1987

The Maine Forester

Maine...is our future growing? We think so. The importance of natural resources within this state clearly indicates that growth is paramount to our future in many ways. The 1987 edition of the Maine Forester takes a look at a variety of "growing" areas in the field of natural resources throughout Maine. Within these pages you will find many feature articles on topics such as: a unique educational opportunity at the University of Maine; the future of tree planting within the state; the burgeoning role of computers; the importance of wildlife; and the role that the College of Forest Resources plays in the building of professionals.

"For the future is ours..."

Carpe diem!

THE
MAINE FORESTER
1987

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The Students of the
COLLEGE OF FOREST RESOURCES
University of Maine

DEDICATION

Through the years Dr. Thomas J. Corcoran has dedicated his time and efforts to the College of Forest Resources and to the forestry and engineering professions. We are proud to dedicate the 1987 edition of the Maine Forester to him. His career serves many of his students as a model for their own future professional goals.

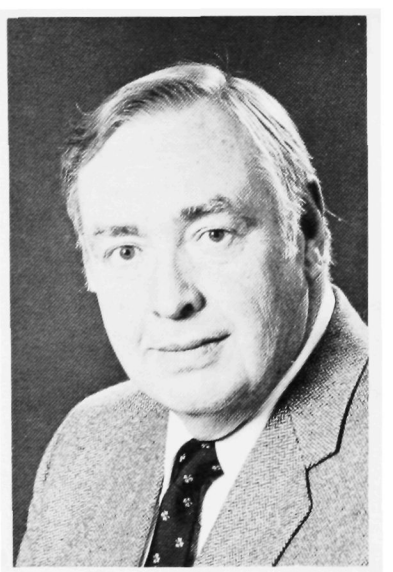
Dr. Corcoran received his Bachelor of Science from Michigan Technological University in 1955. In 1960, after serving two years in the U. S. Army, he received his Masters of Science and in 1962 a Ph.D., both from Purdue University. In 1961 Dr. Corcoran arrived at the University of Maine as an Assistant Professor of Forest Economics. In 1965 he was promoted to Associate Professor and to full Professor in 1968. At present Dr. Corcoran is the most senior faculty member in the college.

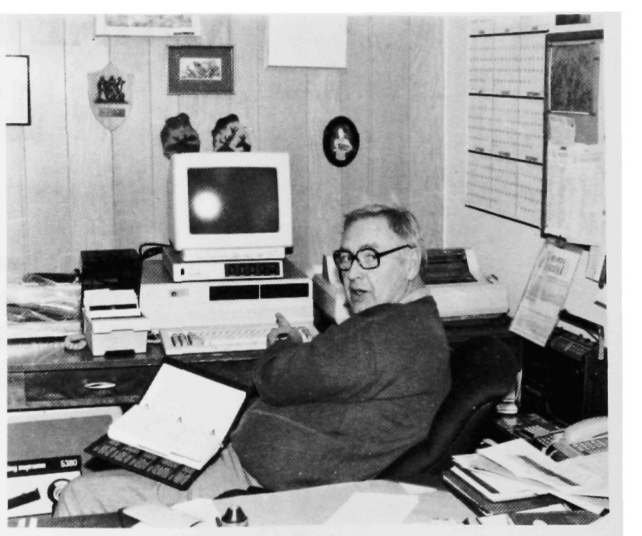
Since coming to the University of Maine, Dr. Corcoran has authored approximately 130 scientific papers and written chapters in four books. Dr. Corcoran is a well reknown professional in the fields of Forest Engineering and Forest Economics. He has lectured around the world at Universities such as: University of Gottingen, Denmark; University of Helsinki, Finland; Swedish Royal College, Sweden; and University of Tokyo, Japan; just to name a few. Dr. Corcoran has also been a Senior Fulbright Research Scholar, University of Helsinki, Finland 1969-1970; NATO Senior Fellow in Science, Agricultural College of Norway 1972; NATO Senior Scientist, University of Wageninga, The Netherlands 1977; and FORMULA Division leader, University of Maine 1978 to date.

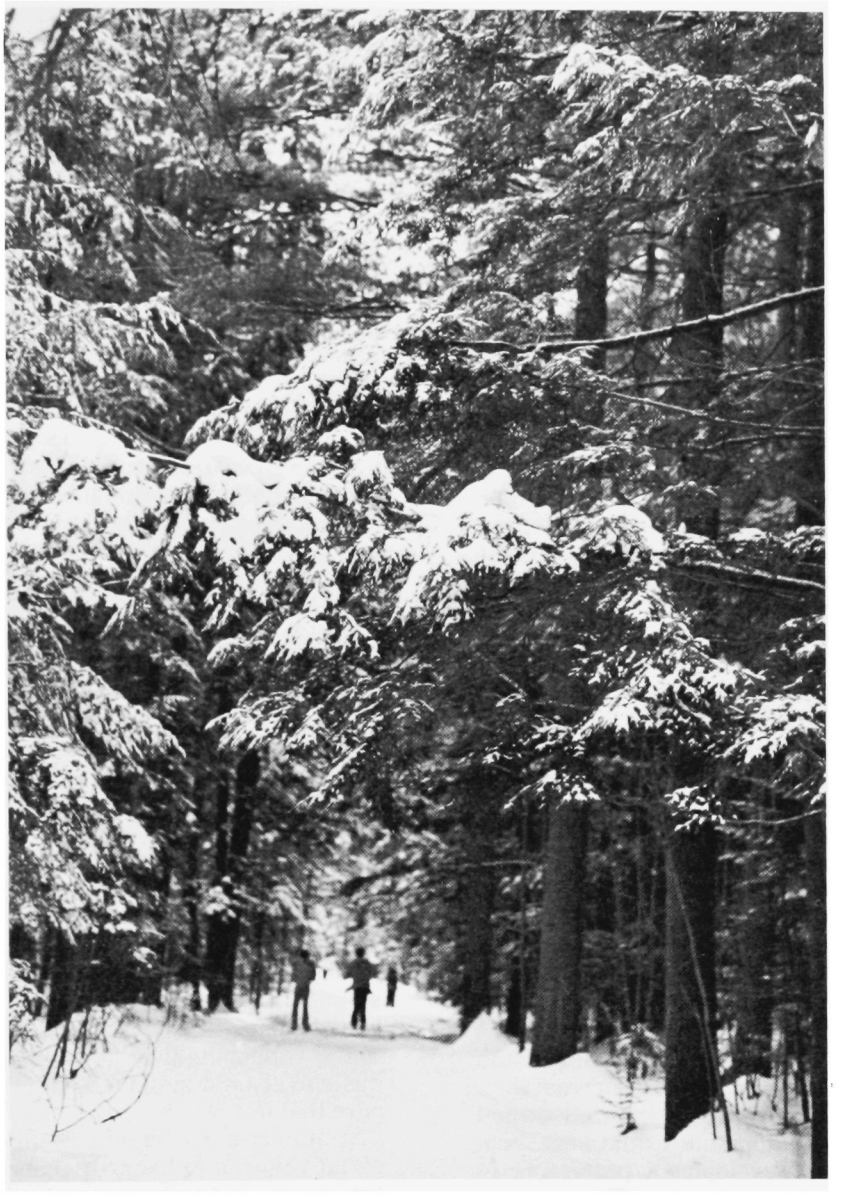
Dr. Corcoran belongs to and is involved with many organizations and societies. In 1985 he was elected as a Fellow in the Society of American Foresters. He has been involved with the Council on Forest Engineering (COFE) since its inception and served as national chairman in 1984. Since 1985 Dr. Corcoran has been the executive chairman of the New England Regional Council on Forest Engineering. Other organizations include the International Union of Forest Research Organizations (IURFO), American Society of Agricultural Engineers, and the Association of Environmental and Resource Economist.

One of the major contributions Dr. Corcoran has made to the University was the creation of the Forest Engineering Program. In 1971, he and Dr. Norman Smith of Agricultural Engineering Department founded this program, which is co-sponsored by the College of Forest Resources and the Department of Agricultural Engineering. This is the only program in the U. S. which has been accredited by both the Society of American Foresters and the Accreditation Board for Engineering and Technology. Since 1972 Dr. Corcoran has been the Co-administrator and Professor of Forest Engineering.

Dr. Corcoran teaches Forestry Economics, Production Analysis in Forestry, Planning and Control of Forestry Operations, and Research Problems in Forestry Economics. Besides teaching, Dr. Corcoran also does consulting for major corporations and the government.







Year-end revelling . . .
Still in Pilgrim's
Cape must I
Roam my endless road.

Basho

GREETINGS FROM THE DEANS

Editor's Note:
This year, the "Greetings from the Dean" and the "Comments by the Associate Dean" are combined into the "Greetings from the Deans" to reflect the recent changes that have taken place within the College. On November 1, 1986, Dean Brown was appointed Acting Vice President for Academic Affairs. At the same time, Associate Dean Knight assumed responsibilities as Acting Dean for the College of Forest Resources.

The theme of the 1987 MAINE FORESTER is "Is Our Future Growing?" There has been much debate within the renewable resources professions as to the future of our forest resources and what the forests of the year 2016 will look like. We must ask ourselves some important questions today for our actions will determine the viability and availability of future forest ecosystems. The resource management practices and land use policies which we put into effect today will produce outcomes which require our careful consideration.

Sixty-six percent of the Northeast is forested, yet the overall quality of these forests is poor. The forests of this region are largely composed of mature to over-mature, even-aged stands of secondary origin. The low quality and productivity of these forests can be attributed to the effects of nature and man's abuse over the last century. From the sprout forests of 50 years ago, we have attained an overstocked, under-utilized forest where active silviculture is largely absent.

Seventy-three precent of the forest land in the Northeast is in non-industrial private ownership. The size of an average parcel of privately-owned forest land is getting smaller due to the encroachment of the surburban development pattern (1 to 5-acres house lots) into forested areas. This land use trend in rural areas is expected to continue. Much of the remaining non-industrial private forest land is not being managed for any forest use or is being managed for short-term financial gain with no regard for long-term productivity.

Global demand for wood products is expected to increase by 60 percent by the year 2000. Similar projections have been made for the non-fiber uses of U. S. forests. At the same time, a decline in spruce-fir inventories during the next 30 years to less than one-third the present volume is projected in Maine (Seymour, et al., 1986). To promote adequate supplies to take advantage of increasing demands, further gains in the productivity of succeeding generations are needed, along with long-time adjustments in production, marketing and investment strategies.

Prime species, large areas of high site-quality land, and access to domestic and international markets provide strategic advantages for resource managers in the Northeast. Integrated forest management for high-value yields is needed to optimize opportunities for the region's wood industries. Forest managers can do much today to ensure that our future will continue to grow and thrive. The application of intensive silviculture to improve stand values and foster regeneration will pay off in the quality of the next forest.

ASSOCIATE DEAN KNIGHT AND DEAN BROWN

The productivity and profitability of future forests can be further enhanced through improvements in the areas of research, management practices, wood-based industries and public policies. Additional research is needed in forest ecology, plant genetics and biotechnologies. This research should improve data management and forecasting capabilities, and include on-going evaluation. Management practices are needed which promote sustained yields, timely and efficient harvesting and regeneration, while maintaining site quality and ecosystem integrity. New products and markets are needed for low-quality hardwoods. Improvements also are needed in manufacturing and processing technologies. Public policies and programs are needed which promote sound land use regulations and taxation structures, encourage public appreciation of natural resources, and lead to the development of appropriate short-and long-term natural resources goals in the U. S. and abroad. The College of Forest Resources at the University of Maine has been actively involved in these and other aspects of resource management and is committed to an Active Program combining teaching, research and public service to identify the issues and impacts of our actions on the forests of the future.

Since publication of the 1986 MAINE FORESTER, our College has welcomed Dr. Donald Spalinger, Assistant Professor of Wildlife; Dr. Alan White, Associate Professor of Forest Resources specializing in silviculture; Dr. Steven Sader, Associate Professor of Forest Resources in photogrammetry and remote sensing, (Dr. Marshall Ashley continues his assignment in international work stationed in Haiti); and Catherine Elliott, Assistant Scientist in Wildlife. Searches are currently underway for the Curtis Hutchins Professorship in quantitative silviculture, and Assistant Professors specializing in Economics and Wildlife.

Two new professional positions were added to the College this year. In September, 1986, the Office of Professional Development was established. Dr. Christopher Murdoch is the Coordinator of this professional development program designed to meet the educational needs of practicing foresters and other resource professionals. Using traditional and innovative approaches, the program will serve those professionals desiring to further or broaden their educational background through continuing education. The second position created this year is that of an Assistant to the Dean (for administration). Katherine Weber assumed responsibilities as the new Assistant to the Dean in November 1986.

The College continues to be active in the areas of research and publication, public service and international programs. The College is being awarded an increasing number of grants and research contracts across all disciplines of the College. Faculty and administrators play key roles in many State, regional and national committees, and serve as facilitators and participants in international programs.

To ensure that there will be quality forest resources in the future, we need good resource managers in the field today. After a slow period, the forestry profession is growing again across the country. A higher percentage of our graduates now are finding employment within the profession than was the situation during recent years. Many of our graduates are finding temporary resource management jobs which lead to permanent placement in time.

We would like to close this letter with a special recognition and challenge to the Class of 1987. Your class will be the next class to graduate from the College of Forest Resources at the University of Maine and enter the professional world of natural resource managers. As resource managers, you must also be planners and educators. Landowners and the public in general must develop a greater appreciation for the value of and need for resource management and appropriate land use policies which will lead to the growth of high-quality forests in the 21st century. Each of you is an ambassador for land stewardship.

The Class of 1987 has demonstrated the spirit and skills to be effective stewards of the natural resources of the future. We take pride in being associated with the students of the Class of 1987 as you move into the professional world with its associated challenges. On behalf of the College of Forest Resources, we wish our 1987 graduates success, peace and happiness in your careers and lives.

Fred B. Knight

Gregory N. Brown

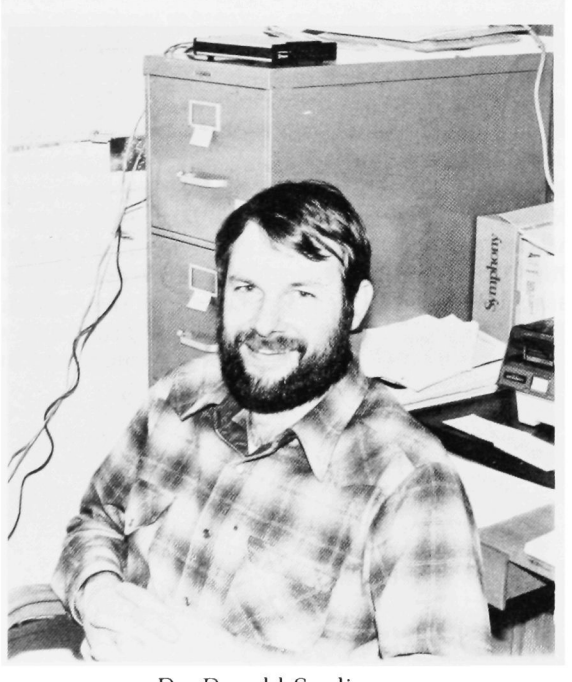
Nutting Newcomers

This year Nutting Hall would like to welcome Dr. Alan White both to the College and back to Maine. Originally from Kingfield, Maine, he attended Williams College where he received his B. A. degree in biology. He received his M. S. degree in Forestry from Montana and his Ph. D. degree in Forestry from the University of Minnesota. Dr. White comes to us from Northern Arizona University where he taught for the past six years as an Assistant Professor of Forestry.

Dr. White joined the College in September as an Associate Professor in the areas of Silvics and Silviculture and has received the Henry W. Saunders Associate Professorship in Forest Resources. His research interests include fire and the roles of competition and plant population dynamics in early stand development.

Tim White

Dr. Alan White



Dr. Donald Spalinger

We are very pleased to introduce Dr. Donald Spalinger as the latest addition to the wildlife department faculty. In addition to teaching courses such as ecology and nutrition, Dr. Spalinger is involved in examing the interactions between herbivores and their habitats. Understanding the relationships between animals and their requirements for forage will enable us to better evaluate the habitat quality and improve the effective management.

Dr. Spalinger's background includes much of this type of research. He received his B. S. from Humbolt State University in California and went to Nevada to work for the Bureau of Land Management as a wildlife technician and later as a biologist. While in Nevada, he received his Masters from the University of Nevada in 1979, studying mule deer habitat in the state. From the deserts of the west, he headed north to southeast Alaska to work at the USFS Experimental Station studying Sitka black tail deer. Eventually, he headed south to Washington State University to receive his Ph.D in 1985, studying the digestion of deer and elk.

Dr. Spalinger arrived here in August from Alaska where he was studying the Sitka black tail deer for post doctoral work. Along with all the other responsibilities in his position, he has inherited the deer pens and eight deer. He is acting as a consultant to the caribou project since the animals are housed in the pens.

Mary K. Meiman

Dr. Chris Murdoch

Nutting Hall is also welcoming back one of its former students. Dr. Chris Murdoch joins us this year as the Coordinator for Professional Development. His duties include developing courses, workshops, and programs for foresters and other natural resource professionals, administrative tasks, research, and teaching Freshman and Senior seminars in the spring. His primary area of interest is in forest pathology.

After graduating in 1973 from the University of Maine with a B. S. degree in forest management he attended Yale University obtaining a M. F. S. degree in forest pathology. After returning to the University of Maine, Dr. Murdoch received his Ph.D. degree in 1981 completing a thesis entitled "Bacterial Wetwood in Elm". Dr. Murdoch comes to us from across the road in Deering Hall where he was a postdoctoral research and teaching fellow. There are still a few students around who remember the days of "Howling Mad Murdoch" in both Wood Technology I and Forest Pathology and we are glad to see him back! Dr. Murdoch encourages students to stop by his office in 201A Nutting to get to know him.

Tim White

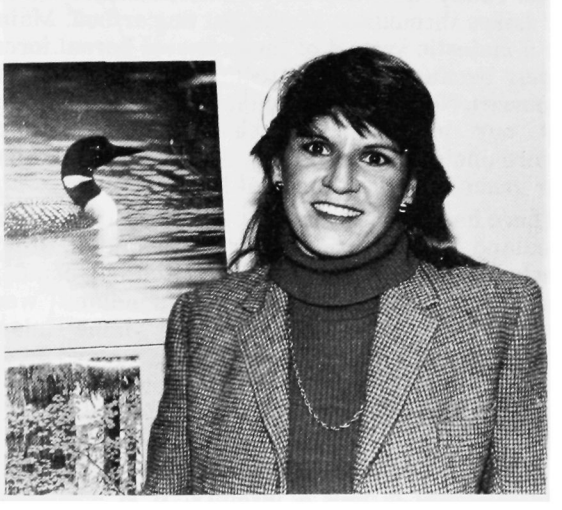
We also welcome another new face to Nutting Hall. Katherine Weber comes to us in a new position as Assistant to the Dean. She joins us from Hancock County where she spent the last three-and-a-half of her ten years experience as a professional planner. Her duties include recruiting and retention of students, College publicity, cooperative education programs, general administrative tasks as requested by the Dean, and placement of graduates of the College.

Ms. Weber graduated from the University of Rhode Island with a B. S. degree in Natural Resources concentrating in forestry and wildlife management, and a Master in Community Planning degree with a concentration in environmental planning.

She strongly urges students and graduates of the College to become involved in the decision-making process in their communities since the knowledge they have of natural resources will enable them to be good policy makers.

Tim White

If you have not had a chance to meet the "Nutting Newcomers" please take the time to do so. They all welcome students to stop by and get acquainted.



Katherine Weber

RETURN OF THE WOODLAND CARIBOU

By Mark McCollough, Caribou Project Leader

It has been almost 80 years since the clattering of caribou hooves was last heard on the barren-lands, bogs, and lakeshores of northern and eastern Maine. In 1908, the last small band of woodland caribou trotted across the tablelands of Mount Katahdin and were never seen again. All that is left of their legacy are the ghosts of their former haunts on topographic maps. Today there are Caribou Mountains, Streams and Lakes throughout Maine but no caribou. Maine lost a majestic symbol of the primeval boreal forest largely because of man's foolish misuse of natural resources. Now we have a unique opportunity to correct our predecessor's mistakes and perhaps restore one of the most beautiful life forms that has ever graced the woodlands of Maine.

There has been a recurring dream to re-establish woodland caribou in Maine. In 1963 that dream nearly became a reality when 23 adult caribou captured near Lake Victoria, Newfoundland were released on Mount Katahdin by Maine Inland Fisheries and Wildlife. The animals remained on the mountain until April then dispersed and never returned. For two years after the release caribou were occasionally resighted in northern Maine until they eventually disappeared. The failure of the 1963 reintroduction is still a mystery. It is not known whether the caribou succumbed to poaching or disease or whether being from a migratory herd they dispersed from the release site and never found each other during the mating season.

Early in 1986, a group of inspired Maine citizens, wildlife officials and legislators desired once again to attempt to re-establish the woodland caribou as a Maine resident and formed a private organization, the Maine Caribou Transplant Corporation. This private, nonprofit organization, spearheaded by Glenn Manuel, was solely responsible for the funding and administration of the project. The Corporation works in cooperation with Maine Department of Inland Fisheries and Wildlife but is independent and has received all of their funding from private donations.

The plan called for calves born to this herd to be released into northern Maine when they are 1 to 2 years of age. Therefore, the earliest releases could occur in the summer of 1988 or 1989. After 3 or 4 years of calf releases, the adult caribou would be released to join their young. The goal of the reintroduction program would be to establish a self-sustaining wild herd of about 100 woodland caribou in 10 years. Numerous successful caribou reintroductions in Newfoundland, Quebec and Alaska in the last 2 decades have used similar techniques successfully. All that was yet to be written was the financial symphony to accompany the hope of finally returning caribou to Maine.

During the autumn of 1986, a former governor of Maine, Horace Hildreth, generously donated the initial funds needed to make the dream become a reality. Many donations of time, money and materials have since followed and once again there was a possibility of caribou being re-established in the Pine Tree State.

The caribou reintroduction is an experiment. Although the project is believed to have a good chance of succeeding, it could also fail. Regardless of the outcome we stand to gain a tremendous amount of knowledge concerning caribou reintroductions that will be used by other states and provinces wishing to re-establish populations of this beautiful symbol of the North. Furthermore, we may uncover clues as to why woodland caribou mysteriously dissappeared across the southern portion of their range at the turn of the century.

The prospects of a caribou herd returning to Maine has captured the imagination of Maine people. It is the intention of the Caribou Transplant Corporation to establish a caribou herd for the enjoyment of the people of Maine, and to replace a significant part of our wildlife heritage that was lost.

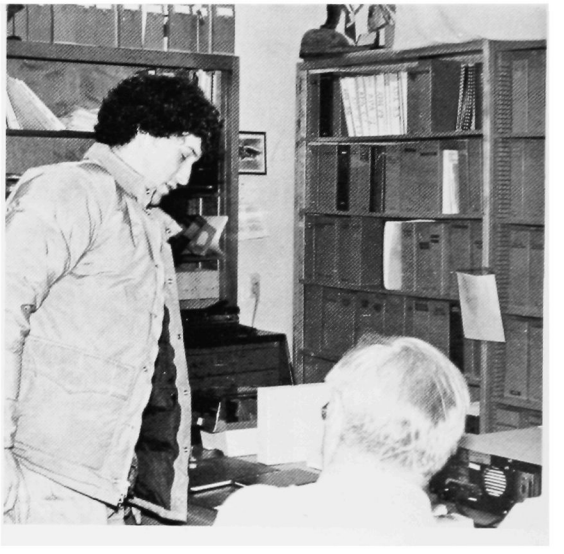
FOREST ENGINEERING-A FORMULA TO CHALLENGE THE FUTURE

By Thomas Corcoran and Norman Smith

A field of academic pursuit such as forest engineering should not only produce graduates who can cope with the future, but can significantly influence it. Since its conception in 1971 this has been the goal of the program at the University of Maine. Its founding concept was the integration of forestry and engineering. Both disciplines have distinct areas of scientific inquiry whose principles, at least superficially, seem to have little in common, and whose practitioners remained somewhat apart from each other. In 1971 with a sense of forthright vision, the University of Maine via the then School of Forest Resources and the Department of Agricultural Engineering initiated what was soon to become a program of high national and international prominence. Like many new initiatives its growth was humble at origin, accelerated rapidly, even too rapidly for a brief period, and stabilized in more current time. From its single graduate in 1976, it sprouted to an enrollment numbering over 100 students in the early 80's and then settled into a more academically manageable level of about 15 graduates per year.

Let's review briefly the program's graduates both of the past and in the present. Because the program was designed toward full academic integration of engineering and forestry principles, graduates have enjoyed a unique national status. They are recognized in a joint sense as well as in an independent sense both as true and competent foresters and engineers. In 1977 the forest engineering program received full accreditation by the Accreditation Board for Engineering and Technology (ABET) and in 1982 reaccreditation by the Society of American Foresters (SAF). Maine's program is the only one in the U. S. to enjoy the distinction of this dual accreditation. Upon graduation students from Maine are eligible to be licensed in Maine and in other states as both registered professional foresters (RPF) and as professional engineers (PE). Nearly all of the graduates are progressing toward either or both of these formal recognitions via "in-training" or "experience gaining" periods. Having already satisfied the complete licensing procedures, many graduates have already reached the RPF and/or PE status.

Roughly 53% of new graduates have assumed positions in forest products firms (e.g. Great Northern/Nekoosa., Scott, Boise Cascade, Diamond Occidental, Georgia-Pacific, Weyerhauser, International Paper, Louisiana Pacific, Champion, etc.), 23% with equipment development and manufacturing firms (e. g. Caterpillar, John Deere, Clark, FMC, etc.), 8% with governmental agencies (federal, state, municipal, and military), 7% to graduate school and 5% with consulting firms and 4% in other employment categories (e. g. construction, railroads, communications, etc.).



Before students can graduate with a B. S. in forest engineering they must matriculate through the 4-year forest engineering curriculum. High school graduates arriving as new students in this curricula had prior residency in 15 states, 2 Canadian provinces, and 3 foreign countries. Their undergraduate studies can be categorized as 27% in basic sciences and mathematics, 16% in basic engineering, 19% in forest engineering, 22% in forestry, and 16% in humanities and social sciences. The composition of their required studies ranges from two years of calculus to two three-week summer forestry field practicums. It includes coursework in communications, economics, computer programming, surveying, physics, chemistry, biology and a substantive variety of classical forestry and engineering subjects. These subjects have served as a foundation to the applications approach inherent in forest engineering courses.

A three-semester design project is a new feature of the forest engineering curriculum, beginning in the Spring of 1987. Juniors will spend a semester developing a project proposal and the two semesters of the senior year bringing it to fruition. The design project is intended as a "capstone" to the whole undergraduate engineering experience. All the features of current engineering practice in the process of design will play a part in the project. Computer Assisted Design (CAD), high tech instrumentation and simulation techniques, etc. will be used.

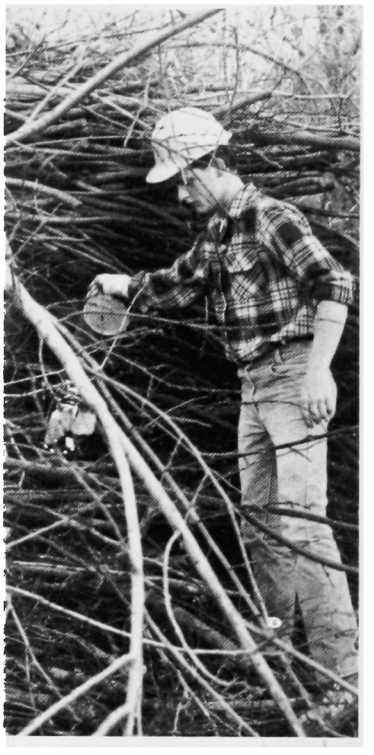
Forest engineering students have been involved with faculty in many design projects in the past, some of which have had lasting effects on the campus. For example, sections of the Honors Center, an experimental modular building, were built by forest engineers; the wood chip furnace which heats the Service Building and saves over 46,000 gallons of oil per year came originally from a student project. The current work on brush harvesting is a continuation of the efforts of two forest engineering students.

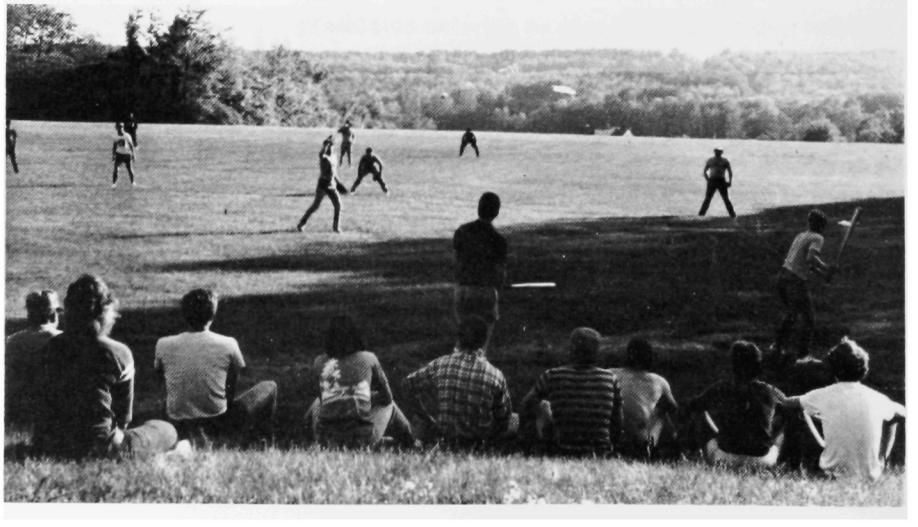
Overall, the curriculum emphasizes the design, planning and management of tree harvesting systems, transportation and logging equipment, and environmental engineering in general. Forest engineers develop technical capabilities suitable for employment in an industrial context whether it be directed to equipment design and manufacture, to equipment services and sales, or to equipment management and associated planning. Additionally, the potential for a forest engineer in computing, mill management, wood product and paper production, re-forestation methods, systems for wood production and harvesting, handling and transportation, forest road systems, design of bridges, soil-water control and conservation, and recreational development has not been overlooked by prospective employers in private industry, or federal and state public agencies. A unique feature of the forest engineering curriculum is that it provides the academic background necessary for full association with both professional engineering and forestry societies.

Assuming leadership roles are a part of a student's professional development. Recent forest engineering students have been a University Valedictorian, Presidents of the Maine Chapter of Tau Beta Pi (National Engineering Honorary Society), Robert I. Ashman Distinquished Student Awardees, Dwight B. Demeritt Outstanding Student Awardees, Hovey Scholastic Achievement Awardees and many other like recognitions.

A positive past, a current vitality and a vision toward the future identify forest engineering at the University of Maine. The administration, the faculty, and most importantly, the students have been, are now, and will be ready for most, if not all, challenges.

Thomas Corcoran is a Professor of Forest Resources and Co-Administrator of Forest Engineering, University of Maine. Norman Smith is a Professor of Agricultural and Forest Engineering and Dean of the College of Engineering and Science, University of Maine.





MAINE WILDLIFE: IS OUR FUTURE GROWING?

By William B. Krohn and R. B. Owen, Jr.

Of all human activities, few are despised and yet praised as much as that of forecasting. Take, for example, the weather forecasters; we all talk about their lack of reliability yet most of us routinely factor in their predictions in our daily activities. Given our lack of a reliable window to the future, which we admit from the start, it is with some uncertainty that we offer our view of tomorrow.

To answer the question posed by our title, we'll consider the future from two perspectives: (1) Maine's changing wildlife resource, and (2) prospects for wildlife professionals.

First the resources. Maine supports over 500 species of vertebrate wildlife. These mammals, birds, fishes, reptiles and amphibians live in habitats ranging from the top of Mt. Katahdin to Maine's rocky coast, and from rivers and wetlands to upland forests. Wildlife is not randomly distributed across the state but each species has its own unique set of required habitats. As these habitats change, from man-caused as well as natural forces, so do the wildlife communities. Change is the nature of Nature and with man's activities becoming ever more dominant we fully expect not only habitat change to continue, but that the rate of change will increase.

Throughout southern and coastal Maine, escalating development is eliminating wildlife habitat at an alarming rate. In these areas an all-out effort must be made to balance development while maintaining wildlife habitat. To date, state regulatory agencies have had neither the staff nor funds to achieve this critical balance, and time is running out! Much of the remainder of Maine, while increasingly being used for intensified forestry, should provide good wildlife habitat for many years to come.

Now let's glance at some specific changes of four species of Maine wildlife as related to changing forestland conditions. Today, the size of Maine's black bear population may very well be at an all-time high. Why? Although no one is certain, it is possible that the increased harvesting of Maine's forests over the past decade has resulted in a higher percentage of the land area converted from trees to forbs, grasses, raspberries, and other fruits and plants which bears eat. Similarly, Maine's moose population has increased dramatically in the last 20 years. In response to increased demands for fiber and the salvage of budworm-killed trees, mechanical harvesting has created a patchwork of large openings now occupied by young regeneration and saplings, ideal forage for Maine's largest herbivore.

However, not all of the state's wildlife resources are on the upswing. Take, for example, two migratory game birds — the woodcock and black duck. The decline of the woodcock is related to habitat change. In Maine, the highest densities of woodcock occur on abandoned farmlands. As plant succession progresses these old farms change from shrublands to forestlands and woodcock numbers decline. While there is little wildlife managers can do to affect succession on abandoned farmlands, increased biomass harvesting, especially if done in second-growth hardwood stands, could improve overall habitat conditions for Maine's woodcock. Only time will tell.

Black ducks are experiencing a 30-year decline, but in contrast to the three species listed above, the forested wetlands used by this species are in ample supply. Instead of habitat change, overhunting is thought to be the major culprit. Managers are attempting to increase black duck numbers by restricting hunting throughout the Atlantic Flyway. Black duck hunting regulations have been especially restrictive in Maine during the last few years and there are signs that the population is slowly, but positively responding.

These brief examples illustrate the dynamic aspect of wildlife populations. Change **is** the nature of Nature and wildlifers must recognize this fundamental reality when attempting to assess wildlife populations or habitats.

Like wildlife populations, the wildlife profession is also changing, although we must admit uncertainty as to the direction. On the one hand, we see an increasing recognition of the economic values of Maine's wildlife resources, and an increased public sentiment for wildlife conservation. As evidence, consider voter support for the state's Endangered and Nongame Wildlife Project, and the overwhelming recent endorsement of the bond issue to purchase wildlife habitats. On the other side, there is a growing public concern about government programs and spending. These concerns have resulted in decreased Federal domestic programs and have increased state responsibilities at a time when the public wants all governmental expenses held to a minimum.

As wildlife is a public resource almost all wildlife research and management programs have been government supported. We suspect that as these programs continue to decrease in real terms, there will be increased public support for greater efforts. In addition, as the public's concern for wildlife is strong and increasing, we also suspect that private efforts will become more noticeable and significant in the future.

The future of tomorrow's wildlife professionals is growing given society's broadening concerns. As use and management of Maine's forests and waters intensifies, so does the need for more intensive wildlife programs. A rational balance between developmental and environmental forces will require that management decisions be based on sound information. The need for such information is expanding and it is the person who is today preparing for tomorrow that will be ready to step in and provide the increasingly needed resource information.

As you continue your education and intellectual growth, increased human pressures on the natural environment and humanity's growing concern for the wildlife resource will ensure a future need for talented, new wildlife biologists. This will be especially true for those able and willing to deal with a changing society as well as an ever changing wildlife resource.

"He plants trees to benefit another generation"

Cicero (149 B.C.)

by Katherine Carter

The future of Maine's forest does indeed depend upon growing trees which will continuously renew the timber harvested from existing forests. Traditionally, forest renewal has been dependent upon natural regeneration of partially harvested stands. The past decade, however, has seen an increase in tree planting as a means of artifically regenerating new forest stands, especially on clearcut areas which may lack an adequate seed source or sufficient advanced regeneration to establish a well-stocked stand.

There is a long history of tree-planting activities in Maine. From 1900 to 1930, trees were often planted on old fields which had been taken out of agricultural production. Most of these early plantations consisted of white spruce, Norway spruce, white pine, or red pine. In the 1960's and 70's, growth of these plantations was summarized by Professor R. I. Ashman and by H. Klaiber of Scott Paper Company. While some of the early plantations had poor growth due to low survival, others had been highly successful, and produced up to 1.5 cords/acre/year over their lifetime.

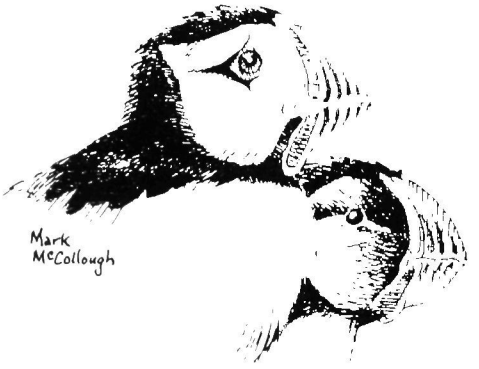
Lessons learned from evaluating these plantations during the 1970's, combined with the success of tree planting activities in other parts of the U. S. have resulted in a sharp increase in forest plantation establishment in the past decade. In 1975, U. S. Forest Service records indicated that only 178 acres of trees were planted in this state. In 1985, almost 7,000 acres were planted, and this level of activity is expected to continue. Almost all tree planting activities in Maine are carried out on land owned by forest industry. Several companies have also established their own greenhouses to grow seedlings for their planting programs.

An important advantage of tree planting, as opposed to natural regeneration, is the ability to control spacing and stocking in order for trees to make the best possible use of the available growing space. Natural regeneration of spruce-fir stands often produces patchy regeneration, with some areas lacking trees and others that are overstocked. The even spacing in a planted stand ensures higher productivity, since each seedling is free to grow and all areas within the site are stocked. Regular spacing has the additional advantage of reducing the eventual harvesting costs substantially, sometimes by as much as one-third.

Another advantage of planting trees is the control of species composition. By choosing a species that is well adapted to the site and appropriate for the anticipated end products, the regeneration planner can maximize productive yields. Species such as Japanese larch, which is budworm-resistant and can be grown on rotations of 20 to 30 years, can replace slower-growing native species where such a change is appropriate. In addition, tree improvement programs can produce genetically superior seedlings to be used in large-scale planting programs.

What is the future of forest planting in Maine? Even with the recent increase in planting, only seven percent of the forest land harvested in Maine each year is regenerated by planting. Anticipated increases in biomass harvesting could create more potential planting sites. Increased stumpage prices resulting from increased wood demand may also increase the economic returns from plantation management. If these favorable trends continue, it is possible that planting activity might double by the end of the century.

New technologies are also likely to become a part of forest planting by the year 2000, for example, clonal production by rooting cuttings of black spruce and larch to produce planting stock. Tissue culture techniques for producing clonal plantlets will probably be operational within a few years. Eventually, genetic engineering may be used to introduce beneficial traits such as cold hardiness or disease resistance. The future of forest planting will depend upon the successful integration of new and existing techniques to meet the changing demands of our society.



Whether you will or not
You are king, Tristram, for you are one
Of the time-tested few that leave this world,
When they are gone, not the same place it
Mark what you leave.

Robinson

Computer Technology and Cartographic Change

by Jeff Cole

Cartography is an old and tradition bound discipline. Over the past 30 years we've witnessed rapid technological change in cartography. Today, rapid change has become an accepted fact of life within the cartographic discipline. The purpose of this article is not to fully enlighten an individual to the world of computer-assisted cartography, but to investigate some of the implications of this rapid change and explore the application of the computer to cartography. The future of advanced development and application of computer-assistance in map production and analysis is growing and will continue to be an important natural resource information management tool.

Computer-assisted cartography is a general term. It is possible to distinguish between the two very different types of computer-assisted cartography; automated mapping and computer mapping. Automated mapping can be thought of as the automation of map-making processes with an aim to produce maps not inherently different in style, design, and content from existing topographic maps. Computer mapping on the other hand can be thought of as the production of maps utilizing the analytical powers of a computer. These two forms can be thought of as lying at two ends of a continuum. These are hybrids of the two forms and all computer-assisted cartographic systems cannot be easily pigeonholed into a predefined category. It is helpful to view computer-assisted cartography as an integration of computer assistance with the fundamental principles of cartography. There must be a distinction between the purely methodical automated production of maps and the interactive cartographic design of map products. Despite obvious trends towards increased computer automation, fully automated mapping is both unlikely and undesirable in many ways. Map design and production is very different from the automation of manufacturing machine parts or sewing shoes. For example, it simply isn't a matter of watching a machine; it is, indeed, a design process.

The needs of a map user are highly individual and variable. Design is a mental trial and error exercise intended to encourage innovation while increasing economy and utility. The ability to reposition and scale map elements provided by an interactive graphics system is very likely to encourage innovation and experimentation that can be stifled by a user with mylar, ink pen, and eraser in hand.

The benefits of computer-assistance are unparalleled. The effects of the new technology to the cartographic discipline as well as the product user are profound. Computer-assistance has, in effect, added a new dimension to cartography. It has reached the point that there is discussion as to what constitutes a map. Temporary maps that exist on a CRT, virtual maps which are coordinates that exist in computer memory, the enhancement and classification of images by processing remotely-sensed data, and images that can be scaled, rotated, translated, overlayed, taken apart, and reconstructed interactively have all been added to the cartographer's bag of tools used to convey his message most effectively. A computer is designed to perform tedious, lengthy, and repetitive tasks, giving the cartographer time to devote himself to expanding his art and science.

Computer-assisted cartography is emerging from the stage of exploratory development into a more mature area of fine tuning.

In general, maps have increased in value as decision making tools for management. Geographic information systems (GIS) are an extension of pure computer-assisted mapping systems. GIS link tabular data of resource characteristics to the geographic coordinates or location of each characteristic. GIS software allows complex mathematical and statistical operation on spatial data. For example, a map of timber types drawn on top of a soils map with resultant acreages of timber type by soil type measured and summarized, is a typical GIS problem. Without the aid of a computer we avoid undertaking this type of valuable analysis because of very prohibitive time and cost requirements. With the aid of a computer's speed and accuracy in executing repetitive operations, however, we can perform such vaulable exercises in order to strengthen the decision making process. The GIS label is, unfortunately, often assigned to just about any program that generates a map. Although drawing maps is an important function of a GIS, it is only one component of a true geographic information system.

Jeff Cole is a Graduate Research Assistant in the Department of Forest Management. His thesis topic is: "The Development and Implementation of a Digitizing System for Data Input from a Photographic Image into a Geographic Information system".

MAINE: IS OUR FUTURE GROWING?

By Duncan Howlett

The above title is obviously a pun, intended or unintended. Accepting it as such, I answer "yes" to the forestry community, in particular to budding foresters now entering the profession. Maine is growing, and your future as foresters will grow with its development in this state.

More importantly, the future of a great many of you is growing–the growing of trees in this, the most heavily treed state in the union. Maine needs you as never before, if it is to hold its present high place in the forest products industry. For nearly a century we have been increasing the quality and the quantity of our forest crop due to the increasing knowledge and the continued dedication of our forest professionals. Armed with the latest knowledge of silviculture, as you join the professional ranks of forest workers in the state, you will accelerate and improve the practice of silviculture here.

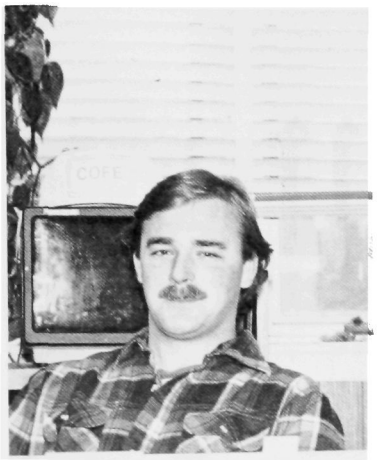
As a small woodland owner, I would like to address this particular aspect of the opportunities now opening before you in silviculture. They say there are some 100,000 small woodland owners in the state. The figures may be high or low–it does not matter. What matters is that there are uncounted private owners who need your professional assistance desperately. A few of them know it. Most of them do not. You have the dual task of being able to help them and in showing them the need of helping those small owners, to see the importance of private forest ownership and the importance of managing the woodland they own.

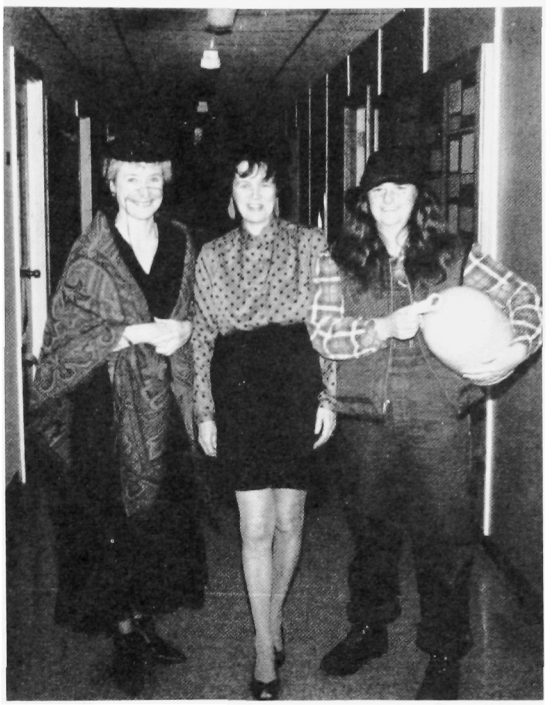
The State can help you, our new forest professionals, in doing this. I believe the State should do far more than it is now doing. Compared with its opportunity and its obligation to the citizens of Maine, the Bureau of Forestry is, at present, miniscule. You can do much to help build the Forest Service back to the position of strength and influence to which Albert Nutting brought it before he became Director of the School of Forestry a generation ago.

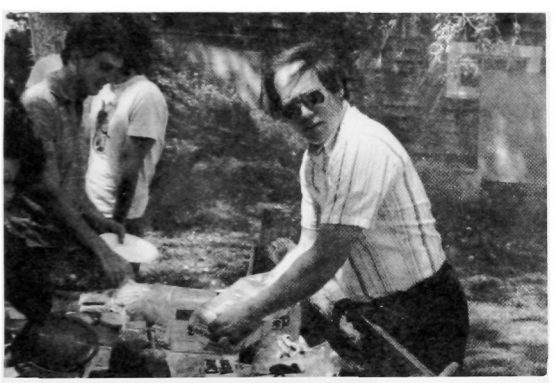
On your own, however, you can do much, if you really believe the State is growing and that your chosen task is to assist in that growth by growing more and better trees. You can put your strength into the current movement in the state to persuade private citizens to buy, hold and manage forest land for production. With your professional knowledge and skill you can show our private citizens how productive a beautiful stretch of woodland can be, and how much more beautiful a well-managed woodlot is than one that is left to itself.

Yes, Maine is growing and if you remain in the state, you will be part of it. Your work as foresters is growing as more forest owners come to know the value of the many things you can assist them in. But above all your work is growing–the growing of trees. The shrinking woodlands of our planet Earth have called you into their service. By coming here to The College of Forest Resources, you have responded. May your work in the world's forests–anywhere, but hopefully here in Maine, be crowned with success.

Duncan Howlett is the President of the Small Woodlot Owners Association of Maine.







Faculty

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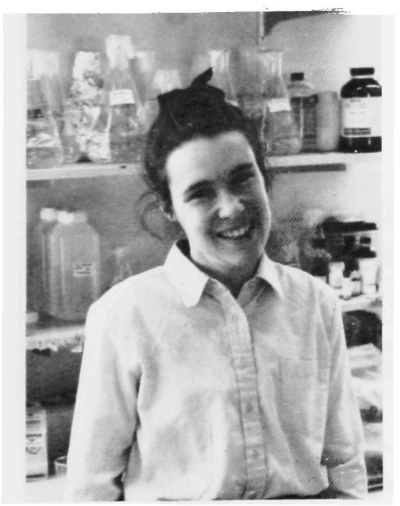

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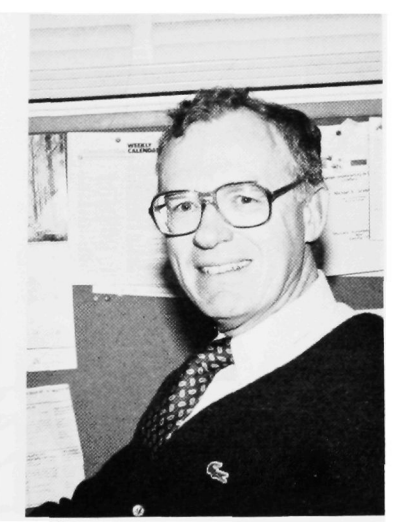
Biodegradation of Wood



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Professor of Forest Resources
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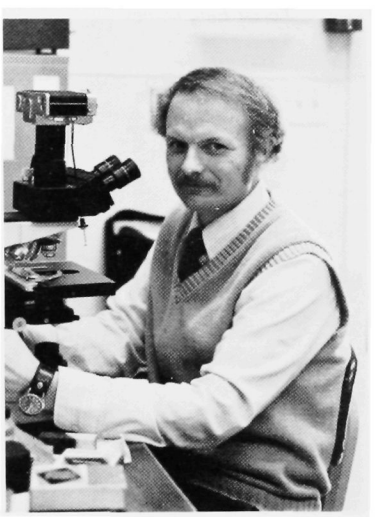
Tree Physiology



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M.S., Syracuse University, Forest Pathology, 1965
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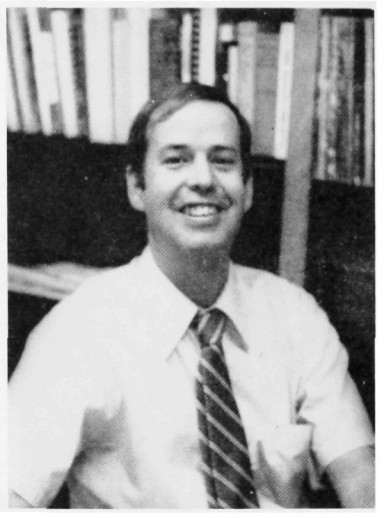
D.F., Duke University, Forest Entomology and Forest Mensuration, 1956
Forest Entomology



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Coordinator for Professional Development
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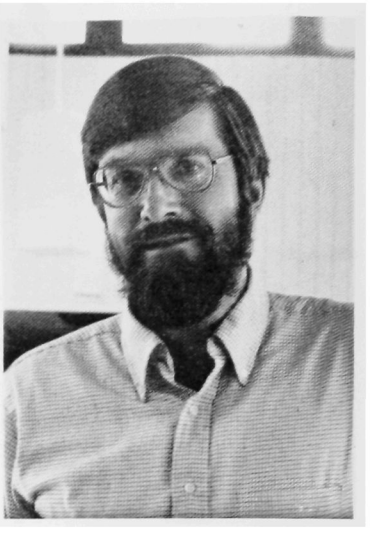
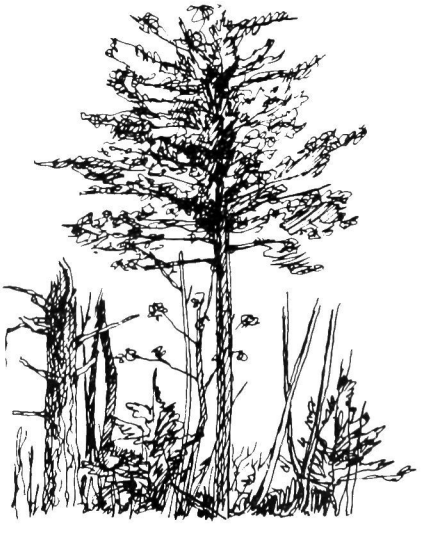
Ph.D., University of Maine, Plant Sciences 1981
Forest Pathology



ALAN S. WHITE

H.W. Saunders Associate Professor of Forest Resources
B.A. Williams College, 1973
M.S. University of Montana, 1976
Ph.D. University of Minnesota, 1981
Forest Ecology/Silviculture



FOREST MANAGEMENT

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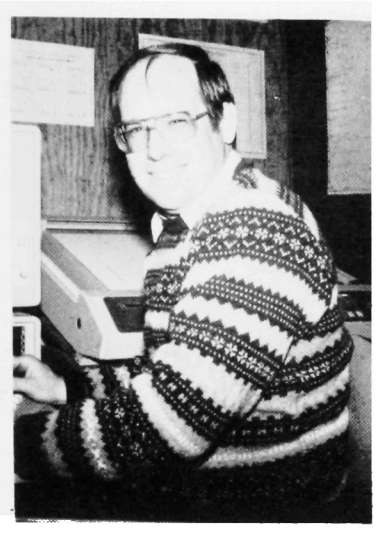
B.S., University of Maine, Forest Management, 1965
M.S., Purdue University, Inventory Design, 1968
Ph.,D., Purdue, Mathematical Statistics and Civil Engineering, 1969
Remote Sensing
In Haiti



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Statistics and Computer Applications to Forestry

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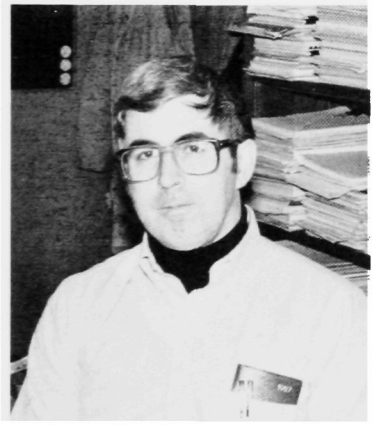
Ph.D., Purdue University, Economics, Industrial Engineering, Statistics,. 1962
Engineering Economics



DAVID B. FIELD
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Forest Policy

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Associate Professor of Wood Technology
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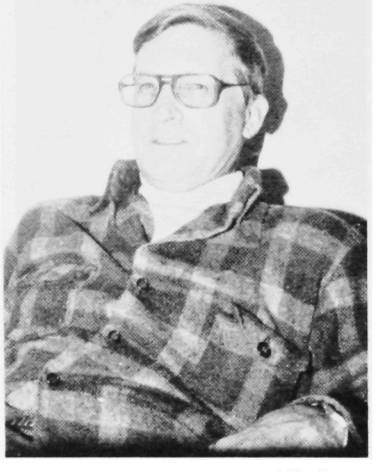
M.F., Yale University, Forestry, 1948
Primary Wood Processing



BENJAMIN F. HOFFMAN, Jr.
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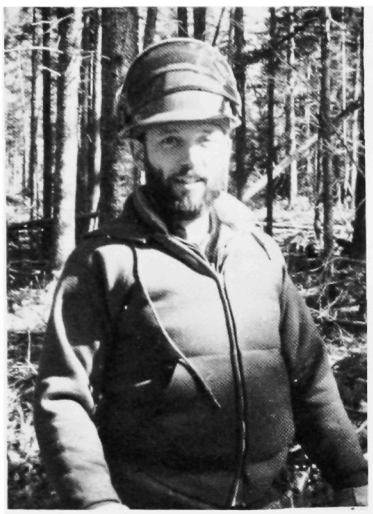
B.A.,. University of Virginia, 1951
M.F., Yale University, Forest Management, 1957
M. Phil., Yale University, Silviculture, 1981
Ph.D., Yale University, Harvesting, 1982
Timber Management



ALAN J. KIMBALL

Assistant Professor of Forest Technology
B.S., University of Maine, Wildlife Management, 1972
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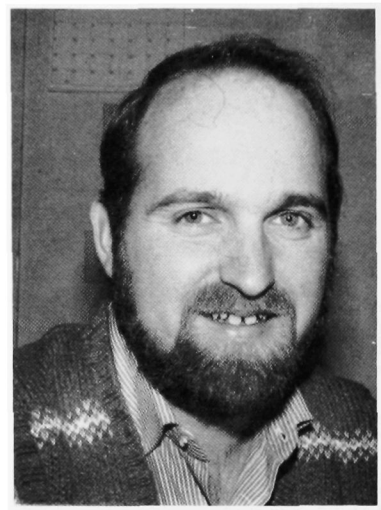
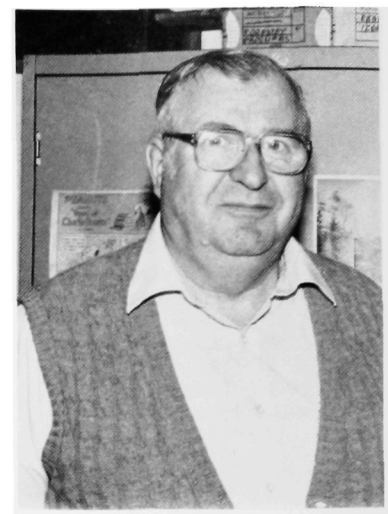
Biology and Integrated Management of Small, Non-Industrial Forest



J. LOUIS MORIN

Instructor, Forest Resources
B.S., University of Maine, Forest Management, 1976
M.S., University of Maine, Forestry, 1978
Photo Interpretation and Remote Sensing



WALLACE C. ROBBINS

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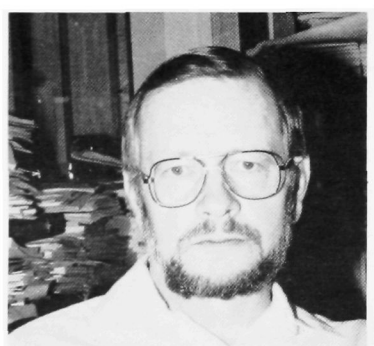
Head of Two-Year Forest Management Technology Program
B.S., University of Maine, Forest Management, 1954
M.S., University of New Brunswick, Forest Harvesting, Labor, 1956
Photogrammetry and Wood Products



ROBERT K. SHEPARD, JR.

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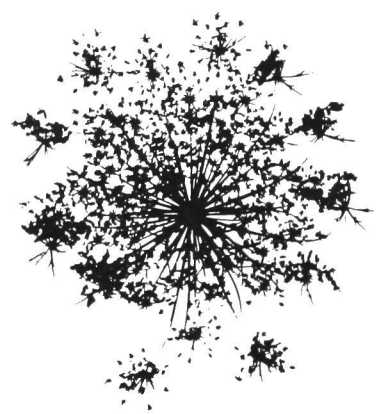
Ph.D., University of Michigan, Forestry and Biometeorology, 1970



JAMES S. SHOTTAFER

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B.S., State University of New York, Syracuse, Wood Technology, 1954
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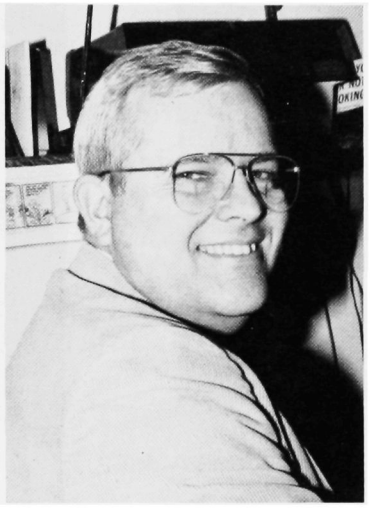
Forest Recreation, Recreation and Park Management



PAUL H. RISK

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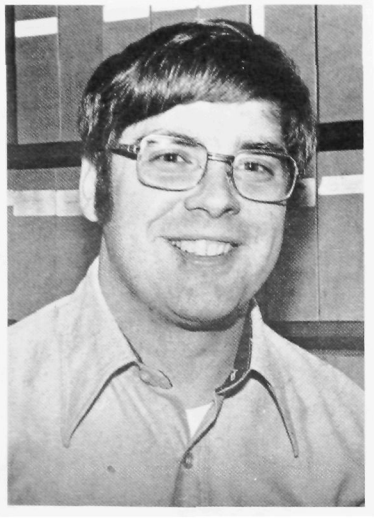
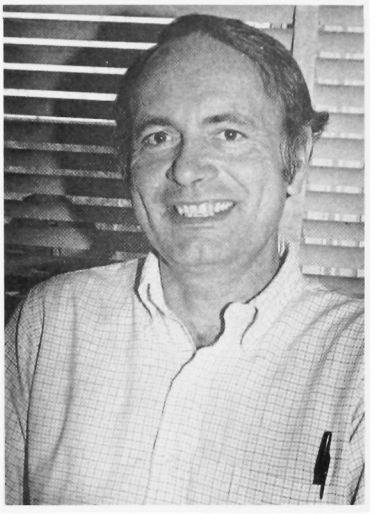
B.A., California State College at Los Angeles, Botany and Biological Sciences, 1966
M.S., University of California at Davis, Entomology, 1969
Ph.D., Michigan State University Wildlife Biology, 1976
Environmental Interpretation

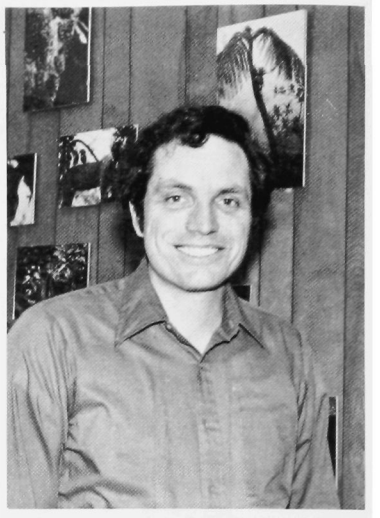
WILDLIFE



PATRICK W. BROWN
Assistant Professor of Wildlife Resources
B.S., Central Michigan University, Biology, 1974
M.S., Iowa State University, Wildlife Biology, 1977
Ph.D., University of Missouri, Wildlife Biology, 1981
Waterfowl Ecology



JAMES R. GILBERT
Associate Professor of Wildlife Resources
B.S., Colorado State University, Wildlife Biology, 1968
M.S., University of Minnesota, Ecology, 1970
Ph.D., University of Idaho, Wildlife Science, 1974
Population Dynamics



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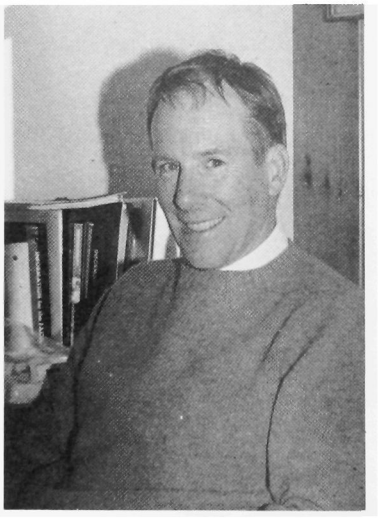
Ph.D., University of Idaho, Wildlife Science, 1977
Migratory Birds



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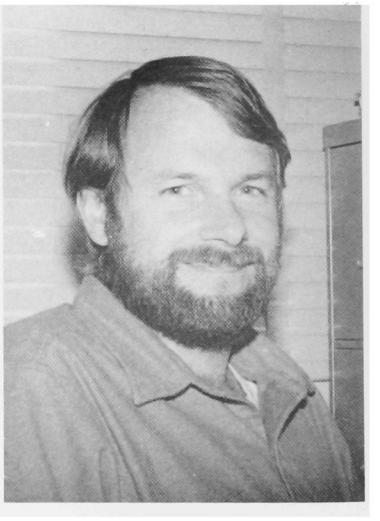
M.S., University of Illinois, Ecology, 1966
Ph.D., University of Illinois, Ecology, 1968
Wildlife Ecology



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Ph.D. Washington State University, 1985
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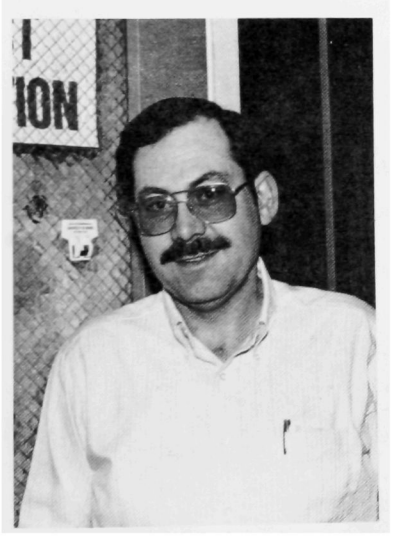
D.F., Duke University, Silvics, 1963
Silviculture



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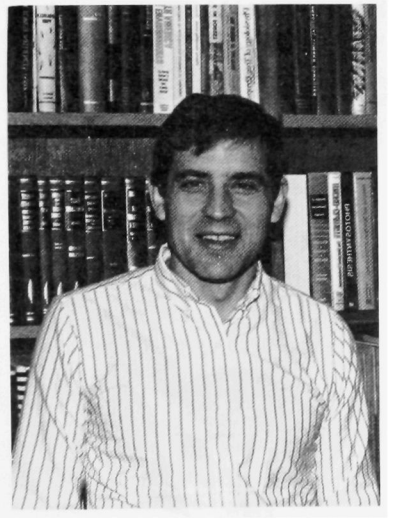
Ph.D., University of Minnesota, Forest Entomology and Computer Sciences, 1976
Forest Protection



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Ph.D., University of New Hampshire, Botany and Plant Pathology, 1982
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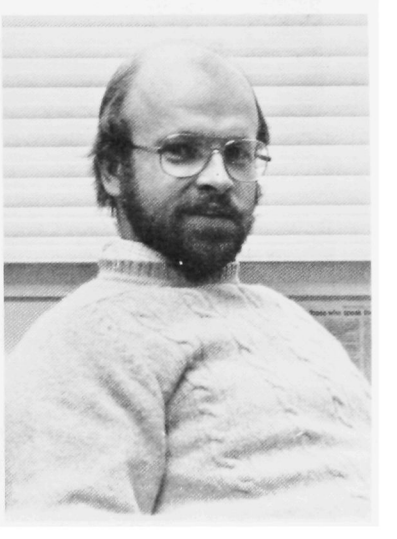

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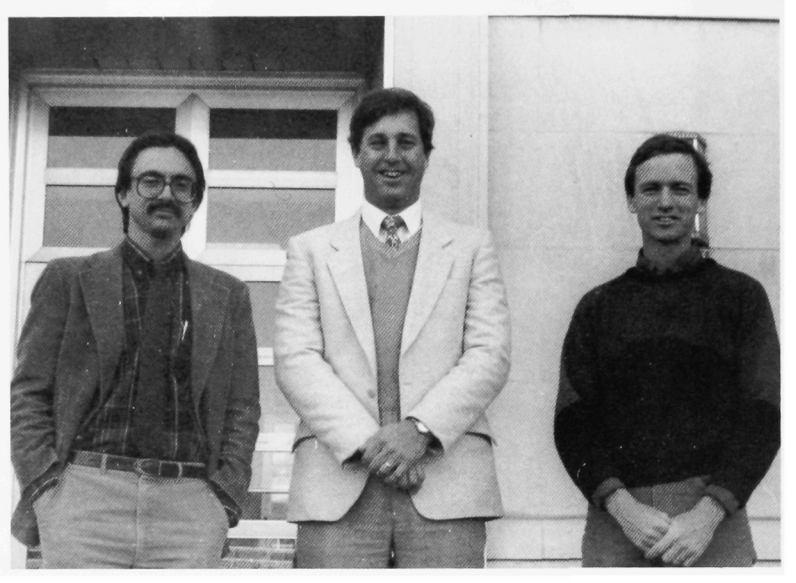
Timber Management and Harvesting

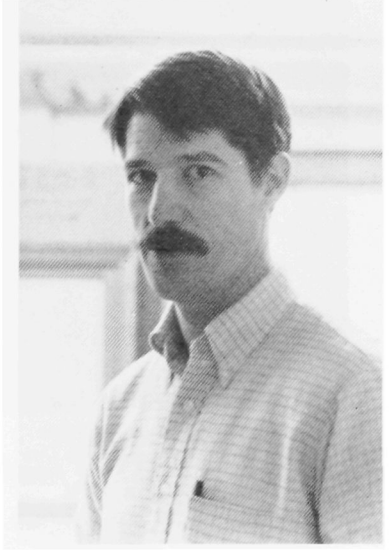
COOPERATING FACULTY



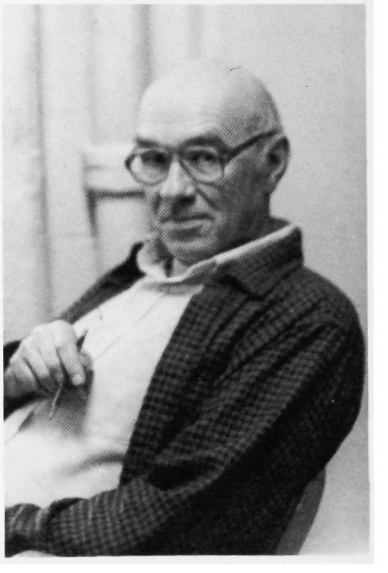
IVAN FERNANDEZ
Assistant Professor of Soil Science

WILLIAM LIVINGSTON
Assistant Professor of Forest Pathology

WILLIAM MITCHELL
Associate Professor of Landscape Architecture



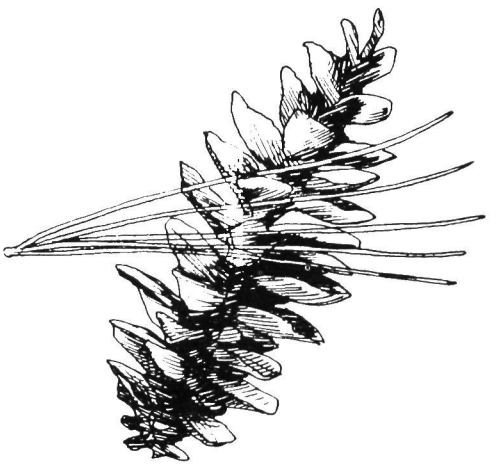
CHRISTOPHER CAMPBELL
Associate Professor of Plant Systematics

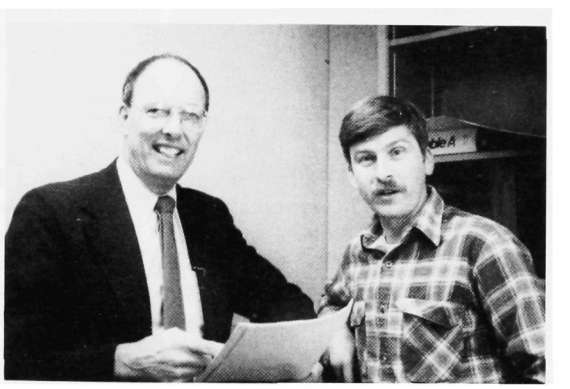


JOHN B. DIMOND
Professor of Entomology

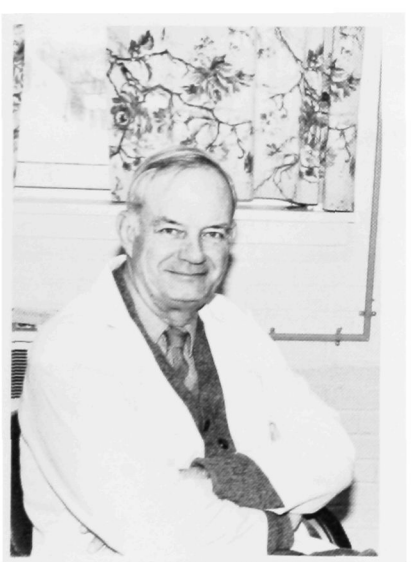
WARREN HEDSTROM
Associate Professor of
Forest Engineering

JOHN RILEY
Professor of
Agricultural and Forest
Engineering





HAYDEN SOULE, JR. **THOMAS CHRISTENSEN**
Associate Professors of
Agriculture and Forest Engineering



HAROLD GIBBS
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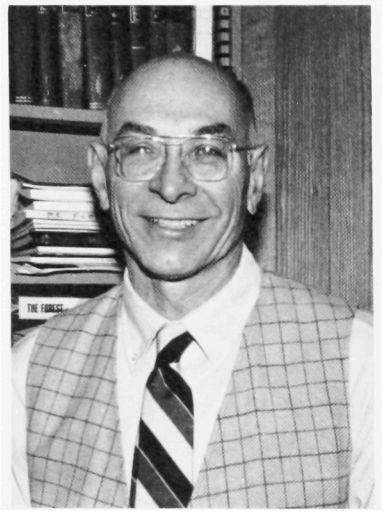
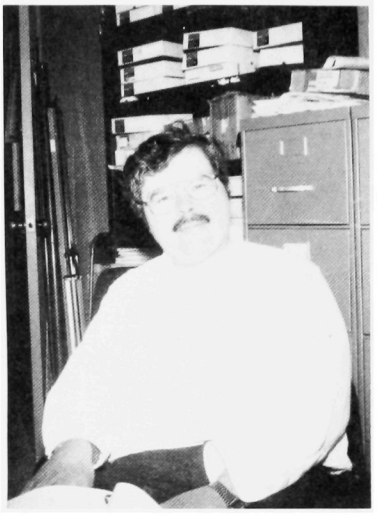
and Veterinary Sciences
and Wildlife Resources

NORMAN SMITH
Dean, Engineering and Science

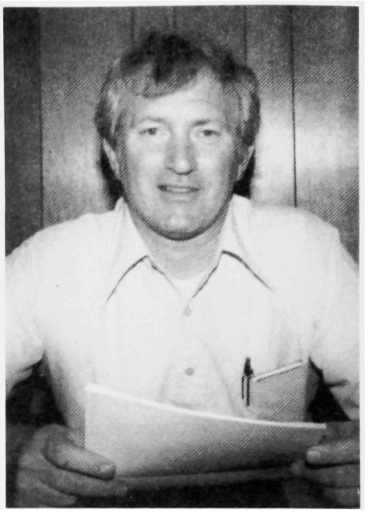
COOPERATIVE EXTENSION SERVICE



BUD BLUMENSTOCK



WILLIAM LILLEY



JAMES PHILP

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VISITING FACULTY

Xia Guo-hua (pronounced Shah Go who a), faculty member at Northeast Forestry University in Heilungkiang Province, has become the first educator from the People's Republic of China to receive a research appointment in our internationally recognized forest engineering program at the College of Forest Resources. He is among at least four professionals from mainland China who presently have research positions on campus.

Xia said the University of Maine was chosen for his research appointment because "the climate, topography and general forests are similar to Heilungkiang Province in China. I have studied a lot of things which will be useful for Heilungkiang Province in the forest industry. I have been working with a computer graphics system for harvest system planning. What I learned will be very good for my teaching and research." He said 40 percent of the timber used in China comes from his province, and the beautiful scenery in that region attracts tourists from the U.S., Japan, Korea, USSR, and other sections of China.

Located in Harbin, the Northeast Forestry University is one of the key forestry universities in the Forestry Ministry of the People's Republic of China. It was founded in 1952, and has an enrollment of about 4,000 students. Xia tells us. "There are four American educators teaching English and cultural subjects at our university. There is even one student from America studying there."

The College of Forest Resources welcomes Xia Guo-hua to the college and the country.