# REGIONAL SOCIO-ECONOMIC IMPACT OF A NATIONAL PARK: BEFORE AND AFTER KEJIMKUJIK

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# FOREWORD

In 1964, prior to the establishment of Kejimkujik National Park, the Institute of Public Affairs undertook an economic survey of the park area under a contract with the National Parks Branch of the Department of Northern Affairs and National Resources. The purpose of the survey was to establish benchmark data against which the economic impact of the park could be measured following its establishment.

The present study, supported by Parks Branch, Department of Indian and Northern Affairs, utilizes the data collected in 1964 and additional data collected in 1973-74 to examine the impact of the park on the Kejimkujik area. The study is of particular interest because of the before-and-after comparisons which are made. All too often, in evaluative research, a lack of sufficient benchmark data forestalls meaningful comparisons over time.

The earlier study, which resulted in an unpublished paper, "Economic Survey of the Kejimkujik Park Area in Nova Scotia", was conducted by D. Paul Schafer and Robert L. Comeau. The work reported here was carried out by Dr. Andrew S. Harvey, Research Associate in the Regional and Urban Studies Centre, Institute of Public Affairs, and Michael Foster, a research assistant at the Institute. Mr. Foster had major responsibility, under Dr. Harvey's direction, for producing the report.

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# BEFORE AND AFTER KEJIMKUJIK

# CHAPTER I

## INTRODUCTION

The establishment of a National Park creates benefits and costs for society as a whole, but benefits and costs are not distributed equally over the entire population. In particular, residents living closest to the park are often those most affected by the park in terms of employment and income changes. Hence, although the primary reason for the establishment of a National Park is to provide for the recreational desires of citizens, this goal must also be evaluated in terms of what effect it will produce in the local area of the park.

In recognition of this fact, a socio-economic impact study was conducted in the immediate area of Kejimkujik National Park. Officially opened in 1969, the park is situated in southwestern Nova Scotia on the boundary of Queens and Annapolis Counties. The park area is some 144 square miles. At present a wilderness-oriented park with 330 campsites, the park registered 140,495 visitors from April to October, 1971.

The study was conducted as a two-phase operation. Phase One consisted of a report, completed in 1965, entitled *Economic Survey of Kejimkujik Park Area in Nova Scotia*. The object of the report was to determine the state of the local economy prior to the establishment of a national park as the benchmark for a follow-up study to be "carried out after a number of years when the influence of the park has had time to make itself felt in the local economy . . . ." The present report is the follow-up study.

The methodology employed in the study is primarily a comparative static approach; i.e., we look at the socio-economic state of the area in 1964 and compare it with 1973. The comparison

is then evaluated in terms of the park's role in the measured changes.

## Data Collection

The study area, as defined in the 1964 study, consists of the communities of Caledonia, Harmony Mills, Kempt, Maitland Bridge, West Caledonia, New Grafton, Westfield, and Northfield. These communities represent the population centres immediately adjacent to the park. The appropriate study area is, of course, a matter of degree, since the economic effects are dispersed in varying degrees over different geographic areas. The study area was defined by delineating a normal commuting distance to the park in terms of employment. Data supplied by the National Parks operations section for Kejimkujik reveal that all employees lived in the study area during their employment at the park.

In order to assess the changes in the socio-economic characteristics that have occurred in the study area, it was deemed necessary to conduct two surveys in the area: (1) a Household survey, and (2) a Business and service establishments survey. The surveys were designed to be compatible with those used for the 1964 report.[1] Surveying conducted for the 1964 report was done on a total population basis for both the Household survey and the Business and service establishments survey. The total number of residents reached by the interviewers was 1,046, which constitutes 78.12 per cent of the census total of the region in 1961. Fifty-six firms were interviewed in the areas of primary and secondary relevance. The present report utilized sampling in conducting the household survey and a total population attempt for the business and services but restricted to the area of primary importance.

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[1] Institute of Public Affairs, *Economic Survey of Kejimkujik Park Area*, 1964, unpublished.

Testing of both survey designs for the present report was accomplished via a pilot study conducted in the Maitland Bridge area in August, 1972. Undertaking the pilot study also enabled the project team to familiarize themselves with the study area. A review of the pilot work resulted in minor revisions to the survey. The major portion of those revisions consisted of shortening the surveys to permit a better response.

The bulk of the survey work was conducted during the summer months of 1973 and included an updating of the pilot surveys. The total results of the survey work were 113 household surveys and 39 business surveys. The household surveys were coded for processing on the SPSS system.[2]

## Household Survey Sampling Technique

The residential data were collected on a sample basis, with the household selected as the basic sampling unit. Since we were concerned with the park's influence on the local area, a two-phase methodology was employed. Stage one consisted of simple random selection of all households in the area, and stage two completed the household survey effort by interviewing the majority of park personnel who were specifically brought to the area by the National Park officials and had not been interviewed in stage one. An inventory of the households in the study area was prepared and households were selected for interviewing via a random number generation; i.e., simple random sampling was employed.

Table I-1 presents the number of interviews completed in each community. In total, 105 interviews were completed

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[2]The processing formats and codes used are contained in a separate document entitled *Coding Manual 1973 Kejimkujik National Park Area*, Institute of Public Affairs, 1974, unpublished.

employing the random sampling technique. This represents a 27 per cent sample of the inventoried households.

Table I-1

NUMBER OF RANDOMLY SAMPLED HOUSEHOLD INTERVIEWS
KEJIMKUJIK NATIONAL PARK AREA

| Location | Total Households | Households Interviewed |
|---|---|---|
| Maitland Bridge | 66 | 21 |
| Northfield | 15 | 2 |
| Westfield | 54 | 11 |
| New Grafton | 19 | 4 |
| Kempt | 40 | 14 |
| Harmony Mills | 52 | 12 |
| Caledonia | 96 | 31 |
| West Caledonia | 48 | 10 |
| TOTAL | 390 | 105 |

Source: Institute of Public Affairs, *1973 Survey Kejimkujik National Park*, unpublished.

A chi-square test was performed for those communities interviewed in the major survey effort; i.e., all communities except Maitland Bridge. The computed chi-square of 4.4 corresponds to a probability P such that $70 \geq p \leq 50$ for six degrees of freedom. Hence it is reasonable not to doubt the hypothesis that the sample was a random one. The inclusion of the Maitland Bridge pilot study does introduce some bias into the overall study, since the initial random sample selection was performed for this community exclusive of the other communities. It is not felt, however, that this bias is of significant degree in terms of the results of the study.

In addition to the randomly selected households interviewed, a further eight households were specifically surveyed. These households were composed of families who were specifically brought to the area by National Parks. For the most part, they represent employees transferred from other national parks. We will hereafter refer to these households as non-local park households. The park lists thirteen employees in this category. Ten were interviewed; two in the random sample and eight specifically selected.

## Business and Service Survey

The business and service establishment surveys were conducted on a total population basis. A total of 39 firms were contacted; 10 of these were surveyed in the pilot study and subsequently updated. The total represents approximately 95 per cent of the business and service activity in the study area. Sales and wage and salary data from 25 of these firms were utilized in assessing the income impact of the park. In addition to the survey conducted, interviews were held with the previous owners of three services operating in the present park area in 1964. These were (1) Merrymakedge Lodge, (2) Ked-ge Lodge, and (3) Joe Rodger's Cabins.

## Study Outline

The present report compiled data on major socio-economic characteristics for the study area in 1973 on a basis comparable with the 1964 report. The data were then analyzed with respect to the major changes that have occurred in the study area from 1964 to 1973. The major socio-economic characteristics are further compared for the two subgroups of the present population: (1) those residents specifically brought to the area by National Parks officials, and (2) a sample of the population still living in the area who completed a survey in 1964. The results of the analysis are presented in Chapter II.

Examination over time of the study area with respect to the major socio-economic characteristics provided an insight into the environment within which the park operates and an appreciation of the park's role in the local community. In Chapter III, in order to better assess the park's impact on the local community, gross income and employment are measured via multiplier analysis. The chapter concludes with an estimate of the net effect of the park on employment and income.

Chapter IV provides summary data on park use by local residents and the results of a survey question asking whether, based on their experience with the park, local households would vote to have the park in their area.

Chapter V concludes the study with a summary of the results and an interpretation of the general socio-economic impact of the park based on these results.

# CHAPTER II

## COMPARATIVE ANALYSIS

### The Study Area, 1964 and 1973

The study area is primarily rural, with the largest community, Caledonia, having a population of only 459 persons in 1971. Table II-1, which shows the population by community, reveals that the study area has been relatively stable with respect to population for the last one and one-half decades. In fact, the area has witnessed a slight decline, which is disheartening considering the fact that the park personnel added some 43 persons, or approximately 3.4 per cent of the existing population, specifically as a result of the park locating in the area. An analysis of the household survey reveals that 82.9 per cent of the randomly selected households lived in the area in 1964.

Table II-2 presents data from the 1971 Census on households and population for the relevant enumeration areas (E.A.) in the study area. The E.A. represents the smallest geographical unit for which census data is available. The average household size for the enumeration areas is 3.5.

Table II-3 presents the distribution of household size for random sampled households in 1973, showing an average size of 3.1.

## Table II-1

STUDY AREA POPULATION BY COMMUNITIES*
1956-1971

| Community | 1956 | 1961 | 1966 | 1971 |
|---|---|---|---|---|
| Annapolis County | | | | |
| Maitland Bridge | 190 | 169 | 201 | 204 |
| Queens County | | | | |
| Northfield | 50 | 82 | - | - |
| Westfield | 243 | 265 | 225 | 188 |
| New Grafton | 70 | 19 | - | - |
| Kempt | 147 | 185 | 96 | 121 |
| Harmony Mills | 133 | 145 | 181 | 167 |
| Caledonia | 396 | 404 | 367 | 459 |
| West Caledonia | 72 | 70 | 73 | 67 |
| TOTAL | 1,301 | 1,339 | 1,143 | 1,206 |

*Population figures for individual communities are less reliable than totals, since the respondent decides which community he lives in, rather than having preassigned boundaries. - indicates that population in the area is less than 50 persons.

Source: Statistics Canada, *1971 Census, Unincorporated Settlements*, Catalogue No. 92-771.

## Table II-2

TOTAL POPULATION AND HOUSEHOLDS
SELECT ENUMERATION AREAS
1971

| E.A. No. | Population | Households | Population per Household |
|---|---|---|---|
| 255 | 218 | 68 | 3.2 |
| 256 | 159 | 50 | 3.2 |
| 258 | 734 | 206 | 3.6 |
| 214 | 638 | 180 | 3.5 |
| 217 | 395 | 115 | 3.4 |
| TOTAL | 2,144 | 619 | 3.5 |

Source: Nova Scotia Department of Development, 1971 Census Information.

Table II-3

DISTRIBUTION OF HOUSEHOLD SIZE
RANDOM SAMPLED HOUSEHOLDS
1973

| Household Size | Absolute Frequency | Relative Frequency | Cumulative Frequency |
|---|---|---|---|
| 1 | 14 | 13.5 | 13.5 |
| 2 | 34 | 32.7 | 46.2 |
| 3 | 23 | 22.1 | 68.3 |
| 4 | 15 | 14.4 | 82.7 |
| 5 | 10 | 9.6 | 92.3 |
| 6 | 4 | 3.8 | 96.2 |
| 7 | 1 | 1.0 | 97.1 |
| 8 | 1 | 1.0 | 98.1 |
| 9 | - | - | 98.1 |
| 10 | 1 | 1.0 | 99.0 |
| 11 | 1 | 1.0 | 100.0 |

Statistical Summary

| | | | |
|---|---|---|---|
| Mean | 3.087 | Standard Deviation | 1.801 |
| Median | 2.674 | Mode | 2.000 |

Source: Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area*, unpublished.

Table II-4 presents the income distribution for area residents in 1964 and 1973, as well as the income distribution for non-local park employees. The income data are expressed in current dollars. In 1964, 64.43 per cent of the households had incomes below the $3,000 income level, whereas in 1973 this lower limit of the income scale contained only 26.04 per cent of the households. This increase in income levels is more apparent than real, since the Canadian Consumer Price Index, with June 1964 = 100, gives a June 1973 value of 143.4; nonetheless, the increase is also the result of real factors such as the increase in government transfer payments and higher salary payments for park personnel. Table II-4 also reveals that non-local park personnel are decidedly in the higher income range and hence account for many of the higher income households in the region.

Table II-4

INCOME DISTRIBUTION OF HOUSEHOLDS IN THE STUDY AREA
1964 AND 1973

| Income Class | 1964 Reporting Households | | | 1973 Random Sampled Households | | | Non-local Park Personnel | | |
|---|---|---|---|---|---|---|---|---|---|
| | A.F.[a] | R.F.[b] | C.F.[c] | A.F. | R.F. | C.F. | A.F. | R.F. | C.F. |
| Less than $1,000 | 38 | 12.75 | 12.75 | 1 | 1.04 | 1.04 | | | |
| $1,000 - $ 1,999 | 86 | 28.86 | 41.61 | 9 | 9.37 | 10.41 | | | |
| 2,000 - 2,999 | 68 | 22.82 | 64.43 | 15 | 15.63 | 26.04 | | | |
| 3,000 - 3,999 | 50 | 16.78 | 81.21 | 17 | 17.71 | 43.75 | | | |
| 4,000 - 5,999 | 31 | 10.40 | 91.61 | 24 | 25.00 | 68.75 | 1 | 7.69 | 7.69 |
| 6,000 - 7,999 | 15 | 5.03 | 96.64 | 11 | 11.46 | 80.21 | 1 | 7.69 | 15.38 |
| 8,000 - 10,000 | 5 | 1.68 | 98.32 | 9 | 9.37 | 89.58 | 6 | 46.15 | 61.53 |
| Greater than 10,000 | 5 | 1.68 | 100.00 | 10 | 10.42 | 100.00 | 5 | 38.46 | 99.99 |
| TOTAL | 298 | 100.00 | | 96 | 100.00 | | 13 | 99.99 | |

[a]Absolute Frequency [b]Relative Frequency [c]Cumulative Frequency

Sources: Institute of Public Affairs, *Economic Survey of the Kejimkujik Park Area in Nova Scotia*, 1964, unpublished; Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area*, unpublished; and Kejimkujik National Park, Operations Section.

Table II-5 shows the primary income source for reporting households in 1964 and 1973. Most sectors remained approximately the same, with the exception of forest and forest-related activities, which dropped from 41.6 per cent to 21.7 per cent of the reporting households. This reduction in the forestry sector reflects the general inability of the industry to attract workers at existing wage rates and is not peculiar to the area. The movement out of the forestry occupational class was offset by increases in government transfer payments, which are primarily composed of old age pensions, and National Park employment resulting from the location of the park in the area.

Table II-5

PRINCIPAL SOURCE OF INCOME BY OCCUPATIONAL GROUP
STUDY AREA HOUSEHOLDS, 1964 AND 1973

| Occupational Class | 1964 Reporting Households | | 1973 Random Sampled Households | |
|---|---|---|---|---|
| | Number | % of Total | Number | % of Total |
| Forest and Forest Related | 124 | 41.6 | 20 | 21.7 |
| Farming | 10 | 3.4 | 1 | 1.9 |
| Services | 81 | 27.2 | 26 | 28.2 |
| Transfer Payments | 77 | 25.8 | 33 | 35.9 |
| National Parks | - | - | 9 | 9.9 |
| Other | 6 | 2.0 | 3 | 3.2 |
| TOTAL | 298 | 100.0 | 92 | 100.0 |

Sources: Institute of Public Affairs, *Economic Survey of Kejimkujik Park Area in Nova Scotia*, 1964, unpublished; and Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area*, unpublished.

Table II-6 presents the age distribution of the study area population for 1964 and 1973. We note that there has been

a drop in the proportion of the population under age 16 and an increase in the proportion of the population in the productive years, as well as an increase in the population in the 66 and over category. The influx of non-local park personnel to the area has helped offset the decrease in the below 16 age group and accounts for part of the increase in the 16-65 category.

Table II-6

AGE DISTRIBUTION OF RESIDENTS
STUDY AREA, 1964 AND 1973

| Age Groups | 1964 Reporting Households | | 1973 Random Sampled Households | | 1973 Non-local Park Personnel | |
|---|---|---|---|---|---|---|
| | A.F.[a] | R.F.[b] | A.F. | R.F. | A.F. | R.F. |
| Below 16 | 343 | 32.8 | 71 | 23.8 | 10 | 28.6 |
| 16 - 65 | 573 | 54.8 | 182 | 61.1 | 25 | 71.4 |
| 66 and over | 130 | 12.4 | 45 | 15.1 | - | - |
| TOTAL | 1,046 | 100.0 | 298 | 100.0 | 35 | 100.0 |

[a]Absolute Frequency [b]Relative Frequency

Sources: Institute of Public Affairs, *Economic Survey of Kejimkujik Park Area,* 1964, unpublished; and Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area,* unpublished.

The educational level of the 1973 study area randomly sampled population is presented in Table II-7. The 1964 study[1] stated that 43.9 per cent of the E.A. population not attending school reported having one year of high school or

[1]Institute of Public Affairs, *Economic Survey of Kejimkujik Park Area,* 1964, unpublished.

better. The corresponding figure for the 1973 population is 63.8 per cent. The increase in the educational level is partly accounted for by the non-local park personnel, which has 100 per cent of its respondents not now attending school with an educational level greater than one year of high school (i.e., Grade 9). In fact, 6 of the 20 eligible sampled respondents reported having a college degree.

Table II-7

EDUCATIONAL LEVEL OF THOSE NOT ATTENDING SCHOOL
RANDOMLY SAMPLED STUDY AREA POPULATION, 1973

| Educational Level | Absolute Frequency | Relative Frequency |
|---|---|---|
| 3 years | 3 | 1.5 |
| 4 | 3 | 1.5 |
| 5 | 8 | 4.0 |
| 6 | 13 | 6.5 |
| 7 | 13 | 6.5 |
| 8 | 34 | 16.9 |
| 9 | 30 | 14.9 |
| 10 | 32 | 15.9 |
| 11 | 18 | 9.0 |
| 12 | 16 | 8.0 |
| Some university | 11 | 5.5 |
| University degree(s) | 12 | 6.0 |
| Other post-secondary | 9 | 4.5 |
| TOTAL | 201 | |

Sources: Institute of Public Affairs, *Economic Survey of Kejimkujik Park Area*, 1964, unpublished; and Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area*, unpublished.

Our final table for this section presents a comparison of the labour force participation rate for 1964 and 1973. Table II-8 shows that the labour force participation rate, defined as that proportion of the population working at the

time of the survey, has increased by 7.5 per cent since 1964.

Table II-8

LABOUR FORCE PARTICIPATION
STUDY AREA, 1964 AND 1973

| | 1964 Households | | 1973 Random Sampled Households | |
|---|---|---|---|---|
| | Actual | % of Pop'n | Actual | % of Pop'n |
| Total Sampled Population | 1,046 | 100.0 | 301 | 100.0 |
| Work Force | 342 | 32.7 | 121 | 40.2 |
| Unemployed | 16 | | 8 | |

Sources: Institute of Public Affairs, *Economic Survey of Kejimkujik Park Area*, 1964, unpublished; and Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area*, unpublished.

This increase in participation is to be expected because of the higher percentage of the population in the working years than was the case in 1964. Non-local park personnel households have a labour force participation rate of 28.7 per cent. The lower participation rate for this subgroup is as expected, given the age and income composition.

## Households Living in the Area in 1964 and 1973

In this section we take a closer look at the subgroup of the present population that completed a survey in 1964. This subgroup consists of 51 households, which represents a 17 per cent sample of the 1964 households. We will analyze this population subgroup with respect to the changes in the major socio-economic characteristics. By doing so, we will be in a better

position to appreciate the park's effect on the population residing in the area in 1964.

The average household size for this subgroup in 1964 was 3.5, which equals the 1964 population household size; in 1973 it was 2.8. This decrease reflects the formation of new family households and the deaths of older members of the households and is not an unexpected result given the high percentage of people in the under 16 and over 65 age groups in 1964.

Table II-9 presents the distribution of income levels for the 1964 population and the subgroup. A chi-square test was performed and gave a value of 28.59 with 7 degrees of freedom. On this basis we would reject the comparative subgroup as a random sample from the 1964 population. This, of course, is not unexpected and reflects the changes that the base population has undergone since 1964. Table II-9 reveals that the sample is positively biased with respect to the $4,000-$5,999 income range and negatively biased with respect to the $2,000-$2,999 and $3,000-$3,999 income ranges. Hence, assuming our comparative sub-sample is representative of the households living in the area in 1964 and remaining in 1973, Table II-9 indicates that it is the low-income household that has moved out of the area or decreased.

Table II-9

INCOME DISTRIBUTION OF HOUSEHOLDS
1964

| Income Class | Total 1964 Households | | Comparative Subgroup | |
|---|---|---|---|---|
| | Absolute Frequency | Relative Frequency | Absolute Frequency | Relative Frequency |
| Less than 1,000 | 38 | 12.75 | 7 | 14.00 |
| 1,000-1,999 | 86 | 28.86 | 15 | 30.00 |
| 2,000-2,999 | 68 | 22.82 | 8 | 16.00 |
| 3,000-3,999 | 50 | 16.78 | 9 | 12.00 |
| 4,000-5,999 | 31 | 10.40 | 9 | 18.00 |
| 6,000-7,999 | 15 | 5.03 | 2 | 4.00 |
| 8,000-10,000 | 5 | 1.68 | 2 | 4.00 |
| Greater than 10,000 | 5 | 1.68 | 1 | 2.00 |
| TOTAL | 298 | 100.00 | 50 | 100.00 |

Sources: Institute of Public Affairs, *Economic Survey of Kejimkujik Park Area*, 1964, unpublished; and Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area*, unpublished.

Table II-10 presents the income changes in our comparative sub-sample that have occurred from the base years of 1964 and 1973. The figures show that 15.2 per cent of the households are now earning less than they did in 1964; this is primarily due to retirement of one or more household members from the labour force. For the remaining population, 17.4 per cent are earning in the same income range and 67.4 per cent are earning more.

Table II-10

CHANGES IN HOUSEHOLD INCOMES
COMPARATIVE SUBGROUP
1964-1973

| Income Class, 1964 | Income Class, 1973 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Less than $1,000 | $1,000-1,999 | $2,000-2,999 | $3,000-3,999 | $4,000-5,999 | $6,000-7,999 | $8,000-10,000 | Greater than $10,000 |
| Less than $ 1,000 | - | 2 | 2 | 2 | - | - | - | - |
| $1,000 - 1,999 | - | 4 | 2 | 5 | 3 | - | - | - |
| 2,000 - 2,999 | - | - | 1 | 2 | 4 | - | 1 | - |
| 3,000 - 3,999 | - | - | 3 | - | - | 2 | - | 1 |
| 4,000 - 5,999 | - | - | 1 | 1 | 1 | 2 | 1 | 1 |
| 6,000 - 7,999 | - | - | - | - | - | 1 | - | 1 |
| 8,000 - 10,000 | - | - | - | - | 1 | 1 | - | - |
| Greater than 10,000 | - | - | - | - | - | - | - | 1 |

Sources: Institute of Public Affairs, *Economic Survey of Kejimkujik Park Area*, 1964, unpublished; and Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area*, unpublished.

Table II-11 shows the change in the primary income source for the comparative household subgroup. We see that 52.4 per cent of the subgroup had the same primary income source in 1973 as in 1964. For the remaining population, most of the households now list their primary source of income as services or transfer payments. For this subgroup, 50.0 per cent of the reporting households now list transfer payments as their primary source of income and only one (2 per cent), the National Park.

Table II-11

CHANGE IN PRIMARY INCOME SOURCE
COMPARATIVE HOUSEHOLD SUBGROUP
1964 - 1973

| Income Source 1964 | Income Source - 1973 | | | | | |
|---|---|---|---|---|---|---|
| | Forest and Forest Related | Farming | Services | Transfer Payments | National Park | Other |
| Forest and Forest Related | 4 | - | 6 | 3 | 1 | - |
| Farming | 1 | 1 | 1 | 2 | - | - |
| Services | - | - | 7 | 6 | - | 1 |
| Transfer Payments | - | - | - | 10 | - | - |
| National Park | - | - | - | - | - | - |
| Other | - | - | - | - | - | - |

Most of the changes in Table II-11 are accounted for by movement out of the forestry sector by the subgroup households. Surveys for this group revealed that four of the households now reporting services as the primary source of income

resulted from household members other than the household head now accounting for the major portion of income for the households. In three households this change was the result of change in occupation by the household head; in the remaining three households it was the result of the retirement of the household head.

## Socio-economic Changes

The data presented above indicate that the study area is now better off than it was in 1964, but that 1964 households have shared little in this improvement. This indicates that the benefits accruing to the area have been accumulated by the second-generation households in the area, the sons and daughters of the 1964 households, and the households of immigrants.

The major change in the study area since 1964 has been the location of the park. The park brought with it an influx of park personnel. These new residents represent only 3.4 per cent of the existing population; nonetheless, it does appear that they have produced a significant effect on the local community, as measured by the differences in their socio-economic characteristics (age, income, education) compared with the resident population. The new residents are in the upper level of the income range and hence account for a portion of the revealed economic improvement in the area.

# CHAPTER III

## INCOME AND EMPLOYMENT IMPACT OF KEJIMKUJIK NATIONAL PARK ON THE STUDY AREA

### Gross Income Impact

#### 1. Model Theory

Our income impact model attempts to determine the income effect of the park on the local area by what may be termed a micro approach; in essence, to focus attention on the park's expenditure and to trace this expenditure through the local economy.

The total income effect of the park is seen as the sum of two components: (1) direct spending by the park, and (2) indirect spending resulting from this direct spending. The methodology employed is that of multiplier analysis, where, typically, a multiplier model evaluates the total effect as the sum of a geometric series.

In our particular case, we use three multiplier models corresponding to the three types of exogenous inputs the park injects into the local economy. These exogenous inputs, or direct spending by the park, are (1) wages and salaries paid out by the park to persons residing in the study area, (2) park purchases of local goods and services, and (3) purchases by park visitors. Summation of the corresponding three multiplier models gives us the total effect of the park's economic activity on the income of local residents.

In order to arrive at a clear understanding of the methodology employed, we will trace the steps in determining the total effect of the park's wage and salary expenditure. Consider the following sequence of events: (1) the park pays its employees; (2) these employees spend a proportion of this

income on local goods and services; (3) a proportion of these local sales are paid out as income to local employees and local employers; (4) a proportion of this income is then respent on local goods and services; (5) steps (3) and (4) are repeated, with an ever decreasing amount being respent. Our total effect is then the summation of these expenditure rounds.

Mathematically, we have:

$$Y_1 = Y_{01} + k_1k_2Y_{01} + k_1k_2\ (k_1k_2Y_{01}) + \ldots + k_1^n\ k_2^n\ Y_{01} + \ldots \qquad (1)$$

where $Y_1$ = total income effect of park's wage and salary payments to individuals residing in the area

$Y_{01}$ = amount of park's wage and salary payments to individuals residing in the area

$k_1$ = proportion of income earned by residents that is respent locally

$k_2$ = proportion of sales to local residents that is paid out as income to employees and employers

We note that (1) is the summation of a geometric series; hence we have:

$$Y_1 = \frac{Y_{01}}{1-k_1\ k_2} \qquad (2)$$

where

$$0 < \frac{1}{1-k_1\ k_2} < 1$$

The parameters we have to estimate are $k_1$, the proportion of income earned by residents that is respent locally, and $k_2$, the proportion of sales that is paid out as income to employees and employers. The actual estimating procedures used

will be discussed below. It is sufficient to note at this point that we have an aggregate model, and hence the parameters will represent a weighted average of the individuals in the relevant population.

In a similar manner, the total income effect can be derived for (1) park purchases of local goods and services, and (2) purchases by park visitors. In order to do this, however, we must determine the first round of expenditures. This differs from our preceding case, since we now have direct spending in terms of sales and net income to local residents.

The park's purchases of local goods and services represents payments to firms in the area that are in turn paid out to local residents as wages and employer income;[1] hence, the first round of income is the amount of income received as a result of these purchases; that is,

$$Y_{02} = k_3 Y_{12} \tag{3}$$

where

$Y_{02}$ = amount of income received by employees and employers

$k_3$ = proportion of park's purchases received as income by employees and employers

$Y_{12}$ = amount of park's purchases of local goods and services

Therefore, the total income effect of the park's local purchases is:

$$Y_2 = \frac{Y_{02}}{1 - k_1 k_2} \tag{4}$$

In analyzing a more complex environment, the income generated as the result of purchases by park visitors of local

---

[1] The small size of the area makes second and further round business purchases negligible.

goods and services could not be attributable solely to the park but would also be attributable to other recreational services in the area. Given the minimal existence of such activities in the study area, however, it is reasonable to include park visitor expenditures as part of the park's total income effect.

Park visitor purchases vary on an individual firm basis; hence, the first round of income generated by the purchases will be the corresponding income generated, weighted by visitor purchases. This is analogous to the income effect of the park's local purchases, and here we have:

$$Y_{03} = k_4 Y_{13} \qquad (5)$$

where $Y_{03}$ = total income generated by park visitor purchases

$Y_{13}$ = amount of park visitor purchases

$k_4$ = proportion of park visitor purchases received as income by employees and employers

Thus, the total income effect of park visitor purchases is given by

$$Y_3 = \frac{Y_{03}}{1 - k_1 k_2} \qquad (6)$$

## 2. Model Data and Estimation

The primary data bank for the income impact consists of (1) responses from business and services establishments, (2) the household survey, and (3) information received from the operations section at the Kejimkujik National Park Administration Office.

Data from the National Park's local operation section provided us with two of the direct income effects of the park: (1) wages and salaries paid out to persons residing in the area, and (2) park purchases of local goods and services. The data are presented in Table III-1. These data refer to the most

recently available expenditure items for the park operation and can be considered as an accurate reflection of the park's expenditure in the local area for 1973 even though the actual data refer to different time periods. Wages and salaries paid out by the park apply to the park's 1972-73 fiscal year and are actual but rounded to the nearest $100 for each individual. Local purchases represent those contracted for the 1973-74 period.

Table III-1

ESTIMATED PARK ANNUAL EXPENDITURE IN THE STUDY AREA BY SECTOR, 1973

| Sector | Expenditure |
|---|---|
| Wages and Salaries to Park Employees living in the Study Area | $ 345,615 |
| Purchases from Local Business and Services | |
| Grocery Store | $ 7,103 |
| Service Stations | $ 4,080 |
| Transportation | $ 14,639 |
| Other Business & Services | $ 1,417 |
| Area Households | $ 108 |

Source: Compiled from data supplied by Kejimkujik National Park, Operations Section.

a. Estimation of $k_1$

The household surveys were utilized to give the proportion of income earned that is respent on local goods and services ($k_1$). Respondents were asked to report their total yearly household income range and the proportion of this that is spent in the local area on goods and services. The income of the household was reported as an interval range. The household response was supplemented with actual figures where these were available.

For example, actual income level of retired households reporting the old age pension as the sole source of income was calculated from available government sources.[2] Also, the actual income for those park personnel reporting the National Park as the sole source of income was calculated from data supplied by the Kejimkujik National Park operations section. Table III-2 shows the proportion of household income spent on local goods and services.

As our estimate of $k_1$ ($\hat{k}_1$) we use the weighted average of all sampled households; that is,

$$\hat{k}_1 = \frac{\sum_{i=1}^{n} k_1 Y_1}{\sum_{i=1}^{n} Y_i}$$

where $k_1$ = that portion of income earned by local residents and respent locally

$k_i$ = reported portion of income that is spent locally for household i

$Y_i$ = mid-value of reported income range for individual i

Analysis of the sample households revealed a total estimated reported income of $52,496 and an expenditure by these households of $31,058 in the local area on local goods and services. Thus, we have:

$$\hat{k}_1 = \frac{31,058}{52,496} = .5916$$

Hence, of each dollar of income, local residents spend .5916 cents on local goods and services.

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[2] Health and Welfare Canada, *The Guaranteed Income Supplement*, Information Canada, Ottawa, 1973.

Table III-2

DISTRIBUTION OF HOUSEHOLD INCOME SPENDING
ON LOCAL GOODS AND SERVICES
1973

| Percent of Income Spent Locally | Absolute Frequency | Relative Frequency |
|---|---|---|
| 5 | 1 | 1.1 |
| 10 | 3 | 3.4 |
| 12 | 1 | 1.1. |
| 15 | 1 | 1.1 |
| 20 | 1 | 1.1 |
| 25 | 2 | 2.2 |
| 30 | 3 | 3.4 |
| 33 | 1 | 1.1 |
| 36 | 1 | 1.1 |
| 40 | 5 | 5.6 |
| 45 | 3 | 3.4 |
| 47 | 1 | 1.1 |
| 48 | 1 | 1.1 |
| 50 | 6 | 6.7 |
| 57 | 1 | 1.1 |
| 60 | 4 | 4.5 |
| 70 | 5 | 5.6 |
| 75 | 8 | 9.0 |
| 77 | 1 | 1.1 |
| 80 | 19 | 21.3 |
| 85 | 4 | 4.5 |
| 90 | 12 | 13.5 |
| 93 | 1 | 1.1 |
| 95 | 2 | 2.2 |
| 98 | 1 | 1.1 |
| 100 | 1 | 1.1 |

No. of no response 24
Mean 64.79
Standard Deviation 24.895

Source: Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park Area*, unpublished.

b. Estimation of $k_2$

In order to determine the total income impact of the park we must first ascertain how much is returned to local residents in terms of payments for services as the result of local purchases by residents. Essentially this involves three steps; identification of (1) total sales of business and services in the area, (2) wages and other income paid out to area residents from sales of the local business and services establishments, and (3) purchases by area residents.

The estimation of $k_2$ relies primarily on the response from those business and services surveys that constituted sales to the park and/or local residents. There are a total of 32 firms in the study area in this category. Of these, usable data were obtained from 25 firms, representing approximately 90 per cent of the total sales generated. A complete discussion of the quality of the response and estimation for the sales data, and a similar discussion of firm expenditures for wages and proprietor earnings, is presented in Appendix B.

Table III-3 presents sales data as well as sales destinations on a sector basis. Table III-4 presents firm expenditure data on a sector basis. These tables give the necessary input to enable us to arrive at an estimate of $k_2$. We have

$$\hat{k}_2 = \sum_{i=1} \frac{I_i}{S_i} \quad W_i$$

where $k_2$ = proportion of sales paid out to employers and employees as income from sales

$S_i$ = reported sales for sector i

$W_i$ = proportion of income spent by local residents in sector i

$I_i$ = amount of income paid out to employers and employees as income from sales in sector i.

Table III-3

SALES DESTINATIONS
BUSINESS AND SERVICE ESTABLISHMENTS
STUDY AREA
1972-1973

| Sector | Total Sales* ($) | National Park ($) | Park Visitor ($) | Other Non-Locals ($) | Locals ($) |
|---|---|---|---|---|---|
| Grocery Store | 603,283 | 7,103 | 50,927 | 55,211 | 490,040 |
| Service Stations | 475,693 | 4,080 | 93,366 | 64,727 | 313,520 |
| Tourist Services | 102,269 | - | 68,127 | 15,520 | 18,623 |
| Other Business & Services | 221,816 | 1,417 | 1,336 | 18,554 | 200,507 |
| TOTAL | 1,403,061 | 12,600 | 213,756 | 154,012 | 1,022,690 |

*Row totals may not add due to rounding.

Source: Institute of Public Affairs, *1973 Business and Service Survey Kejimkujik National Park*, unpublished.

Table III-4

INCOME EARNINGS AND EMPLOYMENT
BUSINESS AND SERVICE SECTOR
STUDY AREA
1972-1973

| Sector | No. of Employees | Annual Wage Bill | Working Employers | Annual Employer's Income |
|---|---|---|---|---|
| Grocery Store | 11 | 34,414 | 6 | 30,049 |
| Service Stations | 8 | 33,559 | 6 | 27,965 |
| Tourist Services | 22 | 16,876 | 7 | 15,354 |
| Other Business & Services | 6 | 22,600 | 8 | 54,742 |
| TOTAL | 47 | 107,449 | 27 | 128,110 |

Source: Institute of Public Affairs, *1973 Business and Service Survey, Kejimkujik National Park Area*, unpublished.

Hence our estimate of $k_2$ represents the summation of the individual sector's proportion of sales paid out to employers and employees as income from local sales appropriately weighted by the proportion of spending in each sector by local residents. For estimation purposes, the data have been aggregated to the sector level to minimize the sampling errors for individual firms.

The data required to estimate $k_2$ is given in Table III-5.

$$\hat{k}_2 = (.1069 \times 490,040) + (.1293 \times 313,520) + (.3151 \times 18,623) + (.3487 \times 200,507)/1,022,690$$

$$= \frac{52,385 + 40,538 + 5,868 + 69,916}{1,022,690}$$

$$= \frac{168,708}{1,022,690}$$

$$= .1650$$

Hence, a given dollar purchase by local residents results in .1650 cents being returned to local residents in the form of wage and other income payments.

Table III-5

SALES, INCOME AND EXPENDITURES
STUDY AREA FIRMS
1973

| Sector | Total Sales ($) | Employer & Employee Income ($) | Income as a Percentage of Sales (%) | Local Resident Purchases ($) | Purchases (%) |
|---|---|---|---|---|---|
| Grocery Store | 603,283 | 64,463 | 10.69 | 490,040 | 47.92 |
| Service Stations | 475,693 | 61,524 | 12.93 | 313,520 | 30.66 |
| Tourist Services | 102,269 | 32,230 | 31.51 | 18,623 | 1.82 |
| Other Business & Services | 221,816 | 77,342 | 34.87 | 200,507 | 19.61 |
| TOTAL | 1,403,061 | 235,559 | 16.79 | 1,022,690 | 100.00 |

Source: Institute of Public Affairs, *1973 Business and Service Survey Kejimkujik National Park Area*, unpublished.

## c. Estimation of first round income generation for park purchases of local goods and services

We have seen in Table III-1 a breakdown by sector of the park's purchases of local goods and services. The park's purchases consist of purchases from local business and services and from the transportation sector, which consists primarily of self-employed individuals providing trucking and other heavy equipment services to the park and forestry sector of the local area.

There are approximately ten (10) establishments of this type in the area. Business and services surveys were attempted for three of these, with only one providing data of any usability. Given the data collection problem, we have assumed the income generated by the park in the transportation sector to be the average of the reporting firms in the local business and services sector already discussed, or an average of .2260.

Our estimate of the first round of income generated by park purchases of local goods and services is the summation of the product of the income received from sales times the amount of park purchases for each sector. Again, we have aggregated to the sector level to minimize individual firm errors. Thus we have:

$$
\begin{aligned}
Y_{02} &= .1069 \times 7103 + .1293 \times 4{,}080 + .2260 \\
&\quad \times 14{,}639 + .3487 \times 1{,}417 + 108 \\
&= 759 + 528 + 3{,}308 + 494 + 108 \\
&= \$5{,}197
\end{aligned}
$$

Hence, the $27,347 worth of purchases by the park results in a direct income impact of $5,197.

d. Estimation of first round income generation for park visitor purchases

As noted previously, the first round income generated by park visitors is the summation of the park visitor purchases per firm times the income paid out per firm. As with park purchases, since data on a firm basis are subject to error, we have restricted ourselves to aggregate purchases and incomes at the sector level. Thus we have:

$$Y_{03} = .1069 \times 50,927 + .1293 \times 93,366 + .3151 \times 68,127 + .3487 \times 1,336$$

$$= 5,444 + 12,072 + 21,467 + 466$$

$$= \$39,449$$

Hence, the $213,756 worth of purchases by park visitors (Table III-3) results in a direct income impact of $39,449.

3. Income Impact Model Solution

Having discussed the data sources we are now in a position to determine the total income impact of the park, which is the summation of the total impacts resulting from the three exogenous effects generated by the park.

The previous section presented the data and our estimates of the income generated by: (1) park wage and salary payments, (2) park purchases of local goods, and (3) park visitor purchases, as well as estimates of $k_1$, the amount of income respent in the local area by residents per dollar of income received, and $k_2$, the amount of the income received by local residents per dollar purchase of local goods by local residents. Recalling our general model we have

$$Y_1 = \frac{Y_{01}}{1 - k_1 k_2} \qquad (2)$$

where $Y_1$ = total income from exogenous effect 01

$Y_{01}$ = direct impact of exogenous effect 01

Utilizing our data we have

$$Y_1 = 1.108 \cdot Y_{01}$$

Hence a dollar of income received by local residents results in a total income of $1.108 being created in the local area.

Table III-6 sets out the total income impact of the park. The values were computed by inserting the direct income impact from the three exogenous forces in the above multiplier model.

Table III-6

INCOME IMPACT OF KEJIMKUJIK NATIONAL PARK
1973

| | Direct | Indirect | Total |
|---|---|---|---|
| Wage and Salary Payments | $345,615 | $37,326 | $382,941 |
| Park Purchases | 5,197 | 561 | 5,758 |
| Park Visitor Purchases | 39,449 | 4,260 | 43,709 |
| TOTAL | $390,261 | $42,147 | $432,408 |

Table III-6 reveals that direct wage and salary payments by the park account for some 79.9 per cent of the total income impact of the park. The data supplied by the Operations Section of Kejimkujik National Park show that full-time employees accounted for $178,100 of the $345,615 paid out as wages and salaries by the park. Of this $178,100, 63.1 per cent was paid to non-local park personnel brought into the area by National Parks and 36.9 per cent was paid to local residents. The remaining $165,515 was paid to part-time employees. Of this, some 92.5 per cent went to local residents.

The small size of the regional income multiplier reduces the size of the error, given accurate direct income spending figures. The large value for the wage and salary component,

which represents an accurate figure, reinforces this conclusion. The effect of the exclusion of some firms from the analysis is similarly reduced by the low multiplier figure. Given the assumptions of the model, the total income impact of the park of $432,408 should represent an accurate reflection of the actual state of affairs within a ± 20 per cent range.

## Gross Employment Impact

Having established the gross income impact of the park, we are now in a position to estimate total employment impact. Employment impact can be divided into (1) direct employment, defined as employment in the park itself, and (2) indirect employment, defined as employment that is created in other firms as a result of the park's sales generation.

The data on direct employment were provided by the Kejimkujik National Park Operations Section. For the 1972-73 fiscal year a total of 99 persons were employed at the park; 22 were classed as full-time, and 77 were on a part-time basis. Of the full-time employees, 13 were non-local residents, and 9 were local residents. Twenty-six of the part-time employees were non-local residents, the majority of these being summer students.

The indirect park employment effect is estimated by assuming that the ratio of park indirect employment to total local business and services employment is the same as the ratio of park-generated sales to total business and services sales; that is,

$$\frac{E_p}{E_T} = \frac{S_p}{S_T} \qquad (1)$$

where $S_p$ = Park-generated sales

$S_T$ = Total local business and service sales

$E_p$ = Park indirect employment

$E_T$ = Total local business and service employment

The estimation of park-generated sales is as follows:

$$\begin{aligned}\text{Park-Generated Sales} &= \text{Direct Sales} + \text{Indirect Sales}^3 \\ &= 12{,}600 + 213{,}756 + (345{,}615 + 5{,}197 \\ &\quad + 39{,}449) \cdot .5916 \cdot 1.108 \\ &= \$482{,}169\end{aligned}$$

Total area sales of the business and services sector are given in Table III-3, which shows a value of $1,403,061. Area employment figures presented in Table III-4, show that there were 74 persons employed in the business and services sector. Sales and employment figures for the transportation sector were omitted from the analysis due to lack of data. Given the small amount of sales and employment that this represents in terms of the park, this is not considered a serious omission.

Solving (1) we have:

$$E_p = \frac{S_p}{S_T} \cdot E_T$$

$$= \frac{482{,}169}{1{,}403{,}061} \cdot 74$$

$$= 25.4$$

Hence the park generated indirect employment of some 25 persons. As with the income input of the park, the major employment contribution of the park is its direct effect.

As an alternative to this empirical derivation, we asked area households the extent to which employment of members of their families was the result of the park's location in the area. The randomly sampled households reported a total of four members that they felt were employed as an indirect result of the park location in the area.

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[3]Indirect sales calculation is directly analogous to the calculation of the income generation of the previous section.

Assuming a population of 1,256 persons (i.e., the 1971 community population plus an assumption of 50 persons for the two unreported communities), and the sample labour force participation rate of 40.2 per cent, we estimate the study area labour force as 505 persons. The household survey conclusion that four persons are working in the area as an indirect result of the park represents 3.3 per cent of the sample population. This gives us a figure of 16.6 individuals working in the area as an indirect result of the park, which provides a useful crosscheck on our empirical derivation. For further analysis we will adopt our derived figure as the gross employment impact of the park, since it is the more soundly derived of the two figures.

From this we conclude that the total employment impact of the park is 113 persons. The direct impact is 99 persons, 22 on a full-time basis and 77 of a part-time basis. Assuming that the park's indirect employment impact has the same ratio of part-time to full-time as the total local study area employment, we find that the 25 employees represent 14 full-time and 11 part-time jobs.

## Net Income and Employment Impact

The previous sections have provided us with estimates of the gross income and employment impact of the National Park. This section deals with estimates of income and jobs lost as a result of the park location. We define the total income and employment lost as the total impact resulting from the displacement of firms at the time of the location of the park.

At the time of the location of the park there were three tourist facilities in the park area: (1) Ked-ge Lodge, (2) Merrymakedgie Lodge, and (3) Rodger's Cabins. These facilities represent the major income-generating activities in the park area before the establishment of the park. Unfortunately,

business surveys were not completed for these firms in 1964 and the relevant data had to be collected in 1973. Usable wage and salary data were collected for Ked-ge Lodge and Merry-makedgie Lodge. The Rodger's Cabins establishment was similar to these in size and, for lack of a better alternative, the means of the wage and salary and employment data for the first two were used as estimates for the missing establishment.

Total wage and salary payments by the three establishments are considered as an exogenous income source. Other exogenous components are very likely negligible. Using the multiplier of 1.108 computed in the previous section and the estimated total wage and salary payments for the pre-park establishments which was computed as $45,903, you have a total income impact of $50,860.

The total employment of the pre-park establishments was computed as 33, all on a part-time basis. Following the methodology outlined in the previous section and using the total sales and employment figures given there, we find that the total income impact represents $30,089 worth of sales to the local area, which in turn implies an indirect employment impact of 2 employees.

Hence we estimate that the location of the park resulted in an income loss of $50,860 and an employment loss of 35 part-time jobs. These estimates are of necessity cruder than those of the previous section, but nonetheless should be of an acceptable order of accuracy given the low multiplier used.

Viewed as the immediate effect of the location of the park, these income and employment estimates must be subtracted from the gross figures to determine the net effect of the park in terms of income and employment on the local area. Allowing for this income and employment loss in the study area,

we find that the park has a net income impact of $381,548 and a net employment effect of 30 full-time and 53 part-time jobs.

# CHAPTER IV

# HOUSEHOLD ATTITUDES AND AREA PARK USE

The previous chapter has quantified the extent to which the park has affected income and employment in the study area. It is also important to determine the effect of the park as perceived by the study area households.

## Household Attitudes

The household survey asked several questions concerning how the study area felt respecting the park operation; the survey response is presented in Table IV-1. The 112 households responding to this question indicate that the study area households are overwhelmingly in favour of the park in the area and feel that it has a favourable effect on income and employment. One cannot, of course, infer from the data the extent to which the area households are satisfied with the park; the data simply show that the majority of the households feel that the good effects of the park have outweighed the detrimental effects. In fact, the high response rate in favour of the park could indicate that area residents have no strong views concerning the existence of the park in the area; nonetheless, the highly favourable response rate is satisfying from the point of view of park planners. In 1964, 84.4 per cent of the study area households stated that they were in favour of the park. Hence the 1973 results show a confirmation of the expectations of the 1964 area households.

In addition to specific quantifiable information on household attitudes, respondents were asked if they had any comments on the park's operations and its role in the community. No in-depth analysis of these comments has been done, since it is felt that the data are better appraised on an individual

basis by National Parks officials. It is interesting to note, however, that several respondents complained of poor hiring practices and others felt that park personnel could have better public relations with the community. Other comments included a desire for more campsites in the park area and for more full-time employment.

Table IV-1

HOUSEHOLD SURVEY RESPONSE TO PARK EFFECTS, STUDY AREA - 1973

| Question | Response | | |
|---|---|---|---|
| | Favourable | Unfavourable | No Effect |
| Do you think that the establishment and operation of the national park has a favourable or an unfavourable effect on income and employment in the surrounding community? | 107 | 4 | 1 |
| | Yes | No | Abstain |
| The national park has been in the community for approximately nine years now. If you had the decision to determine if the park should locate in the area how would you vote? | 100 | 9 | 3 |

Source: Institute of Public Affairs, *1973 Household Survey Kejimkujik National Park Area*, unpublished.

## Park Use by Area Households

Besides the economic benefits with respect to income and jobs, the establishment of the park also provides an opportunity for households in the study area to enjoy its recreational benefits. This study has not attempted to provide a dollar measurement of

the value of this consumption for the area households, which would require more data and theoretical development, though one must recognize that this is an additional benefit to the local area.

Prior to the establishment of the park, the area was used primarily for hunting and fishing. An indication of the net use of the park is provided by an analysis of post- and pre-park use of the area. Tables IV-2 and IV-3 show the distribution on an hourly basis of park use by households using the park area in 1973 and 1964 for those respondents stating that they lived in the area in 1964. A comparison of the tables shows that the area is now heavily utilized in relation to its pre-park use. In 1964, only 31 of the respondents used the area, with an estimated total use time of 14,377 hours; in 1973, 76 households used the area, with an estimated total use time of 24,190 hours. The 1964 respondents had a mean use time of 463.79 hours; the 1973 respondents, 318.29 hours. Thus, the data indicate that, as a result of the location of the park, the area is now used by more local residents, though their average use time is less.

The data, of course, give only an indication of use, since the 1964 information was obtained after a lapse of nine years. Regression analysis was attempted by regressing park use on household size and age of the household head, which could have been used to separate out this effect in determining the "real" increase in use of the area; unfortunately the results were unsatisfactory.

Table IV-2

DISTRIBUTION OF 1973 HOURLY PARK VISITS
HOUSEHOLDS LIVING IN THE AREA

| Hours Spent At Park | Absolute Frequency | Relative Frequency | Cumulative Frequency |
|---|---|---|---|
| less than 100 | 32 | 42.1 | 42.1 |
| 100-200 | 15 | 19.7 | 61.8 |
| 200-300 | 2 | 2.6 | 64.4 |
| 300-400 | 8 | 10.5 | 74.9 |
| 400-500 | 33 | 8.0 | 78.9 |
| 500-600 | 1 | 1.3 | 80.2 |
| 600-700 | 3 | 8.0 | 84.2 |
| 700-800 | 2 | 2.6 | 86.8 |
| 800-900 | 0 | - | - |
| 900-1000 | 2 | 2.6 | 89.4 |
| 1000 or greater | 8 | 10.5 | 99.9 |
| TOTAL | 76 | 99.9 | 99.9 |

STATISTICAL SUMMARY:

| | |
|---|---|
| Mean | 318.29 |
| Mode | 40.00 |
| Standard Deviation | 408.09 |

Source: Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park*, unpublished.

Table IV-3

DISTRIBUTION OF 1964 HOURLY VISITS TO PARK AREA HOUSEHOLDS LIVING IN THE AREA

| Hours Spent In the Area | Absolute Frequency | Relative Frequency | Cumulative Frequency |
|---|---|---|---|
| less than 100 | 9 | 29.0 | 29.0 |
| 100-200- | 5 | 16.1 | 45.1 |
| 200-300 | 2 | 6.5 | 51.6 |
| 300-400 | 4 | 12.9 | 64.5 |
| 400-500 | 3 | 9.7 | 74.2 |
| 500-600 | 2 | 6.5 | 80.7 |
| 600-700 | 2 | 6.5 | 87.2 |
| 700-800 | - | - | 87.2 |
| 800-900 | - | - | 87.2 |
| 900-1000 | 1 | 3.2 | 90.4 |
| 1000 or greater | 3 | 9.7 | 100.1 |
| TOTAL | 31 | 100.1 | 100.1 |

STATISTICAL SUMMARY:

| | |
|---|---|
| Mean | 463.79 |
| Mode | 360.00 |
| Standard Deviation | 654.54 |

Source: Institute of Public Affairs, *1973 Household Survey, Kejimkujik National Park*, unpublished.

# CHAPTER V

## SUMMARY AND CONCLUSIONS

It has not been the purpose of this study to do a cost-benefit analysis as to the desirability of alternative uses of the park area; that is, recreational versus forestry in terms of benefits and costs to area residents. Rather, our purpose has been to measure the actual socio-economic impact of Kejimkujik National Park on the local area. The approach taken has been to examine net benefits of the park, primarily in terms of income and employment generated in the area. The data base consisted of household interviews and business and services establishment interviews, the bulk of which were conducted during the summer of 1973. The data and study area were defined to be compatible with a benchmark study completed in 1965 by the Institute of Public Affairs entitled *Economic Survey of Kejimkujik Park Area in Nova Scotia**. The study has shown that the park, though important to the area, has not been a major generator of growth. There has been little economic structural change in the area, and the population has remained fairly stable, indicating no heavy in-migration to the area. A large number of jobs at the park are on a part-time basis, which does not make for a stable economic climate.

An analysis of the household surveys indicates that the study area is now better off than it was in 1964, but 1964 households have shared little in this improvement. The major change in the area has been the establishment of the park. The park brought with it an influx of park personnel. These new residents represent only 3.4 per cent of the existing population but differ from the local residents in their socio-

*Unpublished.

economic profile; i.e., higher income and a higher level of formal education. They are in the upper level of the income range and hence account for a portion of the revealed economic improvement in the area.

The main focus of the study has been to determine the local income generated by the park. An analysis shows that a dollar paid out by the park as income to the local area results in a total income effect of 1.108 dollars. In 1973, Kejimkujik National Park produced a total gross income impact of $432,408. Further analysis shows that the location of the park resulted in an income loss of $50,860. Hence the net income effect of the park is $381,548. Translating this into jobs gives a net employment impact of 30 full-time jobs and 53 part-time jobs in the area.

An attempt to determine feelings concerning the park indicates that households are largely in favour of the park; the majority stated they would vote to have the park locate in the area.

In conclusion, it was found that to date the park has not had the developmental impact in the area that was initially anticipated; that is, in terms of being a growth pole for the area's development. It does, however, represent a major socio-economic influence, and existing households generally view favourably its establishment in the area.

# REFERENCES


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# APPENDIX A

# SURVEYS

SURVEY OF HOUSEHOLDS, KEJIMKUJIK LAKE AREA, 1973

THE INFORMATION CONTAINED IN THIS REPORT IS STRICTLY CONFIDENTIAL

A. Identification No. _____

1. Family Name _____

2. Mailing Address _____

3. How many persons are there in the family? _____

4. How many persons in the family live at home? _____

   Away from home? _____

5. Did this household exist in its present form (i.e. size, location) in 1964?

   Yes_____ No_____

6. If no, please specify changes:

   location changes - moved in from outside area A ___

   - moved within area A ___

   size changes - no. new births ___

   - no. family members returned ___

   - no. family members left ___

   Other _____

   _____

   _____

7. | Household Member | Sex | Age | Marital Status | Relation to Household Head | Education |
   |---|---|---|---|---|---|
   | 1. | | | | | |
   | 2. | | | | | |
   | 3. | | | | | |
   | 4. | | | | | |

8. Are there any other persons living in this household?

Yes___ No___ No. of persons___

B. Employment History

(To be completed for each eligible labour force member in the household)

Job History from June 1972 to June 1973

Respondent No. _____

Employer _____

Occupation _____

Job Location: Area A Area B Other Areas Other (specify)

_____

Hours per week _____

Length of Employment (dates) _____

Job type: Part-time Seasonal Full-time Other (specify)

_____

C. Effects of National Park

1. Would you please indicate the extent of your family's use of the park?

| | No. of visits | Average length of stay (days) |
|---|---|---|
| 1973 | _____ | _____ |
| 1964 (pre-park) | _____ | _____ |

2. (a) Do you think that the establishment and operation of the national park has a favourable or an unfavourable effect on income and employment in the surrounding community?

Favourable_____ Unfavourable_____

(b) State reasons briefly _____

_____

3. (a) Have you or a member of your family done, attempted to do, or plan to do in the near future, any of the following:

| | Have Done | Attempted | Plan |
|---|---|---|---|
| 1. Act as a guide in the park | _____ | _____ | ____ |
| 2. Work in the park in some other capacity | _____ | _____ | ____ |

Please state _____

_____

| | | | |
|---|---|---|---|
| 3. Rent rooms or provide meals for passing tourists | _____ | _____ | ____ |
| 4. Establish or operate a hotel, restaurant, or any other type of tourist accommodations | _____ | _____ | ____ |
| 5. Cater to tourists in some other way, such as by operating a general store, confectionary store, gasoline station or by making handicrafts or by hooking rugs. | _____ | _____ | ____ |

Please state _____

_____

3. (b) Please explain stage of planning and/or what problems you have encountered (where applicable)

_____

_____

4. (a) Do you feel that the establishment of the national park has affected your household in a direct way by creating employment which enabled household members to

a) remain in area b) return to area

State number: a)_____ b)_____

b) Has this been accomplished by:

a) employment at the park

b) indirect employment generated by the park operation

State number: a)_____ b)_____

5. The national park has been in the community for approximately nine years now. If you had the decision to determine if the park should locate in the area how would you vote?

Yes_____ No_____ Abstain_____

6. Do you have any other comments on the park operation and its role in the community?

_____

_____

_____

_____

THE INFORMATION CONTAINED IN THIS REPORT IS STRICTLY CONFIDENTIAL AND WILL NOT BE MADE PUBLIC OR PUBLISHED IN ANY WAY THAT MAY PROVE DETRIMENTAL TO THE RESPONDENT'S INTERESTS.

BUSINESS AND SERVICE ESTABLISHMENTS SURVEY
KEJIMKUJIK LAKE AREA
1973

A. IDENTIFICATION

1. Type of business _____

2. Location and mailing address _____

_____

3. Type of business organization (Proprietorship, Partnership, or Company)

_____

4. Name and position of respondent _____

_____

5. Year establishment started _____

6. Year establishment began operating under present proprietor: _____

7. Fiscal year of firm, month ending _____

8. Approximately how many (a) Hours/Day____ are you open?

(b) Days/Week____

(c) Weeks/Year____

(d) If open less than twelve months, which months are you open?

J F M A M J J A S O N D

B. EMPLOYMENT

1. How many people are working in your establishment at the present time?

_____

2. What part of this employment is:

A. Full-time_____ Hours per week_____ Weeks per year_____

B. Part-time_____ Hours per week_____ Weeks per year_____

3. How many of your employees are MALE_____ FEMALE_____

4. Please specify how many of your employees live in:

Area 'A'_____ Area 'B'_____ Other_____

5. Would you please specify the wages paid for the current year's operation. (Check that the respondent includes himself)

| | Amount of Wages Paid |
|---|---|
| A. Full-time - Male | _____ |
| - Female | _____ |
| B. Part-time - Male | _____ |
| - Female | _____ |

| C. Total Employment | Lowest Month | | Highest Month | |
|---|---|---|---|---|
| | Month | # | Month | # |
| 1968 | _____ | _____ | _____ | _____ |
| 1969 | _____ | _____ | _____ | _____ |
| 1970 | _____ | _____ | _____ | _____ |
| 1971 | _____ | _____ | _____ | _____ |
| 1972 | _____ | _____ | _____ | _____ |

6. To what extent do you think your employment policy is affected by the seasons?

_____

_____

(a) To what extent would you attribute this to the national park?

(a) primarily
(b) some
(c) not very much
(d) not at all

C. SALES, PURCHASES, INCOME FROM OPERATIONS, AND VALUATION OF THE BUSINESS

1. Would you give me some information concerning the volume by principal commodities and value of your weekly, monthly, or yearly sales? (If possible, acquire the information that each business establishment is required to submit to the Dominion Bureau of Statistics.)

   SALES: _____

   _____

   _____

2. In what month(s) are your best sales? _____

   Value _____

3. In what month(s) are your worst sales? _____

   Value _____

3. In what month(s) are your highest purchases? _____

   Value _____

   In what month(s) are your lowest purchases? _____

   Value _____

4. State briefly the reasons for this.

   Sales _____

   Purchases _____

5. Considering your total sales this past year as going to two types of customers: those using the national park and those not using it. Estimate your sales between these two groups.

   (a) Percentage of total sales sold to park users _____.

   (b) Percentage of total sales sold to non-park users _____.

6. Considering only your sales to those not using the national park and considering that these go to either local residents or non-local residents, estimate your sales between these two groups.

   (a) Percentage of total sales to local residents_____.

   (b) Percentage of total sales to non-local residents _____.

7. What types of products do you primarily sell to those using the parks? And to what extent do park users account for your total sales of these products?

| Type of Product | % of Product Sales |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

8. Are most of your sales to individuals, companies, or to some other type of institution (if other than individuals specify).

_____

_____

_____

9. Please state the amount, type and location of sales to other businesses and institutions.

| | Type | Amount ($) | Name and Address of Supplier |
|---|---|---|---|
| 1. | _____ | _____ | _____ |
| 2. | _____ | _____ | _____ |
| 3. | _____ | _____ | _____ |
| 4. | _____ | _____ | _____ |

10. Would you mind looking at this card and indicating the letter that is most representative of your yearly taxable income from business operations?

| | |
|---|---|
| A. $100 to $500 | G. $5000 to $10,000 |
| B. $500 to $1000 | H. $10,000 to$20,000 |
| C. $1000 to $1500 | I. $20,000 to $40,000 |
| D. $1500 to $2000 | J. $40,000 to $60,000 |
| E. $2000 to $3000 | K. $60,000 to $80,000 |
| F. $3000 to $4000 | L. Over $100,000 |

11. Would you say that your profits fluctuate "unusually" from year to year?

Yes _____ No_____

12. Do you attribute your business profits to:

1. The nature of the business
2. An advantageous location
3. Efficiency
4. Personal goodwill
5. Some combination of the above (specify)_____
6. Some other reasons (specify)_____

13. With respect to your yearly business profits or taxable income, would you say you are:

Extremely dissatisfied _____
Dissatisfied _____
Satisfied _____
More than satisfied _____
Extremely satisfied _____

14. Do you think you could estimate the value of your business as a going concern at the present time?

Yes _____ No _____

15. What factors do you deem to be most relevant in valuing your business?

1._____

2._____

D. THE FINANCING OF THE BUSINESS

1. Approximately how much money did you require to start the business?

_____

2. How was this initial money raised? (eg. personal savings, kinship relations, parent company, government, bank, some financial institution).

_____

3. Would you say that you found it difficult to find the money to start your business?_____

4. If so, why?_____

_____

4. Do you find it difficult at present to find the money to continue your business operations?_____

Why?_____

_____

5. To what extent do you presently depend on borrowed money?

1. Not at all.
2. 1/4 of your assets.
3. 1/2 of your assets.
4. 3/4 of your assets.
5. To the total extent of your assets.

6. Would you mind indicating specifically the extent of your borrowed money?_____

7. Is your financing or borrowing primarily for increasing your fixed assets? _____ or for current business operations?_____ or some combination (state proportion of these).

8. Are there any other problems or peculiarities of the financing of your business? _____

_____

PART II QUESTIONS RELATING TO THE ANTICIPATED EFFECTS OF THE NATIONAL PARK ON THE BUSINESS

1. Do you think that the national park has had an effect on your business operations?

   Yes_____ No_____

   If yes, how?

   (a) Employment _____ How?_____

   (b) Purchases _____ How?_____

   (c) Sales _____ How?_____

   (d) Profits _____ How?_____

   (e) Other _____ How?_____

2. Do you think that the national park will have an economic effect on your business operations in the next five years?

   Yes_____ No_____

   If yes, how?

   (a) Employment _____ How?_____

   (b) Purchases _____ How?_____

   (c) Sales _____ How?_____

   (d) Profits _____ How?_____

   (e) Other _____ How?_____

3. At present, do you think that the local area is abundant or deficient in services or service establishments that will be required by the operation of the parks?

   Abundant_____ Deficient_____

   Why?_____

4. Where and in what manner do you think improvements might or should be made?

   _____

5. (a) Are you planning to engage in any of the improvements?

_____

(b) Please specify the present state of planning (i.e. funds acquired, construction contracted, etc.).

_____

_____

_____

6. Do you think that the establishment and operation of the national park has any effect on the method, type, ease or difficulty of business financing in the area?_____

Why?_____

_____

_____

7. Do you have any comments concerning the role of the national park in the community?

_____

_____

_____

_____

_____

# APPENDIX B

# DISCUSSION OF
# BUSINESS AND SERVICE ESTABLISHMENTS DATA

Appendix B provides a discussion of the data quality and estimation procedures for the sales and expenditure data used in determining the income impact of the park. Tables III-3 and III-4 from the text are reproduced here as Tables B-1 and B-2 for ease of discussion.

## Discussion of Sales Data

The grocery store sector represents fairly accurate sales data. For the 5 firms in question, 3 gave accurate monthly sales from September 1972 to August 1973, 1 gave an accurate yearly sales figure, and 1 gave a yearly estimate. The data on sales destination, excluding the National Parks figures, necessarily represent a lower order quality of data, since they are based on the subjective feelings of the respondents and hence open to some error. A useful crosscheck for the park visitor spending figures would be a survey of spending completed by the park visitors themselves. This crosscheck was not conducted, due to the time and financial constraints of the study. Nonetheless, the data are felt to be accurate for the purpose at hand. The data relating to sales to the National Park were obtained directly from National Parks officials and can be considered as accurate.

The service station sector also represents fairly accurate sales data. Of the 5 firms investigated, 2 gave data on a monthly basis (1 for 11 months, 1 for 8 months), 1 gave a yearly estimate, and 2 gave monthly high and low figures. The annual sales estimates for the firms reporting monthly data were obtained by averaging the closest 2 months in the case of the firm reporting an 11-month series; for the firm reporting 8 months of data, the remaining 4 months were estimated by assuming the firm had the same ratio of monthly sales to total sales as the firm reporting 11 months. For the 2 firms reporting monthly high and low figures, a simple average of the 2

Table B-1

SALES DESTINATIONS, BUSINESS AND SERVICE ESTABLISHMENTS
STUDY AREA, 1972-1973

| Sector | Total Sales* ($) | National Park ($) | Park Visitor ($) | Other Non-Locals ($) | Locals ($) |
|---|---|---|---|---|---|
| Grocery Store | 603,283 | 7,103 | 50,927 | 55,211 | 490,040 |
| Service Stations | 475,693 | 4,080 | 93,366 | 64,727 | 313,520 |
| Tourist Services | 102,269 | - | 68,127 | 15,520 | 18,623 |
| Other Business & Services | 221,816 | 1,417 | 1,336 | 18,554 | 200,507 |
| TOTAL | 1,403,061 | 12,600 | 213,756 | 154,012 | 1,022,690 |

*Row totals may not add due to rounding.

Source: Institute of Public Affairs, *1973 Business and Service Survey Kejimkujik National Park*, unpublished.

was taken to compute the yearly sales figure. A check of the accuracy of this approach was made via the firm reporting an 11-month series. The test revealed that the figure so obtained was an accurate representation for the purposes at hand. Comments with respect to the sales destination figures parallel those of the grocery store sector.

The tourist services sector consists of those firms that sell primarily to park visitors; hence the firms are classified according to destination of sales, whereas the previous two sectors are classified according to commodity type. For the 8 firms reporting in this sector, the annual sales figures for 7 represent yearly estimates given by the respondents, and 1 represents an accurate yearly figure. The tourist services, of course, represent an important component in analyzing the park's income impact. Unfortunately, 2 firms supplied data of an unusable nature. The firms are Maple Lane Farms (a campsite), and an area golf course. Neither operation is of a significant size, but the exclusion of these does weaken our results.

The other business and services establishments sector comprises 8 firms. Sales data in this category, with one exception, represent yearly estimates on the part of the respondents; the exception provided monthly sales data. There were 4 firms excluded from this sector due to lack of data: (1) Nova Scotia Liquor Commission store, (2) a general store, (3) a small canteen, and (4) a barber shop. These operations are small, but our results will represent a lower figure because they have to be excluded.

### Firm Expenditure Data

In general, the data on firm expenditure shown in Table B-2 represent a poorer quality than do the sales data. This is

particularly true for employee earnings, which were reported on an interval basis and had a poor response rate. The employment figures can be considered accurate for all sectors.

Table B-2

INCOME EARNINGS AND EMPLOYMENT, BUSINESS AND SERVICE SECTOR STUDY AREA, 1972-1973

| Sector | No. of Employees | Annual Wage Bill | Working Employers | Annual Employer's Income |
|---|---|---|---|---|
| Grocery Store | 11 | 34,414 | 6 | 30,049 |
| Service Stations | 8 | 33,559 | 6 | 27,965 |
| Tourist Services | 22 | 16,876 | 7 | 15,354 |
| Other Business & Services | 6 | 22,600 | 8 | 54,742 |
| TOTAL | 47 | 107,449 | 27 | 128,110 |

Source: Institute of Public Affairs, *1973 Business and Service Survey, Kejimkujik National Park Area*, unpublished.

For the grocery store sector the annual wages paid can be considered as accurate. For the 4 firms reporting, all gave annual wage figures as reported on account records of the establishments. The employer earnings were less satisfactory. Only 2 firms submitted a response to the taxable income category. To arrive at estimates for the other 2 firms, the mean of the reported range for the 2 respondents was used. The Co-operative Store was excluded from the employer earnings calculation by definition.

The annual wage bill for the service station sector was computed from hourly and weekly wage figures and the hours

worked for the 4 applicable firms. As with the grocery store sector, only 2 firms reported taxable income categories. Estimates for the remaining 3 firms were made by assuming the mean of the ratio of taxable income to sales of the reporting firms.

Of the 5 firms reporting employees in tourist related services, 1 presented accurate yearly data; the remaining 4 responded with yearly estimates or hourly estimates which were then multiplied by hours worked to give the yearly figures. The employer figures were reported on a category basis for 5 firms.

In other business and services establishments sector, 3 firms were eligible to submit wage data. One of these had to be estimated from another firm, whereas 2 provided yearly estimates. Four firms gave taxable income figures. The remaining 3 were derived by assuming the grocery store return percentage.

Comments with respect to firms excluded in the sales data also apply to the firm expenditure data. We have noted in the above discussion that the expenditure data represent in general a poorer quality than other data presented. It is noteworthy that the average income for business service operators in Nova Scotia for 1971 was $8,126.[1] Thus, estimated figures would appear to be accurate for the purpose at hand. This is particularly true since, in the analysis, we have aggregated to the sector level to minimize errors.

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[1] Department of National Revenue, Taxation, *Taxation Statistics, 1973 Edition*, Information Canada, Ottawa.