

**Proceedings of the  
SYMPOSIUM ON  
INTENSIVE CULTURE OF  
NORTHERN FOREST TYPES**



**USDA FOREST SERVICE GENERAL TECHNICAL REPORT NE-29  
1977**

**FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE  
NORTHEASTERN FOREST EXPERIMENT STATION  
6816 MARKET STREET, UPPER DARBY, PA. 19082**

## FOREWORD

**T**HE NORTHERN FOREST TYPES constitute a vast natural resource for the United States and Canada. For instance, in the eastern United States there are more than 10 million acres of commercial forest land supporting spruce and fir types alone. The magnitude and variety of this resource is such that treating it in any detail at a 3-day meeting was impossible. Rather, the idea that germinated and developed into this symposium was to present a broad picture of the extent of our knowledge of intensive cultural techniques, the status and trends of our research in the northern forest types, and some actual experiences in managing this resource; and to explore those factors that affect our use of the intensive cultural techniques we have at hand.

There is no doubt that we face a new era in the management of northern forests. The production of wood products is no longer the primary objective of many owners, and increased pressure for the social values of our forests is being felt by all landowners. We must recognize these other forest values, which in turn dictates intensification of all aspects of forest management if we are to meet the future demands of a wood-hungry society.

The enthusiastic efforts of the symposium sponsors—the School of Forest Resources, University of Maine; the Maine Bureau of Forestry; the Maine Forest Products Council; and the U.S.D.A. Forest Service—and the individuals behind those efforts, should be commended. Special thanks are due to Great Northern Nekoosa, Inc., and Brooks B. Mills for their help in providing interesting field trips, and to the Casco Bank and Trust Co. for sponsoring the symposium brochure. Also, without the enthusiastic participation of the experts invited to present papers, and the moderators of each session, the Symposium could not have taken place.

—**BARTON M. BLUM**  
Symposium Chairman

---

---

### PUBLISHER'S NOTE

This report is published by the Northeastern Forest Experiment Station as a public service. The papers it contains are published as received from the authors. Any questions or comments about these papers should be directed to the authors.

---

**Proceedings of the  
SYMPOSIUM ON  
INTENSIVE CULTURE OF  
NORTHERN FOREST TYPES**

*held 20-22 July 1976 at Nutting Hall, University of Maine, at  
Orono.*

**SPONSORED BY:**

- School of Forest Resources, University of Maine
- Maine Bureau of Forestry
- Maine Forest Products Council
- Forest Service, U.S. Department of Agriculture

Barton M. Blum, USDA Forest Service, Orono, Maine.  
Ralph Griffin, University of Maine, Orono.  
Gordon Baskerville, University of New Brunswick, Fredericton.  
Tom Corcoran, University of Maine, Orono.  
Bart Harvey, Great Northern Nekoosa, Inc., Millinocket, Maine.  
Dick Arsenault, Lavalley Lumber Co., Sanford, Maine.  
Joe Lupsha, Maine Forest Products Council, Augusta.  
Tim O'Keefe, Extension Forester, University of Maine, Orono.  
Ed Giddings, University of Maine, Orono.  
Robert Frank, USDA Forest Service, Orono, Maine.  
Ken Hendren, Maine Bureau of Forestry, Augusta.  
Jack Bulger, Maine Bureau of Forestry, Ellsworth.  
Bill Adams, Maine Bureau of Forestry, Old Town.  
Jonathan Ford, J. M. Huber Corp., Old Town, Maine.

---

### **Moderators**

Fred Knight, School of  
Forest Resources  
University of Maine: 20 July 1976, morning session.

Fred Holt, Maine Bureau  
of Forestry (retired): 20 July 1976, afternoon session.

Ray McDonald, Casco Bank  
& Trust Company: 21 July 1976, morning session.

Dick Kennell, USDA Forest  
Service, State & Private  
Forestry: 21 July 1976, afternoon session.

C. D. Hartley, Valley  
Forest Products Ltd.,  
Canada: 22 July 1976, morning session.

## CONTENTS

TRANSLATING FORESTRY KNOWLEDGE INTO FORESTRY ACTION:	1
John R. McGuire .....	9
WOOD AS A STRATEGIC MATERIAL: Kenneth S. Rolston, Jr. ....	17
NATIONAL AND REGIONAL NEEDS FOR INCREASING WOOD YIELDS THROUGH INTENSIVE MANAGEMENT: Robert B. Phelps .....	25
LET'S CALL THE WHOLE THING OFF! Gordon Baskerville .....	31
PRESENT METHODS AND TECHNOLOGY AVAILABLE FOR INTENSIVE MANAGEMENT AND EXTENT OF PRESENT USE: Gordon F. Weetman .....	43
HOW APPLICABLE IS EVEN-AGED SILVICULTURE IN THE NORTHEAST?: Ralph H. Griffin .....	53
HOW APPLICABLE IS UNEVEN-AGED MANAGEMENT IN NORTHERN FOREST TYPES?: Stanley M. Filip .....	63
EVEN-AGED INTENSIVE MANAGEMENT: TWO CASE HISTORIES: Harold M. Klaiber ..	67
SILVICULTURAL SYSTEMS—UNEVEN-AGED MANAGEMENT: Morris R. Wing .....	73
NATURAL REGENERATION—SMALL OWNERSHIPS FROM CONCEPT TO PRACTICE: Arthur G. Dodge, Jr. ....	77
PUBLIC LANDS—FROM CONCEPT TO PRACTICE: John J. Vrabec .....	83
ARTIFICIAL REGENERATION: APPLICABILITY, OPTIONS AND RESEARCH NEEDS Herchel G. Abbott .....	97
LARGE-SCALE SOFTWOOD PLANTING OPERATIONS IN NEW BRUNSWICK: M. K. Harteaux .....	101
HARDWOOD PLANTING IN SOUTHERN ONTARIO: F. W. von Althen .....	111
DIRECT SEEDING IN NORTHERN FOREST TYPES: Ralph H. Griffin .....	127
INTERMEDIATE CULTURAL PRACTICES: Robert Dinneen .....	135
SILVICULTURAL POTENTIAL FOR PRE-COMMERCIAL TREATMENT IN NORTHERN FOREST TYPES: H. W. Hocker, Jr. ....	151
FIELD EXPERIENCE SILVICULTURAL CLEANING PROJECT IN YOUNG SPRUCE AND FIR STANDS IN CENTRAL NOVA SCOTIA: Theodore C. Tryon and Thomas W. Hartranft ..	159
INDICATIONS OF SILVICULTURAL POTENTIAL FROM LONG-TERM EXPERIMENTS IN SPRUCE-FIR TYPES: Robert M. Frank .....	179
FIELD EXPERIENCES IN PRE-COMMERCIAL THINNING, PLANTING AND CONTAINER GROWING OF NORTHERN SOFTWOODS: Oscar Selin .....	185
STATUS OF FERTILIZATION AND NUTRITION RESEARCH IN NORTHERN FOREST TYPES: Miroslaw M. Czapowskyj .....	205
SITE CLASSIFICATION FOR NORTHERN FOREST SPECIES: Willard H. Carmean .....	241
NUTRIENTS: A MAJOR CONSIDERATION FOR INTENSIVE FOREST MANAGEMENT: James W. Hornbeck .....	251
STATUS OF GROWTH AND YIELD INFORMATION IN NORTHERN FOREST TYPES: Dale S. Solomon .....	261
THE STATUS OF TREE IMPROVEMENT PROGRAMS FOR NORTHERN TREE SPECIES: David S. Canavera .....	269
STATUS OF HERBICIDE TECHNOLOGY FOR CONTROL OF TREE SPECIES AND TO REDUCE SHRUB AND GRASS COMPETITION: Maxwell L. McCormack, Jr. ....	279
COMPATABILITY OF INTENSIVE TIMBER CULTURE WITH RECREATION, WATER AND WILDLIFE MANAGEMENT: Samuel P. Shaw .....	291
PLANNING PITFALLS: James H. Freeman .....	299
PLANNING FOR & IMPLEMENTING INTENSIVE CULTURAL LONG & SHORT RANGE PLANNING: Lester W. Hazelton .....	307
SMALL WOODLAND OWNERSHIP MANAGEMENT: Albert J. Childs .....	311
EFFECTS OF TAXATION ON THE PLANNING AND IMPLEMENTATION OF INTENSIVE TIMBER MANAGEMENT: David Field .....	333
EFFECTS OF INCENTIVE PROGRAMS: Duane L. Green .....	341
POSSIBLE LEGISLATIVE CONSTRAINTS TO INTENSIVE SILVICULTURAL PRACTICES IN NORTHERN FOREST TYPES: Brendan J. Whittaker .....	351
TECHNICAL ASSISTANCE FOR INTENSIVE CULTURE OF NORTHERN FOREST TYPES: Timothy G. O'Keefe .....	355
CLOSING COMMENTS: Fred B. Knight .....	355

## PUBLIC LANDS - FROM CONCEPT TO PRACTICE

by: John J. Vrablec, District Ranger, Evans Notch Ranger District, White Mountain National Forest, Bethel, Maine

---

### Abstract

Intensive timber management can and is practiced on National Forest lands in the Northeast. There are, however many constraints and limitations which are placed upon the public lands manager. The key issue here is that the National Forests are PUBLIC lands which must be managed for the public.

---

### INTRODUCTION

So far today we have heard much about what is available or ideally desirable in the science of intensive forest management of Northern Forest Types. I have been asked to comment as to how these concepts are practiced on public lands in a sort of case history. My approach will be simply to relate in a very non-technical manner the experiences of a public land manager on one of our National Forests.

### BACKGROUND

Many of you are aware of the many laws and regulations under which the National Forests are managed. I will name only a few of the key ones which do have and will probably continue to have direct impact upon the practice of intensive culture of any forest types. They are:

1. The Organic Administration Act of 1897 - provided for management, protection and use of the Forest preserves.
2. The Multiple Use - Sustained Yield Act of 1960
3. The Wilderness Act of 1964
4. The National Environmental Policy Act of 1969
5. The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA)

There is also new Legislation pending which many of you are aware of. Such bills as Senate Bill 3091 (Humphrey Bill) and its companion bill H.R. 12503 + 13832, Senate Bill 2926 (Randolph Bill) and its companion bill H.R. 11894 and Senate Bill 2851 are some of the bills, which would have an impact on how, if any, forest management will be practiced on National Forest lands.

The White Mountain National Forest made a management plan modification in 1968, which changed the system of timber management from uneven - aged to even - aged. This was based on results of research conducted at the Bartlett Experiment Forest over a 30-year period which indicated that even-aged management of northern hardwoods and associated species was a desirable system. Thus, the present timber management and therefore any intensive culture of Northern Forest Types on the WMNF is based on this even-aged system.

#### PRACTICE

The general objective of timber management on the WMNF will be to grow and harvest timber crops to the best public advantage in accordance with the previously mentioned laws and regulations. A timber management plan provides guidance for the development of the timber resource.

Some Specific Objectives Are:

1. Development of even distribution of age classes by the end of  $1\frac{1}{2}$  rotations.
2. Increase the proportion of desirable species (yellow birch, paper birch, white ash, sugar maple and red spruce) through proper cutting methods and timber stand improvement work.
3. Market the full potential yield consistent with Multiple Use requirements.
4. Maintain a healthy, vigorous forest.

To achieve the stated objectives, coordination of all the land and social resources of the National Forest are needed. This coordination is achieved best through the Land Use Planning practices and policies which are carried out on the WMNF as well as throughout the Forest Service. Here on the WMNF, we have completed the "Guide for Managing the National Forest in New England" in 1973 and the "Forest Plan - WMNF" in 1974. These planning documents provide the guide and policies for all coordination requirements between timber management activities and other resources. The third step in this planning effort, the individual Unit Plans provide even more specifically the necessary coordination as it applies to individual areas on the Forest.

I will not go into great detail as to the specifics of the management guides for the various timber types on the WMNF since that would entail a detailed description of the Timber Management plan itself. Some over-all guides and comments are as follows:

1. The Spruce-fir type which comprises 11% of the commercial forest land on the National Forest, is managed in accordance with "A Silvicultural Guide for Spruce-Fir in the Northeast" USDA report NE-6. Rotation age will be 90 years

- for red spruce. Balsam fir should be removed as part of an intermediate cut before age 70. Regeneration can be either shelter wood or final harvest.
2. The Spruce-hardwood type which comprises 24% of the CFL on the National Forest has a rotation age of 110 years. Regeneration cutting will be by the shelterwood method. Balsam fir should be removed during intermediate cuts (thinnings) prior to age 70.
  3. The Maple - Beech - Birch type, which makes up the majority of the CFL (58%) will be managed using "A Silvicultural Guide for Northern Hardwoods in The Northeast" USDA Research Paper NE - 143. The rotation age will be 120 years. Regeneration cutting will generally be by Final Harvest (patch, strip or stand) and seed tree methods.
  4. The Paper Birch type, although a small component (7%) of the CFL, is economically important. The management guide used is "A Silvicultural Guide for Paper Birch in the Northeast" USDA Research Paper NE - 130. Rotation age will be 70 years. Regeneration will be by final harvest and seed tree cutting methods where more than 50% of the future stand will be paper birch.

These guidelines are just a few of the many that the professional forester has to guide him in the scientific application of forest management on the WMNF. There are many more, quite specific as to area (acreage) control, potential yield, allowable cut, etc. All of these speak to the professional forester and to his scientific management. But what about the human side of the coin or the fact that the National Forests are public lands?

#### CONFLICTS/OPPORTUNITIES

Again, as you probably are all aware of, National Forest management must be responsive to the myriad of laws, national interests, public demands for the various uses of the National Forest, and a land use ethic which at times defies purely scientific or technological knowledge.

Since converting to the even-aged system on the WMNF in 1968, we also have had to cope with the many multiple-use conflicts and opportunities which have risen. For instance, during the period of 1971 to 1975, we had harvested 528 acres of softwood stands and 8654 acres of hardwood stands through intermediate cutting practices, and 543 acres of softwood stands and 6173 acres of hardwood stands through regeneration cuttings. And even though we had some rough moments, we do continue to be able to practice the types of harvesting methods which have come under fire in other parts of the country.

Because of its location, the WMNF is one of the most highly used National Forests in the country. Recreation use and management permeates every facet of our operations. We have many user publics, ranging from the ultra-preservation minded to the exploiter, the sightseer to the logger, the hunter to the bird watcher.

#### AVOIDING THE CONFLICT

How do we deal with all these conflicts and opportunities? I wouched very briefly upon our Land Use Planning process and won't go into any details because I believe there will be another speaker dealing with the subject. I do believe however, that we have dealt with these issues in at least two parallel means which have contributed to our staying out of court, so far. These have been through our Information and Education processes (keeping the public well informed) and through our own policies of public involvement in our decision making processes.

To expand a little on these, we have made every attempt at informing the general public, the pressure groups, and the individual of every facet of our management practices. No longer can any one of us assume that the public is disinterested or ignorant of what we are attempting to do. We therefore concentrate, through the educational process, on having a knowledgeable public work with us in resolving the issues and conflicts.

This leads us into our second most valuable tool, Public Involvement. To state it very briefly and non-scientifically, we ask the public how they would like to see us manage their lands. Of course we don't do this blindly. We attempt to present the public with all of the facts, scientific knowledge, technical data, etc. that we have gathered. This is done by the professional on the ground. He also uses his scientific knowledge and training to recommend what he believes in the best course of action. This then is sent out to the various publics with the request that they study it and give us their input. We stress very strongly that they not only tell us what they do or don't like, but more important, that they provide us with their rationale for their recommendations. By analyzing the inputs from the public and combining it with our analysis, we have been able to come up with decisions for forest management which at least to date has worked fairly well.

Over the years we have developed a sensitivity to some of the conflicts which impact forest management practices on public lands. We have for instance limited our individual clearcutting Units to 40 acres and in some places even down to 10 acres. We recognized that aesthetics played a major role in how the majority of the public viewed our management practices. These same practices have been modified by our wildlife considerations.

I could go on and on about the various considerations interwoven into our land management. It should be clear that the key word or issue here is that we deal with "Public" lands, in which the public has a vested interest and in which the public is apparently demanding its say.