

A CASE STUDY
THE MOUNTAIN PINE BEETLE
IN THE EAST KOOTENAYS

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I am very pleased that the sponsors of this workshop selected the East Kootenays for the meeting and field trip, as this area has been subjected to one of the longest and most severe mountain pine beetle outbreaks in recent history. In the East Kootenays, through trial and error and cooperation of all forest users, we developed an Action Sanitation Salvage and Control Plan, which was too late to provide control in many parts of the Kootenays but could be used as a model for control actions against future outbreaks of mountain pine beetle or, for that matter, any other insect.

Some of the East Kootenay mountain pine beetle attacks could have been controlled, barring unforeseen circumstances, if we had developed our "Five-Year Master Control Plans" prior to the outbreak. None of us recognized the explosive nature of this small insect. I find it ironical that, in British Columbia, we have developed the most modern fire-control plans and suppression organizations, but have not developed comprehensive insect and disease control plans. Perhaps this is because fire is spectacular and the press and public love the excitement attached to it.

If we are to avoid major reductions in allowable cut and social dislocation, we must quickly develop salvage and control plans for all areas, ensure execution of these plans, and ensure adequate funding for access and site rehabilitation.

THE HISTORY AND EXTENT OF
ATTACKS IN THE EAST KOOTENAYS

The first attack area was identified by the Canadian Forestry Service in 1966 near the lower end of Elk

Creek in the White River drainage, approximately 15 miles southeast of Fairmont. The Service placed a study plot of approximately 80 acres around the attack. This plot was discontinued in 1968. In 1969, the beetle attack spread rapidly along the lower end of Elk Creek to the confluence of Elk Creek and the White River. In about 1970, small groups of attacked trees were found in the middle portion of Elk Creek and, in 1971, in the upper portion of Elk Creek. No master salvage plan was developed and the attack spread at an ever accelerating rate until the beetle was far ahead of salvage attempts in most areas, as it is today.

The second attack area was noted in the Golden Area in 1971 and, like the White River Area, spread in spite of attempts to control it.

The third attack area was in the Flathead Valley in 1975. This attack was identified as spreading from the United States like a wall of fire, with the result that effective control action has been impossible. In some areas, the insect has chewed through the mature timber and is now working on immature timber in the 60-year-old age class, which unfortunately is unmerchantable today.

EXTENT OF
MOUNTAIN PINE BEETLE
SUSCEPTIBLE STANDS

The four timber supply areas (TSA) in the East Kootenays contain 45 900 000 cubic metres of susceptible mature pine, located on 228 400 hectares. The percentage of pine varies from area to area,

and the following figures indicate the various percentages for each timber supply area (the Creston public sustained yield unit [PSYU] is being incorporated into the Kootenay Lake TSA):

Cranbrook TSA:	37%
Invermere TSA:	36%
Golden TSA:	13%
Creston PSYU:	15%

The high percentage of lodgepole pine in the East Kootenay forests, coupled with the fact that lodgepole pine comprises of a very high proportion of the immature stands, is of grave concern, particularly as mountain pine beetle attacks are continuing unabated.

AREA AND VOLUME UNDER ATTACK

The forested area, currently under attack by the mountain pine beetle in the East Kootenays, is startling. The extent of the epidemic in mature pine is as follows:

Timber Supply Area	Volume (m ³)	Area (ha)
Cranbrook	3 500 000	17 500
Invermere	5 400 000	27 000
Golden	120 000	600
Kootenay Lake (east)	45 000	225
Total	9 075 000	45 325

While this acreage is under varying degrees of attack, it amounts to approximately 4 to 5 years of the allowable cut of the East Kootenays!

In addition, it is estimated that more than 20 000 hectares of immature pine are decimated or under attack.

DEVELOPMENT OF A CONTROL PLAN BY THE EAST KOOTENAY INSECT AND DISEASE CONTROL COMMITTEE

The East Kootenay Insect and Disease Control Committee was re-formed in 1973 to address the rapidly spreading mountain pine beetle outbreaks,

through both government and forest industry co-operation. A major goal was to eliminate the misunderstandings and conflicts among forest users. This committee had been formed in 1969 to combat the large spruce bark beetle attacks in the East Kootenays. The committee efforts were recognized as providing the basis for control actions against spruce beetle attacks, which had subsided by 1971.

The committee was broadened in 1973 to include the B.C. Forest Service, forest industry, Fish and Wildlife Branch, Canadian Forestry Service, and recreation (Forest Service) and parks (on occasion). The committee organization included a steering committee and working committees for each of the four timber supply areas. The terms of reference included the "development of master salvage and control plans" for the East Kootenays, within the framework of the allowable cuts for all tenures. It was recognized that overcutting would be required in some tenures, but that, hopefully, this would be offset by undercutting in other areas. The Steering Committee meets semiannually, or more regularly if necessary, to set priorities and guidelines. The Working Committees meet as often as required and are charged with the development of "Five-Year Master Salvage and Control Plans", which I will describe later. Committee accomplishments, direct and indirect, in many different areas, have permitted the preparation of master salvage and control plans.

Committee Work On Fish and Wildlife

Elk/Logging Studies

The committee, with the guidance and participation of the Fish and Wildlife Branch, sponsored an Elk/Logging Study from 1975 to 1978. The report, "Relationships Between Elk, Snow, Habitat Use, and Timber Management in the White River Drainage of Eastern British Columbia", prescribes:

- Select cuts on south aspect, leaving abundant browse.
- Protection of riparian areas.
- Temporary forested travel corridors.
- Sheltered cover in temporary reserve blocks.

- Properly engineered clearcuts:
 - Optimum size under 30 hectares, but larger where heavy attack occurs.
 - Providing protection of ridge-top cover for escape routes.
 - Located on the lee side in windy areas.
 - Preserving deep-rooted tree species on windward side.
 - To afford windbreaks and cut down wind-crusting of snow.
 - Controlled burning activities, when necessary.
- Large select logging area, leaving 10% of stems (fir/larch) ideal browsing areas.

Grizzly Bear Study

The Border Grizzly Bear Study, which includes the Flathead Valley of British Columbia, has two members of the East Kootenay Insect and Disease Control Committee on the Steering Committee.

The Grizzly Bear Study Committee recognized that logging and grizzly bear management could be carried on, but the question was "how to log".

The "Akamina-Kishinena Grizzly Project Report" concluded that timber salvage can occur without detrimental effects to grizzlies, if activities are carefully planned and diligently supervised. Salvage plans must be contingent upon:

1. The establishment of population centre and high-density areas.
2. The protection of basic needs within these areas through:
 - The retention of a minimum amount of wilderness area by limiting development and by an active road closure program.
 - Maintenance of as much of the existing ground cover as possible.
 - Protection of breeding, denning, and spring feeding areas.

- Improvement of feeding areas through controlled burning and seeding of clover.
- Retention of temporary timbered corridors to protect travel routes.
- Avoiding road construction through avalanche shutes.

The work of the Grizzly Bear Study group has been instrumental in the development of sanitation and control salvage programs in the Akamina-Kishinena Area, which is a highly controversial area.

A policy of access control for hunters and of physical road closure plans has developed from the "Elk/Logging" and "Grizzly Bear" Studies. Coordinated use plans, were initiated into British Columbia by the Fish and Wildlife Branch and have been very successful in resolving conflicts.

Utilization Studies for the Committee

The Western Forest Products Laboratory, now Forintek of Vancouver, reported in "Lumber Values and Beetle-Killed Lodgepole Pine" (1976) that, under normal markets, positive conversion returns for manufactured lumber can be obtained until trees start shedding their bark and have severe checking. To ensure positive values, attacked trees should be harvested prior to complete foliage loss, normally within two years of attack. Tree with green or red foliage yielded similar values per cunit of logs with positive conversion returns. Trees with no foliage, but tight bark, also yielded positive returns, but at a lower level. For trees with sloughy bark, the returns were negative. This excellent report has been used by all forest companies for guidance and has been instrumental in stumpage value assessments.

B.C. Forest Service Cooperation

The B.C. Forest Service has encouraged salvage and control by:

- Providing incentives in the stumpage appraisal system by reducing lumber recovery factors, increasing "crash" road construction, planning and logging costs, and allowing salvage rates for specific degrees of attack.
- Giving priority to chart or planning areas and cutting permits.

- Reducing or eliminating the cruising requirements, depending on the degree of attack.
- Preparing intensive fire protection plans because of the extreme fire danger associated with beetle attacks.
- Placing insect foresters in each region.

Cooperation With The Kootenay Steep Slope Committee

The Kootenay Steep Slope Committee is developing guidelines for road and harvesting systems to remove lodgepole pine from sensitive sites on an economic and environmentally sound basis. Logging systems include conventional, mechanical, small tractors, two sizes of light flotation systems, and cable. I would suggest that, with proper planning, supervision, and an optimum combination of equipment, beetle-attacked timber could be salvaged in parks with little, if any, detriment.

Forest Industry Cooperation

The forest industry has played its part in salvage and control plans by:

- Investing in new equipment for harvesting on critical sites and making mill modifications to utilize lodgepole pine. All companies in the East Kootenays have agreed to utilize 70% of lodgepole pine in their plants, compared to the normal profile of 25%. This has had a definite impact on the profitability of operations.
- Longer hauls have been required, in some cases, at a considerably increased cost. At least one company is hauling lodgepole pine an extra 50 miles.
- Accelerating the planning process and holding planned areas in abeyance because of the out-breaks.
- Accelerating access construction into high-priority areas. Large sums of money have been spent. Previously developed areas have been held in abeyance.

Canadian Forestry Service Surveys

The Canadian Forestry Service, by providing annual

and periodic reports on insect intensity and direction of attack, has facilitated plan preparation.

SALVAGE AND CONTROL PLANS FOR STANDS DAMAGED BY INSECTS AND DISEASES

The East Kootenay Insect and Disease Control Committee, through cooperation and implementation of study results, has modified or eliminated many of the hurdles that prevent the preparation of a meaningful salvage and/or control plan. Our plan may not be perfect, but it is an effective "blueprint" for control and/or salvage.

The planning process for a Five-Year Master Salvage Plan includes:

- Identification of all infested and susceptible stands.
- Establishment of priority criteria.
- Identification of priority areas.
- Estimation of affected volumes.
- Estimation of accessible annual allowable cuts versus volumes.
- Establishment of cut volumes for each company.
- Submission to the Steering Committee of the East Kootenay Insect and Disease Control Committee for approval and amalgamation with adjoining timber supply areas.

The preparation of plans for harvesting include:

- Developing access plans for all infested stands and for susceptible stands.
- Establishing data collection requirements (cruise required, logging production information) on each infested stand, together with the Ministry of Forests.
- Recommending post-logging treatments to the East Kootenay Insect and Disease Control Steering Committee, i.e., extra funds required, additional staffing, etc.

- Reviewing performance semiannually or more often, as required, to ensure that objectives of master plans are being met.
- Revising the plan annually, if required.

The Master Salvage Plan update will be completed in January 1982 and will be reviewed shortly after. This plan will include addressing the spruce and balsam beetle attacks, which are now reaching major proportions in the East Kootenays. Heavy emphasis will be placed on site rehabilitation. Areas that require rehabilitating include large areas of mature lodgepole pine that are inaccessible and immature stands that are unmerchantable. If these areas are not treated, there will be a substantial reduction in annual allowable cut.

CONCLUSIONS

Multi Discipline Committees, formed on a federal, provincial and county level, need to develop "Master Control and/or Salvage Plans". The elimination of technicalities and friction points in advance is mandatory, and a full commitment is required to the plan.

Federal and provincial governments must provide substantial funding for access and site rehabilitation. These funds must be allocated on a priority basis within a "Five-Year Master Control or Salvage Plan", otherwise, they will be largely wasted.

Public education and awareness programs must be developed to make everyone aware of the tremendous damage caused to the forest by insects and disease.