

## CHAPTER VIII -TN 39: ESTIMATING THE ECONOMIC IMPACT OF PROPOSED PARKS

A Summary of the Report ECONOMIC IMPACT OF NATIONAL PARKS IN CANADA By Hildebrandt-Young and Associates Ltd. Prepared Under Contract for Parks Canada 1970

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### ABSTRACT

To study the economic impact of establishing national parks, Parks Canada, in the late 1960s, commissioned the firm of Hildebrandt-Young and Associates Ltd. to undertake a study that would review existing methodologies; propose a standard methodology for Parks Canada; and test this methodology on a proposed park.

This paper is a condensed version of the consultants' two-volume report. It is divided into three parts:

- (1) the conceptual framework;
- (2) the Gros Morne Park proposal; a case approach;
- (3) an annotated bibliography.

The original research does not propose the adoption of a specific methodology for all such studies, but does provide the reader with procedures for evaluating the impact of a National Park.

### INTRODUCTION

The economic impact of establishing national parks has been of major interest to the Government of Canada for some Years. In 1970, National and Historic Parks Branch, now Parks Canada, commissioned the firm of Hildebrandt-Young and Associates Ltd. to undertake a study (1974-Note that the actual study was in 1968-69 with a contract report in 1970. There was an official publication in 1974.) that would:

- (1) review existing methodologies;
- (2) propose a methodology suitable for Parks Canada; and
- (3) test this methodology on a proposed park.

This paper is a condensed version of the consultant's report. Although the organization of the paper does not follow the organization of the report, no new ideas on impact evaluation have been added in revising the paper. A commentary has been included at the end of the paper and it is followed by a short bibliography drawn, in part, from the annotated bibliography included in the report. All the entries in the original bibliography are not included as most of the issues are better (or more briefly) dealt with in more recent literature (Coomber & Biswas 1972).

This paper is not intended to provide a model to follow in doing benefit-cost analysis, or socio-economic impact studies. Rather, it is intended to give the flavour of some of the difficulties involved in undertaking such a task. Therefore, the procedures endorsed here should not be taken to be those which are officially accepted by Parks Canada. Parks Canada has drafted guidelines for the execution of socio-economic impact studies and these deviate considerably from the ones followed by Hildebrandt-Young. In fact, a paper titled "A Longitudinal Analysis of the Impact of the Creation of a Major Park" (TN 40) sets out a number of Parks Canada's concerns with regard to the economic impact research that has been undertaken on its behalf.

Finally, because the title or the article does not make it clear, the reader may find it useful to note that the paper is in two parts:

- (1) a theoretical framework; and
- (2) the Gros Marne Park proposal: a case approach.

The first part of the paper introduces the concept of benefit-cost analysis, examines the types of costs associated with the establishment of parks, and then examines the types of benefits. Each cost and benefit is discussed, in so far as it is useful to do so, with respect to:

- (1) its nature and elements;
- (2) the problems of measurement;
- (3) how these problems might be overcome; and
- (4) presenting the cost or benefit in accounts.

The second part of the paper follows the same organization and includes tables presenting the estimated costs and benefits.

## PART I: A THEORETICAL FRAMEWORK FOR THE EVALUATION OF THE BENEFITS AND COSTS OF NATIONAL PARKS

### INTRODUCTION

Canadians both publicly and politically are of the view that national parks are valuable. The federal government is, however, faced with the problem of determining what priority this view has with respect to competing programs, or in other words just how valuable any newly proposed park is to those who benefit and to those who must bear the costs. This value problem is complicated by the fact that many of the benefits and costs of park development are intangible or indirect. The cost of foregoing resource exploitation may not be a direct cost to the park, but is still very real to those who no longer hunt, fish, trap, etc. and to those who depend on them. The benefits of preserving Canada's natural heritage are intangible, but constitute one of the prime purposes for the establishment of a park. Furthermore, benefits and costs accrue differently to the nation and the federal government, the provincial government, and the residents of the proposed park and immediate vicinity.

### COSTS

There are three types of cost associated with park creation: opportunity, capital and operating. Opportunity costs are the measure of the highest value which resources could have realized, had they not been dedicated to National Park use which precludes all mining, timber, harvest, etc. In other words, it is the measure of benefit foregone because resource exploitation, actual or potential, must be foregone. Capital and operating costs are meant in their traditional senses.

#### Opportunity Costs

In the case of a national park, these costs arise from the prohibiting of timber harvests, mineral development, commercial fishing, agriculture and other similar resource use. The components of the benefit foregone include wages and cost of plant and equipment (factor payments) which would be paid by firms engaged in extraction or harvesting, transportation, processing or manufacturing the primary material into marketable, exportable or consumable form. Also included is a value commonly referred to as pure economic rent which represents the inherent value of the resource. It is the residual which remains when factor payments, including "normal profit", are subtracted from market value.

There are also secondary benefits. The existence of a resource processing industry will create a demand for goods and services that can bring into existence in the region further industries to supply the demand (backward linkages). It can also create a supply of goods and services that will permit the creation in the region of industries who will use these goods and services as their inputs (forward linkages). Payments to factors (e.g. labour) get re-spent in the region (net of savings and imports from outside the region) and these expenditures (again net of savings) are spent again and again, thus multiplying the impact of any payment made in the

region. All these benefits are foregone if resource exploitation is prohibited.

Opportunity costs for a resource in a park exist when the resource has a value that will be lost if it is locked up in the park. From the national point of view opportunity costs usually reduce to the equivalent of pure economic rent plus the earnings of factors that would remain unemployed in the absence of resource development. However, in Canada person power is ordinarily almost fully employed (note that the Hildebrant-Young report was written in 1968) and capital was characteristically overemployed and scarce. Thus it could be assumed that where development of one national resource was foregone, capital and person power will find employment in the development of other economic opportunities within the nation.

From the provincial point of view, the circumstances were very different. The resource potential of a province is, of course, much more limited than for the country as a whole. Foregoing the exploitation of a resource has a much more significant impact on the economy of a province than on Canada. If the capital and person power for exploiting the resource is attracted to another province, the opportunity cost approaches the gross market value of the resource, and not just the economic rent as is the case from the viewpoint of the nation. The province also must consider the net effects of the forward and backward linkages (those occurring within the province) as opportunity cost.

Conceptual difficulties in the measurement of opportunity costs are negligible although Krutilla (1971) shows that matters are not all that clear. The key is correct description and understanding of the opportunities foregone. The calculation can be very complex, however, as often a great number of factor payments are involved. Actual accounting for these transactions is frequently impossible and some more general statistical measure must be used. Econometric input-output models, which measure the interaction of firms in the economy are in various stages of completion for a number of Canadian provinces and regions. (For example, Statistics Canada is just now (1976) getting provincial models into operation.) These can often provide a reasonable estimate of the net effect of foregoing economic opportunities. (The Department of Regional Economic Expansion did not, as of 1976, accept the estimates produced by these models.)

For accounting purposes, it is useful to consider opportunity costs as capital or operating costs. For example, the cost of purchasing a farm within the boundaries of the proposed park can be considered a capital cost but in fact it represents to the owner the present value of net future income stream from the farm (i.e. earning opportunity foregone).

#### Capital and Operating Costs

Established methods for treating capital and operating costs are widely accepted. These costs present no problems of measurement. Difficulty is caused by accounting for the effects of dislocating communities and persons living within the park. It is necessary to determine the amount of compensation to be paid both for real assets owned by members of the community and for hardship undergone in relocating. Here again the key is accurate description of the extent of dislocation. (Life tenancy was under consideration as an alternative to compensation.)

#### **BENEFITS**

There are four types of benefits generated by the establishment of parks: preservation, recreation, economic stimulation from tourist spending, and from government expenditure for the establishment and operation of the park. The first two benefits in particular pose significant problems of measurement, and no generally accepted method has yet been found to measure them satisfactorily.

##### 1. Benefits of Preservation

One of the two principal purposes of a national park is preservation, for its ecological or scenic uniqueness, for the maintenance of the widest possible variety of existing species of flora and fauna, or for its "option value". Option value is the value attached by a person to the possibility of obtaining a good or service in the future, when one has no intention at present of using it, but when re-establishing the supply of that good or service would be excessively expensive or even technically impossible once it had been discontinued. While it is obvious that all three types of preservation have value, it is equally obvious that it is not possible to attach firm monetary estimates to these, although an attempt could be made in the last case where something is preserved for future use (in this case, recreation). The best that can be done is to present preservation as an unmeasured value which must be considered subjectively in the benefit-cost analysis.

## 2. Benefits of Recreation

The other principal purpose of a national park is to produce recreation benefits. National parks supply a wide variety of recreation services such as sightseeing, camping, water sports/hiking, skiing and wildlife observation. The main difficulty in measuring this benefit derives from the fact that the consumer does not pay (at least directly) for the benefits received, as it is the policy of the National Parks of Canada to make parks available free or at nominal cost to visitors.

In the private sector, price can be used as an indicator of benefit. While benefits received may be more than the price a consumer pays, the benefits will at least be no less. In the case of a park, however, price is zero or nominal, so it is not possible to use price as a proxy. It is therefore necessary to try to measure the benefits in some other way. From an extensive review of methods previously employed, three approaches offer some hope.

THE GROSS EXPENDITURE METHOD, usually based on interviewing a sample of visitors, gives the total amount of tourist spending as reported by tourists themselves. While this method may provide guidelines for investment in tourist accommodation and so on, the visitor's expenditures are for fuel, food and accommodation, and not for access to the park. Therefore they do not necessarily reflect how the visitor rates the park's value.

THE UNITED STATES FEDERAL AGENCY PROCEDURES, which are widely used in estimating recreation values, consist essentially of assigning standard dollar values to each activity park visitors participate in, multiplying the values by the number of visitors participating in each activity, and summing the values to obtain an estimate in dollar terms of benefits provided by the park. This approach has serious shortcomings: the values assigned are completely arbitrary, and they are assumed to remain constant over the project's life expectancy. However, this approach can provide, in the view of Hildebrant-Young and Associates, a rough approximation of benefits obtained. In addition, the values have the advantage of appearing reasonable both to those who use the parks and those who must consider allocating funds to park development.

THE HOTELLING METHOD is an attempt to determine the benefits by theoretical means. Users are grouped into geographical zones within which travel costs incurred in reaching the recreation site are relatively constant. For each zone, a participation rate per unit of population is found. It is assumed that the participation rate for a given zone would decline to the level of a more distant zone if residents of the first zone were charged a user's fee equal to the difference in travel costs facing the users in each zone. Participation rates can then be estimated for various fee levels, when it is known what "price" visitors in a zone would be willing to pay to visit the park, consumer surplus becomes the difference between this and what they do pay.

There are several theoretical problems with the Hotelling method. There is no guarantee that behaviour in one zone can be used to predict behaviour in another. Secondly, changing the fee would not necessarily leave the quality of the recreation experience unchanged (e.g. congestion might increase). There are practical problems as well: (1) demand estimates are extremely sensitive to the choice of zone boundaries; (2) it is difficult to define minimum necessary travel costs; (3) it is difficult on a multi-purpose trip to separate benefits attributable directly to the park visit. Successful application of this method have so far been limited to the analysis of recreation services such as daytime or weekend visits to sites that offer a uniform range of services. These conditions generally do not apply to Canadian national parks (see TN 31, 38, and Coomber & Biswas 1972)

While the US Federal Agency procedures appear to be the most useful method at this time (1970), and so will be used in this study, it is recommended that they be modified in three ways. Changes in prices since the technique was developed should be taken into account. Changes in relative prices, which have tended to place a higher value on outdoor recreation relative to general price changes should also be taken into consideration. Finally sensitivity of the benefit (in the eyes of the user) to travel distance should be taken into account. Recommended values are set out in Table 1.

### 3. Benefits of Economic Stimulation from Tourist Spending

The economic benefits of tourism derive from expanded economic activity which occurs as a result of transfer, by tourists, of spending power from one region to another. A tourist is considered a visitor from outside the region. Obviously, from the local point of view, this would include everyone not normally residing in the immediate area. From the provincial point of view, this means anyone who comes from outside the province, and from the national point of view it means anyone who is not normally resident in Canada.

TABLE 1: PROPOSED VALUES FOR RECREATION USE OF CANADIAN NATIONAL PARKS PER VISITOR DAY

Activity	Representative Park		Unique Park	
	Local Point of Origin	Distant Point of Origin	Local Point of Origin	Distant Point of Origin
1. Picniking, driving for pleasure, highway observation, general use of intensive areas	\$1.00	\$1.00	\$1.00	\$2.00
2. Overnight camping	1.50	1.50	1.50	3.00
3. Skiing, golf, guided tours, etc.	1.50	3.00	1.50	6.00
4. Hiking, mountain climbing, canoeing, nature observation, etc.	2.50	5.00	2.50	10.06

The requirement therefore for the measurement of benefits from tourism is to discern the level of spending within the region for which the analysis is being made, and which is attributable to the existence of the park. Because tourist expenditures are of considerable economic significance to all provincial governments and to the federal government, well designed studies have been carried out. These reveal average levels of tourist spending which make possible reasonably precise estimates of purchases of accommodation, food and fuel, and which will provide an estimate of gross expenditures by tourists attributable to a national park. It is necessary however, to estimate expenditures net of interregional flows, that is, net of the purchases of goods and services imported from outside the region in question. As in the case of opportunity cost calculation, input-output models which show the linkages between firms

producing goods and services purchased by tourists and firms outside the region will provide an indication of the extent to which the economy of the region will be expanded by tourist expenditures.

#### 4. Benefits of Economic Stimulation from Government Expenditure

Expenditures by the federal government for capital works and operation of a park are costs and not benefits to the national account. In the provincial context, however, such expenditures represent a transfer of funds into the region and a consequent expansion of the provincial economy (directly, through linkages created, and through the multiplier effect). This transfer is net of federal taxes paid for the establishment of the park by residents of the province, and net of money which drains out of the province for goods and services purchased outside. Money transferred into a region to meet opportunity costs cannot, of course, be counted as a benefit since their effect is to compensate for opportunities foregone.

### PRESENTATION OF ACCOUNTS

#### 1. Present Value and Discount Rates

To compare costs and benefits, all values must be expressed using uniform units of measure. This is normally achieved by discounting all costs and benefits to their present value. Present value is the amount that would now have to be invested at a given interest rate (or discount rate) to yield a given amount at a given future date. There is no practical way in which to choose a single discount rate suitable to all purposes. The discount rate is a function of fiscal and monetary policy, anticipated price changes (inflation) and a net amount which is sometimes described as the real cost of capital. This last, in simplest terms, represents the degree to which present consumption is construed to be preferable to investment for the production of future values. For some years, it has appeared that this figure in Canada has approximated 6 percent. This figure is only useful if prices and values are assumed to remain constant for the entire discount period and that fiscal and monetary policy do not shift the discount rate.

The federal government's choice of a discount rate must take into account counter-cyclical spending requirements, current cost of money, and inflationary trends. The province must take the same thing into account, but capital rationing is ordinarily more stringent because of the province's lack of authority to change monetary policy. Consequently, the province will tend to use a higher interest rate. The private individual's discount rate will be highest of all, as one usually has the least control on the money market and the least borrowing power.

#### 2. Presentation of Accounts

The benefit and cost estimates for a proposed park are finally presented in a set of accounts, which is reviewed usually at both the federal and provincial levels, and possibly at the local level. Estimates cover a fixed period, possibly 20 years. Since the benefits can be expected to vary from year to year, it is advisable to present an estimate from the provincial point of view and from the national point of view for each year within the planning horizon: 20 separate sheets for each of the 20 years.

## PART II: A CASE STUDY: EVALUATION OF BENEFITS AND COSTS OF THE PURPOSED GROS MORNE NATIONAL PARK, NEWFOUNDLAND THE PARK AND ITS ECONOMIC MILIEU

### 1. The Park

Gros Morne is the second national park in Newfoundland. It is located in an area of outstanding scenic and natural features, and so is considered a unique park. It is out of the main stream of tourist traffic and is rather remote and difficult of access. Therefore it is foreseen that it will receive low intensity use.

## 2. The Local Economy

According to the 1966 Census of Canada, the proposed boundaries of the park enclose 4,834 residents in four major community complexes and several smaller communities, mostly fishing and ports. These comprise about 1,000 households. 2,388 persons fall within the category 15 to 64 (employable age). The high birthrate and a significant out migration of young adults accounts for the high proportion of dependants. Personal disposable income per capita averages \$860 a year, 45% of the national average. Of this, 25% was derived from government transfer payments and 75% from wages, salary and self employed income. 33% of persons are employed in fishing. Their net income is about \$619 a year. Average income per capita is increased by the presence of 76 professionals (nurses, teachers and doctors). There is also a high rate of government employment in such activities as roan maintenance and ferry operation. The area is in general economically depressed with residents supplementing their cash income by cutting stove wood, hunting and subsistence agriculture.

### **COST ESTIMATES**

Discount or interest rates of six and ten percent are recommended for federal and national costs, while eight and ten percent are the recommended rates applied to provincial costs. The time horizon of the study is 20 years. It is recognized that since a park is established in perpetuity, many of the benefits and costs will be in perpetuity. Little certainty can be attached to estimates into perpetuity however, so a definite period is selected. Constant dollars are used in calculations. Relative price changes are, however accounted for.

#### 1. Opportunity Costs

Park policy requires that all commercial resource exploitation in the park be discontinued. Because of the importance of fishing, and the possibility that it will be permitted to continue, it will be considered separately.

The other opportunity costs are for foregone timber harvest, agriculture, and mineral development. Although the fuelwood harvest is of declining importance in Newfoundland, it provides a revenue in kind to low income residents of the area, and is almost free when cut from areas adjacent to the park, so discontinuing the fuelwood harvest would not be a loss to the provincial economy. It would however cost the local residents a net of \$109,456 a year to replace the wood they harvest. Newfoundland imports lumber, and so the \$42,300 which it would cost to import lumber to replace the product from the park area's 22 sawmills would be a cost to the region and the province. There is no loss to the national account because forest products could be manufactured in other parts of the country. The cost to local residents of replacing the products of subsistence agriculture would be about \$24,000 each year. This would be a loss to the province which is an importer of food, but not to the nation, where an excess exists. No information exists at this time concerning specific mineral occurrences or income in kind derived from hunting.

A total of 254.5 square miles is held by private companies or individuals under lease or mineral concession. To the owner of the rights, the value of ones holding is the present value of the annual net profit which can be obtained by using the land. There is not enough information available to assess the potential profits, so a value of \$1.00 an acre is assumed for each year. This results in a present value, discounted at 8%, of \$1,599,500. This is a cost to the provincial account, since, in order to conform with National Parks policy, the province must transfer the land to the federal government free of all encumbrances. The province must therefore either purchase privately owned lands and rights, or exchange them for comparable holdings elsewhere.

#### 2. Capital and Operating Costs

Gross capital outlay of the federal government over the 15-year period estimated for the establishment of the park is \$27,556,000 for a present value of \$21,427,100 discounted at 6%. Salaries, equipment, and supplies necessary to operate the park would amount to \$14,123,900 at present value discounted at 6%.

Capital and maintenance expenditures on such things as access roads outside the park are constitutionally the responsibility of the province. Upgrading the access road would be a cost to the provincial treasury of \$8,000,000. The province would be relieved of the cost of maintaining roads within the park however, so the present value of the net cost to the province would be \$4,724,400 discounted at 8% over the 40-year write-off period. Basic costs are set out in Table 2, Part A.

### 3. Park Boundary Alternatives and Dislocation Costs

Present National Park policy prohibits permanent communities within new national parks. Because of the number of communities in the maximum extension of the park boundary, three alternative boundaries were considered which leave certain groups of communities outside the park. In all cases, some communities will require relocation.

Under the terms of the agreement signed by Canada and Newfoundland to consolidate communities, relocation grant levels have been established, some of which are shared equally by both governments. The community consolidation program is voluntary, of course, but the costs and grants would not be less for the compulsory program suggested here, so these costs and grants are used for estimating purposes. They include: \$1,200 paid to each household, \$200 to each member of the household, \$3,000 for the purchase of a serviced lot, \$500 for moving a house, or \$9,000 to replace one that is not in good enough condition to move, clean-up costs for remaining structures estimated at \$250 for a household and such additional costs as \$25,000 to replace each classroom and \$28,000 to replace each hospital bed.

If commercial fishing were permitted, it is assumed that dislocated fishermen would move to neighbouring communities and no disruption of the fishing industry would occur. Disposable income would merely be distributed elsewhere. The provincial economy would not lose this. The loss in real property value and decline in business to merchants who would have to relocate is also included in the cost estimates. Table 2, Part B, outlines the dislocation costs of including the three alternative areas in the park.

### 4. Implications of Prohibiting Inshore Fishing

It was proposed to include an aquatic zone in the park extending approximately three miles off shore. This would have the effect of prohibiting commercial fishing. As fishing is the principle occupation of primary industry of the area and much of the secondary economic activity depends on it, the alternative of permitting inshore commercial fishing was also considered.

Prohibiting fishing inside the proposed aquatic zone would drastically erode the entire economic base of a high proportion of the communities of the region. Therefore, two of the boundaries considered above are not real options because prohibiting fishing would force those excluded villages to be relocated in any case.

The total annual opportunity cost to the national economy of the fishing harvest that would have to be foregone is \$323,380. The loss to the provincial economy would be \$389,680. Prohibiting fishing would also entail paying fishermen 50% of the replacement value of their equipment (50% payment is the practice set in the establishment of previous parks). The gross cash payment, a capital cost to the park, is \$158,581. Table 2, Part C summarized these costs.

ESTIMATED BENEFITS

### 1. Benefits of Preservation

These do not create measurable or tangible economic benefits and so an explicit or monetary equivalent of these benefits cannot be provided (for a contrary view see Kurtilla 1971).

### 2. Recreation Use

To measure the benefits of recreation occurring to park visitors, the number of visitor days in the first twenty years of the park's operation were estimated, divided into categories of activities participated in, and multiplied by the value imputed to each activity by the modified U.S. Federal agency procedures. (For the categories of activities and values, see Table 1.)

In 1968, 269,000 Newfoundland residents used Terra Nova Park (the other National park in Newfoundland). Although park use had grown very rapidly since the establishment of Terra Nova, it was reasonable to assume that growth would stabilize after 1968 at about 5.5%, based on patterns of growth at similar parks when first established and after several years. 1976 was taken as the year that Gros Morne would become fully operational (assuming the park was established in 1972 and took five years to develop and publicise). By 1976, it is estimated that there will be 413,404 visitors from Newfoundland to the two parks. Examination of the amount of increase absorbed by other new parks located near established parks (Elk Island, for example) suggests that about two-thirds of the increase will go to Gros Morne, so that by 1976, 92,000 visitors can be expected. By extrapolating back to 1972 and by assuming a growth rate after 1976 of 2.76% a year (set low to reflect low incomes and low population growth in Newfoundland compared to the national average), it is estimated that 18,900 persons will visit the park in the first year (representing 23,920 visitor days, based on an average stay of 1.3 days for a visitor observed in Terra Nova park) and 138,404 visitors (179,925 visitor days) in the twentieth year.

Off-island visitors to Newfoundland parks must travel long distances at great expense to reach them. Gros Morne park can therefore be likened to parks in the Yukon and Alaska that receive relatively few visitors but whose rate of Increase of visitors is very high (about 12% a year). In 1968, off-island visitors to Terra Nova park totalled 23,500. Applying the 12% growth rate, there will be 65,000 visitors by 1976. Because the two parks are no more than one day's drive apart, it is likely that a large proportion of these visitors will visit both parks and so it is reasonable to assume that about 75% of the new visitors will at least visit Gros Morne. This means that in 1976, Gros Morne will receive about 48,000 off-island visitors. Extrapolating as before, and applying the 12% growth rate for the years after 1976, it is estimated that there will be 9,500 visitors in the first year (12,500 visitor days) rising to 267,000 visitors (347,000 visitor days) in the twentieth.

Allocating (on the basis of common sense) the proportion of visitors who would participate in each category of activities and applying the modified U.S. Federal agency procedures, it is estimated that in the first year of operation, imputed recreation benefits would amount to \$68,000, rising to \$1,255,000 in the twentieth year. These imputed benefits are not monetized and so have no linkage or multiplier effects.

### 3. Benefits of Economic Stimulation from Tourist Spending

Every dollar spend by a tourist is a dollar paid to someone else, who will in turn spend part of it on consumption or for business. A part of the original dollar is thus spent and respend over and over. This is the multiplier effect. This effect in the region depends on the amount of each dollar that goes into savings at each stage, and the amount that leaks out of the region for imports. The impact of all tourist spending is increased by the multiplier, as is every expenditure by the federal government for the establishment and operation of the park. It should be noted as

well that the tourist industry can have linkage effects in the region.

Although tourist expenditure is clearly expansionary in the region, if it was diverted from some other part of Canada, it has a contracting effect on the national economy so a provincial gain may leave the nation exactly where it was. For the purposes of this study, it has been assumed that any tourist would, if the park had not been established, be attracted to some other facility in Canada.

TABLE 2: SUMMARY OF COST OF GROS MORNE PARK (PRESENT VALUE \$)

	National	Costs
	6% Discount Rate	10% Discount Rate
A		
Basic Cost	41,341,970	40,293,900
B		
Dislocation Costs		
In all cases	268,350	268,350
Area A	1,388,810	1,301,780
Area B	2,032,680	1,925,670
Area C	5,364,550	5,120,550
C		
Costs of Prohibiting Fishing Opportunity	3,709,170	2,753,260
Cost Equipment	158,581	158,581
Replacement Total	54,264,111	51,822,091
	Federal Costs	
	6% Discount Rate	10% Discount Rate
A Basic Cost	35,551,000	33,556,900
B Dislocation Costs		
In all cases	55,200	55,200
Area A	277,500	277,500
Area B	368,250	368,250
Area C	1,013,100	1,013,100
C Costs of Prohibiting Fishing Opportunity	3,709,170	2,753,260
Cost Equipment	138,581	158,581
Replacement		
Total	41,132,801	38,182,791
	Provincial	Costs
	8% Discount Rate	10% Discount Rate
A Basic	6,974,800	7,301,400
Cost		
B Dislocation Costs	.	
In all cases	213,150	213,150
Area A	1,065,410	1,024,280
Area B	1,607,230	1,557,420
Area C	4,221,450	4,107,450
C Costs of Prohibiting Fishing Opportunity	3,825,880	3,317,740
Cost Equipment Replacement Total	17,257,020	16,957,040

Note: Boundary alternative I would exclude areas B and C from the park, alternative II would exclude only area C and alternative III would not exclude any of these areas. The Total cost of prohibiting fishing would include the cost of relocating all these areas.

The value of tourist expenditures, based on visitor rates, is estimated to rise from \$70,000 in the first year to \$4,900,000 in the 20th year. The multiplier is calculated to be 1.42.

#### 4. Benefits of Economic Stimulation from Government Expenditure

Capital costs of constructing facilities within the park, and the operating costs, while entered as a cost in the national account, constitute a benefit to the province. This benefit is net of tax payments to the federal government (estimated at 2 1/2%) and purchases of goods and services outside that province (imports). (This is calculated to be 25% of expenditures). The net transfer will have an expansionary effect on the provincial economy through direct spending and through the multiplier. There are no net benefits to the national account as it must be assumed that funds not used to establish and operate the park would have been used elsewhere, perhaps in some other region. Discounted at 6% and reduced to 72 1/2% because of transfers and tax payments, the capital expenditures are estimated at \$15,534,647. At 10%, this amount would be \$16,727,852.

Federal operating expenditures are reduced in the same way and are estimated at present value to be \$10,238,827 (6%) or \$7,600,900 (10%).

#### COMPARISON OF BENEFITS AND COSTS

Table 3 shows the benefit cost ratios for the park from the national and provincial points of view. From the national point of view, benefits are less than costs, and an annual comparison shows that the benefits would not begin to exceed costs before the 16th to 20th year, depending on the alternative boundary chosen. These benefits, however, do not include any value to be derived from regional development or preservation. It may be that the benefit of preservation could be considered to exceed the difference between benefits and costs. An unfavourable benefit-cost ratio during a short planning period is characteristic of many large-scale projects. Ordinarily, five or at most ten years would be considered the short-term horizon beyond which benefits should start to exceed costs. The park is, however, preserved for use in perpetuity and the probability exists that the benefit cost ratio would be favourable over a longer period.

TABLE 3: BENEFIT COST RATIOS (\$000's, present value)

National Viewpoint	Estimated Cost		Estimated Benefit		Ratio	
	6%	10%	6%	10%	6%	10%
I	42,731	41,956	19,877	12,768	0.46:1	0.30:1
II	44,763	43,521	19,877	12,768	0.44:1	0.29:1
III	50,128	48,642	19,877	12,768	0.39:1	0.26:1
Fishing Prohibited	54,264	51,822	19,877	12,768	0.36:1	0.24:1
			Provincial Viewpoint			
	Estimated Cost		Estimated Benefit		Ratio	
	8%	10%	8%	10%	8%	10%
I	8,040	8,326	62,840	54,002	7.81:1	6.48:1
II	9,647	9,883	62,840	54,002	6.51:1	5.46:1
III	13,869	13,991	62,840	54,002	4.53:1	3.85:1
Fishing Prohibited	17,257	16,957	62,840	54,002	3.64:1	3.18:1

From the provincial viewpoint, the benefits of Gros Morne Park vastly exceed the costs, most of which are met by the federal government transferring purchasing power to Newfoundland. New hotel and motel accommodation, restaurants and gasoline stations will be required, and many existing businesses will benefit. However, tourist traffic is concentrated heavily in the summer months, and so this benefit would tend to be seasonal. In many cases,

benefits would probably consist of supplementary family income earned by women and young adults. There are, however, social costs not accounted for, particularly as far as concerns local residents whose lives have been disrupted by the establishment of the park.

#### COMMENTARY

At the outset of the study, Parks Canada was aware of the inadequacy of the methodologies reviewed by the consultants. Therefore, the consultants were given the objective of reviewing existing methodologies and choosing or developing one which would adequately and comprehensively evaluate the costs and benefits of a park and would be adapted to the unique characteristics of the Canadian context.

They did not realize this objective: in some areas they did not develop their ideas enough. In other areas they were not comprehensive or glossed over problems. They proposed a modified version of the U.S. Federal Agency procedures, but provided no information on the method used to derive the values obtained. Consequently, the report provides no guidance on how to adjust the estimated values in the future, or on how to improve the estimating procedure. They mention the existence of income multipliers, without applying them, and do not deal with employment multipliers at all. Finally, and most seriously, they do not adequately treat the whole area of intangibles, such as preservation benefits or the social impact of a park on a region (dislocation and break-up of communities, unemployment and the qualification of local residents for jobs created by the park, etc.) These intangibles may have a much greater importance than any other considerations in assessing a park. In some research, it may be acceptable to put aside these questions as beyond the realm of economics, but there are researchers who have puzzled with them, and Parks Canada is frequently called upon to make decisions in which these questions play a part. Any methodology which does not deal with intangibles is thus not adequate for Parks Canada's needs.

The responsibility for this shortcoming cannot, however, rest entirely on Hildebrandt-Young and Associates Ltd. At the time of the study project, Parks Canada had not as yet drafted a series of guidelines that would have permitted close supervision and strict adherence to the terms of reference. Had Parks Canada insisted that the consulting firm hire personnel with sufficient expertise to develop the required methodology, no study would have been done because the answers to many questions still are not known. Doing and analysis that is good for its day and within the allowed budget for the work is all that (in the end) can be demanded from any consultant.

The research undertaken did make a number of substantial contributions to the problem of measuring the impact of national parks. For instance, the analysis of the three most popular methodologies is comprehensive both in its review and assessment. Furthermore, the analysis of quantifiable variables such as opportunity costs (commercial fishing, forestry, agriculture, mineral development potential, etc.) and estimates of benefits (construction, tourism expenditures, etc.) were both complete and enlightening. Lastly, the analysis of the various development plans for the proposed Gros Borne National Park were done in such a way as to facilitate decision-making concerning the most feasible option.

Thus it must be said that, even though the study did not meet Parks Canada's original optimistic expectations, the report is a useful document for planning and policy purposes. The study can serve as a stepping stone toward an understanding of what to do and what not to do in other research projects of this scope and nature.

## APPENDIX ANNOTATED BIBLIOGRAPHY

Grazer, Harvey E. "Outdoor Recreation as a Public Good and Some Problems of Financing."

Address Presented before the National Short Course on Elements of Outdoor Recreation Planning. Ann Arbor, Michigan, 10 May, 1968.

Outdoor recreation is a public good only to a very limited extent, therefore it should be offered by government to users at a price equal to the marginal cost that their use imposes. If outdoor recreation has constantly declining average costs (of production) this scheme will not cover all costs, and the remainder may be met either by the government or by a charge for facilities access. Problems of congestion costs are also discussed.

Canadian Outdoor Recreation Research Committee, *THE ECONOMIC IMPACT OF PARKS*. Federal Provincial Parks Conference, Canada, 1975.

This paper outlines methods now available for the measurement of primary and secondary benefits of parks and the problems associated with these techniques. Estimates of benefits from past studies are included, as is a set of administrative guidelines for undertaking a comprehensive socio-economic impact analysis.

Coomber, Nicholas H. and Biswas, A. T. K., *EVALUATION OF ENVIRONMENTAL INTANGIBLES*. General Press, Bronxville, New York, 1973.

A review of the state of the art of evaluating intangible benefits and costs associated with the use of the environment. The authors synthesize, organize and criticize those techniques which have been widely used in the past for this purpose.

Davidson, Paul; Adams Gerald F. and Seneca, Joseph "The Social Value of Water Recreation Facilities Resulting From the Improvement in Water Quality: The Delaware Estuary" in Kneese and Smith, *WATER RESEARCH*, The Johns Hopkins Press, Baltimore, Maryland, pp. 175-214, 1966.

The first portion of the article is an argument for public intervention in the recreation market. The authors feel that this can be justified by the pervasive externalities, the existence of off peak demand that can be provided at zero cost, the presence of option demand, and the phenomenon of "learning by doing". The second portion of the article discusses the specific problem of how much recreation will be provided by improved water quality in the Delaware estuary. The figure is not quantified monetarily.

Frey, John C. and Gamble, Hays B. "Policy Issues and Problems in Outdoor Recreation", *JOURNAL OF FARM ECONOMICS*. 49 (5) December, pp. 1307-1317, 1967.

Using Pareto Optimality as the basic welfare criterion, the authors argue that recreation expenditures will achieve maximum welfare only if the pricing mechanism is used. It is pointed out that one of the simplest welfare maximizing criteria is locating recreation areas nearer population areas. In some cases an increase in recreation sites results in a smaller congestion effect which in turn increases recreation at all sites. Finally, they suggest more multipurpose ventures and advocate joint public-private partnerships for recreation development.

Norton, Virgil J. "Discussion: Policy Issues and Problems in Outdoor Recreation Economics", *JOURNAL OF FARM ECONOMICS*. 49 (5) December, 1967.

The author differs with Frey and Gamble in arguing that merit and redistribution effects of recreation are too important to advocate policy on the narrow grounds of Pareto optimality. He also notes that present measurement schemes are inadequate for accurate benefit-cost results.

Robinson, Warren C. "The Simple Economics of Outdoor Recreation", *LAND ECONOMICS*, 43 (1) February, pp. 71-83, 1967.

Robinson argues that outdoor recreation should be publicly provided on the grounds that it is a merit service. However, it is a merit service not for distributional reasons but as a result of social judgments in favor of a type of quality control that will not be provided by private markets. Since the merit service is not re-distributional in nature, it can be priced. The optimal pricing mechanism can be established in the short run by setting marginal cost equal to price while employing taxes or subsidies on complementary goods to adjust demand to the designed capacity of the facility. Other rationing and pricing schemes are also considered.

Schmidt, Allan A. "Economic Analysis of Water Resource Problems: Non-Market Values and Efficiency of Public Investments in Water Resources", *AMERICAN ECONOMIC REVIEW*. 58 (2) May, pp. 158-168, 1967.

A general review of the problem involved in measuring "intangibles". Schmidt argues that all goods can be priced as they are implicitly priced whenever a decision is made regarding them. Following this point is a suggestive and non-technical discussion of public goods, externalities, and non-marginal change. Externalities and public goods are problems involving property rights. Many environmental goods constitute new products and thus present problems of non-marginal change and price adjustment throughout the economy.