# AN OVERVIEW OF THE PROBLEM

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By way of introduction to the subject of this symposium, I'd like to present an overview of the problem, in particular as it relates to the areas adjacent to the British Columbia-Alberta boundary, and stretching from the United States border north to at least the Yellowhead Highway. As many of you are aware, we are dealing with an insect outbreak in western Canada that is probably the largest, or one of the largest mountain pine beetle threats of this century. The outbreak has many ramifications in the management of lodgepole pine forests of the Rocky Mountain region. Some of these relate specifically to several jurisdictional areas, including national parks and wilderness areas, areas managed primarily for forest production in the two adjoining provinces, forest industry, and a multitude of other multiple forest land uses. The concerns and management of the mountain pine beetle in the general Rocky Mountain area are therefore complex. A main function of this symposium should serve in airing a number of the complexities and provide an appreciation of the problems of management.

The mountain pine beetle (Dendroctonus ponderosae Hopk.) is a small black insect about 0.5-0.7 cm long and is native to western North America. It is one of a number of bark-feeding beetles, so-called because of its burrowing habit in the bark of pine trees. It is the most important insect enemy affecting mature pines in western Canada. Within the past few years, it has killed millions of merchantable size pine trees in British Columbia and adjacent areas of the United States, and now has invaded several areas in southern Alberta. A recent statement by W.H. Klein of the U.S.F.S. suggests the mountain pine beetle has probably killed more timber in western U.S. and Canada during the current century than all other forest insects combined.

The natural range of the mountain pine beetle includes approximately the southern two-thirds of B.C. and southwestern Alberta and extends

south to northern Mexico and from the Pacific coast eastward to Colorado and the Black Hills of South Dakota. In British Columbia, it attacks three main pine hosts: ponderosa, western white, and lodgepole pines. In the areas of concern for this symposium, lodgepole pine is the most important species. Other native pine hosts of lesser economic importance are white bark and limber pines, and the exotic Scots pine.

In examining the current outbreak, especially in Alberta and adjacent areas of the B.C.-Alberta boundary, it may be worthwhile to review some historical notes on outbreaks in western Canada and the northern States. W.H. Klein of the U.S.F.S. provides an interesting account in Montana dating back to the early part of this century. The first record of a major outbreak in the Flathead County of Montana appears to have occurred between 1899 and 1909. Scattered tree-killing occurred for several years afterwards in southern B.C. and in western and southern Montana. Throughout the 1920's, the infestations generally progressed southward killing large areas of trees in Wyoming and southern Idaho. By the early 1930's, significant tree-killing was reported in Utah. For the next 20 years, infestations were numerous but widely scattered. Then, between 1953 and 1958, a large outbreak developed in Utah and at other infestation centres throughout the Intermountain Region. These began to expand rapidly with a general movement northward, so that by 1965, massive outbreaks were present in northern Utah, southern Idaho and western Wyoming. By 1972, infestations were appearing in Glacier National Park and the Flathead County of northern Montana. These infestations intensified during the mid 70's, and in 1976 a few scattered infested lodgepole pine were found in adjacent southeastern B.C. Between 1976 and 1980, the flathead area of southeastern B.C. experienced up to 75 percent mortality of mature lodgepole pine on some 15 000 hectares. Similar but somewhat slower intensifications of infestations have developed northward in the Elk Creek and White River valleys south of Kootenay National Park. These infestations now cover some 10 000 hectares and

have been expanding rapidly within 50 kilometres south of the Park. Infestations also occur along the Kootenay River Valley and Cross River Valley adjacent to the southern Park boundary.

New infestations were discovered in Kootenay National Park in 1979, and these expanded considerably in 1980. It is noteworthy that the current development of infestations in the Park is following a pattern similar to that which developed the area during the 1930's and early 1940's, and eventually killed up to 90 percent of pine over some 650 square kilometres. This same outbreak spread into Banff National Park between 1940 and 1944. At the present time, no beetle infestations have been found in Banff or Jasper National Parks.

In 1980, at least four separate infestations were active in Yoho National Park. These pose a threat to the large areas of mature lodgepole pine within the Park.

In Alberta, which has been essentially free of mountain pine beetles, except for the 1940 to 1944 infestation in Banff National Park, the first beetle-killed trees were reported in 1977 in Waterton Lakes National Park, and along the Castle and Carbondale River drainages. Examinations of the sites suggest the initial tree attacks began as early as 1974 or 1975, and possibly from movement of beetles from the south in Glacier National Park, Montana and to the west in southeastern B.C. These infestations in Waterton National Park, and the Bow/Crow Forest have since expanded and intensified.

In 1980, the total area with beetle-killed trees is probably between 6 000 to 7 000 hectares and contains accumulated tree mortality of well over a million trees.

Between 1978 and 1979 beetle populations moved northward to initiate numerous small infestations throughout the Porcupine Hills and to the west along the eastern escarpment of the Livingstone Range. This northern movement prompted the Alberta Forest Service to initiate a major control program in the spring of 1980 to attempt to prevent further spread northward.

In late 1979, beetle-killed trees were also found, for the first time in recorded history, in the Cypress Hills on the southern Alberta-Saskatchewan boundary. The origin of the beetles in the Cypress Hills is of considerable interest because of the distance of some 160 kilometres to nearest known population source. At the present time, there are an estimated 3 000 to 4 000 dead and dying trees scattered somewhat randomly throughout the hills in both the Alberta and Saskatchewan portions.

This is essentially the story of the beetle and its current infestation pattern along the B.C.-Alberta boundary, in the Rocky Mountain National Parks and Cypress Hills area. A further expansion and intensification of the outbreak in 1981 and subsequent one to three years is possible, and therefore of considerable concern.

Some of the current issues that need to be examined relate to the different jurisdictional policies of the federal and provincial forest lands supporting large mature forests of the prime host, lodgepole pine. Should infestations continue to expand and intensify northward and eastward, the beetle could present a major threat in Banff and Jasper National Parks and the new Kananaskis Provincial Park, and possibly threaten other lodgepole pine stands along the eastern slopes. These represent some of the most important timber-producing areas in Alberta. In the aftermath of infestations, other concerns include depletion of the pine timber resource, a hastening of forest succession, a change in age and diameter distribution of the pine component, reduced aesthetic values, and an increased fire hazard.

Within the susceptable pine forests, an annual monitoring, surveillance, and biological assessment will be necessary. Further control work may also be required, and decisions will have to be made to define where and how to implement such controls, and the likelihood of their success. Where controls are considered in the region of the Alberta-B.C. boundary, close co-operation will be necessary between the different federal and provincial agencies because of the different policies

of land management. In areas where controls are applied concerns include total costs, available manpower, rigid time schedules, accessibility, and utilization of sanitation-cut logs.

Extensive areas of tree mortality may require salvage logging. Here the concerns are numerous and complex, and include multiple-use planning, new road development, steep terrain, large clearcut blocks, change from long-range to short-range harvesting plans, greater public awareness, and marketing utilization problems associated with dead and dying, blue-stained timber.

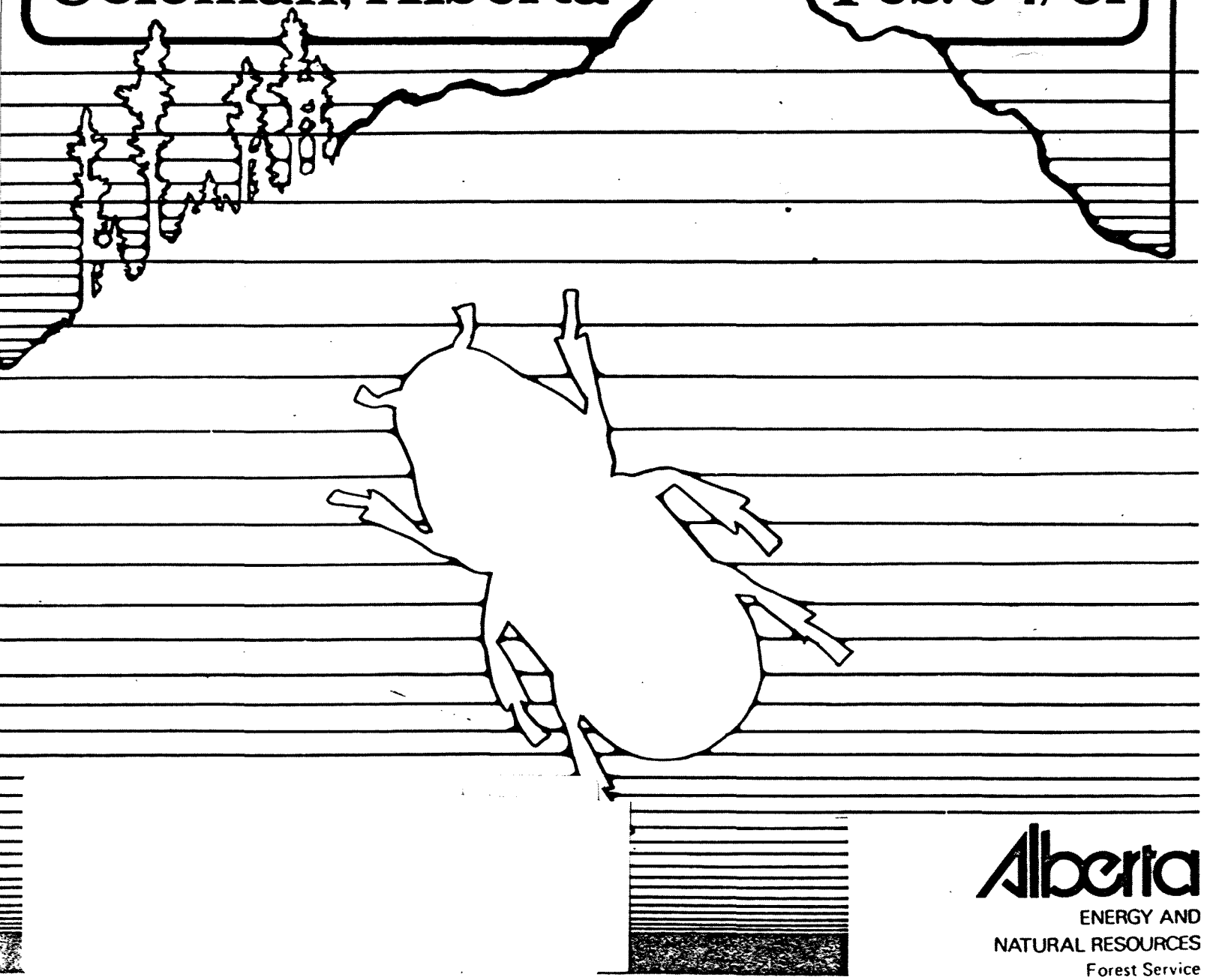
I believe that participants of this symposium will address many of these concerns and will provide a useful exchange of information to help in the overall management of the mountain pine beetle.

A series of slides were shown to illustrate the biology of the mountain pine beetle on the host lodgepole pine, the characteristics of successfully attacked trees, and the development of infestations. A map was presented to summarize the current infestations. The slides should serve as useful background information and help to recognize events which will be seen during this afternoon's field trip.

# MOUNTAIN PINE BEETLE SYMPOSIUM

Coleman, Alberta

Feb. 6-7/81



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