

The Northern Forest Forum

Working for Sustainable Natural & Human Communities

\$3.00

Headwaters Restoration 1995

Volume 3 No. 5

Blueprint for a 75-Year *Transition* to Sustainable Natural & Human Communities
8 Million Acre HEADWATERS Wilderness Reserve System Proposed
➤ *For Undeveloped, Uninhabited Lands in Northern Vermont, New Hampshire & Maine*
➤ *Wildlands Create Context for a New Economic Direction*



A SECOND CHANCE FOR THE NORTHERN FOREST

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Northern Forest Wilderness & Wildlands Economy~ The Path to Sustainability

Sustainability—From Theory to Practice

There is widespread support for the ideal of sustainability. Thus far, however, there has been insufficient progress in actually implementing sustainable practices. I believe the proposal offered on the following pages for the ecological, economic, cultural, and political restoration of the Headwaters region of Northern New England will help move our society towards greater ecological and economic sustainability.

This is a blueprint for a 75-year transition to sustainability. It is offered as a friendly challenge to everyone concerned with the future of the forests and people of the Northern Forest Headwaters region to advance their own strategies for implementing sustainable actions. I am confident that vigorous discussion and debate of this and other proposals will lead us to the actions we must take collectively.

The Problem

The current economic and political system in the United States and in the Northern Forest Headwaters region is unsustainable both ecologically and economi-

cally. And it is politically inequitable. Regardless of how one feels about the Republican Contract, it ought by now to be clear to most that the "politics of anger" of recent elections is a reflection of the failure of the status quo to meet that most basic and cherished need—the pursuit of happiness. An angry electorate is not a happy populace.

Dramatic change, such as this proposal outlines, is never easy. I believe the first step in a peaceful revolution of societal values is public debate over our options. Such a debate helps differing constituencies build trust and learn to work together, and it stimulates our collective, community creativity to address the full range of problems—not merely jobs, not merely education, not merely environmental concerns.

On the following pages we offer proposals for:

- 1) *The design and establishment of the Northern Forest Headwaters Regional Wilderness Reserve System* (see pages 4-7). We include a map and brief descriptions of each of the 16 proposed reserves on pages 8-10;
- 2) *A sustainable regional economy*. (See pages 11-13)

- 3) *A strategy to promote cultural restoration*. (See pages 11-13)
- 4) *A new Wild Land Ethic*. (See below)

What You Can Do Now

1) Critique this proposal. Offer your own concrete proposals that will achieve the goals of sustainability more quickly, more efficiently, more economically. The *Forum* will print as many constructive critiques as space permits.

2) Join the Northern Appalachian Restoration Project in developing and promoting strategies to purchase lands from willing sellers to establish regional Wilderness reserves.

3) Help your community address issues of economic sustainability and self-determination.

4) Become involved in current statewide initiatives to reform unsustainable forest practices.

5) **Get involved and stay involved.** As Jefferson said: "Eternal vigilance is the price of liberty."

—Jamie Sayen

A New Wild Land Ethic

The year I was born, Aldo Leopold proposed the following land ethic: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."

I would like to add something to Leopold's ethic my son Brook has taught me in his first year of life. Early this spring, with snow still in the woods and ice along the edges of the brook out back, Brook and I went walking. When we reached a small waterfall a mile or so from our home, I removed him from my back and showed him the noisy cataract. For a full minute this three-and-a-half month old child stared with eyes wide open, a blank expression on his face.

Then all at once, a huge smile broke over his face, and his arms and legs began flailing away with happiness. For the next several minutes he continued to stare intently, delightedly, at the waterfall.

Brook's first encounter with free-flowing water taught—or reminded—me that humans are born with a deep, direct connection to the natural world. Instinctively, this baby was excited, delighted and filled with wonder.

As we search for strategies to protect and restore biological diversity and ecological integrity, we must grapple with the tragedy of Euro-American history—our cultural estrangement from the land. To assure sustainable natural and human communities, we'll have to find a way to re-connect—individually and collectively—with the wild, natural world.

For four hundred years Euro-Americans have been uncomfortable in the North American Wilderness. "Redeem the howling wilderness" was Cotton Mather's advice to our rootless,

discontented New England ancestors. The history of Euro-Americans has been a story of ambition, of westward migration, of rootlessness, of a quest for something bigger, stronger, richer, newer than the present offered. Americans, it has been said, are ever in a state of "becoming," ever in a condition of dissatisfaction with the present, with their "home."

The diverse indigenous cultures displaced by these restless foes of the "howling wilderness" were—and still are—rooted in place. Culture was defined by place. Everything necessary

for a rich life was available right here at home. The howling wilderness which so terrified and offended the European was the source of life, strength, and joy to the land-based indigenous cultures of North America. It was home. Whereas alienation from the wild land bred a culture always dissatisfied, always "becoming," connection to the wild land nurtured a culture in a state of "being," willing captives of the endless cycles of the seasons of the year and the ages of man. Alienation has produced struggle; connection nurtures a dance with our fellow co-evolving critters.

Nurturing the connection to the land in the young and re-connecting older people with the dance of wild lands and wild life requires a break from our culture's tragic legacy of always "becoming." A culture based on dissatisfaction is psychically and spiritually out of balance, and it has produced an economy that is out of balance with the limits and realities of the natural world. Developing a land-based culture, a culture that respects and is satisfied with what is, offers our best hope of devising an economy that is in balance with the limits and realities of the natural, wild world—a sustainable economy.

A new-old Land Ethic, articulated so succinctly by Leopold half a lifetime ago, challenges us to be careful that our actions—whether inadvertent or intentional—do not disrupt the dance of evolving life.

While there are sound economic, cultural and ecological reasons for establishing a Northern Forest Headwaters Wilderness Reserve System, the issue, ultimately, is an ethical one: Do we have the grace, humility, and generosity of spirit to respect four billion years of evolving life? The establishment of a Headwaters Wilderness Reserve System and a regional economy compatible with Wildlands is the litmus test of our generation's moral fiber.

—Jamie Sayen



The soil is dreaming of trees.
The trees are dreaming of wind.
The wind is dreaming of clouds.
The water returns to the earth.
Without trees, the soil washes away.
The wind blows over barren ground,
and the dreams of the world are broken.

—Gary Lawless, Gulf of Maine

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The *Northern Forest Forum* is
published by
The Northern Appalachian
Restoration Project
of Earth Island Institute

Illustration Credits

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A 75-Year Blueprint to Sustainable Natural & Human Communities

A Summary of The Northern Forest Headwaters Community Restoration Proposal

Goals of Proposal

The goals of the Northern Forest Headwaters Community Restoration Proposal are to maintain the ecological and evolutionary integrity of the region's ecosystems; to preserve and restore native biological diversity; to assure an ecologically sustainable economy; and to sustain a political and cultural quality of life that nurtures—rather than stunts—the natural potential in us all.

Objectives

The objectives of the Headwaters Community Restoration Proposal are:

1) Ecological Reserves: (see p. 4-7)

- Establish a network of 16 publicly-owned wilderness reserves in northern Vermont, northern New Hampshire, and northern & western Maine on uninhabited lands that are largely owned today by multinational corporations, the heirs of the 19th century timber barons, and real estate developers;
- Restore damaged or degraded ecosystems and natural communities, and restore viable populations of all rare, threatened, endangered, & extirpated native species;
- Establish low-impact, long-rotation, sustainable forestry practices.

2) Economic Revitalization: (see p. 11-13)

- Plug local economy's leaks such as raw log exports and energy imports;
- Establish low-impact, long-rotation, sustainable forestry practices;
- Promote a diversified economy whose manufacturing is geared primarily to value-added products;
- Support local, organic agriculture;
- Establish local & external markets for agricultural and value-added manufacturing products produced within the region;
- Promote a recreation & tourism industry that is centered upon and sustains the Headwaters

Wilderness Reserve System;

- Redirect government subsidies, incentives, and policies away from activities that promote inequality, instability, and unsustainability towards activities outlined above.

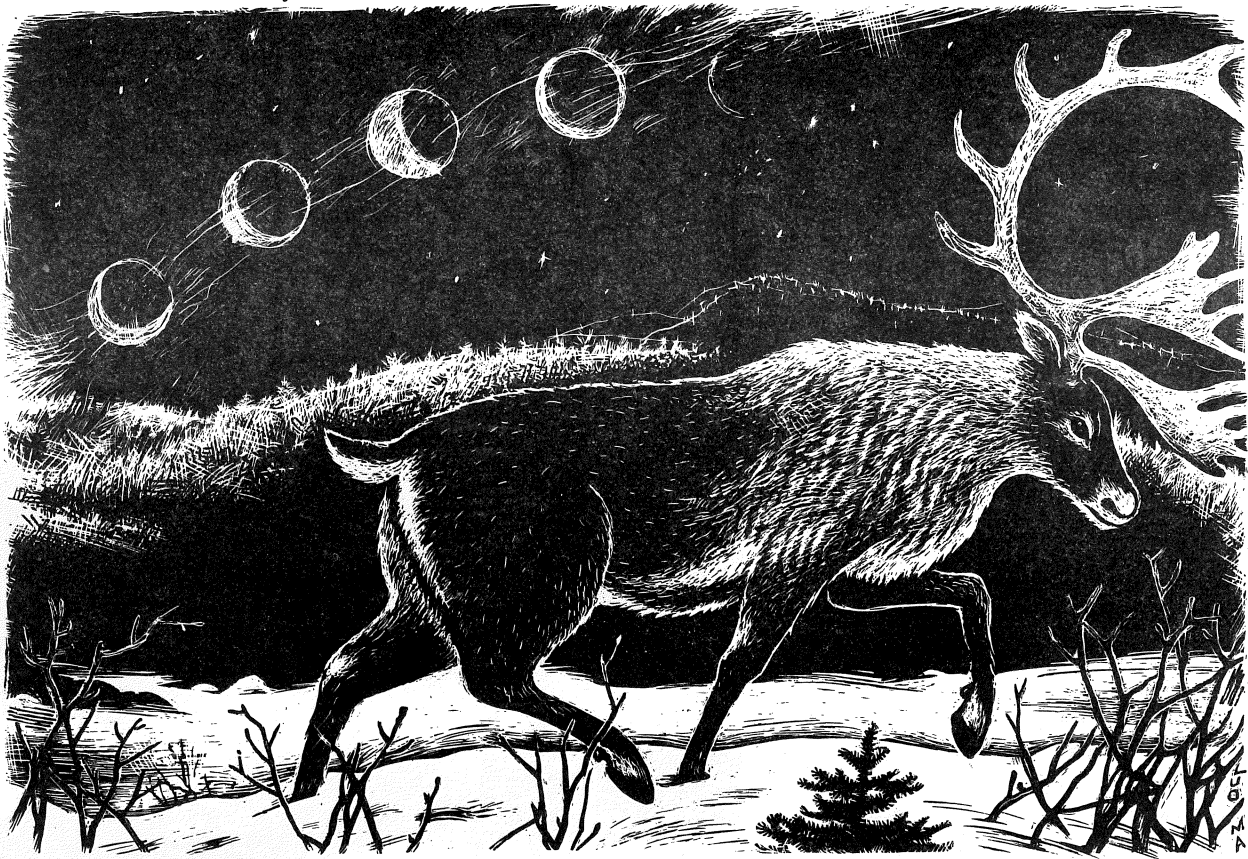
3) Cultural Restoration: (see p. 11-13)

- Restore a sense of community and hope to our towns & communities;
- Support educational reforms that: (a) place Natural History at the core of curriculum from kindergarten through college; (b) Establish a Headwaters Restoration Academy;

- Establish a network of Headwaters Community Museums affiliated with the Restoration Academy;
- Abide by a New Wild Land Ethic.

4) Political Restoration:

- Establish Watershed Councils that assure local, ecologically-responsible decision-making;
- Restore local control of the region's economy;
- Protect rights of future generations and other species;
- Devise a sound, equitable, and ambitious Transition Strategy to achieve the goals and objectives.



Transition Strategy or, You Can Get There From Here

The Northern Forest Community Restoration Proposal offers a vision of sustainable natural and human communities in the Northeast Kingdom of Vermont, northern New Hampshire and western and northern Maine in about 75 years. Because the vision will not be realized overnight, we need to adopt a transition strategy to move us as swiftly as feasible from our current unsustainable condition to enduring sustainability.

Readers who fear that this proposal will cause unacceptable disruptions in the current economy should bear in mind two things: (1) the current economy is in decline and has been inflicting serious disruptions on mill towns and logging communities prior to the promulgation of this proposal; and (2) the proposal will, of necessity, be implemented in stages over several decades; there will be no violent rupture with the present.

Ecological Transition

Near-Term:

- (1) Establish the Northern Forest Headwaters Wilderness Reserve System and begin to appropriate funds to acquire lands within its boundaries.
- (2) Begin Phase II of the Northern Forest Watershed Reserve system that addresses the more developed areas of Maine, New Hampshire and Vermont south of the Headwaters Reserve System.
- (3) Reform unsustainable forest practices in all three states.
- (4) Prioritize the most ecologically sen-

sitive lands in the entire Northern Forest Watershed Reserve System (Phases I & II). This will guide initial land acquisition efforts.

- (5) Begin research on highest priority issues.
- (6) Establish community-based monitoring & inventorying projects.
- (7) Develop and begin to implement strategies to restore extirpated and endangered species such as Caribou, Wolf, Wolverine, Lynx, Cougar and Atlantic salmon.
- (8) Begin ecological restoration projects to reverse river and stream degradation; to halt erosion caused by roads and logging, and to restore diversity to industrial monoculture plantations.

25 Years

- (1) Acquire the bulk of the Northern Forest Headwaters Reserve lands.
- (2) The most critical Phase II reserves should be established and major progress has been made in the establishment of the Phase II system.
- (3) Continue ongoing research and monitoring of existing reserves.

Economic Transition

Near-Term:

- (1) Paper mills convert to totally chlorine-free paper production and begin conversion to optimal utilization of recycled fiber and other fibers such as kenaf and hemp.
- (2) Citizens of Northern Forest communities take stock of the strengths and assets of their communities and identify the weaknesses and greatest immediate needs, such as need for

retraining and education, financing opportunities for expansion of existing local, labor-intensive, value-added businesses, and start-up financing for new local ventures.

- (3) Develop local farmers' markets.
- (4) Begin to grow more of our own food needs locally.

Political Transition

Near Term:

- (1) Begin to redirect the federal and state budgets from favoring moneyed interests to nurturing local communities.
- (2) Pass federal legislation that: (a) identifies the Headwaters region as an area of national and global significance; (b) endorses the establishment of a system of Regional Wilderness Reserves; (c) appropriates \$100-200 million a year to a Northern Forest Headwaters acquisition fund to acquire—from willing-sellers—lands that are critical to protect biological diversity and ecological integrity; and (d) appropriates another \$100-200 million per year for regional economic transition.
- (3) Establish regional watershed councils that are truly representative of the varied interests of the community that assure fair and free and open discussion of all issues relating to sustainability, especially regarding the economy, forest practices, cultural issues and regional wilderness reserves.
- (4) Include the rights and needs of future generations and non-human species in all political deliberations and decisions.

Cultural Restoration

Near Term:

- (1) Make natural history, regional culture, and regional history core elements of our education system from kindergarten to college.
- (2) Develop strategies and programs to help citizens reconnect with the natural communities of the Northern Forest region.
- (3) Establish one or more Northern Forest Restoration Academies and a system of interactive museums.
- (4) Promote recreation and tourism opportunities with cultural integrity that offer visitors deep and lasting experiences in our communities.

Clearly, there are countless other near- and long-term actions we must take collectively and individually, but this brief list provides quite a challenge.

We will be limited only by our imagination and our commitment to leaving our children and grandchildren a better chance to enjoy a secure, sustainable future. We must not allow defenders of the status quo to misrepresent the ideas guiding the Northern Forest Headwaters Community Restoration Proposal and mislead the public with fear-mongering that alleges the changes outlined here are going to occur overnight.

This is a long, evolving adventure. Nothing good can happen until we begin; once we begin, we will be rewarded with all manner of exciting and beneficial surprises.

—JS

A Proposal to Establish a Headwaters Regional Wilderness Reserve System

by Jamie Sayen

"Ecosystems are not only more complex than we think, but more complex than we can think." -R. Egler

Proposal

Phase I—To protect and restore the native biological diversity and ecological and evolutionary integrity of the Northern Forest Headwaters, we propose the establishment of a Northern Forest Headwaters Regional Wilderness Reserve System (RWRS), a network of 16 Wilderness Reserves on lands that currently are undeveloped and uninhabited in northern Maine, New Hampshire, and Vermont. The map on pages 8 and 9 shows the proposed reserves. (Note: Phase I is the subject of this special issue of the *Forum*.)

The Headwaters of the watersheds of this region possess a cultural, economic, historic and ecological identity. They have been dominated in the last century by the paper industry which is regionally in decline due largely to old mills and overharvested forests. The Northern Forest Headwaters region is essentially undeveloped, has no year-round human population, and offers the best chance to establish large wilderness restoration reserves most quickly. A small number of owners control the entire area; ownership in recent years has been highly volatile; there is growing support for protection of biological diversity and ecological integrity, and, most importantly, the region has great ecological significance.

Phase II: In the more developed regions of Maine, New Hampshire, and Vermont (and points south, west, and north), we need to design a reserve system, to complement the Headwaters RWRS, that secures the representation of each of the region's terrestrial, aquatic, and marine natural regions and protects and restores the region's ecological and evolutionary integrity. The design and implementation of Phase II will be more complex because it covers an area that is more developed and much more severely fragmented than the Northern Forest Headwaters region. Conservation biologists, landowners, informed laypersons and concerned citizens must become involved immediately in developing the design for Phase II. (See "Phase II" on page 7)

Goal of Proposal

Our goal is the protection and restoration of biological diversity and ecological integrity throughout the region in a system of ecological reserves.

Objectives of Reserve System

In *Maintaining Ecological Integrity in Representative Reserve Networks*, Dr. Reed Noss lists three major objectives for maintaining ecological integrity in a reserve system:

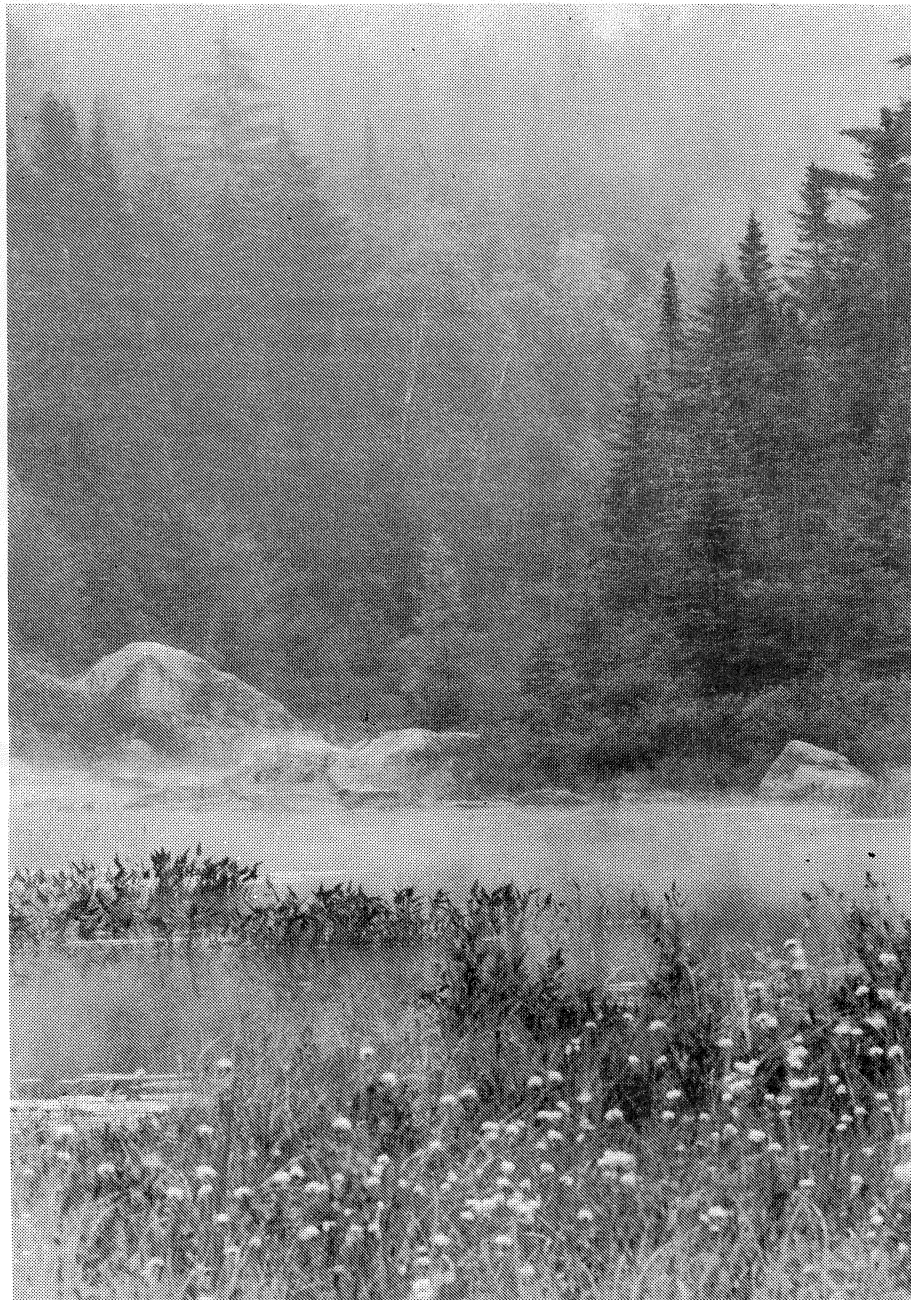
"(1) Sustain key geomorphological, hydrological, ecological, biological, and evolutionary processes within normal ranges of variation, while building a conservation network that is adaptable to a changing environment;

"(2) Maintain or restore viable populations of all native species in natural

patterns of abundance and distribution; and

"(3) Encourage human uses that are compatible with the maintenance of ecological integrity." (This objective will receive fuller treatment in the *Economic & Cultural Restoration Proposals* on pages 11-13.)

• To establish the Northern Forest Headwaters RWRS we need to convince Congress and the respective State Legislatures to appropriate Federal and State funds to acquire the undeveloped and uninhabited lands that are currently mostly owned by multinational paper corporations, the heirs of 19th Century Timber Barons, and real estate developers.



Dennis Pond, Northeast Kingdom, Vermont. This photo © by John McKeith appears in *The Great Northern Forest*, published by National Audubon Society, Sierra Club & The Wilderness Society.

• In addition, Maine, New Hampshire and Vermont should adopt a constitutional amendment similar to New York's celebrated "Forever Wild" Article 14 that states: "The lands of the state now owned or hereafter acquired, constituting the forest preserve as now fixed by law, shall be forever kept as wild forest lands. They shall not be leased, sold or exchanged, or be taken by any corporation, public or private, nor shall the timber thereon be sold, removed or destroyed."

Identification of Core Wilderness Areas

The following criteria have been used to identify core wilderness areas for Phase I —The Northern Forest

Headwaters Regional Wilderness Reserve System:

1) Location of undeveloped areas: Lands owned by industrial and large non-industrial owners and real estate developers have been selected. These corporations are generally headquartered out of the region, in some cases, out of the United States. There are no year-round human settlements within the boundaries of any of the proposed 16 Headwaters Reserves. Adjacent lands which are owned by landowners who live in or near the proposed reserves and lands owned by smaller, local forest product corporations have been excluded from the core areas.

Bigelow State Park, Namakanta State Forest, the Allagash Wilderness Waterway, the Appalachian Trail, the White Mountain National Forest, the Nash Stream State Forest, and the Victory Bog State Forest are the largest existing public land holdings in the region. Although they are not currently managed primarily for the protection of ecological integrity, they do enjoy varying degrees of protection.

Efforts to connect the Headwaters RWRS with reserve systems in the Adirondacks, the Berkshires, the Taconics, and Canada will build upon existing public lands such as the Adirondack Park, Willoughby State Park and the Green Mountain National Forest, and provincial parks in Canada.

4) Concentrated occurrences of rare species, areas of unusually high species richness, and locations of rare plant or animal communities. Where this information is available, it has been utilized. Unfortunately, inventories for most of the so-called "industrial forest" have not been done. Vermont's Northeast Kingdom is the most thoroughly inventoried portion of the proposed reserve system. Most of northern Maine has not been inventoried. Data on rare species and communities will be especially critical for the implementation of Phase II which will complete the Northern Forest Watershed reserve system.

5) Locations of depleted seral stages, especially old growth. Inventories of remaining old growth are much more complete than those of rare species and communities. Studies by Charles Cogbill ("The Ancestral Forest", *Forum*, vol. 1 #4, pages 30-31) and Mary Byrd Davis (*Old Growth in the East: A Survey*, Cenozoic Society, 1993), and the recent discovery of a 300-acre old growth stand in Baxter State Park (*Forum*, vol. 3# 1) have pinpointed most of the remaining fragments of the ancestral forest. The proposed reserve incorporates many of the sites in Maine, New Hampshire and Vermont. Alas, there are very few such stands; they cover only a tiny fraction of one percent of the region's land base; they are small (most are less than 100 acres), and they are often surrounded by heavily cut forests.

6) Extirpated Species:

Large Mammals: Several large mammals—wolf, wolverine, cougar, lynx, (possibly still extant), and caribou—have been extirpated. They require large areas, especially wolves and caribou. The large, undeveloped region identified in this proposal offers the best opportunity for restoring viable, evolving populations of these important species. A wolf was shot in Maine west of Baxter State Park in August 1993, and there have been numerous sightings of cougars over the past few decades throughout the region.

Anadromous fish: Atlantic salmon formerly bred in many of the rivers within the proposed reserve system. However, the existence of more dams in New England than returning salmon in northern New England in 1994 means the fate of this important species remains unpromising.

Microflora and fauna: Ecologists studying remnant old growth tracts have discovered many lichen and beetle

2) Watersheds of high value, as intact as possible: The Headwaters RWRS contains the headwaters of all the major rivers of the region: Connecticut, Androscoggin, Kennebec, Penobscot, St. John/Allagash/Aroostook, and Saco. It encompasses the entire watershed of the fabled Allagash River and almost the entire watershed of the St. John, the most remote and wild river in New England. There are nine Class A river watersheds from Maine.

3) Sites adjacent to existing public lands: Although public lands comprise only about five percent of the Northern Forest Lands Region of Vermont, New Hampshire and Maine, they help form important anchors in the Headwaters RWRS. Baxter State Park,

species that apparently do not appear in the fragmented early and mid-successional forests that cover over 99% of the forests of this region. This has two important implications:

- We need to restore as much mature forest (future old growth) as possible to provide habitat for species that depend on old growth and mature forests for part or all of their habitat needs;

- We must assume that a multitude of uncatalogued, unstudied organisms—including soil microbes, fungi, and a wide array of invertebrates—have similarly suffered serious declines due to habitat loss or degradation.

Reserves Must Be Very Large

Noss emphasizes the need for large reserves (p. 58): "Studies employing biological criteria (reviewed by Noss & Cooperrider, *Saving Nature's Legacy*, 1994) generally conclude that somewhere in the range of 25% to 75% of a given region must be protected in order to meet the integrity goals of the kind suggested in this report..." Dr. Stephen Trombulak writes: "Conservationists now understand that it is important to consider large-scale spatial patterns in their planning, such as continental migration of birds, wide-ranging disturbances, and long-distance dispersal of individuals."

Very large wilderness reserves, such as those proposed for the Northern Forest Headwaters RWRS are necessary:

1) To Protect Watersheds:

Protection of intact watersheds or considerable portions of watersheds, are a vital means to protect ecological integrity.

ty. Unfortunately, existing public land boundaries are generally politically, not ecologically, designed. Noss recommends (p. 49): "Adjust boundaries, as feasible, to encompass entire watersheds, whether or not those watersheds are considered critically important from a biodiversity standpoint...ideally boundaries should not sever drainage areas or leave out headwater areas."

2) Because existing public lands cannot assure ecological integrity. Existing public lands in the region are too small, too isolated from each other, delineated by political, not ecological boundaries, and not managed first and foremost for ecological integrity.

3) There is inadequate data on occurrences of rare natural communities and species, nor of species richness. Given the absence of data, we have followed two recommendations of Noss (and a growing number of conservation biologists):

- "In the face of uncertainty, the prudent decision is to risk erring on the side of protecting too much." (p. 43)

- "The threats to ecological integrity will not wait for us to complete our hypothesis tests. Conservationists need a working model for landscape design which, based on what we know now, has a high probability of maintaining ecological integrity over the long-term. *Lands and waters crucial to integrity must be protected now or options will be foreclosed.*" (p. 44, emphasis added)

4) The mature, closed-canopy forests that characterized the pre-settlement hardwood and Acadian forests of the region has been replaced by early and mid-successional forests. J.R. Runkle found that



Bald Eagle, Lake Umbagog, NH. This photo © by John McKeith appears in *The Great Northern Forest*, published by National Audubon Society, Sierra Club & The Wilderness Society.

What's the Problem? Why Do We Need Big Reserves?

What's the Problem? Why do we need such a large system of Wilderness Reserves?

These are reasonable questions to ask proponents of dramatic social, political and economic change. There is growing appreciation that current land ownership patterns, land management practices, overpopulation, and excessive consumption of material goods has produced a global and regional ecological crisis. Here are ten ecological problems confronting the Northern Forest Watersheds:

(1) Habitat Destruction: The destruction of habitat through development, land conversion, and clearcuts compromises or disrupts key hydrological, ecological, biological and evolutionary processes, and renders native species vulnerable to population decline and even extinction.

(2) Rare, Threatened & Endangered Species: In the Mid Winter 1995 issue of *The Northern Forest Forum* (volume 3 #3), Middlebury (VT) College Professor Stephen C. Trombulak documents a number of alarming ecological trends in Northern New England:

*In Maine, 33% of the state's Ferns and Allies are either "rare, threatened or endangered" (RTE); 25% of Maine's native Flowering Plants are RTE; 25% of the Mammals native to Maine are RTE; and 23% of its Reptiles and Amphibians are RTE.

*In New Hampshire, 28% of the native Flowering Plants are RTE; 25% of NH's Ferns and Allies are RTE; and 19% of the state's native Conifers are RTE.

*In Vermont, 46% of the state's Reptiles and Amphibians are RTE. 30% of the state's Flowering Plants are RTE; 31% of its Ferns and Allies are RTE, and 26% of Vermont's native Fish species are RTE.

(3) Rare, Threatened, & Endangered Natural Communities: A recent publication of the National Biological Service "Endangered Ecosystems of the

United States: A Preliminary Assessment of Loss and Degradation" (by Reed F. Noss, Edward T. LaRoe III, & J. Michael Scott) reports that 18 natural communities in New Hampshire have suffered greater than 50% loss or serious degradation; greater than 95% of NH's floodplain forests have been lost; greater than 97% of pine-oak-heath sandplain woods in the Lake Champlain Basin of Vermont has been lost to development.

(4) Loss of Old-Growth & Mature Forests: "Endangered Ecosystems of the United States" reports that 96% of the virgin forests of the Northeastern and Central states were eliminated by 1920. Today, about 0.05% of New Hampshire is still covered in old-growth forest. Figures for Maine and Vermont are similar. Researchers estimate that 60-70% of the presettlement forest of the region was dominated by mature and old-growth trees (greater than 130 years).

(5) Extirpated Species: Wolf, Wolverine, Lynx, Cougar, and Caribou formerly were found in the Northern Forest Headwaters region. But, we will never know the full extent of extirpated (and extinct) species native to the Northern Forest Watersheds. There is evidence that many beetle and lichen species were dependent on old-growth and mature forests. Although there is a lack of knowledge of presettlement soil ecology, research in the Pacific Northwest indicates that the soil ecology of old-growth and mature forests is significantly different from the soil ecology of heavily—and repeatedly—disturbed forests.

(6) Unprotected Watersheds: No large, undeveloped, intact watershed in the region is fully protected. Due to the presence of thousands of dams and barriers, only a very small percentage of the total length of the rivers and streams of the region are still free-flowing. In 1994 there were five times as many dams and barriers to New England rivers than returning adult Atlantic salmon to all New England rivers.

(7) Insufficient Public Land: The public land base

is insufficient to represent all native communities and to protect habitat for viable populations of all species native to the region. Wide-ranging species such as caribou and wolf require large, undisturbed tracts. Only about four percent of Maine is publicly owned. In contrast, 42% of the 6-million acre Adirondack Park in New York is publicly owned "Wild Forest," and even this does not represent all native communities adequately, nor provide sufficient habitat for large native carnivores that have been extirpated.

(8) Lack of Information and Understanding of Northern Forest Ecology: "The Proceedings of the First Conference on the Ecology of the Northern Forest" (August 17-20, 1993) documents the large gaps in existing data and knowledge about species, communities and ecosystems of the Northern Forest. In developing strategies to protect biological diversity and ecological integrity, we must: (a) prioritize research needs and begin to address the highest priorities; (b) acknowledge we will never know everything about the ecology of this—or any—region; and, most important, (c) recognize that we have sufficient information today to design and establish reserves that offer our best hope of protecting and restoring biological diversity and ecological integrity.

(9) Industrial Forest Practices: The massive clearcuts of the industrial forest over the past two decades; a century of highgrading; and now the intensive cutting of whole-tree harvesting have destroyed, degraded, and fragmented the integrity of the Northern Forest Headwaters' forests, rivers, streams, lakes, and ponds. Today, there are still no *meaningful* forest practices regulations.

(10) Airborne Pollutants: Acid deposition, ozone depletion, and the greenhouse effect are stressing the region's forests in ways we only dimly understand.

—JS

undisturbed eastern hardwood forests throughout the northeastern United States were characterized by small natural disturbance gaps. *He estimated that less than one percent of the land area was in openings greater than one-quarter acre.* Logging records show that pre-settlement forests contained a considerably larger component of older trees (esp. spruce 150-plus years) than is present today. Catastrophic disturbances were relatively rare in the pre-settlement forest. Researchers estimate that perhaps 60-70 percent of the pre-settlement forest was characterized by late successional stands and species.

What Are Regional Wilderness Reserves?

We believe that a network of ecological reserves is necessary for every region in North America. Rather than tinker with existing public land management philosophies, we need to establish a new public lands agency, the Regional Wilderness Reserve System (RWRS) in the US Department of the Interior. The goal of the RWRS is to protect, preserve, and restore the native biotic communities and all their natural processes in perpetuity. This federal agency must operate as an equal partner with regional wilderness reserve agencies to achieve the appropriate mix of local, regional, and national representation and expertise.

A Regional Wilderness Reserve System will be a new form of federal/regional partnership. Funding for land acquisition and associated regional economic revitalization must necessarily come largely from the Federal treasury. The Federal RWRS will also coordinate RWRs throughout the United States, and, hopefully—in cooperation with Canada and Mexico—the entire continent. Each RWR will be governed by a regional agency that consists of representatives from federal, regional, state and local constituencies. Absentee bureaucracies will not manage the RWRs.

Wilderness Reserves will be managed under a "Forever Wild" philosophy designed to protect biodiversity. Non-motorized recreation will be permitted—and encouraged—provided it does not compromise the RWRS mandate to protect biodiversity. . .

The Regional Wilderness Reserve system must develop a new method of managing land that gives citizens of the region meaningful representation in the development and implementation of management plans, economic redevelopment and other critical regional issues. This proposal is not designed to further erode local control, but to help restore control of the region's destiny to the region's citizens. Since 18 corporations and families own over 75 percent of the Maine woods today, the status quo already represents lost local control to the maximum possible degree.

Excerpted from "Thoreau Regional Wilderness Reserve: A Proposal for the Maine Woods," by Jamie Sayen & Rudy Engholm, Forum, Spring Equinox 1994(vol. 2 #3)

Extensive, unbroken blocks of old growth forest are necessary for the restoration of the full complement of historic biological diversity. To restore the complete range of ecosystem types, successional states and ecological processes, large wilderness reserves must be established. Current, unregulated, forest practices do not mimic pre-settlement natural disturbance regimes, and restoration of the essentially closed canopy cannot be accomplished solely on private lands.

5) Extirpated carnivores and migratory ungulates have very large area requirements. Restoration of wolves, wolverines, cougars, lynx and caribou requires millions of acres of wildlands in a wilderness reserve system. Noss writes (p. 54): "... Viable populations of large carnivores and migratory ungulates cannot usually be planned for in individual reserves, but rather only in networks of reserves within and among regions."

6) Current forest practices and development patterns are inadequately regulated and are generally incompatible with the goals of the reserve system. Therefore, reserves must be very large to buffer the reserves from unsustainable practices, and effective controls on forest practices and development must be established to complement the reserves as well as to foster an economy that sustains the needs of local citizens without conflicting with reserve goals.

7) Air-borne pollutants: The long-range transportation of pollutants such as acid rain, global warming, and ozone thinning is a threat to ecological integrity. Large reserves provide species and communities flexibility and mobility in response to a changing environment.

8) To sustain key geomorphological, hydrological, ecological, biological, and evolutionary processes within normal ranges of variation. Noss writes (p. 10): "These processes, which generate biodiversity and keep it forever changing over time, include plate tectonics, volcanism, glacial cycles, landform development, hydrological cycles, nutrient cycles, species migrations and invasions, isolation of populations, spe-

ciation, gene flow, natural disturbances, succession, herbivory, predation, parasitism, pollination, competition, and many more." He further observes that while change is natural, "extreme fluctuation is abnormal in most ecosystems and, when caused by human activity, is often what threatens biodiversity."

Later, he writes (p. 57): "A natural landscape can be visualized as a 'shifting mosaic' of patches in various stages of recovery from disturbance.... Ideally, a core reserve should be large enough that only a small part of it is disturbed at any one time."

9) To protect the integrity of natural disturbance regimes: The region's forests and the flora, fauna, and natural communities within them have been shaped by the natural disturbances characteristic of the region. Human activity following European settlement has significantly altered these regimes at both site-specific and on a landscape level.

Noss writes (p. 22): "Changes in biodiversity on the spatial scale of a forest watershed (say 1,000-10,000 ha) are likely to be dramatic on a temporal scale of 10 to 500 years, depending on the periodicity of the natural disturbance regime... However, over a larger region of millions to tens of millions of hectares biodiversity under natural conditions will remain relatively stable over centuries, as disturbances in some watersheds are balanced by regrowth in others..."

The establishment of large reserves is possible because of the existence of several millions of acres of undeveloped forest lands in Northern New England provides a unique opportunity to establish large wilderness reserves. With a minimal amount of transactions, and at prices ranging from about \$100 to \$500 per acre—averaging about \$250 per acre—the lands can be purchased by the public from willing sellers. The map on the back page reveals that about two-thirds of the proposed Headwaters RWRS has changed ownership since 1980. It is reasonable to assume that large tracts will be offered for sale within the next quarter century. Will the

public purchase these lands, or will a foreign investor from South Africa, Japan, Germany or Great Britain acquire these ecological treasures?

Footnotes

¹ Note: References in this proposal (unless otherwise noted), and the proposal itself follow the outline of an excellent new 68-page publication: *Maintaining Ecological Integrity in Representative Reserve Networks*, by Dr. Reed Noss, a discussion paper published by World Wildlife Fund Canada/World Wildlife Fund-United States, January 1995. Noss is editor of *Conservation Biology* and co-author, with Allen Y. Cooperrider of *Saving Nature's Legacy: Protecting and Restoring Biodiversity*, Island Press 1994. *Maintaining Ecological Integrity* provides a clear, logical, well-reasoned recipe for reserve design that I encourage others to study closely. Copies are available from WWF-Canada, 90 Eglinton Ave East, Suite 504, Toronto, Ontario, Canada M4P 2Z7. Tel. 416-489-4567 X253 (ask for Jeffrey Kenney). Cost is \$5 plus \$2 for shipping. A real bargain!

² Dr. Stephen Trombulak, "How to Design an Ecological Reserve System," draft of unpublished paper, 1995.

³ J.R. Runkle, "Patterns of Disturbance in Some Old-Growth Mesic Forests of Eastern North America," *Ecology* 63: 1533-1546.

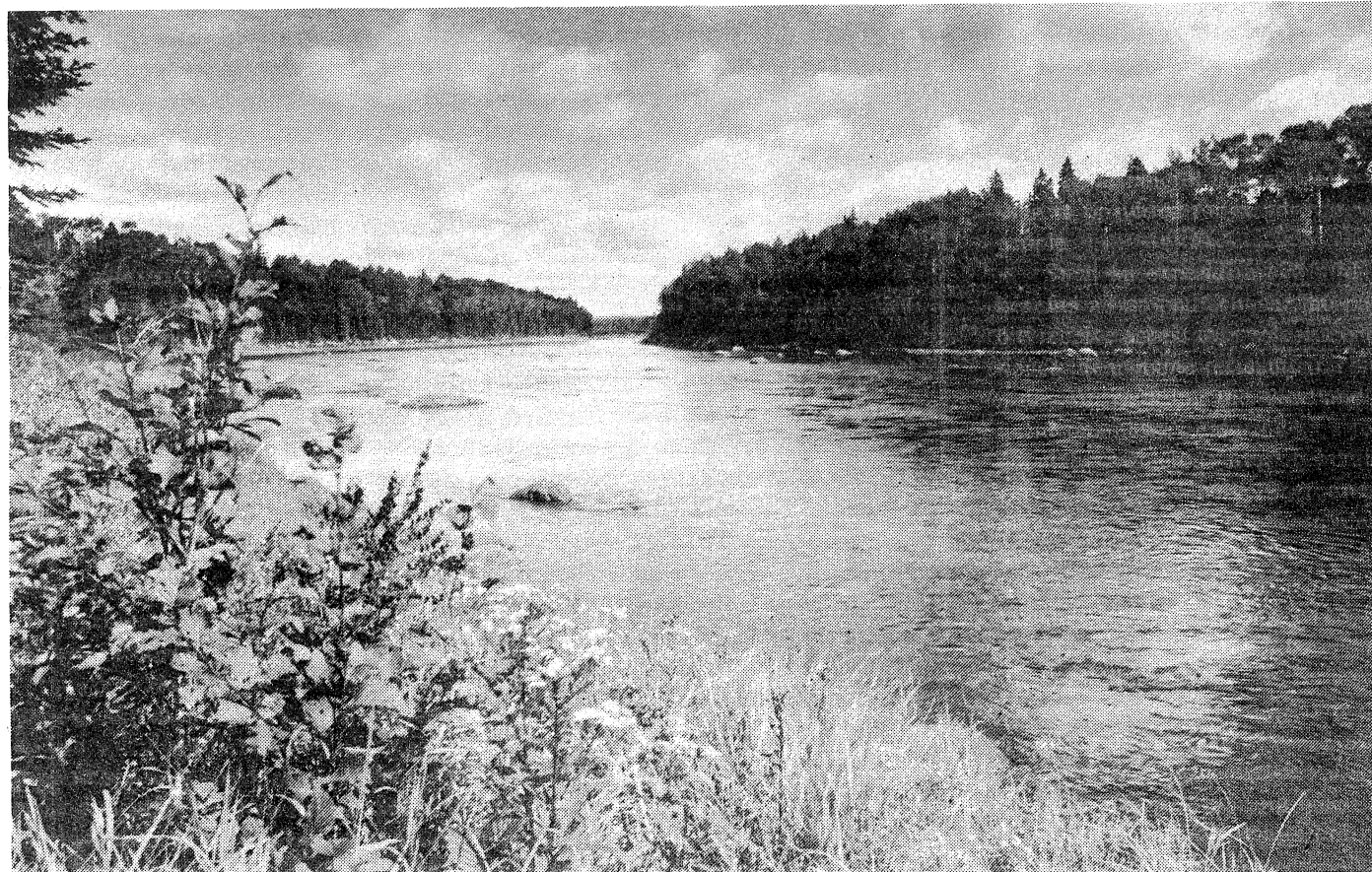
⁴ C.G. Lorimer, (1977) "The Presettlement Forest and Natural Disturbance Cycle of Northeastern Maine," *Ecology* 58:139-148. R.S. Seymour, "The Red Spruce-Balsam Fir Forest of Maine," *The Northern Forest Forum*, vol. 1 #6, p.15-18. C.G. Lorimer & L.E. Frelich, (1994), "Natural Disturbance Regimes in Old-Growth Northern Hardwoods: Implications for Restoration Efforts," *Journal of Forestry*, 1:33-38.

A Challenge to Critics of Headwaters Proposal

We can foresee two types of critics: (1) those who think the status quo is serving the region well; and (2) those who share our concerns about the status quo, but feel this proposal is not the best way to assure sustainable natural and human communities.

To those who like the status quo, we challenge you to demonstrate with scientific documentation that the status quo is ecologically and economically sustainable.

To those who feel the Headwaters proposal is not the best way to promote sustainable natural and human communities, please send the *Forum* your critique of the Headwaters proposal and your ideas for more efficiently achieving the goals of sustainability. We will happily publish as many of your critiques and proposals as space permits.



The St. John River in Northern Maine is the wildest, most remote river in the Headwaters Region. This photo © by John McKeith appears in The Great Northern Forest, published by National Audubon Society, Sierra Club & The Wilderness Society.

Phase II: A Reserve Strategy for the Developed Areas of Maine, NH & VT

The map of the 16 proposed Northern Forest Headwaters Regional Wilderness Reserves on pages 8-9 represents the first phase of a 75-year strategy to protect and restore the biological diversity and ecological and evolutionary integrity of the Watersheds of Maine, New Hampshire, and Vermont. Phase I of this plan only covers the most undeveloped northern portions of the three states.

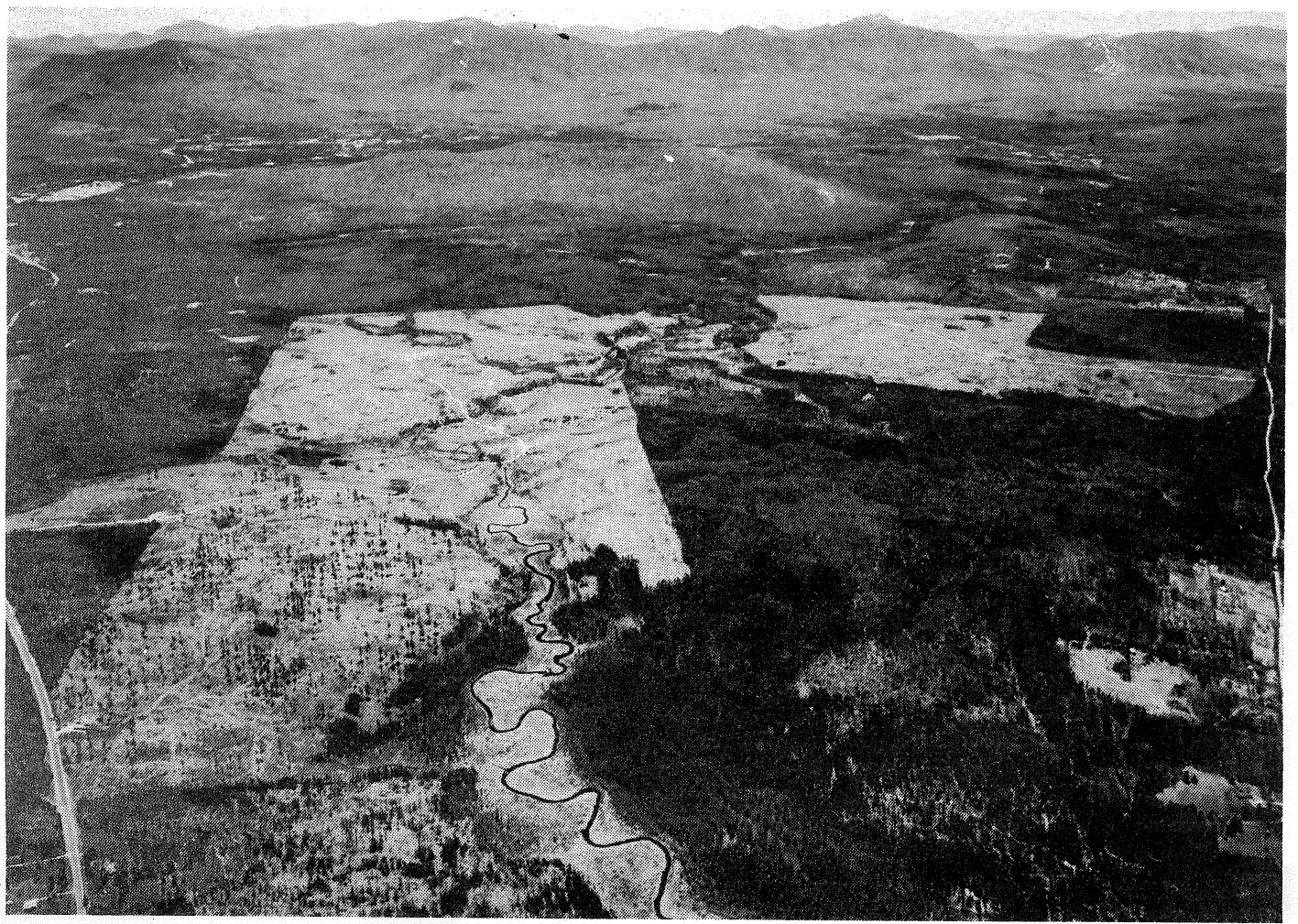
To protect the biological diversity and ecological integrity of the entire region requires a second phase which establishes a network of buffered, connected reserves extending from the large wilderness reserves of the Northern Forest Headwaters to the Atlantic Ocean, Southern New England, New York's Adirondack and Taconic regions, and Eastern Canada.

Design and establishment of Phase II of the Northern Forest Watershed Wilderness Reserve System raises many new issues and poses many new problems. The area south of the Northern Forest Headwaters is much more developed. Ownership is much more highly fragmented. There are no sizable roadless areas. For these reasons, core reserves will likely be much smaller than the wilderness reserves proposed for the Northern Forest Headwaters (Phase I), and the cores will likely be much more isolated from each other.

To assure the integrity of isolated, small reserves, the core areas must be buffered from developed areas and connections between cores must be identified and protected. As a general rule, small, isolated cores require more buffering and connections to other reserves than larger cores that are closer together. Thus, design and establishment of buffers and connecting corridors will play a more critical role in the development of Phase II than in Phase I. Also, the manner in which the landscape outside the reserve system is managed will help determine the size and management options of the buffer zones. If private lands are managed in a truly sustainable manner, buffers generally can be relatively smaller and multiple uses in the buffer zones can be relatively less restrictive than if the surrounding landscape is managed unsustainably.

"Learning to live in harmony with nature should be one of the primary functions of buffer or multiple-use zones," Reed Noss writes. Early successional management—when appropriate—should occur in buffers, not in the interior of core areas. Buffer zones can enlarge a core area by capturing key ecological factors such as rare species habitat that is not included in the core area. Buffer zones can be either publicly or privately owned.

Ideally, core areas would be connected to other cores by multiple linkages. Corridors should, where possible, be both terrestrial and aquatic. Candidates for corridors include: existing migratory routes and trails of terrestrial animals along riparian corridors and ridgelines. Noss advises that a riparian corridor should extend from ridgetop to ridgetop, and a ridgetop corridor should extend downslope on either side to encompass the riparian zones. Stephen Trombulak states: "corridors should allow for movement (a) among large core reserves and some small ones, (b) along elevational gradients,



Voluntary Compliance with Best Management Practices has resulted in ever larger, more abusive whole tree clearcutting in New Hampshire and the Headwaters Region. This clearcut can be seen from Route 3, two miles south of Whitefield, NH. It is approximately 1.8 miles long, and probably about 1000 acres or more. In the upper right hand corner, it extends to another clearcut that is probably another 400 or more acres in size. The biomass mills and other purchasers of wood cut from these very wet forest lands don't seem to care that they are supporting forest liquidation. Photo by Alex S. MacLean—Landslides

and (c) along east-west and north-south axes." A general rule is: the longer a corridor, the wider it should be, with a minimum of about one-half mile.

Data Necessary for the Design of Northern Forest Watershed Phase II Reserves includes:

(1) Locations of rare, threatened, and endangered species, populations, and communities; (Unfortunately, many rare, threatened, and endangered species, populations, and communities may not yet have been identified due to red tape, insufficient funding, or political pressures.)

(2) Examples of rare, threatened and endangered natural communities and seral stages such as old-growth forests, wetlands, and spawning grounds; (All should be protected.)

(3) The distribution of natural ecosystems in the region;

(4) Existing public land (federal, state & municipal);

(5) Existing private conservation land (The Nature Conservancy, Audubon Societies, Land Trusts, etc.);

(6) Location of roads, categorized by type (primary, secondary, trail);

(7) Soil types;

(8) Distribution of all biological diversity; (Remember, the purpose of the reserve system is to protect all species, whether common or endangered.)

(9) Travel routes of species; (This is important for core reserve design and vital for the design of corridors that connect core reserves. Road kill data, sadly, is the best source of information for large vertebrates.)

(10) Watershed boundaries; (Trombulak writes: "If you include representation of all watersheds in your reserve design, you increase your chance of including all species." A core reserve must be located in each primary watershed, and it is very important that

each core include an entire secondary or tertiary watershed.)

(11) Historical distribution of locally-extirpated species;

(12) Ranges of wide-ranging species.

Some of the above data sets are readily available today (existing public and private conservation lands, soil types, roads, watershed boundaries). Other data sets are very incomplete (locations of rare, threatened, and endangered species, populations and communities, the distribution of all biological diversity, travel routes of many species). It is imperative that research fill as many critical gaps in our data sets as swiftly as possible. **However, we have adequate data to begin the process of reserve design for Phase II today.**

Timeframe for Phase II

Begin immediately: Assemble known data; conduct research on the highest priority data gaps; begin to manage existing public and private conservation lands for the goal of protect-

ing and restoring biological diversity and ecological integrity; begin to acquire critical lands from willing-sellers; develop and enforce sustainable forest management practices.

Within 10 Years: Many reserves should now be established and the job of buffering and connecting them should be progressing. More land acquisition. Research, restoration and monitoring are vital during this period.

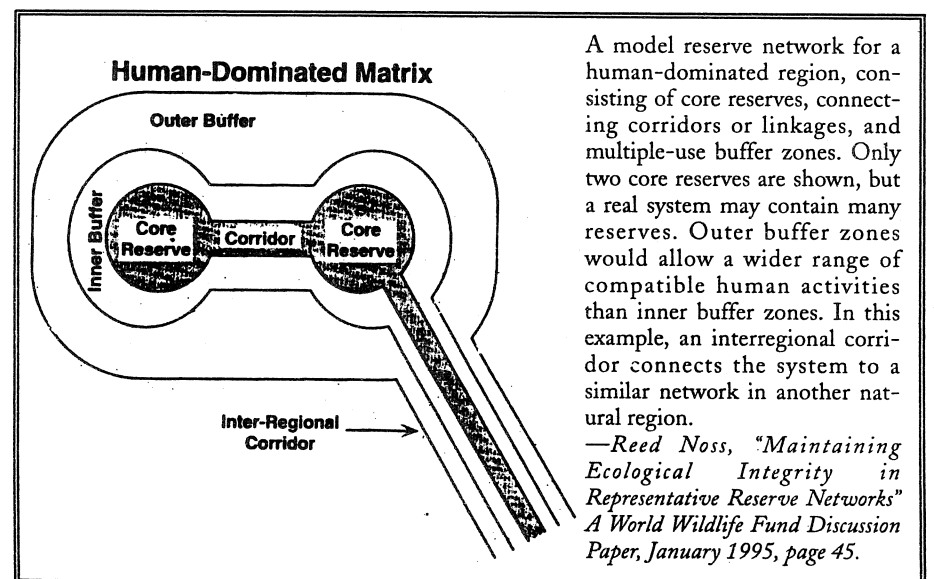
Within 25 years: The Phase II Reserve System should now have been clearly identified and much of it should already be in the initial to intermediate stage of implementation. Monitoring should indicate the success of the reserve design, and should lead to adaptive management to compensate for experiments that have not succeeded.

In 75 years: Phase II Reserve System should be essentially in place.

—Jamie Sayen

References

- Reed Noss, "Maintaining Ecological Integrity in Representative Reserve Networks" A World Wildlife Fund Discussion Paper, January 1995.
Stephen Trombulak "How To Design an Ecological Reserve System," draft of paper to be published in 1995.



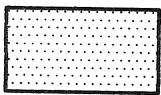
A model reserve network for a human-dominated region, consisting of core reserves, connecting corridors or linkages, and multiple-use buffer zones. Only two core reserves are shown, but a real system may contain many reserves. Outer buffer zones would allow a wider range of compatible human activities than inner buffer zones. In this example, an interregional corridor connects the system to a similar network in another natural region.

—Reed Noss, "Maintaining Ecological Integrity in Representative Reserve Networks" A World Wildlife Fund Discussion Paper, January 1995, page 45.

PROPOSED NORTHERN FOREST HEADWATERS REGIONAL WILDERNESS RESERVE SYSTEM

KEY

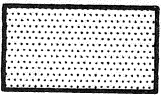
MAJOR EXISTING
PUBLIC LANDS



⑤

RESERVE NUMBERS

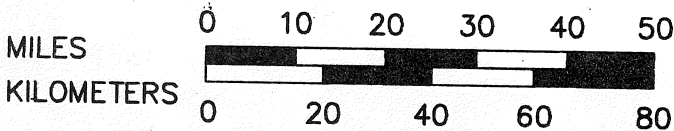
PROPOSED RESERVES



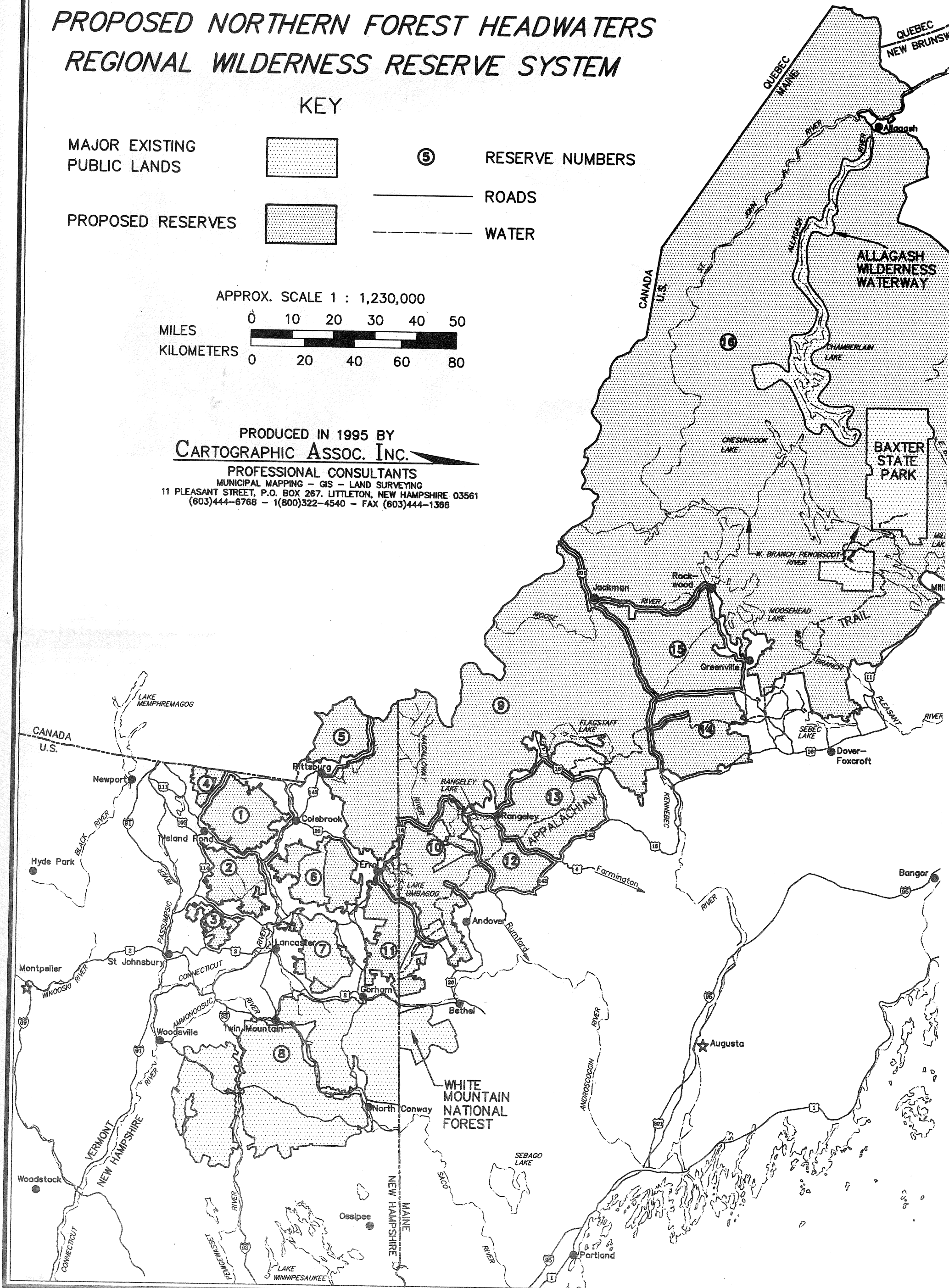
ROADS

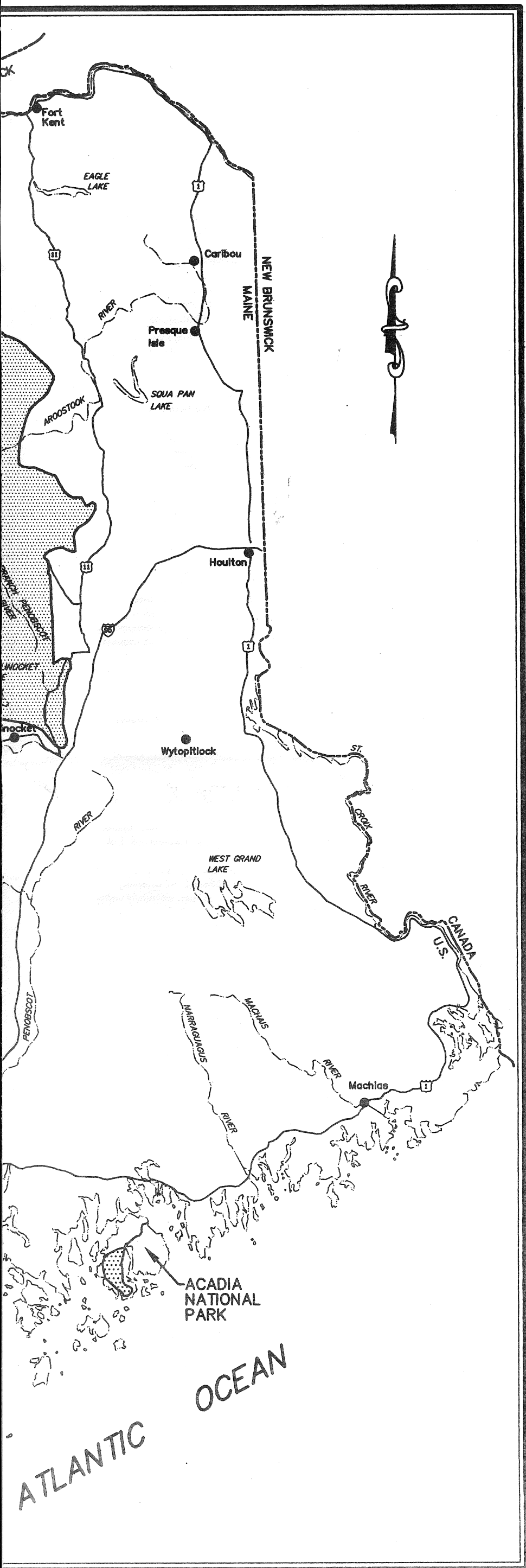
WATER

APPROX. SCALE 1 : 1,230,000



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Inventory of Ecological Features

of the Northern Forest Headwaters Wilderness Reserve System

The following is a short "inventory" of major landowners and ecological features for each of the 16 proposed reserves in the Northern Forest Headwaters Wilderness Reserve System. Information on rare, threatened, & endangered species and natural communities is often unavailable or incomplete for private lands. Acreages for each reserve are approximate.



4—Hurricane Brook Reserve

Approximate Size: 20,000 acres
Major Landowners: Hancock Timber Resources, Champion International
Public Lands: Hurricane Brook Wildlife Management Area
Major Watershed: Coaticook River
Lakes & Ponds: Holland Pond, Norton Pond
Roadless Areas: Essentially Entire
Ecological Features:
• Loons & heron nesting areas.



5—Indian Stream Reserve

Approximate Size: 70,000 acres
Major Landowners: Champion International, Wallace
Public Lands: Connecticut Lakes State Forest
Major Watersheds: Hall Stream, Indian Stream, Perry Stream, Connecticut River
Lakes & Ponds: Fourth & Third Connecticut Lakes
Roadless Areas: Approximately the Northern half (43,000 acres)
Ecological Features:
• NH Rivers Protection Project rated the Connecticut River headwaters the highest possible score for critical ecological significance.
• Several Wolf sightings in recent years.
• Abundant Moose.
• Black spruce swamps.
• Quaking bogs.
• Softwood flats.



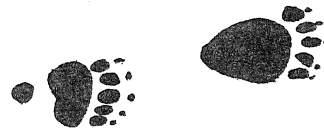
2—Paul Stream Reserve

Approximate Size: 75,000 acres
Major Landowners: Champion International, Hancock Timber Resources, Boise Cascade
Public Lands: Brighton State Park, Brighton Municipal Forest, Wenlock Wildlife Management Area, Darling State Park, Maidstone State Park
Major Watersheds: Paul Stream, Connecticut River
Lakes & Ponds: Maidstone Lake, Dennis Pond, Wheeler Pond
Roadless Areas: Essentially entire, except for the area just west of Maidstone Lake. Many short dead end spurs.
Ecological Features:
• 150-acre spruce-fir old growth on East Mountain.
• Quaking bogs (Dennis Pond).
• Interesting mingling of spruce-fir-larch and Northern Hardwoods-White Pine-Hemlock communities.
• Habitat for peregrine falcon, bear, otter, fisher, & bobcat.



6—Nash Stream Reserve

Approximate Size: 110,000 acres
Major Landowners: Boise Cascade, International Paper, Ray Hartshorn
Public Lands: Nash Stream State Forest
Major Watersheds: Upper Ammonoosuc, Connecticut River, Androscoggin River
Lakes & Ponds: Millsfield Pond, Dummer Pond, Trio Pond, Phillips Pond, Stratford Bog Pond
Roadless Areas: Essentially Entire, except dead-end roads to Nash Stream, Stratford Bog, Phillips Brook (85,000 acres)
Ecological Features:
• Nash Bog is predominantly mixed emergent marsh and shrub scrub.
• Habitat for Northern Harriers, Lynx & Pine Marten.
• Many Arctic/Boreal bryophytes (mosses), herbs & shrubs at higher elevations.
• Possible old growth Northern Hardwood forest on Fitch & No. 3 Mountains.

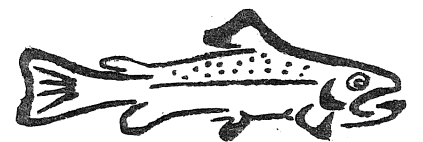


3—Victory Bog

Approximate Size: 30,000 acres
Major Landowners: Hancock Timber Resources, The Nature Conservancy
Public Lands: Victory State Forest
Major Watershed: Moose River
Lakes & Ponds: Victory Bog
Roadless Areas: Gallup-North Concord Road bisects otherwise roadless area.
Ecological Features:
• Victory Bog is third largest non-forested wetland in Northern Forest of Vermont (1100 acres).
• Quaking bogs.
• Habitat varies from low elevation, remote wetlands to Burke Mountain (c. 3267 ft.).

7—Kilkenny Mountains Reserve

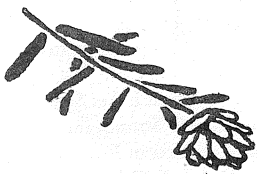
Approximate Size: 85,000 acres
Major Landowners: Hancock Timber Resources, James River, Champion International
Public Lands: White Mountain National Forest (Kilkenny District), Moose Brook State Park
Major Watersheds: Upper Ammonoosuc, Connecticut, Androscoggin
Lakes & Ponds: York Pond, South Pond
Roadless Areas: Western and southern portions of Kilkenny District of WMNF
Ecological Features:
• Peregrine Falcon habitat





8—White Mountain National Forest

Approximate Size: 700,000 acres
Major Landowners: No private land
Public Lands: WMNF, Crawford Notch State Park, Franconia Notch State Park
Major Watersheds: Pemigewasset River, Saco River, Swift River, Gale River, Androscoggin River, Baker River
Lakes & Ponds: Stinson Lake, Mirror Lake, Russell Pond, Mountain Pond, Flat Mountain Pond
Roadless Areas: Pemigewasset Wilderness (121,000 acres), Carr Mtn (47,000 acres) Sandwich Wilderness (92,000 acres), Wild River/Kearsarge (103,000 acres), Presidentials (76,000 acres)
Ecological Features:
• Most extensive roadless areas and alpine zone on New England.
• Lynx habitat.
• Most active peregrine nests in NH (Crawford Notch).
• Several large old growth areas, including: Mountain Pond, Great Gulf, Gibbs Brook, Nancy Brook, The Bowl, Eagle Cliff



9—Boundary Mountains Reserve

Approximate Size: 1,100,000 acres
Major Watersheds: Each district is a watershed
Roadless Areas: Dead Diamond River (NH)/Magalloway R (ME) (63,000 acres); & Dead, Moose & Upper Kennebec R.

9-A—Connecticut Lakes/Magalloway District

Major Landowners:
NH: Boise-Cascade, Dartmouth College, Hancock Timber Resources, New England Power Co.
Maine: Boise-Cascade, International Paper, Seven Islands
Public Lands: Kennebag Lake, Connecticut Lakes State Forest
Major Watersheds: Magalloway, Androscoggin Lakes & Ponds: Anzicosohs, Kennebag
Ecological Features:
• East Inlet provides wintering habitat for bald eagles.
• 427-acre virgin red spruce-balsam fir forest at Norton Pool (NH)
• Historical golden eagle use area.
• Important link between wildlands of Maine and the Northeast Kingdom, Green Mountains & Adirondacks
• Relatively high level of pine marten sightings.
• Twin Peaks in Bowmantown geologically noteworthy and botanically outstanding due to calcareous & serpentine communities.

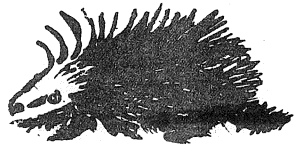
9-B—Dead River District

Major Landowners: International Paper, Sappi, Boise-Cascade, Penobscot Nation, Central Maine Power
Public Lands: Bigelow SP, Appalachian Trail
Lakes & Ponds: Arnold Pond, Chain of Ponds, Crosby Pond, Enchanted Pond, Flagstaff Lake, Spencer Lake
Ecological Features:
• Old growth stands at: Bigelow Mtn. (spruce-fir), and Huston Brook (Cedar); Eustis (pure red pine)
• Bald Eagles (Flagstaff Lake).
• Approximately 10 rare plant locations (S1 & S2—critically imperiled or imperiled in state).
• Serpentine site at Parker Brook.

9-C—Moose River District

Major Landowners: Sappi, Hancock Timber Resources, Passamaquoddy Forestry, Boise-Cascade, Lowell Associates, International Paper, Hilton, Hugh's Lumber, Megantic
Public Lands: Holub TWP
Lakes & Ponds: Attean Pond, Holub Pond, Wood Pond, Little Bigwood Pond
Ecological Features:
• Old growth stands at: #5 Bog (red pine); Attean Pond (jack pine)

• Several heron rookeries in Attean area.
• Extensive wetland complex (#5 Bog).
9-D—Upper Kennebec District
Major Landowners: Sappi, Boise-Cascade, Central Maine Power
Public Lands: Appalachian Trail
Lakes & Ponds: Pierce Pond, Stratten Brook Pond



10—Umbagog, Richardson, Mooselookmeguntic Lakes Reserve

Approximate Size: 220,000 acres
Major Landowners: ME: Boise-Cascade, Seven Islands, International Paper, Hancock Timber Resources; NH: James River, Boise-Cascade
Public Lands: Grafton Notch State Park, Appalachian Trail, Umbagog National Wildlife Refuge
Major Watersheds: Androscoggin
Lakes & Ponds: Umbagog, Upper and Lower Richardson Lakes, Mooselookmeguntic
Roadless Areas: Essentially all except for southern tip from Andover, Me south
Ecological Features:
• 6 "Outstanding lakes" (Beaver Pond, Mooselookmeguntic, Pond in the River, Upper and Lower Richardson Lakes, Cupsuptic).
• Umbagog is a major waterfowl breeding area—loon, osprey, great blue heron, bald eagle.
• Old growth stands at: Elephant Mtn. (spruce-fir); Richardson Narrows (white pine).



11—Mahoosuc Reserve

Approximate Size: 110,000 acres
Major Landowners: ME: Boise-Cascade, Seven Islands, Sunday River Ski Area; NH: Hancock Timber Resources, James River, Boise-Cascade
Public Lands: ME: Grafton Notch State Park, Mahoosuc Mountain Management Unit
Major Watersheds: Androscoggin
Lakes & Ponds: Success Pond
Roadless Areas: Essentially entire except Success Pond road.
Ecological Features:
• Great habitat diversity from alpine areas of Mahoosucs to lowland streams & wetlands of Androscoggin River valley.
• Old growth balsam fir on Baldpate Mountain.
• Several rare plant & unusual community sites, primarily alpine. Goose Eye Mtn. is second to Mt. Katahdin in alpine plant diversity.



12—Tumbledown Mtn. Reserve

Approximate Size: 80,000 acres
Major Landowners: Boise-Cascade, Hancock Timber Resources, International Paper, Georgia Pacific
Public Lands: Appalachian Trail, Little Swift River MPC
Major Watersheds: Androscoggin, Kennebec
Roadless Areas: Northern two-thirds
Ecological Features:
• Tumbledown Mt. has several rare plants & peregrine falcons.



13—Sugarloaf/ Mt. Abraham Reserve

Approximate Size: 170,000 acres
Major Landowners: International Paper, Sappi, Georgia Pacific, Boise-Cascade
Public Lands: Appalachian Trail, US Navy
Major Watersheds: Kennebec, Androscoggin
Lakes & Ponds: Redington Pond
Roadless Areas: Entire, except NW corner
Ecological Features:
• Seven of the eleven highest mountains in Maine including Sugarloaf #2, Crocker #4, Saddleback #7, Mt. Abraham #8
• Saddleback, Sugarloaf & Mt. Abraham all have rare alpine plant communities.
• Several small old growth spruce stands.



14—Moxie Pond Reserve

Approximate Size: 160,000 acres
Major Landowners: Boise-Cascade, International Paper, Sappi, Hancock Timber Resources
Public Lands: Appalachian Trail
Major Watersheds: Kennebec, W. Branch Pisquaticus
Lakes & Ponds: Moxie Pond, Pleasant Pond, Austin Pond, Bald Mountain Pond
Roadless Areas: Largely roadless
Ecological Features:
• Moxie Pond supports population of rare brook stickleback.
• Bald Mtn. Pond has blueback char.
• Red & white pine old growth stands.



15—Kennebec Headwaters-Misery Ridge Reserve

Approximate Size: 200,000 acres
Major Landowners: Sappi, International Paper, Huber, Hilton, TM
Public Lands: Little Squaw Mtn.
Major Watersheds: Kennebec, W. Branch Pisquaticus
Lakes & Ponds: Indian Pond, Burnham Pond, Black Bowl Pond
Roadless Areas: Largely roadless
Ecological Features:
• Upper Kennebec (Class A river).
• Parlin Stream Falls has outstanding scenic & natural values.
• Area virtually untouched & supports abundant wildlife.



16—Thoreau Reserve

Approximate Size: 4,900,000 acres
Major Watersheds: Each district is a watershed
Roadless Areas: Entire area is without paved public roads, although there are thousands of miles of logging roads.

16-A—Upper Kennebec-Moose River District

Major Landowners: Sappi, Boise-Cascade, Bowater, Huber, TM, Shabot
Public Lands: Sugar Island, Mt. Kineo, Farm Island
Lakes & Ponds: Long Pond, Moosehead Lake, Prong Pond, Spencer Pond
Ecological Features:
• Bald eagles, herons, & merlin around Moosehead Lake
• Moosehead is one of six lakes rated "outstanding" for both botanical and wildlife resources.

16-B—West Branch Pleasant River District

Major Landowners: Hancock Timber Resources, Huber, Cassidy, Sappi, Bowater, Champion, Webber, Boise, Prentiss-Carlisle
Public Lands: Hermitage, Gulf Hags
Lakes & Ponds: Big Lyford Pond, Upper Wilson Pond
Ecological Features:
• Peregrine falcons on Boarstone Mtn.

• Hermitage (white pine); Boarstone Mtn. (red spruce).

16-C—Allagash District

Major Landowners: International Paper, Bowater, Seven Islands, Fraser, Irving, Huber
Public Lands: Allagash Wilderness Waterway, Deboulie Mtn.
Lakes & Ponds: Churchill Lake, Clear Lake, Long Lake, Big Pleasant Lake, Priestly Lake, Umsaskis Lake, Allagash Ponds
Ecological Features:
• 8 listed old growth stands, including: Rocky Brook, Dry Town (red spruce), & Eagle Lake (100 acre white pine)
• Several rare communities around Deboulie Ponds (talus woodland, acidic cliff & seepage swamp).
• 5 ponds support blueback char (mostly in Deboulie).
• 5 known bald eagle nesting sites in Eagle/Churchill Lake region.

16-D—Upper Aroostook District

Major Landowners: Bowater, International Paper, Seven Islands, Webber, Huber, Fraser
Public Lands: Big Reed Pond, Scraggly Lake
Lakes & Ponds: Upper Hudson Pond, Millinocket Lake, Mooseleuk Lake, Munsungen Lake, Big Reed Pond
Ecological Features:
• Big Reed Pond is one of largest and most diverse old growth forest ecosystems in New England.
• Old growth stands at: Chandler Mtn.; Snowshoe Pond.

16-E—St. John District

Major Landowners: Seven Islands, International Paper, Irving, Bowater, Domtar, Huber, Kruger-Daquaam, Daishawa, Prentiss & Carlisle
Lakes & Ponds: Baker Lake
Ecological Features:
• Extensive rare plant sites (19 are listed, and many have numerous rare species).
• Diverse wetland communities (3 different wetland types and large areas of more common wetland types).
• Yankeetuladi is a 240 acres virgin Northern Hardwood forest.
• Lynx habitat.

16-F—West Branch Penobscot District

Major Landowners: Bowater, Seven Islands, Cassidy, Hilton, Daishawa, Hugh's Lumber, Moulton, Webber, Sappi, Shaw, Passamaquoddy Forestry, Huber, McCrillis Land Association
Public Lands: Baxter State Park, West Branch Penobscot, Gero Island, Chesuncook, Lobster Lake
Lakes & Ponds: 30 lakes & ponds designated "outstanding" by Maine State Inventory. Thirteen of these are large, essentially undeveloped lakes. Chesuncook & Lobster Lakes were rated "outstanding" for both wildlife & botanical resources.
Ecological Features:
• 12 rare plant sites (most in Baxter SP—alpine sites).
• 7 bald eagle nesting sites.
• 12 old growth stands; Gero Island white pine stand is one of very few in "presettlement" condition).
• Boundary Bald Mtn. is botanically significant due to low elevation alpine community supporting many rare plants.

16-G—East Branch Penobscot District

Major Landowners: Seven Islands, Bowater, Kruger-Daquaam, Cassidy, Huber, Penobscot Nation, Fraser, Hancock Timber Resources, Sherman Lumber, Baskehegan, Godsoe
Public Lands: Baxter State Park, Chamberlain, Scraggly Lake
Lakes & Ponds: Allagash Lake, Chamberlain, Johnson Pond, Katahdin Lake, Marble Pond, Mattagamon Lake, Scraggly Lake
Ecological Features:
• Old Growth stands at: Traveller Mtn. (red spruce), Wassataquoik Lake (red spruce), N. Turner Brook (red spruce), Baxter Scientific Area (300 acres of spruce & northern hardwood).
• Marble Pond is a ribbed fen—an unusual 225 acre wetland community supporting many rare and unusual plants and abundant wildlife.



Wildlands Create Context for a New Economic Direction

by Andrew Whittaker

A northern New England Wilderness reserve system offers fresh opportunity to chart a new economic direction. Achieving the goals of sustainability, local prosperity and community empowerment will require new approaches to landscape, resource and economy. A commitment to establishing Wildlands requires commitment to rebuilding and re-fashioning local economy.

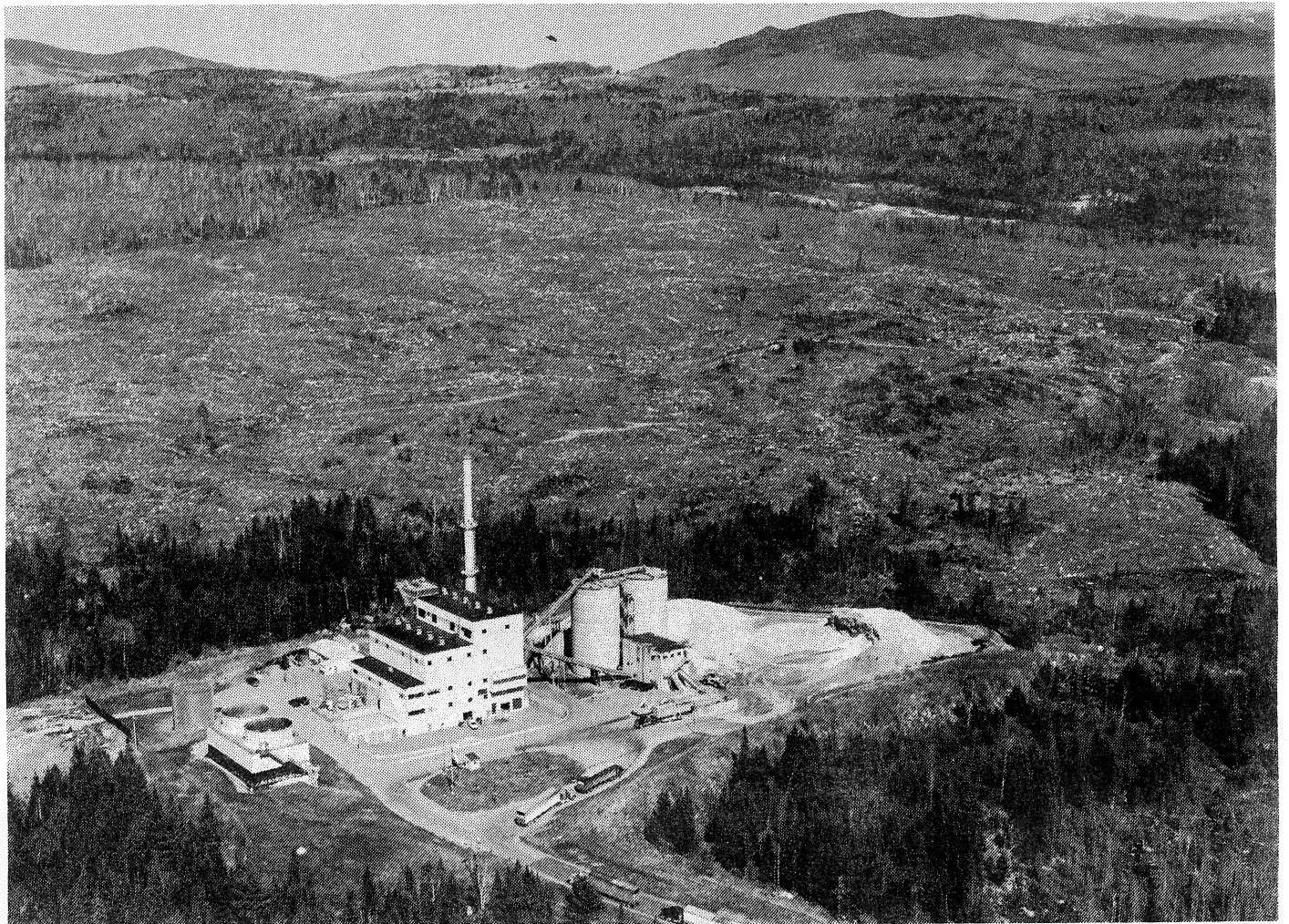
A community or region that does not organize around its interests cannot defend them. Our interest, the essence of where we are, is the forest.

What We Are Doing

Jane Jacobs, the Rocky Mountain Institute, Paul Hawken and numerous economic thinkers all correctly point to the economic opportunities that exist where, today, we squander resources. Waste and expense are symptomatic of opportunities to build local economies.

One of northern New England's chief exports is *equity*: raw log exports represent manufacturing opportunities forgone as well as a subtraction from the resource base; truckloads of fluid milk are a commodity individual farmers produce at a loss. Meantime, much of what we need is produced elsewhere and transported here—a straight-piping of our money out of the region.

As Jacobs, RMI and others suggest, we can build local economy by meeting our own needs. We can replace imports with products of local manufacture. We can reduce our dependency on imported sources of energy and other industrial



The Pine Tree biomass power plant in Bethlehem, NH is surrounded by a sea of very large clearcuts. Proponents of whole-tree harvesting promised healthy forests. But they opposed any regulation of wood-chipping, and the result has been ever larger, more destructive clearcuts. (See photo on page 7) Photo by Alex S. MacLean—Landslides.

inputs by looking to our own resources. We can also replace noxious products and technologies with cleaner substitutes using resources found closer to home.

We can have a sawtimber economy and add value to standing timber if we

create stronger domestic “junk” wood markets. Our highest quality sawlogs can create more manufacturing jobs in our own communities than they presently do. We can capitalize on conservation of our Wildlands and create ways for visitors to see and experience our environment—and our culture.

such as brush gathering for ornamentals, berrying and herbaling, although disparaged by the over-capitalized, can provide significant economic benefits, particularly as markets increasingly reward natural products.

A further economic role of Wildlands is to be found in their interaction with the surrounding forest. Wildlands would provide managed forestlands with a baseline for scientific study: what would occur in our woods if left alone? Is human management improving on or interfering with natural rates of productivity, with natural succession or forest soils? An old silvicultural textbook I often refer to makes the point that excessive harvesting requires a “return to nature.” Wildlands would provide the reference.

Further, aren't Wildlands a reservoir, gene bank or insurance program for managed woodlands? Remote and mature forests are less subject to pestilence and exotics than our manipulated ones. Natural forests, through a variety of functions, have thrifter reproduction. Some of these effects must spill over into the surrounding landscape—certainly in beneficial impact on local energy transactions (wind and microclimate) and water quality.

Finally, many acknowledge the need for public lands such as the Wildlands to offer exemplary models of forestry. Natural forestry regimes on the margins of the Wildlands would offer the opportunity to establish long rotations reflecting species' natural maturity: 80 years for balsam, perhaps 250 for spruce and white pine. How many trees must die and decay on site to maintain productivity and old growth characteristics? What equipment would be best suited to low impact extraction? What local markets would make best use of the harvest? The establishment of such natural forestry models would help to re-invigorate the scientific underpinnings of the forestry profession.

Wildlands

Across the Headwaters region, summer Youth Conservation Corps and vocational education programs funded by recreational tax proceeds (see “Actions That Promote Sustainable Local Economies”) could involve young people in biological inventorying, trail creation or maintenance, design of other facilities (lean-tos or hostels) for a low impact tourism infrastructure. A chief function of YCC would be to provide the Wildlands with institutional memory, management and monitoring of reserve goals, and to offer a more meaningful connection to place than is provided today for our young people.

Such an expenditure would yield benefits all around. Those who pay the bill receive access to a wilderness experience. Year-round residents in communities surrounding the Wildlands can build businesses catering to a tourist population which desires, above all, the experience of a landscape. Young people get an education: who hasn't learned more from a summer spent working with others in the woods than from the tedium of classrooms?

Alverson et. al. (*Wild Forests*) in their Wildland proposals for national forest in Wisconsin support hunting-gathering pursuits on Wildlands that do not interfere with natural processes. As one who stopped hunting when roads and vehicles and roadhunters began appearing in places I formerly hiked to, I can see Wildlands as an effective means to re-introduce quality back into the hunting experience. Other activities

Problems With Our Current Economy

The current economy of the Northern Forest Headwaters region promotes inequality, instability, and unsustainability:

- The multinational paper corporations, which dominate the current economy, are in decline and have not served the people, wildlife, forests, and rivers of the region well.
- Dominance by the paper industry means: (a) lack of economic diversity; and (b) lack of labor-intensive secondary and tertiary value-added opportunities.
- Shortfalls in the most economically desired species (and age classes) means that machines and mills will close.
- The region's mills are old, uncompetitive with the newer mills of the South, and industry is not adequately investing to make them more competitive or more environmentally safe.
- The unwillingness of the paper companies to convert the region's mills to Totally Chlorine-Free paper bleaching means: (a) continued poisoning of rivers, fish, lobsters, and citizens, and (b) a squandered opportunity for these mills to get a head start in the most promising new paper market.
- Industrial forest practices are economically and ecologically unsustainable. Large clearcuts have degraded habitat, disrupted natural processes, and jeopardized the sustainable flow of high quality timber.
- Growing reliance on wood chipping for biomass boilers produces negative ecological and economic consequences due to intensive short-rotation whole-tree harvesting and the consequent loss of future high-value sawlogs.
- Emphasis on “productivity” gains has promoted the substitution of capital-intensive technology for labor.
- The global economy means ownership of land and mills is not local; in most cases ownership is not even regional.
- The global economy encourages the export of unprocessed raw logs and drives demand to unsustainable levels for some species and age classes.
- Sustainable development, as currently touted by industrial nations, is not and never has been sustainable.
- Current tax policy favors the global economy and suppresses local, diverse, sustainable economies.
- In this region, local agricultural potential is underdeveloped and local markets are either inadequate or unsupportive of local organic produce.
- Tourism is geared towards motorized recreation, promotes second home development construction, higher local infrastructure costs that drive up property taxes, and generally results in low-paying service jobs.

—JS



Abandoned farm, Aroostook County, Maine. Photo by Stephen Gorman

Actions That Promote Sustainable Local Economies

The following list represents just a few of the actions communities can take to promote sustainable, locally-controlled economies. Make up your own list.

- Establish community capitalization pools by funding and extending such programs as USDA's Northeast SARE (Sustainable Agriculture Research and Education) program or RDF (Rural Development through Forestry).
- Create trail, rail, and river infrastructure for low impact tourism in concert with outdoor education programs for both visitors and residents. Create an Ogdensburg to Halifax, NS trek route by drawing together existing resources, public and private, such as the Lake Champlain and Bay of Fundy ferries and boat rental businesses.
- Pursue a decentralized energy policy by encouraging smaller-scale, environmentally sustainable production and homestead energy independence through energy tax credits.
- Create tax funding sources for conservation initiatives and Wildlands by taxing end products like recreational equipment that rely on environmental integrity in return for conserving of streams, fish, forests. Create investment pools for forestry and agriculture by taxing increments of value-added, so that a log would pay marginal taxes at each step of production from stump to chair. Such taxes are contracts; state and federal taxes should deliver benefit to the taxed as well as general welfare.
- Create holistic development philosophy and resource management toward communities and businesses through such projects as Vermont's Holistic Resource Management which promotes farm & homestead ecology.
- Fund vocational education to the same degree as college preparation tracks and encourage students to mix the two. Encourage innovations in education.
- Include completion and on-going monitoring programs of National Biological Survey, State Heritage and water quality testing projects in education, training students in scientific methods.
- Increase relevance of forestry as a profession and science. Encourage legislators to require forest plans for all significant harvests. Accept the plans of citizens as well as professionals, but hold all to the same standards.
- Change current use appraisal that excludes land not under active management. Private reserve lands contribute to social good too.
- Make green certification a public procedure and readily available to cooperative alliances of landowners, loggers, sawmills, end-users and urban customers. Encourage end-user databases, market access information and affordable housing projects based on local suppliers and lumber.
- Establish reserves and integrate them socially, economically, and geographically with the surrounding landscape, involving local communities and conservation science in their governance.

—AW

Overall, we can think of Wildlands as a component of local economy that *replaces imports and reduces exports of equity*. Today we import culture and recreation; with cultural ties to Wildlands renewed over years, we would hunt, fish or hike instead of watching TV or running around on a Japanese import burning Middle Eastern fuel. Further, across much of the Headwaters Reserve area, paper companies have already exported much of the equity—a situation the reserves would halt and eventually reverse.

Farm and Forest

One approach to stronger local economies is increased organization of landowners, loggers, sawmills and woodworkers. Landowner alliances can help share information about markets and reputable harvesting operations while sharing forestry and other silvicultural services such as timber stand improvement. Loggers could have assured access to jobs over time, a key aspect of good cutting, if they had clientele who desired to actually practice silviculture. Databases of worldwide specialty end-users as well as organization of local woodworkers would strengthen the existing market structure for wood, a benefit for sawmills. A retailing structure that carried local finished goods more widely into downtowns of the region and Northeast would offer towns' cultural attraction as well as develop wider opportunity for local manufactures—which in turn creates markets for services and tools of the trade.

Are we adding sufficient value to the wood we cut? While some note that a state like Vermont or region like New England could not possibly mill what is cut there, is this really an argument for continued exporting of equity when sawmill owners recognize that trees are being harvested before economic maturity? I have seen several sorts of mills and woodworking shops: one has a container for every category of scrap piece while the other has a chipper or one big pile for everything.

There is no fault to find here: merely the observation that an economy is all about converting waste into product. One man's work is another man's job. It might simply be that our economy lacks the sophistication and maturity for necessary linkages to have been created.

Our efforts need to focus on creating symbiosis. Examples of opportunities to create work through conserving resources, replacing imports and adding value to products of farm and forest abound. The required catalysts are organization to match needs and capital pools to get projects off the ground.

One major area to consider is affordable housing. A common sight in northern New England is a trailer on a lot being clearcut or heavily high-graded. The irony is that the trailer owner cannot "afford" to build a house from native material grown on site. Yet such a house could acquire rather than lose value like trailers do, and cut energy costs to the homeowner. Certainly there is opportunity here; we need to learn how to act on it.

On the farm, we have the opportu-

Principles of Low Impact Forestry

Alternatives to mechanical harvesting have to allow long-term productive forestry. They have to address the problems of skidder trails, and the damage to the roots and bark of trees adjacent to the trails. Alternatives also have to be economically viable.

Criteria for alternative woods technologies must include the following:

1. Machinery must be affordable and easily maintained.
2. The harvest system must minimize skidder trails.
3. Light cuts must be more economical.
4. The technologies and methods must be easily copied and adaptable.
5. The harvest system should represent long-term stewardship, not just a cut and run operation.
6. Logging roads must be designed for minimal impact, but allow frequent, light cuts.
7. There must be economic incentives for landowners to enroll into such long-term programs.
8. There must be guidelines for landowners/foresters/loggers with checks and balances to assure compliance.
9. There must be penalties for abuse.
10. Examples should be set on both state and federal lands.

Excerpted from "A Proposal for Intensive Forest Management Based on Low-impact, Low-cost Technologies" by Dana Marble, *Forum* vol. 3 #1. Chart below compiled by Mitch Lansky.

Array of Logging Impacts

	Higher-impact	Lower-impact
Road size	highway	one lane
Skidder/forwarder		
trail size	14+ feet	10- feet
Trail distribution	30-40 feet	100+ feet
Cutting intensity	70-100%	30% or less
Yarding system	whole-tree	short wood
Yarding area	acres	along trails
Harvest target	high-grade	low-grade
	fast growth	slow growth
Tree retention	small/young	young/old/dead
Stand structure	simplified	maintained/enhanced
Natural succession	truncates	allows
Landscape impact	fragments	maintains interior
Machinery	big/expensive	flexible/affordable
Production goals	quantity	quality
Long-term community		
impact	degrades	enhances

nity to tie papermaking and alternative building materials into crop production, diversifying the agricultural economy. A group of Maine farmers has been experimenting with growing flax and notes the need for a processing mill for their effort to go anywhere. Hemp offers potato farmers another crop that helps interrupt pathogen cycles. Straw is of growing popularity as a highly insulative construction material and is yet another alternative to tree pulp.

A small-scale paper-making industry capable of utilizing agricultural crops is a viable option for New England. (The technology for small-scale papermaking exists, by the way, and is being imported to the U.S. from Ukraine.) Such smaller scale manufacturing would tie more closely to local fiber supply, potentially yield the higher quality paper which is New England's niche in papermaking, and could be capitalized on a community scale. The end product would be fully biodegradable and the process itself produce nothing that could not be composted, unlike organochlorines.

Towns

Over the long term, we might consider how our settled places in fact relate to the surrounding landscape. Do our cultural surroundings reflect our natural heritage as well? Do our towns have the green spaces, the artisan retailing, and architecture, the overall design that invites visitors to stay a while and creates a sense of shared culture for those growing up here? Do our towns reflect generic retail-strip consumer values or livable places in harmony with surrounding woods, fields and Wildlands?

An analysis of what makes our towns distinctive gives us an outsider's eye for our own surroundings, an appreciation for what will draw people from their cars and into our communities. Railroads have given many of our



"The role the [Connecticut River] plays, the role it has played, is that of a transcendent wisdom we can return to, despite several centuries' neglect and desecration. It occurred to me once this summer as I hoed my celery (like the Roman) many miles upriver from Long Island Sound, yet wishing for a load of eelgrass to add to my sandy terrace soil. After all, isn't it only right the ocean make some return of nutrient for all the sediments we upriver send it?"

"Then, of course, I recalled that once upon a time, with the salmon and shad runs each spring, Nature of its own accord made that return—and much more artfully than with a truckload of seaweed puttering along blacktop."

—Andrew Whittaker, "New Direction for Forestry & Agriculture—Perma(nent) Culture," *Forum*, vol. 3 #2 (Winter Solstice 1994) Photo of Connecticut River meanders by Alex S. MacLean—Landslides

region's towns a distinct architecture and geography as well; the history of railroads is also the history of our land use and land abuse. Pre-dating but not escaping our technology are the rivers which gave birth to manufacturing's distinct architecture—another asset our towns could capitalize on to greater effect.

The life of our towns is a direct reflection of our relation to our forest. The cutting and manufacturing of timber contributed to the history of all our towns. The lack of a considered approach to conserving our forests is mirrored in the intractable social conditions we who live here know so well. A Wildlands which puts our relation to the woods on a more secure footing can renew the cultural life of our towns with manifold economic and social benefits.

Conclusion

Our current economy offers us a field of increasingly unattractive options that do not address underlying problems. Most everything we eat and utilize is imported, neither produced locally nor sold through local enterprise. We export commodities without regard for the underlying resource base, manufac-

turing creates poisonous products and by-products. Cash leaves our communities without sufficient multiplier. Employment is tenuous and often poor-paying. Social deficits are high in the larger towns of the northern forest.

A new economic direction cannot solve these problems overnight. Nor will a Wildlands reserve system magically create local economy. We have to think together and organize locally in order to have an economic system that preserves our connection to the wild.

But we also have to question the alternatives. By simple observation, we know that our communities grow more individualized, polarized and distant from Nature, as our economic life becomes more generic and less localized. As fact and symbol, Wildlands could be cornerstone to an alternative future.

'From Volume to Value'

"Since the sustainable use of renewable resources probably depends upon the existence of settled, small local economies and communities capable of preserving the local knowledge necessary for good farming and forestry, there is no easy or quick answer to the problem of the exhaustion of renewable resources. It's unlikely that we can conserve natural resources so long as our extraction and use of the goods of nature are wasteful and improperly scaled, or so long as these resources are owned or controlled by absentees, or so long as the standard of extraction and use is profitability rather than the health of natural and human communities."

—Wendell Berry "Conservation is Good Work," *Forum*, vol. 1 #1 (Autumn Equinox 1992)

"Access to resources is not gained through wealth but through work, which is itself centered on adding value to extracted resources, (manufactures and agriculture) protecting the capital value of standing forests and running streams (public service), or, finally, making non-extractive use of such resources (tourism in its many forms)."

—Andrew Whittaker, "Economics of Place," *Forum*, vol. 1 #6 (Mid Summer 1993)

"The most for the cheapest is not productive, unless we decide that 'most' means the highest quality sustenance, physical and spiritual, and that 'cheapest' implies minimal impact on the integrity of the forest, hydrology, and all linking biological systems. Under these terms, we must admit that today's system of production and retailing is expensive indeed."

—*Ibid.*

"Fundamental Principle: The ecosystems of the Northern Forest have limits. We must live within these limits if we wish to maintain the ecosystems."

—Mitch Lansky, "Recommendations for Regional Economic & Ecological Revitalization," *Forum*, vol. 2 #5 (Listening Sessions 1994)

"Human labor . . . is not just socially but thermodynamically necessary; more people must orient themselves to provisioning their own needs because the biosphere's health requires we shift out of massive energy consumption."

—Andrew Whittaker, "New Direction for Forestry & Agriculture—Perma(nent) Culture," *Forum*, vol. 3 #2 (Winter Solstice 1994)

Headwaters Restoration Academy

I propose the creation of a Northern Connecticut River Valley Restoration Academy that teaches ecological restoration and natural history, socially-responsible, watershed-based economics, and a vocational school that teaches skills and crafts that add value to wood, agricultural and other natural resource products. Aligned with this "Academy" would be a network of museums. A natural history museum should be on the Academy campus. Smaller satellite museums treating various aspects of our regional legacy could be built in many of the small towns of the region. . . .

Overall, we must broaden the idea of restoration to include cultural restoration. Hence the need for a new kind of academic institution that will offer degrees in ecological restoration, ecology, and the natural history of the region. Allied with this new academy must be a vocational school that teaches the skills that will sustain our diversified, value-added economy. If we are to develop an economy that produces quality wood products such as furniture and musical instruments, we will need to train workers in skills that have largely been forgotten. The vocational component would teach traditional agricultural practices, crafts such as quilt-making, and small-scale logging, including logging with horses rather than skidders, as well as woodworking skills. . . .

Excerpted from: "Cultural Restoration: The Key to Ecological & Economic Sustainability," by Jamie Sayen, *Forum*, Mud Season 1993.

Land Acquisition~\$100 Million a Year for Two Decades Can Buy 7 Million Acres

by Jamie Sayen

"Our land is not for sale. How much are you offering"

—Anon. Landowner, 1988

The establishment of the Northern Forest Headwaters Wilderness Reserve System will require acquisition from willing-sellers of approximately seven million acres, most of which is currently owned by paper companies, large non-industrial landowners, and real estate speculators. At first glance, this seems a preposterously expensive proposition. Actually, for as little as \$100 million per year for two decades, the public could acquire all seven million acres.

Here are some recent large land sales:

- 1995—Hancock Pension Fund acquired about 55,000 acres in western Maine for under \$250 an acre.

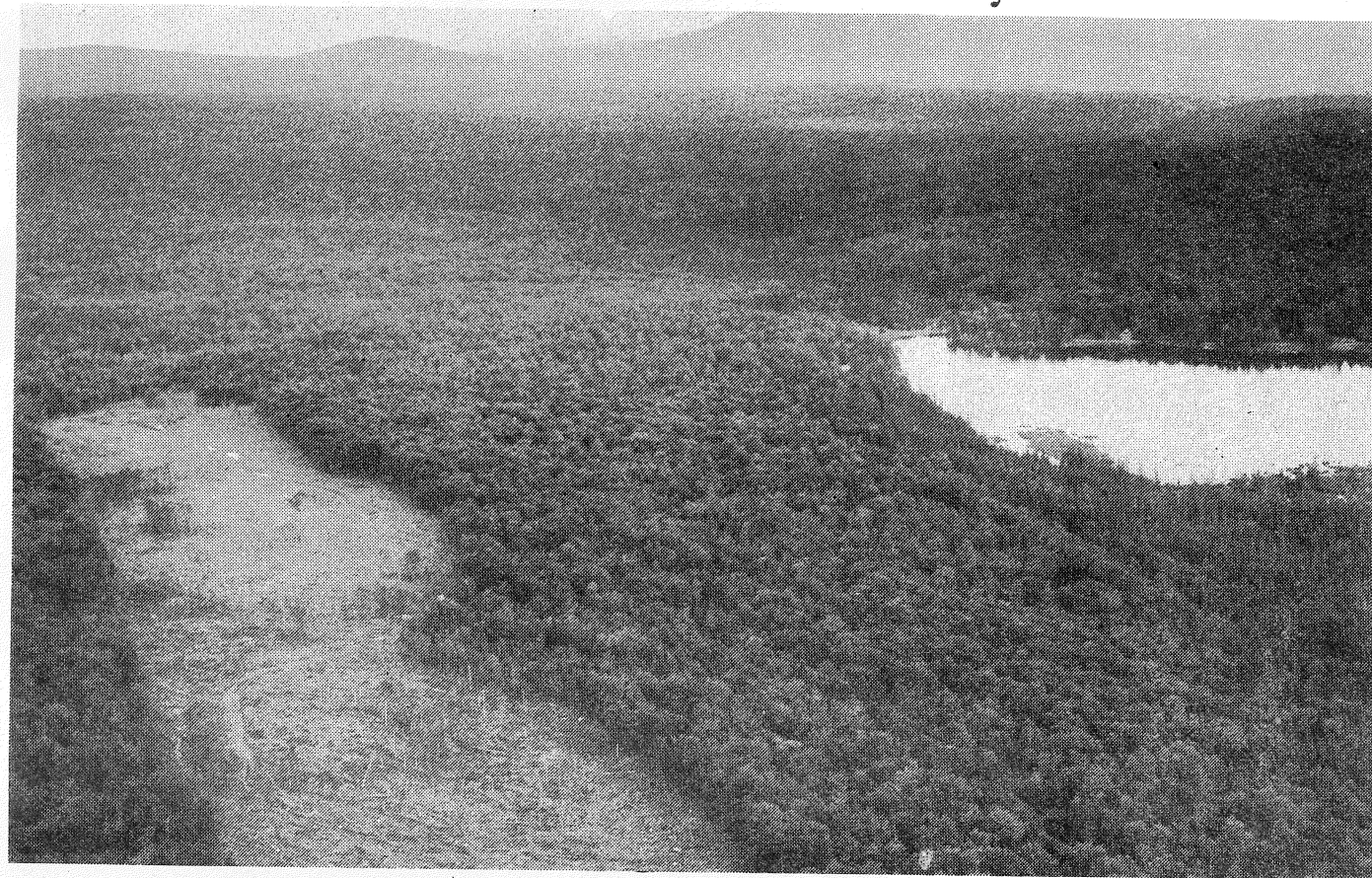
- 1993—Hancock acquired 238,000 acres in Northern New England for approximately \$300 per acre.

- 1991—Bowater purchased 2.1 million acres in Northern Maine for approximately \$100 per acre.

- 1988—Rancourt Associates paid \$212 an acre for the 90,000 acres of Diamond International land in Vermont and New Hampshire, including the 40,000 acre Nash Stream watershed. Three months later the State of NH and the U.S. Government paid \$282 per acre for the Nash Stream.

Clearly, the land is affordable, and delaying acquisition, as in the 1988 Nash Stream case, is very costly. And, as the map on the back cover illustrates, millions of acres have been sold since 1980.

It is reasonable to assume that land will sell for an average price somewhere between \$100-\$400, with prime developable land (a very small percent-



The 7,000 acre Stratford Bog (NH) tract is now suffering heavy logging because Stratford residents, by a vote of 33-30, refused to permit the White Mountain National Forest to acquire it in 1990. Local developer Ray Hartshorn has cut a 'landing strip' for his proposed ski development. He also raised annual hunting camp leases from \$180 to about \$2000. Public ownership would have protected the Bog from the overcutting and pipedream development schemes of its current owner, and the camp owners, many of whom voted against public acquisition might still be enjoying their camps. Photo by Peter Riviere

age of the total land base) going for a higher rate.

At an average price of \$250 an acre, the public could purchase seven million acres for \$1.75 billion. At \$300 an acre, the cost would be \$2.1 billion.

Thus, if we spread acquisition out over a 20 year period, the cost to the public will be about \$100 million a year to acquire seven million acres for the Northern Forest Headwaters Wilderness Reserve System.

The U.S. government currently spends between \$80-\$200 billion a year

in corporate welfare and corporate tax breaks. Redirecting one-one thousandth of that sum each year for two decades could assure the acquisition of the Headwaters Reserve lands.

The U.S. government spent \$7 billion to rebuild southern Florida after Hurricane Andrew a few years ago, and nearly double that amount after the flooding of the Mississippi in 1993.

Funding Sources

- The Land & Water Conservation Fund, both Federal and State;

- Excise Tax on Recreation Equipment;
- State Bonds;
- Redirect corporate welfare and tax subsidies to land acquisition, environmental protection and deficit reduction.

Money is always available for corporate welfare, congressional pork, and disaster relief. What is lacking is the political will to invest in the future of our Northern Forest natural and human communities. We cannot afford to pass up such a bargain.

End Corporate Welfare ~ Invest in Local Communities

by Jamie Sayen

The timber industry and agribusiness are two of the major beneficiaries of corporate welfare, according to two Washington, DC think tanks, with very different political agendas, who released reports in March identifying government subsidies to corporations that cost taxpayers hundreds of billions of dollars annually.

The libertarian Cato Institute charged that "Congress can no longer ignore the growing scourge of corporate welfare." It called for an end to "aid to dependent corporations" that cost taxpayers \$85 billion a year. The major effect of corporate subsidies, according to the Cato Institute, "is to divert credit and capital to politically well-connected firms at the expense of their less politically influential competitors." This fosters "an incestuous relationship between business and government."

The Progressive Policy Institute of the Democratic Leadership Council identified 120 programs and tax provisions that provide taxpayer subsidies to powerful industry groups. Among PPI's findings:

- Subsidies for domestic industries reduce domestic jobs and business creation in a global market;
- The major beneficiaries of these subsidies are, not surprisingly, "high income Americans."

PPI recommends that funds released by phasing out or reforming these subsidies should go either to deficit reduction or "to public economic investments in generic activities such as education, training, infrastructure, and basic research..."

I have long maintained that the Federal government can afford: (1) to acquire several millions of acres of Northern Forest lands as the infrastructure of a new regional culture and economy, and (2) invest in education, training and regional economic renewal and revitalization. Publication of these lists of "unwarranted business subsidies" (Cato Inst.) confirms this is true.

I am not suggesting long-term subsidies to local businesses, but, rather, that government level a playing field that has been tilted for too long towards the multinationals and against local enterprise. If Northern Forest communities can get a helping hand to convert to sustainability, we won't need the sort of chronic welfare the Fortune 500 has become addicted to.

Here's a small sampling of the corporate subsidies that either Cato or PPI have identified. (Dollar values are in \$ millions)

• End below-cost timber sales & reduce the subsidy for Forest Service construction of logging road networks	\$140
• Timber industry exemption from uniform capitalization rules: Reduce by one-third benefits from timber firms' special right to expense indirect costs of production	\$180
• Special tax credit for timber companies' reforestation costs: Phase-out subsidy for timber industry expenditures for site preparation, seeds and seedlings, labor and tools, and depreciation	\$20
• Ag Dept. Price support payments for unplanted crops	\$260
• Reduce subsidization of wealthy farmers by limiting subsidy payments to \$50,000 per person	\$140
• Expensing of conservation and fertilizer conditioner costs: Treat these expenses as depreciable capital costs.	\$100
• Animal Damage Control Program	\$40
• Charge market rates for power generated by federal hydroelectric power plants, now sold at cost to utilities in certain regions	\$960
• 1872 Mining Act: Set an 8 percent royalty on minerals recovered from public lands	\$60
• Introduce competitive bidding for right to operate lucrative concessions at National Parks & raise fees to cover costs related to concessions	\$40
• Private purpose revenue bonds: End ability of state and local governments to raise funds loaned to private developers by issuing bonds exempt from federal tax	\$1,460
• Air Force B-2 Bomber	\$1,818
• Discontinue direct and indirect subsidies to foreign purchasers of U.S. Defense firm products	\$500
• U.S. Territorial possessions tax credit: Repeal tax credit exempting income earned by U.S. firms on operations in Puerto Rico and other U.S. possessions	\$3,940
• Expensing of advertising costs: End firms right to fully deduct advertising costs by depreciating 20 percent as a capital cost to build brand recognition	\$3,660

Sources: *Cut-and-Invest: A Budget Strategy for the New Economy*, PPI Policy Report No. 23, by Robert J. Shapiro. *Ending Corporate Welfare as We Know It* by Stephen Moore & Dean Stansel, Cato Institute, Draft Report, March 6, 1995

Public Land Acquisition ~ A Greater Bargain Than Ever

by David Publicover & Tom Steinbach
Appalachian Mountain Club

One of the arguments often heard against the practicality of large public land purchases is that, even if willing sellers could be found and the public supported such purchases, the money is simply not available. We tested this argument by assessing the prices of large land purchases within the White Mountain National Forest and using several different measures to compare them to current forest land prices.

Between 1914 and 1937, 31 separate purchases of over 5,000 acres contributed to the building of the WMNF. (The largest of these was nearly 69,000 acres purchased from the Parker Young Company in 1936 covering much of the current Pemigewasset Wilderness.) In total these purchases encompassed nearly 540,000 acres, or about 70% of the current WMNF. The price of these transactions ranged from \$2.50 to \$47.57 per acre, with the price dependent on location, land quality, access, and amount of standing timber.

We used three measures of comparison. First we adjusted the price of past land purchases using the Consumer Price Index (CPI), a standard measure of inflation. Second, we compared the purchase prices to the federal budget for the year of purchase, in order to assess the cost relative to overall federal spending. Third, we compared the purchase prices to the Gross National Product for the year of purchase, in order to assess the cost relative to the total national economy.

Consumer Price Index: The price per acre for each purchase was adjusted by the ratio of the CPI for 1994 to the CPI for the year of purchase. This puts the cost of each purchase in terms of 1994 dollars. We then calculated the average cost per acre of all purchases in 1994 dollars, weighted by the acreage of each purchase so that large purchases counted more than small purchases. The weighted average cost of these land purchases in 1994 dollars was \$91 per acre, ranging from \$27 to \$412. By comparison, the current price of moderately well-stocked forest land in the undevel-

oped Northern Forest of Maine is about \$200-\$300 per acre. Thus land appears to be more expensive than in the past. This is to be expected—land prices generally rise faster than the rate of inflation, which is why land is always recommended as an excellent long-term investment.

However, the difference may not be as great as it first appears for two reasons. Much of the land bought for the WMNF had been heavily cut over. The price for land with a decent amount of standing timber would be higher than the average of \$91/acre, and the level of stocking probably accounts for much of the variability in the purchase price of lands included in this analysis. Also, much of the land included in this analysis was steep, rocky, or high elevation land with little timber or development value; the price of land with decent timber management potential would also be higher than the calculated value of \$91/acre.

Federal Budget: The price per acre for each purchase was adjusted by the ratio of the total federal budget (not including Social Security) for 1994 to the federal budget for the year of purchase. This answers the question, "If the cost of an acre of land was x% of the federal budget in 1914, what is the equivalent percentage of the 1994 federal budget?" The weighted average price of these land purchases relative to the 1994 federal budget is \$5,563 per acre, ranging from \$224 to over \$21,000. This seems unreasonable, but it makes sense. The federal budget has grown far in excess of the rate of inflation, thus land prices based on a percent of this budget will show a similar rise. What this points out is that *given actual land prices today, large public land purchases would require a much smaller piece of the federal budget than did the White Mountain National Forest.*

The current federal deficit complicates matters, but the government also

ran large deficits during World War I and the Depression, and the WMNF land purchases did not stop. In fact, 45% of these purchases took place in the years 1918-19 and 1932-37, when the federal budget deficits were proportionately much larger than they are today.

Gross National Product: A calculation similar to that done with the federal budget was done using the Gross National Product. This answers the question, "If the cost of an acre of land was x% of the national economy in 1914, what is the equivalent percentage of the 1994 national economy?" This calculation was done for transactions between 1914 and 1928, since GNP figures between 1929 and 1937 were not available. This still includes about 400,000 acres, or over half of the WMNF.

The average price of these land purchases relative to the 1994 GNP is \$1023 per acre, ranging from \$262 to \$3275. These figures again make sense—the national economy has grown faster than the rate of inflation but not as fast as the federal budget. What they indicate is that *forest land prices have declined significantly relative to the overall national economy since the WMNF was bought.*

Summary: The argument that we can no longer afford large public land purchases is without merit. Land prices have risen faster than the rate of inflation, though the difference between past and present costs of basic timberland without development potential and with equivalent levels of stocking may not be as large as indicated by this analysis. However, forest land prices are significantly lower than during the creation of the White Mountain National Forest when calculated as a percent of either the federal budget or the national economy. The money is there. What is lacking is the public and political will to spend it for this purpose. An economy that can pay Michael Jordan tens of millions of dollars a year to advertise soft drinks can certainly afford to conserve additional large wildlands in our ever-shrinking world for the benefit of future generations.

(for Brian Damien)

Coyote, running ahead of us

Soil forgives compaction,
slowly it
furtheres one to have
somewhere to go -
Young cedar, sweet fern,
flowers and moss
(what feeds them)
bittersweet along rock walls,
water cuts through, carries away -
old road, turning soft.

I think of other culverts,
other roads,
to take them out,
allow the water its way,
watching the road go back.

—Gary Lawless, Gulf of Maine

What You Can Do

To Help Establish the Headwaters Wilderness Reserve System

(1) Learn About the Proposal

- Offer suggestions for strengthening it.
- Write letters to the editor and Op-Ed pieces.
- Raise issues in all sorts of public forums.
- Learn about other proposals and campaigns: Wolf Restoration, the Maine Woods National Park, & efforts to save the endangered Atlantic salmon.

(2) Get Involved & Stay Involved

- Work to achieve dramatic reforms in Forest Practices.
- Conduct ecological inventories in your community.
- Work to assure that Natural history is taught at all levels of schooling.
- Promote local economic diversification—support local endeavors.

(3) Support Funding for Land Acquisition

- Support efforts to get Congress to appro-

priate full funding to the Land & Water Conservation Fund (about \$1 billion a year).

- Redirect Federal and State "Corporate Welfare" and tax breaks to rebuilding local communities (and reducing the deficit).
- Support State land acquisition bonds.
- Explore other funding options

(4) Stay the Course

- Show up, do your homework, and persist in promoting strategies that assure sustainable natural & human communities.

(5) Get Out in the Woods

- Get to know some portion of the Northern Forest Headwaters firsthand. It's fun, refreshing, and will sustain you in your work to protect the entire region.

(6) Support the Northern Appalachian Restoration Project (NARP)

- See box at right.

Help Establish Headwaters Wilderness Reserves

Support the Northern Appalachian Restoration Project

In addition to publishing *The Northern Forest Forum*, the Northern Appalachian Restoration Project (NARP) is in the vanguard of efforts to protect & restore native biological diversity & ecological integrity through the establishment of large wilderness reserves, halting unsustainable forest management practices, banning chlorine in paper bleaching, and developing regionally-controlled, sustainable economies.

Grassroots groups such as NARP are chronically underfunded. Your generous financial support can help sustain NARP's visionary activists.

* Enclosed \$ _____

Name _____

Address _____

Town _____

State _____ ZIP _____

Contributions to NARP are tax-deductible. Please make checks payable to Earth Island Institute and send to:

Northern Appalachian Restoration Project, POB 6, Lancaster, NH 03584

Northern Forest Headwaters Restoration Proposal—Questions & Answers

Here are some of the most frequently asked questions about the Northern Forest Headwaters Community Restoration Proposal. Answers often refer to articles inside this special issue.

(1) What is the problem this proposal addresses?

The Northern Forest Headwaters Restoration Proposal addresses many chronic and worsening ecological, economic, cultural & political problems.

Ecological: Destruction of habitat due to clearcutting, roadbuilding, pesticide spraying, dams & development; high numbers of rare threatened & endangered species and communities native to the region; extirpated native species; dioxins discharged by paper mills have contaminated fish & lobsters (see pages 4-7)

Economic: Job loss in mills and woods, high unemployment and poverty; decline of paper industry and industry investment in mills; lack of economic diversity; lack of labor-intensive value-added opportunities; raw log exports; lack of local ownership of business & industry; inadequate markets for local agricultural produce. (See pages 11-13)

Cultural: Lack of higher education opportunities results in "brain drain; lack of control over community destiny; high alcoholism; young see no future in the region; loss of hope; loss of sense of community; under-appreciation of natural environment. (See page 13)

Political: Absentee landowners and mill owners control decision-making process on local, county and state levels; few successful mechanisms for resolving difficult social, political and economic problems in an ecologically responsible manner; no protection for the rights of future generations; no protection of rights of other species; absence of watershed and regional initiatives.

(2) If we establish an 8-million acre reserve system, won't this destroy the local economies and communities of the region?

No. First, this is a blueprint for a 75-year transition to a sustainable culture. Instead of a violent rupture with the present, the Northern Forest Headwaters Community Restoration Proposal will be an orderly, evolving transition to a truly sustainable future.

Second, we believe this proposal represents our best hope for salvaging our local communities and economy from the current crisis. If we continue to do nothing, then our economy and communities are really doomed. (See pages 11-13)

(3) What will happen to the paper industry and logging jobs?

Jobs are disappearing under the status quo. In the past decade, more than 3,000 jobs in Maine paper mills have been lost—a 16.3% decrease in jobs during a period when mill capacity increased by 7%. In New Hampshire, James River has laid off about 750 of its 1700 workers in the past five years, including 150 in April. The Northern Forests cannot support current mill capacity and most experts agree that several mills will close down in the next couple of decades.

The region can support a couple of mills that rely heavily on recycled fiber, mill waste, kenaf and some virgin wood cut from lands that remain in private ownership. To replace lost jobs in the mills and woods, our economic restoration proposal (see pages 11-13) suggests many new jobs in labor-intensive, value-added woods products, jobs in ecological restoration, guiding & outfitting, and agriculture.

(4) Where can we cut wood?

Low impact, ecologically sustainable forestry will be carried out on lands owned by residents of Northern Forest communities and in buffer zones of reserves. These lands will produce high-quality sawlogs for local, value-added businesses, instead of junkwood for biomass boilers and raw logs for export as is currently the case. (see pages 11-13)

(5) (a) How many people will be thrown off their land?

None. The lands in the proposed Headwaters Wilderness Reserves (see map on pages 8-9) are owned by large, absentee corporations, not by our neighbors. There are no year-round residents on the lands in the proposed Headwaters Wilderness Reserves.

(b) Won't people be forced to leave the region if the "Industrial Forest" is designated "Forever Wild"?

No. Today people are leaving the region to find work and to gain a higher education (the "brain drain"). Under this proposal, there would be college opportunities in the region (a Restoration Academy) and jobs following graduation. (see page 13)

(c) Won't this proposal violate my property rights?

No. This proposal is good for property rights. The stumpage value for timber growing on private lands near reserves will increase, and residents of the region, not absentee corporations, will make the important decisions affecting the fate of this region.

(6) How can we afford to buy more public land? Is the land for sale?

The map on this page shows that approximately five million acres have been sold one or more times since 1980. As shortfalls in pulp wood supplies grow more acute, mills will close and large tracts of land will be offered for sale in the next two decades. The price of an acre of Northern Forest land varies, but is generally somewhere between \$100-\$400 an acre. At an average of \$250 per acre, seven million acres could be purchased for under \$2 billion. If these acquisitions are spread over 20 years, this means an average annual expenditure of about \$100 million to protect our life support system. (see page 14)

(7) Doesn't public land cause a loss of property taxes to local towns?

(a) Most of the land (especially in Maine) is in uninhabited townships.

(b) Most of the land in the proposed Headwaters Reserves is under current use and is taxed at a very low rate. The 10 million acres in Northern Maine under LURC jurisdiction only pays about \$0.60 per acre in property taxes. Lands in unincorporated townships in New Hampshire pay no property tax.

(c) Loss of property tax can be compensated for by: (i) payments in lieu of taxes which often equal or exceed the lost property tax; and (ii) an increase in local revenue from recreation & tourism and via a healthy economy that returns profits to the local economy (multiplier effect).

(d) Most people are willing to pay a small amount more in additional taxes to assure the welfare of future generations.

(8) (a) What will happen with public access?

Under corporate and private ownership, we are losing access to the Northern Forest lands. Public ownership assures public access.

(b) Can I hunt & fish?

Low impact hunting and fishing will be permitted, provided they are consistent with the goals of the reserves to protect biological diversity and restore ecological integrity.

(c) What happens to leased hunting camps?

In Vermont, Champion recently gated access roads to leased camps. In New Hampshire, developer Ray Hartshorn raised annual fees from \$180 to about \$2000. Many camp owners bulldozed their camps rather than pay. Also in NH, the state of New Hampshire offered 50-year leases to camp owners on the Nash Stream when the state purchased the land. Recently, camp owners saluted the Nash Stream Citizens Advisory Committee and the State for the manner it treated camp owners.

(9) Won't this proposal result in loss of local control? Who will manage the reserves?

The Headwaters Regional Wilderness Reserves will be managed by watershed citizen advisory councils and representatives of local, state and federal agencies. Unlike today, where the boards of the absentee corporations make all decisions without regard for the needs of local communities, local citizens will be able to exercise control over the destiny of their communities.

(10) Isn't this proposal politically unrealistic?

In the short-term, the current Congress probably would not support such a proposal. But, as the public learns more about the positive healing elements of the Northern Forest Community Restoration Proposal, and as the public grows more disillusioned with the current assault on environmental protection, support for this proposal will grow.

In the long-term, we must ask if destroying our environment—our life-support system—is "politically realistic."

(11) What can I do to help make the Northern Forest Community Restoration Proposal and the Headwaters Wilderness Reserve System a reality?

(a) Spend as much time with your children, grandchildren or friends' children in the Northern Forests.

(b) Become involved in your community. Take responsibility for restoring local democratic control.

(c) See page 15 for additional actions you can take.

5 Million Acres in the Northern Forest Headwaters Region Have Been Sold Since 1980

Proposed Northern Forest Headwaters Regional Wilderness Reserve System

(Shaded areas are lands sold since 1980)

