MINNESOTA'S FORESTRY SECTOR:
STATUS OF RESOURCE, ECONOMIC IMPORTANCE AND
CONDITIONS INFLUENCING FUTURE DIRECTIONS

by

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MINNESOTA FORESTRY: RESOURCE STATUS, ECONOMIC IMPORTANCE, AND CONDITIONS INFLUENCING FUTURE DIRECTIONS

by

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Minnesota is fortunate -- in many respects it is in an enviable position from a national perspective. Why? Because it has forests of substantial magnitude -- forests which provide the raw material required for manufacturing products demanded by state, national and in some cases international markets. Implied with the existence of forests is an economic base from which flow jobs, income and a sense of economic stability. Many states would find such wealth especially desirable; their own economies being narrowly focused and subject to damaging abuses as witnessed by the most recent economic downturn. Our wood-based sector is among the leaders in the state's economy, standing tall with agriculture, tourism and minerals. It is a most significant contributor to the quality of life experienced by Minnesotans and visitors alike. A fact which stands firmly on the existence of forests which blanket the state.

Forested vegetation covers nearly 17 million acres (1/3) of the state's 50 million acres of land. Fourteen million acres of forest are classified as commercial timberland. From a national perspective we are the 16th most forested state. Of every 10 acres covered with trees,

roughly 4 are occupied by aspen, 3 by hardwoods, 2 by spruce-fir; the remainder is in pine or a nonforested condition. Obviously different regions of the state have different mixtures of forest -- such is a condition in a state that can brag of forest diversity. Our commercial forest landownership is divided nearly equally between private (47 percent) and public (53 percent) landowners. Our uniqueness in this respect is the extent of forest land controlled by state and country governments. Combined, the latter two ownerships account for 35 percent of all forest land so owned nationwide. In state-owned land alone we rank third in the nation, behind only Michigan and Pennsylvania; county-wise we lead all states with 34 percent of the nation’s county administered forest land. Our privately-owned forest land totals 6.4 million acres -- only 14 percent of which is industrially owned.

Clearly, the state’s wood-based industry is dependent on the actions of other landowner categories for its raw material supply. Most private forest land is in a heterogeneous lot of owners, commonly referred to as nonindustrial private forests. Such owners account for 38 percent of commercial timberland within the state and more often than not have holdings of less than 50 acres. They have a variety of forestry objectives not always of a timber nature. And their numbers can be large. Minnesota is thought to have 120 thousand of the 7.8 million which exist nationwide. Indeed, they are a challenge to management skills of the forestry professional.

Land area covered by forest within the state has declined. This can be good or bad depending on successes in intensifying management on
remaining forest land. Between 1962 and 1977, commercial forest land found its way into cropland, pasture, marsh, urban and productive reserved (nontimber uses). In total, 1.7 million acres were so converted, of which 700,000 was given national park or wilderness status. All forest ownership categories — except forest industry — have experienced losses of a timberland base; with nonindustrial private forests experiencing the greatest erosion over the past 30 years, namely, 915,000 acres. What of the future? Predicted are conversions of approximately 780,000 acres of commercial timberland to nonforest uses through 1990. Most will go to urban and agricultural uses.

Forest land and the trees which occupy it are physical features of the landscape — in and of themselves having no value. They take on meaning when used to enhance the economic and social well-being of people. This they do in a most significant way — producing recreation, water, timber, wildlife and pleasing landscapes. More specifically, they are the foundation on which rests the state's third largest manufacturing industry — the wood-based industry. In 1982, total sales by the industry's primary and secondary segments approached $2.5 billion. These sales were realized because over 45,000 people were directly involved in product manufacturing — more than half of which were located in the Twin Cities metropolitan area. If persons employed in related trade and service industries are included, employment attributable to the industry probably exceeds 100,000. Based on late 1970's information, Minnesota's wood-based industry accounts for 13.5 percent of statewide manufacturing employment, 15.0 percent of personal income
generated by such industries, 9 percent of gross sales and 12.3 percent of the value added by manufacturing within the state. In sum, the wood-based industry is certainly an important cog in the state's economy -- and not one which is prone to inaction. During the past 5 years, the industry has made capital expenditures in excess of $700 million, directly creating over 1,000 new jobs in northeastern Minnesota -- the most economically distressed area of the state. If persistent rumors are true, the industry is likely to announce this year additional capital investment exceeding $300 million.

Programatic advances in the state's forestry sector have been substantial over the past 6-8 years. With significant leadership from the Legislative Commission on Minnesota Resources and a sense of vision established by state political leaders and professional resource managers, Minnesota has established and implemented programs that place the state in the honored position of being looked to for leadership in state and county forestry and in forestry research and education. In a relatively short period of time, Minnesota has:

- reforested over 80 thousand acres of forest land and applied timber stand improvement practices to over 31 thousand acres of such land, using both federal (BWCA) and state monies.
- constructed 40 miles of forest road, applied intensive maintenance to 3,000 miles of such roads and built 10 new bridges.
- prepared a premier statewide forest plan and is well on its way to developing a series of unit forest plans.
- established in law, some of the most comprehensive forestry programs in the nation, especially noteworthy being a statewide
forest planning system, a forest management fund, a continuing education plan and basic policy guidance for state forestry research and extension.

- recognized stable ownership of forest land by county governments as in the public's best interest.

- established a cooperative tree improvement program with a coordinator to implement it.

- saw capital investments in wood processing facilities which could exceed one billion dollars in a 10 year period

- and carried out major efforts focused on forest information systems; fire management analyses, private forest management assistance and accelerated forest inventories.

The breadth and scope of advancement are in many respects remarkable given the relatively short period of time over which they have been accomplished. A challenge to resource managers and political leaders is to identify a state that can boast similar accomplishments. One would be hard pressed to do so. Especially rewarding to the state will be the processes and procedures which have been set in place. Funding and leadership per se may change with the times, but institutionalized processes will remain to enhance stability of the forestry sector in the years ahead.

The forestry community of Minnesota must not, however, rest on its laurels. If the potential of the state forests are to be fully realized, we must look ahead with a sense of vision. Exactly what direction we steer the vessel is largely a political determination.
What could be of value in determining such direction is an assessment of the major structural conditions that might be imposed on Minnesota by its own forestry and political climate as well as the goings on nationally. From my perspective, the direction that such forces will move us is uncertain — answers are not always clear. But what might be some major challenges to forestry over the next 5-10 years? A short summary is in order.

**Emerging Lake States Regional Perspectives.** Minnesota's forests and the economics which thrive on them are part of a broader system of forests and forest economies — the Lake States Region which is composed of Minnesota, Michigan and Wisconsin. In total the region claims one in ten acres of the nation's commercial timberland. With neighboring states of Wisconsin and Michigan we have much in common from a forestry perspective. Consider: marketing advantages in terms of raw material supplies being close to major population centers; forest tree species and natural ecosystems of a similar nature; relatively high percentage of public forest land over which public control can be directly exercised, especially state and county ownership; and a healthy interest in using forests as a tool for economic development. During the past 3-5 years, the forestry community within the region (especially state governments) have been operating in a favorable environment of strong bipartisan support for forestry programs — optimism over forestry and forest development has been high. Given such a climate, there has emerged a growing interest in cooperative efforts focused on common regional interests. For example, regional forestry strengths may well
be exercised to secure significant portions of emerging domestic and foreign markets for wood. A regional image such as the South has pursued in marketing pine species may be in order. From a national perspective, wood products for the South are regionally identified -- not identified with states per se. Obvious too may be opportunities to directly address problems that impede the flow of forest products between states (e.g., transportation regulations, building codes). Regional consortiums may also enable the forestry community to act as a more formidable political force when dealing with competing regions and the federal government. In sum, the objectives of cooperating regionally have yet to fully materialize; what their nature will be remains to be seen. It should, however, be recognized that a Lake States regional forest perspective is emerging and with it some important implications for Minnesota's forestry sector. It is a factor deserving attention and as appropriate, action.

**Signals for Expanding Forest Product Exports.** The United States is a major exporter of forest products -- $3.7 billion in 1980. The South has taken on an especially aggressive role in export markets. To date, Minnesota has played a minor role in worldwide markets. In the late 1970’s, shipment of lumber, paper and board products from the state to international markets represented approximately 9 percent of the value of forest products shipped by Minnesota firms -- 8 percent (2,200) of our wood-based employment was oriented toward export markets. Such is admittedly not an overwhelming role -- but important to those involved. There are signs, however, that such a role could increase. Because of
growing worldwide demand for wood products, international markets are expected to grow. U.S. exports to Europe in 1981 were $700 million -- forecasted is a rise to $1.6 billion by 1990 with panel products expected to lead the way. To meet such markets, nationwide interest in the exporting of wood products (raw material and finished) has become exceptionally keen in recent years. For example, in the past 2-3 years the Foreign Agricultural Service of the U.S. Department of Agriculture has made significant efforts to augment its forest products exporting activities. The latter are designed to encourage market access, provide market information and encourage market development. Wood-product interests are now tied to some 70 FAS posts located around the world -- in some cases forest product representatives per se have been assigned to such offices. Further augmenting the national push to expand export activities is the establishment of an industry-wide program called Foreign Market Development. Through the National Forest Products Association, 15 industrial associations representing untold thousands of companies are involved with federal international agencies in the development of wood product markets. They mean business -- world trade business that is. And legislatively, companies have been given a major new incentive to become involved in exports -- the Export Trading Company Act of 1982. The latter enables competing companies to form export trading companies which allow freedom to aggressively pursue trading activities previously prohibited (third country roles, bartering), to secure very favorable tax advantages for export activities, to be virtually free from federal antitrust laws, and to seek out
banking partners which can provide financial support to export trading companies at very favorable rates. The new law is in its infancy -- surely it will be aggressively pursued by companies with an interest in worldwide markets. Suffice it to say that nationally there is surfacing a number of public and private export programs that are being aggressively pursued. Much of this interest is obviously designed to diversify markets and thus buffer dismal domestic market experience such as occurred over the past 5 years. Where does Minnesota fit in -- we're not sure. With a sense of vision on behalf of the state's government and industry there is no doubt that our role in exporting forest products could be enhanced. We may never be in the wood export league of our West Coast neighbors, yet the export climate that is now developing nationally surely has more in store for us than now exists.

Aging Structure of Forest Stands. Although Minnesota's forests are diverse in the sense of species, growing conditions and use, they are all undergoing a common and major structural change -- they are getting increasingly mature. This maturity is occurring much the same as we see the U.S. human population in general (an aging society). Moving through the forest system are older age classes that account for ever increasing volumes of timber. Despite an 11 percent statewide decline in commercial timberland area since 1962, growing stock volumes have increased 21 percent and sawtimber volumes 65 percent. Most of the growing stock volume increase is on trees 7-12 inches in diameter -- a fact which signals a forest landscape dominated by trees approaching "old-age." If we consider the aspen forest type, for example, a bell-shaped age class
distribution is found. Nearly one-quarter of aspen acres throughout the occupied by trees state is/40–50 year old/while nearly 60 percent is occupied by 30–60 year old stands -- mature by aspen standards. The evidence for maturing stands is even more apparent for paper birch. Although reasons for this distribution are many, the most influential factors are related to fire and logging activities which occurred many years ago. We are not alone in this respect; forests in Michigan and Wisconsin are undergoing the same structural changes. Some have labeled this a "wall of wood" working its way through the system. What does all this mean? One obvious consequence is that we will be blessed with a substantial volume of timber -- particularly aspen -- for a number of years. Combined with appropriate utilization technology, our industrial development strategies can flourish given such raw material conditions. But beyond that, what is implied of a mature forest? Will it require greater investment in forest protection activities (e.g., fire, insects and diseases)? Will the younger forest to follow mandate development of different products capable of using a substantially different forest and raw material implied therein? Will wildlife habitats and recreation conditions change for the better -- or the worse? Will the natural death of mature forests result in forest sites reverting to species of lesser value for timber, recreation and wildlife? And will the cost per ton of wood fiber rise because fiber volumes per acre go down? A list of speculative questions such as this can go on at great length. As we look to establish the state's third forest, what we are facing is a need to address in a strategic sense the development of a better distribution of
age classes on commercial timberland within the state. Doing so may well be beyond a single generation. The least we can do, however, is to recognize the situation and attempt to formulate industrial and related strategies accordingly. And when possible, carry-out cultural treatments that will temper the "wave of wood" flowing through the forest.

Forests as Strategic Resources for Development. Forests represent vast storehouses of raw materials. They generate the raw fiber on which industry operates -- much in the way the steel industry looks at raw iron ore or the food processing industry looks to fields of grain. There exists a growing interest nationally in a more focused view of forests -- and the timber therein -- as strategic resources through which industrial development and diversification can be achieved. Implied therein is a cohesive program which brings together various sectors of a state's forestry community with a common focus on industrial development based on forest resources. Some states have formulated target industry programs which bring together skills and information amassed in state research units, universities, businesses and government agencies to secure development of the wood-based industrial sector. Programatically, efforts focus on attracting new industry, developing national and international markets for products of a state's forests, targeting assistance to existing businesses so as to ensure long-term viability and encouraging support for new products and new product research. Michigan has gone so far as to propose a "strategic fund" from which capital could be supplied to new enterprises unable to secure financing from conventional sources, and has targeted "forest develop-
ment" zones within the state -- zones within which exist the mix of ingredients necessary for new industry or expansion of existing industries (e.g., labor, raw material, water). Details aside, there is a growing interest in forests as a strategic resource to be used in achieving industrial development goals and in initiating broadly structured programs to coordinate human and physical resources toward such ends. Minnesota will most certainly be influenced by states which are agressively pursuing such actions. The latter are certainly deserving of attention.

Long-term Sustained Financial Support. By their very nature, timber management programs imply long-term investments. Equally important they imply sustained levels of funding free of dramatic shifts in emphasis. Only then can the raw material supplies flowing from them be predicted with reasonable accuracy, and the risk of uncertain raw material supplies be kept at acceptable levels. Public forestry programs in Minnesota -- notably state and county -- are well on their way toward development of intensified timber management programs. Along the national horizon are rising circumstances which will undoubtedly effect the financial health of these programs. For example, there are major adjustments occurring in federal financial and supportive assistance to state forest programs (e.g., fire, private cost share, planning). Federal cooperative funds to states are being reduced. Admittedly such funds are less than 7 percent of current DNR Division of Forestry budgets and are likely to drop to 2 percent by 1988-89. They are, however, hard money which must be sought elsewhere if program levels are not to be jeopardized. A related
funding concern is the BWCA Intensification Program which has been a major catalyst to renewal of interest in state and county forestry programs. With authorization for funding through the BWCA program due to expire in 1990, a sizeable reservoir of financial support will be removed. In some respects, the Forest Management Fund authorized by the 1982 Minnesota Forest Management Act will shore up the deficit. But is that all we wish to do? Or are we willing to make up the difference with state financial commitments and continue the growth of total financial investments in forestry which has occurred over the past 5 to 6 years. Obviously the latter implies commitments by the state -- commitments that must be judged in light of other demands made on state tax revenues.

Commitment to Lifelong Professional Education. Natural resource professionals are the "implementers" of policies and programs developed by legislative and administrative systems. As does any profession, they must maintain a high level of professional skills if programs to which they are assigned are to be administered efficiently and the program wishes of political leaders carried out in an effective manner. There are strong signals nationally and at the state level that forestry professionals are demanding access to well organized and current continuing education programs -- the technologies they practice are moving too rapidly to be satisfied with current understanding. Nationally, the Society of American Foresters has recognized the opportunity and has set in motion a forestry certification program, awarded after professionals have completed certain post-collegiate educational endeavors. The USDA
Forest Service has long had a history of keen concern for keeping their professionals attuned to current knowledge as have certain states. In California, continuing education evidence is a requirement of renewed licensing of professional foresters. Our own DNR Division of Forestry carries out significant continuing education programs for professionals therein. And the importance of the problem was recognized by the Minnesota Forest Management Act of 1982 which called for a recommended program, including an ongoing means of identifying training needs and the mechanisms by which they will be addressed. There remains a concern, however, that we have yet to really face up to the issue. The time may be ripe for some aggressive action. A comprehensive program needs to be developed, leadership authority needs to designated, and funding must be forthcoming. We have grand designs for the forestry sector within this state -- expectations are high. National and state indications are, however, that hand-in-hand with such designs must go a knowledgeable forestry professional -- one that is attuned to the skills and technologies of the day.

**Intensified Resource Assessment and Information Management.**

Information is a vital ingredient for effective decision making within forest management organizations. As we expect more from our forests and the professionals managing them, a more enlightened understanding of the forest and its response to management activities becomes more and more critical. We have begun to view information (data) as a capital resource to be invested in. With the advent of computerized information systems at the lowest level of management, there is occurring an enor-
mous surge in demand for information about forests in the broadest sense. Heightened management intensity is creating a nearly insatiable demand for information: more timely and intense inventories, better estimates of the physical responsiveness of forests to management programs, and a clearer statistical picture of the demands (use) which will be made for the outputs of forests in the years ahead. We would be hard pressed to deny that such information is needed -- the question is always "how much," for which answers are at times elusive. Tied to the demand for more planning and management information is the arduous task of managing the information gathered and integrating information systems within and between agencies. In Minnesota alone, there are more than 45 divisional level organizations (agencies) in the business of gathering data important to forest administrators, planners and managers. As the volume of information grows and demand for its use increases, the integration of information systems looms more ominously on the horizon. One step in the right direction -- although themselves a major consumer of information -- are forest planning activities. If wisely carried out, they can focus information gathering on critical needs and move emphasis away from "its nice to know" information. Information and its management is a product of complex programs being applied to equally complex biological forestry systems. It most certainly is a matter of growing importance and should be recognized as such.

Science and Technology as a Foundation of Progress. Public and private forestry programs rest on a foundation of scientific information and technology. Without investment in such endeavors the progress
realized by the forestry community during the last 4 decades would be dubious at best. In our own state, the results of research conducted by public and private organizations throughout the nation have been significant. They take the form of new products such as waferboard, the application of technologies such as remote sensing and satellite imagery, moves toward high speed information management techniques and the application of computer technologies -- to name but a few. What lurks on the horizon is subject to speculation -- robotics, biotechnology, genetic engineering. Opportunities for research to alleviate problems that curtail the ability of forests to fully contribute to social and economic well-being are many. They include:

- means of improving timber yields through development and application of advanced silvicultural techniques (e.g., seed production, stand establishment)
- genetic improvements to provide superior trees having greater yields and substantial resistance to diseases and insects.

Biotechnology procedures offer opportunity for circumventing the long regeneration cycle of trees.

- development of processing techniques which lead to new products from wood, many of which may well enable use of abundant hardwood species and extension of scarce softwood species volume.
- means of reducing timber losses resulting from destructive agents such as fire, insects and disease. Volumes lost from such agents are larger than volumes harvested annually.

Suffice it to say that opportunities for directing research activities abound in number. To carry-out such work requires sustained high
level investments commensurate with the economic gains to be realized. This implies research funding focused on specific problem areas as well as continued support for the basic institutions in which research is carried out -- the supporting facilities such as buildings, equipment and numerous indirect costs. Not to invest in the latter jeopardizes the foundation on which many "special project" research activities are carried out. Research, then, is a key ingredient to any forestry program. It should be supported in a fashion consistent with our vision of where forestry is going in the years ahead.

**Concluding Observations.** In sum, these are but a few of the many conditions which will influence the direction in which the state's forestry sector will move in the years ahead. Obviously many more could be brought forth for attention. The forestry sector of the state is on the move -- no question about it. In large measure the advances of the past few years must be credited to the vision and leadership of the Legislative Commission on Minnesota Resources. If there is an essential factor one would identify with Minnesota's forestry future, it is that Commission leadership and the financial commitment which goes with it needs to be sustained in support of forestry initiatives begun so well. There most certainly are untested policies and programs which if given the opportunity to be implemented may pay off handsomely to the state and its economic structure. Minnesota and the region of which it is a part is being looked to once again as a major supplier of forest products for markets across the nation -- in some respects we are in keen
competition with other regional sources of wood products, especially the South. Now is not the time to be "resting on our oars." Let's continue to make Minnesota forestry the hallmark of the nation and thereby serve the residents of the state in a most respectable fashion. The Legislative Commission on Minnesota Resources has succeeded in moving the state's forestry establishment toward such goals. I'd urge its continued support for innovative forestry programs in the years ahead.
Distribution of commercial forest land by ownership class in Minnesota, 1977.


Net annual growth and removals of growing stock on commercial forest land by ownership class and softwoods and hardwoods in Minnesota, 1976.

Commercial forest land in Minnesota by forest type in thousands of acres and percentage of total.

Source: Minnesota Forest Resources Plan, 1983.
FOREST LAND AREA (thousand acres)

Total Land Area

Forest Land
- Commercial Timberland: 13,695.1
- Productive Reserved: 1,175.6
- Productive Deferred: 3.0
- Other Forest: 1,835.5

Total 16,709.2

FOREST LAND OWNERSHIP (thousand acres)

Total Commercial Timberland Area: 13,695.1

Public Ownership
- Federal: 7,328.5 (53.5%)
- Indian: 1,869.6
- State: 2,650.5
- County & Municipal: 2,341.6

Private Ownership
- Forest Industry: 6,366.6 (46.5%)
- Farm and Other Private: 5,394.6

SOFTWOOD GROWING STOCK (million cubic feet)

All Ownership
- National Forest: 871.1
- Other Public (State & County): 1,564.5
- Forest Industry: 265.0
- Farm and Other Private: 776.4

HARDWOOD GROWING STOCK (million cubic feet)

All Ownership
- National Forest: 1,000.0
- Other Public (State & County): 2,698.5
- Forest Industry: 371.0
- Farm and Other Private: 3,707.5