 there, and at some point we think there are going to be too many condos, there might already be too many condos. We need to look at that.

For the large Patton Realty-type of lots in our back country, we use cumulative impact. One house in the wilderness? Three houses in the wilderness? 35 houses in the wilderness? Wait a minute! What are we doing? That's cumulative impact because none of our other standards for development are adequate to say that development is not appropriate there, and yet it is pretty obvious to a majority of us that development is not appropriate at that level in that space.

***Forum**: Can we sustain development in perpetuity?* Can every generation continue to develop at today's pace?

Collins: The obvious answer is no we can't do that in perpetuity, we can't even do that in the Adirondacks for 25 to 30 more years.

Forum: Does this generation have the right to use up all future development options in the next ten years or so?

Collins: I think we have to put into our thinking the theory, the concept, the practice of re-use. I have said for ten years--not as an agency commissioner, but as a private citizen and as one concerned for the park--that it's time to close the gates, because we've got to close them sometime. That's obviously a figurative term. What does that mean? I say it means current use zoning in the resource management and rural use areas. If the APA doesn't understand that we cannot just continue to develop and develop and develop in the park, then the APA is just gridding the park up and overseeing its sale.

Forum: There is some limit, whether or not we agree where the limit is, we all agree there is a limit. And you're saying we've already passed it?

Collins: That's right. I'm saying, close them now. No matter how loud the yell is, it's less than it's going to be ten years from now. Now's the time to close the gates.

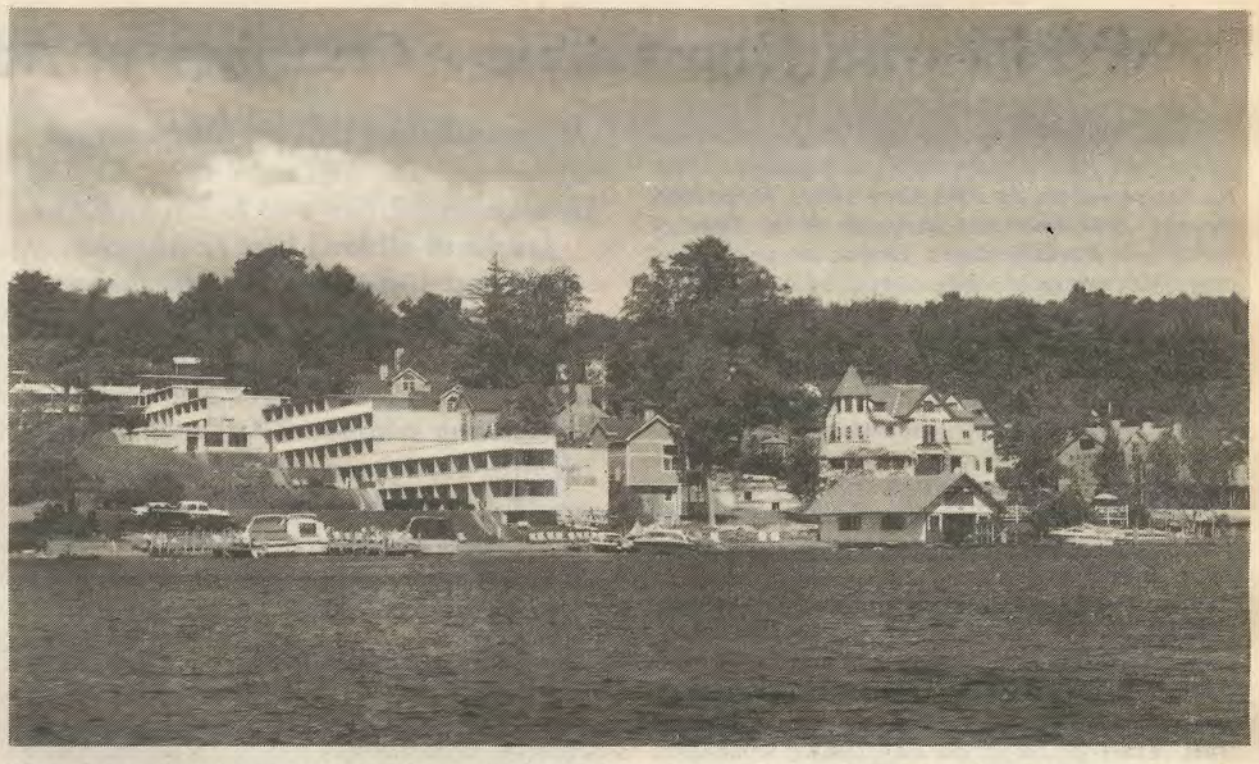
Forum: Are there people who say we can continue this rate of development for the next hundred or thousand years.?

Collins: There are people who say we shouldn't talk about birth control.

Forum: Many people acknowledge there are finite limits to the amount of development that can be done.on a finite planet, in a finite park. They may dispute where the line has to be drawn, but they don't dispute the fact that there is a limit.

Collins: The thing that scares me the most is the people who say, "I'm only in this for the 5-10 year period. You know, I don't think beyond 5 or 10 years." There are a lot of thinking people who pull that curtain because it's too vague and too uncertain and too unpleasant [to contemplate the long-term].

Forum: Do these people plan for their financial retirement or for their children's education, or do they apply that 5-10 year rule for those things too?



Shoreline development, such as Tahoe Resort on Lake George, threatens some of the most beautiful, undeveloped tracts in the Adirondack Park. Backcountry development of forestland, while less visible, is equally threatening. Local residents of the Park do not see the profits generated form this sort of development project. Can the APA protect the Park's ecological integrity? Photo © Alan Cederstrom, courtesy The Adirondack Council

Collins: Good question. I don't know. You can ask, "Do you really hate your children so much that you don't want them to have an opportunity? Can you not forego this development urge?"

Forum: 42% of the land in the Park is owned by the state. What is the percentage of land owned by small owners who live in the park full time.

Collins: 58% is privately owned. About half of the private land is paper company land. About 20% of the private land is held by large landowners--the Adirondack League Club, the Ausable Club. Only about 15% of the entire park is owned by the people in the park, and most of that is in the Champlain Valley and the eastern edge of the park.

Forum: What if we exclude the more developed eastern edge of the park and talk only about the back country of the park. Then, what percentage of those hamlets is owned by the people of the park?

Collins: Under 5%; probably significantly under that.

Forum: In the November-December 1992 issue of *Adirondack Life*, Bill McKibben writes that the Adirondack Park is a great experiment to demonstrate that people and wilderness can coexist. What's the value of wilderness for someone who's living in a park that has so much wilderness?

Collins: I think we're terribly lucky to have someone as astute as Bill to look at it and say that that's true. Those who hear the sounds of bulldozers and backhoes roaring down the street in our sleep and in our dreams ask "Is that the only way to survive here? To wreck it?" It's not the only way to survive here; Bill's right. There's a long track record of people living here.

Can we live with wilderness? Yes we can live with wilderness without wrecking it. It means living so that we take our riches where they lie, which is in being able to step out the door and breathe the air and see the sun and cross the street and walk into the Blue Ridge Wilderness and see the old growth. Those are the things that are worth the income you give up. Now you've still got to have an income. Abject poverty is not acceptable in New York City and not acceptable here. We have an awful lot of poverty. I think we have rural poverty. I don't think we have an awful lot of the dirt poor, hungry children, malnourished adults, unsuccessful pregnancies type of poverty.

Forum: Rural poverty, not abject poverty?

Collins: Right. And not urban poverty. I would rather be poor here than in a city. In that sense I think we can live well with wilderness without wrecking it If we recognize it as our wealth. Our cousins and sisters and brothers who have moved out of the park and live in a high rise in New York and spend all that money. I don't think they live as well as we do. They have second homes here; I don't have a second home in New York City. (Laughter)

Forum: What is the value of wilderness to you? Is it a luxury or is there something more to it?

Collins: With absolutely no facetiousness, I think the most important aspect of wilderness to me is knowing that it's there. I don't even have to see it or be there. I have a touch [of the attitude] that if I'm there, it isn't wilderness right where I am. (Laughs) You can never really see wilderness; you can never really experience wilderness because when you're there, it ain't.

Having said that, I would say that personally I don't know anything nicer than a walk through an old growth forest with one or two other people and in an innocent and playful way compete to see who can see the most. "What do you see? What do I see? What do we see? Look at this. Look at that."

In between those two extremes of what I think of wilderness, it replenishes water, it replenishes air, it provides home for creepy-crawlies. Those are things that we don't provide for in our lawns and in our paved highways and our parking lots.

The fourth thing is all the things that wilderness provides that we don't have any idea what they are and may never. It's a huge treasure resource of things that we don't know. I'm certain of it because every now and then something pops up, for instance what we are just learning about old growth forests--forests are not a crop. You can't farm a forest generation after generation. You need that death and resurrection of old trees, the mycorrhizal fungi...

This is why wilderness is, in and of itself, worth having.

Forum: Is there an economic role for the APA in helping to promote more value-added job opportunities and to assist with marketing those products?

Collins: Yes, there is a role. We have one staff person who's our economics person. He spends most of his time attending the different economic development administrative boards within the park--county and regional boards. He meets with prospective business people--large or small. There is a role for the Agency; there's a role for the industry. [Standards that businesses have to deal with in the park] really aren't much tougher than they are anywhere else. Nobody today allows industry to dump junk into their rivers if they can help it. It isn't the Agency that's holding back business. It's the location. It's transportation primarily. And then it's location. [Except for wood products] there isn't much reason for industry to come here.

Forum: Whenever there is a mix of public and private land, the issue of coordinated management of these lands is raised. How can the APA regulate forestry on private lands so that it does not adversely impact the ecological integrity of the state lands?

Collins: The agency can't regulate forestry in any way except for clearcuts. When something is subject to a permit, we have called for forest management plans on those tracts. Our rationale is that we want

Continued on Next Page

NY Legislature Ponders Adirondack Legislation

by John Sheehan
Adirondack Council

There are at least four bills under consideration by the New York State Legislature which could prove beneficial to the environment and economy of New York's six-million-acre Adirondack Park in 1993.

The 1993 session is expected to be a wild one, with lots of surprises and plot twists to keep everyone guessing.

In the Legislative branch, the Assembly has signalled a return to bi-partisan support for protection of the Adirondack Park's most sensitive regions, with quick action on its version of an updated land-use plan for the Park.

Assembly Speaker Weprin (Queens) seized the initiative by embracing the bill crafted in 1991 by now-Congressman Maurice Hinchey (Saugerties), the former long-time chair of the Environmental Conservation Committee. By placing his name at the top of the list of sponsors, the Speaker assured passage in the Assembly and offered to help negotiate an agreement with the Senate on Adirondack policy issues. New EnCon Committee Chairman Richard Brodsky (Westchester) also lent strong support to the legislation, guiding floor debate.

Both Brodsky and Weprin noted that the bill is the same as the one passed by the Assembly late last year, but felt they should pass it much earlier this year to give the Senate extra time to come to an agreement.

The Assembly passed its Adirondack land-use bill by an overwhelming 105-39 margin on January 25.

In the upper house, there seemed to be more interest in reaching a settlement on Adirondack Park protection measures than in years past. Senator Ronald Stafford (Plattsburgh) has been instrumental in blocking the Assembly's recent attempts to tighten loopholes in the Adirondack land-use plan. But Stafford has said in numerous press accounts this winter that there may be some portions of the Assembly plan he would look favorably upon.

Further, Governor Mario Cuomo said during his January 6 State of the State address that he had received word from Senate Majority Leader Ralph Marino (Muttontown) that the Senate is interested in creating a fund this year to pay for environmental priorities. An attempt at an agreement fell apart last year when the Legislature could not agree on whether to include money for land acquisition and easements in the Adirondack and Catskill Parks.

In the Executive branch, Governor Cuomo has also renewed his commitment to positive change in the Adirondack Park by proposing legislation with goals similar to those espoused by the Assembly.

Essentially, both the governor and the Assembly have two goals in mind. First on the list is updating the Park's 20-year-old zoning laws, to tighten the loopholes and make the rules easier to follow. Second is a plan to create an environmental fund to pay for a variety of needs, not the least of which are conservation easements and land purchases. The state has been without such a fund since 1990.

Action to date includes:

*Passage of the Assembly Adirondack land-use bill January 5 with strong support from both parties.

*In his January 6 State of the State message and his 1993-94 Budget message the Legislature, Governor Cuomo outlined proposals for protecting open space and natural resources, which include a $9.5 million annual fund for easements and land purchases, as well as millions more for landfill closure grants and water and sewer projects; hundreds of thousands of dollars for local land-use planning assistance, new positions at the Adirondack Park Agency (which governs land use in the Park) and for farmland preservation programs. These proposals are being discussed now and should be either accepted or rejected by the Legislature on or before the April budget deadline.

Still awaiting action:

*Governor Cuomo is also expected to promote his own package of land-use reforms for the Adirondack Park, focusing mainly on protecting undeveloped shorelines and unbroken forests, while increasing economic opportunities within the already-settled areas of the Park.

*A second Assembly bill may appear soon, which would provide a dedicated source of money for environmental projects throughout the state, including conservation easement and land-purchase money for the Adirondack Park and Tug Hill, as well as the rest of the state.

Assembly Land-Use Plan

The bill passed by the Assembly on January 5 is the third attempt in as many years by the Assembly to reach an accord with the Senate on what is right for the Park. The bill passed by the Assembly this year is very similar to the one which passed last year, with the exception of some minor technical differences. The bill received wide bi-partisan support both last year and this year. Since it was very late in the Legislative Session last year when the bill was first considered, Speaker Weprin said he felt the Assembly should pass it right away to give the Senate more time to craft a response.

The Assembly land-use bill's major provisions include:

Farm and Forest Fund: Creates a permanent fund to help local governments cope with the loss in property tax revenues when farmers and forest-owners take advantage of tax shelters in state law. Millions of dollars would flow annually from fees imposed on luxury recreational amenities, owned mostly by visitors and seasonal residents, based on the system already in use in the Lake George area. That money would flow, with no strings attached, directly to local governments as a means of encouraging the preservation of open space and rural jobs.

Residents Homestead Exemption: This allows Adirondack residents to subdivide family property for use as a residence by another family member regardless of the building density regulations contained in new or existing regulations.

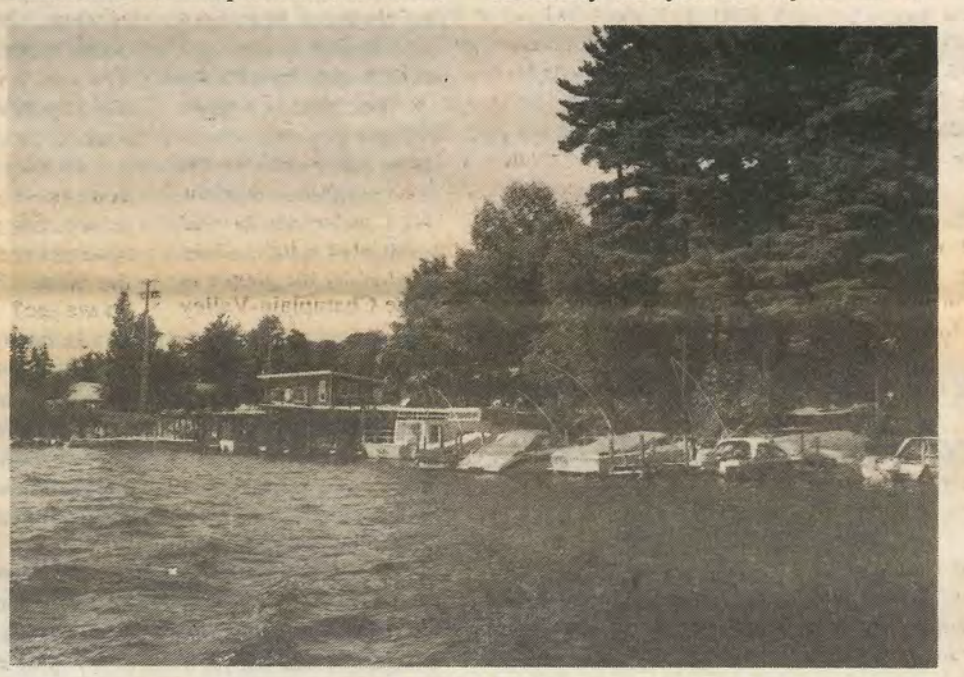
Adirondack Park Agency: This bill would, for the first time, allow the APA to charge a filing fee for permit applications. The fee would be nominal for small projects and increase in proportion to the scope of the development. Further, the APA would be directed to codify current policies and guidelines into new regulations and performance standards that the public can understand and rely on.

Shorelines and Backcountry: The Weprin bill would give the APA greater jurisdiction over undeveloped shorelines and restrict land-use in the most remote and sensitive areas of the Park to traditional uses, such as forestry, farming and recreation.

Cuomo's Land Use Plan

While this bill could well be the negotiating piece for the Senate, Governor Cuomo is expected to wade in with his own land-use package soon. The governor's approach to preserving timber lands includes offering tax breaks to timber companies and other large

Continued on Next Page



What is the cumulative impact of shoreline developments such as this one at Bolton Landing opposite Green Island? Photo © Alan Cederstrom, courtesy of The Adirondack Council.

Collins

Continued from Preceding Page

forestry to continue to be a viable opportunity in the park and therefore if applicants say that they plan to continue forestry on their land, we say "That's wonderful. Let's see how you are going to do it." We have no way to get IP or other large owners to submit their overall plan for forestry for the lands they own in the park, unless they are seeking a permit on some part of those lands. [The power to regulate all forestry] was left out intentionally in the political wrangling to get the Agency Act in 1970. It's a weak spot in the Agency, but it's not going to be fixed immediately.

Forum: What is the general condition of the private forest lands in the Park today?

Collins: I think we've highgraded the park to the point where there aren't a lot of quality sawlogs here.

Forum: What role can the APA play in improving the educational and cultural life in the Park?

Collins: The primary cultural impact the agency can have and should have is through the visitor centers where we're trying to explain and interpret the natural history of the Park. They do fun things. They conduct workshops for kids. They build bluebird houses. They teach the kids how to conduct very simple acid rain checks.

This goes back to the issue that the agency's primary role probably should not be regulation, but information so that people recognize what they have here and will protect it.

I think the visitor centers have never been appropriately staffed. They have been barebones, relying on volunteers. They should be better funded. It would take very little money.

Forum: What are the major improvements to the Agency that you would like to see?

Collins: I would like to see the bureaucratic impediments removed so that the process works as the law says it should. To complement that, I would like us to look at the law and fix our rules and regs so that we do a better job of protecting the park. You can get your permit quickly, but it's going to have some [strong conditions]. We need to rev up so that we really are aware of cumulative impact. Because there are so many lakes, we need to know more about lakes and recreation, and use and carrying capacity.

The other thing I would like to see is some way for us to figure out what is really important when you grant a permit. What is it that you really should be watching out for. I think that we have a pretty good handle on that, but I suspect that we could refine it a little better, and then figure out how to get that information. A nightmare for me is that in 20 years we'll look back and see that we granted a permit for something that we thought was a minor problem and it may well turn out to be more important than that. I would rather know more than we do now.

Since I have been chairman, the Commissioners have spent a considerable amount of time together discussing our planning process. It's not doing all that we want it to. It's not the planning department's fault. We are not giving it the instructions and the vision [and the proper level of staffing and funding].

Forum: Why would you like Adirondackers to support the continued existence of the APA?

Collins: Because they'd be crazy if they didn't. Many people say "We've got to keep our way of life." I respond that what we can be assured of keeping is our land, and we can prevent change from happening too fast, but things change.

If we want to see the uses of the land controlled. If we want to see the land protected from the very few who could lock us out of everything, if we want to see the water kept open and as clean as possible, then we obviously don't want to see a Queensbury or a Colonie... [We need the APA.]

Adirondack Legislation

Continued from Preceding Page

landowners in exchange for written agreements not to develop their lands for a specific period of time.

The governor's bid would also make it more difficult to create destructive and unsightly shoreline developments by enlarging the definition of "critical environmental areas," where APA jurisdiction is triggered.

Cuomo's Environmental Assistance Fund

The governor made a bold move this year by including his environmental funding proposal in the annual budget, rather than waiting until after the budget deadline of April to discuss the matter. By doing so, the governor has sent a message to the Legislature that he is serious about protecting the state's environment and that something must be done this year to solve pressing needs.

His fund includes $9.5 million for land preservation, which could include the purchase of Follensby Pond--a 14,000 acre tract adjacent to the High Peaks Wilderness, which is the site of the 1858 Philosopher's Camp hosted by Ralph Waldo Emerson. The purchase price is reputed to be roughly $4.6 million. While the tract is not specifically mentioned in the budget, it is high on the state's short list from the Open Space Conservation Plan. Further, the state's option to purchase Follensby expires this summer.

The fund also includes $300,000 for local land-use planning in the Park, $2 million for property tax breaks for large landowners and another $300,000 for farmland preservation.

The entire fund would amount to $58 million in 1993-94 and includes money for landfill closure, recycling, water projects, sewage systems, municipal parks, historic preservation, coastal programs and Great Lakes protection.

In fiscal year 1994-95, the fund would increase to $150 million, and would slowly rise to a $270 million annual fund by 1997-98.

Assembly Environment Fund

The Assembly may create and pass its own environmental fund bill for this year, although no details have been available to date. Since the governor has included his fund in the state budget package, the Assembly may forego the passage of its own bill and simply work with the Senate to negotiate a deal on the Governor's proposal. The fate of the governor's bill is likely to dictate the Assembly's actions. If it is eliminated from the budget by the Senate, the Assembly may try again before the session ends in July.

What You Can Do:

The Adirondack Council has a well-established Statewide Activist Network to direct volunteer efforts to protect the Adirondack Park. The Council has also created an Organizational Activist Program to coordinate information and the efforts of organizations throughout the Northeast and nation with regard to Adirondack and Northern Forest Lands issues. Individuals and organizations hoping to keep abreast of new developments in state/federal policy or legislation that effects the Adirondack Park and Northern Forest Lands are urged to contact:

Daniel R. Plumley
Director of Park Protection
c/o The Adirondack Council
P.O Box D-2
Elizabethtown, NY 12932
518-873-3340

Twin Pond in Dix Wilderness. Photo Courtesy of Gary Randorf, The Adirondack Council.

Farm and Forest Fund

Rewards Adirondack Towns with Open Space

by John Sheehan

The New York State Assembly has proposed an innovative response to protect open space and local tax bases in the six-million-acre, part public, part private Adirondack Park.

The "Farm and Forest Fund" is a means of encouraging local governments to protect open spaces by providing direct cash payments to towns in proportion to the amount of farmland and forestland within their borders. It is also a means of collecting revenues from seasonal visitors who enjoy local government services without contributing to their upkeep, while at the same time discouraging overuse of popular water bodies by recreationists.

The plan is simple. The Assembly is hoping to show Adirondack towns and villages they can benefit from the existence of private open space within their borders in the same way they benefit from the state's policy of providing full tax payments to communities which contain Forest Preserve.

For decades in the Adirondack Park, timber companies have been able to take advantage of state tax-break programs to reduce the amount of money they shell out in property taxes each year to the 90-plus towns in the Adirondack Park. Such programs have been vital to the Adirondack economy, since they encourage timber companies (and their jobs) to remain in the Park. But they also cause financial problems for towns in which the largest landowners are timber companies.

Currently, Adirondack timberlands are taxed at roughly $4 per acre, as opposed to about $1 in the rest of the Northern Forest Lands. As a result, many timber companies have searched for ways, other than harvesting trees, to generate income. For many companies, that means closing and posting their lands and offering exclusive hunting leases. Many of those same companies, as well as others, also opt for state-offered property tax breaks.

The state tax breaks offer companies an 80 per cent reduction in property taxes until harvest time, when the companies pay a stumpage fee to the towns to make up for the 80 per cent reduction in previous years. While this system benefits timber companies and allows them to continue employing vast numbers of Adirondack residents, town officials complain that their revenue streams are unpredictable and the long wait between harvests is unbearable when planning local budgets.

As a result, Adirondack communities, are looking for a way out of the dilemma.

The Assembly's answer is the Farm and Forest Fund, contained in the package of legislation the Assembly has proposed as part of its plan to update the Park's 20-year-old zoning laws.

The fund would be paid for by placing fees on recreational amenities (often owned and used by seasonal residents and tourists) using the existing Lake George Basin fee structure as a model. Due to its proximity to New York City, Albany, and an interstate, Lake George has seen a steady increase in tourist use, boat traffic, and commercial development, since the 1950s. The result has been the exodus of local residents who can't keep up with local tax increases and the loss of open space to development.

The Lake George fee system was created to lift some of the burden of providing services off the shoulders of local government by placing it on visitors.

Consequently, fees on large power boats, shorefront airplane hangars, wharfs, multi-boat docks, boathouses and other amenities help provide the money local governments need to provide services and maintain a cleaner environment.

But Lake George's tourist traffic is only a portion of the 10 million people who visit the Adirondack Park each year.

By spreading this fee system throughout the Adirondack Park, the Assembly hopes to create a multi-million dollar annual fund. The money from the fund would be spread evenly through Adirondack villages and towns, based on the amount of open space each contains. By maintaining this open space, the communities guarantee they will continue to receive a share of the money, which they can spend any way they like.

While there are absolutely no strings attached to the money, there is a clear impetus to spend it in ways which promote the integrity of the Park's largest land holdings, especially since many communities will try to discourage the break-up of large tracts to protect their cut of the fund. At the very least, they will begin to weigh the cost of development versus the cost of losing Farm and Forest Fund money. The Assembly hopes the program will provide local governments a financial incentive to keep their lands out of the hands of land speculators.

Book Review

After the Ice Age: The Return of Life to Glaciated North America

by E. C. Pielou
(The University of Chicago Press, 336 pages)

Reviewed by Lowell Krassner
Sierra Club

This fascinating volume should interest a very broad audience: the environmentalist will derive additional support in advocating preservation of natural communities; the naturalist will gain an insight into the forces that shaped the continent's biotic communities and the paths that various life forms, from beetles to bison, have followed in re-populating land that recently lay under the ice sheet; and the forester will comprehend the sensitivity of the forest to the ongoing changes that will shape its future.

An enthusiastic review in the journal **Science** first piqued curiosity about this book. When I found it in a book shop, I was delighted to find it far from a dry technical volume. The book is very amply illustrated with maps and drawings depicting the species, regions, and sites under discussion.

Commencing with the fundamental causes of the cycle of glacial ages and glaciations that have affected life on Earth over the past billion or so years, the discussion continues by illustrating examples of the paleontologist's methodology, the kinds of data that are available, and the deductive processes that lead in some cases to conclusions, in others to continued uncertainty and controversy. All of glaciated North America, from Beringia to the Maritimes, is surveyed.

As one might guess, the periodic changes in the tilt of the planet's axis and in its orbit around the sun are the major parameters that alter climate--but the alignment of the continents also has a major role. Science seems to have accepted this picture. But what of the more controversial hypotheses? Were humans a major cause of extinction among the Pleistocene mega-fauna? Both sides of the argument are presented, but as befits a book designed for the lay reader, the question is left open. An ample bibliography for each chapter indicates the path to more complete study.

Of interest to followers of Northern Forest issues are data showing the length of time it took various tree species to move into their present ranges, and the locations of the refugia where species survived while the present-day Northern Forest landscape lay under the ice. The strongest impression the narrative leaves is of unremitting change over the past 20,000 years, continuing now and into a frigid future of returning glaciers.

Read this book to learn a great deal about the past that forged our world, and to gain a perception of the future.

IP Donates Raquette River Tract

20,000 Acre Adirondack 'Jewel' Protected

A press release from International Paper

Purchase, NY--On December 23, 1992 International Paper announced a major gift of over 20,000 acres to the Conservation Fund and the State of New York that will provide for the permanent protection of a scenic corridor of the Raquette River. The Raquette has long been recognized as one of the premier canoeing, kayaking and fishing rivers within New York State's Adirondack Park.

The gift celebrates the 100th anniversary of the Adirondack Park and this region's long-standing tradition of public and private land stewardship. International Paper has a long history of managing and protecting these lands that dates back to the company's formation in New York State in 1898. The forested lands on this tract have been managed for over a century for forest resources, recreation and wildlife preservation.

The gift also assures a healthy local economy built on the working forest. The Conservation Fund and International Paper will continue to allow for forestry, recreation and wildlife management on surrounding lands.

The company will donate full fee and easement rights totalling 20,200 acres. Approximately 15,300 acres, including the river frontage on approximately 11 miles on the northeast side of the Raquette River in the town of Piercefield, will be donated to the Conservation Fund. Hunting and fishing leases, currently leased by the company to recreational customers, will be transferred to The Conservation Fund and will be reissued to the same customers for at least five years.

The company will donate an approximately 500 foot wide corridor of river lands along the entire length of the southwest side of the river to the State of New York. The corridor of land totals approximately 700 acres. Cabin licenses within this corridor will be transferred to The Conservation Fund prior to the company's gift to the State.

The company will additionally donate, to the State of New York, a conservation easement on about 4,200 acres on the south and west side of the river on lands adjacent to those donated to the State. This land will continue to be forested and leased for recreational purposes, but the easement will preclude developmental uses.

Governor Mario M. Cuomo, upon receiving the gift, said, "On behalf of the people of New York, I thank International Paper for its generous gift. New York is always eager to work with its corporate citizens on projects that benefit our environment and our economy. The Adirondack Park's recreational, ecological, and economic significance--in short, its attractiveness as a place to live and visit--is enhanced by this gift."

Patrick Noonan, president of the Conservation Fund, said that the fund will undertake an environmental assessment of the Raquette River gift. Preliminary plans call for maintaining a protected scenic corridor along the northeast side of the river. The Conservation Fund will continue to manage the adjacent timberlands as an Adirondacks working forest and, consequently, will continue to pay taxes on the property.

The Conservation Fund creates partnerships with the private sector, non-profit organizations, and public agencies to help protect America's outdoor heritage. Committed to excellence and entrepreneurial spirit, The Fund constantly seeks new opportunities to advance land and water conservation.

International Paper manages 325,000 acres within the Adirondack Park. The company also owns and operates two primary paper-making facilities within the Adirondack region at Ticonderoga and Corinth, and employs approximately 1,600 people in the Adirondacks. The company manages more than 6 million acres of forest within the United States.

Contributions to the Forum

Contributions to The Northern Forest Forum are tax-deductible & urgently needed if we are to keep this publication alive.

Please make checks payable to Earth Island Institute, earmarked for "Project #44, The Northern Forest Forum."

Please send checks to:
The Northern Forest Forum
POB6
Lancaster, NH 03584

Thank you.

Illustration Credits

Mast-Rachel O'Meara; Cover-Jon Luoma; p.2-3-Rachel O'Meara; p. 6-8, 11, 13, 14 Jon Luoma; P. 9 Cheryl Seal; p. 10 (Falcon) Jon Luoma; (Hemlock) Rachel O'Meara; p. 21,23,26 Kit Kuntze; P. 24 (woodcut) & 25 (damselfly) Siri Beckman; p. 25 (farmer) Susannah Becker

Publication Schedule

The **Northern Forest Forum** is published six times a year if funding permits. It will be printed in the middle of the odd-numbered months (January, March, May, July, September, & November). Deadlines for submission will be the First of those months.

PAW Appeals Continue on GMNF

No Quick Resolution Seen

by Lowell Krassner

Preserve Appalachian Wilderness (PAW) has appealed most of the recent timber sales on Vermont's Green Mountain National Forest on grounds that the Forest Service has failed to consider important wildlife habitat, has not carried out required monitoring of timber sale impacts, and has neglected to account for the cumulative impacts of previous and current sales. PAW also charges that a number of forthcoming timber sales are re-offers that were planned under a preceding Forest Plan, now no longer valid.

Some observers regard the situation as a serious breach of faith on the part of the USFS, because when the GMNF plan was issued in 1986, it was hailed as the most environmentally conscientious plan that came out of the mid-eighties planning cycle, and was an important landmark in what most environmentalists regarded as an otherwise egregious process. Timber purchasers feel that PAW is pursuing a course of legalistic obstructionism, aimed at halting or delaying timber sales regardless of the substantive impacts.

Serious problems surfaced last summer, when the Emily Proctor Trail, a spur leading to the Long Trail, was used as a skid route on the Spruce Lodge Sale. A site visit called by GMNF staff for interested groups (after press groups gave wide publicity) revealed a breakdown in internal communications on GMNF. A clearcut had not been screened from the hiking trail in accordance with the project EA, and the originally selected skid route, which avoided the hiking trail, was still partially flagged, but unused. GMNF staff recognized the error, but no remedial actions have been taken, and additional cutting was given the go-ahead.

PAW has pointed out that GMNF expenditures are not following the forest plan; while recreation, wildlife, and similar amenities are funded well below plan levels, the timber sale budget is currently 120% of that established for the plan. The present situation raises important issues for the environmental community--whether the sales being questioned will cause substantive damage to the resource; whether all sales being offered are in compliance with the current Forest Plan; and whether the Forest Service will correct procedural insufficiencies that it has already acknowledged in several PAW appeals.

Some groups fear that frequent shifts in Forest Service staff have resulted in a loss of institutional memory on GMNF, noting that present Forest Service interpretations of plans often do not reflect the emphasis made when the planning was discussed with interested publics.

Lowell Krassner lives in South Burlington, VT and monitors the Northern Forest Lands issues for New England Sierra Club groups as a volunteer activist.

Jon Luoma does artwork, design, and illustrations
Jon Luoma
PO Box 551
Alna, Maine 04535
(207) 586-5706

Quiz Answers

Diversity Quiz

Page 8

(1) b. (2) c. (3) d. (4) d. (5) c.

Extinction Quiz

Page 12

(1) b (2) d (3) c (4) b (5) c (6) b (7) No, fragmentation of habitats leads to extinction even in unmodified areas because of changes in the physical conditions in the fragment, decrease in available resources and area for remaining individuals, and the introduction of new predators (such as dogs and cats) around the fragments. (8) True, over 99% of all species that have ever lived are extinct. (9) (c) This varies and is hard to calculate exactly, but probably ranged from between 30 species to 1,000 species per year, depending on whether the Earth was experiencing a "mass extinction" event or not? (10) (d) This is also difficult to calculate precisely because we don't know exactly how many species there are, but conservative estimates put it at around 50,000 species per year.

Subscribe to the Forum

*A one-year subscription to the Forum costs $12 US or $20 Canadian for six issues.
*We will send you a freebie if you can't afford to pay on the condition that you become actively involved in the search for sustainable natural and human communities.
*We urge our more affluent subscribers to send us $24 or more to sponsor a freebie.
*Please consider becoming a lifetime subscriber with a donation of $1000 or more.

**Enclosed is $_____ to cover ____ subscription(s).
**___I can't afford a subscription right now, please send me a freebie. I promise to roll up my sleeves and get to work on behalf of the Northern Forest Communities.
**___ Here's some extra cash to cover the cost of freebies.
**___ Enclosed is $1000 (or more). Please sign me up as a lifetime subscriber.

Name_____

Address_____

Town_____

State_____ZIP_____

Please Make Checks payable to Earth Island Institute.

Please Send Checks To:
The Northern Forest Forum
POB 6
Lancaster, NH 03584

Forest Liquidation Legal in Vermont

There are no limits to the size of legal clearcuts in Vermont. Flying over Granby, Victory, Concord, Lunenburg and Miles Pond near Route 2 one can see numerous clearcuts that are hundreds or even thousands of acres in size. And remember, it's legal to deforest Vermont. Photo by Steve Gorman

The Northern Forest Forum
PO Box 6
Lancaster, NH 03584

Address Correction Requested

Bulk Rate
U.S. Postage
PAID
Lancaster, NH
Permit #6

If this is a Complementary Copy
Please Subscribe (See page 31)

Printed on Chlorine-Free Paper