

**HB**

**358**

# FISCAL NOTE

**STATE OF ALASKA**  
**2002 LEGISLATIVE SESSION**

Fiscal Note Number: 1  
 Bill Version: CSHB 358(CRA)  
 (H) Publish Date: 2/22/02

Revision Date/Time (Note if correction): \_\_\_\_\_ Dept. Affected: \_\_\_\_\_  
 Title Exemption From Proper Tax: Timber BRU \_\_\_\_\_  
 Component \_\_\_\_\_  
 Sponsor Rep. Chenault \_\_\_\_\_  
 Requester \_\_\_\_\_ Component No. \_\_\_\_\_

**Expenditures/Revenues (Thousands of Dollars)**

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
<b>TOTAL OPERATING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<b>CAPITAL EXPENDITURES</b>						
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<b>CHANGE IN REVENUES ( )</b>						
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**FUND SOURCE (Thousands of Dollars)**

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type--Do not abbreviate)						
<b>TOTAL</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

Estimate of any current year (FY2002) cost: 0.0

Check this box (X) if funding for this bill is included in the Governor's FY 2003 budget proposal:

**POSITIONS**

Full-time						
Part-time						
Temporary						

**ANALYSIS:** *(Attach a separate page if necessary)*

Prepared by: Bill Lawrence Committee Aide Phone 465-3882  
 Division: HCRA Date/Time 2/21/02 3:08 PM  
 Approved by: Representative Morgan, Co-chair Date 2/21/02  
 Agency: HCRA

# STATE OF ALASKA

REPRESENTATIVE  
MIKE CHENAULT



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HOUSE OF REPRESENTATIVES

## SPONSOR STATEMENT House Bill No. 358 EXEMPTION FROM PROPERTY TAX: TIMBER

HB358 - "An Act relating to an optional exemption from municipal property taxes for certain land from which timber is harvested and for certain improvements used in or necessary to the harvest of timber."

The Kenai Peninsula Borough contains about 1.1 million acres of land consisting of trees that are dying due to infestation by the Spruce Bark Beetle. These areas have been identified as a high fire threat, with limited access for firefighting resources and inadequate emergency evacuation sites.

Harvesting the infested timber is one of the best devices for managing this threat. To encourage continued and expanded operations of harvesting timber resources, HB 358 allows the option to all municipalities to offer land owners a tax exemption to harvest beetle infested timber, or timber that is at risk of being infested or to make improvements, such as clearing roads to gain access to the properties.


  
**DEPARTMENT OF NATURAL RESOURCES**
**DIVISION OF FORESTRY****TONY KNOWLES, GOVERNOR**
 Kenai-Kodiak Area Office  
 42499 Sterling Highway  
 Soldotna, AK 99669  
 Phone: (907) 262-4124  
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February 8, 2002

 Representative Mike Chenault  
 State Capitol, Room 432  
 Juneau, AK 99801-1182

RE: State Timber Sales on the Kenai Peninsula

Dear Representative Chenault:

We received a request from your office for an update on our recent timber sale offering on the Kenai Peninsula. The Division of Forestry offered four spruce beetle-killed salvage sales on January 7, 2002. The offering was by sealed bid. Two of the sales were in the Clam Gulch area, one near Anchor Point, and one near Moose Pass. Two of the sales received bids at the bid opening and were awarded. The same purchaser submitted the two bids and they were the only bids received. They purchased one of the sales near Clam Gulch and the sale near Anchor Point. The other two sales were then posted as available over the counter. Since January 7<sup>th</sup>, we have received a bid for the sale near Moose Pass. The other sale has not as yet received a bid, but we have had some discussions with potential interested parties and expect a bid sometime next week. Below is a quick summary on the sales.

Sale Name	Volume	General Location	Advertised Price	Bid Price
Trail	132 MBF	Clam Gulch	\$5/MBF	\$7.87/MBF
Cottonfield	250 MBF	Anchor Point	\$13/MBF	\$22.30/MBF
Towson	385 MBF	Moose Pass	\$5/MBF	\$5/MBF
Small Lake I	1,620 MBF	Clam Gulch	\$5/MBF	No bids yet

Timber markets worldwide have declined substantially over the last several of years. The resultant impact on the Kenai Peninsula and particularly on our State timber sales is a substantial reduction in stumpage value. On some of our previous sales sold just a few years ago, we were able to have the purchaser complete reforestation, including the purchasing and planting of trees on the sale areas following their harvest operations. Due to the decline in the timber markets, the value of the salvaged trees do not offset the reforestation costs, therefore, the State is now assuming the reforestation responsibility. The State is committed to reforesting these beetle-killed stands to ensure continuation of the sustainability of the State forests. We will be reforesting the above sales through a combination of natural regeneration, where a live seed source is present and has survived the infestation, and planting using funds appropriated by the legislature in the past.

Reforestation of the State's beetle-killed stands is primary goal. We are committed to reforesting all our harvest areas with native tree species grown from local seed sources. Our goal is to use natural reforestation and planting to accelerate re-growth of mixed forests on State lands. Funding to assist with reforestation has been limited.

With the change in timber markets and the movement of the spruce beetle from the more remote areas of the peninsula into our communities and along the road system, we are redirecting our focus to State lands located in the urban-interface. Removal of the beetle-killed trees will assist in reducing fuel loading and the potential for large, difficult to control wildfires.

In 1997, the legislature provide a capital project appropriation to fund the sale and administration of four large salvage sales on the Kenai. The sales were originally designed to feed timber into the chip market, which was active at the time of passage of the legislation. However, due to the economic changes mentioned above, it is no longer feasible to proceed with the original intent language without a major increase in funding for reforestation. We are requesting a revision in the intent language so that the balance

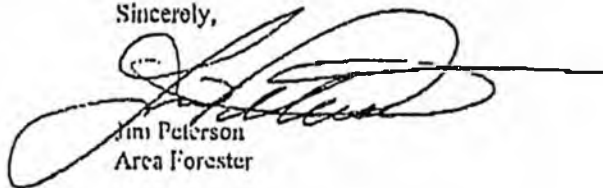
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in this appropriation can be used to prepare, administer, and reforest smaller sales located in the higher hazard areas near residential development and communities. The remaining funds in the appropriation total approximately \$310,000 and would go a long ways towards defraying reforestation costs, assist with road maintenance, and provide funding for preparation and administration of these smaller salvage sales. If you have any questions regarding the technical aspects of this reappropriation, please contact Nico Bus at 465-2406. We would like to solicit your support on this proposed reappropriation.

We are committed to doing our part to reduce the fire hazards near Kenai Peninsula communities and to offer salvage timber sales where the wood fiber can be utilized. We recognize the significant benefits that these actions can have on our quality of life on the Kenai.

If we can provide further assistance or if you have any additional questions, feel free to contact us.

Sincerely,



Jim Peterson  
Area Forester

Cc: Jeff Jahnke, State Forester  
Roy Josephson, Acting Regional Forester  
Nico Bus, DNR, Support Services



# Summary of Final Action Plan Recommendations

## Introduction

The spread of the Spruce Bark Beetle in Alaska, and particularly the Kenai Peninsula, has continued over the last decade at a level unprecedented for current observers. The infestation is considered the largest in North America with estimates that the infestation has impacted over 2.3 million acres of Alaska spruce forests over the last 7 years.

## Grant

Concerns regarding the infestation's impact to Alaska's forests, public safety, and the ecosystem prompted the Senate Appropriation Committee to direct the U.S. Forest Service to establish a multiparty task force to prepare an action plan to manage spruce beetle infestations in Alaska and rehabilitate the infested areas.

## Task Force Formation

The Kenai Peninsula Borough (KPB) was designated as the lead agency in the Task Force effort with the Borough Mayor, Mike Navarre, designated as the Task Force Chair. The initial public meeting was held in Soldotna, Alaska on January 15, 1998 with public comment and exchange regarding the infestation, nominations for task force membership, and the approach for the Task Force.

## Task Force and Public Meetings

The Task Force met on 10 occasions and conducted public meetings in Soldotna, Homer, and Moose Pass.

## Area Impacted and Ownership

The Kenai Peninsula Borough encompasses 9.9 million acres of land with 22% (2.2 million acres) forested with about 1.1 million acres infested. Experts suggest that 6.6% contains commercial quality forest lands (650,000 acres) with over a third of these commercial forest areas in national parks, wilderness areas and wildlife refuges. The net availability for commercial harvest is estimated to be approximately 375,000 acres (3.8% of the total Borough land area).

Land on the Kenai Peninsula is owned by multiple entities as would be expected; however there are large portions owned by government and native interests; (i.e. State of Alaska 1.6 Million acres; Cook Inlet Region, Inc. 467,820 acres; Ninilchik Native Association 64,206 acres; Kenai Peninsula Borough 90,701 acres; Kenai National Wildlife Refuge 1,200,000; and Chugach National Forest 900,000.

## Task Force Plan

The Task Force's recommendations represent consensus of each of the members. A summary by general category follows:

### Fire Prevention & Public Safety

**Emergency Notification and Evacuation.** The Task Force supports providing safe evacuation routes and sites of human refuge. A prompt examination should be made to identify areas with insufficient evacuation routes. Necessary access for fire fighting resources as well as breaks in the continuity of fuel are required. In addition there is a need to identify sites of refuge in the event of a fire emergency and to assure emergency communications to residents takes advantage of modern technologies.

### Identification of Evacuation Routes and Sites of Refuge and Establish a Budget for Work.

**Responsibility:** Alaska Department of Natural Resources Division of Forestry (ADNR/DOF), Kenai Peninsula Borough (KPB), local fire agencies. Target completion date is July 1, 1998 to be conducted using existing personnel.

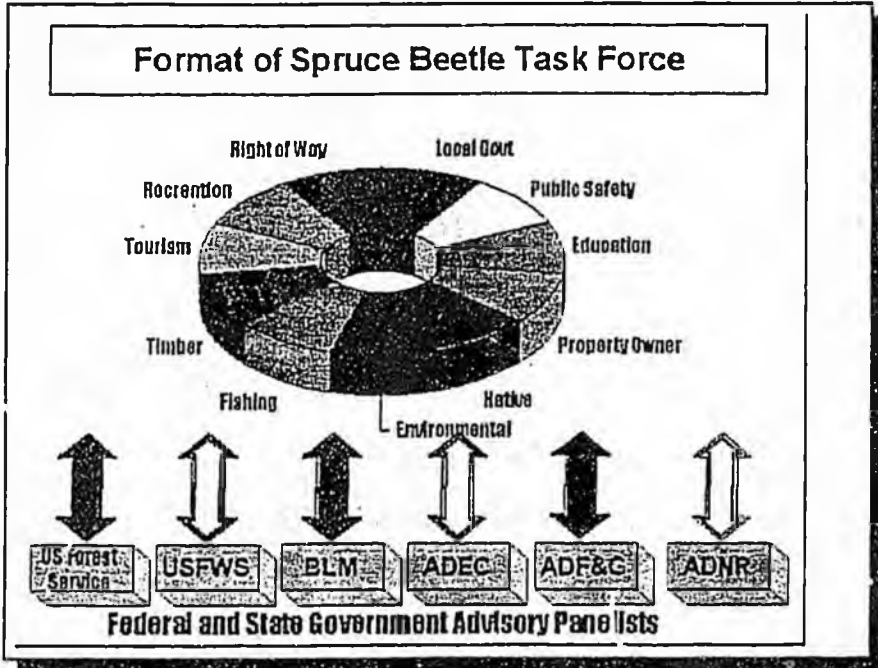
**Emergency Notification.** Expand existing "Community Activation Net" (CAN) to include coverage for evacuation routes and sites of refuge. Essentially, the CAN system should be overlaid on the evacuation plan. **Responsibility:** Kenai Peninsula Borough.

**Homer East End Road Pilot Project** between Miles 8 and 20. The East End Road in Homer has been identified as a high fire threat urban interface area due to fire hazards, limited access, and potential for loss. The proposed initiative is intended to reduce the hazards and improve emergency ingress/egress in the area. State Improvements to East End Road presently scheduled for 2003 will include widening the road and clearing additional right of way. A determination should be made about the feasibility and funding needed to accelerate already planned right of way clearing in 1998; however the Task Force is not suggesting expenditure of requested funds on previously planned and budgeted activities. In addition, the Task Force does not suggest a wider right of way clearing than already planned. The necessary sites of refuge should be identified and necessary preparations of the sites completed. The pilot project should include testing the "C.A.N." communication system as well as provide information and assistance to private landowners that compliment the emergency preparedness effort.

▪ **Responsibility:** ADNR/DOF, KPB, and Department of Transportation and Public Facilities.

▪ **Funding Required:** \$75,000.00

**Regulatory Impediments to Timely and/or Effective Response.** An examination of existing Borough regulatory impediments to rapid response should be examined as well as standards imposed on new subdivision developments in fire risk areas.



▪ **Identify and streamline regulatory processes.** The Borough is requested to examine current impediments to a rapid clearing of right of way in critical areas where emergency evacuation routes are being implemented as well as where actions are necessary to protect public health and safety.

▪ **Road Development in Subdivisions.** There is a need to evaluate Borough road standards and identify fire threat as one of the considerations in establishing standards for new roads. The objective is to avoid creating transportation impediments (or traps) in emergency response and assure that the access standards as well as roadway standards do not add to the existing risks. National Fire Protection Association (NFPA) 299 or similar standards are suggested for guidance in application of new standards for new subdivision roads in identified high threat wildland urban interface areas.

**Incident Command System (ICS) Team and Seasonal Fire Fighter Availability and Training.** Establish a KPB Type III ICS Team using existing personnel and resources. This would be a rapid response ICS team of local resources that would respond to support local fire agencies when requested. Intent is for the Team to manage incidents that can be handled locally and/or until a Type II or Type I team arrives. **Responsibility:** KPB and local fire agencies.

**Coordinate Availability of State Forestry Support to Coincide with Local Fire Season.** Encourage state forestry to staff the KPB commensurate with the danger and with the local fire season. For example, there is presently an approximate 30-day lag between the start of the fire season on the lower Peninsula and arrival of adequate fire fighting personnel and equipment (such as helicopters and water buckets). Due to the

additional hazard associated with the spruce bark beetle infestation and the increase in population on the Kenai the State should increase the number of wildland firefighters assigned to the Kenai Peninsula during the fire season. **Responsibility:** ADNR/DOF.

**Assistance Identifying Programs for Small Local Fire Agencies.** State Division of Forestry should take the lead in identifying programs that are intended to assist local fire agencies that do not have sufficient fire fighting equipment and resources. Additional assistance requested in helping these local agencies qualify for the programs.

**Fire Training.** Currently there is a lack of access to wildland fire training for smaller communities' fire protection efforts. Wildland fire fighting training should be made available to local fire service jurisdictions and/or organizations. **Responsibility:** ADNR/DOF, USFS, BLM and Local Fire Agencies. **Immediate Action:** Develop a training plan identifying the number of individuals and their location as well as cost projection. Target for training plan completion: June 1, 1998. **Responsibility:** Kenai Peninsula Borough and Borough Fire Departments.

**Fire Equipment Caches and Supplies.** Provide fire caches of loaned fire equipment to local fire districts. Fully utilize the State Forestry Fire Stores program to assist local jurisdictions with loaned caches of equipment. Assist local jurisdictions with the purchase of wildland fire protection equipment and supplies through state and federal contracts. **Responsibility:** ADNR/DOF.

Locate and distribute federal excess property to local fire districts. This will require an effort to locate suitable equipment throughout the country and may require making "spruce bark beetle fire risk mitigation" a high priority in the federal excess

property program. Coordination of property screening services and transportation of useful excess property to Alaska may be required. **Responsibility:** KPB, ADNR/DOF, and USFS.

**Coordination of Hazard Tree Removal Around Public Facilities Including rights-of-way clearing.** There is an immediate need to initiate a tree removal effort that will eliminate the current and projected hazards of dead or dying trees to existing public facilities such as schools, campgrounds, roads, and rights-of-way. The effort should include an educational component which 1) encourages the public and land owners to coordinate efforts to safely remove hazard trees near power lines to reduce the risk of electrocution, fire, and power interruption; and 2) educate landowners on the importance of cutting back hazard trees from near residences, public areas, and power lines.

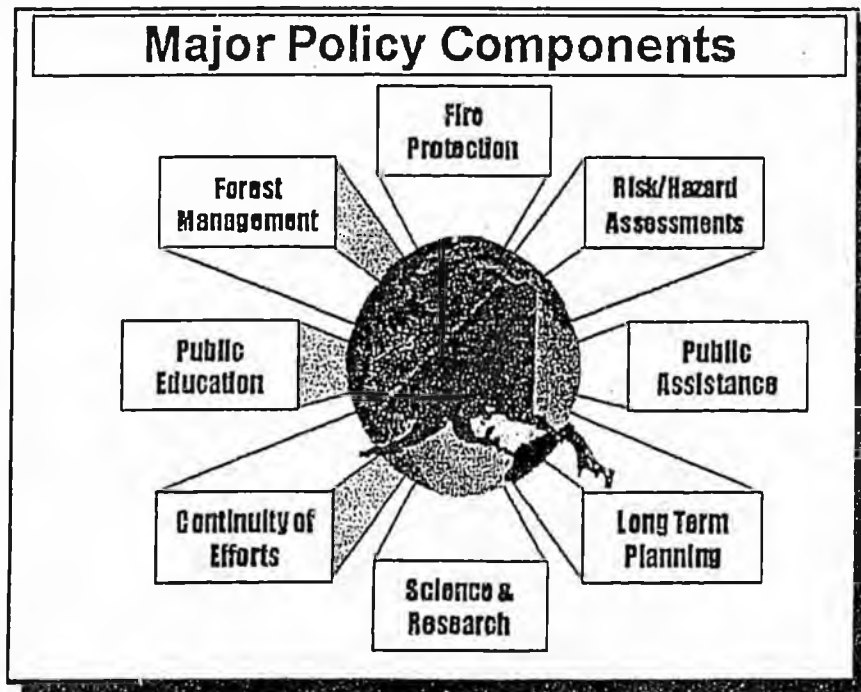
**Projected Costs and Timing:** \$ 5.2 Million over 5 years. (Cost based on projected 6,000 acres of power line right of way plus 500 acres of hazard trees threatening existing public facilities.)

**Use of Fire as a Management Tool.** There should be a plan that identifies the opportunities to use prescribed fire, or wildfires which can be managed to meet fuel reduction and wildlife habitat objectives, which may potentially enhance various forest resources and remain acceptable to the public. Project components include:

- Identification of smoke management issues and applicable air quality standards.
- Designation of one ADNR/DOF Manager and one USDA FS Manager to obtain or enhance advanced prescribed burn qualifications.
- Develop burning prescriptions for selected blocks of land.

**Working Group for Use of Fire as a Management Tool.** The Chugach National Forest, Kenai National Wildlife Refuge, KPB, and the three state agencies (ADNR/DOF, Alaska Departments of Environmental Conservation (ADEC) and Fish and Game (ADFG)) collectively the "Alaska Resource Agencies" are encouraged to create an interagency prescribed fire working group to coordinate prescribed fire activities on the Kenai Peninsula including the following:

- a. Developing plans which identify areas where prescribed fire, or wild fire burning in prescription, could enhance various forest resources while remaining acceptable to the public;
- b. Improving prescribed burning qualifications for agency personnel;
- c. Planning for the availability of resources, including overhead, for prescribed fires;
- d. Identifying smoke management and air quality issues;
- e. Educating the public about the beneficial use of fire;



f. Assisting in the implementation of prescribed fire projects; and

g. Identification of additional funding sources for these projects.

**Use of Organized Emergency Fire fighting Crews for Fuel Reduction Projects.** The Alaska Interagency Coordination Center (AICC) maintains a roster of emergency fire fighting crews from across the State including crews from the Kenai Peninsula and from small Native villages which have high unemployment rates. Many of the projects identified for implementation, including fuel reduction, fuel break construction and prescribed fire, are very labor intensive and require skills similar to those found in trained fire fighting crews. The crews identified by the AICC could be utilized on a rotating basis to work on projects on Borough, State, National Forest, and National Wildlife Refuge Lands. The use of the crews is expected to generate the following benefits:

- Availability of trained fire fighting resources for wildfire suppression on the Peninsula;
- Availability of resources for prescribed fire projects;
- Training for the crews;
- Economic stimulus to disadvantaged communities across the State; and
- Ready availability of crews who are organized and trained to implement many of the proposed projects.

Funding for the crews would be tied to individual projects. ADNR/DOF would take the lead on the coordination and use of the crews.

## Fuel Modeling and Risk/Hazard/Behavior Assessment

### Urban Interface Fire Hazard Assessment

Using the National Wildland Urban Interface Advisory Group methodology, identify, adopt and implement a wildland/urban interface fire hazard assessment to prioritize resources and efforts in high fire potential areas of the Kenai Peninsula. The work product could serve as a model for potential use in other areas of Alaska. The assessment is envisioned to include on-site surveys in the Borough's urban interface and high hazard area of fuels and fire behavior, physical characteristics, and potentials for ignition. Responsibility: ADNR/DOF in cooperation with local fire agencies. Recommend allocation of \$15,000 for the project.

**Fuel Modeling and Risk/Hazard/Behavior Assessment** - Fuel loading and the associated potential for fire in specific forested areas must be understood and considered in developing management practices related to forest health and practices. The Task Force recommends that two initiatives be completed as tools to Forest management with specific assistance envisioned for preparedness planning, and for prescribed burning to regenerate forests or to reduce fuel loading.

▪ **Fuel Model Map.** Create a fuel model map for the Kenai Peninsula that will serve as the basis for developing a plan to identify areas where management practices can enhance forest resources including wildlife populations. The map should help predict fire behavior and is not the same as a vegetation map. Suggest designation of one DOF fire manager and one USDA FS Manager to lead the effort.

▪ **Actions Prior to Fuel Load Reduction Efforts.** The Task Force recognizes that fuel load reduction and management practices (including prescribed burns) is a potential management tool. A Borough-wide Geographic Risk and Hazard Assessment is recommended. This project would complement management planning and identification of areas where wildland burning within prescription or prescribed fire (or alternative fire load reduction techniques) could enhance various forest resources. The hazard assessment would evaluate the fuel complex defined by type, moisture, arrangement, volume, etc. The risk assessment would determine the likelihood of fire ignition in examined areas. The behavior assessment would examine fire behavior under alternative weather scenarios as patterned on John See's 1990 Cooper Landing Spruce Bark Beetle Fire Behavior Analysis.

**Support for Risk Mitigation Effort.** Additional support is required for the state's Fire Risk Mitigation and Education Project. Funding is requested to extend the present two ADNR/DOF Training and Prevention positions to 10 months per year to enable training for volunteer fire departments and public to take place during winter months in advance of the fire season when people can attend.

## Timber Management and Re-forestation

**Reexamine Feasibility of an Instate Seedling Nursery.** The issue of seedling availability is a concern to both large and small entities. The high demand customers such as CIRI and Circle DE experience logistical challenges during periods when hundreds of thousands of trees are being brought in for replanting. There is also considerable demand by small landowners that may not be currently met. A number of organizations have current interest in this subject including the Reforestation Council and potentially local native corporations. ADNR/DOF is requested to conduct a study to determine the merits and economic feasibility of establishing a seedling nursery in Alaska. The Task Force, in designating ADNR/DOF as lead agency for this effort, is not suggesting that the Nursery should be a state facility. The suggested funding for the effort is \$5,000.

**Consideration of Fire Hazard Reduction and Public Safety in Timber Sales.** Government and major land owners are encouraged to design and locate their timber sales in a manner that complements efforts to reduce fire and public safety

hazards and risk of ignition in the urban interface. The recommended policy is considered as complementary to fire hazard minimization with reductions in fuel loading and potential catastrophic fires. The potential for fire loss should be a high priority in existing and future sales programs.

**Spruce Seeds.** A genetically diverse source of spruce seeds for future regeneration of infested areas should be collected from different subpopulations of parent trees before they all die. ADNR/DOF should oversee a broad and systematic collection and proper storage of spruce tree seeds from infested and at risk areas on the Kenai Peninsula. **Immediate Action:** The Task Force recommends \$25,000 for collection to begin in September 1998. Additional parameters recommended include:

- Collect and store 500 pounds of seed as soon as possible beginning in the fall of 1998. Based on past experience it is understood that the collection effort will take between 3 and 7 years.
- Collect Borough wide utilizing cooperative agreements with all land holders where possible and encourage public assistance in collection of seeds.
- Periodically reassess the collection goal and process.
- Make seed available at whatever price necessary to recover cost.
- Projected cost is \$200 per pound for collection (\$100,000) and \$50,000 for storage freezer utilities.

**Limited Examination of Forest Practice Act Regulations.** Convene a technical group (subject matter experts including representatives of the Timber industry and major land owners) to review 11 AAC 95.195 ("Clearing of Spruce Trees") and 11 AAC 95.370 ("Slash") for adequacy in preventing or controlling beetle infestation in Alaska and make specific recommendations to review the regulations or develop internal DNR staff guidance as needed.

**Slash and Debris Disposal.** The KPB, in cooperation with ADEC and private interests, should conduct an evaluation of the feasibility of acquiring and/or leasing large volume grinders and/or incinerators to be operated at KPB landfills and transfer sites to dispose of stumps or other debris from fuel reduction efforts in areas where burning is unsafe or must be limited. These facilities, if feasible, are expected to facilitate hazard mitigation efforts, protect air quality, and may have a secondary benefit of enhancing land development as well as extending the life of the landfills.

**Fuel Breaks.** All landowners (including government, trusts, large land owners, and other institutions) should be encouraged to break up the continuity of fuels and make an effort to connect natural fuel breaks in and around developed areas. All agencies should adopt this policy and encourage

landowners to implement this practice on private lands.

**Landscaping.** All landowners should consider fire resistant landscaping as a priority when making planting and regeneration decisions (including the selection of fire resistant landscape materials) around or near improvements including buildings, roads, and utilities.

**Forest Practices Act Implementation.** There is presently inadequate state funding to support the implementation of the Forest Practices Act regulations which negatively impacts efforts to manage the beetle infestation. The Task Force urges adequate funding to the Alaska Resource Agencies charged with implementing the Forest Practices Act and Regulations.

**Native Species.** If artificial revegetation is selected for landscape level treatment of beetle impacted areas, revegetation should be with native species. This includes planting spruce trees but does not preclude planting other native species.

**Reforestation Incentives.** Across the Kenai Peninsula the loss of the spruce trees to the spruce bark beetle epidemic has resulted in many tens of thousands of acres which are in need of reforestation. The parcels affected range in size from a few acres to thousands of acres. There are currently some 22,000 acres which have been harvested, but exempted from reforestation under the State Forest Practices Act. There is also concern about that timber sale revenues would be insufficient to pay for reforestation on state lands that need to be cleared of dead spruce to reduce fire danger. The need to reduce the risk of future wildfire and insect epidemics by planning with more fire resistant species and creating a forest mosaic is also an important consideration.

**Recommendation:** The need is recognized for forest stewardship across all ownerships and the potential interest in reforestation of lands where reforestation costs cannot be supported through the timber sale and harvest process and where substantial benefit is to be gained from accelerated reforestation. To encourage the reforestation on the Kenai Peninsula, the Task Force recommends the following:

**1. Address the Areas Presently Exempted from Reforestation under the Alaska Forest Practices Act.** Establish a fund in the amount of \$1,250,000 to be used for reforestation on those acres exempted from reforestation under the State Forest Practices Act and harvested before 1998. This fund would be administered by the KPB.

**2. Reforestation in the Urban Interface.** Establish a fund in the amount of \$750,000 for reforestation on land in the urban interface that has been or will be cleared to reduce fuels. Emphasis for reforestation in the interface should be placed on fire resistant species such as birch, aspen and other native hardwoods, or a mixture of fire resistant

species and spruce. This fund would be administered by the KPB.

**3. Reforestation of State Timber Sales with Objective of Fuel Reduction within 5 Miles of Urban Interface.** Establish a fund in the amount of \$1,000,000 to be used for reforestation on State timber sale lands where the objective is to reduce fire danger to human life and property. Consideration will be given to provide benefits to fish and wildlife, as advised by the ADFG. The need for fuel reduction will be based on fuel modeling and a fire hazard and risk analysis.

**4. Reforestation of High Value Public Lands.** Establish a fund in the amount of \$1,000,000 for reforestation of high value public lands impacted by the beetle with an objective of restoring public benefits associated with these lands. One-half of funding would be dedicated to federal lands and remaining half to state and local lands and administered by the U.S. Forest Service's State and Private Forestry through a grant process.

## Public Education

**Publicize Tree Seedling Sources.** Make it easier for small landowners to locate tree seedlings should they wish to replace trees. ADNR/DOF should maintain a list of sources of small quantities of seedlings and produce simple publications for the public on where and how to acquire the seedlings. This effort is anticipated to be possible without additional costs and the Task Force recommends that the Division of Forestry should work with the KPB and the USFS to coordinate printing of the publication(s). It is noted that the Task Force is not suggesting elaborate and costly publications - just the basic information in a brief format.

**Longer Term Technical Assistance.** Recommendation for addition of one position to the UA Cooperative Extension Unit at \$75,000 per year with \$40,000 per year budgeted for publications and communications. A 5-year project is suggested with an assessment of the project merits by the end of year 4. The effort is envisioned to be proactive and community oriented with a majority of the work conducting workshops and making other public contacts out side of an office.

## Communications

The following recommendation reflect the Task Force's view that the beetle problem is part of a natural ecological process that takes a long time to cycle and that tourists and residents should be educated as to the context of the infestation and what is being done.

**Improve Public Access to Information.** Establish an electronic clearinghouse that provides descriptions of how to deal with beetles with responsibility for implementation shared by the Co-op Extension Unit and DNR. The information should keep public advised of what is being done.

**Immediate Action.** KPB to develop and maintain a coordinated Home Page that will contain information expected to be most frequently sought by land owners. Access to more advanced or specialized information will be made available via links to existing and future federal, state, local and private sources. Recommended funding of \$10,000 for implementation by July 1, 1998.

**Public Education.** Implement a proactive approach to public education that considers methods to enhance the tourist and resident opportunities including trail restoration, signage, and access. Specific projects are intended to educate tourists (and residents) on natural forest systems.

**Immediate Action.** Create an interpretive brochure that describes the infestation, including its historical context, and the actions that are being taken for distribution to tourism and public organizations. Efforts should be made to include the information in popular tourist publications such as the Kenai Peninsula Visitor's Guide, the Anchorage Daily News Visitor's Guide, the Milepost, and a page in the Alaska Sport fishing regulation booklet made available each year to anglers. In addition, the Task Force recommends that at least two (2) locations with view of infested areas receive interpretive signage describing the infestation. Initial funding of \$30,000 is recommended.

**Interpretive Displays; part of Longer Term Action.** A more extensive interpretive display regarding the infestation should either be established at an existing facility in the Borough or appropriate financial support should be made available in coordination with other groups or agency initiatives with similar objectives.

**Tourism.** Recommendation is for a longer term project for a Demonstration Forest Area to study and illustrate the results of alternative silviculture treatments. Project would provide public viewing areas as to what the beetle infestation looks like as well as the actions that are being taken in different areas.

**Public Education on Role of Fire:** Provide public information taking advantage of current work products such as the Fish and Wildlife Service's program "The Role of Fire in Alaska" and other published materials that improves the public's understanding of the beneficial uses of fire. Projected Cost: \$20,000

**Community Planning and Involvement.** Encourage the establishment of community planning and local action groups to provide an ongoing local effort in support of the Beetle Infestation management.

**Notices to Absentee Property Owners.** The Kenai Peninsula Borough's existing communications with absentee property owners should be augmented with relevant information regarding the beetle infestation and programs underway that may impact the property owner.

## Continuity of Efforts

**Spruce Bark Beetle Coordinator.** There is a need to assure continuity of the response effort and coordination of the implementation of the Task Force recommendations. There is consensus that additional effort should be made to assist urban communities' related efforts (including volunteers, grants, and planning) for community and urban forest areas in view of the importance of urban trees to Alaskan communities. The Coordinator duties would include assisting communities in qualifying for grants such as the "Trees USA" program which requires a tree inventory, identification of a responsible person for the program, a long term plan for urban tree health, and an annual "Arbor Day Celebration." The projected annual costs for the added position is \$85,000.

**Spruce Bark Beetle Coordinating Committee.** The committee would be facilitated by the Spruce Bark Beetle Coordinator and would monitor the effectiveness the actions, oversee the implementation of the Task Force recommendations, and make recommendations to the KPB Mayor on funding and other issues. The committee would include the six resource agencies participating in the Task Force as well as other interested parties.

## Public Assistance

**State Stewardship Program.** The Task Force recognizes the valuable contribution of the ADNR/DOP's Stewardship Program and agrees that there should be increased support for the program in Alaska with an objective of improving and expanding public access to reforestation advice and support. Recommendation is for one State position stationed in the Kenai Borough with funding support for planning and reforestation of private lands. The projected budget is suggested to be \$75,000 per year for personnel plus funds for silviculture treatment and increased cost-shared treatment of \$100,000 per year for a 5-year period with a reassessment before the end of this period.

**Tree Removal Clearinghouse.** Recommend that the Borough establish a clearinghouse where property owners can obtain a listing of individuals and companies who have indicated an interest in removing trees from similar sized land tracts. This activity is expected to be one of the services provided by the Borough's Spruce Bark Beetle coordinator.

## Long Term Planning

**Transportation Study.** Project Objective: Provide a comprehensive landscape level transportation planning tool by consolidating information on the existing and projected transportation infrastructure into a GIS-based, Kenai Peninsula-wide mapping system. The information will be used to evaluate Task Force recommendations on access and transportation system development as they relate to fire threat,

public safety, emergency evacuation routes, timber harvest and other activities. In addition, the mapping will be used to evaluate the anticipated cumulative effects on fish, wildlife and other resources from road improvements, timber harvest related road construction and other transportation system developments that may occur in beetle-infested or at risk areas.

### Major Project Actions:

A. To facilitate local fire planning for fire prevention, fire fighting actions and emergency evacuation efforts in response to the increased fire threat associated with spruce bark beetle infestations, major public and private landowners and managers will provide information on existing transportation systems such as the Borough's logging road maps and the 911 emergency response maps and consolidate it into GIS map(s). Over time, both improved and unimproved easements will be identified.

B. Prevention measures or response actions in interface or other areas may require upgrading roads or construction of new roads for timber harvest or fuel reduction. The mapping will provide a basis for a landscape level evaluation of the direct and indirect, long-term and cumulative effects to fish and wildlife and other resources, associated with task force recommendations that lead to road construction or improvement. Based on an analysis of fire hazards and risk and fish and wildlife and other concerns, the evaluation may result in recommendations on alternative access options and mitigation measures.

C. The mapping can be used to assist in determining the location of appropriate road corridors by avoiding or mitigating both short-term and long-term impacts to fish and wildlife and other resources.

**Responsibility:** The KPB will take the lead in coordinating and inputting data into its GIS system and then creating the map(s). This will be a collaborative effort including all major public and private landowners and managers affected by recommendations made by the spruce bark beetle task force.

**Estimated Project Costs:** Projects costs for the creation of the initial maps are nominal as most of the information is currently available and included in various GIS formats from the KPB, ADNR, U.S. Forest Service and U.S. Fish and Wildlife data bases. The Borough would be impacted with computer and personnel time. Additional work includes the ground-proofing of the mapped roads on Borough and private lands. This would be accomplished through a combination of GPS data gathering, field notes and orthographic photo interpretation. The map(s) would be continually updated, but will take about a year to complete the initial "ground proofing" and photo work at an estimated cost of \$50,000.

**Land and Vegetation Cover Mapping for the Kenai Peninsula.** The Task Force recommend making a \$25,000 contribution to Phase I of the Land and Vegetation Cover Mapping for the Kenai

Peninsula, recognizing the existing funding commitment of \$65,000 already in place from other sources outside the Task Force for this phase of the project.

Additionally, the Task Force supports federal funding for Phase 2 of this project in order to support such activities as site specific fire risk assessment, tracking and predicting spruce bark beetle infestation, and detailed analysis of individual timber stands. Maps would be based on aerial photographic interpretation, or recently declassified military technology, and would cover selected portions of the Kenai Peninsula. Federal funding for Phase 2 is expected to not exceed \$200,000. The Task Force understands that the USDA Natural Resources Conservation Service (NRCS) is developing a vegetation map for their current soil inventory. Phase II efforts should be coordinated with the NRCS mapping.

**Wildlife Maintenance.** Maintaining wildlife is important to the economy and quality of life on the Kenai Peninsula. Research suggests that habitat changes related to the spruce bark beetle infestation tend to benefit some species and harm others. Some wildlife species are sensitive to human responses to the infestation. The Task Force agreed that the brown bear population in particular is sensitive to human activities and it is vulnerable due to its geographic isolation on the Kenai Peninsula. The health of the brown bear population was also considered a good indicator for the health of many other wildlife species due to both its habitat requirements and its sensitivity to human activities.

**Objective.** It is the intent of the Task Force to provide for human health and safety needs while maintaining wildlife habitat to the extent possible. Understanding and maintaining brown bear corridors and other significant units of bear habitat near human development are important elements of planning and implementing actions recommended by the Spruce Bark Beetle Task Force. Determining and recognizing public opinion is necessary during the process of finding an appropriate balance between wildlife conservation and development.

**Action Recommended.** The Task Force recommends that the state and federal governments collaborate to establish a Kenai Brown Bear Planning Team that will operate on a consensus basis. The team should be composed of the Alaska Resource Agencies and the Alaska Department of Transportation & Public Facilities and their federal counterparts. The team should also include representatives of key public interests including environmental, fishing, oil and gas, tourism, timber, property owners, and other private interests deemed appropriate. The Planning Team is to develop a brown bear conservation plan which can be utilized in planning for health and safety and other infestation related issues. No recommendation is made on funding.

**Recommended Resource Utilization for Implementing Task Force's Recommendations.** The Task Force reached consensus on the most economical manner to achieve several of the preceding recommendations via several early actions that extend the State's employment season of the Fire Management Officer to 12 months; the Training and Prevention Positions to ten months; the two Instructor/Technician positions to 6 months; and the Warehouse position to 8 months at a cost of \$65,000 enabling completing of the following recommendations:

- Develop evacuation routes and sites of refuge.
- Urban Interface fire hazard assessment.
- Support the Spruce Bark Beetle Coordinator.
- Provide year round public education resources.
- "Longer Term Technical Assistance" including presenting defensible space workshops and fuel reduction interventions.
- Support risk mitigation efforts; and
- Provide technical assistance and training to local fire service.

In addition the Task Force recommends adding a Fire Risk Management/Fire Behavior Position to support all other aspects of the Task Force recommendations and to take the lead on the Fuel Modeling and Fuel Map projects. Projected cost of \$90,000.

### Science & Research

Understanding and maintaining healthy ecosystems is important. Management and rehabilitation of impacted forests must be based on the best available science. While a large amount of information on the effects of spruce bark beetle epidemics and associated management options currently exists, there are both short and long-term needs for

additional research. The Task Force reached consensus that increased emphasis be placed on adequately funding research programs that will investigate disturbance regimes and their effect on ecosystem health. Specific areas of emphasis should include the effects of spruce bark beetle outbreaks and management activities on:

- Hydrology
- Fish and wildlife populations and habitat
- Fuel conditions
- Regeneration, with and without management activities such as logging and prescribed fire

In addition, it is important to continue vegetation mapping efforts and research on silviculture and vegetation management prescriptions.

**Support for USFS/Pacific Northwest (PNW) Station's Disturbance Initiative.** The Task Force understands that, if funded, up to \$1 million per year for 5 years may be available for south-central Alaska through the Forest Service's PNW Station's "Improving Forest Health and Productivity by Managing Forest Fire, Insects and Diseases as Natural Ecosystem Disturbance Processes" Initiative. This initiative would involve research and development of techniques for the management of hazard and risk to ecosystem health and would meet many of the above noted research needs. The Task Force urges Congress to appropriate the necessary funding for this initiative.

For additional information contact the Kenai Peninsula Borough at 907 262-4441 or check the Spruce Bark Beetle Home page at <http://www.bo.ough.kenai.ak.us/beetle.htm>

### Task Force Members

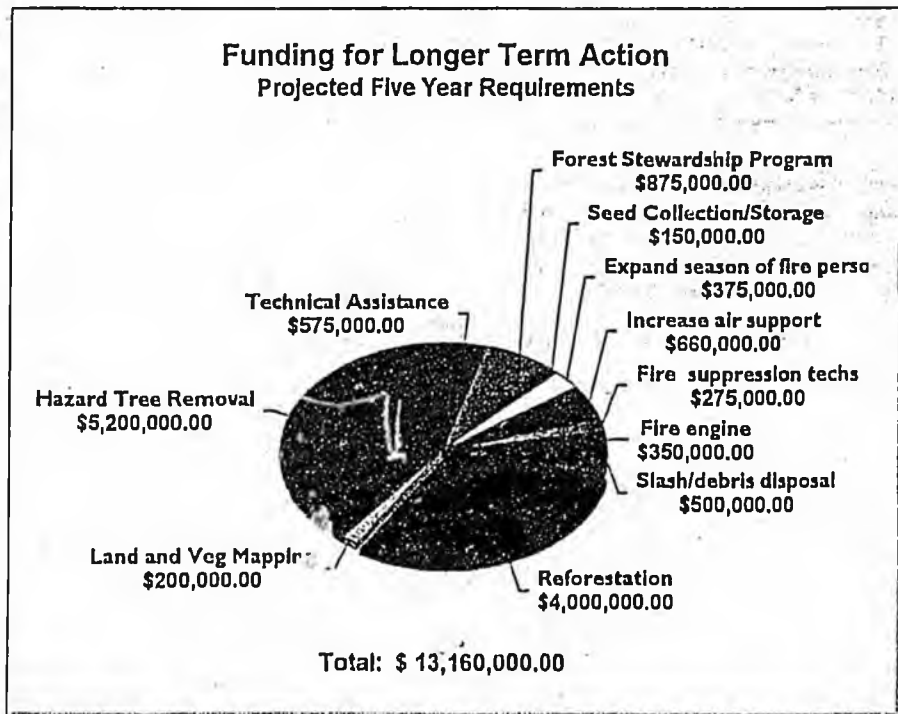
- Mayor Mike Navarre, Chair, Local Government;
- ① Education - Milke Fastabend, Anchorage
  - ② Environmental - Rick Smeriglio, Moose Pass
  - ③ Fishing - Catherine Cassidy, Kaslof
  - ④ Native Interests - Dean Kvasnikoff, Ninilchik
  - ⑤ Private Land Owners - Ann Whitmore-Painter, Moose Pass
  - ⑥ Public Safety - Robert Purcell, Homer
  - ⑦ Recreation - Milke Huckababy, Soldotna
  - ⑧ Rights-of-Way - George Bowen, Kenai
  - ⑨ Timber - Terry Nininger, Homer
  - ⑩ Tourism - Phil Morris, Homer

### Advisory Panelists

- ① AK Dept. Fish and Game - Ellen Fritts, Juneau;
- ② AK Dept. Natural Resources - Jeff Jahnke, Juneau;
- ③ AK Dept. Env. Cons. - Deric Marcocelle, Soldotna;
- ④ U.S. Forest Service - Paul Forward, Anchorage;
- ⑤ Bureau of Land Management - Mike Zaldicz, Anchorage;
- ⑥ U.S. Fish and Wildlife Service - Mark Chase, Soldotna.

Facilitator/Mediator: Gene Burden, Burden & Associates, Inc.

<b>Short Term Action Recommendations</b>	
<b>Projected Funding Requirements</b>	
Recommendation	Projected Costs
Urban Interface Fire Hazard Assessment	15,000
Public Education	40,000
Spruce Bark Coordinator	85,000
Homer East End Project	75,000
Spruce Seeds	25,000
Veg Mapping Phase I	25,000
Trans Corridor Mapping	50,000
General Implementation of other early action recommendations	155,000
<b>Total</b>	<b>\$470,000</b>



# FOREST Killers

KENAI SCIENTIST THINKS HE KNOWS WHY BEETLES  
ARE WIPING OUT ALASKA'S SPRUCE TREES

By Charles Wohlforth

**S**outhcentral Alaska's 4-million-acre spruce bark beetle plague of the 1990s was the biggest single insect kill of trees ever recorded in North America, so you might think that finding out how it happened would be a scientific priority. But

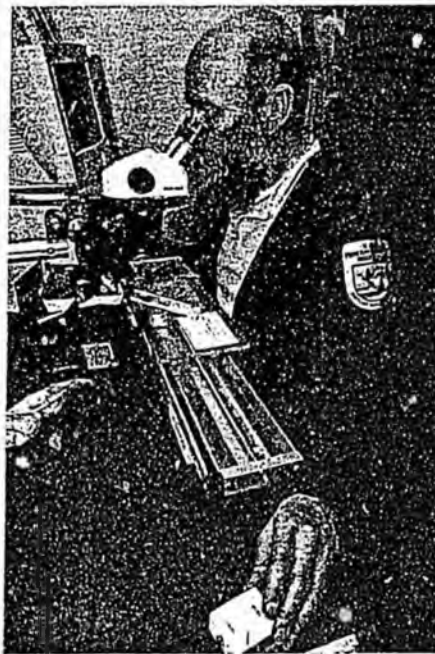
only one researcher looked deeply into the question, a soft-spoken forest ecologist who wears a bushy beard, flannel shirts and suspenders.

Working at the Kenai National Wildlife Refuge, Ed Berg had the skills and curiosity to find the clues and fit them together with advanced statistical analysis. What he found turned out to be much bigger than even the beetle kill. The climate changed enough in this region—it has become warmer and drier—to swing the ecological balance strongly in favor of spruce bark beetles and away from the trees.

Here are some of the clues:

- In the Mystery Hills, on the refuge's Fuller Lakes Trail, krummholz trees, those old, gnarled hemlocks that creep along the ground, have shot up straight and tall as if suddenly cured of their rheumatism. After centuries of struggling for life at the edge of tree-line, they're growing fast in ideal conditions.

- To the west, on the mostly flat, pond-pocked land near the Swanson River, kettle ponds are evaporating, their shrinkage gauged by old aerial photographs and the rings left by receding shores. Some have disappeared entirely, leaving a telltale, concentric pattern of vegetation that is younger toward the center, where the deepest water used to be.



**Botanist Ed Berg** (ABOVE) of the Kenai National Wildlife Refuge examines spruce tree rings under a microscope at the refuge's headquarters. Berg has been studying spruce beetles to determine why they have become more destructive over the past decade.

- All over the region, growth rings inside the trees record each year and give an accurate gauge of conditions in that area of forest. Counted and precisely measured by Berg and his assistants on a microscopic slide wired to a computer—and compiled by the thousands—the growth rings confirm that the 1990s beetle kill was the largest to hit the area in at least 250 years. Beetles have killed a lot of trees before—they come through regularly—but in the past, cool, damp weather stopped them before they could wipe out so much forest.

This huge beetle kill was a direct result of global warming. And it may have been a preview of how insects could devour other Alaska forests as change advances.

Berg hasn't yet published his findings in a peer-reviewed scientific journal, but experts in Alaska buy them. "It's just difficult to account for in any other way," said Glenn Juday, a professor of Forest Ecology at the University of Alaska Fairbanks. Juday and his colleagues put enough stock in Berg's

work to include his conclusion in a Congressionally mandated report by the National Assessment Team of the U.S. Global Change Research Program.

Twenty years ago, experts such as Forest Service entomologist Ed Holsten didn't believe this could happen.

Alaska lost 2.5 million acres of spruce to bark beetles from 1920 to 1990. In the next 10 years, 4 million acres died, and much of that in an uncharacteristic way. Beetles normally attack only the largest spruce trees, but in some areas they took out almost every tree, large and small.

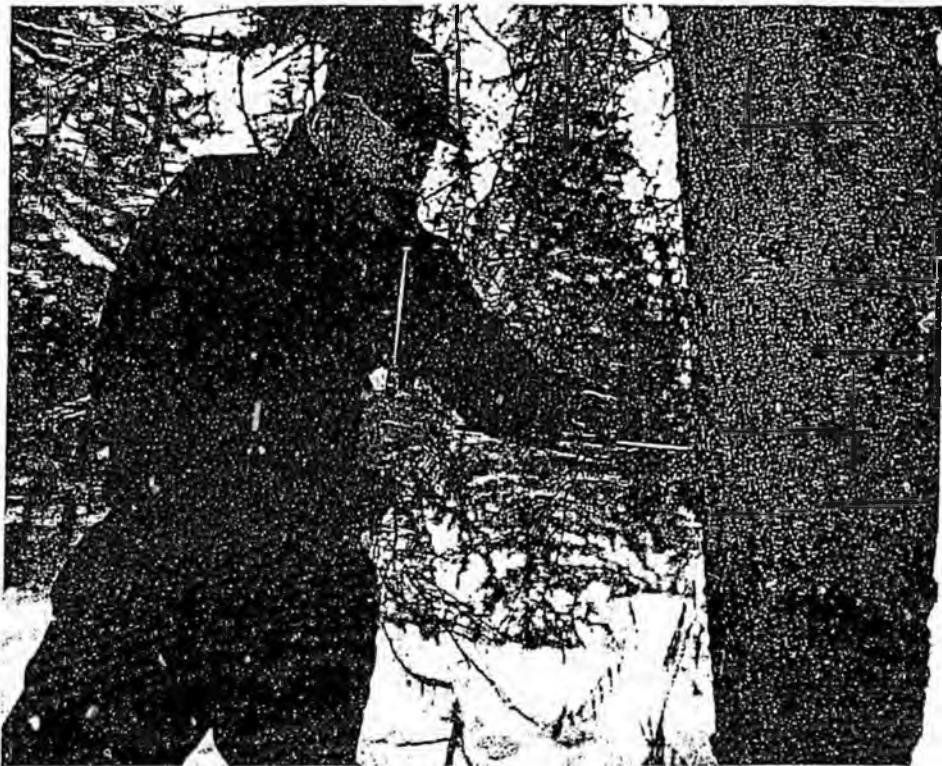
"We had entomologists coming up and just scratching their heads," Holsten said. "If you read the textbook, the spruce beetle is just not very aggressive."

Homer was supposed to be immune from spruce bark beetles. But in 1988, when Ed Berg left for Georgia to become an ecologist instead of a carpenter, it was already evident that the experts were wrong. Red, dying spruce trees were showing up around Kachemak Bay, where the maritime climate had been too cool and wet for bark beetles to do much damage in the past. Still, Berg didn't see the significance.

His career followed an eccentric trajectory to bring him to his discovery. Caught up in the early 1960s craze for the hard sciences, he first became a geophysicist, but for ethical reasons he quit before completing a doctoral thesis. Studying in Madison, Wis., he had joined the movement to oppose the Vietnam War and came to believe his study of the earth's crust could be perverted by the military. He feared that the Navy could use the knowledge to develop communications with nuclear-armed submarines. Berg switched to philosophy, earned his first doctorate, and became a carpenter.

A philosopher, a skilled finish carpenter, a liberal war protester: Berg had the perfect résumé to live among the big Sitka spruce trees on Homer's East End Road, where he ended up in a community of like-minded people in 1982. Free spirits inhabited these woods, building fanciful houses hidden down narrow, muddy roads. Berg's neighbor liked to sing in the chapel of big trees outside her door. "I loved living in the forest," he said.

But in 1992, when Berg returned from Georgia with a doctorate in botany, it was clear that his home was changing. "The beetles had really taken off at that point, and I could see a lot of my trees had beetles in them," Berg said. He decided not to spray, but it didn't matter; nothing could stop the



**Berg extracts** a sample from a spruce tree in Soldotna. In the mid-1990s, Berg witnessed spring swarms of spruce beetles as they took flight looking for new trees to infest. "I can remember them coming, kind of like an Alfred Hitchcock movie," he said.

insects.

Each spring in the mid-'90s when the beetles took flight to search for new trees to infest, they swarmed like a Biblical plague.

"I can remember them coming, kind of like an Alfred Hitchcock movie," Berg said. "They would be in your hair and your eyes, you'd have to brush them off. I've heard people saying they could see them in clouds, miles off, coming down the Anchor River Valley."

The beetles spend most of their lives inside trees, eating a thin layer of inner bark called the phloem, which carries food produced in the needles down to the roots for storage. Eggs hatch during summer and the larvae begin chewing. The insects stay in a tree for nearly two years and then in spring make their brief flight to find new trees in which to lay eggs.

If a tree's sap is flowing, it can flush the beetles out before they get started. Young trees, rich in sap, usually are immune. Most trees have good defenses in cool, damp weather. Even if one generation of beetles thrives, the next can be knocked down by a cool spring. For the beetles to fly, the air must be at least 60 degrees.

Best for the beetles—and worst for

the trees—is when such a warm day comes early in the spring, when the ground is still frozen. At such a time, with moisture quickly evaporating from the needles but little dampness available to draw from the frozen roots, the trees have little defensive sap and beetles can have a field day.

Spruce bark beetle infestations have always come and gone, but historically they never lasted more than a few years before a return to cool spring weather stopped them. Tree ring records show that the cycle has worked that way for at least 400 years. But since 1987, Southcentral Alaska has had an unbroken string of abnormally warm summers. Some summers in the 1990s were so warm that beetles grew to maturity in one year instead of two, doubling the hit on the forest the next spring. So many beetles flew that young and old trees were overwhelmed in some places, leaving few alive for regeneration. The plague didn't slow until the beetles ate their way through all the available acreage.

The forest along East End Road died, as did many. Some people—including everyone in Berg's neighborhood—chose to cut their trees rather than live with the fear of fire and blow-downs. Berg decided to move into

town, partly because of the loss of privacy and the chilly wind that constantly blew off the bay after the trees were gone.

The neighbor who sang from her porch, Mary Jane Shows, lives there still but the area looks like a perpetually messy construction site. During a recent storm, her husband, John Shows, heard a big tree crashing down every minute or so, so he's glad he cut his trees. But he calls the area left around their home "Beirut."

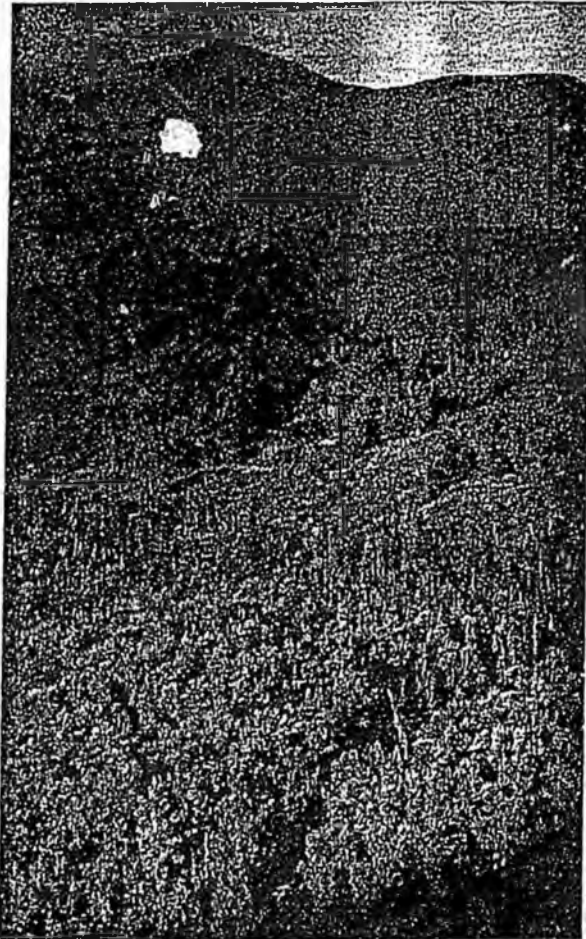
Their trees and thousands of others went into a chipper and out to Homer Spit to be loaded on ships bound for Japan, there to become paper. When you look into the holds of those bulk carriers you get a sense of the scale of how many dead trees there are. These ships are far larger than the biggest building on the Kenai Peninsula, but they are as simple as a bath tub toy—just big boats with immense, empty spaces to be filled. The chips gush into these spaces from a conveyor belt, a torrential cascade of wood and sawdust. But even at this prodigious rate, it takes 12 hours to fill just one of the six holds. Ships come every few weeks. After years of this loading, they've taken only a small nibble from all the dead trees.

Most trees will fall and rot before anyone harvests them. In Bear Cove, on the south side of Kachemak Bay, where the infestation hit early, many trees have already fallen. The land is impassable, like a giant game of pick-up sticks. Once you might have walked or skied through the forest; now it's a no-man's land, probably for a generation. Berg recently visited a site near Point Possession where beetles hit hard in 1958. It is good wildlife habitat, full of devil's club and other berries, but the downed trees make tough going for people.

With a changing climate, it's anyone's guess what will happen next. The ecology of this part of Alaska has changed: spruce beetles won't be limited by cool, wet springs anymore. They might spread next into the coastal rain forest; infestations already have

occurred near Haines and in Glacier Bay, drier pockets of that ecosystem. Canada's Kluane National Park has beetles in forest that never had them before; Berg is training Canadian scientists in his techniques.

Or maybe some other insect will make the next run. "With climate change in the northern latitudes, we might not be able to predict which insect will be the problem, but we know we will have increased insect activity," said entomologist Holsten.



As spruce beetles have swept through Alaska forests, mountainsides have turned brown with dead trees

He studies and records increased outbreaks of various bugs with odd names, such as the larch sawfly. No one saw one in Alaska before 1965, and now the bugs have taken the needles off just about every larch in Interior Alaska for the past seven years. A mystery malady has killed half a million acres of valuable yellow cedar in Southeast Alaska, possibly because climate change has reduced the snow cover that protected roots from freezing.

Ecologist Juday sees much of Alaska becoming more like southern Alberta,

with grasslands and parklike clearings of broadly spaced trees. It could look as it did during the ice ages, providing habitat for elk, bison and wild horses. "It would be kind of back to the future," he said.

But Juday admits that's only a guess. The lesson of climate change and the spruce bark beetle is that we have no idea what big things might happen. Ecosystems are still far beyond our understanding, Juday said.

"They have factors that we don't even know about, like some bug that comes out of nowhere, that's not a factor, then you warm it up a little bit, and it's not a factor, then you warm it up a little bit more, and, boom, it is the only factor," Juday said. "And not only do we not know how that works, but we don't even have a name for the bug yet."

When Beryl Myhill and her husband, Howard, bought their 11 acres off West Hill Road in Homer, there were no big trees around, nor any stumps or signs of a burn. That was in 1946. Over the years since, she felt the climate warm in Homer—she saw winters become milder—and she watched a forest grow up around her house. The tree line came to lie just uphill of her place.

A few years ago, the beetles hit and all those big trees died, including her favorite, where her husband once strung a radio aerial, and her sons' favorites, where they played as children. Howard died in 1997 and their five sons all grew up and moved away. Beryl cut the dead trees to keep them from falling on any-

one. She felt sick, but she assumed God had made a decision.

"You know," she said, "there's a cycle of life to everything. Those trees, they come up and they grow to maturity and they deteriorate and finally they die and the little ones grow up.

"Everyone says it'll grow up again. Of course, I won't be here to see it."

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CHARLES WOHLFORTH, an Anchorage-based free-lance writer, is writing a book about northern climate change research and human adaptation.

