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United States
Department of
Agriculture

**Forest
Service**

General
Technical
Report
WO-23

Forests for Our Needs

1979 Research Accomplishments

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Forests for Our Needs**

General Technical Report WO-23

October 1980

Foreword

The Forest Service, through basic and applied studies, has been working to develop new technology needed for public land management, State and other agencies, various private organizations, the small woodland owner, and individual private citizens including the urban dweller—all forest users.

We conduct research at eight regional forest experiment stations located around the country and at the Forest Products Laboratory at Madison, Wisconsin. We also conduct international studies in forestry, as well as cooperative research with universities and other organizations.

This report contains over 40 short research highlights that provide scientific and technical knowledge needed to protect our Nation's natural resources, help us gain maximum benefit from their use, and leave the environment unspoiled.

Starting on page 44 is a list of publications issued during fiscal year 1979 by our Forest Service research staff. For additional information, please contact the appropriate research headquarters directly, using addresses listed on the inside back cover.

A handwritten signature in black ink, reading "R. Max Peterson". The signature is fluid and cursive, with the first name "R. Max" and last name "Peterson" clearly distinguishable.

R. MAX PETERSON
Chief

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Environment

Surface Mine Spoils in the East

Revegetation of surface mine spoils is important for controlling erosion, enhancing aesthetics, and restoring the land to a productive use. Studies show that planting of compatible combinations of species will produce a quickly established ground cover and a permanent or long-lived cover and product. Vegetation of steep slopes and toxic spoils often requires the application of soil amendments, planting of acid-tolerant species, and introduction of beneficial microorganisms.

Research on various species of microorganisms that are known to form mutually beneficial associations with plant roots is showing the importance of these organisms in establishing good vegetation on mine spoils. Studies indicate that hardwood bark and woodchips also have promise as mulch materials used in establishing vegetation on surface-mine lands.

A manual to aid land managers, landowners, and mine operators in revegetating surface mined areas for wildlife in eastern Kentucky and West Virginia has been published.

A second manual concerning revegetation of mined lands in the Eastern United States is nearing completion. This publication will cover selection of species for quick cover, for erosion control, selection of permanent species for long-term cover, and techniques for sampling and evaluating mine soils to guide selection of appropriate plant species and needed amendments.

Serious adverse effects on the environment both on and off the mining site result when sediment and chemical pollutants enter streams. Research is underway to determine the quantities and to characterize sources of sediment and chemicals reaching streams from mined areas.

Tree chip mulch application to help establish vegetation on strip mined lands in the East. NE

A bright green parrot, one of the rarest of endangered species, confined to the Luquillo Forest. SO

More Parrots of Luquillo

Human intrusion into the tropical forests is jeopardizing the habitat of thousands of animal species. In the Luquillo Experimental Forest, only 13 Puerto Rican parrots were living in 1974. Research on this endangered tropical bird has increased their number to over 30 in the wild in 1979.

Cooperative research between the Southern Forest Experiment Station and the Fish and Wildlife Service led to development of nesting structures that frustrate predators such as the pearly-eyed thrasher and rats. Nests remain dry even in the wet tropical mountain habitat.

Scientists can now tell the sex of parrots by analyzing stool samples, and can select compatible mates for captive breeding by watching the habits of individual caged birds. Hispaniolan parrots from the Dominican Republic make excellent foster parents and have been successful in hatching Puerto Rican parrot eggs and raising nestlings. Then, before fledging, these fostered birds can be transferred to active Puerto Rican parrot nests. This technique can insure that each active wild nest fledges a maximum brood of three to four birds.

Research will continue until the population has been built to 200 nesting pairs and nesting sites are established in two or more different locations in Puerto Rico. Management of the species will then be turned over to action agencies on the island.

Wildlife Habitats in Managed Forests

Forest managers throughout the country are beginning to use a new system to improve habitat for wildlife in managed forests in response to recent legislation concerning wildlife needs.

This system was developed by researchers at the Pacific Northwest Forest Experiment Station in cooperation with The Wildlife Management Institute, the USDI Bureau of Land Management, the National Forest System of the USDA Forest Service, and State fish and game departments. This new method grew from the need to protect wildlife habitat in eastern Oregon and Washington when salvaging large amounts of timber damaged by a major outbreak of the Douglas-fir tussock moth in 1972-74.

The new system is now being used to improve wildlife habitat management in National Forests in the Pacific Northwest, California, and the Intermountain West, but is generally applicable to managed forests throughout the United States. The publication *Wildlife Habitats in Managed Forests—the Blue Mountains of Oregon and Washington*, USDA Agriculture Handbook No. 553, is available for sale only from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Wildlife Habitats in Managed Forests the Blue Mountains of Oregon and Washington

U.S. Department of Agriculture • Forest Service
September 1979 • Agriculture Handbook No. 553

Wildlife habitat management will be aided by the new publication just off the press. PNW

Environment

More people are making use of our rivers for recreation. NC

How and Why Rivers are Used

Recreational use of our Nation's waterways has grown tremendously during the past decade. Managers of Federal, State, and local rivers are increasingly forced to deal with problems such as conflicts among user groups, depreciative behavior, crowding, and environmental impacts. To deal with these problems, and also to be adequately prepared for developing sound management plans, managers need a cost efficient mechanism to find out how river recreationists view management problems and their solutions.

North Central Forest Experiment Station's research, through input and cooperation of Federal and State land management agencies, has developed a standardized mail questionnaire capable of yielding information on river use and nationwide user preferences. Issues covered by the questionnaire include reasons for visiting the river; number, severity, and kinds of problems encountered; level of trip satisfaction; perception of crowding and conflict; level of support for a variety of management practices; and descriptive characteristics of the user and of the trip.

Over 30 rivers have been studied. Study results will provide the basis for developing trends through followup investigations.

New Guide for Wildlife Needs

Managers of National Forests and land managers have a responsibility to consider the different needs of all forest wildlife when developing forest management plans.

The Pacific Southwest Experiment Station and Pacific Southwest Region (Region 5) have produced a data base of 355 species of wildlife in the Western Sierra Nevada. This new data base is available both as written report GTR-PSW-37 and in a format suitable for computer access and analysis from the Pacific Southwest Region's Wildlife Management Staff in San Francisco.

For each of the birds, mammals, reptiles, and amphibians described in the report, information about the life history, distribution, and habitat needs is presented, along with a sketch of the species and a map of its distribution. The most important feature of the data base is the species-habitat matrix, which depicts the plant communities each wildlife species needs at different times of the year.

The report is the only one of its kind on California wildlife and was carefully designed to be a convenient, easy-to-use field reference. Both the publication and the computerized data base offer California wildlife biologists, silviculturists, and others an invaluable aid for determining possible impacts that timber harvesting, prescribed burning, roadbuilding, and similar forest management activities might have on their forest's wildlife.

Management plans requirements to help all forest wildlife. PSW

Canoeists and fishermen have conflicting interests. RM

Identifying Outdoor Recreation Benefits

Because most publicly provided outdoor recreation opportunities are not allocated by competitive market prices, too little is known about the benefits these outdoor recreationists receive.

Researchers at the Rocky Mountain Experiment Station have been looking for a way to get better measures of both economic and noneconomic outdoor recreation benefits.

Survey research techniques have been developed to identify the reasons why different types of people interested in outdoor recreation decide to participate in particular activities, and to quantify the benefits these same people feel they receive.

Research has led to the development of an outdoor recreation resource inventory and management system. The system can be used to map public lands to show which areas can best be managed to provide specific types of recreation opportunities. This system has been adopted nationwide by the Forest Service and the Bureau of Land Management.

Sewage Waste Put to Use

American cities are producing huge volumes of sewage sludge, and many cities are running out of places to put it. Scientists at the Southeastern Forest Experiment Station find sludge can do much to restore the productivity of the soil of millions of acres of land disturbed by strip mining, severe erosion, and borrow pits.

Severely disturbed and eroded sites in eastern Tennessee have defied reclamation for many years. Application of sewage sludge prior to planting of pines there has greatly increased seedling growth. On a borrow pit in South Carolina, loblolly pine growth during the critical first 3 years after planting was increased 20-fold by applying 1/2 inch of sewage sludge prior to planting. On plots where sludge was not applied, 500 pounds per acre of 10-10-10 fertilizer and 2,000 pounds per acre of lime were applied. Researchers found the sewage sludge far more effective than commercial fertilizer and lime for this kind of reclamation.

Scientists at the North Central Forest Experiment Station have been concerned with the land management of 160 sewage lagoon systems in Michigan and neighboring States.

Hybrid *Populus* plantations have been established and studied. Scientists found that forest vegetation can be used to remove large amounts of nitrogen contained in wastewater from sewage oxidation ponds. Short rotation culture appears to have a promising role in the design and operation of land treatment systems.

Two-year-old hybrid cottonwoods were irrigated with 2 inches wastewater per week during growing season. NC-SE

More Water Means More Antelope!

We could have more antelope on Great Basin desert lands.

Researchers of the Intermountain Forest and Range Experiment Station and the Utah Division of Wildlife Resources have completed a series of studies showing the major reason why antelope do not occupy much of the potential range—poor distribution of a few existing watering places. The topography and the forage are there but, unfortunately, the water is not. The development of additional watering places is the key to expanding the antelope range.

Researchers have found that making more water sites available during fawning season helps distribute the antelope population and may lessen the number of fawns killed by predators. And predation is one of the major contributors to the slow growth rate of antelope population.

Research results are being applied by the State of Utah through construction of rainwater catchments and other water developments on potential antelope range. Similar water developments on cold-desert areas of Nevada, eastern Oregon, and southern Idaho could greatly increase antelope populations throughout the Intermountain West.

More water sites will help increase antelope population in the West. INT

Managing Our Wilderness

Wilderness must be managed is the premise of a recently published book, *Wilderness Management*, Miscellaneous Publication No. 1365. Although wilderness is intended to be natural and unmodified, increasing recreational use and other influences make it necessary to manage these areas in order to protect the natural values for which they were established.

This publication summarizes the history of wilderness as a land use, discusses legislation protecting wilderness, describes current use patterns and pressures, and shows how research knowledge can be utilized in wilderness management planning. Intermountain Forest and Range Experiment Station and Southeastern Forest Experiment Station scientists cover both management of visitor use and resource protection and describe the relations between the two. This provides a basis for managing visitors with as little regulation and restriction as possible while safeguarding wilderness quality.

The book has already been adopted in many university classrooms and is used as a standard reference by wilderness managers in all Federal land management agencies.

Management of our Nation's wilderness will be helped by this new publication.
INT

Collecting soil-solution samples in an unthinned control plot on the Challenge Experimental Forest, PSW

Forest Fertilization and Water Quality

Research has demonstrated that timber growth can be doubled on certain sites through proper application of nitrogen fertilizers without the risk of contaminating groundwater with nitrate. Nitrates are normally present in low amounts in undisturbed forest soils, regardless of depth.

The Pacific Southwest Station has established a battery of studies in four geomorphic provinces in California to determine not only the benefits of fertilization on timber growth, but also the effect on water quality. The results of the studies have shown that when nitrogen was applied at rates as high as 400 pounds per acre, the nitrate concentrations were comparable to the natural concentrations at a depth of 1 meter below the soil surface. This depth is well above the surface of the permanent water table in the four test areas.

The fertilizers were applied in the fall. When the soil warmed in the spring, the nitrate concentrations tended to intensify in the upper layers of the soil profile. But the tree roots also became more active and effectively absorbed much of the nitrate before it filtered to more critical depths.

Scientists are working on techniques to determine what biological, ecological, and economic returns can be expected from treating forest soils with fertilizer.

These techniques and analyses will be used to produce guidelines or prescriptions for fertilization programs that will increase timber productivity without jeopardizing water quality.

Weather Modification in the Sierra Nevada

In cooperation with the Water and Power Resources Services, U.S. Department of the Interior, hydrologists at the Pacific Southwest Station have produced a set of nine reports that can be used to evaluate the effect of wintertime weather modification on the ecology and snowpack hydrology of the Sierra Nevada mountain range.

The impacts of increased precipitation upon five major ecological areas were estimated from historic snowpack and precipitation data acquired from 1899 through 1974. The estimates covered potential impact on (1) vegetation, including rare and endangered plants; (2) forest insects and diseases; (3) deer and their habitat; (4) nonpoint source pollution; and (5) lake and stream arrival and plant life.

The reports include a bibliography of more than 1,300 citations relating to the impact of weather modifications, and an overview in which responses to public concerns are evaluated.

These reports can be used to evaluate environmental impact statements, to implement such statements, or to assess the utility of weather modification on flood potential, nonpoint source pollution, and reduction of drought stress on plants and animals.

The intertwining network of tree roots provides strength to forest soils. PSW

Strong Roots Hold Soil

Hydrologists and soil scientists at the Pacific Southwest Experiment Station are learning how logging affects the role that roots play in maintaining slope stability in the unstable landscape of northwestern California.

Scientists have found that both tree and brush roots reinforce unstable slopes by tying the soil mantle to parent material and by providing lateral support to the soil mass.

Thousands of roots excavated from unstable sites in northwestern California, Oregon, and Alaska were weighed, measured, and grouped into size classes. Then the roots were tested for shear strength to determine their ability to resist the stresses continually acting on unstable slopes.

The data obtained in these studies helped interpret the interaction of timber harvesting activities and mass erosion process, such as landslides, soil creep, and debris avalanches.

The studies indicated that invasion by brush may not be undesirable from the standpoint of soil and slope stability. Within 12 years after logging, the clearcut blocks were completely revegetated with snowbrush (*Ceanothus velutinus*) rather than conifers. The rootmass of brush is only half that of conifers, but the individual brush roots are twice as strong. The brushfields will add reinforcement to the slopes equal to that provided by the conifer roots.

The root-strength studies point up the importance of establishing some type of vegetation as soon as possible after harvesting conifers on stable, but difficult to reforest, landscapes.

For More Colorado River Basin Water

According to scientists at the Rocky Mountain Experiment Station, the annual flow of the Colorado River could be increased up to 6 million acre-feet if all contributing forest and brush lands were managed solely to increase water yields. Such dramatic increases could not be achieved without serious impact to other forest resources including economic, social, and environmental values. Such resources need to be considered.

Water yields in the upper Colorado River Basin could be increased an estimated 500,000 acre-feet by appropriate management of one-fifth of each major vegetation type. Half that increase would come from subalpine forests, where well-designed timber harvests would create small forest openings to trap blowing snow. More extensive treatments would be necessary to get an additional 250,000 acre-feet in the lower Basin. Ninety percent of the increase would be generated by creating a mosaic of grassy openings in one-fifth of the chaparral and by intensive management of a third of the ponderosa pine.

This type of management could also substantially increase yields of timber and forage for livestock, as well as improve landscape aesthetics, recreation opportunities, and habitat for many species of game and nongame wildlife.

Measuring water yield from an intensively managed pine watershed in Colorado River Basin. RM

The rotting timber is residue that should be left to provide needed moisture and nutrients. FPL

Moisture and Nutrients from Residues

Lack of suitable moisture is a deterrent to reforestation in the dry land mass of the Rocky Mountains and westward to the crest of the Sierras and Cascades. Most moisture in this area occurs as winter snowfall and snowmelt in the spring.

Forest Products Laboratory scientists working with scientists from the Intermountain Forest Experiment Station and Michigan Technological University have determined that decayed wood residues and charcoal from fires are very important to forest reproduction in this area and contribute to survival and growth of seedlings and transplants.

Biomass is needed for accumulation and retention of water and minerals. Decaying wood acts as a sponge and enables circulation and change of air in its cavities as well as providing a favorable acidity for conifer growth. Nitrogen, phosphorous, or both, in usable form, are determining factors in plant growth in both decayed wood and moist forest soils.

Decayed wood and charcoal provide a favorable habitat for many kinds of living soil organisms such as mycorrhizal fungi that must be present to associate with roots. These fungi enable plants to accumulate phosphorous from insoluble minerals such as rock and nitrogen and their action is like that of bacteria in the intestinal tracks of animals. Mycorrhizae require constant moisture, correct acidity, and adequate aeration provided by charcoal or wood in advanced decay. Studies have shown that in drier areas of the West, forest managers must leave some residues to provide moisture and nutrients for reforestation.

Research Helps Western Reclamation

Seventy-two percent of our Nation's coal reserves are located on federally administered lands in the West. As development of these resources progresses, a key problem has been how to revegetate surface mine spoils with the objectives of controlling erosion, enhancing aesthetics, and restoring the land to productive use.

When strip mining of coal accelerated in the early 1970's in the Four Corners region of the Southwest, the biggest reclamation concern was whether vegetation could be reestablished on these low rainfall sites. Research by the Rocky Mountain Forest and Range Experiment Station and mining company reclamation specialists has shown that plant establishment is practical and feasible.

Four native species have been established and maintained on mined lands in New Mexico's San Juan coal province. Research is concerned with the management of these and additional plants so the lands can be returned to their historic grazing use.

Researchers at the Intermountain Forest and Range Experiment Station and Montana State University, Bozeman, have developed a prototype minicomputer-based planning system to develop mine plans and reclamation strategies, and to estimate environmental impacts. This system is a powerful planning tool, combining the speed and accuracy of the computer with the professional judgment of the specialist-operator.

Efficient data management features allow the operator to use information on coal, overburden, climate, hydrology, vegetation, and wildlife. Maps, cross-sections, isometric drawings, and other data displays can be created in minutes.

This prototype planning system is located on the Montana State University campus and is available for demonstrations and expanded research.

*Researchers study results of revegetation efforts on mined lands in the West.
INT-RM*

Fire and Atmospheric Sciences

Weather Information for Foresters

Prescribed burning, fire control, tree planting, use of heavy equipment, and nursery spraying are strongly influenced by weather conditions. Forest managers faced with these conditions have needed more information about the weather than they could get directly from the National Weather Service.

The need for weather information is especially acute for someone trying to estimate the rate and pattern of smoke dispersion from a prescribed burn. Such an estimate requires data and computations that are best handled by a computer.

A computer-based system for doing this job was developed at the Southeastern Forest Experiment Station. Since weather data were necessary for predicting smoke dispersion, some data were used to provide additional weather information, including localized forecasts, predictions about conditions for equipment use, and the likelihood of rust infection in nurseries.

An evaluation of the Forestry Weather Interpretations System (FWIS) shows a 6-to-1 benefit-to-cost ratio. A "Grass Roots Experiment," in which Georgia Forestry Commission personnel in 20 counties receive and relay county-level forecasts from FWIS, also delivers fire prevention and prescribed burning messages on days when it counts.

A weather information data system helps forest managers plan use of equipment and fire control. SE

Prevent Fires Before They Start

When large forest or wildland fires start, an interagency mobilization system is used to immediately dispatch fire fighters from all over the country.

Until recently, these mobilization procedures have not been available for fire-prevention specialists.

Working with staff of the Pacific Southwest Region, researchers at the Pacific Southwest Station developed mobilization procedures for fire-prevention specialists, similar to those used for fire-suppression crews. These prevention procedures were designed to reduce the number of human-caused fires in an area experiencing severe fire conditions and were first used in California in September 1979 during a period of extreme fire danger.

Key to the prevention procedures was an up-to-date statistical summary that predicted the number of human-caused fires that were likely to start during a given day of the week. Researchers used this forecast along with an early alert to warn the National Forests and Ranger Districts when fire danger and occurrence probability would become high and mobilization of fire-prevention specialists would have a high payoff.

These test runs demonstrated the beneficial potential of prevention procedures and established the basis for total mobilization of national fire-prevention efforts.

The Pacific Southwest Station, in cooperation with the Institute for Social Research, University of Michigan, developed a National Plan for Wildfire Prevention. The National Plan will help make it possible to carry out a coordinated program of fire-prevention research involving Federal agencies, all 50 States, and colleges and universities.

After logging ponderosa pine forest, forest fuels are appraised. RM

Appraising Forest Fuels

Each year roughly 115,000 wildfires burn over 2.4 million acres in the United States. Wildfires are particularly troublesome when they burn in heavy fuel concentrations that result from timber harvesting or thinning.

One way to reduce wildfire hazard is by direct treatment of these fuels, but fuel treatment is expensive and the costs are rapidly increasing. Land managers will have to choose the most cost-effective treatments.

Rocky Mountain Experiment Station scientists have developed a system that will estimate the extent and severity of wildfire expected under different fuel treatment strategies. Managers can use this estimate to help determine which fuel treatments—if any—should be used.

The Activity Fuel Appraisal System combines fire and fuel modeling, historical fire and weather data, and principles of decision theory into an analysis that allows the land manager to consider wildfire occurrence risk, fuel quantities, climate, and suppression capability when evaluating fuel treatments. This system is currently being applied by the Ashley and Black Hills National Forests, the Wyoming State Office of the Bureau of Land Management, and by the Colorado State Forest Service.

Fire Behavior Can Be Predicted

Predicting fire behavior! Impossible! Not at all. The development of a custom programmed micro chip for use with a handheld calculator has now made it possible for the fire manager to quickly tell what a fire will do.

Fire behavior research has been underway for many years at the Intermountain Experiment Station. The micro chip developed in 1979 puts these years of research results into a form fire managers can use quickly and conveniently.

The chip allows fire control personnel to calculate the National Fire Danger Rating indexes to assess fire danger before a fire occurs. In addition, and perhaps more important, predictions of actual fire behavior from on-site assessment of fuels, weather, and topography can now be calculated. Fire managers are now using this important tool to determine fire severity in surface fuels, and to determine when conditions reach that critical and dangerous state where fires can be expected to race destructively through forest tree crowns.

Micro-chip allows fire control personnel to predict fire behavior. INT

Insects and Disease

Joint International Research

The Canada/United States Spruce Budworms Program (CANUSA) is a joint international effort between the Forest Service and the Canadian Forestry Service to develop effective spruce budworm management techniques. CANUSA has completed its first full year of activity with full funding. A considerable number of research proposals, cooperative agreements, and contracts were funded to support activities ranging from basic biological studies to a comprehensive integrated pest management plan.

The geographic distribution of investigators ranges from Maine to California and from the Lakes States to Georgia plus several Canadian Provinces. These investigators represent United States and Canadian universities, USDA Forest Service and Canadian Forestry Service Units, private contractors, and private timber companies.

In the first field season some promising results seem to be developing in the following areas: Monitoring of spruce budworm populations with pheromones, automatic egg mass counters, damage and hazard rating techniques, environmental impact and assessment of chemicals, improved application technology for chemicals and biologicals, and appraisal of pre-salvage strategy for budworm management.

In addition to these areas, CANUSA supports an integrated pest management demonstration in Maine aimed at reducing budworm damage by developing management plans for specific tracts that use silvicultural treatments, harvesting, and more precise spray application. This is a joint effort with the University of Maine, several private timber companies, and Baxter State Park.

Root Parasites of Southern Forests

Root parasites were virtually unknown to southern foresters until 1969 when a Forest Service scientist reported that *Senna seymeria* was killing 3- and 4-year-old slash pines in a large plantation in northwest Florida. A series of studies by Old Dominion University and Southern Forest Experiment Station has identified the significance of southern root parasites as pathogens of both pine and hardwood species.

The most familiar parasitic plants are the mistletoes that penetrate stems and branches of trees and shrubs. Root parasites act similarly below ground, forming specialized knob-like organs, called haustoria, that attach to and penetrate roots of neighboring plants. This provides a pathway for the transfer of water and food from the host to the parasite. Parasites depend on host plants for subsistence in varying degrees. Several species are capable of maturing and producing seed without attachment to a host. Some parasites attach to a wide variety of hosts, while others are much more specific.

The information gained from these studies gives geographic range, host selection, habitats, and keys for identification of the most prevalent southern root parasites.

Root parasites below the ground destroy the pines. SO

Biological Control for Pine Shoot Borer

A biological strategy has been developed to control the western pine shoot borer with an artificial version of the insect's own attractant or pheromone. Research by the Pacific Northwest and Pacific Southwest Forest Experiment Station and Weyerhaeuser Company has shown that when the artificial sex attractant is applied in amounts slightly greater than occur naturally, male moths can become confused and this can prevent them from finding females. Reproduction is blocked, shoot borer populations decline, and damage to pine plantations is reduced. The attractant is highly specific for the shoot borer and is not toxic to humans or other organisms.

The shoot borer is a pest of ponderosa pine and jeffrey pine plantations throughout the Western United States where growth reduction is estimated at \$200 per acre. The larvae mine inside the new terminal shoots where they cannot be readily treated with insecticides. Practical methods for both aerial and ground application of the pheromone have been developed; when the pheromone is registered for commercial use, insect damage can be controlled at very low cost. A single treatment of less than one-fourth ounce per acre will reduce damage 70 to 90 percent.

Pheromone control is now recognized as a means of pest management that avoids the use of chemicals potentially harmful to the environment. This is the first case in which a pheromone control strategy has been shown to reduce damage by a forest pest.

Pheromone control of pine shoot borer is working well. PNW

Identify Pacific Coast Conifer Diseases

Forest Service plant pathologists with the assistance of State, county, and university organizations, as well as the Canadian Forestry Service, have developed a major publication that provides basic information needed to identify the common diseases of Pacific Coast conifers. Except for a number of texts written on forest and plant pathology, most of the available literature has been in the form of bulletins, monographs, articles, and shorter contributions issued from time to time through a variety of publication outlets. This handbook, *Diseases of Pacific Coast Conifers*, USDA Agriculture Handbook No. 521, brings all the basic information together under one cover.

The publication describes hosts, distribution, damage, disease cycle, and identifying characteristics for 31 needle diseases; 17 canker, dieback, and gall diseases; 23 rusts; 8 root diseases; 15 forms of mistletoe; and 18 forms of rot. Diseases in which environmental conditions are contributory factors are also described.

This information will be useful throughout Western North America where most of these diseases occur.

Bacterial gall of Douglas-fir caused by the bacterium Pseudomonas pseudotsugae.
PSW

Tiny parasitic wasps have been released in western larch forests since 1960. INT

Controlling the Larch Casebearer

Western larch forests of northern Idaho were silently invaded in the mid-1950's by a tiny moth called the larch casebearer. The moth was accidentally introduced into the Northeastern United States from Europe in the 1880's. Free of native European parasites, the casebearers bred rapidly and spread over most of the Northwestern United States and British Columbia.

Soon after discovery of the casebearer near St. Maries, Idaho, in 1957, researchers at the Intermountain Forest and Range Experiment Station began to study methods of biological control using small parasitic wasps that were native to the casebearer's homeland. In 1960 several species of wasps were imported and hundreds of thousands have since been released in infested stands. Researchers have also discovered local parasites that have added casebearers to their menu.

Results of this research are found in *Larch Casebearer in Western Larch Forests*, GTR-INT-55.

This publication contains information on casebearer life stages, biology, damage symptoms, and methods of evaluating outbreaks.

Products and Engineering

Putting Waste Wood to Use

Cutting of trees and tearing down of old houses to make room for new construction are everyday occurrences in major cities. Ever wonder what happens to the wood? In most instances it goes to the dump; it is not used. Approximately 20 percent of the material entering landfills in the Southern United States is urban waste wood.

Perhaps the saddest chapter in this story is that technological systems for putting this waste wood to use are available, but seldom used. To correct this situation, scientists at the Southeastern Forest Experiment Station called a conference of municipal and county waste management officials and other interested parties. Attendees were informed about the possibilities of using urban waste wood in the South. Scientists and engineers described the systems that were available. They discussed the technical, financial, and legal barriers to full utilization of this important supply of wood. Papers presented at the conference were reproduced, and copies were sent to interested people who were unable to attend.

Full utilization of urban waste wood would have several obvious advantages. It would decrease the space cities require for landfills, provide a largely untapped source of energy and fiber, and help reduce our dependence on oil and natural gas for energy.

Urban waste wood is vastly under utilized. SE

System 6 and Sem are now in use for using low-grade hardwood of the Northeast in high-grade uses. NE

New Ways for Using Low-Grade Hardwoods

Researchers at the Northeastern Forest Experiment Station have found that some of the abundant supply of low-grade hardwood in the Northeast can be used for high-grade uses. They feel that *commonality* (or standardization) is the key.

Using computers, researchers have determined the standard-sized blanks that should be used to manufacture thousands of furniture and cabinet parts without a great deal of waste. They have also found ways to convert the presently unused timber to the standard-sized blanks.

System 6 is a technique of converting 6-foot long bolts to blanks and Sem (Serpentine end matching) is a technique to make long pieces out of short pieces of wood. Timber for processing is obtained from forest thinning cuts. This promotes growth of the best trees. Industry is very interested in this system and has been cooperating with researchers in its development.

To date, thinning material from three National Forests has been converted into 6-foot bolts, processed using System 6 and Sem methodology to standard-sized blanks, and the blanks have been used by five furniture manufacturers to make tables, chairs, kitchen cabinets, and upholstered furniture.

Structural Flakeboard Results

Studies of structural flakeboard indicate that structural grade exterior sheathing can be manufactured from hardwood and softwood residues. This research considered the harvesting, materials, processing, economic, and marketing aspects of board manufacture. Products produced have met building code requirements for roofs and floors, and have met the Class B flame spread rating and exceeded the fire endurance requirement for exterior walls of one- and two-family dwellings.

The results of this Forest Products Laboratory research are available to industry to help decide whether or not to expand the number of flakeboard plants. Flakeboard manufacturers have announced that in the United States, the number of plants has risen from 2 to a potential of 17 to 25 plants.

Commercial Use of Southern Hardwoods

The major unused wood resource in the South is low-grade hardwoods growing on pine sites.

Scientists at Southern Forest Experiment Station have been studying new processes for utilizing these low-quality, short, crooked hardwood logs. One promising result is hardwood structural flakeboard. This panel product would use large quantities of hardwoods as a substitute for lumber and plywood products from softwood. Flakeboard can be used for roof decking, sheathing, subfloors, concrete forms, containers, pallets, etc.

The shaping-lathe headrig was developed to convert short, low-quality logs into crossies or posts, cants for resawing, or cylindrical bolts to be rotary peeled. Flakes of uniform length and thickness are residue from the headrig and are excellent for use in manufacturing structural flakeboard. Fabrication techniques and an effective, economical resin system for gluing flakeboard of mixed southern hardwoods also resulted from this research. This new process is now available to the forest industry.

Structural flakeboard produced from both hardwood and softwood. FPL

New Products from Veneer

Upholstered furniture frames are currently produced from mixed hardwood lumber. Many manufacturers report difficulty in obtaining adequate quantities of long and/or wide parts from low-grade lumber. Since the frame is covered by upholstery, appearance is not a factor.

Purdue University and Forest Products Laboratory researchers have conducted a study that shows the feasibility of producing such lumber for furniture frames from parallel-laminated, thick-rotary-cut veneer.

The primary advantages of producing lumber by this process are increased yield over conventional sawing, more uniform strength and stiffness than lumber sawn from a comparable quality of logs, and product dimensions not limited by log dimensions.

The University of Washington and the Forest Products Laboratory have studied the use of reconstituted materials such as parallel-laminated veneer, which offers the opportunity to use lower grade, little used, and/or smaller raw materials for the manufacture of engineered wood components or finished products.

A number of potential market areas have been identified for this type of material and include ladder rails, mobile home ridge beams, purlins, crossarms, joists, glulam beams, and mobile home truss chords.

Parallel-laminated veneer from low-grade and infrequently used materials can be used in many products. FPL

Build in Energy Efficiency

Energy saving features are emphasized in a new research paper, *Energy Efficiency in Light-Frame Wood Construction*, FPL-317. The paper provides innovative ideas on the design and construction of energy efficient light-frame wood structures.

Charts and graphs will be of considerable interest to engineers, designers, architects, and builders. Forest Products Laboratory research presents the role of housing design and landscape planning in building energy efficient homes, as well as the need of engineering for energy efficiency.

Topics include building code considerations, heating losses and gains, zoning for energy balance, windbreaks and air leakage control, thermal performance, and insulation. The paper describes how bedrooms with an easterly orientation offer sunlight in the morning, but not during hot summer afternoons, and how a southwesterly exposure gains solar heat in the winter. This energy efficient guide can make a significant improvement to our national energy problems.

Housing and landscape design helps make new homes energy efficient. FPL

Left flask contains bleaching waste at start of treatment. Right flask shows effective color removal. FPL

Lignin Research Holds Practical Promise

Lignin, a major component of wood, is the second most abundant renewable biomass resource on earth. Nature can break down lignin but in the past we have not known how microbes recycle lignin, or how this system might be used in wood utilization. Research has given us a clear understanding of which microbes degrade lignin, how the lignin is metabolized by these microbes, and what environment and nutritional factors favor lignin biodegradation.

Three applications have been demonstrated on a laboratory scale: (1) Partial bleaching (delignification) of kraft pulp with microbes reduces the chlorine requirement for the subsequent chemical bleaching. This lowers pollution from chlorinated lignin residue. (2) Microbial modification of lignin in coarse mechanical pulp lowers the energy requirements for final refining (fiberizing) in production of quality mechanical pulps. (3) Microbial action decolorizes dark colored bleaching wastes, which resist conventional biological treatment.

Microbial action is considered to be the most promising process of the three for technical-scale development and is being further studied by the Forest Products Laboratory in cooperation with four large pulp companies and North Carolina State University. Continued basic research is expected to increase the number of potential applications of microbial lignin-degrading systems.

Lumber Use by Truss Fabricators

Shortages of softwood lumber is one reason home building costs are increasing. The truss frame construction system developed by Forest Products Laboratory saves lumber and reduces costs. The use of frame material is reduced by 30 percent.

Studies by the North Central Forest Experiment Station and the Forest Products Laboratory show that builder prejudices and architect influences are major obstacles to greater use of trusses; that raw material procurement and lumber warp are major industry problems; and that variation within some lumber grades, conflicting interpretation of the same regulatory codes, and builders' lack of knowledge about trusses are major truss fabricator concerns.

Study results have helped large lumber manufacturers improve their production and marketing practices. The Truss Plate Institute and the Component Manufacturers Council have developed programs to focus members' attention toward improvement in truss marketing and lumber procurement practices.

Study results in information to help lumber manufacturers improve production and marketing practices. NC

Forest residues can help us with our Nation's energy needs. NC

Energy from Residues and Simulated Harvests

Scientists have conducted a study of the pulp and paper industry in Michigan's Upper Peninsula and northern Wisconsin to see if industry could be energy self-sufficient through the use of forest residues. Studies showed the forests of the region could supply 40 million green tons of fiber annually. This is seven times the current level of fiber utilization. Half of this fiber is from conventional forest residues—rough and rotten trees, and tops and limbs.

The use of forest residues as an energy source for forest industries can contribute substantially to solving the forest industry's energy needs.

Study results show that 9 of the 10 major pulp and paper mills within the study region could become economically energy self-sufficient through the use of forest residues by 1980.

Simulation or computer modeling is one way loggers can stay ahead of problems concerning machine purchase and operation. Recent application of improved simulation languages by the North Central Forest Experiment Station to full-tree field-chipping systems has shown that harvest models can predict real system output within 10 percent. Using these models, many different combinations of equipment and operating procedures can be tested within a fraction of the time and money required to examine just one real operation.

More efficient harvest systems will provide greater incentive for growing more wood for the future. The harvest model was used in the Forest Residue Energy Program study sponsored by the Department of Energy.

Dead Timber is Valuable

The rising price of lumber combined with the desire to improve wood utilization has resulted in more extensive use of a resource once considered valueless—timber dead and dying from insect attack. Approximately 1.2 billion cubic feet of standing dead timber exists in the northern Rocky Mountain States alone.

Studies at the Pacific Northwest Experiment Station and at the Intermountain Forest and Range Experiment Station show that much dead timber thought to be unmerchantable is actually satisfactory for lumber and other forest products. Researchers have worked with public forest managers and private industry to revise timber appraisal guidelines, set utilization standards, and lower log diameter limits to increase utilization of the dead timber resource.

Information gained from these studies has been applied in various ways and is providing needed wood for American consumers, reducing the fire hazard of dead stands and wood waste in managed forests, and benefiting forest products industries in small towns throughout the West.

The potential dollar benefits are also great. Approximately \$1 can be returned to the national economy for each cubic foot of dead timber processed as sawtimber. The total salvageable sawtimber in the West is estimated at 5.5 billion cubic feet. If only 10 percent of that volume were utilized, the value to the economy would exceed \$500 million.

Dead timber is an underestimated wood resource. INT-PNW

Economic gains are small from increased timber harvest on public lands, PNW

Analyzing Significant Policy Issues

The issue of setting aside large additional areas of the National Forest system as wilderness areas has generated much controversy. The benefits and impacts of alternative courses of action were the subject of close examination during the recent Roadless Area Review and Evaluation (RARE II).

One statement said that as much timber could be harvested without logging within the roadless areas, if the monies saved by not building roads were used to intensify management on the remaining forest lands. Researchers at the Pacific Northwest Forest and Range Experiment Station tested this hypothesis in seven western National Forests. Because of environmental constraints to significantly increased timber management and harvesting on the lands outside the roadless areas for the forests studied, researchers concluded there were limited opportunities to intensify management through increased investments in intensive management of accessible areas.

Since the seven forests were not construed to be a scientific sample, no firm conclusions on this issue can be drawn for other National Forests. The study does suggest there may be similar limitations for other western National Forests and that the issue of increasing management intensity on accessible areas is very complex and extends beyond questions of available management monies alone.

Another issue associated with RARE II has been the likely impact of massive withdrawals of unroaded National Forest land from future timber harvesting on future wood product output and prices. Research economists analyzed the potential effects of withdrawing all roadless areas being studied. Their conclusions were that while there could be

severe impacts on local and subregional economies in the West, the overall long-term effect would be to increase softwood timber harvesting in other parts of the country and also to stimulate greatly increased imports of Canadian softwood lumber.

These studies provide a factual basis for the resolution of complicated issues in the management and use of forests and forest-related resources.

Improved Scientific Information

The Forest and Rangeland Renewable Planning Act of 1974 as amended by the National Forest Management Act of 1976 directs the Secretary of Agriculture to prepare periodical reports to the Congress on the Nation's renewable natural resources. The Renewable Resources Assessment is a supporting technical document for these reports to Congress on the Nation's renewable resources. The second Assessment prepared in response to this legislation was submitted to Congress in January 1980. The major findings of the Assessment are that while trends in the consumption of most forest and range land related goods and services show that future demands may well outstrip future supplies, there are many opportunities for remedial management programs to prevent such future shortfalls.

In preparing the Assessment, new scientific information, resource data, and analytical methodologies were developed by Forest Service scientists at various locations throughout the country.

In 1976, South Carolina was selected as one of the six pilot study areas in the United States to be highlighted in the 1980 RPA Assessment. The specific mission in South Carolina was to develop and test procedures for multiresource inventories. Renewable Resources Evaluation scientists at the Southeast Forest Experiment Station had been involved in a number of innovative nontimber resource studies and had formulated new conceptions of the additional inventory needs.

Previous inventories had focused primarily on timber. While they provided the official estimates of total forest acreage, detailed classifications and measurements were generally confined to lands classified as commercial timberland. The new forest inventory of South Carolina is the most comprehensive State multiresource inventory ever completed.

The new inventory for South Carolina will allow foresters, range specialists, wildlife biologists, recreation specialists, ecologists, and others to draw upon a common data base. It should provide an understanding of the ecological relationships that affect resource benefits when land is used for several purposes simultaneously. As experience is gained in analysis of multiresource inventory data, procedures will be improved and incorporated into operational inventories in other States.

The nationwide inventory and analysis of renewable forest-land resources was initiated at the direction of the Forestry Research Act (McSweeney-McNary) of 1928 and continues under the authority of the Forest and Rangeland Renewable Resources Planning Act of 1974 and the Forest and Rangeland Renewable Resources Research Act of 1978.

State-by-State inventories were conducted on nearly 50 million acres of forest land this year. Analysis and publication of these resource data provide the sound technical information base required for resource decisions and policy at multicounty, State, regional, and national levels. In addition to providing forest area and productivity data to the public and the various forest-related industries, several specific applications were made of these resource inventories for the evaluation of alternative energy sources.

Business Data Book is now available. NC

Business Data and Market Information Source Book

Market analysts at the North Central Forest Experiment Station and the Forest Products Laboratory jointly developed a reference source book, *Business Data and Market Information Source Book for the Forest Products Industry*.

This book contains comprehensive listings for sources of timber and wood products-related data, including economic statistics, directories, forest products reports and newsletters, price reports, pertinent periodicals, bibliographies, computerized information retrieval systems, and many other market information aids.

Timberland owners, small private wood processors, and others involved in the production, sale, and marketing of timber and wood products will find this book a valuable reference and information source.

Timber Management

Energy and Nitrogen from Red Alder

Red alder is the major hardwood species in the Pacific Northwest, where it has a reputation as a successful, but often unwelcome, competitor of conifers. Researchers at the Pacific Northwest Forest Experiment Station suggest that forest managers consider alder in their management plans.

There are many reasons. Alder is fast growing, outstripping associated conifers for the first 30 years. Its wood is suitable for many commercial products; it is a prime fuelwood. Alder covers a large portion of the low-elevation coastal forest area from Alaska to central California. In addition, red alder is the only important western tree species that adds nitrogen to the soil at the same time it produces usable wood.

Alder can be planted by itself for short rotations to produce fiber for pulp or fuel or it can be managed on longer rotations to produce solid wood products. Alder also has potential for use in reclaiming strip mine sites or areas where diseases now prevent conifers from growing.

A Conference on Management and Utilization of Alder was co-sponsored by the University of Washington and the Station. The published proceedings will be of considerable use to foresters, scientists, and land managers in planning the use of alder.

These ponderosa pine seedlings were grown in single cells and bundled for packing. RM

Container-Grown Seedlings are Better

Over the last 10 years researchers have found that seedlings grown in containers do not have limitations that are common to bare root seedlings. Because the root system of container-grown seedlings is intact and protected, cold storage is usually not necessary, and the seedlings can be planted successfully for a longer season.

Container seedlings can be programed for planting almost any time of year when raised in a specially designed greenhouse-type structure. In this kind of controlled environment, container-grown seedlings can be produced in one-quarter the time needed for bare root seedlings in outdoor beds. This enables nursery staff to quickly replant after large fires and to respond rapidly to changed logging schedules.

Research into seedling physiology, nursery hardware, and planting techniques have made possible the current North American production of more than 100 million container seedlings per year.

The research and practical experience of scientists and nursery staff have recently been assembled in a manual, *How to Grow Tree Seedlings in Containers in Greenhouses*, GTR-RM-60.

Radiography Advances Tree Seed Technology

Radiography provides a practical method for seed analysts to evaluate internal seed anatomy without destroying the seed. This method gives researchers detailed information on seed structure, development, mechanical injury, and insect damage. Used with other accepted tests, radiography helps draw accurate inferences about seed quality and can be used safely in the laboratory.

Researchers studied 24 radiopaque agents to see what the agent's capacity would be to promote the image contrast needed for accurate interpretation. With black walnut, shellbark hickory, and pecan seeds serving as test subjects, 20 of the agents improved images of either seed coat cracks, cavity outlines, healthy tissue, damaged tissue, or general contrast.

Seed analysts of Southeastern Area and the Southern Forest Experiment Station have authored a handbook to familiarize seed radiography users with materials, equipment, techniques, and terminology involved in preparing and interpreting radiographic imagery.

Timber Management

Tree breeding strategies using multiple populations will allow high genetic improvement in trees. SE

Tree Breeding Strategies

Scientists at the Southeastern Forest Experiment Station are studying the highly specialized field of quantitative genetics. They are concerned about the complex problems associated with breeding designs and strategies inherent in long-term tree breeding programs for improvement of multiple traits.

A system of tree breeding using multiple populations has been shown to be feasible. By dividing breeding populations into subunits, researchers have found that more genetic gain can be achieved than by using a single breeding population of comparable size. When the future is uncertain, as it generally is in forestry because of the long generational span, selection for different trait combinations or site conditions can be undertaken simultaneously by selecting for different responses among the subunits.

Using this approach, tree breeders can deploy multiple populations in several directions around combinations of high predicted future value. This practice will allow high immediate genetic improvement, guard against selection of improper direction, and provide genetic flexibility and variation in the tree breeding population for many generations in the future.

Management of Hemlock-Sitka Spruce Forests

Western hemlock-Sitka spruce forests occupy a narrow 2,000-mile strip along the Pacific coast from Oregon to Alaska. This type of forest is extremely productive and is a substantial part of the timber harvest in western Washington and coastal British Columbia. Nearly all of the timber harvested in Alaska is from hemlock-spruce forests.

Besides its value for timber, hemlock-spruce forests provide habitat for wildlife, and streams for spawning and rearing habitat for salmon and trout that sustain an important commercial sport fishery. Scenic and recreational opportunities are also provided for many people.

Researchers from the Pacific Northwest Forest Experiment Station recently published *Management of Western Hemlock-Sitka Spruce Forests for Timber Production*, GTR-PNW-88. This publication describes current timber management practices and includes practical guides for management.

Beautiful western hemlock-Sitka spruce forest is valuable for wildlife and productive for timber. PNW

Yellow-Poplar Harvests Can Be Doubled

Scientists have found that yellow-poplar harvest rate can be doubled in the Eastern United States. The significance of this finding is that more yellow-poplar can be used to manufacture many products now made from pine. Rough construction plywood, many kinds of paper products, as well as studs and sheathing for housing, can be manufactured from yellow-poplar. This will help relieve pressures now being exerted on the southern pine resources.

Researchers have found there is no need for intensive management of yellow-poplar to bring about these increased supplies. Custodial management, permitting a forest to regenerate and grow as it will and harvesting timber at the landowner's convenience, is responsible for the current rate of yellow-poplar growth. There is no need for large investments at the time of harvest and regeneration that must be carried forward at high rates of interest for 40 to 80 years.

The minimum cultural practices for custodial management are (1) keep harvested areas larger than 1 acre, (2) remove or fell all trees larger than 2 inches d.b.h. at the time of harvest, (3) protect the young stand from fire, and (4) schedule the next harvest according to the owner's best interest.

These guidelines will be of interest to land managers and landowners throughout the central and southern Appalachian forest region where yellow-poplar predominates as a commercially important timber producing tree.

Yellow-poplar growth is two and one-half times greater than removals. SE

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Environment

Watershed Management

Bastos, T. X., and W. H. Smith.

1979. Influence of pine forest removal on flatwood soil temperature and moisture conditions. IMPAC Report 4(3). 28 p.

Beasley, R. S.

1979. Intensive site preparation and sediment losses on steep watersheds in the Gulf Coastal Plain. *Soil Science Society of America Journal*. 43(2):412-417.

Bergen, James D.

1978. Some measurements of settlement in a Rocky Mountains snow cover. *Journal of Glaciology*. 20(82):141-148.

Bergen, James D.

1979. The windflow to the lee of a forest edge. *In* 14th Conference on Agricultural and Forest Meteorology, April 2-6, Minneapolis, Minn. p. 170-172.

Burton, Timothy, A., Gerald F. Gifford, and George E. Hart.

1979. An approach to the classification of Utah mine spoils and tailings based on surface hydrology and erosion. *Environmental Geology*. 2(5):269-278.

Carmichael, R. S., O. D. Knipe, C. P. Pase, and W. W. Brady.

1978. Arizona chaparral: Plant associations and ecology. U.S. Department of Agricultural Forest Service Research Paper RM-202. 16 p.

Clayton, James L.

1979. Nutrient supply to soil by rock weathering. *In* Proceedings Impact of Intensive Harvesting on Forest Nutrient Cycling. State University of New York, College of Environmental Science and Forestry, Syracuse. p. 75-96.

Cooley, John H.

1978. Nutrient assimilation in trees irrigated with sewage oxidation pond effluent. *In* Proceedings Central Hardwood Forest Conference II, Purdue University, W. Lafayette, Ind. p. 328-340.

Cooley, John H.

1979. Effects of Irrigation with oxidation pond effluent on tree establishment and growth on sand soils. *In* Utilization of Municipal Sewage Effluent and Sludge on Forest and Irrigated Land. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 145-153.

Corbett, Edward S.

1978. Municipal watershed management. *In* Urban Foresters Notebook. Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49.

Corbett, Edward S.

1978. Disposal of wastewater and sludge in wooded areas. *In* Urban Foresters Notebook. Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49. 9 p.

Corbett, Edward S.

1979. Opportunities in water management. *In* Proceedings Society of American Foresters Annual Convention 1978, St. Louis, Mo. p. 185-188.

Currie, Pat O., and Howard L. Gary.

1978. Grazing and logging effects on soil surface changes in central Colorado's ponderosa pine type. *Journal of Soil and Water Conservation*. 33(4):176-178.

Curtis, Willie R.

1978. Effects of surface mining on hydrology, erosion, and sedimentation in eastern Kentucky. *In* Proceedings 4th Kentucky Coal Refuse Disposal and Utilization Seminar, June 6-7. Pine Mountain State Resort Park, Pineville, Ky. (Sponsored by the University of Kentucky College of Engineering.)

Curtis, Willie R.

1978. Mined-land reclamation. *In* Proceedings 3rd National Conference on the Interagency Energy/Environmental Research and Development Program, June 1-2, Washington, D.C. (Sponsored by the Environmental Protection Agency.)

Curtis, Willie R.

1979. Surface mining and the hydrologic balance. *Mining Congress Journal*. 65(7):35-40.

Davis, Edwin A.

1979. Chaparral control with aerially applied karbutilate brush balls. Western Society of Weed Science, Research Progress Report, 1979. [March 20-22, Boise, Idaho.] p. 37-38.

Davidson, Walter H.

1979. Hybrid poplar pulpwood and lumber from a reclaimed strip-mine. U.S. Department of Agriculture Forest Service Research Note NE-282. 2 p.

Dawson, K. L., and T. E. Lang.

1979. Numerical simulation of jet roof geometry for snow cornice control. U.S. Department of Agriculture Forest Service Research Paper RM-206. 19 p.

DeBano, L. F.

1979. Effects of fire on soil properties. *In* California Forest Soils: A Guide for Professional Foresters and Resource Managers and Planners. University of California, Division of Agricultural Science, Berkeley, Priced Publication 4094. p. 109-118.

DeBano, L. F. and C. E. Conrad.

1978. The effect of fire on nutrients in a chaparral ecosystem. *Ecology*. 59(3):489-497.

DeBano, Leonard F., Gary E. Eberlein, and Paul H. Dunn.

1979. Effects of burning on chaparral soils: I. Soil nitrogen. *Soil Science Society of America Journal*. 43(3):504-509.

- deBarros, N. F.
1979. Effects of eucalypts on water yield and quality. IMPAC Report 4(2). 24 p.
- Farmer, Eugene E.
1979. Mining waste dump construction, stability and reclamation in the western phosphate field. *In* Proceedings Mineral Waste Stabilization Liaison Committee. [Eveleth, Minn., June 21.] 23 p.
- Federer, C. A.
1979. A soil-plant-atmosphere model for transpiration and availability of soil water. *Water Resources Research*. 15:555-562.
- Fedrcr, C. Anthony, and Douglas Lash.
1978. BROOK: A hydrologic simulation model for eastern forests. University of New Hampshire Water Resources Research Center Research Report 19. 84 p.
- Federer, C. Anthony, and Douglas Lash.
1978. Simulated streamflow response to possible differences in transpiration among species of hardwood trees. *Water Resources Research*. 14:1089-1097.
- Foggin, G. T., III, and R. M. Rice.
1979. Predicting slope stability from aerial photos. *Journal of Forestry*. 77(3):152-155.
- Fosberg, Michael A.
1979. A generalized unsaturated hydraulic conductivity function for watershed models. *In* Proceedings 14th Conference on Agricultural and Forest Meteorology. April 2-6, Minneapolis, Minn. p. 202-204.
- Gaffney, G. R., and R. Ellertson.
1979. Ion uptake of red-winged blackbirds nesting on sludge-treated spoils. *In* Utilization of Municipal Sewage Effluent and Sludge on Forest Land and Disturbed Land. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 507-515.
- Gary, Howard L.
1979. Duration of snow accumulation increases after harvesting in lodgepole pine in Wyoming and Colorado. U.S. Department of Agriculture Forest Service Research Note RM-366. 7 p.
- Gosz, James R.
1978. Nitrogen inputs to stream water from forests among an elevational gradient in New Mexico. *Water Research* 12:725-734.
- Halverson, Howard G., and James L. Smith.
1979. Solar radiation as a forest management tool: A primer of principles and application. U.S. Department of Agriculture Forest Service General Technical Report PSW-33. 13 p.
- Harr, R. Dennis, Richard L. Fredriksen, and Jack Rothacher.
1979. Changes in streamflow following timber harvest in southwestern Oregon. U.S. Department of Agriculture Forest Service Research Paper PNW-249, 22 p.
- Harr, R. Dennis, and F. Michael McCorison.
1979. Initial effects of clearcut logging on size and timing of peak flows in a small watershed in western Oregon. *Water Resources Research*. 15(1):90-94.
- Harris, Alfred R.
1978. Evaluation of several methods of applying sewage effluent to forested soils in the winter. U.S. Department of Agriculture Forest Service Research Paper NC-162. 8 p.
- Harris, Alfred R.
1979. Physical and chemical changes in forested Michigan sand soils fertilized with effluent and sludge. *In* Utilization of Municipal Sewage Effluent and Sludge on Forest and Disturbed Land. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 155-161.
- Hasfurther, Victor R., and David H. Foster.
1978. Operation and design of evapotranspiration waste disposal systems. U.S. Department of Agriculture Forest Service, Rocky Mountain Forest and Range Experiment Station. Eisenhower Consortium Bulletin 6. 21 p.
- Haupt, Harold F.
1979. Local climatic and hydrologic consequences of creating openings in climax timber of North Idaho. U.S. Department of Agriculture Forest Service Research Paper INT-223. 43 p.
- Haupt, Harold F.
1979. Effects of timber cutting and revegetation on snow accumulation and melt in north Idaho. U.S. Department of Agriculture Forest Service Research Paper INT-224. 14 p.
- Heede, Burchard H.
1979. Deteriorated watersheds can be restored: A case study. *Environmental Management*. 3(3):271-281.
- Heede, Burchard H.
1979. Predicting impact of a restoration project on river dynamics: A case history. U.S. Department of Agriculture Forest Service General Technical Report RM-62. 8 p.
- Helvey, J. D., and A. R. Tiedemann.
1978. Effects of defoliation by Douglas-fir tussock moth on timing and quantity of streamflow. U.S. Department of Agriculture Forest Service Research Note PNW-326. 13 p. [In cooperation with USDA Douglas-fir Tussock Moth Program.]
- Henderson, G. S.
1978. Nutrient inputs, outputs and factors affecting water quality of Walker Branch Watershed, Oak Ridge, Tennessee. IMPAC Report 3(7). 25 p.
- Henderson, G. S., W. T. Swank, J. B. Waide, and C. C. Grier.
1978. Nutrient budget of Appalachian and Cascade region watersheds: A comparison. *Forest Science* 24(3):385-397.
- Hibbert, Alden, R.
1977. Potential for augmenting flow of the Colorado River by vegetation management. *In* Proceedings 21st Annual Arizona Watershed Symposium. Arizona Water Commission Report 10. p. 16-21.

Environment

- Hogan, T. D., M. E. Bond, and R. H. Dunikoski.
1979. Streamflow and second-home development in northern Arizona. Arizona State University. Eisenhower Consortium Institutional Series Report 4. 71 p.
- Hornbeck, James W., Michael T. Koterba, and Robert S. Pierce.
1979. Sludge application to a northern hardwood forest in New Hampshire: Potential for dual benefits? *In* Utilization of Municipal Sewage Effluent and Sludge on Forest and Disturbed Land. William E. Sopper and Sonja N. Kerr, eds. The Pennsylvania State University Press, University Park p. 137-143.
- Hornbeck, J. W., and S. J. Ursic.
1979. Intensive harvest and forest streams: Are they compatible? *In* Proceedings Impact of Intensive Harvesting on Forest Nutrient Cycling. State University of New York, College of Environmental Science and Forestry, Syracuse. p. 249-262.
- Huff, D. D., W. T. Swank, C. A. Troendle, G. S. Henderson, J. B. Waide, and T. Haynes.
1979. Element cycles and water budget analyses applied to forest management in the Eastern United States. *In* Society of American Foresters Proceedings (1978):77-89.
- Jaynes, Richard A.
1978. A hydrologic model of aspen-conifer succession in the Western United States. U.S. Department of Agriculture Forest Service Research Paper INT-213. 17 p.
- Johnson, Steven R., Howard L. Gary, and Stanley L. Ponce.
1978. Range cattle impacts on stream water quality in the Colorado Front Range. U.S. Department of Agriculture Forest Service Research Note RM-359. 8 p.
- Kane, Douglas L., Richard D. Seifert, and George S. Taylor.
1978. Hydrologic properties of subarctic organic soils. University of Alaska, Fairbanks, Institute of Water Resources Report IWR-88. 49 p.
- Kennedy, Vance C., David W. Hershfield, James W. Hornbeck, et al.
1978. Research and monitoring of precipitation chemistry in the United States: Present status and future needs. U.S. Government Printing Office Publication 1978-0-679-010/22. 64 p.
- Knighton, M. Dean.
1978. Estimating infiltration rates for a loessal silt loam using soil properties. U.S. Department of Agriculture Forest Service Research Note NC-233. 4 p.
- Kochenderfer, J. N.
1979. Some thoughts on forest roads. West Virginia Tree Farm News 3:3.
- Kochenderfer, J. N., and G. W. Wendel.
1978. Cable logging research in the central Appalachians. Allegheny News, Winter 1978. 1 p.
- Koterba, Michael T., James W. Hornbeck, and Robert S. Pierce.
1979. Effects of sludge application on soil water solution and vegetation in a northern hardwood forest. *Journal of Environmental Quality* 8(1):72-78.
- Lang, T. E., K. L. Dawson, and M. Martinelli, Jr.
1979. Application of numerical transient fluid dynamics to snow avalanche flow, Part I. Development of computer program AVALNCH. *Journal of Glaciology* 22(86):107-115.
- Lang, T. E., K. L. Dawson, and M. Martinelli, Jr.
1979. Numerical simulation of snow avalanche flow. U.S. Department of Agriculture Forest Service Research Paper RM-205. 51 p.
- Lang, T. E., and M. Martinelli, Jr.
1979. Application of numerical transient fluid dynamics to snow avalanche flow, Part II. Avalanche modeling and parameter error evaluation. *Journal of Glaciology*. 22(86):117-126.
- Leary, R. A., and M. C. Lyverse.
1979. Design for a systematic interpretation of ecosystem interactions. *In* Proceedings 1979 Association of Interpretive Naturalists Workshop. p. 44-49.
- Lewis, William M., and Michael C. Grant.
1978. Sampling and chemical interpretation of precipitation for mass balance studies. *Water Resources Research* 14(6):1098-1104.
- Lynch, James A., Edward S. Corbett, and William E. Sopper.
1979. Effects of antecedent soil moisture on stormflow volumes and timing. *Proceedings 3rd International Hydrology Symposium on Theoretical and Applied Hydrology*. July 27-29, 1977, Fort Collins, Colo. p. 89-99.
- Lyon, L. Jack, Hewlette S. Crawford, Eugene Czuhai, Richard L. Fredriksen, and others.
1978. Effects of fire on fauna: A state-of-knowledge review. U.S. Department of Agriculture Forest Service General Technical Report WO-6. 41 p.
- Martin, C. Wayne.
1979. Precipitation and streamwater chemistry in an undisturbed forested watershed in New Hampshire. *Ecology* 60(1):36-42.
- McAda, Douglas P., and Peter F. Ffolliott.
1979. Solar radiation as indexed by clouds for snowmelt modeling. *In* Hydrology and Water Resources in Arizona and the Southwest, vol. 8. p. 175-181.
- McCabe, S. L., and F. W. Smith.
1978. A mechanical test procedure for avalanche snow. *Journal of Glaciology* 20(83):433-438.
- McDonald, Stephen E., and Steven W. Running.
1979. Monitoring irrigation in western forest tree nurseries. U.S. Department of Agriculture Forest Service General Technical Report RM-61. 8 p.
- Miller, D. R., J. D. Bergen, and M. J. Gilbert.
1979. Vertical and horizontal temperature and vapor pressure profiles in a lodgepole pine stand. *In* Proceedings 14th Conference on Agricultural and Forest Meteorology, April 2-6, Minneapolis, Minn. p. 181-183.
- Moore, Douglas I., James R. Gosz, and Carleton S. White.
1978. Impact of a ski basin on a mountain watershed. II: Heavy metals. *Water, Air, and Soil Pollution* 10:81-93.

- National Research Council of Canada. [Norris, L. A., and others].
1978. Phenoxy herbicides: Their effects on environmental quality with accompanying scientific criteria for 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD). National Research Council of Canada NRCC 16075. 440 p.
- Neary, D. G., J. E. Douglass, and Walter Fox.
1979. Low picloram concentrations in streamflow resulting from forest application of Tordon-10K. *In* Proceedings of the 32nd Annual Meeting Southern Weed Science Society [Atlanta, Ga., January 1979.] p. 182-197.
- Newton, Michael, Logan Norris, and James Witt.
1978. Comments submitted by Michael Newton, Logan Norris, and James Witt. *In* Addendum to the Symposium on the Use of Herbicides in Forestry, February 1978, Arlington, Va. U.S. Department of Agriculture and U.S. Environmental Protection Agency. p. 38-42.
- Norris, L. A., M. L. Montgomery, C. A. Troendle, and J. N. Kochenderfer.
1978. 2,4,5-T persistence in a West Virginia watershed. Abstract 83. *In* Weed Science Society of America Proceedings. p. 38.
- Norris, Logan A.
1978. Post-symposium responses to questions submitted to Logan Norris. *In* Symposium on the Use of Herbicides in Forestry, February 1978, Arlington, Va. U.S. Department of Agriculture and U.S. Environmental Protection Agency. p. 95-101.
- Norris, Logan A.
1978. Toxic materials in forest streams. Proceedings Seminar 1978 Spring Quarter. Oregon State University, Corvallis. Water Resources Research Institute. p. 43-68.
- Norris, Logan A., and Clifford L. Hawkes.
1979. TCDD in the environment. Comments. Transactions American Fisheries Society 108:107-109.
- Northeastern Forest Experiment Station.
1979. Mulches help turn bleak to beautiful. Northeastern Forest Experiment Station, Broomall, Pa. Photo Story 37. p
- Parrott, Harry A., and Don H. Boelter.
1979. The use of peat filter beds for wastewater renovation at forest recreation areas. *In* Utilization of Municipal Sewage Effluent and Sludge on Forest and Disturbed Lands. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 115-121.
- Patric, James H.
1979. Can forest land produce wood, recreation, and high quality water, too? Northern Logger and Timber Processor 27(12):6-7, 36-37.
- Patric, J. H.
1979. Erosion control and esthetics: More than a marriage of convenience? *In* Service Foresters Handbook, Watershed Chapter. Northeastern Area State and Private Forestry, Broomall, Pa.
- Patric, J. H.
1979. What happens to rain before and after a forest is cut? West Virginia Tree Farm News 3:4.
- Patric, J. H., and Stanley Caruso.
1979. Solar radiation at Parsons, West Virginia. U.S. Department of Agriculture Forest Service Research Note NE-272. 6 p.
- Patric, J. H., and D. W. Smith.
1978. Some effects of urea fertilization on a forested watershed in West Virginia. Proceedings 2nd Meeting Central Hardwood Forest Conference, Purdue University, November 1978.
- Perla, R. I.
1978. Failure of snow slopes. *In* Rockslides and Avalanches, vol. 1, Natural Phenomena, B. Voight, ed. Developments in Geotechnical Engineering 14A. Elsevier Scientific Publishing Co., New York, p. 731-752.
- Plass, William T.
1978. Reclamation of coal-mined land in Appalachia. Journal of Soil and Water Conservation 33(2):56-61.
- Plass, William T.
1978. Use of mulches and soil stabilizers for land reclamation in the eastern United States. *In* Proceedings Symposium on Reclamation of Drastically Disturbed Lands, August 9-12, Wooster, Ohio. Ohio Agriculture Research and Experiment Station. p. 329-337.
- Ponce, Stanley L., Kerry D. Sundeen, and David Striffler.
1979. Effect of selected geology-soil complexes on water quality of the Little Black Fork Creek. Completion Report. U.S. Department of Agriculture Forest Service, Northeastern Forest Experiment Station, Broomall, Pa. 87 p.
- Rafaill, Barbara L., and Willis G. Vogel.
1978. A guide for vegetating surface-mined lands for wildlife in eastern Kentucky and West Virginia. U.S. Department of the Interior, Fish and Wildlife Service. FWS/OBS-78/84.
- Rice, Raymond M.
1978. The effects of forest management on erosion and sedimentation due to landslides. *In* 8th World Forestry Congress [Jakarta, Indonesia, Oct. 16-18.] Paper FF/5-10. 14 p.
- Rice, Raymond M.
1979. Sources of erosion during timber harvest. *In* California Forest Soils. University of California, Berkeley. Division of Agricultural Science 4094. p. 59-68.
- Riekerk, H.
1979. Forest hydrology and water quality. *In* Water Program Planning: IFAS Workshop Report, S. H. West, ed. University of Florida, Gainesville. p. 39-42.
- Roth, Paul L., B. D. Jayko, and G. T. Weaver.
1979. Initial survival and performance of woody plant species on sludge-treated spoils of the Palzo Mine. *In* Utilization of Municipal Sewage Effluent and Sludge on Forest and Disturbed Land. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 389-394.

Environment

- Rothwell, Frederick M., and James M. Trappe.
1979. *Acaulospora bireticulata* sp. nov. Mycotaxon 8:471-475.
- Running, Steven W.
1979. An ET model controlled by physiological processes for coniferous forests. In Proceedings 14th Conference on Agricultural and Forest Meteorology, April 2-6, Minneapolis, Minn. p. 207-212.
- Sander, John E.
1978. The blind zone in seismic ground-water exploration. Groundwater 16(6):394-397.
- Schmidt, R. A.
1978. Measuring visibility in blowing snow. In Snow Removal and Ice Control Research Special Report 185. Proceedings 2nd International Symposium. National Academy of Sciences, Washington, D.C. p. 200-207.
- Simons, D. B., R. M. Li, and T. J. Ward.
1978. Estimation of parameters that describe channel geometry for watershed modeling. Colorado State University Report CER77-78DBS-RMC-TJW12. 37 p.
- Smirnov, N. N.
1979. Hydrobiological studies in Biosphere Reserves. In Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 231-241.
- Smith, James L., and Howard G. Halverson.
1979. Estimating snowpack density from albedo measurement. U.S. Department of Agriculture Forest Service Research Paper PSW-136. 13 p.
- Smith, W. H., and B. F. Swindel.
1978. Forest management: Its impact on forest values. Florida Forestry Association Annual Meeting Magazine p. 24-29.
- Stucky, D. J., and J. Bauer.
1979. Establishment, yield and ion accumulation of several forage species on sludge-treated spoils of the Palzo Mine. In Utilization of Municipal Sewage Effluent and Sludge on Forest and Disturbed Land. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 379-387.
- Sturges, D. L., and M. J. Trlica.
1978. Root weights and carbohydrate reserves of big sagebrush. Ecology 59(6):1282-1285.
- Sundberg, W. J., D. L. Borders, and G. L. Albright.
1979. Changes in soil microfungus populations on the Palzo strip-mine spoil following sludge application. In Utilization of Municipal Sewage Effluent and Sludge on Forest and Disturbed Land. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 463-469.
- Sundeen, Kerry D., Stanley L. Ponce, W. D. Striffler, and Gerald M. Aubertin.
1978. A method to predict baseline water quality on wildland watersheds. Abstract. EOS Transactions American Geophysical Union 59(12):1072.
- Svoboda, D., G. Smout, G. T. Weaver, and P. L. Roth.
1979. Accumulation of heavy metals in selected woody plant species on sludge-treated strip-mine spoils at the Palzo site, Shawnee National Forest. In Utilization of Municipal Sewage Effluent and Sludge on Forest and Disturbed Land. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 395-405.
- Swanson, Frederick J., and George W. Lienkaemper.
1978. Physical consequences of large organic debris in Pacific Northwest streams. U.S. Department of Agriculture Forest Service General Technical Report PNW-69. 12 p.
- Swanson, Frederick J., and James R. Sedell.
1979. Use of watershed and stream research in the coniferous biome for forest management. In North America's Forests: Gateway to Opportunity. Proceedings 1978 Joint Convention of Society of American Foresters and Canadian Institute of Forestry. p. 107-113.
- Swanston, Douglas N.
[n.d.] Prediction, prevention, and control of landslides on mountainous forest lands. Proceedings Seminar on Watershed Management, Pakistan, September 1977. p. 226-249.
- Tabler, R. D.
1979. Visibility in blowing snow and applications in traffic operations. In Snow Removal and Ice Control Research Special Report 185. Proceedings 2nd International Symposium. National Academy of Sciences, Washington, D.C. p. 208-214.
- Thor, Edward C.
1979. IMPACT—A new approach to environmental impact assessment. In Proceedings Land Use Planning Workshop, David L. Ericson, ed. University of Kentucky, Lexington. p. 106-112.
- Thor, Edward C., Richard C. Smardon, and Richard Adams.
1979. IMPACT in California and Colorado: Applications of a computer system before it was complete. U.S. Department of Agriculture Forest Service Research Note PSW-336. 7 p.
- Thor, Edward C., Gary H. Elsner, Michael R. Travis, and Kathleen M. O'Loughlin.
1978. Forest environmental impact analysis: A new approach. Journal of Forestry 76(11):723-725.
- Tiedemann, A. R., J. D. Helvey, and T. D. Anderson.
1978. Stream chemistry and watershed nutrient economy following wildfire and fertilization in eastern Washington. Journal of Environmental Quality 7(4):580-588.
- Troendle, Charles August.
1979. A variable source area model for stormflow prediction on first-order forested watersheds. Ph.D. dissertation. University of Georgia, Athens. 115 p.
- Troendle, Charles A.
1979. Hydrologic impacts of silvicultural activities. Journal of American Society of Civil Engineers (Irrigation and Drainage Division) 105IR(1):57-70.

- Troendle, Charles A., and Charles F. Leaf.
1979. Hydrology. *In* Water Resources Evaluation—Impacts of Silvicultural Activities on Non-Point Source Pollution. Chap. 3. (WRENS) U.S. Department of Agriculture Forest Service, Government Printing Office, Washington, D.C.
- Urie, Dean H.
1979. Nutrient recycling under forests treated with sewage effluents and sludge in Michigan. *In* Utilization of Municipal Sewage Effluent and Sludge on Forest and Disturbed Land. W. E. Sopper and S. N. Kerr, eds. The Pennsylvania State University Press, University Park. p. 7-17.
- Ursic, S. J.
1978. Effect of harvesting systems on water quality and supply. *In* Proceedings Symposium Complete Tree Utilization of Southern Pine. p. 103-107.
- U.S. Forest Service.
1979. Creating land for tomorrow. American Society of Landscape Architects in cooperation with U.S. Department of Agriculture Forest Service, Surface Environment and Mining Project, Landscape Architecture Technical Information Series 1(3):1-45.
- U.S. Forest Service.
1979. The joint review process. U.S. Department of Agriculture Forest Service, Surface Environment and Mining Project, Billings, Mont. 25 p.
- U.S. Forest Service.
1979. LANDFORM: A computer-aided planning and design demonstration. U.S. Department of Agriculture Forest Service, Surface and Environmental Mining Project, Billings, Mont. 5 p.
- U.S. Department of Agriculture Forest Service.
1970. Working with nature. U.S. Department of Agriculture Forest Service, Intermountain Forest and Range Experiment Station, Ogden Utah. Brochure. 16 p.
- Vandre, Bruce C., and Douglas N. Swanston.
1977. A stability evaluation of debris avalanches caused by blasting. Bulletin of the Association of Engineering Geologists 14(14):205-223.
- Van Epps, Gordon A., and Cyrus M. McKell.
1978. Major criteria and procedures for selecting and establishing range shrubs as rehabilitators of disturbed lands. *In* Proceedings 1st International Rangeland Congress. Society for Range Management, Denver, Colo. p. 352-354.
- Varness, Kevin J., R. E. Pacha, and R. F. Lapen.
1978. Effects of dispersed recreational activities on the microbiological quality of forest surface water. Applied and Environmental Microbiology 36(1):95-104.
- Verry, Elon S.
1978. Wetlands and water. Journal of Freshwater 2(3):36-37.
- Vogel, Willis G.
1978. Reforestation research on surface-mined land in eastern Kentucky. *In* Proceedings 4th Kentucky Coal Refuse Disposal and Utilization Seminar, June 6-7. Pine Mountain State Resort Park, Pineville, Ky. (Sponsored by the University of Kentucky College of Engineering.)
- Waring, R. H., H. R. Holbo, R. P. Bueb, and R. L. Fredriksen.
1978. Documentation of meteorological data from the Coniferous Forest Biome primary station in Oregon. U.S. Department of Agriculture Forest Service General Technical Report PNW-73. 23 p.
- Wells, Carol G., Ralph E. Campbell, Leonard F. DeBano, Clifford E. Lewis, and others.
1979. Effects of fire on soil: A state-of-knowledge review. U.S. Department of Agriculture Forest Service General Technical Report WO-7. 34 p.
- Wendel, G. W., and J. N. Kochenderfer.
1978. Damage to residual hardwood stands caused by cable yarding with a standing skyline. Southern Journal of Applied Forestry 2(4):121-125.
- White, Carleton S., James R. Gosz, and Douglas I. Moore.
1978. Impact of a ski basin on a mountain watershed. I: Bacteriological water quality. Water, Air, and Soil Pollution 10:71-79.
- Williams, Jr., George P.
1979. Wood chips for dust control on surface-mine haul roads. U.S. Department of Agriculture Forest Service Research Note NE-277. 16 p.
- Williams, K.
1978. The avalanche victim. *In* Avalanche control forecasting and safety. National Research Council, Canada, Technical Memo 120. p. 232-244.
- Williams, K.
1978. The Colorado avalanche warning program. *In* Avalanche control forecasting and safety. National Research Council, Canada, Technical Memo 120. p. 116-131.
- Williams, K.
1979. Post-control avalanche releases. *In* Deuxieme Rencontre Internationale sur la Neige et les Avalanches, 12-13 and 14 Avril 1978. Association Nationale Pour L'Etude de la Neige et des Avalanches, Grenoble, France. p. 251-263.
- Williston, H. L., and S. J. Ursic.
1979. Planting loblolly pine for erosion control: A review. Tree Planter's Notes 30(2):15-18.
- Woltering, D. M., J. L. Hedtke, and L. J. Weber.
1978. Predator-prey interactions of fishes under the influence of ammonia. Transactions American Fisheries Society 107(3):500-504.
- Wu, Tien H., William P. McKinnell, III, and Douglas N. Swanston.
1979. Strength of tree roots and landslides on Prince of Wales Island, Alaska. Canadian Geotechnical Journal 16(1):19-33.
- Ziemer, Robert R.
1979. Evaporation and transpiration. A review. Geophysics and Space Physics 17(6):1175-1186.

Environment

Wildlife

- Allen, Charles L., and Lowell K. Halls.
1978. Feasibility of a green-tree reservoir in eastern Texas. *Proceedings Annual Conference Southeastern Association of Fish and Wildlife Agencies* (1976) 30:404-497.
- Baker, D. L., D. E. Johnson, L. H. Carpenter, O. C. Wallmo, and R. B. Gill.
1979. Energy requirements of mule deer fawns in winter. *Journal of Wildlife Management* 43(1):162-169.
- Balazs, George H., and C. John Ralph.
1979. A Steller's sea eagle at Kure and Midway: First Hawaii record. *'Elepaio* 39(10):117-118.
- Basile, Joseph V.
1979. Elk-aspen relations on a prescribed burn. U.S. Department of Agriculture Forest Service Research Note INT-271. 7 p.
- Basile, Joseph V., and Terry N. Lonner.
1979. Vehicle restrictions influence elk and hunter distribution in Montana. *Journal of Forestry* 77(3):155-159.
- Berry, Larry A., Edwin D. Michael, and H. Reed Sanderson.
1978. Effect of population density on captive gray squirrels. *Transactions Northeast Fish and Wildlife Conference* 35:53-59.
- Bjugstad, Ardell J.
1979. Bentonite mine spoil and pit reclamation: A major research problem. *In Proceedings Mineral Waste Stabilization Liaison Committee* [June 21, Eveleth, Minn.] p. 1-18.
- Boldt, Charles E., Daniel W. Uresk, and Keith E. Seyerson.
1979. Riparian woodlands in jeopardy on northern High Plains. *In Strategies for Protection and Management of Floodplain Wetlands and Other Riparian Ecosystems*, R. Roy Johnson and J. Frank McCormick, technical coordinators. U.S. Department of Agriculture Forest Service General Technical Report WO-12. p. 184-189.
- Brown, David E., Charles H. Lowe, and Charles P. Pase.
1979. A digitized classification system for the biotic communities of North America, with community (Series) and association examples for the Southwest. *Journal of the Arizona-Nevada Academy of Science* 14(1):1-16.
- Carpenter, L. H., O. C. Wallmo, and R. B. Gill.
1979. Forage diversity and dietary selection by wintering mule deer. *Journal of Range Management* 32(3):226-229.
- Casner, Wilson B., Barbara Kulonowski, David R. Patton, and Sandra J. Pinkerton.
1978. RUN WILD—for the UNIVAC 1100 series, implementation and maintenance. U.S. Department of Agriculture Forest Service General Technical Report RM-51A. 31 p.
- Conner, Richard N.
1979. Food storing by yellow-bellied sapsuckers. *Auk* 96:195.
- Conner, Richard N.
1979. Seasonal changes in woodpecker foraging methods: Strategies for winter survival. *In The Role of Insectivorous Birds in Forest Ecosystems*. Academic Press, New York, p. 95-105.
- Conner, Richard N., Jerry W. Via, and Irvine D. Prather.
1979. Effects of pine-oak clearcutting on winter and breeding birds in southwestern Virginia. *Wilson Bulletin* 91:301-316.
- Cox, L. M., L. D. Bartee, A. G. Crook, P. E. Farnes, and J. L. Smith.
1979. The care and feeding of snow pillows. *In 46th Annual Meeting, Western Snow Conference* [April 18-20, 1978, Otter Crest, Oreg.] p. 40-47.
- Crawford, H. S., W. A. Abler, and D. M. Hardy.
1978. Nesting of birds on strip-mine highwalls in southern West Virginia. *In Proceedings 1978 Northeast Fish and Wildlife Conference*. White Sulphur Springs, W. Va. p. 87-91.
- Crawford, H. S., D. M. Hardy, and W. A. Abler.
1978. A survey of bird use of strip-mined areas in southern West Virginia. *In Proceedings of Surface Mining and Fish/Wildlife Needs in the Eastern U.S. Conference*. p. 241-246.
- Crawford, H. S.
1979. Managing wildlife on New England farms. *Farmstead Magazine* 6(2):56-58.
- Crawford, H. S., and R. W. Titterton.
1979. Silviculture and upland spruce-fir bird communities. *In Proceedings of the Workshop: Management of North Central and Northeastern Forests for Nongame Birds*. U.S. Department of Agriculture Forest Service, North Central Forest Experiment Station, St. Paul, Minn. p. 110-119.
- Crouch, Glenn L.
1979. Food habits of black-tailed deer on forested habitats in the Pacific Northwest. *In Sitka Black-tailed Deer: Proceedings Conference in Juneau, Alaska*. U.S. Department of Agriculture Forest Service Alaska Region [In cooperation with Alaska Department of Fish and Game.] R10-48.
- Crouch, Glenn L.
1979. Long-term changes in cottonwoods on a grazed and ungrazed plains bottomland in northeastern Colorado. U.S. Department of Agriculture Forest Service Research Note RM-370. 4 p.
- DeGraaf, R. M.
1978. House-lot landscaping for wildlife. *In Urban Foresters Notebook*, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49. 190 p.
- DeGraaf, R. M.
1978. Management of wooded areas for songbirds and other wildlife. *In Urban Foresters Notebook*, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49. 190 p.
- DeGraaf, R. M.
1978. Avian communities and habitat associations in cities and suburbs. *In*

- Wildlife and People. Purdue University Department of Forestry and Nature Research. p. 7-24.
- DeGraaf, R. M., and D. G. Holland.
1978. Response of breeding birds to gypsy moth defoliation. *In* 35th Northeast Fish and Wildlife Conference [26 Feb.-1 March, White Sulphur Springs, W. Va.] Transactions Northeast Section, Wildlife Society, p. 105-119.
- DeGraaf, R. M., and G. M. Witman.
1979. Trees, shrubs and vines for attracting birds: A manual for the Northeast. University of Massachusetts Press, Amherst. 194 p.
- Dickenson, Tony G., Gerald W. Garner, and C. David Simpson.
1978. Home range and movements of young mule deer fawns in Pecos County, Texas. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 16.
- Dickenson, Tony G., Gerald W. Garner, and C. David Simpson.
1978. Mortality of desert mule deer fawns in Pecos County, Texas. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 17.
- Dickenson, Tony G., and C. David Simpson.
1978. Dispersal and establishment of barbary sheep in the southern Great Plains. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock, p. 12.
- Dickson, James G.
1978. Seasonal bird populations in a south central Louisiana bottomland hardwood forest. *Journal of Wildlife Management* 42:875-883.
- Dickson, James G.
1979. Seasonal populations of insectivorous birds in a mature bottomland hardwood forest in south Louisiana. *In* Role of Insectivorous Birds in Forest Ecosystems. Academic Press, New York. p. 261-268.
- Dickson, James G., and Charles A. Segelquist.
1979. Breeding bird populations in pine and pine-hardwood forests in Texas. *Journal of Wildlife Management* 42:875-883.
- Dickson, James G., and Charles A. Segelquist.
1979. Winter bird populations in pine and pine-hardwood forest stands in east Texas. *Proceedings Annual Conference Southeastern Association of Fish and Wildlife Agencies* (1977) 31:134-137.
- Dickson, James G., Richard N. Conner, and Kent T. Adain.
1978. Guidelines for authorship of scientific articles. *Wildlife Society Bulletin* 6:260-261.
- Evans, Keith E.
1978. Forest management opportunities for songbirds. *North American Wildlife and National Research Conference* 43:69-77.
- Ffolliott, Peter F., and David R. Patton.
1978. Abert squirrel use of ponderosa pine as feed trees. U.S. Department of Agriculture Forest Service Research Note RM-362. 4 p.
- Finley, Robert W.
1976. Original vegetation cover of Wisconsin compiled from U.S. General Land Office notes. U.S. Department of Agriculture Forest Service, North Central Forest Experiment Station, St. Paul, Minn. 1 p.
- Fisch, Gordon.
1979. Deer pellet deterioration. *In* Sitka Black-tailed Deer: Proceedings of a Conference in Juneau, Alaska, O. C. Wallmo and J. W. Schoen, eds. U.S. Department of Agriculture Forest Service Alaska Region [In cooperation with State of Alaska Department of Fish and Game.] R10-48. p. 207-218.
- Floyd, Theodore J., L. David Mech, and Michael E. Nelson.
1979. An improved method of censusing deer in deciduous-coniferous forests. *Journal of Wildlife Management* 43(1):258-261.
- Grayson, Donald K., and Chris Maser.
1978. An efficient, inexpensive dermestid colony for skeleton preparation. *Journal of Field Archaeology* 5:246-247.
- Grayson, Donald K., and Chris Maser.
1978. First record for the long-tailed jaeger in eastern Oregon. *Murrelet* 59(2):75-77.
- Grigal, D. F., L. F. Ohmann, and N. R. Moody.
1979. Nutrient content of some tall shrubs from northeastern Minnesota. U.S. Department of Agriculture Forest Service Research Paper NC-168. 10 p.
- Guthery, Fred S., and Jay Custer.
1978. History of pheasants in the Texas Panhandle. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 46.
- Guthery, Fred S., and Michael S. Owen.
1978. Management need of Texas Panhandle pheasants. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 47.
- Halls, Lowell K.
1978. Effect of timber harvesting on wildlife, wildlife habitat and recreation values. *In* Proceedings Symposium Complete Tree Utilization of Southern Pine. p. 108-114.
- Halls, Lowell K.
1978. White-tailed deer. *In* Big Game of North America, J. L. Schmidt and D. L. Gilbert, eds. Wildlife Management Institute, Washington, D.C., and Stackpole Books, Harrisburg, Pa. p. 43-65.
- Harlow, R. F.
1979. In defense of inkberry: Dangers of ranking deer forage. *Wildlife Society Bulletin* 7(1):21-24.
- Harlow, R. F., D. F. Urbston, and J. G. Williams, Jr.

1979. Forages eaten by deer in two habitats at the Savannah River Plant. U.S. Department of Agriculture Forest Service Research Note SE-275. 3 p.
- Harrington, Fred H., and L. David Mech.
 1979. Wolf howling and its role in territory maintenance. *Behaviour* 58(3-4):207-249.
- Harrington, Fred H., and L. David Mech.
 1978. Howling at two Minnesota wolf pack summer homesites. *Canada Journal of Zoology* 56(9):2024-2028.
- Harris, L. D.
 1978. Effects of forest management practices on wildlife ecology: A list of citations. IMPAC Report 3(9). 108 p.
- Healy, William M.
 1977. Wild turkey winter habitat in West Virginia cherry-maple forests. *Transactions of Northeast Fish and Wildlife Conference* 34:7-12.
- Hirth, D. H., and W. R. Marion.
 1979. Bird communities of a south Florida flatwoods. *Florida Scientist* 42(3):142-151.
- Jackson, J. A., M. R. Lennartz, and R. G. Hooper.
 1979. Tree age and cavity initiation by red-cockaded woodpeckers. *Journal of Forestry* 77(2):102-103.
- Jones, Gwilym S., John O. Whitaker, Jr., and Chris Maser.
 1978. Food habits of jumping mice (*Zapus trinotatus* and *Z. princeps*) in western North America. *Northwest Science* 52(1):57-60.
- Kimball, Thomas L.
 1979. The role of Biosphere Reserves in the management of national and international ecosystems. In *Selection, Management and Utilization of Biosphere Reserves*, Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 60-63.
- Kirkland, Gordon L., Jr.
 1977. Responses of small mammals to clearcutting of northern Appalachian forests. *Journal of Mammalogy* 58(4):600-609.
- Koerth, Ben, Jr., and Fred C. Bryant.
 1978. Habitat use and productivity of mule deer in the Texas Panhandle. In *Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management*, Ronald E. Sosebee and Henry Wright eds. Texas Technological Univ., Lubbock, p. 15.
- Kroodsma, Donald E., and Jared Verner.
 1978. Complex singing behaviors among *Cistothorus* wrens. *Auk* 95:703-706.
- Kruse, William H., Russell P. Balda, Michael J. Simono, A. Michael Macrander, and Clarence D. Johnson.
 1979. Community development in two adjacent pinyon-juniper eradication areas twenty-five years after treatment. *Journal of Environmental Management* 8:237-247.
- Leckenby, Donavin A.
 1978. Western juniper management for mule deer. In *Proceedings of the Western Juniper Ecology and Management Workshop*. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 137-161.
- Leftwich, Timothy J., and C. David Simpson.
 1978. The impact of domestic livestock and farming on Texas Pronghorn. In *Proceedings 8th Biennial Pronghorn Antelope Workshop*, Jasper, Alberta, May 2-4. Alberta Recreation, Parks and Wildlife, Fish and Wildlife Division. p. 307-320.
- Lennartz, M. R., and R. F. Harlow.
 1979. The role of parent and helper red-cockaded woodpeckers at the nest. *Wilson Bulletin* 91:331-335.
- Lewis, Robert E., and Chris Maser.
 1978. *Phalacroscylla oregonensis* sp. N. with a key to the species of *Phalacroscylla* Rothschild (Siphonaptera: Hystrichopsyllidae). *Journal of Parasitology* 61(1):147-150.
- Lyon, L. J., H. S. Crawford, E. Czuhai, R. L. Fredricksen, R. F. Harlow, L. J. Metz, and H. A. Pearson.
 1978. Effects of fire on fauna: A state-of-knowledge review. U.S. Department of Agriculture Forest Service General Technical Report WO-6. 41 p.
- Lyon, L. Jack.
 1979. Influences of logging and weather on elk distribution in western Montana. U.S. Department of Agriculture Forest Service Research Paper INT-236. 11p.
- Maser, Chris.
 1977. Notes on *Cicindela oregona* in Oregon. *Cicindela* 9(4):61-64.
- Maser, Chris.
 1977. Notes on *Omus audouini*. *Cicindela* 9(3):47-50.
- Maser, Chris.
 1977. Notes on *Omus dejeani*. *Cicindela* 9(2):35-38.
- Maser, Chris, Robert E. Kindschy, and Vern Atkins.
 1978. A field ice box. U.S. Department of the Interior, Bureau of Land Management Technical Note T/N 320. 3 p.
- Maser, Chris, and Jay S. Gashwiler.
 1978. Interrelationships of wildlife and western juniper. In *Proceedings of the Western Juniper Ecology and Management Workshop*. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 37-82.
- Maser, Chris, and Gerald S. Strickler.
 1978. The sage vole, *Lagurus curtatus*, as an inhabitant of subalpine sheep fescue, *Festuca ovina*, communities on Steens Mountain: An observation and interpretation. *Northwest Science* 52(3):276-284.
- Mattson, William J., Jr.
 1979. Shrub nesting of the red-eyed vireo in relation to structure of aspen forests. U.S. Department of Agriculture Forest Service Research Note

- NC-245. 3 p.
- Mech, L. David.
1979. Why some deer are safe from wolves. *Natural History* 88(1):70-77.
- Mech, L. David, and Mark Korb.
1979. An unusually long pursuit of a deer by a wolf. *Journal of Mammalogy* 59(4):860-861.
- Mech, L. David, and Steven T. Knick.
1978. Sleeping distance in wolf pairs in relation to the breeding season. *Behavioral Biology* 23:521-525.
- Medin, Dean E., and Allen E. Anderson.
1979. Modeling the dynamics of a Colorado mule deer population. *Wildlife Monograph* 68. 77 p.
- Moore, Richard L., and C. David Simpson.
1978. The economics of hunting on Playa Lakes. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 49.
- Moore, Richard L., and C. David Simpson.
1978. Migrating waterfowl food habits. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 49.
- Moore, Richard L., and C. David Simpson.
1978. Update of the waterfowl die-off in Castro County, Texas. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 50.
- More, T.
1977. Formation of wildlife perceptions. *In* Transactions Northeast Fish and Wildlife Conference. p. 81-85.
- More, T.
1978. Graduate recreation education in U.S. Forestry Schools: A status report and comment. *In* Proceedings Society of American Foresters Annual Meeting, St. Louis, Mo., October 1978. p. 416-418.
- More, T., and G. Buhoff.
1979. Managing recreation areas for quality user experiences: A theoretical framework. U.S. Department of Agriculture Forest Service Research Paper NE-432. 14 p.
- More, T.
1979. The demand for nonconsumptive wildlife use: A review of the literature. U.S. Department of Agriculture Forest Service General Technical Report NE-52. 16 p.
- Nenno, Edward S., and William M. Healy.
1979. Effects of radio packages on behavior of wild turkey hens. *Journal of Wildlife Management* 43(3):760-765.
- Niemi, Gerald J.
1978. Breeding birds of burned and unburned areas in northern Minnesota. *Loon* 50:73-84.
- Noble, Delpha.
1979. Grizzly bear in the Yellowstone ecosystem. U.S. Department of Agriculture Forest Service, Intermountain Forest and Range Experiment Station, Ogden, Utah. Brochure.
- Ohmann, L. F., H. O. Batzer, R. R. Buech, D. C. Lothner, D. A. Peralá, A. L. Schipper, Jr., and E. S. Verry.
1978. Some harvest options and their consequences for the aspen, birch, and associated conifer forest types of the Lake States. U.S. Department of Agriculture Forest Service General Technical Report NC-48. 34 p.
- Owen, Michael S., and Fred S. Guthery.
1978. Ecology and management of pheasants in the Texas Panhandle. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 47.
- Patton, David R.
1978. Vertebrate checklist for Arizona and New Mexico. U.S. Department of Agriculture Forest Service, Southwestern Region, Albuquerque, N. Mex. *Wildlife Habitat Technical Bulletin* 5. 25 p.
- Pearson, Connie J., and John R. Probst.
1979. Aspen forest (20-year). *American Birds* 33(1):64.
- Pearson, Connie J., and John R. Probst.
1979. Aspen clear-cut (2-year). *American Birds* 33(1):77.
- Pearson, Connie J., and John R. Probst.
1979. Aspen forest (50-year). *American Birds* 33(1):64.
- Peters, Roger, and L. David Mech.
1978. Scent-marking in wolves. *In* Wolf and Man. Academic Press, Inc., New York. p. 133-147.
- Plummer, A. Perry, and Kent R. Jorgensen.
1978. Harvesting, cleaning, and storing seed of western shrubs. *In* Western Forest Nursery Council and Intermountain Nurseryman's Association Conference and Workshop Proceedings p. 65-76.
- Pyle, Robert L., and C. J. Ralph.
1979. Hawaiian Islands region. *American Birds* 33(2):218-220.
- Pyle, Robert L., and C. John Ralph.
1978. Hawaiian Islands region. *American Birds* 32(5):1057-1058.
- Pyle, R. L., and C. J. Ralph.
1979. Hawaiian Islands region. *American Birds* 33(3):317-318.
- Rakstad, Donald, and John R. Probst.
1979. Aspen-birch forest. *American Birds* 33(1):63-64.
- Rakstad, Donald, and John R. Probst.
1979. Aspen clear-cut (8-year). *American Birds* 33(1):77.
- Rakstad, Donald, and John R. Probst.
1979. Mature aspen forest. *American Birds* 33(1):63.

- Ralph, C. John, and Howard F. Sakai.
1979. Forest bird and fruit bat populations and their conservation in Micronesia: Notes on a survey. 'Elepaio 40(2):20-26.
- Ralph, C. John, and Robert L. Pyle.
1979. First record of the buff-breasted sandpiper in Hawaii. 'Elepaio 39(11):140.
- Ralph, C. John, and Robert L. Pyle.
1978. Hawaiian Islands region. American Birds 32(6):1211.
- Ramsden, David J., L. Jack Lyon, and Gary L. Halvorson.
1979. Small bird populations and feeding habitats: Western Montana in July. American Birds 33(1):11-16.
- Rausch, R. L., and Chris Maser.
1977. *Monococystus thomasi* sp. N. (Cestoda: Anoplocephalidae) from the northern flying squirrel, *Glaucomys sabrinus* (Shaw), in Oregon. Journal of Parasitology 63(5):793-799.
- Regelin, Wayne L., Julius G. Nagy, and O. C. Wallmo.
1978. Effects of snowdrifts on mountain shrub communities. In Proceedings 13th International Congress of Game Biology, Wildlife Society, Wildlife Management Institute, Washington, D.C. p. 414-419.
- Roedner, Beverly J., David A. Hamilton, and Keith E. Evans.
1978. Rare plants of the Ozark Plateau: A field identification guide. U.S. Department of Agriculture Forest Service, North Central Forest Experiment Station, St. Paul, Minn. 238 p.
- Rohweder, Ronald, Jack Melland, and Chris Maser.
1979. A new record of Washington ground squirrels in Oregon. Murrelet 60(1):29
- Roppe, J. A., and D. Hein.
1978. Effects on wildlife of a fire in a lodgepole pine forest. Southwestern Naturalist 23(2):279-288.
- Rost, Gregory R., and James A. Bailey.
1979. Distribution of mule deer and elk in relations to roads. Journal of Wildlife Management 43(3):634-641.
- Rothmann, Russell, and L. David Mech.
1979. Scent-marking in lone wolves and newly formed pairs. Animal Behavior 27:750-760.
- Sakai, Howard F., and C. John Ralph.
1978. A recent sighting of the 'Akiapola'u in South Kona, Hawaii. 'Elepaio 39(5):49-50.
- Sando, Rodney W.
1978. Natural fire regimes and fire management: Foundations for direction. Western Wildlands 4(4):34-44.
- Schoen, John W., and O. C. Wallmo.
1978. Deer and logging relationships in southeastern Alaska. Alaska Fish and Game Trails 11(2):2, 3, 10.
- Schoen, John W., and O. C. Wallmo.
1979. Timber management and deer in southeast Alaska: Current problems and research direction. In Sitka Black-tailed deer. Proceedings of a Conference in Juneau, Alaska, O. C. Wallmo and J. W. Schoen, eds. U.S. Department of Agriculture Forest Service, Alaska Region [In cooperation with State of Alaska Department of Fish and Game.] R10-48. p. 69-85.
- Schweitzer, Dennis L., Charles T. Cushwa, and Thomas W. Hoekstra.
1979. The 1979 national assessment of wildlife and fish: A progress report. Transactions North American Wildlife and Natural Resources Conference. 43:266-273.
- Scott, Virgil E., Jill A. Whelan, and Robert R. Alexander.
1978. Dead trees used by cavity-nesting birds on the Fraser Experimental Forest: A case history. U.S. Department of Agriculture Forest Service Research Note RM-360.
- Seal, Ulysses S., Michael E. Nelson, L. David Mech, and Reed L. Hoskinson.
1978. Metabolic indicators of habitat differences in four Minnesota deer populations. Journal of Wildlife Management 42(4):746-754.
- Severson, Kieth E.
1978. A bibliography of blue grouse-1889-1977. U.S. Department of Agriculture Forest Service General Technical Report RM-59. 10 p.
- Severson, Kieth E., and Arthur V. Carter.
1978. Movements and habitat use by mule deer in the northern Great Plains, South Dakota. In Proceedings 1st International Rangeland Congress. Society of Range Management, Denver, Colo. p. 466-468.
- Severson, Kieth E., and Jeremiah J. Kranz.
1978. Management of bur oak on deer winter range. Journal of Wildlife Management 6(4):212-215.
- Short, Henry L.
1979. Food habits of coyotes in a semidesert grass-shrub habitat. U.S. Department of Agriculture Forest Service Research Note RM-364. 4 p.
- Simpson, C. David, and Thomothy J. Leftwich.
1978. Historic range change in the Texas pronghorn. In Proceedings 8th Biennial Pronghorn Antelope Workshop, Jasper, Alberta, May 2-4. Alberta Recreation, Parks and Wildlife, Fish and Wildlife Division. p. 121-146.
- Simpson, C. David, and Timothy J. Leftwich.
1978. Historical status of mule deer in Texas. In Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 14
- Smith, Harvey R.
1979. Growth, reproduction and survival in *Peromyscus* carrying intra-peritoneally implanted transmitters. Abstract. In International Conference on Telemetry and Radio Tracking in Biology and Medicine, C. J. Amlaner, Jr. and D. W. Macdonald, eds. Oxford. p. 57.
- Smith, Harvey R., and R. A. Lautenschlager.
1978. Predators of the gypsy moth. U.S. Department of Agriculture Handbook 534. 72 p.

- Sokolov, V. E.
1979. Research on the higher vertebrates in Biosphere Reserves. *In* Selection, Management and Utilization of Biosphere Reserves, Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 216-219.
- Steuter, Allen A., and Henry A. Wright.
1978. Cover requirements of white-tailed deer in the Rio Grande Plains. *In* Research Highlights, 1978: Noxious Brush and Weed Control; Range and Wildlife Management, Ronald E. Sosebee and Henry Wright, eds. Texas Technological Univ., Lubbock. p. 18.
- Stransky, John J., and Douglas C. Richardson.
1979. Fruiting of browse plants affected by pine site preparation in east Texas. *Proceedings Annual Conference Southeastern Association Fish and Wildlife Agencies* (1977) 31:5-7.
- Sturges, D. L.
1979. Hydrologic relations of sagebrush lands. *In* Proceedings Symposium on Sagebrush Ecosystem. [April 1978, Utah State University, Logan]. p. 86-100.
- Stutzman, W. L., F. W. Collier, and H. S. Crawford.
1979. Microwave transmission measurements for estimation of the weight of standing pine trees. *Antennas and Propagation* 27. Institute of Electrical and Electronics Engineers. Transactions (1):22-26.
- Thomas, Jack Ward, Rod Miller, Chris Maser, Ralph Anderson, and Bernie Carter.
[n.d.] The relationship of terrestrial vertebrates to plant communities and their successional stages. *In* Classification, Inventory, and Analysis of Fish and Wildlife Habitat. U.S. Department of the Interior, Fish and Wildlife Service FWS/OBS-78/76. p. 281-303.
- Thomas, Jack Ward, Rodney J. Miller, Jon E. Rodick, and Chris Maser.
[n.d.] Guidelines for maintaining and enhancing wildlife habitat in forest management in the Blue Mountains of Oregon and Washington. *In* Proceedings, Management of Forests and Range in Interior British Columbia, June 1977. B. C. Ministry Environment, Agriculture, and Recreation and Conservation. [Reprinted from Transactions, 41st North American Wildlife and Natural Resources Conference, p. 452-476. Wildlife Management Institute, Washington, D.C. 1976.] p. 27-52.
- Whitaker, John O., Jr., Chris Maser, and Laurel E. Keller.
1977. Food habits of bats of western Oregon. *Northwest Science* 51(1):46-55.
- Wolff, Jerry O., and Dan F. Holleman.
1978. Use of radioisotope labels to establish genetic relationships in free-ranging small mammals. *Journal of Mammalogy* 59(4):859-860.
- Range**
- Baker, R. L., and J. Powell.
1978. Oklahoma tallgrass prairie responses to atrazine with 2,4-D and fertilizer. *In* Proceedings First International Rangeland Congress 1:681-683.
- Bedell, Thomas E., and Thomas R. Bunch.
1978. Effects of western juniper on forage production and livestock grazing management. *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 163-167.
- Bergen, James D.
1979. Aerial spray patterns in forest canopy. *In* Proceedings on Forest Meteorology [Aug. 21-25, 1978, Ottawa, Ontario]. p. 160-166.
- Bright, Larry.
1978. Weather stress difference between two levels of juniper canopy cover. *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 91-95.
- Buckhouse, J. C., and J. M. Skovlin.
1979. Streambank erosion in a Blue Mountain stringer meadow in response to livestock and big game grazing management. *In* 1979 Progress Report on Research in Rangeland Management. Oregon State Univ., Corvallis, Agriculture Experiment Station Special Report 549. p. 2-4.
- Cable, Dwight R.
1979. Ecology of Arizona cottontop. U.S. Department of Agriculture Forest Service Research Paper RM-209. 21 p.
- Caraher, David L.
1978. The spread of western juniper in central Oregon. *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 3-7.
- Clary, Warren P.
1979. Grazing and overstory effects on rotationally burned slash pine plantation ranges. *Journal of Range Management* 32(4):264-266.
- Clary, Warren P., and Harold E. Grelen.
1978. Comparison of beef gain potentials on cool semiarid and subtropical pine forest ranges. *In* Proceedings 1st International Rangeland Congress. Society for Range Management 1:600-602.
- Clawson, W. J., and D. A. Duncan.
1979. Herbage and chemical composition shifts in annual grasslands. *In* Proceedings Western Section American Society of Animal Science 30:190-193.
- Crouch, Glenn L.
1978. Effects of protection from livestock grazing on a bottomland wildlife habitat in northeastern Colorado. *In* Proceedings Lowland River and Stream Habitat in Colorado Symposium [Greeley, Colo. Oct. 4-5.] p. 118-125.
- Currie, Pat O.

Environment

1979. Cattle weight gain comparisons under seasonlong and rotation grazing systems. *In* Proceedings 1st International Rangeland Congress, Society Range Management. [Aug. 14-18, 1978, Denver, Colo.] p. 579-580.
- Currie, Pat O., and Frederick L. Hammer.
1979. Detecting depth and lateral spread of roots of native range plants using radioactive phosphorous. *Journal of Range Management*. 32:101-103.
- Dealy, J. Edward.
1978. Autecology of curleaf mountain-mahogany (*Cercocarpus ledifolius*). *In* Proceedings 1st International Rangeland Congress, Society for Range Management. p. 398-400.
- Dealy, J. Edward, J. Michael Geist, and Richard S. Driscoll.
1978. Communities of western juniper in the Intermountain Northwest. *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 11-29.
- Dealy, J. Edward, J. Michael Geist, and Richard S. Driscoll.
1978. Western juniper communities on rangelands of the Pacific Northwest. *In* Proceedings 1st International Rangeland Congress, Society for Range Management. p. 201-204.
- Dickinson, Earl O., and James R. Carlson.
1978. Acute respiratory distress of rangeland cattle. *In* Effects of Poisonous Plants on Livestock. Academic Press, New York. p. 251-259.
- Ettershank, George, Ned Z. Elkins, Perseu F. Santos, Walter G. Whitford, and Earl F. Aldon.
1978. The use of termites and other soil fauna to develop soils on strip mine spoils. U.S. Department of Agriculture Forest Service Research Note RM-361. 4 p.
- Everett, R. L., R. O. Meeuwig, and J. H. Robertson.
1978. Propagation of Nevada shrubs by stemcuttings. *Journal of Range Management* 31(6):426-429.
- Frischknecht, Neil C.
1979. Biological methods: A tool for sagebrush management. *In* The Sagebrush Ecosystem: A Symposium. Utah State University Press, Logan. p. 121-128.
- Frischknecht, Neil C.
1978. Effects of grazing, climate, fire, and other disturbances on long-term productivity of sagebrush-grass ranges. *In* Proceedings 1st International Rangeland Congress, Society for Range Management. p. 633-635.
- Frischknecht, Neil C., and Robert B. Ferguson.
1979. Revegetating processed oil shale and coal spoils on semi-arid lands: Interim report. U.S. Environmental Protection Agency, Office of Research and Development Report EPA-600/7-79-068.
- Gautier, Clay, and Richard Evertt.
1979. Fertilizing and clipping on seed capsule and forage production of orange globemallow. U.S. Department of Agriculture Forest Service Research Note INT-251. 6 p.
- Geist, J. Michael, and Gerald S. Strickler.
1978. Physical and chemical properties of some Blue Mountain soils in northeast Oregon. U.S. Department of Agriculture Forest Service Research Paper PNW-236. 19 p.
- Giunta, Bruce C., Richard Stevens, Kent R. Jorgensen, and A. Perry Plummer.
1978. Antelope bitterbrush: An important wildland shrub. Utah State Division of Wildlife Resources Publication 78-12. 48 p.
- Green, L. R., Catherine L. Hughes, and Walter L. Graves
1978. Goat control of brush regrowth on southern California fuelbreaks. *In* Proceedings 1st International Rangeland Congress, Society for Range Management. p. 451-455.
- Grelen, Harold E.
1978. Winter and spring prescribed fires on Louisiana pine-bluestem range. *In* Proceedings 1st International Rangeland Congress, Society for Range Management 1:242-244.
- Horvath, Joseph C., Dennis L. Schweitzer, and Enoch F. Bell.
1978. Grazing on National Forest System lands: Costs of increasing capacity in the Northern Region. U.S. Department of Agriculture Forest Service Research Paper INT-215. 56 p.
- Martin, S. Clark.
1979. Evaluating the impacts of cattle grazing on riparian habitats in the National forests of Arizona and Mexico. *In* Proceedings of the Forum: Grazing and Riparian/stream Ecosystems, Oliver B. Cope, ed. Trout Unlimited, Denver, p. 35-38.
- Martin, Robert E., J. Edward Dealy, and David L. Caraher, eds.
1978. Proceedings of the western juniper ecology and management workshop. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. 177 p.
- McArthur, E. Durant.
1979. Sagebrush systematics and evolution. *In* The Sagebrush Ecosystem: A Symposium. Utah State University Press, Logan. p. 14-22.
- McArthur, E. Durant, A. Clyde Blauer, A. Perry Plummer, and Richard Stevens.
1979. Characteristics and hybridization of important Intermountain shrubs. III. Sunflower family. U.S. Department of Agriculture Forest Service Research Paper INT-221. 82 p.
- McArthur, E. D., A. P. Plummer, G. A. Van Epps, D. C. Freeman, and K. R. Jorgensen.
1978. Producing fourwing saltbush seed in seed orchards. *In* Proceedings 1st International Rangeland Congress, Society for Range Management. p. 406-410.
- McArthur, E. Durant, Charles F. Tiernan, and Bruce L. Welch.
1979. Subspecies specificity of gall forms on *Chrysothamnus nauseosus*. *Great Basin Naturalist*, 39(1):81-87.
- Noble, Delpha.

1979. Healing the wounded tundra. Forst Research, What's New in the West, January.
- Noble, Delpha.
1978. The Shrub Sciences Laboratory: One of a kind. Forest Research, What's New in the West, July. p. 15-17.
- Norton, Brian E.
1978. The impact of sheep grazing on long-term successional trends in salt desert shrub vegetation of southwestern Utah. *In* Proceedings 1st International Rangeland Congress, Society for Range Management. p. 610-613.
- Packer, Paul E., Chester E. Jensen, Edward L. Noble, and John A. Marshall.
1979. A prediction model to estimate revegetation potentials of land surface mined for coal in the West. *In* Proceedings International Congress on Energy and the Ecosystem, vol. 1. Pergamon Press, New York. p. 396-411.
- Pearson, H. A., C. H. Herbel, and D. T. Pendleton.
1979. A tour of East German agriculture. *Rangelands* 1(1):9-11.
- Pearson, H. A., and H. S. Sternitzke.
1978. Short communications: Response to comments on browse inventories in Louisiana. *Journal of Wildlife Management* 42:171-172.
- Skovlin, Jon M., and D. Leroy Williamson.
1978. Bush control and associated tsetse fly problems of rangeland development on the coastal plain of East Africa. *In* Proceedings 1st International Rangeland Congress, Society for Range Management. p. 581-583.
- Smith, B., and D. H. Hunter.
1978. Chemical content and digestibilities of important deer forages on a Florida flatwoods range. *IMPAC Report* 3(8).
- Stoner, D. L., J. F. Hunter, J. W. Stuth, and H. A. Pearson.
1979. Transduction of changes in esophageal geometry associated with swallowing. *In* Proceedings Rocky Mountain Bioengineering Symposium. p. 113-116.
- Thill, Ronald E., and Gale L. Wolters.
1979. Cattle production on a southern pine-hardwood forest. *Rangelands* 1(2):60-61.
- Thomas, Jack Ward, Chris Maser, and Jon E. Rodiek.
1979. Riparian zones in managed rangelands: Their importance to wildlife. *In* Proceedings of the Forum: Grazing and Riparian/stream Ecosystems, Oliver B. Cope, ed. Trout Unlimited, Denver. p. 21-31.
- Thomas, Jack Ward, Chris Maser, and Jon E. Rodiek.
- [1979]. Wildlife habitats in managed rangelands—the Great Basin of south-eastern Oregon: Riparian zones. U.S. Department of Agriculture Forest Service General Technical Report PNW-80. 18 p.
- Tieman, Charles F.
1978. The role of entomology in management. *In* Proceedings 1st International Rangeland Congress, Society for Range Management. p. 477-478.
- Uresk, D. W., J. F. Cline, and W. H. Rickard.
1979. Growth rates of a cheatgrass community and some associated factors. *Journal of Range Management* 32(3):168-170.
- U.S. Forest Service.
1979. Native shrub production project, Cocur d'Alenc Nursery. U.S. Department of Agriculture Forest Service, Surface Environment and Mining Project, Billings, Mont. 40 p.
- Vavra, M., J. L. Holcchek, and R. L. Phillips.
1979. Improved beef production from forested rangelands. *In* 1979 Progress Report: Research in Rangeland Management. Oregon State University, Corvallis, Agriculture Experiment Station Special Report 549. p. 29-34.
- Wagner, Warren L., and Earl F. Aldon.
1978. Manual of the saltbushes (*Atriplex* spp.) in New Mexico. U.S. Department of Agriculture Forest Service General Technical Report RM-57. 50 p.
- Wagner, Warren L., William C. Martin, and Earl F. Aldon.
1978. Natural succession on strip-mined lands in northwestern New Mexico. *Reclamation Review* 1:67-73.
- West, Neil E., Kenneth H. Rea, and Roy A. Harniss.
1979. Plant demographic studies in sagebrush grass communities of southern Idaho. *Ecology* 60:376-388.
- Wiebe, Herman H., and Ray W. Brown.
1979. Temperature gradient effects on *in situ* hygrometer measurements of soil water potential. II. Water movement. *Agronomy Journal* 71:397-401.
- Winegar, Harold, and Wayne Elmore.
1978. Mechanical manipulation of western juniper: Some methods and results. *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 107-119.

Fisheries Habitat

- Campbell, Alsie G., and Jerry F. Franklin.
1979. Riparian vegetation in Oregon's western Cascade Mountains: Composition, biomass, and autumn phenology. *Coniferous Forest Biome Bulletin* 14. 90 p.
- Everest, F. H.
1978. Diver-operated device for immobilizing fish with a small explosive charge. *Progressive Fish Culturist* 40(3):121-122.
- Everest, Fred H.
1979. How to demonstrate the importance of fishery resources to interdisciplinary planning teams. *Fisheries* 4(1):15-19.
- Greentree, Wallace J., and Robert C. Aldrich.
1978. Measuring trout habitat as an indication of population on large-scale aerial color photographs. *In* PECORA IV, Proceedings of the Symposium, Application of Remote Sensing Data to Wildlife Management. National Wildlife Federation, Science and Technology Series 3. p. 65-71.

Harshbarger, T. J.

1978. Factors affecting regional trout stream productivity. *In* Proceedings of the Southeastern Trout Resource: Ecology and Management Symposium. Virginia Polytechnic Institute and State University [Blacksburg, Va., October 1975.] p. 11-27.

Lisle, Thomas.

1979. The Caspar Creek Experimental Watershed. *In* Guidebook for a Field Trip to Observe Natural and Management-related Erosion in Franciscan Terrane of Northern California. Cordilleran Section, Geological Society of America. p. XIV-1 to XIV-8.

Lisle, Thomas.

1979. A sorting mechanism for a riffle pool sequence. *Geological Society of America Bulletin* 90(1):616-617, 1142-1157.

Meehan, William R., and Richard A. Miller.

1978. Stomach flushing: Effectiveness and influence on survival and condition of juvenile salmonids. *Journal of the Fisheries Research Board of Canada* 35(10):1359-1363.

Meehan, William R., and William S. Platts.

1978. Livestock grazing and the aquatic environment. *Journal of Soil and Water Conservation* 33(6): 274-278.

Pacific Northwest Forest and Range Experiment Station [Everest, Fred, and William R. Meehan]

1978. Anadromous fish habitat research. U.S. Department of Agriculture Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oreg. Information Leaflet. 15 p.

Platts, William S.

1979. Livestock grazing and riparian/stream ecosystems: An overview. *In* Proceedings, Forum: Grazing and Riparian/stream Ecosystems, Oliver B. Cope, ed. Trout Unlimited, Denver. p. 39-45.

Platts, William S.

1978. Livestock interactions with fish and aquatic environments: Problems in evaluation. *In* Transactions 43rd North American Wildlife and Natural Resources Conference. Wildlife Management Institute, Washington, D.C. p. 498-504.

Platts, William S.

1979. Livestock interactions with fish and their environments: A symposium summary. *Cal-Neva Wildlife Transactions* 1978:92-96.

Platts, William S.

1979. Relationships among stream order, fish populations, and aquatic geomorphology in an Idaho river drainage. *Fisheries* 4(2):5-9.

Platts, William S., Mostafa A. Shirazi, and Donald H. Lewis.

1979. Sediment particle sizes used by salmon for spawning with methods for evaluation. U.S. Environmental Protection Agency, Office of Research and Development Report EPA-600/3-79-043.

Rinne, John N.

1978. Development of methods of population estimation and habitat evaluation for management of the Arizona and Gila trouts. *In* Proceedings Wild Trout-catchable Trout Symposium, John R. Moring, ed. [Eugene, Oreg., Feb. 15-17.] Oregon Department of Fish and Wildlife, Research and Development Section. p. 113-125.

Ward, J. V., and R. A. Short.

1978. Macroinvertebrate community structure of four special lotic habitats in Colorado. *In* U.S.A. Proceedings of the International Association for Theoretical and Applied Limnology Congress 20:1382-1387.

Forest Recreation

Ballman, Gary, Timothy B. Knopp, and L. C. Merriam, Jr.

1978. Preferences of Minnesota Canoe Association members compared to Kettle River users. University of Minnesota, College of Forestry, St. Paul. Minnesota Forest Research Note 269. 4 p.

Bevins, M. I. and D. P. Wilcox.

1979. Evaluation of nationwide outdoor recreation participation surveys, 1959-1978. Vermont Agricultural Experiment Station, Burlington. 161 p.

Bevins, M. I., W. F. LaPage, and D. P. Wilcox.

1979. The campground industry: Recent national trends. U.S. Department of Agriculture Forest Service General Technical Report NE-53. 41 p.

Bevins, M. I., T. L. Brown, G. L. Cole, K. J. Hock, M. W. Kottke, W. F. LaPage, R. W. Stammer, and D. J. Stynes.

1979. Changing patterns of outdoor recreation participation in northeastern United States. University of Delaware Agriculture Experiment Station Bulletin 427. 80 p.

Bond, M. E., and R. H. Dunikoski.

1978. Current and forecasted water consumption patterns of Arizona second-home owners. *Hydrology and Water Resources in Arizona and the Southwest* 8(1):120-124.

Brush, Robert O.

1979. The attractiveness of woodlands: Perceptions of forest landowners in Massachusetts. *Forest Science* 25(3):495-506.

Brush, Robert O.

1978. Managing forests for esthetic benefits. *In* Urban Foresters Notebook, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49.

Brush, Robert O.

1979. Forests can be managed for esthetics: A study of forest-land owners in Massachusetts. *In* Proceedings of the National Urban Forestry Conference, Nov. 13-16, Washington, D.C.

Brush, Robert O., and James F. Palmer.

1979. Measuring the impact of urbanization on scenic quality: Land use change

- in the Northeast. *In* Proceedings Our National Landscape: A Conference on Applied Techniques for Analysis and Management of the Visual Resource. [Lake Tahoe, Nev. April 23-25.]
- Brush, R. O., Dennis W. Williamson, and J. Gy. Fabos.
1979. Visual screening potential of forest vegetation. *Urban Ecology*. (In press.) Bryan, Hobson.
1979. Conflicts in the great outdoors: Toward understanding and managing for diverse sportsmen preferences. University of Alabama, Bureau of Public Administration, University. Social Study 4. 98 p.
- Canon, L. K., Steven Adler, and R. E. Leonard.
1979. Factors affecting dispersion of backcountry campsites. U.S. Department of Agriculture Forest Service Research Note NE-276. 6 p.
- Cial, C. P., R. E. Leonard, and J. J. Lindsay.
1978. Collecting hiker information in the backcountry. University of Vermont Recreation Department Research Report SNR-RM4. 18 p.
- Echelberger, H. E., R. E. Leonard, and M. L. Hamblin.
1978. The trailguide system as a backcountry management tool. U.S. Department of Agriculture Forest Service Research Note NE-266. 5 p.
- Elsner, Gary H.
1978. Forests, plains and wildlands, or how to get the most out of your landscape research budget. *In* Analysis and Development of the Visual Resource. American Society of Landscape Architects, Colorado Chapter, Denver. p. 43-44.
- Estep, Eldon M.
1979. Incentive system for litter control: Lateral diffusion among National Forest personnel. *In* Poster Presentations—Technology Transfer Workshop [Tucson, Ariz., February.] U.S. Department of Agriculture Forest Service, Washington, D.C. 2 p.
- Evison, Boyd.
1979. Research, monitoring, inventory, and education at Great Smoky Mountains National Park. *In* Selection, Management and Utilization of Biosphere Reserves, Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 77-89.
- Fay, S. C., and R. E. Leonard.
1979. Composting privy wastes at recreation sites. *Compost Science* 20(1):36-39.
- Franklin, Jerry F.
1978. Wilderness ecosystems. *In* Wilderness Management, Chap. 10. John C. Hendee, George H. Stankey, and Robert C. Lucas, eds. U.S. Department of Agriculture Miscellaneous Publications 1365. p. 190-212.
- Godin, Victor, and R. E. Leonard.
1979. Management problems in designated wilderness areas. *Journal of Soil and Water Conservation* 34(3):141-143.
- Graves, P. F., and W. F. LaPage.
1978. Participant satisfaction with public involvement in U.S. Forest Service recreation policy. *In* Involvement and Environment: Proceedings of the Canadian Conference on Public Participation [Banff, Alberta, October 1977.] p. 297-311.
- Greenleaf, R. D., and W. F. LaPage.
1979. Recreation in the forestry curriculum: Observations. *In* Recreation Resource Management and the Professional Forester: Proceedings of the Society of American Foresters Recreation Working Group Technical Session [St. Louis, Mo., October 1978] p. 412-415.
- Hanson, Robert A.
1977. An outdoor challenge program as a means of enhancing mental health. *In* Children, Nature, and the Urban Environment, Proceedings of a Symposium—Fair. U.S. Department of Agriculture Forest Service General Technical Report NE-30. p. 171-173.
- Hendee, John C., George H. Stankey, and Robert C. Lucas
1978. Wilderness management. U.S. Department of Agriculture Miscellaneous Publications 1365. 381 p.
- Hogans, Mack L.
1978. Using photography for recreation research. U.S. Department of Agriculture Forest Service Research Note PNW-327. 11 p.
- Kaplan, Rachel.
1977. Summer outdoor programs: Their participants and their effects. *In* Children, Nature, and the Urban Environment, Proceedings of a Symposium—Fair. U.S. Department of Agriculture Forest Service General Technical Report NE-30. p. 175-179.
- Kaplan, Stephen.
1977. Tranquility and challenge in the natural environment. *In* Children, Nature, and the Urban Environment, Proceedings of a Symposium—Fair. U. S. Department of Agriculture Forest Service General Technical Report NE-30. p. 181-185.
- Knopf, Richard C., and John D. Barnes.
1979. Determinants of satisfaction with a tourism complex: A case study of visitors to Gettysburg, Pa. *In* Proceedings of Meeting on Recreation Economics. International Union of Forestry Research Organizations. IUFRO Publication P4.03.00. p. 178-205.
- Knopp, T. B., L. C. Merriam, Jr., G. E. Ballman, and P. Grumstrup.
1979. The Kettle—Minnesota's first wild river—its use and user preferences. University of Minnesota Agriculture Experiment Station Miscellaneous Report 160-1979, Forest Series 28. 35 p.
- Landis, John D.
1979. The skier report: Forecasting the demand for skiing in the Western United States. University of California, Berkeley, Institute of Transportation Studies Research ITS-UCB-78-13. 149 p.
- Landis, John D.
1979. Forecasting the demand for skiing in the Western United States. *In* 1st

Environment

- Annual National Conference on Recreation Planning and Development [April 18-21, Snowbird, Utah.] 12 p.
- LaPage, W. F.
1979. Growth potential of the skier market. U.S. Department of Agriculture Forest Service Research Paper WO-36. 36 p.
- LaPage, W. F.
1979. Market analysis for recreation managers. *In* Land & Leisure: Concepts and Methods in Outdoor Recreation, 2d ed. Maaroufa Press, Chicago. p. 259-265.
- LaPage, W. F.
1979. Research problems in monitoring recreation trends. *In* Proceedings of the Conference on Dispersed Recreation and Natural Resource Management [Logan, Utah, April 1979.]
- Leatherberry, Earl C.
1979. Minnesota canoe and kayak owners: Their characteristics and patterns of use. U.S. Department of Agriculture Forest Service Research Paper NC-171. 8 p.
- Leonard, R. E., H. E. Echelberger, and M. Schnitzer.
1978. Use characteristics of the Great Gulf Wilderness. U.S. Department of Agriculture Forest Service Research Paper NE-428. 9 p.
- Leonard, R. E., and H. J. Plumley.
1979. Human waste disposal in eastern backcountry. *Journal of Forestry* 77(5):349-352.
- Lime, David W.
1979. Managing visitor use on whitewater rivers. *Trends* 16(2):24-27.
- Lime, David W.
1979. Carrying capacity. *Trends* 16(2):37-40.
- Lime, David W.
1979. Visitor observation: A tool for appraising interpretive activities. *In* Proceedings of Association of Interpretive Naturalists Workshop. [Feb. 13-17, Bloomington, Minn.] p. 49-55.
- Lime, David W., Dorothy H. Anderson, and L. David Mech.
1978. Guided expeditions to encounter wildlife: A plus for forest recreation users in Minnesota. *In* Proceedings of Association of Interpretive Naturalists. [April 5-7, Tuscon, Ariz.] p. 60-76.
- Lime, David W., Dorothy H. Anderson, and L. David Mech.
1978. Interpreting wildlife through guided expeditions. *Journal of Interpretation* 3(2):10-16.
- Lime, David W., Dorothy H. Anderson, and Stephen F. McCool.
1978. An application of the simulator to a river recreation setting. *In* Simulation of Recreational Use for Park and Wilderness Management. Johns Hopkins University Press, Baltimore. p. 153-174.
- Little, S.
1978. Ecology and silviculture of Pine Barren forests. *In* Proceedings First Research Conference on New Jersey Pine Barrens. [Atlantic City, N.J., May 22-23.] p. 105-118.
- Litton, R. Burton, Jr.
1978. The landscape as a visual resource: Some historical and philosophical observations. *In* Analysis and Development of the Visual Resource. American Society of Landscape Architects, Colorado Chapter, Denver. p. 2-6.
- Magill, Arthur W.
1979. Campsite reservations: A public service. *In* Proceedings of the Conference on Campgrounds and Camping 1980: Trends, Research, Future Needs [Nov. 5-8, 1978, Land-Between-the-Lakes, Tenn.] p. 17-24.
- Minore, Don, and Michael E. Dubrasich.
1978. Big huckleberry abundance as related to environment and associated vegetation near Mount Adams, Washington. U.S. Department of Agriculture Forest Service Research Note PNW-322. 8 p.
- Minore, Don, and Alan W. Smart.
1978. Frost tolerance in seedlings of *Vaccinium membranaceum*, *Vaccinium globulare*, and *Vaccinium deliciosum*. *Northwest Science* 52(3):179-185.
- Moir, W. H., F. D. Hobson, M. Hemstrom, and J. F. Franklin.
1979. Forest ecosystems of Mount Rainier National Park. *In* Proceedings of the First Conference on Scientific Research in the National Parks, vol. I, Robert M. Linne, ed. National Park Service Transactions and Proceedings 5. p. 201-207.
- Muth, Robert M., and Roger N. Clark.
1978. Public participation in wilderness and backcountry litter control: A review of research and management experience. U.S. Department of Agriculture Forest Service General Technical Report PNW-75. 12 p.
- Norgaard, Judith King, Tom Kovalicky, and George Stankey.
1979. Wilderness myths: Some falsehoods are put to rest. *Montana Magazine*, July-August. p. 53-56.
- Peterson, George L., and David W. Lime.
1979. People and their behavior: A challenge for recreation management. *Journal of Forestry* 77(6):343-346.
- Plumley, H. J., H. T. Peet, and R. E. Leonard.
1978. Records of backcountry use can assist trail managers. U.S. Department of Agriculture Forest Service Research Paper NE-414. 19 p.
- Rupe, Mary Lynn, R. E. Leonard, and J. J. Lindsay.
1979. Hikers' views of backcountry management. University of Vermont Recreation Department Research Report SNR-RM6.
- Schomaker, John H.
1978. Measurements of preferences for proposed landscape modifications. *Landscape Research* 3(3):5-9.
- Schreyer, Richard.
1977. Recreational use restrictions in wildlands: Lessons from whitewater rivers. *Western Wildlands* 4(2):45-52.
- Schreyer, Richard.
1977. Satisfaction and user input to management. *Utah Tourism and*

- Recreation Review 7(1):1-7.
- Shreyer, Richard, Robert G. White, and Stephen F. McCool.
1978. The need for risk recreation: Common attributes uncommonly exercised. *Leisure Today* (April):12-14.
- Shafer, Elwood L., and Robert C. Lueas.
1979. Research needs and priorities for dispersed recreation management. *Journal of Leisure Research* 10(4):311-320.
- Shechter, Mordechai, and Robert C. Lueas.
1978. Simulation of recreational use for park and wilderness management. Johns Hopkins University Press, Baltimore. 220 p.
- Standley, Staey, and Wilbur F. LaPage.
1979. Skiers: Past, present and potential. *In* *Ski Area Management*, Winter 1979. p. 24-30.
- Stankey, George H.
1979. Use rationing in two southern California wildernesses. *Journal of Forestry* 77(5):347-349.
- Tyre, Gary L., and Chrystos D. Siderelis.
1979. Instant-count sampling: A technique for estimating recreation use in municipal settings. *Leisure Science* 2(2):173-179.
- Wagar, J. Alan.
1978. Recreation insights from Europe. *Interpreter* 10(1):21-24.

Urban Forestry

- Bardini Frova, C., and W. A. Feder.
1979. Effect of cold treatment on the in vitro germination and day-to-day variability of maize (*Zea mays* L.) pollen. *Annals of Botany* 43:75-79.
- Barker, Philip A.
1979. Growing trees on recreation sites—or hospitality with trees. *In* *Tourism and the Next Decade*. International Symposium. The Future [March 11-15, Washington, D.C. 9 p.
- Barker, Philip A., and M. Guy Durrant.
1979. Space for trees in street rights-of-way. *In* *North America's Forests: Gateway to Opportunity*. Society of American Foresters, Washington, D.C. p. 463-467.
- Brown, T. L., D. J. Miller, and B. T. Wilkins.
1977. Rural nonfarmed lands and their owners in five central New York counties. *SEARCH, Agriculture Natural Research* 2, vol. 7, no. 4.
- Browning, Edwin R., and Gene Colling.
1979. The SEAM technology transfer process. *In* *Proceedings, Poster Presentations, Technology Transfer Workshop*. [Tucson, Ariz., Feb. 13-15.] U.S. Department of Agriculture Forest Service, Washington, D.D. 12 p.
- Buckley, C. E., D. T. Harje, M. P. Knowlton, and G. M. Heisler.
1978. The optimum use of coniferous trees in reducing home energy consumption. Princeton University Center for Environmental Studies PU/CES 71. 76 p.
- Burns, Denver P., and George H. Moeller.
1979. Urban forestry at the crossroads. *Journal of Forestry* 77(1):24-26.
- Christensen, Thomas W. and David R. Miller.
1979. Water use by honeylocust in urban stress sites. *In* *Proceedings 14th Conference on Agricultural and Forest Meteorology*. Minneapolis, Minn., April 2-6.
- Coon, R. A., J. S. Lindzey, and J. L. George.
1978. Nesting, fall migration, and harvest of American woodcock in Pennsylvania. The Pennsylvania State University, School of Forest Resources. Research Briefs, Winter-Spring, vol. 11, no. 1.
- DeWalle, D. R.
1978. Trees for shelter and shade. The Pennsylvania State University, School of Forest Resources, Cooperative Extension Service. Pennsylvania Forest Resources 53. 4 p.
- DeWalle, D. R.
1978. Mobile home energy costs conserved with shade trees. *Science in Agriculture* 26(1):16.
- DeWalle, D. R.
1978. Microclimate modification using urban forests for residential energy conservation in space heating and cooling. *In* *Proceedings, WMO Symposium on Forest Meteorology*. [Ottawa, Canada, Aug. 21-25.]
- DeWalle, D. R.
1978. Residential energy conservation using urban trees and forests, a problem analysis. Final report. U.S. Department of Agriculture Forest Service, Pinchot Institute, Cooperative Agreement 23-906, March 1978. 36 p.
- DeWalle, D. R.
1978. Manipulating urban vegetation for residential energy conservation. *In* *Proceedings National Urban Forestry Conference*, Nov. 13-16, Washington, D.C.
- Dwyer, John F.
1979. Estimating consumer satisfaction associated with an increase in public tourism supply: An economic approach. *In* *Proceedings of Meeting on Economics of Recreation*. International Union of Forestry Research Organizations. IUFRO Publication P4.03.00. p. 68-80.
- Dwyer, John F., and Michael D. Bowes.
1979. Benefit-cost analysis for appraisal of recreational alternatives. *Journal of Forestry* 7(3):145-147.
- Dwyer, John F., and Michael D. Bowes.
1978. Concepts of value for marine recreational fishing. *American Journal of Agricultural Economics* 60(5):1008-1012.
- Dwyer, John F., and Michael D. Bowes.
1978. Concepts of value for water-based recreation. *Water International* 3(3):11-15.

Environment

- Echelberger, Herbert E., and Silas Little.
1978. Wooded areas managed for intensive recreation. *In* Urban Foresters Notebook, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49, 6 p.
- Epstein, Claude M.
1978. Some effects of effluent spray: Irrigation on a New Jersey Pine Barrens water table. *In* Natural and Cultivated Resources of the New Jersey Pine Barrens, John W. Sinton, ed. Stockton State College, Pomona, N.J. p. 59-79.
- Feder, William A.
1978. Plants as bioassay systems for monitoring atmospheric pollutants. *Environmental Health Perspectives* 27:139-147.
- Halverson, Howard G., and James L. Smith
1979. Solar radiation as a forest management tool: A primer of principles and application. U.S. Department of Agriculture Forest Service General Technical Report PSW-33, 13 p.
- Harkov, R., and E. Brennan.
1979. An ecophysiological analysis of the response of trees to oxidant pollution. *Journal of the Air Pollution Control Association* 29:157-161.
- Harkov, R., and E. Brennan.
1979. An ecophysiological analysis of the susceptibility of woody and herbaceous plants to oxidant damage. *In* IX International Congress of Plant Protection, Aug. 5-11, 1979.
- Harkov, R., B. Clarke, T. Lewis, and E. Brennan.
1979. Comparison of oxidant injury in urban and agricultural crops in New Jersey. *Journal of Arboriculture*. (In press.)
- Harkov, R., and E. Brennan.
1979. Comparison of oxidant injury in urban trees and agricultural crops in New Jersey during 1978. *In* Proceedings National Urban Forestry Conference, Nov. 13-16, 1978, Washington, D.C.
- Harkov, R., and E. Brennan.
1979. Control of ambient oxidant damage in Eastern white pine. *In* Plant Pathology Leaflet 105. Rutgers, The State University, New Brunswick, N.J. p. 48-49.
- Heisler, Gordon M.
1978. Effects of trees and woodlands on microclimate and home conditioning costs. *In* Urban Foresters Notebook, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49, 6 p.
- Heisler, Gordon M., David T. Harje, and Charles E. Buckley.
1979. Planning the arrangement of tree windbreaks for reducing air infiltration energy losses. *In* 14th Conference on Agricultural and Forest Meteorology and 4th Conference on Biometeorology. April 2-6, Minneapolis, Minn. p. 123-125.
- Hunter, H. B., and J. L. George.
1978. Herbivore-woody plant relationships on a Pennsylvania clearcut. *The Pennsylvania State University, School of Forest Resources, Research Briefs, Winter-Spring*, vol. 11, no. 1.
- Jennings, A. A., F. S. Tirsch, and D. D. Adrian.
1978. Methods for evaluating the leachate attenuative capacity of soil. *In* Proceedings of the 1st Annual Conference of Applied Research and Practice on Municipal and Industrial Waste. Madison, Wis., Sept. 10-13.
- Kaplan, Rachel.
1979. Liberty plaza: Post design evaluation. University of Michigan, School of Natural Resources, Ann Arbor. 24 p.
- Karnosky, D. F.
1978. Selection and testing programs for developing air pollution tolerant trees for urban areas. *In* Proceedings IUFRO Air Pollution Meeting. Ljubljana, Yugoslavia, Sept. 18-23, International Union of Forestry Research Organizations (In press.)
- Karnosky, D. F., and D. B. Houston.
1979. Genetics of air pollution tolerance of trees in the Northeastern United States. *In* 26th Northeastern Forest Tree Improvement Conference Proceedings, p. 161-178.
- Kent, James A., Richard J. Greiwe, James E. Freeman, and John J. Ryan.
1979. An approach to social resource management. Report prepared for USDA Forest Service by Foundation for Urban and Neighborhood Development, Inc., and The John Ryan Co., Denver, Colo. 124 p.
- Little, Silas.
1978. Ecology and silviculture of Pine Barrens forests. *In* Natural and Cultivated Resources of the New Jersey Pine Barrens, John W. Sinton, ed. Stockton State College, Pomona, N.J. p. 105-118.
- Little, Silas.
1978. Management of natural areas. *In* Urban Foresters Notebook, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49, 5 p.
- Little, Silas.
1978. Reducing construction damage to shade and woodland trees. *In* Urban Foresters Notebook, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49, 4 p.
- Loehr, R. C., ed.
1976. Land as a waste management alternative. *In* Proceedings of the 1976 Cornell Agriculture Waste Management Conference.
- Magill, Arthur, Rowan Rowntree, and Robert Brush.
1979. Visual impacts at the urban-wildland interface. *In* Proceedings Our National Landscape: Applied Techniques for Analysis and Management of the Visual Resource. [Incline Village, Nev., April 23-25.] U.S. Department of Agriculture Forest Service, Washington, D.C. [Unnumbered publication.]
- Miller, David R.
1978. The energy budget of a forest edge: A model and field measurements at an oak-forest-asphalt interface. The University of Connecticut, Storrs Agriculture Experiment Station, Research in Microclimate at the Forest and Urban Interface Program, Report 5.

- Miller, David R., and Gordon M. Heisler.
1979. The amenity values of urban trees and some general design principles for urban plantings. In *Urban Forestry*. The University of Rhode Island, Rhode Island Cooperative Extension Service. (In press.)
- Miller, David R.
1979. The two-dimensional energy budget of a forest edge with field measurements at an oak forest-asphalt parking lot interface. *Agriculture Meteorology*. (In press.)
- Nichols, Len M., Marianne Bowes, and John F. Dwyer.
1978. Reflecting travel time in travel-cost based estimates of recreation use and value. University of Illinois Agriculture Experiment Station Forest Research Report 78-12. 8 p.
- Orr, James, and Judith Wolfe.
1979. Technology transfer and the diffusion of innovations: A working bibliography with annotations, Public Administration Series: Bibliography. Vance Bibliographies, Monticello, Ill.
- Orr, James, and Rowan Rowntree.
1979. The American national park system: A selected review. Public Administration Series: Bibliography. Vance Bibliographies, Monticello, Ill.
- Orr, James.
1979. Malls, pedestrian malls, and shopping centers: A selected bibliography with annotations. Architecture Series: Bibliography. Vance Bibliographies, Monticello, Ill.
- Paulick, R. K., and J. L. George.
1978. Determination of habitat components utilized by avian species in a planned suburban community. The Pennsylvania State University, School of Forest Resources. Research Briefs, Winter-Spring, vol. 11, no. 1.
- Payne, Brian R.
1978. Trees increase property values. In *Urban Foresters Notebook*, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49.
- Payne, Brian R.
1978. Evaluation of tree losses. In *Urban Foresters Notebook*, Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49.
- Payne, Brian R., and Joanne E. Gallaher.
1979. National urban forestry conference. *Journal of Forestry* 77(5):284-286.
- Pham, C. H., Howard G. Halverson, and Gordon M. Heisler.
1978. Red maple (*Acer rubrum* L.) growth and foliar nutrient responses to soil fertility level and water regime. U.S. Department of Agriculture Forest Service Research Paper NE-412. 7 p.
- Pizor, Nieswand, and Swanson.
1979. A transfer of development rights sampler. New Jersey Agriculture Experiment Station Bulletin 612.
- Ravenscraft, David J., and John F. Dwyer.
1978. Estimating the influence of congestion on the willingness of users to pay for recreation areas. University of Illinois Agriculture Experiment Station Forest Research Report 78-5. 7 p.
- Ravenscraft, David J., and John F. Dwyer.
1978. Reflecting site attractiveness in travel cost-based models for recreation benefit estimation. University of Illinois Agriculture Experiment Station Forest Research Report 78-6. 7 p.
- Rowntree, Rowan, and James Orr.
1979. The American National park system: Policy analysis in the context of a changing urban society. In *International Review of National Parks and Related Reserves*, Gordon Nelson, ed. University of Waterloo, Waterloo, Ont.
- Roy, S. F.
1978. Alternatives for conservation commission lands: A process for management planning. M.S. thesis, University of Massachusetts, Amherst. 274 p.
- Sopper, W. E., D. R. DeWalle, and S. N. Kerr.
1979. Utilization of municipal wastewater and waste heat for energy production from forest biomass. In *Proceedings National Conference and Exhibition on Technology for Energy Conservation*. Information Transfer Inc., Rockville, Md. (In press.)
- Steiner, K. C., and L. H. McCormick.
1979. Selecting trees for adaptation to the mineral environment. In *Northeast Forest Tree Improvement Conference Proceedings* 26:25-39.
- Steiner, Kim C., and Charles W. Heuser.
1978. Resistance of pin oak to iron chlorosis: A technique for detecting genetic variation. Pennsylvania Agriculture Experiment Station Journal Paper 5174. [Also, METRIA Proceedings 1:57-68.]
- Steiner, K. C., and D. D. Davis.
1979. Variation among Fraxinus families in foliar response to ozone. *Canadian Journal of Forest Research* 9:106-109.
- Townsend, Alden M., and David P. Worley.
1979. Firewood gardens: A renewable energy source. *The Buckeye Arborist* 10(3):2-4.
- Walker, P. A., and D. D. Adrian.
1977. Specific conductance as a measure of treatability of landfill leachate in algal lagoons. In *32nd Industrial Wastes Conference*. Ann Arbor Science Publications, Michigan.
- Whelan, James B., and Gary Sawhill.
1978. A bioenergetic approach for determining carrying capacity of the Pine Barrens for white-tailed deer. In *Natural and Cultivated Resources of the New Jersey Pine Barrens*, John W. Sinton, ed. Stockton State College, Pomona, N.J. p. 146-151.
- Yingling, E. L., C. A. Keeley, S. Little, and J. Burtis.
1979. Reducing damage to shade and woodland trees from construction activities. *Journal of Arboriculture* 5(5):97-105.

Fire and Atmospheric Sciences

Fire Prevention, Hazard Reduction and Prescribed Burning

Bruner, Allen D., and Donald A. Klebenow.

1979. Predicting success of prescribed fires in pinyon-juniper woodland in Nevada. U.S. Department of Agriculture Forest Service Research Paper INT-219. 11 p.

Burgan, Robert E.

1979. Estimating live fuel moisture for 1978 National Fire Danger Rating System. U.S. Department of Agriculture Forest Service Research Paper INT-226. 17 p.

Donoghue, Linda R., and Eugene F. McNamara.

1979. Fire prevention in the Northeastern States: Where do we stand? Fire Management Notes 40(2):8-10.

Doolittle, M. L.

1978. Analyzing wildfire occurrence data for prevention planning. Fire Management Notes 39(2):5-7.

Doolittle, M. L., and M. L. Lightsey.

1979. Southern woods-burners: A destructive analysis. U.S. Department of Agriculture Forest Service Research Paper SO-151. 6 p.

Doolittle, M. L.

1979. A scale for rating fire-prevention contractors. U.S. Department of Agriculture Forest Service Research Note SO-249. 2 p.

Fowler, W. B., and J. D. Helvey.

1978. Changes in the thermal regime after prescribed burning and select tree removal (Grass Camp, 1975). U.S. Department of Agriculture Forest Service Research Paper PNW-234. 17 p.

Folkman, William S.

1979. Urban users of wildland areas as forest fire risks. U.S. Department of Agriculture Forest Service Research Paper PSW-137. 22 p.

Furman, R. William.

1979. Using fire weather data in prescribed fire planning: Two computer programs. U.S. Department of Agriculture Forest Service General Technical Report RM-63. 11 p.

Johansen, R. W., and W. H. McNab.

1977. Estimating logging residue weights from standing slash pine for prescribed burns. Southern Journal of Applied Forestry 1(2):2-6.

Loomis, Robert M., and Peter J. Roussopoulos.

1978. Estimating aspen crown fuels in northeastern Minnesota. U.S. Department of Agriculture Forest Service Research Paper NC-156. 6 p.

Martin, Robert E., and John D. Dell.

1978. Planning for prescribed burning in the inland Northwest. U.S. Department of Agriculture Forest Service General Technical Report PNW-76. 67 p.

Miller, W. E.

1979. Fire as an insect management tool. Bulletin of the Entomological Society of America 25:137-140.

Phillips, Clint, and Brad Nickey.

1978. The concept of "spatial risk" and its application to fire prevention. Fire Management Notes 39(4):7-8.

Rigsby, S. Renee, Arthur G. Cosby, and G. Richard Wethergill.

1979. Evaluating forest fire prevention programs: A case study in the adequacy of the simple pretest, post-test design. In Rural Sociology in the South. Proceedings 1979 Annual Meeting of the Rural Sociology Section of the Southern Association of Agricultural Science. 12 p.

Wagle, R. F., and Thomas W. Eakle.

1979. A controlled burn reduces the impact of a subsequent wildfire in a ponderosa pine vegetation type. Forest Science 25(1):123-129.

Fire Management Methods and Systems

Bevins, Collin D., and Robert E. Martin.

1978. An evaluation of the slash (I) fuel model of the 1972 National Fire Danger Rating System. U.S. Department of Agriculture Forest Service Research Paper PNW-247. 17 p.

Bratten, Frederick W.

1978. Containment tables for initial attack on forest fires. Fire Technology 14(4):297-303.

Bratten, Frederick W., Jerry Keith, and Stanley Rapp.

1979. FOCUS maintenance manual. U.S. Department of Agriculture Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, Calif. 700 p.

Burgan, Robert E.

1979. Fire danger/fire behavior computations with the Texas Instruments TI-59 calculator: User's manual. U.S. Department of Agriculture Forest Service General Technical Report INT-61. 25 p.

Cohen, Jack D., and Robert E. Burgan.

1979. Hand-held calculator for fire danger/fire behavior. Fire Management Notes, Winter 1978-79. p. 8-9.

Davis, James B.

1979. Building professionalism into forest fire suppression. Journal of Forestry 77(7):423-426.

Davis, James B.

1979. A new fire management policy on Forest Service lands. Fire Technology 15(1):43-50.

Eakle, T. W., and R. F. Wagle.

1979. Method of estimating ground fuels under two inches in diameter in southwestern ponderosa pine stands. U.S. Department of Agriculture Forest Service Research Note PNW-333. 8 p.

Eckels, Karen L., and Alan R. Taylor.

1979. FIREBASE. The wildland fire bibliographic information system.

- Environmental Management 3:21-27.
- Egging, Louis T., and Richard J. Barney.
1979. Fire management: A component of land management planning. *Environmental Management* 3:15-20.
- Flatman, George T., and Theodore G. Storey.
1979. Decision techniques for evaluating fire plans using FOCUS simulation. U.S. Department of Agriculture Forest Service Research Note PSW-338. 6 p.
- Frandsen, William H., and Patricia Andrews.
1979. Fire behavior in nonuniform fuels. U.S. Department of Agriculture Forest Service Research Paper INT-232. 34 p.
- Gorte, Julie K., and Ross W. Gorte.
1979. Application of economic techniques to fire management: A status review and evaluation. U.S. Department of Agriculture Forest Service General Technical Report INT-53. 26 p.
- Johnson, Von J.
1978. Curriculum for fire management: An assessment. *Society of American Foresters Proceedings*, 1978. p. 235-236.
- Kessell, Stephen R., Meredith W. Potter, Collin D. Bevins, Larry Bradshaw, and Burce W. Jeske.
1978. Analysis and application of forest fuels data. *Environmental Management* 3:347-363.
- Kessell, Stephen R.
1979. FORUM: Fire modeling, fire management, and land management planning. *Environmental Management* 3:1-2.
- Lotan, James E.
1979. PROFILE: Integrating fire management into land-use planning: A multiple-use management research, development, and application program. *Environmental Management* 3:7-14.
- Martin, Robert E., and Arlen H. Johnson.
1979. Fire management of Lava Beds National Monument. *In Proceedings of the First Conference on Scientific Research in the National Parks*, vol. II. U.S. Department of the Interior, National Park Service Transactions and Proceedings 5:1209-1217.
- Mees, Romain.
1978. Computing arrival times of firefighting resources for initial attack. U.S. Department of Agriculture Forest Service General Technical Report PSW-27. 5 p.
- Mees, Romain, and Ira B. Pearman.
1978. Determining arrival times of fire resources by computer. *Fire Management Notes* 39(4):12-13.
- Noble, Delpha.
1978. Fire RD&A Program: Research-land management link. *Forest Research, What's New in the West*, October 1978. p. 5-7.
- Noble, Delpha.
1979. How much fuel and how will it burn. *Forest Research, What's New in the West*, April 1979.
- Pickford, Stewart G., and John W. Hazard.
1978. Simulation studies on line intersect sampling of forest residue. *Forest Science* 24(4):469-483.
- Potter, M. W., S. R. Kessell, and P. J. Cattellino.
1979. FORPLAN—a Forest Planning LANGUAGE and simulator. *Environmental Management* 3:59-72.
- Ryan, P. W., C. D. Tangren, and C. K. McMahon.
1979. A balloon system for profiling smoke plumes from forest fires. *In Environmental Protection in the Forest Products Industry*, Session 6. *Proceedings 72nd Annual Meeting of the Air Pollution Control Association*, Cincinnati, Ohio, June 24-29.
- Snell, J. A. Kendall, and James K. Brown.
1978. Comparison of tree biomass estimators—dbh and sapwood area. *Forest Science* 24(4):455-457.
- Snell, J. A. Kendall, R. Gordon Schmidt, and John D. Dell.
1979. User's guide to debris prediction and hazard appraisal. U.S. Department of Agriculture Forest Service, Pacific Northwest Region, Portland, Oreg. 61 p.
- Steigerwaldt, W., and M. Meyer.
1979. Vegetation/fuel type mapping of Isle Royale National Park. University of Minnesota, College of Forestry, Remote Sensing Laboratory, St. Paul. IAFHE RSL Research Report 79-1, June 1. 27 p.
- Taylor, Alan R.
1978. Transferring fire-related information to resource managers and the public: FIREBASE. *In Proceedings on Environmental Consequences of Fire and Fuel Management in Mediterranean Ecosystems*. [Palo Alto, Calif., Aug. 1-5, 1977.] p. 215-219.

Forest Fire Science

- Albini, Frank A.
1979. Spot fire distance from burning trees: A predictive model. U.S. Department of Agriculture Forest Service General Technical Report INT-56. 73 p.
- Albini, F. A., and R. G. Baughman.
1979. Estimating windspeeds for predicting wildland fire behavior. U.S. Department of Agriculture Forest Service Research Paper INT-221. 12 p.
- Barney, Richard J., compiler.
1979. *Proceedings of fire working group*, Society of American Foresters National Convention, Albuquerque, N. Mex., Oct. 4, 1977. U.S. Department of Agriculture Forest Service General Technical Report INT-49. 19 p.
- Bowman, K. O., and L. R. Shenton.
1979. Approximate percentage points for Pearson distributions. *Biometrika* 68(1):001-005.

Fire and Atmospheric Sciences

- Finklin, Arnold I.
1979. A comparison of portable aluminum and standard wooden thermometer shelters. U.S. Department of Agriculture Forest Service Research Note INT-260. 12 p.
- Fischer, William C.
1978. New portable weather instrument shelter performs well. *Fire Management Notes* 39(3):15-18.
- Fosberg, M. A., and D. G. Fox.
1978. Nonturbulent dispersion process in complex terrain. Authors' reply. *Atmospheric Environment* 12:966.
- Frandsen, William H., and Robert D. Schuette.
1978. Fuel burning rates of downward versus horizontally spreading fires. U.S. Department of Agriculture Forest Service Research Paper INT-214. 14 p.
- Pierovich, J. M.
1979. The technology transfer process for smoke management. *In* Poster Presentations, Technology Transfer Workshop, Tucson, Ariz., Feb. 13-15. U.S. Department of Agriculture Forest Service, Washington, D.C. 6 p.
- Stockstad, D. S.
1979. Spontaneous and piloted ignition of rotten wood. U.S. Department of Agriculture Forest Service Research Note INT-267. 12 p.
- Susott, Ronald A., Fred Shafizadeh, and Thomas W. Aanerud.
1979. A quantitative thermal analysis technique for combustible gas detection. *Journal of Flammability* 10:94-104.
- Ward, Darold E., Ralph M. Nelson, Jr., and Donald F. Adams
1979. Forest fire smoke plume documentation. *In* Proceedings 72nd Annual Meeting of the Air Pollution Control Association, Cincinnati, Ohio, June 24-29. Paper 79-63. 24 p.
1979. Nitrogen replacement after fire in chaparral. *In* Symposium on Symbiotic Nitrogen Fixation in the Management of Temperate Forest. Oregon State University, Corvallis. p. 287-293.
- Dunn, Paul H., Leonard F. DeBano, and Gary P. Eberlein.
1979. Effects of burning on chaparral soils: II. Soil Microbes and Nitrogen Mineralization. *Soil Science Society of American Journal* 43(3):509-514.
- Fitzhugh, E. L., J. E. Cornley, and J. T. Beaulieu.
1978. The Rattle Burn: Disaster or blessing for wildlife. *In* Putting Biology Back into Wildlife Management, D. J. Siebert, ed. Proceedings, Arizona-New Mexico Chapters, The Wildlife Society Annual Meeting. p. 199-218.
- Fosberg, Michael A.
1979. A generalized unsaturated hydraulic conductivity function for watershed models. *In* Proceedings 14th Conference on Agricultural and Forest Meteorology and 4th Conference on Biometeorology, [April 1-6, Minneapolis, Minn.] p. 202-204.
- Harvey, A. E., M. J. Larsen, and M. F. Jurgensen.
1979. Fire-decay: Interactive roles regulating wood accumulation and soil development in the northern Rocky Mountains. U.S. Department of Agriculture Forest Service Research Note INT-263. 3 p.
- Kessell, Stephen R.
1979. Phytosociological inference and resource management. *Environmental Management* 3:29-40.
- Lyon, L. Jack, Hewlette S. Crawford, Eugene Czhuai, Richard L. Fredriksen, Richard F. Harlow, Louis J. Metz, and Henry A. Pearson.
1978. Effects of fire on fauna. U.S. Department of Agriculture Forest Service General Technical Report WO-6. 41 p.
- Martin, Robert E.
1978. Fire manipulation and effects in western juniper (*Juniperus occidentalis* Hook.). *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 121-136.

Ecological Relations

- Anderson, Hal E.
1978. Graphic aids for field calculation of dead, down forest fuels. U.S. Department of Agriculture Forest Service General Technical Report INT-45. 21 p.
- Arno, Stephen F.
1978. How to learn the frequencies and ecological roles of historic fires. *Fire Management Notes* 39(3):8-9.
- DeBano, L. F., and C. E. Conrad.
1978. The effect of fire on nutrients in a chaparral ecosystem. *Ecology* 59(3):489-497.
- DeBano, Leonard F., Gary P. Eberlein, and Paul H. Dunn.
1979. Effects of burning on chaparral soils: I. Soil nitrogen. *Soil Science Society of America Journal* 43(3):504-509.
- Dunn, P. H., and M. Poth.
1979. The pileated woodpecker in forests of the northern Rocky Mountains. *In* The Role of Insectivorous Birds in Forest Ecosystems. Academic Press, New York. p. 283-299.
- McClelland, B. Riley.
1979. Cavity nesters seek the security offered by snags in old-growth forests. *Montana Outdoors* 10(4):34-37.
- McClelland, B. Riley, Sidney S. Frissel, William C. Fischer, and Curtis H. Halvorson.
1979. Habitat management for hole-nesting birds in forests of western larch and Douglas-fir. *Journal of Forestry* 77(8):480-483.
- McNab, W. H., M. B. Edwards, and W. A. Hough.
1979. Estimating weight of fuel components in slash/saw palmetto/gallberry

- stands. *Forest Science* 24(63):345-358.
- Sandberg, D. V., J. M. Pierovich, D. G. Fox, and E. W. Ross.
1979. Effects of fire on air. A state-of-knowledge review. U.S. Department of Agriculture Forest Service General Technical Report WO-9. 40 p.
- Tiedemann, Arthur R., Carol E. Conrad, John H. Dieterich, James W. Hornbeck, Walter F. Megahan, Leslie A. Viereck, and Dale D. Wade.
1979. Effects of fire on water. A state-of-knowledge review. U.S. Department of Agriculture Forest Service General Technical Report WO-10. 28 p.
- Viereck, L. A., and C. T. Dyrness, tech. eds.
1979. Ecological effects of the Wickersham Dome fire near Fairbanks, Alaska. U.S. Department of Agriculture Forest Service General Technical Report PNW-90. 71 p.
- Wells, Carol G., Ralph E. Campbell, Leonard F. DeBano, Clifford E. Lewis, Richard L. Fredriksen, E. Carlyle Franklin, Ronald C. Froelich, Paul H. Dunn.
1979. Effects of fire on soil. A state-of-knowledge review. U.S. Department of Agriculture Forest Service General Technical Report WO-7. 34 p.
- Wright, Henry A.
1978. The effect of fire on vegetation in ponderosa pine forests, a state-of-the-art review. Texas Technological University, Department of Range and Wildlife Management Information Series 2, College of Agricultural Science Publication T-9-199.
- Weather Modification and Weather Effects**
- Childs, Joseph E., M. C. Wood, W. E. Marlatt, and D. G. Fox.
1979. TAPAS: A system for assessing the impact of land use change on air quality. *In* 14th Conference on Agricultural and Forest Meteorology, April 2-6, Minneapolis, Minn. p. 120.
- Fosberg, Michael A.
1978. Fifth conference on fire and meteorology. *Journal of Forestry* 76(10):677-691.
- Fox, Douglas G.
1979. What is visibility worth? Air Pollution Control Association Paper 79-26.6.
- Fuquay, Donald M., Robert G. Baughman, and Don J. Latham.
1979. A model for predicting lightning-fire ignition in wildland fuels. U.S. Department of Agriculture Forest Service Research Paper INT-217. 22 p.
- Furman, R. William.
1979. The effects of changes in local forestry patterns on the climate with particular reference to the tropic and subtropics. *In* Proceedings World Meteorology Organization Symposium on Forest Meteorology [Aug. 21-25, 1978, Ottawa, Ontario, Canada.] WMO-527. p. 181-197.
- Haines, Donald A., William A. Main, and E. F. McNamara.
1978. Forest fires in Pennsylvania. U.S. Department of Agriculture Forest Service Research Paper NC-158. 20 p.
- Haines, Donald A.
1979. Dew measurement and forest fuels. *In* Preprint Proceedings 14th

- Conference on Agricultural and Forest Meteorology [Minneapolis, Minn., April 2-6.] American Meteorological Society, Boston. p. 25-29.
- Main, William A.
1979. Palmer Index computations for small land areas. *In* Preprint Proceedings 14th Conference on Agricultural and Forest Meteorology, p. 150-153. [Minneapolis, Minn., April 2-6.] American Meteorological Society, Boston. p. 150-153.
- March, William J., James R. Wallace, and Lloyd W. Swift, Jr.
1979. An investigation into the effect of storm type on precipitation in a small mountain watershed. *Water Resources Research* 15(2):298-304.
- McCutchan, Morris H.
1978. A model for predicting synoptic weather types based on model output statistics. *Journal of Applied Meteorology* 17:1466-1475.
- McCutchan, Morris H.
1979. Models for the diurnal variation of surface temperature and dew point in the Sierra Nevada of California. *In* Proceedings 3rd Conference on Hydro-meteorology, August 1979, Bogota, Colombia. p. 97-100.
- McCutchan, M. H.
1979. Determining the diurnal variation of surface temperature in mountainous terrain. *Journal of Applied Meteorology* 18:1224-1229.
- Paul, James T., and Marshall P. Waters, III.
1978. Lightning fire occurrences in southeastern Georgia. *National Weather Digest* 3(2):10-15.
- Sestak, M. L., W. E. Marlatt, and D. G. Fox.
1979. Simulation of the surface temperature pattern of an idealized terrain feature using an areal model. *In* 14th Conference on Agricultural and Forest Meteorology, April 2-6, Minneapolis, Minn. p. 134-137.
- Paul, James T., Joe Clayton, and (Compilers)
1978. User manual: Forestry weather interpretations system (FWIS). U.S. Department of Agriculture Forest Service, Southeastern Forest Experiment Station, and Southeastern Area, State and Private Forestry in cooperation with U.S. National Weather Service, National Oceanic and Atmospheric Administration (NOAA). 83 p.
- Sommers, William T.
1978. Conference on Sierra Nevada meteorology. AMS, 19-21 June 1978, South Lake Tahoe, Calif. *Bulletin of the American Meteorological Society* 59:1450-1451.

Insects and Disease

Insect Detection and Evaluation

- Acciavatti, Robert E., John M. Schmid, and Donn B. Cahill.
1978. Spruce beetle survey procedures for assessing current, potential, and past Engelmann spruce mortality in the central and southern Rocky Mountains.

Insects and Disease

- In Forest Insect and Disease Survey Methods Manual Section 3.1.1.* U.S. Department of Agriculture Forest Service, Davis, Calif. 8 p.
- Batzner, Harold O., and Daniel T. Jennings.
1979. Persistence of jack pine budworm *Choristoneura pinus pinus*, (Lepidoptera: Tortricidae) egg mass chorions on jack pine foliage. *Great Lakes Entomologist* 12(2):85-86.
- Batzner, Harold O., and Robert C. Morris.
1978. Forest tent caterpillar. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 9. 8 p. (Revised)
- Blair, Larry M., and William H. Kearby.
1979. Sex differentiation by sternal characters of adults of *Conotrachelus retentus* (Coleoptera: Curculionidae). *Journal of the Kansas Entomological Society* 52(1):226-228.
- Burkot, T. R., and D. M. Benjamin.
1979. The biology and ecology of cottonwood leaf beetle, *Chrysomela scripta*, on tissue cultured hybrid *Aigeiros* (*Populus x euramericana*) subclones in Wisconsin. *Canadian Entomologist* 111:551-556.
- Campbell, Robert W.
1979. Gypsy moth: Forest influence. U.S. Department of Agriculture Information Bulletin 423. 45 p.
- Carolin, V. M., and R. E. Stevens.
1979. Key to small lepidopterous larvae in opening buds and new shoots of Douglas-fir and true firs. U.S. Department of Agriculture Forest Service Research Note RM-365. 4 p.
- Dewey, Jerald E.
1978. You could spot the next tussock moth outbreak! Here's how. U.S. Department of Agriculture Handbook 543. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 11 p.
- Dix, Mary Ellen, and Jacob L. Kovner.
1978. Evaluation of carpenterworms and lilac borer infestations in Great Plains shelterbelts containing green ash. *In Forest Insect and Disease Survey Methods Manual, Section 2.1.4.* U.S. Department of Agriculture Forest Service, Davis, Calif. 6 p.
- Dix, M. E., J. D. Solomon, and R. E. Doolittle.
1979. Influences of pheromone dispenser and trap placement on trapping carpenterworm moths in North Dakota and Mississippi. *Environmental Entomology* 8:322-325.
- Donley, David E.
1978. Distribution of the white oak borer in a mixed oak stand. *In Proceedings 2nd Central Hardwood Forest Conference*, p. 529-539.
- Drooz, A. T., C. A. Doggett, and H. C. Coppel.
1979. The introduced pine sawfly, a defoliator of white pine new to North Carolina. U.S. Department of Agriculture Forest Service Research Note SE-273. 3 p.
- Erickson, Glen W., and Arthur R. Hastings.
1978. Spruce budworm defoliation in Minnesota: 1954-1977. U.S. Department of Agriculture Forest Service Research Note NC-243. 4 p.
- Farris, Marion, and James E. Appleby.
1978. How to identify and control the walnut caterpillar. U.S. Department of Agriculture Forest Service Leaflet, North Central Forest Experiment Station, St. Paul, Minn. 6 p.
- Haverty, M. I.
1979. Soldier production and maintenance of soldier proportions in laboratory experimental groups of *Coptotermes formosanus* Shiraki. *Insectes Sociaux* 26(1):69-84.
- Haverty, Michael I.
1979. Selection of tunneling substrates for laboratory studies with three subterranean termite species. *Sociobiology* 4(3):315-320.
- Haverty, Michael I., and Ralph W. Howard.
1979. Effects of insect growth regulators on subterranean termites: Induction of differentiation, defaunation, and starvation. *Annals of the Entomological Society of America* 72(4):503-508.
- Herrick, Owen W., David A. Gansner, and Paul S. DeBald.
1979. Predicting stand losses from the gypsy moth: An application of automatic interaction detection. *Journal of Forestry* 77(2):91-94.
- Heyd, R. L., and L. F. Wilson (and cooperators).
1979. Guidelines for managing red pine plantations to reduce losses from Saratoga spittlebug. Michigan State University, Department of Entomology Manual 30 p.
- Houseweart, Mark W., Daniel T. Jennings and James C. Rea.
1979. Large capacity pitfall trap. *Entomological News* 90(1):51-54.
- Howard, Ralph W., and Michael I. Haverty.
1978. Defaunation, mortality and soldier differentiation: Concentration effects of methoprene in a termite. *Sociobiology* 3(2):73-77.
- Howard, Ralph W., and Michael I. Haverty.
1979. Comparison of feeding substrates for evaluating effects of insect growth regulators on subterranean termites. *Journal of the Georgia Entomological Society* 14(1):3-7.
- Howard, Ralph W., and Michael I. Haverty.
1979. Termites and a juvenile hormone analogue: A review of methodology and observed effects. *Sociobiology* 4(2):277-285.
- Jacobson, M., and D. T. Jennings.
1978. Attraction of *Rhyacionia neomexicana* (Dyar) to synthetic pheromones. *Journal of Environmental Science and Health* A13(7):429-443.
- Lorimer, Nancy.
1979. Patterns of variation in some quantitative characters of *Malacosoma disstria* (Lepidoptera: Lasiocampidae). *Annals of the Entomological Society of America* 72(2):275-280.
- McManus, Michael L.
1979. Dispersal of forest insects. *In Radar, Insect Population Ecology and Pest*

- Management. C. Vaughn, W. Wolf, and W. Klassen, eds. National Aeronautics and Space Administration Conference Publication 2070. 248 p.
- McManus, Michael L.
 1979. Impacts of airborne insects. Chapter 6: Impact of airborne material on living systems. *In* Aerobiology: The Ecological Systems Approach. R. L. Edmonds, ed. US/IBP Synthesis Series 10. Dowden, Hutchinson and Ross, Inc., Stroudsburg, Pa. p. 183-192.
- McManus, Michael L.
 1979. Insects and other microfauna. Chapter 2: Sources and characteristics of airborne material. *In* Aerobiology: The Ecological Systems Approach. R. L. Edmonds, ed. US/IBP Synthesis Series 10. Dowden, Hutchinson and Ross Inc., Stroudsburg, Pa. p. 54-70.
- Mason, Richard R.
 1978. Synchronous patterns in an outbreak of the Douglas-fir tussock moth. *Environmental Entomology* 7(5):672-675.
- Mason, Richard R.
 1978. Detecting suboutbreak populations of the Douglas-fir tussock moth by sequential sampling of early larvae in the lower tree crown. U.S. Department of Agriculture Forest Service Research Paper PNW-238. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 9 p.
- Miller, William E.
 1979. The genus *Olethreutes*: Identity corrections and description of a new species (Lepidoptera: Tortricidae: Olethreutinae). *Annals of the Entomological Society of America* 72(2):232-236.
- Miller, William E., Robert F. Wambach, and Robert A. Anfang.
 1979. Effect of past European pine shoot moth infestations on volume yield of pole-sized red pine. *Forest Science* 24(4):543-550.
- Mitchell, R. G.
 1979. Dispersal of early instars of the Douglas-fir tussock moth. *Annals of the Entomological Society of America* 72(2):291-297.
- Montgomery, M. E., G. J. Musick, J. B. Polivka, and D. G. Nielsen.
 1979. Modifiable washing-floatation method for separation of insect eggs and larvae from soil. *Journal of Economic Entomology* 72:67-69.
- Moore, G. E., J. F. Taylor, and James Smith.
 1979. Tracing dispersion of southern pine beetles from felled brood trees with phosphorus 32. *Journal of the Georgia Entomological Society* 14(1):83-87.
- Moore, Harry B., and Michael I. Haverty.
 1978. Insects injurious to unfinished and finished wood. *In* Forest Insect Survey and Control. J. A. Rudinsky, ed. Oregon State University, Corvallis. p. 255-343.
- Parker, D. L., and R. E. Stevens.
 1979. Mountain pine beetle infestation characteristics in ponderosa pine, Kaibab Plateau, Arizona, 1975-1977. U.S. Department of Agriculture Forest Service Research Note RM-367. 4 p.
- Rexrode, Charles O.
 1978. Stem deformity in black cherry. U.S. Department of Agriculture Forest Service Research Paper NE-411. 6 p.
- Sower, L. L., G. E. Daterman, C. Sartwell, and H. T. Cory.
 1979. Attractants for the western pine shoot borer, *Eucosma sonomana*, and *Rhyacionia zozana* determined by field screening. *Environmental Entomology* 8(2):265-267.
- Taylor, J. F., and G. E. Moore.
 1978. Evaluation of a technique for tagging southern pine beetles with selected radionuclides. *Journal of Economic Entomology* 71(4):677-679.
- U.S. Department of Agriculture [Neill, Dennis].
 1978. Douglas-fir Tussock Moth Program accomplishments report. U.S. Department of Agriculture Information Bulletin 417. 21 p.
- Valentine, Harry T.
 1978. Estimating defoliation of hardwoods using blade-petiole relations. U.S. Department of Agriculture Forest Service Research Paper NE-405. 5 p.
- Weatherston, J., G. G. Grant, L. M. MacDonald, D. Frech, R. A. Werner, C. C. Leznoff, and T. M. Fyles.
 1978. Attraction of various tortricine moths to blends containing cis-11-tetradecenal. *Journal of Chemical Ecology* 4(5):543-549.
- Wickman, B. E.
 1978. How to time the sampling of tussock moth larvae. U.S. Department of Agriculture Handbook 532. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 6 p.
- Wickman, Boyd E.
 1978. A case study of a Douglas-fir tussock moth outbreak and stand conditions 20 years later. U.S. Department of Agriculture Forest Service Research Paper PNW-244. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 22 p.
- Wilson, Louis F., Jeffrey A. Corneil, and Walter A. Lemmien.
 1979. Susceptibility and injury of some hybrid walnuts by the butternut curculio. *Great Lakes Entomologist* 12(1):17-21.
- Wilson, L. F., and R. D. Averill.
 1978. Redheaded pine sawfly. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 14. 4 p.
- Wilson, L. F., and G. A. Surgeoner.
 1979. Variable oakleaf caterpillar. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 67. 4 p.
- Wilson, L. F.
 1979. The insect collecting tent. *Michigan Entomological Society, Entomology Notes* 13. 2 p.
- Wilson, L. F.
 1978. Saratoga spittlebug. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 3. 4 p.
- Wilson, L. F.
 1979. Insect pests of *Populus* in the Lake States. *In* North American Poplar

Insects and Disease

- Council Annual Meeting Report. p. 75-81.
- Wilson, L.F.
1978. Eastern pinestem borer. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 134. 4 p.
- Wright, L. C., and A. A. Berryman.
1978. Effect of defoliation by the Douglas-fir tussock moth on moisture stress in grand fir and subsequent attack by the fir engraver beetle (Coleoptera: Scolytidae). U.S. Department of Agriculture Forest Service Research Note PNW-323. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 14 p.

Insect Biology

- Beckwith, R. C.
1978. Larval instars of the Douglas-fir tussock moth. U.S. Department of Agriculture Handbook 536. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 14 p.
- Beckwith, R. C., and M. J. Stelzer.
1979. The duration of cold storage and eclosion of the Douglas-fir tussock moth. *Annals of the entomological Society of America* 72(1):158-161.
- Bridges, J. Robert.
1979. An artificial diet for rearing the southern pine beetle, *Dendroctonus frontalis* Zimm. (Coleoptera: Scolytidae). *Journal of the Georgia Entomological Society* 14(3):278-279.
- Browne, L. E., D. L. Wood, W. D. Bedard, R. M. Silverstein, and J. R. West.
1979. Quantitative estimates of the western pine beetle attractive pheromone components, exo-brevicomin, frontalin and myrcene in nature. *Journal of Chemical Ecology* 5(3):397-414.
- Byers, J. A., D. O. Wood, L. E. Browne, R. H. Fish, B. Piatek, and L. B. Hendry.
1979. Relationship between a host plant compound, myrcene and pheromone production in the bark beetle, *Ips paraconfusus*. *Journal of Insect Physiology* 25:477-482.
- Campbell, R. W., L. C. Levitan, E. R. Sobecki, and M. F. Tardiff.
1978. Population dynamics of the gypsy moth: An annotated bibliography. U.S. Department of Agriculture Forest Service General Technical Report NE-48. 124 p.
- Campbell, Robert W., and Lorna C. Youngs.
1978. Douglas-fir tussock moth: An annotated bibliography. U.S. Department of Agriculture Forest Service General Technical Report PNW 68. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 168 p.
- Campbell, Robert W., and Ronald J. Sloan.
1978. Numerical bimodality among North American gypsy moth populations. *Environmental Entomology* 7(5):641-646.
- Cornell, Jeffrey A., and Louis F. Wilson.
1979. Life history of the butternut curculio, *Conotrachelus juglandis* Leconte, in Michigan. *Great Lakes Entomologist* 14(1):13-15.
- Denton, Robert E.
1979. Larch casebearer in western larch forests. U.S. Department of Agriculture Forest Service General Technical Report INT-55. 62 p.
- Denton, Robert E., and Leon J. Theroux.
1979. An annotated bibliography of the larch casebearer (*Coleophora laricella* [Hubner]). U.S. Department of Agriculture Forest Service General Technical Report INT-52. 29 p.
- Fedde, Gerhard F.
1977. The fall cankerworm, a biological maverick. 68th Annual Report of the Northern Nut Growers Association. p. 76-84.
- Fedde, Gerhard F.
1979. Evaluating parasitism of fall cankerworm eggs after emergence. *Journal of the Georgia Entomological Society* 14:24-31.
- Fedde, Vicki H.
1977. Catching up with the fall cankerworm. 68th Annual Report of the Northern Nut Growers Association. p. 69-76.
- Fish, Richard H., Lloyd E. Browne, David L. Wood, and Lawrence B. Hendry.
1979. Pheromone biosynthetic pathways: conversions of deuterium labelled ipsdienol with sexual and enantioselectivity in *Ips paraconfusus* Lanier. *Tetrahedron Letters* 17:1456-1468.
- Furniss, Malcolm M.
1979. An annotated bibliography of the Douglas-fir beetle (*Dendroctonus pseudotsugae* Hopkins). U.S. Department of Agriculture Forest Service General Technical Report INT-48. 40 p.
- Furniss, M. M., T. A. Leege, and R. J. Naskali.
1978. Insects that reduce redstem ceanothus seed production in Idaho. *In Proceedings 1st International Range Congress*. p. 355-358.
- Furniss, M. M., and P. W. Orr.
1978. Douglas-fir beetle. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 5. (Revised.)
- Godwin, Paul A., and Thomas M. Odell.
1979. A laboratory study of the interaction of two parasites of *Lymantria dispar* (Lep.: Lymantriidae): *Blepharipa pratensis* (Dipt.: Tachinidae) and *Brachymeria intermedia* (Hym.: Chalcididae). *Entomophaga* 24(2):79-84.
- Gollob, Sherry Keith.
1978. A laboratory technique for producing egg masses of Douglas-fir tussock moth, *Orgyia pseudotsugata* (McDunnough), for field studies. *Pan-Pacific Entomologist* 54:316-318.
- Houston, D. R., E. J. Parker, and D. Lonsdale.
1979. Beech bark disease: Patterns of spread and development of the initiating agent, *Cryptococcus fagisuga*. *Canadian Journal of Forest Research* p. 336-344.
- Hughes, Kenneth M.

1979. Some interactions of two Baculoviruses of the Douglas-fir tussock moth (Lepidoptera: Lymantriidae). *Canadian Entomologist* 111:521-523.
- Jennings, Daniel T., and Mark W. Houseweart.
1978. Spider preys on spruce budworm egg mass. *Entomological News* 89:183-186.
- Kinn, Donald N.
1979. Three methods of sampling mites phoretic on bark beetles: a comparison. *Canadian Entomologist* 111:491-494.
- Kuntz, J. E., and A. J. Prey.
1978. The etiology, distribution, and impact of butternut canker in Wisconsin. *University of Wisconsin Forest Research Notes* 212. 3 p.
- Leppa, N. C., J. D. Solomon, and W. J. Pons.
1979. Sexing carpenterworm larvae. *Journal of the Georgia Entomological Society* 14(2):144-148.
- Lipkowitz, Kenneth B., Steve Scarpone, Bradford P. Mundy, and William G. Bornmann.
1979. Formation and synthetic utility of dihydro- and dihydrothiapyrans. *Journal of Organic Chemistry* 44(4):486-494.
- Lorimer, Nancy.
1979. Genetics of superoxide dismutase in the forest tent caterpillar and other organisms. *Journal of Heredity* 70:199-204.
- Lorimer, Nancy.
1979. The genetics of melanism in *Malacosoma disstria* Hubner (Lepidoptera: Lasiocampidae). *Genetics* 92:555-561.
- Lynch, Carol B., and Marjorie A. Hoy.
1978. Diapause in the gypsy moth: Environment-specific mode of inheritance. *Genetic Research* 32:129-133.
- McDonald, G. I.
1979. Resistance of Douglas-fir to western spruce budworm: Results of a preliminary progeny test. U.S. Department of Agriculture Forest Service Research Note INT-264. 12 p.
- McManus, Michael L., and Roger T. Zerillo.
1979. The Gypsy moth: An illustrated biography. U.S. Department of Agriculture Home and Garden Bulletin 225. 15 p.
- Mamayev, B. M., and L. N. Medvedev.
1979. Entomological studies in Biosphere Reserves. In *Selection, Management and Utilization of Biosphere Reserves*. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 226-230.
- Miller, M. C., W. A. Chappell, W. Gamble, and J. R. Bridges.
1979. Evaluation of immunodiffusion and immunoelectrophoretic tests using a broad spectrum anti-adult southern pine beetle serum. *Annals of the Entomological Society of America* 72(1):99-104.
- Montgomery, M. E., and L. R. Nault.
1978. Effects of age and wing polymorphism on the sensitivity of *Myzus persicae* to alarm pheromone. *Annals of the Entomological Society of America* 71(5):788-790.
- Moser, J. C.
1979. Parasitengona mites (Acarina: Prostigmata) associated with flying adults of the southern pine beetle. *International Journal of Acarology* 5:24-28.
- Moser, J. C., and T. R. Dell.
1979. Predictors of southern pine beetle flight activity. *Forest Service* 25:217-222.
- Moser, John C., and P. H. Vercammen-Grandjean.
1979. *Megophthrombium gracile* N. sp. and *Diathrombium diaphane* n.g., n.sp. (Acarina: trombidiiac), two larval parasites of adult southern pine beetles. *International Journal of Acarology* 4:18-23.
- Namkoong, G., J. Roberds, L. Nunnally, and H. Thomas.
1979. Isozyme variation in populations of southern pine beetles. *Forest Science* 25:197-203.
- ODell, Thomas M.
1978. Periodicity of eclosion and pre-mating behavior of gypsy moth. *Annals of the Entomological Society of America* 71(5):748-751.
- ODell, Thomas M., and Paul A. Godwin.
1979. Attack behavior of *Parasetigena silvestris* in relation to host density. *Annals of the Entomological Society of America* 72(2):281-286.
- Peterson, Linda J.
1978. Rearing the western tussock moth on artificial diet with application to related species. U.S. Department of Agriculture Forest Service Research Paper PNW-239. 5 p.
- Rexrode, Charles O.
1979. Effects of disbudding on shoot mortality and stem deformity in black cherry. U.S. Department of Agriculture Forest Service Research Note NE-280. 4 p.
- Ryan, R. B.
1979. The larch casebearer (Lepidoptera: Coleophoridae) and its parasites. I. Maintaining year-round availability of larch foliage and the casebearer for parasite rearing. *Canadian Entomologist* 111:471-475.
- Ryan, R. B.
1979. The larch casebearer (Lepidoptera: Coleophoridae) and its parasites. II. The influence of different growth stages of *Larix occidentalis* foliage on casebearer development and survival. *Canadian Entomologist* 111:477-480.
- Schroen, C. K., R. B. Roberts, and J. F. Gustafson.
1978. Nervous system of 6th stage western spruce budworm larvae, *Choristoneura occidentalis* Freeman (Lepidoptera: Tortricidae). *International Journal of Insect Morphology and Embryology* 7(5/6):427-433.
- Solomon, J. D., and M. E. Dix.
1979. Selected bibliography of the clearwing borers (Sesiidae) of the United States and Canada. U.S. Department of Agriculture Forest Service General Technical Report SO-22. 18 p.

Insects and Disease

Solomon, J. D., and W. K. Randall.

1978. Biology and damage of the willow shoot sawfly in willow and cottonwood. *Annals of the Entomological Society of America* 71(4):654-657.

Taylor, Bobby, and William H. Kearby.

1977. Scanning electron microscope studies of the metaunci as secondary sex determination characters of *Conotrachelus retentus* (Say) and *Conotrachelus juglandis* Lec. (Coleoptera: Curculionidae). *Journal of the Kansas Entomological Society* 49(1978):465-468.

Thompson, C. G., and D. W. Scott.

1979. Production and persistence of the nuclear polyhedrosis virus of the Douglas-fir tussock moth, *Orgyia pseudotsugata* (Lepidoptera: Lymantriidae), in the forest ecosystem. *Journal of Invertebrate Pathology* 33:57-65.

Tomescu, Nicolae, Edgar Clark, Jerry White, and Hollis Thomas.

1978. Factors influencing response of *Dendroctonus frontalis* (Coleoptera, Scolytidae) to beetle- and host-produced attractants. *Travaux du Museum d'histoire Naturelle 'Grigore Antipa' XIX*:285-288.

Umetchuruba, C. I., G. J. Griffin, and M. G. Hale.

1978. Effect of sodium azide on survival of *Cylindrocladium microscerotia* and lettuce seeds in soil clods of high and low clay content. *Plant Disease Reporter* 62:1-5.

Vandenberg, J. S., and R. S. Soper.

1979. A bioassay technique for *Entomophthora spaerosperma* on the spruce budworm, *Choristoneura fumiferana*. *Journal of Invertebrate Pathology* 33:148-154.

Wallner, William E.

1979. Induction of diapause in *Rogas indiscretus*, a larval parasite of the gypsy moth, *Lymantria dispar*. *Annals of the Entomological Society of America* 72(3):358-361.

Werner, Richard A.

1978. Overwinter survival of spear-marked black moth, *Rheumaptera hastata* (Lepidoptera: Geometridae), pupae in interior Alaska. *Canadian Entomologist* 110:877-882.

White, J. D., and J. A. Richmond.

1979. Two olfactometers for observing orientation of the southern pine beetle to host odors. *Journal of the Georgia Entomological Society* 14(2):99-106.

Insect Control and Management Strategies

Barger, Jack H.

1979. Landing times on various surfaces for *Scolytus multistriatus* after responding to the pheromone multilure. *Journal of Economic Entomology* 72:399-400.

Bargar, Jack H., William N. Cannon, Jr., and David P. Worley.

1979. Spraying and sanitation practices for Dutch elm disease control. *In* Pest Management Seminar Synopsis 78. National Park Service, Washington, D.C. p. 102-111.

Barry, John W., Robert B. Ekblad, George P. Markin, and Galen C. Trostle, compilers.

1978. Methods for sampling and assessing deposits of insecticidal sprays released over forests. U.S. Department of Agriculture Technical Bulletin 1596. 162 p.

Bart, Jonathan, and Laurie Hunter.

1978. Ecological impacts of forest insecticides: An annotated bibliography. New York Cooperative Wildlife Research Unit, Cornell University, Ithaca, N.Y. 128 p.

Bedard, William D., David L. Wood, and Paul E. Tilden.

1979. Using behavior modifying chemicals to reduce western pine beetle-caused tree mortality and protect trees. *In* Current Topics in Forest Entomology. U.S. Department of Agriculture Forest Service General Technical Report WO-8. p. 159-163.

Birch, Martin C.

1979. Use of pheromone traps to suppress populations of *Scolytus multistriatus* in small isolated Californian communities. *Bulletin of the Entomological Society of America* 25:112-115.

Blumenthal, E. Michael, Robert A. Fusco, and Richard C. Reardon.

1979. Augmentative release of two established parasite species to suppress populations of the gypsy moth. *Journal of Economic Entomology* 72(2):281-288.

Brewer, J. Wayne, and George P. Markin.

1978. Bioassay of acephate-treated foliage on three instars of the Douglas-fir tussock moth. U.S. Department of Agriculture Forest Service Research Paper PNW-241. 7 p.

Brown, Leland R., Clark O. Eads, Carl E. Crisp, and Marion Page.

1979. Control of a Jeffrey pine needleminer by spraying and trunk implantation and resultant acephate residues. *Journal of Economic Entomology* 72(1):51-54.

Bustillo, P., A. E., and A. T. Drooz.

1978. Control biológico del gusano medidor gigante del ciprés. Ministerio de Agricultura, Instituto Colombiano Agropecuario, Regional 4, Antioquia-Choco. Plegable de Divulgación 127. 5 p.

Camosci, D., J. W. Homeyer, and H. M. Mazzone.

1979. Computer analysis for the thermal transition midpoint of DNA. *Computers in Biology and Medicine* 9:155-160.

Crisp, Carl E., and Melvin Look.

1979. Phloem loading and transport of weak acids. *In* Advances in Pesticide Science. Pergamon Press, Oxford. p. 430-437.

- Crookston, Nicholas L., Robert C. Roelke, Donald G. Burnell, and Albert R. Stage.
1979. Evaluation of management alternatives for lodgepole pine stands using a stand projection model. *In* Theory and Practice of Mountain Pine Beetle Management in Lodgepole Pine Forests. Alan A. Berryman, Gene D. Amman, and Ronald W. Stark, eds. University of Idaho, Moscow. p. 114-122.
- Cuthbert, Roy A., and John W. Peacock.
1979. The Forest Service program for mass trapping *Scolytus multistriatus*. Bulletin of the Entomological Society of America 25:105-106.
- Dahlsten, Donald, Nancy X. Norick, John M. Wenz, and Carroll B. Williams, Jr.
1979. Evaluation of sparse Douglas-fir tussock moth populations. California Agriculture 33(5):26-27.
- DeBarr, Gary L.
1978. Southwide tests of carbofuran for seedbug control in pine seed orchards. U.S. Department of Agriculture Forest Service Research Paper SE-185. 24 p.
- DeBarr, Gary L., and John C. Nord.
1978. Contact toxicity of 34 insecticides to second-stage nymphs of *Leptoglossus corculis* (Hemiptera: Coreidae). Canadian Entomologist 110:901-906.
- Dix, Mary Ellen, Arden D., Tagestad, John D. Stein, and Melvin E. McKnight.
1979. Insecticidal reduction of carpenterworm and lilac borer infestations in green ash in North and South Dakota shelterbelts. N. Dakota Farm Research Bimonthly Bulletin 36(5):26-29.
- Drooz, A. T.
1978. Control of a South American defoliator by a North American egg parasite. *In* Minutes 23rd Annual Southern Forest Insect Work Conference. [Blacksburg, Va. Aug. 20-23] p. 11-17.
- Dubois, N. R., H. B. Gunner, and R. A. Daoust.
1978. Effect of chitinase on the peritrophic membrane of *Lymantria dispar* L. (Lepidoptera: Lymantriidae) larvae. Journal of the New York Entomological Society 86:285.
- Fedde, Gerhard F., and Gary L. DeBarr.
1978. Phytotoxicity of azinphosmethyl (Guthion®) to loblolly pine needles and branches. Tree Planters' Notes 29(3):18-21.
- Fedde, G. F., V. H. Fedde, and A. T. Drooz.
1979. Biological control prospects of an egg parasite, *Telenomus alsophilae* Vierck. *In* Current Topics in Forest Entomology. U.S. Department of Agriculture Forest Service General Technical Report WO-8. p. 123-127.
- Furniss, Malcolm M., and R. Ladd Livingston.
1979. Inhibition by ipsenol of pine engraver attraction in northern Idaho. Environmental Entomology 8(2):369-372.
- Gara, R. L., and L. L. Jaeck.
1978. Insect pests of red alder: Potential problems. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 265-269.
- Hard, John, Richard Frye, Donald Carey, and Mary Ellen Dix.
1979. An evaluation of day and night aerial Bt applications for cankerworm control in Siberian elm shelterbelts. U.S. Department of Agriculture Forest Service, Northern Region, State and Private Forestry, Missoula, Mont. 20 p.
- Hard, John S., Stanley Mcso, and Michael J. Haskett.
1979. Testing aerially applied Orthene for control of larch casebearer. U.S. Department of Agriculture Forest Service Research Paper PSW-138. 6 p.
- Hastings, F. L., P. J. Barry, and I. Ragenovich.
1979. Laboratory screening and field bioassays of insecticides for controlling the balsam woolly adelgid in southern Appalachia. U.S. Department of Agriculture Forest Service Research Note SE-279. 4 p.
- Houston, David R.
1979. Classifying forest susceptibility to gypsy moth defoliation. U.S. Department of Agriculture Handbook 542. 23 p.
- Hydorn, Susan B., Charles F. Rabeni, and Daniel T. Jennings.
1979. Effect of forest spraying with acephate insecticide on consumption of spiders by brook trout (*Salvelinus fontinalis*). Canadian Entomologist.
- Hydorn, S. B., D. T. Jennings, and C. F. Rabeni.
1978. Effect of forest spraying with acephate insecticide on consumption of spiders by brook trout (*Salvelinus fontinalis*). American Arachnology 18:12.
- Kaczmarek, F. S. and N. R. Dubois.
1979. A simple technique for collecting chyle from gypsy moth, *Lymantria dispar* L. U.S. Department of Agriculture Forest Service Research Note 281. 3 p.
- Kennedy, Bruce H.
1979. The effect of multilure on parasites of the European elm bark beetle, *Scolytus multistriatus*. Bulletin of the Entomological Society of America 25:116-118.
- Kislow, Cynthia J., Alice S. Jones, and Felton L. Hastings.
1979. Screening modern insecticides for control of black turpentine beetles and *Ips* species. *In* Proceedings Annual Meeting of the Lightwood Research Coordinating Council. Mary H. Esser, ed. p. 65-68.
- Lautenschlager, R. A., J. D. Podgwaite, and H. Rothenbacher.
1978. Effects of field application of gypsy moth *Lymantria dispar* L. (Lepidoptera: Lymantriidae) nucleopolyhedrosis virus (Baculovirus) on birds. Journal of the New York Entomological Society 86:303-304.
- Lautenschlager, R. A., H. Rothenbacher, and J. D. Podgwaite.
1978. Response of small mammals to serial applications of the nucleopolyhedrosis virus of the gypsy moth, *Lymantria dispar*. Environmental Entomology 7:676-684.
- Lautenschlager, R. A., and J. D. Podgwaite.
1979. Passage of nucleopolyhedrosis virus by avian and mammalian predators of the gypsy moth, *Lymantria dispar*. Environmental Entomology 8:210-214.

Insects and Disease

- Lanier, Gerald N.
1979. Protection of elm groves by surrounding them with multilure-baited sticky traps. *Bulletin of the Entomological Society of America* 25:109-111.
- Lewis, Franklin B., and Daniel O. Etter.
1978. Use of pathogens in forest pest management systems: Gypsy moth, *Lymantria dispar* L. In *Microbial Control of Insect Pests: Future Strategies in Pest Management Systems*. G. Allen, G. Ignoffo, and R. Jaques, eds. University of Florida, Gainesville. p. 261-267.
- Lewis, F. B., M. L. McManus, and N. F. Schneeberger.
1979. Guidelines for the use of Gypchek to control the gypsy moth. U.S. Department of Agriculture Forest Service Research Paper NE-441. 9 p.
- Lewis, F. B., and W. D. Rollinson.
1978. Effect of storage on the virulence of the gypsy moth nucleopolyhedrosis inclusion bodies. *Journal of Economic Entomology* 71:719-722.
- Lewis, Frank, Richard C. Reardon, Allan Munson, Harry Hubbard, Noel Schneeberger, and William White.
1979. Observations on the use of Gypcheck. U.S. Department of Agriculture Forest Service Research Paper NE-447. 8 p.
- Look, Melvin.
1978. An improved method for preparing phenoxyacetic acids-1-¹⁴C. *Journal of Labelled Compounds and Radiopharmaceuticals* 15:545.
- Lorio, Peter L., Jr.
1978. Developing stand risk classes for the southern pine beetle. U.S. Department of Agriculture Forest Service Research Paper SO-144. 9 p.
- McFadden, Max W.
[1978.] CANUSA spruce budworm project: Executive Summary of Proceedings Western Forests Conference. Western Forest and Conservation Association, Portland, Oreg. p. 38.
- Maksymiuk, Bohdan.
1979. Determining volume-median diameter. In *Methods for Sampling and Assessing Deposits of Insecticidal Sprays Released Over Forests*. John W. Barry, Robert B. Ekblad, George P. Markin, and Galen C. Trostle, compilers. U.S. Department of Agriculture Technical Bulletin 1596. [In cooperation with USDA Douglas-fir Tussock Moth Program.] p. 41-47.
- Markin, George P.
1979. Western spruce budworm control with Orthene implants, 1978. In *Insecticide and Acaricide Tests* 4:175.
- Markin, George P.
1979. Western spruce budworm control with three dosages of Reldan, 1977. In *Insecticide and Acaricide Tests* 4:175.
- Markin, George P.
1979. Effects of acephate sprayed on western spruce budworm in Idaho, 1976. *Journal of Economic Entomology* 72:414-415.
- Markin, George P., and David R. Johnson.
1979. Western spruce budworm control with Lannate, 1978. In *Insecticide and Acaricide Tests* 4:176.
- Markin, George P., Harold O. Batzer, and J. Wayne Brewer.
1978. Effectiveness of three insecticides applied at two droplet sizes for control of the Douglas-fir tussock moth and western spruce budworm. U.S. Department of Agriculture Forest Service Research Note PNW-321. 7 p.
- Mazzone, H. M., R. A. Lautenschlager, and J. D. Podgwaite.
1979. Viruses as regulator of forest pest insects. Abstracts of Papers IX International Congress on Plant Protection and 71st Annual Meeting of the American Phytopathological Society.
- Merkel, E. P.
1979. Field trial of lindane, phosmet, and fenitrothion to prevent insect-caused mortality of paraquat-treated slash pines. U.S. Department of Agriculture Forest Service Research Note SE-278. 4 p.
- Miller, W. E.
1978. Use of prescribed burning in seed production areas to control red pine cone beetle. *Environmental Entomology* 7:698-702.
- Mitchell, R. G., and J. Neisess.
1979. Aerial treatment of a Douglas-fir needle midge with acephate. *Journal of Economic Entomology* 72(3):447-449.
- Monserud, Robert A.
1979. Combining the stand prognosis and Douglas-fir tussock moth outbreak models. *Proceedings Society of American Foresters* 1978:268-272.
- Moore, Gordon E., Jack Stubbs, and Kenneth W. Outcalt.
1979. Minimizing insecticide requirements in the paraquat induction of resinosis. In *Proceedings 5th Annual Lightwood Research Conference*. [Atlanta, Ga., Jan. 17-18.] p. 49-55.
- Neisess, John.
1979. Evaluation of sticking agents mixed with *Bacillus thuringiensis* for control of Douglas-fir tussock moth. U.S. Department of Agriculture Forest Service Research Paper PNW-254. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 6 p.
- Neisess, John.
1978. Field procedures for deposit sampling. In *Methods for Sampling and Assessing Deposits of Insecticidal Sprays Released Over Forests*. John W. Barry, Robert B. Ekblad, George P. Markin, and Galen C. Trostle, compilers. U.S. Department of Agriculture Technical Bulletin 1596. [In cooperation with USDA Douglas-fir Tussock Moth Program.] p. 22-25.
- Neisess, John.
1978. Dyes for water- and oil-base insecticides. In *Methods for Sampling and Assessing Deposits of Insecticidal Sprays Released Over Forests*. John W. Barry, Robert B. Ekblad, George P. Markin, and Galen C. Trostle, compilers. U.S. Department of Agriculture Technical Bulletin 1596. [In cooperation with USDA Douglas-fir Tussock Moth Program.] p. 17-21.
- Neisess, John.
1978. Collection plates. In *Methods for Sampling and Assessing Deposits of*

- Insecticidal Sprays Released Over Forests. John W. Barry, Robert B. Ekblad, George P. Markin, and Galen C. Trostle, compilers. U.S. Department of Agriculture Technical Bulletin 1596. [In cooperation with USDA Douglas-fir Tussock Moth Program.] p. 101-103.
- Neisess, John.
1978. Assessment of microbial spray deposits. *In* Methods for Sampling and Assessing Deposits of Insecticidal Sprays Released Over Forests. John W. Barry, Robert B. Ekblad, George P. Markin, and Galen C. Trostle, compilers. U.S. Department of Agriculture Technical Bulletin 1596. [In cooperation with USDA Douglas-fir Tussock Moth Program.] p. 99-100.
- Neisess, J. A., and H. B. Hubbard.
1978. Application of microbial insecticides on forests. Entomological Society of America Miscellaneous Publication 10:27-43.
- Oliveria, F. L., and J. D. Solomon.
1979. Control of hackberry butterfly larvae on sugarberry trees, 1978. Insecticide and Acaricide Tests 4:178.
- Orchard, Richard D.
1979. Onboard equipment for monitoring aerial spray application parameters. The World of Agricultural Aviation 20(1):17-26.
- Outealt, Kenneth W., and Jack Stubbs.
1979. Insect attack and tree mortality in paraquat-treated stands at the Savannah River Plant. Proceedings Annual Meeting of the Lightwood Research Conference. p. 56-64.
- Peacock, John W.
1979. ESA Symposium: Behavior-modifying chemicals for elm bark beetles. Bulletin of the Entomological Society of America 25:101.
- Pieper, G. R.
1979. Residue analysis of carbaryl on forest foliage and in stream water using HPLC. Bulletin of Environmental Contamination and Toxicology 22:167-171.
- Podgwaite, J. D.
1979. Diseases of the gypsy moth: How they help to regulate populations. U.S. Department of Agriculture Handbook 539. 14 p.
- Podgwaite, J. D., K. S. Shields, R. T. Zerillo, and R. B. Bruen.
1979. Environmental persistence of the nucleopolyhedrosis virus of the gypsy moth, *Lymantria dispar* L. Environmental Entomology 8:528-536.
- Raimo, B., R. C. Reardon, and J. D. Podgwaite.
1979. Vectoring gypsy moth nuclear polyhedrosis virus by *Apanteles melanoscelus* (Hym: Braconidae). Entomophaga 22:207-215.
- Reardon, R., W. Metterhouse, and R. Balaam.
1979. Impact of aerially applied *Bacillus thuringiensis* and carbaryl on gypsy moth (Lep.: Lymantriidae) and adult parasites. Entomophaga 25(4):305-310.
- Richmond, Charles E., Carl E. Crisp, John E. Larson, and Gustav R. Pieper.
1979. Simple method for assessing acephate and methamidophos residues in plant tissues. Bulletin of Environmental Contamination and Toxicology 22:512-516.
- Richmond, Charles E., Robert D. Averill, and Carl E. Crisp.
1978. Protection of Douglas-fir foliage from western spruce budworm (Lepidoptera: Tortricidae) damage by early applications of acephate (Orthene 75S). Canadian Entomologist 110(11):1127-1132.
- Roberts, Richard.
1978. Chemical analysis of spray deposits. *In* Methods for Sampling and Assessing Deposits of Insecticidal Sprays Released Over Forests. U.S. Department of Agriculture Technical Bulletin 1596. p. 104-106.
- Robertson, Jacqueline L., Robert L. Lyon, Theresa L. Andrews, Emanuel E. Moellman, and Marion Page.
1978. Moellman spray chamber: Versatile research tool for laboratory bioassays. U.S. Department of Agriculture Forest Service Research Note PSW-336. 6 p.
- Stage, Albert R.
1979. Issues related to response models in a decision support system. *In* Proceedings for Integrated Pest Management Colloquium. U.S. Department of Agriculture Forest Service General Technical Report WO-14. p. 57-60.
- Simons, Edward E., Richard C. Reardon, and Mark Tiechurst.
1979. Selected parasites and hyperparasites of the gypsy moth, with keys to adults and immatures. U.S. Department of Agriculture Handbook 540. 59 p.
- Stage, Albert R.
1978. Modeling probability of outbreak occurrence and stand involvement. *In* The Douglas-fir tussock moth: A synthesis. Martha A. Brookes, R. W. Stark, and Robert W. Campbell, eds. U.S. Department of Agriculture Technical Bulletin 1585. p. 59-61.
- Stage, Albert R.
1978. Model of long range stand response. *In* The Douglas-fir tussock moth: A synthesis. Martha H. Brookes, R. W. Stark, and Robert W. Campbell, eds. U.S. Department of Agriculture Technical Bulletin 1585. p. 89-90.
- Stevens, R. E., and W. F. McCambridge.
1978. Protect your pines from mountain pine beetles. U.S. Department of Agriculture Forest Service, Unnumbered Publication 20 p.
- Thomas, H. A., and G. D. Hertel.
1979. Response of pales weevils to natural and synthetic traps under field conditions. Journal of Entomology 72(3):342-345.
- Tilden, P. E., W. D. Bedard, D. L. Wood, K. Q. Lindahl, and P. A. Rauch.
1979. Trapping the western pine beetle at and near a source of synthetic attractive pheromone: Effect of trap size and position. Journal of Chemical Ecology 5(4):519-531.
- U.S. Forest Service.
- [1979.] The spruce budworm program in the West. U.S. Department of Agriculture Forest Service Information Leaflet, Washington, D.C. 8 p.
- Valentine, H. T., and D. R. Houston.
1979. A discriminant function for identifying oak stand susceptibility to gypsy

Insects and Disease

- moth defoliation. *Forest Science* 25(3):468-474.
- Waite, Richard.
1978. Image analyzers for deposit card assessment. *In* Methods for Sampling and Assessing Deposits of Insecticidal Sprays Released Over Forests. John W. Barry, Robert B. Ekblad, George P. Markin, and Galen C. Trostle, compilers. U.S. Department of Agriculture Technical Bulletin 1596. [In cooperation with USDA Douglas-fir Tussock Moth Program.] p. 90-91.
- Waite, Richard.
1978. Spread factor of pesticide spray formulations on cards. *In* Methods for Sampling and Assessing Deposits of Insecticidal Sprays Released Over Forests. John W. Barry, Robert B. Ekblad, George P. Markin, and Galen C. Trostle, compilers. U.S. Department of Agriculture Technical Bulletin 1596. [In cooperation with USDA Douglas-fir Tussock Moth Program.] p. 74-79.
- Wallner, William E.
1978. Host defoliation: A possible determinant of gypsy moth population quality. *In* Proceedings North Central Branch of the Entomological Society of America. p. 51.
- Wallner, William E., and Gerald S. Walton.
1979. Host defoliation: A possible determinant of gypsy moth population quality. *Annals of the Entomological Society of America*. 72(1):62-67.
- Waters, W. E., ed.
1979. Current topics in forest entomology. Selected Papers From the 25th International Congress of Entomology, August 1976, Washington, D.C.
- Weseloh, R. M., W. E. Wallner, and M. A. Hoy.
1979. Possible deleterious effects of releasing *Anastatus kashmirensis*, a facultative hyperparasite of the gypsy moth. *Environmental Entomology* 8(1):174-177.
- White, W. B., H. B. Hubbard, N. F. Schneeberger, and B. J. Raimo.
1978. Technological developments in aerial spraying. U.S. Department of Agriculture Handbook 535. 15 p.
- Wilkinson, R. C., and A. T. Drooz.
1979. Oviposition, fecundity, and parasites of *Neodiprion excitans* from Belize, C.A. *Environmental Entomology* 8(3):503-505.
- Williams, Carroll B., Jr., Patrick J. Shea, and Mark D. McGregor.
1979. Effects of aerially applied mexacarbate on western spruce budworm larvae and their parasites in Montana. U.S. Department of Agriculture Forest Service Research Paper PSW-144. 14 p.
- Williams, Carroll B., Jr., Patrick J. Shea, Bohdan Maksymiuk, John A. Neisess, and David McComb.
1978. Aerial application of mexacarbate and stabilized pyrethrins on Douglas-fir tussock moth populations. U.S. Department of Agriculture Forest Service Research Note PSW-332. 6 p.
- Williams, I. L., Jr.
1979. Insecticide control in Florida: A progress report. Proceedings 6th Annual Lightwood Research Conference. [Atlanta, Ga., Jan. 17-18.] p. 41-47.
- Wright, Kenneth H.
- [n.d.] Results of the USDA Douglas-fir tussock moth research and development program. Executive Summary of Proceedings of 1978 Western Forests Conference. Western Forest and Conservation Association, Portland, Oreg. p. 37.

Disease Detection and Evaluation

- Aho, Paul E., Boyd E. Wickman, and Lee Roe.
1979. Decay in tops killed by Douglas-fir tussock moth in the Blue Mountains. U.S. Department of Agriculture Forest Service Research Paper PNW-250. [In cooperation with USDA Douglas-fir Tussock Moth Program.] 22 p.
- Bega, Robert V.
1979. Heart and root rot fungi associated with deterioration of *Acacia koa* on the island of Hawaii. *Plant Disease Reporter* 63:632-684.
- Beil, James A., and Kenneth J. Kessler, Jr.
1979. Sapstreak disease of sugar maple found in New York State. *Plant Disease Reporter* 63:436.
- Berry, Frederick H.
1978. Decay associated with borer wounds in living oaks. U.S. Department of Agriculture Forest Service Research Note NE-268. 2 p.
- Berry, Frederick H., and Frances F. Lombard.
1978. Basidiomycetes associated with decay of living oak trees. U.S. Department of Agriculture Forest Service Research Paper NE-413. 8 p.
- Dwinell, L. D., and R. L. Anderson.
1979. Pitch canker of pines. U.S. Department of Agriculture Forest Service Pest Alert Bulletin SA-FB/PL. 1 p.
- Gilbertson, Robert L., and Frances F. Lombard.
1979. Wood-rotting basidiomycetes—Itasca State Park Annotated List: Journal of the Minnesota Academy of Science 42:25-36.
- Hinds, Thomas E., and Thomas H. Laurent.
1978. Common aspen diseases found in Alaska. *Plant Disease Reporter* 62(11):972-975.
- Hodges, C. S., T. F. Geary, and C. E. Cordell.
1979. The occurrence of *Diaporthe cubensis* on eucalyptus in Florida, Hawaii, and Puerto Rico. *Plant Disease Reporter* 63(3):216-220.
- Johnson, David W., and Frank G. Hawksworth.
1978. An evaluation survey procedure for proposed thinning projects in lodgepole pine stands infested with dwarf mistletoe. *In* Forest Insect and Disease Survey Methods manual. Section 2.2.4. U.S. Department of Agriculture Forest Service, Davis, Calif. 10 p.
- Juzwik, J., W. T. Nishijima, and T. E. Hinds.
1978. Survey of aspen cankers in Colorado. *Plant Disease Reporter* 62(10):906-910.

- Larsen, Michael J., Frances F. Lombard, and Paul E. Aho.
1979. A new variety of *Phellinus pini* associated with cankers and decay in white fir in white firs in southwestern Oregon and northern California. Canadian Journal of Forest Research 9:31-38.
- Lewis, R., Jr.
1979. Status of oak wilt or "Live oak decline" in Texas. Texas Chapter, International Society of Arboriculturists Newsletter 3:21-22.
- Nicholls, Thomas H., Kenneth J. Kessler, Jr., and James E. Kuntz.
1978. How to identify butternut canker. U.S. Department of Agriculture Forest Service Leaflet. North Central Forest Experiment Station, St. Paul, Minn. 5 p.
- Phelps, W. R., A. G. Kais, and T. H. Nicholls.
1978. Brown-spot needle blight of pines. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 44. 8 p.
- Phelps, W. R., and Joe P. McClure.
1978. Incidence and impact of damage to the timber resource in Virginia. [Unnumbered report.] U.S. Department of Agriculture Forest Service, Southeastern Area, State and Private Forestry, Atlanta, Ga. 16 p.
- Robbins, K., M. Ostry, and A. Prey.
1979. Leaf bronzing of aspen. U.S. Department of Agriculture Forest Service Pest Alert Bulletin NC-FB/U-5. 1 p.
- Skilling, Darroll D., and James T. O'Brien.
1979. How to identify Scleroderma canker. (Revised.) U.S. Department of Agriculture Forest Service, North Central Forest Experiment Station, St. Paul, Minn. 5 p.
- Thies, Walter G.
1979. Frequency of pine stump colonization by *Fomes annosus* on the Fremont National Forest. Plant Disease Reporter 63(7):542-545.
- Thies, Walter G., and Jill M. Hoopes.
1979. Computer mapping of laminated root rot epicenters. In Forest Insect and Disease Survey Methods. U.S. Department of Agriculture Forest Service, Washington, D.C. p. 3.2.1-3.2.7.
- Thies, Walter G., Kenelm W. Russell, and Larry C. Weir.
1979. Rhizina root rot of little consequence in Washington and Oregon. Journal of Forestry 77(1):22-24.
- aspen. Phytopathology 69:476-479.
- Anderson, Ralph L., and Neil A. Anderson.
1978. Alternate host of jack pine needle rust in northern Minnesota. U.S. Department of Agriculture Forest Service Research Note NC-237. 3 p.
- Bega, Robert V.
1979. The effect of six mycorrhizal fungi on nursery growth of five species of conifers. In Proceedings 4th North American Conference on Mycorrhizae. [June 24-28, Fort Collins, Colo.] p. 14.
- Bega, Robert V.
1978. Introduction. In Diseases of Pacific Coast Conifers. U.S. Department of Agriculture Handbook 521. p. 1-4.
- Bega, Robert V.
1978. Glossary and index. In Diseases of Pacific Coast Conifers. U.S. Department of Agriculture Handbook 521. p. 189-206.
- Bega, Robert V., tech. coord.
1978. Diseases of Pacific Coast Conifers. U.S. Department of Agriculture Handbook 521. 206 p.
- Bega, Robert V.
1978. Rusts. Chapter 4. In Diseases of Pacific Coast Conifers. U.S. Department of Agriculture Handbook 521. p. 91-120.
- Carpenter, L. R., E. E. Nelson, and J. L. Stewart.
1979. Development of dwarf mistletoe infections on western hemlock in coastal Oregon. Forest Science 25(2):237-243.
- Collins, W. M., A. L. Shigo, and T. P. McGrail.
1978. RSV-induced tumors in chickens: Resistance to pulsed current in terminal and non-terminal types. Poultry Science 57:1478-1481.
- Crawford, Daniel J., and Frank G. Hawksworth.
1979. Flavonoid chemistry of *Arceuthobium* (Viscaceae). Brittonia 31:212-216.
- Davis, Weston, Alex Shigo, and Richard Weyrick.
1979. Seasonal changes in electrical resistance of inner bark in red oak, red maple, and eastern white pine. Forest Science 25:282-286.
- Dixon, Gary E., and Frank G. Hawksworth.
1979. A spread and intensification model for southwestern dwarf mistletoe in ponderosa pine. Forest Science 25:43-52.
- Eckstein, Dieter, Walter Licse, and Alex L. Shigo.
1979. Relationship of wood structure to compartmentalization of discolored wood in hybrid poplar. Canadian Journal of Forest Research 9:205-210.
- Fisher, J. T., C. P. P. Reid, and F. G. Hawksworth.
1979. Water relations of dwarf mistletoes (*Arceuthobium*). In Proceedings 2nd International Symposium on Parasitic Weeds. L. J. Musselman, L. J. Worsham, and R. E. Eplee, eds. North Carolina State University, Raleigh. p. 34-37.
- Gardner, D. E., T. Miller, and E. G. Kuhlman.
1979. *Tuberculina maxima* on *uromyces koeae* causes a reevaluation of the life cycle of the rust. Mycologia 71(4):848-852.

Disease Biology

- Aho, Paul E., Kermit Cromack, Jr., Ching Yan Li, and Anita Hutchins.
1979. Occurrence of calcium oxalate and oxalate-utilizing bacteria in *Echinodontium tinctorum* decay zones in *Abies concolor*. U.S. Department of Agriculture Forest Service Research Note PNW-328. 8 p.
- Anderson, Neil A., Michael E. Ostry, and Gerald W. Anderson.
1979. Insect wounds as infection sites for *Hypoxylon mammatum* on trembling

Insects and Disease

- Garrett, P. W., W. K. Randall, A. L. Shigo and W. C. Shortle.
1979. Inheritance of compartmentalization of wounds in sweetgum (*Liquidambar styraciflua* L.) and eastern cottonwood (*Populus deltoides* Bartr.) U.S. Department of Agriculture Forest Service Research Paper NE-443. 4 p.
- Hawksworth, F. G.
1979. Mistletoes and their role in North American Forestry. In Proceedings 2nd International Symposium on Parasitic Weeds. L. J. Musselman, L. J. Worsham, and R. E. Eplee, eds. North Carolina State University, Raleigh. p. 13-23.
- Hawksworth, Frank G., and Robert L. Mathiasen.
1978. Hosts of juniper mistletoe at Walnut Canyon National Monument, Arizona. Great Basin Naturalist 38:89.
- Houston, D. R., E. J. Parker, R. Perrin, and K. Lang.
1979. Beech bark disease: A comparison of the disease in North America, Great Britain, France and Germany. European Journal of Forest Pathology 9(3-4):199-211.
- Johnson, D. W., and J. E. Kuntz.
1978. Imperfect state of *Eutypella parasitica* in culture. Canadian Journal of Botany 56:1518-1525.
- Johnson, D. W., and J. E. Kuntz.
1979. *Eutypella parasitica*: Ascospore germination and mycelial growth. Canadian Journal of Botany 57:624-628.
- Johnson, David W., and James E. Kuntz.
1979. Eutypella canker of maple: Ascospore discharge and dissemination. Phytopathology 69:130-135.
- Kliejunas, J. T.
1979. Effects of *Phytophthora cinnamoni* on some endemic and exotic plant species in Hawaii in relation to soil type. Plant Disease Reporter 63(7):602-606.
- Kuhlman, E. G., L. D. Dwinell, P. F. Nelson, and C. Booth.
1978. Characterization of the *Fusarium* causing pitch canker of southern pines. Mycologia 70:1131-1143.
- Lewis, Robert, Jr.
1978. Influence of infection court, host vigor and culture filtrates on canker production by *Botryodiplodia theobromae* conidia in sycamore. Plant Disease Reporter 62(11):934-937.
- Li, C. Y., and Jon J. Kabara.
1978. Effects of lauricidin on *Fomes annosus* and *Phellinus weirii*. In Symposium on Pharmacological Effects of Lipids, Chapter 5. American Oil Chemists' Society Monograph 5:45-50.
- McCracken, F. I.
1978. Canker-rots in southern hardwoods. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 33. (Revised.) 4 p.
- McCracken, F. I.
1979. Sycamore diseases. Proceedings of the Society of American Foresters 1978:493-496.
- MacKenzie, M., and C. G. Shaw III.
1977. Spatial relationships between *Armillaria* root-rot of *Pinus radiata* seedlings and the stumps of indigenous trees. New Zealand Journal of Forestry Science 7(3):374-383.
- Minter, D. W., J. M. Staley, and C. S. Millar.
1978. Four species of *Lophodermium* on *Pinus sylvestris*. Transactions of the British Bryological Society 71(2):295-301.
- Mulhern, J., W. C. Shortle, and A. L. Shigo.
1979. Barrier zones in red maple: An optical and scanning microscope examination. Forest Science 25:311-316.
- Nair, V. M. G., C. J. Kostichka, and J. E. Kuntz.
1979. *Sirococcus clavignenti-juglandacearum*: An undescribed species causing canker on butternut. Mycologia 71:641-646.
- Nelson, E. E., E. M. Hansen, C. Y. Li, and J. M. Trappe.
1978. The role of red alder in reducing losses from laminated root rot. In Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 273-282.
- Nelson, Earl E.
[n.d.] Forest diseases as determinants of stand composition and forest succession. Proceedings Annual Western International Forest Disease Work Conference [October 1977, Victoria, B.C.] p. 13-17.
- Nayer, R., and C. E. Seliskar.
1978. Mycoplasma like organisms associated with yellow leaf disease of *Areca catechu* L. European Journal of Forest Pathology 8:125-128.
- Ostry, Michael E., and Thomas H. Nicholls.
1979. Bird vectors of black spruce dwarf mistletoe. Loon 51(1):15-19.
- Ostry, Michael, and Gerald W. Anderson.
1979. *Hypoxylon* canker incidence on pruned and unpruned aspen. Canadian Journal of Forest Research 9(2):290-291.
- Papp, Richard, John T. Kliejunas, Richard S. Smith, and Robert F. Scharpf.
1979. Association of *Plagithmysus bilineatus* (Coleoptera: Cerambycidae) and *Phytophthora cinnamoni* with the decline of 'Ohi'a-lehua forests on the island of Hawaii. Forest Science 25(1):187-196.
- Parker, J.
1979. Organic acids in tree barks. Plant Physiology Supplement 63.
- Parker, J.
1979. Effects of defoliation and root height above a water table on some red oak root metabolites. Journal of the American Society for Horticultural Science 104:417-421.
- Parker, J.
1979. Seasonal variation in photosynthesis in black oak twigs. Photosynthetica 12:423-427.
- Peterson, Glenn W., and James A. Walla.

1978. Development of *Dothistroma pini* on and within needles of Austrian and ponderosa pines in eastern Nebraska. *Phytopathology* 68:1422-1430.
- Player, Glade.
 1979. Pollination and wind dispersal of pollen in *Arceuthobium*. *Ecological Monographs* 49:73-87.
- Ploetz, R. C., and R. J. Green, Jr.
 1978. The root rot of black walnut seedlings caused by *Phytophthora citricola*. *Proceedings Indiana Academy of Science* 87(1977):105-112.
- Powers, H. R., Jr., and L. D. Dwinell.
 1978. Virulence of *Cronartium fusiforme* stable after 25 years. *Plant Disease Reporter* 62:877-879.
- Riffle, Jerry W., and Michael G. Boosalis.
 1979. Mycorrhizae—good for our trees. *University of Nebraska Farm, Ranch and Home Quarterly* 25(4):8-10.
- Riffle, Jerry W., and Richard S. Smith, Jr.
 1979. Nursery diseases of western conifers. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 157. 8 p.
- Roth, D. A., and G. J. Griffin.
 1977. Low temperature induces decreased germinability of *Cylindrocladium microscerotia*. *Proceedings American Phytopathological Society* 4:158.
- Roth, Don A., Gary J. Griffin, and Philip J. Graham.
 1979. Low temperature induces decreased germinability of *Cylindrocladium microscerotia*. *Canadian Journal of Microbiology* 25(2):157-162.
- Rowan, S. J.
 1978. Number of cotyledons affects susceptibility to fusiform rust within, but not among, families of slash and loblolly pine. *Plant Disease Reporter* 62:731-734.
- Scharpf, Robert F.
 1978. Cankers, diebacks, and galls. Chapter 3. *In Diseases of Pacific Coast Conifers*. U.S. Department of Agriculture Handbook 521. p. 69-90.
- Scharpf, Robert F.
 1978. Mistletoes. Chapter 5. *In Diseases of Pacific Coast Conifers*. U.S. Department of Agriculture Handbook 521. p. 121-141.
- Scharpf, Robert F.
 1978. Rots. Chapter 7. *In Diseases of Pacific Coast Conifers*. U.S. Department of Agriculture Handbook 521. p. 157-188.
- Schmitt, Dan, Peter W. Garrett, and Alex L. Shigo.
 1978. Decay resistant hardwoods? You bet! *Northern Logger and Timber Processor* 27:20-31.
- Shaw, C. G., III, and S. Calderon.
 1977. Impact of *Armillaria* root rot in plantations of *Pinus radiata* established on sites converted from indigenous forest. *New Zealand Journal of Forest Science* 7(3):359-373.
- Shigo, Alex L.
 1979. Tree decay: An expanded concept. U.S. Department of Agriculture Information Bulletin 419. 73 p.
- Shigo, Alex L.
 1979. Decay resistant trees. *In* 26th Northeastern Tree Improvement Conference Proceedings. p. 64-72.
- Shigo, Alex L.
 1978. Dealing with decay factors in our urban forests. *Weeds, Trees, and Turf* 17(11):14-18.
- Shigo, Alex L.
 1978. Diagnosing internal wood rot. *Proceedings Midwestern Chapter International Shade Tree Conference* vol. 33. p. 58-64.
- Shigo, Alex L.
 1978. Protecting our beautiful trees. *News and Views* vol. XX, November, p. 2-3.
- Shigo, Alex L.
 1978. Let's save our trees. *News and Views* vol. XX, September. p. 4-5.
- Shigo, Alex L., E. Allen McGinnes, Jr., David T. Funk, and Nelson Rogers.
 1979. Internal defects associated with pruned and nonpruned branch stubs in black walnut. U.S. Department of Agriculture Forest Service Research Paper NE-440. 27 p.
- Shigo, Alex L., Walter E. Money, and Dale I. Dodds.
 1978. Mauguet tree injections: Some internal effects of the wounds. *Arboricultural Journal* vol. 3. p. 308-314.
- Shortle, Walter C.
 1979. Compartmentalization of decay in red maple and hybrid poplar trees. *Phytopathology* 69:410-413.
- Shortle, W. C., J. A. Menge, and E. B. Cowling.
 1978. Interaction of bacteria, decay fungi, and live sapwood in discoloration and decay of trees. *European Journal of Forest Pathology* 8:293-300.
- Shortle, Walter C., and Alex L. Shigo.
 1978. Effect of plastic wrap on wound closure and internal compartmentalization of discolored and decayed wood in red maple. *Plant Disease Reporter* 62:999-1002.
- Skilling, Darroll D.
 1979. *Scleroderris* canker threatens pines in the Northeast. *In* 26th Northeastern Forest Tree Improvement Conference Proceedings p. 58-61.
- Skilling, Darroll D.
 1979. The development of *Scleroderris* canker in the U.S. *In* North America's Forests: Gateway to Opportunity. *Proceedings 1978 Joint Convention of the Society of American Foresters and the Canadian Institute of Forestry*. [St. Louis, Mo., October 1978.] p. 301-303.
- Walkinshaw, C. H.
 1978. Cell necrosis and fungus content in fusiform rust-infected loblolly, longleaf, and slash pine seedlings. *Phytopathology* 68:1705-1710.
- Walters, Russell S., and Alex L. Shigo.
 1978. Tapholes in sugar maples: What happens in the tree. U.S. Department of

Insects and Disease

- Agriculture Forest Service General Technical Report NE-47. 11 p.
- Wargo, Philip M.
1978. Judging vigor of deciduous hardwoods. U.S. Department of Agriculture Information Bulletin 418. 15 p.
- Wargo, Philip M.
1979. Starch storage and radial growth in woody roots of sugar maple. Canadian Journal of Forest Research 9:49-56.

Disease Control and Management Strategies

- Aho, Paul E.
[n.d.] Thinning second-growth stands. In Proceedings Annual Western International Forest Disease Work Conference. [October 1977, Victoria, B.C.] p. 39-43.
- Aho, Paul E.
[n.d.] Minimizing decay in managed second-growth grand fir stands. In Proceedings R-6 Silviculture Workshop, October 1978, Colville National Forest. U.S. Department of Agriculture Forest Service Pacific Northwest Region, Portland, Oreg. p. 168-176.
- Aho, Paul E., and Lewis F. Roth.
1978. Defect estimation for white fir in the Rogue River National Forest. U.S. Department of Agriculture Forest Service Research Paper PNW-240. 18 p.
- Blanchette, Robert A., and C. Gardner Shaw.
1978. Associations among bacteria, yeasts, and basidiomycetes during wood decay. Phytopathology 68:631-637.
- Blanchette, Robert A., and C. Gardner Shaw.
1978. Management of forest residues for rapid decay. Canadian Journal of Botany 56:2904-2909.
- Blanchette, R. A., C. G. Shaw, and A. L. Cohen.
1978. A SEM study of the effects of bacteria and yeasts on wood decay by brown- and white-rot fungi. Scanning Electron Microscopy 11:61-68.
- Driver, Charles H.
1978. Red alder management and diseases. In Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 271-272.
- Gibbs, J. N.
1978. Oak wilt. Arboricultural Journal 3(5):351-356.
- Gregory, Garold F., and James R. Allison.
1979. The comparative effectiveness of pruning plus injection of trunk and/or limb for therapy of Dutch elm disease in American elms. Journal of Arboriculture 5:1-4.
- Gurusiddaiah, S., Robert A. Blanchette, and C. Gardner Shaw.
1978. A modified technique for the determination of fungal mass in decayed wood. Canadian Journal of Forest Research 8:486-490.
- Harvey, A. E.
1979. Pine tissue affected by blister rust despite dialysis barrier between the organisms in culture. U.S. Department of Agriculture Forest Service Research Note INT-265. 7 p.
- Jurgensen, M. F., M. J. Larsen, and A. E. Harvey.
1979. Forest soil biology-timber harvesting relationships. U.S. Department of Agriculture Forest Service General Technical Report INT-69. 12 p.
- Knutson, Donald M.
1978. Biological and chemical control of dwarf mistletoe. In Proceedings of the Symposium on Dwarf Mistletoe Control Through Forest Management. U.S. Department of Agriculture Forest Service General Technical Report PSW-31. p. 151-153.
- Larsen, Michael J., Martin F. Jurgensen, and Alan E. Harvey.
1978. N₂ fixation associated with wood decayed by some common fungi in western Montana. Canadian Journal of Forest Research 8(3):341-345.
- Larsen, M. J., M. F. Jurgensen, A. E. Harvey, and J. C. Ward.
1978. Dinitrogen fixation associated with sporophores of *Fomitopsis pinicola*, *Fomes fomentarius*, and *Echinodontium tinctorium*. Mycologia 70(6):1217-1222.
- Pawuk, William H.
1979. *Pythium* control for container-grown longleaf pine seedlings. Tree Planters' Notes 30(3):7-10.
- MacDonald, William L., Franklin C. Cech, John Luchok, and Clay Smith, eds.
1979. Proceedings of American chestnut symposium. January 1978. West Virginia University, Morgantown. 122 p.
- Matthews, F. R., H. R. Powers, Jr. and L. D. Dwinell.
1979. Composite vs. single-gall inocula for testing resistance of loblolly pine to fusiform rust. Plant Disease Reporter 63:454-456.
- McCracken, F. I., and E. C. Burkhardt.
1979. Limiting canker disease losses of sycamore in the Midsouth. Southern Journal of Applied Forestry 3(1):26-28.
- Neely, Dan.
1978. Nitrogen fertilization reduces the severity of walnut anthracnose. Phytopathology News 12(8):90.
- Nicholls, Thomas H.
1979. Scleroderris canker in conifers. American Christmas Tree Journal 23(1):23-26.
- Peterson, Glenn W., and J. Otta.
1979. Controlling Phomopsis blight of junipers. American Nurseryman 149(5):15, 75, 78, 80-82.
- Phelps, W. R., A. G. Kais, and T. H. Nicholls.
1978. Brown-spot needle blight of pines. U.S. Department of Agriculture Forest Service, Forest Insect and Disease Leaflet 44. 8 p.
- Powers, Jr., H. R., and B. J. Zobel.

1978. Progeny of specific loblolly pines clones vary in fusiform rust resistance according to seed orchard of origin. *Forest Science* 24:227-230.
- Rexrode, Charles O.
1978. Movement of oak wilt fungus in a tracer solution under pressure through root grafts. *Plant Disease Reporter* 62:982-984.
- Rothwell, Frederick M., and James M. Trappe.
1979. *Acaulospora birticulata* sp. nov. *Mycotaxon* 8(2):471-475.
- Rowan, S. J.
1979. An evaluation of thirteen adjuvants in combination with ferbam for control of fusiform rust on pine seedlings. *Plant Disease Reporter* 63:507-509.
- Rowan, S. J.
1979. Forest nursery disease management. *In* Proceedings of the 1978 Southern Nursery Conference, p. 155.
- Rowan, S. J.
1979. Mechanical root injury lowers seedling survival more than severe black root-rot. *In* Proceedings of the 1978 Southern Nursery Conference, p. 156-157.
- Rowan, S. J.
1979. Spray adjuvants (spreader-stickers, surfactants) and fusiform rust control. *In* Proceedings of the 1978 Southern Nursery Conference, p. 157-158.
- Rowan, S. J.
1979. Systemic fungicide controls fusiform rust of pine seedlings in greenhouse but not in nursery tests. *Plant Disease Reporter* 63:270-272.
- Rowan, S. J.
1978. Trellan injury of loblolly pine seedlings. *Tree Planters' Notes* 29:25-26.
- Rowan, S. J., and W. C. Bryan.
1979. Controlling southern blight of bicolor lespedeza. *Tree Planters' Notes* 30:31-35.
- Shaw, C. G., III, and L. F. Roth.
1978. Control of Armillaria root rot in managed coniferous forests—a literature review. *European Journal of Forest Pathology* 8:163-174.
- Skilling, D. D.
1978. How to identify and control Rhizosphaera needlecast. (Revised.) U.S. Department of Agriculture Forest Service, North Central Forest Experiment Station, St. Paul, Minn. 3 p.
- Skilling, D. D., J. T. O'Brien, and J. A. Beil.
1979. Scleroderris canker of northern conifers. U.S. Department of Agriculture, Forest Service, Forest Insect and Disease Leaflet 130. 7 p.
- Wellner, C. A.
1978. Management problems resulting from mountain pine beetles in lodgepole pine forests. *In* Theory and Practice of Mountain Pine Beetle Management in Lodgepole Pine Forests. Alan A. Berryman, Gene D. Amman, and Ronald W. Stark, eds. University of Idaho Forest, Wildlife, and Range Experiment Station, Moscow, p. 9-15.

Wicker, Ed. F.

1978. Refinement and quantitation of data for regulating dwarf mistletoe populations: an ecosystem approach. *In* Symposium on Dwarf Mistletoe Control through Forest Management [Berkeley, Calif., April 11-13.]
- Wicker, E. F.
1979. Oak wilt: A broad perspective. *In* Proceedings 7th Annual Hardwood Symposium, Hardwood Research Council, p. 48-51.
- Williams, Ralph E., and C. D. Leaphart.
1978. A system using aerial photography to estimate area of root disease centers in forests. *Canadian Journal of Forest Research* 8(2):214-219.

Air Pollution

- Cowling, Ellis B., and Leon S. Dochinger.
1979. Effects of acid rain on crops and trees. *In* Acid rain. American Society of Civil Engineers Environmental Impact Analysis p. 21-54.
- Dochinger, Leon S., Keith F. Jensen, and Roy Patton.
1978. Effects of air pollution on trees. *In* Urban Foresters Notebook. U.S. Department of Agriculture Forest Service General Technical Report NE-49, p. 67-69.
- Dochinger, Leon S., Keith F. Jensen, and Roy Patton.
1978. Trees and woodlands reduce air pollution. *In* Urban Foresters Notebook. Silas Little, ed. U.S. Department of Agriculture Forest Service General Technical Report NE-49, p. 21-24.
- Dochinger, Leon S., and Alden M. Townsends.
1979. Effects of roadside deicer salts and ozone on red maple progenies. *Environmental Pollution* 19:229-237.
- Force, JoEllen.
1978. Research planning in the Forest Service to assess the impacts of air pollutants on forest resources. The Ohio State University Report AS-1-105 (EES-511X-3). 258 p.
- Gasilina, N. K., F. Y. Rovinsky, and L. I. Boltneva.
1979. Integrated monitoring of environmental pollution at Biosphere Reserves (organization and methods). *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82, p. 289-294.
- Glass, Norman R., Gene E. Likens, and Leon S. Dochinger.
1978. The ecological effects of atmospheric deposition. Environmental Protection Agency ORD Decision Series, Energy/Environment III. EPA-600/9-78-022, p. 113-119.
- Izrael, Y. A., L. M. Filippova, and F. Y. Rovinsky.
1979. The influence of pollution on the biosphere and its monitoring based on Biosphere Reserves. *In* Selection, Management and Utilization of Biosphere

Insects and Disease

- Reserves, Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 160-164.
- Kickert, R. N., and P. R. Miller.
1978. Responses of ecological systems. *In* Handbook of Methodology for Assessment of Air Pollution Effects on Vegetation. W. W. Heck, S. Krupa, and S. Langan, eds. Air Pollution Control Association Information Report TE-2. p. 14-1 to 14-45.
- Krause, C. R., and K. F. Jensen.
1979. Surface changes on hybrid poplar leaves exposed to ozone and sulfur dioxide. *Scanning Electron Microscopy* 32:77-80.
- Miller, P. R., J. N. Pitts, Jr., and A. N. Winer.
1979. Factors in summer ozone production in the San Francisco air basin. *Science* 203:81.
- Morgan, G. B., G. B. Wiersma, and D. S. Barth.
1979. Monitoring on Biosphere Reserves for regional background levels of pollutants. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 90-104.
- Romero, Anthony E., Roy M. Buchan, and Douglas G. Fox.
1979. A study of air pollution from fireplace emissions at Vail Ski Resort. *Journal of Environmental Health* 41(2):117-119.
- Varshney, C. K., and L. S. Dochinger.
1979. Acid rain: An emerging environmental problem. *Current Science* 48:337-340.
1979. Comparing ammoniation and water-repellent preservation treatments for protecting wood window units from decay. *Forest Products Journal* 29(2):23-28.
- Beal, Raymond H., and John D. Bultman.
1978. Resistance of polymeric cable coverings to subterranean termite attack after eight years of field testing in the tropics. *International Biodeterioration Bulletin* 14(4):123-127.
- Beal, Raymond H., Terry L. Amburgey, John D. Bultman, and Donald R. Roberts.
1979. Resistance of wood from paraquat-treated southern pines to subterranean termites, decay fungi, and marine borers. *Forest Products Journal* 29(4):35-38.
- Bultman, J. D., R. H. Beal, and F. F. K. Ampong.
1978. The natural resistance of Ghanaian woods to *Coptotermes formosanus* Shiraki in a force-feeding situation. Naval Research Laboratory NRL Report 8272. 19p.
- Bultman, John D., Raymond H. Beal, and Frederick F. K. Ampong.
1979. Natural resistance of some tropical African woods to *Coptotermes formosanus* Shiraki. *Forest Products Journal* 29(6):46-51.
- Carter, Fairie Lyn, Charles A. Stringer, and Michael A. Taras.
1979. Termiticidal properties of slash pine wood related to position in the tree. *Wood Science* 12(1):46-51.
- Esenher, G. R., and R. H. Beal.
1978. Insecticidal baits on field plot perimeters suppress *Reticulitermes*. *Journal of Economic Entomology* 71:604-607.
- Haverty, M. I.
1979. Soldier production and maintenance of soldier proportions in laboratory experimental groups of *Coptotermes formosanus* Shiraki. *Insectes Sociaux* 26(1):69-84.
- Haverty, Michael I., and Ralph W. Howard.
1979. Effects of insect growth regulators on subterranean termites: Induction of differentiation, defaunation, and starvation. *Annals of the Entomological Society of America* 72:503-508.
- Howard, Ralph W.
1979. Mating behavior of *Trichopsenius frosti*: Physogastric *Reticulitermes flavipes* queens serve as sexual aggregation centers. *Annals of the Entomological Society of America* 72:127-129.
- Howard, Ralph W., and Michael I. Haverty.
1978. Defaunation, mortality and soldier differentiation: Concentration effects of methoprene in a termite. *Sociobiology* 3(2):73-77.
- Howard, Ralph W., and Michael I. Haverty.
1979. Comparison of feeding substrates for evaluating effects of insect growth regulators on subterranean termites. *Journal of the Georgia Entomological Society* 14(1):3-7.
- Howard, Ralph W., and David H. Kistner.
1978. The eggs of *Trichopsenius depressus* and *T. frosti* (Coleoptera: Staphy-

Wood Products Organisms

- Amburgey, Terry L.
1978. Don't be 'fuehish' with wood decay. *Forests and People* 28(3):37-40.
- Amburgey, Terry L.
1978. Prevent wood decay fungi. *Pest Control* 46(11):32, 37-40.
- Amburgey, Terry L.
1978. Preventing discoloration of asphalt roofing shingles and fiberglass panels. *Forest Products Journal* 28(9):53-55.
- Amburgey, Terry L.
1978. Soil effect on soil-block wood decay tests. *Material und Organismen* 13(4):245-251.
- Amburgey, Terry L.
1979. Minimizing degrade in wood inventories. *Southern Lumberman* 238(2945):13-15.
- Amburgey, Terry L., and Raymond H. Beal.
1978. Wood can last for centuries. *Pest Control* 46(11):32, 37.
- Amburgey, Terry L., and Bruce R. Johnson.

- linidae Trichopseniinae) with a comparison to those of their host termites *Reticulitermes virginicus* and *R. flavipes* (Isoptera: Rhinotermitidae, Heterotermitinae). *Sociobiology* 3(2):99-106.
- La Fage, Jeffery P., and Lonnie H. Williams.
1979. Lyctid beetles: Recognition prevention, control. Louisiana Agriculture Experiment Station and Louisiana State University Circular 106. 12 p.
- Lewis, David L., Gene Michaels, Donald B. Hays, William Campbell, and Virgil Smith.
1978. Evaluation of the anti-termitic activity of hydroxyquinoline and naphthol derivative formulations using *Reticulitermes* in laboratory and field experiments. *Journal of Economic Entomology* 71(5):818-821.
- Williams, L. H., and H. M. Barnes.
1979. How *Xyletinus peltatus* beetles affect strength of southern pine floor joists. *Environmental Entomology* 8(2):304-306.
- Williams, Lonnie H., H. Michael Barnes, and Harry O. Yates, III.
1979. Beetle (*Xyletinus peltatus*) and parasite exit hole densities and beetle larval populations in southern pine floor joists. *Environmental Entomology* 8(2):300-303.
- Williams, Lonnie H., and Richard V. Smythe.
1978. Estimated losses caused by wood products insects during 1970 for single-family dwellings in 11 southern states. U.S. Department of Agriculture Forest Service Research Paper SO-145. 10 p.
- Williams, Lonnie H., and Richard V. Smythe.
1978. Wood-destroying beetle treatment incidence in Arkansas and Georgia during 1962 and 1967 with estimated losses caused by beetles for 11 Southern States during 1970. U.S. Department of Agriculture Forest Service SO-143. 8 p.

Products and Engineering

Improving Forest Engineering Systems

- Bergstrom, Dorothy.
1978. A new yarder for small timber. *In* Forestry research: what's new in the West. U.S. Department of Agriculture Forest Service, Fort Collins, Colo. p. 8-11.
- Billar, Cleveland J.
1979. Intermediate supports benefit eastern cable logging systems. *Forest Industries* 106(9):48-49.
- Bradley, Dennis P., and Sharon A. Winsauer.
1978. Estimating forest economic potentials by combining harvest simulation and forest inventory. *In* Simulation Techniques and Forest Operations, Planning, and Control. Working Party S 3.04.01, International Union of

- Forest Research Organizations Proceedings, Forest Technology and Forest Products, Agricultural University, Netherlands, Wageningen. p. 137-145.
- Bradley, Dennis P., and Sharon A. Winsauer.
1978. Simulated full-tree chipping: Model compares favorably to the real world. *Forest Products Journal* 28(10):85-88.
- Carson, Ward W.
1979. Forest harvesting research in Norway. *Journal of Forestry* 78(4):242-243.
- Carson, Ward W., and Dennis P. Dykstra.
1978. Programs for road network planning. U.S. Department of Agriculture Forest Service General Technical Report PNW-67. 21 p.
- Donnelly, Dennis M.
1978. Computing average skidding distance for logging areas with irregular boundaries and variable log density. U.S. Department of Agriculture Forest Service General Technical Report RM-58. 10 p.
- Erickson, J. R.
1979. Separation of bark from wood: Chapter 8. *In* Chip Quality Monograph. Pulp and Paper Technology Series 5. J. V. Hatton, ed. p. 145-170.
- Fisher, E. L., and H. G. Gibson.
1979. Helicopter logging moves east—trial results. *Transactions of the American Society of Agricultural Engineers* 22(1):13-15, 20.
- Gochenour, D. L., E. L. Fisher, and C. J. Biller.
1978. An analytical appraisal of cable logging technique in Appalachia. *Forest Industries* 105(11):80-83.
- Goulet, Daniel V., Donald L. Sirois, and Ronald H. Iff.
1979. A survey and evaluation of timber in the South: Phase I. U.S. Department of Agriculture Forest Service General Technical Report SO-25. 15 p.
- Johnson, L. R., and E. L. Fisher.
1978. Costing forest residue recovery through simulation. *In* Proceedings of the Winter Simulation Conference. University of Florida, Miami, Dec. 4-6.
- Mattson, James A., Dennis P. Bradley, and Eugene M. Carpenter.
1978. Harvesting forest residues for energy. *In* Proceedings of the 2nd Annual Symposium on Fuels from Biomass. vol. 1. Rensselaer Polytechnic Institute, Troy, N.Y., June 20-22. p. 185-225.
- Mifflin, Ronald W., and Hilton H. Lysons.
1978. Skyline yarding cost estimating guide. U.S. Department of Agriculture Forest Service Research Note PNW-325. 19 p.
- Peters, Penn A.
1978. Spacing of roads and landings to minimize timber harvest cost. *Forest Science* 24(2):209-217.
- Sturos, John A.
1978. Bark, foliage and grit removal from whole-tree chips—results and economics. *In* 1978 TAPPI Pulping Conference Proceedings, Atlanta, Ga. p. 121-134.
- Sturos, John A., and D. B. Brumm.

Products and Engineering

1978. Segregating wood and bark chips by photosorting. U.S. Department of Agriculture Forest Service Research Paper NC-164. 6 p.
- Twito, Roger H.
1978. Plotting landscape perspectives of clearcut units. U.S. Department of Agriculture Forest Service General Technical Report PNW-71. 26 p.
- Twito, Roger H., and Charles N. Mann.
1979. Determining average yarding distance. U.S. Department of Agriculture Forest Service General Technical Report PNW-79. 29 p.

Wood Engineering

- Bendtsen, Alan, and William L. Galligan.
1979. Deriving allowable properties of lumber (a practical guide for interpretation of ASTM Standards). U.S. Department of Agriculture Forest Service General Technical Report FPL-20. 29 p.
- Bendtsen, B. Alan, and William L. Galligan.
1979. Mean and tolerance limit stresses and stress modeling for compression perpendicular to grain in hardwood and softwood species. U.S. Department of Agriculture Forest Service Research Paper FPL-337. 14 p.
- Bendtsen, B. Alan, and William L. Galligan.
1979. Modeling the stress-compression relationships in wood in compression-perpendicular to grain. *Forest Products Journal* 29(2):42-48.
- Bendtsen, B. Alan.
1978. Properties of wood from improved and intensively managed trees. *Forest Products Journal* 28(10):61-72.
- Cheng, S.
1979. Elasticity theory of plates and a refined theory. *Journal of Applied Mechanics* 9:644-650.
- Galligan, William L.
1979. Stress graded yellow-poplar lumber utilizing existing standard procedures. *Proceedings of Yellow-Poplar Symposium*, Knoxville, Tenn. p. 70-88.
- Gerhards, Charles C.
1978. Effect of earlywood and latewood on stress wave measurements parallel to the grain. *Wood Science* 11(2):69-72.
- Gerhards, Charles C.
1979. Effect of high-temperature drying on tensile strength of Douglas-fir 2 by 4's. *Forest Products Journal* 29(3):39-46.
- Gerhards, Charles C.
1979. Time-related effects of loading on wood strength: A linear cumulative damage theory. *Wood Science* 11(3):139-144.
- Holmes, Carlton A., Herbert W. Eickner, John J. Brenden, and Robert H. White.
1979. Fire performance of structural flakeboard from forest residue. U.S. Department of Agriculture Forest Service Research Paper FPL-315. 22 p.
- Holmes, Carlton A.
1978. Room corner-wall fire tests of some structural sandwich panels and components. *Journal of Fire and Flammability* 9:467-488.
- Jones, Robert E.
1979. Intercomparisons of laboratory determinations of airborne sound transmission loss. *Journal of the Acoustical Society of America* 66(1):148-164.
- Liu, J. Y., and S. Cheng.
1979. Analysis of orthotropic beams. U.S. Department of Agriculture Forest Service Research Paper FPL-343. 37 p.
- Martin, Richard R., J. Brian Joiner, and E. L. Schaffer.
1979. Wood in household fires. University of Wisconsin Statistics Laboratory Report 79/2. 118 p.
- Moody, R. C., W. L. Galligan, and B. Bohannon.
1979. Material properties and engineering research needs. U.S. Department of Agriculture Forest Service, Forest Products Laboratory, Madison, Wis. [Unnumbered report.] 32 p.
- Moody, R. C., R. L. Tuomi, W. E. Eslyn, and F. W. Muchmore.
1979. Strength of log bridge stringers after several years use in southeast Alaska. U.S. Department of Agriculture Forest Service Research Paper FPL-346. 4 p.
- Murphy, Joseph F.
1979. Strength of wood beams with end splits. U.S. Department of Agriculture Forest Service Research Paper FPL-347. 47 p.
- Palms, Jerome, and Gerald Sherwood.
1979. Structural sandwich performance after 31 years of service. U.S. Department of Agriculture Forest Service Research Paper FPL-342. 17 p.
- Polensek, Anton, and David S. Gromala.
1979. Wood-stud wall system: Performance and probabilistic design for compression-bending loads. In *Behavior of Building Systems and Building Components*. Vanderbilt University Department of Civil Engineering, Nashville, p. 177-194.
- Schaffer, Erwin L.
1979. Smoldering combustion tendency: An introduction. *Journal of Thermal Insulation* 2:135-140.
- Shafizadeh, Fred, and Allan G. W. Bradbury.
1979. Smoldering combustion of cellulosic materials. *Journal of Thermal Insulation* 2:141-152.
- Sherwood, Gerald E., and Gunard E. Hans.
1979. Energy efficiency in light-frame wood construction. U.S. Department of Agriculture Forest Service Research Paper FPL-317. 58 p.
- Sherwood, Gerald E.
1978. Paint as a vapor barrier for walls of older homes. U.S. Department of Agriculture Forest Service Research Paper FPL-319. 11 p.
- Sherwood, Gerald E.
1978. Remodeling a house—will it be worthwhile? In *Living on a few acres*. U.S. Department of Agriculture Yearbook, p. 66-67.

- Shuler, Craig E., Donald A. Grant, and Russell C. Moody.
1979. Evaluation of glued laminated beams of eastern spruce and eastern hemlock. *Forest Products Journal* 29(7):23-28.
- Tuomi, R. L., R. W. Wolfe, R. C. Moody, and F. W. Muchmore.
1979. Bending strength of large Alaskan Sitka spruce and western hemlock log bridge stringers. U.S. Department of Agriculture Forest Service Research Paper FPL-341. 17 p.
- Tuomi, Roger L.
1979. Construction methods. *In* 1979 Yearbook of Science and Technology, McGraw-Hill, New York. p. 136-139.
- Tuomi, R. L., G. E. Hans, and D. J. Stith.
1978. Fabrication, transportation, and erection of the prototype truss-framed house. U.S. Department of Agriculture Forest Service, Forest Products Laboratory, Madison, Wis. [Unnumbered report.] 5 p.
- Tuomi, R. L., and R. C. Moody.
1979. Historical considerations in evaluating timber structures. U.S. Department of Agriculture Forest Service General Technical Report FPL-21.
- Tuomi, Roger L.
1978. Racking strength of wood-frame walls. *In* Wind and Seismic Effects. Proceedings of the 9th Joint Panel Conference of the U.S.-Japan Cooperative Program in Natural Resources. Tokyo, Japan, May 24-27, 1977. Special Publication 523. p. vi, 25-34.
- White, Robert H., and E. L. Schaffer.
1978. Application of CMA program to wood charring. *Fire Technology* 14(4):279-290, 296.
- Wilkinson, Thomas Lee.
1978. Longtime performance of trussed rafters with different connection systems: 10-year evaluation. U.S. Department of Agriculture Forest Service Research Paper FPL-204. (Revised.) 23 p.
- Woeste, F. E., and E. L. Schaffer.
1979. Second-moment reliability analysis of fire exposed wood joint floor assemblies. *In* Probabilistic Mechanics and Structural Reliability Proceedings. American Society of Civil Engineers, New York, N.Y., Jan. 10-12. p. 151-155.
- Wolfe, Ronald W., and Russell C. Moody.
1979. Bending strength of vertically glued laminated beams with one to five plies. U.S. Department of Agriculture Forest Service Research Paper FPL-333. 20 p.
- Amburgey, Terry L., and Bruce R. Johnson.
1979. Comparing ammoniation and water-repellent preservative treatments for protecting wood window units from decay. *Forest Products Journal* 29(2):23-28.
- Amburgey, T. L., and B. R. Johnson.
1978. Effect of ammonium hydroxide on thiamine and available micronutrients in ponderosa pine sapwood. *Phytopathology* 68:951-954.
- R. H. Baechler, L. R. Gjovik, and H. L. Davidson.
1978. 1948 Cooperative creosote project: Review of results of field tests on posts and on 2 x 4 stakes. *In* Proceedings American Wood Preservers' Association, vol. 74. p. 173-180.
- Baker, Andrew, J., and Jerome F. Saeman.
1978. Forest products industry energy needs—Significance and trends. American Institute of Chemical Engineers Symposium Series 177, vol. 74. p. 1-3.
- Baker, Andrew, J., and Robert H. Gillespie.
1979. Accelerated aging of phenolic-bonded flakeboards. U.S. Department of Agriculture Forest Service General Technical Report WO-5. 8 p.
- Barquest, Glenn, Gordon Barrington, and William Feist.
1979. Aluminum siding: Care, cleaning, repainting. University of Wisconsin Extension Bulletin. 2 p.
- Byrd, Von L.
1979. Drying and heat transfer characteristics during bench-scale press drying of linerboard. U.S. Department of Agriculture Forest Service Research Paper FPL-338. 9 p.
- Byrd, Von L.
1979. Press drying—flow and adhesion of hemicellulose and lignin. *TAPPI* 62(7):81-84.
- Chang, H-m., W. J. Connors, C. W. Dence, and J. F. Saeman.
1979. Highlights in wood related literature—1978. Wood chemistry distillates. *TAPPI* 62(7):63.
- Feist, William C.
1979. Protection of wood surfaces with chromium trioxide. U.S. Department of Agriculture Forest Service Research Paper FPL-339. 11 p.
- DeGroot, R. C., T. W. Popham, L. R. Gjovik, and T. Forehand.
1979. Distribution gradients of arsenic, copper, and chromium around preservative-treated wooden stakes. *Journal of Environmental Quality* 8:39-41.
- Feist, William C., and W. D. Ellis.
1978. Fixation of hexavalent chromium on wood surfaces. *Wood Science* 11(2):76-81.
- Gjovik, L. R.
1978. Report of committee T-3 piles. *In* Proceedings of the American Wood Preservers Association, vol. 74. p. 11-12.
- Horn, Richard A.
1979. Bonding in press-dried sheets from high-yield pulps—The role of lignin and hemicellulose. *TAPPI* 62(7):77-80.
- Hrutford, B. F.
1978. Red alder as a pulpwood species. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers.

Wood Chemistry and Fiber Products

- Amburgey, Terry L., and Bruce R. Johnson.
1979. Comparing ammoniation and water-repellent preservative treatments for protecting wood window units from decay. *Forest Products Journal*

Products and Engineering

- U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 135-138.
- Hunt, M. O., W. L. Hoover, D. A. Fergus, W. F. Lehmann, and J. D. McNatt.
1978. Red oak structural particleboard for industrial/commercial roof decking. Purdue University Agriculture Experiment Station Report RB954. 7 p.
- Johnson, Millard W., Jr., Thomas J. Urbanik, and William E. Denniston.
1979. Optimum fiber distribution in single-wall corrugated fiberboard. U.S. Department of Agriculture Forest Service Research Paper FPL-348. 39 p.
- Jonakin, James L., and Eugene C. Millard.
1979. The effect of paraquat-treated pulpwood on kraft pulp and papermill operations. *In* Proceedings Annual Meeting of the Lightwood Research Conference. p. 125-137.
- Jones, J. K. N.
1978. Hemicelluloses in hardwoods growing on southern pine sites. *Wood Fiber* 9:295-307.
- Koning, John W., and James H. Haskell.
1979. Papermaking factors that influence the strength of linerboard weight handsheets. U.S. Department of Agriculture Forest Service Research Paper FPL-323. 32 p.
- Landucci, L. L.
1979. Electrochemical behavior of catalysts for phenoxy radical generation. *TAPPI* 62(4):71-74.
- Lengel, Joan E., and John W. Koning, Jr.
1978. An information retrieval system for research file data. U.S. Department of Agriculture Forest Service General Technical Report FPL-17. 4 p.
- McAlister, Robert H.
1979. Structural performance of COM-PLY studs made with hardwood veneers. COM-PLY Report 16. U.S. Department of Agriculture Forest Service Research Paper SE-199. 15 p. [Cooperative research by the U.S. Department of Housing and Urban Development, Division of Energy, Building Technology and Standards.]
- McNatt, J. Dobbin.
1978. Stress-rupture of particleboard in interlaminar shear. *Forest Products Journal* 28(9):34-36.
- McMillin, Charles W.
1978. Mechanical pulping with a sequential velocity refiner—a new concept. *Svensk Papperstioning* 18:567-574.
- Minor, J. L.
1979. Gel permeation chromatography of polymers from wood. *Journal of Chromatography* 2(3):309-318.
- Obst, John R., Lawrence Landucci, and Necmi Sanyer.
1979. Quinones in alkaline pulping: β -ether cleavage of free phenolic units in lignin. *TAPPI* 62(1):55-59.
- Price, Eddie W., and William F. Lehmann.
1979. Flakeboard properties as affected by flake fabrication techniques. *Forest Products Journal* 29(3):29-33.
- Richens, David T., and Donald T. Sawyer.
1979. Bis(tetramethylammonium)tris(sorbitolato) manganate (IV); and EPR active monomeric complex of manganese (IV). *Journal of the American Chemical Society* 101(13):3681-3683.
- Richens, David T., Cecil G. Smith, and Donald T. Sawyer.
1979. Sorbitol and related polyol complexes of manganese (II), -(III) and -(IV): Redox and oxygenation equilibria. *Inorganic Chemistry* 18:706.
- Rowe, John W., and Anthony H. Conner.
1979. Extractives in eastern hardwoods—A review. U.S. Department of Agriculture Forest Service General Technical Report FPL-18. 67 p.
- Rowell, R. M., and W. D. Ellis.
1979. Chemical modification of wood: Reaction of methyl isocyanate with southern pine. *Wood Science* 12(1):52-58.
- Rowell, Roger M., and W. Dale Ellis.
1978. Determination of dimensional stabilization of wood using the water-soak method. *Wood and Fiber* 10(2):104-111.
- Rowell, R. M., S. V. Hart, G. R. Esenther.
1979. Resistance of alkylene-oxide-modified southern pine to attack by subterranean termites. *Wood Science* 11(4):271-274.
- Rowell, R. M.
1979. Wood preservation: Chemical modification. *In* 1979 Yearbook of Science and Technology, McGraw-Hill, New York, N.Y. p. 416-417.
- Scott, Ralph W.
1979. Colorimetric determination of uronic acids in plant materials. *Analytical Chemistry* 51:936-941.
- Setterholm, V. C.
1979. An overview of press drying. *TAPPI* 62(3):45-46.
- Springer, E. L., Zoch, L. L., Jr., Feist, W. C., Hajny, G. J., and Hemingway, R. W.
1978. Storage characteristics of southern pine whole-tree chips. *In* Proceedings Symposium on Complete Tree Utilization of Southern Pine, New Orleans, La. p. 216-223.
- Stern, R. K.
1979. Performance of medium-density hardboard in pallets. U.S. Department of Agriculture Forest Service Research Paper FPL-335. 12 p.
- Stern, Robert K.
1979. Performance of pallets with hardboard decks of varied density. U.S. Department of Agriculture Forest Service Research Paper FPL-340. 8 p.
- Suchsland, Otto, George E. Woodson, and Sidon Keinert, Jr.
1979. Veneer-reinforced structural composition board. U.S. Department of Agriculture Forest Service Research Paper SO-149. 6 p.
- Urbanik, Thomas J.
1979. Transportation vibration effects on unitized corrugated containers. *Paperboard Packaging* 64(2):50, 52, 57-58, 60.
- Weatherwax, R. C., and D. F. Caulfield.

1978. The pore structure of papers wet stiffened by formaldehyde crosslinking. I. Results from the water isotherm. *Journal of Colloid and Interface Science* 67(3):498-505.
- Weatherwax, R. C., and D. F. Caulfield.
1978. The pore structure of papers wet stiffened by formaldehyde crosslinking. II. Results from nitrogen sorption. *Journal of Colloid and Interface Science* 67(3):506-515.
- Zinkel, Duane F.
1979. Potential health hazard associated with determination of turpentine in wood. *In* Proceedings 6th Annual Lightwood Research Conference [Atlanta, Ga., Jan. 17-18.] 3 p.

Utilization Potential and Processing of Wood

- Adams, Thomas C.
1978. Production opportunities in the Pacific Northwest. *In* Structural Flakeboard from Forest Residues. U.S. Department of Agriculture Forest Service General Technical Report WO-5. p. 189-195. [Also Opportunities for structural flakeboard production in the Pacific Northwest. *In* Structural Flakeboard From Forest Residues. Forest Products Research Society 5/78/300, 1978.. p. 190-196.]
- Araman, Philip A.
1978. A comparison of four techniques for producing high-grade furniture core material from low-grade yellow-poplar. U.S. Department of Agriculture Forest Service Research Paper NE-429. 7 p.
- Atterbury, Toby.
1978. Alder characteristics as they affect utilization. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 71-81.
- Boone, R. Sidney.
1979. High-temperature drying of hardwoods: a progress report on current research at FPL. *In* High Temperature Drying of Hardwoods, Symposium Proceedings. Purdue University, New Albany, Ind., March. p. 25-40.
- Boone, R. Sidney.
1979. An introduction to high-temperature drying: past research efforts and definition of terms and procedures. *In* High Temperature Drying of Hardwoods, Symposium Proceedings. Purdue University, New Albany, Ind., March. p. 1-9.
- Briggs, David G., and James S. Bethel.
1978. The potential for integrated utilization of alder. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 163-173.
- Briggs, David G., Dean S. DeBell, and William A. Atkinson, compilers.
1978. Utilization and management of alder. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. 379 p.
- Bryant, Ben S.
1978. Parallel-laminated veneer: Its manufacture and potential as a structural lumber substitute. *In* Proceedings of the 6th Plywood Clinic, Portland, Oreg., March. p. 56-65.
- Cassens, Daniel L.
1978. Read oak Press-Lam structures upholstered furniture frames. *Plywood and Panel Magazine*, October. p. 23-25.
- Chen, Peter Y. S., and Edward C. Workman, Jr.
1979. Steaming black walnut heartwood—how it affects physical and chemical properties. *National Hardwood Magazine* 52(13):70-77.
- Chen, Peter Y. S., and Frank E. Biltonen.
1979. Effect of prefreezing on press-drying of black walnut heartwood. *Forest Products Journal* 29(2):48-51.
- Crist, J. B., J. G. Isebrands, and N. D. Nelson.
1979. Suitability of intensively grown *Populus* raw material for industry. *In* Proceedings 16th Annual Meeting of the North American Poplar Council, Thompsonville, Mich. Aug. 14-17. p. 65-74.
- Duff, John E.
1978. Moisture content of a joist floor over a crawl space. U.S. Department of Agriculture Forest Service Research Paper SE-189. 12 p.
- Duff, John E., Gerald A. Koenigshof, and Dick C. Wittenberg.
1978. Performance standards for COM-PLY floor joists. COM-PLY Report 14. U.S. Department of Agriculture Forest Service Research Paper SE-192. 17 p. [Cooperative research by the U.S. Department of Housing and Urban Development, Division of Energy, Building Technology and Standards.]
- Eckelman, Carl A., William L. Hoover, Ronald W. Jokerest, and John A. Youngquist.
1979. Utilization of red oak Press-Lam as upholstered furniture frame stock. *Forest Products Journal* 29(5):30-40.
- Fahey, Thomas D., and Edward Starostovic.
1979. Changing resource quality: Impact on the forest products and construction industries. *Forest Products Journal* 29(4):39-43.
- Fedderm, Edward T.
1978. Harvesting of red alder. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 61-69.
- Fye, Calvin G., and David G. Briggs.
1978. A comparison of lumber grading rules for alder and competing species. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 85-92.

Products and Engineering

- Gaby, Louis I., and John E. Duff.
1978. Moisture content changes in wood deck and rail components. U.S. Department of Agriculture Forest Service Research Paper SE-190. 12 p.
- Gatchell, Charles J., Hugh W. Reynolds, and Philip A. Araman.
1979. Furniture parts from small logs—at a profit! *In* Proceedings 7th Annual Hardwood Research Council Symposium. p. 35-43.
- Geimer, Robert L.
1979. Reel wheels: An application of material science. *Forest Products Journal* 29(4):44-48.
- Godshall, W. D.
1979. A new proposal for the performance testing of shipping containers. *Package Development and Systems* 9(5):21-23.
- Grantham, John B.
1977. Anticipated competition for available wood fuels in the United States. *In* Fuels and Energy from Renewable Resources, Chapter 3. David A. Tillman, Kyosti V. Sarkanen, and Larry L. Anderson, eds. Academic Press, New York. p. 55-91.
- Hallock, Hiram, Philip Steele, and Richard Selin.
1979. Comparing lumber yields from board foot and cubically scaled logs. U.S. Department of Agriculture Forest Service Research Paper FPL-324. 16 p.
- Hallock, Hiram, Philip Steel, and Richard Selin.
1978. Cubic volume tables for short logs. U.S. Department of Agriculture Forest Service, Forest Products Laboratory, Madison, Wis. [Unnumbered publication.] 4 p.
- Hallock, Hiram, Abigail R. Stern, and David W. Lewis.
1978. Individual log yields by four centered sawing systems. U.S. Department of Agriculture Forest Service Research Paper FPL-321. 48 p.
- Hallock, Hiram, Abigail R. Stern, and David W. Lewis.
1979. A look at centered versus offset sawing. U.S. Department of Agriculture Forest Service Research Paper FPL-321. 16 p.
- Hallock, Hiram.
1979. Sawmilling roots. *In* Electronics in the Sawmill. Proceedings of the Electronics Workshop, Sawmilling and Plywood Clinic [Portland, Ore. March.] p. 7-13.
- Hanks, Leland F.
1979. Cubic-foot tree volumes and product recoveries for eastern redcedar in the Ozarks. U.S. Department of Agriculture Forest Service Research Note NE-283. 4 p.
- Hanks, Leland F., and Robert L. Brisbin.
1978. Lumber grade yields for graded aspen logs and trees. U.S. Department of Agriculture Forest Service Research Paper NE-423. 13 p.
- Hill, Fred J.
1978. Trends and technologies in southern hardwood sawmills. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 111-121.
- Hoover, William L., Carl A. Eckelman, Ronald W. Jokerst, William H. Mason, and John A. Youngquist.
1978. Engineering and economic feasibility of producing and utilizing red oak Press-lam for upholstered furniture framestock. Purdue University Agricultural Experiment Station Report RB 956.
- Howard, Elaine T.
1977. Bark structure of southern upland oaks. *Wood Fiber* 9:172-183.
- Isebrands, J. G., J. A. Sturos, and J. B. Crist.
1979. Alternatives for the integrated utilization of short rotation intensively cultured *Populus* raw material. *In* TAPPI Annual Meeting Proceedings, New York, N.Y., March 12-14. p. 181-187.
- Karchesy, Joseph, and Peter Koch.
1979. Energy production from hardwoods growing on southern pine sites. U.S. Department of Agriculture Forest Service General Technical Report SO-24. 59 p.
- Kluender, R. A., and M. A. Taras.
1979. Fiber for fuel sources study. Southern Pulpwood Industry Report 79-A-9. 32 p.
- Koeppen, Robert C.
1979. Tropical legumes: Resources for the future. Report of an Ad Hoc Panel of the Advisory Committee on Technology Innovation, Board on Science and Technology for International Development, Commission in International Relations, National Research Council, National Academy of Science, Washington, D.C. 331 p.
- Koch, Peter.
1978. AIDS: From dependent infancy to useful adolescence. *Forest Products Journal* 28(8):1.
- Koch, Peter.
1978. Five new machines and six products can triple commodity recovery from southern forests. *Journal of Forestry* 76:767-772.
- Koch, Peter.
1978. Shaping-lathe headrig can profitably yield short cants or flitches and structural flakeboard panels from small-diameter hardwoods. *In* Proceedings 8th World Forest Congress, Paper FID-11-21-1. 23 p.
- Koch, Peter, and Robert H. Caughey.
1978. Shaping-lathe headrig yields short and molded hardwood products. *Forest Products Journal* 28(10):53-61.
- Koch, Peter, and James Dobie.
1979. Production of chips by chipping headrigs. *In* Chip Quality Monograph, Pulp and Paper Technology Series 5. J. V. Hatton, ed. p. 36-70.
- Koeningshof, Gerald A.
1978. Economic feasibility of manufacturing COM-PLY studs in the South. COM-PLY Report 15. U.S. Department of Agriculture Forest Service Research Paper SE-197. 26 p. [Cooperative research by the U.S. Department

- of Housing and Urban Development, Division of Energy, Building Technology and Standards.]
- Koenigshof, Gerald A.
1978. Preventing basement leakage in treated-wood foundations. U.S. Department of Agriculture Forest Service Research Paper SE-195. 13 p.
- Kozlik, Charles J.
1978. Stabilizing color and drying red alder. In *Utilization and Management of Alder*. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 93-101.
- Kukaehka, B. F.
1978. Wood anatomy of the Neotropical Sapotaceae. I. Bumelia. U.S. Department of Agriculture Forest Service Research Paper FPL-325. 9 p.
- Kukaehka, B. F.
1978. Wood anatomy of the Neotropical Sapotaceae. II. Mastichodendron. U.S. Department of Agriculture Forest Service Research Paper FPL-326. 6 p.
- Kukaehka, B. F.
1978. Wood anatomy of the Neotropical Sapotaceae. III. Dipholis. U.S. Department of Agriculture Forest Service Research Paper FPL-327. 7 p.
- Kukaehka, B. F.
1978. Wood anatomy of the Neotropical Sapotaceae. IV. Aehrouteria. U.S. Department of Agriculture Forest Service Research Paper FPL-328. 8 p.
- Kukaehka, B. F.
1978. Wood anatomy of the Neotropical Sapotaceae. V. Calocarpum. U.S. Department of Agriculture Forest Service Research Paper FPL-329. 5 p.
- Kukaehka, B. F.
1978. Wood anatomy of the Neotropical Sapotaceae. VI. Chloroluma. U.S. Department of Agriculture Forest Service Research Paper FPL-330. 5 p.
- Kukaehka, B. F.
1978. Wood anatomy of the Neotropical Sapotaceae. VII. Chrysophyllum. U.S. Department of Agriculture Forest Service Research Paper FPL-331. 9 p.
- Laing, F. M., H. Duehaeck, S. Williams, N. Huyler, and L. D. Garrett.
1978. Wood residue fuels for maple evaporators. University of Vermont Agriculture Experiment Station MP 101. 32 p.
- Laundrie, James F.
1979. Utilization of mixed hardwoods from tropical forests for pulp, paper, and panel products. Final Report to Office of Science and Technology, Agency for International Development, U.S. Department of State, Washington, D.C. 65 p.
- Lency, L., A. Jackson, and H. D. Erickson.
1978. Properties of red alder (*Alnus rubra* Bong.) and its comparison to other hardwoods. In *Utilization and Management of Alder*. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 25-33.
- Lewis, David W.
1978. Einstaz der elektronischen Datenverarbeitung zur Verbesserung der Schnittholzausbeute — Erfahrungen aus den USA. [Making sawmilling decisions—There is a better way.] Produktivitäts Steigerung in Der Säge-industrie. p. 95-107. DRW—Verlag Weinbrenner—KG Stuttgart. [In German, English translation.]
- Maeglin, Robert R.
1979. Could S-D-R be the answer to the aspen oversupply problem? *Northern Logger and Timber Processor* 28(1):24-25.
- Maeglin, Robert R.
1978. Yellow-poplar studs by S-D-R. *Southern Lumberman* 2944(237):58-60.
- Maloney, T. M.
1978. Alder: One of tomorrow's important structural raw materials? In *Utilization and Management of Alder*. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 125-132.
- Manchester, Steven R., and Regis B. Miller.
1978. Tree cells and their occurrence in Malvean fossil woods. *International Association of Wood Anatomists* 1978/2-3:23-28.
- Manwiller, Floyd G.
1979. Wood and bark specific gravity of small-diameter pine-site hardwoods in the South. *Wood Science* 11:234-240.
- McDonald, Kent A.
1979. Defect detection. In *Electronics in the Sawmill. Proceedings of the Electronics Workshop, Sawmilling and Plywood Clinic* [Portland, Oreg., March.] p. 108-112.
- McDonald, Kent A.
1978. Lumber quality evaluation using ultrasonics. In *Proceedings Non-destructive Testing in Wood Symposium* 4. p. 5-13.
- McLintoek, Thomas F.
1979. Research priorities for eastern hardwoods. *Hardwood Research Council, Asheville, N.C.* 70 p.
- McNees, Ralph, and Gerald Koenigshof.
1978. COM-PLY products will stretch our timber supply. *Wood Review* 1(26):2.
- McSwain, George A.
1977. Technical developments in the wood-based panel products industry. Food and Agriculture Organization of the United Nations, 5th Session, Committee on Wood-based Panel Products, Rome, Nov. 9-11.
- Myers, Gary C.
1979. Hardboards from mixed tropical hardwoods. *Forest Products Journal* 29(5):44-48.
- Nelson, N. D., and W. E. Hillis.
1978. Association between altitude and xylem ethylene levels in *Eucalyptus pauciflora*. *Australia Forest Research* 8:69-73.
- Nelson, N. D., and W. E. Hillis.

Products and Engineering

1978. Genetic and biochemical aspects of kino vein formation in *Eucalyptus* II. Hormonal influences on kino formation in *E. regnans*. Australian Forest Research 8:83-91.
- Nelson, N. D., and W. E. Hillis.
1978. Genetic and biochemical aspects of kino vein formation in *Eucalyptus* I. Genetic variation in response to kino induction in *E. regnans*. Australian Forest Research 8:75-81.
- Nelson, N. D., and W. E. Hillis.
1978. Ethylene and tension wood formation in *Eucalyptus gomphocephala*. Wood Science and Technology 12:309-315.
- Ostrem, Fred E., and W. D. Godshall.
1979. An assessment of the common carrier shipping environment. U.S. Department of Agriculture Forest Service General Technical Report FPL-22. 60 p.
- Phillips, Douglas R., and Noel D. Cost.
1979. Estimating the volume of hardwood crowns, stems, and the total tree. U.S. Department of Agriculture Forest Service Research Note SE-276. 6 p.
- Phillips, D. R., and J. R. Saucier.
1979. A test of prediction equations for estimating hardwood understory and total stand biomass. Georgia Forestry Commission Research Paper 7. 8 p.
- Pong, W. Y., and John W. Henley.
1978. Characteristics of residues in a helicopter logged area of old-growth Douglas-fir. U.S. Department of Agriculture Forest Service Research Note PNW-320. 33 p.
- Popham, Thomas W., Rodney C. DeGroot, and Ronald W. Howe.
1978. Wood performance in doorways of single-family houses. U.S. Department of Agriculture Forest Service Research Note SO-242. 4 p.
- Rast, Everette D.
1978. Volume relationships in slicing northern red oak and black cherry logs. U.S. Department of Agriculture Forest Service Research Paper NF-420. 11 p.
- Remington, Rod L.
1978. Alder—should we chip it or saw it? In Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 103-109.
- Reynolds, Hugh W., and Charles J. Gatchell.
1979. Marketing low-grade hardwoods for furniture stock—a new approach. U.S. Department of Agriculture Forest Service Research Paper NE-444. 7 p.
- Richards, D. B., H. Hallock, and E. H. Bulgrin.
1978. Optimum value yield from hardwood logs by simulated sawing. In Proceedings IUFRO Symposium on Simulated Techniques in Forest Operational Planning Control. [Wageningen, The Netherlands, October.]
- Rosen, Howard N.
1978. Continuous lumber drying by high temperature impingement of air jet. In American Institute of Chemical Engineers Symposium Series 177(4):106-110.
- Rosen, Howard N.
1979. Energy requirements in high temperature and conventional kilns. In Proceedings of Symposium on High Temperature Drying of Hardwoods. [New Albany, Ind., March 22, 1978.] p. 41-54.
- Rosen, Howard N.
1978. High temperature predrying of wood. In Proceedings Western Dry Kiln Clubs 29th Annual Meeting. [May 11-12, Redding, Calif.] p. 1-10.
- Rosen, Howard N.
1978. Jet drying of southern pine and Douglas-fir: Exploratory study. U.S. Department of Agriculture Forest Service Research Note NC-242. 4 p.
- Rosen, Howard N.
1979. Potential for energy recovery from humid air streams. U.S. Department of Agriculture Forest Service Research Paper NC-170. 10 p.
- Rosen, Howard N.
1978. The influence of external resistance on moisture adsorption rates in wood. Wood and Fiber 10(3):218-228.
- Saeman, Jerome F., and Robert L. Youngs.
1978. Wood utilization priorities as set by energy and materials shortages. In Proceedings of Society of American Foresters 1978 National Convention, St. Louis, Mo. p. 451-455.
- Sampson, George R.
1979. Energy potential from central and southern Rocky Mountain timber. U.S. Department of Agriculture Forest Service Research Note RM-368. 7 p.
- Saucier, Joseph R.
1979. Estimation of biomass production and removal. In Proceedings of Symposium on Impact of Intensive Harvesting on Forest Nutrient Cycling. State University of New York, College of Environmental Sciences and Forestry, Syracuse. p. 172-189.
- Saucier, J. R., L. T. Henderson, and R. E. Schoenike.
1979. Wood properties of plantation-grown Sonderegger pine. U.S. Department of Agriculture Forest Service Research Note SE-272. 4 p.
- Smith, Nicholas J.
1978. Red alder as a potential source of energy. In Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 139-155.
- Snellgrove, Thomas A., and Thomas D. Fahey.
[1978.] Values and problems associated with utilization of dead timber. In Proceedings of Symposium on the Dead Softwood Timber Resource. Washington State University Engineering Extension Service. p. 1-10. [Also Market values and problems associated with utilization of dead timber. Forest Products Journal 27(10):74-79, 1977.]
- Sonderman, David L.
1979. Guide to the measurement of tree characteristics important to the quality classification system for young hardwood trees. U.S. Department of Agriculture Forest Service General Technical Report NE-54. 13 p.
- Sonderman, David L., and Robert L. Brisbin.

1978. A quality classification system for young hardwood trees—the first step in predicting future product potential. U.S. Department of Agriculture Forest Service Research Paper NE-419. 7 p.
- Springate, Norman C., Irving Plough, and Peter Koch.
 1978. Shaping-lathe round-up machine is key to profitable manufacture of composite sheathing panels in Massachusetts or Maine. *Forest Products Journal* 28(10):42-47.
- Stern, Abigail R., and Kent A. McDonald.
 1978. Computer optimization of cutting yield from multiple-ripped boards. U.S. Department of Agriculture Forest Service Research Paper FPL-318. 12 p.
- Stern, E. George, and Walter B. Wallin.
 1979. Performance of red alder pallets. Virginia Polytechnic Institute and State University, Wood Research and Wood Construction Laboratory, Pallet and Containers Research Center, Research Bulletin 161. 40 p.
- Stern, E. George, and Walter B. Wallin.
 1979. Performance of pallet component assemblies in flexure. Virginia Polytechnic Institute and State University Wood Research and Wood Construction Laboratory, Pallet and Container Research Center, Research Bulletin 162. 28 p.
- Stern, E. George.
 1978. Testing nails for ductility and toughness. *Forest Products Journal* 28(1):38-39.
- Stern, E. George.
 1978. Stiffness and rigidity of 48" by 40" nailed pallets of 22 southern hardwoods. Virginia Polytechnic Institute and State University, Wood Research and Wood Construction Laboratory, Pallet and Container Research Center, Research Bulletin 158. 48 p.
- Stern, E. George.
 1979. Influence of stringer width on pallet performance. Virginia Polytechnic Institute and State University Wood Research and Wood Construction Laboratory, Pallet and Container Research Center, Research Bulletin 165. 20 p.
- Stewart, Harold A.
 1978. Stock removal rates for aluminum oxide- and garnet-coated abrasive belts. *Forest Products Journal* 28(11):29-31.
- Stewart, Harold A.
 1978. Effects of stock removal rates on belt loading for abrasive planing hardwoods. U.S. Department of Agriculture Forest Service Research Note NC-240. 2 p.
- Stewart, Harold A.
 1979. Analysis of orthogonal woodcutting across the grain. *Wood Science* 12(1):38-45.
- Tschernitz, John L., and William T. Simpson.
 1979. Solar-heated, forced-air, lumber dryer for tropical latitudes. *Solar Energy* 22:563-566.
- Winandy, Jerrold E.
 1979. Press-Lam: Its feasibility and use as upholstered furniture dimension stock. Part I. *Furniture Manufacturing Management* 1(3):29-32.
- Winandy, Jerrold E.
 1979. Press-Lam: Its feasibility and use as upholstered furniture dimension stock. Part II. *Furniture Manufacturing Management* 1(4):35-36.
- Vick, Charles B.
 1978. Asbestos thickening agents for gap-filling phenol-resorcinol adhesives. U.S. Department of Agriculture Forest Service Research Note SE-270. 7 p.
- Worth, Harold E.
 1978. Marketing considerations for products from dead timber. In *Proceedings of Symposium on the Dead Softwood Timber Resource*. May 22-24, Spokane, Wash. U.S. Department of Agriculture Forest Service, Pacific Northwest Forest and Range Experiment Station, and Washington State University, Engineering Extension Service. p. 87-94.
- Youngquist, J. A., D. S. Gromala, R. W. Jokerst, R. C. Moody, and J. L. Tschernitz.
 1978. Design, performance and installation of a Press-Lam basement beam in a factory-built house. U.S. Department of Agriculture Forest Service Research Paper FPL-316. 8 p.
- Youngquist, John A., Ben S. Bryant, and Joseph Jung.
 1979. Parallel laminated veneer as a tension-lam substitute. *Proceedings of Annual Meeting of American Institute of Timber Construction* [Puerto Rico, March.]
- Youngquist, John A., David S. Gromala, Ronald W. Jokerst, Russell C. Moody, and John L. Tschernitz.
 1979. Press-Lam timbers for exposed structures. *Journal of the Structural Division of the American Society of Civil Engineers*. p. 1405-1416.
- Youngquist, John A., and Ben S. Bryant.
 1979. Production and marketing feasibility of parallel-laminated veneer products. *Forest Products Journal* 29(8):45-48.
- Youngs, Robert L., and James F. Laundrie.
 1979. Reconstituted products—a use for mixed tropical hardwoods. *Journal of Forestry* 77(3):178-179, 198.
- Youngs, Robert L., David M. Smith, John J. Ewel, and James F. Laundrie.
 1978. Utilization of mixed tropical hardwoods—technical options and silvicultural and environmental implications. In *Proceedings 8th World Congress, Paper FID-11/20-3, Jakarta, Indonesia*.
- Zerbe, John I.
 1978. Energy limitations on utilization and processing of wood products. In *Proceedings Society of American Foresters 1978 National Convention*. p. 149-151.
- Zerbe, John I.
 1978. Impacts of energy developments on utilization of timber in the North-

Resource Economics

- west. *In* Proceedings Northwest Private Forests Forum, Portland, Oreg. 3 p.
- Zerbe, John I.
1978. The many forms of wood as fuel. *American Forests* 84(10):32-35.
- Zerbe, John I., Rodger A. Arola, and Roger M. Rowell.
1978. Opportunities for greater self-sufficiency in energy requirements for the forest products industry. *In* Symposium Series 177, vol. 74, American Institute of Chemical Engineers. p. 58-64.

Resource Economics

Forest Research Evaluation

Adams, Edward L., and Daniel E. Dunmire.

1978. SOLVE II users manual: A procedural guide for a sawmill analysis. U.S. Department of Agriculture Forest Service General Technical Report NE-44. 18 p.

Aldrich, Robert C.

1979. Sampling for multiresource information—can aerial photographs help and at what cost? *In* Proceedings of the Workshop on Forest Resource Inventories, Warren E. Frayer, ed. Society of American Foresters, International Union of Forestry Research Organizations, Colorado State University. [Fort Collins, Colo., July 22-27.] p. 393-405.

Barnard, J. E., and J. David Born.

1979. FINSYS-2: subsystem EDIT-2. U.S. Department of Agriculture Forest Service General Technical Report NE-43. 68 p.

Bassett, Patricia M.

1979. Timber resources of southwest Oregon. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-42. (Revised.) 29 p.

Baumgras, John E.

1978. The causes of logging truck delays on two West Virginia logging operations. U.S. Department of Agriculture Forest Service Research Paper NE-421. 4 p.

Baumgras, John E., and A. Jeff Martin.

1978. Managing harvesting operations with the weak link logging systems analyzer. *Southern Lumberman* 237(2944):109-115.

Birch, Thomas W., and Douglas S. Powell.

1978. The Forest-land owners of Kentucky. U.S. Department of Agriculture Forest Service Resource Bulletin NE-57. 101 p.

Birch, Thomas W., and Neal P. Kingsley.

1978. The Forest-land owners of West Virginia. U.S. Department of Agriculture Forest Service Resource Bulletin NE-58. 76 p.

Blyth, James E., and James T. Bones.

1978. Pulpwood production in the Northeast and North Central States in 1977. *Northern Logger and Timber Processor* 27(6):18.

Blyth, James E., and W. Brad Smith.

1979. Pulpwood production in the north central region by county, 1977. U.S.

Department of Agriculture Forest Service Resource Bulletin NC-41. 23 p.

Blyth, James E., and W. Brad Smith.

1979. Pulpwood production in the Lake States by county, 1978. U.S. Department of Agriculture Forest Service Research Note NC-247. 4 p.

Blyth, James E., Steven Wilhelm, and Jerold T. Hahn.

1979. Primary forest products industry and timber use, Minnesota, 1973. U.S. Department of Agriculture Forest Service Resource Bulletin NC-39. 35 p.

Bolsinger, Charles L.

1978. The extent of dwarf mistletoe in six principal softwoods in California, Oregon, and Washington, as determined from Forest Survey records. *In* Proceedings of the Symposium on Dwarf Mistletoe Control Through Forest Management. U.S. Department of Agriculture Forest Service General Technical Report PSW-31. p. 45-54.

Bolsinger, Charles L.

1978. Forest area and timber resources of the San Joaquin area, California. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-75. 71 p.

Bones, James T.

1978. The Forest resources of West Virginia. U.S. Department of Agriculture Forest Service Resource Bulletin NE-56. 105 p.

Bones, James T., and John K. Sherwood, Jr.

1979. Pennsylvania timber industries: A periodic assessment of timber output. U.S. Department of Agriculture Forest Service Resource Bulletin NE-59. 26 p.

Convery, F. J., and J. Neese.

1979. Environmental and multiple use impacts of intensified management. *In* An Assessment of the Forest and Range Land Situation in the United States—Review Draft. U.S. Department of Agriculture Forest Service, Washington, D.C. p. 353-357.

Cost, Noel D.

1978. Aboveground volume of hardwoods in the Mountain Region of North Carolina. U.S. Department of Agriculture Forest Service Research Note SE-266. 4 p.

Cost, Noel D.

1978. Multiresource inventories—a technique for measuring volumes in standing trees. U.S. Department of Agriculture Forest Service Research Paper SE-196. 18 p.

Craft, E. Paul, and John E. Baumgras.

1978. Products derived from thinning two hardwood timber stands in the Appalachians. U.S. Department of Agriculture Forest Service Research Paper NE-422. 8 p.

Craver, Gerald C.

1979. Forest statistics for the Northern Coastal Plain of South Carolina, 1978. U.S. Department of Agriculture Forest Service Resource Bulletin SE-47. 33 p.

- Crothers, Charles M.
1979. Midsouth pulpwood prices, 1977. *Southern Pulp and Paper Manufacturer* 42(2):20.
- Cuppett, Donald G., and David M. Emanuel.
1978. Yield of utility boards from No. 2B Common yellow-poplar lumber. *In Marketing and Utilization of Yellow-Poplar: Symposium Proceedings*. University of Tennessee Department of Forestry, Wildlife, and Fish, Knoxville. p. 151-157.
- Dana, Robert W.
1978. Using airborne radiometry to determine atmospheric effect in Landsat data. *In Proceedings American Society of Photogrammetry, Fall Technical Meeting*. [Albuquerque, N. Mex., Oct. 15-20, 1978.] p. 117-129.
- Dutrow, G. F., J. M. Vasievich, and M. Conkin.
1979. Economic opportunities for increasing timber supplies. *In Assessment of the Forest and Range Land Situation in the U.S.—Review Draft*. U.S. Department of Agriculture Forest Service, Washington, D.C. p. 348-351.
- Eisenman, Eric, and Lin Yeilding.
1979. Data and information systems for land use decisionmaking. *In Proceedings and Abstracts, American Institute for Decision Sciences, Western Regional Conference, 8th Annual Meeting*. [March 22-23, 1979, Reno, Nev.] p. 307-310.
- Felt, Dorothy G., and Michael K. Barrett.
1979. Forest area and timber resource statistics for the Bozeman working circle, Montana, 1976. U.S. Department of Agriculture Forest Service Research Note INT-258, 23 p.
- Francis, Richard E., and Richard S. Driscoll.
1979. Integrated resource inventory for the Resources Planning act. *In PECORA IV, Proceedings of Symposium on Application of Remote Sensing Data to Wildlife Management*. National Wildlife Federation Science and Technical Series 3. p. 269-273.
- Hiserote, Bruce A., and James O. Howard.
1978. California's forest industry, 1976. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-80. 95 p.
- Howard, James O.
1978. Logging residues and hardwoods as energy sources. *In Increased Energy from Biomass: 1985 Possibilities and Problems*. Proceedings of the Pacific Northwest Bioconversion Workshop. U.S. Department of Energy, U.S. Department of Agriculture Forest Service, and Oregon State University. [October 1978, Portland, Oreg.] p. 11-51 to 11-53.
- Howard, James O., and Bruce A. Hiserote.
1978. Oregon's forest products industry 1976. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-79. 102 p.
- Jacobs, David M.
1978. Timber resources of west-central Oregon. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-76. 30 p.
- Kharin, N. G.
1979. Remote sensing in arid zone Biosphere Reserve studies. *In Selection, Management and Utilization of Biosphere Reserves*. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 273-281.
- Kingsley, Neal P.
1979. Attitudes of landowners toward timber harvesting in the Northeast. *Northern Logger and Timber Processor* 27(4):22.
- Kingsley, Neal P.
1979. How important is timber production to small owners? *Forest Farmer* XXXVIII(8):8.
- Kingsley, Neal P., and Douglas S. Powell.
1979. Oak: Where is it? Where's it been? Where's it going? *In Proceedings 7th Annual Hardwood Symposium*. Hardwood Research Council. [Cashiers, N.C., May 1-4.] p. 12-28.
- Knight, Herbert A.
1978. Sizes of timber stands in the Piedmont of South Carolina. U.S. Department of Agriculture Forest Service Research Note SE-267. 5 p.
- Knight, Herbert A., and J. B. Hilmon.
1978. The hardwood timber supply situation in the Eastern United States. *In The Business of Growing and Using Hardwoods*. Proceedings 6th Annual Hardwood Symposium. Hardwood Research Council. [Cashiers, N.C., May 3-6.] p. 36-48.
- Little, Gene R.
1978. Supply of red alder stumpage its quantity and quality, and trends in alder stumpage prices and product markets for the State of Washington. *In Utilization and Management of Alder*. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 9-23.
- Lloyd, J. D., Jr.
1978. 1976 Oregon timber harvest. *Western Conservation Journal* 35(4):13. [Also U.S. Department of Agriculture Forest Service Resource Bulletin PNW-78.]
- Lloyd, J. D., Jr.
1978. 1976 Washington timber harvest. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-81. 2 p.
- Lundgren, Allen L.
1978. The forest resources evaluation program (FREP), a new tool for evaluating timber management opportunities in the Lake States. *In Economic Forum on Forest Land Ownership, Management and Investment*. Proceedings Society of American Foresters Wisconsin-Michigan Section Meeting. [Marquette, Mich., March 9-10.] p. 106-108.
- Lundgren, Allen L., and Burton L. Essex.
1978. A computerized tree growth projection system for forest resource evaluation in the Lake States. *In Operational Forest Management Planning*

Resource Economics

- Project Group, International Union of Forestry Research Organizations, Bucharest, Romania. Daniel Navon, compiler. U.S. Department of Agriculture Forest Service General Technical Report PSW-32. 117 p.
- Lundgren, Allen L., and Jerold T. Hahn.
1978. The extent and characteristics of low productivity aspen areas in Wisconsin. U.S. Department of Agriculture Forest Service General Technical Report NC-45. 24 p.
- MacLean, Colin D.
1979. Relative density: The key to stocking assessment in regional resource analysis—a Forest Survey viewpoint. U.S. Department of Agriculture Forest Service General Technical Report PNW-78. 5 p.
- McClure, Joe P., Noel D. Cost, and Herbert A. Knight.
1979. Multiresource inventories—a new concept for forest survey. U.S. Department of Agriculture Forest Service Research Paper SE-191. 68 p.
- McKee, M.
1979. Index utilization in natural resources planning: A review and evaluation of techniques. *In* Proceedings of Workshop on Index Construction for Use in High Mountain Watershed Management. L. Douglas James, ed. Utah Water Research Laboratory, Utah State University. UWRL/G-79/01. p. 195-228.
- Mei, Mary A.
1979. Timber resources of northwest Oregon. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-82. 29 p.
- Metcalf, Melvin E., Robert E. Nelson, Edwin Q. P. Petteys, and John M. Berger.
1978. Hawaii's timber resources, 1970. U.S. Department of Agriculture Forest Service Resource Bulletin PSW-15. 20 p.
- Mills, Thomas J., and Daria Cain.
1978. Timber yield and financial return performance of the 1974 Forestry Incentives Program. U.S. Department of Agriculture Forest Service Research Paper RM-204. 56 p.
- Montgomery, A. A., V. L. Robinson, and J. D. Strange.
1979. Southeast forest resource: An economic outlook. Georgia State University College of Business Administration, Contract Research Division. 134 p.
- Nevel, Robert L., Jr., and David R. Dickson.
1979. Northeastern pulpwood, 1977: An annual assessment of regional timber output. U.S. Department of Agriculture Forest Service Resource Bulletin NE-60. 27 p.
- Oswald, Daniel D.
1979. Forests and timber resources of California's central coast. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-83. 56 p.
- Raile, Gerhard.
1978. Estimating d.b.h. from stump dimensions. *In* Proceedings 1977 Midwest Forest Mensurationists Meetings. U.S. Department of Agriculture Forest Service General Technical Report NC-46. 33 p.
- Roberts, Edwin H.
1979. Use of Landsat data for forest and rangeland studies. *In* Proceedings of the Colorado Landsat Conference. Paul A. Tessar and Sally A. Cornwell, eds. National Conference of State Legislatures. [Denver, Colo. Jan. 15-16.] p. 85-90.
- Sarles, Raymond L.
1979. Wood fuel plentiful in West Virginia. U.S. Department of Agriculture Forest Service Research Note NE-279. 4 p.
- Sendak, Paul E.
1979. Estimating the potential for maple sap production using forest survey data. *In* Proceedings of the 1979 Workshop on Forest Resource Inventories. Colorado State University, Department of Forestry and Wood Sciences. [Fort Collins, Colo. July.] (in press.)
- Shupe, Dorothy G., and Michael K. Barrett.
1979. Forest area and timber resource statistics for central Utah, 1976. U.S. Department of Agriculture Forest Service Resource Bulletin INT-14. 23 p.
- Shupe, Dorothy G., and Michael K. Barrett.
1979. Forest area and timber resource statistics for southeastern Utah, 1975-76. U.S. Department of Agriculture Forest Service Resource Bulletin INT-15. 23 p.
- Southern Forest Experiment Station.
1978. Forest statistics for Mississippi counties. U.S. Department of Agriculture Forest Service Resource Bulletin SO-69. 86 p.
- Sternitzke, Herbert S., and Robert L. Johnson.
1979. The Midsouth's changing hardwood forests. *Forest Farmer* 28(6):12-13, 48-50.
- Suhr, Jim, and D. Ross Carder.
1979. A comparison of three index techniques in use in Forest Service planning. *In* Proceedings of Workshop on Index Construction for Use in High Mountain Watershed Management, L. Douglas James, ed. Utah Water Research Laboratory, Utah State University. UWRL/G-79/01. p. 241-268.
- Tarrent, Robert F.
1979. Forest Survey and the small private ownerships. *In* The Impact of Change on the Management of Private Forest Lands in the Northwest. Proceedings Northwest Private Forest Land Conference. Western Forestry Center, U.S. Department of Agriculture Forest Service, and State Forests of California, Idaho, Oregon, and Washington. p. 22-24.
- Tarrant, Robert F., Robert A. Ewing, and Donald R. Gedney.
1978. Forest Survey and the nonindustrial private ownerships. *Journal of Forestry* 76(8):470-472.
- Thor, Edward C., and James L. Creighton.
1978. Mystic Mountain: An educational alternative futures wildland planning game. U.S. Department of Agriculture Forest Service General Technical Report PSW-30. 13 p.
- Throssell, T.
1979. PARMS—a computer program to modify FINSYS-2, TABLE-2 and other

- FORTTRAN programs. U.S. Department of Agriculture Forest Service Research Note INT-273. 10 p.
- Timson, Floyd G.
1978. Development of minimum standards for hardwoods used in producing underground coal mine timbers. U.S. Department of Agriculture Forest Service Research Note NE-261. 4 p.
- Timson, Floyd G.
1978. Logging residue available for mine-timber production. U.S. Department of Agriculture Forest Service Research Paper NE-415. 6 p.
- VanSickle, Charles, and Robert E. Benson.
1978. The dead timber resource—amounts and characteristics. *In* Proceedings of Symposium on The Dead Softwood Timber Resource. [Spokane, Wash., May 22-24.] p. 127-138.
- Vasilevsky, Alexander, and Burton L. Essex.
1978. An accurate way to select sample plots on aerial photos using ground control. *In* Proceedings 1977 Midwest Forest Mensurationists Meeting. U.S. Department of Agriculture Forest Service General Technical Report NC-46. 33 p.
- Wartluft, Jeffrey L.
1978. Estimating top weights of hardwood sawtimber. U.S. Department of Agriculture Forest Service Research Paper NE-427. 7 p.
- Welch, Richard L.
1978. Wood from land clearing and noncommercial silvicultural operations in the Southeast. U.S. Department of Agriculture Forest Service Research Note SE-268. 6 p.
- Forest Economics**
- Anderson, Walter C.
1979. Research in foreign trade for southern timber products. *In* Proceedings 1978 Joint Convention of the Society of American Foresters and the Canadian Institute of Forestry. p. 366-368.
- Anderson, Walter C.
1979. Resource management on a city watershed forest. *In* Forest Resource Management: Decisionmaking Principles and Cases. W. B. Saunders Co., Philadelphia, Pa. p. 505-513.
- Bailey, Robert G., Robert D. Pfister, and Jan A. Henderson.
1978. Nature of land and resource classification—a review. *Journal of Forestry* 76(10):650-655.
- Baumgartner, David C., and Ronald I. Beazley.
1979. Taxation of forest and associated lands in Illinois. U.S. Department of Agriculture Forest Service Research Paper NC-165. 9 p.
- Beuter, John H., and Con Schallau.
1978. Forest in transition: relationship to economic and social stability. Proceedings 8th World Forestry Congress FRC/2-7 [Jakarta, Indonesia, October.] 18 p.
- Bradley, Dennis P.
1979. A brief description of the general purpose simulation system (GPSS) for discrete models. *In* Simulation Techniques and Forest Operations, Planning, and Control. Working Party S 3.04.01, International Union of Forest Research Organizations Proceedings, Forest Technology and Forest Products, Agricultural University, Wageningen, The Netherlands. p. 275-278.
- Briggs, David G., James S. Bethel, and Gerald F. Schreuder.
1978. An approach for comparing the relative value of alder with other species from forest to end product. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 35-46.
- Brown, Thomas C., and Ron S. Boster.
1978. On the economics of timber damage appraisal for public forests. *Journal of Forestry* 76(12):777-780.
- Carpenter, Eugene M.
1978. Structural flakeboard production opportunities in Virginia, Minnesota. (Revised.) U.S. Department of Agriculture Forest Service General Technical Report WO-5. 241 p.
- DeBald, Paul S.
1979. Economics of even-age regimes in northern hardwoods. *In* Economic Forum on Forest Land Ownership, Management, and Investment. Proceedings of the Society of American Foresters Wisconsin-Michigan Section Meeting, March 9-10, 1978, Marquette, Mich. p. 155-165.
- Duchacek, Howard.
1978. Tubular versus standard evaporator. *National Maple Syrup Digest* 18(2):15-18.
- Duchacek, Howard, Frederick M. Laing, Lawrence D. Garrett, Neil K. Huyler, Mariafranca Morselli, and James Marvin.
1978. Sap preheaters: Efficient maple syrup processing. University of Vermont Agriculture Experiment Station MP-97. 11 p.
- Dutrow, G. F., C. Row, and R. Stewart.
1979. Methods for estimating impacts of ban on 2,4,5-T on production costs and yields. *In* 2,4,5-T Rebuttable Presumption Against Registration Impact Assessment—Timber Commodity—Biological and Economic Assessment. U.S. Department of Agriculture Forest Service, Washington, D.C. p. 38-50.
- Flight, Roger D., K. Norman Johnson, Kent P. Connaughton, and Robert W. Sassaman.
1978. Roadless area—intensive management tradeoffs on western National Forests. U.S. Department of Agriculture Forest Service, Portland, Ore. 57 p.
- Flight, Roger D., K. Norman Johnson, Kent P. Connaughton, and Robert W. Sassaman.

Resource Economics

1979. Can intensive management make up the harvest lost when roadless areas are left undeveloped? *Journal of Forestry* 77(3):148-151.
- Gansner, David A., and Owen W. Herrick.
1979. Forest stand losses to gypsy moth in the Poconos. U.S. Department of Agriculture Forest Service Research Note NE-273. 5 p.
- Garrett, Lawrence D.
1979. Determining wood fuel costs and economic use in home heating systems. *In* Proceedings Wood Heating Seminar 4. Wood Energy Institute, Camden, Me. p. 286-309.
- Garrett, Lawrence D., and Mariafranca Morselli.
1978. Mechanical compression evaporators. *National Maple Syrup Digest* 18(4):20-23.
- Godman, Richard M.
1979. Hardwood sawtimber quality and value growth. *In* Economic Forum on Forest Land Ownership, Management, and Investment. Proceedings Society of American Foresters Wisconsin-Michigan Section Meeting, March 9-10, 1978, Marquette, Mich. p. 148-154.
- Godman, Richard M., and Joseph J. Mendel.
1978. Economic values for growth and grade change of sugar maple in the Lake States. U.S. Department of Agriculture Forest Service Research Paper NC-155. 16 p.
- Granskog, James E.
1979. Southern sawmills gain in size. *Southern Lumberman* 238(2949):15-16.
- Gratzer, Miklos A., and Edward H. Alkiewicz.
1979. Attitudes and travel patterns of boaters in the Pocono/Lake Wallenpaupack region of Pennsylvania. State University of New York, College of Environmental Sciences and Forestry, Syracuse. [Unnumbered bulletin.] 24 p.
- Herrick, Owen W., David A. Gansner, and Paul S. DeBald.
1979. Predicting stand losses from the gypsy moth: An application of automatic interaction detection. *Journal of Forestry* 77(2):91-94.
- Host, John.
1978. Costing fundamentals in the logging industry. *In* Proceedings of the Society of American Foresters and the Northeastern Loggers Association p. 5-12.
- Huyler, Neil K., and Lawrence D. Garrett.
1979. A cost analysis: Processing maple syrup products. U.S. Department of Agriculture Forest Service Research Paper NE-430. 6 p.
- Huyler, Neil K., Lawrence D. Garrett, and Paul E. Sendak.
1979. Economics of sugaring. *New England Farmer*, March, p. 4-5.
- Kallio, Edwin, and Edward Dickerhoof.
1979. Business data and market information source book for the forest products industry. Forest Products Research Society, Madison, Wis. 215 p.
- Lothner, David C., Edwin Kallio, and David T. Davis.
1978. Administering Minnesota's tax-forfeited land: Some trends in revenues and expenses. U.S. Department of Agriculture Forest Service Research Bulletin NC-38. 6 p.
- Lothner, David C., Edwin Kallio, and David T. Davis.
1979. Minnesota's tax-forfeited land: Some trends in timber harvested and stumpage prices. U.S. Department of Agriculture Forest Service Research Bulletin NC-42. 12 p.
- McCauley, Orris D.
1978. Requirement for an economic evaluation of thinning and timber stand improvement. *In* Proceedings Society of American Foresters Wisconsin-Michigan Section Meeting, March 9-10, 1978, Marquette, Mich. p. 109-120.
- McCay, Roger E.
1978. Don't be a recreational slob. *Pennsylvania Forests* 68(3):447-448.
- McCay, Roger E.
1978. Hiker preferences for trail features and maps. U.S. Department of Agriculture Forest Service Research Note NE-262. 4 p.
- McCay, Roger E., David A. Gansner, and Jane R. Riddle.
1978. Preparing directories to local outdoor recreation facilities. U.S. Department of Agriculture Forest Service General Technical Report NE-46. 17 p.
- McCay, Roger E., David A. Gansner, and John J. Padolino.
1978. Measuring the attitudes and awareness of environmental education camp users. U.S. Department of Agriculture Forest Service Research Paper NE-426. 13 p.
- Meter, James W., and Gayne G. Erdmann, eds.
1979. Economic forum on forest land ownership, management, and investment. Proceedings Society of American Foresters Wisconsin-Michigan Section Meeting, March 9-10, Marquette, Mich. 171 p.
- Mills, Thomas J.
1979. Synopsis: 1974 FIP evaluation. *In* Proceedings of the Southern Forest Economics Workshop. [Chapel Hill, N.C., March 21-22.]
- Olson, Jeffrey T., and Allen L. Lundgren.
1978. Converting partially-stocked aspen stands to fully stocked stands in the Lake States: An economic analysis. U.S. Department of Agriculture Forest Service General Technical Report NC-47. 8 p.
- Olson, Jeffrey T., Allen L. Lundgren, and Dietmar Rose.
1978. Equations for estimating stand establishment, release, and thinning costs in the Lake States. U.S. Department of Agriculture Forest Service Research Paper NC-163. 7 p.
- Randall, Robert M.
1978. Techniques and costs of converting hardwood stands to conifers. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 353-363
- Randall, Robert M., and Robert W. Sassaman.
1979. Identifying and evaluating environmental impacts associated with timber harvest scheduling policies. U.S. Department of Agriculture Forest Service

- General Technical Report PNW-81. 20 p.
- Rose, Dietmar W., and Dean S. DeBell.
1978. Economic assessment of intensive culture of short-rotation hardwood crops. *Journal of Forestry* 76(11):706-711, illus.
- Sampson, George R.
1979. Effects of oversimplification inherent in LP models of primary wood processing operations. *Forest Products Journal* 29(5):23-27.
- Sawyer, Alan G., Parker M. Worthing, and Paul E. Sendak.
1979. The role of laboratory experiments to test marketing strategies. *Journal of Marketing* 43(3):60-67.
- Siegel, William C.
1979. Forest management and the law. In *Forest Resource Management, Decisionmaking Principles and Cases*. W. B. Saunders Co., Philadelphia, Pa., p. 339-362.
- Siegel, William C.
1979. The tax climate. In *Forest Resource Management, Decisionmaking Principles and Cases*. W. B. Saunders Co., Philadelphia, Pa., p. 363-380.
- Smith, H. Clay, G. R. Trimble, Jr., and Paul S. DeBald.
1979. Raise cutting diameters for increased returns. U.S. Department of Agriculture Forest Service Research Paper NE-445. 7 p.
- Steuer, Ralph, and Albert T. Schuler.
1979. An interactive multiple-objective linear programming approach to a problem in forest management. *Journal of Forest Ecology and Management* 2(3):240-256.
- TenWolde, Anton, and Robert N. Stone.
1978. Consistent energy accounting in production of wood products and competing materials. In *Resource Recovery and Conservation* 3:249-259.
- Thor, Edward C.
1979. Alternative futures planning: Decisionmaking for an uncertain future. In *Proceedings and Abstracts, American Institute for Decision Sciences, Western Regional Conference, 8th Annual Meeting [March 22-23, Reno, Nev.]* p. 303-306.
- Utz, Keith A., William C. Siegel, and John E. Gunter.
1978. What forest landowners should know about federal estate and gift taxes. U.S. Department of Agriculture Forest Service General Report SA-GR1. 12 p.
- Waggener, Thomas R.
1978. Should alder be replaced by conifers? In *Utilization and Management of Alder*. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 365-379.
- Wolf, Charles H.
1978. Forestry's role in promoting employment in the United States. In *8th World Forestry Congress, Jakarta, Indonesia*. 12 p.
- Wolf, Charles H., and Gilbert P. Dempsey.
1978. Logging work injuries in Appalachia. U.S. Department of Agriculture Forest Service Research Paper NE-416. 13 p.

Supply, Demand, and Price Analysis

- American Christmas Tree Journal.
1979. A report on the 1978 national Christmas tree production survey. *American Christmas Tree Journal* 23(2):10-11. (NE-4206, 4)
- Behm, R. D.
1978. Developing new alder markets. In *Utilization and Management of Alder*. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 157-161.
- Bellamy, Thomas R.
1978. Southern pulpwood production, 1977. U.S. Department of Agriculture Forest Service Resource Bulletin SE-46. 21 p.
- Boyce, Stephen G., and Joe P. McClure.
1978. The harvest of yellow-poplar timber can be doubled. In *Marketing and Utilization of Yellow-Poplar, Symposium Proceedings*. University of Tennessee Institute of Agriculture, March 21-22. p. 18-31.
- Corner, Sandy.
1979. Christmas trees: A bibliography. *American Christmas Tree Journal* 23(1):17-18, 47.
- Darr, David R.
1978. The export market for lumber and panel products from the South: Status and potential. In *Complete Tree Utilization of Southern Pine, Symposium Proceedings*. Charles W. McMillin, ed. Forest Products Research Society. [New Orleans, La., April.] p. 57-68.
- Darr, David R.
1978. Potential impact of easing the log export restriction on the Tongass National Forest. U.S. Department of Agriculture Forest Service Resource Bulletin PNW-77. 18 p.
- Darr, David R.
1979. The impacts of international trade in domestic markets. In *The Impact of Change on the Management of Private Forest Lands in the Northwest, Proceedings Northwest Private Forest Land Conference*. Western Forestry Center, U.S. Department of Agriculture Forest Service, and State Forests of California, Idaho, Oregon, and Washington. p. 25-34.
- Darr, David R.
1979. World wood fiber resources. In *Future Technical Needs and Trends in the Paper Industry—III*. Technical Association of the Pulp and Paper Industry, Atlanta, Ga. p. 23-33.

Timber Management

- Dickerhoof, H. Edward, and David B. McKeever.
1979. Particleboard medium density fiberboard and mende process board plants in the United States: Capacity, production, and raw material trends, 1956-1976. U.S. Department of Agriculture Forest Service Resource Bulletin FPL-6. 21 p.
- Dickerhoof, H. Edward, and Thomas C. Marcin.
1978. More wood used in mobile homes despite slump in production. *Southern Lumberman* 237(2944):83-85.
- Haynes, Richard W., and Darius M. Adams.
1979. Impacts of RARE II withdrawals on softwood prices, consumption, and production. *Journal of Forestry* 78(4):230-233.
- Hutchins, Cecil C., Jr.
1978. Pulpwood prices in the Southwest, 1977. U.S. Department of Agriculture Forest Service Research Note SE-269. 3 p.
- Lindell, Gary R.
1978. Log export restrictions in western States outlined in report. *Western Conservation Journal* 35(4):42-43. [Excerpt from Log export restrictions of the western States and British Columbia. 1978. U.S. Department of Agriculture Forest Service General Technical Report PNW-63.]
- Lindell, Gary R.
1979. World softwood lumber trade: patterns, trends and prospects. *Forest Products Journal* 29(7):43-48.
- Northeastern Forest Experiment Station.
1978. Buying your Christmas tree. U.S. Department of Agriculture Forest Service Information Report NE-INF-5-R78. 30 p.
- Quink, Thomas F., and Jean W. Nolley.
1979. Eastern Massachusetts' secondary wood industry. Massachusetts Department of Environmental Management, Division of Forests and Parks, Boston. 38 p.
- Reid, William H., and David B. McKeever.
1979. Wood products and other materials used in construction highways in the United States. U.S. Department of Agriculture Forest Service Resource Bulletin FPL-5. 19 p.
- Ring, Merle E., Jr., and Jean W. Nolley.
1979. Maine's secondary wood industry. Maine Department of Conservation, Bureau of Forestry, Augusta. 48 p.
- Ruderman, Florence K.
1978. Production, prices, employment, and trade in Northwest forest industries, second quarter 1978. U.S. Department of Agriculture Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oreg. 68 p.
- Ruderman, Florence K.
1979. Production, prices, employment, and trade in Northwest forest industries, third quarter 1978. U.S. Department of Agriculture Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oreg. 56 p.
- Ruderman, Florence K.
1979. Production, prices, employment, and trade in Northwest forest industries, fourth quarter 1978. U.S. Department of Agriculture Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oreg. 57 p.
- Ruderman, Florence K.
1979. Production, prices, employment, and trade in Northwest forest industries, first quarter 1979. U.S. Department of Agriculture Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oreg. 57 p.
- Schuler, Albert T.
1978. An econometric analysis of the U.S. hardboard market. U.S. Department of Agriculture Forest Service Research Paper NE-424. 7 p.
- Schuler, Albert T.
1979. An economic model of the domestic insulation board industry. *Forest Products Journal* 29(8):21-25.
- Welch, Richard L., and Thomas R. Bellamy.
1979. A 10-year analysis of South Carolina's industrial timber products output. U.S. Department of Agriculture Forest Service Resource Bulletin SE-48. 23 p.
- Withcombe, Richard.
1978. Production opportunities for structural flakeboard in the Northern Rockies. *In* Structural Flakeboard from Forest Residues. U.S. Department of Agriculture Forest Service General Technical Report WO-5. p. 184-188.
- YoungDay, Douglas, J., and Roger D. Fight.
1979. Natural resource policy: The distributional impact on consumers of changing output prices. *Land Economics* 55(1):11-27.

Timber Management

Biological Relations

- Alban, David H., Donald A. Perala, and Bryce E. Schlaegel.
1978. Biomass and nutrient distribution in aspen, pine, and spruce stands on the same soil type in Minnesota. *Canadian Journal of Forest Research* 8(3):290-299.
- Alban, David H.
1979. Species influence on nutrients in vegetation and soils. *In* Impact of Intensive Harvesting on Forest Nutrient Cycling Proceedings. State University of New York, College of Environmental Science and Forestry, Syracuse. p. 152-171.
- Ashby, W. Clark, Clay A. Kolar, Thomas R. Hendricks, and Robert E. Phares.
1979. Effects of shaking and shading on growth of three hardwood species. *Forest Science* 25(2):212-216.
- Auchmoody, L. R., and H. Clay Smith.
1979. Oak soil-site relationships in northwestern West Virginia. U.S. Department of Agriculture Forest Service Research Paper NE-434. 27 p.
- Bailey, D. K., and Frank G. Hawksworth.

1979. Pinyons of the Chihuahuan desert region. *Phytologia* 44:129-133.
- Barnett, James P.
 1978. Advances in container production of planting stock. *In* Proceedings American Forest Biology Workshop. 5:167-175.
- Barnett, James P.
 1978. Maturation of tree seeds. *In* Proceedings Flowering and Seed Development in Trees: A Symposium. F. T. Bonner, ed. International Union of Forestry Research Organizations (IUFRO). p. 206-217.
- Barnett, James P.
 1979. Germination temperatures for container culture of southern pines. *Southern Journal of Applied Forestry* 3:13-14.
- Barney, Richard J., Keith Van Cleve, and Robert Schlentner.
 1978. Biomass distribution and crown characteristics in two Alaskan *Picea mariana* ecosystems. *Canadian Journal of Forest Research* 8(1):36-41.
- Belcher, E., and J. A. Vozzo.
 1979. Radiographic analysis of agricultural and forest tree seeds. *Association of Official Seed Analysis Handbook* 31. 29 p.
- Bergstrom, Dorothy.
 1979. Small mammals traffic in truffles. *Forest Research West*, January 1979. p. 1-3.
- Bjorkbom, John C.
 1979. Seed production and advance regeneration in Allegheny hardwood forests. U.S. Department of Agriculture Forest Service Research Paper NE-435. 10 p.
- Bjorkbom, John C., L. R. Auchmoody, and Donald E. Dorn.
 1979. Influence of fertilizer on seed production in Allegheny hardwood stands. U.S. Department of Agriculture Forest Service Research Paper NE-439. 5 p.
- Blackmon, B. G.
 1979. Estimates of nutrient drain by dormant-season harvests of coppice American sycamore. U.S. Department of Agriculture Forest Service Research Note SO-245. 5 p.
- Blackmon, B. G.
 1979. Site-species relationships for southern hardwoods. *In* Proceedings Society of American Foresters. p. 354-359.
- Bonner, F. T., ed.
 1979. Proceedings: Flowering and seed development in trees: A symposium. International Union of Forestry Research Organizations (IUFRO). 380 p.
- Boyce, Stephen G.
 1979. The environmental consequences of intensive forestry and the removal of whole trees from forests. *In* Biological and Sociological Basis for a Rational Use of Forest Resources for Energy and Organics. Proceedings International Workshop for the Man and the Biosphere Program. [Michigan State University, East Lansing, May 1979.] p. 27-29.
- Boyce, Stephen G.
 1978. Theory for new directions in forest management. U.S. Department of Agriculture Forest Service Research Paper SE-193. 19 p.
- Boyce, Stephen G., and Noel D. Cost.
 1978. Forest diversity—new concepts and applications. U.S. Department of Agriculture Forest Service Research Paper SE-194. 36 p.
- Boyce, Stephen G., and Herbert A. Knight.
 1979. Regeneration for the third forest. *Forest Farmer* 38(9):12-14.
- Campbell, T. E.
 1979. Increasing latex in pine seed coating impairs repellency and germination. *Southern Journal of Applied Forestry* 3:61-64.
- Carl, Clayton M., Jr., John R. Donnelly, and Boyd W. Post.
 1978. Effects of watering and fertilization on carbohydrate reserves in sugar maple seedlings. U.S. Department of Agriculture Forest Service Research Paper NE-418. 6 p.
- Carlson, C. E., C. C. Gordon, and C. J. Gilligan.
 1979. The relationship of fluoride to visible growth/health characteristics of *Pinus monticola*, *Pinus contorta*, and *Pseudotsuga menziesii*. *Fluoride* 12:9-17.
- Castri, Francesco di, and Lloyd Loope.
 1979. Thoughts on the Biosphere Reserve concept and its implementation. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 137-146.
- Cattellino, Peter J., Ian R. Noble, Ralph O. Slatyer, and Stephen R. Kessell.
 1979. Predicting the multiple pathways of plant succession. *Environmental Management* 3:41-50.
- Cecich, R. A., and E. D. Bauer.
 1979. How to make your ultramicrotome vibration-free. *Stain Technology* 54(2):103-104.
- Cecich, R. A.
 1979. The overwintering shoot apex of *Pinus banksiana*. *Botanical Society of America Miscellaneous Series* 159. p 7.
- Cecich, R. A.
 1979. Ovule development and abortion in *Pinus banksiana*. *In* Proceedings Flowering and Seed Development in Trees: A Symposium. F. T. Bonner, ed. International Union of Forestry Research Organizations (IUFRO). p. 33-36.
- Cole, Dale W., S. P. Gessel, and John Turner.
 1978. Comparative mineral cycling in red alder and Douglas-fir. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 327-336.
- Crow, Thomas R., and Richard W. Blank.
 1978. Distribution of biomass and production for several northern woody species. U.S. Department of Agriculture Forest Service Research Note NC-239. 3 p.
- Czapowskyj, M.

Timber Management

1979. Foliar nutrient concentrations in balsam fir as affected by soil drainage and methods of slash disposal. U.S. Department of Agriculture Forest Service Research Note NE-278. 4 p.
- Daniels, Barbara A., and Darr M. Duff.
 1978. Variation in germination and spore morphology among four isolates of *Glomus mosseae*. *Mycologia* 70(6):1261-1267.
- Daniels, Barbara A., and James M. Trappe.
 1979. *Glomus epigaeus* sp. nov., a useful fungus for vesicular-arbuscular mycorrhizal research. *Canadian Journal of Botany* 57(5):539-542.
- Densmore, Roseann, and John C. Zasada.
 1978. Rooting potential of Alaskan willow cuttings. *Canadian Journal of Forest Research* 8(4):477-479.
- Della-Bianca, Lino.
 1979. Fruit production by summer grape in the southern Appalachians. *Journal of Wildlife Management* 43:579-583.
- Dickson, Richard E.
 1979. Analytical procedures for the sequential extraction of ¹⁴C-labeled constituents from leaves, bark, and wood of cottonwood plants. *Physiologia Plantarum* 45:480-488.
- Dinsman, L. G.
 1979. The study of long-term changes in terrestrial ecosystems at Biosphere Reserves. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 262-272.
- Edwards, M. B., and W. H. McNab.
 1979. Biomass prediction for young southern pines. *Journal of Forestry* 77(5):291-292.
- Franklin, Jerry F.
 1979. The conceptual basis for selection of U.S. Biosphere Reserves and features of established areas. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 2-27.
- Franklin, Jerry F., and Stanley L. Krugman, coordinators.
 1979. Selection, management and utilization of Biosphere Reserves. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. 308 p.
- Funk, David T., Richard C. Schlesinger, and Felix Ponder, Jr.
 1979. Autumn-olive as a nurse plant for black walnut. *Botanical Gazette* 140(Supplement):110-114.
- Funk, David T., and Robert D. Williams.
 1979. Can juglone be hazardous to your health? *Walnut Council Members Newsletter* 6(2):4.
- Funk, David T., Paula J. Case, W. J. Rietveld, and Robert E. Phares.
 1979. Effects of juglone on the growth of coniferous seedlings. *Forest Science* 25(3):452-454.
- Galoch, E., M. Michniewicz, and Z. Zatorska.
 1978. Dynamics of plant hormones in the shoots of flowering and not yet flowering young Scots pines (*Pinus silvestris* L.). *Bulletin de l'Academie Polonaise des Sciences Serie des Sciences Biologiques* 26:283-287. (PL-480 Project PL-FS-63 in Toruń, Poland, in cooperation with J. A. Romberger.)
- Galoch, E., and M. Michniewicz.
 1978. Dynamics of endogenous gibberellin-like substances in embryonic shoots of young Scots pines (*Pinus silvestris* L.) at the time of flower primordia initiation. *Bulletin de l'Academie Polonaise des Sciences Serie des Sciences Biologiques* 26:421-424. (PL-480 Project PL-FS-63 in Toruń, Poland, in cooperation with J. A. Romberger.)
- Gerasimov, I. P.
 1979. Anthropogenic transformation of natural ecosystems and their study at Biosphere Station Reserves. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 165-171.
- Ghilarov, M. A., D. A. Krivolutsky, and Y. I. Chernov.
 1979. Soil-zoological studies of Biosphere Research Stations. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 220-225.
- Gilbert, Vernon C.
 1979. Biosphere Reserves in the United States and their relationship to the international program, man and the biosphere. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 28-35.
- Gordon, Donald T., and Eugene E. Bowen.
 1978. Herbs and brush on California red fir regeneration sites: A species and frequency sampling. U.S. Department of Agriculture Forest Service Research Note PSW-329. 10 p.
- Gordon, John C.
 1978. Biological components of alder yield improvement. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 321-325.
- Gordon, John C., and Richard B. Hall.
 1978. Alder research outside the Northwest: A brief overview. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 47-53.
- Graney, David L.
 1979. Site quality relationships for the oak-hickory forest type. *In* Proceedings

- Society of American Foresters Annual Meeting. p. 339-343.
- Gregory, Robert A., and William E. Wallner.
 1978. Histological relationship of *Phytobia sciosa* to *Acer saccharum*. Canadian Journal of Botany 57:403-407.
- Gregory, Robert A.
 1978. Living elements of the conducting xylem of sugar maple (*Acer saccharum* Marsh.). International Association of Wood Anatomists Bulletin 1978/4: 65-69.
- Gregory, Robert A., and William E. Wallner.
 1979. Histological relationships of *Phytobia sciosa* to *Acer saccharum*. Canadian Journal of Botany 57(4):403-407.
- Grigal, D. F.
 1979. Extractable soil nutrients and permafrost under adjacent forest types in interior Alaska. Northwest Science 53(1):43-50.
- Gwynn, T. M., III, L. J. Musselman, and W. F. Mann, Jr.
 1978. The floral and seed biology of *Seymeria cassioides* (Scrophulariaceae). Beitrage zur Biologie der Pflanzen 54:105-124.
- Haissig, Bruce E., and Arthur L. Schipper, Jr.
 1978. How to extract and characterize dehydrogenases from woody plants. U.S. Department of Agriculture Forest Service Research Paper NC-159. 15 p.
- Hall, Frederick C.
 1978. Western juniper in association with other tree species. In Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 31-36.
- Hansen, Edward A., and Richard E. Dickson.
 1979. Water and mineral nutrient transfer between root systems of juvenile *Populus*. Forest Science 25(2):247-252.
- Hansen, Edward A., and James B. Baker.
 1979. Biomass and nutrient removal in short rotation intensity cultured plantations. In Impact of Intensive Harvesting on Forest Nutrient Cycling Proceedings. State University of New York, College of Environmental Science and Forestry, Syracuse. p. 130-151.
- Harris, L. D., and W. H. Smith.
 1978. Relations of forest practices to non-timber resources and adjacent ecosystems. In Proceedings of a Symposium on Principles of Maintaining Productivity on Prepared Sites. T. Tippen, ed. U.S. Department of Agriculture Forest Service, Southern Forest Experiment Station, New Orleans, La. p. 28-53.
- Harvey, A. E., and J. L. Grasham.
 1979. The effects of selected systemic fungicides on the growth of *Cronartium ribicola* in vitro. Plant Disease Reporter 63(5):354-358.
- Harvey, A. E., M. F. Jurgensen, and M. J. Larsen.
 1978. Role of residue in and impacts of its management on forest soil biology. In Proceedings 8th World Forestry Congress [Jakarta, Oct. 16-28, 1978.] FQL/29-8. 7 p.
- Harvey, A. E., M. J. Larsen, and M. F. Jurgensen.
 1979. Comparative distribution of ectomycorrhizae in soils of three western Montana forest habitat types. Forest Science 25(1):350-358.
- Hawk, Glenn M., Jerry F. Franklin, W. Arthur McKee, and Randall B. Brown.
 1978. H. J. Andrews Experimental Forest reference stand system: Establishment and use history. Coniferous Forest Biome Bulletin 12. 79 p.
- Hebb, Edwin A., and Willis B. Wheeler.
 1978. Bromacil in Lakeland soil ground water. Journal of Environmental Quality 7(4):598-601.
- Heidmann, L. J., W. J. Rietveld, and D. P. Trujillo.
 1979. Fertilization increases cone production and diameter growth of a 55-year old ponderosa pine stand in Arizona. In Flowering and Seed Development in Trees: A Symposium. Frank Bonner, ed. International Union of Forestry Research Organizations (IUFRO). p. 197-205.
- Hejnowicz, Z., and J. A. Romberger.
 1979. The common basis of wood grain figures is the systematically changing orientation of cambial fusiform cells. Wood Science and Technology 13:89-96.
- Hilt, Donald E.
 1979. Diameter growth of upland oaks after thinning. U.S. Department of Agriculture Forest Service Research Paper NE-437. 12 p.
- Hilt, Donald E., and Martin E. Dale.
 1979. Stem form changes in upland oaks after thinning. U.S. Department of Agriculture Forest Service Research Paper NE-433. 7 p.
- Holt, Coleman.
 1978. The effect of deer populations on natural regeneration in the Allegheny Plateau Region. Allegheny News, Summer 1978. 9 p.
- Horsley, Stephen B.
 1978. Chemicals from herbaceous plants maintain forest openings. Pennsylvania Forests 68:12-13, 24.
- Horsley, Stephen B.
 1979. Herbicide treatment of fern and grass understories with Roundup: A new tool in Allegheny hardwood silviculture. Allegheny News, Summer 1979. 2 p.
- Hoyle, M. C.
 1979. Response of yellow birch in acid subsoil to micronutrient additions. Plant and Soil 51:453-455.
- Janerette, C. A.
 1978. The effects of soak temperature on sugar maple seed germination. U.S. Department of Agriculture Forest Service Research Note NE-269. 2 p.
- Janerette, C. A.
 1978. Solute absorption by seeds of sugar maple. Forest Science 24:509-512.
- Janerette, C. A.
 1979. Cold soaking reduces the stratification requirement of sugar maple seeds.

Timber Management

- Tree Planters' Notes 30:3.
- Janerette, C. A.
1979. Seed dormancy in sugar maple. *Forest Science* 25:307-311.
- Janerette, C. A.
1979. The pathogenicity of fungi isolated from sugar maple seeds. *Tree Planters' Notes* 30:12-14.
- Johnson, Frederic D., and Robert Steele.
1979. New plant records for Idaho from Pacific Coastal refugia. *Northwest Science* 52(3):205-211.
- Johnson, W. Carter, Jerry S. Olson, and David E. Reichle.
1979. Management of experimental reserves and their relation to conservation reserves: The Biosphere Reserve cluster. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 64-75.
- Kindschy, Robert R., and Chris Maser.
1978. Jordan Crater Research Natural Area, Supplement 7. U.S. Department of Agriculture Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland Oreg. 18 p.
- Kopcewicz, J., Z. Zatorska, H. Kulikowska, and T. Szczesniak.
1978. Hormonal balance in apical meristems of Scots pine shoots as a very early symptom of flower sex differentiation. *Acta Societatis Botanicorum Poloniae* 47:107-114. (PL-480 Project PL-FS-63 in Toruń, Poland, in cooperation with J. A. Romberger.)
- Kelsey, Rick G., and Michael G. Harrington.
1979. A search for potential phytotoxins influencing germination and early growth of ponderosa pine. U.S. Department of Agriculture Forest Service Research Paper INT-216. 22 p.
- Kormanik, Paul P., William C. Bryan, and Richard C. Schultz.
1979. Endomycorrhizal inoculation during transplanting improves growth of vegetatively propagated yellow-poplar. *Plant Propagator* 23:4-5.
- Kovda, V. A., and A. S. Kerzhentsev.
1979. Integrated studies at the Pushchino Biosphere Station. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 282-288.
- Krawczynsyn, J., and J. A. Romberger.
1979. Cyclical cell length changes in wood in relation to storied structure and interlocked grain. *Canadian Journal of Botany* 57:787-794.
- Krinitzky, V. V.
1979. Research at U.S.S.R. state reserves and their role in monitoring biosphere changes. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 172-177.
- Kulikowska, H., J. Kopcewicz, Z. Zatorska, and T. Szczesniak.
1978. Auxins and gibberellins in embryonic shoots of Scots pine in relation to flower sex differentiation. *Acta Societatis Botanicorum Poloniae* 47:403-409. (PL-480 Project E21-FS-63 in Toruń, Poland, in cooperation with J. A. Romberger.)
- Kung, Fan H., and Calvin F. Bey.
1979. Heritability construction for provenance and family selection. *In* Lake States Forest Tree Improvement Conference Proceedings 13:136-146.
- Laacke, Robert J., ed.
1979. California forest soils. University of California, Division of Agricultural Science, Berkeley. Publication 4094. 181 p.
- Langdon, O. Gordon, Dean S. DeBell, and Donal D. Hook.
1979. Diameter growth of swamp tupelo: Seasonal pattern and relation to water table level. *In* Proceedings Fifth North American Forest Biology Workshop. University of Florida School of Forest Resources and Conservation, and U.S. Department of Agriculture Forest Service, Southeastern Forest Experiment Station, Asheville, N.C. p. 326-333.
- Larsen, M. J., M. F. Jurgensen, A. E. Harvey, and J. C. Ward.
1978. Dinitrogen fixation associated with sporophores of *Fomitopsis pinicola*, *Fomes fomentarius*, and *Echinodontium tinctorium*. *Mycologia* 70(6):1217-1222.
- Larsen, Michael J., Martin F. Jurgensen, and Alan E. Harvey.
1978. N₂ fixation associated with wood decayed by some common fungi in western Montana. *Canadian Journal of Forest Research* 8:341-345.
- Larson, Philip R.
1979. Establishment of the vascular system in seedlings of *Populus deltoides* Bartr. *American Journal of Botany* 66:452-462.
- Layser, Earle S., and Gilbert H. Schubert.
1979. Preliminary classification for coniferous forest and woodland series of Arizona and New Mexico. U.S. Department of Agriculture Forest Service Research Paper RM-208. 20 p.
- Leak, W. B.
1979. Three habitats of the White Mountains. *Forest Notes* 136:11-13.
- Little, E. L., Jr.
1979. Four varietal transfers of United States trees. *Phytologia* 42(3):219-222.
- Little, S., and J. J. Mohr.
1979. Reestablishing understory plants in overused wooded areas of Maryland State Parks. U.S. Department of Agriculture Forest Service Research Paper NE-431. 9 p.
- MacMahon, James A.
1979. Thoughts on the optimum size of natural reserves based on ecological principles. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 128-134.
- Mann, W. F., Jr.
1979. Relationships of seed size, number of cotyledons, and initial growth of

- southern pines. *Tree Planters' Notes* 30(2):22-23, 26.
- Mann, W. F., Jr., and L. J. Musselman.
 1979. Native root parasites and forestry in American South: A review. *In* International Symposium on Parasitic Weeds 2:24-33.
- Marquis, David A.
 1978. Tree regeneration and deer. The Pennsylvania State University, Cooperative Extension Service, Pennsylvania Forest Resources 61. 4 p.
- Marquis, David A., and Ted J. Grisez.
 1978. The effect of deer exclosures on the recovery of vegetation in failed clearcuts on the Allegheny Plateau. U.S. Department of Agriculture Forest Service Research Note NE-270. 5 p.
- Marx, Donald H.
 1979. *Pisolithus* ectomycorrhizae survive cold storage on shortleaf pine seedlings. U.S. Department of Agriculture Forest Service Research Note SE-281. 4 p.
- Marx, Donald H.
 1979. Synthesis of *Pisolithus* ectomycorrhizae on white oak seedlings in fumigated nursery soil. U.S. Department of Agriculture Forest Service Research Note SE-280. 4 p.
- Maser, Chris, James M. Trappe, and Ronald A. Nussbaum.
 1978. Fungal-small mammal interrelationships with emphasis on Oregon coniferous forests. *Ecology* 59(4):799-809.
- Maser, Chris, James M. Trappe, and Douglas C. Ure.
 1978. Implications of small mammal mycophagy to the management of western coniferous forests. *In* Transactions 43rd North American Wildlife and Natural Resources Conference. Wildlife Management Institute, Washington, D.C. p. 78-88.
- Mattson, William J., Jr.
 1979. Red pine cones: Distribution within trees and methods for sampling. *Canadian Journal of Forest Research* 9:257-262.
- McKee, W. H., Jr.
 1978. Slash pine seedlings response to potassium and calcium on imperfectly drained Coastal Plain soil. *Plant and Soil* 50:615-624.
- Meeuwig, Richard O., and Robert B. Murray.
 1978. Current research on pinyon-juniper in the Great Basin. *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 97-103.
- Mishustin, E. N., and G. A. Zavarzin.
 1979. The ecology of microorganisms and Biosphere Reserves. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82, p. 242-249.
- Moir, William H., and John A. Ludwig.
 1979. A classification of spruce fir and mixed conifer habitat types of Arizona and New Mexico. U.S. Department of Agriculture Forest Service Research Paper RM-207. 47 p.
- Molina, Randolph J., James M. Trappe, and Gerald S. Strickler.
 1978. Mycorrhizal fungi associated with *Festuca* in the western United States and Canada. *Canadian Journal of Botany* 56(14):1691-1695.
- Molina, Randy.
 1977. Ectomycorrhizal fungi and forest practice. *In* Mushrooms and Man: An Interdisciplinary Approach to Mycology. Tony Walters, ed. Linn-Benton Community College, Albany, Ore. p. 125-161.
- Murmanis, L. L.
 1978. Breakdown of end walls in differentiating vessels of secondary xylem in *Quercus rubra* L. *Annals of Botany* 42:679-682.
- Murmanis, Lidija.
 1977. Development of vascular cambium into secondary tissue of *Quercus rubra* L. *Annals of Botany* 41:617-620.
- Murmanis, Lidija, and M. Chudnof.
 1979. Lateral flow in beech and birch as revealed by the electron microscope. *Wood Science and Technology* 13:79-87.
- Musselman, L. J., C. S. Harris, and W. F. Mann, Jr.
 1978. *Agalinis purpurea*: A parasitic weed on sycamore, sweetgum, and loblolly pine. *Tree Planters' Notes* 29(4):24-25.
- Musselman, L. J., and W. F. Mann, Jr.
 1978. Root parasites of southern forests. U.S. Department of Agriculture Forest Service General Technical Report SO-20. 76 p.
- Mussleman, Lytton J., and William F. Mann, Jr.
 1979. *Agalinis fasciculata* (Scrophulariaceae): A native parasitic weed on commercial tree species in the southeastern United States. *American Midland Naturalist* 101:459-464.
- Musselman, Lytton J., and William F. Mann, Jr.
 1979. Notes on seed germination and parasitism of seedlings of *Buckleya distichophylla* (Santalaceae). *Castanea* 44:108-113.
- Nechayeva, N. T.
 1979. Research at biogeocenological stations in deserts: A link in the biosphere monitoring system. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 178-185.
- Nix, Lawrence E.
 1979. The effect of paraquat treatment on height growth, branch extension, and cambial activity of loblolly pine. *In* Sixth Annual Research Conference Proceedings Annual Meeting 1979, Atlanta, Georgia. p. 21-27.
- Noble, Daniel L., Carleton B. Edminister, and Wayne D. Shepperd.
 1979. Effects of watering treatments on germination, survival, and growth of ponderosa pine: A greenhouse study. U.S. Department of Agriculture Forest

Timber Management

- Service Research Note RM-369. 6 p.
- Noble, Delpha.
1979. Coram Experimental Forest. U.S. Department of Agriculture Forest Service, Intermountain Forest and Range Experiment Station, Ogden, Utah. Brochure. 20 p.
- Pallardy, S. G., and T. T. Kozlowski.
1979. Stomatal response of *Populus* clones to light intensity and vapor pressure deficit. *Plant Physiology* 64:112-114.
- Pallardy, S. G., and T. T. Kozlowski.
1979. Relationships of leaf diffusion resistance of *Populus* clones to leaf water potential and environment. *Ecologia* 40:371-380.
- Pawuk, William H.
1979. Fungicide coverings affect the germination of southern pine seed. *Tree Planters' Notes* 30(1):3-4.
- Pawuk, William H., and J. P. Barnett.
1979. Seed handling practices for southern pines grown in containers. *Southern Journal of Applied Forestry* 3:19-22.
- Perry, D. A.
1978. An estimate of the effective range of pollen dispersal in lodgepole pine (*Pinus contorta* Dougl.). *Annals of Botany* 42:1001-1002.
- Phares, Robert E.
1979. New challenges in chestnut research. *In* Proceedings of the American Chestnut Symposium. [Morgantown, W. Va., Jan. 4-5, 1978.] p. 26-29.
- Pillai, S. K., and B. Chako.
1978. Growth periodicity and structure of shoot apex of *Picea smithiana* (Wall) Boiss.—anatomical and histochemical study. *Flora* 167:515-524. (PL-480 Project A7-FS-61 in Pilani, Rajasthan, India, in cooperation with J. A. Romberger.)
- Plumb, T. R., and P. M. McDonald.
1979. Current status of oak management in California. *In* Proceedings IUFRO Division 1. Symposium on the Establishment and Treatment of High-quality Hardwood Forests in the Temperate Climatic Region [Sep. 11-15, 1978, Nancy-Champenous, France]. p. 251-263.
- Powell, Douglas S., and E. H. Tryon.
1979. Sprouting ability of advanced growth in undisturbed hardwood stands. *Canadian Journal of Forest Research* 9:116-120.
- Powers, Robert F.
1979. Mineral cycling in temperate forest ecosystems. *In* California forest soils. University of California, Division of Agricultural Science, Berkeley. Publication 4094. p. 89-108.
- Radwan, M. A.
1978. Foliar essential oils and deer browsing preference of Douglas-fir genotypes. U.S. Department of Agriculture Forest Service Research Note PNW-324. 6 p.
- Radwan, M. A., and G. L. Crouch.
1978. Selected chemical constituents and deer browsing preference of Douglas-fir. *Journal of Chemical Ecology* 4(6):675-683.
- Radwan, M. A., W. D. Ellis, and G. L. Crouch.
1978. Chemical composition and deer browsing of red alder foliage. U.S. Department of Agriculture Forest Service Research Paper PNW-246. 6 p.
- Ray, G. Carleton.
1979. Exploration of the concept of marine Biosphere Reserves: What could be done and how. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 46-59.
- Rietveld, W. J., and Robert D. Williams.
1979. Dormancy and root regeneration of black walnut seedlings: Effects of chilling. U.S. Department of Agriculture Forest Service Research Note N-244. 3 p.
- Rietveld, W. J., and Robert D. Williams.
1979. Resistance to pulsed electric current may indicate dormancy in tree seedlings. *In* Proceedings Southeastern Area Forest Tree Nurserymen's Conference. [Hot Springs, Ark. and Williamsburg, Va., 1978.] p. 77-87.
- Rink, G., T. R. Dell, G. Switzer, and F. T. Bonner.
~1979. Use of the Weibull function to quantify sweetgum germination data. *Silvae Genetica* 28:9-12.
- Risser, Paul G.
1979. Characteristics of research programs at established U.S. Biosphere Reserves. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 36-45.
- Rogers, Robert, and Thomas M. Hinckley.
1979. Foliar weight and area related to current sapwood area in oak. *Forest science* 25(2):298-302.
- Rose, Sharon, Barbara A. Baniels, and James M. Trappe.
1979. *Glomus gerdemannii* sp. nov. *Mycotaxon* 8(1):297-301.
- Rudolph, T. D.
1979. Effects of gamma irradiation of *Pinus banksiana* Lamb. seed as expressed by M_1 trees over a 10-year period. *Environmental and Experimental Botany* 19:85-91.
- Sander, Ivan L., and Robert Rogers.
1979. Growth and yield of shortleaf pine in Missouri: 21-year results from a thinning study. *In* Proceedings of Symposium for the Management of Pines of the Interior South. U.S. Department of Agriculture Forest Service Southern Area, State and Private Forestry Technical Publication SA-TP2. p. 14-27.
- Schlesinger, Richard C., and Calvin F. Bey.
1978. Natural improvement in black walnut stem form. *In* Proceedings Central Hardwood Forests Conference II. [Purdue University, W. Lafayette, Ind.,

- Nov. 14-16.] p. 389-400.
- Schmidt, Wyman C.
1978. Some biological and physical responses to forest density. *In* Proceedings 8th World Forestry Congress, FQL/25-2. 12 p.
- Schmidt, Wyman C., and Jack A. Schmidt.
1979. Recovery of snow-bent young western larch. U.S. Department of Agriculture Forest Service General Technical Report INT-54. 13 p.
- Schmitt, M. D. C., M. M. Czapowskyj, L. O. Safford, and A. L. Leaf.
1979. Biomass and elemental content of fertilized and unfertilized *Betula papyrifera* Marsh. and *Populus grandidentata* Michx. (Abstract.) *In* Proceedings Impact of Intensive Harvesting on Forest Nutrient Cycling. State University of New York, College of Environmental Science and Forestry, Syracuse. p. 416.
- Smart, Alan W., and Don Minore.
1977. Germination of beargrass (*Zerophyllum tenax* [Pursh] Nutt.). *Plant Propagation* 23(3):13-15.
- Snyder, E. Bayne, and James M. Hamaker.
1978. Inheritance of peroxidase isozymes in needles of loblolly and longleaf pines. *Silvae Genetica* 27(3-4):125-129.
- Spano, S. D., M. F. Jurgensen, M. J. Larsen, and A. E. Harvey.
1978. Nitrogen fixation in decaying Douglas-fir residue. Presented to 70th Annual Meeting of American Society of Agronomy, December 1978.
- Stark, Nellie.
1979. Nutrient losses from timber harvesting in a larch/Douglas-fir forest. U.S. Department of Agriculture Forest Service Research Paper INT-231. 41 p.
- Steele, Alma.
1978. Bryophyte communities of central Idaho forests. *Northwest Science* 52(4):310-322.
- Stein, William I.
1978. Naturally developed seedling roots of five western conifers. *In* Proceedings Root Form of Planted Trees Symposium. British Columbia Ministry of Forestry/Canadian Forest Service Joint Report 8. p. 28-35.
- Stewart, R. E.
1978. Origin and development of vegetation after spraying and burning in a coastal Oregon clearcut. U.S. Department of Agriculture Forest Service Research Note PNW-317. 11 p.
- Stewart, R. E., and Walter H. Knapp.
1979. Evaluating the impact of loss of herbicides on forest management. *In* Proceedings of the National Silvicultural Workshop, Missoula, Mont. Sept. 26-28, 1978. p. 150-162.
- Sucoff, Edward, and Dennis Hiesey.
1978. Preliminary evaluation of leaf water potential for irrigating hybrid poplar. Minnesota Agricultural Experiment Station, Science Journal Series Paper 10264. (also *In* Proceedings Fifth North American Forest Biology Workshop. p. 187-195.)
- Targulian, V. O., A. A. Rode, N. A. Dmitriev, and A. D. Armand.
1979. Soil as a component of natural ecosystems and the study of its history, modern dynamics and anthropogenic changes. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 186-197.
- Tinus, Richard W.
1978. Effect of parent tree and crop year on Scots pine seed weight. *In* Proceedings Western Forest Nursery Council and Intermountain Nurseryman's Association. Combined Nurseryman's Conference and Seed Process Workshop. Robert W. Gustafson, ed. U.S. Department of Agriculture Forest Service, Region 5, San Francisco, Calif. p. D-49-D-53.
- Tinus, Richard W.
1978. Root form: What difference does it make? *In* Proceedings Root Form of Planted Trees Symposium. British Columbia Ministry of Forestry/Canadian Forest Service Joint Report 8. p. 11-15.
- Trappe, James M.
1978. Mycorrhiza research and application in Taiwan forestry. *Taiwan Forestry Journal* 4(6):3-9. (In Chinese.)
- Trappe, James M.
1979. The orders, families, and genera of hypogeous Ascomycotina (truffles and their relatives). *Mycotaxon* 9(1):297-340.
- Trappe, James M., and James W. Gerdemann.
1979. A neotype of *Endogone pisiformis*. *Mycologia* 71(1):206-209.
- Trappe, James M., and Chris Maser.
1977. Ectomycorrhizal fungi: Interactions of mushrooms and truffles with beasts and trees. *In* Mushrooms and Man: An Interdisciplinary Approach to Mycology. p. 163-179. Tony Walters, ed. Linn-Benton Community College, Albany, Oreg. p. 163-179.
- Voronov, A. G., and V. V. Kucheruk.
1979. The biotic diversity of the northern hemisphere: Problems of study and conservation. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 137-146.
- Vozzo, J. A.
1978. Carbohydrates, lipids, and proteins in ungerminated and germinated *Quercus alba* embryos. *Forest Science* 28:486-493.
- Vozzo, J. A.
1979. Radiopaque agents for seed research with *Juglans nigra*. *In* Proceedings Flowering and Seed Development in Trees: A Symposium. F. T. Bonner, ed. International Union of Forestry Research Organizations (IUFRO). p. 272-280.
- Wadsworth, Frank H.
1978. Aspectos ambientales del pino australiano. *In* Revista del Colegio de Agronomos de Puerto Rico, 1978. p. 6-7.

Timber Management

- Waring, R. H., and J. F. Franklin.
1979. Evergreen coniferous forests of the Pacific Northwest. *Science* 204(4400):1380-1386.
- Weaver, P. L., and Douglas J. Pool.
1979. Correlation of crown features and growth rates in natural forests of Puerto Rico. *Turrialba* 29(1):53-58.
- Weaver, T., and D. Perry.
1978. Relationship of cover type to altitude, aspect, and substrate in the Bridger Range, Montana. *Northwest Science* 52(3):212-219.
- Whipple, Stephen A., and Ralph L. Dix.
1979. Age structure and successional dynamics of a Colorado subalpine forest. *American Midland Naturalist* 101:142-158.
- Wodzicki, T. J., A. B. Wodzicki, and S. Zajackowski.
1979. Hormonal modulation of the oscillatory system involved in polar transport of auxin. *Physiologia Plantarum* 46:97-100. (PL-480 Project PL-FS-72 in Warsaw, Poland, in cooperation with J. A. Romberger.)
- Wodzicki, T. J.
1978. Seasonal variation of auxin in stem cambial regions of *Pinus silvestris* L. *Acta Societatis Botanicorum Poloniae* 47:225-231. (PL-480 Project PL-FS-72 in Warsaw, Poland, in cooperation with J. A. Romberger.)
- Yawney, Harry W., Clayton M. Carl, Jr., and Michael S. Greenwood.
1978. Procedures for rooting and overwintering sugar maple (*Acer saccharum* Marsh.) cuttings. In *Proceedings 5th North American Forest Biology Workshop Proceedings*. University of Florida, Gainesville. p. 412-413.
- Yawney, Harry W.
1978. Leaching of inorganic salts by precipitation from the foliage of red pine (*Pinus resinosa* Ait.) Ph.D. thesis. State University of New York, College of Environmental Science and Forestry, Syracuse.
- Yawney, Harry W., Albert L. Leaf, and Raymond E. Leonard.
1978. Nutrient content of throughfall and stemflow in fertilized and irrigated *Pinus resinosa* Ait. stands. *Plant and Soil* 50:433-445.
- Zajackowski, S., and T. J. Wodzicki.
1978. On the question of stem polarity in respect to auxin transport. *Physiologia Plantarum* 44:122-126. (PL-480 Project PL-FS-72 in Warsaw, Poland, in cooperation with J. A. Romberger.)
- Zajackowski, S., and T. J. Wodzicki.
1978. Auxin and plant morphogenesis: A model of regulation. *Acta Societatis Botanicorum Poloniae* 47:233-243. (PL-480 Project PL-FS-72 in Warsaw, Poland, in cooperation with J. A. Romberger.)
- Zajackowski, S., and J. A. Romberger.
1978. Polarity of xylem formation in isolated stem segments of *Pinus silvestris*. *Physiologia Plantarum* 44:175-180. (PL-480 Project PL-FS-72 in Warsaw, Poland, in cooperation with J. A. Romberger.)
- Zak, B., and M. J. Larsen.
1978. Characterization and classification of mycorrhizae of Douglas-fir. III.

Pseudotsuga menziesii + *Byssoporia (Poria) terrestris* vars. *lilacinorosea*, *parksii*, and *sublutea*. *Canadian Journal of Botany* 56:1416-1424.

Silviculture

- Applegate, J. E., S. Little, and P. E. Marucci.
1979. Plant and animal products of the Pine Barrens. In *Proceedings Pine Barrens Ecosystem and Landscape*. New Jersey Academy of Science. Academic Press, New York.
- Arno, Stephen F.
1979. Forest regions of Montana. U.S. Department of Agriculture Forest Service Research Paper INT-218. 39 p.
- Atkinson, W. A., B. T. Bormann, and D. S. DeBell.
1979. Crop rotation of Douglas-fir and red alder: A preliminary biological and economic assessment. *Botanical Gazette* 140:S107-S109 (Supplement.)
- Atkinson, William A., and Willard I. Hamilton.
1978. The value of red alder as a source of nitrogen in Douglas-fir/alder mixed stands. In *Utilization and Management of alder*. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 337-351.
- Bergstrom, Dorothy.
1979. Let's harness the energy of red alder. *Forest Research West*, August. p. 5-9.
- Black, Hugh C., Edward J. Dimock II, James Evans, and James A. Rochelle.
1979. Animal damage to coniferous plantations in Oregon and Washington. Part 1. A survey, 1963-1975. *Oregon State University Research Bulletin* 25. 44 p.
- Blanchard, R. O., D. Smith, A. L. Shigo, and L. O. Safford.
1978. Effects of soil applied potassium on cation distribution around wounds in red maple. *Canadian Journal of Forest Research* 8:228-231.
- Bonner, F. T.
1979. Collection and care of sycamore seeds. *Southern Journal of Applied Forestry* 3:23-25.
- Brodie, Douglas, Hugh C. Black, Edward J. Dimock II, and others.
1979. Animal damage to coniferous plantations in Oregon and Washington. Part II. An economic evaluation. *Oregon State University Research Bulletin* 26. 22 p.
- Burns, Russell M.
1978. Evaluation of a Choctawhatchee sand pine plantation at age 35. U.S. Department of Agriculture Forest Service Research Paper SE-183. 13 p.
- Carkin, Richard E., Jerry F. Franklin, Jack Booth, and Clark E. Smith.
1978. Seeding habits of upper-slope tree species. IV. Seed flight of noble fir and Pacific silver fir. U.S. Department of Agriculture Forest Service Research Note PNW-312. 10 p.
- Cochran, P. H.
1978. Response of a pole-size ponderosa pine stand to nitrogen, phosphorus,

- and sulfur. U.S. Department of Agriculture Forest Service Research Note PNW-319. 8 p.
- Cochran, P. H.
 1979. Site index and height growth curves for managed, even-aged stands of Douglas-fir east of the Cascades in Oregon and Washington. U.S. Department of Agriculture Forest Service Research Paper PNW-251. 16 p.
- Cochran, P. H.
 1979. Site index and height growth curves for managed, even-aged stands of white or grand fir east of the Cascades in Oregon and Washington. U.S. Department of Agriculture Forest Service Research Paper PNW-252. 13 p.
- Cole, Dennis M.
 1979. Feasibility of silvicultural practices for reducing losses to the mountain pine beetle in lodgepole pine forests. *In* Theory and Practice of Mountain Pine Beetle Management in Lodgepole Pine Forests. Darline L. Kibbee and others, eds. University of Idaho, Moscow. p. 140-147.
- Crouch, Glenn L.
 1979. Atrazine improves survival and growth of ponderosa pine threatened by vegetative competition and pocket gophers. *Forest Science* 25(1):99-111.
- Currie, Pat O., Carleton B. Edminster, and F. William Knott.
 1978. Effects of cattle grazing on ponderosa pine regeneration in central Colorado. U.S. Department of Agriculture Forest Service Research Paper RM-201. 7 p.
- Czapowskyj, M. M., and L. O. Safford.
 1978. Species differ in growth response to fertilizer in a young aspen-birch stand in eastern Maine. *Agronomy Abstracts* 1978. p. 187.
- Czapowskyj, M. M., and L. O. Safford.
 1979. Growth response to fertilizer in a young aspen-birch stand. U.S. Department of Agriculture Forest Service Research Note NE-274. 6 p.
- Dawson, David H., J. Zavitzovski, and J. G. Isebrands.
 1978. Managing forests for maximum biomass production. *In* Proceedings 2nd Annual Symposium on Fuels from Biomass. Rensselaer Polytechnic Institute, Troy, N.Y., June 20-22. p. 151-167.
- DeBell, D. S., and M. A. Radwan.
 1979. Growth and nitrogen relations of coppiced black cottonwood and red alder in pure and mixed plantings. *Botanical Gazette* 140:S107-S109 (Supplement.)
- DeBell, Dean S., Robert F. Strand, and Donald L. Reukema.
 1978. Short-rotation production of red alder: Some options for future forest management. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70, p. 231-244.
- Elling, Arthur E., and Elon S. Verry.
 1978. Predicting wind-caused mortality in strip-cut stands of peatland black spruce. *Forestry Chronical* 54(5):249-252.
- Farr, Wilbur A., and A. S. Harris.
 1979. Site index of Sitka spruce along the Pacific Coast related to latitude and temperatures. *Forest Science* 25(1):145-153.
- Ferguson, Dennis, E., and David L. Adams.
 1979. Guidelines for releasing advance grand fir from overstory competition. University of Idaho Forest, Wildlife and Range Experiment Station Note 35. 3 p.
- Francis, John K.
 1979. Bedding improves yellow-poplar growth on fragipan soils. U.S. Department of Agriculture Forest Service Research Note SO-244. 3 p.
- Francis, John K.
 1979. Yellow-poplar rooting habits. U.S. Department of Agriculture Forest Service Research Note SO-246. 3 p.
- Franklin, E. C.
 1978. Current trends in loblolly pine silviculture. *In* Proceedings 8th Forest and Wildlife Forum. Virginia Polytechnic Institute and State University, Blacksburg, Va. p. 80-90.
- Franklin, Jerry F.
 1978. Effects of uneven-aged management on species composition. *In* Uneven-aged Silviculture and Management in the United States. U.S. Department of Agriculture Forest Service, Timber Management Research, Washington, D.C. p. 169-175.
- Funk, David T.
 1979. Stem form response to repeated pruning of young black walnut trees. *Canadian Journal of Forest Research* 9(1):114-116.
- Funk, David T., Richard C. Schlesinger, and David J. Polak.
 1979. Value gains from selective thinning of *Juglans nigra*. *In* Proceedings of Symposium on Establishment and Treatment of High-Quality Hardwood Forests in the Temperate Climatic Region. [Nancy, France, Sept. 11-15, 1978.] p. 286-296.
- Gasbarro, Anthony F., John Zasada, Jack Utten, and Dean Argyle.
 1979. Opportunities for the subsistence use of forest resources in interior Alaska. *In* The Subsistence Lifestyle in Alaska Now and in the Future. University of Alaska School of Agriculture and Land Resource Management Special Publication 1. p. 161-172.
- Gordon, Donald T.
 1978. White and red fir cone production in northeastern California: Report of a 16-year study. U.S. Department of Agriculture Forest Service Research Note PSW-330. 4 p.
- Gottfried, Gerald J.
 1978. Five-year growth and development in a virgin Arizona mixed conifer stand. U.S. Department of Agriculture Forest Service Research Paper RM-203. 22 p.
- Graber, Raymond E.
 1978. Summer planting of container-grown northern hardwoods. U.S. Department of Agriculture Forest Service Research Note NE-263. 5 p.

Timber Management

- Graham, Russell T., and Jonalea R. Tonn.
1979. Response of grand fir, western hemlock, western white pine, western larch, and Douglas-fir to nitrogen fertilizer in northern Idaho. U.S. Department of Agriculture Forest Service Research Note INT-270. 8 p.
- Graney, David L., and Phillip E. Pope.
1978. Fertilization increases growth of thinned and nonthinned upland oak stands in the Boston Mountains of Arkansas. U.S. Department of Agriculture Forest Service Research Note SO-243. 4 p.
- Graney, David L., and Phillip E. Pope.
1978. Response of red oaks and white oak to thinning and fertilization in the Boston Mountains of Arkansas. *In* Proceedings Central Hardwood Forest Conference 2:357-369.
- Gratkowski, H.
1978. Herbicides for shrub and weed tree control in western Oregon. U.S. Department of Agriculture Forest Service General Technical Report PNW-77. 48 p.
- Hansen, E. A., H. A. McNeel, D. A. Netzer, H. M. Phipps, P. S. Roberts, T. F. Strong, D. N. Tolsted, and J. Zavitkovski.
1979. Short rotation intensive culture practices for northern Wisconsin. *In* Proceedings 16th Annual Meeting of the North American Poplar Council. [Thompsonville, Mich., August 14-17.] p. 65-74.
- Harrington, Michael G., and Rick G. Kelsey.
1979. Influence of some environmental factors on initial establishment and growth of ponderosa pine seedlings. U.S. Department of Agriculture Forest Service Research Paper INT-230. 26 p.
- Haywood, J. D.
1979. Combinations of foliar- and soil-applied herbicides for controlling hardwood brush. U.S. Department of Agriculture Forest Service Research Note SO-247. 3 p.
- Holman, G. T., F. G. Knight, and R. A. Struchtemeyer.
1979. The effects of mechanized harvesting on soil conditions in the spruce-fir region of northcentral Maine. University of Maine Life Sciences and Agriculture Experiment Station Bulletin 751.
- Hoyer, Gerald, Walter Ferguson, Michael Newton, and David R. M. Scott.
1978. A comparison of red alder, Douglas-fir, and western hemlock productivities as related to site—a panel discussion. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 175-180.
- Jaramillo, Annabelle.
1978. An integrated study of nursery stock conditioning: Oscilloscope readings and cold hardiness. *In* Nurseryman's Conference and Seed Processing Workshop. Western Forestry Nursery Council and Intermountain Nurseryman's Association. p. B-106 to B-116.
- Jeppeson, Darwin J.
1978. Competitive moisture consumption by the western juniper (*Juniperus occidentalis*). *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 83-90.
- Johnson, R. L.
1978. Hardwood culture in the Eastern United States. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 55-59.
- Johnson, Robert L.
1979. Adequate oak regeneration—a problem without a solution? *In* Management and Utilization of Oak. Proceedings Annual Symposium of the Hardwood Research Council 7:59-65.
- Johnson, Robert L.
1979. A new method of storing Nuttall oak acorns over winter. *Tree Planters' Notes* 30(2):6-8.
- Kenady, Reid M.
1978. Regeneration of red alder. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 183-191.
- Kennedy, Harvey, E., Jr.
1979. Planting season for cottonwood can be extended. *Southern Journal of Applied Forestry* 3:54-55.
- Koski, Wayne H., and W. C. Fischer.
1979. Photo series for appraising thinning slash in north Idaho: Western Hemlock, grand fir, and western redcedar timber types. U.S. Department of Agriculture Forest Service General Technical Report INT-46. 49 p.
- Krinard, R. M., and W. K. Randall.
1979. Soaking aids survival of long, unrooted cottonwood cuttings. *Tree Planters' Notes* 30(3):16-18.
- Laidly, Paul R., and Robert G. Barse.
1979. Spacing affects knot surface in red pine plantations. U.S. Department of Agriculture Forest Service Research Note NC-246. 3 p.
- Lamson, Neil I., and Roger E. McCay.
1978. How to determine whether forest fertilization pays. *In* Proceedings of Central Hardwood Conference II. Purdue University, West Lafayette, Ind., Nov. 14-16. p. 320-327.
- Lancaster, K. F., and W. B. Leak.
1978. A silvicultural guide for white pine in the Northeast. U.S. Department of Agriculture Forest Service General Technical Report NE-41. 13 p.
- Little, S.
1979. Fire and plant succession in the New Jersey Pine Barrens. *In* Proceedings Pine Barrens Ecosystem and Landscape. New Jersey Academy of Science.

- Academic Press, New York. p. 25-36.
- Loftis, David L.
 1979. Northern red oak performs poorly in North Carolina planting. U.S. Department of Agriculture Forest Service Research Note SE-277. 3 p.
- Mann, W. F., Jr.
 1979. Glyphosate is highly effective for tree injection. U.S. Department of Agriculture Forest Service Research Paper SO-150. 7 p.
- Mann, W. F., Jr., and M. J. Haynes.
 1978. Status of some new herbicides. U.S. Department of Agriculture Forest Service General Technical Report SO-21. 18 p.
- Mann, W. F., Jr., and T. Wiseman.
 1978. Pines green strip mines. *Alabama Forests* 21(11):5-8.
- Marquis, David A.
 1978. Allegheny hardwoods. Pennsylvania Forest Resource No. 56. The Pennsylvania State University, Cooperative Extension Service. 4 p.
- Marquis, David A.
 1978. Application of uneven-aged silviculture and management on public lands. *In* Proceedings Uneven-aged Silviculture and Management in the United States. p.25-61. U.S. Department of Agriculture Forest Service, Timber Management Research, Washington, D.C.
- Marquis, David A.
 1978. The effect of environmental factors on the natural regeneration of cherry-ash-maple forests in the Allegheny Plateau region of the Eastern United States. *In* Proceedings Symposium Fevillus Precieux, Nancy, France. p. 90-99.
- Marquis, David A.
 1979. Shelterwood cutting in Allegheny hardwoods. *Journal of Forestry* 77(3):140-144.
- Marx, Donald H.
 1979. Ectomycorrhizae: Rx for artificial regeneration of oak? *In* Proceedings 7th Annual Hardwood Symposium of the Hardwood Research Council. p. 66-71.
- Marx, Donald H., and Sagar V. Krupa.
 1978. Mycorrhizae. A. Ectomycorrhizae. *In* Interactions Between Non-pathogenic Soil Microorganisms and Plants. Y. R. Dommergues and S. V. Krupa, eds. Elsevier Scientific Publishing Co., Amsterdam. p. 373-400.
- Mecuwig, R. O., and J. D. Budy.
 1979. Pinyon growth characteristics in the Sweetwater Mountains. U.S. Department of Agriculture Forest Service Research Paper INT-227. 26 p.
- Miller, Richard E., and Roger D. Fight.
 1979. Fertilizing Douglas-fir forests. U.S. Department of Agriculture Forest Service General Technical Report PNW-83. 29 p.
- Miller, Richard E., and Constance A. Harrington.
 1979. Response to urea and ammonium nitrate fertilization in an 80-year-old Douglas-fir stand. U.S. Department of Agriculture Forest Service Research Note PNW-330. 5 p.
- Miller, Richard E., and Marshall D. Murray.
 1978. The effects of red alder on growth of Douglas-fir. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 283-306.
- Miller, Richard E., and Steve Wert.
 1979. Effects of soil and foliar applications of nitrogen fertilizers on a 20-year-old Douglas-fir stand. U.S. Department of Agriculture Forest Service Research Note PNW-329. 12 p.
- Miller, Richard E., and Ray Zalunardo.
 1979. Long-term growth of eight legumes introduced at three forest locations in southwest Oregon. U.S. Department of Agriculture Forest Service Research Paper PNW-255. 12 p.
- Minore, Don.
 1978. The Dead Indian Plateau: A historical summary of forestry observations and research in a severe southwestern Oregon environment. U.S. Department of Agriculture Forest Service General Technical Report PNW-72. 23 p.
- Morby, Frank E., and Russell A. Ryker.
 1979. Fall-lifted conifers successfully spring planted in southwest Idaho. *Tree Planters' Notes* 30(3):27-29.
- McGee, Charles E.
 1979. Forest research at work in Tennessee. *Forest Farmer* 38(6):17, 45.
- Newton, Michael.
 1978. Herbicides in alder management and control. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 223-230.
- Noble, Daniel L.
 1979. Roots of lodgepole pine seedlings reach depth of only 3 to 4 inches their first season. U.S. Department of Agriculture Forest Service Research Note RM-363. 3 p.
- Noste, Nonan V., and Howard M. Phipps.
 1978. Herbicide and container system effects on survival and early growth of conifers in northern Wisconsin. *Forestry Chronicle* 54(4):209-212.
- Nyland, Ralph D., and David A. Marquis.
 1979. Appropriate silviculture systems for northern hardwoods. *In* Proceedings 1978 Joint Convention of Society of American Foresters and Canadian Institute of Forestry. p. 334-338.
- Oliver, William W.
 1978. Sugar pine outperforms ponderosa pine on a hot dry site. *Tree Planters' Notes* 29(4):14-17.
- Oliver, William W.
 1979. Growth and mortality of thinned knobcone X Monterey pine saplings affected by engraver beetles and a hard freeze. U.S. Department of

Timber Management

- Agriculture Forest Service Research Paper PSW-139. 9 p.
- Owston, Peyton W., and William I. Stein.
1978. Survival, growth, and root form of containerized and bare-root Douglas-firs and noble firs seven years after planting. *In* Proceedings of the Root Form of Planted Trees Symposium. British Columbia Mining and Forestry and Canadian Forest Service Joint Report 8. p. 216-221.
- Perala, Donald A.
1978. Aspen sucker production and growth from out-planted root cuttings. U.S. Department of Agriculture Forest Service Research Note NC-241. 4 p.
- Perala, Donald A.
1978. Thinning strategies for aspen: A prediction model. U.S. Department of Agriculture Forest Service Research Paper NC-161. 19 p.
- Perala, Donald A., and Ronald W. Sorensen.
1979. Creating stable shrub communities for managed openings in the aspen forest. *Down to Earth* 35(2):19-24. [Also *Industrial Vegetation, Turf and Pest Management* 11(1):10-15.]
- Perry, David A., James E. Lotan, Paul Hinz, and Martin A. Hamilton.
1979. Variation in lodgepole pine: Family response to stress induced by polyethylene glycol 6000. *Forest Science* 24(4):523-526.
- Ponder, Felix, Jr.
1979. Fertilization and release increase nut production of pole size black walnut. *In* Proceedings Flowering and Seed Development in Trees. [Starkville, Miss., May 15-18.] p. 138-143.
- Powers, Robert F., and Grant D. Jackson.
1978. Ponderosa pine response to fertilization: Influence of brush removal and soil type. U.S. Department of Agriculture Forest Service Research Paper PSW-132. 9 p.
- Reukema, Donald L.
1979. Fifty-year development of Douglas-fir stands planted at various spacings. U.S. Department of Agriculture Forest Service Research Paper PNW-253. 21 p.
- Russell, Thomas E.
1979. How to grow yellow-poplar. *Alabama Forests* 22(4):28-29.
- Russell, Thomas E.
1979. How to grow yellow-poplar. *In* Tennessee Forest Association Annual Meeting Magazine and Membership Directory p. 14-15.
- Russell, T. E.
1979. Plantation spacing affects early growth of planted Virginia pine. U.S. Department of Agriculture Forest Service Research Note SO-248. 2 p.
- Russell, T. E.
1979. Planting methods for black walnut on Cumberland Plateau sites. *Tree Planters' Notes* 30(1):11-13.
- Safford, L. O.
1979. A technique for evaluating growth and foliar nutrient response to fertilizer treatments. *In* Proceedings 5th North America Forest Biology Workshop. University of Florida, Gainesville. p. 421.
- Sander, Ivan L.
1979. Silvicultural systems for the oak-hickory forest type. *In* North America's Forests: Gateway to Opportunity. Proceedings 1978 Joint Convention of the Society of American Forests and Canadian Institute of Forestry [St. Louis, Mo., October 1978.] p. 344-348.
- Schier, George A.
1978. Root suckering in young aspen, girdled, defoliated, and decapitated at various seasons. *In* Proceedings 5th North American Forest Biology Workshop. University of Florida, Gainesville. p. 259-267.
- Schier, George A.
1978. Vegetative propagation of Rocky Mountain aspen. U.S. Department of Agriculture Forest Service General Technical Report INT-44. 13 p.
- Schier, George A., and Arthur D. Smith.
1979. Sucker regeneration in a Utah aspen clone after clearcutting, partial cutting, scarification, and girdling. U.S. Department of Agriculture Forest Service Research Note INT-253. 6 p.
- Schlesinger, Richard C.
1978. Increased growth of released white oak poles continues through two decades. *Journal of Forestry*: 726-727.
- Schmitt, M., M. M. Czapowskyj, L. O. Safford, and A. L. Leaf.
1979. Biomass and elemental content of fertilized and unfertilized *Betula papyrifera* Marsh. and *Populus grandidentata* Michx. *In* Proceedings Symposium on Impact of Intensive Harvesting on Forest Nutrient Cycling. U.S. Department of Agriculture Forest Service, Northeastern Forest Experiment Station, Broomall, Pa. p. 416.
- Schultz, Richard C., Paul P. Kormanik, and William C. Bryan.
1979. Vesicular-arbuscular mycorrhiza influence growth but not mineral concentration in seedlings of eight sweetgum families. *Canadian Journal of Forest Research* 9:218-223.
- Seidel, K. W.
1979. Regeneration in mixed conifer clearcuts in the Cascade Range and the Blue Mountains of eastern Oregon. U.S. Department of Agriculture Forest Service Research Paper PNW-248. 24 p.
- Shigo, Alex L., E. Allen McGinnes, Jr., David T. Funk, and Nelson Rogers.
1979. Internal defects associated with pruned and nonpruned branch stubs in black walnut. U.S. Department of Agriculture Forest Service Research Paper NE-440. 27 p.
- Smalley, Glendon W.
1978. Classification and evaluation of forest sites in the interior Uplands. *In* Proceedings Central Hardwood Forest Conference 2: Addendum. p.1-28.
- Smalley, Glendon W.
1979. Classification and evaluation of forest sites on the southern Cumberland Plateau. U.S. Department of Agriculture Forest Service General Technical Report SO-23. 59 p.

- Smith, H. Clay, G. R. Trimble, Jr., and Paul S. DeBald.
1979. Raise cutting diameters for increased returns. U.S. Department of Agriculture Forest Service Research Paper NE-445. 7 p.
- Smith, J. Harry G.
1978. Growth and yield of red alder: Effects of spacing and thinning. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 245-263.
- Snell, Kendall J. A., and James K. Brown.
1978. Comparison of tree biomass estimators—d.b.h. and sapwood area. *Forest Science* 24(4):455-457.
- Sprackling, John A., and Ralph A. Read.
1979. Tree root systems in eastern Nebraska. *Nebraska Conservation Bulletin* 37. 73 p.
- Stage, Albert R.
1979. Stand prognosis model—the central link in a decision-support system for forest managers. *In* Proceedings Society of American Foresters 1978. p. 256-257.
- Stein, William I.
1978. An integrated study of nursery stock conditioning: Preliminary observations on stock performance. *In* Nurseryman's Conference and Seed Processing Workshop. Western Forestry Nursery Council and Intermountain Nurseryman's Association. p. B-96 to B-105.
- Stewart, R. E., P. W. Owston, and H. G. Weatherly.
1978. Evaluation of six herbicides for weed control in Pacific coast forest nurseries. *In* Nurseryman's Conference and Seed Processing Workshop. Western Forestry Nursery Council and Intermountain Nurseryman's Association. p. B-127 to B-133.
- Stubblefield, George, and Chadwick D. Oliver.
1978. Silvicultural implications of the reconstruction of mixed alder/conifer stands. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 307-320.
- Strothmann, R. O.
1979. Regeneration of Douglas-fir cutblocks on the Six Rivers National Forest in northwestern California. U.S. Department of Agriculture Forest Service Research Paper PSW-142. 9 p.
- Sullivan, Michael J.
1978. Regeneration of tree seedlings after clearcutting on some upper-slope habitat types in the Oregon Cascade Range. U.S. Department of Agriculture Forest Service Research Paper PNW-245. 17 p.
- Tarrant, Robert F.
1978. Attitudes toward red alder in the Douglas-fir region. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 1-7.
- Tinus, R. W.
1978. Production of container-grown hardwoods. *Tree Planters' Notes* 29(4):3-9.
- Tinus, Richard W.
1978. Shelterbelts for nurseries. *In* Nurseryman's Conference and Seed Processing Workshop. Western Forestry Nursery Council and Intermountain Nurseryman's Association. [Eureka, Calif., Aug. 7-11.] p. B-154 to B-164.
- Tinus, R. W.
1979. Container seedling production: Information needed and how to get it. *In* 25th Northeastern Tree Improvement Conference Proceedings [Orono, Maine, July 27-29, 1977.] p. 16-34.
- Tinus, Richard W., and Stephen E. McDonald.
1979. How to grow tree seedlings in containers in greenhouses. U.S. Department of Agriculture Forest Service General Technical Report RM-60. 256 p.
- Tubbs, Carl H.
1978. How to manage eastern hemlock in the Lake States. U.S. Department of Agriculture Forest Service Leaflet. North Central Forest Experiment Station, St. Paul, Minn. 4 p.
- Tueller, Paul T., C. Dwight Beeson, Robin J. Tausch, Neil E. West, and Kenneth H. Rea.
1979. Pinyon-juniper woodlands of the Great Basin: Distribution, flora, vegetal cover. U.S. Department of Agriculture Forest Service Research Paper INT-229. 22 p.
- Wells, S. P.
1979. Chilling requirements for optimal growth of Rocky Mountain Douglas-fir seedlings. U.S. Department of Agriculture Forest Service Research Note INT-254. 9 p.
- Wendel, G. W.
1979. Growth and survival of three hardwood species as affected by artificial regeneration method. *Tree Planters' Notes* 30(1):16-19.
- Williams, Robert D., and David T. Funk.
1979. Cow manure deters rodents from stealing seeded black walnut. *Northern Nut Growers Association Annual Report* 69(1978):43-48.
- Williamson, Denis M., and Don Minore.
1978. Survival and growth of planted conifers on the Dead Indian Plateau east of Ashland, Oregon. U.S. Department of Agriculture Forest Service Research Paper PNW-242. 15 p.
- Zasada, John C., and J. Dean Argyle.
[n.d.]. Interrelationships between forest resources and agriculture in Alaska. *In* Expanding Agriculture and the Management of Interior Alaska Resources. University of Alaska School of Agriculture and Land Resource Management. p. 95-108.
- Zasada, John C., and Roseann Densmore.
1979. A trap to measure *Populus* and *Salix* seedfall. *Canadian Field-Naturalist*

Timber Management

93:77-79.

- Zasada, John C., M. Joan Foote, Frederick J. Deneke, and Robert H. Parkerson.
1978. Case history of an excellent white spruce cone and seed crop in interior Alaska: Cone and seed production, germination, and seedling survival. U.S. Department of Agriculture Forest Service General Technical Report PNW-65. 53 p.
- Zasada, John C., Patricia Holloway, and Roseanne Densmore.
1977. Considerations for the use of hardwood stem cuttings. *In* Proceedings of the Symposium on Surface Protection Through Prevention of Damage (Surface Management). Focus: The Arctic Slope. U.S. Department of Interior, Bureau of Land Management, Alaska State Office. p. 148-157.

Management and Mensuration

- Alban, David H.
1979. Estimating site potential from the early height growth of red pine in the Lake States. U.S. Department of Agriculture Forest Service Research Paper NC-166. 7 p.
- Auchmoody, L. R.
1978. Hardwood fertilization progress: Allegheny and Appalachian areas. *Allegheny News*, Summer 1978. 10 p.
- Auchmoody, L. R.
1978. Response of young black cherry to fertilization. Abstract. *In* Agronomy Abstracts 1978.
- Auchmoody, L. R., and R. L. Ernst.
1979. Response of planted Allegheny hardwoods to fertilization. Abstract. *In* Agronomy Abstracts 1979.
- Balmer, W. E., Keith A. Utz, and O. Gordon Langdon.
1978. Financial returns from cultural work in natural loblolly pine stands. *Southern Journal of Applied Forestry* 2(4):111-117.
- Beck, Donald E.
1978. Growth and yield of white pine. *In* Proceedings Symposium for the Management of Pines of the Interior South. U.S. Department of Agriculture Forest Service, Southeastern Area, State and Private Forestry Technical Publication SA-TP2. p. 72-90.
- Belanger, Roger P., and David L. Bramlett.
1979. Growth and yield of Virginia pine. *In* Proceedings Symposium for the Management of Pines of the Interior South. U.S. Department of Agriculture Forest Service, Southeastern Area, State and Private Forestry Technical Publication SA-TP2. p. 108-118.
- Belanger, Roger P., Eben A. Osgood, and Glyndon E. Hatchell.
1979. Stand, soil, and site characteristics associated with southern pine beetle infestations in the Southern Appalachians. U.S. Department of Agriculture Forest Service Research Paper SE-198. 7 p.
- Belanger, Roger P., and William D. Pepper.
1978. Seedling density influences the early growth of planted sycamore. *Forest Science* 24(4):493-496.
- Bramlett, David L.
1979. Efficiency of seed production in southern pine seed orchards. *In* 13th Lake State Forest Tree Improvement Conference Proceedings. U.S. Department of Agriculture Forest Service General Technical Report NC-50. p. 17-25.
1979. Timber management guides and marking rules. *In* A Generalized Forest Growth Projection System Applied to the Lake States Region. U.S. Department of Agriculture Forest Service General Technical Report NC-49. p. 56-60.
- Buchman, Roland G.
1979. Mortality functions. *In* A Generalized Forest Growth Projection System Applied to the Lake States Region. U.S. Department of Agriculture Forest Service General Technical Report NC-49. p. 47-55.
- Carmean, Willard H.
1979. A comparison of site index curves for northern hardwood species. U.S. Department of Agriculture Forest Service Research Paper NC-167. 12 p.
- Carmean, Willard H.
1979. Site and soil relations for northern hardwoods. *In* North America's Forests: Gateway to Opportunity. 1978 Joint Convention Proceedings Society of American Foresters and Canadian Institute for Forestry [St. Louis, Mo., October 1978.] p. 324-328.
- Carmean, Willard H.
1979. Site index comparisons among northern hardwoods in northern Wisconsin and Upper Michigan. U.S. Department of Agriculture Forest Service Research Paper NC-169. 17 p.
- Clendenen, Gary W.
1979. Cross cubic-volume equations and tables, outside bark, for pinyon and juniper trees in northern New Mexico. U.S. Department of Agriculture Forest Service Research Paper INT-228. 20 p.
- Cole, Dennis M.
1979. Merchantable cubic stand volume conversion factors for lodgepole pine in Montana and Idaho. U.S. Department of Agriculture Forest Service Research Note INT-259. 12 p.
- Conde, L. F., J. E. Smith, B. F. Swindel, and C. A. Hollis.
1979. Aboveground live biomass of major pine flatwoods tree species. *IMPAC Report* 4(4).
- Cordell, Charles E., William H. Hofford, and Donald H. Marx.
1978. National *Pisolithus tinctorius* ectomycorrhizal nursery evaluation. *In* Proceedings Northeastern Area Nurseryman's Conference, Lansing, Mich. p. 17-23.
- Cordell, Charles E., and Donald H. Marx.
1978. National *Pisolithus tinctorius* ectomycorrhizae nursery evaluation. *In*

- Proceedings Western Forestry Nursery Council and Intermountain Nurseryman's Association, Eureka, Calif. p. B-117 to B-122.
- Crookston, Nicholas L.
1979. Predicting the outcome of management activities in mountain pine beetle susceptible lodgepole pine stands. *In* Proceedings Society of American Foresters 1978:276-280.
- DeBell, Dean S., Boyd C. Wilson, and Bernard T. Bormann.
1978. The reliability of determining age of red alder by ring counts. U.S. Department of Agriculture Forest Service Research Note PNW-318. 7 p.
- Dell, T. R., D. P. Feduccia, T. E. Campbell, and others.
1979. Yields of unthinned slash pine plantations on cutover sites in the West Gulf region. U.S. Department of Agriculture Forest Service Research Paper SO-147. 84 p.
- Edminster, Carleton B.
1978. Development of growth and yield models for dwarf mistletoe-infested stands. *In* Proceedings Symposium on Dwarf Mistletoe Control Through Forest Management. U.S. Department of Agriculture Forest Service General Technical Report PSW-31. p. 172-177.
- Ek, Alan R.
1979. A model for estimating branch weight and branch leaf weight in biomass studies. *Forest Science* 25:303-306.
- Ek, Alan R., and Robert A. Monserud.
1979. Performance and comparison of stand growth models based on individual tree diameter class growth. *Canadian Journal of Forest Research* 9:231-244.
- Ernst, Richard L., and David A. Marquis.
1979. Tree grade distribution in Allegheny hardwoods. U.S. Department of Agriculture Forest Service Research Note NE-275. 5 p.
- Feduccia, D. P., T. R. Dell, W. F. Mann, Jr., and others.
1979. Yields of unthinned loblolly pine plantations on cutover sites in the West Gulf region. U.S. Department of Agriculture Forest Service Research Paper SO-148. 88 p.
- Field, Richard C.
1978. Timber management planning with Timber RAM and goal programming. *In* Operational Forest Management Planning Methods. U.S. Department of Agriculture Forest Service General Technical Report PSW-32. p. 82-90.
- Foiles, Marvin W.
1978. Stand structure. *In* Uneven-aged Silviculture and Management in the United States. Combined Proceedings of Two in-Service Workshops Held in Morgantown, W.Va., July 15-17, 1975, and in Redding, Calif., Oct. 19-21, 1976. p. 176-185.
- Franklin, Jerry F.
1979. Simulation modeling and resource management. *Environmental Management* 3(1):1-5.
- Gary, Howard L.
1978. The vertical distribution of needles and branchwood in thinned and unthinned 80-year-old lodgepole pine. *Northwest Science* 52(4):303-309.
- Gerig, Thomas M., H. T. Schreuder, D. M. Crutchfield, C. G. Wells.
1978. The two-way median fit: A sensitive statistical procedure to detect response of trees to fertilization. *Forest Science* 24(3):358-362.
- Hahn, Jerold T., David M. Belcher, Margaret R. Holdaway, Gary J. Brand, and Stephen R. Shifley.
1979. FREP78: The updated tree growth projection system. *In* Proceedings 1979 Workshop on Forest Resource Inventories, July 22-27, Colorado State University, Fort Collins. 12 p.
- Hann, David W., and B. Bruce Bare.
1979. Uneven-aged forest management: State of the art (or science?). U.S. Department of Agriculture Forest Service General Technical Report INT-50. 18 p.
- Harris, A. S., and Wilbur A. Farr.
1979. Timber management and deer forage in southeast Alaska. *In* Sitka Black-tailed Deer: Proceedings of a Conference in Juneau, Alaska. O. C. Wallmo and J. W. Schoen, eds. [In cooperation with State of Alaska Department of Fish and Game.] U.S. Department of Agriculture Forest Service, Alaska Region R10-48. p. 15-24.
- Herman, Francis R., Robert O. Curtis, and Donald J. DeMars.
1978. Height growth and site index estimates for noble fir in high-elevation forests of the Oregon-Washington Cascades. U.S. Department of Agriculture Forest Service Research Paper PNW-243. 15 p.
- Holdaway, Margaret, Rolfe A. Leary, and Jerrilyn LaVarre Thompson.
1979. Estimating mean stand crown ratio from stand variables. *In* A Generalized Forest Growth Projection System Applied to the Lake States Region. U.S. Department of Agriculture Forest Service General Technical Report NC-49. p. 27-30.
- Johnston, William F., and Matti J. Hyvarinen.
1979. Northern white-cedar: An American wood. U.S. Department of Agriculture Forest Service, American Woods Leaflet FS-227. 6 p.
- Kochenderfer, J. N., and G. W. Wendel.
1978. Cable logging research in the central Appalachians. *Allegheny News*, Winter 1978. 1 p.
- Kochenderfer, J. N., and G. W. Wendel.
1978. Skyline harvesting in Appalachia. U.S. Department of Agriculture Forest Service Research Paper NE-400. 9 p.
- Krinar, R. M., H. E. Kennedy, Jr., and R. L. Johnson.
1979. Volume, weight, and pulping properties of 5-year-old hardwoods. *Forest Products Journal* 29(8):52-55.
- Larson, F. R., P. F. Ffolliott, W. O. Rasmussen, and D. R. Carder.
1978. Estimating impacts of silvicultural management practices on forest ecosystems. *In* Best Management Practices for Agriculture and Silviculture Proceedings, 1978 Cornell Agricultural Waste Management Conference. p. 281-294.

Timber Management

- Leary, Rolfe A.
1979. Design. In *A Generalized Forest Growth Projection System Applied to the Lake States Region*. U.S. Department of Agriculture Forest Service General Technical Report NC-49. p. 5-15.
- Leary, Rolfe A., and Margaret R. Holdaway.
1979. Modifier function. In *A Generalized Forest Growth Projection System Applied to the Lake States Region*. U.S. Department of Agriculture Forest Service General Technical Report NC-49. p. 31-38.
- Lohrey, Richard E.
1979. Predicted growth of longleaf pine planted on cutover forest sites in the West Gulf. In *Proceedings Longleaf Pine Workshop*. p. 54-64.
- Mitchell, Brian R., and David W. Hann.
1979. BREX: A computer program for applying ridge regression techniques to multiple linear regression. U.S. Department of Agriculture Forest Service General Technical Report INT-51. 25 p.
- Moser, John W., Carl H. Tubbs, and Rodney D. Jacobs.
1979. Evaluation of a growth projection system for uneven-aged northern hardwoods. *Journal of Forestry* 77(7):421-423.
- Oliver, William W., and Robert F. Powers.
1978. Growth models for ponderosa pine: 1. Yield of unthinned plantations in northern California. U.S. Department of Agriculture Forest Service Research Paper PSW-133. 21 p.
- Phillips, W. W., and T. J. Corcoran.
1978. Wood transportation systems: A spin-off of a computerized information and mapping technique. In *Operational Forest Management Planning Methods Proceedings of IUFRO Meeting*. p. 45-53.
- Popham, T. W., D. P. Feduccia, T. R. Dell, and others.
1979. Site index of planted loblolly on cutover sites in the West Gulf. U.S. Department of Agriculture Forest Service Research Note SO-250. 6 p.
- Pritchett, W. L., and C. G. Wells.
1978. Harvesting and site preparation increase nutrient mobilization. In *Principles of Maintaining Productivity on Prepared Sites Symposium Proceedings*. U.S. Department of Agriculture Forest Service, Mississippi State University, State College. p. 98-110.
- Rodin, L. E.
1979. Primary productivity studies in Biosphere Reserves (methods and initial results). In *Selection, Management and Utilization of Biosphere Reserves*. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 198-215.
- Rogers, Robert.
1978. A comparison of two methods used to estimate stand stocking in upland central hardwoods. In *Proceedings Midwest Forest Mensuration Meeting*. U.S. Department of Agriculture Forest Service General Technical Report NC-46. p. 14-16.
- Rogers, Robert, and Sandra Novinger.
1979. A SAS Macro for a distribution-free test for the parallelism of two regression lines. In *SAS Users Group International 4th Annual Conference Proceedings*. SAS Institute Inc., Raleigh, N.C. p. 391-396.
- Scott, Charles T.
1979. Northeastern forest survey board-foot volume equation. U.S. Department of Agriculture Forest Service Research Note NE-271. 3 p.
- Smalley, Glendon W.
1979. Growth and yield of shortleaf pine plantations. In *Proceedings Symposium for the Management of Pines of the Interior South*. U.S. Department of Agriculture Forest Service, Southeastern Area, State and Private Forestry Technical Publication SA-TP2. p. 28-47.
- Smith, Clay.
1978. Skyline cable logging on the Fernow Experimental Forest. *Northern Logger and Timber Processor* 27(5):20, 21, 32.
- Stage, Albert R.
1978. Modeling growth of host stands. In *The Douglas-fir Tussock Moth: A Synthesis*. Martha H. Brookes, R. W. Stark, and Robert W. Campbell, eds. U.S. Department of Agriculture Technical Bulletin 1585. p. 21-23.
- Stage, Albert R.
1978. Site and stand inventory. In *The Douglas-fir Tussock Moth: A Synthesis*. Martha H. Brookes, R. W. Stark, and Robert W. Campbell, eds. U.S. Department of Agriculture Technical Bulletin 1585. p. 193-195.
- Stage, Albert R.
1978. The stand prognosis model. In *The Douglas-fir Tussock Moth: A Synthesis*. Martha H. Brookes, R. W. Stark, and Robert W. Campbell, eds. U.S. Department of Agriculture Technical Bulletin 1585. p. 210-215.
- Swindel, B. F., C. A. Hollis, L. F. Conde, and J. E. Smith.
1979. Aboveground live biomass of slash pine trees in natural stands. *IMPAC Report* 4(1).
- Thompson, Jerrilyn LaVarre.
1979. Precipitation and temperature trends in the Lake States for selected weather stations. In *A Generalized Forest Growth Projection System Applied to the Lake States Region*. U.S. Department of Agriculture Forest Service General Technical Report NC-49. p. 90-96.
- Tubbs, Carl H., and Robert R. Oberg.
1978. How to calculate size-class distribution for all-age forests. U.S. Department of Agriculture Forest Service Leaflet, North Central Forest Experimental Station, St. Paul, Minn. 6 p.
- Weaver, P. L., and L. Nieves.
1978. Periodic annual DBH increment in a subtropical moist forest dominated by *Syzygium jambos* (L.) Alston. *Turrialba* 28(3):253-256.
- Wellner, C. A.
1979. Estimating light intensity beneath coniferous forest canopies: Simple field method. U.S. Department of Agriculture Forest Service Research Note INT-250. 3 p.

Wendel, G. W., and J. N. Kochenderfer.

1978. Damage to residual hardwood stands caused by yarding with a standing skyline. *Southern Journal of Applied Forestry* 2(4):121-125.

Genetics and Tree Improvement

Bey, Calvin F., and E. Bayne Snyder.

1978. Genetic gains through testing and crossing longleaf pine plus trees. U.S. Department of Agriculture Forest Service Research Note SO-241. 5 p.

Bridgen, M. R., J. W. Hanover, and R. C. Wilkinson.

1979. Oleoresin characteristics of eastern white pine seed sources and relationships to weevil resistance. *Forest Science* 25(1):175-183.

Campbell, Robert K.

1978. Regulation of bud-burst timing by temperature and photoregime during dormancy. Proceedings 5th North American Forest Biology Workshop. School of Forest Resources and Conservation, University of Florida, and U.S. Department of Agriculture Forest Service, Southeastern Forest Experiment Station, in cooperation with Society of American Foresters. p. 19-33.

Clausen, Knud E.

1979. The relation between tree size and flowering in yellow birch sampling. *In* Proceedings Flowering and Seed Development in Forest Trees: A Symposium. F. T. Bonner, ed. International Union of Forestry Research Organizations (IUFRO). p. 77-82.

Clausen, Knud E.

1979. The yellow x paper birch hybrid—a potential substitute for yellow birch on problem sites. *In* 13th Lake States Forest Tree Improvement Conference Proceedings. U.S. Department of Agriculture Forest Service General Technical Report NC-50. p. 166-171.

Cooper, D. Thomas.

1979. Cottonwood culture and research in the South. *In* Proceedings Annual Meeting North American Poplar Council. p. 3-11.

Cooper, D. Thomas, and Robert B. Ferguson.

1979. Avoid early selection for growth rate in cottonwood. *Southern Forest Tree Improvement Conference Proceedings*. 15:52-58.

Copes, Donald L.

1979. A genetic analysis of aminopeptidase and peroxidase isoenzymes in Douglas-fir parent trees and seedling progeny. *Canadian Journal of Forest Research* 9(2):189-192.

DeBell, Dean S., and Boyd C. Wilson.

1978. Natural variation in red alder. *In* Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 193-208.

Demcrist, M. E.

1979. Evaluation of early growth among hybrid poplar clonal tests in the Northeastern United States. *In* 26th Northeastern Forest Tree Improvement Conference Proceedings. p. 133-139.

Demcrist, M. E.

1979. Poplar culture in the Northeast. *In* Proceedings Annual Meeting North American Poplar Council. p. 27-30.

Demcrist, M. E., W. T. Adams, and R. J. Joly.

1979. Preliminary results of competition among hybrid poplar clones. *In* 26th Northeastern Forest Tree Improvement Conference Proceedings. p. 179-183.

Dubin, N. P., and Yu. P. Altukhov.

1979. Population genetic aspects of Biosphere Reserves. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 250-261.

Ferguson, R. B., S. B. Land, Jr., and D. T. Cooper.

1977. Inheritance of growth and crown characters in American sycamore. *Silvae Genetica* 26:180-182.

Franklin, E. C.

1978. Australian forest tree improvement—accomplishments and challenges. *In* Proceedings 6th Meeting Research Work Group 1, Forest Genetics. Australian Forestry Council, Coffs Harbour, New South Wales, Australia. p. 90-95.

Franklin, E. C.

1978. Genetic selection of eucalypts for the southeastern USA. *In* Proceedings 6th Meeting Research Work Group 1, Forest Genetics. Australian Forestry Council, Coffs Harbour, New South Wales, Australia. p. 84-89.

Franklin, E. C.

1978. Use of quantitative genetics in planning multiple trait breeding. *In* Proceedings of Third World Consultation on Forest Tree Breeding. vol. 2. Canberra, Australia. p. 1149-1156.

Funk, David T.

1979. Genetic variation in volume growth of eastern white pine. *Forest Science* 25(1):2-6.

Funk, David T.

1979. Balck walnuts for nuts and timber. *In* Nut Tree Culture in North America. Richard A. Jaynes, ed. Northern Nut Growers Association. p. 51-73.

Gabriel, William J.

1979. Sweeter sugar maples. *Forest Notes*, Society for the Protection of New Hampshire Forests 136:27-28.

Garrett, P. W., W. K. Randall, A. L. Shigo, and W. C. Shortle.

1979. Inheritance of compartmentalization of wounds in sweetgum (*Liquidambar styraciflua* L.) and eastern cottonwood (*Populus deltoides* Bartr.). U.S. Department of Agriculture Forest Service Research Paper 443. 4 p.

Garrett, P. W.

1979. Species hybridization in the genus *Pinus*. U.S. Department of Agriculture

Timber Management

- Forest Service Research Paper NE-436. 17 p.
- Genys, John B., and Hans Nienstaedt.
1979. Variation in white spruce from 24 different provenances studied in Maryland's Piedmont plateau. *In* '26th Northeastern Tree Improvement Conference Proceedings. p. 48-57.
- Griggs, Margene M., Warren L. Nance, and Ronald J. Dinus.
1978. Analysis and comparison of fusiform rust disease progress curves for five slash pine families. *Phytopathology* 68:1631-1636.
- Hansen, Edward A., Howard M. Phipps, and David H. Tolsted.
1979. Rooting greenwood tip cuttings of a difficult-to-root *Populus* clone. *Tree Planters' Notes* 30(2):9-11.
- Hare, Robert C.
1978. Axenic culture of *Cronartium fusiforme* from three spore forms. *Canadian Journal of Botany* 56:2641-2647.
- Hare, Robert C.
1979. Effect of some chemical retardants on height growth of loblolly pine. *In* Proceedings North American Forest Biology Workshop 5:346-353.
- Hare, Robert C.
1979. Promoting flowering in loblolly and slash pine with branch, bud, and fertilizer treatments. *In* Proceedings Flowering and Seed Development in Trees: A Symposium. F. T. Bonner, ed. International Union of Forestry Research Organizations (IUFRO). p. 112-121.
- Hare, Robert C., E. Bayne Snyder, and Ronald C. Schmidtling.
1979. Longleaf pine flowering in response to nitrogen fertilization, branch girdling, growth substances, and cultivation. *In* Lake States Forest Tree Improvement Conference Proceedings 13:11-16.
- Jeffers, Richard M.
1978. Seed source related eastern pineshoot borer incidence in jack pine. *Silvae Genetica* 27(5):211-214.
- Jenkinson, James L., and James A. Nelson.
1978. Seed source lifting windows for Douglas-fir in the Humboldt nursery. *In* Proceedings Nurseryman's Conference and Seed Processing Workshop [Eureka, Calif., Aug. 7-11, 1978.] p. B-77-B-95.
- Johnson, L. C., and W. B. Critchfield.
1978. The production of functional pollen and ovules by pine seedlings less than 1 year old. *Forest Science* 24(4):467-468.
- Kang, Hyun.
1979. Long-term tree breeding. *In* 15th Southern Forest Tree Improvement Conference Proceedings. p. 66-72.
- Krugman, Stanley L.
1979. Biosphere Reserves: Strategies for the conservation and management of forest gene pool resources. *In* Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 123-127.
- Kung, Fan H., and Calvin F. Bey.
1979. Heritability construction for provenance and family selection. *In* 13th Lake States Forest Tree Improvement Conference Proceedings. U.S. Department of Agriculture Forest Service General Technical Report NC-50. p. 136-146.
- Ledig, F. T., and S. Little.
1979. Pitch pine (*Pinus rigida* Mill.): Ecology, physiology and genetics. *In* Pine Barrens Ecosystems and Landscape. R. T. Forman, ed. Academic Press, New York. p. 347-371.
- Little, S., and I. F. Trew.
1978. Possibilities of pitch x loblolly pine hybrids in the Interior South. *In* Proceedings Symposium for Management of Pines of the Interior South. U.S. Department of Agriculture Forest Service, Southeastern Area, State and Private Forestry Technical Publication SA-TP2. p. 151-158.
- Manley, S. A. M., and F. Thomas Ledig.
1979. Photosynthesis in black and red spruce and their hybrid derivatives: Ecological isolation and hybrid inviability. *Canadian Journal of Botany* 57(4):305-314.
- McDonald, GERAL I.
1979. Resistance of western white pine to blister rust: A foundation for integrated control. U.S. Department of Agriculture Forest Service Research Note INT-252. 5 p.
- McDonald, GERAL I.
1978. Segregation of "red" and "yellow" needle lesion types among monoaeciospore lines of *Cronartium ribicola*. *Canadian Journal of Genetics and Cytology* 20:313-324.
- McLemore, B. F.
1979. Top pruning and bending branches fail to aid collection and production of loblolly cones. *Tree Planters' Notes* 30(2):27-30.
- Namkoong, G.
1979. Introduction to quantitative genetics in forestry. U.S. Department of Agriculture Technical Bulletin 1588. 342 p.
- Nance, Warren L., and Calvin F. Bey.
1979. Incorporating genetic information in growth and yield models. *In* Southern Forest Tree Improvement Conference Proceedings 15:140-148.
- Nienstaedt, Hans.
1979. Mass production alternatives for fast-growing spruce hybrids. *In* 13th Lake States Forest Tree Improvement Conference Proceedings. U.S. Department of Agriculture Forest Service General Technical Report NC-50. p. 56-71.
- Nicholson, E., and M. E. Demeritt.
1978. Cleaning *Populus* seed with a blender. *Silvae Genetica* 27(5):216.
- Read, Ralph A.
1978. Tree improvement research applications to urban forestry. *In* Midwestern Chapter International Society of Arboriculture Proceedings 33:93-104.

- Rehfeldt, Gerald E.
 1978. Adaptive differentiation of Douglas-fir populations from the northern Rocky Mountains. *Ecology* 59(6):1264-1270.
- Rehfeldt, G. E.
 1978. The genetic structure of a population of Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) as reflected by its wind-pollinated progenies. *Silvae Genetica* 27(2):49-84.
- Rehfeldt, Gerald E.
 1979. Patterns of first-year growth in populations of Douglas-fir (*Pseudotsuga menziesii* var. *glauca*). U.S. Department of Agriculture Forest Service Research Note INT-255. 7 p.
- Rehfeldt, G. E.
 1979. Variation in cold hardiness among populations of *Pseudotsuga menziesii* var. *glauca*. U.S. Department of Agriculture Forest Service Research Paper INT-233. 11 p.
- Riemenschneider, Don E.
 1979. The genetic and economic effect of preliminary culling in the seedling orchard. In 13th Lake States Forest Tree Improvement Conference Proceedings. U.S. Department of Agriculture Forest Service General Technical Report NC-50. p. 81-91.
- Rudolph, T. D.
 1979. Female strobili on 12-month-old jack pine. *Tree Planters' Notes* 30(2):24-26.
- Rudolph, Thomas D.
 1979. Seed production in the first eight years and frequency of natural selfing in a simulated jack pine seedling seed orchard. In 13th Lake States Forest Tree Improvement Conference Proceedings. U.S. Department of Agriculture Forest Service General Technical Report NC-50. p. 33-47.
- Rudolph, T. D.
 1978. Seed yield and quality in *Populus tremuloides* Michx. following pollination with gamma-irradiated pollen. *Canadian Journal of Botany* 56(23):2967-2972.
- Schaefer, V. G., and J. P. Miksehe.
 1978. Mikrospektrophotometric determination of DNA per cell and polyploidy in *Fraxinus americana* L. *Silvae Genetica* 26(5-6):184-192.
- Schmidtling, Ronald C.
 1979. Southern loblolly pine seed orchards produce more cone and seed than do northern orchards. In Proceedings Flowering and Seed Development in Trees: A Symposium. F. T. Bonner, ed. International Union of Forestry Research Organizations (IUFRO). p. 177-186.
- Schmitt, D. M., P. W. Garrett, and A. L. Shigo.
 1978. Decay resistant hardwoods? You bet! *Northern Logger and Timber Processor* 27(3):20-21, 30-31.
- Silen, Roy, and Cary Osterhaus.
 1979. Reduction of genetic base by sizing of bulked Douglas-fir seed lots. *Tree Planters' Notes* 30(1):24-30.
- Silen, Roy R.
 1978. Genetics of Douglas-fir. U.S. Department of Agriculture Forest Service Research Paper WO-35. 34 p.
- Silen, Roy R., and Joseph G. Wheat.
 1979. Progressive tree improvement program in coastal Douglas-fir. *Journal of Forestry* 77(2):78-83.
- Smith, Michael H., I. Lehr Brisbin, Jr., and James G. Weiner [Wicner].
 1979. Some basic principles concerning biological response to environmental change. In Selection, Management and Utilization of Biosphere Reserves. Jerry F. Franklin and Stanley L. Krugman, coordinators. U.S. Department of Agriculture Forest Service General Technical Report PNW-82. p. 105-122.
- Snyder, E. Bayne.
 1979. Variation and inheritance of black seededness and other traits in longleaf pine. In Proceedings North American Forest Biology Workshop 5:389-400.
- Snyder, E. Bayne, and Calvin F. Bey.
 1978. Progeny testing longleaf pine at two locations. U.S. Department of Agriculture Forest Service Research Note SO-240. 4 p.
- Snyder, E. Bayne, and James M. Hamaker.
 1978. Needle characteristics of hybrids of some species of southern pine. *Silvae Genetica* 27(5):184-188.
- Sorensen, Frank C.
 1978. Date of sowing and nursery growth of provenances of *Pseudotsuga menziesii* given to fertilizer regimes. *Journal of Applied Ecology* 15:273-279.
- Sorensen, Frank C., and Robert K. Campbell.
 1978. Comparative roles of soil and air temperatures in the timing of spring bud flush in seedling Douglas-fir. *Canadian Journal of Botany* 56(18):2307-2308.
- Sorensen, Frank C., and Richard S. Miles.
 1978. Cone and seed weight relationships in Douglas-fir from western and central Oregon. *Ecology* 59(4):641-644.
- Squillace, A. E., D. G. Nikles, and L. C. Saylor.
 1977. Monoterpene composition in cortical oleoresin of *Pinus caribaea* and relation to *P. elliottii* of Florida. In Proceedings of Third World Consultation on Forest Tree Breeding, vol. 1. Canberra, Australia. p. 241-258.
- Steinhoff, R. J.
 1979. Variation in early growth of western white pine in north Idaho. U.S. Department of Agriculture Forest Service Research Paper INT-222. 22 p.
- Stettler, Reinhard F.
 1978. Biological aspects of red alder pertinent to potential breeding programs. In Utilization and Management of Alder. David G. Briggs, Dean S. DeBell, and William A. Atkinson, compilers. U.S. Department of Agriculture Forest Service General Technical Report PNW-70. p. 209-222.
- Sweet, G. B., and S. L. Krugman.

Timber Management

1977. Flowering and seed production—and a new concept of seed orchards. *In* Proceedings of Third World Consultation on Forest Tree Breeding, vol. 2. Canberra, Australia. p. 749-759.
- Van Deusen, James L.
1979. Eastern redcedar seed sources recommended for North Dakota sites. U.S. Department of Agriculture Forest Service Research Note RM-371. 6 p.
- Van Haverbeke, David F.
1978. A laboratory technique for depulping *Juniperus* cones. *Tree Planters' Notes* 29(4):33-34.
- Van Haverbeke, David F.
1978. Genetic principles applied in a Scots pine seed orchard. *In* Northeastern Area Tree Improvement Workshop for Field Foresters Proceedings. [University Park, Pa., July 27.] p. 20-26.
- Van Haverbeke, David F.
1979. Improving the Scotch pine for Christmas trees. *Christmas Trees* 7(3):12-14.
- Wells, Osborn O.
1979. Geographic seed source affects performance of planted shortleaf pine. *In* Proceedings Symposium for the Management of Pines of the Interior South. U.S. Department of Agriculture Forest Service, Southeastern Area, State and Private Forestry Technical Publication SA-TP2. p. 48-57.
- Wells, Osborn O., Paul E. Barnett, Harold J. Derr, David T. Funk, Timothy LaFarge, Edwin R. Lawson, and Silas Little.
1978. Shortleaf x slash pine hybrids outperform parents in parts of the southeast. *Southern Journal of Applied Forestry* 1:28-32.
- Wells, Osborn O., George L. Switzer, and Warren L. Nance.
1979. Genetic variation in Mississippi sweetgum. *In* Southern Forest Tree Improvement Conference Proceedings 15:22-32.
- Wheat, J. G., and R. R. Silen.
1978. Cooperative tree improvement in the Douglas-fir region. *In* Proceedings of Third World Consultation on Forest Tree Breeding, Food and Agricultural Organizations, Rome, Italy.
- Wilkinson, R. C.
1979. Cortical strobic acid concentrations in eastern white pine resistant and susceptible to the white pine weevil. *In* 26th Northeastern Forest Tree Improvement Conference Proceedings. p. 121-132.
- Wilkinson, R. C.
1979. Oleoresin crystallization in eastern white pine: Relationships with chemical components of cortical oleoresin and resistance to the white pine weevil. U.S. Department of Agriculture Forest Service Research Paper NE-438. 10 p.
- Williams, Robert D., and David T. Funk.
1978. Eighteen-year performance of an eastern white pine genetic test plantation in southern Indiana. *Indiana Academy of Science Proceedings* 87(1977):116-119.

- Zavarin, E., William B. Critchfield, and Karl Snajberk.
1978. Geographic differentiation of monoterpenes from *Abies procera* and *Abies magnifica*. *Biochemical Systematics and Ecology* 6:267-278.

Special Products

- Bey, Calvin F.
1979. Pruning. *In* Nut Tree Culture in North America. Richard A. Jaynes, ed. Northern Nut Growers Association. p. 272-279.
- Clements, R. W.
1979. Gum producers can improve quality of gum marketed and get higher prices. *Naval Stores Review* 89(3):9-10.
- Clements, R. W.
1979. Gum producers can improve quality of gum marketed and get higher prices. U.S. Department of Agriculture Forest Service Research Note SE-274. 4 p.
- Drew, John, and Donald R. Roberts.
1978. Extractive enhancement in pines by paraquat treatment. *Forest Products Journal* 28(9):21-26.
- Funk, David T., and David J. Polak.
1979. Notes on the weight of black walnuts. *Northern Nut Growers Association Annual Report* 69(1978):63-65.
- Herbst, John R.
1978. Physical properties and commercial uses of western juniper. *In* Proceedings of the Western Juniper Ecology and Management Workshop. Robert E. Martin, J. Edward Dealy, and David L. Caraher, eds. U.S. Department of Agriculture Forest Service General Technical Report PNW-74. p. 169-177.
- Munson, John W.
1979. Turpentine extraction and analysis with an internal standard. *In* 6th Annual Lightwood Research Conference, Proceedings Annual Meeting, Atlanta, Ga. Mary H. Esser, ed. p. 120-124.
- Peters, William J., and Donald R. Roberts.
1978. Lightwood formation in pond pine from paraquat treatment. U.S. Department of Agriculture Forest Service Research Note SE-265. 6 p.
- Peters, William J., Donald R. Roberts, and John W. Munson.
1979. Lightwood induction by paraquat and diquat applied with Ethrel. *In* 6th Annual Lightwood Research Conference, Proceedings Annual Meeting, Atlanta, Ga. Mary H. Esser, ed. p. 70-77.
- Roberts, Donald R.
1979. Methods of applying paraquat in planted slash pines. *In* 6th Annual Lightwood Research Conference, Proceedings Annual Meeting, Atlanta Ga. Mary H. Esser, ed. p. 107-110.
- Roberts, Donald R.
1979. Short-term production of lightwood without insecticides. *In* 6th Annual

- Lightwood Research Conference, Proceedings Annual Meeting, Atlanta, Ga.
Mary H. Esser, ed. p. 78-81.
- Smith, H. Clay.
1979. Opinions and predictions on wood energy use. *Northern Logger and Timber Processor* 27(7):12, 29-31.
- Walters, Russell S., and Alex L. Shigo.
1978. Paraformaldehyde-treated tapholes: Effects on wood. *National Maple Syrup Digest* 19(2):13-18.
- Walters, Russell S.
1979. More vacuum improves yield. *National Maple Syrup Digest* 19(1):15-17.
- Walters, Russell S., and Alex L. Shigo.
1978. Tapholes in sugar maples: What happens in the tree. U.S. Department of Agriculture Forest Service General Technical Report NE-47. 12 p.
- Walters, Russell S.
1978. Tapholes drilled into frozen sugar maples close slowly. U.S. Department of Agriculture Forest Service Research Note NE-265. 4 p.
- Walters, Russell S.
1978. Vacuum transfer system increases sugar maple sap yield. U.S. Department of Agriculture Forest Service Research Note NE-264. 4 p.

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