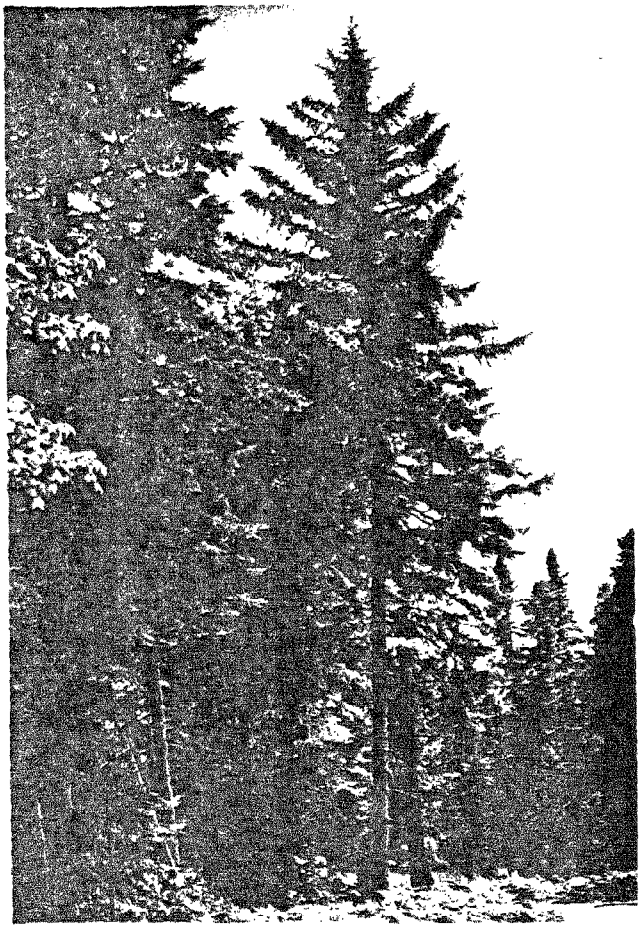
Proceedings of the SYMPOSIUM ON INTENSIVE CULTURE OF NORTHERN FOREST TYPES



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FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE
NORTHEASTERN FOREST EXPERIMENT STATION
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FOREWORD

THE 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

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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.

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DISCUSSION PAPERS

Below is a list of discussion papers on important topics that were presented Tuesday evening, 20 July. These papers are not included in the proceedings, but copies may be obtained from the authors.

"Summer planting of container-grown northern hardwoods":
Raymond E. Graber, plant ecologist, USDA Forest Service, Durham, N.H.

"Planting and intensive culture of yellow birch to improve timber quality and production": Peter R. Hannah, associate professor of forestry, University of Vermont, Burlington.

"Birch management—cleaning and weeding": R. W. Nash, G. A. LaBonte, and F. H. Manning, Department of Conservation, Augusta, Maine.

"Spruce-fir silviculture and management in the northeast":
Robert M. Frank and Ken Lancaster, USDA Forest Service, Orono, Maine (slide-tape program).

"Opportunities and limitations of northern forest types in Alaska":
John Galea, Alaska Planning Team, Anchorage, Alaska, and John Zasada, Institute of Northern Forestry, Fairbanks, Alaska.

"Economic aspects of intensive management; directions of technological change currently inappropriate": Lloyd Irland, Department of Conservation, State Bureau of Forestry, Augusta, Maine.

TRANSLATING FORESTRY KNOWLEDGE INTO FORESTRY ACTION

by John R. McGuire, Chief, Forest Service, U.S. Department of Agriculture, Washington, D.C.

Abstract

The non-Federal forest lands, which comprise three-fourths of the Nation's forest lands, are the key to meeting projected future needs for all forest products and uses. At the same time, the Federal role in State and Private forestry cooperative programs is being critically questioned. Public attitudes toward Federal expenditures, and the possibility of sunset legislation, may change the nature of Forest Service cooperative programs. One possible approach would be for each State to develop a comprehensive forestry plan suited to both State and national needs, perhaps related to a national program expressed through the Resources Planning Act process, as a basis for granting Federal funds for cooperative forestry activities.

I am very pleased to have the honor of opening this symposium. It's good to be back once again in the great State of Maine and to be a part of what promises to be a very productive and interesting discussion of the culture of northern forests. We all know that here in Maine, the State that proudly claims the highest percentage of forested land in the Nation, the future economic outlook depends upon intensive culture of all lands. And, in Maine, this means private forest lands. Certainly, no State depends more on its forest lands.

The agenda for this conference promises a rather comprehensive review of the culture of northern forest types. But, to get the meeting underway this morning, I'd like to set the background in a way quite different than you might expect.

I have been increasingly concerned in recent months about the outlook for State and Private forestry in this Nation. Unprecedented challenges face us in the next few months and years regarding the non-Federal forest resource.

There are many reasons for each of us here today to be concerned about State and Private Forestry. After all, the silvicultural knowledge that has been so painfully acquired over these many years finds much of its application on the three-fourths of the Nation's forests that are privately-owned.

In addition, the Assessment of forest and rangeland resources prepared under the Resources Planning Act confirmed that small, non-industrial private forestlands are the key to meeting increased needs for wood and other forest products in the next half century.

But, how do we get this land into production? There seem to be almost as many theories on this as there are speeches during an election year.

The challenges that face State and Private Forestry today are substantial and real. For example, when the President transmitted the Resources Planning Act documents to the Congress early this year, his Statement of Policy stressed concerns over the Federal role in State and Private Forestry. Today there is unprecedented questioning of the effectiveness of, and the rationale for Federal participation in programs targeted toward non-Federal lands. There is a strong feeling that the private sector and the States can and should provide the investments in and management of these lands. There is a strong feeling that the market forces are adequate to assure sustained and adequate supplies of timber and other forest resources far into the future. Thus, the Federal role in S&PF cooperative programs is being critically questioned.

Another dimension of this new concern is the so-called Monongahela controversy. Certainly any legislation which changes the 1897 Organic Act could have far-reaching implications for private forestry. If timber flows from the National Forest System are reduced through legislative direction, and assuming that demand for timber products continues as projected, it is obvious that the vast acreage of non-industrial private land in particular will feel the brunt of increased pressure for harvest.

Let me assure you that the Forest Service considers the State and Private function a major responsibility. It is an essential part of the total mission of our agency. We are well aware that the greatest remaining challenges to forestry in this Nation are found on these lands. We know that the interrelationships between State and Private Forestry and the National Forest System—particularly in the West--and with Research, are strong, and mutually supportive. We know that in many States--and Maine is a good example--private forest lands form a large part of the foundation of the economic and social well-being of the people. We intend to do our best to meet the emerging challenges of S&PF.

For those of you who may want to do some reading on this general subject, there are many recent analyses--for example the latest Forest Service "Timber Outlook Report" is a reasonably fresh set of statistics on forest land capability. The Resources Planning Act Assessment released in January is another. The President's Advisory Panel on Timber and the Environment put out a very comprehensive report in 1973. The National Commission on Materials Policy Report of the same year also paints a strong picture of the major significance of private forests in the United States.

We know what the challenge is. Now, how do we meet it? First, I would note that there is now, and has long been, a widespread philosophical opposition to subsidy or incentive payments to private landowners. Yet, it seems apparent--and here's where we need more analysis and data—that the typical non-industrial landowner simply will not make the investments needed in reforestation and intensive culture without some external motivation. All of us are aware of the reasons for this. But, what is lacking is a definitive analysis and projection of what would take place in the private sector without Federal or State intervention.

Some economists claim that the market place is the best arbitrator of national demands and supplies. Yet recent history has shown that market forces are not adequate to get small, non-industrial holdings into production. There has been little response to the sharp stumpage increases a few years ago and most landowners are fully aware of the fluctuations in the market price for timber—and the reality that most harvesting on their land will be done by the next generation.

I am sure this audience is well aware of what I might call the inadequate technology transfer of forestry research. We simply are not getting enough of our research findings applied on the ground. There are still many barriers that lie between the advancements of the research scientist and the practicing forest manager. Much of that linkage must come from State and Private Forestry activities such as the Cooperative Forest Management Program and from Forestry Extension programs.

There is also clearly an inadequate data base for benefit-cost determination, program evaluation, accomplishment reporting and other quantitative expressions of the effectiveness of Cooperative Forestry Programs. Until we overcome these inadequancies, we are of necessity put in the position of arguing for technical and financial assistance to State and private landowners without the necessary facts in hand.

I could elaborate for some time on the challenges facing us in State and Private Forestry as we begin this third century, but instead I would prefer to discuss some of the possible ways in which we, as a Nation, can assure that these lands are managed and protected.

Let's first take the definition or rationale for the Federal role in S&PF. Many would argue that the Federal role is and should be a catalytic role. For example, the Clarke-McNary law of 1924 established the Cooperative Fire Protection activities commonly known as CM-2. After some 52 years, the President's Office of Management and Budget argues that the program has been successful as a catalyst and should be terminated. The States have been able to establish strong capability in forest fire protection and therefore, the argument goes, there is no need to continue an outlay of some $20 million a year in payments to States. They point out that the Federal share now amounts to only about 15 percent of the total expenditures. On the other hand, the State Foresters and Congress argue that there is a continuing Federal responsibility to share the cost of protecting the Nation's private forest lands. Put simply, they conclude that it is in the national interest to have well-protected forests. The President proposes no further payments to States for this activity. The Congress, however, continues to appropriate the funds.

Another illustration, of great significance here in Maine, is the Cooperative Forest Pest Control project. As you well know, the Spruce Budworm outbreak here and in Canada is causing great and continuing concern. In recent years, the Federal Government, through the Forest Service, has contributed many

millions of dollars in repeated attempts to reduce the losses from Spruce Budworm. The State has just completed the largest aerial spraying in forestry in the United States, some 3 1/2 million acres. There are those who argue forcefully that the Federal role in pest control should be much less than a 50-50 partnership, in terms of dollars expended.

And so we are faced with the continuing need to analyze and rationalize, and establish a consensus on, exactly what the Federal role should be in protecting, developing and managing private forest lands.

Developing a rationale for Federal participation in Cooperative Forestry Programs is not something that lends itself to scientific analysis or linear programming or any other kind of hard data manipulation. Rather it is in the more difficult area of policy over what might be termed "shared responsibility" among interested parties.

To approach this question we plan to have a series of discussions with the parties concerned. For example, here in Maine later this year we plan to meet with all of the interests involved and review our strategy on Spruce Budworm control. We hope to have our Canadian friends participate in that program. This will not be a large conference, but rather a small group of the decision shapers and makers who must determine what each of the various roles should be in facing a very serious threat to Maine's forest resources. Out of that discussion, we hope to identify what the Forest Service role should be, as well as the roles of the State, private industry, and small landowners.

Another dimension of the emerging challenge to S&PF is finding much better ways of targeting the Federal contribution to Cooperative Forestry Programs. Most of the payments to States are based upon a formula distribution that attempts to provide equity among the States in receiving their share of the Federal funds made available for fire protection and technical assistance to landowners through the Cooperative Forest Management Program. In both of these long-standing programs, the formula distribution procedure is increasingly questioned. As the States increase their capability, and become dominant in the sense of far-overmatching the Federal dollars, there is less and less weight to arguments for providing Federal dollars to stimulate the program. Instead, what is needed is a targeted or directed use of Federal dollars for specific purposes, with accountability that will make possible cost-effective analysis of the Federal participation.

We are beginning to move in that direction as we work with our cooperating State Forestry agencies in revising our approaches to meet the new situation. The situation, obviously, is far different in 1976 than it was in 1924 or 1950, when these major pieces of legislation were enacted.

One illustration of the targeting approach is our so-called Sawmill Improvement Program. This activity comes under the Cooperative Forest Management Act funding and is targeted to aid mills who request assistance in improving their operations. The State Foresters and the Forest Service have been quite successful in providing this kind of technical assistance--and the results have been quite dramatic. The output of lumber from the same volume of logs going to the mill has been increased an average of about 13 percent simply by following better quality control procedures. The potential is there for even greater increases in yield. This is a good example of the effectiveness of applying some of the research knowledge that is developed at the Forest Products Laboratry and elsewhere.

The public's attitude toward Federal government expenditures is also a major element in the future role of State and Private programs. Some critics claim that we have too much government, too much bureaucracy, too many programs that are initiated but never terminated. The Office of Management and Budget has taken the stand that Federal agencies will not continue to do "business as usual." Sunset legislation may become the law. In fact, Congress and the States share this feeling to a large extent. In other words, I do not foresee that a law passed in 1976 can continue on for decades, as have the Clarke-McNary law of 1924, the Forest Pest Control Act of 1947, the CFM Act of 1950, and other major pieces of Cooperative Forestry legislation. Rather, we should think in terms of completion dates for programs, whether they are 5 years or 10 years or whatever. We should set a target to accomplish a specific objective and then conclude the program and move on to something else. The Rural Community Fire Protection Program is one illustration of Congressional direction in this regard. It provided for a 3-year pilot program and there is every indication that if the legislation is renewed it will have a very precise time limitation.

Closely tied to all of this is the need for better program evaluation. Federal legislation is increasingly requiring formal program evaluation. Both the Forestry Incentives legislation of 1973 and the Rural Community Fire Protection legislation of 1972, for instance, have this requirement. The picture emerging clearly shows increased attention to

the effectiveness of various State and Federal programs. Agencies such as the Forest Service must justify and prove the effectiveness of their activities more than ever before. And this means that we must develop an adequate basis--a factual basis--for program evaluation that is much better than we have ever had before.

There is no doubt that private lands--particularly small, non-industrial holdings--are the key to meeting the future demands for forest resources. And please remember that while this conference deals mainly with wood supplies, the demands for other forest uses are increasing just as rapidly--in some cases, more rapidly.

Those of you in the Northeast are well aware of the escalating demand for recreation, for both developed facilities and wilderness opportunities. The Allagash River is a classic example of what can happen when user demand outstrips the available resource--and the resource suffers. In other areas of the country, use of Federal rangelands is becoming highly controversial--and decisions have to be made that balance the Nation's red meat needs with the need to protect the rangeland resources. All other resources from our forestlands--water, wildlife and subsurface minerals--are also priority candidates for intensive management.

Incentives, education, and other forms of assistance are one approach to insuring adequate management and protection of private lands. But there is another approach which has become more dominant in the last few years--and this is regulation. On the Federal level, we have such laws as the Federal Water Pollution Control Act Amendments of 1972. At the same time, many States are rushing to enact their own requirements, involving everything from forest practices acts to coastal zone management. Federal and State legislation is surfacing many debates--what lands should be regulated, what level of government should do the regulating, and just as importantly, who should foot the bill?

Nor can we dismiss the international picture when we talk about meeting future needs in this country. Last year marked the first time in history that the dollar value of our timber product imports caught up with our exports.

I think these considerations--coupled with requirements for 5-year reporting periods of Forest Service accomplishments under the Resources Planning Act--logically point to some new future directions in our Cooperative Forestry programs. Let me conclude by expressing a hope about where we may find ourselves moving as we progress through the remainder of the 1970s. Basically, we are placing our hope in the idea that in each of the 50 States it will be possible to develop a comprehensive forestry plan.

One way in which this might work is through a block grant approach, very similar to the Federal revenue sharing program. It could perhaps be a 10-year plan, starting with a State resource assessment, tying into national needs as expressed through the Resources Planning Act process, and progressing to each State organization developing a forestry plan suited both to that State and to national needs. The Forest Service would then evaluate the plan, and provide a block grant to implement the plan.

Last March I wrote to each of the State Foresters, in effect challenging them to pick up this "mantle of leadership," through their resources planning process and to provide much of the State leadership necessary to bring together the various interests in forestry assessment and program development. I am happy to tell you that almost every State Forester responded positively. They are ready and willing to move forward in this direction.

I hope these comments have helped set at least a part of the stage for this symposium. I'm sure you will touch on many aspects of the need for technology transfer and for applying forestry knowledge to non-Federal lands. I believe that all forestry interests--scientists as well as practitioners--must focus their attention on this vast acreage of productive forest land that is one of the rich blessings of this Nation. It is simply not enough to know how to achieve intensive culture of northern forest types--or of any other forest type. We also need to be able to deliver that know-how and to make it effective. Transforming knowledge into action will require the coordinated efforts of all of us who are dedicated to the management and protection of this Nation's forest resources.