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HARDWOOD MANAGEMENT FOR DIFFERENT FORMS OF LAND USE

by

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RESUME

Ce rapport est une revue des recherches sur l'aménagement polyvalent des forêts feuillues aux fins d'usages direct et indirect. Il comprend trois parties: une introduction qui signale que la demande pour l'aménagement de ces forêts aux fins autres que la production ligneuse sera de plus en plus élevée en dedans d'un rayon de 100 milles de nos plus grandes villes; une revue générale de la littérature sur 13 options d'aménagement forestier non-destructif; une partie qui expose les besoins, les opportunités et les contraintes vis-à-vis le programme de recherche forestière du Service canadien des Forêts. On a preparé une bibliographie pour la période 1960-1974.

INTRODUCTION

I appreciate very much this opportunity to exchange ideas with you concerning research and development needs for hardwood management for non-consumptive and multiple use. I regret only that I could not devote more time to preparing these notes: the subject proved much more complex than initially foreseen, probably because of an over-enthusiasm in expanding on the "etc." that appears in a footnote on the agenda.

A comprehensive review of research and development needs comprises at least four elements:

1. an analysis of the results from past research;
2. a knowledge of current research program;
3. an identification of the clientele for whom we propose doing the research;
4. an understanding of our clients' needs.

Because of the time limitation, no attempt was made to prepare an analysis of past work. However, a bibliography of multiple-use forest management and non-consumptive forest use was compiled, and it illuminates in a general way what has been done to date, and permits several general conclusions.

A review of current research follows in the next section. Available time was again an adverse factor and it is acknowledged that many current projects have not been reported on.

And who are our clients for the results of our new research into non-consumptive forest management? And what are their needs? In the preface of *A Ten-Year Plan, Environment Canada*, 1975-1985, it is stated:

> "any loyalties that we may have to clan, tribe, city, province, nation or alliance, must be placed below our loyalty to species Man."

Thus in the elucidation of needs and their subsequent alignment in order of priority, every ongoing or proposed CFS research or development project concerning non-consumptive management should relate directly to some agreed upon and clearly defined human need. To the argument that any research that adds to the store of our knowledge will be for the ultimate benefit of man, I would reply that the flaw in this logic is the word "ultimate" which suggests that man is here forever and that he cannot destroy himself by polluting his earth and mis-managing its resources. To say that such things will actually occur would be to mock human intelligence, but what I suggest is that increasingly we must be sure that we are serving our real clients. And

as for the fourth element, our understanding of his needs, I suggest that we have little reason for complacency, which I believe has been recognized by those who convened this workshop.

If I were to forecast that by the year 2000, the forests within a radius of 100 miles of our large urban centers would be reserved for the exclusive and non-consumptive use of our citizens, you might conclude I was some kind of nut. Well, it seems I may have some company within the upper echelons of our Ministry because on page 15 of our 10-year plan is the following sentence:

> "The question will increasingly be posed whether a tree is more important as a living, beautifying and air cleansing object than as a manufacturing resource."

How many of us 10 years ago would have bet a month's salary that the citizens of Toronto would stop construction of the Spadina throughway dead in its tracks? How is Parks Canada able to resist the pressure there must be from many sources to exploit the forest, mineral, wildlife and water resources within our National parks? How were the citizens of Quebec able to stop Hydro-Québec from building a dam on the Jacques Cartier River, 25 miles north of the city? These are examples of "people power" and I present the hypothesis that sooner or later this power will be brought to bear on our forest resources within and surrounding our major urban centres. These are precisely the hardwood and mixedwood forests we will be studying over the next three days.

By using the words from the footnote on the agenda, and expanding the words "et cetera", the following list of management alternatives was prepared. These alternatives have been placed in what I feel is their order of importance for consideration in this workshop:

1) Urban forestry
2) Education, formal and informal (public awareness)
3) Recreation, intensive, extensive, and therapeutic
4) Amenity forestry; arboreta

5) Noise abatement and wind breaks
6) Protection of wildlife habitat
7) Preservation of natural beauty spots
8) Deposition of solid and sludge wastes
9) Erosion and flood control
10) Protection of pure water supply
11) Air polution control, climate moderation
12) Maple syrup production
13) Production of nectars and edible nuts

While these management options are listed individually, it is understood that two or more could be pursued simultaneously or sequentially within many hardwood and mixedwood forests of eastern Canada. This is the main reason for listing urban forestry as top priority because within urban forests the multiple use concept can be proved and sold to the "average" citizen and thus perhaps the alienation of forest land for single purpose use can be held at a reasonable level. It seems to me that multiple use is the most talked about but least applied and researched management alternative.

STATE OF KNOWLEDGE AND CURRENT RESEARCH

Urban Forestry

The concept of urban forestry is relatively new in North America but not new at all in Europe. The Lockwood Conference on Suburban Forests and Ecology was held at New Haven, Connecticut, in 1962. While the urban forest concept envisioned by this conference differs radically from mine, it is clear that the forest under discussion was the deciduous forest of eastern North America.

I define an urban forest as a natural forest of at least 100 acres, within the financial reach of at least 90% of the citizens of the urban centre it serves, intensively managed primarily to provide

recreation, education, and biological and sociological research opportunities, and forest products, in this order of priority. Within this definition, I know of only two such forests in Canada that would probably qualify: the forest area of Stanley Park in Vancouver, and the Morgan Arboretum of McGill University in Montreal. Thus it is not surprising that very little research, biological or other, has or is being done in Canada on this specific subject. The Laurentian Centre has one modest research project, "Forestry for People - Management of Urban Forests", where the work done is within the tolerant hardwood forest. Contacts with CFS personnel in the Maritimes and Ontario indicate no CFS work on this subject in these Regional Centres although the FMI has one project "Urban and Environmental Forestry".

In self-defence, I acknowledge the existence of a considerable volume of scientific literature on the biology of hardwood species and forests, plus the existence of a relatively large number of papers on forest recreation. However, the fact remains that there is a distinct lack of comprehensive research in Canada on the interaction between man and the forest environment. A study was begun in 1970 by the Ontario Ministry of Natural Resources within a 750 sq. mi. area of Simcoe County, Ontario, to provide a methodology for evaluating and anticipating the impact of people on the natural environment. I have not been able to find the published results of this study.

Concerning research on trees and small wooded areas within cities, which I call city forestry, there is considerable literature on the role of deciduous trees as shade providers, climate moderators and for aesthetics. Perhaps the best single paper is by Little and Noyes, *Trees and forests in an urbanizing environment*, published in 1971 by the extension service of the University of Massachusetts. However, the value of this literature is limited in this application to urban areas in eastern Canada for several reasons. First, most of the studies are American. Second, most studies have been done on individual species or wooded areas <u>outside</u> city limits with results extrapolated for

application to city environments. Third, there is a remarkable lack of knowledge about the real needs of urban populations for trees, parks, greenbelts, urban forests and natural beauty spots. Canadian research on the sociological and economic aspects of city forestry seems almost non-existent.

There must be a wealth of information, gathered over the years by municipal governments, on the silvics of deciduous trees used in municipal planting programs. If anyone has bothered to dig out these data it seems that he has not chosen to make them easily available.

The economics of maintaining trees in urban environments has been almost entirely neglected. It is well known that tree roots break sidewalks, sewer systems and house foundations, that tree foliage interferes significantly with street lighting systems, and causes an annual fall clean-up expense, that the reproductive physiology of poplars and willows presents a health hazard for asthmatics and those with allergies, and that falling trees and tree branches interrupt electricity and telephone services. The literature is very silent about these detrimental effects. However, I am pleased to note that our Maritimes Forest Research Centre recently published an excellent and useful report on the technical and cost implications of dead elm removal from city streets. While there may be no formal project at that Centre this report fills a very real need concerning one aspect of urban forestry.

Education

We all know that over the past decade the use of forests of southern Canada for educational purposes has increased dramatically, as witnessed by the mushrooming of ecological reserves, nature centres and nature trails. A new and high-quality periodical has started, *The Journal of Environmental Education*. Our southern hardwood forest is an excellent place to teach formally the fundamentals of nature and ecosystems and to make the general public more aware of the value of

our forest resource, and how to appreciate their impact on it.

There are two distinct types of forests required, 1) the natural, unmanaged forest and 2) the forest managed for multiple use. The latter forests are cause for concern simply because they don't exist in sufficient numbers. I suggest it would be sheer folly to use mis-managed or extensively-managed forests for either formal or informal education. Any CFS endeavours in forest education research should also have the political objectives of developing more public support for better forest management with a commensurate forestry research program. We cannot expect, and indeed would not merit, such additional support unless we show people examples of the best management possible. And where do we find these?

The multiple-use 600-acre forest of Morgan Arboretum is the best example I know, of what can be done over a period of 10 to 15 years on a very modest budget. The forest, in addition to its roles in formal education, and forestry, botanical and wildlife research, also provides a sufficient variety of recreation possibilities to attract the general public so that they may be exposed in a subtle way to the educational process. Opportunities exist as well for much-needed research, both sociological and biological, on the interactions between man and the forest environment. One of the most interesting papers available is Algar's (1973) *Kindergarten to grade four behavior on forest conservation field trips* (unpublished M.Sc. thesis, McGill University), based largely on work done in the Arboretum.

Recreation

Without doubt there has been more research on forest recreation than any other single aspect of multiple-use or non-consumptive forest use. Within forestry literature alone we find valuable bibliographies on the subject. To determine the precise state of knowledge concerning the use of Canada's hardwood and mixedwood

forests for recreation, however, is beyond the scope of this paper. From the reading I have done, plus study of bibliographies and *Forestry Abstracts*, I have reached some general conclusions.

First, the number of different Canadian entities conducting forest recreation research or development is remarkably large and diverse. At least six Federal departments are involved in some way in this work, although the only one I can determine with a specific mandate is our own Environment Canada. I discovered a federal government unit called Recreation Canada with the Department of Health and Welfare. I wrote but got no answer, and all I can tell you is that this unit seconds recreation specialists to federal prisons (Prisoners Canada?). This summer the Department of National Defence hired a forester to appraise the potential of CFB Gagetown for recreation, and parts of CFB Valcartier forest are being prepared for intensive recreation. Units of our Department with ongoing projects include the Wildlife, Lands, and Forestry Directorates, the latter's activities in eastern Canada comprising studies at the Economics Institute, Forest Management Institute, Petawawa Forest Experiment Station, Laurentian Forest Research Centre, and subsidized research at Montreal and McGill Universities. Quebec's Departments of Lands and Forests, and Tourism, Fish and Game are involved, as is Ontario's Ministry of Natural Resources. Some universities and municipalities are into the act and others would like to be. And then there is the CFA, OFA, QFA, 4-H Clubs, Ontario's Conservation Authorities; and where should I stop?

Second, there is no evidence to suggest that a national policy exists concerning federal activity in recreation in general or forest recreation research in particular. The manner in which jurisdiction over Quebec's Provincial parks has been tossed back and forth like a hot potato between Lands and Forests, and Tourism, Fish and Game over the last 50 years, suggests that for this province there exists a lack of firm policy. The saga of Algonquin Park suggests that Ontario is, or was, in the same boat. Thus, the general impression

from the literature is that most of the work done has been planned on an ad hoc basis, in response to some real or imagined need but not within the framework of clearly defined national, provincial, regional or municipal goals. Ontario may be an exception. The Research Branch of the Ministry of Natural Resources speaks of its hardwood research program in southern Ontario as follows:

> "Because of the rapid social and economic changes in land ownership and land use, attempts are being made to meet the present and future demands of our society by selecting multi-purpose trees and shrubs capable of not only supplying high quality timber products but also such by-products as nectar and pollen for the honey industry, sap for the maple syrup producers, nuts and wild fruit for the confectionary trade, home consumption and wildlife as well as suitable forest cover types to meet the requirements of the environmentalist and recreationist".

I don't know to what extent this program is co-ordinated with other Ontario research but the required administrative means exists.

Third, in general, Canadians using the intensively managed forest recreation facilities within National and Provincial parks as well as commercial facilities come from the middle and upper income strata, as do those who travel north for sport fishing or to seek a wilderness experience. A significant amount of sociological research has been done concerning the needs, wants and aspirations of these Canadians for forest recreation. But we know very little about their impact on the forest environment. This fact has been recognized by National Parks and a program of impact research will begin in Kejimkujik National Park, N.S., next summer. One exception to this general conclusion is the reasonably well-known disregard if not disdain for the forest environment exhibited by many sport fishermen.

Our citizens from lower income families hardly appear at all in the forest recreation literature and the reason may be found in

sociological research: these people are involved in a daily battle to attain a lifestyle with an acceptable level of human dignity. There simply is no energy or money left over for a Sunday jaunt into the countryside. Similarly, our physically and mentally handicapped citizens, with only minor exceptions, are forgotten beings relative to forest recreation. For those of you interested in the possibilities for forest recreation for these latter citizens, I suggest you read Therapeutic Recreation in the revue *Recreation Canada*, No. 31/5/73.

Fourth, and last, while it is obvious from studies such as CORD that demand for forest recreation opportunities is increasing rapidly, the rate of demand increase and the characteristics of the clientele expected are not known with any precision. What is clear from our sociologist friends is that the average citizen seeks diversity in the recreation forest including access to water (except rain). Without doubt the hardwood and mixedwood forests of southeastern Canada would satisfy these requirements as well as or better than the northern forest. The dilemma confronting us is the fact that these forests are being gobbled up by the spread of suburbia, purchase by private citizens with no intention of permitting public access, and by rather large land purchases by both domestic and foreign commercial interests. With the exception of the expropriation for La Mauricie National Park in Quebec and Kedgie in Nova Scotia, I could find no evidence of any effort by any level of government to accumulate parcels of our southern forests for future intensive recreational use.

One final comment on forest recreation research: I was looking for but did not discover in the forestry literature any reports of research to study the possibilities of controlling or eliminating populations of biting, sucking and stinging insects within forests managed for intensive recreation. We all know that for many people the forest is rendered "inaccessible" because of the presence of these insects, and it seems strange that apart from the development of repellents and some operational-type spraying with chemicals, there

appears to be no research underway on this problem.

Amenity Forestry

Amenity is defined in the Oxford Dictionary as "The quality of being pleasant or agreeable". Writing in the *Quarterly Journal of Forestry*, April 1973, Nial Charlton says:

> "Most people share the same sensible view, that beauty is something obvious that is seen at once, like a colour or shape. That is not so. Any experienced teacher could tell them that children have naturally the most appalling bad taste, and require quite careful teaching to conform their instincts to the reigning adult conventions.
>
> A study of the cases over the years shows quite clearly that the meaning of amenity to the general public is always that there must be no change, or that if there must be change, it must be somewhere else. Planting trees alters the familiar landscape; felling trees alters the familar landscape. Both are loss of amenity, because all change is wrong. It should now be possible to build up a composite picture of what amenity is. It is in fact what a small and influential section of the population say it is."

A tree planted along a highway may have amenity value for a car driver up to the moment when a rear tire blows and his car wraps itself and him around the said tree. If our driver survives, I'm sure he would instantaneously assign a negative amenity value to our tree, which if it was of substantial diameter has probably survived very well. Seriously, amenity like beauty is a subjective concept. In my view, it should be banished from our forestry vocabulary and replaced by city forestry (previously discussed) and other concrete words, such as arboretum.

Noise Abatement and Windbreaks

Undoubtedly existing hardwood forests can be managed specifically to provide noise and wind barriers. This management would not, in my view, require a great deal of research effort but rather the judicious application of knowledge already available.

To create a new sound or wind barrier by planting trees is another problem. Conifers would seem to be much superior because of their form in providing such barriers. Besides, we can plant conifers with a reasonable degree of success, something that we cannot say about hardwoods with the exception of poplars. Undoubtedly trees have been planted for these purposes by municipalities and highway departments, but these activities are not reported on in forestry literature.

Protection of Wildlife Habitat

At the outset it must be stated that time did not permit more than a superficial examination of the many papers about wildlife management. The Canadian Wildlife Service has a modest program of research but apparently most of the work is being done at universities or within Provincial government departments. Birds receive a great deal of attention.

Many papers dealing with animals and the forest can be divided quite easily into two groups, 1) papers written by wildlife biologists about animals where the forest is mentioned within the context of some detrimental effect of harvesting or forest fire, and 2) papers written by foresters about the detrimental effects of animals on the forest, particularly planted forests.

My impression from reading some papers from each group is that the problems are easily surmountable. It is only very recently than any bilateral research projects have begun, and we have yet to get to know each other. The sooner wildlife biologists stop telling us

that we eliminate moose by clearcutting, and the sooner we stop telling them we are only "repelling" small mamals by coating our tree seed with endrin, the better off we'll both be.

It seems that the modifications required in hardwood silviculture and management to assure a hospitable habitat for most animals would be acceptable to foresters. This hypothesis remains to be tested. The assured presence of animals would maintain or add one element of the variableness previously noted as being a highly desirable characteristic of forests managed for recreation and education.

Preservation of Natural Beauty Spots

The concept of natural beauty is certainly not new for Canadians; for years highway departments have been providing lookout points at places along major traffic arteries where the view has been considered spectacular and/or beautiful. What is new in Quebec within the last decade is that a search for beauty spots within the forest has begun, coupled with the building of roads to them and to previously known spots. I would guess the same thing has been going on in other Provinces.

The application of known silvicultural techniques and common sense, plus some engineering input would seem sufficient for the relatively intensive management required for many sites. The knowledge currently lacking concerns the cumulative impact of visitors to the sites. Some study may have to be done at certain sites, but surely the current and anticipated impact research with recreation forests will provide much valuable data applicable to these sites.

Deposition of Solid and Sludge Wastes

This management alternative is mentioned simply because it represents a probable future opportunity rather than a current problem.

The only Canadian research discovered was a Quebec Lands and Forests study of the effect of distributing raw domestic sewer waste within a forest environment at St. Donat. To date the study involved only a monitoring of visible changes in the forest flora.

From attending an international conference last fall on the use of land for solid waste disposal, I am aware that many large U.S. cities are faced with a serious problem of solid waste disposal and some are experimenting with disposal on forested land. The results range from modest success to complete disaster.

Erosion and Flood Control, Protection of Pure Water Supply

Erosion and flood control problems are not serious in eastern Canada in the sense that they are chronic, causing high property damage, pollution of water sources, and loss of life. The Conservation Authorities of Ontario seem to have Ontario's flood control situation well in hand.

Certain rivers in Quebec do present more frequent problems than others but to what extent hardwood forest management is relevant to the varity of possible solutions, I cannot say.

Protection of municipal water supply is closely linked to erosion and flood control but in Quebec at least the problems seem more political and administrative than biological.

Air Pollution Control and Climate Moderation

The use of hardwoods for these activities seems to be an area where there is much talk but little action. While many tree physiologists have shown the capacity of certain tree species to absorb gases from the air and to moderate extremes of temperature and humidity, I did not discover a single comprehensive study or research project, past, present or proposed, on this subject. Clearly, building

contractors are leaving far more trees on lots where single-family homes are being built, and some municipalities have by-laws forcing land developers to leave small percentages of green or wooded spaces within their areas of urban construction. There is no evidence even remotely suggesting that these happenings are a result of individual or collective desires to influence air quality or climate.

Maple Syrup Production

Excellent research programs, including marketing research, are currently underway in Quebec, Ontario and Vermont. The catalysts responsible for these projects are agronomists and not foresters, although foresters, including two scientists from our Laurentian Centre, are making substantial contributions. Current plans envision the extension of this work to include study of genetic variation and maple physiology; the situation seems well in hand.

Production of Nectars and Edible Nuts

The only reason this is mentioned is because the Research Branch of Ontario's Ministry of Natural Resources has a modest research program underway. I suggest that the CFS cannot afford the luxury of becoming involved with such nectars and nuts.

United States

I was asked to allude to research in the U.S. and this is certainly all there is time for. The following tabulation shows the number of published papers of the U.S. Forest Service, for 1971 and 1972 combined, that touch on some aspects of non-consumptive forest management.

Erosion control	39
Noise abatement	2
Wildlife habitat	26

Air pollution control	16
Air pollution damage	20
Amenity	6
Recreation	50
Water yields	94
Water quality	56
Maple syrup	4
Multiple use economics	12

A large number of interesting papers on recreation have been published by the Outdoor Recreation Resources Review Commission since 1962, and the Northeastern Forest Research Station has good research programs on forest recreation, and maple syrup production.

Two unrelated bits of information I stumbled on in the U.S. literature are interesting and perhaps relevant to this workshop: 1) the U.S. Forest Service is the largest single employer of landscape architects in North America, and 2) at least 36 forest nature trails exist in the U.S. designed specifically for the use of the blind and physically handicapped.

For further information on the U.S. I can only refer you to the bibliography[1)].

NEEDS, OPPORTUNITIES AND CONSTRAINTS

In spite of this admittedly incomplete review of the literature, I believe that certain needs concerning CFS activity can be stated. Clearly we don't know with precision what has or is being done in research on non-consumptive forest use; to find out will not be an easy job because the pertinent literature is remarkably scattered. But it must be done.

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1) Available from the author

The CFS could play a dominant role in urban, recreational and educational forestry, and not only because there is a real need for research in these fields but because these activities would help improve public understanding of, and support for, the program of the CFS.

Jaap Salm has said, "The management of federally-owned lands within and in the vicinity of urban centres in Canada should be a high priority item for the CFS. These areas should become true jewels, demonstrating to other levels of government and to the private sector the best of what environmental management has to offer our society."

Frankly, at this time, it does not appear realistic to propose new research in any of the other alternatives noted herein, except in certain special circumstances. Without doubt our Service is already spread thinly across the many disciplines we now work in; additional manpower and money resources will not be forthcoming in the near future; and most of these other alternatives are the primary responsibility of other agencies.

To seize the opportunities in southeast Canada, our Service will have to rid itself of its timidly about the acquisition of forest land for research and the acceptance of responsibility for administration and operation of this and other federal forested land. Our friends in the Canadian Wildlife Service pursue an aggressive policy of land acquisition, at least in Quebec, to protect their feathered friends. Our own May, 1974 policy statement says:

> "The CFS will endeavour to provide leadership in establishing improved interdepartmental cooperation on federal forestry matters. The CFS will continue to collaborate with other departments in joint operational and research projects, and to provide technical and advisory services."

and:

> "The CFS will undertake operational roles where real need exists, and benefits promise to be substantial."

And what could be considered a "real need" or a "federal forestry matter", with the possibility of "substantial benefits" if not the management of 24,000 forested acres at Mirabel airport? The Laurentian Centre has certainly done its best to "collaborate" and so has BANAIM and DOT. But somebody hasn't collaborated because three years after expropriation, these 24,000 acres are being managed (?) by one forester and one technician. It strikes me as possible that we have our priorities badly ordered when we spend millions in National Parks for the near-exclusive use of affluent North Americans but can't find a paltry few thousands for acquisition and management of relatively small wooded areas within reach of millions of our less affluent citizens.

"The objective of the CFS is to promote the preservation, enhancement and wise use of a healthy, attractive and bountiful forest resource and terrestrial environment for the economic and social benefit of all Canadians" (*The Role and Policy* etc., May 1974).

Can we expect "to promote" the application of sound forest management implied in our objective when forested land under federal jurisdiction remains unmanaged or marginally managed? The promotional work of course extends to other Federal government departments. In Quebec, our Service has promoted more intensive forest management at CFB Valcartier for over 30 years and at Mirabel for 4 years. And now the Canadian Wildlife Service is making noises about CFS participation in forest management on their land. In all three of these cases what the other agency is seeking from us is not more promotion or sage advice but joint participation involving our personnel and our money.

If we do become directly involved in research in urban, recreation and education forests, we should decide at the outset who will assume operational responsibility for these forests when the research is ended. It's one thing to close out a black spruce research forest 300 miles north of Quebec but quite another thing to close a recreation forest 30 miles north of Montreal.

In closing I acknowledge with thanks the many people who have helped me in preparing this paper, particularly D.H. Burton of Ontario Ministry of Natural Resources and Dan Schmitt of the U.S. Forest Service who forwarded many valuable papers.

DISCUSSION

(1) Wooded areas within city limits are fast disappearing, and therefore it may not be worthwhile conducting research on their use unless they are municipally owned and there is a commitment to preserve them; municipalities in Quebec cannot normally expropriate land for recreational purposes. In Montreal most undeveloped forest land could be gone within 10 years, leaving Mirabel (30 miles to the north) as one of the nearest forest areas for urban residents.

(2) The "100-mile radius" concept was questioned in that while woodlands may not be found near urban centres along main highways, they can often be discovered much closer on side roads. Cities were said to possess "recreation sheds" which served most of the population, and one problem is to define them.

(3) Small wooded areas present many valuable opportunities, but are extremely vulnerable to overuse, and research in carrying capacity of hardwood stands for recreational purposes is badly needed. Perhaps 100 acres is a minimum area where approximately natural forest conditions could be maintained under constant use.

(4) It is unrealistic to believe that trees in urban forests will never be felled and utilized. They should not merely be allowed to fall down when overmature or dead, but cutting (and replacement) should and must be anticipated and included in the management plan.

(5) The Simcoe Country Project was a cooperative venture between University of Toronto and Ontario Ministry of Natural Resources dealing with use of mixed lands, and selection of priorities, similar to the approach described in the *Glackmeyer Land-use report*[2]. The project was used for a field workshop, and probably ended with Angus Hills' retirement.

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2) Ontario Department of Lands and Forests. 1960. The Glackmeyer report of multiple land-use planning. Rep. Glackmeyer Subcommittee of Northern Region Land-use Planning-Committee.