

**OBTAINING MORE FAVOURABLE ATTITUDES
TO USE OF FORESTS FOR TIMBER PRODUCTION
A REPORT ON APPROACHES USED IN BRITISH COLUMBIA
AND PARTS OF THE UNITED STATES**

DON SPRIGGINS

1989 GOTTSTEIN FELLOWSHIP REPORT

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JOSEPH WILLIAM GOTTSTEIN MEMORIAL TRUST FUND

The Joseph William Gottstein Memorial Trust Fund was established in 1971 as a national educational Trust for the benefit of Australia's forest products industries. The purpose of the fund is *"to create opportunities for selected persons to acquire knowledge which will promote the interests of Australian industries which use forest products for the production of sawn timber, plywood, composite wood, pulp and paper and similar derived products."*

Bill Gottstein was an outstanding forest products research scientist working with the Division of Forest Products of the Commonwealth Scientific Industrial Research Organisation (CSIRO) when tragically he was killed in 1971 photographing a tree-felling operation in New Guinea. He was held in such high esteem by the industry that he had assisted for many years that substantial financial support to establish an Educational Trust Fund to perpetuate his name was promptly forthcoming.

The Trust has three major forms of activity,

- (1) Fellowships - each year applications are invited from eligible candidates to submit a study programme in an area considered to be of benefit to the Australian forestry and forest industries. Study tours undertaken by Fellows have usually been to overseas countries but several have been within Australia. Fellows are obliged to submit reports on completion of their programme. These are then distributed to industry if appropriate.
- (2) Study Tours - industry group study tours are arranged periodically and have been well supported.
- (3) Seminars - the information gained by Fellows is often best disseminated by seminars as well as through the written reports.

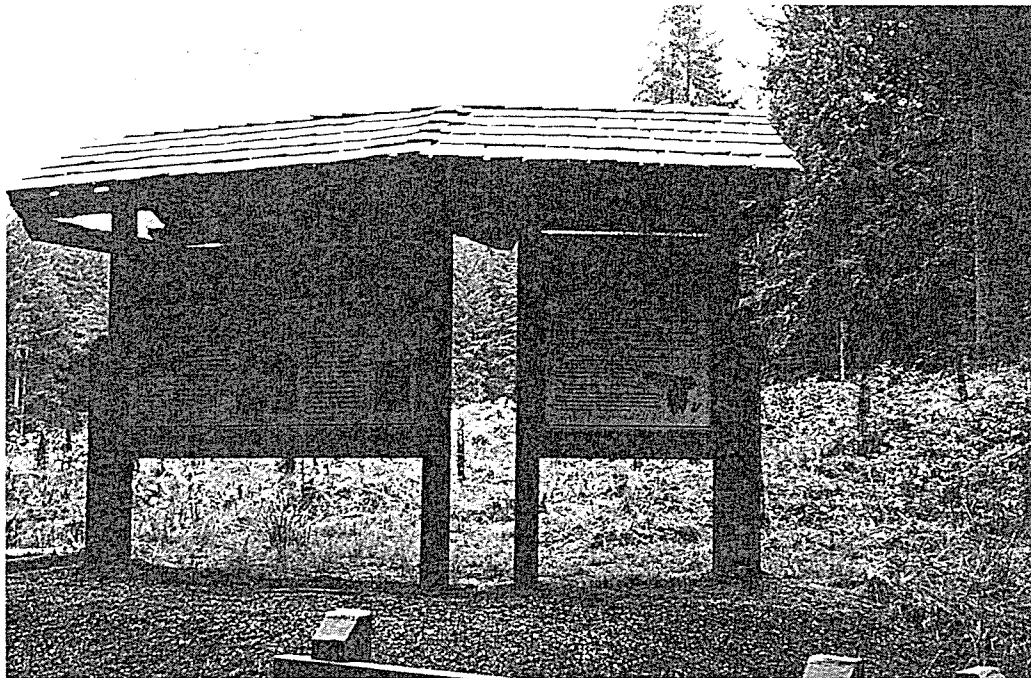
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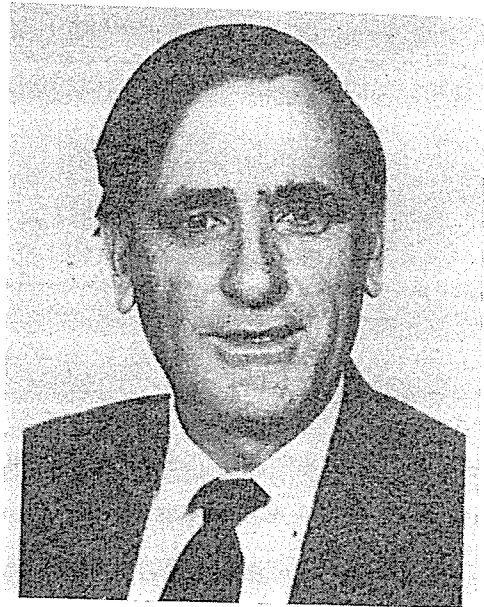
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Information Boards used to allow visitors to interpret forest management principles and practices; Seymour Demonstration Forest, British Columbia.

Don Spriggins is the Regional Manager, Central Forest Region, of the Department of Conservation and Land Management in Western Australia. He is a graduate of Creswick and Melbourne University Forestry Schools and has worked as an operations manager in Victoria and Western Australia. He served four years as Western Australian Chairman of the Institute of Foresters. The purpose of his Gottstein Fellowship was to investigate how demonstration forests in British Columbia and U.S.A. have been used over the past 40 years to better inform and educate the public about the various forest management practices involved in forests managed for timber production. Mr. Spriggins is currently involved in the



establishment of a demonstration jarrah forest near Bunbury, W.A. He anticipates that the knowledge gained from his tour will benefit his project immensely and will greatly assist others in designing similar demonstration areas in Australian forests.

GOTTSTEIN REPORT

DON SPRIGGINS

GOTTSTEIN FELLOW 1989

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This Study Tour was undertaken with the financial support of the J.W. Gottstein Memorial Trust Fund.

I offer my sincere thanks to the trustees of the Fund in awarding me a 1989 Gottstein Fellowship and making this study and report possible.

I also thank my employer, the Department of Conservation and Land Management of Western Australia for the support and encouragement to undertake the project.

I would also like to thank the many people who so willingly gave of their hospitality and time during the Tour. Everyone I met was extremely helpful and went to great lengths to ensure the visit was of value. I am especially grateful to Peter Sanders of the U.B.C. Research Forest, British Columbia and Professor John Helms of the University of California for their assistance in arranging contacts and planning an itinerary.

The assistance of Toni Jones in typing and compilation of the report is gratefully acknowledged.

SYNOPSIS AND RECOMMENDATIONS

This report is the result of a Study Tour undertaken through the sponsorship of the Joseph William Gottstein Memorial Trust Fund as a Gottstein Fellow in 1989.

The Fellowship consisted of a visit of eight weeks to British Columbia, the West Coast of the United States, Arizona and North Carolina. Object of the visit was to examine methods being used to inform, educate and influence people towards the view that use of forests for timber production is both important and environmentally acceptable. I was particularly interested to see how Demonstration Forests were being used for this purpose.

I believe that a lot of opposition to use of forests for timber production stems from a lack of understanding of how forests can be managed for a variety of resource uses including timber production. Generally it has not been made easy for people to gain a better understanding of the principles involved and I have long been an advocate of the Demonstration Forest concept whereby people are encouraged to visit a forest designed for the purpose of educating and information sharing on forest management.

As well as visiting Demonstration Forests, I spoke to many people in Forest Service, Forest Industries and National Parks to obtain ideas and suggestions on how public understanding of forest management could be improved.

Nobody I met claimed total success to date with the methods they were using and I was surprised at the intensity of the environmental debate about use of forests for timber production, particularly on the West Coast of the United States. What stood out was that individuals and groups taking a pro-active approach to educating and informing were being more successful than those directing their energies solely to reacting to environmentalist actions.

It was a common view of many foresters I spoke to that facilities such as well managed and publicised Demonstration Forests should have been in place about 30 years ago. Had this occurred it was considered that the polarised debate about use of forests which is taking place in the United States might have been defused.

The main message I gained from the Study Tour was that use of forests for timber production in Australia will be increasingly reduced if the trends seen in the United States are followed here. Recent events in Australia with respect to World Heritage listings suggest that the differences between the two countries is decreasing as time passes.

Based on the experience of people met on the Tour and my own observation, there appears to be two broad approaches that have potential in Australia to reverse the trends observed in the United States and in the process obtain a more favourable attitude towards use of forests to include timber production. It is recommended both approaches be used. The approaches are:

- * Education and information sharing
- * Community involvement in forest management

Recommendations:

1. Education and information sharing.

1.1 Demonstration Forests

Demonstration Forests similar to the one being developed on the doorstep of Vancouver, British Columbia, should be established close to every Capital City in Australia.

The aim of these Demonstration Forests should be to illustrate that forests can be successfully managed for a variety of resource uses including timber production.

Smaller, less grand Demonstration Forests should also be established in country areas to cover a range of forest types.

1.2 Publicising existing information on forest management

Until Demonstration Forests are fully operational there should be a major thrust into publicising and marketing of interesting trials and illustrations of forest management practices already established in Australian forests.

This should be via field days for legislators, civic leaders and environmental groups. The use of television documentaries similar to that used to explain systems operating in National Parks should be employed to reach the general public audience.

2. Community involvement in forest management

In countries such as Southern Sweden where a large proportion of the community is experienced, involved and knowledgeable about forest management, attitudes towards use of forests for timber production are very favourable.

It is recommended community involvement in forest management in Australia be actively encouraged by:

- incentives to landholders to manage existing private forests better and to increase their forest management skills.
- exploring the potential for issue of small woodlot licences over Crown owned forest land as practiced in British Columbia.
- exploring the potential of licences over Crown owned forest land for the purpose of a Community Forest whereby revenues from timber production flow to the local community.
- exploring the potential for active involvement of community groups in various aspects of forest management.

3. Financial provisions

The already polarised debate about use of forests in Australia for timber production has cost Australians dearly in time and resources. It is a National problem and deserves Federal Government funding to help resolve the issues involved, particularly as the alternative of importing all our timber needs would be neither practical or economic.

It is recommended Federal funds be made available to:

- finance the establishment and ongoing management of a major Demonstration Forest near each Capital City in Australia. Each Forest would cost about \$1 million to establish and about \$250,000 a year to run.
- provide grants and other means to encourage private landowners to manage their existing forests better and to create additional forests suitable for timber production.

SECTION 1

1.1 ATTITUDES TO USE OF FORESTS

Throughout the world, use of forests for timber production is being increasingly challenged. Environmental groups ideologically opposed to use of forests for other than recreation or preservation purposes have been successful in persuading governments to withdraw timber production from large areas of forested land and to have management practices modified where production continues.

Whilst few would disagree with the need to set aside examples of undisturbed forest types as benchmark areas for future generations, for reference areas, gene pool conservation and also as National Parks, there is concern that further exclusion will seriously affect the future of Australian forest industries and their ability to meet future forest product demands. The need to increase imports of forest products with consequent rises in import bills would be to the disadvantage of the Australian economy.

In essence it is a power struggle as to how forested land is to be used. It is generally acknowledged that in recent years the environmental movement has been far more successful in influencing public attitudes about use of forests than those who believe forests can be managed to produce a range of values, including timber, without serious environmental conflict. A prime purpose of this report is to illustrate and recommend how more favourable attitudes to this viewpoint could be achieved in Australia.

The remainder of this Section examines the current nature of the forest industries in Australia, the United States and British Columbia and the impact of environmental groups on influencing attitudes about use of forests in these three countries.

Section Two discusses the rationale for use of forests for timber production and Section Three examines common public concerns about use of forests.

Section Four reviews the standard approaches used to communicate with people with the aim of obtaining a change in attitude and Section Five describes and discusses useful applications of these approaches seen on the Study Tour.

As one of the principal reasons for undertaking the Study Tour was to visit Demonstration Forests to assess their potential for informing, educating and influencing attitudes on use of forests, Section Six concentrates solely on this topic. Drawing on examples of Demonstration Forests seen on the Study Tour, factors that need to be addressed if a Demonstration Forest is to be successful and options for their development are listed. Descriptive notes of each of the Demonstration Forests are included in the Appendices.

1.2 AUSTRALIA

1.2.1 Forests and Forest Industries

Out of a total of 35.3 million hectares of native forest in Australia, 25.6 million are in public ownership. Out of this total only 7.3 million hectares are currently managed for timber production under the multiple use framework. The balance is in National or State Parks where timber production is excluded or in vacant Crown Land where timber harvesting is restricted for environmental or access reasons. (See Table 01). Tree plantations of mainly exotic conifers constitute over 930,000 hectares of which about 30% are privately owned. The total annual log harvest is about 17 million cubic metres of logs which yield about 7.3 million cubic metres of forest products valued at \$5 billion. Imports of forest products into Australia cost about \$1.6 billion a year. (Shea 1990).

It is projected that by the year 2030, demand for forest products will more than double to about 17 million cubic metres per year which on present trends would result in an import bill of \$2.9 million a year. To offset this the Forest Product Industries have proposed that in addition to maintaining the area of native forest available for timber production that the softwood plantation area be increased to 1.36 million hectares and hardwood plantations to 115,000 hectares. (See Table 02).

The Forest Product industries are an important contributor to the economy and employment. About 100,000 people are directly employed with a further 200,000 indirectly employed in associated activities. The industry is regarded as the second largest in Australia in the manufacturing sector with wages and salary payments totalling \$2.7 billion a year.

In 1988 the National Association of Forest Industries was formed which brought together over 100 individual organizations supporting the Forest Product Industries throughout Australia. In the short time it has been operating the Association has been effective in speaking with a much more united voice on forest industry matters than previously. Some sound material for television, newspapers and posters has been prepared to inform people on the importance of the Forest Product Industries and the view that forests can be managed to include timber production without undue environmental consequences.

Table 01

AUSTRALIAN PUBLIC NATIVE FOREST USE CATEGORIES

| Category | Area (millions ha) | % |
|---|-----------------------|-----|
| State Forest reserved for wood production under multiple use. | | |
| - No special restrictions | 7.3 | 28 |
| - Areas where wood production excluded for environmental or access reasons. | 5.7 | 22 |
| Crown lands not reserved for wood production. | 7.6 | 30 |
| National Parks and State Parks | 5.0 | 20 |
| | ----- | --- |
| Total | 25.6 | 100 |

Source: Australian Forestry and Forest Products Industry. Shea, 1990.

Table 02

CURRENT AND PROJECTED AUSTRALIAN DEMAND FOR FOREST PRODUCTS

| Product | Demand | |
|--------------------------|---------------------------------|-------|
| | 1987 (millions cubic metres) | 2030 |
| Sawn timber | | |
| - hardwood | 1.89 | 1.6 |
| - softwood | 2.01 | 6.8 |
| Plywood | | |
| - hardwood | 0.074 | 0.120 |
| - softwood | 0.105 | 0.190 |
| | (millions of tonnes) | |
| Pulp and Paper Products. | 2.27 | 5.45 |

Source: Forestry and Forest Products Industry Council. 1987 Publication.

Federal move to protect forests

By DEANIE CARBON.

CANBERRA: The Federal Government wants a fifth of Tasmania listed as a World Heritage area.

The Minister for the Environment, Senator Richardson, yesterday announced the boundaries for a conservation area in south-west Tasmania which will be nominated for listing.

It covers about 600,000ha — 20 times the size recommended by an inquiry last year.

The World Heritage Committee will consider this latest recommendation in December.

"It protects significant tracts of some of the world's tallest forests, other mixed forest types, areas of King Billy pine, alpine vegetation, rain forest, wilderness and spectacular mountain scenery," Senator Richardson said.

The new area is in addition to 769,400ha placed on the World Heritage list in 1983.

Senator Richardson's announcement came after a meeting between the Australian Conservation Foundation and the Prime Minister, Mr Hawke, over the Tasmanian issue and the ramifications of uranium mining in Kakadu national park.

THE WEST AUSTRALIAN THURSDAY FEBRUARY 15 1990

State bid to end timber ban row

MELBOURNE: The Victorian Government will meet rebel logging contractors today in a bid to end the row over logging in the National Estate forests in East Gippsland.

The loggers claim they were cheated out of promised access to National Estate forests in East Gippsland after a \$10 million deal was approved by Federal Cabinet on Tuesday.

The controversial plan will replace National Estate logging with plantation timber for at least two years.

Details of a similar agreement with the NSW Government will be announced today.

WA loggers yesterday threw their weight behind NSW and Victorian colleagues over the bans on National Estate forests.

The Forest Products Association of WA, which represents about 15,000 timber industry workers, has written to the Prime Minister, Mr Hawke, and other senior ministers expressing concern about the temporary bans.

Mr Hawke said the governments would ensure that the bans did not lead to any job losses.

The association's WA manager, Mr Cam Kneen, said yesterday that without timber resources, there was no lasting job

security or new investment in the industry.

He asked Mr Hawke to assure loggers that other forest timber would be available to the industry.

"We seek this assurance in terms of both quality and quantity, and in line with current contracts and future sustained projections," Mr Kneen said.

"We are committed to meeting the demands of the community through the provision of fine Australian softwoods and hardwoods, and maintaining the livelihood of our members and their families."

Victorian Premier John Cain and Conservation Minister Kay Setches, who will meet with loggers today, said there could be a return to harvesting National Estate forests if sufficient timber could not be found elsewhere.

"We have not closed the door to logging in National Estate," Mrs Setches said.

Mr Cain offered to discuss the East Gippsland deal with the contractors but only on the condition that they end their blockade of a highway in the area and remove a bulldozer from the front steps of Parliament House.

"I'm not going to have a bulldozer held at my head," Mr Cain said.

The blockade was lifted about an hour later.

States warned on environment

By PETER REES

CANBERRA: The Minister for the Environment, Senator Richardson, warned yesterday that the Government would not hesitate to use the federal corporations power to override the states in woodchipping disputes.

In a significant hardening of the Government's position, Senator Richardson said he was tired of waiting, tired of negotiating and tired of the court cases.

He made it clear that if necessary, the powers would be used not just against conservative state governments like NSW, but also Labor states.

In a strong defence of the Government's commitment to the environment after last week's policy statement on the issue by the Prime Minister, Mr Hawke, Senator Richardson admitted it was "popular politics" but said it went as far as Australians wanted to go — "and maybe in a few cases a little bit further".

Senator Richardson also:

- Attacked criticism by the "more extreme" sections of the environmental movement that the statement was a cynical exercise to buy votes for the Government.
- Predicted that the green vote



Senator Richardson

could jump sharply from 1 or 2 per cent at the last election to 4 or 5 per cent at the next poll.

- Conceded that stopping logging always cost Labor votes in the short term.
- Admitted that he was "angry" over being rolled in Cabinet in the lead-up to the statement on the issue of setting targets for reducing Greenhouse gas emissions.

● Strongly differed with the Opposition by asserting it was no longer possible to say that the environmental debate was second to the economic debate because they were "becoming one".

Senator Richardson said the initial advice given to him when he took over the portfolio two years ago was that it was not worth pursuing the use of the corporations power — which gives Canberra power over foreign corporations and trading and financial corporations formed within the limits of the Commonwealth — because it was so bitterly debated.

"The new advice seems to suggest that our powers in this regard are much stronger," he said.

Senator Richardson said that if negotiations with NSW over woodchipping in the national estate forests in the south-east of the state failed, the corporations power "will be used".

"We have shown on this occasion a capacity to keep negotiating while trees keep falling. We are not likely to be as tolerant or as patient in the future," he said.

He said any attempt to use the power would get "an enormous reaction from the states and not just conservative states, but some Labor states".

Newspaper Article on Federal powers to decide use of forests.

Western Australian 26.07.89.

1.2.2 Impact of Environmental Movement

Over the last decade, representations from environmental groups have led to timber production being excluded from a significant proportion of native forests such that less than one quarter is now available for long term sustainable production under a reasonable degree of security. Pressure is being continually applied by the environmental movement to exclude timber production from more of this remaining area which has created a considerable degree of uncertainty in the Forest Products Industries and has led to a reluctance to invest capital in modern plant and equipment.

Highly publicised battles by environmentalists to "Save the Forest" have been waged in most States and extensive areas have been nominated, often in ambit claims for World Heritage listing. Some of the well known battlegrounds have included the Southern Forests of New South Wales, The Lemonthyme and Southern Forests in Tasmania, the Shannon Basin in Western Australia, forests in East Gippsland, Victoria and rainforests in Northern Queensland. Governments sensitive to the environmental vote have often been very supportive of these environmental movement requests.

Opposition to use of forests for timber production is commonly led by articulate, urban based people with a good knowledge of the issues involved and an ability to persuade others to their point of view. They have been effective in influencing other urban dwellers with little understanding of forest management practices to believe that using forests for timber production is permanently damaging to the environment. The paradox is that this same population are large consumers of forest products with little apparent appreciation of the link between supply of forest products and the harvesting of trees.

The Australian Conservation Foundation in a 1988 report, "The Wood and the Trees", strongly recommends the virtual phasing out of timber production from all native forests within 15 to 30 years in lieu of plantation development on cleared farmland. This is in contrast to policy statements of bodies such as the Institute of Foresters which advocates that forests be managed to meet all the varying and various needs of the community.

1.3 UNITED STATES OF AMERICA

1.3.1 Forests and Forest Industries.

About a third or just under 300 million hectares of the United States is classified as forest or timberland and of this area almost half is privately owned. (See Table 03). Compared to Australia, the production and consumption of forest products and employment in forest based industries is large. (See Tables 04, 05, 06).

States on the West Coast of the United States are important timber producers and the State of California which has a population of 28 million is a good illustration as it ranks as the third largest producer of forest products in the United States. Annual log production is about 22 million cubic metres with a stumpage value of \$560 million and wholesale value of about \$1,124 million. Despite this large level of production, demand for forest products is about double this amount which is satisfied by imports from other West Coast States and Canada. It is projected that imports will have to double by early next century to satisfy the demands of an increased population expected to reach 39 million by 2020.

In California, about 40% of forest land is privately owned and about half of this is owned by large industrial companies. In the last decade, change of ownership of these companies has been common, sometimes resulting in assets such as standing timber being realised by increasing harvesting rates. The balance of private forest is owned by a variety of landholders with differing interests in timber production. There is potential to significantly lift yield from these small forest holdings and owners are being encouraged to do so by government loans.

Despite its importance in U.S.A. timber production, the Forest Products Industry in California is overshadowed by other sectors of the State economy such as agriculture, tourism and high technology industries. The forest product industries employ less than 1% of the workforce and less than 3% of the manufacturing workforce.

Industry efforts to inform and educate people about use of forests on the West Coast of the United States receives a low priority. Most of the thrust to counter environmentalist objections to use of forests for timber production seems to be via political lobbying rather than education and information processes. In Oregon it was said that ten years ago there were 64 public relations officers employed by timber companies, now there are only two. It was a common observation of foresters that the Forest Product Industries have been too late in organizing themselves into an effective force against the environmental lobby.

Table 03

FOREST LAND OWNERSHIP, UNITED STATES OF AMERICA

(million hectares)

| Category | Area | |
|------------------------|-------|-------|
| Federal | | |
| National Forest System | 93.2 | |
| National Forest | 34.2 | |
| Bureau of Land Mgt. | 2.2 | |
| Other | 8.6 | 138.2 |
| State | 10.8 | |
| County & Municipal | 2.8 | |
| Indian | 2.3 | 55.1 |
| Private Ownership | | |
| Forest Industry | 28.5 | |
| Farmer | 39.3 | |
| Other | 72.7 | 140.5 |
| | ----- | |
| Total | 294.6 | |

Source: U.S. Forest Facts, U.S. Forest Service.

Table 04

CONSUMPTION OF FOREST PRODUCTS - UNITED STATES

(million cubic metres), roundwood equivalent

| Category | 1986 data |
|----------------------------|-----------|
| Lumber | 239.2 |
| Plywood | 46.0 |
| Pulp and Paper Products | 151.3 |
| | ----- |
| Total | 436.5 |

Source: U.S. Forest Facts, U.S. Forest Service.

Table 05

VALUE OF FOREST INDUSTRIES

| Category | Value added by manufacture (million \$) |
|----------------------------------|--|
| Logging Camps | 2502 |
| Sawmills | 3748 |
| Plywood and Veneer mills | 1273 |
| Millwork and kitchen cabinets | 2857 |
| Furniture | 6289 |
| Other | 4997 |
| Pulp and paper | 33355 |
| | ----- |
| Total | 55021 |

Source: U.S. Forest Facts. U.S. Forest Services.

Table 06

EMPLOYMENT IN FOREST PRODUCTS INDUSTRIES - UNITED STATES

| Type of Establishment | No. of Employees (thousands) | Wages and Salaries (million \$) |
|----------------------------------|---------------------------------|------------------------------------|
| Logging Camps | 81 | 1208 |
| Sawmills | 158 | 2306 |
| Plywood and Veneer Mills | 53 | 908 |
| Millwork and Kitchen cabinets | 100 | 1502 |
| Furniture | 256 | 3180 |
| Other | 204 | 2894 |
| Pulp and Paper | 605 | 12933 |
| | ----- | ----- |
| Total | 1457 | 24931 |

Source: U.S. Forest Facts, U.S. Forest Service.

1.3.2 Impact of Environmental Movement

The environmental movement had its beginnings in North America and is still a very strong and influential force in American society. Compared to Australia the environmental movement appears to be more extreme and better organized than their Australian counterparts. The combined annual operating budgets of environmental groups in the United States is about \$120 million. By comparison the annual budget of Natural Resource Agencies in Oregon is \$60 million.

The reasons for the extremism and power of environmental groups in the United States is subject to debate but two factors common to California where environmental activism probably reaches its peak were put forward by several foresters I met.

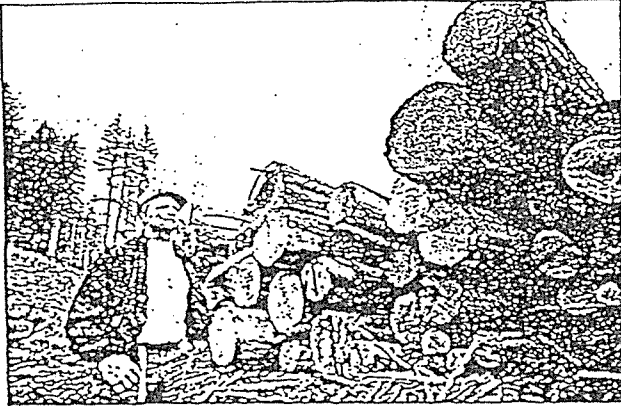
* In California, 96% of the population live in 3% of the State in cities such as Los Angeles and San Francisco. Many have little understanding of forest practices and an appreciation of the link between their large consumption of forest products and the consequent need to harvest trees.

* Californians like quick solutions to problems. If, for example, trees adjoining a major highway are felled, the public are not disposed to waiting for several years until they regrow.

* Californians react to situations more on an emotional rather than a logical basis. Possibly this is due to the influence of the film industry which makes them more susceptible to environmentalist arguments, many of which are very emotionally based.

The large budgets of environmental groups allow employment of numerous research and legal staff. The use of legal action to halt preparation of management plans and harvesting operations is commonplace and leads to lengthy and costly delays. Preparation of management plans for Federal forest areas takes on average about 10 years with the final cost being of the order of \$1,000,000. Finalisation of plans for forest areas in the more environmentally sensitive States such as Washington, Oregon and California are many years away from completion.

The Spotted Owl issue is a major controversy on the West Coast of the United States with potential to exclude logging from remaining Old Growth Forests. According to environmentalists, these forests are essential habitat for the Spotted Owl. Estimates of old growth requirements for each breeding pair ranges from 400 hectares to a 3.4 kilometre radius or about 900 hectares for each pair of Spotted Owls. On some Forest Service maps, circles representing these habitat areas almost link up.



By Don Ryan, AP

LOGJAM: Charlie Janz, co-owner of Christian Logging Inc., says there are 'enough forests for recreation and other uses.'

At loggerheads over timberland

Wildlife, industry needs clash

By Deeann Glamser
USA TODAY

OAKRIDGE, Ore. — Logging trucks roar along crowded roads as sawdust swirls through the air of this Cascade Range town in the heart of the nation's timber country.

But the sights and sounds of the Pacific Northwest's No. 1 industry soon might be gone. Efforts to protect the northern spotted owl, coupled with complex economic factors, threaten the livelihood of thousands in Oregon and Washington.

"Oakridge could become a few gas stations and a Dairy Queen," says Chris West, of the Northwest Forestry Association industry group.

Such fears permeate hundreds of towns in the two states, which produce a third of the nation's wood products.

Fanning the fear is a dispute between businesses and conservationists over the logging of federal land considered the northern spotted owl's prime habitat. After an earlier failed attempt at a compromise, both sides meet this week to try again. At odds:

▶ As many as 10,000 of the 127,660 timber jobs could be lost by winter, when much federal land still open to logging will have been logged.



AP

SPOTTED OWL: Some want to halt logging in its habitat

▶ The fate of the rare spotted owl, which nests in "old growth," centuries-old Douglas fir trees as big as 8-foot in diameter and 250 feet tall.

"I've been around logging all my life," says Jim Young, 26, a third-generation logger who runs a small logging outfit with his brother in Oakridge, a town of about 3,500. "It doesn't seem possible that everything may be shut down."

Plenty of trees remain, but a federal court order won by a coalition of environmentalists

▶ The spotted owl. It needs virgin forest, the alliance says. It will adapt to new-growth forests, the industry says.

One effect already felt is the price of lumber, with some Douglas fir products 20 percent higher than a year ago, says Jon Anderson, an industry newsletter publisher.

"If you walk into your retail lumber yard to buy a few 2-by-4s, you may not see it," says Anderson. "But if you're building a home in California or Phoenix (prime markets for Northwest lumber), you probably would."

The most immediate effect, though, is in Oakridge.

"No one is turning loose any more money than they have to," says Lenora Roat at Ray's Auto Repair.

Jim and Kassey Young, expecting their first child this summer, bought a used crib rather than a costly new one. "We're certainly watching our pennies," Jim Young says.

— the Ancient Forest Alliance — last spring stopped the sale and harvest of lumber on 29 square miles of forest land.

Those in the industry say there are enough trees and land to suit both logging interests and public use.

"We have to convince the public we can manage the forests out here, and there's enough forest for recreation and other uses," says Charlie Janz, co-owner of Christian Logging Inc. of Oakridge.

The two sides disagree on virtually every point:

▶ The amount of land affected. The industry says half of such land is protected in federal wilderness areas and national parks. The alliance says those areas don't include the best forest land.

▶ The economic impact. Up to 131,400 jobs in logging and spinoffs would be lost, the industry says. The threat to jobs is from mill automation and exporting logs, the alliance says.

Newspaper comment on Spotted Owl.

In Washington, the State Wildlife Agency declared the species rare and endangered. The Federal Wildlife Agency after a years investigation concluded this rating was not warranted. Because of litigation by environmental groups exploiting this anomaly, the US Forest Service has halted cutting in Spotted Owl Habitat areas. The Federal Wildlife Agency has been requested to re-examine the status of the species and decide within one year whether the Spotted Owl should be declared rare and endangered.

In Oregon, all mills supplied with logs ex Federal Forest Service Lands will be forced to close later this year if injunctions before the Courts based on the Spotted Owl issue are successful. At the time of my visit, mills were accumulating vast stockpiles to withstand a long seige. If the injunctions succeed it was claimed about 50,000 people employed in Forest products industries in Oregon were likely to lose their jobs.

Private forest land is not yet affected by the Spotted Owl issue although foresters I spoke to were concerned that if injunctions for Federal Forests were successful the same restrictions would later apply to private forest land. Foresters from private companies say the timber yield from National Forests in Oregon is about half that obtained from private forests, mainly due to restrictions imposed on the Forest Service by environmental groups.

Many foresters believe the Spotted Owl is far more widespread than first thought as it has been sighted in several regrowth forests. Most saw the Spotted Owl issue as a surrogate means of placing more forest into reserves. The Forest Industries should not relax if injunctions by the environmental groups do not succeed; environmentalists have a lengthy list of other species to test in the Courts if the Spotted Owl case fails.

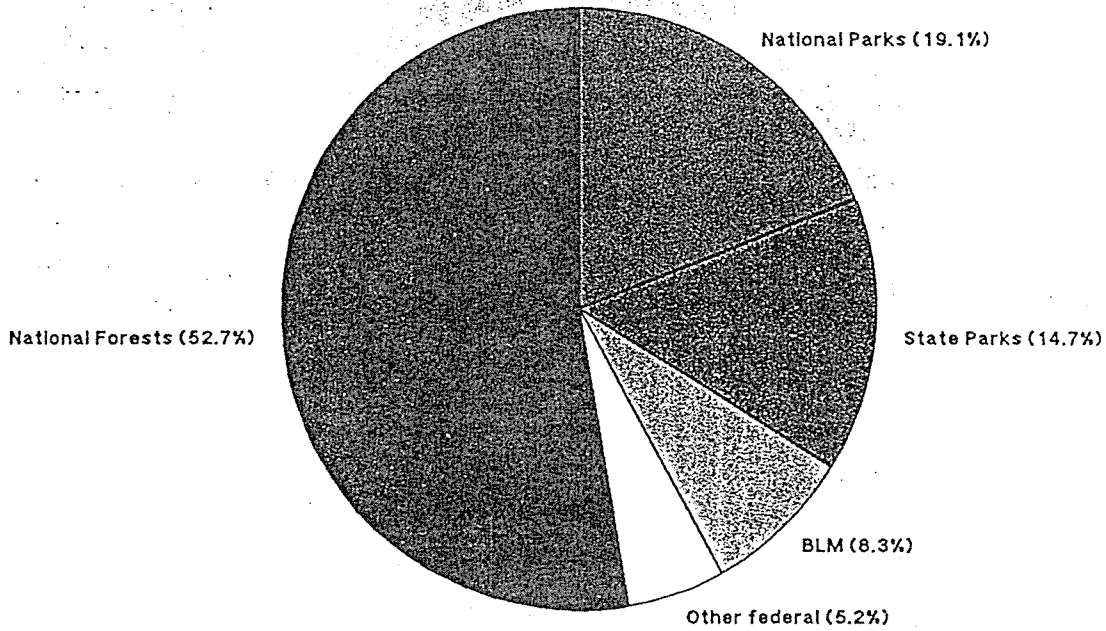
Earth First, a radical environmental organization which adopts strategies of driving spikes into trees to stop harvesting is agitating to prevent private landholders logging second growth forests. One of the goals of Earth First is to reduce the human population to 100 million, destroy industrial infrastructures and see wilderness with its full complement of species returning throughout the world.

The impact of the environmental movement and its ability to frustrate timber harvesting has created a great deal of uncertainty in the Forest Industries as to whether issues such as the Spotted Owl campaign will affect access to future log supplies. Compared to British Columbia there is less investment by mills in new technology and equipment for this reason.

Figure 01

RECREATIONAL USE OF FOREST LANDS IN CALIFORNIA - 1986

Figure 3-8. 1986 Recreation Use of Public Forests and Rangelands, Amounting to 104,000,000 Recreation Visitor Days

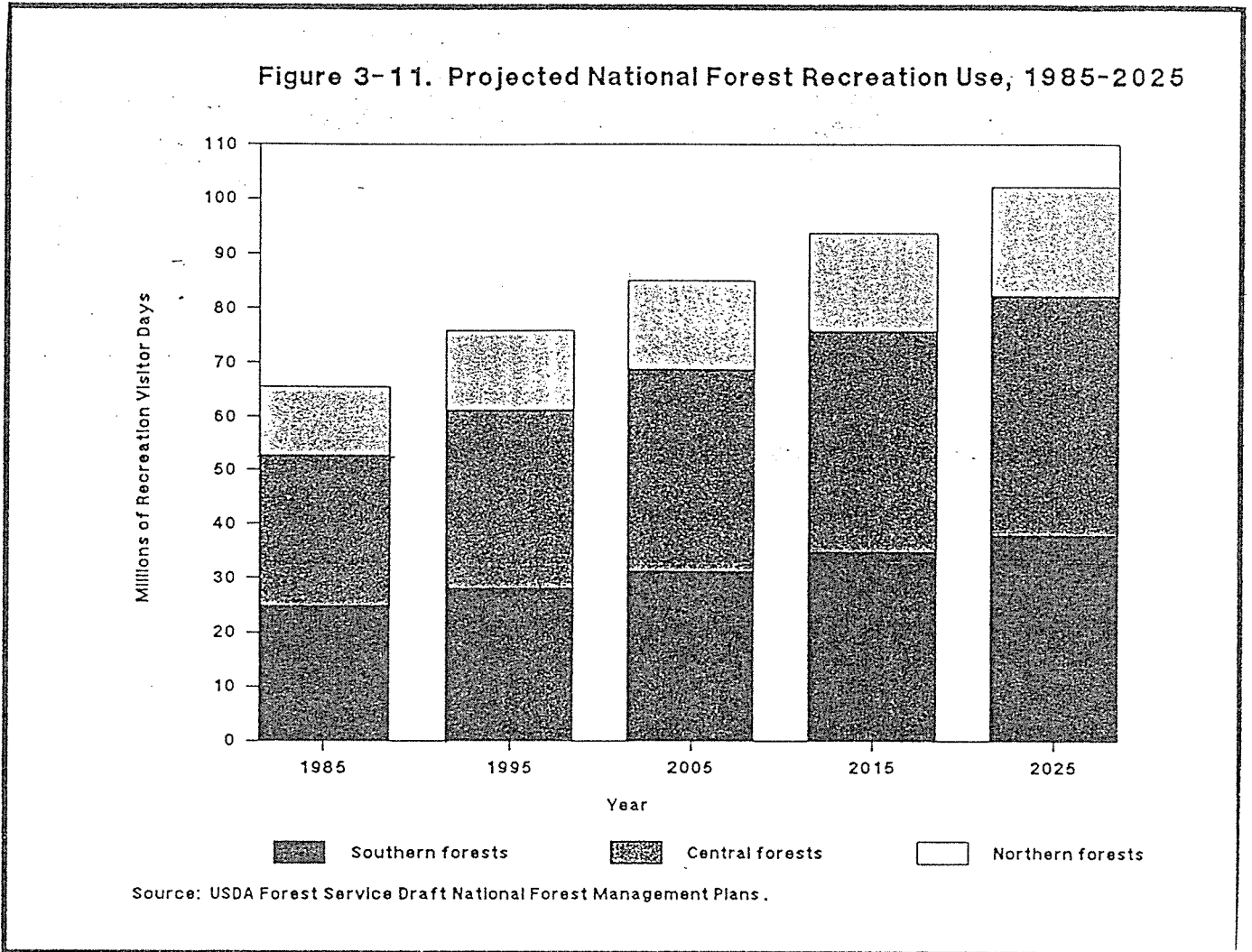


Source: California Department of Parks and Recreation, 1987; USDA Forest Service Draft National Forest Management Plans; USDI National Park Service, 1986.

Source: California's Forests & Rangelands

Figure 02

PROJECTED INCREASE IN RECREATIONAL USE OF NATIONAL FORESTS IN CALIFORNIA.



Source: California's Forests & Rangelands.

Staff from the Forest Service, particularly in California, spend considerable time and resources defending legal actions by environmental groups. The Regional Office in California has a well staffed legal section of attorneys to advise and train Forest Service staff on how to minimise disruptions to day to day management from litigation. Staff are being trained in courtroom procedure and generally the Forest Service is having more success in defending cases than a few years ago. Similarly private forest industry companies are expending a huge amount of resources on defending legal actions initiated by environmental groups.

There was general agreement from foresters I spoke to that there was a great need to increase the level of understanding of forest management in the community if the present polarised debate was to be defused. All agreed that methods such as Demonstration Forests are very useful and should have been operating about 30 years ago. Unfortunately so much of their energies and resources and that of the forest industries are being directed to countering the numerous legal attacks on forest management that information and education is low on the list of priorities.

The most encouraging sign of an alternative approach was in Washington where the Washington State Department of Natural Resources played a lead role in developing a Timber-Fish-Wildlife Agreement. This arose when all timber cutting on State Forest land had come to a halt as a result of legal action by environmental groups and opposition from the Wildlife Service. This had a devastating effect on State revenues, sawmills, logging contractors and small towns relying on continuance of logging for their survival.

The Agreement is a negotiated approach to management of forest lands and involved participation of all the key users, timber companies, government agencies, environmental groups, native tribes, fishermen and other recreationists.

The key features of the Agreement which took three years to develop included identification of the various needs of all parties, their acceptance by others and a commitment to resolve problems by discussion and negotiation, not litigation. A secondary aim is not to allow the media the chance to inflame issues into confrontations which only tend to magnify the differences between groups. The approach is a refreshing change to the very bitter battles taking place in other areas on the West Coast and whilst timber production values will be decreased it is a far superior arrangement than prior to the Agreement.

One of the desirable outcomes has been a commitment to establish a 250,000 acre Demonstration Forest to lay down examples of alternative silvicultural systems and collect basic information on the effects of different cutting practices on fish, wildlife etc. The intention is to use this forest for the purpose of public information and interaction on alternatives to current forest management.

Editorials

How to craft a timber deal

Oregon politicians who tried, and failed, to sell a phony deal on old-growth forests ought to give close study to this state's carefully crafted compromise, announced last week. The Washington Commission on Old Growth Alternatives has shown how this sort of thing is supposed to be done.

The commission, established by Department of Natural Resources Commissioner Brian Boyle, included representatives of all interested factions — legislators, the timber industry, environmentalists, educators (state timber revenues finance school construction), Indian tribes and communities on the Olympic Peninsula, where the state forest under discussion is located.

The negotiators took a year to study the issue thoroughly and to reconcile their differences. The result is a plan that all can support. It not only preserves 15,000 acres for the endangered spotted owls, it sets aside 260,000 acres for research on how to cut trees in ancient forests without destroying wildlife or doing irreparable damage to the environment. Although timber harvests from western Olympic Peninsula state lands would drop over the next 10 years, they would then increase to possibly

yield more than expected now.

In contrast, Oregon's Gov. Neil Goldschmidt and its congressmen, led by Sen. Mark Hatfield and Rep. Les Aucoin, cobbled together an agreement over a weekend, behind closed doors, and then told environmental groups to take it or leave it within 48 hours. The proposal even involved Washington forests, although no one from this state was asked to participate in the decision-making.

The game might have been called let's pretend to make a deal. It played well with Oregon voters dependent upon the logging industry and it put conservationists in a poor position. The environmental groups could accept a vague deal that took away their legal right to protest timber cuts and gave them almost nothing in return. Or they could turn it down and face criticism as obstructionist zealots who refused to compromise.

The environmental groups did the right thing by saying no to a poor bargain, but offering to negotiate to reach agreement on a good one. Compromise is possible on this extremely difficult confrontation between economics and environment. But it has to be gone about in a proper fashion.

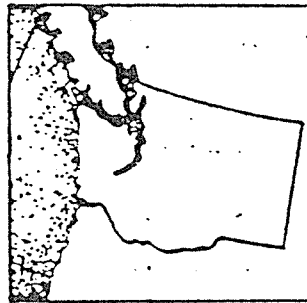
In heavily populated States such as California, recreational use of forests is substantial (Fig. 01), and is projected to steadily increase, (Fig. 02). Timber production in forests close to major cities has been severely curtailed as a result of inability to resolve conflicts with recreational use.

THE NORTHWEST

State groups reach compromise in own-logging fight

But agreement on federal lands still up in the air

Washington state environmentalists and other groups have reached a compromise on saving habitat for northern spotted owls, while acknowledging the needs of timber workers in state forests.



But a compromise proposal for federal lands in the Northwest remained up in the air last week.

A state commission studying old-growth forests recommended approval of a 15-year halt to logging on more than a quarter of the 50,000 acres of old-growth timber owned by the state on the Olympic Peninsula. The state plan is significant because it came after a year of talks among representatives of timber companies, timber-dependent communities, environmental groups and education officials.

The plan would guarantee a timber supply in the area of the state hardest hit by timber shortages. It would remove from logging for the next 15 years 15,000 acres considered critical habitat for the spotted owl and preserve 3,000 acres in perpetuity.

1.4 BRITISH COLUMBIA

1.4.1 Forests and Forest Industries

Canada has just over 450 million hectares of forest land and British Columbia, with 60 million hectares, is second only to Quebec with the largest area of forest in the country. British Columbia's stock of standing timber constitutes about half the Canadian total forest resource and about 20% of the North American inventory.

About 57% of the land in British Columbia is forested. (See Figure 03). The Provincial Government owns 94% of all land in British Columbia, private interests own 5% and the Canadian Government the balance. Consequently most forested land is owned by the Province.

Forest management is guided by the principle of sustained yield. The Ministry of Forests administers 35 Timber Supply areas and 31 Tree Farm Licences. Forest management on Timber Supply Areas is shared between the Ministry and private firms whilst on Tree Farm Licences, management is totally the responsibility of the private operator. Tree Farm Licences are issued for 25 year periods.

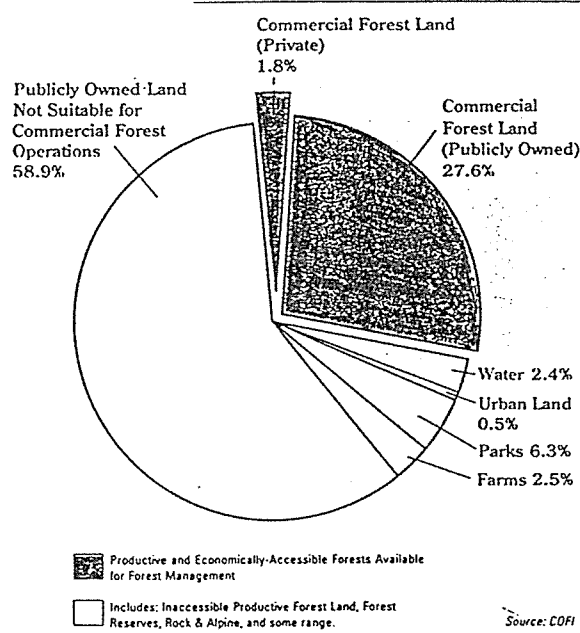
Some of the Tree Farm Licence areas are over a million hectares in size and there has been criticism by environmentalists, smaller operators and woodlot owners that there is too much concentration of control of timber production by large companies. Currently large companies produce about 85% of the total cut, private forests contribute about 1% with the balance by smaller operators. To offset the image of forest production being dominated by large companies the Ministry of Forests has issued 450 woodlot licences to small holders with a total cut of 500,000 cubic metres a year. The intent is to increase this number to 900 in the next year.

The scale of timber production in British Columbia and size of industries dependent upon it is very large by Australian standards. The annual cut is about 90 million cubic metres and 219,000 people are employed both directly and indirectly as a result of the forest industries. Annual exports of forest products are valued at over \$9 billion, with the majority of exports being to the United States. (See Figure 04). Almost half the total value of British Columbia's manufacturing exports are forest products and it is frequently said that the forest industries are the steam that drives the economy of the Province.

The British Columbia Council of Forest industries formed in 1963 represents about 90% of the forestry industry organizations in the province. They have been very active in the public information and education field over the last five years with an expenditure of several million dollars a year on different programs. Individual companies are active also and many have appointed a vice president of their company to solely attend to public relations and information approaches.

Figure 03

LAND USE IN BRITISH COLUMBIA



Source: Council of Forest Industries.

Figure 04

VALUE AND DESTINATION OF FOREST PRODUCT EXPORTS FROM BRITISH COLUMBIA

MANUFACTURING SHIPMENTS
BY INDUSTRY (\$ millions)

| Industry | 1987 | Percent |
|---------------------------------|--------|---------|
| Wood | 6,528 | 28.4 |
| Paper and Allied | 4,909 | 21.3 |
| Food | 2,763 | 12.0 |
| Petroleum and Coal Products | 1,919 | 8.3 |
| Fabricated Metal Products | 1,130 | 4.9 |
| Primary Metals | 807 | 3.5 |
| Transportation Equipment | 893 | 3.9 |
| Chemicals | 612 | 2.7 |
| Non-metallic Mineral Products | 547 | 2.4 |
| Machinery | 527 | 2.3 |
| Plastics | 281 | 1.2 |
| Electrical/Electronics Products | 240 | 1.0 |
| Clothing | 173 | 0.8 |
| Furniture and Fixtures | 131 | 0.6 |
| Other | 1,549 | 6.7 |
| Total | 23,009 | 100.0 |

Source: Facts about British Columbia.

1.4.2. Impact of Environmental Movement.

The size of the industry and its importance to the economy has tended to limit the effects of the environmental movement but it is recognized they are a growing force and several well publicised "Save the Forest Battles" were taking place during my visit.

It was the opinion of some foresters I spoke to that the environmental movement was unlikely to gain the same momentum it has in the United States. This was because of the importance of the forest products industries to the economy and a belief that Canadians are more inclined to seek expert advice and opinion on issues than Americans who were seen as being more easily swayed by emotional arguments. At the same time it was accepted there was no room for complacency and this has led to the dramatic increases in education and information sharing efforts by industry who have seen what has happened in the United States.

Many of the environmental objections against timber production have been concerned with steep slopes difficult to regenerate and in hindsight it is now the view of many in the industry that it would have been better to have excluded them from past harvesting operations. It was the view of several foresters that about a third of forested land in British Columbia was suited to long term sustainable forest production and the rest should be regarded as de facto National Park and managed accordingly.

In response to environmental movement concerns the forest industries are now saying that future timber production should be concentrated on this approximate third of available forested land and any loss of production compensated for by intensive management such as tree breeding and fertilizing.

The establishment near Vancouver of the best Demonstration Forest seen on the Study Tour and plans for its expansion to enable people to gain a good understanding of integrated resource management is a direct result of concerns expressed by the environmental movement.

SECTION 2

USE OF FORESTS FOR TIMBER PRODUCTION

2.1 RATIONALE

Assuming reasonable representations of forest areas are set aside for National Parks and also as benchmark reserves for nature conservation for the benefit of current and future generations, there are a number of reasons why timber production should be considered a valid land use for much of the remaining forest areas in Australia.

* A large body of scientific evidence and practical experience gained over many years indicates that forests can be successfully managed for timber production whilst being compatible with most other uses and with minimal effect on the environment.

* The community is a large consumer of forest products with demand necessitating imports of forest products into Australia each year valued at almost \$2 billion. Relying more on imports would be to the detriment of balance of trade figures and the economy of the country.

* Growth rates in the main forest belts of Australia compare favourably with those obtained in many overseas countries. Many believe there is considerable potential to export value added hardwood products to earn useful income for Australia and increase employment opportunities.

* The option as suggested by the Australian Conservation Foundation of growing trees on former farmland to supply all forest product needs is not a realistic option in the short term. This strategy can be a useful supplement, not a replacement for supplies from native forest. Industry groups have already recommended an increase in plantation area by about 600,000 hectares to cater for increased demand due to population increases.

Implicit in the rationale for use of forests for a timber production component is that the practices to be used are justifiable by being environmentally sound and based on the best scientific information available. To do otherwise would be unacceptable and run the risk of losing credibility with the community.

In British Columbia only a third of the forested land is considered suitable for long term sustainable timber production. Likewise in Australia there are forest areas best left unlogged because of their environmental fragility. Judging by the fact that only 7 million out of a total of 34 million hectares of native forest in Australia are now available for timber production, it would seem that this concern has been adequately addressed.

SECTION 3

PUBLIC CONCERNS ABOUT USE OF FORESTS

Attitudinal surveys of large samples of the Australian population a few years ago (Goss 1988) concluded that:

- * Compared to issues such as the economy and employment, forest management issues such as clearfelling and woodchipping were not major concerns.
- * There was a reasonable balance across the community in its attitude to using forests for timber production. Only a minority at that stage were hardened antagonists and beyond persuasion that timber production was an acceptable use of forests.
- * The forest products industries had a low approval rating.
- * The public wanted to be assured that forests were not being cut faster than they were regrowing and that long term environmental impact was minimal.

It needs to be recognized that these surveys are now over three years old and attitudes of the population may have altered. Environmental debates in New South Wales and Tasmania in the last two years and concerns about a possible Greenhouse Effect have probably reduced the proportion of people in the community supportive of using forests for timber production.

On the West Coast of the United States there is considerable opposition to clear felling. Openings in the forest larger than about a hectare in size are commonly perceived as being no different to a large clearcutting coupe. Whilst in British Columbia and Australia, larger opening sizes than this are not opposed to the same degree, it would be unwise to ignore the United States trend.

Generally there is a low level of understanding of forest management practices in the Australian community as evidenced by letters to newspapers, television reporting and comments made by some politicians. Often this leads to opposition to timber production due to misunderstanding. Forest terminology is confusing to people outside the profession and terms such as clearfelling have been interpreted as meaning the same as removal of a forest by conversion to farmland. There are also differences of interpretation within the forestry profession and the timber industry as to what is meant by terms such as pulpwood and woodchipping.

Fortunately there is evidence from the experience of foresters and industry groups who have run conducted forest tours, to indicate that opposition due to misunderstanding can often be reversed. People who have an open mind often become quite supportive of timber production if they have the opportunity to view forest management practices in the field, hear explanations of what is occurring and see for themselves that common concerns are unjustified.

CONCERNS BASED ON MISUNDERSTANDING.

THE WEST AUSTRALIAN WEDNESDAY JUNE 21 1989

A plea for our jarrah forests

I'D like to enlighten you on the plight of our jarrah forests here. Maybe you can help me find a solution or pass my letter on to someone who will sit up and take notice because this concerns me deeply.

I live in Rosa Brook, a farming community some 5.25km east of Margaret River and work in Augusta 40km away.

This enables me to travel the back roads and part of my trip takes me through the forest so I see first hand the week-by-week massacre. And you know what? I've lived here for five years now and I've noticed no slowing down in the slaughter of our trees.

I am constantly amazed at the alarming rate we are losing our bush. One afternoon I might pass two hectares of healthy forest. I'll return the next afternoon and all that will be left is debris and topsoil left to blow away.

As for the replacement program which we have been led to believe occurs when a tree is taken, it is rubbish. It just doesn't exist. It might of course exist if that area is accessible to the public. Otherwise it's take what you want and get out quick.

To take one big tree always results in the undergrowth being pulverised. Wildflowers and young saplings just don't have a chance.

So in reality one big tree taken

results in the loss of 20-30 jarrah or redgum saplings.

Then you have the wood contractors. For example, a 35-year-old jarrah may be felled for a four metre piece for a post. Unbelievably tonnes and tonnes of seasoned wood logs on the forest floor are ignored by most and left to be burnt by the conservation and land mismanagement crew in their next spring burning. I thought burning off contributed to the Greenhouse/ozone Effect.

Seeing this go on all the time leaves me feeling sad and angry. What I find hard is feeling so helpless, especially when I see exactly the cause of our present environmental and climatic crisis.

Sure I agree, let's save the Amazon, but let's get our act together in our own backyard first. Next time you come to Margaret River, don't be fooled by the beauty. Take a drive just a few kilometres into the backroads and it won't take long to see what I'm talking about. Then get out of your car and take a walk a few hundred metres into the bush and what you see could take your breath away. I'm not talking about the beauty either. My friends and I care very deeply but we just don't know who to turn to for help.

If you can help or you want to see first-hand what I'm talking about, please contact me.

Thank you for the chance to speak up. I only hope you cares enough to, do something too.

TANIA LOWIEN, Rosa Brook.

Source: Western Australian.

SECTION 4

METHODS OF INFLUENCING ATTITUDES

4.1 COMMUNICATION APPROACHES.

Traditional approaches used for communicating with people in order to obtain a change in attitude and behaviour have been listed by Goss (1988) as:

- * dissemination of information
- * interpretation of natural environments
- * community education
- * extension or advisory services
- * public participation.

4.1.1 Dissemination

Dissemination of information objectives are to communicate information to the general public via easily understood simple messages using newspapers, television and radio, displays and exhibits and audio visual material. These can be expensive options and whilst they are appropriate for conveying a simple message that builds on a base of knowledge and a favourable attitude already held by the target audience, they are of limited value in tackling issues where this does not exist. For example reassuring people with little knowledge of forestry that forests regenerate after cutting may be possible by dissemination to an audience with an open mind. Attempting to convey messages on complex silvicultural issues by dissemination methods would be virtually impossible to an audience that knows little about the subject and is hostile to use of forests for timber production.

4.1.2 Interpretation

Interpretation of natural environments has been effectively used in National Parks around the world where the aim has been to not only provide people with a pleasant experience as a result of the visit to the Park but also give them the opportunity to learn something about the natural environment and history of the area. The environment is interpreted for them to improve their awareness and understanding of what they are viewing. The accent is more on the revealing of meanings and relationships rather than transmission of factual information.

An interpretation program for primary school children might aim to create awareness that bark on trees can differ markedly between different types of tree. The fact that a tree with smooth bark might be a eucalypt and another with rough bark a pine would be incidental to the program.

4.1.3 Community Education

In community education programs the usual approach is to provide resource materials for schools, tertiary institutions and also speakers for seminars, provision of field study centres and training and induction courses for teachers. Ranger-led walks and campfire talks in National Parks are examples of successful use of community education programs.

4.1.4 Extension

Extension services are a means of ensuring technical and research information is transferred and applied by end users. The process of information exchange via field days and one to one discussions can be very effective in influencing changes in attitudes and behaviour of user groups. The approach is widely used by Agricultural Departments to ensure research results are transmitted and applied by farmers.

4.1.5 Public Participation

Public participation approaches include inviting comments on proposed management plans, holding of seminars and workshops, appointment of advisory committees and use of volunteers to assist with specific projects. This approach can be time consuming but very effective in building up a supportive constituency.

4.2 Application to Forest Use Issues.

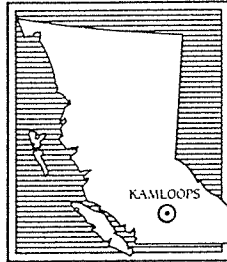
All approaches have their place in influencing people to adopt a more favourable attitude towards use of forests for timber production. It is generally acknowledged by experts in the communication field though, that the ones most likely to achieve long term behaviour and attitudinal change are those that allow people to gain a better understanding and awareness of the principles involved through personal experience. (Goss 1988).

Numerous examples of the application of all these approaches to communicating messages about forests were seen on the Study Tour. Many were identical to those being used in Australia. Accordingly, instead of listing all approaches seen, only those that illustrate a new aspect or reinforce a useful lesson are discussed. These are grouped in the next Section according to the type of communication approach.

COMMUNITY LAKE

*NORTH OF KAMLOOPS,
BRITISH COLUMBIA*

Logged 1967...reforested 1971



In 1967, 120 hectares of land surrounding Community Lake, B.C. were clearcut logged. By 1971, the area had been reforested with lodgepole pine and spruce.

Together with the reforestation and forest management programs that followed, the logging created many benefits—jobs for

loggers, mill-workers and treeplanters, sales for forest companies, products for consumers, and money for governments to help provide schools, hospitals, highways and other services for the people of B.C.

But the logging done at Community Lake didn't only produce economic and social benefits. It produced some environmental benefits as well.

The original forest at Community Lake was dense and decaying. It was practically impossible to walk through, and lack of sunlight meant there wasn't much forage for animals to eat.

Good logging and forest management practices like the ones used at Community Lake can improve wildlife habitat by increasing access and the availability of forage. Wildlife populations in Community Lake actually increased after logging and for the first time, local ranchers were able to use the area for rangeland. Logging roads also made it easier for people to get to Community Lake. Harvesting improved recreational access and opportunities for hikers, campers, hunters and fishermen to enjoy the area.

Twenty-five years ago there was no timber production, no grazing, no wildlife and very little recreation at Community Lake. Today, ranchers graze their cattle, fishermen cast the waters, wildlife roams and forest companies continue to log...and reforest.

Community Lake proves that British Columbians don't have to choose between jobs and environmental quality. When we all work together we can have both.

B.C.'s forest companies...committed to Forests Forever and for everyone.



FORESTS FOREVER™

SECTION 5

IMPLEMENTATION OF COMMUNICATION APPROACHES

5.1 DISSEMINATION

5.1.1. Public Television

In British Columbia the Council of Forest Industries which represents about 90% of the Forest Industry in the Province has put a major effort over the last five years into public information and education programs about use of forests. This arose following increasing objections by environmentalists to harvesting operations and the observation of how successful these groups had been in the United States.

A common concern of the public was that forests were not being regenerated after harvesting. In the cold Canadian climate there is often a delay of several years between the time of felling and visible appearance of seedlings. This had been interpreted by many people that forests were not being regenerated, which was incorrect in most cases.

To counter this impression the Council has been running a major public relations program to address this concern. The campaign has as its theme "Forests Forever" and consists of television clips costing about \$1.5 million a year plus the same messages repeated in billboard advertising, newspaper advertisements, broadsheets, brochures, posters and souvenir type goods.

These television clips have been reasonably successful in influencing public attitudes on the regeneration concern but less so on other issues. Some of the timber companies run television advertising themselves. Some of these have a dramatic introduction to attract attention such as a tree being felled that follows on with a simple message. It is clear there is some excellent forest management being practiced in British Columbia but equally there have been some environmental disasters in the past. Environmentalists have been active in drawing attention to these so the public is aware that all is not as it seems on the television material.

Several foresters from both private and government service I spoke to said that the television material was often too slick and lacked credibility. At one stage, protests from viewers led to forest industry television material being banned on Federal Canadian channels. This highlights the need to ensure that television messages match up with what is happening on the ground, otherwise the messages lose credibility. After the exposure of Richard Nixon in the Watergate Affair, Americans and Canadians have become very cynical of politicians and big business when "Trust Me" type messages appear on television.

From what is known of the success of influencing attitudes by television advertising it could be argued that the funds might have been better

invested in development of Demonstration Forests.

5.1.2 Videos

Most of the larger timber companies in British Columbia have good video material used for disseminating information both internally to their employees and also to outside audiences. I viewed one produced by Fletcher Challenge for their Kelowna operations in British Columbia and thought it was very informative and well balanced. Companies such as Fletcher Challenge place great emphasis on keeping their own employees well informed and up to date with environmental matters. This strategy is essential to ensure employees can act as effective spokesman on forest use matters in the community.

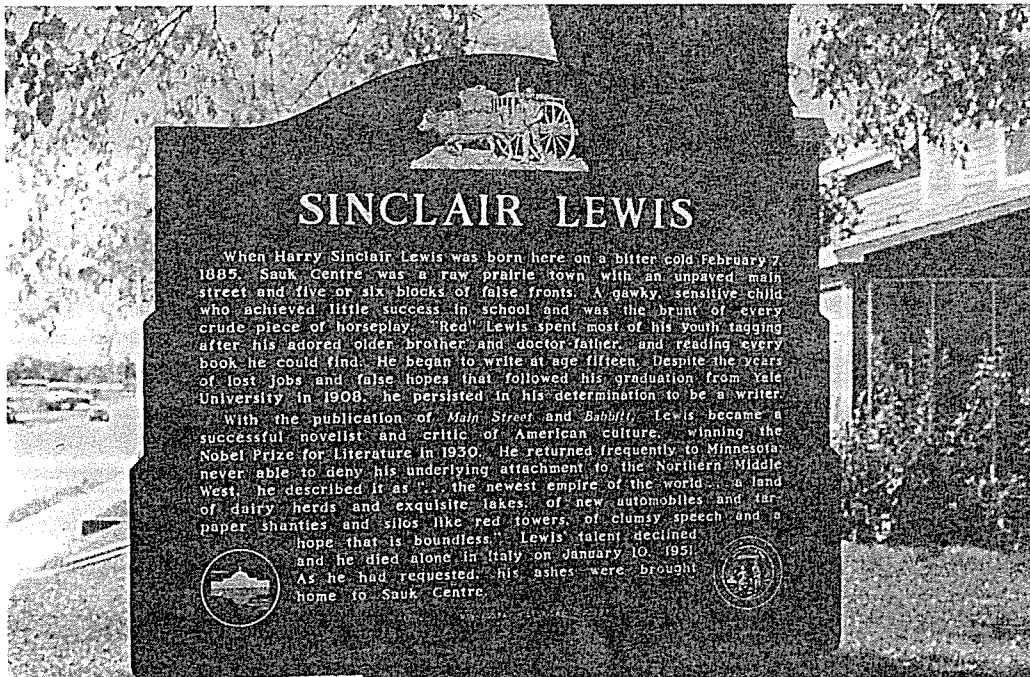
The U.S. Forest Service makes use of videos for internal audiences to inform staff and outside groups on issues so that all parties receive exactly the same message and the same set of facts. I viewed one produced to explain what is meant by the term "Old Growth Forests". It was a short video but very effective in communicating its message. The value of these videos is that the best qualified person in the organization conveys the desired message.

5.1.3 Newspapers

In British Columbia, the British Columbia Forestry Association which has a broad based membership consisting of industry, educators and recreation groups has as its mission "Promoting awareness of British Columbia's forest resources". One of the ways of doing this has been by running a weekly column in the main Vancouver newspaper where points of interest about forests are discussed and common concerns answered.



Souvenir articles associated with the Forests Forever Program.
Council of Forest Industries, B.C.



Historical Information Plaque, Minnesota.

Most of the major Forest Product Companies in British Columbia produce a small newspaper on a periodic basis for distribution to employees and people who visit their information centres. These consist of only a few sheets and often highlight the accomplishments of the industry or people employed in the industry together with a rebuttal of some of the arguments put forward by environmental groups. Although some of the material is biased they are well read and are a useful means of informing employees and others of Industry activities and explaining the reasons for taking a particular stance.

5.1.4 Souvenirs

As part of its "Forests Forever", program, the Council of Forest Industries in British Columbia produces a number of souvenirs such as sweaters, mugs, glasses, key rings, drink coasters, and travel bags all embossed with the "Forests Forever", emblem. These together with a set of free posters, one of which shows some excellent regrowth stands, are very popular and help reinforce the intended message. This approach has been used to a limited extent in Australia and would be worth extending to reinforce a particular theme. Often the best posters of forests in Australia are those produced by environmental groups.

5.2 Interpretation

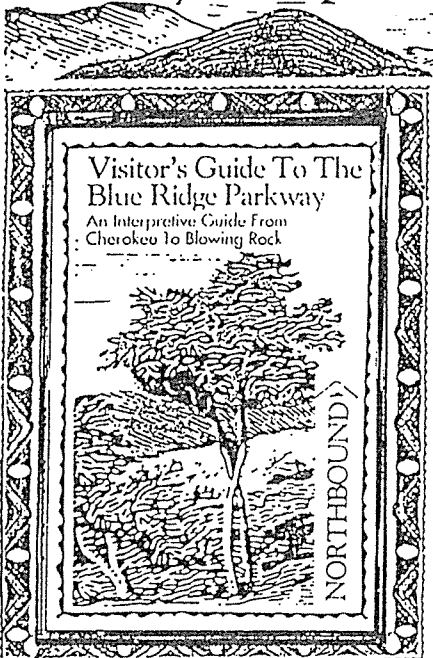
Application of interpretation techniques in Demonstration Forests and National Parks is discussed in the next Section. Two techniques commonly used outside forest areas in the United States are listed because of their potential application in areas of forest outside a Demonstration Forest.

5.2.1 Information plaques

An interpretation approach commonly seen in both British Columbia and the United States is the use of small information boards or plaques at roadside stops to tell a short story of historical interest about the site. This might be about a past battle in the Civil War or a town long since disappeared.

The common feature of these facilities is that they are well used by people. It was usual to see several cars parked at each site whilst people were reading the messages, which indicates that people are interested in gaining further information if it is well presented.

Discover the Blue Ridge Parkway with your personal audio guide.



"Ride with a guide" along the beautiful Blue Ridge Parkway and get valuable **VISITORS INFORMATION** as you need it.

This 60 minute **AUTO TOUR TAPE** accompanies you with mysteries and music, and will introduce you to the natural phenomena and culture of the southern highlands.

Feel history come to life as old-time mountain residents tell about life in the old days along the parkway. The tape offers a complete guided tour with **SITE BY SITE INTERPRETATIONS** keyed to your sightseeing progress.

North or South Bound versions available. Keyed map included.
Rogers Associates • 3301 Hwy. 101 N. • Woodruff, SC 29388 • (803) 877-0538

Cassete Tape for motorists driving the Blue Ridge Parkway North Carolina.

The use of such plaques in forest areas outside a demonstration forest has considerable potential as a lead in to a message on forest management. This is sometimes used in Australian forests where for example a recreation site has been developed on an old sawmill site. The indication I obtained from the Study Tour is that there is considerable potential to do more of this and in the process impart some messages on forest management at the same time.

5.2.2 Cassette tapes

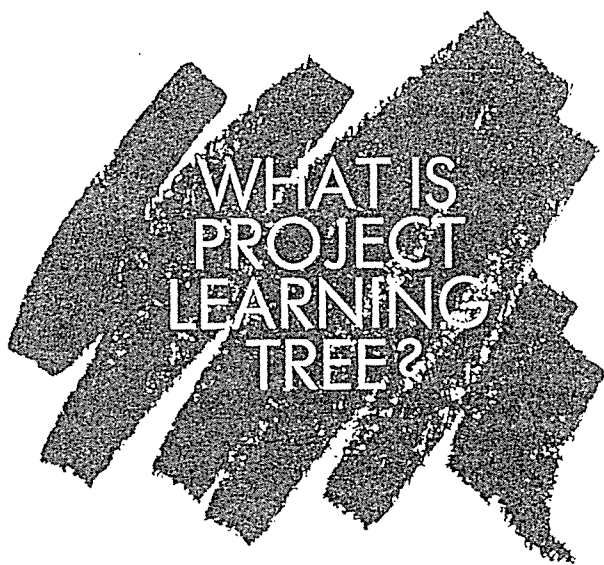
In North Carolina there is a narrow strip of National Park adjoining a 175 mile road running from the Shenandoah National Park in Virginia along the Blue Ridge mountains to the Great Smokey Mountains National Park. The road is heavily used by motorists as a scenic driving route with numerous stop points of interest.

Motorists can purchase a cassette tape to play whilst travelling the route. A bright narrative - not always favourable to forestry - discusses points of interest along the route by reference to mile pegs where the user is asked to switch the tape on. This approach could be easily adapted for a drive through forest areas to introduce discussion on forest management as well as items of historical interest. The key seems to be to make the story interesting and appealing to the listener.

The British Columbia Forestry Association also hires cassette tapes at its Regional centres to motorists wanting to drive a circuit route through forest areas and find out more about what they will be viewing.

5.2.3 Signing Forest Operations

Several of the major Companies in British Columbia place great attention to placing small signs adjoining main public access roads to give a brief history of forest management for particular stands. These are usually the dates of harvesting, regeneration and spacing displayed on a standard sign. They are a very effective way of illustrating that forests regenerate and grow again after harvesting. The system has been used in Australia but it would be worth extending and made a common practice.

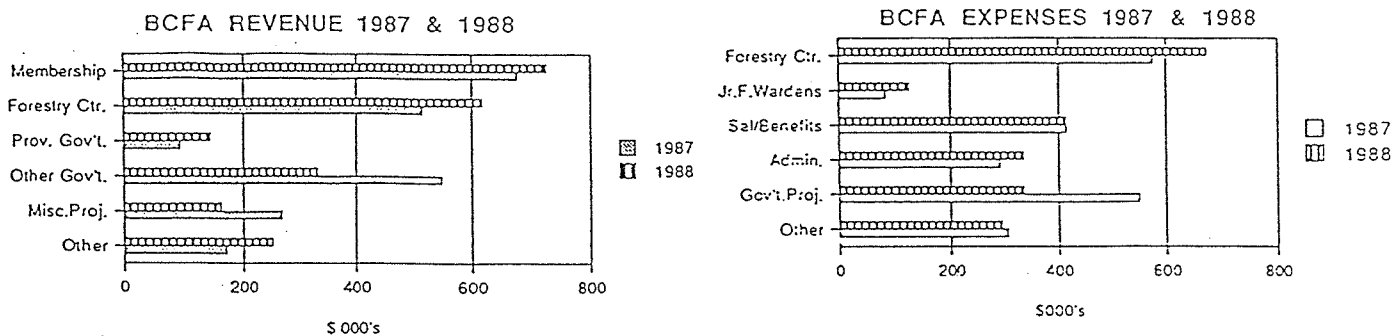


-
- **Project Learning Tree** is an award-winning environmental education program designed for teachers and other educators working with students in kindergarten through grade 12.
 - PLT uses the forest as a “window” into the natural world, helping young people gain an awareness and knowledge of the world around them, as well as their place within it.
 - PLT is a source of interdisciplinary instructional activities and provides workshops and in-service programs for teachers, foresters, park and nature center staff, and youth group leaders.
 - PLT is people! It is an international network of students, teachers, parents, community leaders, educational administrators, and representatives from the forest products industry, resource agencies, and conservation groups.
 - PLT works in the city and the country, whether there is a forest or a single tree.
 - PLT helps prepare students to make wise decisions about conservation practices and resource use.

Brochure on Project Learning Tree.

Figure 05

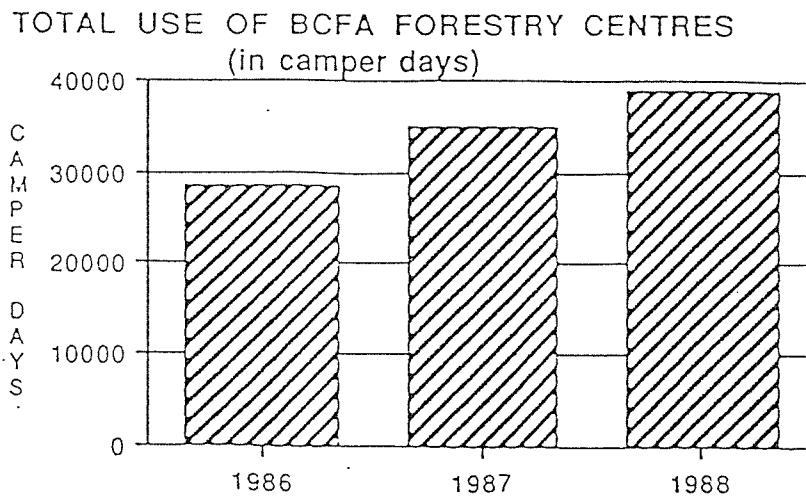
REVENUE AND OPERATING EXPENDITURE. B.C. FORESTRY ASSOCIATION.



Source: B.C. Forestry Association, 1988 Annual Report.

Figure 06

SCHOOL USE OF B.C. FORESTRY ASSOCIATION FORESTRY CENTRES



Source: B.C. Forestry Association, 1988 Annual Report.

5.3 COMMUNITY EDUCATION

5.3.1 School Programs

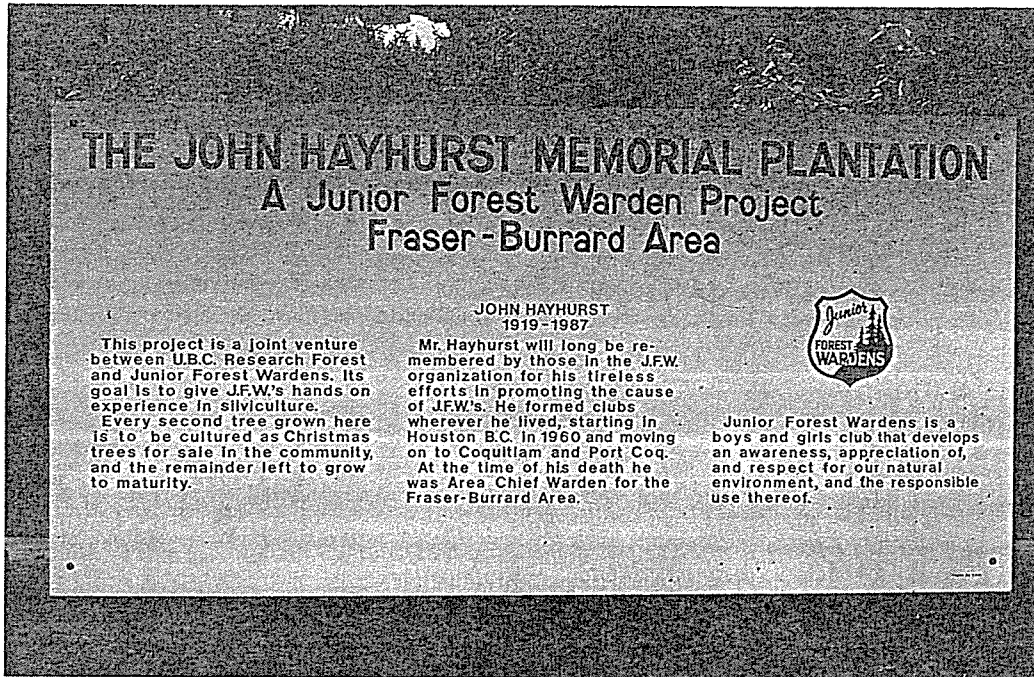
Because future attitudes to use of forests are shaped by what is currently taught in schools I was interested to see the type of information provided to schools. In Australia there has been criticism in recent years that material taught in schools has sometimes been rather negative when dealing with the subject of use of forests for timber production or has avoided the subject altogether.

In British Columbia the British Columbia Forestry Association which has been operating since 1925, produces a wide range of publications and information material for schools. The Association relies on corporate, industry and government grants for its funding. It has a broad based membership and produces balanced material to appeal to their diverse membership. Annual operating budget is over \$2 million (See Figure 05)

Material is based on the "Project Learning Tree" system which is also widely used throughout North America. Although criticised by some environmentalists and interpreters as not being a true environmental education program it includes a balanced approach to use of forests for timber production and creates awareness about subjects such as wood quality not usually addressed in most environmental programs.

The B.C. Forestry Association also runs five regional centres associated with live in camps where school children stay for a week or more to receive education on a wide range of outdoor activities such as canoeing, outdoor survival and navigation together with a component of forest management topics. In Australia, similar camps are held but in many cases the emphasis is on recreation and conservation education only with forest management being excluded (See Figure 06).

The B.C. Forestry Association also sponsors the Junior Forest Warden Program. This is a movement similar to the Boy Scouts where children of school age participate in weekend camps that involve a component of forest management. I saw some excellent second growth stands in British Columbia that had been planted by former members of the Forest Warden group. These were well signposted to recognize their efforts.



Signboard at plantation planted by Junior Forest Wardens.

New Technology in Forest Management

A Creative Problem Solving Approach

The forests are a biological resource. In recent years, scientists have been developing new technologies that affect living things – in some cases the chemical and biological bases of life – and these technologies have been expanding and changing rapidly.

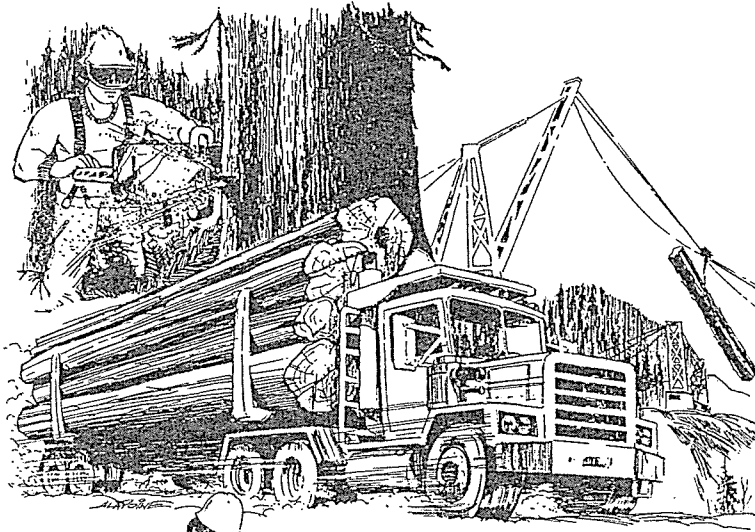
Already forest managers have begun to try some of the new bio-technologies in silviculture, the science of growing and caring for trees. Most of their potential will be reached only in the future, however. In BC, the new technologies have not yet had a major impact on the forests, partly because the forest crop takes a very long time to mature.

New technologies always mean new challenges. The following sections point to some of the problems that the industry will face in using new technologies.

These materials ask you to work out your own solutions to some problems, and also to develop your problem solving skills. Together with your class, as a group or by yourself, choose one of the problems and work out what you think is the best solution. Or, if you prefer, find a problem that is not described here that interests you, discuss it with your teacher, and see if you can use your thinking skills to solve the problem. Present your results in a way that shows clearly what you have come up with and what thinking led to your conclusion. Remember that it is just as useful to find out that a multi-million dollar "solution" will not work before the millions are spent, as it is to find a solution that will make millions.



Come into the woods with us...



Visitors and residents of the Fraser Canyon are invited to take a close up look at Fletcher Challenge Canada's Boston Bar operations. On our free half-day tours you'll view active logging areas, scenic recreational sites, managed forests and our sawmill.

Come and learn about modern logging and sawmilling techniques and our commitment to forests for our future.

For further information, drop in at our Public Information Centre in downtown Boston Bar, or call 867-8885. Tours are scheduled for

11 a.m. to 4 p.m. Maps of our operating area are available on request.

FLETCHER CHALLENGE CANADA

Coast Wood Products
Boston Bar Operations



Brochure for tours of logging areas.

The B.C. Council of Forest Industries also prepares school education packages for schools and in 1989 presented these to over half the schools in the Province. A staff member works closely with Ministry of Education staff involved with curriculum preparation to ensure industry messages are included. Some of these are based on a creative problem-solving approach. Students are presented with a real life problem that might be encountered by a forest manager or a wood utilization scientist. Basic facts are given and students asked to devise a creative way of solving the problem. In the process, students gain a much better appreciation of the subject than if they simply read a textbook on the subject.

The Council of Forest industries also organizes three day excursions to forest areas for school teachers. Normally 20 teachers are taken at a time with all expenses borne by the Council. The aim is to acquaint teachers with what is happening in the forest and to hear an Industry viewpoint. On average about 60 teachers take the tours each summer.

In British Columbia, the Ministry of forests leaves education and information for schools to the B.C. Forestry Association. The U.S.D.A. Forest Service have a series of school education packages ranging from extremely technical material that most pupils would have difficulty grasping, to simple material based around the "Smokey Bear" or "Woodsy Owl" themes. Producing material dealing with too much emphasis on timber production runs the risk in the United States of attracting legal action and as a result there is a tendency with U.S.D.A. material to treat timber production topics for schools in a very bland way.

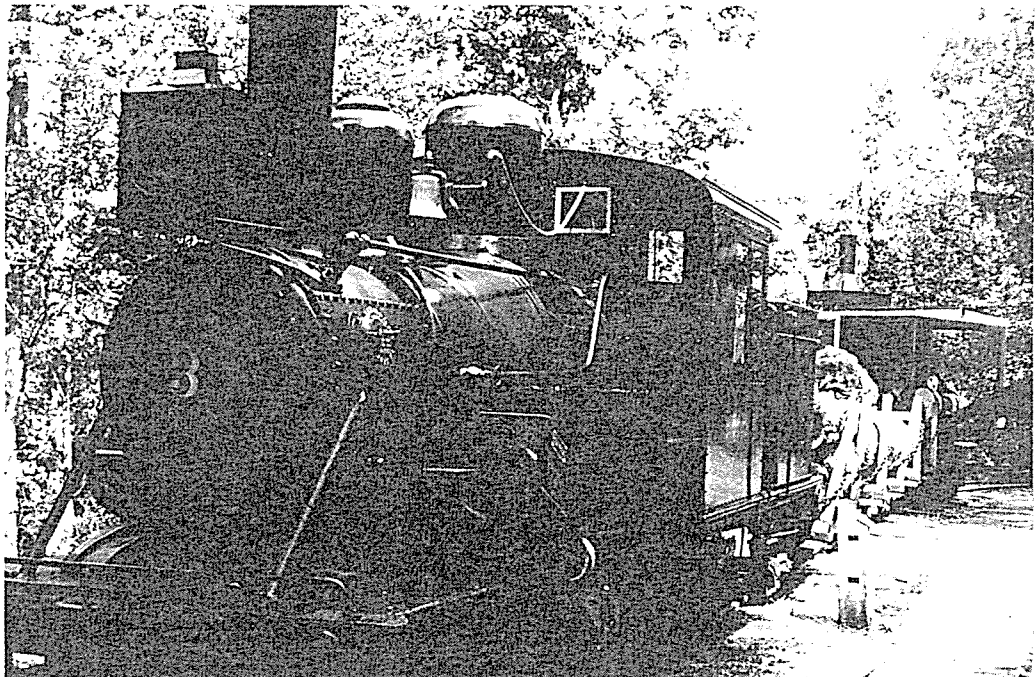
5.3.2 Forest Tours

In British Columbia, most of the major forest industries run conducted, free tours of forest operations and processing plants. In several cases the Companies have attractive information centres in nearby towns where visitors assemble and can pick up literature before going on the visit to the forest.

In some cases a forester has been allocated the full time task of conducting tours and actively encouraging groups such as civic leaders, politicians and media to undertake a visit to gain a better appreciation of forest management practices and what is likely to occur in the local area in the future. The tours are proving to be very popular and foresters involved with running them considered they were very effective in influencing public opinions.



Forest Museum, Duncan, British Columbia.



Old Locomotive once used for log haulage.
Cradle of Forestry, Pisgah, North Carolina.

5.3.3 Special Events

National Forest Week is a major event right throughout Canada and the equivalent to the B.C. Forestry Association in each Province is the major organiser of this event. Displays, seminars, tours to forest areas and media articles are used to focus attention on forests and their importance to Canada over this one week period. It would be a valuable exercise to make a similar effort in Australia to remind the community of the value of forests and the industries that depend on them. World Forestry Day on March 21st each year could be more strongly promoted in Australia.

The B.C. Council of Forest Industries and its member bodies are active in holding seminars and talking to groups about forest management issues. Identification of groups likely to support use of forests to include timber production is a key strategy. These groups have included ranchers with timber interests, hunters and logging contractors.

5.3.4 Forest Museums

At Duncan, in British Columbia and at Pisgah in North Carolina, timber and forestry museums have been established. Whilst interesting and a drawcard to attract visitors they concentrate on methods and approaches out of tune with today's values. They need to be supported with an equal weighting of information about current and future possibilities for forest management.

5.4 Extension

5.4.1 Private Forest Growers

Over the last five years the Canadian Federal Government and the British Columbia Provincial Government have provided \$300 million to increase the forest resource and create more jobs in the forest industries. Whilst much of the funding has gone towards regenerating large areas of land not satisfactorily regenerated in the past, activities such as assistance and advice to private forest landowners has been given a high priority. (See Figure 07).

A number of useful publications to assist private forest owners have been written. One of these "Managing your Woodlands" a non foresters guide to aid small scale forestry is a useful and practical document.

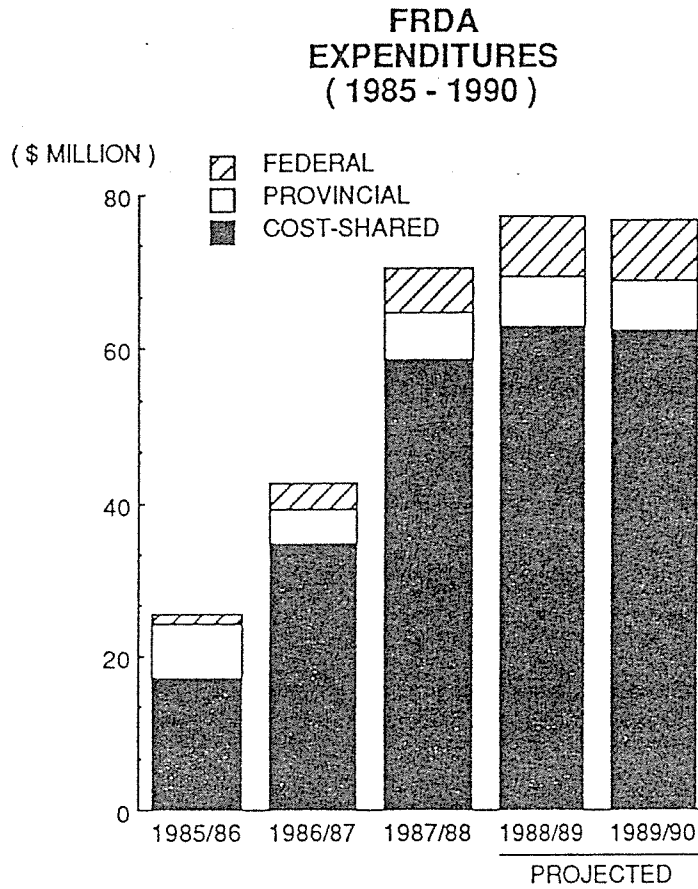
The funding also permitted groups such as the Canadian Institute of Forestry to develop demonstrations of forest management practices for the benefit of woodlot owners with little knowledge of forest management.

5.4.2 Agricultural Research Stations

At Oyster River in British Columbia an agricultural research station run by the University of British Columbia is managed according to a "best land use policy". Land suited to forest growth is managed intensively for timber production and poor quality land converted to agricultural uses.

Figure 07

FOREST RESOURCE DEVELOPMENT AGREEMENT EXPENDITURES,
BRITISH COLUMBIA.



Source: FRDA Annual Report, 1988.

The station is the venue for numerous field days on agricultural topics for private landholders. In the case of this station, unlike any I am aware of in Australia, there is an active forest management component as well. The knowledge sharing and illustration of forest management techniques has been very effective in encouraging private landowners to manage their forests better. It has also enabled a wider group of people to gain a better understanding of forest management issues applying to public forests. Agricultural scientists have used research stations for decades to effectively educate and change attitudes of farmers. Their use as a venue to illustrate and influence attitudes on forest management should be seriously examined in Australia.

5.4.3 Technology Transfer

In the U.S.D.A. Forest Service, Technology Transfer is a new buzz word. The concept arose out of 1986 Legislation which seeks to increase the rate of application of research results into operational practice in industry and in government bodies.

The procedures designed to allow this to happen within the USDA Forest Service are:

- * Giving recognition to researchers who get their research results applied into operational practice. This is a requirement for career progression whereas previously this was largely on the number of papers published.

- * Each researcher being paired up with an operations person either in the U.S.D.A. Forest Service or industry to work on implementing one or more research findings. The pair meet twice a year to review progress but keep closely in touch in the interim.

- * Encouraging the concept of the push-pull approach where the researcher is asked to push his information into the operations arm of an organization and operations staff are encouraged to pull out the information they need.

- * Publication of a Monthly Alert to inform people on projects being successfully introduced into operational practice.

- * Provision of a computerized literature research facility to all staff. The computer accessed system allows access to 150 library data bases around the world and is simple to operate. A listing of names and addresses of people working in various fields allows operational staff to make direct contact if they wish.

The system has been very successful. So far the availability of information has been restricted to staff within the U.S.D.A. Forest Service. The potential exists for such a system to be a useful means of sharing information and increasing the level of knowledge and understanding of forest management practices to groups such as private growers.

5.5 PUBLIC PARTICIPATION.

5.5.1 Community Forests

In British Columbia, the municipality of Mission, a town east of Vancouver with a population of about 8000 people holds 9000 hectare of Crown Land under a Tree Farm Licence.

This community forest is managed on a sustained yield basis by the municipality with guidance from the Ministry of Forests. The harvest of about 43,000 cubic metres each year provides a nett income to the municipality of \$26,000 which is used to fund specific projects such as schools and health facilities. The forest supports 40 full time jobs and through a recently adopted intensive silvicultural program, 17 more full time jobs have been created, resulting in an additional half a million dollars flowing into the community.

Apart from the financial benefits to the municipality a very positive outcome is that the Mission District are very supportive of managing forests for timber production and act as an equalising force against environmental objectors. The concept is worth examining in Australia where most of the forests are in public ownership. A community forest in areas where there is local opposition to forests being managed for timber production could be an excellent means for influencing a change of attitude to use of forests.

5.5.2 Assistance to Private Growers

It was put to me several times on the Study Tour that an effective way to obtain a more favourable attitude to use of forests for timber production is to increase the number of people involved in the growing process. In countries such as Southern Sweden it was claimed there was a very favourable attitude due to the large numbers of small private growers in the community.

In Southern Sweden some 25,000 small woodlot owners own a total area of 1.2 million hectares of forest which constitutes about 50% of the total with the balance being equally divided amongst State owned and industrial forests. The woodlot owners in Sweden own and run 8 sawmills and 2 pulp mills as outlets for their produce and are a powerful voice in forest industry matters.

Woodlot owners in British Columbia argue that whilst timber processing plants may need to be large and sophisticated, the growing of the raw product is best spread amongst a large number of groups. The analogy they use is the agricultural industry where a large number of producers such as wheat farmers supply their raw product to capital intensive flour mills.

Forestry Incentives Program for the Forest Landowner



Woodlot Licence Program in British Columbia



United States
Department of
Agriculture

Agricultural
Stabilization and
Conservation
Service

Forest Service
and
State Foresters



Province of
British Columbia
Ministry
of Forests

Programs to increase private involvement in forest management.

Due to lobbying by the Woodlot Association, the Ministry of Forests in British Columbia have now issued 450 small woodlot licences to private owners. Under the terms of the licence, individuals, groups or societies can apply for the right to manage up to 400 hectares of Crown Land forest. The woodlot has to be managed in accordance with an approved management plan. The holder has to pay a stumpage to the Ministry for all timber harvested so the incentive is to minimise harvesting costs and maximise sale costs to make a profit. Licence holders do not make large profits but there is a lot of satisfaction gained by managing a forest of their own. Although the Ministry of Forests intends to increase small woodlot licences to 900 they currently produce less than 1% of the total cut in British Columbia.

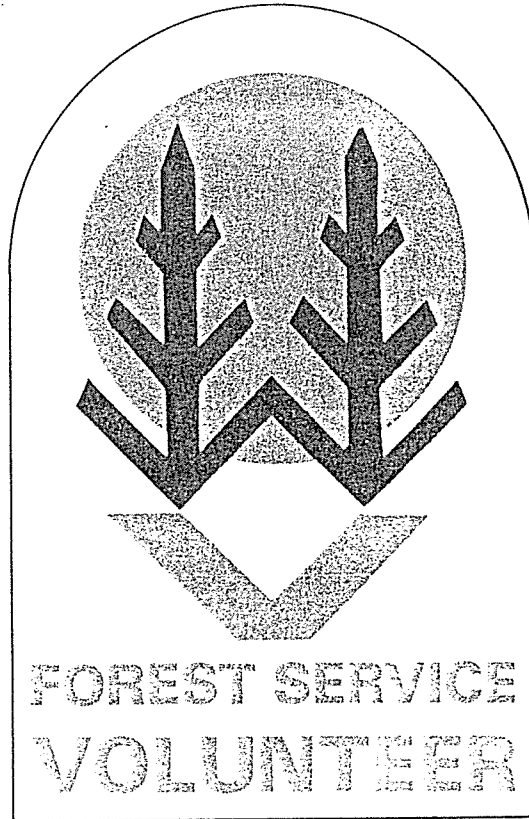
In California, generous financial incentives are given to encourage small private forest owners to manage their forests to increase timber yields. Landholders up to 5000 acres in size are eligible. A management plan prepared by a professional forester is required and once approved up to 90% of costs are allowed. It is estimated there are about one million acres of private forested land suitable for more intensive management and since 1980 some 1400 projects have been approved involving grants of \$13 million. Finance for the grants has come from Federal funds but also from log sales from State owned forests. None of these State log sale revenues go to Consolidated Revenue but are directed into forest improvement projects such as assistance to private owners.

Both the community forest concept, the small woodlot licence system and direct grants to owners of private forests are well worth considering in Australia to help modify current unfavourable attitudes to using forests for timber production. In particular the use of revenues from log sales ex State Forests for financing grants to private owners instead of being directed to Consolidated Revenue could be adopted by State Governments.

5.5.3 Volunteers

Volunteers are used extensively in National Parks in both British Columbia and the United States. In return for working in the Park as a campground host or guide, the volunteer is usually provided with free accommodation or a campsite to park a mobile home. Many husband and wife teams have been coming back to the same Park for several years and the system is very popular with retired people. There is quite a status symbol in becoming a Volunteer in Park (VIP) with usually more applicants than positions available. Students seeking a career in the National Parks Service on graduation actively seek work in Parks at summer vacations to increase their chances of obtaining a position.

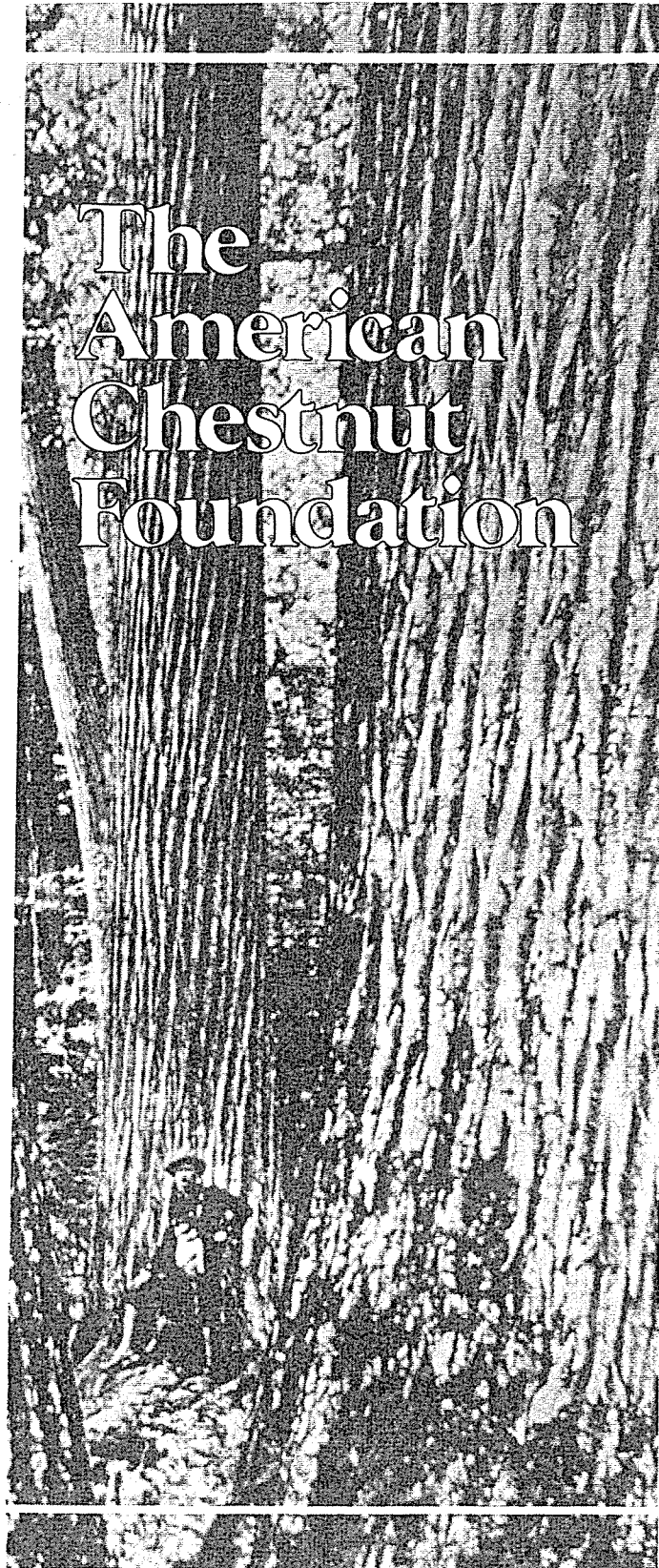
The U.S.D.A. Forest Service has also run a volunteer program for several years involving people as campground hosts in recreation areas, researching information and doing a variety of tasks in the organization. Apart from the work achievement, a positive benefit is the building up



get involved
as a volunteer
in the
national forests

FS 342
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Brochure on how to be a volunteer with the U.S. Forest Service.



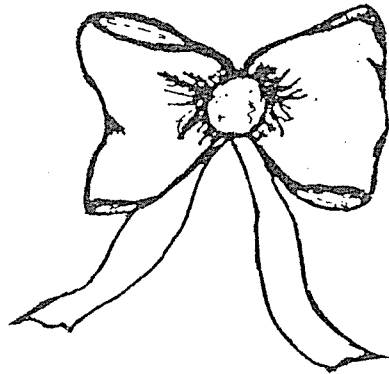
Leaflet on the American Chestnut Foundation.

of a constituency in the community favourable to the aims and objects of the organization. This has been enormously successful with the use of volunteers in National Parks but less so in the USDA Forest Service with respect to use of forests for timber production. There is considerable potential to involve volunteers in acting as guides in Demonstration Forests but so far this has not been realised.

Forest Industry groups have assisted voluntary groups such as the Yellow Ribbon Society as a counter movement to the more extreme environmental groups. Members of this group which show their allegiance by tying a piece of yellow ribbon to their car aerials turn up at Federal hearings commonly attended by large numbers of environmentalists to rebut the arguments of the environmental movement. Some of the spokespeople for groups such as the Yellow Ribbon Society are very articulate and effective in presenting their point of view.

The American Chestnut Foundation is a group committed to restoration of the American chestnut which was devastated early this century by the chestnut blight. The Foundation relies almost totally on private support and has been successful in raising funds for genetic research which will hopefully produce a resistant variety.

THE YELLOW RIBBON



At the turn of the century Gifford Pinchot, the father of American forestry defined "forest conservation" as the wise use of our forests. He encouraged the formation of the national forest system to "furnish a continuous supply of timber for the use and necessities of the United States."

Today, those who support forest conservation use the yellow ribbon as a symbol of the wise use of forest resources.

SECTION 6

DEMONSTRATION FORESTS

6.1 OBJECTIVES AND DEFINITION.

Although the aims of individual Demonstration Forests have not always been clearly documented, it would be reasonable to say that a common objective of planners involved in their development would have been, "To convey, in a defined forest setting, messages on forests and forest management to selected audiences over a long time period."

The aim of conveying messages over a long period of time carries with it the need for permanent security of purpose for the area selected. In the case of Demonstration Forests on public lands a vesting similar to that given to a National Park is appropriate but to my knowledge this has never been carried out. Based on the objective above and the need for a degree of permanence, a definition of a Demonstration Forest would be "A defined area of forest where a principal aim of management is to facilitate the conveying of messages on forests and forest management over time to selected audiences".

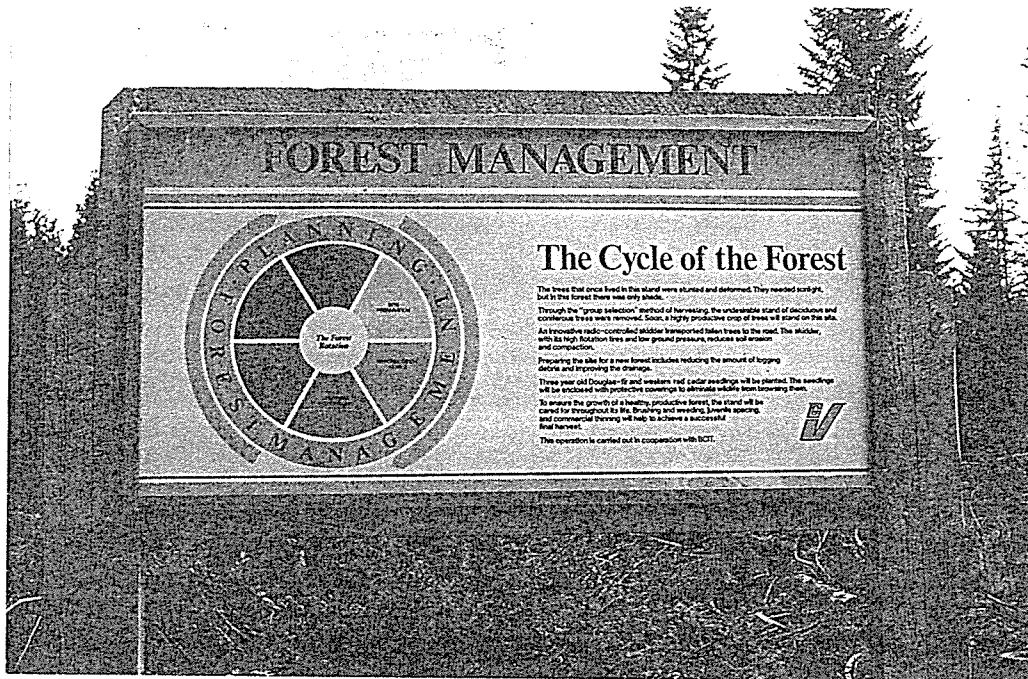
6.2 TYPES OF DEMONSTRATION FORESTS.

The Demonstration Forest concept is an evolving one characterised often by initiatives taken at a local level in organizations to facilitate communication about forests. Consequently there is considerable variation in the types of Demonstration Forest developed and the approaches used.

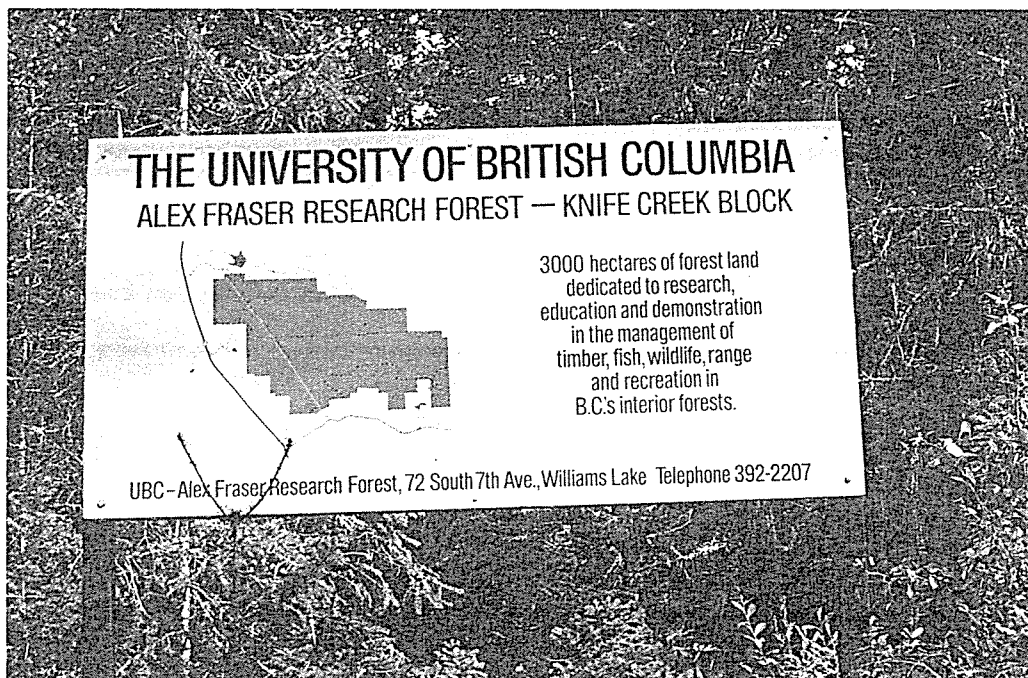
Basically there have been two broad types depending on the type of audience the messages in the Demonstration Forest are aimed at.

Ones catering for people with little understanding of forests have tended to concentrate on information and interpretation of systems operating in both unmanaged and managed forests by illustrating examples of both, often on a mini scale. In the latter case, planners have considered the small scale of the samples illustrated makes it easier for people to gain an overall appreciation of the life cycle progression of a forest. The approach is a useful means of reassuring people that forests regenerate and grow again after harvesting.

The communication method commonly used in these types of Demonstration Forest has largely been by interpretive self guiding trails where the objective is to assist the visitor to gain a personal and first hand appreciation and understanding of what is seen.



Information Board at Seymour Demonstration Forest, catering for audiences with limited understanding of forest management.



Information board at Demonstration Forest for audiences with a reasonable understanding of forest management.

The second broad type have catered for audiences such as private woodlot owners and foresters from private and government forest services, ie people already possessing a reasonable understanding of forest management practices. Objectives are usually to illustrate research findings, provide training for forestry students and to illustrate alternative management methods. The communication method used in these types of forest is most commonly via field days where staff with specialist skills lead discussion and explain details to the audience.

Both types of Demonstration Forest have traditionally been a compact area of forest with a specific name and managed over long periods of time primarily for the purpose of conveying messages on forests and how they can be managed.

The value of illustrating forest systems in one compact area of forest is considered very important, particularly for Demonstration Forests catering for an audience with limited understanding of the principles involved and where the potential audience is large. Forest operations traditionally cover a large area in space and time which makes it difficult for people with little prior knowledge to comprehend the changes that occur in a forest.

Concentrating a sample of activities in a specific area and publicising it as an attraction in its own right, similar to a National Park has considerable merit. People come to recognise the particular Demonstration Forest as an area where they can come to obtain information about forests. An analogy given to me by one planner is a large supermarket where people can see on display a large range of foodstuffs in a compact area. The alternative of visiting a large number of individual shops scattered throughout the suburbs is a difficult exercise that would deter most people. If the objective is to convey forest messages, it should be made easy for people to find them. People should not be asked to travel great distances unnecessarily. For audiences with a reasonable understanding of forests and their management the necessity for a defined compact area is less important as people in this category are more inclined to travel to a research trial or field demonstration wherever it is held. At the same time there are great advantages in concentrating research trials and demonstrations of alternative management practices in one area. The area can be protected better and it is easier for staff involved in running field days to organise a visit for outside groups. If provision is also made for audiences with limited understanding there is potential to attract these people back in the future. Several planners I spoke to who advocated this approach were hopeful that people having had their interest stimulated by examining illustrations of basic principles would return to investigate more complex illustrations.

Table 07

LISTING OF DEMONSTRATION FORESTS VISITED

| Name | Location | Size | Audience | Formal Plan | Brochure | Trails |
|------------------------------|------------------|--------------|-----------------------------|-------------|----------|-----------------|
| Malcom Knapp Research Forest | British Columbia | 5000ha | Lay public Informed public. | Yes | Yes | Yes |
| Seymour Forest | British Columbia | 5600ha | Lay public | Yes | Yes | Yes |
| Chilliwack Forest | British Columbia | 30 mile tour | Lay public | No | Yes | Yes |
| Willow River | British Columbia | 400 ha | Lay public Woodlot Owners | No | Yes | Yes |
| Alex Fraser Research Forest | British Columbia | 9000ha | Informed Public | Yes | Yes | No |
| Cowichan Valley | British Columbia | 20 km tour | Lay public | No | Yes | Yes |
| Mesachie Lake | British Columbia | 50 ha | Informed public | No | No | being developed |
| Oyster River | British Columbia | 700ha | Informed public | Yes | No | No |
| Campbell River | British Columbia | 200ha | schools | Yes | Yes | Yes |
| Pack Forest | Washington | 4200ha | Lay public | Yes | Yes | Yes |
| Lee Forest | Washington | 50 ha | Lay public | Yes | No | Not yet |
| McDonald Forest | Oregon | 7000ha | Lay public informed Public | Yes | Yes | Yes |
| Swain Mtn. | California | 2000ac | Lay public informed Public | Yes | Yes | Yes |

Table 07 (continued)

LISTING OF DEMONSTRATION FORESTS VISITED

| Name | Location | Size | Audience | Formal Plan | Brochure | Trails |
|--------------------|----------------|---------|---------------------|-------------|----------|--------|
| Pacific Lumber Co. | California | 20 ac | Lay public | No | Yes | Yes |
| Jackson Forest | California | 50000ac | Lay Informed Public | Yes | Yes | Yes |
| Blodgett Forest | California | 1200ha | informed Public | Yes | Yes | No |
| Bent Creek | North Carolina | 1000ha | informed Public | No | No | No |
| Cradle of Forestry | North | 100ha | lay public | Yes | Yes | Yes |

Illustration of forests and forest management practices need not be solely confined to compact areas of forest denoted as a Demonstration Forest. There can be value in illustrating a particular aspect of forestry adjoining a recreation area or highway which may remain relevant for one or two years. As the forest grows this relevance may disappear and relocation to another site may be necessary if the message needs to be repeated. Because these illustrations are transitory they would not be regarded as a Demonstration Forest by most practitioners.

6.3 PLANNING

Several planning considerations and processes need to be taken into account before developing a Demonstration Forest. These are discussed and illustrated with examples from some of the Demonstration Forests visited on the Study Tour. Much of the material is drawn from the Master Plan for Interpretation and Education in the Seymour Demonstration Forest which as well as setting out a framework for development, discusses background discussions and rationale for planning decisions.

6.3.1 Messages

It is necessary to decide what messages the managing agency or sponsors of a Demonstration Forest want to convey. Some possibilities might include one or all of the following:

- * Current forest management practices have little effect on the environment.
- * Growth rates for timber production are greater in managed forests compared with unmanaged areas.
- * Forests can be successfully managed for a range of resource uses without undue conflict and effect on the environment.
- * Alternatives to current forest management practices.

The last message would be appropriate for a research forest such as Blodgett Forest in California which is at the forefront of developing alternative silvicultural methods. The first is the main message of the Ministry of Forests at Rosedale, British Columbia where demonstration covers a range of practices to illustrate regeneration after clear felling, thinning and herbicide treated areas.

It was impressed on me by several people with experience and training in interpretation not to try and convey too many messages, particularly in sections of a Demonstration Forest catering for audiences with limited understanding of forests. An upper limit of six was recommended.

Several practitioners also impressed the importance of including messages on timber management as a component only in the overall picture of resource management of the forest. Demonstration forests visited that had timber production as their primary message were not very inspiring.

6.3.2 Target audience.

Identification of the likely audiences that could visit the forest and which ones should be targetted with selected messages is essential. It is important having identified audiences to then determine their needs and the things which will facilitate or hinder their use of the Demonstration Forest. This implies consultation with target audiences to involve them in planning and design of facilities at an early stage. A system for ongoing feedback of comments once the Demonstration Forest is operational is also necessary.

Types of target audiences might be:

- * An urban adult audience with little understanding of forests and currently only interested in using the forest for recreation.
- * Environmentally aware groups with a good grasp of forestry principles and practices but interested in extending their knowledge.
- * School groups with varying degrees of understanding and interests ranging from a fun day in the forest to upper level High School students interested in forest ecology.
- * Private Woodlot owners interested in expanding their knowledge of forest management practices.
- * Forestry students or practicing foresters seeking information on current and new practices.

The Seymour Demonstration Forest located on the doorstep of Vancouver City, British Columbia is an attractive forest with recreational opportunities for an urban population of about 1.4 million people. The planners have recognised this and whilst encouraging recreation are also providing excellent interpretation facilities to convey messages on integrated resource management. The expectation is that by examining these interpretation facilities, people initially attracted for recreational activities will gradually develop a greater awareness and understanding of how the forest is being managed to accommodate many uses.

The Demonstration Forest at Maple Ridge, about 70 kilometres east of Vancouver is a magnificent forest but travel distance for urban residents is a factor that limits visitor numbers to about 10,000 people per year. This was a factor in deciding to concentrate future Demonstration Forest development at Seymour forest which is much more readily reached by Vancouver residents.

Seymour Demonstration Forest planners used a questionnaire survey to measure visitor types and obtain an indication of visitor needs. At Campbell River on Vancouver Island, a Demonstration Forest is well used by school groups as a direct result of consultation between a forester from the Ministry of Forests and a local school teacher. The two spent six months preparing a set of detailed teacher guides to the forest which are now used by schools in the District as an integral part of their curriculum. On the other hand some of the Demonstration Forests visited had been developed with little understanding of visitor needs and as a consequence were little used.

6.3.3 Type and size of forest

It is important in a Demonstration Forest to be able to illustrate that forests change with time with or without man's intervention. Consequently an area of forest with a range of successional stages in the life cycle of a forest is more valuable than one with only one stage present.

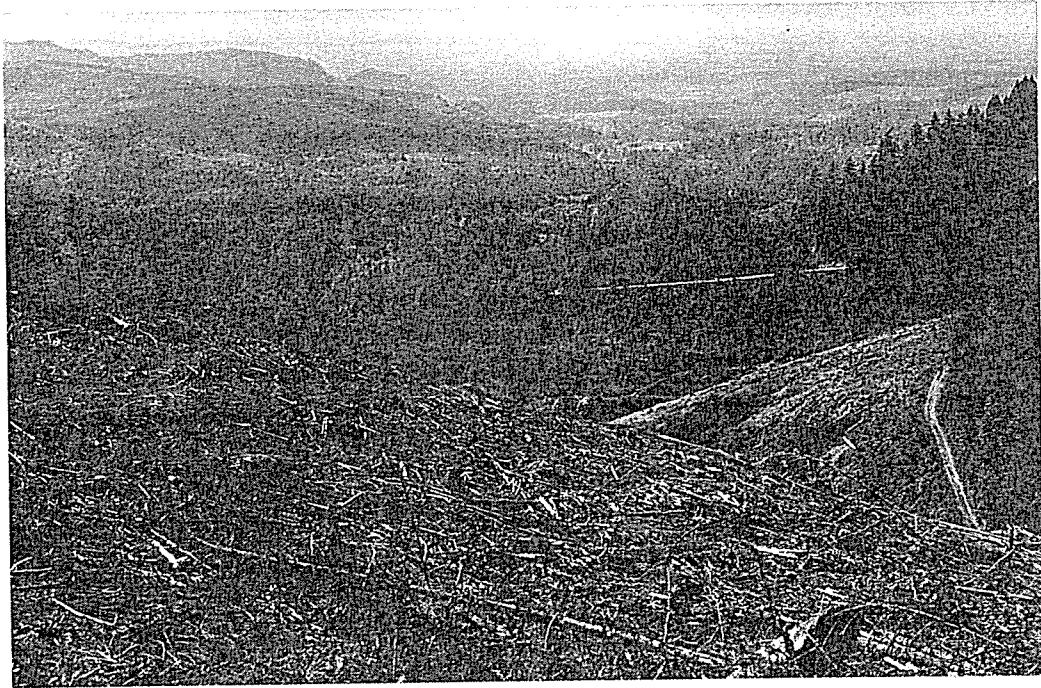
If the forest is totally composed of old growth forest it is difficult to distinguish from a National Park or Reserve. When cutting commences this can cause an adverse reaction from people who have not really appreciated the difference between a park and a managed forest.

A useful lead into a Demonstration Forest is an introductory trail through a section of old growth forest where visitors are introduced to the forest ecosystem to gain an appreciation that a dynamic ever changing process is going on without intervention from man. When use of forest management practices are later introduced, people are usually less concerned because of this understanding that forests change with time.

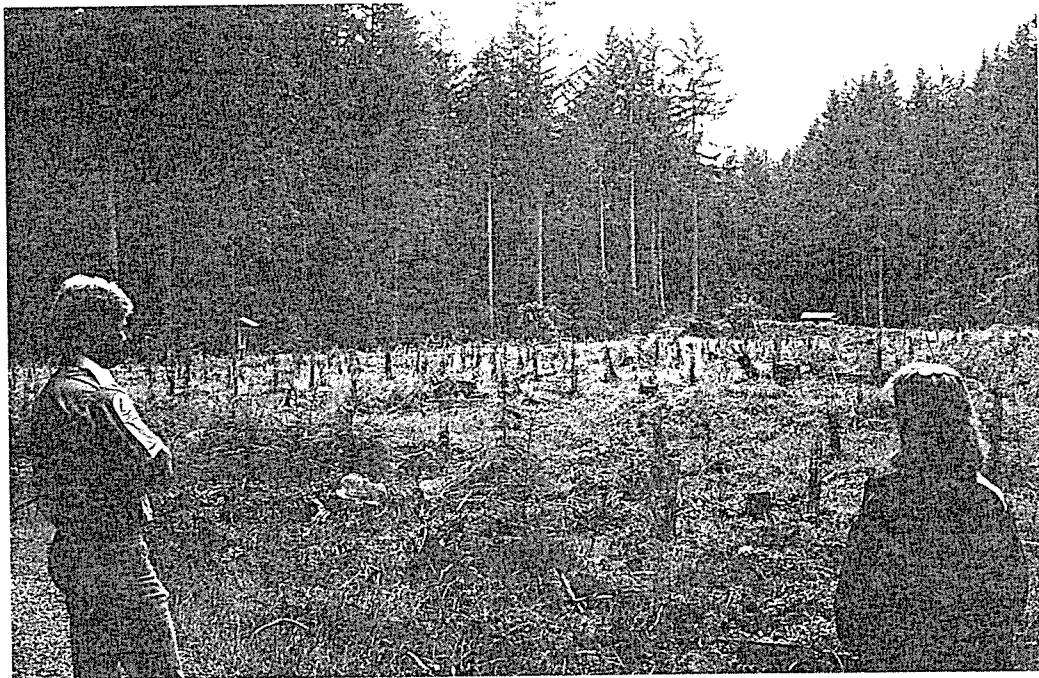
Several of the Demonstration Forests visited are run as a working forest so that a large range of different aged stands are available for illustration. Where these are not present it may be necessary to create them artificially. At Lee Forest near Washington, planting of 8 year old trees was carried out in clearcut areas to achieve differences in age classes more rapidly.

Many Australian Forests, even those that are even aged, often contain a wide range of size classes. Careful removal of size classes not required could provide samples of desired tree sizes for demonstration purposes.

At Seymour Forest, although the whole area will be run as a working forest, it is proposed to cut each year, at a site chosen to interpret timber management, small blocks about 75 metres square, to ensure a continuous supply of areas for illustration of planting, thinning, pruning and harvesting methods.



Pack Forest, Washington, illustrating a range of age classes in a small area.



Small blocks of forest like this are cut each year at Seymour Demonstration Forest.

The total area of several Demonstration Forests was as high as 5000 hectares although the actual area deliberately developed to demonstrate samples of management practices to people with limited understanding was generally less than 200 hectares. The Demonstration Forest at Maple Ridge, British Columbia has a discrete 200 hectare area set aside for a Demonstration Forest for people with limited understanding. The balance of the 5000 hectares is being used for demonstration of research trials to a different audience. The Seymour Demonstration Forest Plan proposes development of several small sites within the total area of 5600 hectares designated as a Demonstration Forest. A small effective Demonstration Forest catering for a single audience such as primary school children could probably be provided in less than 100 hectares. The actual size required depends very much on the audience and the messages to be conveyed.

6.3.4 Resource Balance

A decision needs to be taken on which resource uses are to take place in the area designated as a Demonstration Forest and the concessions and constraints that need to be made to ensure all uses can live in harmony.

If recreational use is large and the intent is to encourage recreationists so they can be informed and educated, it will probably be necessary to restrict timber harvesting around a popular visitor attraction. If water production and maintenance of fish habitat are key features, designation of stream reserves will be essential. Where timber management is a key message to be conveyed it is essential that timber management activities are not scaled down to such an extent the area becomes indistinguishable from a National Park.

A zoning system as suggested for future development at the Seymour Demonstration Forest is a good approach where the resource uses permitted in a zone are defined and those permitted within each are ranked in order of priority to minimise potential conflicts. (See Table 07).

6.3.5 Management Activities

To give visitors an appreciation and understanding of what is involved in managing a forest it is desirable they have the opportunity to view a wide range of activities and in some cases get "hands on experience" of some activities. School groups can participate in tree planting of cut over areas and pruning of trees. If, as at Seymour Forest, a fish hatchery is located in the forest, visitors could participate in feeding of fish. Similarly wildlife management often involves trapping and recording of species numbers and this provides an opportunity to illustrate that forests are managed for many purposes.

A listing of current management activities taking place in a proposed Demonstration Forest needs to be made and consideration given to introducing additional ones to add to the interpretation experience of visitors.

Table 08

PROPOSED ZONING SYSTEM, SEYMOUR DEMONSTRATION FOREST

Zone 1:

- * High people use sites
- * recreation, visual, wildlife and fisheries values take priority
- * timber harvesting by irregular group selection
- * timber harvesting takes a back seat to other values.

Zone 2:

- * Halfway between Zone 1 and 3
- * resource values basically equal
- * scale down size of existing forestry practices and sequence for education/demonstration along roads and trails
- * small treatment units suitable for equipment demonstration, school plots.

Zone 3:

- * Areas where current timber management activities would continue
- * activities would have to integrate with Zone 1 and Zone 2 activities
- * present planning may have to change to take other values into account including public safety and visual resource.

Zone 4:

- * Watershed reserve
- * No timber harvesting at this stage

Source: Master Plan for Interpretation and Education in the Seymour Demonstration Forest.

6.3.6 Available Budget

Obviously funds available for provision of facilities and staff have an important influence on the size and type of Demonstration Forest that can be developed.

Proposals for the Seymour Demonstration Forest have been costed as requiring a capital investment of between \$580,000 to \$950,000 depending on the options chosen, with annual operating costs ranging from \$260,000 to \$315,000.

In North Carolina the Cradle of Forestry interpretation centre and associated trails and facilities cost over \$2 million.

At the same time, very effective Demonstration Forests such as the one at Campbell River on Vancouver Island previously mentioned have been constructed with a very low budget. This particular one caters for school groups only and apart from trail maintenance, ongoing costs for the Ministry of Forests are minimal. Educational and interpretive material is contained in guideline manuals used by teachers when taking classes to the forest.

The Lake Cowichan Valley Demonstration Forest in British Columbia involves demonstration of forest practices adjoining 20 kilometres of Highway. The concept is excellent but it has been poorly funded and staffed. It is better to have more modest facilities than grand plans that cannot be properly staffed and maintained.

A useful approach adopted in the Seymour Demonstration Forest Plan is to identify and cost several options for development that can proceed on a staged basis as funds become available.

6.3.7 Framework Plan

After examining the various planning considerations it is desirable to prepare a framework plan to guide the direction and form that the Demonstration Forest should take.

Research Forests such as Blodgett in California have detailed plans for future management activities such as areas to be harvested and proposed silvicultural treatments well into the next century. For Demonstration Forests such as these where target audiences are largely people with a good understanding of how forests are managed and where visits are made with a tour leader present there is lesser need for a formal plan on how to handle education and interpretation needs.

In Demonstration Forests to which people with little understanding of forest management are being encouraged to visit, it is important that education and interpretation methods are well thought out and documented in advance. In many cases people will be visiting the forest on their own and if information provided is unclear or unco-ordinated this can result in misunderstanding and ineffective communication.

The most successful public Demonstration Forests such as Seymour and Maple Ridge nominated the opportunities and constraints at the site selected and defined an overall theme to guide production of educational and interpretive options.

At Maple Ridge, the theme selected in 1976 was "The Forest Resource and its Management". The Seymour Forest has as its theme "Integrated Resource Management". This is an umbrella theme comprised of seven specific resource themes: vis,

- * The Forest Ecosystem
- * Timber Management
- * Time, The Forest and People
- * Water
- * Salmonoids
- * Wildlife
- * Recreation

Within each resource theme a series of stories and messages have been nominated for an interpretation and education program to focus on. These stories and messages are co-ordinated to ensure that they all reinforce the overall message of integrated resource management.

From a timber management viewpoint, the incorporation of this theme as a component only is a useful approach much more likely to be accepted by people than a total timber production message. The tendency by timber companies in the past to "preach" to their audience on the benefits of timber production has a very negative impact on many listeners.

A valuable inclusion in any Demonstration Forest is a sub theme dealing with historical use of the area; the people involved and how society's perceptions of resource values and needs have changed. Several Demonstration Forests have included this theme and it appears to attract considerable interest.

6.4 Communication Approaches and Processes

A range of methods and processes have been used in Demonstration Forests to convey messages to target audiences and to facilitate feedback from user groups. Ideally the approaches that could be used should be identified in advance in the framework plan. Not all of the approaches listed are applicable to every Demonstration Forest but they give an indication of how Demonstration Forests can be used to communicate messages about forests and improve awareness and understanding.

6.4.1 Sites for Communication

Identification of themes and sub themes allows identification of sites within a Demonstration Forest where these can be best illustrated. The Seymour Plan formally identifies sites and the themes, messages and stories that can be told at each site by means of information boards and brochures or a trained interpreter. (See Table 09).

Table 09

INTERPRETATION POTENTIAL OF SITES IN SEYMOUR DEMONSTRATION FOREST FOR VARIOUS ACTIVITIES

INTERPRETATION POTENTIAL OF THE SEYMOUR DEMONSTRATION FOREST (1989)

| Sites | TIMBER MANAGEMENT | | | | Aerial Log | Research | SALMONIDS | | | WATER | | | | WILDLIFE | | GRAVEL | | RECR. | HISTORY | MOVIES |
|--------------------|-------------------------------------|-----------|-------|------|------------|----------|-----------|---------|-------|---------|---------|-----------|---------|----------|----------|---------|-------|-------|---------|--------|
| | Harvest | Site Prep | Plant | Thin | | | Mgmt | Collect | Spawn | Collect | Storage | Transport | Protect | Mgmt | Research | Extract | Rehab | | | |
| Rice Lake | o | * | * | o | | o | | | | | o | o | o | * | | | * | o | o | |
| Mid-Valley Viewpt | * | * | * | o | o | o | * | | * | * | o | * | * | | | | | o | o | * |
| Spur 4 Bridge | | | | | | o | * | * | * | * | | * | * | | | | | | | |
| Seymour Dam | o | * | * | | | | * | * | * | * | o | * | * | * | * | | | | * | |
| Fish Hatchery | o | | | | | o | o | o | | | | | * | | | | | | | |
| Old Growth Forest | o | | | | | o | o | o | | | | | o | | | | | * | o | o |
| Pipeline Road | o | o | o | o | | o | | | | | o | | o | * | * | | | * | o | o |
| Twin Bridges | * | | | | | o | * | * | * | * | | | | | | | | * | o | o |
| Fisherman's Trail | * | | | | | o | * | * | * | * | | | | | | | | * | * | o |
| Gravel Rd. to T.B. | | | | | | | | | | | | | | * | | | | | | |
| Acid Rain Study | | | | | | * | * | | | | | | | | | | | | | |
| Small Clearcut | o | o | o | o | | * | | | | | | | * | * | | | | | | |
| Thinned area | o | | | o | | | | | | | | | * | * | * | | | | | |
| Gravel Pit | | | | | | | | | | | | | | | | | o | * | | |
| Key | | | | | | | | | | | | | | | | | | | | |
| | * good interpretation potential | | | | | | | | | | | | | | | | | | | |
| | o moderate interpretation potential | | | | | | | | | | | | | | | | | | | |
| | * some interpretation potential | | | | | | | | | | | | | | | | | | | |

Source: Master Plan for Interpretation and Education in the Seymour Demonstration Forest.

Visitor Centres or interpretation centres are generally located at the entrance to a Demonstration Forest or at some focal point within. Whilst valuable for visitors who cannot enter the forest itself, they are not regarded as a substitute for a personal visit to the forest to view a particular activity or feature. Most National Parks in the United States have large visitor centres which are very effective as a focal point in drawing people to seek information on the Park and its features. Most National Park visitor centres have videos, films and auditoriums for visitors. One of the most useful aids were relief maps which give people not used to map reading a good appreciation of the topography of the area and enable them to orientate themselves better.

Large Visitor Centres are expensive to build and run. The Interpretation Centre at Pisgah State Forest in North Carolina cost over \$2 million and most in the major National Parks in the United States have cost well in excess of that figure. It was impressed upon me several times that if funds are limiting it is better to concentrate on developing features that attract people into the forest itself.

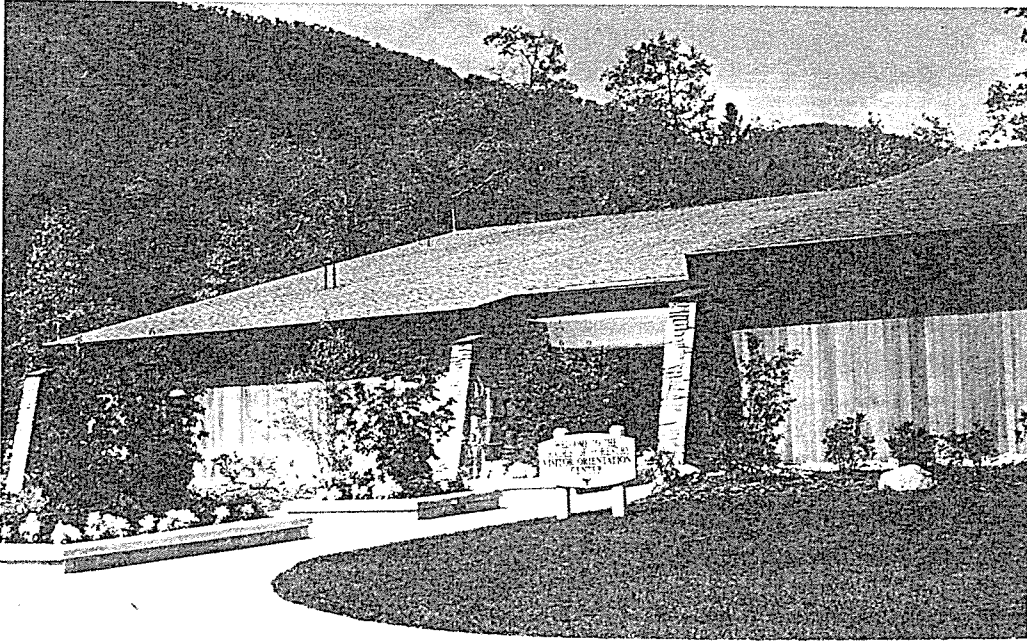
6.4.2 Personal Interpretation

Personal interpretation, ie the provision of a trained person to explain and answer questions about activities at a particular site is very appropriate in situations which are complex or where there is a public safety risk. Activities which take place over a short time period such as a pruning operation are more effectively explained by a trained person while the operation is taking place.

Personal interpretation has the advantage of being able to alter the style of communication to the knowledge level of the audience. Interpreters can also influence audiences by correcting misunderstandings and most importantly can monitor whether the audience has understood and appreciated the message.

It is recognised that women are often far better interpreters than men. This is probably due to their less threatening approach and greater interest in people. One of the interpreters at Pack Demonstration Forest in Washington is a woman who previously worked with the U.S. National Parks Service. She is extremely competent in acting as an interpreter in the forest situation and is well respected by visiting groups.

The limitation on use of interpreters is usually one of cost but there is little doubt of their effectiveness in explaining and influencing attitudes on resource management. The support for National Parks in the United States and the level of awareness of conservation issues is considered by many people to be a reflection of the positive interaction that occurs between visitors and National Park rangers. At the same time, visitors to National Parks in the United States are likely to receive many negative messages on forestry from rangers as there is a certain animosity between the Parks Service and the U.S. Forest Service. I was surprised on several occasions during visits to National Parks in the United States to hear rangers making very adverse observations on forestry subjects which were accepted without question by their audience.



Visitor Centre, Cradle of Forestry, Pisgah, North Carolina.



Interior of Visitor Centre, Manning National Park, B.C.

At most National Parks visited there is a notice board updated daily, advising visitors when ranger-led tours will be held in the park. On most evenings campfire talks on the Park and its features are led by a ranger and these are usually very popular. Several Parks use roving rangers for the sole purpose of talking to visitors and explaining the natural history of the area.

6.4.3 Special Events

The concept of using Demonstration Forests as a venue for occasional activities designed to attract public attendance and a focus on the Forest has considerable merit particularly if it is easily accessible to the public. The number and type of events that could be held is really only limited by the imagination of management.

The Seymour Forest Plan lists several options for each of the resource themes, eg equipment displays such as helicopter logging, woodturning exhibitions, tours of the fish hatchery, and recreational events such as fun runs. It is envisaged that these could be arranged to co-incide with well known events such as Environment Week or National Forest Week.

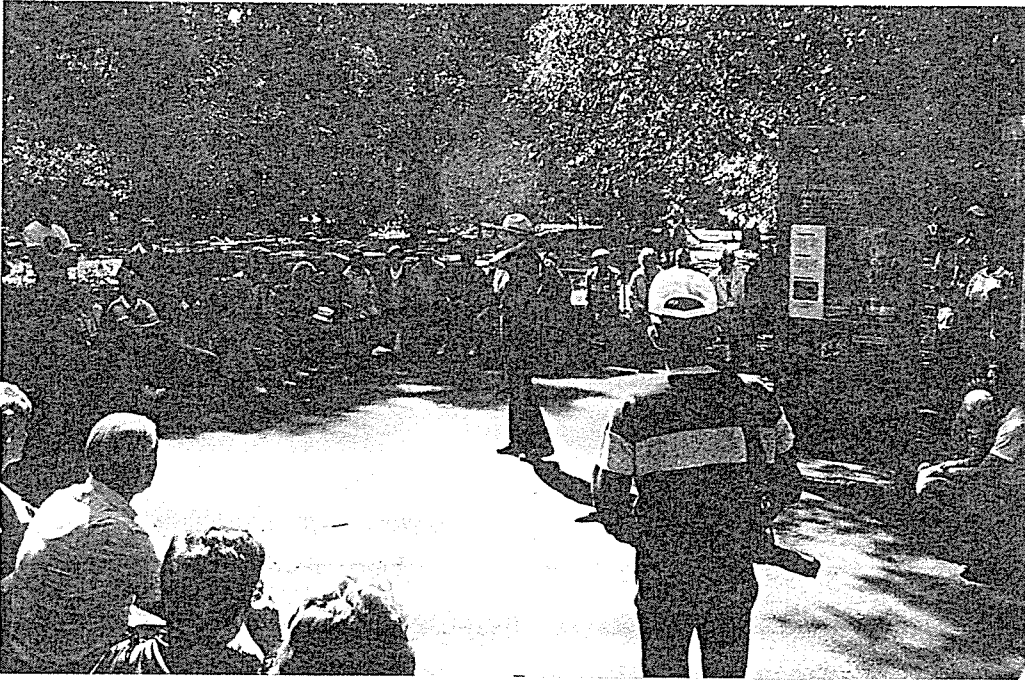
Several National Parks such as Yosemite and Great Smoky Mountains have a theatre where plays are staged. These often contain a theme related to the Park such as the struggle to achieve dedication or the oppressions suffered by Indians following European settlement. I attended some of these and there was little doubt of their effectiveness in conveying messages to the audience. An imaginative playwright could tell the story of forest management in an equally interesting way.

In recent years the holding of outdoor musical concerts has become very popular. Given the right facilities, Demonstration Forests could be an excellent venue for such activities to publicise the forest and encourage people to return on another occasion to explore some of its features.

6.4.4 Trails

Trails have been widely used in most Demonstration Forests as a means of getting people into the forest to increase their awareness and understanding of forests and forest management practices.

They are effective provided they are well designed and the information provided to support them is prepared by people with experience in education and interpretation. Some of the information seen in Demonstration Forests on the tour was deadly dull and requires rewriting by an interpretation professional. The aim should be to present material in an interesting and lively style that attracts the attention of the visitor and stimulates further enquiry. This is the standard for material provided in National Parks and Demonstration Forests should use the same approach.



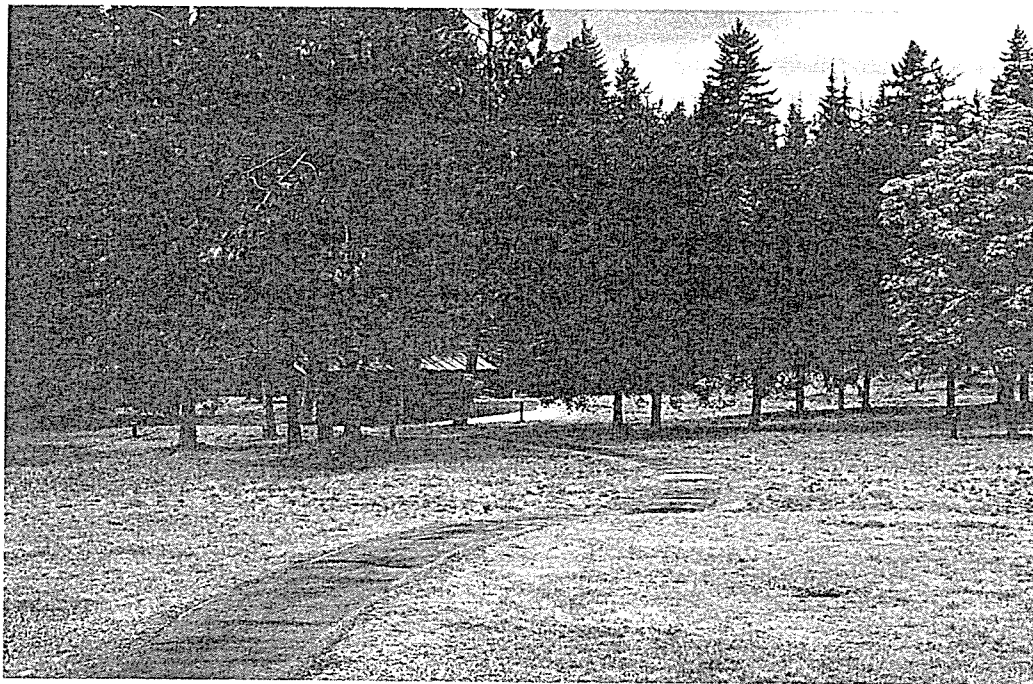
Ranger led personal interpretation, Yosemite National Park, California.



Female interpreter, Pack Forest, Washington.

| WHAT | WHEN | WHERE |
|-------------------|---------------------|---------------------|
| KARAH NATURE HIKE | 8 AM - 2:30 PM | KARAH TRAIL |
| GEOLOGY WALK | 10 AM - 1:30 PM | YAVAPAI MUSEUM |
| FLORAL TALK | 11 AM - 11:30 AM | YAVAPAI MUSEUM |
| CANYON TALK | 11 AM - 11:30 AM | |
| AUTUMN WALK | 11:30 AM - 12:30 PM | YAN POINT |
| HILL WALK | 1:30 PM - 3:30 PM | EL TOVAR FLAGPOLE |
| GEOLOGY TALK | 2:30 PM - 4:30 PM | YAVAPAI MUSEUM |
| EVENING PROGRAM | 7:30 PM - 9:30 PM | MATHER AMPHITHEATER |

Notice board, Grand Canyon National Park showing details of ranger programs.



Large grassed assembly area at start of trail at Demonstration Forest, Maple Ridge B.C. Note wheelchair trail for disabled.

Advice from interpretation experts is to have different trails for different themes and to limit messages on any one trail to about six as this is all most people can remember. Trails should not be too long; about a mile in length being the maximum. National Park Rangers confirm also that shorter trails requiring about one hour to walk are the most popular with Park visitors.

Assembly areas at the start of a trail are very useful especially if facilities such as picnic tables are provided to help make the visit an enjoyable experience. Trails should be wide enough to allow two people to walk side by side. This is particularly important for trails to be used by young school children who can become nervous if forced to walk single file through an environment they are unfamiliar with. The wider trail also allows use of small machinery for maintenance or access in the event of an accident.

Information along the trail can be related to marker pegs denoted by distance along the trail from the start point. This makes it easy to insert new material later without requiring a renumbering of stop points.

Other useful recommendations are the creation of assembly points along the trail at points of interest to facilitate communication by an interpreter with a group of people.

Where information on soil properties is important, soil pits should be built into the side of an embankment so that soil features are easily seen from the trail. Construction of soil pits requiring people to peer down a deep hold should be avoided.

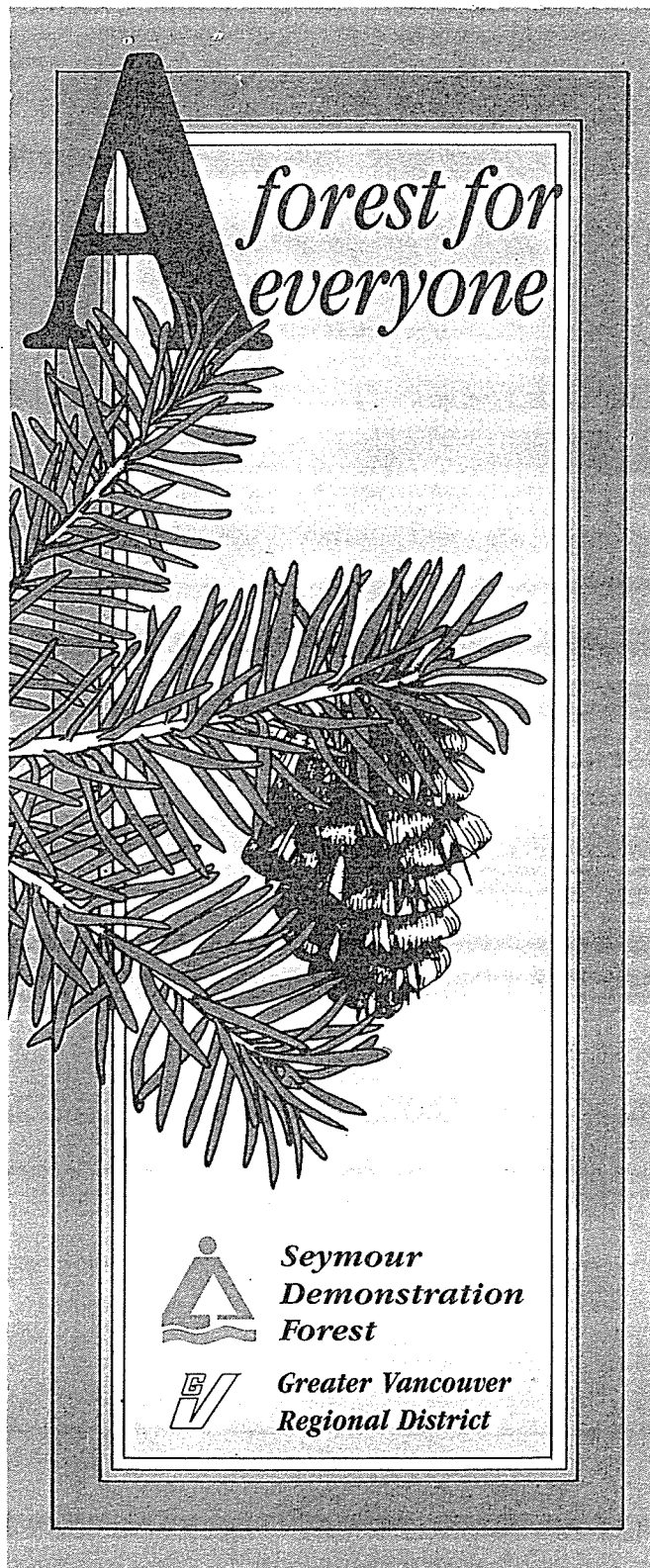
6.4.5 Media

Most Demonstration Forests have a brochure describing the forest. In many cases the brochure also incorporates a guide to the trails available in the forest. The style and presentation is variable and many need to be re-written by people experienced in interpretation to be more interesting and encourage the public to visit.

There is also considerable potential to use media techniques to communicate with audiences removed from a Demonstration Forest. The only case seen on the study tour was the Jackson Demonstration Forest at Fort Bragg in California which publishes a quarterly Newsletter on activities and results of trials. This is a useful publication and is widely read by forest managers throughout California.

The Seymour Demonstration Forest Plan proposes the following approach to making more use of media techniques.

- * Updating the Demonstration Forest brochure annually
- * Preparation of a booklet to give a pictorial and written overview of integrated resource management in the Seymour Forest. The booklet to be used as a promotional piece, reference and souvenir of the Forest.



Seymour Demonstration Forest Brochure.

* Preparation of a series of videos to discuss all of the themes of integrated resource management taking place in the Forest.

* Provision of information sheets to visitors to answer queries on subjects such as birds, wildlife, plants etc.

All National Parks visited make extensive use of media techniques to communicate with visitors and also audiences away from the Park. Most publish a weekly newsletter available free of charge outlining attractions and activities taking place in the Park for the following week and Visitor Centres at most Parks usually have a bookshop run by voluntary associations such as "Friends of the Park", which sell a wealth of information material on the Park. Both of these communication techniques could be adapted for use in a popular Demonstration Forest.

There is also potential to use television documentaries to publicise activities and practices taking place in Demonstration Forests. Some of the alternative silviculture trials taking place in Blodgett Forest in California for example would be of considerable interest to a wide audience. These could be an alternative to the numerous programs on television that concentrate on the values provided by unmanaged ecosystems.

6.4.6 Education Programs

Interpretation programs are characterised by presentation of information to a volunteer audience who have not necessarily chosen an activity on which they are to be informed but who would welcome information provided it is presented in an entertaining manner. Self guiding trails use this principle by providing the facility for an enjoyable walk through a forest and supplying information that people will hopefully absorb.

Education on the other hand is directed to a captive audience not necessarily in the presence of the real thing. For example a talk about a Demonstration Forest to a classroom audience and a conducted tour to a Demonstration Forest that may involve use of a self guiding trail would both be regarded as education programs.

Demonstration Forests have been used extensively for education programs by school groups and less so in others. Ones such as at Maple Ridge and at Campbell River came as a result of involving schools in the development of the Demonstration Forest at an early stage.

Demonstration Forests such as Pack Forest in Washington and McDonald Forest in Oregon are used to inform civic leaders, legislators and special interest groups about forest practices and new developments. This is arranged by field tours of the forest and these have proven very successful in communicating information to audiences involved. Pack Forest is used to demonstrate that instead of being disposed of in costly landfills, municipal sludge can be used to greatly increase forest growth rates with no adverse effects on the environment.

Demonstration Forests at Prince George and at Oyster River, both in British Columbia, have been very useful in educating small private landholders about managing forests on land under their control. The Oyster River Forest is located on an agricultural research station which is a good venue for conveying messages on forest management to farmer audiences.

The Seymour Demonstration Forest proposes three types of Education Programs; School Programs, Community Education Programs and Technical, Academic and Professional Programs.

The School Programs aim not to duplicate material offered by nearby Provincial Parks which concentrate on interpretation of natural history. The accent on those provided in the Demonstration forest are to be management of natural resources and integrated resource use. It is intended to prepare study package kits for teachers containing maps and other information about the Demonstration Forest.

Options for the School Programs include:

1. Self Guided Programs for specific grade levels. This will involve preparation of material appropriate to the teachers' needs in such a form that teachers can organise and conduct a visit to the Forest themselves.
2. Guided Educational Programs for students. The aim is to provide a range of interpreter-led tours to provide on site experience relative to integrated resource management not found elsewhere. Tours can be tailored to fit in with curriculum studies or build on the students knowledge and particular interests.
3. Professional Development for Teachers. The aim is to develop a program on integrated resource management for classroom teachers and teachers in training involving a co-operative effort between other resource use educators. Once agreed upon and accepted it is envisaged that training of teachers in use of these programs could be offered by weekend workshops or at one day Professional Development Days.
4. Off Site Programs. Although not a substitute for a visit to the Demonstration Forest itself, Off Site Programs are seen as being useful by providing a pre-visit introduction to the Forest and also as a promotional tool to attract schools to make use of the Forest.

6.4.7 Community Education Programs

The aim of these Programs which can be held on site in the forest could be to create greater awareness and understanding of the concept of integrated resource management and ensure that discussion of resource use as opposed to preservation is ongoing.

The vehicle for attracting people to the forest to participate in this process might be a workshop on chainsaw safety and maintenance or methods of enhancing wildlife habitats in forest. Following presentation of the first topic, discussion could be directed to comments on current and future management options for the forest.

6.4.8 Technical, Academic and Professional Programs

Much of the opposition to management of forests has come from members of the academic community not involved with or aware of the issues involved in resource management. Encouraging academic institutions to become involved in research and training programs in a Demonstration Forest can be a very fruitful learning experience for the people involved. The experience of Demonstration Forest managers at McDonald Forest in Oregon, at Blodgett Forest in California and at Seymour Forest in British Columbia has been that these programs have yielded some valuable data and have enabled academics to gain a greater appreciation and sympathy for forest management practices.

The Seymour Forest has been used for many years for research and training by several academic institutions. The intention is to ensure that this use continues and that wherever possible, experiments and trials managed by these institutions are interpreted for visitors.

This is a worthy aim. Throughout the forests of the world, including Australia, there are a wealth of experiments and trials which would be of considerable interest to people provided they are interpreted such that the message is interesting. Unfortunately many are known only to the researchers involved and in some cases access is actively discouraged such as the San Dimas Experimental Forest in southern California which has been closed to the general public since 1933.

6.5 Management Requirements

Demonstration Forests are no different to any other forest based program. If they are to be successful the key management functions of planning, allocation of resources to implement the plan and a review process have to be addressed.

Apart from University Research and Demonstration forests such as Pack Forest and Blodgett, most Demonstration Forests have been developed with a major underestimate or commitment to these management requirements. This is probably due to many being developed at a local level without the support of the whole organisation.

The concept of a large Demonstration Forest such as Seymour Forest consisting of 5600 hectares of forest designed to attract a large public audience has many similarities to a National Park. In many respects it is more complex due to timber management continuing as a major resource use.

6.5.1 Staffing

National Parks in the United States and Canada are generally adequately staffed. The two broad functions are management of the Park and management of people. The Seymour Forest Plan recognises this need and recommends the appointment of a "People Co-ordinator" and a "Facilities and Materials Co-ordinator".

The People Co-ordinator at Seymour Forest would be responsible for all tours, bookings, special events, developing, implementing and evaluating programs, co-ordinating volunteers and training and supervision of seasonal staff employed as tour leaders. At the Maple Ridge Demonstration Forest in British Columbia it was common practice for several years to employ two final year forestry students over the summer season to carry out many of these duties and this proved very successful.

The Facilities and Materials Co-ordinator responsibilities would include arranging preparation of all signs, brochures, displays and trails, supervising construction and maintenance of facilities and directing work crews and work experience crews.

At smaller Demonstration Forests with low visitor use these duties could be shared by one person but as a minimum one person needs to be given the responsibility and time to handle these tasks professionally. The person or persons involved needs to have a good understanding and be experienced in interpretation and education techniques. Several of the Demonstration Forests seen on the tour were suffering because of inadequate allocation of experienced staff.

6.5.2 Financing

Adequate funds are essential to construct and maintain the various educational and interpretive facilities identified in the framework plan. The amount will vary depending on the size of the Demonstration Forest and the facilities and programs to be provided. The Seymour Demonstration Forest Plan indicates a Capital cost ranging from \$580,000 to \$950,000 depending on the development options selected with annual operating costs from \$260,000 to \$315,000. At North Carolina, the possibility of expending several million dollars on development of a Demonstration forest was being discussed.

Brochures, signs and all facilities need to be attractive and interesting if visitors are to be encouraged to visit a Demonstration Forest. In the United States and British Columbia, National Parks which in many respects are a competitor with Demonstration Forests for peoples attention, are well managed. Rangers are common on the ground, signage is of good quality and most Parks are attractive and pleasant places to visit. One commitment to provision of services of this quality outside the Parks system is that provided by the U.S. Forest Service at Mt St Helens in Washington. The eruption of Mt St Helens a few years ago has proven to be a popular focal point for visitors and the U.S. Forest Service have capitalised on this by providing some excellent interpretation facilities backed up with adequate staffing. It is a good example of what can be achieved if an organisation is committed to the concept.

By comparison several Demonstration Forests seen on the tour were being run on a shoe-string budget and this was reflected in the lower standard of signs and facilities provided.

In the United States, as in Australia, National Parks are largely funded by government. Mt Rainier National Park in Washington is a good illustration as it is located close to Pack Demonstration Forest. Mt Rainier receives about 2 million visitors a year and has a staff of 112 permanent people assisted by up to 175 temporaries during the summer months. The annual budget for running Mt Rainier Park is \$5.5 million of which \$370,000 are salaries for interpretation staff. Pack Forest handles about 3000 visitors a year and although the potential is there to increase this greatly, lack of funds is a limiting factor.

6.5.3 Evaluation and Review

Attention needs to be given to evaluating the success of Demonstration Forests and whether programs need changing to convey messages better or address issues not currently covered.

Co-ordinators and tour leaders obtain considerable feedback from groups whilst conducting tours and this process has been used to modify programs and adjust the material being presented. For several years at the Demonstration Forest at Maple Ridge in British Columbia, volunteer professional foresters conducted weekend tours for the public. Following the tour, each tour leader completed a questionnaire, the results from which were summarised at the end of the season. This information was extremely useful to staff involved with making recommendations on any changes to programs and facilities.

At Seymour Forest, tour leaders for school groups hand out a questionnaire about half way around the tour to assess how much information has been assimilated. Students supplying original answers are rewarded with a small prize as a positive reinforcement.

The McDonald Demonstration Forest in Oregon has been successfully used to illustrate alternative silviculture treatments to adjoining landholders opposed to harvesting of forest near their properties. The compromises reached and the defusing of this issue is a good illustration of the value of a Demonstration Forest as a forum to explain and resolve issues.

In most Demonstration Forests though there does not appear to be a formal review process. I was surprised to find that in most National Parks there is little attempt to evaluate how successful the conveying of messages has been. It appears to be an article of faith that the programs being presented are valuable and it is left at that.

The technology of forest management for a variety of resource uses is an evolving art and will continue to change with time. Similarly the interests of the community and their attitudes to use of forests will undoubtedly alter. The development of any Demonstration Forest must recognise this by being dynamic enough to accommodate changes as they occur rather than becoming a museum of outdated forest practices. Consequently a formal review process, probably once a year, is essential for any Demonstration Forest to ensure its programs and messages remain relevant to their intended audiences.

6.6 DISCUSSION AND CONCLUSIONS

6.6.1 Potential of Demonstration Forests

The main conclusion I reached as a result of the Study Tour was that use of native forests in Australia for timber production will be increasingly opposed as it has in the United States unless there is a shift in approach by forest managers. There is a need for a major thrust in education and information sharing with all forest user groups. It is important that the initiative for this comes from forest managers as a whole and not be in response or reaction to isolated environmentalist pressures. As outlined in this Section, well planned Demonstration Forests can play a very effective role in this process.

Throughout the Study Tour I met foresters from different parts of British Columbia and the United States who saw Demonstration Forests as having considerable potential for informing, educating and influencing people on how forests can be managed for a variety of resource uses. It was a common view that Demonstration Forests similar to the Seymour Demonstration Forest model should have been operating about 30 years ago in the United States. Had this occurred it was considered that the polarised debate about use of forests which is now taking place in the United States might have been defused. In Australia where the debate has not reached the intensity it has in the United States it is not too late to learn from these comments and their experience.

Authors of the Seymour Demonstration Forest Plan see Demonstration Forests as offering a new and different learning experience by providing the opportunity to explore first hand a forest being managed for a variety of resource uses and to view or take part in the process of integrated resource management. They see Demonstration Forests as a stage on which to display not only current techniques but also management alternatives and new research results. They are also viewed as a meeting ground where land use issues can be discussed and explained far better than in a meeting hall or similar off site situations.

It is significant that architects of the recently drawn up Timber - Fish - Wildlife Agreement in Washington State, have decided to establish a large Demonstration Forest to illustrate different silvicultural methods and collect basic information on the effects of different cutting practices.

In North Carolina, the U.S. Forest Service is seriously considering developing a major Demonstration Forest to complement the Visitor Centre at the Cradle of Forestry at Pisgah. The Cradle of Forestry has concentrated largely on the history of forestry education in America and it is now realised that this needs to be supported with current information on forest management. The Forest Product Industries were to be approached for several million dollars to assist in the development of this Demonstration Forest.

So far, the potential of Demonstration Forests to have a major impact on public attitudes to use of forests for a variety of resource uses including timber production has not been realised although there are encouraging examples where they are being effectively used. The Demonstration Forest at Maple Ridge in British Columbia which was a pioneer in the concept still attracts 10,000 people a year and the current version of the Seymour Demonstration Forest near Vancouver which has only been operating since 1987 receives about 90,000 visitors a year.

6.6.2 Reasons for limited success

The reasons why individual Demonstration Forests seen on the Study Tour have not been as successful as they could be are numerous but the main ones would appear to be:

- * Lack of concept and framework plans to define matters such as target audiences, themes and messages to be conveyed.
- * Not consulting the target audiences sufficiently and involving them in both initial and ongoing management of the Forest.
- * Forest difficult to access for the target audiences
- * Little attempt to market the Demonstration Forest as an attraction in its own right.
- * Unimaginative presentation of material
- * Inadequate commitment to staffing and funding requirements

6.6.3 Key Factors for Success

These factors have been discussed earlier but they warrant repeating as essential ingredients to ensure that a specific Demonstration Forest achieves its full success potential.

- * Obtain a commitment from the Executive of the organizations involved to the concept and provision of adequate funds for both development and ongoing management.
- * Select a location easily reached by the target audience which will attract visitors with or without a Demonstration Forest. If necessary construct facilities such as picnic grounds to encourage people to visit the forest.
- * Engage professionals experienced in interpretation and education techniques to prepare an imaginative framework plan to cover items such as target audiences, themes, stories and messages to be conveyed and the communication methods to be used. Select an umbrella theme and limit sub themes to about six.

- * Consult target audiences and local communities both in preparation of the plan and as an ongoing process.
- * Ensure that management of the plan is flexible enough to accommodate changes in technology and in public attitudes to use of forests.
- * Materials, signs, brochures and other facilities to be prepared by people with interpretation skills.
- * Staff involved with educating and informing target audiences to be trained in interpretation and education skills.
- * Market the Demonstration Forest as an exciting and interesting place to visit.

6.6.4 Similarity to National Parks

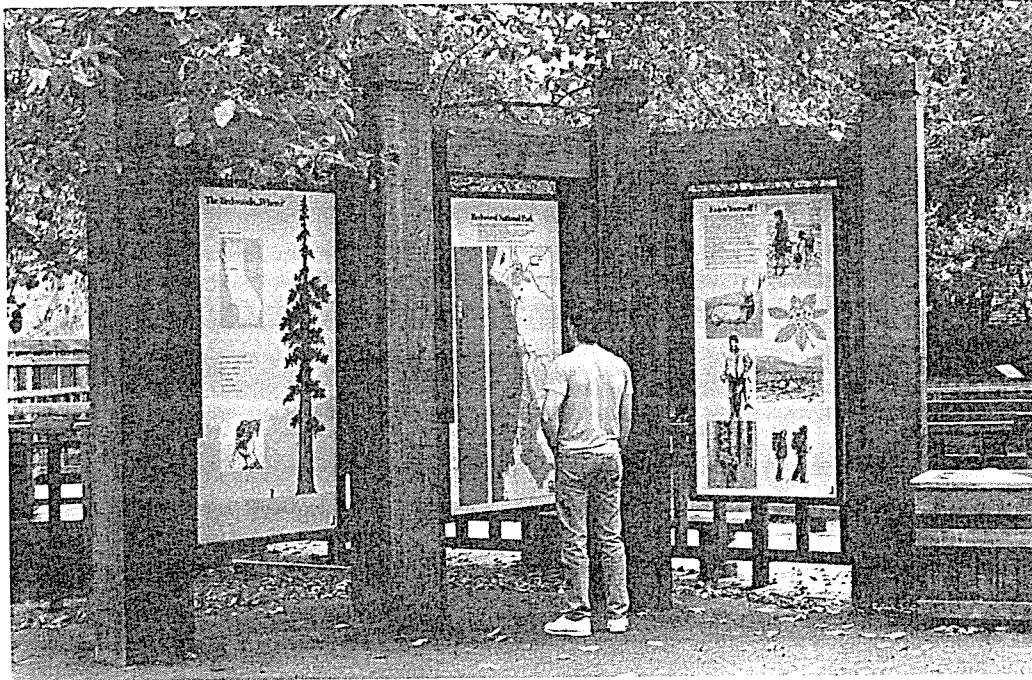
Most of the principles applied or being recommended for communicating with people in Demonstration Forests such as community education, interpretation and participation have been successfully used in National Parks for many years. The popularity of National Parks and awareness of conservation issues in the community has been strongly influenced by these communication approaches and is reflected in the high numbers of people visiting and being supportive of National Parks.

The main difference between National Parks and Demonstration Forests is that in Parks the emphasis is on creating awareness of the natural or cultural history or the "what is" situation. In Demonstration Forests the accent is on improving understanding on how the environment can be managed and the "what will be" or "what can be" outcomes. In many respects this is a more difficult and complex exercise but there is little doubt that the same principles used in National Parks can be applied equally successfully in Demonstration Forests.

6.6.5 Conclusions

The recently released Master Plan for Interpretation and Education in the Seymour Demonstration Forest was the most comprehensive and professionally produced plan for a Demonstration Forest seen on the Study Tour. If all the recommendations in this plan are implemented it will be an excellent test case to see how effective the application of interpretation and education principles used in National Parks can be in obtaining more favourable attitudes towards use of forests for timber production.

Until the Seymour Demonstration Forest example proves itself further, it becomes a matter of judgement as to the extent to which Demonstration Forests should be established in Australia and how successful they might be in influencing attitudes towards use of forests for timber production.



Information Panels, Blue Ridge Parkway, North Carolina.

My belief is that the approaches already being used at the Seymour Demonstration Forest and proposed in the Master Plan will be increasingly successful. Bearing in mind that Forest Industries in British Columbia are very supportive of the Demonstration Forest concept, and the many comments from foresters in the United States that Demonstration Forests of this type should have been developed in their country about 30 years ago, there is a good case for establishing near every Capital City in Australia, a Demonstration Forest similar to the Seymour model. Less expensive versions should be established in other areas and as shown at Campbell River in British Columbia these can be very effective and well used if certain key principles are observed.

Until Demonstration Forests are established more in Australia there would be considerable value in interpreting for various audiences, many of the research experiments and trials in forest areas that illustrate how forests can be managed for a range of values including timber production, eg thinning of forests to increase water production, retention of stream reserves and habitat trees for wildlife or bird populations. This approach is used at Blodgett Forest in California where once it is explained to them, people are commonly very impressed at the positive improvements in values such as wildlife, bird populations and water production in managed compared to unmanaged old growth stands. Where experiments are not easily accessible to the public the use of television and other media should be considered as a means of conveying this information to wider audiences.

SECTION 7

REFERENCES

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- Hadley, M.J. and Associates and BUFO Incorporated (1989). Master Plan for Interpretation and Education in the Seymour Demonstration Forest.
- Shea, S.R., (1990) The Australian Forestry and Forest Products Industry - Potential, Constraints and Future. Department of Conservation & Land Management publication. Western Australia.

SECTION 8

APPENDIX 01
TRAVEL ITINERARY

WEEK 1 August 11-18

U.B.C. Forestry Faculty, Vancouver
Malcolm Knapp Research Forest. Maple Ridge
British Columbia Forestry Association
Council of Forest Industries
Association of B.C.. Professional Foresters
Seymour Demonstration Forest
Chilliwack Forest.

WEEK 2 August 20-26

Willow River Demonstration Forest, Prince George
Williams Lake, B.C. Forestry Association
Alex Fraser Research Forest
Fletcher Challenge, Kelowna
Grand Forks, Woodlot Association
Manning National Park.

WEEK 3 August 28-1 September

B.C. Ministry of Forests, Victoria
Forestry Canada, Victoria
Cowichan Valley Demonstration Forest
Mesachie Lake Experimental Station
Fletcher Challenge, Lake Cowichan
Malaspina College, Forestry Dept.
U.B.C. Research Farm, Oyster River
Demonstration Forest, Campbell River

WEEK 4 September 4-9

University of Washington, Pack Forest
Mt Rainier National Park
USDA Forest Service, Mt St Helens Visitor Centre
USDA Forest Service, Portland, Oregon
Oregon State University, Research and Demonstration Forest,
Corvallis
Weyerhaeuser, Eugene, Oregon. Operations Division

WEEK 5 September 11-16

USDA Forest Service, Redding, California
Swain Mountain Research and Demonstration Forest
Eureka, California. Redwood Demonstration Forests
Jackson Demonstration Forest, Fort Bragg.

APPENDIX 01 CONTINUED

WEEK 6 September 18-23

University of California, Berkeley
USDA Forest Service workshop, Auburn
USDA Forest Service, Region 5, San Fransisco
Dept. of Forestry and Fire Protection, Sacramento
Blodgett Forest Research Station, University of California
Yosemite National Park.

WEEK 7 September 25 - 3 October

Grand Canyon National Park, Arizona
USDA Forest Service, Ashville North Carolina,
South Eastern Forest Experiment Station
USDA Forest Service, Asheville, Operations Section
Cradle of Forestry, Pisgah
Great Smoky Mountains, National Park, N.C.
Blue Ridge Parkway, N.C.

APPENDIX 02
NOTES ON
DEMONSTRATION
FORESTS VISITED

1. Malcolm Knapp Research Forest. Maple Ridge British Columbia

This Research Forest was Crown granted to the University of British Columbia in 1949 as a facility for research, education and demonstration in forestry. The Forest of over 5000 hectares is located in Maple Ridge, 60 kilometres east of Vancouver.

The forest contains almost every type of terrain found in the lower coastal region with elevations ranging from sea level to 1025 metres where the forest adjoins Golden Ears Provincial Park. When the University commenced management in 1951, much of the forest consisted of second growth stands (originating after a severe fire in 1868,) interspersed with small patches of old growth. In the western parts, stands consisted of regeneration following severe fires in 1925 and 1931.

Principal species are Douglas Fir, western hemlock, western red cedar and Sitka spruce together with Bigleaf Maple, Vine Maple and Red Alder. Regrowth stands resulting from the 1868 fires are now over 100 years old and quite magnificent.

The forest is managed on a sustained yield basis and administration of the research facility is largely paid for by logging revenues. Research is conducted by the University itself as well as other Universities, Federal and provincial governments and private companies. Over 550 projects have been initiated since 1949 and 130 are still active today. Studies conducted in the forest have gained international recognition in the fields of ecology, biology, climatology, hydrology and genetics.

Over 1500 U.B.C. forestry students gained their initial field experience at Maple Ridge and as part of their final year spend three weeks at a camp in the Forest. The Forest is also a training ground for B.C. Forest Service programs, students from the B.C. Institute of Technology and B.C.'s regional colleges.

In 1976, 200 hectares of the Research Forest adjoining the main entrance were set aside to be managed as a Demonstration Forest aimed at an audience of schools, the local community and recreational visitors.

The theme of the Demonstration Forest was "The Forest Resource and its Management" and objectives were:

- a. Improve public awareness and understanding of forests and forestry, by guiding them on trails through a series of forest management areas.
- b. Provide additional outdoor education facilities on the U.B.C. Research Forest which would be durable and to a large degree self operating thus easing the pressure on Research staff for guided tours.
- c. Investigate the demand for public education and demonstrate the potential for self guiding trails in fulfilling public education demands.
- d. Extend and diversify the tour service currently on offer to schools on the lower mainland.

The site selected for the Demonstration Forest had to satisfy the following criteria:

- a. Accessible by foot in all weathers
- b. Relatively easily traversed ground
- c. Diverse forest cover
- d. Controlled access
- e. Low interference with research areas
- f. Resilient to heavy use
- g. Low maintenance

NATIVE TREES



DOUGLAS-FIR (*Pseudotsuga menziesii*) is B.C.'s most important wood producer. It likes deep sandy soil, moist but not sodden. It does not grow well in the shade. The needles are uniformly 2 to 3 cm. in length. On young trees the bark is smooth and grey; on older specimens it will be deeply furrowed into thick ridges. Bark may be up to a foot thick on old trees.

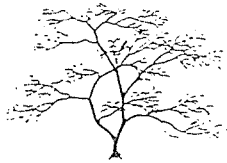
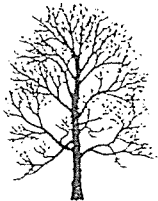
WESTERN RED CEDAR (*Thuja plicata*) is the perfect wood for use outdoors: it resists decay in the dampest climates. The branches are distinctive, drooping but turning upward near their ends. Instead of true "needles" the cedar has small blunt scales. Its cones are tiny — about 1 cm. long. Bark is reddish-brown and stringy on trees of all ages.



WESTERN HEMLOCK (*Tsuga heterophylla*) likes a good supply of moisture but doesn't need much light to grow. This helps it to claim vacant areas inside established stands. The uppermost shoot of a hemlock always droops. The needles vary in length, ranging from 1/2 to 2 cm. on the same twig. The cones are 2 to 3 cm. long. Young bark has fine grey scales; old bark forms into flat-topped scaly ridges.

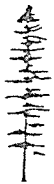


BIGLEAF MAPLE (*Acer macrophyllum*) has some value since there is not much other hardwood in B.C. It is often used in furniture, panelling, and musical instruments. The tree is easily identifiable because of its huge leaves, 5-lobed and up to a foot long.



VINE MAPLE (*Acer circinatum*) grows in some pretty strange shapes, so it is rather useless as a wood supplier. The trunk is normally short and crooked, or even prostrate. The leaves are lobed like all maples but are almost circular in outline. This tree will often form an "archway" over the hiking trails.

RED ALDER (*Alnus rubra*) is a "pioneer", one of the first species to reclaim cut or burnt areas. However, it rarely lives over 50 years and so produces little wood. Alder can outgrow softwood trees in plantations, and becomes a "weed" problem. Left alone it will grow in pure dense thickets. Bark is smooth and light grey; leaves are ovoid or rhombic in shape.



SITKA SPRUCE (*Picea sitchensis*) likes deep, well-drained soil near streams. The needles are an inch long, very stiff and sharp. The elongated cones will be 2 1/2 to 4 inches in length. The bark is reddish-brown and broken into large loose scales.

WHITE PINE (*Pinus monticola*) is easy to please as to soil type; its favourites are moist valleys and slopes with a northern exposure. Its long needles are distinctive: they grow in clusters of five, 2 to 4 inches long, and are flexible and soft to the touch. Young bark is smooth and greyish-green. When older the bark forms into scaly thick plates.



YELLOW DEMONSTRATION ROUTE

Distance: 3.2 kilometres
Walking time: 2 hours (approximately)

The Yellow Route is the one designed to suit most of our visitors. It will acquaint you with the modern science of Forestry; we hope to show you how the technology being developed here will benefit British Columbia.

The wilderness ecology that makes our province unique need not be "pushed aside" by progress: our forestry practices are meant to work with nature, not against it. Logging and reseeded are made a part of the natural cycle of renewal. The "wild" forest here is harvested — but not destroyed.

The Yellow Route passes 24 points of interest, each of which is described on the following pages. Each stop is marked by an engraved post, which shows its distance in metres from the start of the trail. Look for other posts marked in yellow at all intersections.

Be sure to consult the foldout map if you have any difficulty finding the way. Take your time and have an enjoyable walk!



11 m. The Weather Station

This station, situated here since 1948, is used not for forecasting the weather but rather for measuring it.

Temperature and precipitation data are collected twice daily and used in a province-wide "Fire Watch" program. It is sometimes necessary during long droughts to close the Forest to the public because of the risk of fire. The broken terrain in our 5,157 hectares makes the danger grave: even a tiny fire may have grown beyond control by the time it is spotted.

Of course, this forest has survived for thousands of years without the help of firefighters. But the natural function of fires is to clear areas for new growth — a job now taken over by our logging industry.

Nature also never had to contend with fires caused by campers, smokers, and even by heat-magnifying pop bottles. Because foresters must cope with all that, it is essential to know just when the risk is greatest.

An Introduction to B.C. Forestry

Welcome to the U.B.C. Malcolm Knapp Research Forest DEMONSTRATION AREA

The southern tip of the vast U.B.C. Malcolm Knapp Research Forest has been set aside as a Demonstration Area. Here you will find scenic trails which can provide either a family stroll or a vigorous hike. The trails will show you through both natural and "man-made" forests. Many research projects are also visible. Visitors may learn about plant identification, ecology and forestry practices; they may observe a variety of wildlife including our population of blacktail deer; or, they may just enjoy the views.

You are welcome to come out and explore. The Demonstration Area is open from dawn til dusk every day of the year. During regular office hours you may pick up a trail guide brochure from the Administration Office at the main gate. This brochure will explain the many notable features which are marked for you along the trails.

The Research Forest is located next to Golden Ears Provincial Park. To get here, take the Lougheed Highway to the centre of Maple Ridge and turn north onto Haney Boulevard (224 St.). After four blocks turn right onto Dewdney Trunk Road. Head east for 1.5 kilometres and then turn left onto 232 St. After another four kilometres northward you will see Silver Valley Road branching off to your right; the Research Forest gates are at the very end of this road.

For more information, call 463-8148 or write to us at R.R. #2, Maple Ridge, B.C. V2X 7E7.

This brochure is designed to help you guide yourself along the hiking trails in our Demonstration Area. All you need is this booklet and a comfortable pair of walking shoes. All trails begin at the main gates adjacent to our car park.

There are three main routes to choose from, varying in length and difficulty. Simply select the one that suits you from the list below. The first two trails (Yellow and Red) pass a number of interpretive stations which are explained inside this brochure. The simple text will introduce you to B.C.'s rich natural setting — and to the practice of forestry.

There are also a few "detours" you may take to add variety to your walk. A map showing the whole trail system can be found on the foldout back cover.

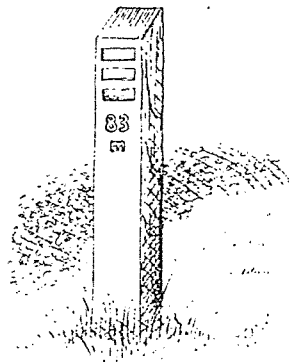
The three main routes are marked by posts engraved in the appropriate colours. These routes are:

The Yellow Route (3.2 kilometres, with a walking time of 2 hours at a leisurely pace). This is a standard trek

recommended to most visitors. The trail passes through natural and man-made forests; ecology, logging and reforestation are described. The guide to this route begins on page 3.

The Red Route (1.5 km., 1 hour) is a shorter version of the Yellow Route, for those with less time or energy. This walk is also described in this booklet, beginning on page 14.

The Blue Route (7 km., 3½ hours) is a longer trail for those seeking more of a hike than a stroll. There are no interpretive stations along this route, but there are some gorgeous vistas and scenery. One or two moderately strenuous stretches.



The following trails are optional additions to the above main routes. Please refer to the map for an overview of the trail network.

The Green Trail is a side trip that connects with the Yellow and Blue Routes. It runs across the Alouette River and along its eastern bank. This diversion will add an extra hour to your walk, but will return you to the main gates at its end.

The Spring Creek Trail loops northward, extending the Yellow Route. It adds about a half-hour to that walk, taking you through more natural forest area before rejoining the main Yellow Route.

There is also a **Wheelchair Trail** which runs through the Arboretum and the Deer Pen area not far from the gates. This path has a smooth asphalt surface.

UBC Malcolm Knapp Research Forest
End of Silver Valley Road
Maple Ridge, B.C.

To facilitate routing of trails, the area selected for the Demonstration Forest was segregated into several interest areas as follows.

- A. Natural Forest
- B. Basic Ecology
- C. Introduction to Management of Natural Forests
- D. Site Preparation, Reforestation and managed future forests
- E. Plantations
- F. Forest Foes, diseases etc
- G. Unmanaged forest
- H. Use of river corridors for recreation & Wildlife
- I/J Role of research in forestry
- K. Scenic walk
- L. Arboretum and deer closure
- M. Natural forest reforestation and site differences
- N. Effects of harvesting
- O. Wildlife management
- P. Effects of skidder harvesting
- Q. Recolonisation of cut-over areas
- R. Reforestation
- S. Forest Research area
- T. Homesteading, cleared farm reverting to forest
- U. No area
- V. Forest management
- W. Genetics
- X. Site preparation and hydrologic constraints
- Y. Results of selective harvesting
- Z. Areas not yet allocated

Trails were then planned in a series of circuits and colour coded for guiding purposes. The forest was designed to be essentially self guiding, visitors being encouraged to pick up a brochure from the main entrance gate, select a route and use the map and brochure to guide themselves. A series of stops are numbered by distance in metres along the trail from the start point. A short bitumen surfaced trail was established for use by handicapped people in wheelchairs.

Guided tours were run for educational purposes by arrangement through a booking system at the main office.

Costs of constructing the Demonstration forest were segregated into Labour, Equipment, Materials and Overheads, there were:

Labour: 6 labourers for 9 months
2 labourers for 2 months
3 research technicians for 2 months
Project supervisor
Contractor to carry out tree felling
40 man days of voluntary labour

Equipment:

Contract falling, skidding, haulage etc. of trees removed on trails.

U.B.C. research equipment

Tractor 170 hours

Chainsaws 430 hours

Pumps 10 hours

Brush cutters 200 hours

Materials:

| | |
|------------------------|-----------|
| Notice Boards | 18 |
| Brochures | 2000 |
| Hog fuel | 60 tonnes |
| Bridges and boardwalks | 2 |

Overheads:

| | |
|--------------------------------------|------------|
| Staff time planning and organization | 1300 hours |
| Vehicle mileage | 4300 miles |

Construction of the Demonstration Forest was financed by the U.B.C. Research Forest, Canada Manpower, Canadian Institute of Forestry and Council of Forest Industries. The bulk of costs being borne by the U.B.C. Research Forest.

In 1978 over 10,000 people used the trails. For the period 1979 to 1987 the Ministry of Forests provided funding for employment of two tour co-ordinators to handle summer visitors to the Demonstration Forest. These were usually third year forestry students working on vacation employment. Their task was to prepare and update brochures, arrange training of tour guides and organise trail maintenance. After 1987 the Ministry withdrew funding in lieu of support for Seymour Demonstration forest close to Vancouver.

In 1986 as part of the Vancouver Expo, day trips were run from Vancouver to the Research Forest. This was an ambitious project catering for both general and special interest groups. It was estimated about 14,000 people would be attracted to the Forest over the summer Expo period but numbers were less than this and this was attributed to visitors to Vancouver being reluctant to commit a whole day to travel out and back to the Forest.

The Maple Ridge Demonstration forest is not promoted today to the extent it was in the 1970's and early 1980's when it attracted several thousand visitors each summer. U.B.C. staff still conduct tours of groups who request a guided tour and a steady stream of visitors walk the trails on their own. Locals use the forest for recreation such as walking and jogging. Copies of the brochure are available at the main office and a leaflet on the forest is available at the local tourist bureau and all local motels.

The Maple Ridge Demonstration Forest was a marvellous pioneering venture for its time and much that has been learnt from its 10 years of operation has been incorporated into other Demonstration Forests including the new and innovative Seymour Demonstration forest adjoining Vancouver.

2. Seymour Demonstration Forest, Vancouver

This Demonstration Forest in North Vancouver is easily accessible to the 1.4 million people living in the general Vancouver area. It consists of 5600 hectares of excellent coastal forest, principal species being Douglas Fir, western Hemlock, western Red Cedar, Sitka Spruce and Amabilis fir.

The forest is part of land controlled and managed by the Greater Vancouver Regional District who are responsible for water supply to Vancouver. Forests both on and off the catchment have been logged for more than 100 years and revenues from harvesting are an important source of funds for water supply capital works. Some environmental groups are opposed to logging continuing and the Greater Vancouver Regional District who take an opposite view have been interested for some time in improving awareness of forests and multiple use management.

The Seymour Demonstration Forest is off catchment and lies just downstream from Seymour Reservoir, the main water supply source for Vancouver. In 1987 this 5600 hectare area was opened to the public for the first time with forests on catchment remaining closed to public access. The purpose of the Demonstration Forest when first opened was "to promote awareness of forests and multiple land use through interpretive trails and programs, educational displays, tours and forestry demonstration plots."

Although only opened to the public for two years it is being heavily used for recreational uses such as picnicing, cycling, jogging, horse riding and fishing. In 1988 about 90,000 people visited the forest with increasing numbers in 1989 as more people became aware of its attractions.

Currently the area developed for demonstration of forest management occupies about 100 hectares and over \$250,000 has been spent. The trails though this portion are old railway logging formations which were easily opened up to provide ideal foot access. Trees and other vegetation are identified and a series of excellent information boards along the trails describe the various management practices to be seen. The trails pass through a range of age classes from recently cut over to 80 year old regrowth. Old stumps from the previous forest are common and are a subtle reminder that forests can be successfully regenerated after harvesting.

School or community groups can walk the trails themselves or be given a guided tour. In the 1989 summer a full time experienced guide was employed to handle weekday groups and at weekends, foresters from the Association of B.C. Professional Foresters are rostered on a voluntary basis to conduct tours. On average about 50 people take guided tours on weekends with mid week guided tours varying according to school demand. From May to August 1989 over 1500 school children had been taken on guided tours.

An excellent feature for school groups is the use of a small interpretive centre half way along one of the trails. School groups stop there and, the guide hands out an interesting questionnaire to see how much information has been assimilated to date. Additional information such as samples of pine cones etc. from the different conifers are displayed and handled by children. Children were blindfolded and asked to guess the type of tree they were touching by feeling the texture of the bark. Children giving original answers were given small prizes such as a ballon with a forest message.

The whole 5600 forest area is run as a managed working forest. Currently most people visit the area for recreational use and to ensure visitors are aware they are in a managed forest, not a National Park, no attempt is made to hide forest management operations such as clear felling, logging, site preparation, thinning and log hauling. Stands are signposted with date of previous cutting, age of regeneration etc. to reinforce the message that forests can be regenerated quite satisfactorily. The hope is that people visiting purely for recreational visits and seeing all these activities will be encouraged to visit the developed demonstration area to learn more about resource management.

S *Welcome to the Greater Vancouver Regional District's* **Seymour Demonstration Forest**

The Seymour Demonstration Forest lies in the lower part of an ancient glacier-carved valley. It offers clean water, wildlife, forest production, fisheries, recreation and educational opportunities just a short drive from downtown Vancouver!

The Forest is between Lynn Headwaters Regional Park and Mount Seymour Provincial Park in North Vancouver District. Majestic mountain peaks rise to 1446 metres on the west and to the 1455 metre Mount Seymour on the east.

It is a coastal forest consisting mainly of coniferous trees — western hemlock, western red cedar, Amabilis fir, Douglas fir and Sitka spruce.

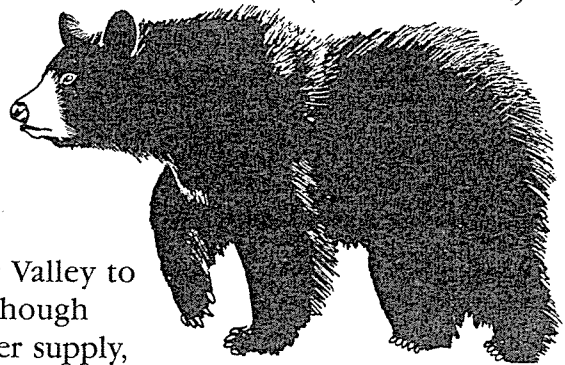
Logging roads and forest management activities have produced a mosaic of vegetation patterns and a rich diversity of wildlife. Deer, squirrels, raccoons and a variety of birds are often seen, and black bear, coyote, bobcat, mountain goat and cougar also inhabit the area.

The Seymour River, flowing in the valley bottom, is one of the top ten angling streams in the Lower Mainland. The valley also contains Rice Lake, one of few fresh water lakes on the North Shore.

In 1987, the Greater Vancouver Regional District (GVRD) opened the lower Seymour Valley to the public for the first time in 59 years. Although the area was initially set aside for future water supply, it is below the Seymour Reservoir water catchment area and is likely not required until well into the next century.

The new purpose of the 5600 hectare site is to promote awareness of forests and multiple land use through interpretive trails and programs, educational displays, tours and forestry demonstration plots.

*American Black Bear
(Ursus americanus)*

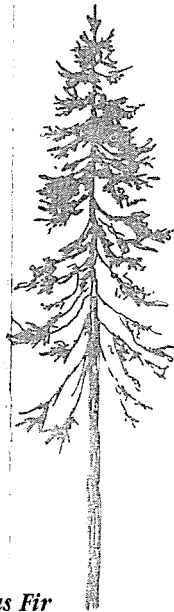


WILD ANIMALS Black Bears, cougars, bobcats and coyotes inhabit the valley. Be cautious and remember to remove your garbage so wild animals will be less dangerous to you and other visitors.

Activities

Activities in the Demonstration Forest can be educational and recreational. Whether studying forestry or nature, observing examples of forest management, angling, picnicking or on a leisurely stroll throughout the valley, you'll discover that the Forest is a model of man's activities and nature working in harmony.

At present vehicular access is not permitted beyond the entrance area. At various times, organized tours and special interest groups will be allowed vehicular access to the Seymour Falls Dam.



Douglas Fir
(*Pseudotsuga menziesii*)



FOR YOUR SAFETY The Seymour Demonstration Forest area is mountainous and subject to heavy rainfall and abrupt weather changes. This is a remote and rugged area and if you get lost or hurt, rescue would be difficult. Dress accordingly. Hike or cycle with a friend and stay within the limit of a safe return in daylight hours.

Education

Interpretive signs explaining examples of forest management techniques are provided for your enjoyment and understanding of the many facets of the Seymour Demonstration Forest.

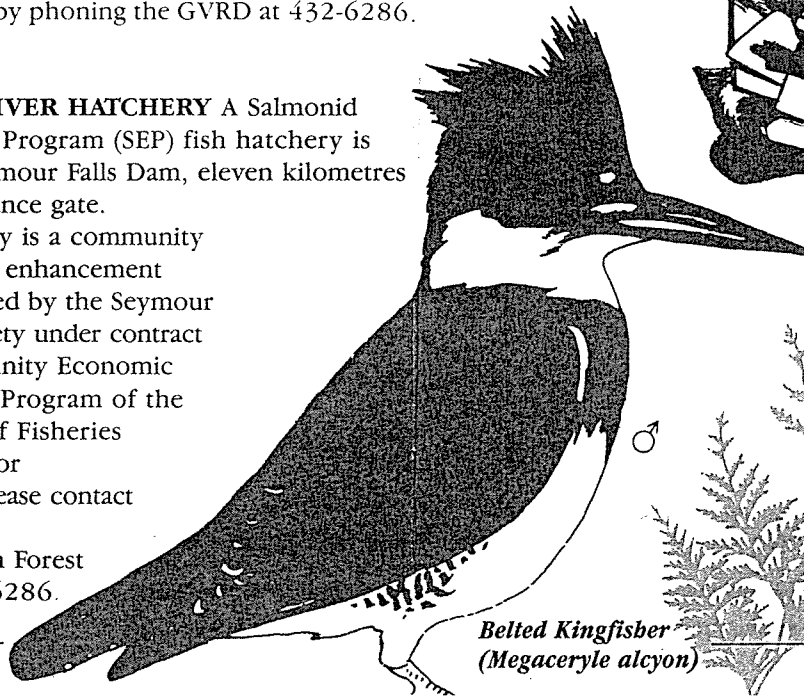
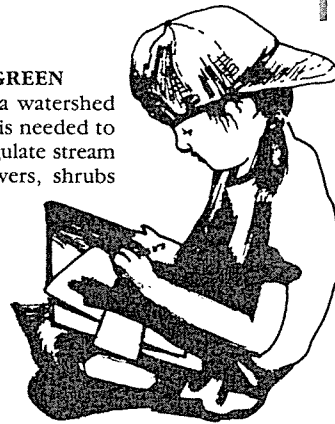
School and community groups may reserve program time by phoning the GVRD at 432-6286.

SEYMOUR RIVER HATCHERY A Salmonid Enhancement Program (SEP) fish hatchery is located at Seymour Falls Dam, eleven kilometres from the entrance gate.

The hatchery is a community education and enhancement facility operated by the Seymour Salmonid Society under contract to the Community Economic Development Program of the Department of Fisheries and Oceans. For information please contact the GVRD's Demonstration Forest office at 432-6286.

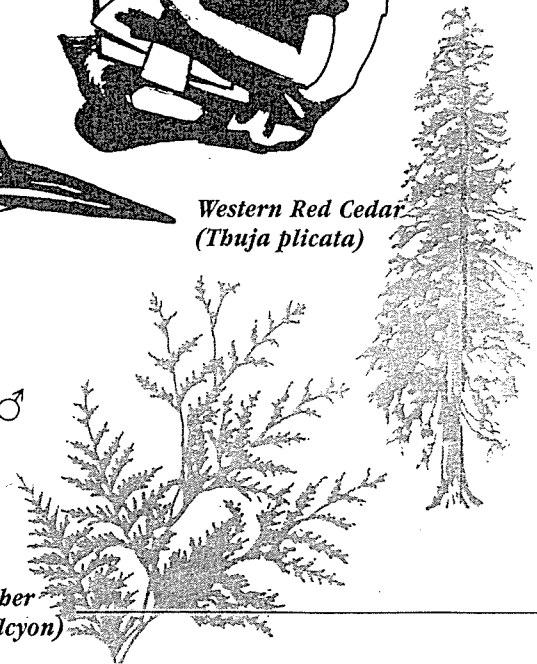
KEEP THE FOREST GREEN

Remember you are in a watershed area where vegetation is needed to control erosion and regulate stream flow. Please leave flowers, shrubs and trees undamaged.



Belted Kingfisher
(*Megaceryle alcyon*)

Western Red Cedar
(*Tbujia plicata*)



Considering Seymour Demonstration forest has only been open to the public for two years and the forest management demonstration section only really commenced in 1989, visitor use is very encouraging. The Forest lies between a Regional Park and Mt Seymour Provincial Park both of which are run along National Park lines which allows Vancouver residents to compare the two systems of management. Positive attractions for many visitors to Seymour Forest are the considerably better access as a result of past logging and the rich diversity of wildlife due to the greater variety of vegetation patterns resulting from past cutting. It is common to see deer, bears and a wide variety of birds whilst in the Seymour Forest.

The Seymour Demonstration Forest has resulted from the efforts of an Advisory Committee of 15 members representing forestry agencies, naturalists, government agencies and recreation groups. This Committee advises a seven person planning and Development Group set up within the Greater Vancouver Regional District. This consultative process has obviously been a time consuming process but has been very effective in obtaining support and ideas from a wide cross section of the community.

Strong financial support has been provided by Forestry Canada, Canadian Job Strategy, Council of Forest Industries and others interested in supporting the concept of a demonstration forest.

Encouraged by the use of Seymour Forest since its inception, the Greater Vancouver Regional District has prepared and recently released a Master Plan for Interpretation and Education in Seymour Forest. The G.V.R.D. were assisted by an eight person Forest Education Committee together with the original Seymour Forest Advisory Committee.

The intent of the Plan is to provide a framework for the development of interpretation sites and facilities and ensure that all are integrated and co-ordinated into a common storyline. It also provides a baseline against which to assess all interpretive/education opportunities to ensure a balanced message of integrated resource use and a variety of activities are provided.

For the purposes of the Plan, Interpretation and Education were differentiated on the audience and degree of formality of the visitor experience. Interpretation refers to presentation of information as a first hand experience and in a context with meaning for the participant. In interpretation, the transfer of factual information is secondary to revealing of meanings and relationships. Education is directed to a captive audience and need not take place in the presence of the real thing.

Objectives in preparing the plan were:

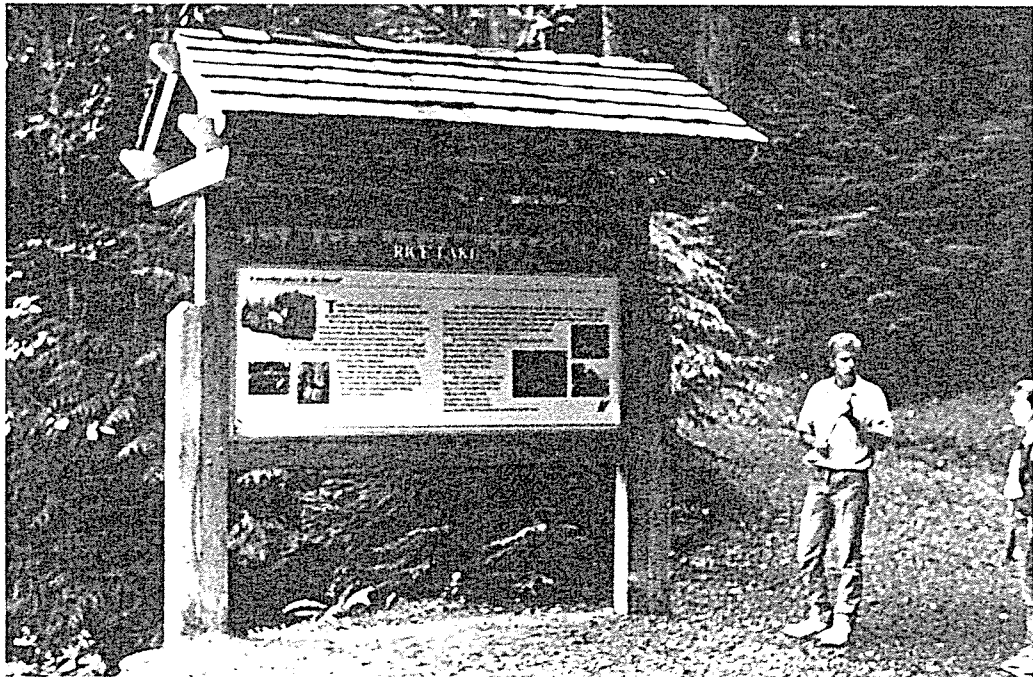
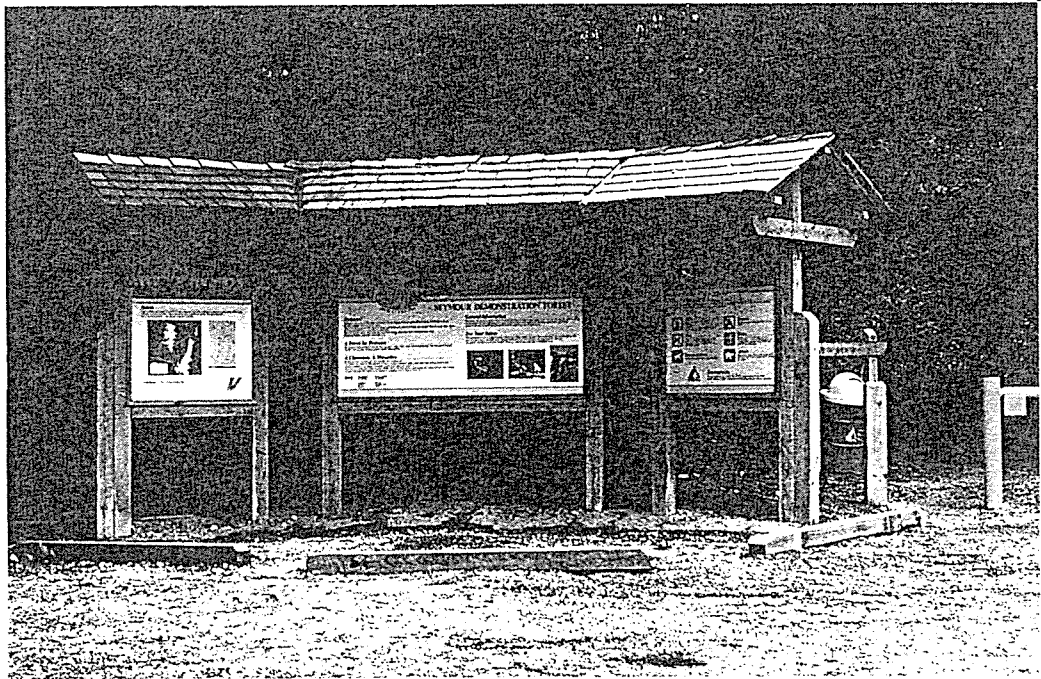
- a. identify interpretive and educational opportunities
- b. establish guidelines for developing interpretive and educational potential.
- c. identify the themes and messages to be communicated within the forest.
- d. identify effective methods of communicating these messages.

The Plan is an excellent document and sets out guidelines and recommendations for interpretation and education within the forest for the next 10 years. The overall theme is integrated resource management and within this umbrella, sub themes to be covered include the forest ecosystem, management of forests for timber, wildlife, salmonoids and water, historical use of the area and current recreational use by a variety of publics.

The forest management sub theme intends to include examples of ways in which timber harvesting can be integrated with proposed urban development. This is a real life situation at Seymour Forest where expanding urban development will soon adjoin the forest.

The Master plan identifies 20 options to achieve these interpretation and education objectives. Some involve the development of self guiding facilities at specific sites and others involve personal interpretation where educators and interpreters interact with visitors. Some options require the development of media materials. Twelve of the twenty options have been developed as concept plans for funding by outside agencies.

Depending on the interpretive options selected, capital investment could range from \$580,000 to \$950,000 with annual operating costs ranging from \$260,000 to \$315,000. The Plan recommends the necessity for two people to work full time on implementing the various recommendations. It is stressed that without staff to co-ordinate, plan and support the implementation, the project will suffer with regard to credibility and continuity, and the message of integrated resource management will be jeopardized.



Information Boards - Seymour Demonstration Forest.

One person would be a "People" co-ordinator responsible for:

- a. special events and on site programs
- b. schools and lay person tours and programs
- c. bookings for programs and visitor centre use
- d. program development, implementation and evaluation
- e. volunteer co-ordination
- f. funding personnel
- g. training, supervising seasonal staff

The second person would be a "Facilities and Materials" co-ordinator responsible for:

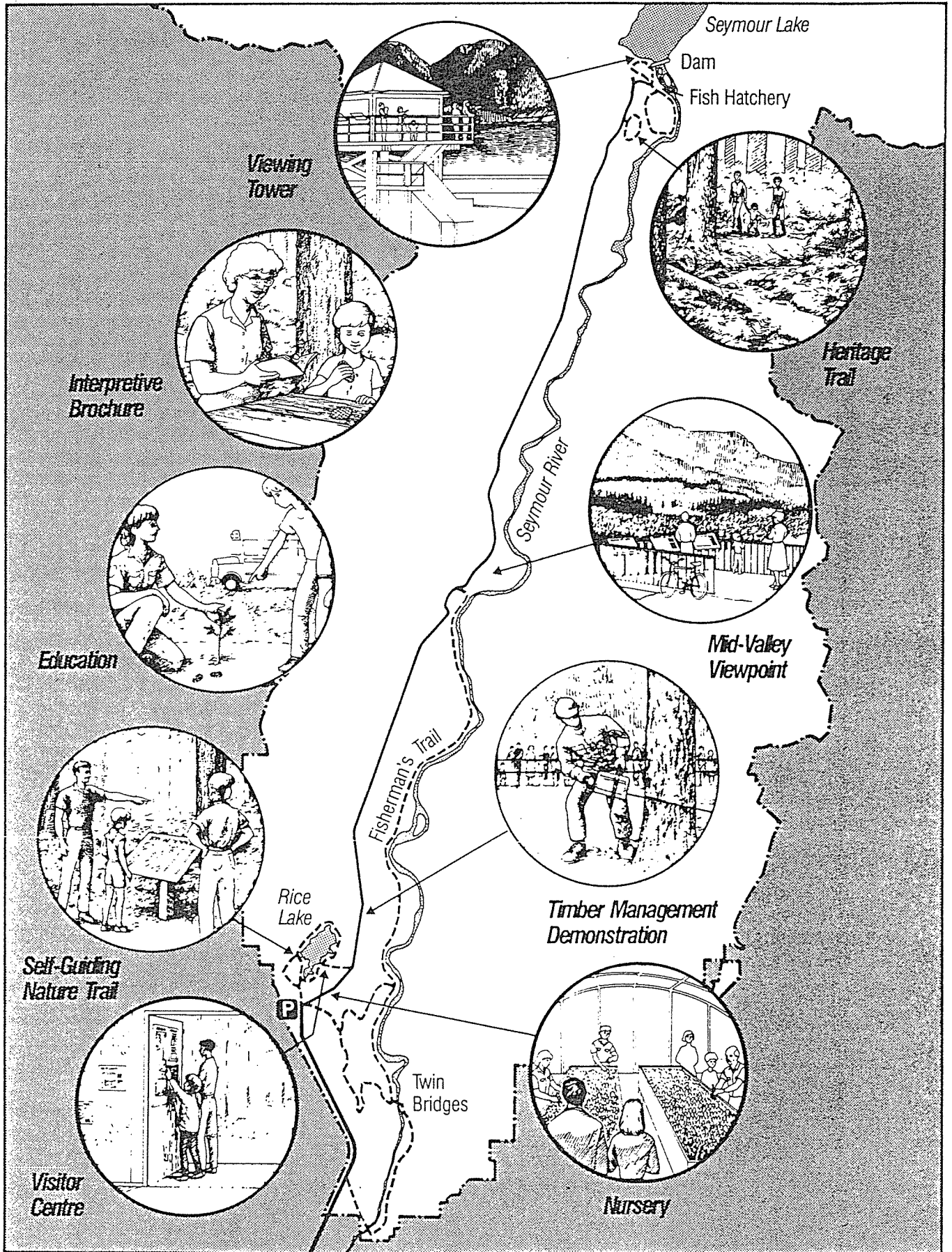
- a. copy/layout and co-ordination of signs/materials/trails/brochures/sponsored displays.
- b. construction projects and special attraction sites
- c. directing work crews and work experience groups

Both positions would need to be supported and supplemented by seasonal staff and/or contractors and volunteers.

The other critical factor recognised is the need to plan and manage access within the forest. Adequate access is necessary to ensure that education and interpretation objectives are met and also that resource management - including timber harvesting -, can continue so activities are taking place which can be interpreted.

Of all the Demonstration Forests I saw on the Study Tour designed to target a lay audience, the Seymour Demonstration Forest and its comprehensive Master Plan for future development was the best. What has been achieved so far and the level of planning and documentation of future proposals is a credit to those concerned. It will be extremely interesting to follow development of this project and learn from their experience.

RECOMMENDED SITES FOR INTERPRETATION/EDUCATION
IN THE SEYMOUR DEMONSTRATION FOREST



Forest Management

Good forest management creates a diversity of wildlife habitat, protects water and fish resources and provides a variety of recreation opportunities.

In the Seymour Demonstration Forest harvested areas are immediately reforested. Seedlings are weeded and tended and juvenile trees are thinned and pruned to maintain not only the vigour of the forest, but also the health of the watershed and wildlife habitat.

Forest management activities began in 1961, resulting in a mixed forest of young plantations and second and old growth stands, and development of over 40 kilometres of roads.

Seedling

Open fires are not permitted. Even small fires can quickly get out of hand, threatening humans, wildlife and adjacent watersheds.

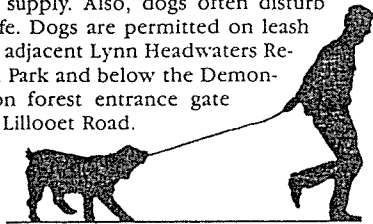
Please remember this area is an operating forest. During dry periods access to any part of the Demonstration Forest may be denied due to fire hazard.



FIRE HAZARD



DOGS Dogs are not permitted in the Demonstration Forest. They are potential carriers of bacteria which can infect forest animals and affect the domestic water supply. Also, dogs often disturb wildlife. Dogs are permitted on leash in the adjacent Lynn Headwaters Regional Park and below the Demonstration forest entrance gate along Lillooet Road.



Recreation

WALKING/HIKING There are over 40 kilometres of unpaved logging roads and trails to explore. Please use caution as many roads and trails are used by GVRD and forestry vehicles.

CYCLING On weekends cycling is permitted on the paved road to the Seymour Dam. Throughout the week cycling is permitted to the north junction of Rice Lake Creek Road (see map) Logging and construction activities during the week make road travel dangerous. Cycling is not permitted on trails. Please slow down when approaching hikers, horses and other road users.

FISHING Fishing is permitted in the main stem of the Seymour River downstream from the concrete bridge at the Mid Valley Activity Area (see map) A Provincial fishing licence

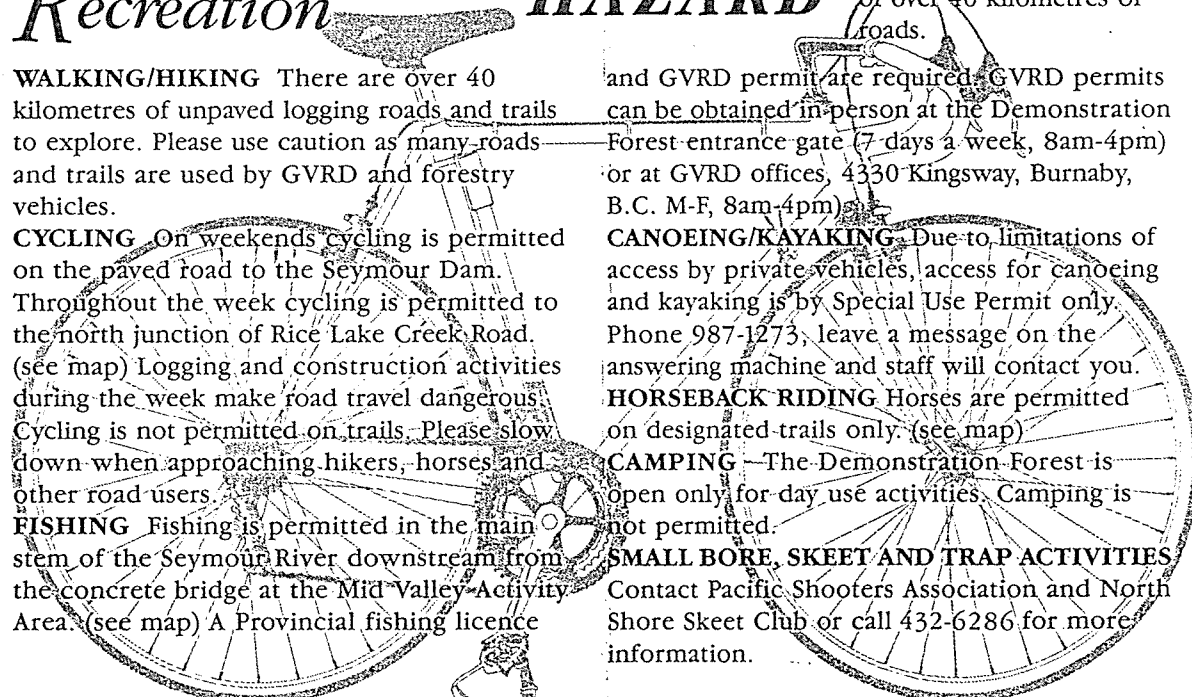
and GVRD permit are required. GVRD permits can be obtained in-person at the Demonstration Forest entrance gate (7 days a week, 8am-4pm) or at GVRD offices, 4330 Kingsway, Burnaby, B.C. M-F, 8am-4pm.

CANOEING/KAYAKING Due to limitations of access by private vehicles, access for canoeing and kayaking is by Special Use Permit only. Phone 987-1273, leave a message on the answering machine and staff will contact you.

HORSEBACK RIDING Horses are permitted on designated trails only (see map)

CAMPING The Demonstration Forest is open only for day use activities. Camping is not permitted.

SMALL BORE, SKEET AND TRAP ACTIVITIES Contact Pacific Shooters Association and North Shore Skeet Club or call 432-6286 for more information.



Sound forest management... meeting the needs of the future

History of a natural forest

A forest is a living organism. It is a dynamic, constantly changing system of plant and animal relationships.

Some changes are long and almost imperceptible; others are sudden and cataclysmic.

Here is a condensed typical history of an unmanaged forest:

1. **BEGINNINGS** — A major event removes most of the vegetation, such as a forest fire caused by lightning.
2. **PIONEER PLANTS** — The first plants to establish themselves after a wildfire are called 'pioneers'. Most of these are broadleaf species — either trees, such as Maple and Alder; or brush, such as salmonberry bushes.
These broadleaf plants require a lot of light, and therefore are unable to grow under the shade of older plants of the same species. They must spread out.
3. **SUCCESSION** — Plants that require protection from harsh conditions begin to grow as an 'understorey' in the shelter of the pioneer species. These are usually coniferous (needle-bearing) trees such as Hemlock, Cedar and (in the right conditions) Douglas Fir.
4. **CLIMAX** — the understorey trees begin to grow tall enough to shade out the pioneer species, which then die off for lack of light.

These new trees are called 'climax species'. New climax species trees form a new understorey, and grow to replace those that are dying of old age. When this stage is reached, it is called a 'climax forest'.

This whole history may be interrupted at any stage by a new cataclysmic event, such as a forest fire or landslide, and the process starts over at Stage One.

History of the managed forest

A managed forest is really a very special kind of farm, and useful trees are the crop. A delightful "bonus" provided by this kind of "farm" is a long period of recreational use while the "farmers" wait for the crop to mature.

Most pioneer species are not useful; they are the "weeds" of this farm. Management of a forest works to eliminate these species and maximize the growth of useful trees. Here is how it is done:

1. **CLEARING THE "FARM"** — Climax species are removed by harvesting, or pioneer species are removed by site rehabilitation.
2. **PLANTING** — Foresters choose the most suitable species for the site's climate, soil and water conditions.
Seedlings are planted fairly close together, to prevent the encroachment of unwanted species, and to provide shelter for each other.
3. **JUVENILE SPACING** — As the trees grow, they begin to compete with each other, and require 'juvenile spacing'. This can be compared to the home gardener thinning a row of carrots to get the best growth. At the same time, any undesirable species are removed from the stand.
4. **CULMINATION AND HARVEST** — The trees reach a stage where growth slows down, and new trees start to come in the understorey, just as in the climax stand of a natural forest. In the time between juvenile spacing and climax, the forest is ideal for recreational enjoyment.
At Culmination — perhaps 40 to 80 years old, depending on climate and conditions — the forest is ready for harvesting, and the cycle begins anew.

BLUE TOUR

Forests in ACTION

CHILLIWACK



Price
50¢



A self-guided tour of Vedder Mountain

3. Chilliwack Forest, self guiding car tour

As a result of the Forest Resource Development Agreement between British Columbia and the Canadian Federal Government, some \$300 million was provided to British Columbia between 1985 and 1990. The broad aim of the Agreement was to sustain and increase the forest resource and strengthen the employment potential of the forest industry.

Projects such as Demonstration Forests and self guiding tours qualified for funding support under the Agreement and as a result the Ministry of Forests prepared a number of self guiding car tours designed to illustrate various aspects of current forest management. These are termed "Forests in Action Tours".

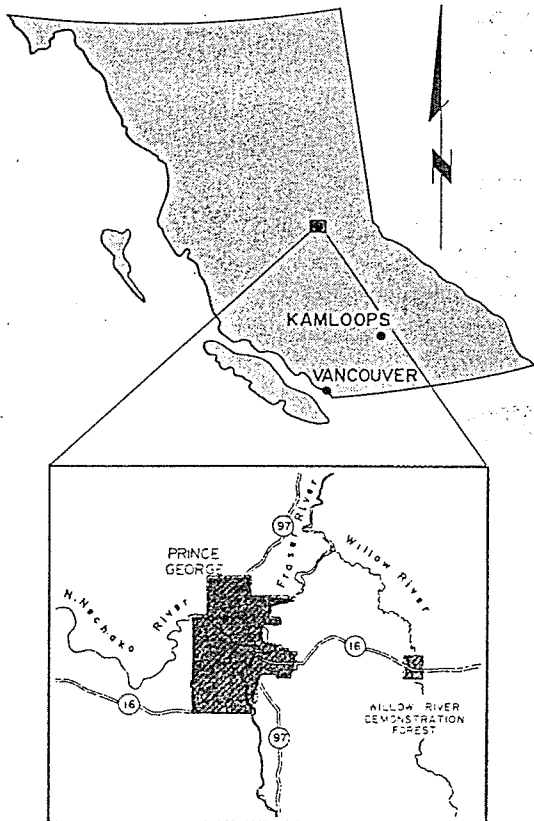
I travelled one of these in the Chilliwack Forest about 50 miles east of Vancouver. The brochure was printed on high quality paper and well illustrated. The tour was a loop of about 30 miles on forest roads easily traversed by a family car and consisted of 14 stop points to illustrate a forest management subject.

The route and stop points were well marked and it was easy to follow the text describing the forest management activity at each stop point. My only criticism was that pull offs at each stop point were often too narrow and would be dangerous if log hauling was taking place.

The full range of forest management activities were included on the tour including clear felling, regeneration, thinning and brush and scrub control and a visit to a large nursery. Anyone travelling the route would gain a good appreciation of current practice but alternatives were not discussed.

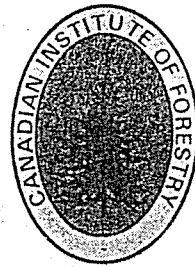
Originally a charge of 50 cents a copy was made for the brochure but they are now free. I was unable to find out how many people used the tours; I suspect not too many as although the guide was sound from a technical viewpoint it appeared development had been done in isolation from the intended audience.

During Forestry Week it is common to take Civic Leaders and others for a bus tour along these routes to show the activities taking place in the forest but otherwise the tours were not marketed to any extent.



Willow River Demonstration Forest

Prince George, B.C.



The Willow River Demonstration Forest is located 34 kilometers east of Prince George; approximately a 30 minute drive on Highway 16 East.

If you have any questions write to:
Willow River Demonstration Forest Society,
Box 1231, Stn. A,
Prince George, B.C. V2L 3L6

Help prevent highway accidents by driving safely, courteously and defensively.

PREVENT FOREST FIRES

B. MEYER & SONS
PRINTING LTD.

OBJECTIVES:

To serve the public as an outdoor classroom of ecological principles and forest management practices.

The concept of this demonstration forest was promoted by the Cariboo Section of the Canadian Institute of Forestry/Institut Forestier du Canada who provided continuity of planning and technical support.

This trail guide was made possible through a Green Gold Grant, sponsored by the Canadian Council of Forest Ministers.

Canada

Canadian Council
of Forest
Ministers



BC

4. Willow River Demonstration Forest, Prince George.

This Demonstration Forest is run by the local Chapter of the Canadian Institute of Forestry. The Institute, similar to the Australian Forest Development Institute aims to bring together private owners and others interested in management of woodlots and forests on private land. Based in Ottawa, the Institute has about 2500 members throughout Canada.

The Prince George Chapter has 75 members. The Demonstration Forest is in the formation stage and consisted of about 200 hectares of Crown forest held as a woodlot licence. Proceeds from thinnings plus a Federal Government grant had been used to develop trails and an information shelter.

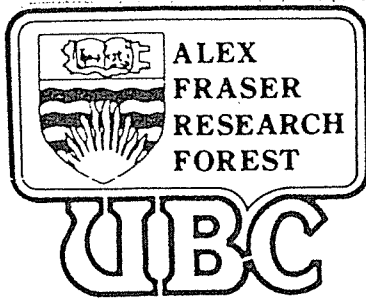
Different silvicultural techniques had been laid down and the forest was being used as a model to demonstrate recommended forest practices to woodlot licencees and private owners. These were explained at field days held in the forest and although the main audience was the small forest owner, school groups were encouraged to visit. Picnic tables and other facilities were provided to make a visit enjoyable.

Some of the forest management practices in the Prince George in the past have been less than professional and providing a licence area for a group such as the Institute to raise forest management skills in the community is commendable. The President of the local Chapter, Mr. Harvey Anderson, a retired forester, had put considerable effort into developing this Demonstration Forest and in motivating others to carry out much of the development on a voluntary basis.

5. Alex Fraser Research Forest, Williams Lake

This forest consists of 9000 hectares of inland forest types managed by the University of British Columbia for research and demonstration purposes. It complements the Research Forest at Maple Ridge and is visited by forestry students from U.B.C. as part of the forestry curriculum.

The forest consists of two Blocks. Knife Creek Block contains drybelt Douglas Fir sites used for range management and timber production. The Gavin Lake Block in moister site types is managed for timber, recreation, water, wildlife and fishing values. Numerous field days are held where trials and demonstrations of forest management practices are examined. Audiences are timber companies with responsibility for forest management on licence areas and private owners involved in range and timber management.



RESEARCH FOREST FACTS

Opened: April 30, 1987

Staff:

Located in Williams Lake year round

Objective:

Research, education and demonstration of integrated forest resource use for the interior of B.C.

Administered:

By the University of British Columbia Faculty of Forestry, in conjunction with the Malcolm Knapp Research Forest in Maple Ridge.

Facilities:

An office in Williams Lake and a field lab at Gavin Lake Camp for research and accommodation.

| Two Blocks: | <u>Gavin Lake</u> | <u>Knife Creek</u> |
|-------------------------|---|---|
| Size: | 6000 ha (15000 ac) | 3000 ha (7400 ac) |
| Forest Cover: | Moist pine, Douglas-fir, and spruce sites | Drybelt Douglas-fir sites |
| Resource Values: | Timber, recreation, range, fish, wildlife, water | Wildlife, range, timber, recreation, water |

Why two blocks?

The research forest is divided into two blocks so that a variety of environmental conditions are included. The dry climate of the Knife Creek Block presents different problems and opportunities from the moister and cooler conditions of the Gavin Lake Block, and thus the research forest can better reflect the conditions elsewhere.

What research is being done?

Any and all aspects of forestry in interior B.C. can be examined at the research forest, including: the effects of forestry operations on wildlife habitat, domestic range, and recreation; the impact of intensive forestry on tree growth; forest insects and diseases; forest fire science; and many other subjects.

The forests are open to the public for recreational uses such as hunting, fishing, hiking and skiing and firewood gathering. The local community are well aware these are research and demonstration forests and generally treat the forest with respect.

6. Cowichan Valley Demonstration Forest, Vancouver Island

In the nearby town of Duncan an excellent historical timber museum exists. This consists of a large information centre containing excellent old photographs and artifacts of early logging days on the Island. A restored steam logging locomotive operates on a one kilometre loop around the centre and stops at recreated stations similar to those existing in the early days. The centre is well located on the main highway and is popular with visitors.

The concept of the Demonstration Forest was to have an outdoor classroom of current forest management activities to complement the historical material available at the Duncan Forest Museum. The idea was conceived by the Canadian Institute of Forestry and involves forests managed by four landowners including the Ministry of Forests.

The demonstration is based on forests adjoining the Cowichan Valley Highway and surrounding Cowichan Valley Lake. It consists of two distinct sections.

In the first, forests adjoining 20 kilometres of the Cowichan Valley Highway were classified into six different management classes:

- regeneration
- juvenile immature
- early immature
- mature
- deciduous types

The classes are indicated and described on a strip map and frequently signposted by a numbered sign so it is easy for motorists to recognise the different forest management classes. At several stop points along the route, information boards describe in more detail, significant features of the management class at that point. At one of the stop points a forest ecology trail has been developed. This has 19 points of interest along the trail which takes about 45 minutes to walk. This trail is commonly visited by school groups on biology excursions.

The second section is a 100 kilometre drive around Cowichan Lake. Twenty sites of interest are identified on a strip map and include recreational facilities, boat launching areas and recent forest management activities such as thinning, regeneration, harvesting etc. The intention was to erect additional information signs as new activities commence rather than vary management practices to match the script.

The concept is excellent but the level of commitment to make it function seemed to be missing. Both the Ministry of Forests and Private Companies had given good initial support to the project but now seemed to be reluctant to give a priority to funding and staffing needs. Much was being left to local foresters to work on the project in their own time on weekends. Last year there were 15 formal requests for guided tours and it was estimated 1000 people had driven the shorter route.

I felt some of the material in the brochures and information boards was too technical for a lay audience. Whilst well intentioned, the material had largely been written by foresters who assumed that visitors would already have a reasonable understanding of forest management terminology. Material designed for general public interest needs to be imaginative to capture peoples attention and encourage the seeking of more information.

A problem had recently arisen with a private forest owner with land adjoining the Highway who was not a party to the Demonstration Forest concept. The land had recently been clear felled with no intention of regenerating it. The resultant mess of debris was an eyesore which conflicted with previous messages on always regenerating a forest after harvest. Visitors would be unaware the land was not in the Demonstration Forest.

7. Mesachie Lake Experimental Station

This is one of the stops in the Cowichan Valley Demonstration Forest. The Experimental Station is involved with provenance testing and genetic improvement of most of the commercial timber species in the coastal forests of British Columbia.

The Station has a wealth of demonstration plots and trials to illustrate the increases in growth and performance that can be attained by tree breeding. The Station is well laid out and set in a very attractive setting adjoining Lake Cowichan. School groups visit the Station and a few people travelling the Demonstration Forest route call in. An area of old growth forest and some magnificent 80 year old Douglas Fir regrowth adjoin the Station and there are plans to establish trails through these for use by visitors.

The visit to this Station was a reminder of the wealth of research trials and other information available in numerous forest research centres in Australia as well as overseas. With imaginative marketing there is enormous potential to attract visitors to these facilities and in the process increase their level of understanding of forest management.

8. U.B.C. Experimental Farm and Woodlot, Oyster River

This is a 700 hectare experimental farm run as a joint venture between the Agricultural and Forestry Faculties of the University of British Columbia. The policy of land management for the farm is one of best use for every hectare. Poor quality forest has been cleared for agricultural use, mainly dairying but some 460 hectares of high site quality forest has been retained and is managed on a very intensive basis. This is the reverse to what often happens in Australia where the better quality land on farms is often cleared for agriculture with only the poorer steep land retained for forest cover.

The farm is used as a demonstration model for private landholders with similar agriculture - forest mixtures on their properties. The concept has been valuable in informing and educating landholders about forest management and encouraging them to retain and manage forest on their own lands in lieu of automatically clearing for agricultural uses.

I was impressed at the intensity of forest management being practiced. Silvicultural practices were varied to take into account small rises in elevation, different soil types and species composition to ensure maximum forest productivity. A poplar provenance trial established on cleared land was used to demonstrate the potential to produce 60cm diameter trees on a 20 year rotation, yielding 500 cubic metres per hectare of quality pulp.

As with most agricultural research stations there were frequent field days and workshops being held. Unlike any agricultural research station in Australia I am aware of this station has an active forest management component as well. As well as influencing landholders to manage forests on their own land the process has also lifted the level of understanding of forest management on Crown Land. Agricultural scientists have been at the forefront of imparting knowledge to Australian farmers via field days etc. on research stations. Their use as a venue to also demonstrate forest management should be seriously examined in Australia.

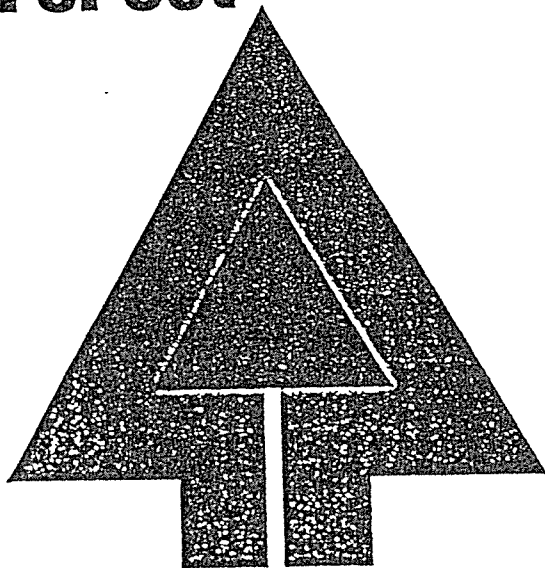
9. Campbell River Demonstration Forest

Campbell River is a coastal town of about 12,000 people located on the eastern shore of Vancouver Island.

In the Snowden Forest, about 25 kilometres northwest of Campbell River or 40 minutes travelling time by car or bus, three trails were designed and constructed a few years ago as a joint exercise between the B.C. Ministry of Education and the B.C. Ministry of Forests.

They are extensively used by all schools in the Campbell River District on field excursions to illustrate environmental and biological theory taught in the classroom. The reason why the trails are so well used by schools is that they were designed and the material written as a joint exercise between the two Ministries. A forester and a teacher worked together for 6 months to share ideas and agree on the material and the way it would be presented.

Cowichan Valley Demonstration Forest



Objective:

To manage the forest along the Cowichan Valley Highway in such a way as to maintain the aesthetic values, and to provide a demonstration forest that is an outdoor classroom of forest management practices to complement the historical education provided by the British Columbia Forest Museum at Duncan, B.C.

The demonstration forest concept was promoted by the Vancouver Island Section of the Canadian Institute of Forestry who provide continuity of planning and technical support.

Management Guidelines

To achieve the stated objective for the demonstration forest, the major forest land managers and owners along the highway (the B.C. Forest Service, Pacific Logging Company Limited and Rayonier Canada) have stated clearly the following resource management guidelines considered essential:

1. Carry out stand improvement practices consistent with good forest management.
2. Maintain or improve scenic viewpoints.
3. Leave uncut individual or clumps of maple, dogwood, arbutus, etc. and natural stand fringes.
4. Preserve some stands of older trees allowing them to grow to maturity.
5. Carry out aesthetic planting of various species at focal points.
6. Create a diversity of species and range of age classes for the future.
7. Apply shelterwood or other silvicultural systems of management where appropriate.
8. Encourage the cooperation of property owners along the roadside.
9. Encourage community involvement in the project.
10. Formulate a simple working plan of the activities planned on a five year basis.

There are three trails, the Old Forest trail, the Ecosystem Trail and a Silviculture trail. The goals of each trail are:

Old Forest trail: To describe the anatomy of a forest by examining the components of a mature, relatively undisturbed forest.

Ecosystem trail: To describe through a forester's eyes, dynamic processes occurring within a 50 year old second growth Douglas Fir Forest.

Silviculture trail: To examine current silvicultural practices in the context of a "growing cycle" and their effects on forest dynamics.

The trails are designed and constructed to make it easy for young children to walk along them. The Old Forest Trail is about half a kilometre in length which is adequate for young children.

Each trail is supported by a comprehensive Manual or Teachers Guide setting out recommended pre visit activities in the classroom including a set of slides to give the teacher a clear idea of what to expect when arriving at the forest.

The Guide also sets out what can be observed at each stop along the trail; questions children could be asked to stimulate their imagination and interest and a wide range of activities the teacher can choose from. The thrust of the package is to get children participating so that it becomes an enjoyable and knowledge gaining experience with the teacher acting as a bridge to help pupils understand what they are viewing. Show and tell techniques are kept to a minimum and are used only after pupils have provided answers of their own.

The approach used at Campbell River could easily be applied in Australia where size of the local population could never justify a Seymour type Demonstration Forest. Consultation with the intended audience via the teaching profession was a sound move as was the lack of any attempt to preach to the audience. The emphasis on children discovering the principles involved by personal observation and enquiry is commended.

10 Pack Forest, Washington

Pack Forest, south of Seattle is owned and managed by the University of Washington. It originated as a gift to the University in 1926 from Charles Pack a noted lumberman and conservationist of his time. It consists of 4200 acres of excellent forests, principally Douglas Fir. About 75% is regrowth about 60 years old, the balance being old growth stands of Douglas Fir, western red cedar and western hemlock.

The forest is run as a working forest on a sustained yield basis with about 150 acres being cut each year. This yields about 1.5 million board feet of logs which is used to finance running of the Research Forest. Charles Pack had the vision of the forest being managed as a showcase of scientific forestry practices. It is located on the main highway leading to Mt Rainier and Pack saw this as an ideal location to attract public visitors.

Teachers' Guide

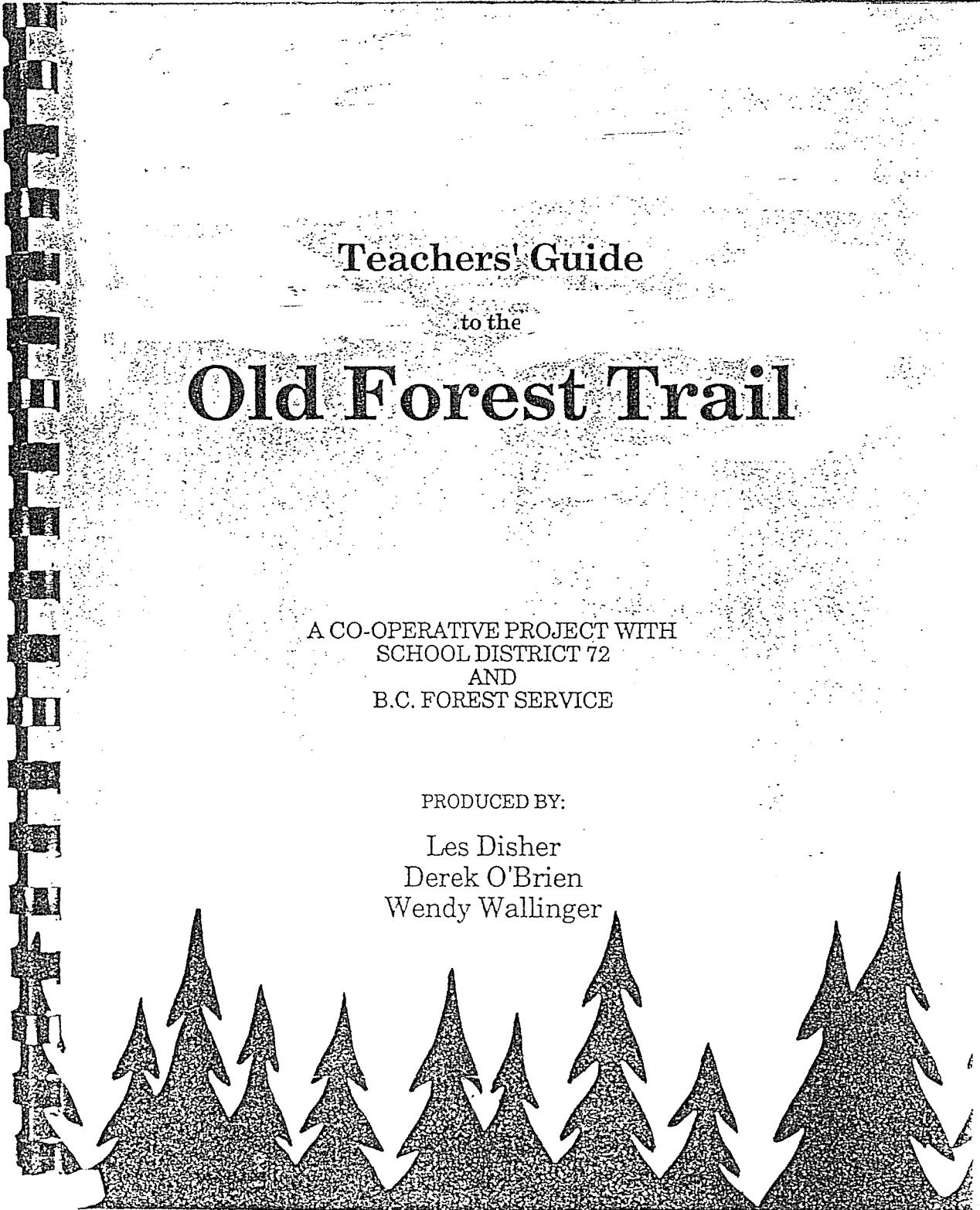
to the

Old Forest Trail

A CO-OPERATIVE PROJECT WITH
SCHOOL DISTRICT 72
AND
B.C. FOREST SERVICE

PRODUCED BY:

Les Disher
Derek O'Brien
Wendy Wallinger



The aim of the University is to use Pack Forest as a research and demonstration area for students at the Forestry Faculty at Seattle but also to provide demonstrations to the public on contemporary forest management. Live in facilities are used by forestry students and also by people attending conventions and seminars. The live in facilities handle up to 200 people. About 100 groups a year involving over 3000 people from a wide cross section of the community stay at Pack Forest. Groups range from woodlot owners to Congressional Associations and all incorporate a visit to the Forest as part of their stay. The nett result is that a large group of people leave these courses with a better understanding of forest management.

There is a wealth of experimental and demonstration work available at Pack Forest which would be of considerable interest to the public if marketed correctly. Apart from marketing the municipal sludge program the public were not actively encouraged to visit the Forest. University staff agree more could be done but consider they would be overwhelmed with visitor numbers. Their preference is for conducted tours by selected groups such as politicians, civic leaders and other groups with influence in the community.

I can understand Washington University not viewing public information on forest management as their primary role. At the same time the United States Government contributes most of the \$5.5 million a year to the running of nearby Mt Rainier National Park which has a high level of commitment to informing the public about processes operating in the Park. It seems anomalous that a similar degree of funding for public information is not being applied to government controlled forest lands where there is intense debate about land use.

Pack Forest has been researching the effects of applying municipal sludge to forest areas for 14 years. The problem of how to dispose of municipal sewerage wastes from large cities is an increasing one in the United States. Traditional methods of handling have been incineration, dumping at sea or burying in landfill sites. Sludge is rich in nutrients and the feasibility of recycling these in intensively managed forest stands has a lot of appeal. A city such as Seattle of two million people would require a forest area of about 5000 acres to provide a 1000 acres every year to be treated on a five year cycle.

Although research has established the safety and feasibility of sludge application to forests little occurs on an operational basis because of ill informed environmentalist objections. The Weyerhaeuser Company has been applying it to company owned forests since 1987 with good results. Pack Forest recognise it has a key role in reversing objections to its use and conducts tours and workshops for legislators and other community leaders to show the results and answer questions.

Barbara Jensen, a group leader for these tours uses her interpretation and visitor skills gained whilst working in the National Parks Service to good effect. Her approach with heckling environmentalists in a group is to ignore initially and let other members of the group rebut extreme points of view. If this does not work, she firmly challenges any statements not based on fact.



University of Washington
College of Forest Resources

**Charles
Lathrop
Pack
Forest**

11. U.S. Forest Service, Mt St Helens Visitor Centre

The U.S. Forest Service have capitalised on the eruption of Mt. St Helens in 1980 as a drawcard for visitors and have provided a well designed visitor centre, several information stations and self guiding trails for the benefit of visitors. The Visitor Centre is well staffed and officers were keen to assist with information and handout literature. Mt St Helens is designated as a National Monument and this ensures it is well known and visited by large numbers of people.

The main visitor centre which cost about \$3 million to construct was completed in 1987. It is extremely well done and is the largest and most elaborate U.S. Forest Service Visitor Centre in the United States rivalling any similar facilities provided at National Parks. About 500,000 people visit this centre each year and new road constructions planned over the next few years are expected to increase visitors to the general Mt St Helens area to about 2 million a year.

The main message visitors would retain after their visit is the awesome destructive power of a volcano and that forests and other vegetation regenerate even after a massive disturbance such as a volcanic eruption. The Forest Service are doing an excellent job in rehabilitating some of the areas devastated by the eruption and in the process illustrating that forest areas can be improved by mans intervention in these situations. As at Yellowstone National Park where regeneration is appearing after the massive recent fires, the American public should now have a better understanding of the life cycle of forests. Despite this, many people simply regard both as evidence of the forces of nature and still consider clear felling for timber production as permanent destruction. There is a marvellous opportunity at Mt St Helens to introduce people to the concept of management of forests for timber production but it does not seem to have been seriously considered so far.

12. Lee Forest, Seattle

Although not able to visit Lee Forest, a small Demonstration Forest close to Seattle and run by the University of Washington, I contacted Research Professor Allan Wagar who is creating miniaturized demonstrations working circles in Lee Forest.

His research project aims to find out how small a working circle can be to illustrate the dynamics of forest management to a lay audience. He has working circles of 2, 4 and 20 acres in size in his experiment each with compartments of 2.5, 0.5, and 0.25 acres respectively. To accelerate progression towards a sequence of age classes he is planting some recently felled compartments with eight feet high trees.

The project is only a few years old, and it is too early to start measuring visitor perceptions but it is an interesting experiment and one which anyone establishing Demonstration Forests in the future should keep in touch with.

13. Oregon State University, Corvallis, McDonald Forest

This 7000 acre forest near Corvallis is, similar to Pack Forest run as a working forest under sustained yield management with proceeds of log sales financing the research facility. Considerable concessions are made to accommodate other values such as retaining snag trees in clearfelled areas and blowing the tops off with explosives to hasten decay and insect attack to provide a greater food source for birds.

There is a wealth of silvicultural and other forest research experiments operating in the forest. About 2500 people a year visit these in organised groups such as legislators, environmentalists, woodlot owners and adjoining landholders. Approximately 1000 school children visit the forest as part of their school program each year. The forest is available for most forms of recreation and usage is about 35000 visitor days per year. Mountain bike riding on trails is popular as is horse riding which is restricted to roads.

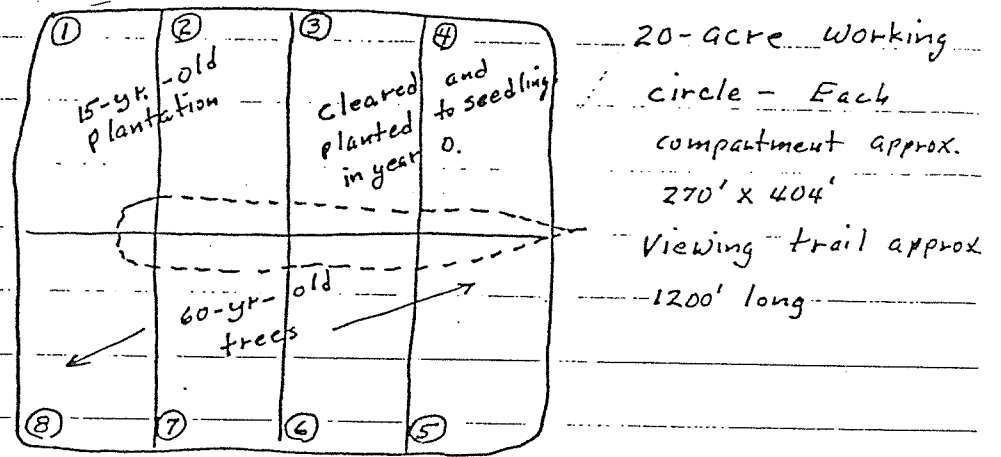
Urban development is spreading out to the edge of the forest and some very expensive homes have been built almost on the forest boundary. This has led to extensive criticism of timber production activities by these new neighbours who see the forest as an extension of their own land. The full political and legal systems have often been enlisted by these land owners to force the university to cease timber harvesting.

The forest manager, Jeff Garver has spent considerable time negotiating and discussing the urban/forest interface issue with representatives of a Land Owner Association and has developed prescriptions for timber harvesting that both parties can live with. Basically these are a 200 feet wide buffer in which shelterwood systems are used to minimise the impact of harvesting by operating on areas as small as one acre at a time. This is in contrast to several private timber companies who rather than endure the restrictions and problems of dealing with adjoining landowners usually sell the forest land for real estate. This is the bargaining tool used by Garver when dealing with difficult adjoining landholders, ie if you wont compromise the University will sell the land for housing.

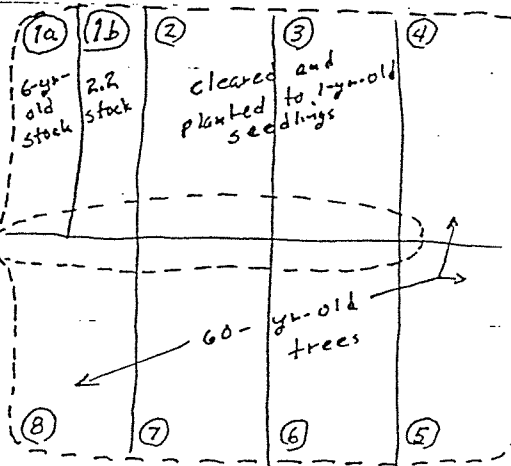
Garver is a great believer in personal contact to resolve issues and negotiate solutions acceptable to both parties. He has lost faith in the ability of larger organisations to solve environmental issues in a sensible manner. Even though he disagrees with much of their philosophy he commands respect from environmental groups such as the Sierra Club and has had considerable voluntary work carried out by them on trail design and maintenance.

A few years ago there was much opposition within the University to timber harvesting programs continuing within the Research Forest. Jeff Garver has achieved a considerable change in attitude of environmentalists and academics within the University by refusing to accept illogically based reasons why timber production should not continue and a commitment to explain the principles involved to those objecting. It is an excellent example of what one person can do to improve understanding of forest management issues by the process of information sharing and negotiation.

FIGURE 1. -- Arrangement of compartments and ages of trees by age class in year zero for (A) 20-acre working circle and (B) 2- and 4-acre working circles (not to scale). Compartment numbers are circled.



2- and 4-acre working circles - For 2-acre circle, each compartment is approx. 85' x 128'. For 4-acre circles, each compartment is approx. 120' x 180'. Perimeter trail for 2-acre circle approx. 1200' long. Interior trail for 2-acre circle also approx. 1200' long



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ALTERNATIVE

for Treatment and Utilization
of Municipal
and Industrial Wastes

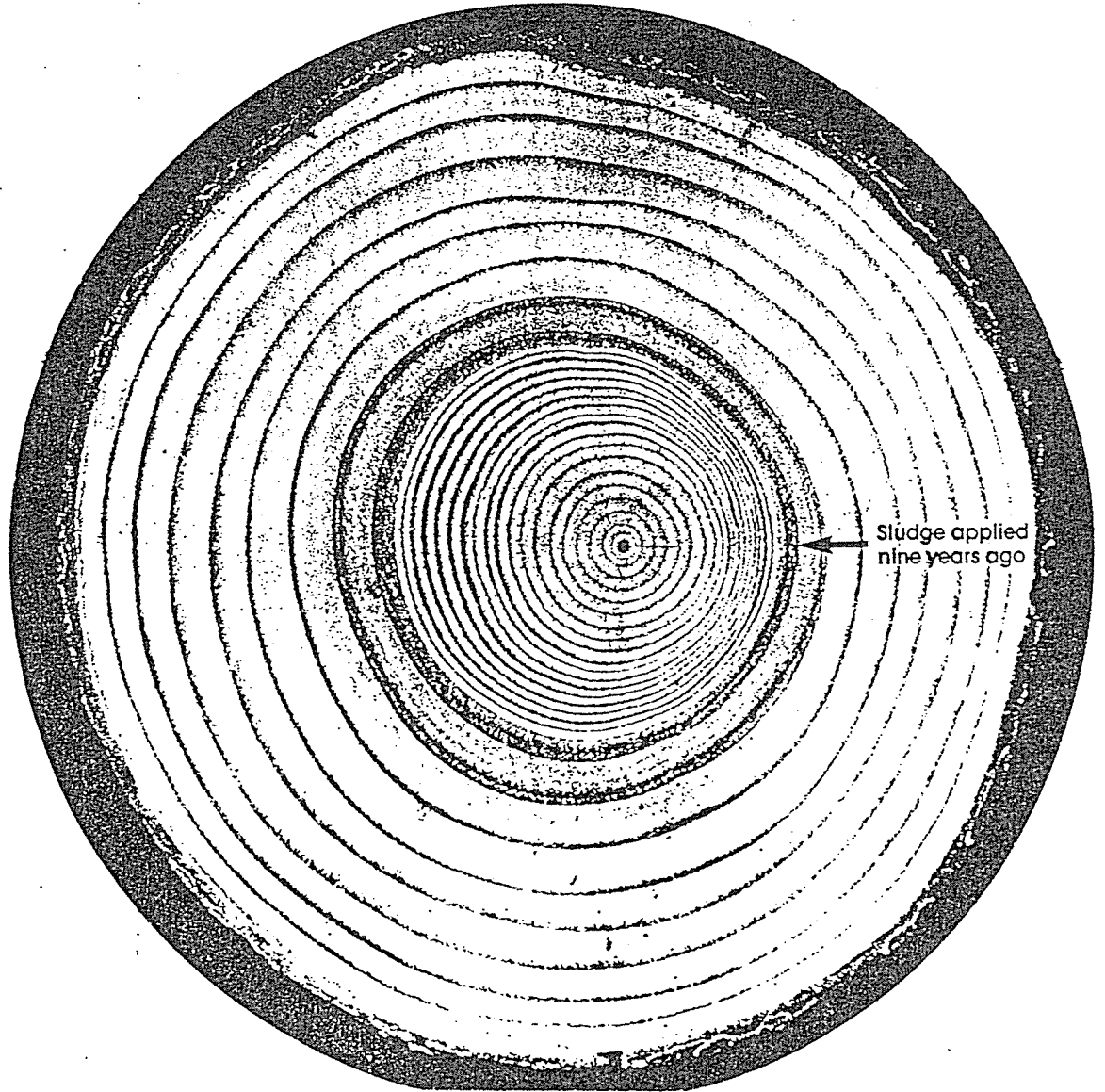
*Edited by DALE W. COLE,
CHARLES L. HENRY,
and WADE L. NUTTER*

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Proceedings of the
Forest Land Applications Symposium
June 25-28, 1985

College of Forest Resources
University of Washington
Seattle, Washington



Sludge applied
nine years ago

How is sludge processed at the treatment plant?

All of Metro's sludge is digested to kill disease-causing viruses called pathogens. The sludge is placed in three heated tanks, called digesters, for about 20 days. Metro then uses a machine called a centrifuge to remove water from the sludge so it is easier to transport to recycling sites.

Where is the sludge recycled?

Metro uses its sludge in three different ways: forestry, soil improvement and composting. Silvigrow is the name of the sludge fertilizer Metro applies to trees in the forest. Trees fertilized with Silvigrow grow twice as big as trees that aren't fertilized. Metro has also used sludge to grow grass at Gas Works and Myrtle Edwards parks in Seattle. Metro sludge is composted with sawdust to make another fertilizer called GroCo. GroCo is used to grow grass, flowers and trees for yards, parks and office buildings.

What is sludge?

Sludge is a combination of water, sand and other materials left over from Metro's wastewater treatment process. Treated sludge contains many nutrients such as nitrogen that can be used as a fertilizer.



Why is this information printed on a tree ring?

Each year a tree grows, it gets taller and wider. You can tell how old a tree is by looking at a piece cut from the tree and counting the number of growth rings. This tree ring shows how fast trees grow when sludge is applied. See how far apart the rings are after that point? That means the trees are growing faster. Research by the University of Washington has shown that trees grow twice as fast when they are fed sludge. A tree that would normally be cut down after 60 years could be cut down after 30 years. That means a tree could be used to build houses and furniture or make paper 30 years sooner!

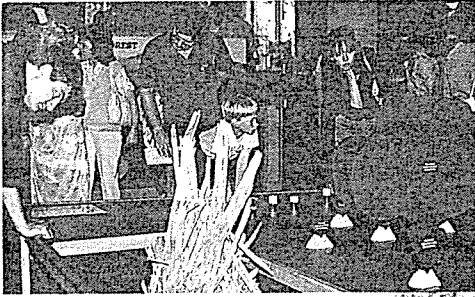
Mount St. Helens

National Volcanic Monument

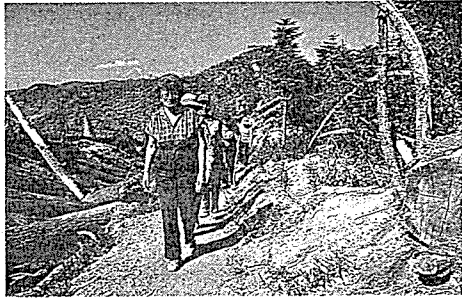
It Beckons Exploration. . .



Gifford Pinchot
National Forest
USDA • Forest Service

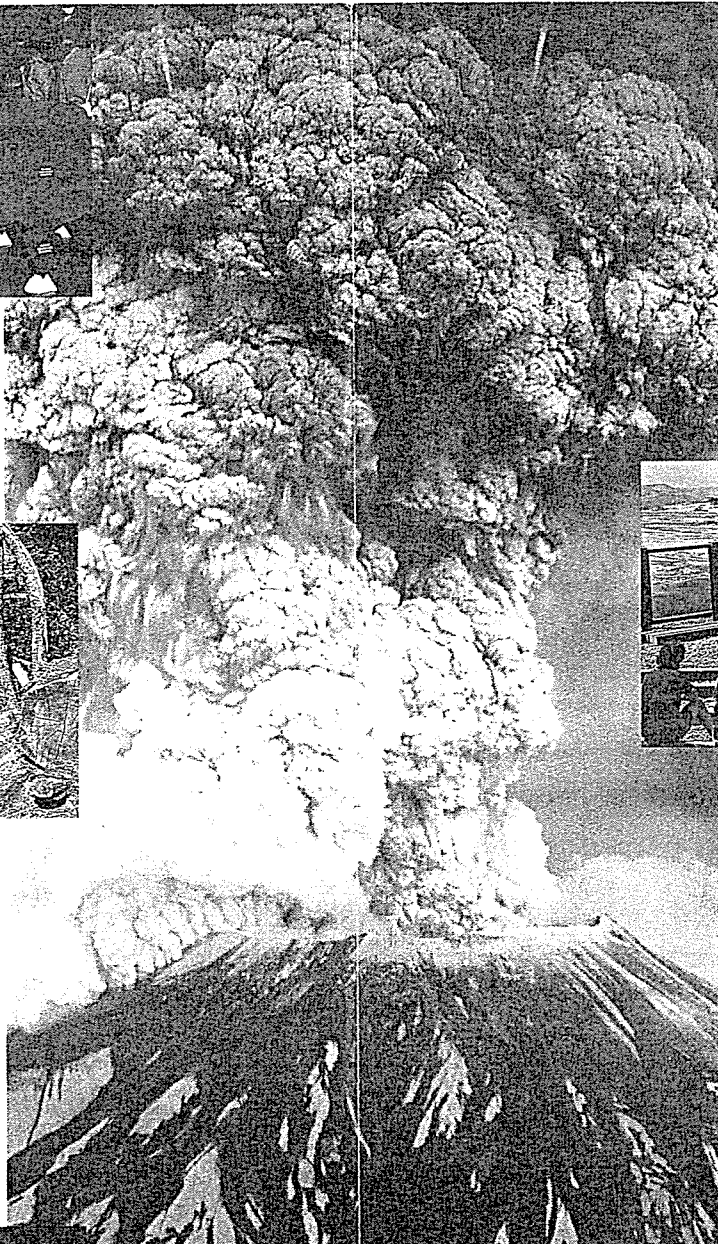
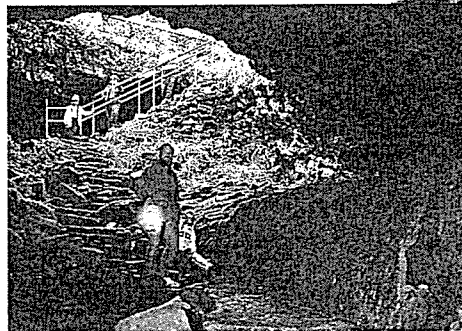


Open new windows of discovery at the Mount St. Helens Visitor Center. Summer hours: 9:00 a.m. to 6:00 p.m. Winter hours: 9:00 a.m. to 5:00 p.m.



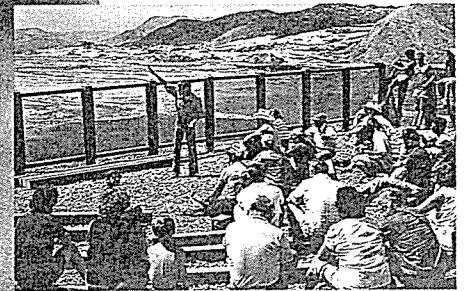
More than 70 miles of trails have been constructed to help you discover this volcanic landscape.

Venture into the cool depths of Ape Cave, a 12,810-foot lava tube. Lantern rentals are available from late spring to early fall.



Powerful volcanic eruptions of Mount St. Helens on May 18, 1980 caused dramatic changes in the landscape surrounding the volcano. Plan today to come and experience this new formed land.

*Photo Austin Post
U.S. Geological Survey*

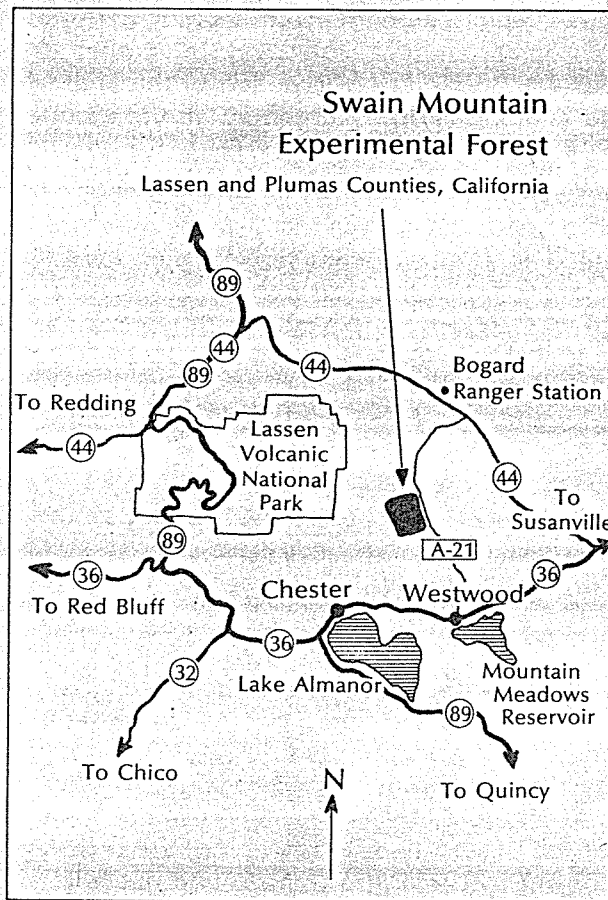


Forest Interpreters reveal the mysteries of Mount St. Helens. Daily activities from mid-June to Labor Day.

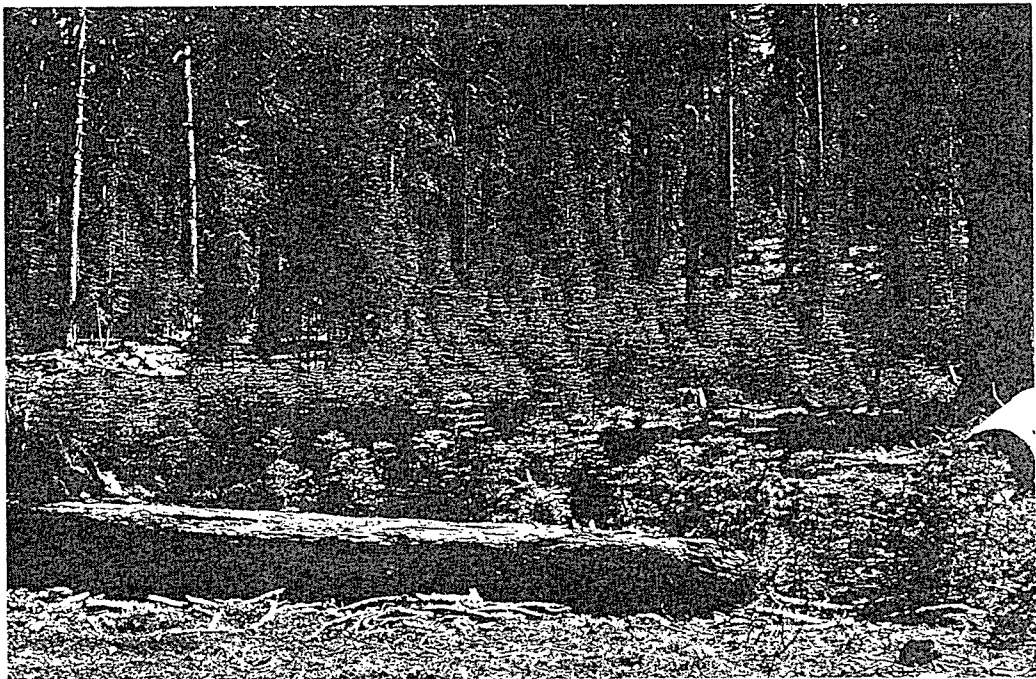
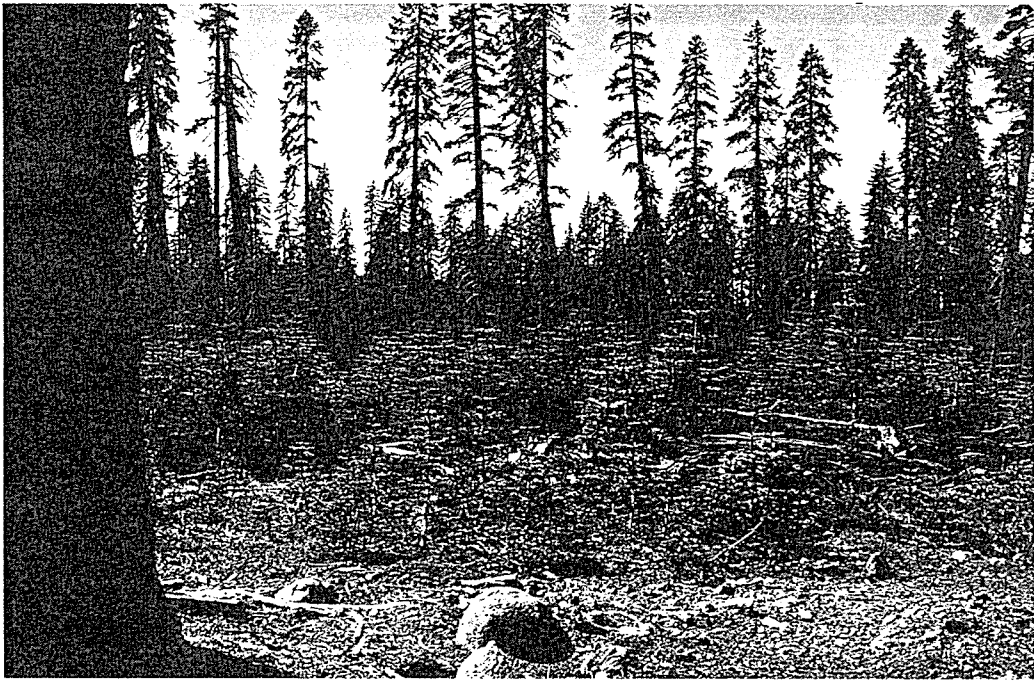
Come explore the wonder of winter at Mount St. Helens where a frozen, sparkling landscape awaits you.



Shelterwood and Meadow Trails, Swain Mountain Experimental Forest



Pacific Southwest Forest and
Range Experiment Station
Forest Service, U.S.D.A.



Shelterwood regeneration of Fir, Swain Mountain.

The forest has over 8 miles of trails for visitors. These consist of six different trails. Old Growth Trail, New Growth Trail, Forest Discovery Trail, Story of the Trees Nature Trail, Section 36 Loop Trail and Powder House Trail.

The Section 36 Loop Trail, a 2.6 mile self guiding trail was laid down in 1962 to demonstrate forest management practices. Sixteen stop points on the trail cover descriptions of forest inventory, skid trails, survey information, game refuge, pine provenance studies, bird habitat trees, clearcutting, understory control, roading, fungal damage to trees, old growth reserves, watershed management, seed trees and logging sports.

The trail and practices were sound but the text was rather technical and would be difficult to follow for most people outside the forestry profession. The trail and brochure is currently being revamped by a new staff member, Mary Rellergert who holds degrees in Interpretation and Forestry from Idaho University. The plan is to present the idea of walking along the trails as a pleasant and enjoyable experience and limit messages to no more than six.

Mary Rellergert recently prepared an excellent recreation map and guide for McDonald Forest. Her skills and knowledge in interpretation and education shine through in this easy to read and interesting brochure in which people are invited and welcomed to the forest. A brief listing of attractions and activities available is given together with a few basic rules on safety. Lastly, people are asked to make sure they enjoy their visit, whatever activity they choose.

14. Swain Mountain Experimental Forest, California

In the Swain Mountains east of Redding in California, at an altitude of about 7000 feet, the U.S. Forest Service have an experimental forest in the Fir forests. Principal species are Californian red fir and white fir, both members of the Abies genus. These are magnificent trees and probably the most attractive of all conifers.

The stands are about 250 to 300 years and to clearfell them would provoke considerable protests. The Forest Service have been carrying out shelterwood cutting trials over about 2000 acres as a demonstration of how these stands could be managed for timber production. The results have been excellent. Due to the high elevations and slow growth rate of fir, seedlings take about 5 years to appear but stocking numbers are more than adequate.

The number of trees retained in the overstorey range from 10 to 30 trees per acre. It is the intention to gradually remove the overstorey trees by directional felling at right angles to the main road access. It was expected windthrow would be a problem but this has not occurred even in the lowest overstorey stockings.

Two trails traverse the area. A trail through the shelterwood trails and adjoining old growth forest is just under a mile in length and takes about an hour to walk.

The second traverses an upland meadow system and examines the flora and wildlife to be found in these water gaining sites which are devoid of trees except on the margins.

The brochure and trails are little used because they are not publicised. The text in the brochure is technically sound but would need to be made more interesting to attract the general public. It was interesting that so far there has been no adverse reaction to shelterwood cutting and it remains to be seen whether this will change when the overstorey is removed.

15. Pacific Lumber Company Demonstration Forest, Scotia, California

Most of the Coastal Redwood forests in California are privately owned by large lumber companies. These Companies belong to an umbrella group, the Redwood Region Conservation Council which provides information to the public on the forest product industries. Through the encouragement of the Council, individual Companies have developed six Demonstration Forests adjoining the main Highway north and south of the town of Eureka.

One of these, run by the Pacific Lumber Company, one of the largest Redwood timber producers, consists of a self guiding trail about one kilometre in length passing through regrowth redwood stands selectively thinned in the 1940's. The trail consists of 18 stop points where various species are identified and forest management practices connected with timber production are described. About 4300 people visited in 1989.

Although there is a good story to be told about how redwoods regenerate successfully, I found the text and brochure rather unimaginative. It needs to be rewritten in a more interesting style attuned to the present day and age.

Adjoining the Highway are small stands of old growth Redwoods purchased by private benefactors from the lumber companies to save them from being cut. The magnificence of these giant trees is marred by the crassness of some of the souvenir shops and advertising signs. It is easy to be wise after the event but it would have enhanced the image of the companies and won them considerable public goodwill had they retained and managed some of these old growth reserves themselves. I believe they would have been seen as enlightened by today's generation and the timber values forgone a small price to pay.

The image of these private companies as perceived by several people I spoke to was one of an industry solely interested in jobs and dollars. By comparison, private benefactors who purchased old growth stands to save them from being cut have gained very favourable publicity.

16. Jackson Demonstration Forest, Fort Bragg

The total area of State Forest in California is less than 70000 acres. Jackson Forest at 50000 acres is the largest of seven Demonstration Forests in the State. The Forest Act requires these seven forests to be

managed for recreation, timber production, and demonstration of good forest practices. The principal tree species in Jackson Forest are Coastal Redwood and Douglas fir. Most of the forest is regrowth, following cutting early this century, although a small amount of old growth stands remain.

The area is run as a working forest on a sustained yield basis and in 1988 some 23 million board feet of timber were cut which was worth 2.77 million dollars. Based on a detailed inventory system of the forest, an allowable annual cut of 28 million board feet per year has been calculated. Proceeds of log sales from all these Californian Demonstration Forests is used to fund loans to private owners to encourage private forest management.

One of the major demonstrations at Jackson Forest is the Caspar Creek watershed study which started in 1960. This involved the calibration of two catchments and harvesting one to determine the effects of logging on sedimentation and fish stream habitat. This watershed study is quite famous and has received international recognition. Results from the study have been the source of guidelines and regulations to be followed when logging forests on watersheds in California.

There are 51 research and demonstration projects operating at Jackson Forest covering pathology, prescribed burning, hydrology, aquatic habitat, biomass harvesting, forest mensuration and recreation which has involved about \$750,000 of research spending over the last seven years. In 1988, forty one groups were given conducted tours of current trials.

Recreational use of the forest is encouraged. Landscape architecture students from the University of California have recently developed a recreation plan for the entire forest including detailed site plans for major campgrounds. Plans are in hand to provide several interpretive facilities at recreation sites to allow visitors to gain an understanding of some of the forest management activities they are likely to see.

A Jackson Demonstration Forest Newsletter is published each quarter giving an update on results emerging from research and demonstration trials plus general information on activities taking place. The audience is largely researchers and forest managers and the information appearing is keenly sought after.

A Woodlands Camp, catering for live in youth groups lies within the forest but is not managed by the Jackson Forest administration. Close to the camp is a four mile interpretive trail designed by staff from the Forestry Department of the University of California. The trail termed the "Forest History Trail" has five sections each dealing with different aspects of the coastal redwood forests. A 45 page booklet which has a good script describes points of interest along the trail.

The first section deals with Redwood forest ecology. Tree and understorey species are identified by numbered marker posts and items discussed include fire effects, site differences, regeneration, wildlife, hydrology, soil profiles, nutrient cycling and variation in forest composition due to exposure.

THE PACIFIC LUMBER COMPANY DEMONSTRATION FOREST



WHAT IS A DEMONSTRATION FOREST?

This Demonstration Forest is owned and operated by The Pacific Lumber Company. Our purpose is to show you a commercial forest. The Pacific Lumber Company logged this area in 1941.

Our foresters select trees to be cut that are mature, overmature or defective. The healthier trees are left for future harvesting. These trees are called residual trees and are an excellent seed source for natural regeneration of the area. Redwood trees grow both from seed and stump sprouts.

Selective harvesting gives room for new trees to grow. Residual trees grow faster too because they now receive more sunlight and moisture and have more room to grow.

It has been The Pacific Lumber Company's policy even before 1941 to use selective logging in our old growth forests. We use a thinning system in our second growth forests.

Take a short walk on our self-guided nature trail. Picnic tables are provided for your use. Please put your litter in the garbage cans provided. Camp stoves may be used in the picnic area, but no open fires are allowed because of the fire danger.



Jackson Demonstration State Forest
State of California Dept. of Forestry P.O. Box 1185 Fort Bragg, CA. 95437

No. 34

TIMBER HARVEST PLANNING METHODS

July 1989

Thomas W. Sutfin and Dr. Richard L. Barber¹

In JDSF Newsletter No. 30 (July, 1988), sustained yield timber management was defined and several factors influencing its implementation were discussed. In this follow-up article, timber harvest planning will be described in more detail. We will discuss how to determine the cutting level, predict forest growth, and project the consequences of timber harvests on the remaining forest inventory. In addition, computer programs that estimate timber growth and economic returns and simulate various cutting levels over time will be briefly explained.

The basic approach for timber harvest planning, regardless of the size of the property to be managed, is to prepare a long-range plan which meets forest-wide goals and objectives. This plan, which includes a description of the timber inventory, spells out when, where, how, and how much timber is to be harvested from the property. This planning effort must address both short-range and long-range decisions, for what one decides to do now has a direct effect on future alternatives. The question of how much to harvest now, must be answered in the larger context of

how much is planned to be cut in the future.

The plan must also consider both stand-level and forest-level decisions. Individual stand treatment decisions need to be made with forest-wide objectives in mind. Some classic stand-level rules of thumb for selecting timber stands for harvest may not always meet forest-wide objectives. For example, the rule of only harvesting the volume that is being grown annually works well if the forest is vigorous. For the owner of poorly stocked or stagnated forest property, however, there may be little or no growth. The only way to create growth is to harvest some timber now and regenerate the forest.

Another rule says to only harvest stands which have reached or passed maximum average growth (or culmination of mean annual increment). This also sounds good until one considers the case of an owner of a property where all the stands are beyond maximum growth. If this rule is strictly followed, everything would be harvested now, and then nothing would be cut for a long time. Alternately, an owner of a young

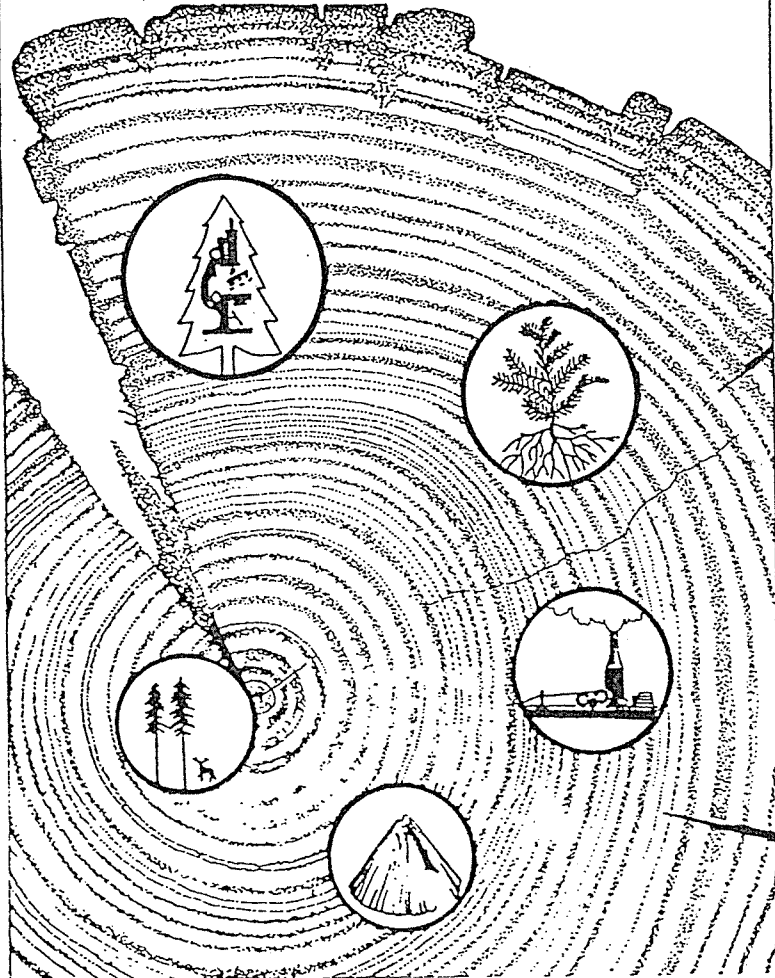
¹Assistant Forest Manager, JDSF, and Associate Professor of Forestry, Humboldt State University, Arcata, CA, respectively.

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION
Richard J. Ernest, Director

George Deukmejian
Governor
State of California

Gordon K. Van Vleck
Secretary for Resources
The Resources Agency

FOREST HISTORY TRAIL GUIDE



INTRODUCTION

Welcome to the Jackson Demonstration State Forest History Trail. This trail has five sections, each dealing with different aspects of the redwood forest and its use. After an introduction to the redwood forest community, you will learn about past uses of these woods from the time of the Native Americans to modern forestry management and research.

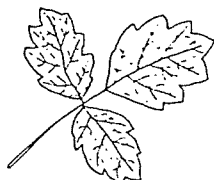
The numbers in the brochure correspond to the numbered posts that you will find along the trail. At the end of the guide is a page of references should you want more information.

It will take you approximately 4 hours to walk this 4-mile round trip loop. There are several steep uphill sections, but benches along the way provide an opportunity to rest and enjoy the redwood forest.

About half-way along the trail you will come to a short side trail that leads to Observation Point. This peak is a good spot to eat lunch and enjoy a view of the ocean.

Feel free to take this brochure with you to study later or to give to friends interested in knowing more about the redwood forest.

Poison oak occurs along the trail. Please be on the lookout for this plant which can cause a skin rash.



Poison Oak

The second section covers the influence of native Indian culture on the forest and how Indians used forest resources for timber for shelter, food sources, hunting, herbs and medicines, ropes and dyes.

The third section examines early logging days, timber cruising and tree felling, Ox team extraction of logs, tanoak bark harvesting, introduction of steam donkey engines and lumber camps.

The fourth section illustrates the introduction of forest management in the 1920's and use of forest plantations including why some have not been successful. Fire management and recovery of the forest ecosystem after logging is illustrated together with retention of snag trees for wildlife. The influence of forest stocking levels on tree growth rates is discussed.

The last section examines some of the key experiments in the Demonstration Forest. A stream gauging station, experiments on root disease control and tanoak management are visited. Different thinning methods ranging from single tree selection to group selection are examined and also the benefits of tree breeding.

The brochure is well presented, it doesn't preach to the audience and anyone following the trail would obtain a good understanding of forest management practices in relation to forest ecology. I thought the trail was too long. Four miles requires a reasonable time commitment and would deter a lot of people. It would be better to have a series of shorter trails requiring less than an hour to walk and concentrate on a few messages for each. People could take an introduction trail on the first visit which hopefully would whet their appetite to tackle another on a subsequent visit.

Within Jackson Forest a "Conservation Camp" is located where first offender prison inmates are based whilst undertaking a variety of forest tending work such as planting, non commercial thinning and trail development and maintenance. These Camps operate as a joint venture between the Department of Forestry and Department of Corrections.

The joint scheme has been very successful. Inmates receive a \$1 per day for time spent in the Camp plus a days reduction in sentence for every day served. Escapes are a rarity and prisoners are supportive of the works programs. The success of the scheme is related to the commitment of both Departments and calibre of the forest supervisors in charge of prison work gangs who command respect from inmates for their knowledge of forest matters and work skills.

An indirect benefit of the scheme has been that their time spent in these Camps has given a large number of people in the community a good first hand understanding of forest management. Similar forest work schemes for prisoners have operated in Australia but this was the best I have seen and is well worth examining as a model for anyone developing programs for prison work in forests.

The concept of prisoners producing work of value to the community to help offset the enormous expenditure involved in gaoling people for minor offences is to be commended.

16. Blodgett Forest Research Station, California

This Research and Demonstration Forest has been managed by the University of California, Berkeley since 1933. It consists of 1200 hectares of forest on the western slopes of the Sierra Nevada mountains near Georgetown.

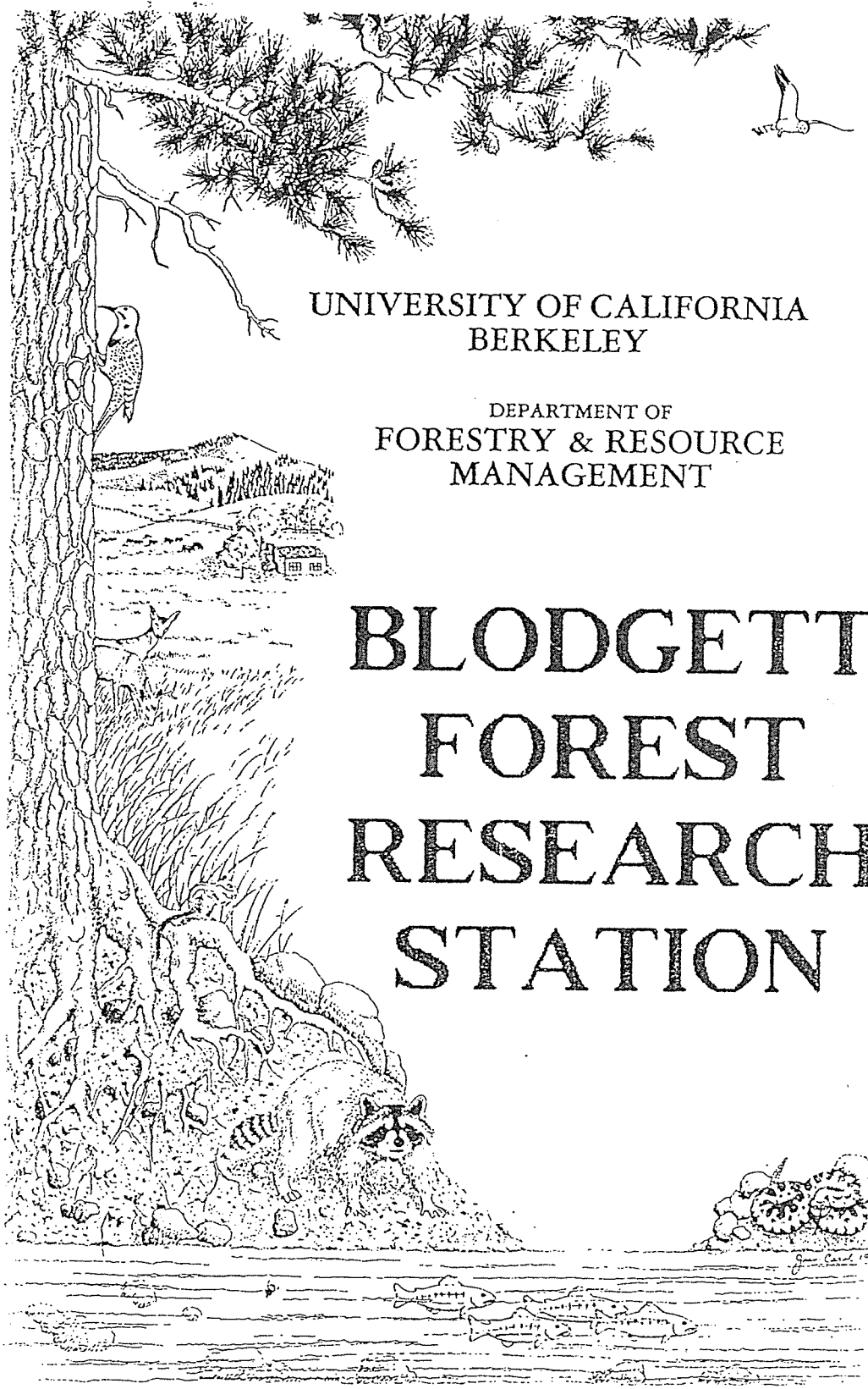
The land was given to the University by the Michigan-California Lumber Co. in 1933 for timber management research and is named in honor of President of the Company of the time, John W. Blodgett. The forest was heavily logged 50 to 70 years ago so most of it consists of regrowth stands containing Douglas Fir, Pinus ponderosa, Pinus lambertiana, Abies concolor, Libocedrus decurrens and Californian black oak and Tan Oak. More than 400 species of plants are found in the forest and over 150 species of animals have been recorded.

The forest is actively managed for timber production on a very intensive basis and consists of 100 compartments averaging about 12 hectares but ranging from one to thirty six hectares in size. About one third of the forest is in compartments managed under even aged management and one third under selection systems. The balance is deliberately reserved in an unmanipulated state to serve as a comparison to areas which are intensively managed. This allows researchers to sort out the effects of year to year climatic differences on plants and animals without confusing the analysis with management related effects.

In compartments treated under uneven aged management, gap openings range from a quarter to one hectare in size with the forest in these areas taking on a Swiss cheese appearance when viewed from the air. It is the opinion of the Forest manager that openings greater than one hectare in size are perceived by the public as being no different to a clear cut. In even aged managed areas the whole compartment is treated with the regeneration system being either clearfelling and planting, seed trees or a shelterwood system.

Seedtree cuts typically leave 10 to 20 trees per hectare of seed trees while shelterwood cutting may leave as many as 50 trees per hectare. Five to ten years after seedlings are established, the overstorey seed or shelter trees are removed. All clear cut areas are planted with the full range of species previously on the site, not just the main commercial species. Species such as oaks were planted on the basis that they would make an ecological contribution to stand health and by the time they were mature would probably be commercial.

The basic aim of management is to provide a location for wildlife research, on-site teaching, and to demonstrate forest management principles and practices. Facilities include accommodation for 45 people, office and meeting rooms, machine shop and a laboratory. The forest is easily accessed by 37 miles of roads which traverse the forest.



UNIVERSITY OF CALIFORNIA
BERKELEY

DEPARTMENT OF
FORESTRY & RESOURCE
MANAGEMENT

**BLODGETT
FOREST
RESEARCH
STATION**

Log sales, which returned \$290,000 nett in 1988, generate the funds for running of the Research Station. The facilities are used for live in courses for forestry students and post graduate students from Berkeley and also groups such as the Forest Service and private woodlot owners wanting to view silvicultural options. Day tours are conducted for interest groups such as environmentalists and last year Blodgett staff spent about 15,000 hours on contact with outside groups.

There are over 50 long term research projects operating at Blodgett. The emphasis in the past has been on silvicultural research but in recent years there has been increasing emphasis on research into wildlife, entomology, birdlife and soil chemistry. Researchers into values other than timber are encouraged to replicate their studies at Blodgett in the three types of forest to obtain some measure of the effects of different forest management practices.

Approximately 1000 permanent 0.1 acre inventory plots are located through the forest. Site information, vegetation, wildlife and tree information for all plots is stored in a computerised database which can be made available to any researcher. There is also a wealth of information on timber production, eg size classes of logs produced from thinnings from even aged and uneven aged management, final crop tree size etc.

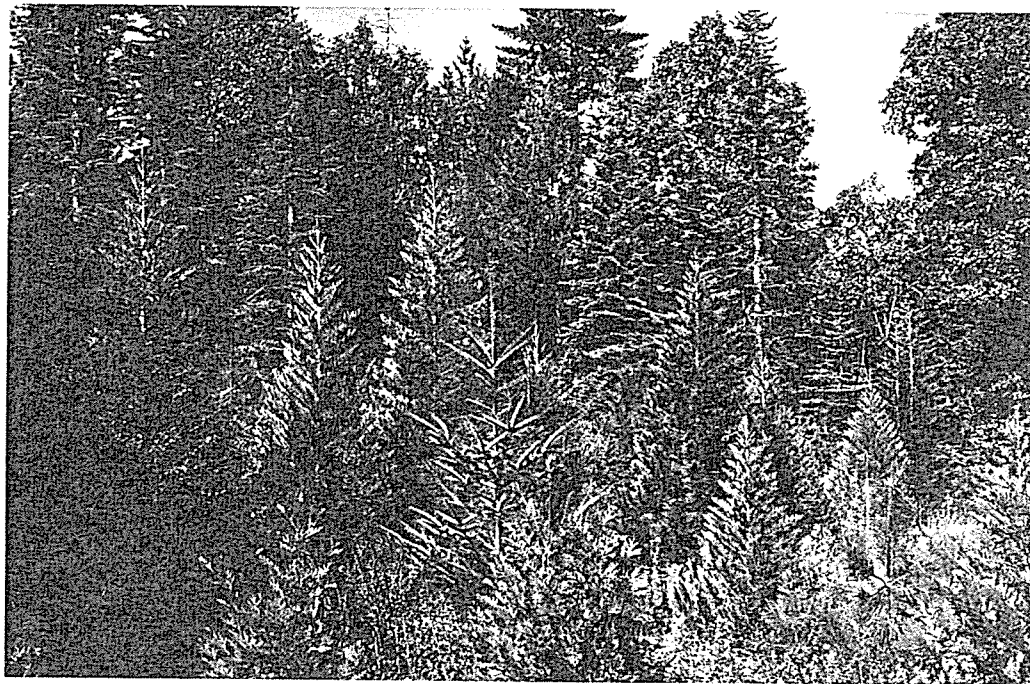
The Research Station at Blodgett has been able to demonstrate on a small scale working forest of this size that timber production can be sustained with little conflict with other values. The small sized openings in the uneven aged forest types were creating a range of age classes and different layers in the forest canopy rarely seen in undisturbed forest or even aged stands. This created more opportunity for wildlife and bird habitats and also increased water production. The end result certainly looked more attractive than other alternatives and meets with much less opposition from environmentalists.

Of all the Research and Demonstration Forests visited that concentrated mostly on research, I thought Blodgett was the most professionally managed and had the greatest variety of innovative trials taking place. An excellent management plan sets out details such as areas to be cut for the next 100 years and procedures to be followed by researchers and visitors to the area. This is backed up with strong management control on the ground by full time Forest Manager, Bob Heald who also takes a very pro-active role when debating management issues with groups opposed to timber harvesting.

Although education and information sharing with the general public is not one of the objectives at Blodgett, and it is too remote from San Fransisco and Sacramento to allow this to occur, there is considerable potential to publicise some of the management practices and findings via television documentaries, and newspaper articles.



Unmanaged forest - Blodgett Forest



Regeneration in gap opening, about 0.25 hectares.

17. Bent Creek, Asheville, North Carolina

This is an area of oak and maple hardwood forest of approximately 1000 hectares close to Asheville and managed by the U.S. Forest Service as a research and experimental forest. Projects operating include various silvicultural and hydrology studies and similar to other research forests it is run as a working forest on a sustained yield basis. This deciduous hardwood forest is extremely beautiful, particularly in the fall and has considerable potential to attract visitors.

The forest is managed under an uneven aged management system where gaps ranging from one half to about one hectare in size are created. In the year prior to creation of the gap, undesirable tree species such as red maple are controlled by herbicides to favour desired species such as white oak. The visual impact of harvesting of timber from the forest via such small gaps is minimal but is still opposed by some environmental groups.

Currently public access into Bent Creek is very restricted due to problems with vandalism and entry points are heavily gated. This is to change as it is recognised there is a need to inform the public much more about forest management issues. My guide had been given the task of preparing within a year, a management plan of how this should occur.

Bent Creek adjoins agricultural land owned by the University of North Carolina who propose to develop a demonstration area on their land to inform people about alternatives available in horticultural crops. Discussions have started about the possibility of a joint demonstration area to cover both forest and agricultural issues.

18. Cradle of Forestry, Pisgah State Forest, North Carolina

The Cradle of Forestry which is a National Historic site is where scientific forestry was first practiced and taught in America over 85 years ago.

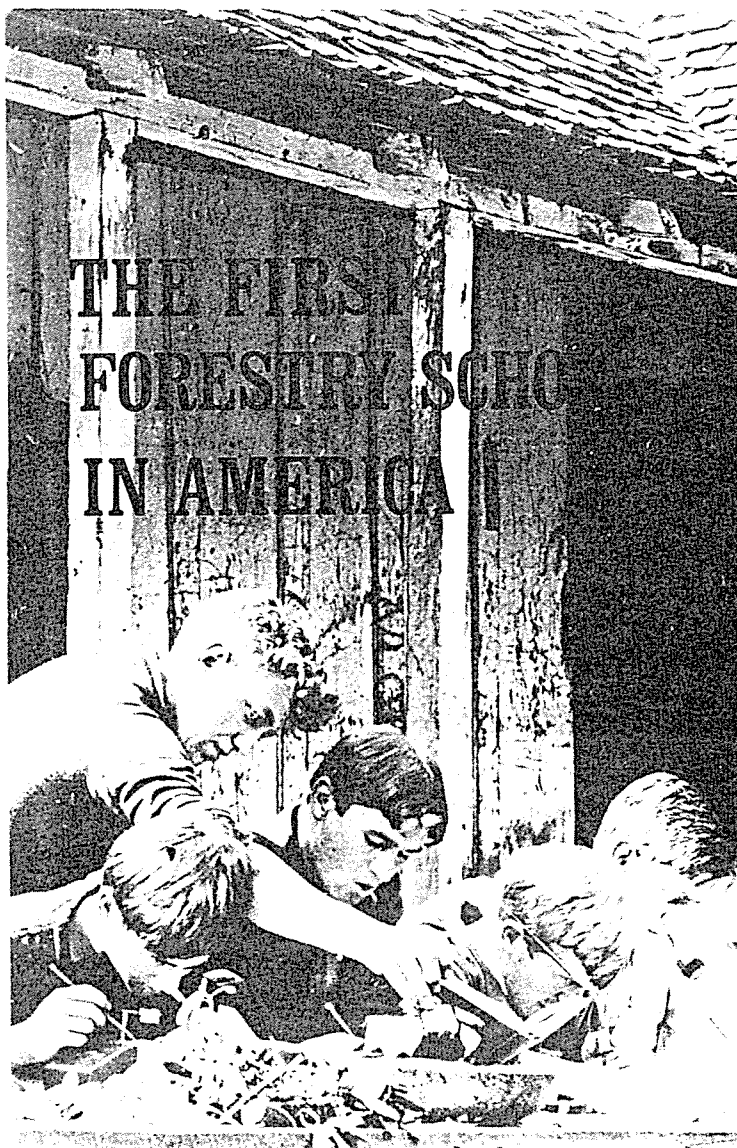
In 1889, George Vanderbilt began buying land near Asheville to build a country estate. His plans included a palatial home surrounded by a large game reserve. To manage the forest property, Vanderbilt hired Gifford Pinchot, father of American forestry. Pinchot's management proved profitable through the sale of wood products so Vanderbilt purchased additional forest land which became the nucleus of Pisgah National Forest.

In 1895, a German forester, Dr. Schenck, succeeded Pinchot as manager of the forest. Schenck intensified forest operations and three years later launched the first forestry school in America, the Biltmore Forest School which ran until 1914.

The Cradle of Forestry facilities include a large interpretation and visitor centre that cost over \$2 million to construct. The theme of the centre which is well manned is the development of forestry training and education in America. An 18 minute movie and a large number of memorabilia and historical items dominate the centre.

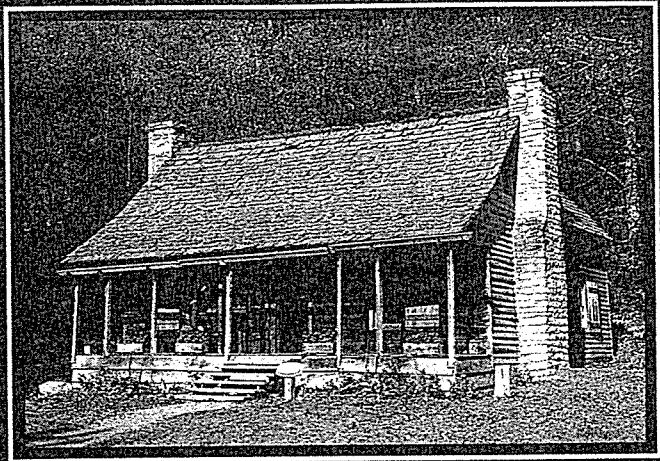


Information Shelter Bent Creek, Experimental Forest.

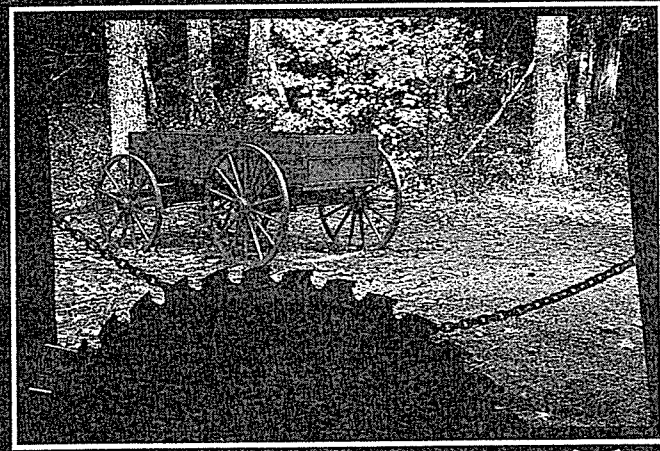


THE FIRST
FORESTRY SCHOOL
IN AMERICA

Cradle of Forestry in America



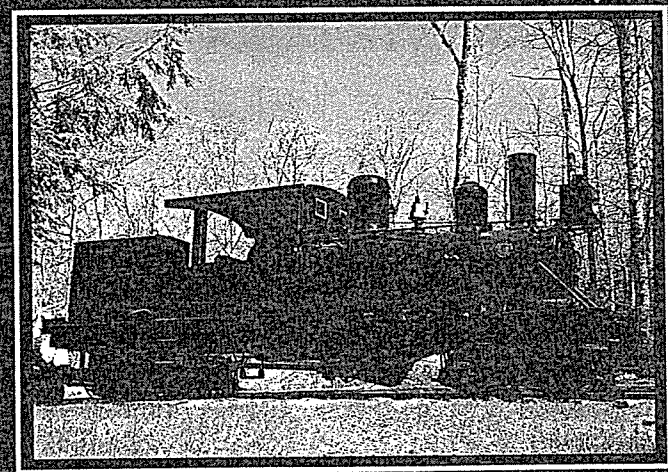
A NATIONAL HISTORIC SITE



Pisgah National Forest
North Carolina



U.S. Forest Service
Pisgah National Forest
North Carolina



Information such as maps and brochures are available to indicate current attractions in Pisgah Forest such as recreation sites, campgrounds, hiking trails and hunting and fishing opportunities. About 39,000 people visit the Centre each year.

Two trails radiate out from the visitor centre. The first covers the history of the original forestry school. Tours are led by a part time interpreter who had an excellent knowledge of the school history. Eight reconstructed buildings are visited on the trail that illustrate student accommodation and other facilities. These are well presented and at some of the stops visitors can press a switch and listen to a taped message.

The second trail covers early forestry experiments laid down by Dr. Schenck and items such as an old locomotive used for log haulage.

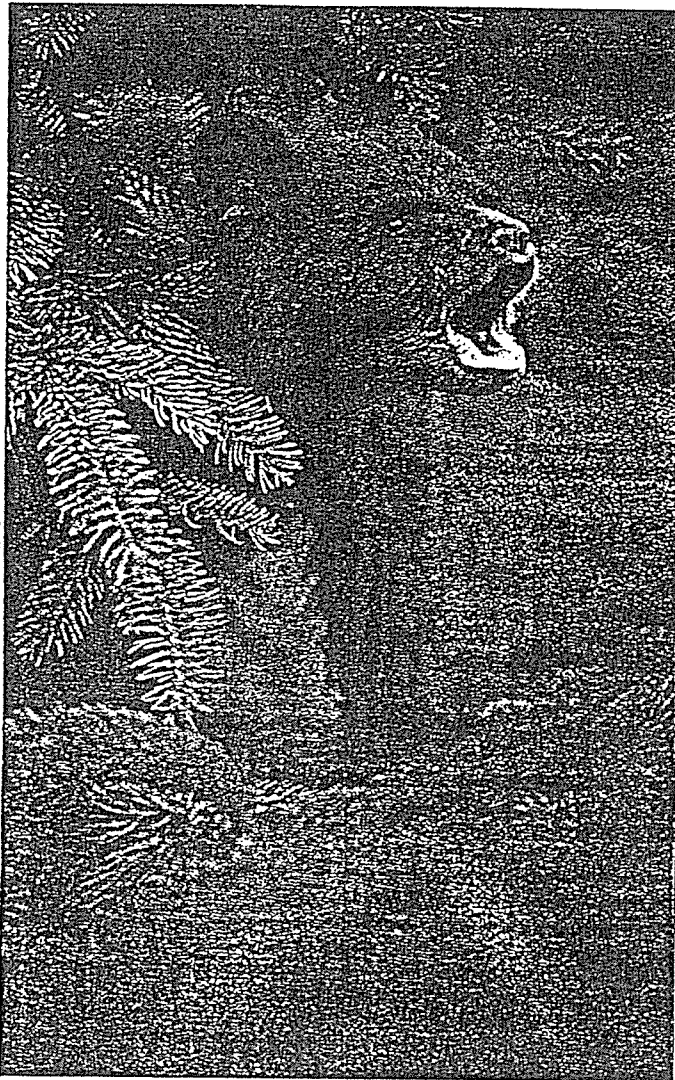
Both the trails largely cover material from the past and whilst this is interesting in its own way it needs to be complemented with material explaining and illustrating current forest practices. Fortunately this has been recognised and the Forest Service hope to attract several million dollars from the Forest Products Industries to establish a Demonstration Forest adjoining the Visitor Centre to illustrate current forest management.



FORESTS FOREVER

COAST

MARCH 1989



Responsible use of B.C.'s forests respects the needs of a range of users, including wildlife.

YOU CARE ABOUT B.C.'S FORESTS... SO DO WE

This newspaper supplement describes some of the things British Columbia forest companies are doing to improve logging, reforestation and forest management practices and to maintain our position as world leaders in the manufacturing and marketing of forest products.

Our industry is constantly learning and getting better at what we do. We have our critics, of course. Any industry as significant as ours in the life of this province is bound to be the focus of a lot of attention and questioning.

Some criticism is justified and we learn from it. Some, however, is founded on incomplete or inaccurate information. That is a problem we believe we must work to correct. This supplement is one element in the B.C. forest industry's efforts to meet its responsibility to be part of the ongoing discussion about the forest sector.

Forest management is a constantly developing science. It is better today than it was ten years ago and it will be even better ten years from now. We are proud of the accomplishments of our industry and those who work in it. We are aware also of areas where we must work harder to improve our performance.

We care about what British Columbians think of our industry and its logging and forestry practices. We hope the articles inside will help you to know more about B.C.'s forest industry. If you wish to convey your thoughts about our industry, or if you want more information please write to:

FORESTS FOREVER
1200-555 Burrard Street,
Vancouver, B.C. V7X 1S7

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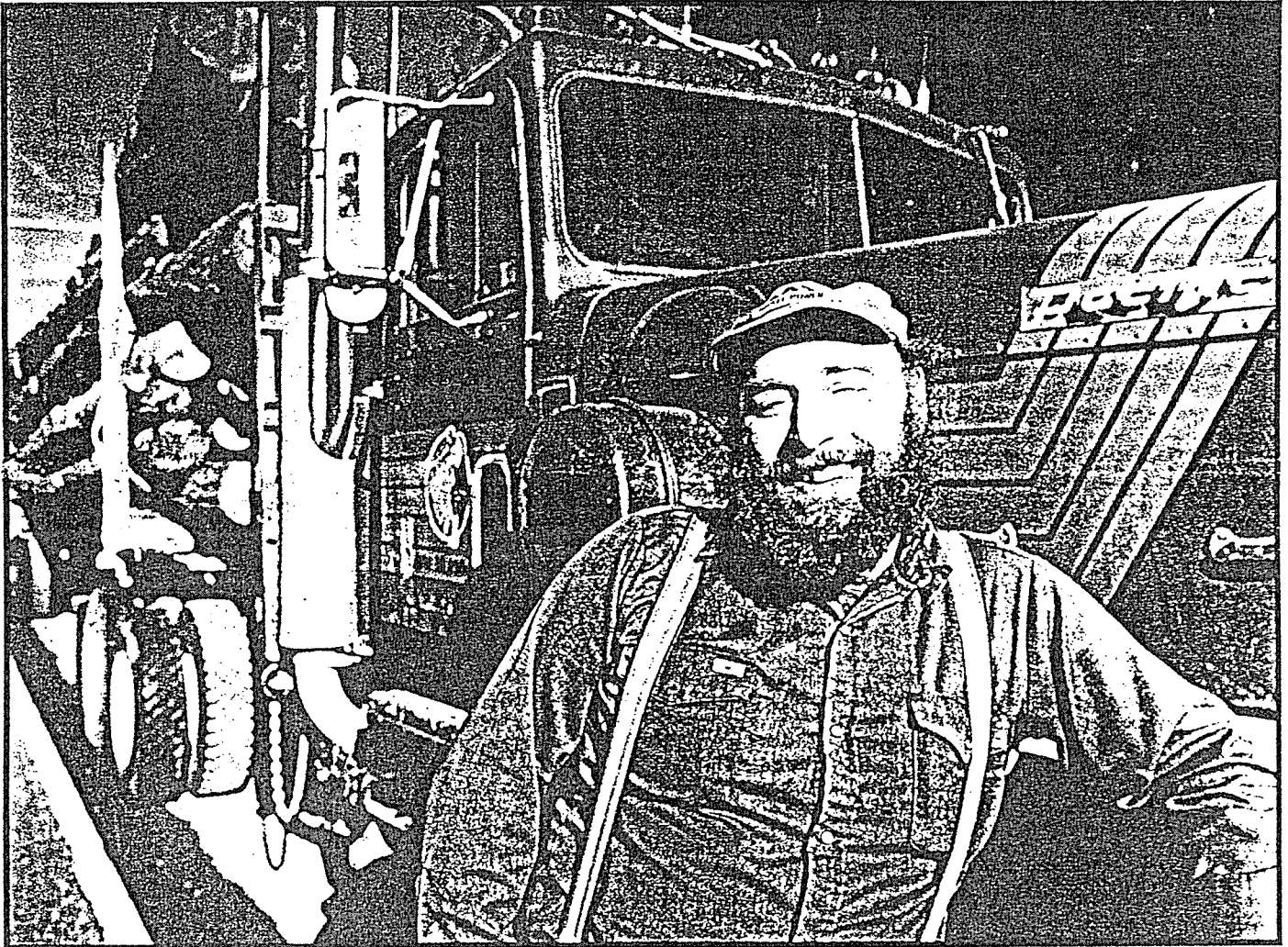
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Spring 1989

UPDATE Share the Stein

Published by the Share the Stein Committee, representing the people of the B.C. Interior who support multiple use of the Stein



Trucker Rick Sosnowski is one of the people who doesn't work for a large forest company but who earns his living from B.C.'s forests. He's been hauling logs into Boston Bar since 1970 "off and on", alternating trucking with stints of working as a mechanic.

For each of the 85,000 British Columbians like Rick, who make their living directly from the forest industry, another two receive their livelihood from the indirect economic benefits which come from the production and sale of forest products.

INSIDE:

'We do object...'

Groups seek middle ground

'Government must show leadership'

Variety is the key word f

APPENDIX 04

INTERPRETATION APPROACHES

Variety is the key word for camping in the Cherokee National Forest. Everything from fully developed areas with weekend campground programs to primitive sites where solitude may not be interrupted for days are available.

The Forest Service operates 29 developed camping areas in the Cherokee, with approximately 685 individual units. (There is no reservation system for campgrounds.) However, unless an area is specifically signed closed for camping, campers may choose other suitable locations throughout the

625,000-acre Forest. Please note that camping is limited to 14 days.

Camping fees for overnight camping range from \$2.00 to \$6.00. Hook-ups are not available at any Cherokee campground. Camping units generally accommodate either a tent or an RV up to 22 feet long.

This, of course, highlights only a few of the areas offered by the Cherokee National Forest. Please refer to the maps and chart on pages 2 and 3 for more specific information about the location of these and other areas.

If you have any questions concerning camping water and sanitary facilities are located on site for camping in this area.

Paint Creek has 16 camping units and 15 picnic sites. Take US 25-70 east from Newport for 12 miles, following Paint Creek signs. Turn left on Tennessee 107 for 10 miles, turn right on Forest Service Road 31, and bear right at fork for two miles.

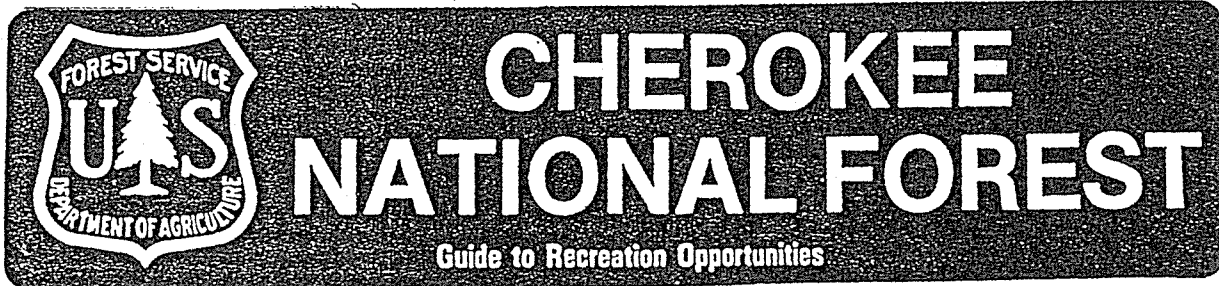
This area features trout fishing in the stream which borders the area, and easy access to the Appalachian Trail. Drink-

ing water and sanitary facilities are located on site for camping in this area.

Horse Creek is in eastern Greene County. It has 10 camping units and 32 picnic sites. Take US 11-E Bypass from Greeneville, turn right on Tennessee 107 for six miles, following signs to Horse Creek. Turn right on Forest Service Road 94.

Rock Creek lies only a few miles east of Erwin in Unicoi County. Take Rock Creek Road east from Erwin for three

(Please turn to page 4)



Walking or riding, Forest trails beckon

Is hiking for days in wilderness areas your favorite pastime? Or would you prefer to take a short walk along a lake-shore?

Perhaps a two-day backpacking trip is more to your liking. Or maybe a drive through the Forest suits you.

Whatever you prefer, the Cherokee National Forest has something to offer.

The most popular form of recreation in a National Forest is driving for pleasure. With that in mind, the agency has begun a national program to identify scenic routes visitors will want to see.

The Cherokee National Forest has the first Forest Service Scenic Byway designation in the nation. The route includes 19 miles of U.S. Highway 64 in Polk County and seven miles of Forest Service Road 77 up Chilhowee Mountain (also in Polk County).

Along this drive are panoramic overlooks, Parksville Lake and the whitewater activities of the Ocoee River.

Visitors may stop for picnics and short hiking trails, may boat or swim on the lake and, of course, test their courage on the Ocoee.

There's just one thing visitors should not do—they should not miss the scenic beauty of this drive!

Hiking offers one of the best ways to enjoy the Cherokee National Forest in a quiet, relaxed atmosphere.

There are no permits and no check-in stations for the backcountry, although it is always a good idea to tell somebody where you are going and when you expect to return.

It is also a good idea to stop at the nearest District Ranger's Office for additional information and maps of the areas you intend to hike.

There are 105 hiking trails totaling 565 miles in the Forest. They range from easy to extremely difficult. There are

both point-to-point trails and loop trail networks.

There are self-guided nature trails, horse trails, bicycle trails and motorcycle trails, as well as an extensive Forest road system.

By all means, do bring your pet, but please keep him/her on a leash.

And, you may camp overnight when you find a spot to your liking—unless the area is specifically closed to camping. Always follow safety rules and be extremely careful with fire.

Meandering 201 miles from the Virginia-Tennessee state line to the Great Smoky Mountains National Park, the Appalachian Trail passes through some of the best scenery East Tennessee's mountains have to offer.

This part of the 2,000-mile mountain walkway is uncrowded. No permits are needed. A map of the Tennessee section

is available from Forest Service Offices for a nominal fee.

Two National Recreation Trails are included in the Cherokee National Forest trail system, John Muir and Warrior Passage. The John Muir Trail, 15.7 miles long, is located in the Hiwassee Ranger District in Polk County, and Warrior Passage, 3.3 miles long, is in the Tellico Ranger District in Monroe County.

If you would rather ride, the Forest has 5 bicycle trails, totaling 8.2 miles. These are located away from busy roads and highways at recreation areas, such as Rock Creek, Indian Boundary and Chilhowee. Some of these areas have self-guided nature trails if you want a brief, quiet walk in the woods at the end of a busy day.

There are 54 specifically designated motorcycle trails and roads. In addition,

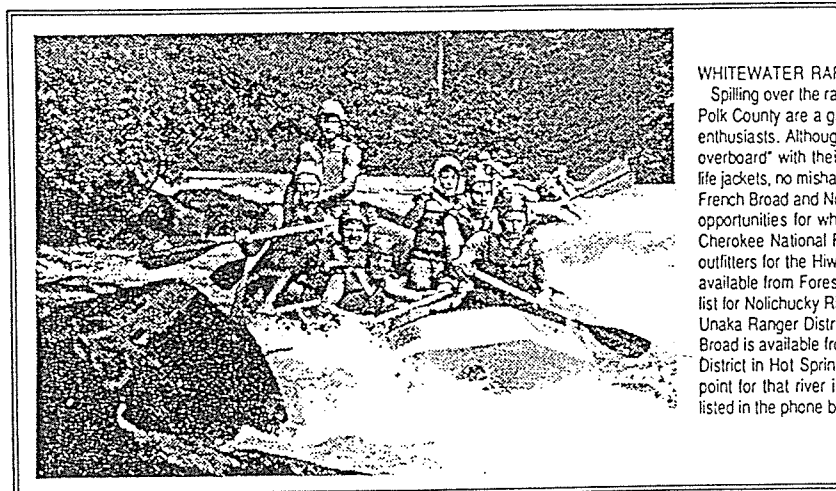
motorcycles are allowed on the Forest Service road system, which totals 1,160 miles.

However, when riding your motorcycle off the road, be sure you stick to a designated route. Motorcycles are not permitted unless on a designated trail or a Forest road.

In addition, the Cherokee is closed to all vehicle use unless on a designated route. Vehicles such as off-road vehicles and all-terrain vehicles are not permitted in the Cherokee National Forest unless used on a specifically designated trail.

ORV's and ATV's are also not permitted to use the Forest road system. Only vehicles that can legally be used on a state highway or city street can be used on the Cherokee's road system.

Check with the nearest district ranger's office for more information.



WHITewater RAFTING

Spilling over the rapids of the Ocoee River in Polk County are a group of whitewater enthusiasts. Although prepared for cries of "man overboard" with their protective headgear and life jackets, no mishaps occurred. The Hiwassee, French Broad and Nolichucky Rivers also provide opportunities for whitewater activities among Cherokee National Forest visitors. A list of outfitters for the Hiwassee and Ocoee Rivers are available from Forest Service offices in the area; a list for Nolichucky River is available from the Unaka Ranger District; and a list for the French Broad is available from the French Broad Ranger District in Hot Springs, N.C. where the put-in point for that river is located. Outfitters are also listed in the phone books for the areas they serve.

Forests, parks: similar, yet different

| Southern Districts' Campgrounds | Campsites | Boating | Fishing | Swimming | Trails | Other | Fee area |
|---------------------------------|-----------|---------|---------|----------|--------|-------|----------|
| 1 Jake Best | 7 | | • | | | | • |
| 2 Double Camp | 13 | | • | | • | | • |
| 3 Indian Boundary | 125 | E | • | * | • | ABHP | • |
| 4 North River | 11 | | • | | | | • |
| 5 Spivey Cove | 18 | | • | | | | • |
| 6 Davis Branch | 4 | | • | | | | • |
| 7 Big Oak Cove | 7 | | • | | | | • |
| 8 State Line | 7 | | • | | | | • |
| 9 Holly Flats | 17 | | • | | | | • |
| 10 Quinn Springs | 22 | • | • | | • | BCPS | • |
| 11 Lost Creek | 12 | | • | | | | • |
| 12 Chilhowee | 68 | E | • | * | • | ABHP | • |
| 13 Parksville Lake | 32 | • | • | | • | | • |
| 14 Thunder Rock | 6 | | | | | C | • |
| 15 Sylco | 12 | | | | | | • |
| 16 Tumbling Creek | 8 | | • | | | | • |

A = Amphitheater B = Bathhouse C = Canoeing/rafting
 E = Electric motors only H = Trailer holding tank disposal
 P = Picnic area S = Picnic shelter
 * - Fee for swimming if not camped in campground.

With a National Forest and a National Park so close together in Tennessee, many visitors become confused as to the purposes and opportunities of each.

National Parks and National Forests both offer outstanding opportunities for recreation, although they are administered by different government agencies and are managed for different purposes.

Both Services also exemplify conservation, the wise use of our resources, in different but equally important ways.

The U.S. Forest Service, an agency of the U.S. Department of Agriculture, administers the 625,000-acre Cherokee National Forest stretching along Tennessee's eastern border. The National Park Service, an agency of the U.S. Department of Interior, administers the 511,700-acre Great Smoky Mountains National Park, which separates the northern and southern halves of the Cherokee National Forest.

National Forests accounted for more recreation use last year than any other Federal agency. Forest recreation includes scenic drives, wilderness travel, picnicking, camping, hiking, skiing, swimming, boating, and some of the country's finest hunting and fishing

(including wild boar hunting in Tennessee).

The National Forest System comprises 154 National Forests and 19 National Grasslands in 41 states and Puerto Rico, for a total of more than 187 million acres of public land. The Forest Service was established in 1905.

The National Park Service, covering an area of 30 million acres, was mandated by Congress to promote and regulate the use of national parks, monuments and reservations in order to conserve the scenery and the natural and historic objects and the wildlife by such means as will leave them unimpaired for the enjoyment of future generations.

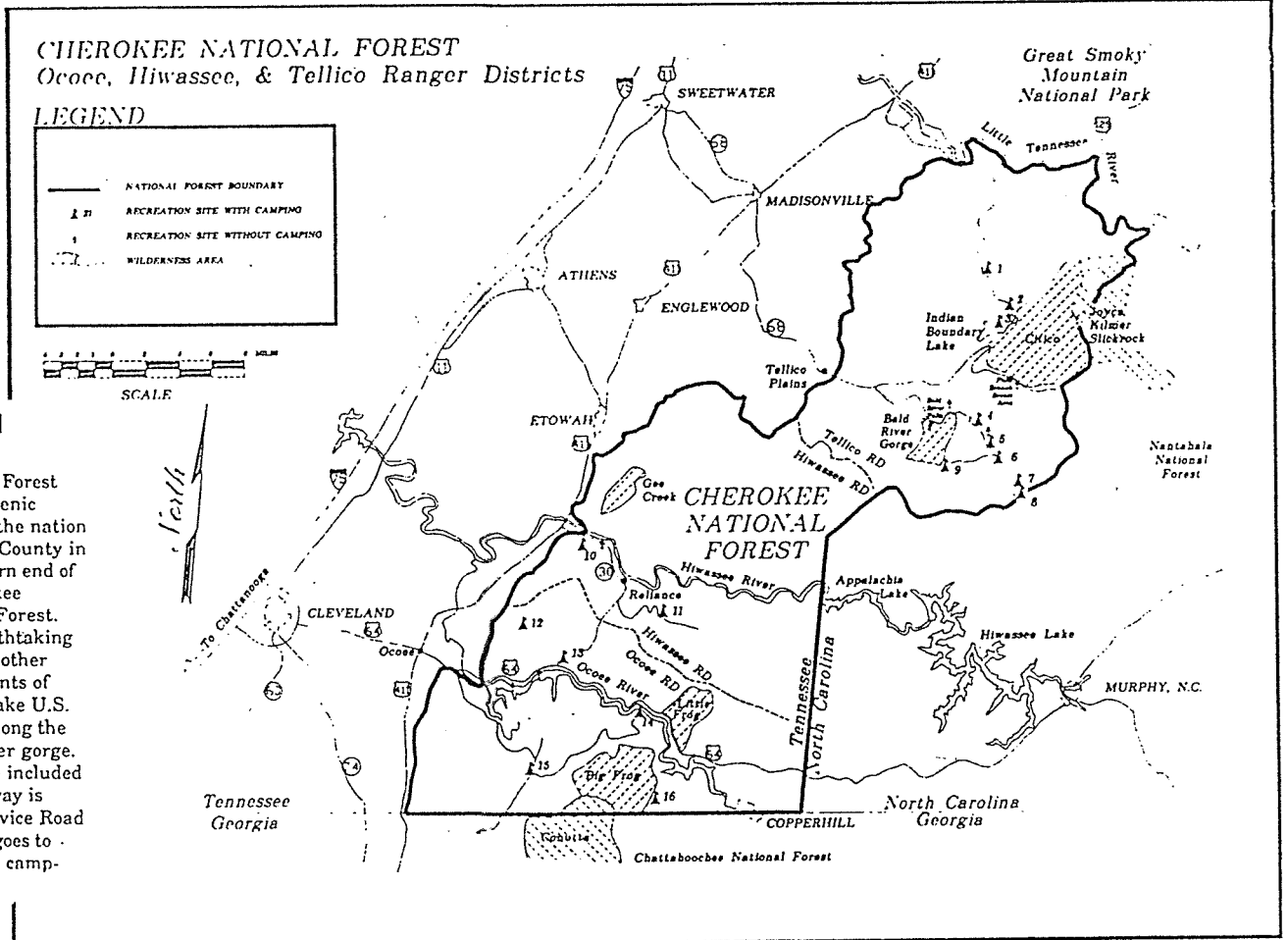
As directed by Congress, the Forest Service manages the Nation's renewable resources — water, timber, forage, wildlife and recreation — under the principles of Multiple Use and Sustained Yield.

Multiple Use means that resource management is coordinated so that areas of land produce a combination of values that best serve the American people.

Sustained Yield means that resources

(Please turn to page 3)

The Cherokee National Forest covers 625,000 acres in 10 East Tennessee counties. It is the state's only National Forest and the largest tract of public land in Tennessee.



Fall 1989

Smokies Guide

The Official Newspaper of Great Smoky Mountains National Park

THE MAGNIFICENT TREES OF THE GREAT SMOKIES

Trees are what set these mountains apart. A dense, rich, living, breathing cloak of trees hugging the mountains from cove bottom to ridge top. Millions of trees. Over 100 native species. An abundance so profound that even the atmosphere is affected by their presence.

Great Smoky Mountains National Park shelters one of the greatest deciduous forests on earth. More species of trees thrive in this 800 square mile area than in all of northern Europe. Under complete protection from the National Park Service, trees like the yellow poplar attain heights of 15 stories and many other trees grow to record size.

Weather and mountains are responsible for the astonishing variety of trees. Rainfall is plentiful (up to 85 inches per year along the Appalachian Trail) and winters are relatively short. With elevations that range from 850-6,600 feet, nearly every tree that occurs in the Appalachians from Georgia to Maine finds some suitable habitat here.

Trees affect all aspects of life in the Smokies. They keep mountain streams clear and cool by preventing soil erosion and by shading the waters from the sun. Bears depend on trees for winter dens; deer fatten on oak acorns in the fall; squirrels can travel for miles on the forest canopy without ever touching the ground, and the Smokies' over 200 species of birds are intimately dependent on trees for shelter and food.

The Park's climate is influenced by trees. During summer, deciduous forests filter some 90 percent of the sunlight before it reaches the ground, causing a dramatic cooling effect. Even the name, Great Smoky Mountains, is related to trees. The Park's famous blue haze or "smoke" is created by moisture and natural terpenes given off by the green giants we call trees. . .



Tulip trees grow up to 15 stories high in the National Park.

The Smokies' Wonderous Diversity

MAPLE TREES: Five species, including red and sugar maples.

BIRCH TREES: Four species, including yellow and sweet birch.

HICKORY TREES: Five species, including mockernut and pignut hickories.

MAGNOLIA TREES: Six varieties, including umbrella and Fraser magnolias, and the cucumber tree.

PINE TREES: Six species, including table mountain, Virginia, and pitch pine.

Fall Color Hot Spots

NORTH CAROLINA

Lakeshore Drive, From Bryson City to Noland Creek.

Blue Ridge Parkway, from Oconaluftee to Soco Gap.

Round Bottom Road, beginning at the Balsam Mountain Picnic Area.

TENNESSEE

Gatlinburg By-Pass, especially the views toward Mt. LeConte.

Foothills Parkway West, from Walland to Chilhowee.

Rich Mountain Road, off the Cades Cove Loop Road.

Foothills Parkway East, from highway 321 to I-40 (near Cosby).

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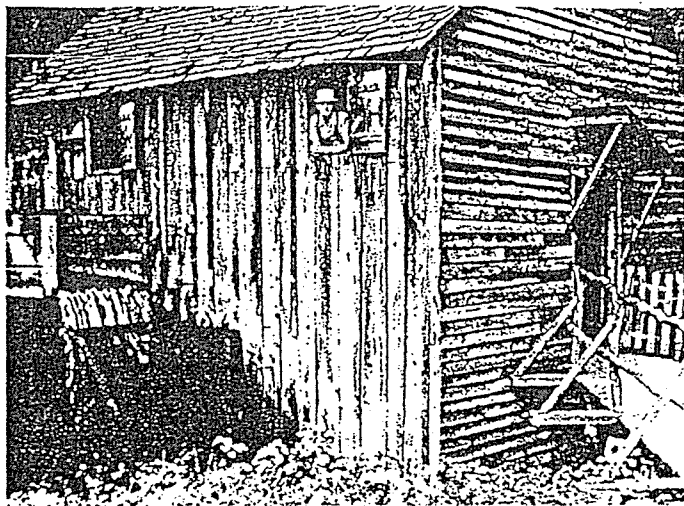
THINGS TO SEE AND DO

Historic buildings

Over 75 historic structures are found in the Park. These churches, cabins, mills, barns and other buildings are the work of early mountain people who carved a living from these mountains up until the establishment of the Park.

Most of the buildings are found in Cades Cove, at the Pioneer Farmstead adjacent to the Oconaluftee Visitor Center, on the Roaring Fork Motor Nature Trail near Gatlinburg, and in the Cataloochee valley in the southeastern corner of the Park.

A 25 cent leaflet, "Mountain People," is available at all Park visitor centers. It provides a map and general information about historic structures and the people who built them.



Historic grist mills, log cabins, and other buildings are waiting to be explored at Cataloochee, Cades Cove, Oconaluftee, and Roaring Fork Motor Nature Trail.

Visitor centers

For detailed information on the Park, your best bet is to stop at a visitor center.

Visitor centers are located at Sugarlands (two miles east of Gatlinburg, Tennessee), Oconaluftee (four miles north of Cherokee, North Carolina), and Cades Cove (in the Cable Mill area). At visitor centers you will find many sources of information, including:

- museum displays
- emergency information boards listing road conditions and urgent contact requests
- hiking information
- publications and film, and
- personnel who will be glad to answer your questions.

For a complete schedule of visitor center activities, please see page 6.

Wayside exhibits

Wayside exhibits call attention to points of interest along Park roads and trails. They describe or explain some natural or historical feature you can see from that particular point, or inform you about some Parkwide points of interest. For example, from the Carlos Campbell overlook, you can see eight of the major forest types that are found in the Smokies.

Radio 1610

While driving in Great Smoky Mountains National Park, tune your radio to 1610 AM wherever you see the roadside radio information sign. Short radio messages will give you important information about locations and items of interest in the Park.

Driving

There are some 170 miles of paved roads and over 100 miles of gravel roads waiting to be explored in the Smokies. The "backroads" offer a special opportunity to escape traffic and enjoy the more remote areas at a leisurely pace.

Parson Branch, Rich Mountain, Heintooga/Round Bottom, and the Foothills Parkway are all off-the-beaten-path routes.

Self-guiding auto tour booklets are available to help you better enjoy the Cades Cove Loop Road, Roaring Fork Motor Nature Trail, and the Cataloochee road. Booklets may be purchased at visitor centers or at the beginning of the roads.

All Park roads are marked on the map in this newspaper. Detailed road information is available in the leaflet "Auto Touring" and in a full color book *Mountain Roads and Quiet Places*, both of which may be purchased at visitor centers.

Fishing

Fishing is permitted year-round in open Park waters from sunrise to sunset. A valid Tennessee or North Carolina state license is required for all persons 16 years of age and older. Either state license is valid throughout the Park. Licenses may be purchased in nearby towns.

Park regulations differ from area to area and are posted on streams and can be obtained at any ranger station or visitor center. Possession of brook trout, the only trout native to the Smokies, is prohibited.

Horseback riding

Horseback riding is available through concessions located around the Park. For information about trips, services, and hourly rates, contact: CADES COVE riding stable, located in Cades Cove. (615) 448-6286.

COSBY riding stable, at Cosby Campground. (615) 623-6981. Open Mon. - Sat.

McCARTER'S riding stable, near Park Headquarters on Newfound Gap Road. (615) 436-5354.

SMOKEMONT riding stable, near Smokemont Campground. (704) 497-2373.

SMOKY MOUNTAINS riding stable, 2 miles east of Gatlinburg on Highway 321. (615) 436-5634.

Learning

Great Smoky Mountains Institute at Tremont is nestled in the heart of the National Park. It is open year-round and provides a wonderful diversity of environmental education programs for everyone from primary school children to Elderhostel groups.

Tuition, meals, and lodging are provided for a minimal fee. The Institute is a nonprofit organization operated by Great Smoky Mountains Natural History Association.

Below is just a sampling of Institute programs. For more information, contact Great Smoky Mountains Institute at Tremont, Great Smoky Mountains National Park, Townsend, TN 37882 (615) 448-6709.

OCTOBER 6-8 Teacher/Naturalist Workshop & 20th Anniversary Celebration

OCTOBER 20-22 Nature Photography Workshop with John Netherton

The Smoky Mountain Field School is a cooperative effort between the National Park and the University of Tennessee. The school features one to five day field courses emphasizing outdoor exploration of the Smokies. Contact: Dept. of Non-credit Programs, the University of Tennessee, 2016 Lake Avenue, Knoxville, TN 37996-3515 (615) 974-6688.

OCTOBER 14 & 15, 21-22 Backpacking Mt. LeConte

DECEMBER 9-10 Winter Highcountry Camping

Picnicking

Nine picnic areas are scattered throughout the Park, each equipped with fire grates and tables. Their locations are marked on the map on the back page of this newspaper.

Bicycling

One-speed bicycles may be rented at the store near Cades Cove campground. To provide an opportunity for leisurely biking around Cades Cove, the 11-mile loop drive will be closed to automobile traffic on Saturday mornings until 10:00 a.m. through September 23.

Bicyclists are welcome to ride the loop at any time, practicing courtesy and caution while sharing the road with motor-driven vehicles. Bicycles are prohibited on Park trails.

GRAND CANYON THE GUIDE NATIONAL PARK

A free publication to provide information about Grand Canyon National Park

Volume XII, Number 7

September 5 - 30, 1989

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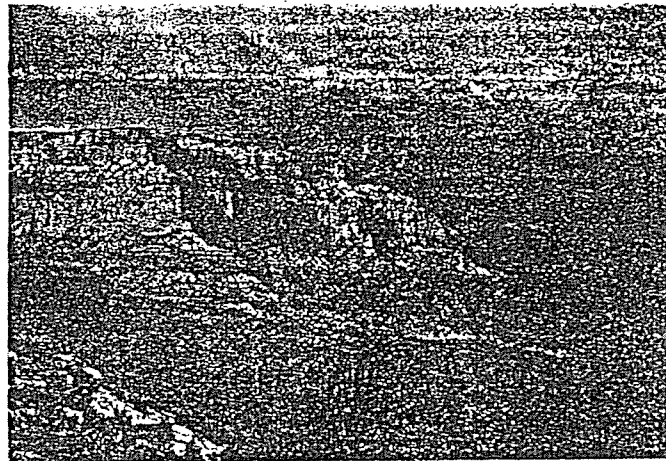
Drinking water

There is no natural source of drinking water on Grand Canyon's South Rim. The rock layers do not trap water close enough to the surface for well drilling to be successful. In 1901 water was first brought to Grand Canyon Village by train. Beginning in 1932, water was piped from Indian Garden, 3200 feet below the South Rim. In 1970 a 14-mile trans-canyon pipeline was completed, bringing water from Roaring Springs on the north side of the Canyon. Large tanks totaling more than 13 million gallons store the water for use on the South Rim.

Though this may seem like plenty of water, the park uses over 600,000 gallons daily. If the pipeline breaks, which happens periodically, the water supply can reach dangerously low levels.

Please help us to conserve water by using only what you absolutely must. Take short showers and do not let water run unnecessarily. Thank you for using water wisely.

HOW TO SEE THE CANYON



There are many ways to enjoy Grand Canyon National Park. Following are some suggestions to help you get the most out of your visit. Here is what to do if you have:

TWO OR THREE HOURS

Visit Yavapai Museum where you may view exhibits about the geologic history of Grand Canyon. Magnificent views of the Canyon are seen from the Museum.

Visit the West Rim Drive for many scenic views. The drive begins just west of Bright Angel Lodge and follow the rim for eight miles to Hermit's Rest. Accessible only by Shuttle during summer. The Colorado River may be seen from Hopi Point, Mohave Point, and Pima Point.

HALF DAY

Having experienced the above, stop at the Visitor Center and explore exhibits which trace the human and natural history of Grand Canyon. Be sure to view the 15-minute slide program for an informative introduction to Grand Canyon.

Take a leisurely walk along any portion of the Rim Nature Trail. The paved trail

extends from Yavapai Museum to Maricopa Point. Free trail brochures are available in boxes along the way.

ONE DAY OR MORE

Enjoy the above activities, then consider a drive along the East Rim to Desert View (25 miles [40 km], 45 minutes one way). At Desert View is the famous Watchtower, and views of the Colorado River and Painted Desert. Tuzigoot Museum and ruin are located three miles west of Desert View.

Hike a short distance into the Canyon. The Bright Angel Trail or South Kaibab Trail are recommended. Remember, it usually takes twice as long to hike up as it does going down. Carry water at all times of year.

Join a Ranger for an interpretive walk or talk to learn more about the human and natural history of Grand Canyon. See THINGS TO DO elsewhere in *The Guide* for program information.

See the sunrise or sunset from the Canyon rim. Arrive early and observe the Canyon's changing colors and moods.

EMERGENCY - 911

Dial 911 from a pay phone or residence. From hotel or motel rooms, dial 9-911.

A 24-hour emergency phone is located to the left of the Visitor Center entrance.

NOTRUF - 911 Wenn Sie im Notfall ärztliche bzw. polizeiliche Hilfe benötigen, wählen Sie von einem öffentlichen Fernsprecher die Nummer 911. Von Ihrem Hotelzimmer aus, wählen Sie 9-911. Ein Notrufernsprecher im Visitor Center zur linken Seite der Eingangstür steht rund um die Uhr zur Verfügung.

APPEL D'URGENCE - 911 Si vous avez besoin d'aide médicale ou de la police, composez le numéro 911 depuis un téléphone public. Composez le 9-911 depuis votre chambre d'hôtel. Un téléphone d'urgence qui reste à votre disposition 24 heures sur 24 se trouve au "Visitor Center", à gauche de la porte principale.

緊急-911 救急車や警察は、公衆電話からは911番をダイヤルして下さい。ホテルの部屋からは9-911でかかります。なお、公園案内所(Visitor Center)の入口左側にも24時間緊急電話が設置されています。



Translated information about Grand Canyon's natural and cultural history is available for sale in German, French, and Japanese. Inquire at the Visitor Center and museums.

AUSKUNFTSÜBERSETZUNGEN über die Natur- und Kulturgeschichte des Grand Canyons werden zum Verkauf auf Französisch, Deutsch und Japanisch angeboten. Erkundigen Sie sich im Visitor Center und in den Museen.

DES TRADUCTIONS sur l'histoire naturelle et culturelle du Grand Canyon se vendent en français, allemand et japonais. Adressez-vous au Visitor Center et aux musées.

外国語による案内書 グランドキャニオンの自然及び文化の歴史をつづった案内書が、仏・独・日の各種外国語でお求めになれます。ビジターセンターか博物館でお問い合わせください。



Hiking permits & reservations

Permits are needed for overnight hiking only; day hikes do not require a permit. Reservation requests for overnight hiking may be sent to:

Backcountry Reservations Office
P.O. Box 129
Grand Canyon, Arizona 86023

Hikers arriving without reservations should contact the Backcountry Reservations Office (BRO). It may be possible to obtain a Use Permit by placing your name on a waiting list for cancellations.

The BRO is located near the entrance to Mather Campground, adjacent to Camper Services. The office is open daily from 8 a.m.-noon and 1 p.m.-5 p.m. (7 a.m.-noon and 1 p.m.-5 p.m. from April 1-September 30). The BRO information line, (602) 638-2474, is answered from 11 a.m. to 5 p.m. Monday through Friday, excluding holidays. Reservations are not accepted by phone.

Inner canyon trails are extremely strenuous and should not be attempted unless you are in good physical condition and are carrying adequate water, food, and other appropriate equipment. Always carry a flashlight. The difficult hike out of the canyon commonly takes longer than visitors anticipate and trails become even more challenging after dark. Remember, Grand Canyon is a mountain, it's just upside down. You'll be hiking uphill when you are tired, and into high altitude instead of out of it (which will greatly increase fatigue if you normally live at lower elevations). Do not attempt to hike from the Rim to the Colorado River and back in only one day! Many people attempting this trek have suffered serious illness or death.

LEBENSGEFÄHRlich: Unternehmen Sie keine Wanderung vom Schluchtrand hinunter bis zum Colorado Fluß und wieder hinauf innerhalb eines Tages! Viele Wanderer, die eine solche Tour versucht haben, erlitten schwere gesundheitliche Folgen bzw. den Tod. Die Hinterlandsförster (Backcountry Rangers) können Ihnen helfen, eine Wanderung zu planen, die Ihren Fähigkeiten entspricht.

NE TENTEZ PAS de faire une randonnée aller et retour depuis le bord du canyon jusqu'au fleuve Colorado dans une seule journée! Beaucoup ayant tenté cette excursion subirent de graves maladies ou même la mort. La gendarmerie du parc (les "Rangers") pourront vous aider à planifier une randonnée à votre mesure.

危険 リムからコロラド川までを日帰りハイキングしないで下さい。この距離を一日で往復して弱気になったり、死亡した人もいます。レンジャーにきけば、あなたの体力に合ったハイキング計画をたててくれます。

Day hiking in Grand Canyon is one way to experience some of the canyon's rich natural beauty and immense size. No permits are required for day hikes.

A number of popular day hikes are described below. For information about more strenuous or longer day hikes, inquire at the Visitor Center or Backcountry Reservations Office.

The round-trip (RT) hiking times listed below are averages for hikers in good physical condition. A good rule to follow is to decide how many hours you wish to hike. When 1/3 of the time has passed, turn around and begin to hike out. Backcountry rangers can assist you in planning a trip within your capabilities.

| Trail/ Destination | Distance Round Trip | Difficulty/ Elevation Change | Approximate Hiking Time (Round Trip) | Notes |
|--|---------------------------------|--------------------------------------|--|---|
| Rim Trails: While most Inner Canyon trails are strenuous, the Rim Trails are excellent alternatives for visitors who are not prepared for a physical challenge, or are accompanied by small children. Hikers could easily spend all day hiking along the rim, but frequent access by car or shuttle (in summer months) allows starting or stopping at many points. See map for details. | | | | |
| West Rim | ½-8 mi .5-12.8 km one way | Easy Up to 200 ft. 60 m | 15 min. to all day | Becomes dirt path west of Maricopa Point. Glimpses of Colorado River. |
| South Rim | ½-1½ mi .5-2.4 km one way | Easy Up to 200 ft. 60 m | 15 min. to 1½ hours | Paved. Best easy walk. Passes historic buildings. |
| Bright Angel Trail: Trail begins just west of Bright Angel Lodge. Some shade, seasonal water* subject to pipeline breaks, check at Visitor Center. | | | | |
| To 1½-Mile Resthouse | 3 miles 4.8 km | Moderate 1131 feet 345 m | 2½-4 hours | *Water May to September |
| To 3-Mile Resthouse | 6 miles 9.6 km | Strenuous 2112 feet 644 m | 4-6 hours | *Water May to September |
| To Indian Garden | 9.2 miles 14.8 km | Very strenuous 3100 feet 945 m | 6-9 hours | Restrooms Water |
| To Plateau Point | 12.2 miles 19.7 km | Very strenuous 3220 feet 980 m | 8-12 hours | No water View of Colorado River 1½ miles beyond Indian Garden |
| South Kaibab Trail: Trail begins near Yaki Point on East Rim Drive. Best views for a relatively short hike. Steep trail, no water, little shade. | | | | |
| To Cedar Ridge | 3 miles 4.8 km | Strenuous 1450 feet 445 m | 2½-4 hours | Toilet No water |
| Rim to River: Not recommended as a day hike. Many persons attempting this trek have suffered serious illness and/or death. | | | | |
| Grandview Trail: Unmaintained steep trail requires caution. For experienced desert hikers. Begins on other side of retaining wall at Grandview Point on East Rim Drive (12 miles east of the Village). | | | | |
| To Horseshoe Mesa | 6 miles 9.6 km | Very strenuous 2600 feet 792 m | 7-11 hours | Toilet No water |
| Hermits Trail: Unmaintained steep trail requires caution. For experienced desert hikers. Begins 500 feet south of Hermits Rest. Water from springs must be treated. | | | | |
| To Santa Maria Springs | 5 miles 8 km | Very strenuous 1200 feet 360 m | 5-8 hours | Treat water |
| To Dripping Springs | 6 miles 9.5 km | Very strenuous 1350 feet 412 m | 6-9 hours | Treat water Use extra caution along some narrow sections |

A fragile place

Grand Canyon National Park faces the challenge of accommodating growing numbers of visitors while at the same time protecting the Canyon's natural treasures.

In 1919, Grand Canyon's first year as a national park, there were 44,173 visitors. That figure exceeded one million for the first time in 1956. Last year nearly four million people visited this park. Grand Canyon's popularity is a testimony to the lure of its natural wonders; those who experience the Canyon are enriched by it. If this environment is to survive it is imperative that we work together to protect it.

The plants and animals at Grand Canyon are part of an interconnecting web of life, an ecosystem. Each species depends on other species for survival. The seemingly enduring Canyon belies the fragile balance of flora and fauna to which it is home. With this understanding you can help protect it by leaving natural things as you find them.

Imagine that each of the four million visitors picks a wildflower. Insects which feed from and pollinate these flowers would be in jeopardy. If the insect population is reduced, rodents would have little to eat. Without the rodents, snakes could not survive.

Human impact anywhere along this continuum may cause imbalances. For example, squirrels and mule deer in the park have become accustomed to people. Dependency on handouts of food diminishes their ability to forage for natural sources; when visitation decreases in the winter, they may starve. Snack foods also tend to have high salt and sugar content which neither rodents nor deer can metabolize. Illness and death can occur.

Contact between people and wildlife can result in harm to both. Squirrels may appear friendly, but they are wild animals which occasionally bite and may carry rabies. Mule deer, associating people with food, tend to congregate in heavily visited areas such as Grand Canyon Village. Their actions are unpredictable and can cause injury. They also are a hazard to themselves and to people along the roads. Every year there are numerous automobile accidents involving deer. Speed limits in the park are reduced for the protection of all.

Visitation by four million people a year threatens the longevity of Grand Canyon's natural resources. You can help preserve the Canyon's delicate ecosystem by leaving plants, animals, rocks and artifacts as you find them, and by disposing of trash in containers provided for that purpose. Thank you.

When planning your activities please remember that you are 7,000 feet (2,134 meters) above sea level. Over-excretion at this altitude can be dangerous.

PROUDLY DWARFING TREND[®]



Supplementary Activity Guide For Grades 7 through 12

DISTRIBUTED IN WORKSHOPS
CONDUCTED BY THE
BRITISH COLUMBIA FORESTRY
ASSOCIATION

BY
C.F.

(Continued)

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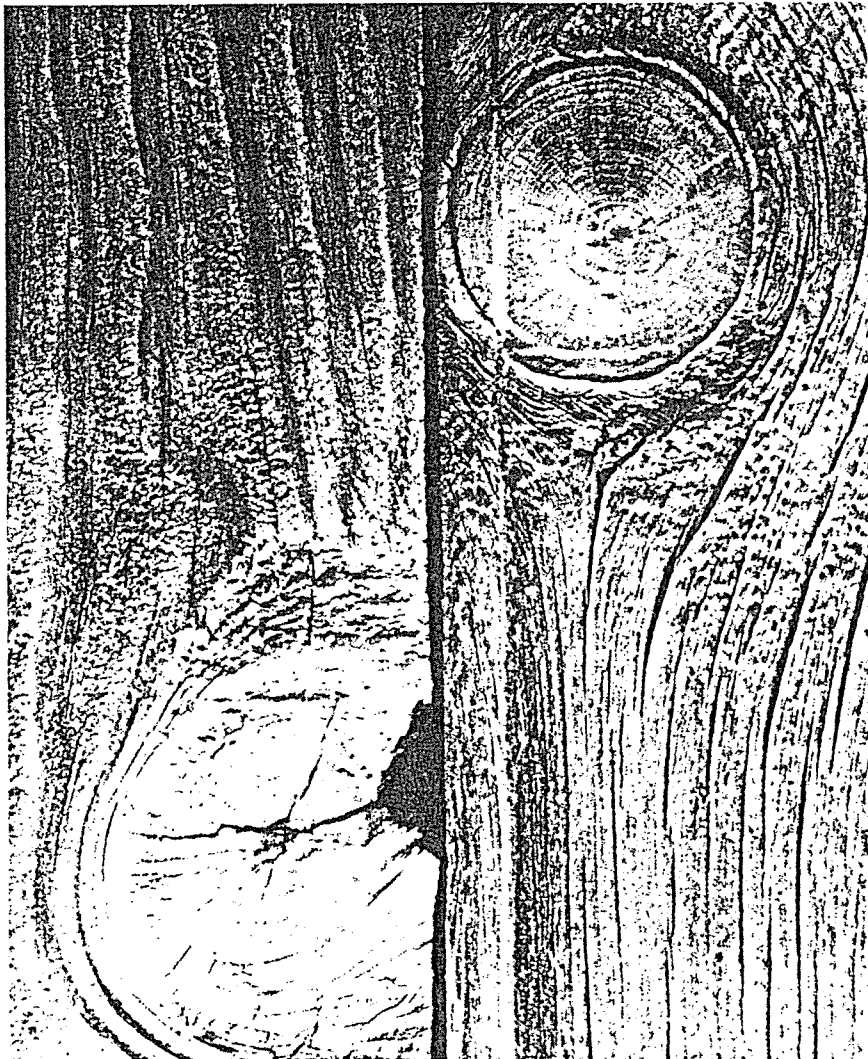
Ask your students to suggest other methods of testing. Students should record the results, then discuss:

Are higher grades of lumber always the best buy? Why or why not?

Could we utilize lower quality grades of lumber for some purposes for which only higher grades are used now? What might cause a shift from higher to lower grades for the same purpose? (Scarcity, abundance of lower grades, rising prices for higher grades, changing technology.)

Could we use defective lumber for some useful purposes?

Not all wood uses require strength or durability; some demand, as first priority, an attractive appearance. Suggest that students design and make a project which uses defective lumber for its aesthetic value — a piece of wormy chestnut furniture, for example.



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Loose Knots and Tight Knots

SUBJECTS

Industrial Arts
Vocational
Agriculture

GRADES

7-12

PLT PRINCIPLES

5. Management and
Interdependence of
Natural Resources
7. Lifestyles

CONCEPTS

5.121 Efficiency of
Resource Use
7.32 Conservation
Through Product
Design

SKILL

I. Gaining
Information

OBJECTIVE

Students will be able to distinguish between natural and human-caused defects in wood and describe probable reasons for the human-made defects.

ACTIVITY

Collect boards with defects which affect the grade of the wood. Divide the sample boards into two categories, one for those with natural defects and one for those with human-caused defects.

Natural defects include knots (loose and tight); waness; shakes; holes from loose knots or insects; staining from insects, sap, or fungi; cross grain; compression; and decay.

Human-caused defects, which occur during the curing process or from improper handling, include splits; cracking; checking; honeycombing; case hardening and reverse case hardening; crooking; cupping; warping; and collapse.

With help from the references cited under Resources or others you can suggest which deal with common curing defects, ask your students to try to identify the defects on the boards you and they have collected.

Discuss:

How can you tell whether these defects were a result of rushing the curing process?

How could some of the natural defects be minimized? Would all people necessarily want these minimized? Suggest reasons why some people might, and others might not, want these minimized.

What are some uses for defective wood? (See related lessons.)

You could make this activity more meaningful by doing it in conjunction with a visit to a sawmill where students could observe the milling and curing process.

VARIATION

Obtain several pieces of lumber which have natural defects produced by such things as insect attack, fungi or parasite attack, and loose knots.

Ask your students to test these boards and matching nondefective boards of the same kinds and dimensions for strength and durability. Some testing methods are:

- Twisting or breaking in a vise.
- Loading between supports until the piece breaks or measuring the distance it sags under the weight
- Nailing to test susceptibility to splitting

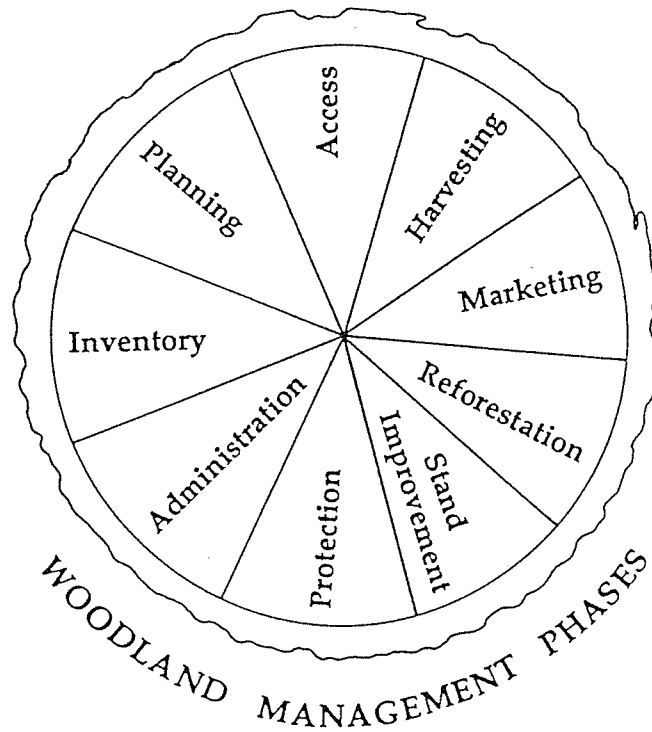
**Managing Your Woodland:
A Non-Forester's Guide
To Small-Scale Forestry
In British Columbia**

FOREST RESOURCE DEVELOPMENT AGREEMENT

Canada



Introduction



This Handbook has been written for non-foresters. Its intent is to make the practice of forestry understandable, profitable and fun.

This is a guidebook to the management of small-scale forest lands in British Columbia – for the production of forest products, and the enhancement of wildlife, fisheries, recreational or aesthetic values. It will provide you with an overview of the steps involved in the practice of forestry, the types of decisions you will need to make, the kind of work to be done, and where you can get help. It will not tell you everything there is to know about forest management, but it will tell you what you need to get started and to take the next steps in managing your woodland.

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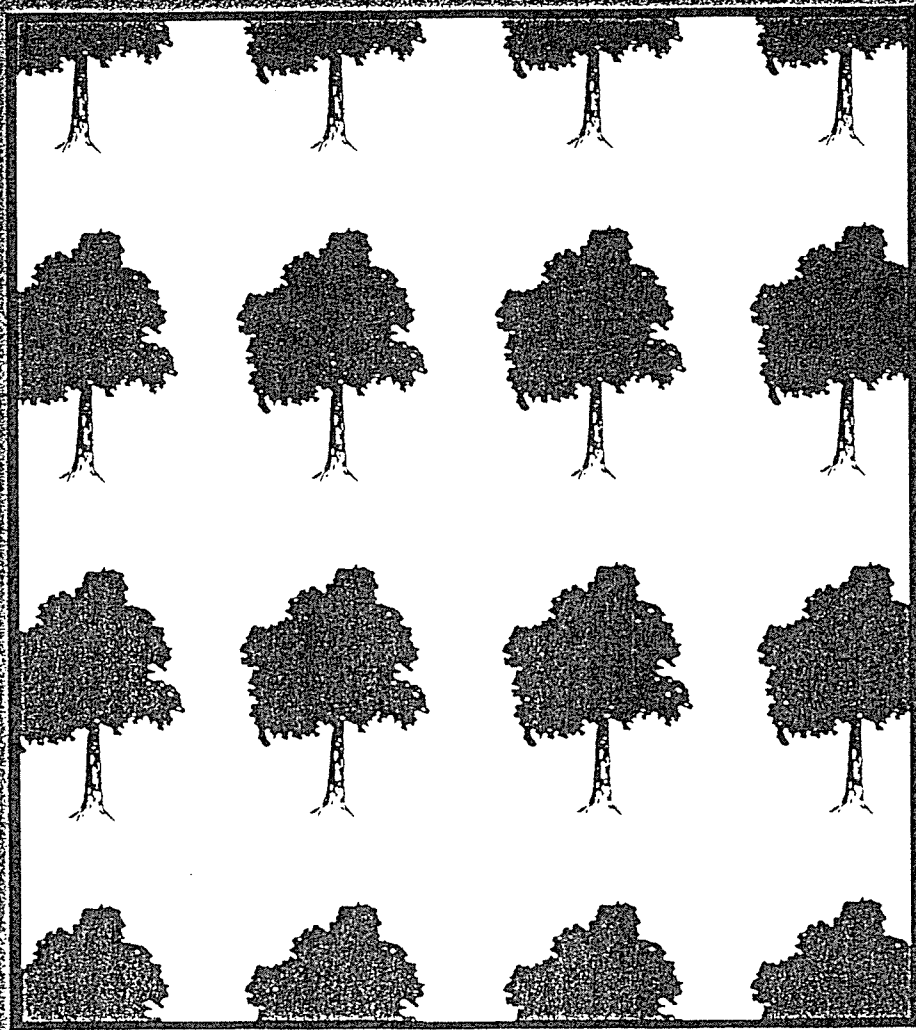
Stumpage And Taxes

- What Charges Will I Pay The Government?
- Stumpage
- Royalties
- Rent
- Property Taxes
- B.C. Logging Tax
- Personal Income Tax
- How To Handle Funds From Assistance Programs

Appendices

- Appendix I – Glossary
- Appendix II – Conversion Factors
 - Imperial/Metric Conversions
 - Slope Correction Tables
- Appendix III – Helpful Extras
 - B.C. Ministry of Forests and Lands' Offices
 - Helpful Contacts
 - B.C. Woodland Associations
 - Acts Affecting Forest Land Management
- Appendix IV – Tree Volumes
 - Calculating Tree Volumes
 - Individual Tree Volume Tables

How to Estimate the Value of Timber in Your Woodlot



Circular 148
January 1989
Agricultural and Forestry Experiment Station
West Virginia University

Volunteers in the
National Forests



Welcome to the
Forest Service

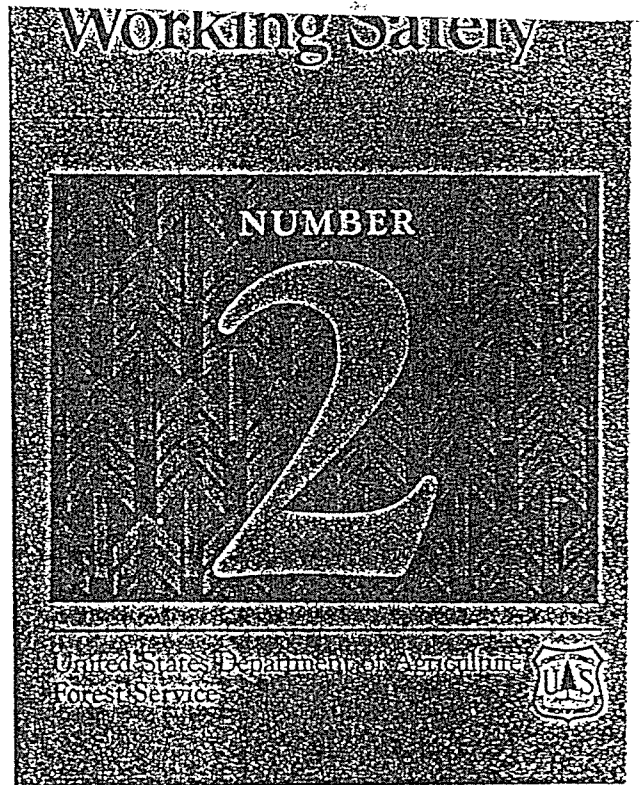


United States Department of Agriculture
Forest Service



APPENDIX 07

PUBLIC PARTICIPATION APPROACHES



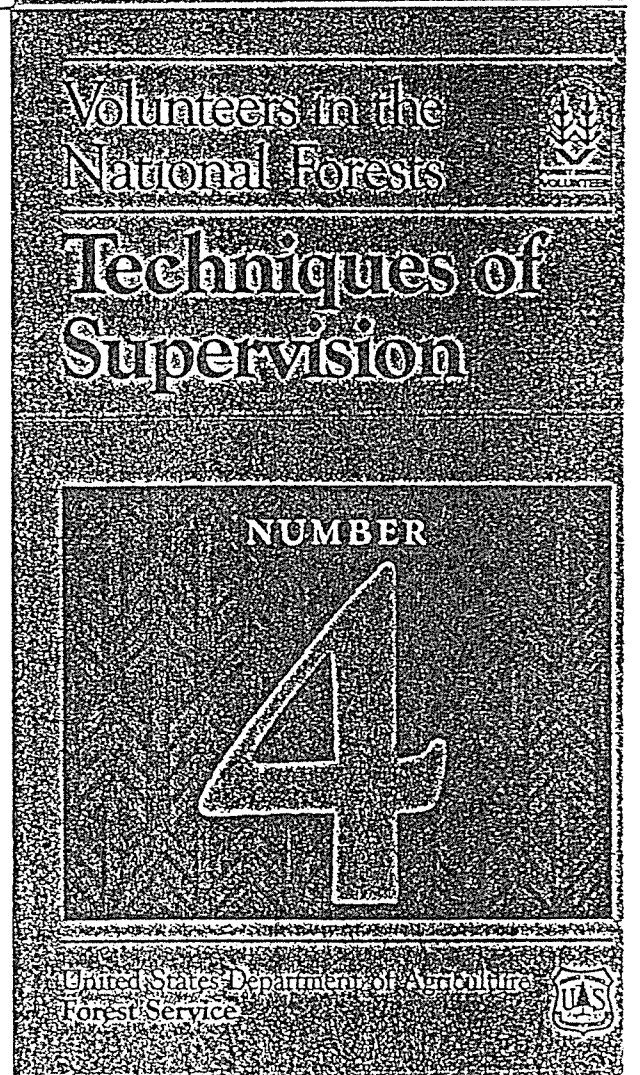
Volunteers in the
National Forests



Meeting the
Visitor



United States Department of Agriculture
Forest Service





United States
Youth Conservation
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Senior Conservation Employment Program



YCC is an Equal Opportunity Employer

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Fish and Wildlife Service
National Park Service
Washington, D.C. 20240

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Forest Service
Washington, D.C. 20256

United States
Department of
Agriculture

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FS-332

It's a great
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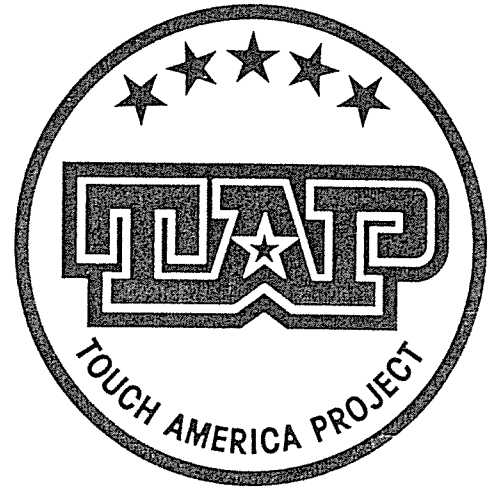


CCC

California Conservation Corps

TAP

**TOUCH AMERICA PROJECT
FOR YOUTH VOLUNTEERS
AGE 14-17**

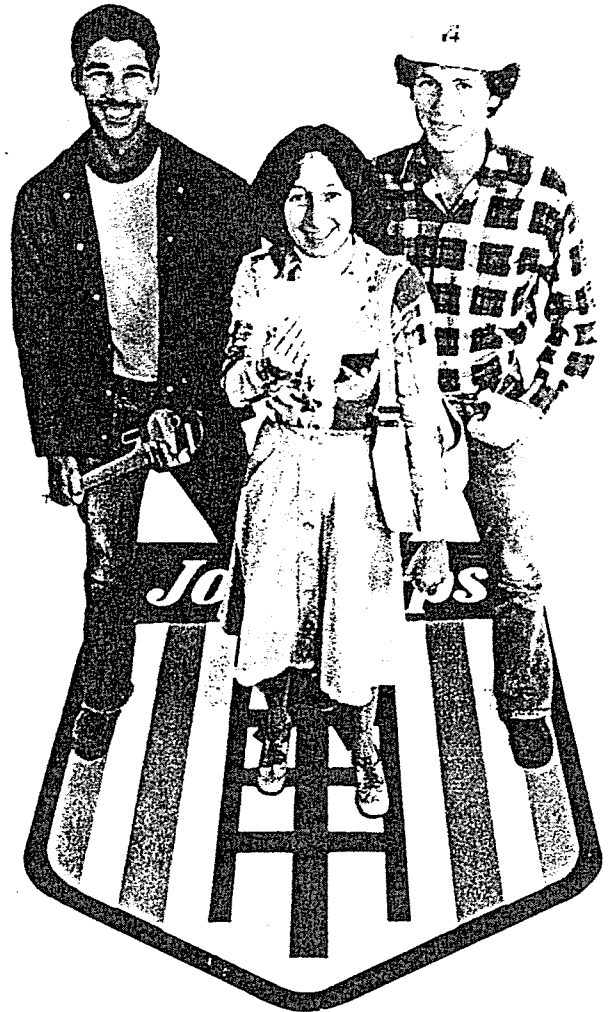


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Involving the American Public

The Forest Service in 1987



Partnerships, such as those with private outfitters and guide services, allow visitors to enjoy unique opportunities on the national forests.

In recent years, the American people have increasingly expressed new concerns and desires for the national forests. Accordingly, the Forest Service has intensified its public involvement efforts to include all segments of society in planning and managing *their* forests. The results of these efforts were clearly evident in all agency activities in 1987. In response to what the public said, the agency endeavored to bring management of the national forests into better balance—to reemphasize management for a variety of benefits and uses. More than just asking for their comments though, the Forest Service has asked the American people to work side by side with the agency to ensure that activities they want on the forests can and will be allowed in a quality environment.

Forest Planning

The need to shift the emphasis of national forest management became more evident through national forest

planning—a process in which managers use scientific and socioeconomic tools to determine the best use of forest resources, both to help meet current demands and ensure that adequate supplies will be available for future generations. It is a continuing process that responds to changes in the demands made upon the Nation's supply of natural resources. An integral part of this effort is public participation, through which the Forest Service actively seeks the views of a variety of forest users in order to develop the best strategy for forest management.

Of 123 forest plans (encompassing 156 national forests) being developed under the National Forest Management Act of 1976, 20 were finalized in 1987, bringing the national total to 85. Currently, 37 plans are published in draft form, with the Tongass National Forest Plan not scheduled for revision until 1989.

Following are other highlights of the 1987 accomplishments of the Forest Service, U.S. Department of Agriculture, in caring for the land and serving people.

Wildlife and Fish

The National Forest System contains the greatest diversity of wildlife and fish

of any single land ownership in the country. These resources are valuable assets of the national forests, generating nearly 33.6 million visitor days of recreation for hunters, fishermen, bird watchers, and others. The combined annual value of recreational hunting and fishing on the National Forest System is estimated at \$643 million. The Forest Service manages animal habitats on these lands and cooperates with State agencies in managing animal and fish populations. These management programs are developed as part of the forest planning process. During 1987, the public stressed its strong interest in maintaining and improving fish and wildlife habitats. The public also became an active partner in the process.

Through Challenge Cost-Share projects, the fishery and wildlife communities reemphasized their continuing support for these programs. In 1987, Congress authorized \$1.5 million to fund Challenge Cost-Share projects on national forest lands, and "matching" contributions exceeding \$2.6 million were provided by groups such as the National Wild Turkey Federation, the Rocky Mountain Elk Foundation, and Trout Unlimited; private individuals; and public

¹ Throughout this publication, 1987 refers to the fiscal year from October 1, 1986, to September 30, 1987, unless otherwise specified.