Foresters and the Challenge of Integrated Resource Management*

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"The forester, particularly in his administrative capacity, may well find that he is prominent among those held accountable should there be any failure to cope with the emerging positions of multiple recourse demands."

Abstract

Increasing public pressure on Canada's land resources to produce a greater variety of social values indicates an urgent need for integrated resources management. This, in turn, requires a reorientation in the traditional "single resource" thinking of foresters and others. However, it is believed that the current major impediments to developing integrated resource management are to be found in the attitudes and opinions which prevail in the administrative centres of government in respect to social, political, economic, legal, and other matters. Integrated resource management is fundamentally a social concept and a prerequisite to long-term progress in this area is a better knowledge and awareness of the social-environmental needs of society on the part of all resource personnel. Foresters are closely identified in the public mind with responsibilities in wildland management and should be actively concerned with integrated resource management.

Les forestiers et le défi de l'aménagement intégré des ressources naturelles.

Résumé

Le public exige de plus en plus que les ressources naturelles du Canada lui appor-

tent des bienfaits sociaux accrus. D'où l'urgence de leur aménagement intégré. Pour ce faire, les forestiers et autres devront penser plus loin qu'en termes "d'une ressource à la fois". De nos jours, cependant, les leviers de commande qui permettront de mettre sur pied un tel aménagement sont détenus par les administrateurs gouvernementaux dont les attitudes et opinions en matière sociale, politique, économique, légale, etc., exercent beaucoup d'influence. Fondamentalement, l'aménagement intégré des ressources est un concept social: afin que son action à long terme soit bénéfique, ceux qui s'en occupent doivent posséder une grande connaissance des besoins sociaux et du milieu et suivre de près leur développement. Les forestiers, en particulier, sont bien connus du public à titre d'aménagistes des contrées sauvages et ils devront s'occuper activement de l'aménagement intégré des ressources naturelles.

Foreword

In January 1966, the National Committee on Forest Land was established. This committee, with federal and provincial government and university representation, has a twofold purpose; it acts as a continuing body for periodic review of the forest land capability classification of the Canada Land Inventory and also serves in an advisory capacity to the federal government forestry authority on all matters connected with wildlands classification, mapping, education, and research.

At its second meeting in February 1967, the committee appointed a Sub-Committee on Multiple Use. This sub-committee was directed "to review, evaluate, and adapt concepts and applications of multiple use and integrated

*This article is a condensation of a report of the Sub-Committee on Multiple Use, National Committee on Forest Land. It was prepared by Chas. R. Stanton, Canadian Forestry Service, Department of Fisheries and Forestry.

resource management", and "to make recommendations concerning 'multiple use' and 'integrated resource management' and their relationships to land management". The members of the sub-committee were Prof. W. W. Jeffrey, C. S. Brown, M. Jurdant, N. S. Novakowski, and R. H. Spilsbury. The following article is a condensation of their jointly-authored first report of May 1969, which appeared under the title, "Towards Integrated Resource Management."¹

Tragically, the chairman of the sub-committee, Prof. W. W. Jeffrey, lost his life in a helicopter accident in August 1969, at Fort Liard, N.W.T., while engaged on a hydrological survey for the Department of Indian Affairs and Northern Development.

The need for integrated resource management

People are becoming increasingly aware of the rapid rate of change occurring in the environment, in technology, and within society itself. They are concerned over the goals of society and the type of environment created by technology. This concern can be expected to generate changes in our resource management. There is a distinct danger that such changes resulting from public pressure and based on less than adequate public knowledge could result in serious mismanagement of natural resources.

A direct challenge for the forester is presented here because he is necessarily vitally concerned with resource management outside of agriculture. The need is for a complete understanding of the overall problem (especially its social aspects) followed by provision of practical systems of integrated resource management. Failure to move with all reasonable speed to meet this challenge is, in effect, to invite the public to do the job itself — with inappropriate tools and inadequate information.

More people want access to the forests where they can hunt or simply observe our wildlife.

In referring to the recommended mechanism for coping with resource management problems, the term "integrated resource management" is used here rather than "multiple use" which has come to have a variety of meanings. D. A. Smith has defined integrated resource management as "the application of management strategies to achieve the maximum output from the optimized use of natural resources of a specific area for the benefit of a referent group and its successors"². A referent group in this sense is the paramount body of people deriving benefits from a resource commodity or area.

Problems in adopting integrated resource management

Is Our Technology Adequate?

Let it be admitted at the outset that not all necessary technology is available to implement a com-

The management of forests for clean, adequate supplies of water is vital to our cities, our farms, and all aspects of water-based sport or recreation. (Nova Scotia Film Bureau).

plete system of integrated resource management. We cannot, for example, make economic evaluations of certain management benefits, and we are almost completely dependent upon the experience of the United States in recreation management. Nevertheless, despite these and other technical shortcomings, a great deal of progress could be made right now if all pertinent aspects of available technology were to be applied. The immediate factors limiting adoption of integrated resource management lie to a large extent with prevailing attitudes and opinions on such matters as social problems, environmental quality, legislation, organization, professional staffing levels, and land management planning. These attitudes and opinions are found not so much in the field as in the administrative centres of government.

The Social Aspects

Integrated resource management is fundamentally a social concept as Rowe and McCormack (1968) have shown. They bring out the point that people have come increasingly to regard land, particularly

¹ Copies of original report are available upon request to: Dr. P. J. B. Duffy, Canada Land Inventory, 161 Laurier Avenue West, Ottawa, Ontario.

² Cited from personal communication between D. A. Smith, University of British Columbia Forestry School graduate, and Committee Chairman.

large areas that are publicly owned, as having social values that should take precedence over the economic interests of the individual producer or the single user.

From a consideration of this situation it is clear that personnel concerned with planning and implementing integrated resource management need training in the relevant social sciences as well as in specific resource fields. To this time universities have given little consideration to social science in the education of foresters and other resource managers who, in turn, have focused their attention more upon resources than upon the people who benefit from their use.

With the change in emphasis away from short-term maximization of economic returns from natural resources to longer-term social and environmental objectives, there is now a need for greatly increased social science research in the area of land management complete with a basic change in orientation in the education of resource managers.

The people of our crowded cities can be expected to increase their demands for quick access to Canada's forest lands.

The Question of Environmental Standards

With the advance of technology we have witnessed examples of deterioration in our environment — sometimes of disturbing proportions. This has led to suggestions that an acceptable quality of environment should be recognized as a basic human right (Tarrant, 1966; Jeffrey, 1968). In view of the possible grave consequences of certain environmental changes the assurance of safe, healthy surroundings seems of equal importance with other fundamental rights already guaranteed to the individual in a democratic society.

The adoption of an environmental standard must, of course, be a matter for legislative and constitutional consideration extending back to our basic social framework; something of indirect concern to the forester. However, formulating environmental standards is an undertaking wherein all resource interests must be represented. Such standards, aside from their possible use in establishing a human right, will be fundamental to the evaluation of integrated resource management practices.

Legal Factors

Resource legislation in Canada typically deals with individual resources rather than the joint production of all resources from a single piece of land.

Furthermore, much of this legislation is internally contradictory, with little indication as to an overriding authority.

By law, in some provinces, only members of a specific profession may administer certain land management statutes. This can seriously hinder integrated resource management and can limit the promotion and development of other professionals.

These factors suggest the need for an historical evaluation of all resource legislation and its impact on resource management throughout the country. Similarly, a study of present legislation with respect to all its effects upon progress towards integrated resource management is desirable and should be implemented. As matters stand, it is clear that legislation specifically designed to encourage integration of resource management is needed at all levels of government in Canada.

Land Tenure

Much of Canada's public forest land is in the hands of large industrial organizations as limits or licences. Such land may be fairly accurately described as "quasi-alienated". Under this system the question arises as to whether or not the maximum public good is derived from the land. It would appear that much quasi-alienated land is managed purely for the benefit of corporate stockholders. The interests of this group may coincide with those of society, but, in today's complex world, the chances of this happening would seem to be remote.

Controversy between public and private interests over the management of quasi-alienated land may generate sufficient public pressure for governments to take action. Changes in land management by industry can then be imposed by decree but this has obvious shortcomings; it inflicts injustice on industrial concerns and the public is inadequately safeguarded.

In some cases these difficulties are further complicated when foresters and other resource personnel make the assumption that maximum economic returns, usually over the short term, are in the best social interest. The degree of public dissatisfaction over management policies based on this assumption shows it to be invalid.

A major problem lying in the area of land tenure and legal considerations is that of over-dependence upon Orders-in-Council. Integrated resource management planned around specified land tenure and legal conditions is especially vulnerable to changes in those conditions. It is important, therefore, that the framework within which integrated resource management is expected to operate is established and protected by formal legislation rather than by Orders-in-Council which are relatively easy to change.

Where appeals against resource management decisions are allowable, a further danger exists in that too frequently these are made to the minister concerned, or directly to the cabinet, rather than to the courts or to special tribunals which could be set up for the purpose. This existing situation leaves much latitude for the exercise of departmental or professional biases.

Government Organization

Throughout government, organization is predominantly along single resource or single disciplinary lines. Thus, generally speaking (though with exceptions), our forestry organizations are legally charged with the management of forests for wood; other agencies have responsibility for water, recreation, wildlife, fishing, and so on.

Because of this situation there is a lack of multi-resource planning teams, a lack of specialists in the basic resource fields attached to our forestry services, a lack of research into the economics of multi-resource management, and a lack of large computer-based simulation programs necessary for planning efficient integrated resource management.

It is true that through the Canadian Council of Resource Ministers a policy-level forum for discussion of land resources administration and experience has been established. However, not all ministers with control of land are represented on this council. Any other approaches to the problem of resource integration have been of a sporadic and stop-gap nature.

Consideration of all the foregoing shortcomings leads to the conclusion that the present organization and terms of reference of both our resource management and resource research agencies of government are inadequate to meet the needs of today's society.

Planning for Integrated Resource Management

To this time little planning for integrated resource management has been done in Canada. It is considered that a three-level approach to this problem is required. At the top would be an area planning group where strategy and policy would be defined and priorities set. Below this would be the integrated resource management level where decisions on use co-ordination would be made. Finally, there would be the area where specialized managers, acting in concert, would apply to individual resources those approaches determined at the upper levels.

Information from the Canada Land Inventory together with that which may be expected from the proposed biophysical land classification project will provide land classification information specific to the land use planning needs of integrated resource management.

Research and Education for Integrated Resource Management

A review of the problems involved in adopting integrated resource management establishes a need for more research in the areas of economics, sociology, political science, law, and land tenure. There is also a need for research into integrated resource management itself using, particularly, the systems modelling approach based on comprehensive simulation models and computers.

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Influenced by prevailing government structure which dictates employment demands, resources education in our universities has followed narrow, specialized, and uni-disciplinary guidelines. In turn, this reinforces the present structure and its underlying philosophies. The basic danger in this situation is one of producing people too centralized in interest to adapt to the broader requirements of integrated resource management. Because universities, in North America particularly, are attuned to job training as much as to the expansion of knowledge, the provision of courses in multiple-resource science would follow quickly if the needs were properly expressed.

The area of integrated resource management requires managers of single resources, researchers, and integrated resource managers. The present and continuing need for the manager of single resources is not in question. It would seem important, however, for this person in his undergraduate years, to be imbued with an understanding of, and sympathy for, resource fields additional to the one in which he is specializing. The researcher, following a Bachelor's training in science or one of the resource disciplines, should, it is felt, achieve a graduate-level inter-resource research capability. It is not probable that potential integrated resource managers will become apparent in their undergraduate years; they will more likely become visible as they gain experience on the job.

Finally, the need for continuing education and re-training programs in all areas of resource science cannot be overstressed. The need for closer interaction between universities and government is also of paramount importance.

The Forester Should be Concerned

There seems to be little doubt that trends in social concern will very soon lead to increased pressures to gain wider benefits from our wildlands. Failure to anticipate and plan effectively for this situation invites confusion, if not chaos. For all foresters this has particular significance. In the public mind foresters are rightly identified as people carrying major responsibilities for the management of wildland, but historically this management has been concerned almost exclusively with the production of wood. The challenge to the forester, then, is to adapt to an increasing public insistence on the provision of additional (or perhaps other) values from the same land and to address himself, wherever possible, to those problem areas which have been discussed. It is important that this challenge be met swiftly so that all pertinent facts will be available in time to guide those responsible for initiating courses of action. The forester, particularly in his administrative capacity, may well find that he is prominent among those held accountable should there be any failure to cope with emerging problems of multiple resource demands.

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