

---

Maine Collection

---

8-1986

## Proceedings : A Forest Based Economy - Carrying A Tradition Into the Future

Blaine House Conference on Forestry (December 6-7, 1984)

Follow this and additional works at: [https://digitalcommons.usm.maine.edu/me\\_collection](https://digitalcommons.usm.maine.edu/me_collection)



Part of the [Business Administration, Management, and Operations Commons](#), [Forest Biology Commons](#), [Forest Management Commons](#), [Marketing Commons](#), [Natural Resource Economics Commons](#), [Natural Resources and Conservation Commons](#), [Natural Resources Management and Policy Commons](#), [Other Forestry and Forest Sciences Commons](#), [Outdoor Education Commons](#), [Sustainability Commons](#), and the [Wood Science and Pulp, Paper Technology Commons](#)

---

### Recommended Citation

Blaine House Conference on Forestry (December 6-7, 1984), "Proceedings : A Forest Based Economy - Carrying A Tradition Into the Future" (1986). *Maine Collection*. 172.  
[https://digitalcommons.usm.maine.edu/me\\_collection/172](https://digitalcommons.usm.maine.edu/me_collection/172)

This Book is brought to you for free and open access by USM Digital Commons. It has been accepted for inclusion in Maine Collection by an authorized administrator of USM Digital Commons. For more information, please contact [jessica.c.hovey@maine.edu](mailto:jessica.c.hovey@maine.edu).

Handwritten: F718.2

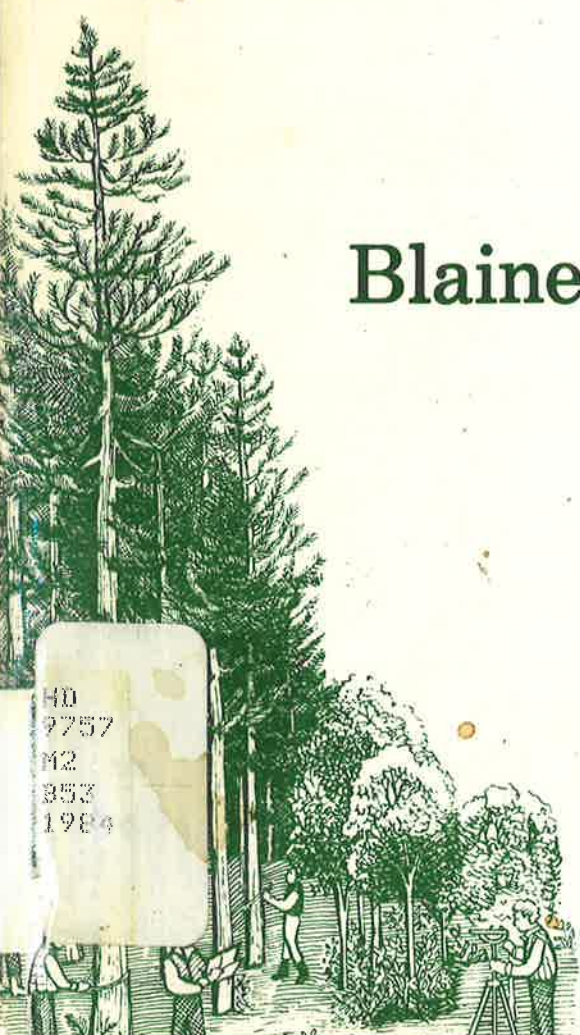
UNIVERSITY OF SO. MAINE  
LIBRARY  
JAN 16 1987  
Maine State Doc.

x o c c c  
1/16/87

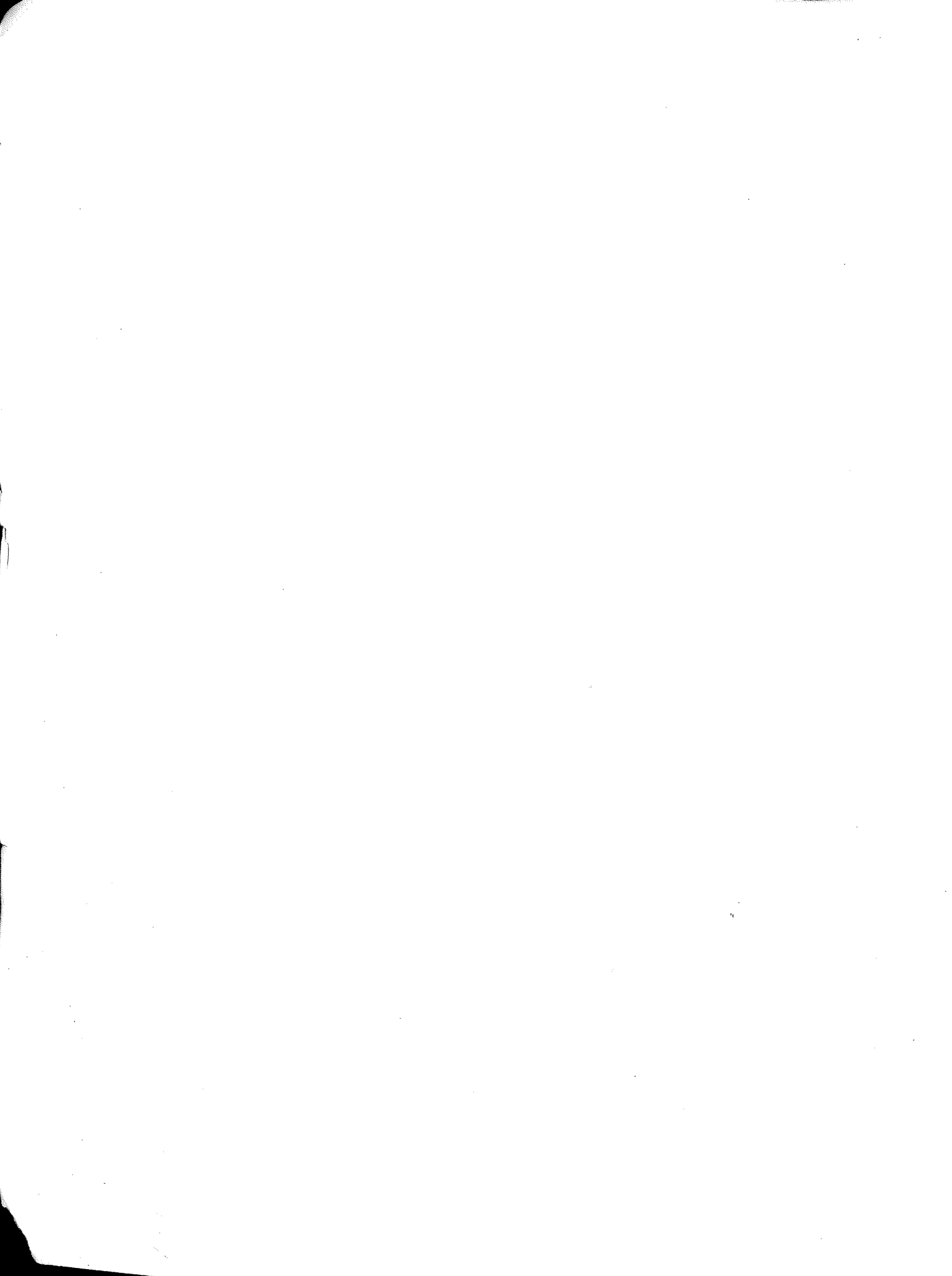
# Proceedings

## **A Forest Based Economy** *Carrying a Tradition Into the Future*

**Blaine House Conference  
on Forestry**  
December 6-7  
1984



HD  
9757  
M2  
353  
1984





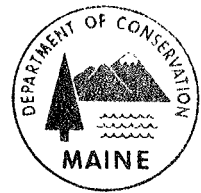
JOSEPH E. BRENNAN  
Governor

DEPARTMENT OF CONSERVATION

STATE HOUSE STATION 22

AUGUSTA, MAINE 04333

TEL. 207-289-2212



RICHARD B. ANDERSON  
Commissioner

HD  
9757  
M2  
B53  
1984

August 19, 1986

Dear Participant:

I transmit for your benefit these proceedings of the 1984 Blaine House Conference on Forestry - "A Forest Based Economy: Carrying a Tradition Into the Future."

While it has taken some time to prepare these proceedings, we have not been standing still. The Department of Conservation and its constituent bureaus has been busily implementing a number of initiatives announced during the conference. Significant progress has been made by the Maine Forest Service by furnishing its Forest Resource Plan. In addition, in keeping with the promise to improve communications, the Maine Forest Service has initiated discussion of key issues of importance to the forestry community. The Land Use Regulation Commission has also contributed to this constructive dialogue through its Forestry Issue Committee. Meanwhile, the Bureau of Public Lands has adopted a comprehensive set of management policies that demonstrate exemplary forest management on public reserved lands.

The Department has made significant progress in promoting and facilitating forest products marketing, especially the use of wood biomass to fuel boilers to produce electrical energy. At the same time, specially impaneled committees have issued reports on ways to encourage biomass harvesting using sound silvicultural practices and a research agenda for biomass related issues.

These are only some of our accomplishments over the past several years. Perhaps the most exciting development is the creation of the **Forests for the Future Program**, reflecting Legislative concern for the long term productivity of our forests. This program was created to assess the forest and related resources and to develop goals and recommendations for actions to achieve those goals.

Forestry in Maine is a vital, exciting mixture of natural resource values and a multiplicity of uses. I hope these conference proceedings will help us focus on the importance of forests for our future well-being.

Sincerely,

Richard B. Anderson  
Commissioner

gdw



**A FOREST BASED ECONOMY: CARRYING A TRADITION INTO THE FUTURE**

**1984 Blaine House Conference on Forestry  
December 6 - 7, 1984  
Augusta, Maine**

**AGENDA**

**THURSDAY, DECEMBER 6:**

8:30 a.m. - 9:00 a.m.  
**Registration**

9:00 a.m.  
**Welcome**

9:05 a.m. - 10:30 a.m.

**Maine's Timber Supply**

Moderator: Annee Tara, Maine Department of Conservation

- o **The resurvey: What does it say? How can we use it?**  
Ken Stratton, Maine Forest Service
- o **Can we increase our supply?**  
Robert Seymour, Cooperative Forestry Research Unit, Orono
- o **Acid Rain. How great is the threat?**  
Ivan Fernandez, University of Maine, Orono

10:30 a.m. - 10:45 a.m.  
**Break**

10:45 a.m. - 12:30 p.m.

**Markets: Where Are They?**

Moderator: Michael Cyr, Forest Resource Marketing and Assessment

10:45 a.m. - 11:15 a.m.

- o **A National Perspective: What is Maine's competitive niche?**  
H. Fred Kaiser, Forest Resources Economics Research, U.S.F.S.

11:15 a.m. - 11:50 a.m.

- o **Future of hardwood markets**  
Ken Freye, International Paper Company  
Donald Stecher, Andover Wood Products, Inc.

11:50 a.m. - 12:30 p.m.

- o **Future of softwood markets**  
Robert Wright, Great Northern Paper Company  
Paul O'Reilly, Furman Lumber

12:30 p.m. - 1:30 p.m.

**Commissioner's Lunch**

- o **The State of our Forest**  
Richard Anderson

1:30 p.m. - 2:00 p.m.

**Trends in Maine's Forest Transport System**

John Melrose, Maine Tomorrow

2:00 p.m. - 5:00 p.m.

**The Woods as an Employer**

Moderator: John Martin, Speaker of the House of Representatives

2:00 p.m. - 3:00 p.m.

o **Future demand for woods workers**

Lloyd Irland, State Planning Office

o **How great is the threat from Canadian labor?**

Charlie Einseidler, Pierce, Atwood Scribner, Allen, Smith, Lancaster

Margaret Wille, Attorney-at-Law

3:15 - 3:30

**Break**

3:30 p.m. - 5:00 p.m.

**Achieving Safe, Attractive and Productive Employment**

o **Training & Education - What are the needs?**

Richard Donovan, Associates in Rural Development

o **What can be done?**

Joe Krug, Washington County Vocational Technical Institute

o **Safety and Workers Compensation**

John Menario, Government Services, Inc.

Michael St. Peter, North Woods Logger

Mark Hardison, Logger

6:30 p.m.

**Dinner**

o **Maine's forests, one piece of the puzzle. How forestry fits into the global framework.**

Louis D'Amore, L.J. D'Amore and Associates

**FRIDAY, DECEMBER 7:**

8:00 a.m. - 9:00 a.m.

**Concurrent Technical Sessions**

(Repeated from 3:30 - 4:30)

**A. Public Lands (Androscoggin Room)**

Rob Gardiner, Department of Conservation, Bureau of Public Lands

**B. Wood Energy (Cumberland Room)**

Scott Noll, Ultrapower, Inc.

**C. Wood Measurement (Aroostook Room)**

Gary Morse, Department of Conservation, Maine Forest Service

**D. Who Shapes Public Perception? (Lincoln Room)**

David Platt, Bangor Daily News, a.m.

Bob Cummings, Maine Sunday Telegram, p.m.

**E. Non-Traditional Uses of Forest Material (Oxford Room)**  
Harold Young, Sewall Company

**F. Waferboard (Somerset Room)**  
Dave Semonite, Huber Corporation

9:15 a.m. - 10:00 a.m.

**The Forest 2020. Visions of a Sustainable Forest**  
Governor Joseph E. Brennan

10:00 a.m. - 2:30 p.m.

**Roles and Actions: Responses from Task Groups**

Moderator: Annee Tara

- o Non-fiber uses
- o Education
- o Wood Harvesting and Transportation

12:00 noon - 1:00 p.m.

**Lunch**

1:00 p.m. - 2:30 p.m.

**Roles and Actions: Continuation of Responses from Task Groups**

- o Commercial
- o Government

2:30 p.m. - 3:15 p.m.

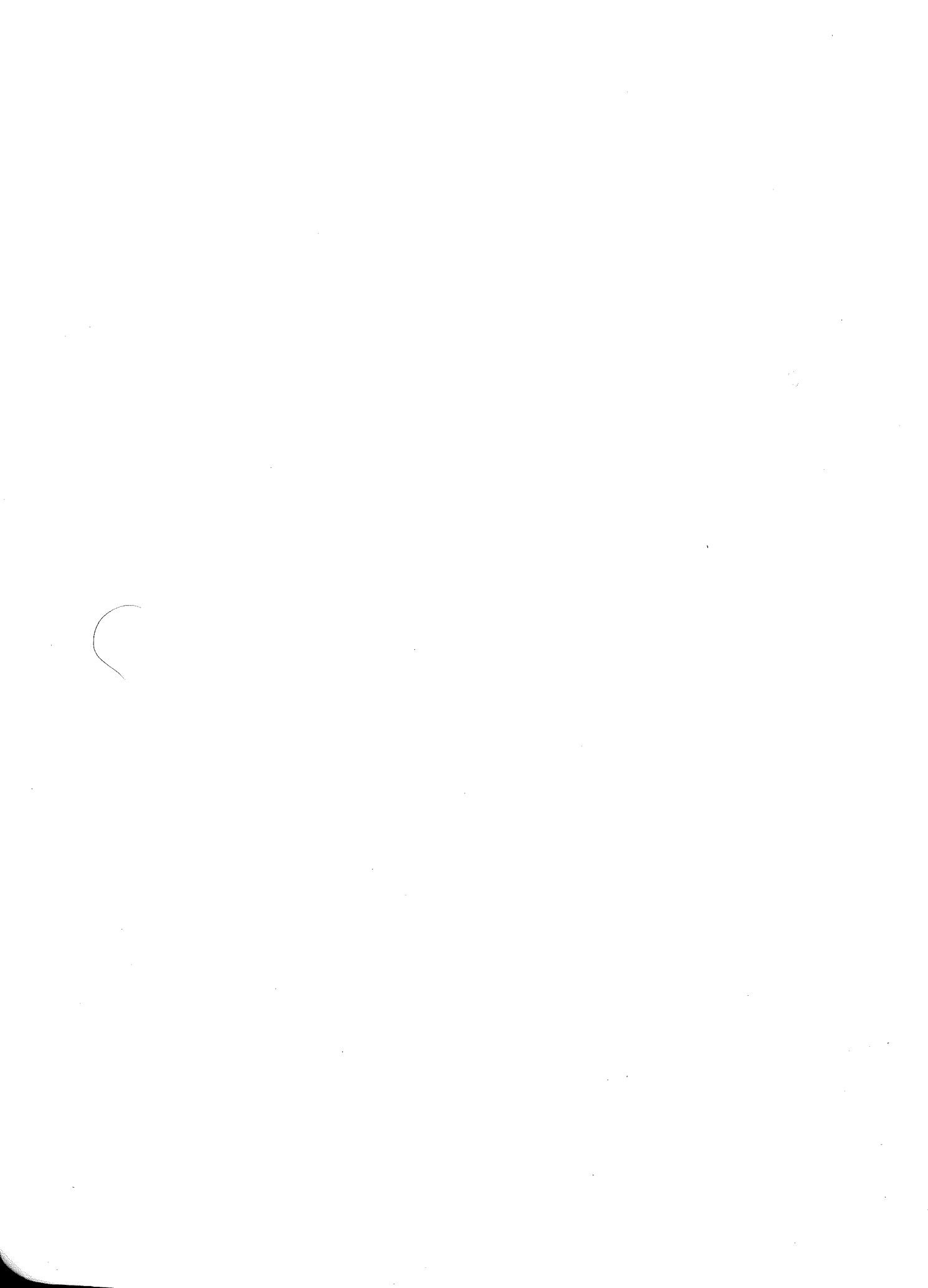
**Wrap-Up: Do Our Visions Match Our Actions? An Outsider's Assessment of  
Maine's Forests.**

Ernie Gould, Harvard Forest

3:30 p.m. - 4:30 p.m.

**Concurrent Technical Session**





## TABLE OF CONTENTS

Letter of Transmittal from Richard B. Anderson.....	
<b>The Forest 2020--Visions Of A Sustainable Forest</b> Presented by Governor Joseph E. Brennan.....	1
<b>Forestry Resurvey: What Does It Say? How Can We Use It?</b> Presented by Kenneth G. Stratton.....	6
<b>-Can We Improve Maine's Timber Supply?</b> Presented by Robert S. Seymour.....	12
<b>Atmospheric Deposition And Forests Of The Northeast</b> Presented by Ivan J. Fernandez.....	22
<b>A National Perspective: What Is Maine's Competitive Niche?</b> Presented by H. Fred Kaiser.....	32
<b>The Future Of Hardwood Markets</b> Presented by Kenneth H. Freye.....	46
<b>The Future Of Hardwood Markets</b> Presented by Don Stecher.....	51
<b>The Future Of Softwood Markets</b> Presented by Robert Wright.....	58
<b>-The State Of Our Forest</b> Presented by Richard B. Anderson.....	64
<b>Trends In Maine's Forest Transport System</b> Presented by John G. Melrose.....	69
<b>Future Employment In The Maine Woods: Situation, Forces And Outlook</b> Presented by Lloyd C. Irland.....	78
<b>How Great Is The Threat From Canadian Labor?</b> Presented by Charles S. Einsiedler, Jr.....	109
<b>The Threat From Imported Canadian Labor Is Alive And Well</b> Presented by Margaret Wille.....	113
<b>Woods Labor Training Needs</b> Presented by Richard Donovan.....	120
<b>A Condensed Report Of Wood Harvesting At The State's VTI'S And What Is A Woodsman?</b> Presented by Joseph S. Krug.....	124
<b>Safety And Workers Compensation</b> Presented by John Menario.....	136

<b>A Brief History Of Northern Woods Logging Association</b> Presented by Michael St. Peter.....	140
<b>A Maine Woodcutter Talks About Safety In The Woods</b> Presented by Mark Hardison.....	144
<b>Maine's Forest In The Global Context</b> Presented by L.J. D'Amore.....	158
<b>Riding The Winds Of Change In Maine's Forest</b> Presented by Ernie M. Gould, Jr.....	174

Special thanks to the following Task Force members who met and prepared presentations prior to the conference.

**GOVERNMENT**

Bud Blumenstock  
Charlie Colgan  
Dana Connors  
Robert Gardiner  
Alec Giffen  
Karen Lazareth  
Doug Marston  
Partick McGowan  
Charles Pray  
Kenneth Stratton  
Staff: Edwin Meadows

**COMMERCIAL**

Charles Bassett  
Henry Bourgeois  
Hal Bumby  
Ted Chadbourne  
James Giffune  
Allen Leighton  
Ben Haug  
George Heywood  
Raymond Hinckley  
Dave Percival  
Steve Weems  
Staff: Thomas Rumpf

**EDUCATION**

Gregory Brown  
Alan Kimball  
Maxwell McCormack  
Al McVetty  
Dunbar Seamons  
Jan Selser  
Tom Saviello  
Eberhard Thiele  
Staff: Regina Pelletier

**NON-FIBER USES**

David Allen  
Everett Carson  
Herb Hartman  
Charles Hewett  
Al Hutchinson  
John Jensen  
Mark Mowatt  
Staff: Jack Dirkman

**WOOD HARVESTING & TRANSPORTATION**

Harold Bouchard  
Winston Ford  
Otis Gray  
Tom Hamilton  
Hollis Hannington  
Wynne Herrick  
Ron Kronholm  
George Lehto  
Steve Mason  
John Richards  
Staff: Michael Cry

**PLANNING ADVISORY COMMITTEE**

Richard Anderson  
Charles Bassett  
Gregory Brown  
Everett Carson  
Philip Conkling  
David Flanagan  
Robert Gardiner  
Alec Giffen  
Timothy Glidden  
Donald Hall  
Charles Hewett  
Ray Hinckley  
Lloyd Irland  
Judy Kany  
Karen Lazareth  
Allen Leighton  
Robert Seymour  
George Sprowl  
Leslie Stevens  
Kenneth Stratton  
Walter Verrill  
Margaret Wille  
Robert Wright  
Staff: Ellen Baum

**STAFF ASSISTANCE**

Judith Andrews  
Richard Dyer  
Kathy Patterson  
Elizabeth Pynchon  
Gale Ross  
Marshall Wiebe

THE FOREST 2020--VISIONS OF A SUSTAINABLE FOREST

Presented by

Governor Joseph E. Brennan

for

Blaine House Conference on Forestry

December 6-7, 1984

Good morning. It is my great pleasure to serve as your host for this the second Blaine House Conference on Forestry.

I must congratulate each of you for braving the elements to participate in this vitally important Conference. This fine turnout under adverse conditions reflects a character trait of Maine people that is deeply rooted in our history and traditions. To recount Maine's past to tell the history of our people is to speak of our natural resources. It was our fish and forests that attracted the first settlers to Maine's wilderness, and our sometimes inhospitable climate. Long before Jamestown and Plymouth, fishing fleets touched Maine's shores. Britannia ruled the waves when the "King's Masts" were harvested along the Penobscot and the Kennebec. The commerce of the young American nation reached the most exotic ports in Yankee Clippers built in Maine from the lumber harvested from Maine's forests. Maine cod and salmon were a staple of dinner tables on both shores of the Atlantic. Our first age of great prosperity, both economic and social, was an era when our natural resources provided their greatest benefits.

Maine author and historian Robert P. Tristram Coffin writes of that time that, "The years from 1820 to 1880 were the only years when the State of Maine was able to keep her smartest children home and give them all something to do and not have to breed them for states farther west, Illinois and Michigan, Wisconsin and Minnesota, Oregon and Washington."

"Those states had to look elsewhere during that spell for good farmers and fishermen, and boatbuilders and lumbermen, and not rob the Maine cradle of its best lumbering and fishing babies."

As your Governor, I believe that we are today at the threshold of another such period, a period when our best and our brightest will stay right here in Maine to make their careers, to raise their families, to serve their communities, and that you here today can lead the way.

Many of you will recall the Maine Development Foundation dinner of two years ago when Walter Mattson, President of the New York Times Corporation, was guest speaker. Walter grew up in Portland, went to the local public high school, and graduated in the 1950's from a humble institution known as Portland University. Seeking his fortune, he headed down the turnpike to Boston and New York. Mattson told the Maine Development Foundation that, today, he would stay right here in Maine where challenges and opportunities abound in sufficient numbers to occupy everyone who is willing and able.

At no time during my own life has there appeared so much promise, so much potential, so much opportunity for every young Maine citizen to build a useful and rewarding career for themselves right here in Maine. With unemployment at a record low, with continuing support of the Maine voters for our economic

development bond issue, with major advances on the horizon in our education system, and with exciting new markets for our basic natural resources, the outlook has never been so full of promise. And, at the very heart of that promise, I believe, is neither the glittering allure of high-tech, nor the recent surge in trade and service industries. It is, in fact, what it has always been, our natural resource based industries and, in particular, the forest products industry which now accounts for more than half the value of our products manufactured for export.

At the first Blaine House Conference on Forestry four years ago, the challenge was one of simple communication to build the foundation for cooperation among all the interests with a stake in our forests and their future. Today, at the Second Blaine House Conference, the challenge is truly awesome for we know that no generation of Maine citizens before us has had so great a chance to shape the forest of Maine for generations to come. The immediate challenge, therefore, is to decide what kind of forest we want for the future, and second, to affirm what we can do together, public and private sectors alike, to bring it about. The challenge is surely great, but it is not without precedent.

In the early years of this century, one of Maine's and the nation's greatest foresters, Austin Carey, warned of forthcoming shortfalls in the important forest species of his time, including spruce and hardwoods. Through human effort and cooperative management, the shortfall was averted.

I'm certain that we here today have no less will to avert the dangers and pitfalls before us. Indeed, I am certain that our knowledge of the Maine woods has never been greater, that the potential for new markets has never appeared more promising, and that our commitment to experimental techniques and innovative technologies has never been more keen.

You will all recall the wonderful scene in Lewis Carroll's Alice in Wonderland, when Alice asks the cat, "Would you tell me please, which way I ought to go from here?"

"That," said the cat, "depends a good deal on where you want to get to."

Or, as a Maine humorist has remarked, "If you don't care where you're going, it don't matter much which road you take."

For all Maine people, it matters very very much where you are going, and which road you take. The future well-being and prosperity of every Maine citizen is very much in your hands today, tomorrow, and for the rest of this century for it is a fact that Maine is still mostly forest. The fir, spruce, cedar, hemlock, and white pine about which you care so much are not only the economic heart of Maine; in some senses, they are Maine's spiritual soul as well.



From the earliest times of European settlement, Maine men and women have lived in and off the woods in a caring, mutually respectful relationship. We have found sustenance, refuge, and solace in the Maine woods and it has entered into our character in untold ways. Our literature, our art, our humor are full of illusions to the Maine woods, and nothing is more certain than that they are now in your hands.

The challenge I believe is clear and that challenge is to pass on to the next generation a forest that will sustain not only itself, but all Maine people...forever.

The question is not which path to choose, but rather, will we make the commitment necessary to follow through on our responsibilities as stewards of Maine's forests?

I stand before you this morning with a promise of my commitment, and that of my Administration, to this vital task. I am prepared to take the steps needed to assure that Maine Government fosters a bright future for Maine's forests and Maine's forest products industry. We will continue our efforts to abate the ravages of the spruce budworm, to press for a solution to the insidious threats posed by acid rain, to train a work force to meet the challenges of changing technologies and to provide an infrastructure of roads and ports to move our commerce to the market place.

Many of you here share a specific concern at this moment which I will address at a later date. After seeing one-third of our annual cut going to Canada each year, you are concerned over the export of sawlogs and the import of Canadian lumber. You are not alone in your concern. Your friends and neighbors in fishing and agriculture face similar problems as they try to market their products, and it is time to address this topic in the broad forum that it deserves.

I have asked Commissioner Anderson, Commissioner Smith of Agriculture, and Commissioner Apollonio of Marine Resources to work with members of my staff to convene a Conference on Canadian imports and exports next spring. The purpose of the Conference will be to explore the issues to determine what the state can do to deal with the hardships caused by Canadian subsidies of their natural resource industries, and raise public awareness on the subject. I shall ask you to join us in these efforts.

Today, I urge you to reach out from this Conference with a message to Maine's people about the potential of our forests, a message that, through a partnership of government, industry, and the public, we can secure the exciting future that our forests offer to all of Maine's people.

In his poem, "The Road Not Taken," Robert Frost speaks of two roads diverging into a wood. His message is about the consequences of choice. In the final lines, he writes,

"Two roads diverged in a wood, And I,  
I took the road less traveled by,  
And that has made all the difference!"

We have clear choices before us in the management of Maine's forests. Let us not make our choices by default. Let us make clear commitments, follow them through, and hereby make all the difference, for all Maine people.

Thank you very much.

FOREST RESURVEY:

WHAT DOES IT SAY? HOW CAN WE USE IT?

Presented by

Kenneth G. Stratton, Director

Maine Forest Service

for

Blaine House Conference on Forestry

December 6-7, 1984

## INTRODUCTION

It is my job this morning to tell you about the most recent forest resurvey - what it is, how we can use it. By now, most of you have a copy of Forest Statistics for Maine, 1971 and 1982, recently published by the U.S. Forest Service and authored by Doug Powell and Dave Dickson. It is the first of the reports to come out of the resurvey and contains a wealth of statistical data about the trees of Maine.

I'm not going to pretend that I can tell you, in 20 minutes, what's in this document. I couldn't do that in 20 hours, even if you could possibly sit through it. Rather, I'm going to concentrate on other aspects of the resurvey and the types of data collected.

Seven years ago, almost to this very day, in a directive to the Director of the Maine Forest Service, John Walker, then Commissioner Richard Barringer said about the forest resurvey: "I am most anxious that this be the most useful and practical survey possible, to everyone concerned."

For nearly the next two years, an intensive planning effort for conduct of the survey took place. Many of you in this room took part in that effort. "The most useful and practical survey possible," was being designed---the survey was to be the first of its kind with data gathered about many aspects of the total forest resource, not just trees alone.

I must highlight the extent of cooperative effort that was needed and carried out for this survey. Representatives from industry, the University of Maine, and both state and federal government worked long and hard to prepare plans for the field work and data collection. Special recognition should be given to Lloyd Irland, Ken Hendren, Doug Powell and Joe Barnard for all their efforts.

This leads me to the first major point about the 1980-81 survey--a wealth of information has been gathered and is available to us.

Let's turn to a few overhead projections to cover this and some additional facts; I'll discuss each one:

1. COMMITTEE FOR RESURVEY

Aerial Photography

Finance  
Landownership  
Recreation  
Soils  
Timber  
Users  
Wildlife

2. PLOT HISTORY

1956-59	- 2,267	1/5-Ac Plots
1970-71	- 902	Remeasured 1/5-Ac Plots
	<u>1,587</u>	10-Point Cluster Plots
	2,489	Total Plots
1980-81	- 902	Remeasured 1/5 Ac Plots
	302	Remeasured Cluster Plots
	<u>2,475</u>	New Cluster-Type Plots
	3,697	Total Plots

- . 1959 and 1970 Plots are basis of growth estimates
- . 900 of the new 1980 plots are result of Maine General Fund Support

3. DATA AVAILABLE - 1980-81 RESURVEY

From Plots -- 84 Pieces of Data  
On Data Tape -- 104 Data Fields

- |                        |                    |
|------------------------|--------------------|
| . Location             | . Foliage & Canopy |
| . Site History         | . Timber Values    |
| . Land Use             | . Soils            |
| . Insects & Disease    | . Wildlife         |
| . Site Characteristics |                    |

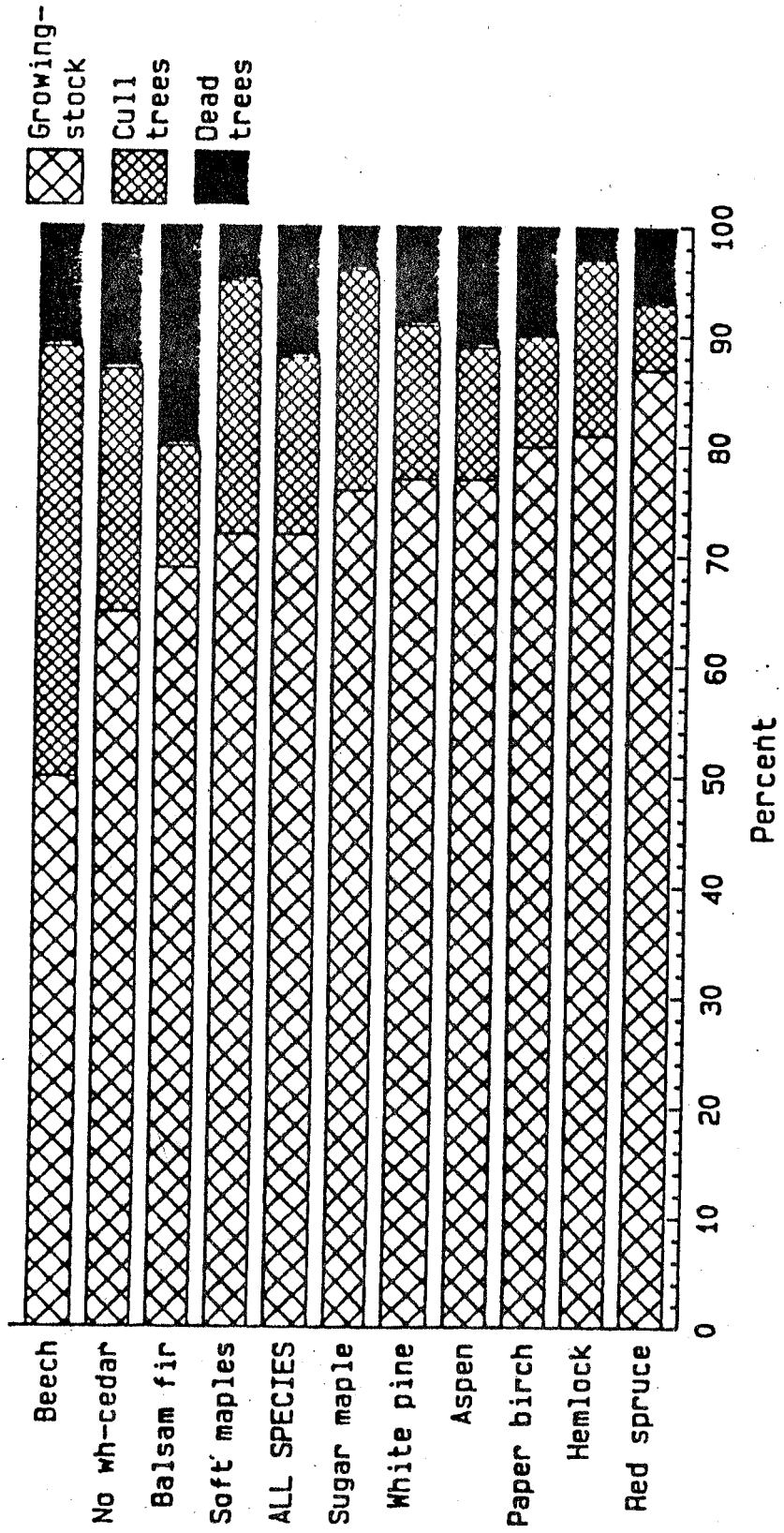
4. MAINE FOREST SERVICE CAN PROVIDE:

- . New/Additional Tables From Data
- . Graphical Representation of Data
- . Reaggregation of Data by Any Area Desired
- . Subsets of Data for Particular Ownerships (With Protection of Landowner's Interests)

5. TREE CLASS DISTRIBUTION GRAPH

(FIGURE 4)

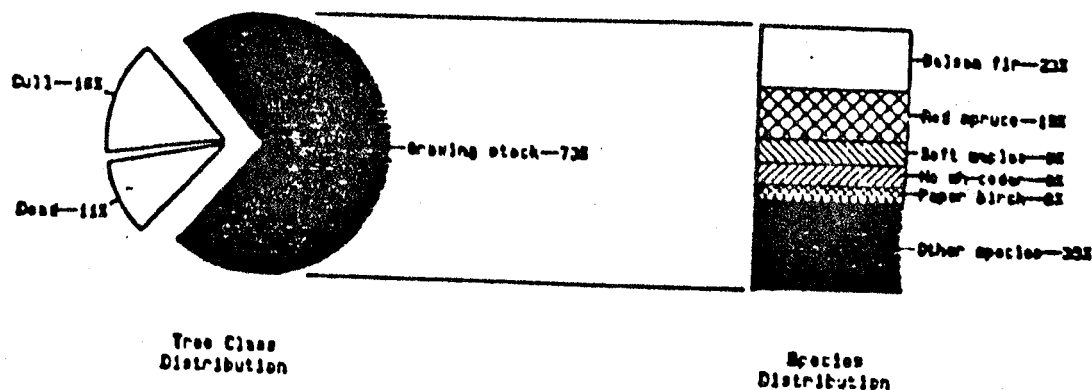
Figure 4. Tree class distribution for the top ten species groups in Maine, 1982.



## 6. CHART OF GROWING-STOCK RESOURCE

(FIGURE 5)

FIGURE 5. **GROWING-STOCK RESOURCE**



## 7. PUBLICATIONS FROM RESURVEY

1. Forest Statistics For Maine, 1971 And 1982
2. Timber Industries of Maine -- At Editor
3. Forest Composition of Maine -- At Editor
4. Forest Landowners - Coming Out For Review
5. Forest Biomass Statistics
6. Spruce-Fir Resource of Maine

I must stress again the wealth of information that is now available to us. My concern is whether or not we really know how to use all of it. Further - one must be extremely careful about interpretations, it's easy to misinterpret data available.

For you to be able to take advantage of it, you need to know what is available, and we will print and distribute a listing of the data fields that currently exist.

For the next few minutes, I will summarize some of the interpretations of the data you have seen in the statistical report, in the way of a general characterization of the forest we have today.

The Maine forest continues to dominate our landscape: we remain about 90% forested, (17.6 million acres) the most heavily forested state, with the amount of timberland having increased slightly since 1970.

The survey found our forest to be composed of 57 different species; 12 different softwoods, 45 hardwoods. Of the 57, 39 species are currently commercially important. I expect we will use more of them with time.

In spite of fewer numbers of softwood species, they dominate our forest - 65% of the growing stock is softwood (down from 72% in 1971). Aspen and red maple have really picked up.

The report suggests that the quality of our resources may be declining somewhat--15% cull in 1971, 18% in 1982. There have been recent newspaper articles about this. But a closer examination shows two species contributing to almost all of this change: For hardwoods--increased problems with beech, and, needless to say, for softwoods, balsam fir shows the greatest decline in quality. In addition, a high percentage of culls in species like gray birch, when averaged with all the others, tends to make the total resource look worse than it is.

Most of our lands are overstocked, with the average number of trees being far in excess of 5,000 trees per acre.

Some of these figures point out that there's plenty of room for good management to be conducted. They also suggest to me that if we could solve insect problems affecting two, good, valuable fast-growing species--white pine and balsam fir, we would be well on our way to vastly improving the quality and status of a majority of the softwood resource, a resource that is still unique in the Eastern United States.

Finally, I find considerable encouragement in the figures from the resurvey. We are growing as much or more wood or fiber than ever. We do have our resource problems which we must address and solve.

But, we have the knowledge; we have the data; we have the expertise--the commitment to increasing our investment in that resource must be made now.



CAN WE IMPROVE MAINE'S TIMBER SUPPLY?

Presented by

Robert S. Seymour, Assistant Research Professor

Cooperative Forestry Research Unit

College of Forest Resources

University of Maine, Orono

for

Blaine House Conference on Forestry

December 6-7, 1984

## INTRODUCTION

I'm happy to have the opportunity to speak today on a topic that I've been closely involved with since I joined the Cooperative Forestry Research Unit (CFRU) in 1981. I've changed the title of my talk from original charge of "Can we increase Maine's timber supply?" for reasons which should become apparent.

### OPTIONS FOR INCREASING WOOD SUPPLY -- TECHNOLOGY VS. SILVICULTURE

What do we mean when we talk about "increasing" or "improving" Maine's timber supply? At the risk of oversimplifying, there are really two different ways to approach this problem:

**The technological fix** -- adapt or improve harvesting and manufacturing methods to develop new or better ways of utilizing whatever happens to exist or develop in the forest; or

**Manage the resource** -- schedule harvesting activities and practical silviculture to grow better quality and more of the kinds of trees we need in our existing mills.

In some cases, I think major gains in wood supply can come from technological developments. Where there are significant quantities of usable material going to waste due to inefficient logging or processing, or grossly underutilized species, we should take advantage of opportunities to improve these situations. The two obvious examples in Maine that come to mind are the aspen resource and use of biomass for power generation. However, for our high-value species -- spruce-fir, white pine, and quality hardwood -- we already achieve excellent utilization. Not that there aren't certain opportunities for marginal improvements, but it seems to me that the only big gains left to be made are in what are currently low-value products. In Maine, we already do a decent job of utilizing our quality wood.

I don't want to sound too negative about technological opportunities, but I believe that we're in for trouble if we rely entirely on this approach to solve wood-supply problems. The forest is not like a factory, in the sense that it can be re-engineered at will in a short time if we decide that we don't like its present condition. With forests, we face biological constraints that cannot be overcome simply by spending lots of money. Although it may not be obvious from the recent Forest survey (Powell and Dickson 1984), it appears that Maine's forest industry is faced with a steadily worsening problem of declining resource quality that can only be overcome by improving forest management and waiting for perhaps decades for the results to materialize.

Although I admit to a bias here, I feel strongly that the second option -- actually managing the forest intensively -- offers, by far, our greatest potential for improving Maine's

timber supply and sustaining the profitable industries that depend on it. If our collective vision is that of a productive, sustainable forest-based economy for Maine, then I submit that we have no choice but to culture the forest so that it is also a productive and sustainable entity.

To my fellow foresters in the audience, I would hope that this is obvious. However, to others who don't think about trees all the time, it may not be so apparent that the character of Maine's future forest is definitely under our control, if we choose to exercise it. We can decide what kind of forest we want and then go about developing it, instead of continually reacting to declining quality by adapting mills and developing new technologies to make the most of a bad situation.

Fortunately, there's good news here. The techniques for creating Maine's new forest -- silviculture and forest management -- are well-developed. We have a sufficient understanding of the ecology of Maine's forests to manipulate it to our benefit on a scale much greater than we have. The rest of my talk will focus on how this can be done in Maine.

#### INTENSIVE MANAGEMENT OPTIONS

What options do we have to manage Maine's forests intensively? There have been symposia lasting several days (NE Forest Experiment Station 1977) held to discuss this topic, and for me to try to review comprehensively in ten minutes all that's possible in Maine would be a hopeless task. Instead, I will use a few examples to give a sample overview of what's going on in our State.

#### Regeneration - Creating the New Stand

I'll start with the one silvicultural practice which has been going on in Maine since time began -- natural regeneration. As Dave Smith (1981) described so well at the last Blaine House Conference, Maine is one of the easiest places on earth to start trees growing. Whenever mature trees are removed through harvesting or natural disturbances, new ones usually take their places almost immediately. If we exploit this property, it can give us a major economic advantage over other regions which must spend several hundred dollars per acre to achieve the same result by planting.

In Maine, due to our long history of utilizing our forests, most natural regeneration has developed after some sort of timber harvesting operation. Indeed, almost all the high-value trees we're harvesting in northern Maine today originated after logging operations between 50 and 100 years ago, so one could rightly conclude that historically, we've been fairly successful in exploiting this advantage. However, we should keep in mind that about the only thing that is still the same today as it was in 1920 are the names of the species. Logging technology has changed

from seasonal, labor intensive methods to year-round, highly mechanized operations. The old-growth stands common then are now almost extinct; today, stands are much younger and denser, and present all kinds of different management problems. Therefore, we should not automatically expect desirable regeneration to develop after present-day harvesting operations just because it happened once before. Many things are different today, and we need to keep them in mind.

This potential conflict between logging and silviculture can be especially serious in Maine, because most of our commercially important species are naturally best adapted to starting life in partial shade as advance regeneration. This means that some sort of shelterwood silvicultural system is ideal from an ecological standpoint. To take full advantage of our abundant natural regeneration, we must take special measures in harvesting that are not necessary if the only goal is to move wood from stump to roadside as efficiently as possible. Following the shelterwood system requires two such operations: First, some sort of a partial cutting is usually required to ensure that regeneration becomes well established, then the remaining mature trees must be carefully removed from the site without damaging the young ones that are destined to make up the future stand. Both types of cuttings are difficult to carry out with the large, single-purpose machinery now in use statewide.

Many of you may not think of controlled logging operations or natural regenerations an intensive management practice. However, I place it right at the top of my list of things I would like to see given more attention to improve the productivity of Maine's forests. The reason I place such high priority on natural regeneration is because harvesting operations affect, and thereby regenerate, so much area every year, by comparison with other silvicultural activities I'll discuss later. Once a stand is regenerated, our options for further cultural treatments are largely fixed for its entire lifetime. When we harvest and regenerate a stand, we leave a legacy, good or bad, for several future generations, so it's a responsibility not to be taken lightly. If the regeneration turns out to be not what we planned, then we're faced with the difficult dilemma: either spend lots of money to wipe it out and start over, or live with a second-rate, understocked and unproductive stand. Neither of these is a happy solution to a problem that would have been easier and less expensive to solve by modifying the way the previous stand was harvested.

### Artificial Regeneration

As important as natural regeneration is to our future forest, there are many cases where it is ineffective or impractical, and we must resort to artificial means to establish the

species we want. Planting offers probably the greatest degree of control over the future forest, accomplished at the highest cost of any silvicultural practice. Planting programs have been undertaken in Maine for a variety of species:

In eastern Maine on Georgia-Pacific timberlands, Oscar Selin and Bill Sayward have established several thousand acres of larch plantations which after 14 years have trees which are as much as four times larger than trees located in a thinned 30-year-old spruce-fir stand.

Eastern white pine is another species that has long been planted with varying success in Maine. There is a substantial acreage of pine, planted during the soil bank era, now reaching merchantable size. Also, at least one major pine sawmill, Robbins Lumber in Searsmont, is routinely planting their harvested pine lots to prevent a reversion to hardwoods. There has also been some interest in the planting red and jack pines.

Many landowners in northern Maine have also been planting spruce on a small scale. However, the most outstanding example of spruce plantation culture is not in Maine, but in northwestern New Brunswick on J.D. Irving lands. Since about 1960, Irving foresters have established nearly 150,000 acres of spruce plantations, using the most intensive treatment regime applied anywhere in the industrial spruce-fir region.

Although planting offers great promise in certain situations, it has been applied to a small acreage compared to the area harvested annually. Planting will almost certainly increase in importance, but in my opinion, it is unlikely to become the dominant regeneration method on industrial lands in Maine in the foreseeable future, as it has in other regions.

#### Treatment of Established Stands

Once the stand is regenerated, what else can be done over the rest of its life to improve its productivity?

In young stands, silviculturists have quite a variety of treatments that go by many different names such as precommercial thinning, spacing, cleaning, and release, depending on exactly what is being favored and what is being discriminated against. I believe it is more important to focus on the purpose of these treatments rather than what you call them. At this stage in development, it is often possible to increase future stand productivity dramatically by controlling three factors: the species composition, density, and spatial distribution of the young trees. During the last ten years or so, most silvicultural research and development in Maine and the Maritime Provinces of Canada has focused on young stand culture, and great advances have been made.

## Control of Species Composition

By far the most common method of controlling species composition now applied in Maine is through the aerial application of selective herbicides, usually to give coniferous species the advantage over broadleaves. Largely as a result of the leadership of my colleague Maxwell McCormack and the initiatives of several landowners, we have effective treatments for most situations.

We used to believe that without herbicide release treatment, the softwoods would suffer suppression and reduced growth for a decade or two, but that eventually they would emerge from the brush and dominate the site. We're now seeing a more alarming trend in many cases, where the intense competition that often develops after clearcutting suppresses softwood seedlings out of existence and the site becomes dominated by a dense cover of raspberry or tolerant hardwoods.

Experimental blocks located near Austin Pond in Bald Mountain Township, Maine, illustrate the effectiveness of herbicides. Seven years after clearcutting, a variety of successful treatments, including the first aerial application of Roundup in eastern North America, were applied. Where the release treatments were successful, a vigorous, fully stocked spruce-fir stand has developed. Without release, a poor-quality hardwood stand dominates the site. In this case, which is typical of a broad acreage in Maine, the positive effects of the release treatment extend well beyond shortening the rotation; it has prevented a profound, undesirable change in stand composition.

## Control of Density and Spacing

Usually, it is not enough to control only the species composition of the stand, because when you're successful, you often end up with far too many trees of the favored species. In this case, if the goal is to achieve maximum production of merchantable timber, it is necessary to carry out thinning or spacing operations to reduce the density and concentrate future growth on selected crop trees. We're fortunate to have in Maine a state-of-the-art system developed by foresters of Scott Paper company that won a National Forest Products Association award. It uses a two-stage operation; the first entry is made with a large brush cutter or chain flail, to create alternating strips of mowed swaths and standing trees. Then, in the second-stage, workers release individual crop trees in the residual strips with brush saws.

Sometimes, brush saws are used to carry out the entire thinning operation. There are several contractors in Maine who perform brush saw thinning work, and acreage treated annually has increased considerably in the last couple of years to several thousand acres.

Even though I have used primarily spruce-fir examples, there is no reason why these treatments, with appropriate modification,

cannot be used to grow quality trees of other commercially important species. We have well-developed silvicultural treatments that can be used to create just about any stand conditions we choose. I do not mean to imply that we have it all figured out, but we certainly do not need to wait for further research to accelerate the process of bringing Maine's forests under more intensive management.

### Commercial Thinning and Regeneration Cutting

Once trees reach merchantable size, options exist for silvicultural treatment that are not available earlier in the rotation, because something of value usually can be harvested to partially offset the cost of treatment. Traditionally, commercial thinning operations, as these are usually called, have been frustrated by poor or non-existent markets for the kinds of poor-quality, low value trees that need to be removed from the stand. As a result, trees with no future have accumulated in Maine's forest for a long time, while high-value ones continue to be harvested.

Over much of Maine, especially the western, southern and central parts of the state, good markets already exist for virtually all species and products, and the recent development of biomass markets has improved this situation dramatically. Markets for whole-tree chips have redefined the merchantable tree to a condition which now permits thinnings, that once required significant investments and were called timber stand improvement operations, to be carried out at a slight profit to the landowner.

Whole-tree chipping has also begun to play a major role in stand regeneration. We have examples of shelterwood cutting, to improve the composition and quality of the future hardwood or white pine stands or outright site conversion from low-quality hardwood to thrifty softwood plantations like the Irving example. Where planting is contemplated, whole-tree harvesting provides an effective, "free" site preparation that might otherwise cost over \$100 per acre if the material were not utilized.

Just because opportunities are there to take advantage of new markets for silvicultural purposes does not mean they will automatically be utilized, however. With any harvesting system that is now conceivable, it will always be cheaper to produce a ton of biomass by chipping a single 13-inch tree instead of 34 three-inch trees. The challenge will be to concentrate whole-tree chipping operations on the component of the resource that will benefit from it, and not get caught in a situation where the only goal is to harvest a low-value product as cheaply as possible.

### SUPPLY PREDICTIONS

I wish I could point to a convincing study that shows how much better off we would be if we created a new forest through widespread implementation of intensive management practices. The

closest thing to it was the spruce-fir supply/demand study (Sewall Co. 1983) where we made some very general forecasts of certain intensive management scenarios (Figure 1). However, even though there was a lot of uncertainty in these predictions, it looks like just about anything we can do to grow an extra cord of spruce or fir that will mature between 1990 and 2020 is highly desirable. During this period, we will be lucky to hold our own and not shut down existing mills.

Although the issue has not been analyzed, I suspect that the same is true for white pine and hardwood sawtimber. In general, I do not think we can grow too much of anything that will produce a quality product during the next 40 years. If we find that there is more quality sawtimber maturing than we can process with existing mills, we should be able to expand our operations in Maine at the expense of other regions where quality material has become scarce.

### CONCLUSIONS

I feel a little uncomfortable with the way I have presented this overview, because in the interest of brevity, I have grossly oversimplified the sophisticated sciences of silviculture and forest management. The last thing I want to do is leave the impression that there are a few simple cookbook silvicultural treatments that apply everywhere in Maine, and that herbicides, brush saws and whole-tree chippers are going to solve all our future wood-supply problems. It is not that simple. These things are just tools. When we begin to apply these treatments on a scale large enough to make a difference, all sorts of subtle variations and problems are encountered. Here, there is no substitute for the expertise and judgment of professional foresters.

Bringing Maine's forests under a high level of management, and making the goal of a sustainable forest-based economy a reality for future generations, is going to be a tough job under the best of circumstances. It will require extraordinary long-term commitments and a vision and consensus of the future that is not now well defined. All of us who have a stake in Maine's future forest -- not just foresters, but loggers, mill-workers, and really, just about all Maine citizens -- must realize that, like it or not, we are in a critical period of transition to a new and different forest. The actions we take, or fail to take, in the next few years will determine, for better or worse, the future character of Maine's forests.



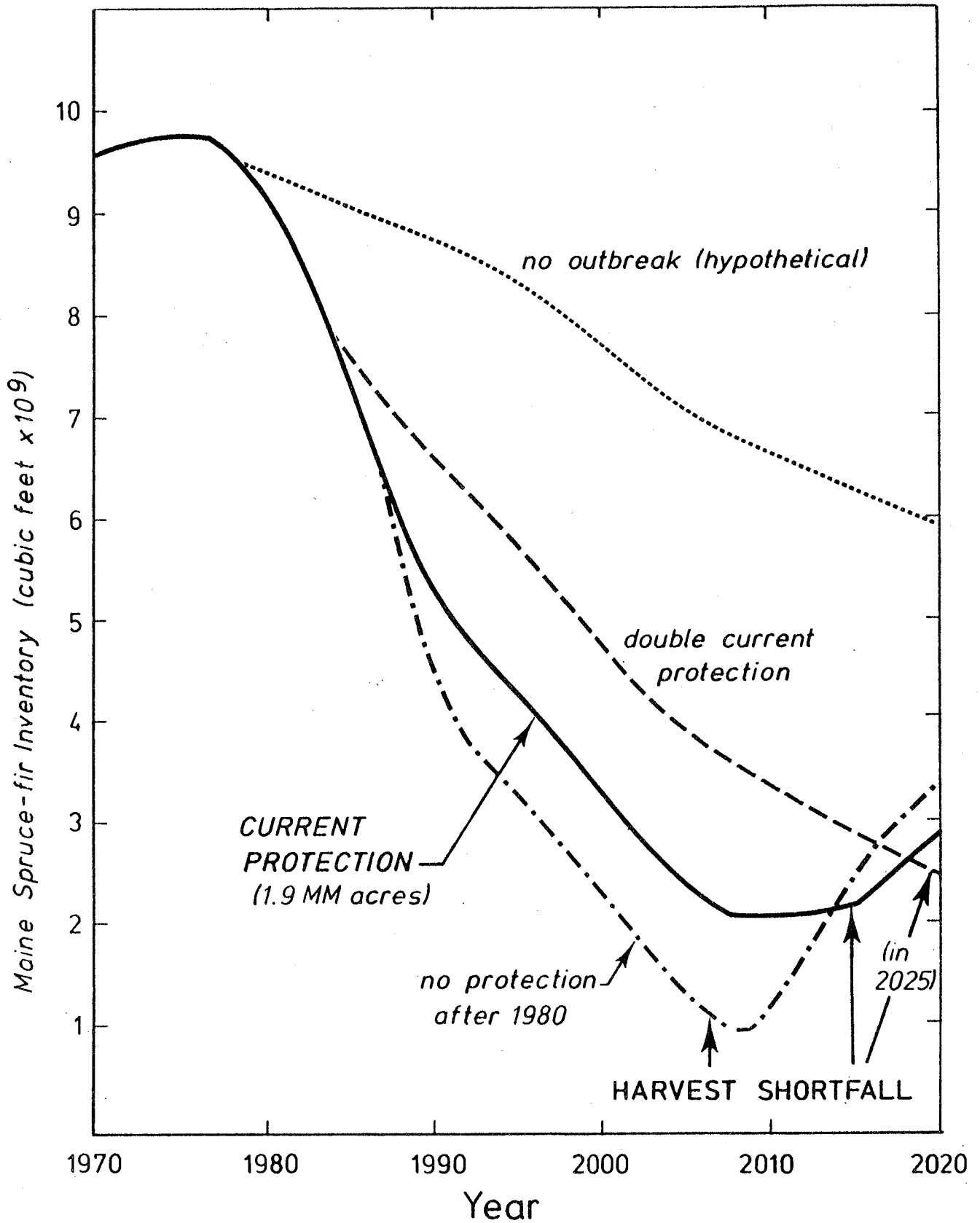


Figure 1. Simulated 50-year trends in Maine's spruce-fir inventory under varying levels of protection against spruce budworm damage after 1980 (adapted from Sewall Co. 1983).

The opportunity is there to control our destiny, and we have made a modest start. I hope that when the 20th Blaine House Conference is held, we are not still talking about managing Maine's forests, but that we can all look back proudly on a solid record of accomplishment in how we transformed the vision of a sustainable forest into a reality.

#### LITERATURE CITED

- Northeastern Forest Experiment Station. 1977. Proc. of the symposium on intensive culture of northern forest types. NE For. Expt. Stn. Gen. Tech. Rep. NE-29. Broomall, PA. 356 p.
- Powell, D.S. and D.R. Dickson. 1984. Forest statistics for Maine. NE For. Expt. Stn. Res. Bull. NE-81. Broomall, PA. 194 p.
- Sewall, J.W. Co. 1983. Spruce-fir wood supply/demand analysis. Available from: Maine Dept. Conservation, Augusta, ME. 94 p. + appx.
- Smith, D.M. 1981. Forest management in Maine. p. 79-87. In: Proc. First Blaine House Conf. on Forestry, Jan. 21-22, 1981, Augusta, ME.

ATMOSPHERIC DEPOSITION AND FORESTS OF

THE NORTHEAST: NOW AND THE FUTURE

Presented by

Ivan J. Fernandez

University of Maine at Orono

for

Blaine House Conference on Forestry

December 6-7, 1984

## I. Introduction

Concern over "acid rain" is a relatively recent environmental phenomenon with the term essentially unknown to the U.S. public prior to 1970. One of the first major research programs in the world to study acid deposition impacts on natural ecosystems began in Norway in 1972 (SNSF Project) and it was not until 1975 that we saw a technical conference in the U.S. devoted to potential acid deposition effects on forested ecosystems. In the U.S., the major concern in the late 1970's and early 1980's focused on acid deposition impacts to aquatic ecosystems, particularly lakes. Regions in the Northeast (e.g. the Adirondacks) thought to be sensitive to acid deposition impacts on freshwater chemistry were found to contain some lakes which apparently had become acidified in recent years. Major public concern developed over the possibility that acid deposition promoted this acidification and led to losses in fish populations in these lakes. Fish mortality has been shown to occur not only as a result of lower pH in lakes, but also to the simultaneous increase in aluminum (Al) which occurs in the acidification process.

During the early 1980's, reports of symptoms of forest declines appeared in the literature from several high elevation sites in the eastern U.S. as well as central Europe. Numerous hypotheses have been proposed to explain this occurrence of forest decline, most of which include air pollution stress as a key component. The rapid rate at which the symptoms of forest decline have spread in West Germany has caused the political and scientific communities in eastern North America to focus on the possible role of atmospheric deposition in forest decline. However, while intensified research in the U.S. has continued to uncover new sites exhibiting the symptoms associated with this decline, the mechanism(s) for these phenomena remain undefined.

## II. What is Atmospheric Deposition?

The media has succeeded in educating the public on the components of "acid rain" (i.e.  $H_2SO_4$  and  $HNO_3$ ); however, it is imperative that we truly think in terms of atmospheric deposition when examining the forest decline issue. Briefly we can consider atmospheric deposition to be composed of:

- (A) Acid deposition which includes wet deposition such as acid rain, snow, sleet, and fog/cloud moisture. The long periods of time in which high elevation forest canopies are bathed in acid cloud moisture may play a critical role in understanding those ecosystems. Dry deposition of acid or acidifying materials includes the absorption of gases (e.g.  $SO_2$ ,  $NO_x$ ) by soil and foliage surfaces and particulate fallout and interception by forest canopies (e.g.  $(NH_4)_2SO_4$ ).

- (B) Other deposition components include dissolved trace organic pollutants and trace metals in wet deposition. Dry deposition components in this group include ozone ( $O_3$ ), other photochemical oxidants (e.g. peroxyacetyl nitrate or PAN), and particulates often containing trace metals (e.g. Pb, Zn, Cd, Cu, Ni). These pollutants are a particular concern since  $O_3$  is already an air pollutant well known for having regional impacts on forest productivity, and many of the trace metals, most notably lead (Pb), are known to be accumulating in the forest floor.

The rate of deposition of these materials is critical in determining their potential roles in forest growth at any one location, as well as their interactions with each other and with other environmental factors.

### III. Potential Impacts of Atmospheric Deposition on Forest Productivity

To date, the relationship between atmospheric deposition and forest productivity, specifically forest decline, is not well understood. Numerous hypotheses on this topic have been presented and a great deal of research is being carried out. Direct effects of acids on tree foliage do not appear to be probable with current levels of acidity in precipitation (i.e. dilute acid rainfalls will not "burn" the leaves). Much of the concern regarding atmospheric deposition rests with potential indirect impacts to the soil. The most probable mechanisms currently thought to play a role in observed or potential alterations in forest productivity due to atmospheric deposition include:

- (a) Increased rates of nutrient leaching from the soil due to sulfate ( $SO_4^{2-}$ ) and nitrate ( $NO_3^-$ ) ions from acid deposition. While soil acidification and nutrient leaching are natural processes in New England, increasing the rate of these processes could cause nutrient deficiency problems which otherwise may not have occurred.
- (b) Aluminum toxicity to tree roots or soil microbes could result since Al, naturally abundant in soils, becomes more mobile as soils become more acid. This is thought to be a major reason for the forest decline seen in the Solling Region of West Germany.
- (c) Trace metal toxicity to roots and soil microbes could affect tree roots or the rate at which organic matter decomposes and releases nutrients in soils a (critical source of nutrients for northeastern forested ecosystems). Not only does trace metal toxicity increase as soils become more acid, but these metals are also being deposited from the atmosphere. Some

metals, such as Pb, are almost completely absorbed in the forest floor and are known to be accumulating. Research to date indicate some evidence for trace metal effects on soil microbiology may exist relative to rates of mycorrhizal infection of tree roots and organic matter decomposition.

- (d) Direct O<sub>3</sub> and SO<sub>2</sub> injury are known to occur with forest species, particularly in situations where local sources of emission cause high concentrations. Air quality data for remote forested areas is sparse, but these gaseous pollutants both alone and when interacting with acid precipitation, trace metals, and natural stress factors could play a major role in evaluating future forest productivity for some locations.
- (e) Leaching of nutrients out of the foliage of forest canopies is also a possible effect of acid precipitation. Much of the chlorosis (e.g. yellowing) evident in stands showing forest decline in West Germany is thought to be due to low magnesium (Mg) concentrations in tissue as a result of nutrients being leached from the tissue by acid precipitation.
- (f) Nitrogen (N) loading, or unusually high rates of nitrogen deposition to forested ecosystems, is a potential contributing stress in forest decline. While low elevation forests might benefit (at least in the short-term) from nitrogen deposition, the excessive levels of N inputs to high elevation forests may alter the physiological status of trees making them more susceptible to natural stress factors (e.g. frost) and other air pollutant stresses.
- (g) Altered reproductive processes due to atmospheric deposition may result if air pollutants alter the phenology (timing) or success of tree physiology events with respect to germination, pollination, fertilization, and related processes. Simply changing the timing of an event, such as when a pollen tube reaches an ovary, could change the success of reproduction and the subsequent character of the future forest.
- (h) Stresses other than air pollution such as drought, frost, nematodes, insects, disease, or intensive utilization can all contribute to forest decline. Some studies have shown drought or frost events may "trigger" the decline which is thought to result from trees being predisposed by other stress factors.

Likewise, pathogens have often been shown to be associated with declining trees, but usually are considered to be a secondary stress.

#### IV. Some Symptoms of Forest Decline

Forest decline is not a new term, but has recently been used to describe situations where an unexplained loss of tree vigor has developed, mostly in the last 20 to 30 years, and usually in regions considered to be impacted by elevated deposition of atmospheric pollutants. The symptoms of the modern decline phenomena can be very different from one location to another. In Central Europe trees have shown a general thinning of the foliage in the crown ("canopy ghosting") along with needle losses from the bole of the tree outward. Along with these symptoms can be seen drooping branches, epicormic branching, repeated larger seed crops and sometimes a yellowing ("chlorosis") of the top sides of the needles. These symptoms have been most prevalent in fir (Abies alba) but have also been seen in Norway spruce, beech, pine, maple, oak, ash and larch. It is important to note that in Europe both the characteristics of forested ecosystems and the history and current conditions of air pollution are significantly different from that in the northeastern United States.

In the United States, red spruce (Picea rubens) has received the most attention since it has been experiencing an as yet unexplained "die-back" which is especially apparent at several high elevation locations. Die-back refers to the loss of foliage from the top down in the crown and, therefore, is very different from much of the European situation with fir. Probably the symptom of greatest concern with respect to forest decline is the decline in radial growth increment which seems to have occurred in Europe and the U.S. beginning primarily in the late 1950's and early 1960's in a variety of tree species, at various age classes, and in a variety of stand types and stocking conditions. The decline in radial growth is often abrupt, but may be only a subtle shift, and can occur in trees which look otherwise healthy. Several efforts have been initiated to quantify and characterize the extent of this symptom. Clearly, if these symptoms indicate changes in the rate or character of growth for certain species, then this problem poses the possibility of significantly altering the future supply of materials from our forestlands and deserves immediate attention. Numerous problems still exist, however, in determining how useful radial increment growth measurements are in truly assessing stand productivity, and in determining if what is being termed "forest decline" is a unique phenomenon or simply appears unique due to our inadequate understanding of long-term ecosystem dynamics.

## V. A Generic Hypothesis for Forest Decline

While there is no conclusive evidence regarding the role of atmospheric deposition in future forest productivity, the available evidence to date can be interpreted (and has been by this author) to strongly imply a role for atmospheric deposition in forest decline as described here.

### (A) Primary Chronic Stress Factors

It seems probable that long-term exposure to elevated levels of acid rain, acid snow, acid cloud moisture, carbon dioxide, ozone, sulfur dioxide, heavy metals, other air pollutants, or natural stress factors has altered the susceptibility of many of our forested ecosystems to stress on both a local and regional basis. While all of these factors should be considered in any evaluation, it is probable that a different suite of modern air pollution factors will be critical in determining the cause of forest decline for different locations. That is, because one scientist's hypothesis is shown inappropriate at site A, does not mean it is inappropriate for site B. It seems unlikely at this time that a single mechanism will be found to explain the symptoms of the modern forest decline phenomena in all areas where it occurs, both in this country and in Europe.

### (B) Primary Acute Stress Factors

These stress factors probably initiate the symptoms of forest decline and occur over a relatively short period of time. Natural stress events such as drought and frost are prime candidates for contributing to, and initiating, the symptoms of decline (particularly a decline in radial growth increment); however, pollutant exposure events can also fit this category. While primary acute stress factors may be natural and can cause declines in the absence of air pollution, it seems that forests which have been predisposed by chronic stresses are more susceptible to significant, negative growth effects due to natural phenomena from which trees could have otherwise recovered.

### (C) Secondary Stress Factors

These factors are primarily stresses on trees due to insects, parasitic organisms or disease. The research and observations to date suggest that in most cases where this modern forest decline phenomenon has been examined there exists evidence of infestation. However, in most cases after careful exami-



nation it has been concluded that already weakened trees had been attacked and that secondary stress factors were not initially responsible for the loss of tree vigor.

## VI. Comments and Prognosis

So one is tempted to ask, in frustration, why is it that the role of atmospheric deposition in forest productivity is so difficult to evaluate? One major reason is that the most probable effects are (or may be) extremely subtle, dealing with gradual alterations in the rates of otherwise natural processes. Likewise, there are few long-term study sites in the country continuously gathering data to allow the evaluation of (and possible changes in) long-term trends in forested ecosystems. No whole watershed study sites with long-term funding exist in Maine at present. Relative to lake ecosystems, terrestrial systems appear to be more complicated with numerous complex processes involved in ecosystem level functioning. Also, there is very little historical data to which we can compare growth rates, long-term trends in forest composition, or possible occurrences of the symptoms of the modern forest decline phenomenon in the past. If we consider the soil-mediated effects of atmospheric deposition on forests, there too we find that the kinds of measurements needed for the evaluation of atmospheric deposition effects have not been, and are not, done on a routine basis and almost no data for some of the key soil parameters currently exists (e.g. soil sulfate absorption properties).

There are several questions regarding this issue which clearly require the earliest attention in order to establish the potential for detrimental effects of atmospheric deposition on our forest, particularly those woodlands so critical to the forest products industry and therefore to all the people of Maine.

- (1) Is there now a detectable and unexplained decline in growth for low elevation, commercial forests? That is, are subtle shifts in the growth of the commercial forest resource taking place for which we yet have no evidence due to the types of information we currently gather on forest productivity?
- (2) What is (are) the mechanism(s) of forest decline, particularly for spruce, at high elevations and to what extent (if at all) can we apply that knowledge to the functioning of low elevation, commercial forests?

- (3) Is the high elevation decline and regional radial growth decline progressive with respect to both time and geography? In other words, have these phenomena always been there and only recently have we looked? Is the problem of recent origin but confined only to locations which we are currently in the process of identifying through our research? Or, are we witnessing the beginning of a trend which will see forests continue to degrade at sites where decline is already identified, and also see the decline continue to expand geographically with time? These questions may be the most critical of all.

Few scientists would be willing to predict the future with regard to atmospheric deposition's role in forest productivity. If deposition rates for all air pollutants of concern were to continuously increase, clearly the consequences would be grave. However, this is not the case at present. Sulfur dioxide levels have declined in recent years. This is good, particularly if current regional levels are not phytotoxic and past impacts are reversible. Likewise, lead deposition levels have dramatically declined, yet lead deposition still remains well above background levels and both past and future lead additions are tenaciously accumulating in forest soils. Trends for nitrogen oxides are variable, and increased motor vehicle miles would increase the major source of  $\text{NO}_x$  in New England. Ozone levels are probably higher in rural Maine areas than we previously believed, and  $\text{NO}_x$  levels are directly related to  $\text{O}_3$  production. The continuously increasing levels of carbon dioxide in the atmosphere could have both positive (e.g.  $\text{CO}_2$  fertilization effect) and negative (e.g. increased drought stress or physiological predisposition to other stresses) effects on future forests. Even our harvesting intensity must be considered since both harvesting and acid deposition could pose potential threats to nutrient supplies on sensitive sites, and nutrient removals in harvests are a far greater drain on the site than would be expected from acid deposition.

Although this list of critical air pollutants is by no means complete it does include the major substances currently believed to have the highest potential for playing a role in regional forest productivity effects. None of these air pollutants are scheduled to be dramatically reduced or eliminated. Some of the potential mechanisms of regional air pollution effects on forests are both interactive and progressive. Symptoms of unexplained forest decline are being identified in locations in both eastern North America and Europe. It is for these reasons that we must very carefully examine this issue. If asked only to

consider the health of our present and future forests (along with our lakes and streams), there is no question that the best course of action would be to reduce the deposition of a number of air pollutants, while simultaneously focusing scientific research on this problem. If we take limited actions to reduce only a single stress on our forests, it is essential that the most detrimental factor be identified and controlled. Policy decisions will not focus solely on forest effects, but must obviously include effects on lakes, streams, materials, and food production which together will determine the focus of regulatory action with respect to air pollution. These considerations have resulted in a major emphasis on sulfur emission reduction proposals, and probably this is a justifiable approach for the benefit of society as a whole. However, the benefit to our forests of a reduction in sulfur emissions alone should not be considered a "cure-all" for current concerns regarding the effects of modern stress factors on the health of eastern North American forests.

### Suggested Recent References

- Breece, Linda and Sherman Hasbrouck (eds.) 1984. Forest Responses to Acidic Deposition - Proceedings of a U.S. - Canadian Conference. Land and Water Resources Center, University of Maine, Orono, Maine.
- Council for Agricultural Science and Technology. 1984. Acid Precipitation in Relation to Agriculture, Forestry, and Aquatic Biology. C.A.S.T. Report No. 100. Ames, Iowa.
- Fernandez, I.J. 1983. Acidic Deposition and Its Effects on Forest Productivity - A Review of the Present State of Knowledge, Research Activities and Information Needs. National Council of the Paper Industry for Air and Stream Improvement Tech. Bull. No. 392. New York.
- Interagency Task Force on Acid Deposition. 1984. Report on the Second Annual Review Meeting of the Nation Acid Precipitation Assessment Program. Washington, D.C.
- Johnson, Arthur H. and Thomas G. Siccama. 1983. Acid Deposition and Forest Decline. Environ. Sci. Technol. 17:294A-305A.
- National Swedish Environment Protection Board. 1983. Ecological Effects of Acid Deposition. Report and Background Papers. 1982. Stockholm Conference on the Acidification of the Environment. Expert Meeting I. Report SNV pm 1636. Stockholm, Sweden.
- Smith, W.H. 1981. Air Pollution and Forest. Springer-Verlag Press, New York.
- The Council on Environmental Quality. Environmental Quality 1983 - 14th Annual Report. Washington, D.C.
- Ulrich, B. and J. Pankrath (eds.) 1983. Effects of Accumulation of Air Pollutants in Forest Ecosystems. D. Reidel Publishing Co., Boston, Massachusetts.
- U.S. Environmental Protection Agency. 1984. The Acidic Deposition Phenomenon and Its Effects. Critical Assessment Review Papers. Volume II - Effects Sciences. (EPA-600/8-83-016BF) U.S. EPA, Washington, D.C.

A NATIONAL PERSPECTIVE: WHAT IS MAINE'S COMPETITIVE NICHE?

Presented by

H. Fred Kaiser, Director

Forest Resources Economics Research

USDA Forest Service

for

Blaine House Conference on Forestry

December 6-7, 1984

In forestry, as in other economic ventures, investments in growing timber entail attempts to increase opportunities for consumption in the future rather than using resources to make goods available for immediate use. Also, timber investments enhance the outputs from the other production factors--land and labor. These are characteristics of all investments, and the differences that distinguish forestry investment may be largely matters of emphasis and method, but they are significant nonetheless.

First, many landowners are unable or unwilling to make an investment and then wait 30 to 80 years to capture financial rewards. Second, the timber product is also the capital plant that becomes the product when harvested. This means that forestry investments call for a willingness to incur unusually high percentages of costs for capital plant rather than material, labor, land, or energy. Third, many of the goods and services produced along with timber are not directly evaluated by existing markets and, therefore, offer limited financial incentives for owners. These characteristics of forestry affect investment levels, especially by private owners of forestland.

Levels of investment influence State, regional, and, eventually, national timber supplies. The key element here is timber supply, which is measured by existing resource as well as by investment capital to augment those resources. In the past, the United States timber resource situation has shown substantial improvement in response to rising investments in management, research, and assistance programs. For example, over the last 30 years softwood growing stock inventories increased 7 percent and hardwoods inventories increased 43 percent. The increase in inventories has been almost entirely on the young stands in the North and South and chiefly on the nonindustrial private forest ownerships.

If we rely on forest management trends as a basis for timber supply projections, we could generate a feeling of complacency. The truth is that demands for timber will rise faster than supply, according to conclusions of the Resources Planning Act Assessment.

Today, I want to talk to you about the current and future U.S. forest land situation and what we foresee for timber investment opportunities. I want to illustrate these relationships using our recently completed long-term forest analysis (USDA Forest Service, 1984). This is a 50-year evaluation made every five years in accordance with the provisions of the Forest and Rangeland Renewable Resources Planning Act. During the last 10 years the Forest Service has developed the methodology used to make the projections for the 1985 RPA timber analysis (Adams and Haynes, 1980). This is a continuing project and we are now involved in improving the methodology for 1990.

## Forest Products Demand

To look at the future demand for forest products in the United States, two basic statistical projections are needed: 1) population and 2) Gross National Product. Figure 1 shows the population of the United States has increased from 120 million to over 230 million in the last five decades. Also shown in this figure are three alternative population trends which vary according to assumptions made about fertility rates and the number of families that will be formed. The high rate of growth shows a very large population by the year 2030; on the other hand, the low rate of growth would achieve results very near to zero population growth throughout the projection period of 1990 and 2030.

Figure 2 shows past and projected future trends in Gross National Product (GNP) for the same time period. The trends are shown in constant dollars which is the same as net of inflation. The past trend in the growth rate of the GNP has been fairly steady since the Depression in the 1930's. The exception is the bulge and subsequent decline due to World War II. Future projections in the GNP are expected to continue at about the same general upward trend.

One of the areas in which our nation spends a significant portion of its GNP, and is also an area that determines a sizable portion of our national wood product consumption, is in housing. Figure 3 shows past trends in housing along with some projections to the year 2030. As shown, housing production has come quite a way since its bottom during the Depression, particularly after World War II. However, during the period shown here, the various classes of family housing have experienced some ups and downs. As you can see, one-family housing construction reached a low point in about 1982 with a million units being constructed. Housing construction has risen since then, but once again there is uncertainty about interest rates and a tight money supply, but this is not reflected on this graph. Overall, it is projected that housing will decline; although, there will be high point in 1990 which is when the people born during the baby boom will reach their highest proportion of family formation and home ownership. The second peak multi-family dwellings is due to the secondary effects of the post-war baby boom.

These projections for housing, along with those of non-residential construction, shipping, manufacturing, and other uses, are combined to determine the various individual wood products that would be consumed through time. Lumber consumption is expected to decline after 1990 and amount to 42 billion board feet. However, it is expected that there will be substantial regional shifts. Canadian imports account for an increasing share until 2000 and will then decline as domestic

# Population With Projections

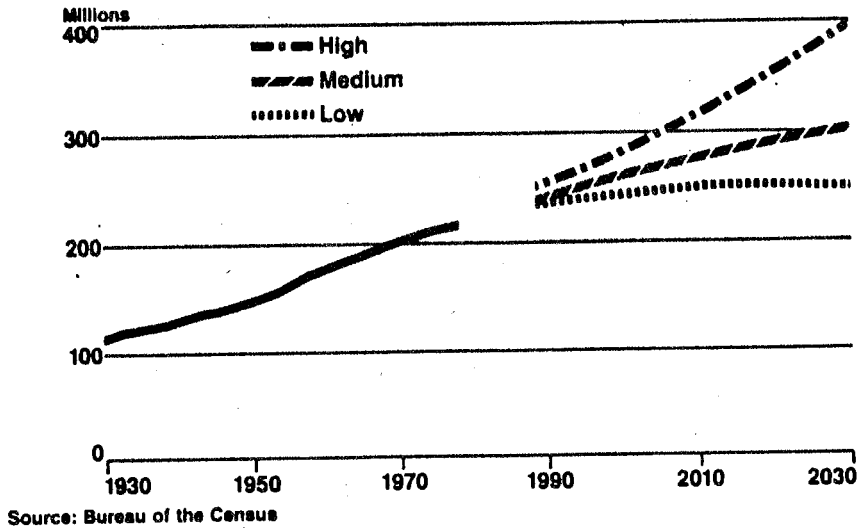


Figure 1

# Gross National Product With Projections

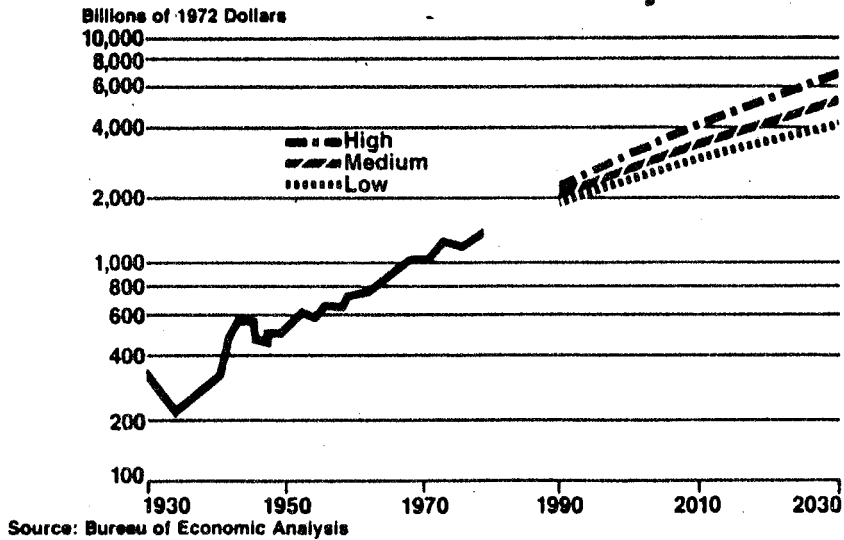


Figure 2



# Housing Starts With Projections

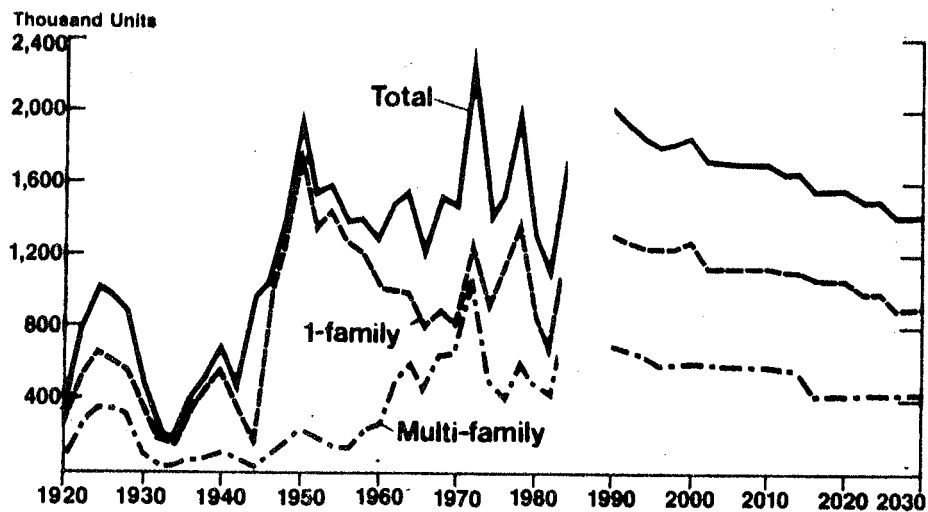


Figure 3

production expands toward the end of the projection period. In the next decade the decline in lumber production on the Pacific Coast accelerates as rising costs, both wood and nonwood, squeeze profits. A modest expansion will take place in the South offsetting some of the Pacific Coast decline. Prior to 2000, expansions in Canadian imports also contribute to the offsetting changes. Lumber production in the North is expected to grow from about 5 billion board feet, both softwood and hardwood, to 7 billion board feet.

Throughout the projection period the regional shares of pulpwood production are expected to remain unchanged. Regional production levels, however, experience large increases as pulp production expands from 55 million tons in 1980 to 124 million tons by 2030. Total softwood pulpwood consumption doubles during this period. By 2030, slightly over 50 percent of the southern and northern harvest will be used in pulp production with a 50 percent increase over current levels.

#### Timber Harvest Inventories and Price Expectations

Timber harvest by region is shown in Figure 4. The largest increase in harvest is expected in the South; although, in percentage terms, an equal increase is expected in the North.

Also, as shown in Figure 5, most of the increase in harvest is expected to occur on non-industrial ownerships. However, there is some uncertainty about the future responsiveness of the ownerships to stumpage prices and inventory changes. These ownerships were quite responsive to stumpage price increases between 1950 and 1980 but many have nontimber management objectives which could increasingly constrain harvests and raise harvesting costs.

Even more important from the long-run standpoint are the present limited investment in timber management. As shown in Figure 6, inventories of growing stock are likely to drop in the South to about 1970 levels. We think this identifies a rather significant problem in American forestry.

In 1974, there were an estimated 138 million acres of pine-site land in the South. Slightly less than half was occupied by pine trees, with the other half roughly split between oak, pine, and hardwood acres (Murphy and Knight, 1974). However, since the early 1960's, less than one-third of the pine site land cut in the South has been adequately reforested with pine.

This regeneration problem was first cited in a Georgia study following a 1972 remeasurement of Forest Survey plots measured ten years earlier (Knight and McClure, 1974). The study found that of the large acreage of southern pine harvested between the two surveys only 9 percent showed any evidence

## Harvest Volume by Region

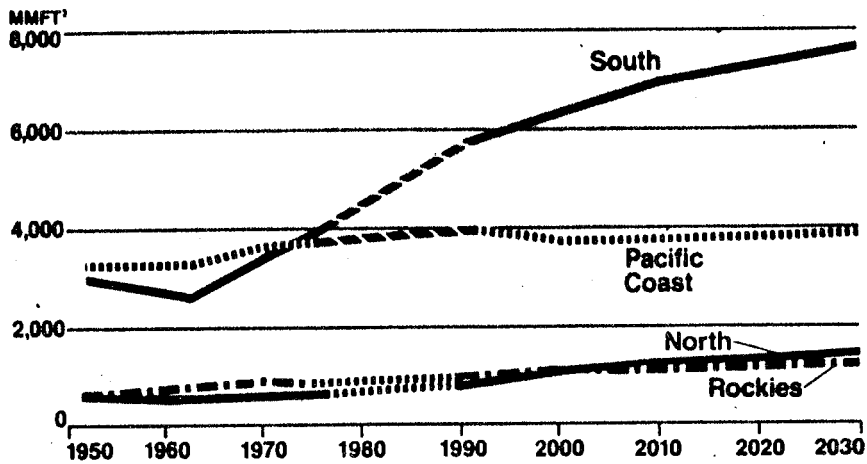


Figure 4

## Projected Harvest by Owner

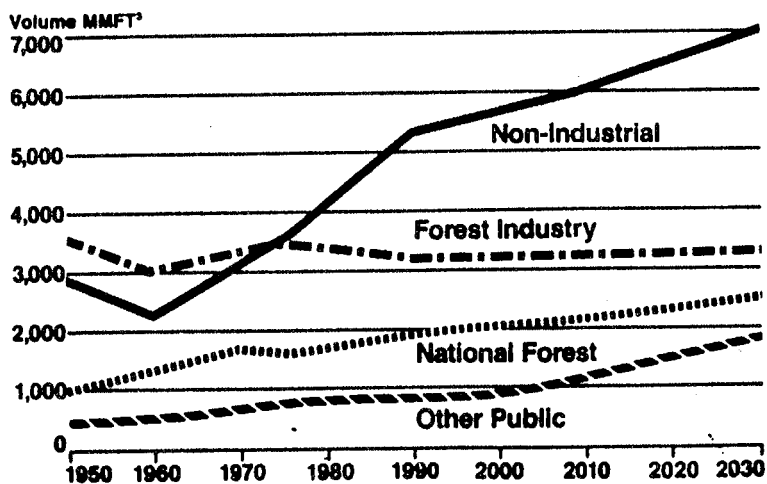


Figure 5

## Total Inventory by Region

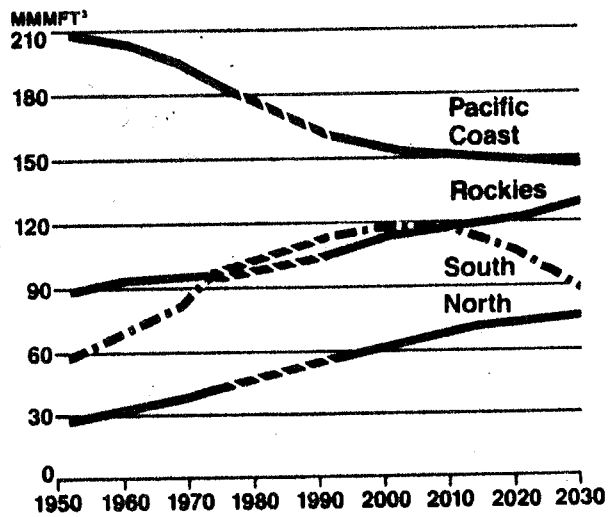


Figure 6

of being replanted with pine on non-industrial forest lands. This problem has also been identified in follow-up surveys in Virginia, North Carolina, South Carolina, Florida, and Arkansas (Boyce and Knight 1979).

Such rates of softwood regeneration will fail to support the increased harvest projected for the South after the year 2000. Across this region, rates of regeneration of pine on harvested lands have been declining. As a consequence, rates of hardwood regeneration have been increasing. These trends have not been properly appreciated because of continued increases in the volume and net annual growth of pine resulting from the large public programs of tree planting during the Soil Bank years. Even today, 70 percent of non-industrial private forest acres that are planted, are cost-shared by the State or Federal funds (USDA Forest Service, 1984). Continued excess harvest of softwood over growth will eventually destroy the capability of the area to support further harvest.

Because current management levels are inadequate to meet future demands, substantial price increases are expected for softwood stumpage. The price necessary to bring about demand-supply balance show softwood prices rising in all regions of the United States. Softwood stumpage prices are projected to rise, net of inflation at a rate of 2 percent per year.

In general, the demand-supply projections for hardwood--both roundwood and sawtimber--show a more favorable supply outlook than in the case for softwoods. It appears that supplies will be adequate in the next two or three decades to meet demands for most hardwood products except for some preferred hardwood species. As a result, there may not be much of an increase in average hardwood stumpage prices in the years immediately ahead. Beyond the next few decades, however, demands will begin to rise causing pressures on hardwood supplies. As this occurs, stumpage prices will move upward and the competition for the available supplies is likely to be more intense.

### Implications

This projected scarcity for timber is not inevitable. There is a large timberland base in the United States, 482 million acres, that is capable of producing more than 20 cubic feet of wood per acre, per year, and that is not reserved for other uses. These lands can be managed more intensively to increase productivity as shown in Figure 7. Also, there are large volumes of wood from noncommercial sources--in rough, salvable, rotten, and dead trees left in the forest after logging, trees on noncommercial forest land, and residues in urban areas. Such sources of additional wood may be utilized to help meet future demands for pulpwood, fuelwood, and other products that can utilize low quality material.

## Current and Potential Net Annual Growth Per Acre

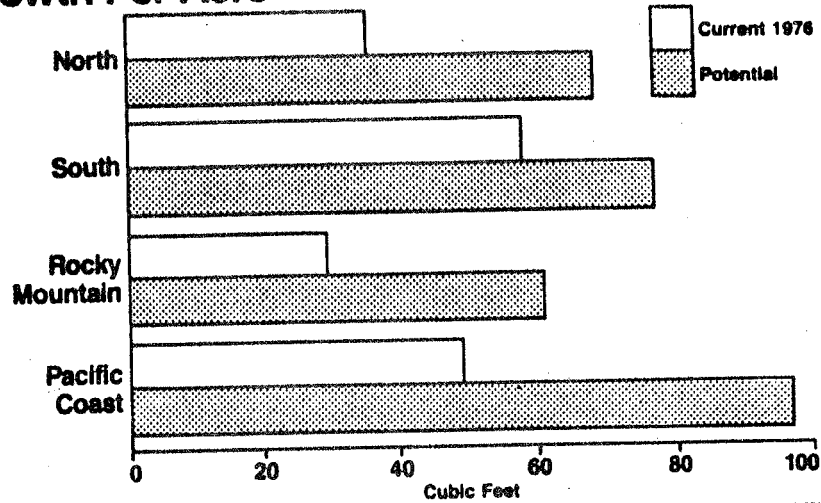


Figure 7

## Economic Opportunities for Management Intensification

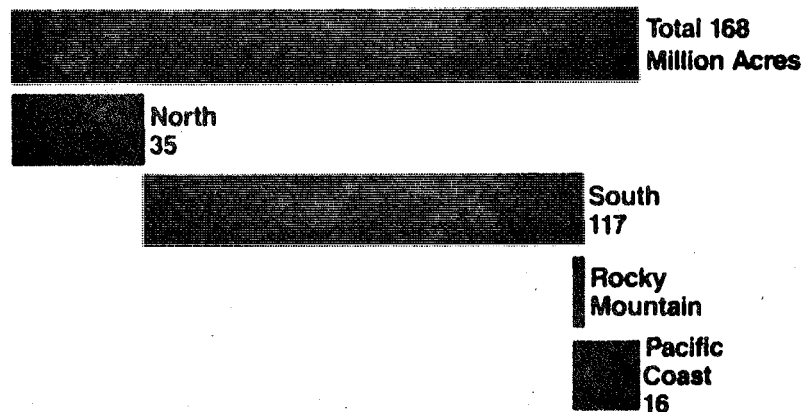


Figure 8

The largest potential lies in the area of additional investments in private timberland. A large number of opportunities to increase timber supplies promise competitive rates of return. Joint research supported by the Forest Service and the Forest Industries Council revealed that numerous opportunities for investment in forest management on private lands can yield at least 4 percent return per year. As shown in Figure 8, opportunities for more intensive management exist on 168 million acres of private commercial timberland, some 35 percent of the Nation's total. Although industry's and Forest Service's forest lands have substantial investment opportunities, more than three quarters of acres suitable for more intensive management are in non-industrial ownerships. About three quarters of the economic opportunities on an area basis, involve regeneration of nonstocked acres, harvesting, and regenerating mature stands and conversion of existing stands to more productive species.

Maine's timberland resource provides an outstanding base for capturing some of these investment opportunities (Powell and Dickson 1984):

- . In Maine there are 17.1 million acres of timberland capable of producing more than 20 cubic feet per acre per year.

- . Maine is the most heavily forested State in the country with 96 percent of the timberland privately owned.

- . Forest industry owns 8.0 million acres or 47 percent of the total. This is the highest proportion of industry ownership in the country.

- . Softwood growing stock volume is 114.8 billion cubic feet, which ranks Maine second only to Georgia in the East for this resource.

Obviously Maine's timber resource is economically important to the State and the residents. Based on the potential annual growth of fully stocked mature stands, Maine's timberland is capable of growing about one billion cubic feet annually, 58 cubic feet per acre per year. From 1971 to 1981, the net annual growth totaled 471 million cubic feet annually, 27 cubic feet per acre per year (Powell and Dickson 1984). Biologically, timberlands in Maine has the potential to increase the current net annual growth.

To improve the State's timber productivity, a look is needed at the economies associated with achieving the biological potential. Such an evaluation was provided by the Forest

Service and Forest Industries Council. They found that Maine has two silvicultural investment opportunities. These are:

1. Stocking control--represents a broad group of silvicultural options often referred to as intermediate stand treatment. In general, the class includes precommercial thin, clean, release, and commercial thin.

2. Harvest and regeneration--this treatment pertains to mature and overmature softwood sawtimber stands. Selection of method of regeneration depends on availability of seed source and comparison of present net worth expected from natural or artificial regeneration.

The greatest potential acreage opportunities in Maine are associated with the spruce-fir forest type. There is an opportunity to improve over 2.5 million acres and harvest and regenerate another 2.8 million acres. This would provide an additional 150 million cubic feet annually for an initial cost of 250 million dollars. However, the profitability of these opportunities are sensitive to the economic assumptions used.

The white pine opportunities involve thinning on 0.5 million acres of seedling and sapling stands and 0.7 million acres of poletimber. These opportunities have the potential to contribute an additional 66 million cubic feet annually with a cost of 17 million dollars. The opportunities appear to have a more favorable economic return than spruce fir but are spread over a greater diversity of ownership.

An analysis conducted by James W. Sewall Company (1983) also found that Maine forests had a potential for significant silvicultural investments. Their analysis estimated that there was a potential 1.5 million acres of mature spruce-fir forest and 2.6 million acres of immature forests where stocking control would benefit timber production.

Maine, therefore, has an opportunity to capture future investment opportunities. Certainly there are technical drawbacks and difficulties in assessing any investment opportunity. Large initial commitments of capital, long-time periods without income, and lack of knowledge seem to be major reasons why some private owners of timberland have managed their forests in the past on such a limited scale.

But for government, industry, and the financial community at large, these conditions can be translated into opportunities rather than problems. Government can continue its efforts to provide information and assistance to all owners of timberland, and equally important, do whatever is necessary to improve the investment climate for the private sector. Forest industry has a tremendous stake in the productivity of our forests. It recognizes this and has established programs to encourage forest management. Financial institutions have examined the



possibilities and appear ready to make commitments to increase capital needed to maintain adequate timber supplies, especially softwoods. From the research community, the message is clear: growing trees is a profitable long-term investment and competitive with many other opportunities.

## Literature Cited

- Adams, D.M., and R. W. Haynes. 1980. The 1980 Softwood timber Assessment Market Model: Structure, Projections, and Policy Simulations. Forest Science Monograph 22.
- Boyce, Stephen G., and Herbert A. Knight. 1979. Prospective in Growth of Southern Pine Beyond 1980. U.S. Department of Agriculture, Forest Service. Res. Pap. SE-200. Southeast For. Exp. Stn., Asheville, NC 50 p.
- James W. Sewall Company. 1983. Spruce-Fir Wood Supply/Demand Analysis (Final report). Old Town, Maine. 97 p.
- Murphy, Paul A., and Herbert A. Knight. 1974. Hardwood Resources on Pine Sites. Forest Prod. Jour. 24(7): 13-16.
- Powell, Douglas and David R. Dickson 1984. Forest Statistics for Maine 1971 and 1982. U.S. Department of Agriculture, Forest Service, Res. Bulletin NE-81 Broomall, PA 1984 p.
- USDA Forest Service. 1984. America's Renewable Resources. U.S. Department of Agriculture, Forest Service FS-386. U.S. Government Printing Office, Washington, D.C. 84 p.

THE FUTURE OF HARDWOOD MARKETS

Presented by

Kenneth H. Freye, International Paper Company

for

Blaine House Conference on Forestry

December 6-7, 1984

I would like to start by saying that it is a real pleasure to be invited to the Blaine House Conference to discuss the future of hardwood markets in Maine.

The conventional approach in a discussion of markets is to identify the existing markets, establish some type of trend line to determine historical change, and usually make a few predictions about future developments. The reason for this is that most folks, myself included, know more about what happened yesterday than what will happen tomorrow or even what is happening today. Therefore, I don't intend to deviate very much from this format. However, rather than discuss actual manufacturing facilities or macro-market demands, I would rather approach the discussion of hardwood markets from the supply side. The supply side theory is that consumption will gravitate to the low cost supply. As applied to our resources, an abundant supply of the elements of production will increase consumption and a shortage in the supply of any of the elements of production will decrease consumption.

Notice that I said supply of the elements of production, not supply of wood. In the terms of classic economics, production is the combination of land (or natural resources), labor and capital. The elements of production are not fixed and can be substituted to a large degree. Historically in this country, there was a surplus of natural resources and a scarcity of labor. Therefore, natural resources were used to generate capital which, in turn, was used to replace labor. Most of the information I will present concerns the physical resource. However, I believe that the other elements of production are too often ignored in this State and will have a greater impact to the future of the industry than the condition or supply of the resource.

Another justification for using the supply side approach is that forest products are almost always commodity products. That is, lumber or paper of a given specification can be produced by a number of manufacturers without commanding a premium or discount in the market place based on the manufacturer. Carried a step further, many forest products can be replaced with non-forest products. Metal and plastic, for example, have largely replaced hardwood as a material for office furniture because of cost, not consumer preference or durability. Therefore, because forest products have a high replacement potential, not only between manufacturers but also with substitutes, the cost of production is more important than the number of manufacturers or current consumer demand.

Let's first take a look at what was predicted for the hardwood resource in 1971 and then we'll see what has actually happened.

In the 1981 Forest Service Survey, the rapid increase in hardwood consumption was identified as a serious problem. Hardwood removals had increased at an annual rate of 5.9% between 1958 and 1970. At this rate, removals would double in a little over 12 years, about the time between resurveys. To quote the survey:

"If present trends in hardwood removals continue, they will exceed growth by 1973."

The survey went on to say that the rate of increase for removals was likely to decline and that a large potential existed to increase the hardwood growth rate. To further quote the survey:

"Thus it appears conceivable that, through a concentrated effort, Maine could continue to grow more hardwood than is harvested for several years to come. But, in the absence of such an effort, the day when removals exceed growth in hardwoods may not be far off."

Such was the outlook in 1971.

Now let's see what actually happened to the hardwood resource. All of the volume data that I will be using is from the 1971 and 1983 U.S. Forest Service surveys. Where possible, the data was examined by county but is presented by state total. The commercial forest land base in Maine has not changed significantly since 1971 and is still 86% of the state land area. The total net increase in growing stock is 1.2 billion cubic feet or an 18% increase. Only beech and other hardwoods, (which includes gray birch, basswood, elm, and others), show a decline in volume. By counties, Washington County has a net loss of 8.5%; all other counties have an increase in net growing stock.

For sawlog trees only, sugar maple and the other hardwood class decreased in volume. However, statewide there is an increase in total sawlog volumes of 1.4 billion board feet or 10.6%. Also, all counties show an increase in sawlog volume. Large sawlogs, those greater than 15" d.b.h., also increased in total volume but only by 2.4%. However, the volume increase was confined to red maple, yellow birch, aspen, and the oaks. Hancock, Penobscot, Piscataquis, and Oxford-Franklin counties show a net loss in large sawlog volume.

The increase in growing stock occurred in spite of a nearly doubling of harvests in the 1970 to 1981 period. Output of timber products has increased by 1.4 million cords or 84.1%. The rate of removals has increased by 5.7% on an annual basis. This is very close to the annual rate of increase for removals in the previous survey period. Output from sawlogs, veneer logs, and turnery logs and bolts all decreased. The decrease may be overstated in terms of cubic feet because the data is

from different surveys. On a board foot basis, the decrease was 10.3 million board feet or a 5.6% decrease. However, hardwood/pulpwood production increased by 341 thousand cords and fuelwood production increased by over 1.1 million cords. The increase in fuelwood output alone is roughly equal to adding three good size hardwood pulp mills to the state. Also, figures are as of 1981. Since that time, there have been increases in industrial fuelwood consumption for the cogeneration of electricity.

To further understand what has happened to the resource, let's look at the average annual net change for the period 1958 to 1981. The 1958 survey shows a large volume of in-growth typical of a developing forest. The 1981 survey period has much less in-growth, but nearly twice the growth on residual volumes. This is more characteristic of a maturing forest. Also, both mortality and cull increment--that is, the volume of trees that become culls has increased in the latest survey.

To summarize the resource situation, there has been a significant increase in supply despite a nearly doubling of consumption. The overcutting of the resource that was predicted in 1971 has not occurred. Sawlog supply has increased, but not as fast as net growing stock. Sawlog consumption has declined since the previous survey. My overall impression is that the resource has the potential to support increased consumption at the lower end of the product spectrum, particularly in the aspen/poplar group. This potential exists without the need of capital investments to increase the resource. Capital investments to either increase the supply or quality of the hardwood resource are almost non-existent in this country and would not seem to be a likely prospect for the future.

I would now like to make a few comments about the other elements of production--labor and capital--and what they mean to the future of hardwood markets. As I mentioned earlier, there is a large degree of substitution between all of the elements of production. The potential for substitution between the elements of production increases with time, so much so that, in the long run, capital invariably becomes the limiting element.

The major topic of this Conference is the softwood supply situation in the first part of the next century. There is not and will not be a shortage of forest land. There very well may be a shortage of the capital necessary to make that land productive enough to meet future demands and the reason that there may be a shortage of capital is not because of the intrinsic poor performance capability of the investment, but rather that Maine is perceived by many as having an unfavorable investment climate for the forest industry.

In our economy, capital follows the path of least resistance. That is, an investment with a marginal return and no

impediments will be funded before an investment with a high return but numerous impediments. Litigation, debate, delays, and general uncertainty have, within a reasonable range, more impact on the formation of capital investment than projected rates of return. Unfortunately, in Maine there is a lot of resistance to investment. When each of us in the private sector looks back at the major public issues of the last decade, the words litigation, debate, delays and uncertainty come to mind.

Stronger leadership is needed, particularly in the public sector, to reduce litigation, debate, and delays, and to provide an atmosphere of stability and predictability. I am not advocating that either environmental quality or worker safety be compromised. I am advocating that regulations be enforced unilaterally, that industry be given representation--not control, but representation--on regulator boards, and in general, that the enforcement of regulations be streamlined so as to place responsibility on the parties actually committing the violation. But, of even greater importance, state agencies must take positions on issues that involve the forest resource and industry. The industry can understand an adverse position, it cannot contend with a non-position.

This may seem to be a long way from hardwood markets. But it's not. We're talking about economic decisions, the allocation of scarce resources among unlimited demands. The greater the expenditure of time and money on litigation, debate, and delays, the less time and money there is available to spend on improving the resource, upgrading the manufacturing process, and finding new markets.

So, what's going to happen to hardwood markets?--that was the original question. there is an adequate resource. The next five years should not produce any major changes except for a possible increase in utilization of low grade material for fuelwood a structural panels. In the long run, if the investment climate improves, the potential for expansion is tremendous. And what happens if things don't change? Will the industry pack up and move to New Hampshire? No, of course not. Maine is 86% commercial forest land. There will always be some level of hardwood industry in the State, just as there still is a shoe industry, and a woolen industry, and a tannery industry.

Thank you.

THE FUTURE OF HARDWOOD MARKETS

Presented by

Don Stecher

Andover Wood Products

for

Blaine House Conference on Forestry

December 6-7, 1984



## The Future of Hardwood Markets

Don Stecher, Andover Wood Products

I'm going to talk about the future of the hardwood export market.

"The future of hardwood dimension in the United Kingdom has a great potential... There is no major competition in U.S. made dimension parts... The only major constraint is the ability of shippers to guarantee and consistently ship dimension to meet the high standards of this market."

These statements all came from a recent publication prepared by the National Lumber Exporters Association for the Hardwood Dimension Manufacturers Association. I think they sum up my whole talk. There's a definite future in hardwood.

Andover Wood Products is a producer of hardwood dimension. However, we have exported green lumber, kiln dried lumber, clear lumber strips, glued panels, solid kiln dried dimension, and machine chair seats. For most of my remarks today, I'm going to lump all of these together into hardwood exports. I'm going to discuss two export markets and the three main problems I see that we've got to deal with.

There are two markets that I'd like to talk about. The first is the European market. The European market has done well. It is a promising market for us now and will be in the future. One of the reasons for this is that there is no large hardwood source in the United Kingdom, Holland, or Belgium, and there are only limited resources in France and Germany.

Oak is the preferred species in Europe, but Europeans will experiment with other species. When our oak got priced very high and they could not get it, they experimented with substitute species. I've seen large plants over there geared entirely to producing from substitutes. In their kitchens, they have used vinyl clad countertops and doors for the low priced kitchen. They are also very good at making a veneer clad product which is very difficult to tell apart from solid wood. Still, solid wood is the desired product; they want to see the real thing.

The European market is good now, and it will be good in the future.

The second market that I will talk about briefly is the Asian market. The Asian market does not have a preferred species like oak. Asians seem to react to our taste. They take U.S. raw materials and manufacture products for our consumption. When we are buying pine furniture, they are buying pine lumber; when we are buying oak furniture, they are buying oak from us. But it turns out that if the product does not have to be identified as being oak or pine, Asian manufacturers

will buy tropical wood from closer sources. Although I do not think of the Asian market as having the long-term potential of the European market, it is one that we are going to watch closely.

Before I got ready to give this talk, I checked with people that I've worked with in Europe to find out how they feel about U.S. timber products in the United Kingdom, they talk about the strong dollar. To offset the strong dollar, they have become increasingly efficient in their own operations. I saw plants where every machine was brand new, computer-controlled and robot operated, aiming for efficiency to offset the high cost of their raw material. On occasion, they will try lower priced species, like maple. When they do, the material is subject to strict color and drying specifications; specifications that are difficult to achieve.

We used to ship a lot of red oak to Holland. Now, however, the Dutch are using strictly French white oak because of the high price of our red oak. They are also buying a different product than most of us are prepared to ship. They are buying fixed widths, 2", 3", 4", 5" widths, and usually in fixed lengths. When you see a package of lumber over there, it is all right to length and width. They prefer to use these fixed widths and lengths because U.S. grades are really confusing to use.

In Holland, they have also tried substitutes, such as eucalyptus from Australia. Eucalyptus looks a lot like oak, but the Dutch have had problems with it, and it has not been a great success for them.

Another interesting point is that the Dutch furniture people are competing with the Communist countries. The Communists, in chasing the Western European currency, heavily subsidize their furniture industry. Evidently, the quality from Hungary, Czechoslovakia, Poland, and Yugoslavia is inferior to the Dutch and so the competition is not perceived as a lasting problem.

In Belgium, the statement that the agent that I work with there made was reassuring. He says Belgium will always need U.S. oak, but because of the strength of the dollar (60 francs/dollar in 1984 as compared to 30 francs/dollar during the Carter years), Belgium is not importing much oak. The agent predicted that the dollar would have to drop 20% in value before Belgium would resume buying oak. Also current style in Belgium is colored furniture. It is impossible to anticipate how long this trend will last, but it is unlikely that oak will be supplanted completely.

More recently, as a participant in a softwood trade mission to Germany, I brought a laminated, yellow birch chair seat that we make. We are pretty proud of that seat. I was determined to try to do something that I've learned since you

don't do. You don't sell people what they don't want, you make what they want and sell it to them, even if you have to change the product. I was determined to sell that yellow birch chair seat because yellow birch was available, and we could make it. I lugged that seat all over Europe and finally, in Germany, I left it right in the hotel. The reason I did was that after I tried to sell it at a meeting of German counterparts in Bremen, this fat Bremener came over to me and he says "We want your raw materials, we don't want your seats." I left the seat right there. It is true that, in Germany, I'm sure they like to buy sawlogs, but they do buy lumber and there is an opportunity there to sell them parts for kiln dried lumber.

On that same trade mission, in England, we were asked one question that stopped everyone cold. The English said, we're interested in your softwood and we'd like to talk about it, but what's your supply for the next 5 years and what's your supply for the next 20 years. We didn't come prepared to talk about 20 years, but this is the way Europeans people think; they are long-term traders. We got a good indoctrination.

This is the long way of getting around the three areas that I really wanted to talk about that affect us and that I think affects other small manufacturers and which need answers if we are going to continue to be heavy exporters.

The first of these has been touched on by Ken Stratton and several other speakers. I am not prepared to talk about it, but I am prepared to ask the question. Where are we in Maine as far as forest management is concerned? Because to export this good European market, we've got to be a dependable supplier and we've got to have the supply. Frankly, I don't know where Maine stands. I've picked up a copy of the re-survey, and I'm going to study that again like I did ten years ago, and it discouraged me then.

We are asked, do you have long-term contracts? The contracts that we write are strictly on price. They mention a volume figure, but nobody ever lives up to the contract. The volume figures are usually just an annual guess. Europeans, when they talk contracts, are very serious. When they send over a contract for product, they sign it, the company president signs it, you have to sign it, and you usually have a witness. They want to be assured of supply. They want to know about management. I had to admit that I didn't know how much forest management there was. In fact, I made the statement that I didn't think there was much intensive management, and I didn't have any contracts that would go further than a year. I didn't bother telling them that frequently our contracts were never filled.

Recently, we have been having a lot of European visitors. One of the reasons they come is because of a news item that I'm going to quote from that not only appeared in the Maine Sunday

Telegram, October 28, 1984, but was picked up by God knows how many wire services. When I got to England recently, it was quoted practically word for word to me.

"...A new inventory by the U.S. Forest Service is predicting decline in the quality of the state's woodlands in the State of Maine. Barring miracles in forest management, the reports forecast mill closings, production cutbacks in wood based industries..." (Mind you I'm over there trying to sell container loads of oak panels and this is what they're reading me.)

"...The decline described by the federal census takers in their inventory of Maine's 17 million acre forest is attributed mostly to bad timber management. Blamed are State foresters and the great timberland companies... According to the report, evidence of the decline in the economic forest is overwhelming."

Well, they asked, what about this? Here I'm supposed to be the expert, I'm an ex-forester and manufacturer. It really takes you back and you wonder well where are we going? Granted, this article was written about fir, but they were putting it in the context of hardwoods, because I was from Maine and we were talking hardwoods. But I worry about supply, too. Today, I'm sure that if anyone of us went looking we could see veneer logs or veneer log quality wood going into the pulp piles. I wish that the veneer logs would all go to that \$800 mill that you hear about. I don't want any of the \$800 logs, I'll take the next grade down. A lot of sawlogs go into pulpwood. I'd like to reverse that, and I wonder if there is any chance that more intensive management would pay landowners? Is there a chance or is there an opportunity for this semi-professional forester that you see in Europe who's right on hand when the trees are cut and sees to it or try his very best (and he's got a lot of power, more than just the power of persuasion) to make sure that that tree gets to its best eventual use. These are all my thoughts as they're asking me what's happening over here in Maine.

Second thing that I think would be very important to us would be a container port in Maine. We ship through Montreal, we got good at it (I shouldn't say good, but we got so we could handle it), but it's still troublesome to prepare the documents necessary to just get our product from Andover across the border in Montreal. Plus we're paying \$600 to truck it up there so that's all added to the price of the products. A container port would certainly be helpful.

The last point I'd like to make has bothered me for ten years now. That's a long time to have something bothering you, isn't it? I feel that, in order to encourage manufacturers like us, and, in order to see a real bright future for hardwoods (particularly hardwood usage and hardwood exports)

our labor climate does have to be improved. To give you an example, if we had a sawmill that was producing about what we produce a year, you might have a payroll of \$400,000 a year, but if you add, as we have, a dimension mill with the kilns, yards, machinery that are necessary you raise that payroll from \$400,000 a year to \$1,800,000. That does a lot of good for a small town like Andover to have a payroll like that. But in order to encourage that type of investment today, there are several things that I feel you've got to consider, in addition to the labor supply which we feel is good and the work ethic which we think is excellent. One of these is labor climate and I'll admit that's an abused phrase that you've heard enough. To improve what I feel is an unfavorable labor climate we feel that we've got to have (and this is the nitty-gritty) a Worker's Compensation plan that is fair and workable. And by fair I mean, as an example, we've got someone who gets hurt or injured at home, and it's obviously that they got hurt or injured at home that person comes back to work frequently sooner than we'd like to have them, in fact, we have to hold them back. But let that be a work injury and it is (I won't say there's no way to get them back, but it's extremely difficult to get those people rehabilitated, even using rehabilitation nurses and the services you can buy now) extremely difficult to get them back. Part of the reason is obvious, injured workers get 2/3 of their pay tax free. A lot of people will take advantage of that, and they'll take advantage of that to the last degree.

I say fair and workable, by workable I mean to make it possible to rehabilitate these people. We don't mind spending the money on rehabilitation--we're glad to do it. We'd like to see something at the end of the tunnel. We've tried to rehabilitate a lot of people for a long time and usually it comes to nothing.

I am gratified by another recent release in the Lewiston Sun, November 25, 1984. It was in the form of an editorial that indicated that Governor Brennan, and I quote, "...will be looking at the whole picture." This is certainly going to be helpful. This editorial, though, was concerned with lost worker days and how they contributed to Worker's Comp cost. I do think that a lot of times the point is missed though. This worker lost days sounds bad. You picture everyone going in there and cutting their fingers off or something like that and losing time. But to me the worker lost days are typical of the self-perpetuating part on this problem. It's difficult to get the worker back to the workplace, even with the most sophisticated rehabilitation. When the nurses and doctors that we hire get frustrated, where does it leave us? It seems that we've got a system that really rewards the savvy character that know how to use the system. In fact, it's sometimes the case of waiting until that person finally just gets sick of hanging around the house and comes back to work. But these add up to lost work days, and with the statistic, it becomes just lost

work days and makes Maine look really bad. They're number one incidentally. Maine ranks number 1 in lost work days. It would look like we've got the most dangerous industries in the states, and I don't think that's true.

Now, I wrote here that I didn't mean to get off on this Worker's Comp problem, but I really did. It is frustrating, though, for someone like us at Andover Wood Products to stagnate and that is exactly what we've done for ten years. We have had zero growth for ten years simply because, when your Worker's Comp payments go from \$17,000 a year to \$500,000 a year two years later, your parent company says stop and they don't put any more money in for capital improvement regardless of how well you can justify it. It's really frustrating, not only for the manager, but it's frustrating for all of our people because they have seen real growth in the prior ten years and wonder what's the matter. At the same time, while we're waiting for this compensation pendulum to swing back the other way, we're watching our competition in other states, and they are quadrupling in size producing the same product we are. The recent statement by Governor Brennan and others, however, does give us hope for some relief. I hope that we personally will see growth in the next year to try to capture new export markets.

Thank you.

THE FUTURE OF SOFTWOOD MARKETS

Presented by

Robert Wright, Manager of Woodlands Planning

Great Northern Paper Company

for

Blaine House Conference on Forestry

December 6-7, 1984

While it is probably not a revelation to anyone in this audience, there is not a lot of paper sold in the State of Maine relative to what is manufactured here. The pulp and paper industry of Maine is a net exporter of manufactured product and we compete in both national and international markets.

So, to establish reasonable bounds for this discussion, I decided to see if I could answer two basic questions, will there continue to be a demand for paper in the foreseeable future, and, will Maine manufacturers participate in satisfying that demand?

While it is often dangerous to project the future based on the past, it was instructive for me to look at a very basic historical question first: has the use of paper in the United States declined, increased, or remained constant over the past fifteen years?

Based on figures reported by the American Paper Institute, New Supply, which represents total U.S. Mill shipments plus imports minus exports or U.S. consumption, - has steadily increased across all major paper grades since 1968. Looking at the three major categories of printing paper, uncoated groundwood, coated printing papers, and uncoated free sheet, consumption of each has increased at a compound rate of between 4.2 and 4.6 percent annually over the past fifteen years.

I thought, perhaps, that gains in the early 70's might be offsetting declines in recent years, but this was not the case. For the same categories, and comparing 1978 with 1983 we see a 4.8 percent annual increase in new supply of uncoated groundwood, a 4.9 percent annual increase in new supply of coated printing papers, and a 4.2 percent annual increase in new supply of uncoated free sheet. So, generally speaking, the answer to the historical question concerning total paper consumption in the United States is, I believe, modest growth. There have, however, been significant changes in the market over the past 15 years which have had and will continue to have a strong influence on the manufacture and sale of paper.

Looking at newsprint in particular, there has been growth in newsprint consumption over the past decade even though basis weights have decreased and format reductions have taken place. Even though publishers are getting higher yields from the same ton of paper, it has not resulted in a new decline in consumption of newsprint. Another challenge in the newsprint field is strong competition for available advertising dollars. Since 1950, newspapers' share of U.S. advertising dollars has fallen from 36 percent to 29 percent in 1980, while television's share has increased from 3 percent to 21 percent in the same time period. The industry, however, has responded to the competition - in fact their share of advertising dollars between 1970 and 1980 did not decline. Their response was the



use of color and the production of higher quality products. An extremely high quality color product is now found regularly in most newspapers. Full color advertisements and pre-printed inserts have resulted in substantial market growth for specific grades of paper in the recent past. The net effect has been the continuation of modest growth in paper consumption. This phenomenon has generally been characterized as the "mass to class" movement and is evident, as well, in the magazine market. There has been a general decline in the mass circulation magazine market. Offsetting that decline, however, is the rapid growth of special interest publications and targeted mailings. Mail order business, with their attendant catalogs, is also an expanding market, and in both cases, there have been dramatic improvements in the quality of the product to successfully compete for advertising dollars.

Other changes in the print media have also been made to strengthen their position. To compete effectively, printing processes have been speeded up, automated, and otherwise modified to improve efficiency and reduce costs. As an example, press speeds in 1978 were between 800 and 1800 feet per minute; they are now running between 1400 and 2600 feet per minute.

A final example is in the area of computerization, reprography and electronic publishing. While providing stiff competition for the print media, this technology has also opened up major new markets for paper and has also facilitated many of the new automated printing processes which have kept the print media competitive. As an aside, for a technology that many feared would replace people and some paper users, neither is obvious to me at this point. Shipments of United States forms bond, which are directly related to this market, increased 285 percent in the period between 1970 and 1980. Without enumerating many other examples, there has been a constant evolution in most every grade line; particular products which had traditionally met specific needs are phased out as the demand for them declines, but at the same time, new products are constantly being developed as opportunities emerge.

What does all this mean to the paper industry? My purpose in discussing these examples was to illustrate that the print media is very dynamic and, as a result, the paper market is as well. There are grades of paper which, in the past, represented major segments of the market and, today, could not be sold if they were still being manufactured. The net result of the print media's determination to compete with others is a stable paper market in terms of total consumption, but the product must change to meet the demands placed upon it as a result of the changes in printing technology. Future markets for paper then, are tied to the industry's technological capability to produce and market a product which will meet those demands.

This admittedly brief analysis of paper markets is my answer to the first question I posed: demand for paper in general has grown in the past fifteen years and probably will continue to grow at a modest rate; and demand for specific products has changed over time and probably will continue to change as the print media reacts to challenges by other forms of communication. This does not answer the second question, however; simply because markets for paper exist does not mean that Maine paper manufacturers, or any other paper manufacturer can or will profitably participate in those markets. The product produced must be competitive. This depends upon both the availability of raw materials and the manufacture of a product of comparable quality and cost to similar products being offered in the same market by other manufacturers.

The subject of fiber availability was discussed earlier this morning, so I'm going to limit the comments I make in that regard. The information we currently have regarding future wood supply clearly is cause for concern but not despair. As Bob has ably discussed, there is much which can be done to favorably affect the future supply of softwood fiber.

There are two points that I would leave you with regarding fiber availability and opportunities to increase supply. The first point I would like to make is that forest management is a business, at least successful forest management is. There are relatively few individuals or businesses which can own and manage forest land without regard for net income excepting those who are independently wealthy and can subsidize their activities, or, and I say this without malice, governmental agencies. While many techniques have been developed to manipulate the forest and achieve particular objectives, not all will be economically feasible in every circumstance. Further, there is no one treatment or strategy which can be universally applied across the softwood forest to "intensify management." Forest managers deal with many different stand conditions and structures, as well as addressing myriad competing demands that are made upon the resource.

To manage the forest resource effectively, the current arsenal of management tools must not be restricted and we must continue to develop new techniques. Dr. Gordon Baskerville has, on several occasions, emphasized that management of any type equates to the freedom to choose one of several different options. Effective forest management depends upon preserving one's ability or freedom to choose the most effective and appropriate course of action to manage a particular stand. To the extent that that freedom of choice is restricted, management and the ultimate degree of success is going to be compromised. The spruce budworm and maturity of the forest today are two natural factors which currently restrict the number of management options available. The effects of both cannot be substantially altered. However, we do have the

ability to limit the loss of those options which remain and can work to expand our management techniques to provide new opportunities.

The second point I would like to make is that the forest managers' success in assuring a stable supply of fiber in the future is dependent, in my opinion, upon three commitments. That of the landowner or land manager, the people of Maine, and state government. All three are important components; a lack of commitment to intensive forest management by any one will undoubtedly jeopardize our success in providing a stable supply of fiber.

To summarize my comments on fiber availability; We must not restrict the forest managers' use of current management techniques, we should continue to develop new management methodologies, and finally we must foster a common commitment by state government, the general public, and land managers to intensive forest management and assuring a stable supply of fiber to support our forest based economy.

The final component I will discuss, and I will be brief, is the manufacturing process and the necessity to produce a product of comparable quality and cost to similar products competing in the same market. The pulp and paper industry of Maine has been a strong competitor for over eighty years. The technological capabilities of the industry have met many challenges in the past for new and improved products, and I am confident that the industry is capable of successfully meeting the market's demands for new and improved products in the future.

But, as with any business, accomplishing a task cost effectively and profitably is considerably more challenging than just getting the job done.

Several years ago, I did some research on suppliers of newsprint to the New England daily newsprint market. I was somewhat surprised to learn that 80 percent of their consumptive requirement was provided by only eight suppliers: seven to those were Canadian. I intend no offense to any of our Canadian colleagues, rather I want to point out again that competition in the pulp and paper market is international. As I said earlier, Maine manufactured products must be technologically equivalent to products offered by others in the marketplace. As a result of changes in the print media, it is essential that Maine manufactured products be competitive today and remain so in the future. I said we have the technological capability to meet this challenge, and I believe we do. But many of the requisite improvements require major capital investments; investments which are going to be evaluated along with many others proposed by different operating companies or divisions across the country. The task of attracting capital to Maine can be difficult; it is a finite resource. The atmos-

phere within which capital expenditures for plant and equipment in Maine are evaluated is important. The same holds true for forest management investments. Proposals are evaluated not only on their specific technological and economic merits, but also with respect to the atmosphere within which business is conducted. I do not profess to be an expert on corporate tax law, environmental regulation, worker's compensation insurance, energy, and other costs associated with doing business in Maine specifically or in the United States in general. Policies which affect the atmosphere within which business is conducted and the cost of doing business in general, effect an industry's competitive position. They also send a message to those doing business in Maine: that message must be positive.

I cannot help but believe that the future stability and success of forest industry in Maine requires commitments from the general public, state government, and the industry itself just as a successful forest management program does. If all three do not have a common goal, the future of Maine's forest based economy will be compromised.

In summary, I believe there will continue to be modest growth in the total paper market: demand for specific products will continue to evolve as end uses change and new markets develop; Maine paper manufacturers have the technological capability to meet the market's demands providing their product is competitive. The availability of raw materials is dependent upon an intensification of forest management and a commitment by land managers, state government, and the general public to succeed as is the ultimate marketability of Maine manufactured products in the marketplace. I believe the challenges can be met, and the future of Maine's forest based economy can be assured if we are willing to make a common commitment to do so.

THE STATE OF OUR FOREST

Presented by Richard B. Anderson, Commissioner

Maine Department of Conservation

for

Blaine House Conference on Forestry

December 6-7, 1984

The forest has been the backbone of the economy of Maine for 300+ years, but never has there been a decade such as the one from which we are now emerging. We have been laying the ground work for Maine to enter the 21st century with more forest area, a faster growing forest, a more diverse forest--in both age and species composition--and more diverse markets for our products than we have ever before enjoyed.

I don't have to tell you that the last ten years has seen some tremendous changes in the forest industry. There are so many that it's difficult to select the few that have had the greatest impact on forest management, so let me just mention several which I think are the most important.

-In the last ten years, we've gone from about 200 registered professional foresters to 1,000.

We've built thousands of miles of new access roads.

We've invested hundreds of millions of dollars in new, safer, and more efficient logging equipment.

We've invested billions in the pulp and paper industry to improve markets for many tree species.

-We've made significant investments in the dimension lumber industry.

-We've increased the number of tree seedlings planted in the State of Maine from a few hundred thousand to about ten million.

-Ten years ago there were no acres treated with herbicides to estimate that we treated about 25,000 acres, and another 3,000 acres were thinned manually with brush saws.

-We have made tremendous strides in our ability to inventory our forest resource, on a stand-by-stand basis or on the basis of the whole state.

I could go on, but I think the foregoing examples will provide us with the capability to increase the productivity of our forest and make it an even greater contributor to our economy.

We've also been busy at the Department of Conservation.

-Education of the general public regarding the value of the Maine forest has been one of our highest priorities. "Project Learning Tree," which also received terrific support from members of the Paper Industry Information Office, and our efforts, along with the Extension Service, to develop demonstration forests are a couple of examples of our commitment to forestry education.

-We've continued to upgrade fire control. As we invest more in the management of our forest, the effective, efficient control of fire becomes even more critical.

-We've made some major strides to cut the cost of the budworm spray program and, in so doing, we've attempted to assure that every acre of spruce-fir forest that needs to get sprayed will be sprayed. At the same time, we've been researching alternative management systems to lessen the severity of future outbreaks.

-We've increased production at the State Forest Nursery from a few hundred thousand trees to several million and will be announcing an additional expansion in the next few weeks.

-We've developed a tree improvement program, also in conjunction with the Nursery and the Cooperative Forestry Research Unit at the University of Maine.

-With your help, we've put together the most sophisticated statewide forest inventory in the United States. This survey has already been used in the development of the Spruce-Fir Supply/Demand analysis which we're all familiar with. The survey will provide the information necessary to maximize the tremendous economic potential of our Maine forests and minimize the conflicts between potential users.

This second Blaine House Conference on Forestry exemplifies our commitment to encourage excellence in the management of Maine's forest land.

The price of a high quality forest is a continuing commitment to improvement. There is no question that we're going to begin the 21st century with a heck of a lot better forest than we had when this century began.

The real question we must all ask ourselves is what can I do to make sure that the forest of Maine will be in the best possible condition on January 1, 2000? Ask yourself, have I always taken the kind of forestry related actions that will result in leaving a better forest for my children?

I'm going to leave those two questions with you and ask you to contemplate those questions and your answers over the next two days and make a personal commitment to do all you can to carry this great forestry tradition we all share into the future with pride.

I want to take this opportunity to make a few commitments of my own:

1. I commit to working cooperatively with each and every one of you to improve the condition of our forest resource. Cooperation is imperative if we are to maximize our efforts to improve the level of forest management.

2. Since I feel markets are the linchpin of improved forest management, I commit to making the most strenuous efforts possible to continue and significantly expand the forest marketing efforts of the Department of Conservation's Maine Forest Service.

3. Since knowing what your inventory is composed of and where it's located are absolutely critical factors in any successful marketing program, I commit to providing inventory data to you, the user, in the most technologically effective and the most cost efficient basis possible.

Because the timeliness of inventory information is so critical, I have proposed to Governor Brennan that he introduce legislation mandating a so-called mid-cycle inventory of our spruce-fir resource to be conducted in 1985-1986.

4. Public concern exists about possible negative effects of more intensive forest management on Maine's wildlife populations. To explore this concern thoroughly, I will impanel a group of well respected wildlife biologists and foresters to consider these two questions:

(a) Between now and the year 2000, how many acres of the Maine forest will come under intensive management and at what rate will this trend proceed? Regionalization of these predictions is an additional obligation.

(b) After developing a consensus on question #1, I am requesting that the group proceed to, in their best judgment, assess the potential positive and negative effects on Maine's forest wildlife.

I will announce the members of this Task Force by January 1, 1985.

5. Research is another key ingredient in our drive to improve the quality of management on Maine's 18 million acres of forests. The Cooperative Forestry Research Unit at the University of Maine at Orono is leading the way in public forestry research in this state and deserves continued strong financial support. After consultation with Bureau of Public Lands Director Rob Gardiner, we have decided that the Bureau will become a full dues paying member of CFRU in 1985.

6. The State now owns 400,000+ acres of public timberland, mostly in large parcels scattered throughout the state and managed by the Department of Conservation's Bureau of Public Lands. I believe as custodians of the public trust on these lands we have an obligation to practice exemplary forest management and that's exactly what we are going to do.

7. Before the end of the year I'll be announcing the details of a major new training program for operators of brush saws used



in the thinning of overstocked softwood stands. This training program will be funded jointly by the Bureau of Public Lands and the State Department of Labor, and managed by the Department of Conservation's Maine Conservation Corps.

8. I also pledge to continue the efforts of the Land Use Regulation Commission to work cooperatively with all forest landowners and interested parties to assure protection of the public interest in the unorganized territories while not unduly hampering timber management activities.

9. Markets for dead, cull, or diseased trees, unmerchantable species, and wood waste created in harvesting operations are key factors in improved forest management. The production of electricity in wood-fired power plants will be a boon to the Maine economy, as well as providing exciting new opportunities for timber stand improvement efforts. It is critical that we take advantage of the opportunities presented by this new technology.

Within the next few weeks, I will announce the formation of a Task Force whose assignment will be to study the forest management opportunities and challenges presented by whole tree chipping for energy. Their recommendations to me will shape the role of the Department of Conservation's Maine Forest Service in this vital partnership with private industry. The deadline for the final report of this Task Force will be April 1, 1985.

10. Finally, as we all know, statistical predictions indicated a serious shortfall in our spruce-fir resource early in the 21st century. It is absolutely imperative that we act quickly and decisively to avert a shortfall and its disastrous negative impact on the economy of a large part of this state.

To this end, I have proposed a program of tax incentives and landowner education to encourage aggressive action in the treatment of overstocked spruce-fir stands to Governor Brennan for inclusion in this Administration's 1985 legislative package.

Will the Maine forest of the year 2000 continue to be the backbone of our economy--providing even greater opportunities for better lives for Maine people? Will it continue to provide the unique recreational experience that it provides in 1984? Will it continue to provide suitable habitat for a variety of wildlife? Will it continue to protect the quality of water (thousands of lakes, streams, rivers, and ponds) that's so important to the continued quality of life that we all enjoy?

I'm committed to making absolutely certain that the answer to these questions is a resounding "yes!" Are you?

Thank you very much.

TRENDS IN MAINE'S FOREST TRANSPORT SYSTEM

Presented by

John G. Melrose

Maine Tomorrow

for

Blaine House Conference on Forestry

December 6-7, 1984

## TRENDS IN MAINE'S FOREST TRANSPORT SYSTEM

Other than those who earn their living in the transportation field, the forest products industry has one of the greatest interests at stake in the future of Maine's transportation system. This industry is the number one user of the system both in terms of intensity of use and extent of use.

While the system is important to the forest products industry, this industry is of critical importance to those who earn their living providing transportation services. Without the forest products industry, the Bangor and Aroostook Railroad and the Maine Central Railroad would probably not exist. The development of a cargo port at Sears Island would not be seriously contemplated. There would be significant reductions in activity at Eastport and the new Merrill Pier in Portland. Perhaps little of the private road network would exist in Maine's unorganized territories. The orientation of many of our trucking firms would be totally different. In summary, Maine's forest products and transportation industries are absolutely interdependent.

The good news for these two industries is that Maine's transportation system is presently experiencing a period of revitalization and improvement. Major changes are taking place in rail, highways and ports that will lead to stronger, more efficient and responsive transportation services. Consider the following developments:

1. Under the Staggers Act of 1980, the nation's rail system has experienced a level of deregulation that has opened up new opportunities for offering competitive rates and streamlined services. The trucking industry has also experienced deregulation and intense competition presently exists within this sector. Further, port development projects in Eastport, Searsport and at Merrill Pier in Portland indicate a rebirth of a maritime industry that has long suffered from neglect. These developments are also leading to a new era of competition in ports. The forest products industry is a principal beneficiary of the competitive environment now found throughout the transportation system.
2. In rail, consolidation under Guilford Transportation Industries of the Maine Central, the Boston and Maine and the Delaware and Hudson vastly alters rail efficiencies and marketing opportunities for Maine.
3. In highways, as a result of state and federal highway user fee increases, Maine has launched a substantial and accelerated investment program. The biennial highway improvement program grew in federal and state dollars from \$97 million for 1982-1983 to \$167 million for 1984-1985. This program in combination with current efforts by the Maine Department of Transportation (MDOT) to improve highway and bridge manage-

ment systems will yield important system improvements in the years ahead. Also, changes in the configuration of heavy vehicles hauling forest products will translate into reduced wear and tear on the system.

4. Another trend is the growing interest in intermodalism where there is increased interaction of rail, highway and port in the movement of products.
5. Finally, there is some glimmer of hope that Maine and the nation are moving toward a simpler form of regulation and tax and fee collection for the trucking industry. There is also evidence the State government is prepared to consider improvements in the relationship between the State and the rail carriers in Maine.

To understand the significance of these and other developments it is important to provide an overview of the system, how it is being used and a discussion of some of the issues involved.

### Highways

The condition of Maine's highways and bridges is one of the most important factors in the efficient movement of forest products in Maine. Historical maintenance and reconstruction patterns, as well as the intensity of use, changing use patterns and the general age of the system, are the major factors contributing to current inadequacies in our highways and bridges.

Maine's State Highways and State Aid Highways are presently rated in fair to good condition. Little data has been collected on the local road network although it is known that local bridges receive poor ratings and that a major public response is warranted. MDOT and municipal officials are presently working to address this area of deficiency. Up to fifty local bridges that serve as principal feeders to the roads of greatest significance to the forest products industry have been identified as structurally inadequate by MDOT.

MDOT is addressing the needs of the highway infrastructure through a highway assessment and pavement management program and it is in the early development stages of a bridge management program. These programs will increase MDOT's ability to anticipate improvement needs and to set priorities for making improvements.

As part of its work on bridges MDOT has recently initiated a pilot project in Division 7 (Oxford, Franklin and Somerset Counties) that seeks the input of the forest products industry on setting priorities for improving deficient bridges. This approach signals a desire to open up the channels of communication between MDOT and system users.

Maine's forest product industries rely upon all levels of the highway system from the Interstate down to the 10,000 plus miles of private road system found in the unorganized territory. While reliance on the highway system is extensive, certain segments experience the heaviest or most intense use. For the publicly held highway system, MDOT has recently completed the so-called Major Haul Roads Study. This Study has identified sixteen segments of Maine's highway system totaling 672 miles where the forest products industry represents a major portion of the heavy truck traffic. The study also revealed Jackman and Houlton as major highway interchanges with Canada. The export of sawlogs through Jackman and the import of chips and sawdust at both locations appear noteworthy.

The Major Haul Roads Study examined the potential impacts that the development of cogeneration and biomass facilities would have on the transportation network. Assuming that the chips would be hauled to the facility from within a 50 mile radius, MDOT determined that, as a result of a cogeneration facility, the annual cost of pavement consumption could approximately double on the haul roads.

MDOT has also been studying Special Commodities Permits to determine the types of trucks hauling forest products. MDOT was pleased to note from their study that there is increasing use of the 6 axle combination which not only can carry up to 100,000 pounds of forest products but also is less destructive to highway pavement and bridges. The Department estimated that during the past summer season there were at least 1,000 vehicles hauling forest products at any one time and 4 axle single unit trucks, 5 axle combinations and 6 axle combinations each constituted roughly one-third of the total.

Before leaving the discussion of highways it is important to briefly mention trucking regulation. While interstate trucking was deregulated in 1980, any reasonable person would conclude that the trucking business is still terribly complex as a result of regulation, highway user fees and registration requirements. The Interstate Fuel Compact adopted by Maine and the International Registration Program under consideration in Maine both offer a means toward simplification. Meanwhile the National Governors' Conference and the U.S. Department of Transportation are moving toward a cooperative effort to promote greater procedural uniformity among the states and within the states in the registration and taxation of motor carriers.

## Railroads

Maine's rail system currently consists of eight different railroads totaling 1533 miles of active line. Only the Bangor and Aroostook Railroad (BAR) and the Maine Central Railroad (MEC) play a significant role in originating forest products traffic carried by rail within the State. Since 1975, thirteen light density lines totaling 176 miles have been abandoned within the State.

Currently, over 300 miles of track are under consideration for possible abandonment.

As a result of concern for the future of rail service in Maine and the discontinuance of the federal rehabilitation program, Governor Brennan established this year the Governor's Rail Advisory Committee to develop a rail transportation policy for the State. This Committee is to provide guidance to state government in identifying essential rail services and a program for preserving these services. The final recommendations have not yet been completed.

One of the most significant developments in the recent history of railroads in Maine is Guilford Transportation Industries' (GTI) consolidation of Maine Central, Boston and Maine and the Delaware and Hudson Railroads to create a 4,000 mile long rail system stretching from central and eastern Maine west to Buffalo, New York, north to Montreal, Canada and south to Washington, D.C. Through this consolidation, GTI is expected to provide a more complete and cost competitive service to the Northeast.

The MEC operates 645 miles of main line track. According to a recent MDOT inventory, main line tracks are in good condition generally, permitting speeds of 40 plus miles per hour. Branch lines are generally in need of repairs.

MEC maintains a number of rail-truck interconnections such as concentration yards, team tracks or freight stations, and trailer-on-flatcar (TOFC) facilities. MEC trailer on flatcar facilities at the Fore River Warehouse (PTC) in Portland and at Calais are significant to the intermodal transfer of forest products. The Waterville facility appears to be developing in significance.

The forest products industry accounts for over 74 percent of MEC's total business. This does not include the clay, chlorine and petroleum which are transported to the paper industry. Sixteen of Maine's 19 pulp and paper companies are served directly by MEC.

A comparison of figures for 1982 with the first half of 1984 indicates that there will be a 61 percent increase in MEC's haulage of lumber and an 89 percent increase in the railroad's transport of waferboard. MEC has experienced a 17 percent decrease in the haulage of logs, a 55 percent decrease in the transport of woodchips, a 34 percent reduction in the handling of pulpwood and an 11 percent reduction in the haulage of pulp.

The Bangor and Aroostook Railroad operates approximately 460 miles of track in Maine with 263 miles of main line trackage. Maine line trackage is generally in good condition allowing speeds of 40 plus miles per hour. Branch lines that are in service are also in generally good condition.

The Bangor and Aroostook maintains a number of interconnections with the highway network. Of these only the TOFC facility at Northern Maine Junction handles significant quantities of forest products. BAR has indicated that it may refurbish its TOFC facilities not only at Northern Maine Junction but also at Millinocket, Madawaska and Presque Isle.

The BAR is a prime mover of Maine's forest products. Of the total 52,898 carloads handled by BAR in 1983, 73 percent were forest products and probably much of the chemicals, clay and oil were for the manufacture of paper products.

The paper industry is the greatest user of the BAR. Since 1982 the railroad's haulage of paper products has increased slightly. BAR is currently hauling about 80 percent of the out-bound paper traffic from mills along its lines.

Since 1982 BAR's handling of lumber and waferboard has increased over 70 percent. It is estimated that the BAR has increased its share of the lumber traffic from mills along its lines from 25 percent to nearly 80 percent in the past few years. BAR is also transporting the predominant share of waferboard from the two plants it serves.

There have been some changes in BAR's hauling of logs, pulpwood and woodchips over the past several years. Since 1982 BAR is hauling over five times more logs, slightly less woodchips and over 35 percent less pulpwood. The trend is away from rail transport of pulpwood and toward increased haulage of woodchips and logs.

## Ports

In 1976, as a result of a growing concern over the inability of Maine ports to compete, the loss of port related economic benefits, and the need to improve the marketability of Maine products, the Maine Department of Transportation and Maine State Planning Office initiated a port planning and development program. From this effort a strategy evolved that identified the ports of Eastport, Searsport and Portland as having potential for further development. This strategy led to the successful passage of the 1981 and 1983 economic development bond issues which raised State funds for projects in each port.

Maine's cargo port strategy is aimed at improving transportation advantages equally to all of Maine's geographic regions. Within the past three years, Eastport has become a significant factor in the movement of the forest resources of eastern Maine.

This publicly-owned marine terminal facility is the recipient of \$3.6 million in MDOT port development funds. The current improvement project is expected to be completed by

January 1985. Once completed, the pier will provide a 40 feet MLW for a vessel of up to 700 feet. In addition, Eastport is presently considering the addition of two 2500 square foot portable warehouses to be located on site. The port is accessed by Route 190 off Route 1 at Perry,, approximately 6 miles northeast of Eastport. There is no rail service.

The Eastport Port Authority has, through aggressive marketing steadily expanded its traffic. Between 1981 and 1983 there was a 76 percent increase in the total amount of forest products exported through Eastport. In 1983 the Port of Eastport recorded 63,868 tons of forest product commodities handled, all of which was exported. Nearly all of this product was wood pulp.

In Portland, up until 1981, forest products were handled by the Maine State Pier. At that time the Pier was closed down because it was antiquated and not cost effective to operate.

Since 1982 Merrill Industries has been operating a new marine terminal on the Fore River in Portland. A rail siding is situated at the adjacent shoreside marshalling area and I-295 is nearby.

There are two berths; one 900 feet long dredged to 35 feet MLW and the other 425 feet long dredged to 25 feet MLW. The latter berth can be used with roll-on/roll-off vessels.

Earlier this year a new 26,000 square foot on-site baled wood pulp warehouse was constructed bringing the facility's total covered storage space to 100,000 square feet.

Recently Merrill Pier has experienced a balanced traffic of exports and imports of pulp. Pulp exports are coming from both Maine and New Hampshire. In addition, they have exported a limited amount of lumber and imported some paper. There have been no waferboard movements to date.

The Port of Searsport located on Penobscot Bay has two major piers of which only the Bangor and Aroostook Railroad Pier built in the early 1900's handles forest products. This facility consists of a 600 foot long, 60 foot wide finger pier with 27,000 square feet of covered storage and transit space and two berths dredged to 32 feet MLW.

The exports of forest products from Searsport decreased 48 percent between 1979 and 1983. During 1982 and 1983 exports consisted of roughly 17,000 tons per year of pulp and paper products. There was one import of woodpulp in 1983.

The \$28 million Sears Island cargo port facility which will serve as a replacement to the Bangor and Aroostook Pier is now moving toward construction.



The facility will be the largest in Maine, consisting of up to 50 acres of shoreside developments, including road and rail access. The berthing area will be dredged to 40 feet MIW to the existing channel.

Initial development will include a marginal wharf of roughly 200,000 square feet with berthing to accommodate at least one vessel of up to 650 feet. It is conceivable that a second berthing will be prepared during initial construction.

By comparing port facilities and vessel requirements it is evident that Maine's ports will be able to adequately handle most bulk/breakbulk vessels. The situation is different when considering the feasibility of container feeder vessel service. MDOT is currently conducting a marketing study to determine the feasibility of a new container facility to be located in Portland.

While the value of the dollar will often have a controlling influence on exports regardless of port efficiencies, Maine ports can have a competitive rate advantage for cargoes which can move overland to a Maine port more cheaply than a competitive port. With the Guilford rail consolidation and the deregulation of surface transportation Maine ports should benefit. This is particularly true for lower-valued non-containerized freight where transportation cost is a significant portion of the total product value.

To summarize this discussion of highways, rail and ports it is important to note that at least 94 percent of Maine's paper products, 70 percent of its lumber and 90 percent of its waferboard move to markets outside Maine. It appears that rail transportation moved roughly 80 percent of the paper in 1982, 42 percent of the lumber in 1983 and 93 percent of the waferboard in 1983. Trucks handled most of the remainder with ports accounting for less than 1 percent in each category. It is known that ports were considerably stronger in the movement of pulp.

In closing, several issues deserve consideration. First is the need to establish a stronger and more effective dialogue and partnership between the forest products industry and those who build, maintain and manage our transportation system. MDOT, while not the only actor in the system is clearly the focal point. MDOT's attitude is to make the system work to serve the economic needs of the State and to have the system meet user needs. The Maine Department of Conservation should work to promote an exchange between the forest products industry and transportation officials.

This expanded dialogue is critical to the second issue which is the difficult matter of establishing a relationship between user taxes and the extent of use of the highway system by various users. While neither the state nor federal

governments are expected to act on this issue in the year ahead, the debate will continue and probably come to a head within three years. Entering into a creative dialogue now could be far more beneficial to both parties than the collision course that presently exists.

Increased user fees are not the only alternative. There must be serious study of methods to reduce highway consumption, such as through the use of alternative truck configurations. There must also be discussions on how to better focus existing resources to upgrade the capacities of those roads which are of greatest importance to the industry. The question also needs to be asked as to whether the industry and the State can create opportunities to share resources for the purpose of building, reconstructing and maintaining a highway network, public and private, that services the industry. Proposals for new and expanded development should be discussed with transportation officials who can then formulate an appropriate system response.

Other issues which deserve discussion include simplifying the collection of user taxes and fees and simplifying registration programs. The industry should also be alert to highway funding shortfalls at the State and Federal levels which may arise in the latter half of this decade.

In the area of rail transportation, there should be a careful review of the recommendations of the Governor's Rail Advisory Committee. It is important to note the role the forest products industry can play in directing the adoption of public policy which will lead to and maintain a competitive balance between truck and rail service. A competitive balance is important for assuring cost effective services.

Finally, with respect to ports, the industry should work to support the existing efforts to develop Searsport, Eastport and Portland and be ready to evaluate their success in the years ahead. There are many who view the current developments as merely initial phases in a much broader scheme. If this proves true, the industry should stand ready to support additional expansion of our port capacities.

FUTURE EMPLOYMENT IN THE MAINE WOODS:

SITUATION, FORCES, AND OUTLOOK

Presented by

Lloyd C. Irland, State Economist

Maine State Planning Office

for

Blaine House Conference on Forestry

December 6-7, 1984

---

Thanks to Steve Oliveri for research assistance and to John Poisson for drafting.

Maine's forest-based manufacturing sector, including logging, is a dominant force in the state's economy, providing in 1980 fully 43% of total manufacturing shipments, and the bulk of the state's manufactured exports to foreign lands.

Considering the importance of this sector, it is important to understand its likely future course of employment. This is not simply a sectional concern or a rural one. Manufacturing jobs are concentrated in urban areas, where 66% of the male labor force resides; fully 45% of the paper workforce resides in urban areas. Comparable figures for other industries are: misc. wood products, 22%; sawmill and planing mills and millwork, 18%; logging, 10%.

This paper reviews the current status and recent trends in employment in Maine's forest-based manufacturing industries, showing comparison with the full manufacturing sector where that seems useful<sup>1</sup>. It then examines key forces affecting the level of employment, describes possible future employment levels, and then offers a short public policy agenda.

---

<sup>1</sup>Many of the tables cite data for the male workers only, since this information suffices for the purposes of this paper.

## SITUATION AND RECENT TRENDS

The most basic question, of course, is how many workers are we talking about? The answer depends on how you count them, which source you use, and on year to year fluctuations, as well as on data revisions. This is not the place to review the specifics, but let me just caution that all data sources in this area should be used with care and with a knowledge of the specific definitions and methods used. A broad view of wood-based employment is shown in Table 1, which includes almost 30,000 jobs in several sectors.

To supply a comparable basis for describing demographic and economic characteristics of the Maine forest sector workforce, I rely here on Census of Population data. These figures will differ, at times considerably, from those shown in other sources. Considering my purposes here, these differences are not important. (Note also, that different tables use slightly different industry classifications).

### Employment

The primary forest products industries include those which rely most heavily on Maine grown wood. This would omit paper converting. There were 25,549 persons employed in 1980 in the primary sector; about 10% were women. This compares to a total exceeding 30,000 by the conventional definition using two digit industry groups.

So the primary forest sector includes about 25,000 workers, or nearly a quarter of Maine's total manufacturing employment. But the Census allows us to count the total number of workers, employed on Census day or not, who consider themselves to be part of the experienced workforce associated with this sector. This total is some 11% larger, or 28,310 workers. The difference reflects seasonal or other unemployment as well as normal job turnover.

From 1970 to 1980, these two ways of describing the forest sector workforce displayed interesting trends (Table 2). Total employment hardly changed over the period. Yet the experienced civilian labor force associated with the sector grew by 8%...and 1980 was not a bad year for the industry. Interestingly, female employment fell in logging and sawmilling, while growing in paper. Most striking is the significantly larger growth in labor force than in employment in logging.

### Canadian Workers

In the woods, a significant proportion of the employment and of firms engaged are not American citizens. Especially in the northwoods, many Canadian loggers work for American

contractors, and Canadian truckers and contractors do a large business. There is no data on how numerous these people are. Labor Department data show a steep decline in bonds certified between the late 1950's and the early 1980's (Table 3). But between 1982 and 1984, the number certified jumped dramatically. Since we do not know how many were actually employed under these certifications, it is hard to assess the impact of this change. Also, many workers enter under visas, who are not covered by the bond program. There is no data on how many "visas" are working in Maine.

This situation has been a source of resentment for more than a century, since New Brunswick woodsmen started working in northern Maine. Federal policy on immigrant workers is set with a view to national needs for immigrant farm labor and the state has few policy tools to apply to this situation, even if it were clear what the state's goals ought to be.

### Earnings

According to Census data, median annual earnings in 1979 for all full-time manufacturing workers were \$14,123. Workers employed full-time in paper earned 32% above this, while loggers earned 78% and sawmill workers earned 89% (Table 4). Because of differing seasonal patterns of work, the disparity among the medians for all workers would be larger. This is indicated in the last column of the table, which shows that in the paper industry, full-time jobs are more prevalent than on average for all manufacturing, while in logging, they are held by only 51% of those employed. Further detail is provided in Table 5, which shows self-employment and also the average weekly hours worked in 1979.

The restructuring of Maine's manufacturing sector over the past decade has brought shifts in wage relationships. From 1973 to 1982, manufacturing wages rose by 124% overall, by 11% in lumber and by 142% in paper. Workers in lumber had wages slightly above the manufacturing average in 1973, but were slightly behind by 1982. In paper, however, the 1979 premium over the manufacturing average widened considerably by 1982 (Table 6).

In logging, the primary determinant of gross income is the spread between stumpage prices and delivered log prices; a quick comparison for major species is interesting (Table 7). The Maine Forest Service data show that the real price spread between logs and stumpage remained constant from 1970 to 1984 for spruce logs and for pine, but fell substantially for birch logs and for hardwood pulp. This gross spread was subject to severe pressure from fuel and machinery costs, both of which rose in real terms.

## Worker Age and Skills

The age distribution in the primary forest sector differs from the manufacturing total:

	Median Age
Manufacturing	36.1
Pulp and Paper and Board	39.3
Logging	34.8
Sawmills	33.4

The younger age of loggers is hardly a surprise, but the median age in paper is interesting (Table 8).

In paper, skill levels are roughly comparable to the manufacturing total, except that fewer craftsmen are employed. But the skill levels of paper machine workers and maintenance people are probably equal to or higher than in other industries. The furniture, lumber and wood products sector shows significantly lower skill levels by these measures than does manufacturing (Table 9).

## Accidents

A significant aspect of worklife in the Maine forest sector is the tragically high rate of industrial accidents (Table 10, Fig. 1). Compared to the nation, the lost workday incidence rate in Maine is 61% higher in lumber and wood, 47% higher in logging, and 8% higher in paper. Within Maine, the same rates are higher than all manufacturing rate by 107% for lumber and wood as a whole, by 342% for logging, by 70% for sawmills and planing mills, but significantly lower for paper mills<sup>2</sup>.

---

<sup>2</sup>Data on injury rates from different sources yield different industry rates and different comparisons among states and sectors. This is because of different sources and definitions. The figures used here are standard data from the Maine Department of Labor and the U.S. Bureau of Labor Statistics, and are adequate for the broad comparative purpose here.

This tragic situation imposes serious costs on individual workers and their families, on employers, and on society at large. There is a serious social agenda here for the state's employers, social agencies, worker's compensation insurers and other institutions, and for public and legislative attention.

### Training Programs

Maine operates a substantial training enterprise for certain vocational skills in the forest sector. At secondary vocational programs, 161 students were enrolled in forestry related programs in the 1982-83 year:

Program	Forestry	Wood Harvesting
Centers	37	--
Satellite Programs	--	35
Regions	79	--
TOTAL	116	35

These programs attract interest that is substantial in view of the size of the total workforce in these industries and its slow growth. Fully 27% of all Maine junior and seniors participate in vocational programs. In view of the current uncertain demand for vocational level skills in forestry, there is reason to carefully review the skills taught and the labor market justification for these programs.

In addition, there are other important skill areas in which no training is currently offered, such as log and lumber grading. In fact, a labor market study by the Maine Occupational Information Coordinating Committee suggested that additional offerings in the area defined as "forest products utilization and logging" could be justified. While this conclusion was based on an employment forecast that may prove optimistic, there remains room for a review.

Small post-secondary programs exist for logging and forest products occupations; the large programs in skills like welding and heavy equipment maintenance and business skills are undoubtedly helpful as well to the forest sector. Evening programs at the VTI's are probably important to the forest sector in many ways. The University system provides two-year training in several forestry related skills. The most recent class graduated 34 people trained for field forestry work.

Continuing education programs in topics like lumber grading, log bucking, and other skills are available through the Cooperative Extension Service, Maine Forest Service, and trade groups.

Vocational and continuing education in occupations related to the forest sector need a searching and comprehensive review



to assure relevance to future needs and conditions. Since thorough management planning and program review is now underway throughout the system, such a review for the forest sector would be most timely.

## EMPLOYMENT OUTLOOK AND THE FORCES AFFECTING IT

Recent projections for 1990 suggest the total sector employment (SIC 24 and 26) will rise by 2.5 to 13 percent (Table 11). The forecasters agree then, that modest growth is likely. What is more interesting, however, is to review the principal forces at work that will affect the level of employment over time (Fig. 2). This will not produce a new or more convincing forecast, but should help us understand the key questions.

### Timber Cut

The first variable is the total timber cut. From 1952 to 1979, Maine's cut more than doubled (Fig. 3). This enabled the industry to maintain a stable level of employment in the face of rising worker productivity. According to federal projections, the timber cut in the Northeast could double from 1980 to the year 2030. Even if such an increase is realized, then, the pace of harvest growth will slacken from the recent past. At today's level of management intensity such an increase in cut would be unsustainable in the long run. How the declining spruce-fir inventory and the recent increases in spruce-fir management will affect this outlook is not clear. But the outlook is for a reduction in spruce-fir harvests from current levels, as other speakers are describing today.

To what extent can the spruce-fir harvest shortfall be made up by increasing the cut from currently underused species? Undoubtedly to a significant degree. To venture a more specific prediction goes beyond current information and the scope of this paper. But an increase in the total cut at the rate seen in the past three decades seems impossible.

### Jobs Per Cord

The next factor to consider is the jobs produced per unit of wood harvested. Progress in mechanization, adoption of new technology, and increases in machine speeds have boosted output per worker throughout the U.S. economy. In Maine, the ratio of value of product per worker in 1980 to the 1960 level was:

All Manufacturing	4.50
Pulp and Paper	5.33
Lumber and Wood	4.49

So lumber kept up with all manufacturing over this period, while paper increased productivity significantly faster.

In terms of jobs per unit of wood, a similar trend was evident (Table 12). From 1952 to 1979, the lumber and wood jobs per MMBf of logs cut fell by three-fifths, while pulp and paper jobs fell by one-third. The ratios shown encompass the effects of productivity advance, net exports, and level of processing into one measure. But the trend is dominated by productivity trends. The advance of technology has made it possible for the same number of workers to produce a vastly larger total output and to enjoy a significantly higher living standard.

Predicting the future rate of technological advance is impossible. We do not know if the recent national productivity slowdown is temporary or permanent. Clearly, any level of continued productivity advance will reduce total employment for a given level of wood cut.

Two additional factors, beyond technology, affect the ratio between wood cut and employment. These are the level of roundwood net exports and the degree of processing applied to the wood in Maine. Both have changed in recent decades and will continue to do so. The forces underlying the large export of spruce-fir logs to Canada are not well understood at present, but supply conditions alone will cause these to slowly recede. For other species, trends will depend on a host of local factors and on currency parities.

### Secondary Processing

We should certainly hope for a higher level of processing to emerge over time here. Occasional examples can be seen, but overall, the opportunities do not appear to be large. This was the conclusion of a Maine Development Foundation analysis some years ago. My own observations suggest several problems to be overcome by efforts to increase the degree of processing:

-- First, in most instances, markets for such products are growing slowly. There is little room in the marketplace for growth.

-- Second, some of the products are vulnerable to competition from non-wood materials and do not seem to generate loyalty to wood as a material or to Maine as a producer. You'd be surprised how many plastic coffee stirrers are used in Maine. Major discount outlets here will not sell a Maine-made wooden clothespin.

--Third, many of the processes employed are labor-intensive and use labor that is low in skill and relatively poorly paid. This means that import competition is stiff. In

terms of required skill levels, the Thomas Moser furniture that often comes to mind is the exception, not the rule.

These obstacles are significant and suggest that we not anticipate rapid job growth based on more intensive processing of wood here. Nonetheless, for enterprising small firms, there are many opportunities to grow and add jobs by identifying small, high-markup market niches and serving them well. Most of us have a favorite example of such a firm. Despite the obstacles, this area deserves more support from State government than it has been getting.

### The New Forest

The last factor affecting jobs is the creation of the New Forest. This has already expanded employment over ten years ago--the trees aren't putting themselves into the ground. At the likely rate of increase in silvicultural investments, led by the major paper companies, we can anticipate significant increases in seasonal employment. Over time, companies and silvicultural contractors will find it to advantage to provide more year-round or off-peak jobs where possible. Someone ought to do a careful survey of current job creation due to silvicultural investment and the likely potential.

Before closing on this subject, I must mention that Maine wood industries will not succeed in meeting our overall hopes for employment in the absence of a positive, supportive business climate here. The State must take care to keep this issue in mind as it makes decisions that can affect the real or perceived business climate in Maine. By this I do not mean, of course, that extreme changes in direction are in order, or plain sellouts to narrow interest groups. I only mean that a sound business climate is critically important to the forest sector, especially so since the industry is so capital intensive.

### ILLUSTRATIVE OUTLOOK PROJECTION

So where does this list of uncertainties bring us? To illustrate the possibilities, I offer a purely illustrative analysis. It shows how the various forces described here might affect employment in the year 2030. The scenarios explore several possible objectives for employment:

- maintain the current absolute level of jobs (31,700)
- increase employment to maintain the same proportion of 2030 population as now applies (45,300)
- increase jobs to meet the 2030 OBERS projection (38,100)

The middle employment goal is admittedly unrealistic, as the normal process of economic change results in a decline in the relative importance of primary resource sectors over time (Table 13). This has happened historically in Maine and will continue. Still, for a resource-dependent State, it is a useful point of comparison, if used with care.

Timber harvest possibilities are straightforward. The first is simply a continuation of the current harvest level. The second is a guardedly optimistic projection, which assumes that the spruce-fir cut can be maintained at today's level by 2030 and the hardwood cut raised from 120 MMCF for industrial purposes to 250 MMCF. The third scenario can be called extremely optimistic, and calls for a virtual doubling of the cut level. Such a harvest is technically achievable on a sustained basis but only an extreme optimist today would seriously assume that this will occur. Still, it cannot be excluded as impossible either.

Employment/MMCF ratios capture the effects of many independently acting forces and are hence a major oversimplification. One could readily define many sub-scenarios to sketch out time paths of each critical variable. For today, I use a constant factor at 75 jobs/MMCF (this blends lumber with paper); a factor which continues the 1952-79 rate of change to 2030 (factor falls by 1/2 every three decades); and a factor reflecting a modest decline which was chosen deliberately to see what factor would be needed to reach the most ambitious 2030 employment goal.

If the timber cut remains constant, at current utilization standards, and the recent trend in jobs per MMCF continues, jobs would fall by the year 2030 to one-third of the current level. This shows a serious effect on Maine's overall economy if the harvest is not increased and if economic development efforts cannot offset the ongoing effects of rising labor productivity. While the smaller workforce will enjoy a significantly higher level of living, I think such a severe decline in forest-based employment is not desirable for the Maine economy as a whole.

What would it take to maintain forest industry jobs in 2030 at today's level? It would require only that Maine achieve what I describe as a guardedly optimistic increase in timber cut. It would also have to achieve a significant degree of increased secondary processing and a reduction in unprocessed wood net exports in order to significantly slow the decline in the jobs/MMCF ratio. If the wood-using economy and the State's business climate could achieve such a result, then the extremely optimistic timber harvest level offers the possibility of wood-using industry retaining its current relation to the State's total population (2.9%).

## A PUBLIC POLICY AGENDA

It is not my task to suggest directions for public policy. Clearly, a concern for the future level of employment based on Maine's forest encompasses a wide range of concerns.

But, I would like to close by listing the major areas of concern as I see them. To achieve our objectives for the forest, we will all have to work cooperatively with other groups who have very different backgrounds, objectives, and attitudes. Only if we can successfully do this will the full potential for wood-based economic development be realized. The order in which these are listed is no reflection of their priority.

1. General business climate issues.
2. Occupational safety, rehabilitation, and improved administration of the Worker's Compensation system.
3. The level of forest management in general, the investment in the new spruce-fir forest in particular, and how labor-intensive those investments will turn out to be. This relates to both the security of future wood supply and to the direct employment to be expected in silviculture.
4. Non-resident woodworkers and related border issues.
5. Promoting secondary processing. This is in part a task of targeted industrial promotion, in part one of promoting a climate for entrepreneurship and small business.
6. Education and skill development, including continuing education at all ages and skill levels.

TABLE 1

## MAINE FOREST-BASED SECTOR, 1982

Industry	Employment
Primary	
Logging 241	3,970
Sawmills and Planing Mills 242	2,885
Paper 262	14,535
PRIMARY TOTAL	21,390
Secondary	
Millwork and Cabinets 243	413
Other Wood Products 244, 245, 249	4,946
Wood Furniture 2511	478
Toys and Sporting Goods 394	354
Miscellaneous Converted Paper 284	1,289
Paperboard Containers 265	746
SECONDARY TOTAL	8,226
SECTOR TOTAL	29,816

SOURCE: Maine Department of Labor, Census of Maine Manufacturers 1982. Bureau of Labor Standards, Research and Statistics Division, Augusta, Maine 1984. p. 13ff.

TABLE 2

CHANGE IN EXPERIENCED CIVILIAN LABOR FORCE (ECLF) AND IN  
EMPLOYMENT

1970 TO 1980, MAINE PRIMARY FOREST PRODUCTS INDUSTRY

	Ratio of			Ratio of		
	1980 ECLF/1970 ECLF			1980 Employed/1970 Employed		
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
LOGGING	1.43	1.02	1.41	1.09	.85	1.08
SAWMILLS AND PLANING MILLS	1.28	.80	1.20	1.19	.74	1.11
PULPWOOD PAPER PRODUCTS	.96	1.04	.96	.96	1.04	.97
TOTAL	1.09	.98	1.08	1.01	.95	1.01

SOURCE: U.S. Bureau of the Census  
Detailed Population Characteristics, Maine PC80-1-D21. Pg 127

TABLE 3

NUMBER OF CANADIAN BONDED WOODSWORKERS CERTIFIED TO WORK  
IN THE MAINE WOODS, 1956 - 1984

(Month of June Exc. as noted)

YEAR	NUMBER	YEAR	NUMBER
1956	6,233	1970	1,538
1957	5,528	1971	1,118
1958	n/a	1972	1,220
1959	4,122	1973 (Aug)	1,465
1960	4,659	1974 (Aug)	1,442
1961	4,137	1975 (Aug)	810
1962	3,218	1976 (Aug)	656
1963	3,116	1977	n/a
1964	2,794	1978 (July)	541
1965	1,997	1979 (Sept)	594
1966	2,589	1980 (July)	403
1967	2,796	1981 (Sept)	362
1968	1,777	1982 (Yr)	366
1969	1,682	1983 (Yr)	641
		1984 (Yr)	1,002

SOURCE: Maine Job Service, Department of Labor.

NOTE: The numbers are given for June up to 1972 since that was the month most consistently available. Within years, the peaks of bonded labor employment were usually July-Sept., at levels often well above June. For examples, the 1967 peak was 2,917 in July, while in 1971 the peak was 1,756 in August. Since 1978, fewer workers have been certified than were requested.

For program detail, see USDOL regs, at Federal Reg 43 (48): 10306, Fri., March 10, 1978, pt. VIII, and 45 (246): 83916, Fri., December 19, 1980.



TABLE 4

MEDIAN AND MEAN EARNINGS BY FULL TIME WORKERS, BY INDUSTRY IN  
1979

INDUSTRY	ALL FULL TIME EMPLOYEES			FT % OF TOTAL
	NUMBER EMPLOYEES	MEDIAN ERG.	% OF A.M.	
ALL MFG.	64,482	14,123	100	73
PULP, PAPER, BD	14,606	18,609	132	84
LOGGING	3,051	11,015	78	51
SAWMILLS	2,786	12,539	89	69

SOURCE: U.S. Bureau of the Census  
Detailed Population Characteristics, Maine PC80-1-D21

TABLE 5  
 INDUSTRY OF EMPLOYMENT BY EMPLOYMENT CLASS  
 1980: PRIMARY FOREST PRODUCTS INDUSTRIES  
 (Males Age 16 and over)

EMPLOY. CLASS	LOGGING	SM,PM,MW	P,P&PBD	ALL MFG
PRIVATE WAGE AND SALARY WORKERS	2,509	3,472	17,253	76,613
SELF EMPLOYED	1,925	201	28	3,162
UNPAID FAMILY WORKERS	28	2	--	73
AVERAGE WORKWEEK				
1-14 HOURS	178	88	65	1,332
15-34 HOURS	604	265	349	4,964
35-40 HOURS	1,947	1,616	8,240	42,764
41 + HOURS	1,368	1,709	7,983	32,098

SOURCE: U.S. Bureau of the Census  
 Detailed Population Characteristics, Maine PC80-1-D21.  
 Page 137

TABLE 6  
WAGE TRENDS, MAINE FOREST SECTOR AND ALL MANUFACTURING,  
1973 - 1982\*

	1973	1982	% OF A.M. 1982	% INC. 1973-82
ALL MFG.	3.23	7.22	100	124
LUMBER AND WOOD	3.25	6.87	95	111
PAPER AND ALLIED	4.17	10.10	140	142

\*Average hourly earnings of production workers.

SOURCE: Maine Department of Labor, The Maine Employment and Earnings Statistical Handbook 1982. Division of Economic Analysis and Research. Statistical Data Ser. No. SH-01. Pages 166 and 167.

TABLE 7

## LOGGING COST SQUEEZE:

SPREAD BETWEEN DELIVERED LOGS AND STUMPAGE, 1970 - 1984

YEAR	SPRUCE LOGS	PINE LOGS	BIRCH LOGS	HARDWOOD PULP	CPI 1967=100
1970	31	32	44	14	116.3
1980	34	39	37	13	246.8
1984	32	31	32	11	311.7*

\*JUNE

SOURCE: Maine Forest Service, Timber Price Reports

TABLE 8  
 MALE EMPLOYMENT IN FOREST SECTOR AND ALL MANUFACTURING  
 BY INDUSTRY AND AGE, 1980

INDUSTRY	16-19	20-29	30-44	45-59	60+	Median Age	Total Male Employ
ALL							
MANUFACT	4,104	23,506	28,694	20,806	5,990	36.1	83,550
PERCENT	5	28	34	25	7	--	----
PULP, PAPER AND BOARD	187	3,977	6,642	5,524	960	39.3	17,290
PERCENT	1	23	38	32	6	--	----
LOGGING	249	1,361	1,603	1,019	246	34.8	4,478
PERCENT	6	30	36	23	5	--	----
SAWMILLS AND PLANING MILLS	212	1,264	1,171	732	301	33.4	3,680
PERCENT	4	34	32	20	8	--	----

SOURCE: U.S. Bureau of the Census  
 Detailed Population Characteristics, Maine. PC80-1-D21  
 Page 226.

TABLE 9

PERSONS EMPLOYED BY INDUSTRY AND KEY SKILL AREAS, 1980  
(Age 16 Years and Older)

OCCUPATION	MANUFACTURING	FURNITURE LUMBER, AND WOOD PRODUCTS	PAPER AND ALLIED PRODUCTS
TOTAL EMPLOYED	125,358	16,152	19,893
	PERCENT		
PROFESSIONAL AND TECHNICAL	3.3	1.1	3.5
MANAGERS AND ADMINISTRATORS	8.0	5.8	7.6
CRAFTSMEN	22.0	3.3	11.4

SOURCE: U.S. Bureau of the Census, Table 224

TABLE 10  
 WORK INJURY RATES  
 FOREST INDUSTRIES AND ALL MANUFACTURING  
 MAINE VS. UNITED STATES, 1982  
 (Rates Per 100 Full Time Employees)

INDUSTRY (SIC)	MAINE <sup>1</sup>		UNITED STATES <sup>2</sup>	
	TOTAL LOST WORKDAY CASES	TOTAL LOST WORKDAYS	TOTAL LOST WORKDAY CASES	TOTAL LOST WORKDAYS
LUMBER AND WOOD (24)	13.2 (3.07*)	328.5 (2.16)	8.2	151.3
LOGGING CAMPS AND LOGGING CONTRACTORS (241)	19.0 (4.42)	565.9 (*3.72)	12.9	302.8
SAWMILLS AND PLANING MILLS (242)	12.4 (1.70)	191.7 (1.26)	8.2	161.3
PAPER AND ALLIED PRODUCTS (25)	5.2 (0.71)	155.4 (1.02)	4.8	97.7
ALL MFG.	7.3 (1.0)	152.0 (1.00)	4.3	72.4

\* Relative to Maine Manufacturing average.

1: SOURCE: 1982 Occupational Injuries and Illnesses in Maine. Maine Department of Labor, Bureau of Labor Standards, BLS-580

2: SOURCE: Occupational Injuries and Illnesses in the United States by Industry, 1982. U.S. Department of Labor Statistics Bull. 2196

TABLE 11  
FORECASTS OF FOREST SECTOR EMPLOYMENT TO 1990

FORECAST	1990 JOBS			
	1980 JOBS	SIC 24	SIC 26	TOTAL
STATE PLANNING OFFICE	31.7	15.0	18.5	32.5
MAINE DEPARTMENT OF LABOR	31.7	16.7	18.9	35.6
OBERS	31.7	16.3	19.6	35.9

SOURCE: Agencies cited.



TABLE 12  
 ILLUSTRATIVE RATIOS OF EMPLOYMENT TO TIMBER HARVEST  
 1952 - 1979

YEAR	JOBS PER MMBF LOGS	JOBS PER MMCORD PULP
1952	32.8	7,919
1960	22.6	8,742
1968	19.8	6,089
1974	16.2	4,883
1979	13.3	5,697

SOURCE: Maine Department of Labor Employment Data and Maine Forest Service Timber Cut Data.

NOTE: This is an illustrative calculation. The results embody the effects of many factors that are changing over time, including trade in logs. They should not be confused with 3 or 4 digit industry level data.

TABLE 13  
 EMPLOYMENT LEVEL IN 2030 UNDER ALTERNATE SCENARIOS  
 FOR TIMBER CUT AND JOBS/MMCF

TIMBER CUT	JOBS PER MM CUBIC FEET		
	CURRENT	DECLINE 1/2 EACH 20 YEARS*	MODEST DECLINE**
CURRENT 440 MMCF GUARDEDLY	33.0	11.0	24.9
OPTIMISTIC 550	37.5	13.8	31.1
EXTREME OPTIMIST 800	60.0	20.0	45.3

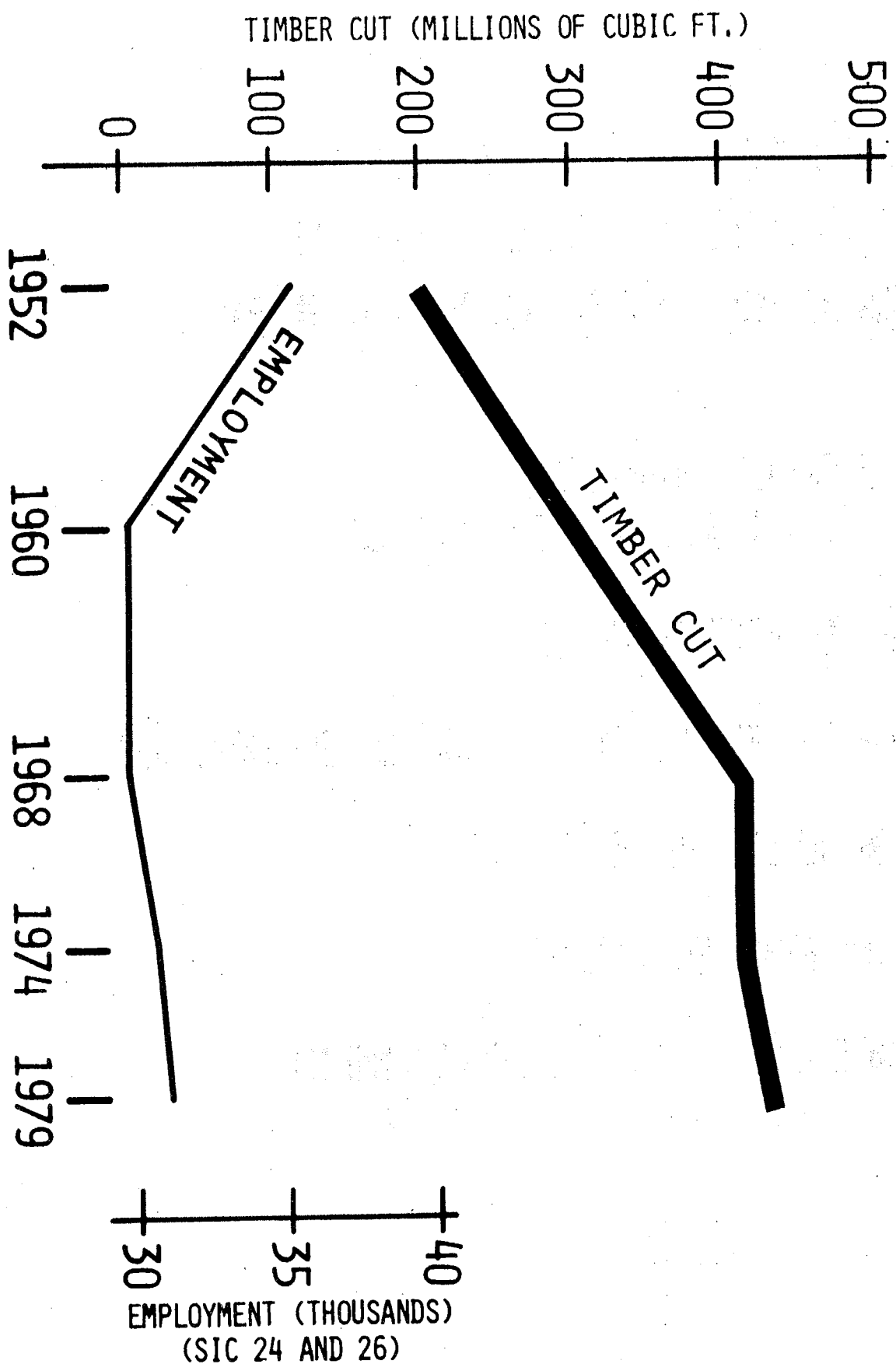
\* Same proportional rate as 1952-1979

\*\* Chosen to yield highest employment scenario in 2030 with extreme optimistic timber cut.

# **SOCIAL POLICY AGENDA ON FOREST-BASED EMPLOYMENT**

- **NONRESIDENT WOODSWORKERS**
- **CANADIAN COMPETITION**
- **EDUCATION AND TRAINING**
- **SAFETY AND REHABILITATION**
- **BUSINESS CLIMATE**
- **LEVEL OF FOREST MANAGEMENT**
- **SECONDARY PROCESSING  
AND IMPROVED UTILIZATION**

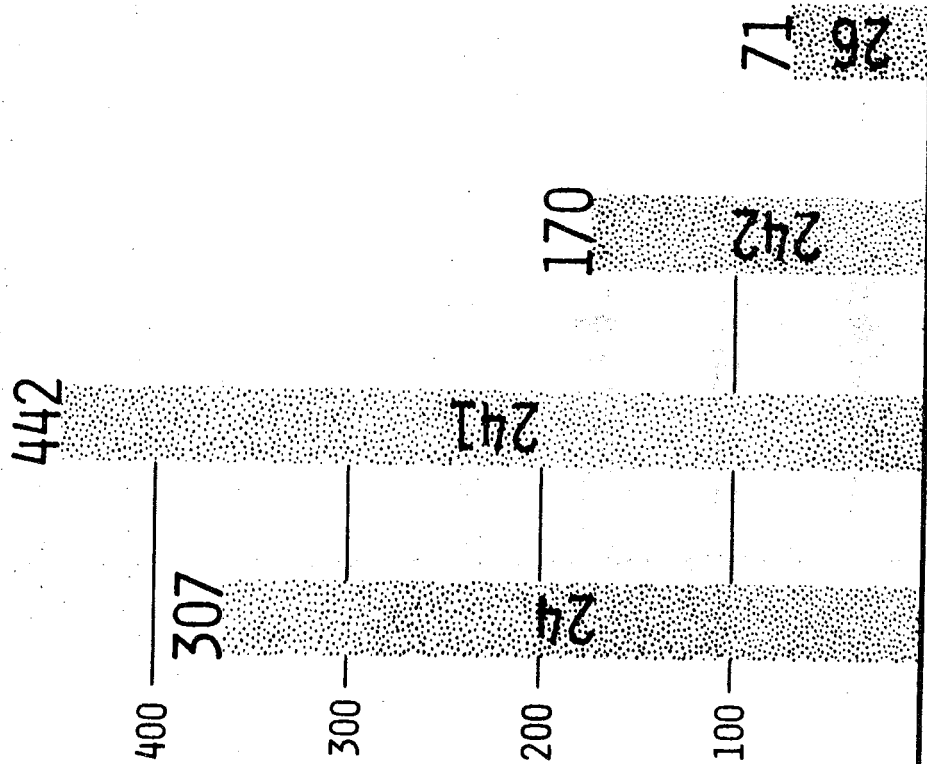
# TIMBER CUT AND EMPLOYMENT



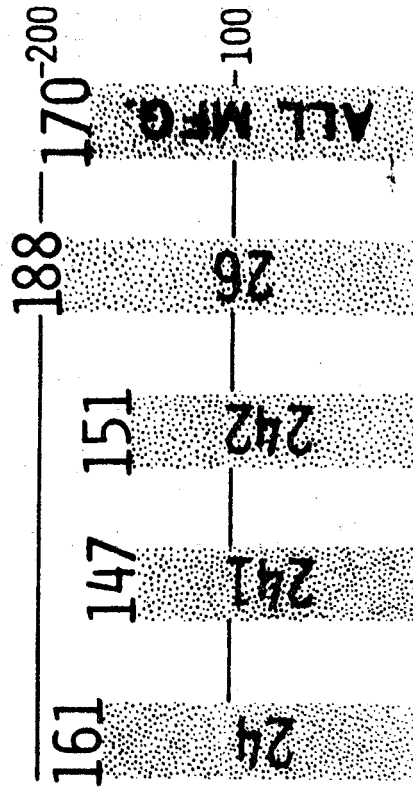
# **FORCES AFFECTING FUTURE EMPLOYMENT BASED ON WOOD IN MAINE**

- LEVEL OF HARVEST  
(UTILIZATION STANDARDS)
- JOBS PER CORD CUT
- NET EXPORTS OF UNPROCESSED WOOD
- LEVEL OF PROCESSING
- IMPORTED WORKERS
- SILVICULTURAL INVESTMENT

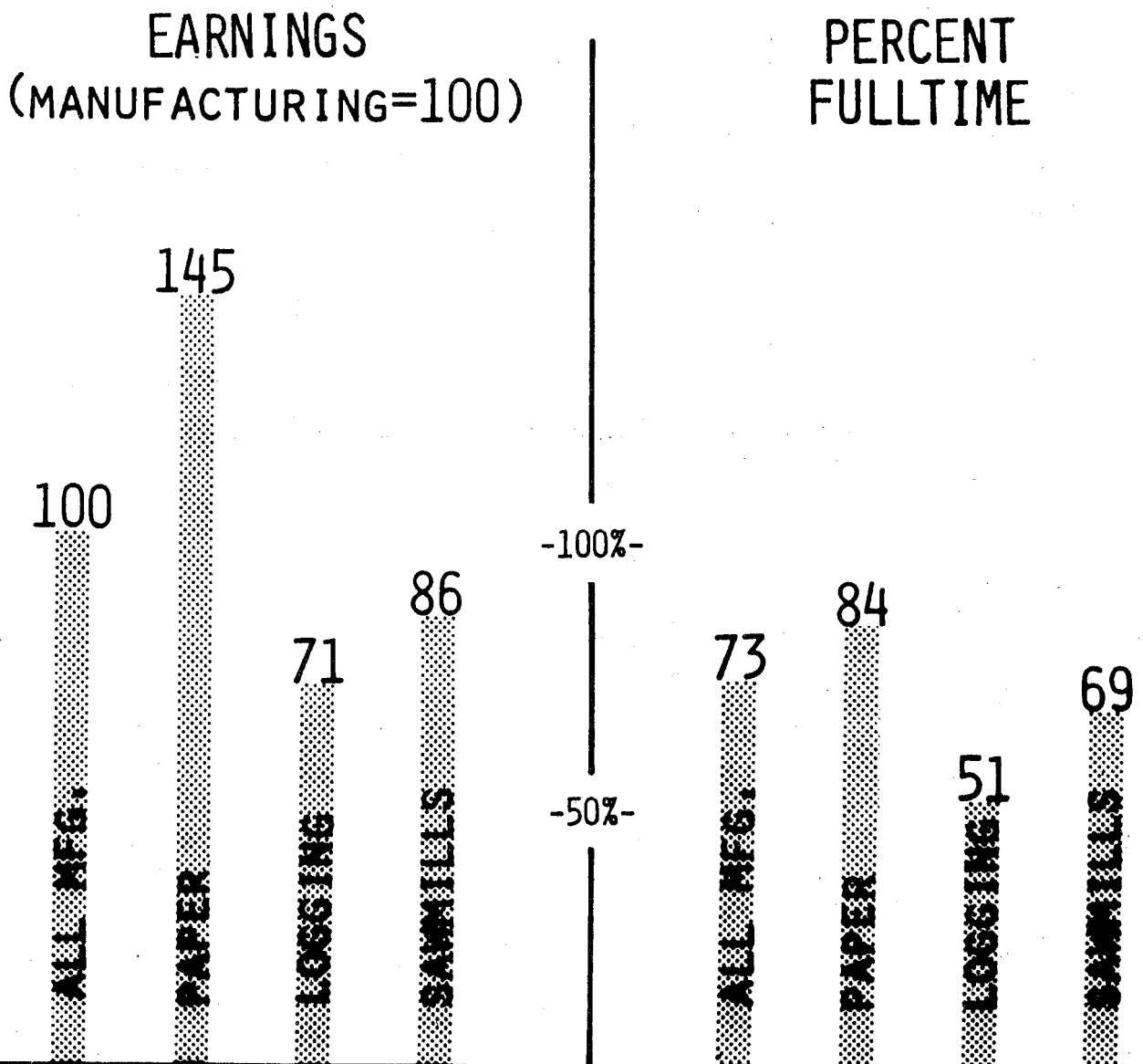
**MAINE:  
 LOST WORKDAY INCIDENCE  
 RELATIVE TO  
 ALL MANUFACTURING  
 (ALL MFG.=100)**



**MAINE:  
 LOST WORKDAY INCIDENCE  
 RELATIVE TO THE U.S.  
 FOR SAME INDUSTRY  
 (U.S.=100)**



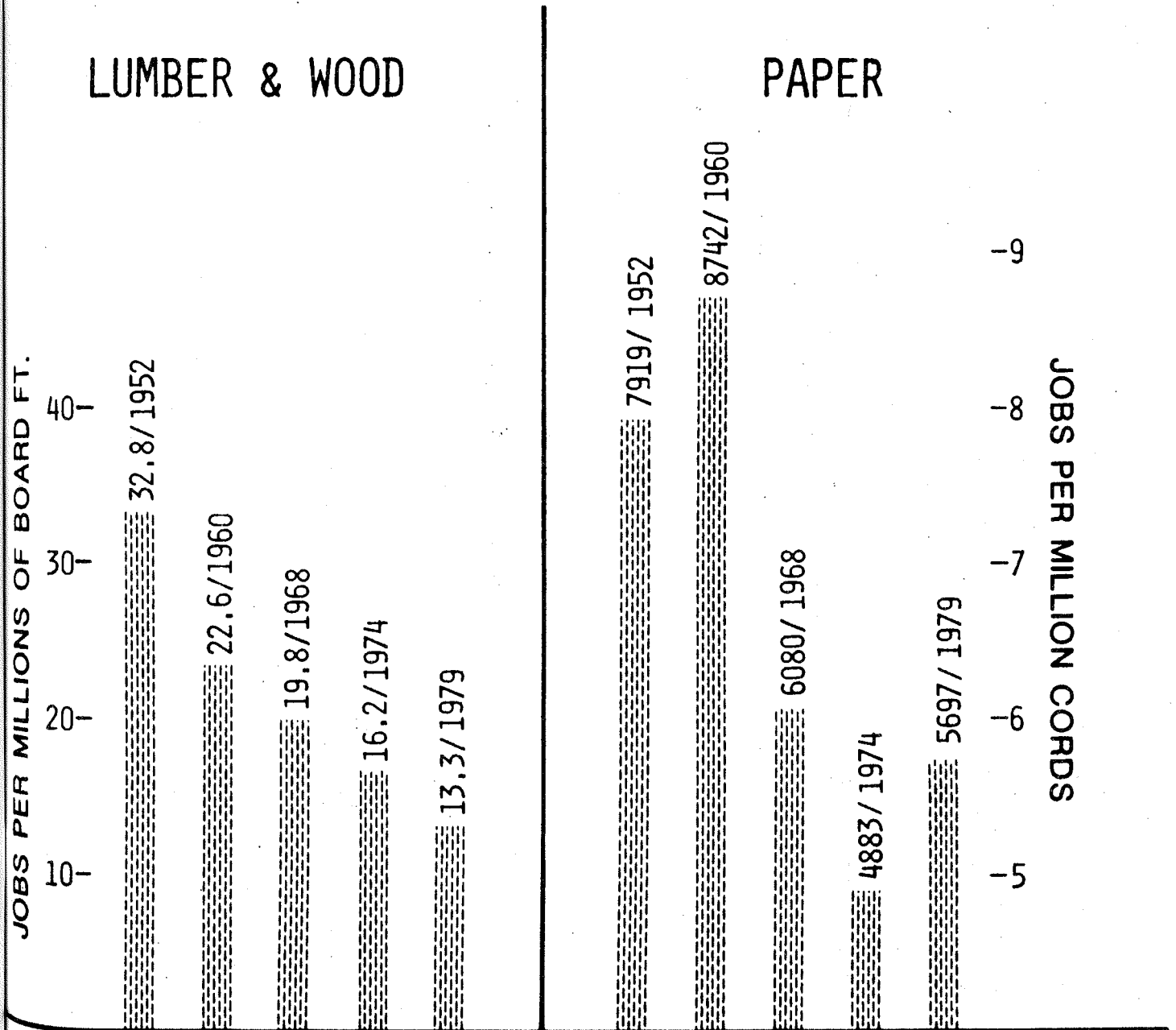
# EARNINGS OF FULLTIME EMPLOYEES AND PERCENT OF EMPLOYEES WORKING FULLTIME



# EMPLOYMENT / TIMBER CUT RATIOS

## LUMBER & WOOD

## PAPER

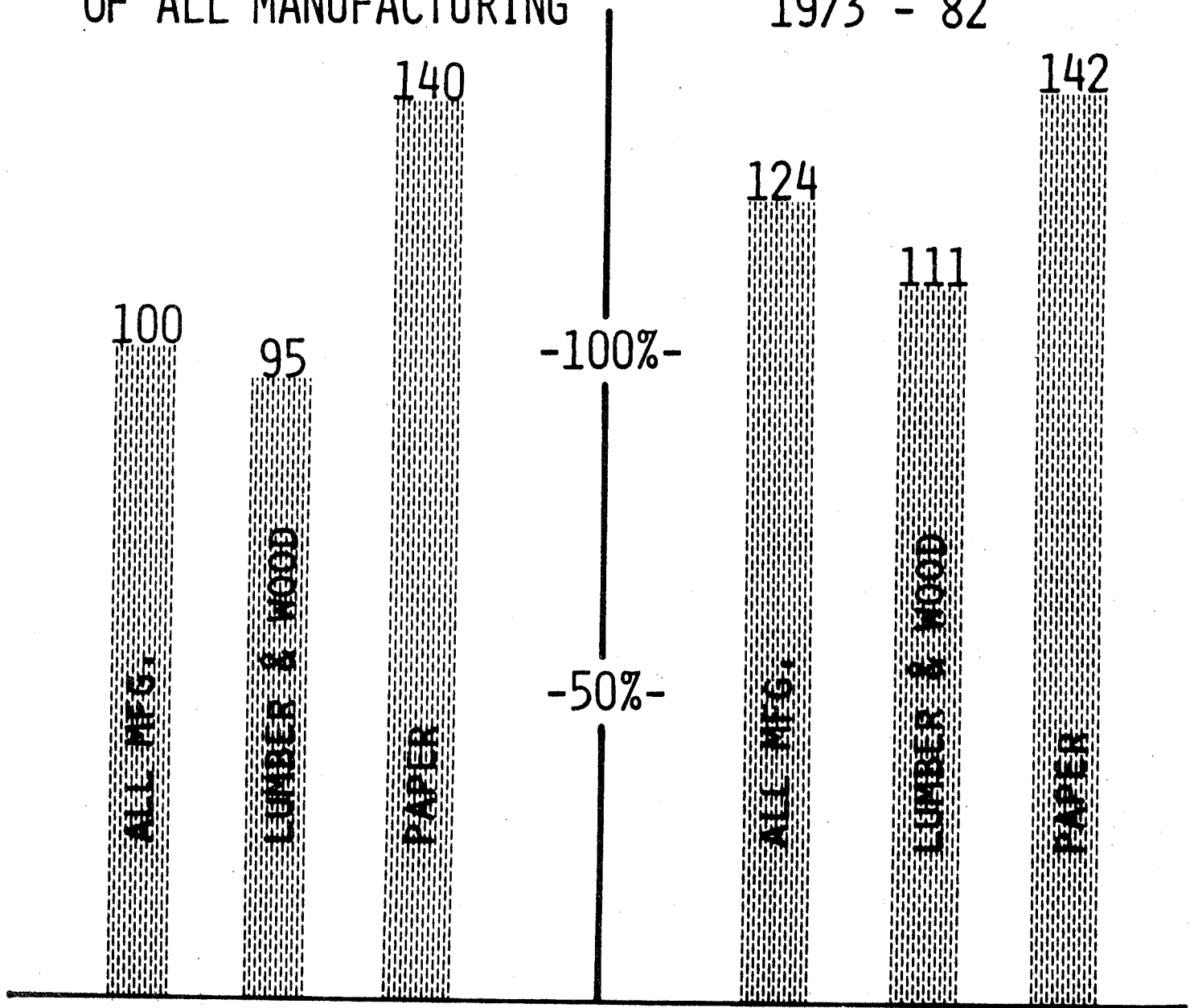




# WAGE LEVELS AND TRENDS 1973-1982

WAGE AS %  
OF ALL MANUFACTURING

INCREASE IN WAGES  
1973 - 82



HOW GREAT IS THE THREAT FROM CANADIAN LABOR?

Presented by

Charles S. Einsiedler, Jr., Esquire

Pierce, Atwood, Scribner, Allen, Smith and Lancaster

for

Blaine House Conference on Forestry

December 6-7, 1984

Speaker Martin, Commissioner Anderson, Members of the Panel:

I was pleased and flattered to be asked to speak at the Blaine House Conference on Forestry. As you all know, I have been asked to speak on the topic, "How Great is the Threat of Canadian Labor?" As pleased as I am to be here, my topic is a dead issue, since Canadian labor really is no threat to U.S. workers in logging.

Ten to fifteen years ago, I could not have made that statement. At that time, many woodlands managers and many logging company operators felt that Americans couldn't cut wood, wouldn't work hard, and were inferior to Canadian wood cutters. Well, that simply was wrong. It was shortsighted and prejudiced and wasn't based on the facts. As more American cutters began working in the woods and did a good job, people began to realize, and now fully realize, that Americans are good wood cutters.

So that there will be no confusion as to who I am talking about when I refer to Canadians or Canadian workers, let me define what I mean by "Canadian workers". Perhaps it is easier to define who I am not talking about. When I refer to "Canadian workers", I am not talking about Americans of Canadian ancestry and I am not talking about Canadian citizens who are lawful permanent residents of the United States (commonly referred to as "visas"). "Visas" have virtually all the employment rights of U.S. citizens and are treated as such by Department of Labor Regulations. When I talk about "Canadian workers" I am talking about temporary Canadian workers (commonly referred to as "bonds").

Why can I say that of Canadian labor is no threat to U.S. workers? First, you have to look at the rights of American workers versus Canadian workers in Maine. American workers have clear preference. Let me explain some of the advantages American workers have:

1. A logging company that wants to hire Canadians must first offer the job to U.S. workers;
2. This job offer, which is very detailed, goes into the Maine Job Service "Job Bank" and the Maine Job Service should refer any unemployed worker to a company which might need Canadian woodworkers;
3. If any U.S. worker applies for a logging job and is qualified (six months experience) the company must hire that worker ahead of the Canadians;
4. "Pooled" job interviews for loggers are held every spring by the Maine Job Service. These "pooled" interviews have been held every spring for several years, usually in Houlton, Presque Isle, Fort Kent and Skowhegan. Employers who seek Canadian loggers are required to hire, on the spot, any qualified

U.S. worker who applies at these pooled interviews, subject only to a reference check;

5. Even if Canadians are hired, if a U.S. worker shows up at a logging camp before one-half the logging season is over, the U.S. worker has the right to "bump" a Canadian worker and TAKE HIS JOB!

Next you have to look at what an employer must go through to get Canadian workers.

1. A detailed job offer must be submitted to the Maine and Federal Departments of Labor and a detailed application requesting the right to "import" Canadian workers must be filed with the U.S. Immigration & Naturalization Services. These forms are complicated and usually require professional assistance. I suppose I should be thankful for that;
2. Employers must attempt to comply with extremely complex and sometimes contradictory Federal regulations. This task is made even more difficult by the fact that the regulations were designed to regulate employment of migrant farmworkers, not loggers;
3. Employers seeking Canadian loggers must provide to their employees, housing, all equipment (including skidders if requested) and transportation from the housing to the job site FREE OF CHARGE;
4. Wage rates are set by the Federal Government and are based on the average rates, not the lowest rates. Experience shows that those government rates are generally higher than rates paid by logging companies without "bonds"--even in unionized companies;
5. Equipment reimbursement "guidelines" are set by the Federal Government and must be followed;
6. Three meals per day must be provided and the most that can be charged for meals is a total of \$5.00/day, I have eaten at logging camps and I know that is a bargain;
7. Employees are guaranteed employment for 3/4 of the contract period and are not subject to lay-off for lack of business during the 3/4 period. No union contract in Maine has a similar guarantee;
8. The employer is required to keep detailed records of work and production.

The Department of Labor has taken the position that all of the requirements apply to U.S. or Canadian workers for a company that applies for Canadian workers.

Believe me, this process is complex, expensive and time consuming. If companies could avoid it they would. Many of our clients would stop using "bonds" if they could; they have told me that. Some already have.

Why, then, are there still Canadian loggers working in Maine? I think this slide of a map of the State of Maine and part of Canada explains the situation. As this map shows, virtually all the companies that employ Canadians are located in the northwestern part of the State. As the map also shows, while there are roads and towns on the Canadian side of the border in this area, there are no towns and there are only logging roads on the Maine side of the border.

There is only one company using Canadians south of Millinocket and that is in Stetson Township, in the Western part of the State, very close to the Canadian border. No Canadians are working in York, Cumberland, Kennebec, Androscoggin, Oxford, Hancock or Washington Counties. As you all know, a great deal of wood is cut in some or all of those counties. Only in Aroostook County and in extreme northern Somerset, Piscataquis, and Penobscot Counties are Canadians cutting wood.

Why, given all the advantages that American workers have, are there any Canadians cutting wood in Maine?

There are a number of explanations as to why the employers in these northern and western areas cannot attract sufficient U.S. workers:

1. U.S. workers have great distances to travel to these locations; and
2. Employment is available in more convenient locations;
3. It is becoming increasingly difficult to find workers who want to live in logging camps. This lifestyle is apparently no longer attractive to many U.S. workers. Virtually all the companies which employ Canadians are located in remote areas and, of necessity, their employees live in logging camps.

In sum, Canadian workers pose no threat to U.S. workers interested in logging jobs. The jobs are there for the taking. Thus, I can confidently say that there is no threat to U.S. workers from Canadian workers.

Thank you.

THE THREAT FROM IMPORTED CANADIAN LABOR IS ALIVE AND WELL

Presented by

Margaret Wille, Attorney at Law

for

Blaine House Conference on Forestry

December 6-7, 1984

This presentation is based on research and experience. The most relevant research has been conducted recently under the auspices of the Marketing and Assessment Program (MAP), directed by Michael Cyr of the Department of Conservation (DOC). This has resulted in a report entitled, The Maine Woods Labor Study, which is now in a draft form and being reviewed by the DOC. The final report will be available through the MAP around the beginning of 1985. This research was conducted throughout the State of Maine, and included in-person and telephone interviews with paper company representatives, loggers, and University specialists. A special effort was made to contact specialists in other parts of the country to get ideas on new harvesting technologies and methods, labor issues, and training needs and programs. It also included attendance at the Mechanization of Silviculture meeting at Thunder Bay, Ontario last fall, sponsored by the Canadian Pulp and Paper Association and the Forest Products Research Society.

The rationale for this study is that labor is viewed as a potentially serious constraint to stable and long-term development of markets for Maine's forest products. This constraint could become evident in a number of ways. From a training viewpoint, if the labor force is relatively unskilled, a large influx of unskilled laborers could mean more accidents in the woods, higher worker compensation rates, poor quality harvesting and long-term damage to the forest resource. It is a complex issue. I don't expect that this presentation will provide a definitive analysis of this issue. Such a study would require far more time and resources. Rather, this presentation will explore the relationships between woods mechanization, labor and the forest resource, and training.

The Maine forest, as the U.S. Forest Service (USFS) Resurvey data analysis shows, has been changing. Generally speaking, smaller size trees predominate and the overall proportion of younger trees has risen. In certain areas of the state, there is more discussion of early rotational or precommercial treatments using mechanical swathcutters, brush saws, and chippers. As wood energy markets have provided an outlet for thinnings, whole tree chip operators and their employees have become commonplace throughout the state. It can be said that, in general, because labor is more expensive, some tasks are so unpleasant (e.g. brush saw work), and because the need for more intensive forestry seems to be growing, the forest industry has, over the past ten years, looked towards mechanization as the answer.

And there is no mistaking the very strong trend towards mechanization in wood harvesting in the State of Maine. Following are examples of that trend:

- from 1975 to 1984 the number of chipping operators in the state has gone from 0 to 44;

- since their first appearance in 1976, Great Northern now has six of the large feller-forwarders (current price - \$750,000) and companies must devote large parts of annual capital budgets for the purchase of equipment for mechanization; and

- in the most recent Northeast Regional Woods Wage Survey by Maine Department of Labor, 79 slasher operators, 77 delimeter operators, and 78 chipper operators were registered, as well as 81 operating engineers.

Hence, the mechanization trend includes the increased use of feller-bunchers (the new technology mentioned most often over the past five years, with smaller machines in the south and larger machines in the north), feller-forwarders (mostly in the northern part of the state), chippers (all over the state), delimiters (mostly in the north and west), and slashers (all over the state).

The new capital-intensive equipment requires individuals who can handle and maintain complex heavy equipment. In fact, some companies would appear to prefer to hire an equipment operator rather than retrain a logger. Thus, over the past few years, the number of equipment operators as a proportion of the logging force has increased rather dramatically and, in the future, given the current rates of mechanization, more will be needed.

Let's do a brief overview of three common planting and harvesting situations typically found in Maine (early rotation treatments, selective cutting and clear-cutting), and provide a "snapshot" on the relevant status of manual, semi-mechanized, and highly mechanized systems.

Early Rotation Treatments. This typically includes the use of brush saws, chain saws, wheeled or tracked swathcutters, herbicidal thinning. A number of companies have adopted the use of brushcutters and/or herbicides for this type of work. Over 3,000 acres of forest land in the northern region of Maine will be treated this way using brush saws in 1985, and some people are suggesting that this figure could reach as much as 30,000 acres per year before 1990. Brush saw work is dirty and difficult--even worse than chain saw work. Few people doing brush saw work last more than a season. To address this, some combination of manual and mechanized, or fully mechanized, systems would seem to offer great advantages.

Research is currently being conducted in Canada by the Great Lakes Forest Research Center to develop a large tracked vehicle (eight feet wide) called the "Crab Combine" that would be able to clear swaths in a checkerboard fashion which would then allow brushcutters to do stem selection. This system improved the conditions under which brushcutters work while, at the same time, incorporating a chipper, allowing the harvest of



chips for potential use as fuel or as a forest product. The six-year effort to date has developed a prototype which is currently being tested. It can operate on up to 20% slopes and travels at roughly one mile per hour.

Another effort has been conducted by the University of Maine CFRU/Scott Paper using a Hydro-Ax equipped with Rotary Ax swathcutter to clear the way for stem-selective brush saw work. Research is also being conducted at the Agriculture Engineering Department of the University of Maine at Orono to develop a swathcutter which could be retrofitted on a small tractor in conjunction with a chipper.

#### Selective harvesting (including commercial thinning).

This type of harvesting has recently been changed through the introduction of small feller-bunchers and chippers. However, the chain saw/skidder combination still predominates. If the characteristics of a forest stand (e.g., slope, soil/ground conditions, stocking rates, size of material) allow it, there seems to be no question that a feller-buncher/grapple skidder system can out produce the traditional chain saw/skidder operation.

Though the available research is not conclusive, the rate at which Maine loggers are adopting the feller-buncher would seem to indicate that, for both production and safety reasons, this trend will continue. However, the limitations of the feller-buncher--slope, ground disturbance, maneuverability and cost-effectiveness for certain stands--are well known. Unless a stand contains a large volume of timber to be harvested, cost alone may prohibit the use of them. Most of these same limitations hold true for delimiters, large feller-forwarders, etc. It is in these situations that the traditional chain saw/skidder (or tractor small forwards) system has great advantages. Many new combinations using the chain saw and other wheeled or tracked vehicles are now being used by loggers. Lagging behind are cable systems which have yet to meet with acceptance. In Vermont, New York, and Maine, there has been substantial testing of cable systems. To date, their potential for use on steep, wet, or otherwise fragile lands for thinning has not been fulfilled. Based on discussions during this research, the widespread use of cable systems in Maine may not occur because they require a different approach that is unfamiliar to the typical Maine logger (specifically more on-site, pre-harvest planning). Also, given the trend towards equipment that gets the logger off the ground and into an enclosed cab, it may be difficult to introduce a technology that requires substantial manual effort.

Clear Cutting. Whether for pulp and paper or for energy, the increased level of clear-felling in many regions of the state, particularly in the north, has been a driving force in the trend towards mechanization. The use of feller-bunchers, delimiters, feller-forwarders and chippers has become synonymous

with clearcutting. In general, the chain saw cannot compete with these technologies for this type of work, based primarily on production levels and safety issues.

Overall, however, the chain saw in combination with any other technology offers great flexibility. It would be shortsighted to believe that we have reached the limits to chain saw-oriented systems, especially for precommercial thinning or selective harvesting systems. For example, recent research and field work in Maine and other parts of the country that capitalize on Scandinavian experience demonstrates the potential for great increases in productivity through a process which has been dubbed "rationalization." Basically, this means that all inputs into a harvesting system (people, machines, timber stands, management and capital) are given considerable forethought and different combinations are designed based on the variation in inputs, especially the type of timber stand and the available equipment. This type of "systems" approach places a stronger emphasis on training than is typical in the United States.

Hence, the race towards mechanization does not mean a reduction or lessening of importance of labor. For example, before the prevalence of mechanized harvesting (prior to 1965), labor costs typically made up 60% of total harvesting costs. With mechanization, this percentage has dropped to between 35 and 45%. In spite of this change, the labor component continues to be the largest single component of harvesting costs in most logging operations.

The Problems. There is no real consensus on the major harvesting related problems to be addressed in the Maine logging and forestry community. Nor does it seem to be true that there is an "across the board" belief that a new harvesting technology needs to be developed. Despite that lack of consensus, there are a number of harvesting problems or issues that I think need to be addressed:

- Considering the misgivings about herbicide treatments of newly regenerated softwood stands to reduce hardwood competition, further testing and systems development for mechanical and/or manual treatment of these stands is necessary, particularly of systems that reduce or eliminate the difficult conditions for brush saw work.

- For the removal of small and medium-sized material (3" - 6" diameter at breast height) in either mixed hardwood or softwood stands, entry by wheeled or tracked equipment is often precluded for fear of damage to the remaining (residual) stand or costs of putting the equipment on the land. The further development of an appropriate cable system or new combinations of currently available equipment with well trained loggers could provide a productive and silviculturally effective method for removal of this material.

- Safety and production and often seem to be opposing forces in woods harvesting. Given the fact that the chain saw will be around for quite a while, safety will continue to be a major problem. The use of innovative incentive systems that enhance safety, while keeping in mind production, could have positive effects on accident rates and woods labor turnover problems. Also, the complexity of running wood harvesting operations is on the rise. Equipment costs are going up; in some cases, the size of logging outfits has gone up (particularly in the north), and almost all outfits are now subject to Workers Compensation, adding to the complexity of business management.

There is also a larger problem affecting woods harvesting throughout the state. This is the low esteem held for woods work. During the course of this research, comments were heard, such as "Woods work is the lowest form of drudgery," or "If you don't straighten up, you will end up in the woods." The poor image of woods work may account for the number of problems that the vocational-technical institutes have faced. At a greater level, it is an important long-term problem for the forestry industry with respect to attracting high-quality labor for woods work. As far back as 1975, Joe Krug of the Calais Vocational-Technical Institute, said, "The image of the woods worker is not an acceptable one, as part of a modern society. If we are to attract the kind of students and numbers needed, this will have to change." While mechanization may help to change this image, it has not yet done so. Unfortunately, it seems that Maine remains, in some ways, in the same situation it was in almost ten years ago.

The low regard held for woods workers is in contrast to the increasingly wide range of skills loggers must have. Even though mechanization reduces manual labor, it demands new skills relating to mechanized harvest planning, equipment maintenance, and financial management. Also, more complex mixes of manual or semi-mechanized harvesting production systems are being developed. As the complexity of harvesting systems increases, so does the demand for more highly skilled loggers and the training programs to produce them.

Potential Solution. What these training programs should provide and what is necessary to improve the capability to provide training is:

Specific Technical Training Topic:

- The ability to work with a variety of equipment ranging from chain saws to feller-bunchers;
- Business management, (cost of equipment, size of firms, workers' compensation); and
- Safety.

General Training Development Issues:

- Development of long-term training vision within the state; and

- Improvement of the image of the woods worker, so as to draw good people to woods work.

WOODS LABOR TRAINING NEEDS

Presented by

Richard Donovan, Associates in Rural Development

for

Blaine House Conference on Forestry

December 6-7, 1984

Detrimental Employment Practices. Three employment practices remain the major obstacles to stable employment in the logging industry. The first is the practice of treating employees as independent contractors for purposes of avoiding taxes and workers' compensation insurance. The second is the part-time nature of the business which, to some degree, is an artifice of the industry's control over the labor market. The third practice is the underutilization of Maine's woodworkers and the corollary reliance on non-resident labor from Canada. These three employment practices continue and promote unstable employment in the logging industry. Today I will discuss the reliance of non-resident or imported labor from Canada.

Before I begin let me clarify that when I speak of non-resident or imported labor from Canada I mean persons who live in Canada but who are recruited and employed in the logging industry within the State of Maine. I include persons with temporary foreign worker visas and those with commuter alien visas.

The Choice. Maine has a choice. Either the state can actively work to wean the logging industry of its dependence on non-resident labor, or it can continue to turn a blind eye towards this practice and sacrifice our working people.

Adverse Impact of Imported Labor. There is no debate over the extent and adverse impact of this employment practice. For example:

1. Between 1981 and 1983 in the lumber and wood products industry, over \$3 1/2 million were paid in state unemployment benefits to residents of Canada, and over \$15 million to Maine residents.

2. In a 1983 survey of 3,700 persons employed in the Maine logging industry, the Department of Labor found that one out of every three persons surveyed resided in Canada.

3. For the 1984 logging season, Canadian and U.S. logging employers submitted requests to recruit over 900 temporary foreign workers from Canada. The jobs for which these non-resident workers were requested included truck drivers, loggers, cooks, bookkeepers, equipment operators and engineers, mechanics, and even logging operation supervisors. I understand the resulting total annual loss of payroll could be as high as \$22 million.

There are other adverse effects that often go unrecognized. Resident contractors who recruit and train local workers understandably resent the companies which prefer to hire Canadian contractors using imported labor. Lastly, consider the exodus of skilled workers leaving the state in search of more stable employment.

The Temporary Foreign Worker Program. Specifically within the context of the temporary foreign worker program, the legal test to determine whether a logging employer may recruit workers from Canada often amounts to no more than a legal paperwork game. The user-employer can designate any period of employment, no matter how short. The wage rates are often less than U.S. workers can afford in light of their enormous investments in equipment and related ongoing expenses. If the Maine worker needs even one dollar more than the base wage, he is considered legally "unavailable" and may be replaced by a foreign worker. Theoretically, user-employers must hire available local workers with at least six months experience. However, that legal condition is effectively nullified when the employer then requires unreasonably high production minimums. Even when a violation of the labor laws relating to foreign workers is documented by the state, an appeal by the user-employer can go on indefinitely. A current case brought by the state against five user-employers, on behalf of both Canadian and U.S. woodcutters, has been going on since the violation occurred in 1981. In the meantime, many of the Canadian workers named in the suit waived their right to the restitution or damages which the State of Maine claimed was due them. It is no wonder the industry prefers to recruit workers from Canada.

Threat vs. Presence. It is important to realize that the adverse impact of non-resident labor is not merely whether and how many woodworkers from Canada are employed in Maine. Rather, the real harm is that the workers lose their bargaining power to establish stable jobs under safe working conditions. If the local worker complains, he knows he can be replaced by a worker from Canada. Likewise, if the imported worker complains, it is unlikely that he will be recruited the following year. In this manner, a serfdom-like atmosphere is perpetuated in the logging industry.

Preventing the Loss of Jobs is as Important as Creating New Jobs. Over the past few years, Maine has spent millions of dollars to bring in new industries while justifying that cost with the public purpose of creating more jobs. My question is, how can we as a state spend vast sums establishing new industries when nothing is being done by the state to prevent the continuing loss of jobs in the largest industry already present in the state?

A Possible Framework for Addressing the Problem of Imported Labor. We can not ignore this problem of imported labor any more than we can neglect other border problems, such as imported potatoes or fishing disputes. The State should stand up to the woods industry and undertake a plan to promote the use of Maine workers and curb the present dependence on imported labor. As the model for this plan, I suggest Canada's foreign worker policy and program.

The policy of the Canadian government is: Employment opportunities in Canada belong to residents of Canada. The use of foreign workers is viewed as a disfunction of the labor market that must be corrected. I quote from Canada's Employment Manual on Foreign Worker Recruitment:

"A request for a foreign worker by an employer is an indication that the Canadian labor market has not functioned properly to meet the demand for labor from Canadian sources. Employment counselors must seize this opportunity to reverse this failure of the market and by so doing, extract from this situation maximum benefits for Canadian workers. This can best be accomplished through the negotiation of an action plan with the parties involved to reduce the eventually eliminate the reliance on foreign workers."

The action plan required of Canadian companies using foreign workers must include:

1. A strategy for identifying and correcting barriers to entry into the relevant area of employment;
2. A plan to provide training and development of opportunities to ensure a future supply of suitably skilled local workers; and
3. A plan to employ a maximum number of paid apprentices. Once a company's action plan has been approved, compliance is monitored by the Canadian Employment Commission.

1985: The Year of Maine's Forest and Forest Workers. Ken Stratton, Director of the Maine Forest Service, promotes 1985 as "the Year of the Maine Forest." I ask him and all of you to expand that concept to 1985 being "the Year of Maine's Forest and Maine's Forest Workers." During this coming year, we must face the problem of imported labor. A program based on the Canadian plan should be set up in coordination with the paper companies and landowners who directly, or through company jobbers, recruit non-resident labor. Such a program could easily be in place by the end of 1985.

In concluding, I ask you to ponder two questions:

1. Are you, as an industry, and we, as a state, earnestly willing to tackle this critical problem of imported labor?
2. Have you and your loggers hugged today?...I suggest we start with Bob Cope and Bill Butler.



A CONDENSED REPORT OF WOOD HARVESTING  
AT THE STATE'S VTI'S  
AND  
WHAT IS A WOODSMAN?

Presented by

Joseph S. Krug, Division Head  
Wood Harvesting, WCVTI/NMVTI

for

Blaine House Conference on Forestry

December 6-7, 1984

## INTRODUCTION

My presentation today will have three basic parts, which are as follows:

1. A condensed report on Wood Harvesting training activities at NMVTI and WCVTI.
2. My view of "What is a woodsman?"

### A. Condensed Report of Training at the State's VTI's

The following four charts will present:

1. WCVTI's Training Program
2. NMVTI's Training Program
3. A brief history of the VTI's training program
4. Student Statistics - Results of Training

WCVTI

WOOD HARVESTING - A 25 WEEK PROGRAM

PURPOSE TO PROVIDE AN OPPORTUNITY FOR THOSE WHO WISH TO WORK IN THE NORTH WOODS; A PLACE TO GAIN THE NECESSARY ENTRY LEVEL SKILLS.

OBJECTIVE TO TRAIN SAFE, COMPETENT, PRODUCTIVE WOODS WORKERS

MAJOR COMPONENTS OF THE PROGRAM

<u>SUBJECT</u>	<u>WEEKS</u>
CHAINSAW OPERATION	12 WEEKS
SKIDDER OPERATION	7 WEEKS
CHAINSAW MAINTENANCE	1 WEEK
SKIDDER MAINTENANCE	1 WEEK

RELATED COMPONENTS OF THE PROGRAM

<u>SUBJECT</u>	<u>HOURS</u>
ORIENTATION TO PROGRAM	3
ORIENTATION TO WOOD HARVESTING	1
SAFETY ORIENTATION	7
TREE IDENTIFICATION	10
WOOD PRODUCTS SCALING	19
BUSINESS ASPECT OF TIMBER HARVESTING	4
WIRE ROPE AND FITTINGS	3
FUELS AND LUBRICANTS	2
HISTORY OF HARVESTING METHODS	2
MAP AND COMPASS WORK	14
TWITCH TRAIL LAYOUT	11
HARVESTING SYSTEMS	7
ROAD MAINTENANCE	10
HYDRAULIC SYSTEMS AND MAINTENANCE	20
RELATED OCCUPATIONS	4
FIRST AID	7
MAINE LAWS	3
FIELD TRIPS	21

PROGRAM BREAKDOWN BY TIME

48% CHAINSAW PRODUCTION CUTTING  
28% SKIDDER PRODUCTION YARDING  
12% CLASSROOM WORK  
12% SHOP WORK

PROGRAM PHASES BY WEEKS

4 WEEKS CLASSROOM WORK

4 WEEKS SHOP WORK

3 WEEKS HARVESTING SHORT WOOD

6 WEEKS HARVESTING TREE LENGTH WOOD

\*8 WEEKS HARVESTING TREE LENGTH WOOD FOR PAYROLL PRODUCTIONS

\*THE LAST 8 WEEKS OF THE PROGRAM IS SPENT IN A CORPORATION LOGGING CAMP. DURING THIS PERIOD OF TIME THE STUDENT IS PAID FOR THE WOOD HE PRODUCES. HIS FINAL TEST, SO TO SPEAK.

NORTHERN MAINE VOCATIONAL TECHNICAL INSTITUTE

Advanced Wood Harvesting Technology-----36 Weeks

<u>Semester I</u> (18 Weeks)	<u>HOURS</u>
Wood Harvesting I (basically the original programs, classroom and shopwork)	15
Orienteering	2
Scaling	2
Basic Hydraulics	2
Technical Communications	3
Small Business Management	3
Welding	$\frac{4}{31}$ /Week

<u>SEMESTER II</u>	<u>HOURS</u>
Wood Harvesting II (10 Weeks) (basically the field work from the original program)	31/Week
O.J.T. - Camp Cutting (8 Weeks)	40/Week

## WCVTI & NMVTI WOOD HARVESTING

### A Brief Condensed History

<u>WCVTI</u>	<u>NMVTI</u>	<u>INFORMATION</u>
Started		
July, 1972		Two programs a year, 22 weeks each, two instructors, three skidders, and 16 chainsaws.
Jan., 1974		Added third instructor to staff and increased classes to four a year. Added three skidders for a total of six, and added four wheel drive Suburban.
	Sept., 1977	Started a Wood Harvesting program with three instructors, four skidders and 30 chainsaws. Program basically funded by CETA. One class per year. No changes until 1979.
Oct., 1978		Peaked at six classes per year, six instructors, 13 skidders, 60 chainsaws one 4 x 4 Suburban, one bulldozer, and two army trucks.
	Jan., 1979	WCVTI and NMVTI merged to form one Wood Harvesting program for the VTI's. The curriculum was identical for each school. Increased program to three classes per year. Administrators with one Division Head and two Department Chairmen.
Jan., 1979		Reduced program to five classes per year. Added one administrative vehicle, low-bed and mechanics truck.
	Oct., 1979	Added two skidders for a total of six skidders.

Jan., 1982 Jan., 1982

Increased program time from  
22 weeks to 25 weeks.

March, 1982

Reduced program to four  
classes per year from five.  
Reduced staff to four  
instructors.

March, 1982

Reduced program to two  
classes per year. Reduced  
staff to two instructors.

Sept., 1984

Reduced program to one class  
per year, but increased the  
time from 25 weeks to 36  
weeks, and added extra  
subject matter.

WOOD HARVESTING  
Student Statistics

	<u>WCVTI</u>	<u>NMVTI</u>
Classes Completed	45	18
Students Started	632	232
Students Graduated	432	108
*Approximate Number Working	294	73
Years Training Completed	12	7

\*These figures are based on a yearly average, not a total survey, from the beginning of the programs.



## PRESENT PROBLEMS

Wood Harvesting training at the VTI's is presently at a crossroads. Problems exist, but they are not insurmountable. New solutions will have to be found, and will be found. I would also like you to think of solutions to these problems.

### PROBLEM #1

The largest and most serious problem is the lack of students. It seems that fewer and fewer people want to learn the profession of wood harvesting. Why? There must be a reason. WCVTI has reduced its number of programs per year from six to four, and NMVTI from three programs per year to one, simply because of a lack of students.

All of the traditional, conventional, and even remote methods of recruiting are not working satisfactorily.

### PROBLEM #2

The programs at both VTI's are operating with relatively old equipment with no viable plan for replacement being used. Budgets are submitted, but are repeatedly turned down. Our newest skidders are 1979 models with many production hours on them. Our oldest skidders are 1968 models and are 90% worn out.

### PROBLEM #3

Money...money is always a problem, especially when there is a lack of it. Due to budget setbacks, WCVTI has lost a full-time mechanic who is desperately needed in order to keep the old equipment on line. WCVTI has had a full-time mechanic since 1976.

The Wood Harvesting programs have a very small operating budget furnished through the State budget process. Both programs derive a large portion of their operating expense money through the sale of wood, cut during the training process.

An example of state budget dollars being spent for skidders, represents approximately one per cent of the total investment.

### PROBLEM #4

A change is needed. By this, I mean what and how we train men in the future for the woods industry. I believe what we teach is becoming more important with each year. The problem is, we do not know which route to take. We are presently seeking help to this problem. Your input would be greatly appreciated.

I hope I haven't painted too bleak of a picture, but I do believe I've painted a true and realistic picture.

I felt it was important to present a brief background before delivering the major portion of the presentation - "WHAT IS A WOODSMAN?"

### WHAT IS A WOODSMAN?

I would like to talk next on "What is a Woodsman?" I do not have to say good woodsman; because if he or she does not meet the standards I'm talking about, he or she is not a woodsman.

Please think about it for a minute. What is your view or description of a woodsman?

I'm sure with a group as large as this represented here today, there will be many different and varied opinions. However, I would like to present two examples of what I think a woodsman is:

#### Example 1

This woodsman is 20 miles into the woods, and a quarter of a mile off the main haul road. His skidder winch will not hold up a twitch of wood. There is not any help around but himself and his tool box.

#### Example 2

It is payday, and his check is \$310; but he has earned \$390. This woodsman knows what a cord of wood is, as well as the cutting rates. He knows to scale and to determine his paycheck.

In each case, these woodsmen knew they had a problem; and each solved the problem in his own way.

In example 1, the woodsman took his tool box and adjusted his winch. In example 2, he quit and moved on to a more reliable employer.

To the woodsman, both solutions were simple. If a man cannot solve all of the problems around him, plus cut wood, he is not a woodsman. His total skills will make his paycheck and keep him in the woods, not just his ability to use the chainsaw and skidder.

His ability to use tools, make decisions, and to work carefully are all very important.

The following facts will back up why you need to be good to work in the woods:

Northern Woods Logging Association, a private insurer of logging operations, compiled a 1-year study of accident rates for the people they insure. The following is a condensed summary of this report. Of approximately 3,000 people insured, there were approximately 1,000 reportable accidents, of which approximately 500 were lost-time accidents. Therefore, one out of six people each year was a lost-time accident.

Most people work in a controlled environment. The woods is different - nothing is controlled. It takes a good man to work in this field, to enjoy it, and to make a living and stay with it.

### FACT

Wood Harvesting is the second most dangerous occupation in the nation. It doesn't have to be, but it is. WHY?

It could be that many working in the woods are not trainable, or they really do not know the right way from the wrong way; or the safe from the unsafe way; or the productive from the unproductive way.

At any rate, it is safe to say that only a small percentage of the insured have ever received any formal or informal instruction in harvesting, and the facts will back up this statement.

A very good example of this attitude came to light this fall. One of our recent graduates went on a job, and before he even went into the woods, his veteran partner said, "I know you have been to school; but now I'm going to really teach you how to cut wood."

The third day on the job, the veteran asked the recruit to fall a tree into a tree, that his saw was stuck in. The recruit said, "I might damage your saw." The veteran replied, "no, you won't, because I'm going to hold on to it and pull it out when the tree starts down."

I ask you - Is this proper instruction? This type of thinking and action leads to all sorts of complications, mainly accidents, high Workman's Compensation rates, small pay checks, high turnover rates and the list goes on.

The pity of it is, in the woods, the control needed to prevent this sort of incident from happening is desperately lacking, because most do not believe it is necessary. If I am wrong, the accident rate would be much lower for woods workers.

If our students who want training, or the man who goes into the woods is not a self-starter, highly motivated, mentally alert, physically able, possesses common sense and shows good judgment, he will surely fail at wood harvesting, and quicker than in most other trades.

The reason is simple. Pay is primarily based on the piece-rate system, which means nobody gives you something for nothing. If you can't pull it all together with a big pile of wood each week, you fail.

With a Union shop, the employee gets paid for his coffee breaks, equipment breakdowns, etc. The woodsman, as a rule, does not get paid for these non-productive periods of time. Therefore, a woodsman must really know his job and be really productive during his actual working hours.

Let me give you another example of putting it all together. If any of you ever have cut firewood, you can appreciate the effort it took to get 7-8 cords of wood manufactured and home each fall. A typical two-man crew of woodsmen will cut 2,000-3,000 cords each year - a vast difference.

Another example of good woodsman's ability is as follows:

Scott Paper Company has stated that their average woodsman earns \$24,000 per year, plus a \$12,000/year fringe benefit package. It is obvious Scott places a high value on its woodsmen, based on the \$12,000 fringe benefit package.

Wood harvesting, by its very nature, demands quality employees. Those who have been spoon-fed do not belong in the woods. The job is exact and demanding, and pay is based on ability, nothing else.

In my opinion, a capable woodsman is a man to look up to. He is where the buck starts in the manufacturing process.

In summary, I would like to repeat a famous saying: "The few, the proud, the Marines." A saying for woods workers could well be, "Few would like to, fewer are capable."

Thank you for your time.....

SAFETY AND WORKERS COMPENSATION

Presented by

John Menario

Government Services, Inc.

for

Blaine House Conference on Forestry

December 6-7, 1984

Remarks of John Menario - Blaine House Conference on Forestry

Thank you Mr. Speaker. I know the hour is late, but I suspect a few of you might have sat hoping that I might say something revealing about Worker's Compensation.

Let me just expand one moment on what the Legislature and John Martin's special commission asked us to study because there has been some confusion about it and also indicate that, although we were limited in what we had to study, we did call attention to the Governor and the Legislature of an area that really deserves very serious attention. Before I do that, however, I'd very much like to compliment the Commissioner, Dick Anderson, the Governor, and the Speaker who have recognized that the importance of the forest industry is the importance of the future of Maine. To see all of you gathered here today and to discuss openly a number of issues that are concerning you and your future is heartening to me. To recognize the Speaker, with the kind of time commitments that he has, spending so much time here is also encouraging because out of these dialogues, in my judgment, will come answers that are crucial to Maine's economic future. I extend that compliment to all of you as well.

When we were asked by the Governor and the Legislature, through John Martin's effort, to study Worker's Comp, we were not asked to look at the issue of rates or benefits or delay in processing claims or any of those other issues that John Martin and his select committee have been studying. We were asked to study a very narrow dimension of the problem, but one which had to be looked at and had to be put to bed. Put in the basic language, we were asked to look at whether the insurance industry was ripping off the State of Maine in the way that rates have been set. Those of you who have followed the issue addressed here today, have heard a lot of people point the finger in a lot of directions. I don't really know in what direction the finger ought to be pointed. Our limited study suggested there is no one culprit, but the problem is real.

The cost of Worker's Compensation in the United States went up 272% from 1971 to 1980--that's dramatic. In Maine, it went up 883% That is a major problem of major proportion. We were, therefore, asked to study whether a part of that adverse rate might represent the insurance industry having unreasonable profits; whether the insurance industry may be reserving money beyond what is necessary; or whether they have investment practices that have provided them a major return on investment from premiums paid that are awaiting the payment of a claim. Once we were asked to study those three issues, we were then asked whether there may be a better way to run the railroad, a better structure, a better way of selling the product. There are several states who no longer allow private insurance companies to sell Worker's Compensation.

One of the questions that we had to address is whether Maine

had now reached point where it may wish to consider having an exclusive State fund, putting Maine exclusively in the insurance industry and requiring that all the private carriers leave, as has already happened in six states. We spent ten months studying the issue and what was important to me is that our findings were unanimous. The labor rep, the business rep, and my neutral chair all agreed with the findings that we submitted back to John Martin, his committee, the Governor, and the Legislature.

I do not intend to present you with all of the findings and the reasons supporting them, but I would let you know that a report exists.

Let me, though, go to the major statements. One, in a very general sense, we did not find that the insurance industry was ripping off the State of Maine. But we did find that they have such an old and archaic method of coming up with a rate that they have to require State approval. I'm sure all of you may know that Maine happens to be a state where the insurance company doesn't set the rate, the rate is set by government, it applies to every company in the State. Once set, companies charge a single rate fixed by government.

I'd just ask you to think a minute of how effective your business today would be (and I don't even know what business you're in) if your product and its price was set by government and if the process required that, once set, all of your competitors had to charge the same price. We reviewed the situation and, after ten months, we concluded that the State should deregulate Worker's Compensation rates. There is no longer any reason to require government control.

This is obviously going to be an issue of great importance in the coming session. I don't know what legislation will be filed, but there are 179 companies in Maine that write Worker's Compensation. It is, therefore, not a monopolistic system and, in our collective judgments, the State should not fix the rate. It doesn't in any other field except monopolistic fields. Central Maine Power is an example where there is only one major supplier. The State fixes the rate and regulates it and rightly so. We don't fix the rates any longer in auto insurance and, if you followed any of the recent press, look at the various rates that exist. It is a buyer's market, a good smart consumer can shop and find a good product. Can you on Worker's Comp? No.

There is a view, however, that says, if the rate is no longer regulated, it will skyrocket because the industry has said repeatedly that the rates are not adequate. We studied that issue because none of us want to see a skyrocketing of Worker's Comp. rates given the fact that they're already one of the highest in the country.

We spent a lot of time looking at the State of Michigan. In 1982, Michigan had the highest Worker's Comp rates in the United

States. They deregulated the rates, but before they deregulated the rates they imposed on the industry a 20% reduction in the rate by law. The industry said "Don't do that, we cannot afford a 20% reduction in the rate."

The legislature did it anyway. Then they deregulated the rate and let the industries decide the price of its own product. Would you believe that rates went down another 20% in the State of Michigan. Their manual rate went from \$4 to \$2. Competition in the market place worked.

You cannot set a rate by government standard and have it one rate and have it uniformly applies. Companies have different overheads, different skills, different efficiencies, and when you regulate a single rate, you subsidize the inefficiencies of the industry.

There are other things that we have recommended in the report, but that is the most significant. But I hope many of you follow the issue because it is complex. It's not really the fault of government or the insurance companies, or unusual benefits or limitations--it is all those things. In our major finding, we then said to John Martin, his committee, the Governor, and the Legislature, that if you are really concerned about price, then you ought to look hard at the issue that influences it. We called to their attention, which I suspect many of them knew, that when you get down to analyzing the cost of Worker's Compensation, you cannot escape the fact that 4% of the claims in the State of Maine represents 80% of the cost to the system--4% of the claims. Those are partial and current disabilities and death. If we're prepared to live with Worker's Comp rates as they are, so be it. But, if we're really interested in doing something about the cost, then we have to look at where 80% of it goes. Therein lies the issue of cost, but it's tough, it's hard politically, it's hard emotionally, and I think it's going to take the collective skills of a lot of people in Maine and a lot of statesmanship to solve that issue.

Thank you very much.



A BRIEF HISTORY OF NORTHERN WOODS LOGGING ASSOCIATION

Presented by

Michael St. Peter

North Woods Logger

for

Blaine House Conference on Forestry

December 6-7, 1984

## A Brief History of Northern Woods Logging Association

One of the most challenging problems faced by industry in Maine is the cost of providing worker's compensation protection. On October 7, 1972, in response to this problem, a group of wood operators, about 50 in all, met to discuss the feasibility of creating an organization that would provide self insured worker's compensation coverage. A legal perspective on the issue was provided by Attorney Charles H. Veilleux. Also in attendance was State Representative Raymond Faucher.

The group reviewed the existing worker's compensation regulation in great detail. Nothing within the law at that time gave any group or organization the authority to provide self insured worker's compensation protection for members. State Representative Faucher promised the group that if another meeting were held to discuss the issue a representative of the Maine State Insurance Department would be present. By a unanimous decision the group decided to hold another meeting within a month to discuss creating a self insurance group. The group took the name Jobbers Associates and assessed dues of \$50.00 per member to defray various costs and expenses.

On November 4, 1972 the second meeting was held. Mr. Everard Stevens, the Chief Examiner of the Maine State Insurance Department was the featured speaker. Mr. Stevens informed the group that a self insurance law existed for large single employers (large corporations, governmental institutions, etc.) but that before a group such as Jobbers Associates could provide self insurance protection a special bill would have to be drawn up, passed by the Legislature and signed into law. It was decided that Attorney Charles H. Veilleux would be directed to begin work immediately on a special bill.

Also during the second meeting the group elected a provisional Board of Trustees to oversee the activities of the organization. Members of the Board included Donald Morissette, Jean Denis Poulin, Glenn A. Lumbert, Marc A. Morin, Jules Bedard, George Therrien and Charles H. Veilleux.

With the assistance of State Representative Douglas M. Smith (now the Association's legal counsel), a special bill # H.P. 1345 - LD 1779 was drafted and heard by the Business Legislation Committee in March 1973. The bill passed through the committee without opposition and was then passed by the House of Representatives and the Senate. The bill was signed into law by Governor Kenneth Curtis June 26, 1973.

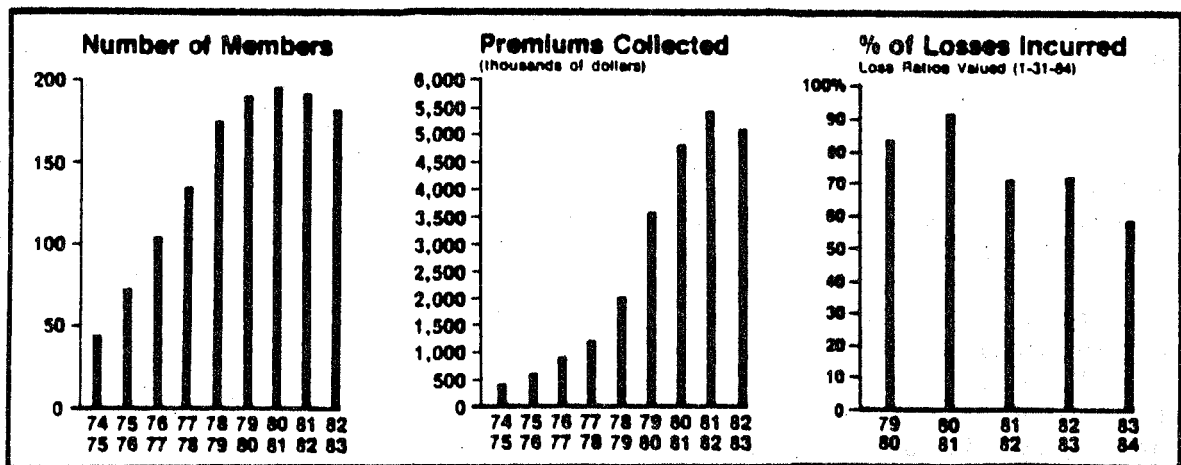
With the appropriate legislation passed the "Jobbers Associates" continued to pursue the creation of a self insurance group for worker's compensation within the timber industry. Throughout the fall and early winter of 1973 representatives of insurance agencies and companies made presentations to the group. Mr. Alvin J. Sims, President of Self Insurers' Management Corporation of

Boston offered the services of that company and, on January 19, 1974 Mr. Sims met with the provisional Board of Directors to reveal the plans for Maine's first group self insurance program. A general meeting of members was called February 2, 1974 where, by a unanimous vote the group authorized Mr. Sims to make preliminary contact with the Maine State Insurance Department and I.A.C. and advise them of the organization's intent to form a self insurance group.

A non-profit corporation called the Northern Woods Logging Association was formed with the sole purpose of providing worker's compensation protection for members. A Certificate of Incorporation was filed with the Secretary of State on April 8, 1974 and recorded in the Registry of Deeds at Skowhegan # 03709, vol. 744, page 175.

Numerous Directors' meetings were held throughout May and June and as a result of these efforts and many others, the Association was given permission by the I.A.C. and the Maine State Department of Insurance to begin operations as a self insurance group on June 28, 1974. Reinsurance coverage began on that day.

Since that time the Association has grown and developed. It has become very active in efforts to reduce painful and costly accidents by promoting safe working practices. As a result of these efforts the Association has grown to serve over 175 members while collecting premiums of nearly \$6,000,000 each year. These charts illustrate the growth of the Association.



One of the important benefits of being a member of the Northern Woods Logging Association is that a portion of compensation premiums paid into the fund may be refunded. For the years 1974 through 1983 premium refunds will average 13.5%. The refund percentage reflects the savings for the group as a whole. Individual members may have been refunded more or less money depending on accident records.

The hard work and cooperation of all concerned members, workers, safety personnel, and the Board of Trustees has made the Association what it is today.

Penn General Service Corporation  
Claims Service

The claims department consists of the main office in Jackman and offices in Falmouth and Caribou, Maine. Claims are received by Northern Woods and passed on to Penn General for processing. Payments are usually made within two to three weeks.

Penn General's claims personnel are familiar with the forest products industry and work closely with rehabilitation specialists to insure injured employees receive the best care and earliest return to gainful employment. Computer print-outs are mailed quarterly to help inform the members of the cost of claims.

NWLA "SAFETY" SERVICES

The safety services are an important aspect of membership because this is the most important factor in reducing costly injuries. Northern Woods employs three full-time safety employees: a safety director and two field representatives, who will provide you with the following services:

- A) Safety meetings, including use of safety films promoting safe work habits.
- B) Video equipment to analyze your operation first hand and follow up discussion with supervisors and employees.
- C) Eight hour "Standard Multi-Media First Aid Course" to members and employees.
- D) Regular on site safety inspections.
- E) An annual membership safety seminar.
- F) Safety equipment at discounted prices.

A MAINE WOODCUTTER TALKS ABOUT SAFETY IN THE WOODS

Presented by

Mark Hardison

Logger

for

Blaine House Conference on Forestry

December 6-7, 1984

Good Afternoon

I'm a woodcutter. I'm that lowest form of life created on this planet. I'm the guy who goes to work hung over each morning and stays drunk all weekend.

I'm the same one who won't go to work in the Northwest part of the State in logging camps, because my wife thinks I will be over in St. Georges or St. Zack partying all the time. Yeah, that's me, the typical Maine woodcutter.

I'm supposed to talk about safety in the woods. In order to get a perspective on today's safety needs, I went back a number of years to look at past safety practices and the ways men used to cut wood. The past safety standards were very lax, but it seems that the proportion of workers hurt was no greater than now. Why?

In attempting to find out why, I questioned many old-timers. Men 40-50 years old. That's old for woodswork.

My uncle has been in the woods full time since he was fifteen years old. He has 30 year experience in the woods. I consider him an expert as well as a great teacher in the art of cutting wood. He has never had a serious injury. As he told me, "I've nicked my fingers a couple of times, nothing to even talk about." In the 50's, when my uncle started woods work, there was practically nothing in the way of safety equipment: no hard hats, safety pads, or steel-toed boots. Wood was mainly cut with a buck saw and limbed with an ax. Some cutters did have the new-fangled chain saws, Distons, Homelite, etc. These 40-50 pound man-killers were not readily available on the local market. Brute strength prevailed.

Ninety per cent of the cutters were far back on terrible woods roads and highly inaccessible to medical care. If you got hurt, even a small insignificant wound could become severely infected, or worse, in the time it would take to get medical help. The first priority in those days, to survive was "STAYING ALERT, PAY ATTENTION, WATCH FOR WIDOW MAKERS". Don't let the logs roll on you in the yard. Don't bull too much, or you'll get cut with the axe. Work at a safe steady pace. A favorite saying was "A cross-cut saw doesn't kick back".

My uncle told me, "We certainly worked a lot longer 25 years ago than today, but we paced ourselves. 15 hours a day in the summer was not unusual. Today, however, there is no way a man could work a chain saw safely for 15 hours. He'd either get cut or lose his alertness from fatigue and get hurt in some other foolish way. I think companies should help woodcutters out by paying hazard pay, when we have to work in unsafe areas, such as blowdown areas, mountainous terrain or on rights of ways where a man is usually a long distance from any help."

A 50 year old wood cutter I know said he thought the winter time was dangerous, because it was slippery underfoot. You can't see what's up in the trees when snow is on them, nor can you run fast enough to get away if something is falling or coming at you. And with snow on the trees, nobody could hear you yelling for help if you were hurt.

An old timer from Kingman "retired now", worked with horses all his life. 15 years ago, his nephew persuaded him to give up the old ways and come work with him driving a skidder. He worked for one week and never got on another one after that.

He said "That skidder will kill a man. If the machine doesn't break your back, it will certainly make you deaf. I had to hurry so much getting back to the chopper, then back to the yard with a hitch that it's a wonder that I didn't jillpoke myself, or run over the chopper in the process."

One of the most interesting statements made to me was from a woodcutter from Enfield. I asked him what he thought of safety in the woods compared to 20-30 years ago. "Well, basically," he said, "things haven't really changed much. We are paid at a low rate that means we must produce or cut lots of trees in order to put a little food on the table." Piece rate means a woodsman must be a superman in order to survive. No mistakes are allowed, because so many men are waiting to take your place, you don't dare slacken off any. That was true thirty years ago and still is today. Cutters are burned out and unable to live up to paper company standards by the time they are 50. They used to get replaced with younger men. Now they get replaced with both younger men and machines. We oldtimers are just put out to pasture like an old workhorse. I call it the "no deposit, no return woodcutter". They don't care how safe you are as long as you produce.

I have to say that all facts support the notion that woodsmen are very expendable. I've had a few experiences myself in which safety was bypassed for production.

In 1980 I went to work for Megantic MFG, Lac Megantic, Quebec. The cutting area was on Seven Islands controlled land in Oxbow Township 30 miles northwest of Rangeley. This is very mountainous and rough terrain. A year before a woodsman got killed on this job. Our cutting location was on West Kennebago Divide, Whitecap Mountain.

From our yard to the back of our cutting area, the distance was 4600'. It was very steep terrain. The yard was located at 2600' elevation and the back of our beat at 3500' elevation. It snowed up there off and on during the last of September and continued into October. By October 15th, there was 4-6" of snow at the back of our beat, 3500' elevation and 2"-3" at the yard. My partner and I thought it was too dangerous to work in those

conditions. We left about October 20th. Megantic MFG and Seven Islands said the top of the mountain would be cut before anybody got moved to the valley.

The Canadian cutter who worked beside me was left with the job of picking up the wood in the hard spots up on the mountain. His name was Laurent Richard. Two weeks after we left the job, some bad news came. Laurent Richard had been killed by a tree up on the mountain. The snow was deep and he couldn't get away. He was found when he didn't come down for lunch on time. They had to have that wood. He was a Canadian in a slave labor situation and didn't have much choice. He was the second man to die on the job in two years. No deposit, no return.

Lee Bennett was not killed in the woods. However, due to economic conditions he was hurt very badly. The morning was stormy and freezing rain was on all the roads. St. Regis Stud Mill Road was very slippery: like a bottle. Lee and his partner were going to cut wood that morning. That was dangerous enough in itself because they knew the trees would certainly be slippery but the main problem they faced was just getting to work. They had to work to make the skidder payment.

Likewise, Duane Jordan, working for his father, had to get that tractor trailer load of wood to the St. Regis stud mill. Jordan's attitude, like most woodcutters, is one of "I'll work no matter what. Only the lazy ones stay home. I'll show them just how much I can produce." Neither Jordan or Lee Bennett made their destination that day. The tractor jackknifed and rolled over onto Lee Bennett's pick up, pinning him and his partner. Surely the economic factors involved with woods work and the never ending need to cut as much wood as the body will let you played a hand in this accident. Delimber payments, as well as truck, loader and skidder payments are not cheap and a man needs to work 80 hours a week just to stay even. Rising insurance rates, due to foolish and unwise moves, such as driving loaded trucks on glare ice, are not usually the thoughts of many woodcutters or contractors. "An ounce of prevention is worth a pound of cure" doesn't seem to apply in the woods.

This past fall a woodsman was killed on a Great Northern Paper job at 5th St. John Pond. He had on his safety equipment, even his safety pads. His chain saw kicked back cutting the artery in his upper leg. His partner found him 30 feet from where he was injured. The man was still holding his leg. He had bled to death. His name was Real Morin, age 46, from St. Camille, Quebec.

When I think of that poor man and his family I think to myself "that man was me". That accident could just as well have happened to me or my 3 brothers, all woodsmen, or any woodsmen, any day working in Maine. It makes you humble.

The last few years have seen a steadily growing problem between contractors and their workers and between paper companies



and their contractors. It seems to most of us working class folk that the contractors' main worry is "how do I keep my Worker's Compensation rates lower?" instead of thinking "how can I keep my crew working SAFER?"

Logging contractors are mostly of the mind that if you don't do things their way, at their price, when they want it done, then you are a no good commie, hippie, troublemaker. They continually tell their crews that they know whats best for them and that the Worker's Compensation rates are too high.

So they cut corners at every opportunity and twist the woodsmen's arms to make them accept it. Of course, I can't go on without saying that the paper companies are most certainly twisting the contractors' arms as well.

Probably much harder than ours are being twisted, but anyway, in 75% of the so called independent contractors' operations today you have a choice: 1. you can stay on the bosses' Worker's Compensation system, but at less money than before, or 2. buy your own cheap insurance with that extra \$2.00 the boss will give you, 3. become your own independent man or be subcontracted by that gracious boss of yours. For an extra \$2-\$3.00 you get to buy your own cheap Worker's Compensation insurance, "preferably, Tony Hall" from Lewistown. You get to do your own payroll taxes for free. Because you are independent you lose your unemployment, but that's ok, because that extra \$2-\$3.00 is going to make you rich, right?  
- WRONG.

After all this foolishness the worker gets hurt and in the end he ends up suing somebody because the "great" insurance didn't pay the bills and he has no real weekly compensation. Who does he sue? The subcontractor, contractor, woods broker, paper company? Who takes any responsibility for this man that gets hurt? The paper companies have certainly insulated themselves well on this one.

This is just part of the story. Logging contractors continually falsify wage earnings to get out of paying any taxes or Worker's Compensation on them. The average price paid for tree length spruce is \$19-\$20.00. Out of that money the contractors regularly give \$10.00 to the skidder, \$2.50 to the saw, \$2.50 for travel, so they only have to pay tax on \$4-\$5.00 per cord.

\$10.00	-	skidder		
2.50	-	saw	\$19-\$20.00	pay
<u>2.50</u>	-	travel	\$ 4-\$ 5.00	taxable
\$15.00				

That is the 4th way to beat the system. Truth is, it beats the working man and fattens the contractors. If anybody should question or disagree with the boss on questions dealing with this issue he is fired or forced out of the woods and black balled.

For 3 1/2 years I was employed by a logging contractor working on St. Regis land. I cut more wood than anybody else in our crew for 3 years straight. The contractor was one Merle Fletcher from Orrington, Maine. In 1983, he tried to sucker us into subcontracting under him and into buying Tony Hall insurance. He threatened us, he gave us his sob story, he tried to get us to go along with the crowd. We wouldn't subcontract. He became very angry with many of us in the crew, especially me. He then changed our saw rates and travel rates, telling no one. Then last spring he fired me and wouldn't hire back 5 others. He bought a harvester and eventually has hired back 4 of the others.

Because I was the most vocal, I didn't ever go back. Now I am told some of the crew has been forced to subcontract. Fletcher still gives a chain saw allowance to the delimeter operator even though this man hasn't used one for two years. When the worker complained, Mr. Fletcher said that he was going to continue giving him that chain saw allowance whether he liked it or not. That fattens Fletchers pocket and with 20 crew members, every little bit from each one adds up to a big savings for him; less coverage for them.

I'm an avid runner and run road races a lot in the summer. It's very healthy and does relax you to a great extent, after a crazy week of cutting trees. However, while working for Mr. Fletcher even that was viewed by him as a waste of time and valuable energy.

On a dozen occasions, Merle would look at me and say, "you'd be better off coming down here and cutting an extra 15 cords a weekend instead of wasting your time doing that. Cutting wood is better exercise anyway".

Did he ever hear of 'burn out'? Does he really care? The above is just an example of contractor-worker relations which makes for an unhealthy and unsafe working environment.

The faster men work in the woods, whether to please the boss, or just to cut more wood to make their own payments, then the riskier it becomes. The chances of getting hurt or killed increase tremendously. Treat your employees as men, not machines, or slaves, to be replaced at your discretion.

The system now lets the large paper companies shift all responsibility for Worker's Compensation and safety issues onto the logging contractor. For the contractor to survive, he must produce as vast a quantity of wood in as short a period of time as possible with little thought to safety.

Most of the time he pushes his crew, sometimes a machine and/or operator, to the ultimate limit. If the machine breaks,

fix it. If the man gets hurt, what the hell, hire somebody else as there are certainly many unemployed woodsmen, on both sides of the border.

It's a vicious circle. The paper company pushes the contractor and the contractor drives his crew. The end result is many strained backs and a high number of injuries.

Advertisements in Maine newspapers this year confirm my belief that all these leeches want is hot bodies to cut lots and lots of wood. Do not apply they read unless you have 6 months experience and can cut 70 cords per week. Can a 50 year old do that? He could cut half that much, ok, and probably do a good job to boot, but that's not the way things are done in our dwindling Maine forest today. Maybe our Maine Forests are in such sorry shape today because as in one old famous sentence, "you get what you pay for". Woodsmen get no more money to do a good job in the woods than to do a half fast job.

And when you're after that spruce or fir in a thicket, then 9 times out of 10 a dozen trees bit the dust to get 1 or 2. A good selective cut area where a man should reach in with the skidder and pull out one tree at a time ends up being flattened. Why? Because in order to make any kind of a day's pay you must get out and limb 100+ trees a day. Every day. It cannot be done when you have to slow down or do a good careful job. The forests would benefit and so would the health of the workers but that's not the way we cut wood today.

Years ago, this state seemingly kept better records of workers' injuries and deaths than they do today. By that I mean that who ever investigated the accident did so in great detail, explaining on paper exactly how the worker got injured, what time it was, etc. The problem today seems to be in getting the information, then using it to prevent future incidents. I'm sure that insurance companies, get, on a regular basis, the injury statistics of Maine woodsmen. Why is it so difficult for everybody else to get information? Hazardous work in the woods seems to be played down by everybody: the paper industry, state government, press, insurance companies, everybody except the woodcutters. And, in reality, most of them shrug off the accidents as an everyday occurrence, something you get used to.

When workers do get hurt or killed the common excuse seems to be that he or she was "inexperienced" and that said person "couldn't cut enough wood to keep a fire going anyhow" so no great loss. I've never seen much digging or investigation into the real cause of the accident. The consensus seems to be the insurance company has the big bucks, so let them pay out.

SAFETY and skill go hand in hand. The woodcutter who can do the best job is usually the safest. Most woodsmen will agree that if you're a so called "good woodcutter", you will have a certain rhythm or flow that goes through you, the machine, and the trees

you're cutting. Everything seems to click together or work very smoothly. Production is usually better, the hard jobs become easy, the dangerous ones are done safely.

The question may be asked, "what is it that breaks this delicate rhythm and leads to injuries or even death in the woods?"

1. Possibly inattention. You should leave your problems at home when you're at the workplace, because woodwork requires your full attention in order to stay alive.

2. Unsafe equipment or lack of safety equipment. Many, so called "independent woodsmen", still do not use all the safety equipment available today, either because they can't afford the safety equipment, or because of good old Yankee stubbornness, they just won't use safety equipment.

3. Another cause can be being forced, in a roundabout way, to cut wood in a very unsafe work location, as mountains, or rights of way by yourself.

When everyone talks about cutting wood they are basically talking about men doing many hours of hard work under dangerous conditions, trying to do the job as safely as possible. As a rule, we'll cut wood in rocky ground, on steep terrain, rotten wood in unsafe blowdown areas or many other bad things without even a second glance. It's our job. Doing it safely is always on the woodcutters mind. To put those thoughts into real life practice is the goal everybody in the industry should strive for. For too long, woodsmen, contractors and paper companies have been fighting with each other. Everyone hates the other and no constructive line of communication has ever been opened up in Maine to try to solve some of the problems that may result in accident statistics coming down. The time for a change is very long overdue. I don't want to end up as a statistic in the Bangor Daily News or State Labor Department. I surely want my two boys to have a better and safer chance in the woods than what they'd get today. Actually, I hope they stay out of the woods but I think the disease is hereditary and probably they'll do as I did.

Safety must start from the top; rules set and enforced and passed down to all the men. The boss, industry representatives, and woodsmen, should share information, exchange ideas, helping each other make the job easier, safer, and hopefully increasing production. All safety and no production mean that any logging outfit will soon be out of business. As well, all production and no safety can ruin a logging outfit. The most efficient way to cut wood is the safest way 9 times out of 10. Production and safety can be looked at in the same way. You might discard safety for a while but in the long run you cannot make it by sacrificing safety for production.

What wood is left in the state of Maine will be cut either by machine or by manual labor in the coming years. Unless every

contractor gets many new harvesters, delimiters, and slashers, most of the wood will be cut by men. In order to keep an able, professional, labor force in the woods, steps must be taken now.

It is only fair and right that all woodsmen should be covered and protected by worker's compensation. The farce that paper companies and their puppet contractors are now pulling off in regards to the contractor, sub-contractor, sub-sub-contractor is a mockery of the working people, and shows the low, low value these companies and contractors place on their employees. The rates of payment for the cutting of wood as governed by the contractor is in itself a joke. These employers, in their efforts to cut costs, cut more wood, stay in business, and make bigger profits have avoided the payment of the right amount of Worker's Compensation monies as well as payroll taxes for many years. By the falsification of the worker's real wages these good ol' boys accomplished a couple of things. They have, in many cases, reduced or completely eliminated any type of Worker's Compensation payments. They have left the workers with the undesirable task of paying in a large amount of taxes at the end of the year to the I.R.S. because the contractor didn't take out anything. They have certainly neglected any type of responsibility for the welfare of the individual or his/her family in the event of an accident or death. Not all are this mean, but today with the big squeeze being put on by the large companies, the majority of the logging contractors in order to survive, are offering different, questionable, programs in the worker's compensation and tax department. It'll keep the questionable logging outfits afloat just long enough to flatten the rest of our state. Then they can get out of the business quick and they'll never have to worry about "what's his name" they hired two years before.

This scheme that these logging contractors are pulling off is nothing more than fraud. The falsification of true wages is detrimental not only to the welfare of the worker and his family but it serves to decrease the amount of money flowing into the Worker's Compensation pot of gold. It seems to me that this loss of money that is supposed to be for Worker's Compensation distribution would tend to keep the rates going up. The collusion between the large paper companies and the contractors they deal with is for real when it comes to saving money at the workers expense. I have called this the "trickle up theory", for the last 5 years. It's always been much easier for the contractors to take from their workers, most of the time without the men knowing they've been had, than it is trying to get more money per cord from the paper companies. 75 years ago, the workers of Maine had no protection, safetywise or in the form of Workers Compensation protection. If I got hurt on the job back then, my only course of action would be to sue the company I worked for; wait 3 or 4 years for a settlement, and have no job retaining. The money received would be very small and the families would end up carrying the major economic burden of the injured worker.

It seems today that with all the 'flim flam' over the question of "who's the boss", and the continuing sub-contractor, sub-sub-contractor, sub-sub-contracting deals, the only recourse the workers will have is the law suit.

I believe that the problems workers in 1910 faced when confronting the Workers Compensation issues are worth attention. I've taken the liberty of copying parts of a book dealing with that. The book is State of Maine Employment Statistics, 1910, pages 268-271.

"The workman injured in his employment, must of necessity bear the burden of his injury. The pain and suffering are his, and no system of law can change or shift that burden. But if that injury be not one which he has willfully brought on himself, but has arisen from the hazard of his work we are unanimously of opinion that the workman should be placed by the law that he shall have the right to call for and receive such prompt and certain compensation as will keep him and those dependent on him from destitution. We are further convinced that in industries in this state as they now exist, the workmen are not able to solve this accident difficulty for themselves. Were the laissez faire system of political economy working without friction, a workman engaged in hazardous employments would command and receive wages high enough to enable him to carry the risks of trade accident and insure them - and there would be no problem.

The accident relief burden reflected in wages would be an element in the cost of the industrial product which the consumers of that product must pay. But that theory does not work out. Wages are not relatively higher in the most dangerous trades. The accident risk is a minor element in fixing wages and the workers in dangerous trades are in the majority of cases not able to carry adequate insurance, and in a large proportion of cases seem to carry no insurance. In view of that fact, we are convinced that the wise policy for the state should be to throw the burden of accident relief in dangerous trades on the industry in another way. Though the workman cannot shift this accident burden upon the cost of the product or upon the trade, the employers can, through their power to fix their selling price with reference to the cost of replacing and repairing machinery; so we would have them make an element of the price of the product the cost of relieving the injured workers of hazardous industry." "The toll of human life and limb being exacted by modern industry has reached such startling proportions as to be a serious menace to our national welfare" says American Industries in a recent editorial article. That it is so recognized is evidenced by the increasing number of laws made to protect life and health, and the marked tendency shown to fix legal responsibility for accidents. "Investigation into the causes of this drain upon our national vitality has proved conclusively that a very large percentage of industrial accidents can be avoided by the adoption of proper preventive measures. From the nature of the case it is plain that although the employer and the employee must work together to

attain the desired end, of reducing accidents to a minimum, the initiative should come from the employer".

"When an accident occurs to an employee, whether through his own negligence or not, an injury is done, not only to the physical body of the one injured, but in case the injured party has a family, or is assisting in the support of others, they also are compelled to suffer through the inability of the one injured to perform his natural duties and fulfill his obligations toward those whose care and well being are in his or her care and unless adequate compensation is paid; either by the establishment where the accident occurred, or by the state out of a fund raised by taxing the various industries according to their liability for causing accidents, or friends and relatives come to the rescue, the one injured, as well as those dependent on his or her earnings must naturally become a charge on the community. As long as any individual, firm or corporation makes a profit on any man's labor, and no man or corporation would employ anyone unless that was the case, the fact that a profit is made is proof conclusive, that the employee is not paid for the risk he runs of being injured during the time he is employed consequently, it is neither just nor equitable that he or his family should suffer by reason of accidents which occur to him owing to the hazardous nature of his occupation. "The family is the central sun around which our body politic revolves, and it is the first duty of the state to conserve the happiness and well being of the family."

"An accident fund ought to be created by the state; this fund to be raised to taxation levied on all industries which menace the life or limb or health of the employees, each line of industry being taxed according to its liability for causing accidents, and the liability of each separate line of industry to be determined by securing the necessary statistics." (end of citation)

Here are some examples of the statistics gathered and published in the same book, in 1910.

#### December 15

Melvin Pineo, a young woodsman, was chopping in the woods near Eagle Lake when the tree on which he was at work, fell on him, crushing him to death. A mother survives him.

#### January 20

Napoleon Labe, 69 years age, of Biddeford while chopping in a timber lot at lower Biddeford, was struck by a falling tree. His skull and chest were crushed and hip broken. He died in a Biddeford hospital.

January 25

William McLain, age 37 years, of Northfield while working in the woods near his fathers lumber camp in Township 37, was instantly killed by a falling tree which struck him on the head.

February 6

Eddie Hemore, 23 years of age, while unloading logs from a car into G.N.P. companys pond was swept into the pond by rolling logs an held there until he drowned. A widow and child were robbed of their means of support.

February 9

Andrew Durgin, a lumberman, was struck in the head while loading logs at East Watertown and killed instantly.

March 9

Charles Martin of Grand Falls was caught between a stump and log which rolled from a sled and killed him instantly.

April 8

It was reported at Old Town that James Donovan of Shediac, N.B., was drowned a few days before, while crossing Pamedumcook Lake. He, with his foreman, horses and other members of the lumbering crew, were coming out of the woods after the seasons operations. The ice wasn't strong enough.

August 23

The body of Ralph Martin arrived at Old Town. He was struck by a falling branch which was torn from a tree that was struck by the tree upon which he was at work. The accident occurred on the North Branch of the Penobscot East Branch.

The students coming out of high school are seemingly much smarter than we would give them credit for. Joe Krug from Washington County Vocational Technical Institute complained that the student enrollment at his two schools has decreased the past few years. More money from the state isn't going to put more young men or women in the schools. I say that they are indeed smart enough to see that there is no future in the woods business now or in the near future unless changes are made. The students are indeed much better off working inside the mills than they would be thrashing around trying to seek out a living in the clear cuts.

However, if the companies, contractors, workers and state, could sit down and discuss the problems at hand, maybe things



could improve. How do we cut down on the accidents and deaths, while raising the status of working in the woods? Difficult, yes; impossible, no.

#### HOW TO IMPROVE WOODS JOBS

1. Keep a line of communication open; work as a team: paper company, contractor, woodcutter.
2. Go over all safety rules together. Woodcutters should be included in all rules making committees that deal with woods safety.
3. Any studies already done or in the process of being done that deal with the safety of woods tools such as saws, chains, pads, hard hats, chainbrakes, should be sent free of charge to all woodcutters working in this state.
4. Everyone that wants woods employment should be given a job, or at least tried out in a job and allowed to work at his or her own pace with no minimum cords per week required.
5. Allow the older workers of a crew the chance to run the new harvesters, delimiters or slashers. Don't just throw them away. If they still want woods employment, find them a job they can do at 50 years of age. Men certainly can't cut the same amount of wood at 50 years as they could at 30; but most still want to be associated with the woods.
7. Apprentice new woodsmen for at least six months after they graduate from logging school. Certainly each one will learn from the other. Older, experienced woodsmen teach new woodcutters.
8. In hard chances, the men should either get additional hazard pay or get paid by the hour.
9. Built-in-incentives for the workers to be more careful. An example: If North Woods Logging or other insurers gives refunds to their policy holder for being safety minded and accident free, shouldn't the crew that has been careful and conscientious while working for this guy get some part of the refund?
10. Make sure all the woodcutters are covered by a workers compensation policy. The State should investigate complaints.

11. Every month the contractor, paper company representative and crew should get together and talk of safety aspects in their work. Help each other out making the job better, safer, more productive.

MOST IMPORTANTLY:

12. AN ADEQUATE WAGE should be paid so woodsmen won't be burned out at age 40. Better pay would let the worker work safely, be healthier, work more years, and do a much better job in cutting the timber.
13. A comprehensive computer file by the state should be kept on any accident or death in the woods. It should be very precise and available to the public.
14. Retraining of injured woodsmen so they can be and are put in other jobs that they can do in the woods or whatever.

I hope the State, industry, other woodsmen and interested persons can and will make a sincere effort to change the working ways in the woods and to lower the Worker's Compensation cost, while protecting the workers rights. Hopefully my testimony will help the cause. Thank you for allowing me to speak in Augusta in December as well as putting in my written statements today.

Sincerely,

Mark A. Hardison

MAINE'S FORESTS  
IN THE GLOBAL CONTEXT

Presented by

L.J. D'Amore, President

L.J. D'Amore & Associates

for

Blaine House Conference on Forestry

December 6-7, 1984

Thank you for the opportunity to be with you this evening.

This morning we heard about the problems of imported Canadian lumber -- the domination of Canadian companies in the U.S. pulp and paper market and the importation of wood products made in Canada from Maine logs. This afternoon we heard about the threat from Canadian labour, so I guess it is appropriate that this evening you have a speaker imported from Canada.

As I prepared my talk for this evening, I was reminded about the story of the optimist and the pessimist. The optimist believes we are living in the best of all possible worlds. As for the pessimist -- that's what worries him.

Much of what I have to say this evening may not be pleasant to hear, particularly as an after-dinner talk. But I would ask you to consider my remarks within a definition of optimism as outlined by Norman Vincent Peale, the father of positive thinking. According to Dr. Peale, optimism is "to see the worst in complete realism, but still to believe in the best". When you have what it takes to deal with the harsh facts, and still keep on believing in good outcomes, you are what Dr. Peale calls "a tough minded optimist".

With this concept of optimism in mind I will begin my talk.

Recent reports regarding the state of the world's forests have not been encouraging. A sampling of issues across Canada illustrates some of the more serious problems.

A report conducted by consultants for the Federal Government in Canada concludes that without considerably greater effort in forest management and protection, and the better utilization of the forests in the long term, softwood timber availability in British Columbia could decline by as much as 30% from current levels.

In a completely separate report of Environment Canada, it was suggested that timber shortages in B.C. would occur within five years and become widespread in another twenty years. The result would be the loss of 30,000 jobs in the forest industry and another 30,000 in related industries.

In Ontario, the report of a Ministry forester of twenty-seven years has been critical of past forest management regarding inadequate reforestation practices.

In Nova Scotia and New Brunswick, while 1984 may turn out to be one of the best years ever for pulp and paper mills, serious timber supply shortages have begun to loom just over the horizon in both provinces.

Supplies are threatened as well by the spruce budworm. Efforts to control the budworm with chemical spraying are often met with public opposition.

While long-term supply is in jeopardy, short-term demand is the immediate issue. The market for west coast lumber remains depressed because of international market trends. The problem has been compounded by a substantial decline in prices.

The financial situation of the forest industry has reached a stage that prompts one forest industry analyst to conclude that "without the immediate restructuring of balance sheets the industry may not survive another cyclical downturn".

Each of you are a better judge than I of the extent to which any of these problems are present in Maine. As mentioned by Commissioner Anderson in his luncheon address, statistical predictions indicate a serious short-fall in Maine's spruce-fir resource early in the 21st century. The shortage, from what I understand, is caused by an infestation of spruce budworm, a rapid expansion of the paper business in the 1960s and 1970s, and an imbalanced age structure.

The stress of Maine forest from budworm infestation is compounded by the escalating problem of acid rain. The area most affected by acid rain in the U.S. is along the crests of the Appalachian range extending from Georgia all the way north into Maine.

Our best indication of the potential damage of acid rain is the research that has been done on Camels Hump in Vermont. There, after two decades of study and with the benefit of a complete inventory of the mountain's vegetation, researchers at the University of Vermont have found that half the spruce trees have died since 1965.

Germany provides clear evidence of the frightening escalation of acid rain damage to forests. Almost daily, the German media reports on the "welsterben" or the "dying of the forest". Three years ago, a survey of German forests found that 1% of the trees were either dead or dying. Two years ago, the percentage increased to 8% and in 1983 it climbed to an alarming 34%. In October of this year, the agricultural minister announced that 9.1 million acres, or fully 50% of West Germany's forest land is damaged by acid rain and other pollutants.

The economic costs of the destruction are huge. The losses to timber and related industries are approaching \$1 billion a year and one expert says that if the damage continues uncontrolled, it could eventually total \$9-11 billion. Polls have shown that Germans are concerned about the death of their forests even more than an escalating arms race.

The situation is reportedly worse in East Germany, Czechoslovakia and Poland. The source of much of the air pollution is aging mills which lack the financial capacity to correct the problem.

Global contour lines of the Ph value of precipitation indicate that acid rain is most severe in the U.S. Northeast and Central Europe; exactly the areas mentioned by Ivan Fernandez this morning as having the most serious forest decline.

In most third world countries, deforestation is a serious problem with long-term ecological and socioeconomic consequences.

A recent report of the U.S. Office of Technology Assessment states that the main causes of forest destruction and degradation in tropical forests are the requirements of more land for food production, primitive methods of agriculture that give low yields and ruin soil fertility, and what the report describes as, "chronic institutional failure".

The Office of Technology Assessment estimates the tropical forest is being destroyed at a rate of 11.3 million hectare per year. Further, the destruction of the tropical forest, with a unique biome of several million species of plants and animals, is accelerating, and the process is usually irreversible.

The Global 2000 Report estimates that 40% of the remaining forests in third world countries will be razed between 1975 and the year 2000.

This thumb-nail sketch of the dynamic forces acting on the forests of the world is illustrative of the global issues faced by humankind. We can no longer ignore the fundamental reality of the global inter-connectedness of people around the world; their various systems - social, political, economic; and the living biosphere on which we all depend. There is a growing appreciation, resulting from global studies on the one hand and the nightly news on the other, that we are facing a series of serious problems which have their roots in something more significant than short-term cycles.

Here we see the broad dimensions of the interconnected global issues which affect us all - a new scarcity, environment and resources, technology, the economy, problems of the third world and current political/military postures. I will speak briefly on each of these dimensions.

### THE NEW SCARCITY

Humankind has always dealt with scarcity of food, clothing, shelter, and other material wants. It is the basis on which our economic systems function. In a real sense, material scarcity of basic needs has been virtually eliminated in the advanced industrial nations. The "new scarcity", however, arises from

approaching the finite planetary limits of our natural resources of fossil fuels (particularly oil), minerals, fresh water, arable lands, and forests.

One of the most serious threats to long-term sustainable development is the depletion of soil resources.

A report just completed by the Canadian Senate Committee on Agriculture, Fisheries and Forestry - Soil at Risk - has concluded that "Canada is facing the most serious agricultural crisis in its history and unless action is taken quickly, Canada will lose a major portion of its agricultural capability."

In Southwestern Ontario, the erosion problem has caused a loss in corn yields of some 30 to 40%.

On lands affected by salinization in the Prairies, crop yields have been reduced by 10 to 75% even though farmers have increased their use of fertilizer.

A 1977 inventory of soil in the U.S. indicated that over one-third of U.S. cropland was losing more than five tons of topsoil per acre. Five tons is the maximum level of soil erosion in order to economically sustain a high level of productivity.

A senior U.S. Department of Agriculture official described the situation in the U.S. as follows:

"the economic pressure - to generate export earnings, to strengthen the balance of payments, and thus the dollar - has been transmitted more or less directly to our natural resource base. As a result, soil erosion can be described as epidemic in proportion".

Soil erosion affects food production, the national economy, trade balance and ultimately people as has been widely demonstrated in Africa in the past several weeks.

In general, we have skimmed the cream of our resources, and are moving to less abundant, more difficult to extract, and more difficult to utilize, resources.

Where oil was the issue of the 1970s, air, water and food will be the issues of the 1980s and 1990s. More countries are threatened with famine in 1984 than at any time in the modern era. Ironically, world food reserves actually have increased in the past few years. However, there has not been a corresponding increase in purchasing power among the world's poor population.

## ENVIRONMENT

Environmental problems have grown in scale.

- Canadian Federal Fisheries estimate 180,000 lakes in Eastern Canada to be chemically very sensitive and of "immediate concern" with regard to acid rain. As many as 400,000 lakes are at long-term risk.
- Nearly half the world's forests have disappeared since 1950.
- We face a critical worldwide shortage of water by 1990.

Environmental problems are increasingly international in scope.

- Acid rain, CO<sub>2</sub> build-up, and the greenhouse effect, deforestation and water shortages do not respect political boundaries.

Environmental problems are growing in complexity.

- Each year, 1,000 new chemicals are introduced on top of 50-60,000 already existing. Over 700 chemicals have been found in drinking water in the U.S., of which the Environmental Protection Agency has targeted 129 as posing the greatest threat.

For some problems, we have yet to find acceptable solutions.

- We have not found an acceptable solution for nuclear waste management.
- We are not able to design containers for toxic waste that do not leak. Four state-of-the-art designs in the U.S. leaked within a year.

The detection system for some of these problems has become the increased incidence of cancer, birth defects and other diseases in humans. An illustration of this is shown through the families of Woburn, Massachusetts. Woburn has one of the ten most hazardous waste sites in North America. The community has had sixteen children die of leukemia. Six of these children lived within a half-mile radius of the waste site. The odds of this occurring are 100 to 1, according to the Centre for Disease Control.

In total, there are some 18,000 hazardous waste sites in the United States.

The fifth key point to be made about environmental problems is that their growth and complexity are outpacing research and



solutions. Scientists maintain that more research and information are required on many of our problems before appropriate responses can be implemented.

## RESOURCES

The world reached a major watershed in 1960. That year, world population reached three billion and for the first time the yields of three basic biological systems - forests, seas, and grasslands - expanded less rapidly than population.

Between 1950 and 1976, the world's grasslands sustained a doubling of beef output. Since then, there has been virtually no growth and overgrazing is commonplace.

The world fish catch tripled between 1950 and 1970 and has had little growth since then.

While conservation is becoming increasingly effective, our appetite for energy will continue to grow. Every twenty years we use as much energy as we had cumulatively used in all past years.

Despite conservation and shifts to alternate forms of energy, the possibility exists that we might face shortages of oil again by the late 1980s and early 1990s.

The high cost of kerosene in third world countries is itself putting further pressures on the depleted forest resource for fuel wood. In turn, deforestation is reducing firewood supplies and increasing the cost of cooking fuel in third world countries.

We are facing a declining productivity of capital in resource sectors of the economy. We are an economy that requires more debt to survive, but whose ability to sustain that debt is declining.

## ECONOMY

For most of the world, the quarter century from 1950 to roughly 1975 was a period of unprecedented prosperity.

World production of goods and services grew 5% annually, tripling in less than one generation.

Rapid economic growth, fueled by cheap energy, became the norm, and was an underpinning assumption in the aspirations of consumers, the profits of corporations and the revenue forecasts of governments.

1973 was a watershed year signalling the end of more than two decades of rapid economic expansion.

This table illustrates four basic world economic indicators which correspond to three price levels of oil. Note that as the price of the oil went up from two dollars to twelve dollars and

then to thirty dollars, other economic indicators went down.

It is clear that the transition to costly oil has affected world economic performance both directly and indirectly.

These economic shifts, for the first time since the start of the Industrial Revolution, have altered the traditional relationships of land, labour, capital, and management.

The basic historical trend going back to the late 19th century has been: declining costs of resources, increasing availability, and higher compensation for labour and management.

These trends were reversed in the 1970s, triggered by the increase in energy prices. For example, weekly wages in the U.S., in 1967 constant dollars, grew steadily from \$32/week in 1900 to a peak of \$135/week in 1973. They have declined steadily since then to \$113/week in 1982, or approximately a 1962 level.

Substantial movements of manufacturing industries are occurring to newly industrializing nations motivated by cheap wages, fewer environmental regulations and tax incentives.

On the supply side, this will contribute to stronger world Competition in traditional markets. On the demand side, many of the traditional markets for material goods are already saturated.

Another trend relates to the increasing levels of debt. As already mentioned, we are a world economy that requires more debt to survive, but whose ability to sustain that debt is declining.

The Reagan Administration had promised a balanced budget when it first took office in 1980. In contrast to that promise, it will create more debt in five years than all previous U.S. governments taken together in the previous two hundred and four years.

Now that the election euphoria has subsided, the Reagan Administration is faced with coming back to reality. Latest figures suggest that the deficit for the current fiscal year will be \$210 billion rather than the \$172 billion projected last summer. The Reaganomics by which the President suggested in his campaign rhetoric that the U.S. would "grow out of the deficit" were based on a GNP growth rate of 5.6% over each of the next five years.

In contrast to this, David Stockman's projections are for a 4% growth which results in a sustained deficit of about \$200 billion per year.

Consensus forecasts of economists are for a growth of 3% which will lead to even higher deficits.

solutions. Scientists maintain that more research and information are required on many of our problems before appropriate responses can be implemented.

## RESOURCES

The world reached a major watershed in 1960. That year, world population reached three billion and for the first time the yields of three basic biological systems - forests, seas, and grasslands - expanded less rapidly than population.

Between 1950 and 1976, the world's grasslands sustained a doubling of beef output. Since then, there has been virtually no growth and overgrazing is commonplace.

The world fish catch tripled between 1950 and 1970 and has had little growth since then.

While conservation is becoming increasingly effective, our appetite for energy will continue to grow. Every twenty years we use as much energy as we had cumulatively used in all past years.

Despite conservation and shifts to alternate forms of energy, the possibility exists that we might face shortages of oil again by the late 1980s and early 1990s.

The high cost of kerosene in third world countries is itself putting further pressures on the depleted forest resource for fuel wood. In turn, deforestation is reducing firewood supplies and increasing the cost of cooking fuel in third world countries.

We are facing a declining productivity of capital in resource sectors of the economy. We are an economy that requires more debt to survive, but whose ability to sustain that debt is declining.

## ECONOMY

For most of the world, the quarter century from 1950 to roughly 1975 was a period of unprecedented prosperity.

World production of goods and services grew 5% annually, tripling in less than one generation.

Rapid economic growth, fueled by cheap energy, became the norm, and was an underpinning assumption in the aspirations of consumers, the profits of corporations and the revenue forecasts of governments.

1973 was a watershed year signalling the end of more than two decades of rapid economic expansion.

This table illustrates four basic world economic indicators which correspond to three price levels of oil. Note that as the price of the oil went up from two dollars to twelve dollars and

then to thirty dollars, other economic indicators went down.

It is clear that the transition to costly oil has affected world economic performance both directly and indirectly.

These economic shifts, for the first time since the start of the Industrial Revolution, have altered the traditional relationships of land, labour, capital, and management.

The basic historical trend going back to the late 19th century has been: declining costs of resources, increasing availability, and higher compensation for labour and management.

These trends were reversed in the 1970s, triggered by the increase in energy prices. For example, weekly wages in the U.S., in 1967 constant dollars, grew steadily from \$32/week in 1900 to a peak of \$135/week in 1973. They have declined steadily since then to \$113/week in 1982, or approximately a 1962 level.

Substantial movements of manufacturing industries are occurring to newly industrializing nations motivated by cheap wages, fewer environmental regulations and tax incentives.

On the supply side, this will contribute to stronger world Competition in traditional markets. On the demand side, many of the traditional markets for material goods are already saturated.

Another trend relates to the increasing levels of debt. As already mentioned, we are a world economy that requires more debt to survive, but whose ability to sustain that debt is declining.

The Reagan Administration had promised a balanced budget when it first took office in 1980. In contrast to that promise, it will create more debt in five years than all previous U.S. governments taken together in the previous two hundred and four years.

Now that the election euphoria has subsided, the Reagan Administration is faced with coming back to reality. Latest figures suggest that the deficit for the current fiscal year will be \$210 billion rather than the \$172 billion projected last summer. The Reaganomics by which the President suggested in his campaign rhetoric that the U.S. would "grow out of the deficit" were based on a GNP growth rate of 5.6% over each of the next five years.

In contrast to this, David Stockman's projections are for a 4% growth which results in a sustained deficit of about \$200 billion per year.

Consensus forecasts of economists are for a growth of 3% which will lead to even higher deficits.

None of these scenarios allow for a recession. The slowdown of the recovery was seen as good news in September and October as it suggested a sustained recovery. But, this past weekend's New York Times indicates that the continued slowdown is now becoming a concern to economic analysts. Whether it is a "pause" as some suggest, or a "growth recession" in the words of one analyst, or the beginning of another recession, remains to be seen.

Compounding the problems of the deficit is the huge imbalance in foreign trade. The trade deficit in 1982 was approximately \$36 billion. It almost doubled in 1983, reaching \$61 billion. The estimate for 1984 is estimated to be about \$125 billion.

The huge deficit has been compensated for by large foreign investments in the U.S. It is these foreign investments which have created a strong U.S. dollar. The strength of the U.S. dollar in turn has been a mixed blessing. While it has helped to keep inflation down, by the American dollar's ability to purchase foreign goods at low prices, this in turn has made it increasingly difficult for American manufacturers to sell their products in international markets, thereby compounding the trade deficit problem and increasing competition for many products within U.S. markets. The result of both is affecting unemployment.

Unemployment has become one of the most critical problems facing both advanced nations and the third world.

In the two recessions of the last five years, 5.1 million workers, with at least three years experience, lost their jobs in the U.S. Of this total, approximately three million managed to find new jobs but roughly one third of those who did get new jobs were forced to change their line of work and accept steep pay cuts.

In total, 11.5 million workers, twenty years or older, lost their jobs. These statistics are based on a study released last week by the Bureau of Labour Statistics.

At a global level, some 650 million young adults will join the world's labour force by the year 2000. 650 million of these will be in the third world. This is three times the entire population of the United States.

## TECHNOLOGY

Historically, technology has solved problems of scarcity and has opened new opportunities for humankind. Space exploration is just one example among many which could be cited. Unfortunately, the manner in which we have used technology has also created some of the problems we currently face, and it contributes further to a compounding of problems in at least the near-term future.

More than half a million scientists (nearly half the worlds total) are engaged in weapons research. This has the obvious

result of increasing our destructive capabilities. It also immobilizes valuable human, financial and material resources which would be used for more constructive purposes. Military research and development takes over two-thirds of the U.S. government's research and development budget.

At the international level, the concern for military secrecy results in distrust and insecurity over the exchange of scientific information and experiences.

Not only do many of the world's scientists devote their skills to weapons research, but political leaders devote more and more of their time to military matters as well. The value of arms imports into the Third World is now greater than that of grain imports.

The revolution in information technology and robotics elevates our human capabilities to a new plateau of potentiality. It also will create substantial unemployment in advance nations as well as the newly industrializing nations. While many corporations are currently moving plants to newly industrializing nations, eventually the trend towards automation and robotics will win over the south's cheap labour.

Fierce competition between the advanced industrialized nations will continue to fuel technical and scientific progress. Technology resulting from this advance will increase the wealth of already rich nations but will have little relevance to the poor nations of the world.

### THIRD WORLD ISSUES

World population will grow from about 4.3 billion to roughly 6.0 billion by the year 2000. Ninety percent of this increase will be in the poorer nations of the world. By the year 2000, 80% of the world's population will be in the developing nations.

This means that five billion people will be living in developing nations by the year 2000, compared to 3.6 billion in 1983.

Currently, one-half do not have access to health services, one-third are living in absolute poverty, and some five hundred million people are seriously undernourished.

Swelling populations in developing countries, combined with rural poverty, will result in a continuation of massive movements to urban settlements.

In 1950 there were six cities with over five million people, totaling over forty-two million. In 2000 there are expected to be sixty cities over five million, totaling six hundred and fifty million inhabitants.

This chart depicts the megalopolises of the year 2000. All but five of the twenty-five largest cities by the year 2000 will be in the Third World.

## The Megalopolises of the Year 2000

	Population in millions		Population in millions		Population in millions
Mexico City	31.0	Calcutta	16.7	Bangkok-Thon Buri	11.9
Sao Paulo	25.8	Jakarta	16.6	Karachi	11.8
Tokyo-Yokohama	24.2	Seoul	14.2	Delhi	11.7
New York (with North- eastern New Jersey)	22.8	Los Angeles - Long Beach	14.2	Bogota	11.7
Shanghai	22.7	Cairo	13.1	Teheran	11.3
Beijing	19.9	Madras	12.9	Istanbul	11.2
Rio de Janeiro	19.0	Manila	12.3	Baghdad	11.1
Bombay	17.1	Buenos Aires	12.1	Osaka Kobe	11.1

Mexico City tops the list with a projected population of thirty-one million, which is more people than will be living in all of Canada in that year. Mexico City already faces serious transportation and pollution problems.

In many large cities, one quarter or more of the population already live in slums or shantytowns. There are already extreme pressures on water supplies, sewage, sanitation, health care, food, shelter, and jobs.

World opinion will demand that either the world's resources be brought to the people or people be brought to the resources.

We can expect mounting pressures for mass migrations, both legal and illegal, to the richer nations of the world. These pressures are already present and to some extent out of control in the Southwest and the Southeast of the United States.

The gaps between have and have-not nations continue to widen. These gaps are not just economic but are in health, education, and technology as well. As we continue to move toward a post-industrialized society, 80% of the world's population will still be trying to move toward or gain entry to an industrial society some twenty years from now. Canada's GNP, with a population of twenty-five million, is roughly comparable to the combined GNP of the poorest one billion people on earth.

The extreme contrasts of the have/have-not situation were vividly illustrated by the placement of a Birks ad in the midst of a major article on Ethiopia in the November 26, 1984 Canadian edition of Time Magazine. The caption in the ad suggests, "When a woman has everything, give her more of the same, gold, from Birks."

A former Canadian Prime Minister, Lester Pearson, noted some twenty years ago that, "No planet can survive half slave, half free; half engulfed in misery, half careening along toward the joys of an almost unlimited consumption... Neither ecology nor our morality could survive such contrasts."

This chart puts the growth of world population in perspective.

## WORLD POPULATION

1900	1.6 Billion
1960	3.0
2000	6.0
2030	9.0

It took the entire history of humankind up to the year 1900 to reach a world population of 1.6 billion. We then doubled this number in sixty years and will double it again in forty years. By 2030, we will again add another three billion people.

As I have already indicated, 90% of the growth between now and the year 2000 will be in Third World nations.

While the developed nations will increasingly have an aging population, less developed regions will have an increasingly younger population with basic food and health requirements, education requirements, and then job requirements.

The financial situation in developing countries is particularly precarious. The total debt of developing nations has risen from \$72 billion in 1970 to about \$820 billion currently. About \$350 billion of this amount is owed to nine U.S. banks. The total capital of the ten largest banks is about \$40 billion.



## Foreign Debt

Argentina, for example, requires 78% of its foreign earnings to service	\$ 45 billion
Brazil	\$100 billion
Mexico	\$ 90 billion

Leading agencies say that no more than 20% is prudent. Debt servicing requirements in many Third World countries are so large that little foreign exchange is left to import essential commodities such as oil, food and industrial machinery. Additional loans are going towards payment of interest rather than for economic development.

At the same time that these huge foreign debts have been increasing, there has been a "capital flight" problem - the historical phenomenon of money fleeing political and economic turmoil.

Individuals, small businesses, and MNC's shipped \$120 billion out of developing countries from 1975-83. Two-thirds of this was in the last three years alone.

Much of this capital finds its way to the U.S. and therefore helps to create a strong U.S. dollar, despite a \$60 billion negative trade balance in 1983, and a \$125 billion negative trade balance in 1984.

In turn, a strong U.S. dollar accentuates trade imbalances, debt problems, high real oil prices and further currency devaluation among developing nations. High U.S. interest rates add further to the debt burden. The high level of government deficits will eventually push interest rates even higher.

Here we see the relationship of foreign debt in Mexico and the declining peso. The value of the peso has declined even further since 1982 from one cent to about half a cent.

The debt burden has become so onerous that the possibility exists for the formation of a debtor's club - an organization of debt exporting countries or ODEC. It would be designed to demonstrate to Western banks the wisdom of easing the debt burden.

Brazil, whose \$100 billion foreign debt is the largest, has already warned that rising interest rates could force them to renounce their financial obligations.

Eleven Latin American debtor nations recently concluded a two-day meeting in Columbia with a statement calling for more lenient terms for loan payments. The statement also calls for the International Monetary Fund to give priority to economic growth

and employment over debt repayment - and as well, a demand for banks to put off interest payments for the poorest countries such as Bolivia.

### POLITICAL/MILITARY POSTURES

Tensions continue to escalate between East and West; North and South; in the Middle East; and Central and South America. Terrorism as a response to perceived social injustices is continuing to escalate.

World military expenditures in 1985 will be in excess of one trillion dollars. This is slightly more than two hundred dollars for every man, woman, and child in the world, roughly equal to the per capita annual income of people in the poor nations of the world.

One-tenth of that amount could feed all the people of the world. Another one-tenth could educate all school-aged children.

A reduction in arms spending could eliminate budget deficits and fight drought, disease, illiteracy and helplessness. For less than 3% of this amount, or twenty-five billion dollars, clean water, sanitation and basic health services could be provided to the 1.5 billion people in the world who lack these basic services (one-third of the world's population).

The Center for Defense Information in Washington, D.C., puts the number of active wars currently underway at forty-one, involving forty-five of the world's one hundred and sixty-five nations. Four million soldiers are engaged in fighting and more than one million lives have been lost in the last decade. In the last three years, six new wars have started, two have ended, and of the continuing thirty-five, twenty-five show an increase in fighting.

The U.S. and U.S.S.R. support opposing factions in almost every conflict. The U.S. is a major supplier of weapons in twenty conflicts and the U.S.S.R. in thirteen.

What is encouraging is the rising level of public awareness to the threat of nuclear annihilation and the escalating weapons race. Public interest groups, professional associations, religious organizations and business groups have been joining together in efforts to reduce tensions and end the arms race. As individuals, we can begin to appreciate that something must be done about these issues, but within our institutions, and as a society, we lack the ability to adequately respond. We lack the capacity to cooperate for common purposes, to understand larger systems, to see beyond "the bottom line", or to see the whole of which we are a part.

We are reliant on institutions of an industrial era to shape the values, guidelines and directions for a post-industrial era.

We tend to see the future in terms of the present rather than the present in terms of the future.

A current example of institutional failure is the build-up of grain at a port in Ethiopia because of our inability to transport it to those who need it.

Having reviewed the state of the world, perhaps we should again remind ourselves of Norman Vincent Peale's definition of optimism. Optimism "is to see the worst in complete realism, but still believes in the best" -- being able to deal with the harsh facts, and still keep believing in good outcomes.

The scientific-industrial age has brought about many benefits to industrialized nations. For the past 200 years, living standards have been improved, illnesses eliminated, life spans increased, and great technological achievements have been accomplished.

The time has come in the evolution of humankind to move on to a new age. Whereas physics and a mechanistic view of society and the universe were the dominating metaphors of an industrial era, biology and "living systems" are increasingly seen as the dominant metaphors of a dawning "new age". Living systems have the continuous capacity of self-renewal while maintaining the integrity of their being. In living systems, the whole is greater than the sum of the parts and all parts are in interdependent harmony to support the functioning of the whole.

Commissioner Anderson challenged you this afternoon to make a commitment. I would like to underscore that challenge.

I believe the individual forester, with his/her knowledge of the tree as a living system and the tree's central role in the forest ecosystem and indeed the global ecosystem, is well placed to give guidance to a sustained and healthy global development process. The forester's knowledge of living systems carries over to the potential for developing models of organizational functioning which provide examples of harmonious institutional behaviour - models which demonstrate "holistic" thinking, integrated resource planning, collaborative action and a future, proactive orientation.

In relationships with other organizations, you are able to set positive examples in establishing and nurturing a collaborative spirit which is directed by common aims for society rather than a protective stance that defends budgets, jurisdictions....or profits within a narrow or short-term perspective of the profit concept.

Through a new generation of thinking and acting, we can discover the means whereby, as individuals and organizations working together with all segments of American society, we will

determine the kind of future society we want and the strategy by which we will achieve it.

Similarly, on a global scale, we can discover through a new generation of thinking the ways in which we can work collaboratively with other nations of the world toward the human welfare of all the world's people in co-existence with a sustainable and bountiful biosphere.

Perhaps after this conference the bumper sticker we saw this morning, "the forester's job is growing", will take on a new meaning.

In closing, I would like to read a quote from a book titled, The Coming Transformation, written by Lewis Mumford in 1957.

"We stand on the brink of a new age: the age of an open world and of a self capable of playing its part in that larger sphere. An age of renewal, when work and leisure and learning and love will unite to produce a fresh form for every stage of life, and a higher trajectory for life as a whole...in carrying man's self-transformation to this further stage, world culture may bring about a fresh release of spiritual energy that will unveil new potentialities, no more visible in the human self today than radium was in the physical world a century ago, though always present...for who can set bounds to man's emergence or to his power of surpassing his provisional achievements? So far we have found no limits to the imagination, nor yet to the sources on which it may draw. Every goal man reaches provides a new starting point, and the sum of all man's days is just a beginning."

RIDING THE WINDS OF CHANGE IN MAINE'S FOREST

Presented by

Ernie M. Gould, Jr., Assistant Director

Harvard Forest

for

Blaine House Conference on Forestry

December 6-7, 1984

All of us have spent the last day and a half discussing how Maine people and their forests can successfully ride the winds of change over the next few decades. Before attempting to reach any conclusions it will be helpful to look beyond our state and regional boundaries and see what the larger context is likely to be.

### Industrial Adjustment

In the future some very significant movements of forest industries within the United States are likely, indeed they have already begun to adjust to some obvious facts. First, the bulk of our nation's inventory of standing softwood sawtimber is in the old growth out west. However, a good deal of this land is being diverted into other uses and the rest is being harvested, so that the end of our old growth resource is finally in sight. Second, only about 25 percent of our nation's timber growing land is in the west. The remaining three-quarters is in the east, about evenly divided between north and south. Thus, as we come to depend increasingly on growing our wood rather than gathering wild stock, it's clear that the east must supply much more of our needs than in the past.

Third, about 75 percent of our western forests are on public land and subject to fierce policy squabbles to accommodate many other uses than wood production. Industrial people have found it hard to cope with the political and planning processes that have developed to handle these complex resource allocation decisions. Fourth, in the east the situation is reversed and only about a quarter of the timberland is public, so private people and companies own the lion's share. Ownership carries with it substantial rights to manage land that business people have found more congenial to handle than public planning.

So, long-term necessity and short-term convenience suggest that we will see a gradual shift in the center of forest industry activity from west to east. Because wood using industries are already heavily developed in the south and because southern pines can substitute for most western forest products and with proper attention can be made to grow on a great deal of land in the south, this is where the first build-up is taking place, symbolized by Georgia-Pacific's shift of its corporate headquarters back from the west to the south.

If this scenario continues it seems likely that for a while corporate managers may turn to expansion in the southeast in preference to Maine. However, this can only be temporary because any reasonably perspicuous foresight will show that in the longer run the large industrial land holdings in Maine are unusually attractive base for industrial growth not readily available elsewhere so close to east coast and European markets.

## Utilization Changes

Another change that these "prevailing westerly winds" suggest we must cope with, is the fact that much of the east, especially the northern part, contains the richest assemblage of temperate region hardwoods in the world. If we are to realize the full productive potential of our timberland it will be essential to find ways to utilize more effectively this vast hardwood resource. These trees represent much too large a reservoir of captured solar energy to allow them to go to waste as so often happens today.

Some propose converting selected areas to softwoods by more intensive management. And this will no doubt happen. However, experience suggests that the accompanying environmental impacts are likely to be considered deleterious. Also the sheer strength of the natural ecological forces that must be overcome in many areas will require such a large front-end investment load that these factors will combine with long term uncertainties to keep forest conversion relatively limited in scope.

Industrial conversion to find some means of adapting manufacturing processes to the hardwood raw materials so abundantly at hand is a far more likely prospect. Historically, this course has been very significant because an investment in utilization can be at work earning a return in a matter of months, while forest growth changes usually take several decades to mature. In addition, the tree species which are the natural growth of the land can often be produced with low intensities of management requiring minimal investments early in the rotation. Low cost production of this kind provides not only a competitive edge but also some of the flexibility needed to deal with uncertainty about future demands.

With its rich diversity of species growing naturally, Maine appears to be in a favorable position to take advantage of any innovations in utilization. Provided, of course, that opportunities are properly presented to investors in a climate congenial to venture capital.

## Debtor Nation

In this respect I heard just last week of a major uncertainty about capital in the future when a Wellesley professor of economics said on television that, "If present trends continue the United States will become a debtor nation early next year". Foreigners have owed us more than we owed them since early in the life of the Republic, but apparently that situation is about to be reversed by the influx of Europeans and Japanese with money, buying corporate stocks and bonds and a significant amount of our treasury notes.

The implications of this change are hard to judge because as we heard last night most other debtor nations are in the third world struggling to develop and their harsh and dictatorial

experiences with international monetary agencies are not so likely to apply to the United States. However, in the future it is probable that our government and financial institutions will be increasingly sensitive to the problems of maintaining a needed flow of foreign capital, and preventing its withdrawal in a fit of panic or pique. In addition, striking a more favorable balance of trade by promoting exports and reducing the need for imports is likely to get closer attention.

In this situation, the possibilities of exporting more farm and forest products are likely to be attractive, and a raw material producing state like Maine may play a significant role. In this effort it will be desirable to export items that have been pushed as far along in the manufacturing process as possible, in order to keep at home a larger share of the value added by manufacture. As we heard this may not be easy but the potential for such activity is suggested by Massachusetts which employs almost one and one half times the number of people in forest industries and realizes 6 percent more value added by manufacture than does Maine. This, in spite of the fact that Massachusetts has less than a sixth of Maine's forest land, so most of its manufacturing gains are based on out-of-state raw materials which are then highly processed. In any future search for new wood using industries it will be desirable to attract those which produce a large value added per unit of raw material.

It appears that we can add to the "prevailing westerly winds" of change the problems of being a debtor nation which may generate some "on-shore breezes" from overseas. We can also throw in the usual eddies of wind that arise in response to the changing barometric pressures of our own economic growth and contraction, inflation and interest rates. At the moment, for every investment analyst and economist predicting a down turn there seems to be another forecasting the opposite. So our information base about future economic activity is just about as confusing as it usually is, and we will continue to base decisions on what informed people imagine the future will be like.

### Maine Wood Supply

Maine's future supply of wood fits into this general picture of contradiction. In the short-run there is a glut of material because of the residual need to finish the salvage of budworm damage. But in the longer run this may produce a stringency in the supply of spruce and fir. One way to alleviate the problem is to manage existing stands more intensively to promote their early maturity. Making the investments needed will pose a sad dilemma for MBA's who think in terms of quarterly earnings, and, all too frequently, control corporate investment policies. However, there is hope, because those wise enough will know that investment should be guided by the expectation of future earnings and not by current returns. An experienced and sagacious business man might



paraphrase Saint Paul's comment on faith by saying, "Expectation is the substance of things hoped for, the evidence of things unseen"--(Epistle to the Hebrews XI, 1).

### Driving Forces

In the past, expectations about forests and their use have responded in very large measure to events beyond local control, and this situation is likely to continue. The budworm attacks of the 1912-20 era greatly reduced the spruce-fir inventory. This act of nature combined with product demand levels which sank like a stone during the Great Depression, and cheaper production opportunities elsewhere in the country, to discourage managers from expanding Maine industries to fully utilize forest growth. Later, people slowly became aware that this situation had produced a huge surplus of wood. When in the 1970's the opportunities for change were perceived and reinforced by rising economic demand for forest products and the need to modernize or abandon some of the old mills, industrial expansion took place both in Maine and just across the border in Quebec. This came in time to salvage the trees killed by the next major budworm epidemic. Enforced salvage in turn created a surplus of wood which has kept current stumpage prices low while again setting up an age-class structure likely to produce a scarcity of wood a few decades down the line. In addition, the widespread use of aerial sprays to retard budworm damage has focused public attention on the environmental impacts that the use of such practices can have.

There are other spin-offs of salvage that are likely to have repercussion for some time. The effects that very large clear cuts can have on water quality, forest regeneration, soil erosion, wildlife and scenic attraction are creating popular concern. This is especially true now that budworm salvage has roaded so much of the hitherto remote north woods. Easier vehicle access has brought a great and probably irreversible change in hunting habits, while massive clear cuts have noticeably reduced the deer herd and increased moose habitat. And the innovation of machines for biomass harvesting promises continued large clear cuts. While proposals to convert high graded, mixed-wood stands to softwood by clearcutting, planting and herbicide spraying raise the specter in the minds of many laymen of even greater environmental change. All told, the effects set entrain by the budworm, the economy and technology will be central preoccupations of Maine forest managers for a long time to come.

A good many of the efforts proposed to cope with the situation have received a lot of attention at this conference. Measures designed to cope with a future wood shortage include proposed thinnings and improvement cuttings to speed normal growth. This is in addition to planting. On the other side of the coin we hear of changes being planned or made in manufacturing processes so that a broader spectrum of trees can be used. In addition, some of the less used but abundant species or tree qualities are the basis for building new businesses like wafer

board and biomass for energy. Both of these ventures are having momentary difficulties breaking into sluggish markets but have great promise in the longer run.

Process and product innovators find that resources are allocated grudgingly when times are tough, but come more readily when the economy is bustling. However, Maine's forest landownership pattern with 47 percent owned by wood using industries which have access to national and international capital and end product markets, holds the promise of long run industrial development. Having ownership control of almost half the forest growth in the state provides major economic advantages which extend well beyond an assured supply of raw material. However, these gains are purchased at the cost of being highly visible rulers of an enormous fiefdom. As such, industrial owners can expect to be fair political game for anyone dissatisfied with the way they handle the forested environment. If they hope to be let alone, the owners of large tracts will have to pay close attention to their impact on water, wildlife and amenity and do what is necessary to create a clear perception of themselves as responsible stewards of the land. Without this favorable image of good husbandry, private large ownership rights are likely to be radically circumscribed by public action in the years ahead.

### Proposals for Action

Each of the speakers and the task force reporters has proposed steps that have been or can be taken, which if successful will improve the opportunities open for forest land use in the future. These proposals fall under four general headings: the forest and its uses, industry, labor and government.

### Forests

Those interested in using woodland for products or for other social values seem united in wanting a forest that is healthy, productive, containing diverse species and age-classes, and is well protected from catastrophic loss to insects, diseases, fire and storm. A look at the latest forest survey suggests that Maine forests are already well advanced toward these goals. Looked at statewide, there is a rich diversity of species and the age-classes are better balanced than hitherto. Locally, however, the age-class structure of spruce-fir leaves a good deal to be desired and there is general agreement that a period of shortage lies ahead. Nonetheless, most of the forest stands are reasonably well stocked and the number of poor quality and defective trees overall is not alarming, even though there is obviously much that could be achieved by thinnings and improvement cuttings.

There is less unanimity about the management practices needed to produce a more well balanced, healthy and productive forest. The most divergent views probably center on the role of large scale clearcutting, the amount of planting that is desirable

and the tolerable scale of insecticide and herbicide spraying. In this regard public concern is focused on the impacts that these practices will have on water quality, fish and wildlife habitats and on forest recreationists.

Proposals for action include enough research to clarify all the consequences of forest practices, responsible use of acceptable measures by private landowners and finally, governmental rules about the use of materials and practices that are clear, consistent and fair to all parties. There is obviously a large role for better information so that public and private decisions are well informed of the measures of effort required, the figures of merit realized and the environmental changes associated with each proposed forest practice.

### Industry

It is agreed that forest based industries make a significant contribution to employment and income in Maine. The pulp and paper segment dominates in wood manufacturing and is likely to continue to do so because Maine now leads the nation in paper making capacity.

Sawmill capacity was enlarged during the 1970's but will continue to suffer all the variation in demand associated with the building cycle. In addition, as long as the dollar remains strong there will be brisk competition from Canadian lumber imports, much of it sawn from exported Maine logs. Whether any governmental steps can be taken to relieve this pressure remains to be seen. Similarly, market pressures affect the fledgling wafer board industry and electricity generated from biomass. The latter cannot expand much until the demand for electricity increases a good deal.

Should all these industries increase their activities at once there might be enough competition for wood of all kinds to raise stumpage prices. The prospect of this would, in turn, make it desirable to use more intensive timber management, reinforcing the desire to fill the anticipated budworm slump. This move might be helped if the state provided some investment incentive through the tax system.

It appears that industrial land managers have adjusted to the idea of land use regulation, although there are a number of changes that would make the LURC system run more smoothly. On the whole, the major plea one hears is that government should clearly state its tax system, land use regulations, environmental, transportation and labor plans and then stick to them so that changes come slowly and infrequently. Industrial people think that they can live with almost any reasonable action in these areas, provided they can count on the rules staying in place for some period of time.

It has been proposed that the Governor appoint an industrial advisory board to promote better understanding between the wood using industry and state agencies. This idea has a good deal of merit, but I suggest that experience with the Massachusetts State Forestry Committee and the Working Groups used by the White Mountain National Forest be considered. In both instances the committee membership is carefully chosen to include representatives of all forest users. Then the group is charged with bargaining out among themselves forest plans and policies they are willing to live with. The system is not foolproof and requires a lot of patience, but when it works it is much more productive than searching for a solution via an adversarial approach in the media or the legislature.

### Labor

The existence of a skilled and willing labor force has been a major asset to Maine. Whether or not this continues to be the case in the future depends not only on the jobs offered by industry, but also on the policies followed by government to educate its citizen labor force. In fact, this is a fruitful field for cooperation between state and local governments and private industry. The education task force has a very complete set of proposals which, if implemented, should go a long way toward making work in forest industries a dignified, rewarding and attractive way to live in Maine. In the long run nothing less will serve.

Maine has been ahead of the other New England states in providing a program of vocational education for the next generation of wood cutters and contractors. The current setback in numbers of students may only be temporary. But it may indicate the need to first do those things that will increase the self esteem of woods workers and this task will require rare insight, some of which was hinted at by speakers yesterday.

I suspect one way to start is by helping up-grade the skills of the present wood cutters and contractors to make their work safer, more effective and rewarding. Europeans regularly send their workers to school to learn about new equipment, safe and efficient work habits and better business practices. If present workers could thereby become more skillful and successful this could start a boot strap operation that might attract new bright students to become full time workers.

### Government

It is difficult to talk about any of the task force reports without touching on some facet of government. Suggestions have ranged over the whole field from forest land management, information and education to creating a favorable business climate and maintaining a healthy outdoor environment for all citizens.

This raises the question of just what the proper role of government is. I propose that in a society such as ours where technological and social innovations are so commonplace that change and adjustment to change become major aspects of life, government should buffer its citizens from too much instability. Thus state officials in designing their actions and policies should try to alleviate or reduce the tensions of social evolution. Programs should introduce elements of steadfast purpose, firmness, steadiness and consistency into the fabric of our society.

This is in sharp contradistinction to the idea that business people should be alert to ride the waves of change, taking nimble advantage of emerging opportunities that were undreamed of yesterday. The strength of a business organization should be its flexibility to set new directions and its power to stimulate people to seek imaginative new solutions. If business policies are innovative, brisk and bustling then the interplay with consistent government will produce a society that is forward looking and yet moves with all deliberate speed.

I suggest that we keep these contrasting roles clearly in mind when judging the proposals placed before this conference. One thing is abundantly clear that the future is fraught with uncertainty because, "thou knowest not what a day may bring" (Proverbs XXVII, 1) but also, "Where there is no vision, the people perish" (Proverbs XXIX, 18). The role of this conference is to provide a shared information base which builds a vision of the future which all can pursue with confidence and joy.

HD 9757 M2 B53 1984  
Blaine House Conference on  
Forestry (1984 Dec. 6-7 ;  
'roceedings

UNIV OF MAINE - GORHAM  
  
3 1390 00388090 1

## DATE DUE GORHAM CAMPUS

THE BORROWER WILL BE CHARGED AN OVERDUE FEE IF THIS BOOK IS NOT RETURNED TO THE LIBRARY ON OR BEFORE THE LAST DATE STAMPED BELOW. NON-RECEIPT OF OVERDUE NOTICES DOES NOT EXEMPT THE BORROWER FROM OVERDUE FEES.

~~NOV 22 1989~~ ~~DEC 02 1991~~

~~APR 21 1990~~

~~OCT 23 1990~~

~~APR 12~~

~~MAY 03 1993~~

~~APR 11 1991~~

~~AUG 30 1994~~

