MAINE SPRUCE BUDWORM POLICY

A Report by

The Commissioner of Conservation

to

The 109th Maine Legislature

December 31, 1979

JOSEPH E. BRENNAN
GOVERNOR

STATE OF MAINE
DEPARTMENT OF CONSERVATION
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RICHARD E. BARRINGER
COMMISSIONER

December 31, 1979

Honorable Joseph Sewall
President, Maine Senate

Honorable John Martin
Speaker, Maine House of Representatives

Dear Mr. President and Mr. Speaker:

Pursuant to the requirements of Chapter 69, Section 7, of the Public Laws of 1979, I am pleased to transmit to you my recommendations for future spruce budworm policy in Maine.

Spruce budworm populations in the Maine forest expanded dramatically in the early 1970's, and since 1972 massive aerial insecticide spray projects have been conducted annually to control budworm populations and preserve tree vigor. Some argue that this spraying has perpetuated the budworm epidemic by delaying tree mortality and thereby preserving the insect's food supply. For the short run, however, chemical spraying is the only technique available for protecting the raw material supply over large areas. Most professionals now agree that the long term solution is to grow balsam fir on shorter rotations and to encourage growth of the less susceptible spruce.

At present, some amount of chemical pesticide application is necessary to protect the Maine forest and the industries that depend upon it. However, substantial reductions in chemical pesticide use in budworm management can be brought about through the implementation of what are known as "integrated pest management techniques." These include the refinement of treatment criteria and spray block design, more precise control of spray application through electronic guidance systems, targeted mortality, silvicultural treatments to reduce vulnerability, and accelerated utilization of balsam fir. It is the purpose of this report, and the intention of the Department of Conservation, to see to it that the "integrated" approach to budworm management is put in place at the earliest possible time.

Over the past two decades, the U.S. Forest Service has played a crucial role in Maine's spruce budworm control program. Annual federal contributions to spray project costs since 1954 have ranged from twenty-five to fifty percent. Earlier this year Assistant Secretary Ruppert Cutler of the U.S. Department of Agriculture stated that future federal support will be forthcoming only where dependence on chemical insecticides is reduced in favor of integrated pest management strategies. Last week, the Director of the Northeastern Area Office, U.S. Forest Service, recommended against federal cost share assistance for the 1980 spray project. We regret this recommendation, as we find it discouraging to an orderly transition to integrated control of Maine's real and severe budworm problem. We intend to testify against its adoption at public hearings on January 11 and 12, 1980, in Orono.

The report that follows draws heavily on the work of a Budworm Policy Review Committee established earlier this year by the Department of Conservation, on public comment received by the Committee at a hearing in Bangor on November 20, on the report of Dr. Gerald Stairs of Duke University prepared for a consortium of private Maine landowners, and on the best judgement of the Maine Forest Service staff. Among other things, it recommends:

(1) that $100,000 be appropriated to the Maine Forest Service in 1980 to finance a thorough spruce-fir supply/demand analysis to determine more precisely the level of chemical protection required for the spruce-fir resource;

(2) that, starting in 1981, participation in the budworm spray project be made voluntary and be effective for a period of four years. The Director of the Bureau of Forestry should be authorized to require improved stand type information and forest management plans on all lands involved as a condition for participation in the spray project;

(3) that, effective at once, a settlement region be defined along all publicly maintained roads within the Spruce Fir Protection District, within which the State spray project would not take place unless a landowner specifically requests inclusion in a given year and the land in question meets treatment criteria formulated by the Director of the Maine Forest Service. Municipalities within the Spruce Fir Protection District should be authorized to prohibit the State spray project within the settlement region corridor within their community, by a majority vote of the municipality's legislative body;

(4) that, beginning in 1980, the non-public share of spray project costs be financed through a two tier system of taxation consisting of a spray tax and a shared tax. The spray tax, levied on all acres actually sprayed in a given year, would finance 30% of the non-public project costs in 1980 and 50% of the non-public costs in 1981 and thereafter. The shared tax, levied on all acres participating in the control program, would finance 70% of the non-public share of project costs in 1980 and 50% in 1981 and thereafter;

(5) that, the General Fund share of budworm program costs support ongoing integrated pest management functions other than spraying. Spray costs should be borne by affected landowners, including agencies responsible for the management of public lands that are sprayed;

(6) that, the Maine Forest Service continue to administer the budworm spray project, with its position count increased in 1980 by 12 positions, funded through the spray project budget, to enable better planning and administration of the spray project;

(7) that, starting in 1981, the Pesticide Control Board in the Maine Department of Agriculture be authorized to review and regulate the budworm spray project for environmental and public health impacts. The regulation process should be conducted in a timely manner to minimize disruption of spray project administration.

In addition, the Budworm Policy Review Committee recommended reconsideration of the criteria used in determining the boundaries of the Spruce Fir Protection District and of the conformance of these boundaries with the criteria. We have examined the existing boundaries as requested. In light of recommendation (2) above, which would effectively remove the mandatory taxation aspect of the law in 1981, I recommend that no change in the boundaries be initiated in 1980.

Legislation to implement these recommendations is attached to the report (Appendix A). The Department of Conservation strongly urges the adoption of this legislation by the 109th Maine Legislature.

Finally, I wish to express my great gratitude to the members of the Budworm Policy Review Committee and to the staffs of the Maine Forest Service and the Green Woods Project at the University of Maine for their help. In less than six months time, through diligence and hard work, they have performed an invaluable public service by re-examining the assumptions of this most perplexing and controversial matter of public policy, and by setting us upon a course that holds great promise for the forest resource and citizens of this State.

Sincerely,

Richard Barringer

RICHARD E. BARRINGER
COMMISSIONER

REB/tl

cc: Governor Joseph Brennan
Members, Committee on Appropriations
Members, Committee of Energy and Natural Resources
Members, Budworm Policy Review Committee
Stewart Smith, Commissioner of Agriculture
Kenneth Stratton, Director of Forestry

Report of the Commissioner of Conservation

to the 109th Maine Legislature on Spruce Budworm Policy

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PREFACE

Chapter 69, Section 7 of the Public Laws of 1979 directs the Commissioner of Conservation to present to the Legislature, by January 1, 1980, his recommendations for future spruce budworm control policy.

The Legislature indicated that these policies should be directed toward accomplishing: (a) a significant reduction from the current level of dependence on chemical pesticides, not later than fiscal year 1981-82; (b) a more equitable method of determining participation in the control program, to allow maximum landowner freedom to choose to participate or not to participate; and (c) a more equitable method of determining the division of budworm program costs among landowners to reduce the tax burden on landowners not being sprayed in any given year. The Legislature further mandated that the Commissioner's report "recommend what ongoing public functions in budworm management should receive General Fund support, (and) summarize the cost and effectiveness of the past control program, steps being taken to improve cost and effectiveness, and research completed or underway to improve control programs." The Commissioner was directed to submit draft legislation to implement his recommendations.

In June of 1979, as Commissioner of the Department of Conservation, I invited a number of responsible persons to assist us in formulating recommendations for future budworm management policies in Maine. Besides myself, members of the Budworm Policy Review Committee included: Robert Bartlett, Manager of Woodlands, Great Northern Paper Company; John Dimond, Professor of Entomology, University of Maine; Robert Gardiner, Executive Director, Natural Resources Council of Maine; Richard Morton, Representative from Farmington, Maine Legislature; Robert Raisch, Director of Northeastern Area State and Private Forestry, U. S. Forest Service; and Rand Stowell,

President, Maine Forest Products Council. The energy and commitment of the Committee to the task were without precedent in my experience. It is no exaggeration to say that without them, the Department would not today be in a position to submit the recommendations which follow, and I am lastingly grateful to each member of the Committee for their help.

The Committee met frequently during the summer and fall of 1979 to consider options for budworm management, and how they might best be administered and financed to meet the Legislature's stated policy objectives. The Committee was most ably assisted and supported throughout by the staffs of the Maine Forest Service, Kenneth Stratton, Director, and the Green Woods Project of the University of Maine at Orono, Gordon Mott and John Dimond, Co-Directors. The Committee's findings and recommendations were released on November 5, 1979, and a public hearing was held on November 20 at the Bangor Civic Center to solicit public comments and suggestions.

The Committee's report, the report of Dr. Gerald Stairs on budworm policy prepared for a consortium of private landowners, public comment received at the November 20 public hearing, and the best judgment of the Maine Forest Service staff have been taken into consideration in formulating the following budworm policy recommendations.

FINDINGS

1. General

The spruce budworm is a natural part of the spruce-fir forest and plays a major role in the dynamics of the spruce-fir ecosystem in the United States and Canada. Spruce budworm outbreaks were recorded as early as 1770 in Maine; but in the past, despite its significant impact on the forest, the budworm was not perceived as a threat to society. In recent years, as the Maine forest industry's demand for the spruce-fir resource has increased sharply, the insect has become a direct competitor with man.

At thirty to eighty year intervals, as the fir component of the forest reaches maturity, budworm populations reach epidemic proportions, causing widespread fir and some spruce mortality, and creating a subsequent shortfall in merchantable-sized spruce and fir timber that may last ten to thirty years. The cycle appears to be repetitive and permanent. Since the 1950's, attempts have been made to halt this cycle through aerial application of chemical (and some biological) insecticides to control budworm population numbers and preserve tree foliage. The result of prolonged and exclusive (or heavy) reliance on spraying, however, is that the cycle is lengthened and the problem is possibly perpetuated. By preserving foliage - the food source for budworm - spraying maintains the forest in a state that is susceptible to massive budworm outbreak.

Current research indicates that the long term solution to budworm infestation is to manage balsam fir on a short rotation and to encourage the regeneration of spruce wherever possible. In the short run, spraying can be minimized by targeting spray to those high-value stands that most merit protection, and by accelerating the utilization of fir, thereby eliminating the extensive stands of overmature fir which exist as prime

breeding grounds for budworm.

The 107th Maine Legislature, through the 1976 Spruce Budworm Suppression Act, mandated that the Department of Conservation "protect and preserve the spruce-fir forest resources of the State of Maine from the ravages of spruce budworm infestations (by) reasonable measures to control and suppress infestations of spruce budworm insects ... during the years 1976-1981." The 1976 Act represented an attempt to protect the resource through existing techniques, primarily aerial insecticide spraying. It also provided a framework for the development of an integrated approach to budworm control, which recognized the enduring nature of the budworm problem.

The purpose of Maine's current spruce budworm protection program is to minimize the impact of the spruce budworm on our spruce-fir resource through a combination of techniques, including monitoring and prediction of insect population levels, individual forest stand risk rating and condition assessment, silvicultural hazard reduction treatments, salvage and presalvage harvest cuts, and pesticide applications to preserve tree vigor. (See Glossary of Terms)

The Budworm Policy Review Committee pointed out the need to assure an adequate supply of wood fiber to the spruce and fir consuming industries of Maine. They found that to assure a future wood supply, <u>some</u> amount of chemical pesticide application is necessary at the present time. However, the Committee recommended immediate reduction in the reliance on chemical pesticides for budworm protection through implementation of "integrated pest management techniques," including the refining of spray block boundaries and more precise control of spray application. They recommended that additional measures now under development, including targeted fir mortality, silvicultural treatments to reduce hazard,

accelerated fir utilization and precision spraying, be used to reduce pesticide use in the future. The Department of Conservation strongly concurs in these recommendations for "integrated" management of the budworm problem by the State and affected landowners.

The past role of the U. S. Forest Service in Maine's budworm program has been vital in assisting with protection costs, in advising on protection techniques, and in research and development. Since 1954, the federal share of protection costs has averaged 40%, with a 36% contribution in the last three years. In 1979, M. Ruppert Cutler, Assistant Secretary of the U. S. Department of Agriculture, approved federal financial support of the 1979 Cooperative Spruce Budworm Suppression Project. He concluded, however, that it is not appropriate for the U. S. Forest Service to continue financial support for large-scale, repeated aerial spray programs designed to maintain a particular forest type in Maine. It is Assistant Secretary Cutler's expressed intention to provide federal support only where dependence on chemical insecticides is reduced in favor of integrated pest management strategies. We concur in and endorse this position.

The recommendations which follow respond to the legislative mandate expressed in Chapter 69, Section 7 of the Public Laws of 1979 as well as to Secretary Cutler's requirements. They set in motion policies that will move us as rapidly as possible towards an integrated pest management strategy for budworm control in Maine. Legislation to implement them is attached to this report as Appendix A.

2. Cost and Effectiveness of the Budworm Control Program

Over 10 million acres of forest land in Maine have been sprayed since 1975 to preserve tree vigor and control budworm populations at a total cost of $31.5 million

In the short term, spraying has yielded a number of benefits, the most obvious being a reduction in the amount of fir and spruce tree mortality that would have occurred without spraying. Most recent estimates indicate current mortality of 50-70 percent of the fir and 5-20 percent of the spruce in infested areas left unsprayed since 1976. Estimates of potential tree mortality in the absence of spraying range from 25-40 percent of the spruce and 70-80 percent of the fir (Burke, 1979).

Spraying has not prevented all tree mortality. One reason for this is that not all the infested acreage is sprayed. The area withdrawn through silvicultural and automatic withdrawals, as well as land in settlement, water, and other sensitive area buffer zones, is substantial. These areas are not sprayed and are expected to sustain significant timber losses. Over certain areas that have been sprayed one or more times since 1973, mortality at 5 to 25% of the combined spruce and fir has occurred. This mortality results from many factors including weather conditions at the time of spray and relative development of tree foliage as opposed to development of budworm larvae (see Burke, 1979).

In any event, complete prevention of mortality from budworm is not an economically or environmentally reasonable goal for policy. The overriding facts are that considerable tree mortality exists in infested and unsprayed stands, and that spraying has reduced the magnitude of losses that would have resulted without a budworm suppression program incorporating chemical insecticides. The spruce-fir resource has in

effect been protected over a period of time so that alternative management strategies might be developed and implemented. That time has now come.

Several steps have already been taken by the Maine Forest Service to improve program effectiveness, including:

(1) the evaluation of alternative guidance systems for small aircraft to assure more precise application of insecticides; (2) use of small aircraft at remote bases to assure more timely application of insecticides; (3) operational development of additional insecticides for specific application situations; (4) extensive use of helicopters for effective treatment of steep and remote terrain, and to most effectively apply the biological insecticide Bacillus thuringiensis; (5) reducing the operational dosage of carbaryl, the primary insecticide used in past projects, from the manufacturer's recommended one pound per acre to 3/4 pound per acre to reduce cost without a significant loss in target effectiveness; and (6) the use of split applications of insecticide to improve population control and foliage preservation.

The recommendations which follow on the wood supply/demand analysis, precision spraying, and spray project administration will significantly improve the overall effectiveness of the budworm control program in Maine.

3. Research to Improve Control Program

The 1976 Spruce Budworm Suppression Act authorized the Department of Conservation to make research grants up to $100,000 a year for the development of forest management strategies which minimize spruce budworm populations; for the development of new and safer biological and chemical control methods which reduce or eliminate budworm populations; and for the development of uses and markets for spruce and fir timber.

The Maine Forest Service has implemented its research program primarily through private contractors, including the University of Maine

at Orono, private consultants, and individuals. Abstracts and full references to the studies noted here are found in a recent Maine Forest Service publication.*

In economics and marketing, a number of significant studies have been conducted including assessment of potential export markets for spruce budworm damaged timber (Strasmore and Carlsson), a problem analysis on salvaging budworm damaged timber (Field & Shottafer); and a review of the decay of spruce-fir timber following spruce budworm attack (Lee and Field). An analysis of the construction lumber industry in Maine, enabling assessment of the impact of spruce budworm control decisions on this industry (Falk), and an overall review of the economics of spruce budworm control (Irland) have also been conducted.

The major emphasis of the Maine Forest Service research effort has been applied research and development, including the field testing of all the currently used operational insecticides for efficacy and environmental acceptability. Particular emphasis has been given to work on the use of Bacillus thuringiensis, a bacterial insecticide, by Dr. John Dimond of the University of Maine at Orono. A number of projects have been funded at the University of Maine to improve insect survey and detection techniques, as well as techniques for assessing stand damage due to budworm through remote sensing techniques. This work has been applied directly in the Budworm Woodlot Management Program of the Maine Forest Service, which assists small, non-industrial landowners in detecting budworm damage and in direct assistance in timber salvage and presalvage and silvicultural management techniques. A significant contribution to perfecting remote sensing techniques for assessing budworm damage has been provided by the staff of Great Northern Paper Company.

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* Maine Forest Service, 1979. Spruce Budworm Research in Maine: A User's Guide. Augusta, 175 pp.

The Maine Forest Service has funded basic research into alternative budworm control techniques, including Entomopthora fungus (Vandenberg, Kenneth, Soper), insect growth regulators (Grannett, Brushwein) and Brachymeria (Leonard, Minot, Tucker). This work has brought many of these techniques closer to full operational status, though their use at present remains experimental.

A final area of applied research funded by the Maine Forest Service has been in assessing the overall impact of the current budworm infestation on growth and mortality in both sprayed and unsprayed stands (Houseweart). This work was also supported by the U. S. Forest Service and the Cooperative Forest Research Unit at the University of Maine.

RECOMMENDATIONS

The recommendations presented here are designed to accomplish the Legislature's directives to reduce pesticide use, maximize landowner freedom to participate or not in the spray program, and apply a more equitable taxing system to landowners which also reduces the tax burden on landowners whose land is not sprayed in any given year.

These recommendations lay the legislative and administrative foundation for an ongoing, integrated pest management (IPM) system which is essential to dealing effectively with the spruce budworm problem in Maine. The recommendations recognize and set forth crucial and specific roles for government and forest landowners in creating an IPM system and making it work.

1. Voluntary Participation

It is recommended that landowners be allowed to make their lands eligible for budworm spraying on a voluntary basis beginning in 1981. At the same time, the existing silvicultural, automatic, and new market withdrawal procedures should be eliminated. Starting in 1981, landowners who choose to make their lands eligible for spraying should make a commitment for a period of 4 years. The Director of the Maine Forest Service should designate from among the spray-eligible lands, the actual areas to be sprayed. (For criteria to be used in the designation, see recommendations 5 and 10.) Landowners within the designated spray area should be allowed, in any given year, to withdraw any lands they wish from the spray area.

The Maine Forest Service will adopt administrative procedures to encourage voluntary participation in the budworm spray project to the extent needed to assure an adequate future supply of wood to the spruce and fir consuming industries of Maine.

2. Two-Tier Tax System

It is recommended that the financing mechanism for raising the non-public costs of the budworm spray project be a two-tier system, composed of a spray tax and a shared tax. The spray tax should be assessed equally on all acres actually sprayed in a given year. The shared tax should be assessed on all acreage which landowners have committed as eligible for spraying. In 1980, 30% of non-public spray project costs should be raised through the spray tax, with the remaining 70% levied on all softwood and mixedwood acreage not currently withdrawn through automatic or silvicultural withdrawal procedures. In 1981, and thereafter, with the initiation of a policy of voluntary participation, 50% of the non-public costs should be raised through the spray tax, with the remaining 50% raised by the shared tax. Upon payment, these taxes would be deposited into a dedicated revenue account to cover spray project expenses.

It is our belief that tying spray costs more closely to acres sprayed in a given year, in combination with allowing voluntary participation in both spray eligibility and actual spraying, will provide landowners with the strongest possible economic incentive to minimize the amount of sprayed acreage.

3. Wood Supply Analysis

It is urgently recommended that a General Fund appropriation of $100,000 be made to the Maine Forest Service to enable it in cooperation with the USFS, the University of Maine, and the Maine forest industry to produce, before January 1, 1982, a thorough analysis of future spruce-fir wood supply and demand based on varying levels of budworm protection and management. This study should also address the impact of increased utilization of Maine's total timber resource on the scale and severity of future spruce budworm

infestations. The results of this study will help to define the precise need for chemical protection of the spruce-fir resource.

It is possible that the study may indicate that the recommended policy of voluntary participation in spraying will have undesired long-term economic impacts. If this is the case, the voluntary policy should be reconsidered.

4. Environmental and Health Regulation and Monitoring

Timely, prior review of the environmental and health concerns of the budworm spray project should be undertaken by a state agency other than the Maine Forest Service in order to eliminate the current conflict of interest between administering the spray project and regulating its environmental and human health impacts. It is recommended that regulatory review, oversight, and enforcement concerning aerial spraying for spruce budworm control be the responsibility of the Pesticides Control Board within the Department of Agriculture. To accomplish this the Board should be provided with an appropriate level of staff support to carry out these functions. The timely handling of permit applications should be ensured.

It is also recommended that the Pesticides Control Board plan, execute, and disseminate the results of field evaluations on the behavior of insecticides and their impact on non-target organisms, water quality, and human health, as well as monitor accidental spills, drift, occupational exposure, and accidental spraying of non-target areas. Direct costs of this environmental and health monitoring should be included in the budworm spray project budget.

We recommend that the Pesticides Control Board convene in 1980 a committee of scientific and medical specialists to advise on the design of an appropriate environmental and health monitoring program. It should also initiate in 1980 a thorough analysis of the problem of pesticide drift, and

establish maximum levels of contamination for designated non-target organisms and environments.

5. Settlement Region

In planning for the 1980 spray project, the Maine Forest Service has established a Settlement Region along all publicly maintained roads within the Spruce-Fir Protection District. We recommend that lands within this corridor only be sprayed when the landowner specifically requests inclusion in the project, and when the lands requested for inclusion meet criteria set by the Director. We also recommend that the legislative body in each organized town and plantation containing part of the Settlement Region should be authorized to disallow the chemical spray project within this corridor within their municipality.

Establishment of a Settlement Region is intended to reduce use of chemical pesticides near inhabited areas and to place priority on the implementation of alternative budworm management techniques in the area where human health concerns are greatest. The Maine Forest Service will adopt an intensified budworm protection management program emphasizing the delivery of increased technical budworm management assistance to small woodlot owners. It is hoped that Maine's forest industry will assist in providing this increased technical assistance to small landowners.

6. Prefunding

Financial commitments for the budworm spray project must be made in the January to March period, prior to the receipt of state, federal, and landowner contributions. In recent years a small group of corporate landowners has "prefunded" the spray project by entering into contracts pending the release of these funds. A number of problems are created by this arrangement:

the landowners group is left encumbered regardless of whether a spray project is actually conducted; the landowners group does not get reimbursed for interest charges on its financial commitment; and an inefficient system of double bookkeeping is required.

To alleviate the current prefunding problem, the entire cost of the proposed spray project in any given year should be raised by a pre-project excise tax levied on all spray-eligible acres within the spray program. In case of delay in collections, the Director of the Maine Forest Service should be authorized to borrow monies from the General Fund for up to 60 days, at no interest, in order to meet financial commitments of the spray project.

A second post-project assessment will allow for accurate determination of the amounts due from each landowner through the shared and spray taxes and will result in additional taxes or rebates to landowners as appropriate. Federal cost share funds, if received, will be accounted for at the time of the post project tax assessment.

7. General Fund Costs

On the basis of the recommendations of the Budworm Policy Review Committee and the best judgement of the Department of Conservation, the following functions are determined to merit ongoing General Fund support: program administration; research and technology transfer; management assistance to small non-industrial private owners; insect survey, detection and hazard rating; environmental and health regulation and enforcement; and public information and education.

A projected budget of expenditures for FY 1981 is presented in Appendix D-1. A total General Fund appropriation of $485,000 is recommended. Approximately $120,000 of this amount is for new or expanded activities in budworm woodlot management and environmental and health regulation

and enforcement.

The remaining funds ($365,000) will be for existing activities that have previously been funded by the General Fund, by the spray project, or through federal dedicated revenue. Federal cost sharing programs under the Cooperative Forestry Assistance Act are expected to provide approximately $45,000 to be credited to the General Fund.

In 1979 the General Fund contributed $472,000 to the budworm program. During the past five year period (1975-1979) the General Fund contributed an average of $406,000 annually. This has been in the form of direct appropriations ($342,000) as well as contributed services ($64,000) as indicated in Appendix D-2. We recommend that the General Fund not support spray project costs, but that these be borne by the affected landowners in the manner described in recommendation 2. Public agencies responsible for the management of any spray-eligible lands should pay the appropriate spray tax and shared tax, as would any other landowner who chooses to join the program.

8. Research

It is recommended that the emphasis of future Maine Forest Service sponsored research be directed toward applied rather than basic research and, specifically, toward the marketing and economic aspects of the budworm problem. In addition to the wood supply/demand analysis described in recommendation 3, projects are being planned to assess the potential for increasing the use of balsam fir relative to spruce both in pulp and paper manufacture and in the solid wood products industry.

Specific studies of operational problems will be funded as needed, with occasional support of projects in insecticide development. The support of basic research is expected to decrease in light of the expansion of

CANUSA* funding for the next 3 to 4 years. As CANUSA winds down in the 1982-84 period, the Maine Forest Service may need to look at opportunities for extending promising basic research projects initiated under CANUSA.

9. Spray Project Administration

In January of 1978, the Department of Conservation first proposed to spin off responsibility for the conduct of budworm spray operation after 1981 to a properly constituted private organization. The Budworm Policy Review Committee carefully considered this matter and recommended that the Maine Forest Service continue to administer the spray project, while improvements are made in the level of staff and funding to ensure a properly planned and administered project. We endorse this recommendation and urge that the position count of the Maine Forest Service be increased to provide for the following positions, to be funded through the spray project budget: a deputy operations director, a development and monitoring coordinator, a spray technologist/insecticide specialist, an accountant-clerk, four forest technicians, an aerial photo interpreter, a draftsperson, a secretary, and two seasonal information and education specialists.

In addition, the Maine Forest Service will assemble an advisory committee composed of representatives of affected landowners, forest industry, the U. S. Forest Service, and the public, to assist the Maine Forest Service in planning the entire budworm management program in a more effective and supportable manner. The Maine Forest Service will also undertake a program of increased contact and information-sharing with individual landowners. In

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*The CANUSA Spruce Budworm Program was initiated in 1977 as a cooperative effort by the U. S. Forest Service and the Canadian Forestry Service to provide funding for an intensive 5-6 year research effort into the spruce budworm problem.

addition to improving spray project effectiveness, the committee and communications efforts will improve coordination with affected landowners and refine spray block design to target spray treatment to those acres most needing protection.

10. Precision Spraying

We recommend that the Director of the Maine Forest Service be authorized to require from affected landowners, in time for use in planning the 1981 spray project, improved forest stand type information on all spray-eligible lands. The information should delineate the location and extent of spruce and fir timber classified according to age or size class and the proportional occurrence of both spruce and fir and of non-host species. In addition to the above information the Director should be authorized to require plans for the management of spray-eligible lands, including harvesting plans, as a condition of participation in the spray project. All the above information should be exempt from the provisions of Maine's Freedom of Information Act, inasmuch as it is legitimately confidential corporate information.

To ensure comparability of information throughout the Spruce-Fir Protection District, the Director, Maine Forest Service, should be authorized to formulate uniform guidelines for forest stand risk rating and condition assessment.

The compilation of the information specified above is essential to the implementation of precision spraying based on refined treatment criteria and spray block design. To target spray specifically to those stands which merit treatment, the Director, Maine Forest Service, should be authorized to set specific criteria for designating areas to be sprayed, including forest stand composition, age, stocking, cost of treatment, wood supply needs, buffer policy, additional pest problems, planned silvicultural treatments, and other

appropriate parameters. In addition, the Maine Forest Service will plan for and use spray aircraft and guidance systems capable of more precise application of chemical and biological pesticides.

11. Silvicultural Treatment

The Maine Forest Service will adopt procedures which serve as strong incentives to extensive use of alternative silvicultural treatments. It will also adopt policies and procedures using the information obtained in recommendation 10, to encourage the accelerated utilization of balsam fir beginning in 1980. The major administrative mechanism currently available in both these regards is spray block design.

APPENDIX A.

LEGISLATIVE MANDATE

APPROVED
APR 3'79
BY GOVERNOR

CHAPTER
69
PUBLIC LAW

STATE OF MAINE

IN THE YEAR OF OUR LORD NINETEEN HUNDRED SEVENTY-NINE

H. P. 1007 — L. D. 1169

AN ACT Making Additional Appropriations from the General Fund and Changing Certain Provisions of the Law Necessary to the Proper Operations of State Government.

Sec. 7. Commissioner of Conservation recommendations for future spruce budworm policy. By January 1, 1980, the Commissioner of Conservation shall present to the Legislature a comprehensive report on his recommendation for future spruce budworm policy.

The policies shall be directed toward accomplishing, not later than the fiscal year 1981-82, a significant reduction from the current level of dependence on pesticides and a more equitable method of determining participation and a more equitable method of determining the division of budworm program costs among landowners.

The proposed method should allow maximum landowner freedom to choose to participate or not to participate, and should reduce the tax burden on landowners not being sprayed in any given year.

The report should recommend what ongoing public functions in budworm management should receive General Fund support. The Commissioner of Conservation shall submit draft legislation to implement his recommendations.

The report will also summarize the cost and effectiveness of the past control program, steps being taken to improve cost and effectiveness and research completed or underway to improve control programs.

APPENDIX B.

Draft Legislation

MAINE SPRUCE BUDWORM MANAGEMENT ACT

Emergency Preamble. Whereas Acts of the Legislature do not become effective until 90 days after adjournment unless enacted as emergencies; and

Whereas spruce budworm spray projects must be undertaken, in order to be effective, prior to the expiration of such 90 day period following adjournment; and

Whereas the Legislature has determined that, beginning in 1980, it is necessary and appropriate to effectuate certain modifications in the manner in which spruce budworm spray projects and management programs are undertaken and financed; and

Whereas, in the judgment of the Legislature, these facts create an emergency within the meaning of the Constitution of the State of Maine and require the following legislation as immediately necessary for the preservation of the public peace, health, safety, and general welfare; now, therefore,

Be it enacted by the People of the State of Maine, as follows:

PART A

Sec 1. Effective Date. In view of the emergency cited in the preamble, this Part A shall take effect when approved.

Sec 2. MRSA § 8407-A is enacted to read as follows:

§ 8407-A. Settlement Corridors

1. All land within two miles of publicly maintained roads in the Spruce Fir Forest Protection District shall be designated by the Director of the Bureau of Forestry as settlement corridors.

2. Land within settlement corridors shall not receive insecti-

cide spray treatment except under the following circumstances:

(i) the landowner makes a written request for such treatment in accordance with schedules and procedures adopted by the director;

(ii) the request is accompanied by such information as the director may require and meets such criteria as the director may adopt; and

(iii) the request does not relate to land within a settlement corridor located in a municipality which has taken action to prohibit spray projects within such corridor pursuant to subsection 4 of this section.

3. The provision for settlement corridors under this section shall not impair or affect the director's authority to define and carry out other policies and procedures, including without limitation the use of no-spray buffers, designed to protect the public health and the environment, as he deems necessary or appropriate.

4. Any municipality within the Spruce Fir Forest Protection District may prohibit the execution of spray projects authorized under this subchapter within settlement corridors, as designated pursuant to this section, which lie within such municipality. Any such prohibition, or the repeal thereof, may be enacted in accordance with the procedures for enactment of municipal ordinances; provided that any such prohibition shall be enacted before April 15 of any calendar year in which it shall apply and that the municipality shall send a certified copy of its enactment to the director within 5 days following the adoption of the same.

Sec. 3. 12 MRSA § 8417-A is enacted to read as follows:

§ 8417-A. Technical Programs

1. The Bureau of Forestry shall undertake to develop and implement budworm management technical assitance programs for small wood lot owners.

2. The Bureau of Forestry shall conduct or cause to be conducted an analysis of future supply and demand for the spruce and fir resources of the State. The purpose of such analysis shall be to determine the types and levels of future spruce budworm protection needs and strategies for such spruce-fir resources.

Sec. 4. 14 MRSA § 8415 is repealed and replaced by the following:

§ 8415. Program Personnel

1. Spray Project Personnel. There are established within the Bureau of Forestry the following positions, all of which will be funded as annual expenses of any spray project conducted: a development and monitoring coordinator, a spray technologist/insecticide specialist, an account clerk, four forest technicians, an aerial photo interpreter, a draftsperson, a secretary, two seasonal information and education specialists, and such other seasonal positions as the director deems necessary to carry out spray projects. Such personnel shall be appointed by the director subject to the Personnel Law and shall perform duties relating to the spray projects as the director may prescribe.

2. Non-spray Project Operations Personnel. There are established within the Bureau of Forestry the following positions, all of which will be funded out of General Fund appropriations for the purpose of providing administrative and operational support for spruce budworm management program activities not directly related

to operation of spray projects: an operations supervisor, a clerk-steno, an accountant, a research associate, two entomologists, a forester, five forest technicians, an aerial photo interpreter, two clerk-typists, an insect ranger, and a public information specialist. Such personnel shall be appointed by the director subject to the Personnel Law. Functions to be conducted by these positions shall include but not be limited to the following: research; technology transfer; budworm woodlot management assistance to small private forest landowners; survey/detection/hazard rating; public information services; spruce-fir supply/demand analysis, and financial management.

Sec. 5. 12 MRSA § 8417 is repealed and replaced by the following:

§ 8417. Research

1. The Bureau of Forestry, acting through its director, may make grants of funds and enter into contracts for purposes of research related to forest management strategies, insecticide and spray application technologies, integrated pest management techniques, forest product marketing and utilization, and other issues pertinent to the purposes of this subchapter. Such research shall be funded out of moneys available to the director for that purpose.

Sec. 6. 12 MRSA § 8405, subsections 3,4 and 5 are repealed and replaced by the following:

3. Excise tax funds. Persons owning parcels of forest land, including persons claiming timber and grass rights in public reserved lands, which are classified as forest land pursuant to Title 36, chapter 105, subchapter II-A, of more than 500 acres within the Spruce Fir Forest Protection District shall be subject to the pre-project and post-project excise taxes established under section 8406

on the privilege of owning and operating such parcels of forest land, except as provided in this subchapter. In cases of divided ownership of the forest land, the persons owning or claiming timber rights in such forest land shall be subject to such taxes. The Legislature hereby finds that it would not be administratively feasible to apply such taxes to smaller parcels of such forest land.

4. Spray Project Special Accounts

A. The Treasurer of State shall establish two dedicated revenue accounts as follows:

(i) into one account shall be deposited any revenues received by the State from the Government of the United States for any spray project.

(ii) into the other account shall be deposited any revenues received by the State from the excise taxes authorized pursuant to this subchapter.

B. The moneys credited to such accounts shall be used by the Bureau of Forestry to pay any expenses, debts, accounts, and lawful demands incurred in connection with spray projects authorized under this subchapter, and the director shall authorize the State Controller to draw his warrant therefor at any time. Any remaining balance in such accounts shall continue from year to year as a fund available for the purposes set out in this subchapter and for no other purpose.

5. Borrowing from General Fund. To accomplish the purposes of this subchapter, the director may borrow moneys from the General Fund for up to 60 days, at no interest, in order to enable the Bureau to pay expenses, debts, accounts and lawful demands for any spray project authorized under this subchapter; provided, however,

that the aggregate amount of such borrowing shall at no time exceed the amount of uncollected excise taxes authorized under this sub-chapter for such spray project.

Sec. 7. 12 MRSA § 8406 is repealed and replaced by the following:

§ 8406. Taxation

1. Pre-Project Excise Tax. The pre-project excise tax on parcels of softwood forest land shall be $1.58 per acre for 1980. The pre-project excise tax on parcels of mixed-wood forest land shall be $.79 per acre for 1980. Such tax shall be assessed and billed by the State Tax Assessor within 30 days following the effective date of this Part.

2. Post-Project Excise Tax. The post-project excise tax on forest land shall be computed and assessed as follows:

A. The director of the Bureau of Forestry shall determine the total amount of costs incurred or budgeted to be expended in connection with any spray project conducted during the 1980 calendar year.

B. The amount computed in paragraph A shall be reduced by the amount of any moneys received for such project from the Government of the United States and from contract payments made for spraying services pursuant to Section 8414, subsection 3.

C. 30% of the balance computed under paragraph B shall be raised by a post-project spray tax, the per acre rate of which shall be calculated by dividing the sum to be so raised by the number of acres, subject to excise taxation under this sub-chapter, which actually received spray treatment in 1980.

D. 70% of the balance computed under paragraph B shall be raised by a post-project shared tax, applicable to all taxable

acres in the District, the per acre rates of which shall be calculated in accordance with the following: each taxable acre in the District which is classified as mixed-wood shall be taxed at half the rate applicable to each taxable acre in the District classified as softwood; and each such acre classified as hardwood shall not be subject to taxation under this paragraph D.

E. The director shall certify in writing to the State Tax Assessor the post-project shared tax rates for softwood and mixed-wood acres and the post-project spray tax rate, together with the number of acres within each ownership which are subject to such taxes.

F. The amount of the post-project excise taxes payable by each landowner shall be reduced by the amount assessed upon such landowner on account of the pre-project excise tax payable for that calendar year.

G. The State Assessor shall compute, assess and bill, by September 1, the amount of post-project excise taxes payable by each landowner in accordance with this section. Notice of the amount owed by each landowner shall be sent to him or his agent at the address shown on the records of the State Tax Assessor or of the municipality in which such land is located. In the event that the amount so calculated results in a negative balance for any landowner, the State Tax Assessor shall refund to such landowner the amount of such balance in the form of a tax rebate.

3. Due Date. The pre-project excise tax is due March 31 of the year in which it is assessed. The post project excise tax is due September 30 of the year in which it is assessed. Notice of such taxes shall be presumed complete upon mailing.

4. Interest and Penalty. Any tax assessed under this subchapter which is not paid when due shall accrue interest

at the rate of 1½% for each month, or fraction thereof, that the tax remains unpaid; and a penalty equal to 20% of the unpaid tax shall be added to the liability of any person who fails to pay a tax when due.

5. Lien. There shall be a tax lien on all land subject to taxation under this subchapter to secure the payment of all sums due hereunder, and such lien may be enforced in the manner provided by Title 36, sections 1282 and 1283.

6. Collection by Attorney General. Whenever any person fails to pay any tax, interest and penalty due under this subchapter within the time provided, the Attorney General shall enforce payment by civil action against the person from whom due for the amount of such tax, interest and penalty, together with costs, in either the Superior or District Courts in Kennebec County or in the judicial division in which such person has a residence or established place of business.

Sec. 8. The appropriations for spruce budworm control, included in Part B of P.L. 1979 c. 164 are repealed and replaced by the following:

	1979-80	1980-1
0234 Spruce Budworm Control	1,492,481	0
Unallocated (expended)	(expended)	

Sec. 9. Sec. 2 of Part D of P.L. 1979 c. 164 is repealed.

Sec 10. General Fund Appropriation. There is appropriated from the General Fund, in each of the following fiscal years, the following amounts for spruce budworm control and management. Any unexpended balance of this appropriation and funds previously appropriated for this purpose shall not lapse but shall remain continuing carrying account for these purposes. The breakdown for this appropriation shall be as follows:

NATURAL RESOURCES
DEPARTMENT OF CONSERVATION

		1979-80	1980-1
0234	Spruce Budworm Management		
	Positions	(1)	(17)
	Personal Services	$12,000	$306,391
	All Other	$245,000	$160,000
	Capital Expenditures		$ 37,000
0232	Division of Forest Fire Control		
	Positions		(-1)
	Personal Services		($25,117)
	All Other		($ 3.000)
0233	Entomology		
	Positions		(-2)
	Personal Services		($27,801)
	All Other		$ 3,500)

Sec. 1. Effective Date. This part B shall take effect on October 1, 1980, provided, however, that the tax lien, foreclosure, collection and enforcement provisions applicable to any tax levied under any prior enactment of this subchapter shall continue in effect as to any such tax.

Sec. 2. 12 M.R.S.A. §§ 8401 through 8418 are repealed and replaced by the following:

§ 8401. Short Title

This subchapter shall be known and may be cited as the "Maine Spruce Budworm Management Act."

§ 8402. Legislative Policy

The Legislature declares that it shall be the policy of the State to undertake a spruce budworm management program to minimize the short and long term impacts of spruce budworm insect infestations upon the State's spruce-fir forests in accordance with the following policy objectives:

(i) the protection of an adequate present and future supply of wood to support the long-term economic needs of the State and of its forest products industries;

(ii) the development and utilization in both the public and private sectors of forest protection and management programs which are cost-effective, biologically sound and responsive to the environmental and health concerns of the public;

(iii) the reduction in reliance upon the use of chemical insecticides in spruce budworm suppression programs;

(iv) the encouragement of private efforts to undertake a variety of integrated pest management techniques which result in a long-term reduction in the susceptibility of the State's forests to spruce budworm infestation and loss;

(v) the implementation of equitable methods for determining

private and public participation in, and financing of, spruce budworm suppression and prevention programs, including provision for voluntary participation in future insecticide spray projects;

(vi) the provision for adequate regulatory review of insecticide spray projects by an independent state agency; and

(vii) the provision of management and utilization assistance programs for small forest landowners designed to minimize impacts of spruce budworm infestation and loss.

§ 8403. Definitions

As used in this subchapter, the following terms shall have the following definitions:

1. Director. "Director" means the Director of the Bureau of Forestry.

2. Designated spray area. "Designated spray area" means that land area designated by the director, pursuant to Section 8405, subsection 4, for inclusion within a spray project.

3. Forest land owners. "Forest land owners" means persons who own forest lands within the Spruce Fir Forest Protection District, including without limitation persons owning or claiming timber and grass rights in public reserved lands located within such district.

4. Management program. "Management program" means all activities undertaken by the Bureau of Forestry in connection with the short and long term suppression, control and prevention of spruce budworm infestations, including without limitation any activities undertaken in connection with spray projects, spruce budworm survey and detection activities, silvicultural, marketing

and integrated pest management programs, research and related activities.

5. Person. "Person" means any individual, partnership, joint venture, corporation or other legal entity, or any group of persons which acts as a tenancy in common or joint tenancy for ownership purposes, and includes any government or any agency, bureau or commission thereof.

6. Rebate. "Rebate" means a payment by the State back to a person subject to taxation pursuant to this subchapter.

7. Rule. "Rule" means a duly adopted regulation of general applicability promulgated by the Bureau of Forestry. Such rules shall have the force and effect of law.

8. Spray Program Area. "Spray Program Area" means all that forest land for which applications have been made and approved by the director pursuant to section 8405, subsections 2 and 3, except as removed pursuant to section 8406, subsection 2.

9. Spray project. "Spray project" means all activities undertaken or caused to be undertaken by the Bureau of Forestry in connection with the application of insecticides or other materials against spruce budworm insects within a single year.

10. Spruce budworm. "Spruce budworm" means the insect of the species known as Choristoneura fumiferana, Clem., at any stage of its biological development.

§ 8404. Spruce Fir Forest Protection District

There is established a Spruce Fir Forest Protection District consisting of each of the municipalities and townships within the State in which the Legislature has determined the forest cover is, to a substantial extent, composed of spruce and fir trees

and wherein such spruce and fir is now, or may reasonably be expected to become, subject to infestation and destruction by spruce budworm insects. The district shall consist of the following municipalities and townships:

Aroostook County. All municipalities and townships;

Franklin County. All municipalities and townships north of a line formed by the southern and eastern boundaries of the following municipalities and townships: Kingfield, Salem Township, Phillips and Weld;

Hancock County. All municipalities and townships east of a line formed by the western boundaries of the following municipalities and townships: Tremont, Mount Desert, Bar Harbor, Trenton, Lamoine, Hancock, Township 8, S.D. and Mariaville;

Oxford County. All municipalities and townships north of a line formed by the southern and eastern boundaries of the following municipalities and townships: Roxbury, Andover, Newry and Township A., No. 1 (Riley);

Penobscot County. All municipalities and townships north of a line formed by the southern and western boundaries of the following municipalities: Clifton, Bradley, Old Town, Alton and LaGrange;

Piscataquis County. All municipalities and townships;

Somerset County. All municipalities and townships north of a line formed by the southern boundaries of the following municipalities and townships: Brighton Plantation, Bingham, Concord Township and Township 2, R. 1, B.K.P., E.K.R. (Lexington); and

Washington County. All municipalities and townships.

§ 8405. Program Planning

1. General Authority. In accordance with the provisions of this subchapter, the Bureau of Forestry, acting under the supervision of the director, shall be empowered to plan for and undertake activities related to spray projects and management programs on behalf of the State of Maine.

2. Application for Spray Project Eligibility. Forest land owners may apply to the director prior to November 1 of any year to be eligible to participate in spray projects for the following four years. Such application shall show (i) the name and address of the applicant and its agent, if any, (ii) the number and location on maps prescribed by the director of the acres of forest land for which application is being made, (iii) the location on maps prescribed by the director of the timber types, timber ages and proportions of spruce, fir and non-host species within such forest land, (iv) the location on maps of private and public road access to such forest land, (v) the location on maps of all residences within or adjoining such forest land, (vi) a five year management plan for such forest land showing plans for timber cutting, road construction and other planned land utilizations, and (vii) any other information pertinent to the description, utilization and management of such forest land as the director may require for purposes of spray project and management program planning. Management plans accompanying the application may be utilized by the Bureau of Forestry for planning purposes, and may be shared with other government agencies, but shall not constitute records available for public inspection or disclosure pursuant to 1 M.R.S.A. § 408.

Each application shall contain the following information to be used for excise tax purposes. The application must designate one person who shall be billed and notified of any lien recorded under this subchapter. When a tax bill or notice of lien is sent to this person, it shall constitute notice to all other landowners listed on the application. Each forest landowner shall be jointly and severally liable for any tax, penalty or interest imposed under this subchapter.

3. Effect of Application. The director shall accept, not later than December 1 of each year, any application which to his satisfaction meets the requirements of this section and any additional criteria which the director may impose by regulation in furtherance of the legislative policies of this subchapter. By December 15, the director shall certify in writing to the State Tax Assessor the complete list of all participants in the program. The list shall include the names of the forest landowners, the name and the address of the person designated to be billed and served with a notice of lien, a particularized description of the real estate included in the Spray Program Area, and a statement of the acreage included in each parcel. If a change in ownership occurs after December 15, the director shall inform the State Tax Assessor not later than the following September 1.

Upon the director's acceptance of any such application, the forest land involved shall, for a period of four years, be and remain eligible for inclusion within the spray project, as determined on an annual basis pursuant to subsection 4 of this section, and shall be subject to taxation pursuant to section 8408, regardless of any change in ownership of such forest land. At the

expiration of such four year period, application must be renewed by the forest land owner, and accepted by the director, in accordance with this section in order to enable continued eligibility for participation in subsequent spray projects.

4. Spray Project Designation

A. Discretion in Director. The director, acting in accordance with this subchapter, shall have ultimate and final discretion to determine and from time to time modify the location, type and manner of any spray project within the Spray Program Area, subject to such regulatory review and approval by other state and federal agencies as is provided by law. The director shall make such determinations based upon evidence of the extent of budworm hazard to forest lands within the Spray Program Area, forest stand composition, wood supply needs, buffer policies, opportunities for silvicultural and other management alternatives, the cost-effectiveness and biological soundness of spray treatment for particular forest lands, the

recommendations of affected forest land owners and the public, environmental and public health concerns and such other factors as the director may deem to be in furtherance of the legislative policies of this subchapter.

B. Preliminary Determination by Director. The director shall, not later than December 15 of each year, make a preliminary determination of the forest lands within the Spray Program Area to which he tentatively deems it necessary and appropriate to apply chemical or biological spray treatment in the following year. Within 15 days following such preliminary determination, the director shall furnish and make available to the affected forest land owners and to the public maps showing the forest lands preliminarily so designated. Notice of such preliminary designation shall be published in the state paper and such other newspapers as the director deems appropriate. Such notice shall indicate where spray area maps will be available for inspection and where further information may be obtained, and shall provide information concerning withdrawal procedures.

C. Withdrawals. Any forest land within the Spray Program Area may be withdrawn from any annual spray project provided that a written request, adequately specifying on maps prescribed by the director the location of the acres to be withdrawn, is submitted by the forest land owner to the director no later than February 1 of the calendar year of the spray project involved. The director may at his discretion receive and act upon later submitted requests for withdrawal.

5. General Conditions for Applications and Requests. In addition to any other requirements for applications for spray project

eligibility or for spray treatment and requests for withdrawal established under this subchapter, such applications and requests shall conform with the following requirements:

A. They shall be accompanied by maps, depicting the forest land involved, of the same size and scale as those accepted by the State Tax Assessor in the administration of the Tree Growth Tax Law;

B. They shall include a statement of ownership rights in the forest lands involved;

C. Subject to the provisions of paragraph D, they shall include written authorization from each owner of, or claimant to, an interest in the forest land involved, other than owners of easements and mortgages;

D. In the case of applications or requests affecting parcels of forest land held in common and undivided or joint ownership, a controlling or majority interest in the parcel shall have the power to make applications and requests under this subchapter and such applications and requests, as well as the decisions of the director thereon, shall be binding on all owners of interests in such lands;

E. Within 30 days following the transfer of any interest, other than an easement or mortgage, in any forest lands which are part of the Spray Program Area, written notice of such transfer shall be sent to the director.

6. Settlement Corridors

A. All land within two miles of publicly maintained roads in the Spruce Fir Forest Protection District shall be designated by the director as settlement corridors.

B. Land within settlement corridors shall not receive insecticide spray treatment except under the following circumstances:

(i) the land is in the Spray Program Area;

(ii) the landowner makes a written request for such treatment not later than January 1 in the year preceding the spray project involved;

(iii) the request is accompanied by such information as the director may require and meets such criteria as the director may adopt in furtherance of the legislative policies of this sub-chapter; and

(iv) the request shall not relate to land within a settlement corridor located in a municipality which has taken action to prohibit spray projects within such corridor pursuant to section 8406, subsection 2.

C. The provision for settlement corridors under this section shall not impair or affect the director's authority to define and carry out other policies and procedures, including without limitation the use of no-spray buffers, designed to protect the public health and the environment, as he deems necessary or appropriate.

7. Technical Assistance Programs. The Bureau of Forestry shall undertake to develop and implement budworm management technical assistance programs for small wood lot owners.

8. Supply-Demand Analysis. The Bureau of Forestry shall conduct or cause to be conducted an analysis of future supply and demand for the spruce and fir resources of the State. The purpose of such analysis shall be to determine the types and levels of future spruce budworm protection needs and strategies for such spruce-fir resources.

§ 8406. Regulatory Jurisdiction

1. General Rule. The Bureau of Forestry, in undertaking any spray project, shall apply for and obtain any permits and approvals of the Maine Pesticide Control Board and the Maine Department of Agriculture, as required by the laws administered by such agencies. Except as provided in this section, spray projects may be conducted without adherence to the laws administered by other state agencies or by any municipal, county or other local government body.

2. Municipal Action. Any municipality within the Spruce Fir Forest Protection District may prohibit the execution of spray projects within settlement corridors, as designated pursuant to section 8405, subsection 6, which lie within such municipality. Any such prohibition, or the repeal thereof, may be enacted in accordance with the procedures for enactment of municipal ordinances; provided that any such prohibition shall be enacted before April 1 of any calendar year in which it shall apply and that the municipality shall send a certified copy of its enactment to the director within 10 days following the adoption of the same. Settlement corridors within which spray projects have been prohibited pursuant to this subsection shall thereupon be removed by the director from the Spray Program Area.

§ 8407. Funding

1. Recommendation of the Director. On or before January 1 of each year, the director shall report in writing to the Bureau of the Budget and to the Legislature his estimate of the costs of implementation of any spray project proposed for that calendar year.

2. Authorization by Legislature. Following the recommendation made in accordance with subsection 1 of this section, the Legislature

shall determine, not later than January 20, the amount, if any, authorized for expenditure for any spray project in that calendar year and shall determine the pre-project excise tax rate, applicable to all acres within the Spray Program Area, necessary to finance the full amount so authorized. Such excise tax shall be assessed and collected in accordance with section 8408, subsection 2.

3. General Fund Participation. The Legislature shall appropriate moneys from the General Fund to pay the costs of management program activities other than those related to spray projects. Except as expressly provided in this subchapter, General Fund moneys shall not be expended for costs incurred in connection with spray projects.

4. Spray Project Special Accounts

A. The Treasurer of State shall establish two dedicated revenue accounts as follows:

(i) into one account shall be deposited any revenues received by the State from the Government of the United States for any spray project.

(ii) into the other account shall be deposited any revenues received by the State from the excise taxes authorized pursuant to this subchapter.

B. The moneys credited to such accounts shall be used by the Bureau of Forestry to pay any expenses, debts, accounts, and lawful demands incurred in connection with spray projects authorized under this subchapter, and the director shall authorize the State Controller to draw his warrant therefor at any time. Any remaining balance in such accounts shall continue from year to year as a fund available for the purposes set out in this

subchapter and for no other purpose.

5. Borrowing from General Fund. To accomplish the purposes of this subchapter, the director may borrow moneys from the General Fund for up to 60 days, at no interest, in order to enable the Bureau to pay expenses, debts, accounts and lawful demands for any spray project authorized under subsection 2 of this section; provided, however, that the aggregate amount of such borrowing shall at no time exceed the amount of uncollected excise taxes authorized under this subchapter for such spray project.

§ 8408. Taxation

1. Generally. Forest land owners within the Spray Program Area shall be subject to the excise taxes authorized under this section on the privilege of owning such lands and of receiving the benefits of spray project eligibility. In cases of divided ownership of such lands, the persons owning or claiming timber rights shall be subject to such taxes.

2. Pre-Project Excise Tax. Forest land owners within the Spray Program Area shall be subject to the pre-project excise tax at the rate established by the Legislature pursuant to section 8407, subsection 2. Such tax shall be assessed and billed by the State Tax Assessor within 30 days following such legislative authorization.

3. Post Project Excise Tax. The post-project excise tax for all land owners within the Spray Program Area shall be computed and assessed as follows:

A. The director shall determine the total amount of costs incurred or budgeted to be expended in connection with any spray project conducted during the then current calendar year.

B. The amount computed in paragraph A shall be reduced by the amount of any moneys received for such project from the Government of the United States or from contract payments made for spraying services pursuant to Section 8409, subsection 8.

C. 50% of the balance computed under paragraph B shall be divided by the number of acres within the Spray Program Area, and such per-acre allocation shall constitute the post-project shared tax rate.

D. 50% of the balance computed under paragraph B shall be divided by the number of acres within the designated spray area which actually received spray treatment, as determined by the director, and such per-acre allocation shall constitute the post-project spray tax rate.

E. By September 1 of each year, the director shall certify in writing to the State Tax Assessor the post-project shared tax rate and the post-project spray tax rate, together with the number of acres within each ownership which is within the Spray Program Area and the number of such acres which actually received spray treatment.

F. The State Tax Assessor shall compute, assess, and bill, by November 1 of each year, the amount of post-project excise taxes payable by each landowner within the Spray Program Area, based upon the sum of (i) the product of the number of acres owned within the Spray Program Area times the post-project shared tax rate, and (ii) the product of the number of acres owned which actually received spray treatment times the post-project spray tax rate, less (iii)

the amount assessed upon such owner on account of the pre-project excise tax for that calendar year. In the event that the sum so calculated results in a negative balance for any landowner, the State Tax Assessor shall credit the amount of such balance against the next pre-project excise tax owed by such landowner; provided that if the landowner's participation in the program ceases, he shall receive the amount of such balance in the form of a rebate.

4. Due Date. The pre-project excise tax is due March 31st of the year in which it is assessed. The post project excise tax is due December 15th of the year in which it is assessed. Notice of the amount of any tax due under this subchapter shall be presumed complete upon mailing of a bill therefor.

5. Interest and Penalty. Any tax assessed under this subchapter which is not paid when due shall accrue interest at the rate of 1 1/2% for each month, or fraction thereof, that the tax remains unpaid; and a penalty equal to 20% of the unpaid tax shall be added to the liability of any person who fails to pay a tax when due.

6. Tax Lien. There shall be a tax lien to secure the payment of all taxes, penalties, and interest assessed under this subchapter. Such lien shall attach to all real estate described in any application made under section 8405, subsection 2 and shall take precedence over all other claims on said real estate and shall continue in force until such taxes, penalties and interest are paid or until the lien is otherwise terminated.

For purposes of lien foreclosure, unpaid taxes assessed under this subchapter shall be delinquent on the date due. Thereafter, the State Tax Assessor may record, in the registry of deeds of the county or registry district where such real estate lies, a certificate signed by the State Tax Assessor setting forth the name of the

person designated in § 8405 (2), the amount of unpaid taxes, penalties, and interest and a description of the real estate subject to the lien. Not later than one week after recording the lien, the State Tax Assessor shall notify the person designated in §§ 8405 (2) that a lien has been recorded. If the full amount of the tax, penalty, and interest is not paid within 45 days of recording, the lien shall be foreclosed. Upon foreclosure, the State shall become fee simple owner of the real estate free of all encumbrances. Such real estate shall be inventoried as provided in 36 M.R.S.A. § 1283.

7. Review of Assessments, Supplemental Assessments. Any forest landowner aggrieved by an assessment made under this subchapter may petition the State Tax Assessor for reconsideration, pursuant to 36 M.R.S.A. § 151, provided that the petition is filed within 45 days of the date of assessment. If justice requires, the State Tax Assessor may, with the approval of the Governor, abate, within 3 years from the date of assessment, all or part of any tax assessed under this subchapter by the State Tax Assessor.

Within 3 years of an assessment made under this subchapter, the State Tax Assessor may make a supplemental assessment if he finds that any previous assessment is imperfect or incomplete in any material aspect. An assessment may be made at any time with respect to a time period for which a fraudulent application has been filed.

The State Tax Assessor may require the assistance of the director in the performance of his duties under this subsection. The director shall recommend to the State Tax Assessor an appropriate disposition of any matter brought under this subsection. Such recommendation shall be made within 15 days of the request and shall be in writing.

8. Collection by Attorney General. Whenever any person fails to pay any tax, interest and penalty due under this subchapter within the time provided, the Attorney General shall enforce payment by civil action against the person from whom due for the amount of such tax, interest and penalty, together with costs, in either the Superior or District Courts in Kennebec County or in the judicial division in which such person has a residence or established place of business.

§ 8409. Duties and Authority of the Director of the Bureau of Forestry

1. General. The director shall supervise and coordinate the activities of bureau personnel in connection with all management programs.

2. Rules. From time to time the director may adopt and amend rules for the implementation of this subchapter. Such rules shall be adopted in accordance with the procedures set forth in Title 5, chapter 375, subchapter II.

3. Applications. The director shall consider applications and requests made pursuant to section 8405, and shall grant, grant conditionally or deny any such applications or requests.

4. Declaration of Termination of Spray Projects. Upon receipt of information satisfactory to him to the effect that future spray projects will not be beneficial, cost-effective or otherwise in furtherance of the legislative policies of this subchapter, the

director shall report the same to the Commissioner of Conservation and to the Governor and shall recommend to the Legislature that this subchapter be repealed or amended as appropriate.

5. Entry and Inspection of Lands. The director or his representatives may enter, upon reasonable advance notice to the landowner, at any reasonable time and in a reasonable manner, any tract of land for which application pursuant to section 8405, subsection 2, has been made in order to inspect the same free of any charge or cost imposed by the owner or his agents.

6. Inspection of Records. The director or his representatives may likewise inspect the books and records of any applicant under section 8405, subsection 2, with respect to any information submitted in connection with such application. He also may require periodic progress reports from such persons in connection with any such information.

7. Contractual Authority. The director shall have the authority to enter into contracts for the acquisition of insecticides, aircraft, personnel and other goods and services necessary or appropriate for management programs and for other purposes related to this subchapter.

8. Spraying Services. The director shall have the authority and discretion to enter into contracts to spray with insecticides or similar materials spruce-fir forest lands outside the designated spray area upon application by the owner of such forest lands, provided that:

A. The application is submitted no later than February 1 of the calendar year of the spray project involved;

B. The director is satisfied that the area for which the application is made can benefit from spraying, that spraying is

practical and cost-efficient and that the inclusion of such area within the spray project is consistent with the legislative policies of this subchapter; and

C. The applicant enters into a contract with the Bureau of Forestry to pay the full actual per acre cost of providing spraying services, less any amount attributable to such land provided by the federal government and less the amount of any tax paid or assessed under this subchapter on such land for purposes of financing the cost of such spray project.

§ 8410. Forest Insect Manager

1. Position created. There is established within the Bureau of Forestry the position of Forest Insect Manager, which shall be funded by the General Fund. Such position shall not be subject to the Personnel Law. The manager shall be appointed by the director with the approval of the Commissioner of Conservation and may be removed by the director with the approval of the Commissioner. The manager shall be directly responsible for the development, coordination and implementation of management programs.

2. Cooperation. The manager shall consult and cooperate with the United States Forest Service, other agencies of the United States and of any state, the federal government of Canada, the governments of any provinces of Canada and public and private landowners in Maine in developing and undertaking joint management program activities.

3. Report. The manager shall, at the end of each calendar year, undertake a complete financial review of any management program activities undertaken that year and shall make a full report thereon

to the next session of the Legislature. The report shall include, but not be limited to, sources of funding, private, state or federal, and total expenditures broken down in the following categories: insecticides, aircraft, monitoring, research and other appropriate categories. Also to be included shall be a statement of any remaining balance by source, private, state or federal.

4. Permit Applications. The manager shall be responsible for processing all applications for regulatory permits and approvals for spray project operations as required by this subchapter.

§ 8411. Program Personnel

1. Spray Project Personnel. There are established within the Bureau of Forestry the following positions, all of which will be funded as annual expenses of any spray project conducted: a development and monitoring coordinator, a spray technologist/insecticide specialist, an account clerk, four forest technicians, an aerial photo interpreter, a draftsperson, a secretary, two seasonal information and education specialists, and such other seasonal positions as the director deems necessary to carry out spray projects. Such personnel shall be appointed by the director subject to the Personnel Law and shall perform duties relating to the spray projects as the director may prescribe.

2. Non-Spray Project Operations Personnel. There are established within the Bureau of Forestry the following positions, all of which will be funded out of General Fund appropriations for the purpose of providing administrative and operational support for management program activities not directly related to operation of spray projects: an operations supervisor, a clerk-steno, an accountant, a research

associate, two entomologists, a forester, five forest technicians, an aerial photo interpreter, two clerk-typists, an insect ranger, and a public information specialist. Such personnel shall be appointed by the director subject to the Personnel Law. Functions to be conducted by these positions shall include but not be limited to the following: research; technology transfer; budworm woodlot management assistance to small private forest landowners; survey/detection/hazard rating; public information services; spruce-fir supply-demand analysis and financial management.

§ 8412. Research

1. Authority. The Bureau of Forestry, acting through its director, may make grants of funds and enter into contracts for purposes of research related to forest management strategies, insecticide and spray application technologies, integrated pest management techniques, forest product marketing and utilization, and other issues pertinent to the purposes of this subchapter. Such research shall be funded with appropriations from the General Fund, provided that the cost of environmental and health monitoring of spray projects shall be part of annual spray project costs and not paid out of General Fund moneys.

2. Research on Public Lands. The commissioner, director or other chief executive officer of any state agency having jurisdiction over any public land may make such land available on such terms and conditions as he deems reasonable to any public or private nonprofit entity engaged in spruce budworm control research and related silvicultural control research. The Forest Insect Manager shall likewise encourage private landowners within the

State to make their lands available for the same purposes.

Sec. 3. 5 M.R.S.A. § 711, subsection 2(A) (3), is amended by adding thereto a new paragraph (h) as follows:

(h) Forest Insect Manager, Bureau of Forestry.

STATEMENT OF FACT

This Act provides for the implementation of the recommendations of the Commissioner of the Department of Conservation to the Legislature made pursuant to Chapter 69, Section 7 of the P. L. of 1979.

APPENDIX C.

Budworm Policy Recommendations

IMPLEMENTATION SCHEDULE

ACTOR	ACTION	EFFECTIVE DATE
109th Maine Legislature (2nd Session)		
A. Emergency Legislation	-Eliminate budworm excise tax	1980 Project
	-Initiate Spray Tax, Shared Tax	1980 Project
	-Appropriate funds for wood supply/demand analysis	FY 1980
	-Appropriate funds for 1980 budworm program	1980 Project
	-Increase position count of Maine Forest Service	1980 Project
	-Authorize Director, Maine Forest Service to define a Settlement Region	1980 Project
	-Authorize organised towns & plantations to disallow spray project within Settlement Region	1980 Project
B. Regular Legislation	-Initiate voluntary participation in spray project	1981 Project
	-Eliminate silvicultural, automatic and new market withdrawals	1981 Project
	-Authorize Pesticide Control Board to regulate spray program for environmental and health impacts	1981 Project
	-Authorize Pesticide Control Board to administer the environmental and health monitoring functions	1981 Project
	-Authorize the Director, Maine Forest Service, to require improved stand type information and management plans as a condition for membership in budworm spray project	1981 Project

ACTOR	ACTION	EFFECTIVE DATE
Maine Forest Service	-Adopt policies to encourage the accelerated utilization of balsam fir	1980
	-Intensify the budworm protection management program for the Settlement Region	1980
	-Undertake spruce-fir wood supply/demand analysis	1980
	-Adopt policies to encourage the implementation of silvicultural treatments	1980
	-Plan for utilization of electronic guidance systems in spray application	1980 Project
	-Strengthen environmental and human health monitoring program	1980 Project
	-Form advisory committee of landowners, industry, USFS, and public to assist in program planning	1980
	-Set specific spray treatment criteria based on management plans and improved type information	1981 Project
	-Adopt administrative procedures and financing mechanisms to encourage voluntary participation in spray program	1981 Project
Pesticides Control Board	-Review environmental & human health impacts of spray project in a timely manner	1981 Project
	-Strengthen environmental and human health monitoring program	1981 Project
	-Initiate a thorough analysis of the problem of pesticide drift and recommend maximum levels of non-target contamination	1980

ACTOR	ACTION	EFFECTIVE DATE
Pesticides Control Board	-Convene a committee of scientific and medical specialists to advise on the design of an appropriate environmental and human health monitoring program	1980

APPENDIX D.

Projected Budget:

General Fund Program for Spruce Budworm Management

in FY 1981

APPENDIX D-1

Summary of the Projected Budget
of Expenditures for the Recommended
General Fund Program for Spruce
Budworm Management *
FY 1981

Program Administration	$ 90,000
Research & Technology Transfer	$100,000
Budworm Woodlot Management	$155,000
Survey, Detection and Hazard Rating	$ 65,000
Environmental and Health Regulation & Enforcement	$ 50,000
Information & Education	$ 25,000
TOTAL	$485,000

* For details on positions, personal services and support services see Appendix D-2.

APPENDIX D-2

Summary of the Estimated Costs of the Recommended General Fund Budworm Program Positions

No. of Pos.	Position Title	Current Source of Funding	Personal Services	Support Costs	Total Cost
1	Forest Insect Manager	Gen. Fund	27,339	3,000	30,339
1	Forestry Operations Super.	Gen. Fund	25,117	3,000	28,117
1	Clerk - Steno III	Gen. Fund	14,530	500	15,030
3	Clerk - Typist II	Project	37,869	1,500	39,369
1	Research Associate II	Project	21,707	1,500	23,207
1	Entomologist III	New *	25,593	3,000	28,593
1	Entomologist I	Gen. Fund	18,107	3,000	21,107
1	Forester I	Project	20,682	3,000	23,682
4	Forest Technicians	Project	62,128	12,000	74,128
1	Aerial Photo Interpreter	Project	18,107	2,000	20,107
1	Insect Ranger	Project	14,530	3,000	17,530
1	Public Information Off.	Project	20,682	1,000	21,682
			306,391	36,500	342,891

NOTE: Funding of those positions (except the Forest Insect Manager) identified as General fund is currently in the Maine Forest Service budget in appropriations other than Spruce Budworm and totals $64,254.

* This position will be established as a new position. It will be filled through transfer or promotion from within the agency. The position vacated by the transfer or promotion will then be eliminated.

APPENDIX D-3

Functional Descriptions of the Positions Recommended for the Budworm Management Program

The Forest Insect Manager handles overall direction and administration of the entire budworm management program.

The Supervisor of Forestry Operations assists the Forest Insect Manager and holds primary responsibility for the entire spray project, including pre-project planning, design, contractual agreements, implementation, and post-spray evaluation.

The Clerk-Steno III provides clerical support for the Forest Insect Manager, and for the public information and research activities.

The Clerk-Typist II's provide financial clerical support services for the management program, clerical support for the Supervisor of Forestry Operations, and clerical assistance to the Forest Insect Manager and all program staff.

The Research Associate II directs and coordinates research, policy development, and legislative liaison, including the preparation of the required environmental impact statement.

The Entomologist III directs and administers the activities of detection, survey and hazard rating, and the small landowner technical assistance program.

The Entomologist I supervises the field operations and laboratory functions related to detection, survey, and hazard rating throughout the spruce-fir forest.

The Forester I provides professional and technical support, advice and training in integrated pest management techniques for applying forest management and silvicultural treatments to spruce-fir stands impacted by budworm on private, nonindustrial lands.

The Forest Technicians work under the direction and supervision of District Foresters providing direct technical advice and assistance to small spruce-fir woodlot owners.

The Aerial Photo Interpreter provides technical support in the interpretation of aerial photo imagery and training to public and private foresters in the use of these photos to identify damaged stands and prescribe integrated pest management strategies.

The Insect Ranger performs field and laboratory work in detection, survey, and and hazard rating activities of the budworm management program.

The Public Information Officer provides information and education staff support for the entire spruce budworm program, including report preparation and publishing, liaison with the media, coordination with other public and private information services, and responses to inquiries from the public.

APPENDIX E.

Budworm Policy Review Committee

Findings and Recommendations

FINDINGS & RECOMMENDATIONS

For Public Review and Comment

of the

BUDWORM POLICY REVIEW COMMITTEE

November 5, 1979

Richard Barringer, Commissioner
Maine Department of Conservation

Robert Bartlett, Manager of Woodlands
Great Northern Paper Company

John Dimond, Professor of Entomology
University of Maine

Robert Gardiner, Executive Director
Natural Resources Council of Maine

Richard Morton, Representative
Maine Legislature

Robert Raisch, Director
Northeastern Area State & Private Forestry
U.S. Forest Service

Rand Stowell, President
Maine Forest Products Council

PUBLIC HEARING:

Bangor Auditorium
November 20, 1979
Sessions: 1:00 PM and
7:00 PM

INTRODUCTION

Legislation enacted by the 109th Maine Legislature early in 1979 mandated that the Commissioner of the Department of Conservation present to the Legislature by January 1, 1980, his recommendations for future spruce budworm control policy in Maine, and draft legislation to implement them (Chapter 69, Section 7, of the Public Laws of 1979).

The Commissioner invited a number of representatives of interested organizations to assist the Department of Conservation in this policy review. The Budworm Policy Review Committee, chaired by the Commissioner, met frequently during the summer and fall of 1979 to consider options for budworm management, and how they might best be administered and financed to meet the Legislature's stated policy objectives. These include a significant reduction in pesticide use in the Maine forest; maximum landowner freedom to choose whether or not to participate in any future spray projects; a more equitable distribution of budworm protection program costs among affected landowners; and reduction of the tax burden on owners not being sprayed in a given year. Throughout its deliberations, the Committee received assistance from the staffs of the Green Woods Project, the Maine Forest Service, and the U.S. Forest Service.

The findings and recommendations which follow are the result of the Committee's deliberations. Together with the public comments and reactions to them, they will be considered by the Commissioner in making his final recommendations to the Legislature.

FINDINGS

1) The purpose of the spruce budworm protection program is to minimize the impact of the spruce budworm on Maine's spruce-fir resource through a combination of techniques, including monitoring and prediction of insect population levels, individual forest stand risk rating and condition assessment, silvicultural hazard reduction treatments, salvage and presalvage harvest cuts, and pesticide applications to preserve tree vigor.

2) There is a need to assure an adequate future supply of wood to the spruce and fir consuming industries of Maine. The adequacy of this supply is unknown at present.

3) Public benefit is derived from commitment to an ongoing spruce budworm protection program, a component part of which may be chemical pesticide application in combination with other techniques of protection management.

4) At present, some amount of chemical pesticide application is necessary to protect the forest resource.

5) The populated areas pose a special problem for the budworm spray project. More refined treatment criteria should be imposed in those areas.

6) Determination of the size of future chemical spray projects requires the early completion of a thorough wood supply/demand analysis for Maine's spruce-fir resource.

7) It is necessary and desirable to reduce reliance on the use of chemical pesticides for budworm protection. It is feasible to do so through the implementation of integrated pest management techniques, provided that the spruce-fir resource as a whole remains within an overall protection program. Steps including timber stand-type mapping to refine block boundaries and more precise control of spray application can now be taken. Additional measures such as targeted mortality, hazard reducing silvicultural treatments, accelerated fir utilization, and precision spraying are under development. Their application depends on further, more conclusive demonstration, and on the outcome of the recommended wood supply analysis.

8) Reductions in current pesticide use can be achieved through more precise pesticide application to those forest stands containing significant quantities of balsam fir, with less frequent if any applications for the protection of spruce. A more detailed analysis of forest composition is required for this purpose.

9) Long and short term reliance on pesticide applications may be expected to diminish if balsam fir utilization is accelerated.

10) Individual landowners should be afforded maximum freedom to choose the budworm protection management program best suited to their lands.

11) The preservation of raw material markets for, and the availability of technical assistance to small woodland owners from Maine's forest industry depends in part on the maintenance of an effective spruce-fir protection program on the large company ownerships.

12) The past federal role in Maine's budworm program has been vital in assisting with protection costs, in advising on protection techniques, and in research and development. Continuing federal participation is essential to an effective budworm protection program in Maine.

PROGRAM RECOMMENDATIONS

1) *The Maine Forest Service should re-articulate the criteria used in determining the boundaries of the Spruce Fir Protection District and re-examine the existing boundaries for conformance with those criteria. Public comment should be solicited in the re-examination of the District boundaries at the forthcoming public hearing.*

2) *The Maine Forest Service, in cooperation with the U.S. Forest Service, the University of Maine, and the Maine forest industry should undertake to produce, by January 1, 1982, a thorough analysis of future spruce-fir wood supply and demand based on varying levels of budworm protection and management. It is further recommended that the Maine Forest Service undertake research to determine the impact of increased utilization of Maine's total timber resource on the scale and severity of future spruce budworm infestations.*

3) *Policies should be adopted to encourage accelerated utilization of balsam fir, beginning with the 1980 budworm protection program.*

4) *Policies should be adopted to effect delivery, to the entity charged with spray project administration, of cartographic depictions, on all lands contained within the protection program, delineating the location and extent of spruce and fir timber classified according to appropriate standards which embrace age or size class and the proportional occurrence of both spruce and fir and of other non-host species.*

5) *A policy of voluntary participation in the budworm spray project should be adopted, together with administrative procedures and financing mechanisms to encourage voluntary participation to the maximum extent. This policy should remain in force until a wood supply analysis is completed and a fair determination made of the merits and specific nature of a change in policy.*

6) *The existing silvicultural, automatic and new market withdrawal provisions in the Spruce Budworm Suppression Law should be eliminated.*

7) *A Settlement Region should be defined along all publicly maintained roads within the Spruce-Fir Protection District. Lands within this corridor would only be sprayed when the landowner requests inclusion in the project for a given year. Residents of each organized town and plantation containing part of the corridor should be granted the authority to vote to disallow the chemical spray project within this corridor within their municipality.*

8) *An intensified budworm protection management program should be adopted for the Settlement Region. This program should be based on a cooperative effort between the public and the private sectors and should emphasize the delivery of increased technical management assistance to landowners. Protection management planning in the Settlement Region should be directed toward accelerating the cessation of chemical pesticide application within that region at the earliest reasonable and practical time.*

9) *Commitments to voluntary participation in the budworm spray project should be effective for a period of 3-5 years, and should be financed through a two-tier tax system comprised of an acreage tax and a shared spray tax. A substantial portion of non-public spray project costs should be collected through the acreage tax, levied against acres actually sprayed in any given year. The remaining non-public cost should be distributed by softwood and mixedwood ownership amongst the participants in the pesticide application program.*

9A) *A minority on the Committee urges in addition to the above, consideration of a severence tax or wood-user tax, designed to reduce the tax burden on owners not owning mills and to foster accelerated use of balsam fir.*

10) *A program tax should be assessed on all softwood and mixedwood acres within the Spruce Fir Protection District to cover the ongoing non-public, non-spray project related overhead costs of budworm protection. Owners of less than 500 acres should be exempt from the program tax.*

11) *General Fund support for the budworm protection program should be proportional to the short and long term benefits of the program to the public.*

12) *Financial commitments for the budworm spray project must be made in the January-March period, prior to the receipt of State, Federal, and landowner contributions. In recent years, corporate landowners have "prefunded" the spray project by entering into contracts pending the release of these funds. The funding arrangement should be reformed to eliminate the need for "prefunding".*

13) *A State agency other than the Maine Forest Service should be assigned responsibility for prior regulatory review of the environmental and health impacts of the budworm spray project.*

14) *The State agency assigned the regulatory review function should take lead responsibility in producing a thorough analysis of the problem of pesticide drift and in establishing maximum allowable levels of contamination for environmentally sensitive areas.*

15) *The Maine Forest Service should retain responsibility for administering the budworm spray project, but the following improvements should be made to ensure a properly planned and administered project: (a) the current basic and applied research program under the Forest Insect Manager, should be eliminated, with authority retained to initiate studies to meet specific program development needs; and (b) the following staff positions should be created and funded through the budworm project budget to more fully handle the tasks assigned: a Deputy Operations Director, a Development and Monitoring Coordinator, a Spray Technology and Insecticide Specialist, an Accountant, an Information and Education Specialist, three to four full-time technicians, one Aerial Photo Interpreter, one full-time draftsperson and one full-time secretary.*

15A) A minority on the Committee urges the following proposal regarding spray project administration. Its objectives are: to achieve greater cooperation between the Maine Forest Service and affected landowners in the integration of spraying with other forest management practices; and to distribute the workload between the public and private sectors on the basis of the seasonal nature of the work and the professional skills required.

The Maine Forest Service should retain overall responsibility for administering the budworm spray project. The Director, Maine Bureau of Forestry, should have the authority to: designate the limits of the proposed spray area in a given year based on information provided by the State Entomologist; establish criteria for acreage qualifying for spray application after public hearings; and to recommend appropriate insecticides and dosages subject to regulatory review.

The remaining responsibilities of spray project administration should be carried out either by a private or quasi-public entity, or by the Maine Forest Service strongly assisted by an organized association of private landowners. These two options are presented in greater detail in the Appendix of this report.

16) All possible effort should be devoted to the development, acquisition and utilization of spray aircraft guidance systems capable of more precise application of chemical and biological pesticides.

MANAGEMENT RECOMMENDATIONS

Recommended State Responsibilities

A) COORDINATION

The dispersion and overlap of authority involved in carrying out the several functions of budworm management require mechanisms for ensuring close coordination among the various entities involved.

17) *The Maine Forest Service should handle overall coordination of the component functions of budworm management. Specific mechanisms should be initiated by the Maine Forest Service to significantly increase the involvement of landowners, the spruce fir consuming industry, the U.S. Forest Service, and the "public interest" in the planning and execution of the overall budworm protection program.*

18) *An advisory committee, representing both the public and private sectors, should be established by the Maine Forest Service to assist in planning for the budworm protection program.*

19) *Costs should be covered by the General Fund.*

B) INSECT SURVEY, DETECTION, AND HAZARD RATING

This task involves ongoing biological assessment and prediction of budworm population levels, distribution, and development, along with tree condition assessment throughout the Spruce Fir Protection District.

20) *The Maine Forest Service should be responsible for insect survey, detection and hazard rating, with an increased level of landowner assistance, and should initiate mechanisms for improved coordination with landowners to facilitate land management decisions in line with budworm protection program goals.*

21) *Funding should remain primarily a responsibility of the General Fund, with indirect assistance from the U.S. Forest Service through the Cooperative Forest Pest Action Program. A portion of total costs should be covered collectively by the landowners within the Spruce Fir Protection District.*

C) ENVIRONMENTAL & HEALTH REGULATIONS

Regulation includes the determination of pesticides which are acceptable for budworm control, ensuring that proper handling and application guidelines for pesticide use are prescribed (in line with label precautions) regarding water and settlement buffers, meteorological conditions for spraying, and safety precautions for minimizing occupational health impacts.

22) *The Legislature should eliminate the current exemption of the spray project from prior regulatory review.*

23) *Regulatory review, oversight and enforcement of aerial spraying for spruce budworm control should be the responsibility of an independent public agency provided with an appropriate level of staff support.*

24) *The regulatory review process should be carried out within prescribed time deadlines to permit the orderly organization and implementation of the spray project.*

25) *Costs should be covered by the General Fund.*

D) ENVIRONMENTAL & HEALTH MONITORING

This function includes the planning, implementation and dissemination of results of field evaluations on the behavior of insecticides and their impact on non-target organisms, water quality, and human health. Monitoring of accidental spills, drift, occupational exposure and accidental spraying of non-target areas is also included.

26) *The monitoring of spruce budworm spray projects for environmental and health impacts should be significantly strengthened to ensure adequate environmental and public health protection.*

27) *A committee of scientific and medical specialists should be convened to advise the agency responsible for environmental and health monitoring on the design of an appropriate monitoring program.*

28) *Environmental and health monitoring should be combined with the regulation of potential environmental and health impacts ("C" above), and handled by the same agency, in coordination with the U.S. Forest Service and other interested and cooperating agencies. Feedback of results to the organization managing the spray project should be ensured.*

29) *Direct (non-overhead) costs should be borne by the budworm spray project budget.*

Recommended Landowner Responsibilities

A) INDIVIDUAL FOREST STAND RISK RATING & CONDITION ASSESSMENT

Risk rating and condition assessment involves the evaluation of stand age, species composition, accessibility, operating and budworm history to identify protection management options for each area consistent with landowner objectives.

30) *Responsibility should remain with the individual landowners for risk rating and condition assessment. In addition, landowners should be responsible for providing improved information to the Maine Forest Service to aid in the survey and detection effort.*

31) The State should accept primary responsibility for this activity for small private landowners within the identified settlement region.

32) Individual landowners should cover costs, with federal cost assistance provided indirectly for small owners (less than 5,000 acres) through the Cooperative Forest Pest Action Program.

33) The Maine Forest Service should develop uniform guidelines for risk rating and condition assessment to ensure comparability of results.

B) SILVICULTURAL HAZARD REDUCTION TREATMENTS

Silvicultural treatments involve the preparation and implementation of on-the-ground professional stand prescriptions to reduce long term vulnerability to budworm.

34) Landowners should be responsible for silvicultural hazard reduction treatments.

35) The State should establish a system of strong incentives, including a "pay-as-you-spray" approach to landowner cost assessment, to ensure extensive implementation of silvicultural treatments.

36) Costs should be covered by affected landowners.

Recommended Joint Responsibilities

A) PLANNING THE AREA TO BE SPRAYED

37) The organization responsible for spray project administration should take lead responsibility, in cooperation with affected landowners and the Entomology Division of the Maine Forest Service. Provisions should be made for access to essential resource information.

38) The Maine Forest Service should develop specific criteria for designating areas to be sprayed, including forest stand composition, age, stocking, cost of treatment, wood supply needs, buffer policy, additional pest problems, and other appropriate parameters.

39) Costs should be covered by the budworm spray project budget.

B) ASSESSMENT OF SPRAY EFFECTIVENESS

Spray effectiveness is measured in terms of foliage preserved, budworm population reduction, protection of stand vigor, and reduction in tree mortality.

40) Responsibility should be shared by the organization responsible for spray project administration and affected landowners.

41) The Maine Forest Service should promulgate assessment standards to ensure comparability of results throughout the Spruce Fir Protection District.

42) Provisions should be made for an increased level of landowner involvement in the assessment process.

43) The responsible organization should establish techniques to ensure feedback of results to its own operation, individual owners, and the Maine Forest Service.

44) Costs should be covered as part of the budworm spray project budget.

C) SMALL LANDOWNER ASSISTANCE

Small landowners require technical assistance in all aspects of budworm protection management, with emphasis on silvicultural and salvage opportunities. A lack of capital, characteristic of many small owners, necessitates some level of subsidization to ensure effective results.

45) The needs of small owners for budworm protection assistance should be more clearly defined.

46) The State (Maine Forest Service and the Cooperative Extension Service, in particular) should take lead responsibility in this area, with increased forest industry assistance through private landowner assistance programs.

47) Methods should be found to increase the role of private forestry consultants in carrying out this function.

48) State program costs should be covered by the General Fund with federal assistance where available.

D) RESEARCH & DEVELOPMENT AND TECHNOLOGY TRANSFER

Research and development includes all levels of basic and applied budworm research and its development. A variety of actors are involved at present. Technology transfer involves the dissemination of new research and demonstration results to different users groups.

49) The Maine Forest Service, in cooperation with the U.S. Forest Service, should undertake to identify budworm research needs on a continuing basis and to coordinate research efforts.

50) The Maine Forest Service role in research and development should emphasize applied rather than basic research.

51) When the planned CANUSA research effort phases down in 1983, a more active State role in basic and applied research may need to be reconsidered.

52) The Maine Forest Service should exercise primary responsibility for technology transfer, cooperating with the U.S. Forest Service and the Cooperative Extension Service; a full-time professional position should be established to implement the effort.

53) Costs of the State research and technology transfer program should be covered by the General Fund.

54) A State forest research policy should be prepared to lend direction and long term commitment to budworm protection management.

Recommended Spray Organization Responsibilities

A) SUPERVISION AND CONTROL OF SPRAY APPLICATION

Administrative oversight of spray application is required to ensure proper application within meteorological and operational constraints, and to document any contract violations.

55) Responsibility and liability for supervision and control of spray application should rest with the organization conducting spraying.

56) Costs should be covered as part of the budworm spray project budget.

57) In the event of continued federal funding support of budworm suppression, the U.S. Forest Service should provide more intensive monitoring of spray operations management.

APPENDIX

Minority Spray Administration Options

Option 1:

The legislature should authorize the incorporation of a forest protection association (FPA) to function primarily as a spray distribution and delivery system.

The FPA should: (1) be owned and managed by participating landowners; (2) support a core staff of full-time professionals to plan and prepare for a spray project; (3) contract with principal landowners for technical and professional assistance during the spray project; (4) apply for necessary regulatory permits, and contract for insecticides and aircraft services; and (5) supervise and conduct the spray operation.

Option 2:

A condition of participation in the spray program would be a requirement to join a legislatively-chartered forest protection association (FPA). The FPA would be operated by a board of directors. The chairman of the board would be the Forest Insect Manager of the Maine Forest Service (MFS). Other directors would include one each from landowners participating in the spray program owning more than 5000 acres. One of these would be from the Bureau of Public Lands, assuming that some State lands were involved in spraying. The Director, Maine Forest Service, would represent small landowners.

The Maine Forest Service would continue responsibility for the spray program, but would require assistance from the FPA in a number of areas. These functions are: (1) to supply MFS, from staff of spray participants, personnel required for execution of the spray program. Examples of activities are airport management, aircraft guidance and contract monitoring, public relations, and logistical support. Personnel should be assigned under MFS direction and paid from project funds; (2) prepare spray maps using tree hazard maps provided by the MFS, appropriate buffer policies, future harvest plans, etc.; and (3) with funds provided to the association from MFS program funding, hire one or more full time personnel to assist the Forest Insect Manager with business and legal affairs connected with spray project management.

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21) Mott, D. Gordon, and William P. Kemp. "Spruce Budworm Protection Management in the Settlement Regions." Green Woods Project, September 1979.

22) Seymour, Robert S. "The Role of Targeted Harvesting and Detailed Stand-Type Mapping in Budworm Protection Management." Green Woods Project, August 1979.

Letters & Memoranda

23) Letter of September 19, 1979 from Gordon L. Baskerville, Professor, University of New Brunswick, to Richard E. Barringer, Commissioner, Maine Department of Conservation, regarding his rationale for favoring a private spray entity.

24) Letter of October 3, 1979 from Richard S. Cohen, Attorney General, to Richard E. Barringer, Commissioner, Maine Department of Conservation, regarding legal concerns about future State involvement in the spruce budworm spray program.

25) Letter of October 5, 1979 from Robert H. Gardiner, Executive Director, Natural Resources Council of Maine, to Richard E. Barringer, Commissioner. Maine Department of Conservation, regarding comments on policy options.

26) Letter of October 10, 1979 from Robert D. Raisch, Area Director, State & Private Forestry, U.S. Forest Service, to Richard E. Barringer, Commissioner, Maine Department of Conservation, regarding the USDA Forest Service position on the major spruce budworm management issues confronting the State.

27) Memorandum of October 11, 1979 from Lloyd C. Irland, Director, Maine Bureau of Public Lands, to Budworm Policy Review Committee, regarding the reasoning behind the recommendation to "spin-off" spray project administration to a private entity.

28) Letter of October 12, 1979 from Robert F. Bartlett, Manager of Woodlands, Great Northern Paper Company, to Richard E. Barringer, Commissioner, Maine Department of Conservation, regarding Great Northern's position on the key functions of the budworm management program.

29) Letter of October 16, 1979 from Don Perkins, Attorney, Pierce, Atwood, Scribner, Allen, Smith & Lancaster, to Richard E. Barringer, Commissioner, Maine Department of Conservation, regarding comments on the "Study of Alternatives to State Management of Spruce Budworm Spraying" prepared for the Department by Lund, Wilk, Scott & Goodall.

30) Letter of October 26, 1979 from Robert D. Raisch, Area Director, State & Private Forestry, U.S. Forest Service, to Richard E. Barringer, Commissioner, Maine Department of Conservation, further clarifying the USDA Forest Service position on the major spruce budworm management issues confronting the State.

APPENDIX F.

MAINE PUBLIC OPINION SURVEY ON THE
SPRUCE BUDWORM PROBLEM

This survey of Maine public opinion was conducted in September and October of 1979 by the Social Science Research Institute at the University of Maine in Orono. It was commissioned and designed by the Green Woods Project with the financial support of the Maine Forest Service, Department of Conservation. This summary was prepared by Gordon Mott, Co-Director of the Green Woods Project.

> The Green Woods Project is an endeavor of the University of Maine School of Forest Resources supported by funds from the U. S. Forest Service, CANUSA and Forest Insect and Disease Management Programs, and the Maine Forest Service. The program is dedicated to the development and application of integrated spruce budworm protection management.

This material has been prepared for distribution by the Information and Education Section of the Maine Department of Conservation.

FIRST SUMMARY

SPRUCE BUDWORM PROTECTION PROGRAM

SOCIAL SURVEY

The Green Woods Project, with funding support from the Maine Forest Service, participated in the Fall 1979 omnibus telephone survey of the Social Sciences Research Institute at the University of Maine, Orono.

The survey covered 1,000 households through random digit dialing, selecting an adult household member to interview at random. The following is a resume of the results. Summaries of the demographic characteristics are included.

QUESTION: *What do you consider to be the most important problem facing people like yourself in Maine that the Governor and the Legislature ought to deal with?*

The three most frequently mentioned problems were the high cost of fuel (20.9%), general energy shortages (13.6), and general inflation (11.6%). Pesticide spraying did not occur on the list.

QUESTION: *What is the second most important problem... ?*

One person of 1,000 mentioned pesticide spraying.

QUESTION: *Here are some issues that have been in the news lately: unemployment, pesticide spraying in the forests, and the Indian land claims. In your opinion, which of these issues presents the greatest problem to Maine people?*

Unemployment was selected by 58.5%, Indian land claims by 20.1%, and pesticide spraying by 16.9%.

There were no significant regional differences. A larger proportion of those with fewer than 5 years' residence in Maine chose pesticide spraying than those with 5 or more years (27.4% vs 15.5%). 10.2% of the sample had been in Maine less than 5 years.

First Summary (cont'd)

Unemployment declined in importance with age, Indian land claims increased with age, and pesticide spraying was more important to persons between 18 and 34, and those over 65.

Curiously, unemployment increased in concern as income increased. There is most concern about unemployment and least about pesticide spraying among individuals earning in excess of $25,000.

QUESTION: *Have you heard or read anything about the spruce budworm and programs to protect the Maine forest from the budworm? (If NO: Then you aren't aware of the spruce budworm spraying or any controversy about it?)*

A surprising 87.3% answered yes, 12.7%, no. The 12.7% were not asked succeeding questions.

Higher proportions were informed in regions I and II than elsewhere (96.8% and 91.6% vs 85.1%), and those with 5 to 9 years in Maine exhibited a remarkably high affirmative rate (96.5%).

QUESTION: *How well informed do you feel you are about the spruce budworm and programs to protect the forest from the budworm? Do you feel very well informed, fairly well informed, or not well informed?*

Over half of the respondents felt not well informed (54.5%), 36.7% felt fairly well informed, and a surprising 8.5% felt well informed. Respondents in Aroostook County felt better informed than those elsewhere - possibly because of the longer history of protection programs there than elsewhere.

A higher proportion of 2-4 year residents in Maine felt well informed than any other category.

First Summary (cont'd)

QUESTION: *With the information that you have now, would you say that the forest needs to be protected against the spruce budworm or that no protection is needed?*

84.1% of the people replied that the forest needs to be protected, 5.8% did not know, and 10.1% felt it was not needed.

The percentages by region were: I - 91.0%, II - 77.1%, III - 89.6%, IV - 88.9%, and V - 80.0%.

In a subsequent question, agreement or disagreement with protestors of spraying was asked. Among those who disagreed strongly, 90.3% felt the forest needs protection; those disagreeing somewhat, 91.0%; neither agreeing or disagreeing, 80.0%; agreeing somewhat, 85.7%; agreeing strongly, 67.2%.

Similarly, among respondents concerned about the effects of insecticides on health and the environment and about short and long range effects, at least 75%, and in most cases more than 80%, of the respondents felt the forest needs protection.

77.6% of those who felt that insecticides pose a personal danger felt the forest needs protection.

Thus, there is strong evidence of acceptance of the need for protection regardless of the respondent's persuasion otherwise.

QUESTION: *Do you think that chemical spraying by planes should be the chief means of protecting the forest, that spraying should be one of several means, or that chemical sprays should not be used at all?*

This question was asked of those who felt the forest needed protection.

Only 24% replied that spraying should be the chief means, 49.5% that it should be one of several, and a surprising 20.8% that it should not be used at all.

When pressed for two alternatives to the use of chemicals, 60% could not offer any. The most frequent alternative mentioned was the use of natural enemies (10.5%, and 6.9%), possibly reflecting some insight into the basic structure of an integrated pest management system.

First Summary (cont'd)

Conversely, a small proportion focused on forest management (2.8% and 4.5%) and few supported research (3.5% and 5.7%).

In Region I, the highest proportions believed both that spraying should be the chief means and that it should be one of several means. Region III was most opposed to spraying with 20.7% against chemical usage.

Curiously, those with 1 year or less and those with 30 years or more in Maine tended to support spraying most.

QUESTION: *Some people believe that the state or federal government should help pay for spraying on private lands because the forest is an important public resource and because taxes on forest lands pay for part of the spraying. Other people believe that spraying on private lands should be paid for entirely by the land owners. What do you think -- should there be financial assistance from either the state or federal government in spruce budworm spraying?*

28.2% felt that spraying should be paid for by the landowners entirely, while 64.4% felt there should be government assistance. 7.4% were uncertain or did not know.

A large proportion of those who felt protection was not needed, felt there should be no assistance (61.9%), while a larger proportion (70.1%) of the 84% who felt protection was needed, felt there should be government assistance.

QUESTION: *Would you prefer that the State conduct aerial spraying against the spruce budworm or would you prefer that private landowners actually conduct the spraying on their lands?*

A majority (53.0%) felt the state should conduct the spraying, 34.7% felt the owners should, and 12.4% were uncertain or did not know.

A larger proportion (47%) of those who felt the forest did not need protection (10%) felt the owners should conduct the

First Summary (cont'd)

spraying than felt the state should do it (40%). Among those who felt the forest needed protection (84.3%), 56% felt the state should do the spraying and 33% felt the owners should.

QUESTION: *Recently some people have protested against the use of aerial spraying. Would you say you agree strongly with the protesters, agree somewhat with them, disagree somewhat, or disagree strongly?*

The results were:

Agree strongly	17.7%	-- 58.6%
Agree somewhat	40.9%	
Neither	4.0%	
Disagree somewhat	27.6%	-- 37.4%
Disagree strongly	9.8%	

Agreement was highest (62.6%) and disagreement lowest (35.0%) in Region II. The reverse was true in Region I (50.0% and 45.0%). The greatest proportions of strong agreement were among those with less than 5 years in Maine.

QUESTION: *People have different views on the effects of chemical insecticides sprayed on the forest. Are you concerned about effects on human health, on the environment, on both, or on neither?*

Only 9.1% had no concerns; 6.8% expressed environmental concerns alone, 15.5% health concerns alone, and 67.7% both health and environmental concerns.

Regions I and II curiously had the highest proportions not concerned: 20.5% and 10.2%. Region II had the highest percentage concerned about both: 72.6%. Concerns are highest among those less than 45 years of age, and decline with age.

In separate questions, respondents were asked whether they were concerned about insecticide use in livestock and crops, in the

First Summary (cont'd)

forest, and whether they believed pesticides posed a personal danger. The results were:

	YES	NO
Livestock and crops	59.8	36.9
Forest use	37.6	57.8
Personal danger	51.4	42.6

It would appear that people's fears are real and prevalent, and that forest use of insecticides is perceived as being somewhat safer than other uses.

When asked whether their attitudes had changed in the past year, 42.6% replied that they had developed more concern, 1.1% less concern, and 55.8% had not changed.

QUESTION: *Let's assume for a moment that spraying against the spruce budworm will be done. If it is, decisions need to be about how it is done.*

Should forest travel be limited during spray season as it is during high forest fire danger, or should the spray area just be posted so people could decide whether to travel in the area?

A majority (57.7%) felt the spray area should be posted; 38% felt travel should be limited.

First Summary (cont'd)

Characteristics of Sample

16.3% of the respondents used a fungicide in the past year,

10.3% used a herbicide,

56.9% used an insecticide,

15.5% used a rodenticide, and only

67.3% an insect repellent.

KEY TO REGIONS:

Region I	-	Aroostook
Region II	-	Penobscot, Piscataquis, Hancock, Washington
Region III	-	Knox, Somerset, Sagadahoc, Kennebec, Lincoln
Region IV	-	Androscoggin, Oxford, Franklin
Region V	-	Cumberland, York

Glossary of Terms

Accelerated Fir Utilization - the increased utilization of balsam fir relative to spruce to accelerate the removal of budworm susceptible mature and overmature fir from the spruce-fir forest and thereby reduce the susceptibility and vulnerability of the forest to budworm infestations.

Environmental and Health Monitoring - the planning, implementation and dissemination of results of field evaluations of the behavior of insecticides and their impact on non-target organisms, water quality and human health. The on-the-ground monitoring of accidental spills, insecticide drift, exposure during handling and application, inadvertant contamination of water courses and other accidental spraying of non-target areas is an important component.

Insect Survey, Detection and Hazard Rating - the ongoing biological assessment and prediction of budworm population levels and distribution, and tree condition throughout the Spruce Fir Protection District. This survey includes egg mass survey, overwintering larval counts, broad area defoliation surveys, and an assessment of tree vigor throughout the Spruce Fir Protection District.

Integrated Pest Management - the evaluation and consolidation of all available techniques into a unified program to manage pest populations so that economic damage is avoided and adverse side effects on the environment are minimized.

Precision (targeted) Spraying - the refinement of aerial application techniques to treat only those areas which merit protection through the utilization of improved guidance techniques, more precise forest stand information and smaller agricultural spray air draft.

Risk Rating and Condition Assessment - an evaluation of the age, species composition, accessibility, operating history and budworm history of individual forest stands, to identify budworm protection management options for each area, in light of landowner objectives.

Salvage and Pre-Salvage Harvest Cuts - the harvesting of forest stands following, or in anticipation of, extensive damage and mortality due to spruce budworm.

Silvicultural Hazard Reduction Treatments	- the preparation and implementation of on-the-ground professional prescriptions on a stand-by-stand basis towards accomplishing a reduction in vulnerability to budworm in the long term.
Targeted Mortality	- the planned mortality of balsam fir to budworm in stands which, due to a relatively high percentage of spruce, will benefit from the removal of fir as in a thinning.

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