
THE IMPORTANCE OF WILDLIFE TO CANADIANS

Highlights of the
1981 National Survey

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THE IMPORTANCE OF WILDLIFE TO CANADIANS

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Highlights of the 1981 National Survey

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Preface

This survey was carried out by Statistics Canada under the sponsorship of the Federal-Provincial Wildlife Conference. It shows the considerable importance Canadians attach to wildlife and the significant role played by wildlife resources in the national and provincial economies. The results of this survey will have important implications for managers involved in protecting wildlife and their habitats, developing resource policies, planning programmes, and in evaluating current wildlife programmes and services.

This project represents the combined efforts and expertise of wildlife management agencies in the federal government, the provincial and territorial governments and several private non-governmental agencies. Such an undertaking would not have been possible without the unique cooperative efforts of the agencies involved, enabling information useful to the 18 sponsors and other concerned researchers to be gathered. However, the ultimate beneficiaries of the study will be the wildlife and people of Canada.

Summary

A comprehensive survey conducted by Statistics Canada in 1982 and sponsored by federal, provincial and territorial government wildlife agencies and a number of non-government groups revealed that Canadian wildlife resources were highly valuable to the nation. The study, which questioned approximately 100,000 Canadians from all regions and walks of life, gauged the importance of wildlife through questions on attitudes toward wildlife populations, participation in a number of wildlife-related activities, and related expenditures in 1981.

Wildlife-related activities emerged as one of the most prevalent forms of recreation undertaken by Canadians. In 1981, the majority of the Canadian population 15 years of age and over was involved in some form of wildlife-related activity. Participants provided an important stimulus to the Canadian economy by spending an estimated \$4.2 billion on wildlife-related activities. This estimate excluded the commercial value of wildlife.

About 83.8 percent of the Canadian population participated in some form of indirect wildlife-related activity in 1981. In other words, an estimated 15.5 million adult Canadians engaged in such activities as watching wildlife films or TV programmes, reading wildlife books or magazines, visiting game farms, zoos, aquariums, natural science museums, purchasing wildlife art, crafts or posters and joining wildlife organizations. An estimated \$119.4 million were spent on wildlife organizations in the form of donations or membership fees. This expenditure amounted to an average of \$107 per contributor.

In 1981 some 12.3 million Canadians fed, watched, studied or photographed wildlife around their home or cottage. An estimated \$196.9 million were spent on these activities, with participants averaging expenditures of \$16 per year. Canadians spent a total of 754.4 million days engaged in these activities, averaging 61.2 days per year.

Approximately 8.1 million Canadians encountered wildlife during trips or outings taken primarily for business or pleasure. About 92.5 percent of them declared that such encounters increased the enjoyment of their trip or outing significantly. These unplanned encounters with wildlife resulted in the spending of a significant amount of extra money during these trips, averaging \$10 per participant and totalling approximately \$85 million in 1981.

Many Canadians made a special trip or outing in 1981 for the primary purpose of observing, photographing, feeding or studying wildlife. As many as 1 out of every 5 Canadians undertook such trips and spent a total of \$2.1 billion. The average participant spent about \$589 and 15.8 days on these trips during the year.

Hunting attracted 1 in every 10 Canadians in 1981. Participants spent an estimated \$1.2 billion or about \$602 per hunter. A total of 32.2 million hunting days were reported, with the average hunter spending about 17.9 days hunting during the year.

The survey also revealed that Canadians value the conservation of wildlife. About 80 percent stated that maintaining abundant wildlife was important to them. Canadians had similar feelings toward preserving endangered species: 82 percent indicated it was important. This highly favourable predisposition toward wildlife was reflected in the interest expressed by Canadians to participate in a number of wildlife-related activities. A significantly higher proportion of respondents indicated interest in participating in hunting and non-hunting activities than actually did so. These and other similar findings may have a significant impact on the future development of wildlife management across the country.

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Introduction

Wildlife has long been regarded as a great Canadian heritage and as one of Canada's valuable natural resources. Federal and provincial governments have been charged with the stewardship of this precious resource and have the legal responsibility for preserving, enhancing and managing it for the present and future benefit of Canadians.

It is often acknowledged that wildlife has a direct impact on millions of Canadians, enhancing tourism and contributing significantly to the economy. Although the significance of wildlife is often mentioned, there are few data that actually quantify the nature and extent of its value.

Wildlife management agencies across Canada recognized the need to better understand the nature, extent and importance of the interactions between wildlife populations and human populations. A better understanding of these interactions was required to aid management agencies in the planning and evaluation of wildlife policies and programmes and in the protection of wildlife habitats.

In order to begin to address the concerns of wildlife conservation, member agencies of the 44th Federal-Provincial Wildlife Conference launched a study on the value of wildlife to Canadians. In 1982, the federal, provincial and territorial governments of Canada, with the support of private non-governmental agencies, commissioned Statistics Canada to conduct a national study to gain a comprehensive understanding of the value of wildlife to Canadians. This was to be the first such study in Canada.

In its simplest form the aim of the survey was to collect data on the incidence and duration of participation of Canadians in wildlife-related activities and to assess the importance of wildlife to the public. Quantifying the importance of wildlife required the collection of data that reflected participation in a wide range of wildlife-related activities: consumptive and non-consumptive, residential and non-residential, primary and secondary in dimension.

1.1

Background and Methodology of the Survey

The survey was initiated as a result of a recommendation put before the 42nd Federal-Provincial Wildlife Conference, calling for a feasibility study to be conducted. A subsequent report at the 43rd Federal-Provincial Wildlife

Conference resulted in the formation of a federal-provincial committee to formulate the terms of reference for a socio-economic survey on wildlife in 1981. This committee (see Appendix B), composed of representatives from provincial and territorial governments and the Canadian Wildlife Service (CWS), drafted goals and objectives and proposed three survey options and a cost-sharing formula to the 44th Federal-Provincial Wildlife Conference. This conference unanimously supported the concept of a study using the Statistics Canada Labour Force Survey Supplement. Private non-governmental organizations (NGO's) participating in the conference were invited to cooperate, and six agreed to commit funds to the project. Those NGO's committing funds included: Canadian Association of Zoological Parks and Aquariums, Canadian Nature Federation, Canadian National Sportsmen's Show, Canadian Wildlife Federation, Federation of Alberta Naturalists, and World Wildlife Fund.

The committee designed the survey questionnaire and used the views, comments and suggestions from the CWS, provincial and territorial governments and NGO's to sharpen the focus of the questionnaire. The construction of the questionnaire was guided by the rationale, goals and objectives agreed at the 44th Federal-Provincial Wildlife Conference. Guidelines concerning the content and format of the Labour Force Survey Supplement were supplied by the Special Surveys Group at Statistics Canada. A pretest of a preliminary questionnaire was conducted by Statistics Canada in eastern and western Canada before the final format of the questionnaire was agreed on.

The survey was carried out between 22 February and 7 May, 1982, under the guidance of the Special Surveys Group of Statistics Canada and its 1,200 enumerators across the country. Using the Labour Force Survey, which employed a national multi-stage probability sample design as a vehicle, a mail-back survey was delivered to 99,601 individuals; 76,201 surveys were returned giving a 76.5 percent response rate. The Labour Force Survey covered approximately 98 percent of the *Canadian population 15 years of age and over*. Populations in the Yukon and Northwest Territories, residents of Indian Reserves, full-time members of the Canadian Armed Forces and inmates of institutions were excluded.

All sponsors were invited to submit a list of their data requirements to CWS. Their needs were summarized and tabled at the 44th Federal-Provincial Wildlife Conference. This summary formed the basis for the tabular

data requested from Statistics Canada. A special sub-committee was established to analyse the data and prepare this report. Reviews of tabular and draft material were solicited from participating sponsors, and their comments and suggestions were taken into account during the final preparation of this report for presentation to the 47th Federal-Provincial Wildlife Conference.

1.2

Structure and Scope of the Report

In order to understand the structure of the report it is necessary to define several important concepts that constitute the foci of the analysis. *Wildlife* is defined as wild animals, not pets or domesticated animals or fish, and includes waterfowl, other wild birds, small and large mammals and other animals in a natural environment. For most Canadians, contact with wildlife cannot be categorized under a single heading and to accommodate this fact four distinct classifications of wildlife-related activities were devised. The first of these categories was labelled *indirect* wildlife-related activity. In this form of activity participants encounter wildlife through reading, watching films or TV programmes, purchasing art and crafts, visiting institutions dealing with wildlife or joining clubs related to wildlife. The second form of wildlife-related activity was *residential*, which took into account contact with wildlife around the home or cottage through such activities as feeding, watching, studying or photographing wildlife, or maintaining shrubs or plants to provide food or shelter for wildlife. The third aspect of wildlife-related activities consisted of encounters with wildlife during *trips or outings*. This category was divided to accommodate trips or outings taken specifically to encounter wildlife — *primary non-consumptive trips* — and those undertaken for business or pleasure but during which wildlife was encountered incidentally — *other trips and outings*. The fourth form of wildlife-related activity was *hunting*. This activity was divided according to four types of game — waterfowl, other birds, small mammals and large mammals — but did not include trapping. It should be noted that hunting is frequently referred to as a “consumptive” wildlife-related activity while indirect, residential activities and non-hunting trips or outings are often called “non-consumptive” wildlife-related activities.

In evaluating the data from the survey participation rates, days engaged in wildlife-related activities, expenditures and attitudes were highlighted. The figures presented in this report represent the responses of *residents of the provinces*, not the participation rates, or the

days engaged in activities or expenditures *within* a province. *Days* in this report refers to a whole day or any part of a day. *Expenditures* refers to money spent on goods or expenses incurred primarily for the pursuit of wildlife-related activities. These and other important definitions are covered in Appendix C.

Each form of wildlife-related activity was analysed on a national and provincial level. On the national level all major wildlife-related activity categories are discussed and detailed demographic profiles of participants in each category are presented. An overview of the provincial data is presented for all major wildlife-related activity categories. Most of the results are illustrated in graphs and charts. Some respondents did not reply to every question in the survey. To compensate for this, the figures presented in this report are based on weighted data that correct for these missing observations. Respondents who had participated in an activity but had provided no details of that participation were identified through editing procedures and assigned the average value for days engaged in and money spent on wildlife-related activities.

In order to simplify the presentation, measures of statistical reliability of the survey findings are excluded from the graphs. However, confidence intervals for the national results may be computed using the coefficients of variation and the formulae presented in Appendix D.

1.3

Profile of the Canadian Population

Throughout this report the *Canadian population aged 15 years and over* was used as the base for the calculation of most percentages. In order to fully appreciate the significance of the profiles of participants in wildlife-related activities it is important to be aware of the proportional breakdown of the Canadian population for key demographic factors.

Appendix “A” contains a fold-out illustration and table that show the profile of the Canadian population by sex, age, urban-rural residence and education in 1981. The table shows that of the estimated 18.5 million Canadians 15 years of age and over, females (51.0 percent) were slightly more numerous than males (49.0 percent). The table also reveals that Canadians in the middle years (25-44 years) make up more than 38 percent of the population, while remaining groups were almost equally represented. The majority of Canadians had either

2.0

Participation in Wildlife-related Activities

elementary (20.5 percent) or secondary (51.0 percent) schooling and resided mostly in urban areas (70.5 percent).

The purpose in presenting this profile of the Canadian population is to enable the reader to distinguish between wildlife-related activities that appeal to a representative cross-section of the Canadian population from those that appeal to participants whose profile may be quite different with regard to age, sex, residence or educational composition. For example, while men constituted 49.0 percent of the Canadian population, they comprised 90.0 percent of those who hunted in 1981. Thus, it can be said that hunters were more concentrated among Canadian males than females, or that hunting was more popular with Canadian males, or that males were disproportionately involved in hunting. In other words, there were more men hunting than one would expect if participation in hunting were to follow the actual concentration of males in the Canadian population.

In 1981 (see Figure 2.01), a great many Canadians participated in a wide range of wildlife-related activities. An estimated 15.5 million Canadians (83.8 percent of the surveyed population) participated in indirect wildlife-related activities; 12.3 million participated in residential wildlife-related activities; 3.6 million took a special primary non-consumptive trip to encounter wildlife; 8.1 million encountered wildlife incidentally during other trips or outings; and 1.8 million Canadians hunted wildlife in 1981.

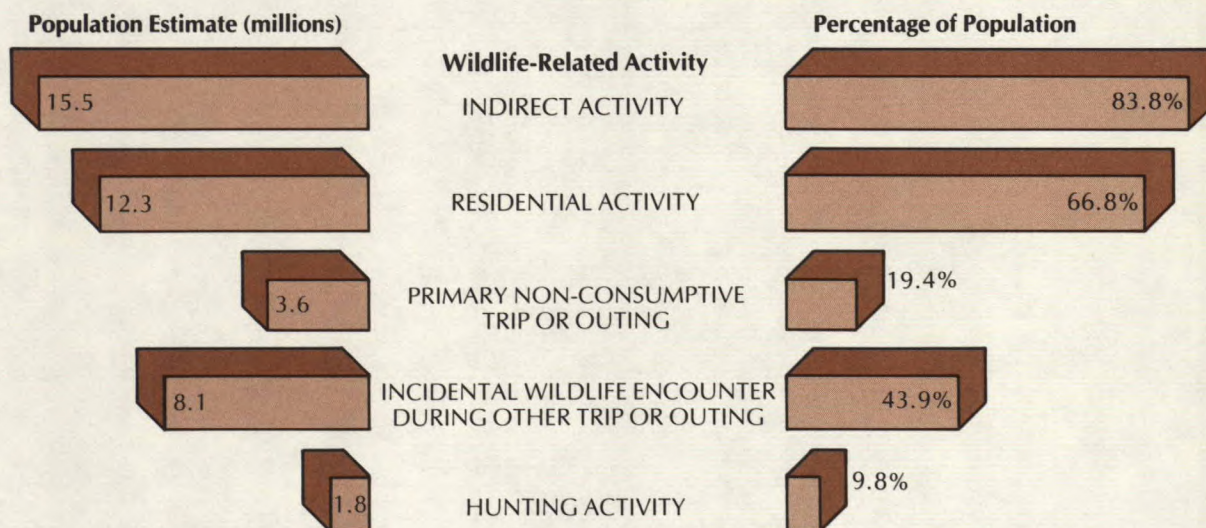
2.1

Indirect Wildlife-related Activities

In 1981, 83.8 percent of the surveyed population, or 15.5 million Canadians, participated in some form of indirect wildlife-related activity. Watching films or television programmes on wildlife was the most common form of indirect wildlife-related activity, attracting 14.2 million Canadians (see Figure 2.11). Reading about wildlife was reported by 48.6 percent of the Canadian population, followed by visiting a zoo, aquarium or museum of natural history, which attracted 7.9 million Canadians. The purchase of art, crafts and posters of wildlife was reported by 2.9 million Canadians. Wildlife organizations had 1.1 million members.

Figure 2.01

Number and Percentage of Canadians Participating in Wildlife-Related Activities During 1981



By folding out Appendix "A", dealing with the characteristics of the Canadian population and comparing the results with those of indirect users in Figure 2.12, the reader will note that the profile of both groups is very similar. Indirect wildlife-related activities in 1981 were popular with both men and women. Those between 15 and 44 years of age represented 65.3 percent of the participants, with those between 25 and 34 years of age being the largest single age group involved in indirect wildlife-related activities. Urban residents constituted the majority of participants as did those with a secondary schooling.

The above profile however, does not include participation in wildlife organizations. The profile of members departs somewhat from that of indirect participants as it seems to represent a mixture of the profiles of primary non-consumptive trip takers and hunters which are presented later in the report. Briefly, membership in wildlife organizations tended to be more popular with males and those between 25 and 44 years of age. Although the majority were urban residents, rural residents were disproportionately represented in wildlife organizations as were members with education beyond secondary school who accounted for 42.2 percent of the membership.

Participation in indirect wildlife-related activities varied appreciably across Canada (see Figure 2.13). In the Atlantic provinces and Quebec, participation levels fell below the national average with Newfoundland residents recording a national low of 76.0 percent. Participation from Ontario westward shows a steady increase, with British Columbia residents recording the highest participation rate of 90.9 percent.

Figure 2.11

Number and Percentage of Canadians Participating in Indirect Wildlife-Related Activities in 1981

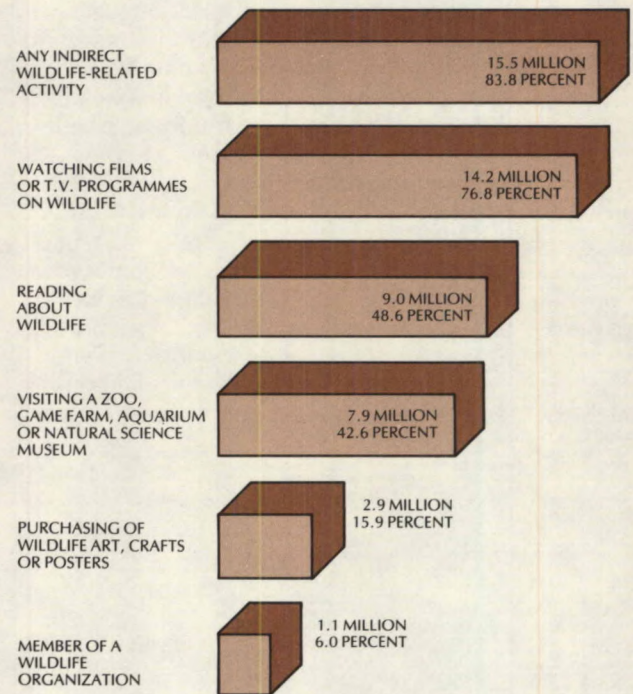


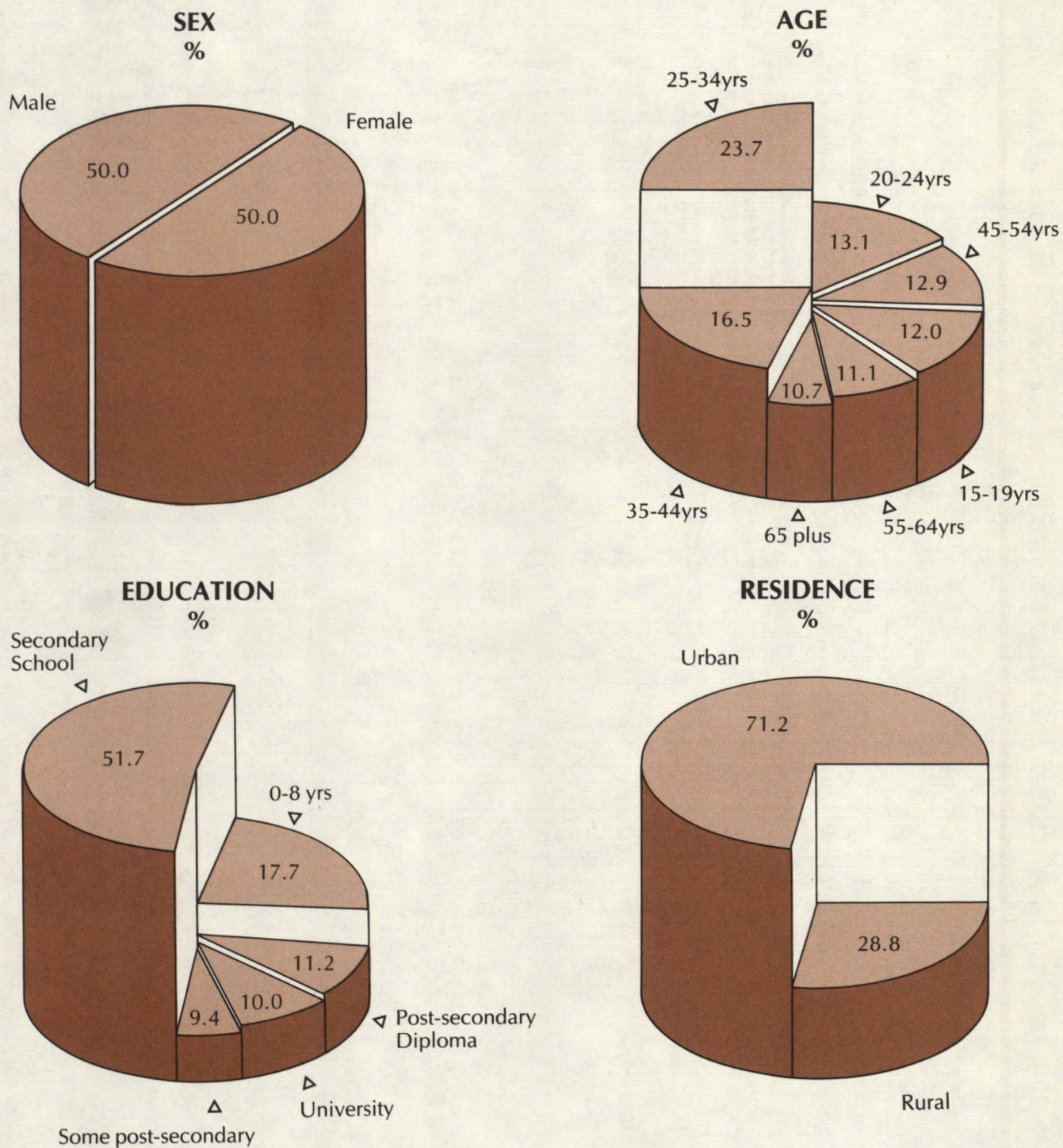
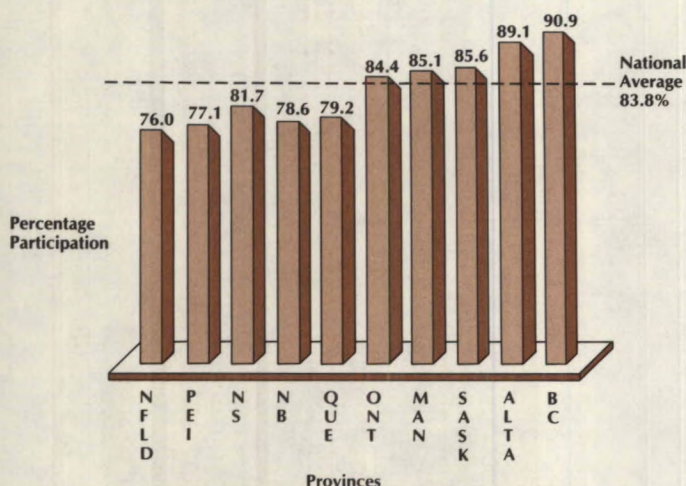
Figure 2.12*Profile of Canadians Participating in Indirect Wildlife-Related Activities in 1981*

Figure 2.13

Percentage of Canadians Participating in Indirect Wildlife-Related Activities in 1981, by Province of Residence



2.2

Non-consumptive Residential Wildlife-related Activities

Non-consumptive activities around the residence or cottage were defined as activities that include feeding, watching, photographing or studying wildlife and maintaining plants or shrubs to provide food or shelter for wildlife. In 1981, about 12.3 million Canadians (66.8 percent) participated in one or more of these activities.

As illustrated in Figure 2.21, watching and feeding scraps to wildlife were the most popular of the non-consumptive residential activities, with an estimated 9.9 million and 7.4 million Canadians, respectively, reporting participation in 1981. Purchasing feed for wildlife was undertaken by 3.8 million Canadians (20.4 percent) and was the third most popular activity. Studying wildlife (19.5 percent), photographing wildlife (17.1 percent), and maintaining plants and shrubs for wildlife (13.4 percent) were other activities reported by Canadians.

Participants in non-consumptive residential wildlife-related activities did not differ appreciably from the profile of the Canadian population shown in Appendix A. These activities (see Figure 2.22) were slightly more popular among Canadian women. Participants between 24 and 34 years of age were the largest single group, but the activities were less popular among Canadians over 55 years of age. Most participants were urban dwellers; however, residential activities were slightly more popular with rural Canadians. Participants with educational levels beyond secondary school tended to be disproportionately involved in these activities, totalling 31.1 percent of participants in 1981.

Figure 2.21

Number and Percentage of Canadians Participating in Non-Consumptive Wildlife-Related Activities Around Their Residence or Cottage in 1981

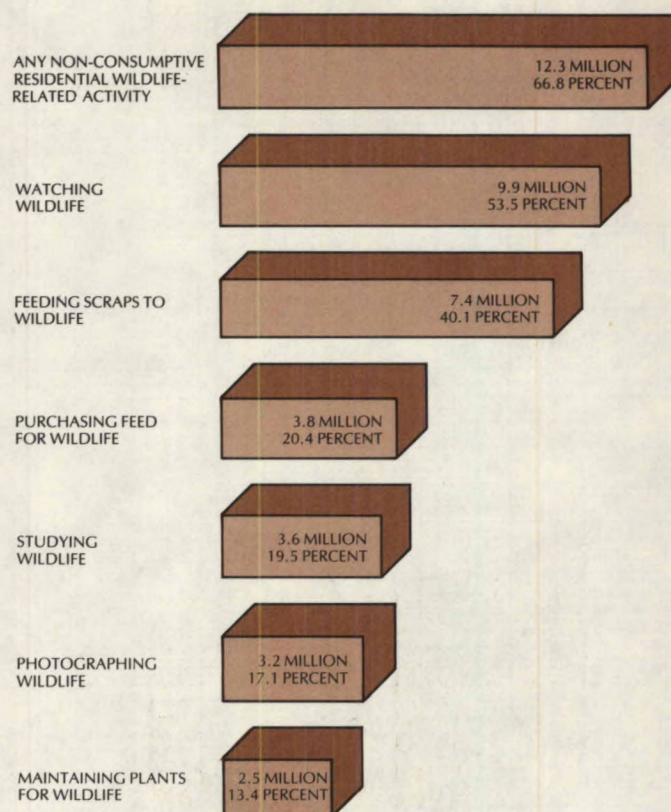
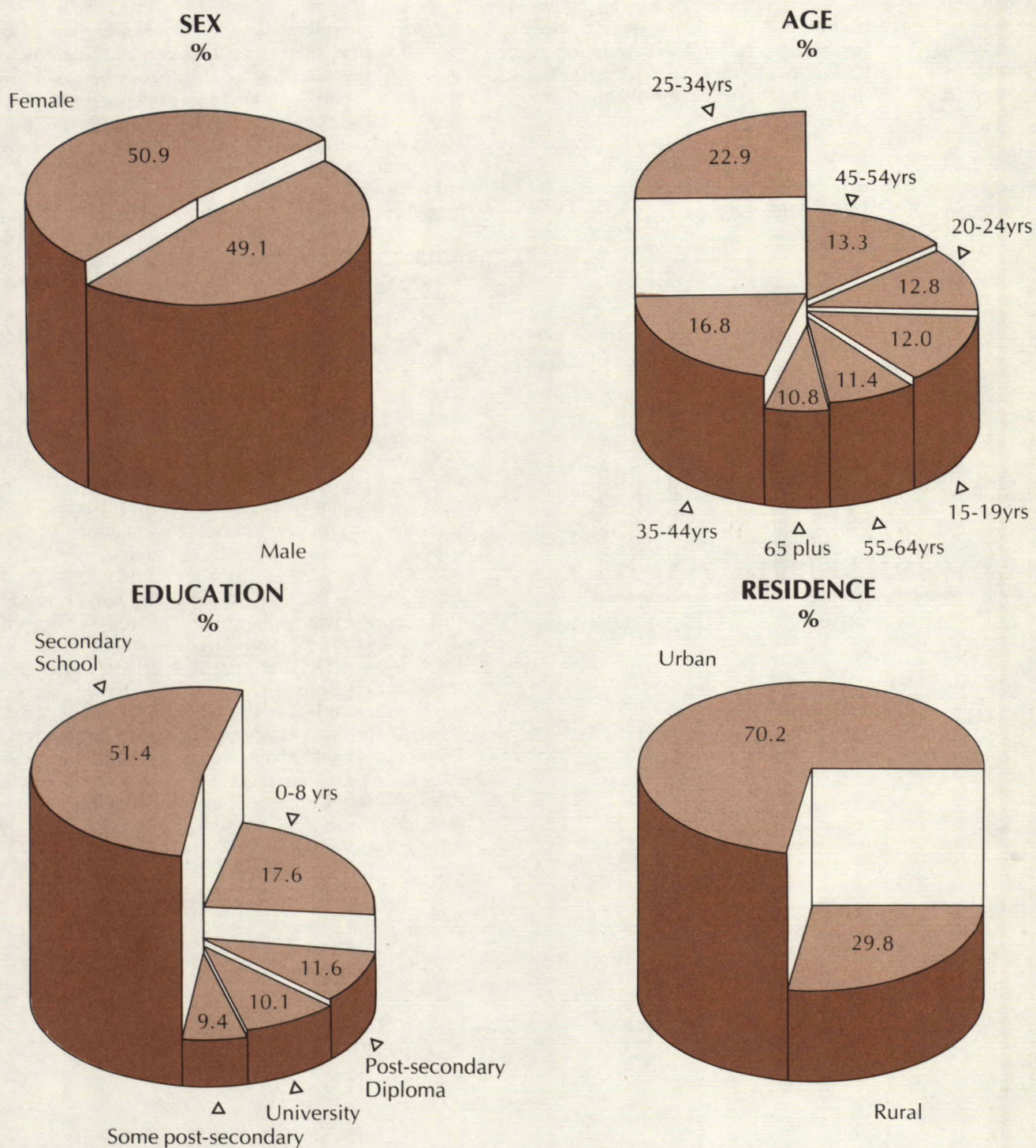
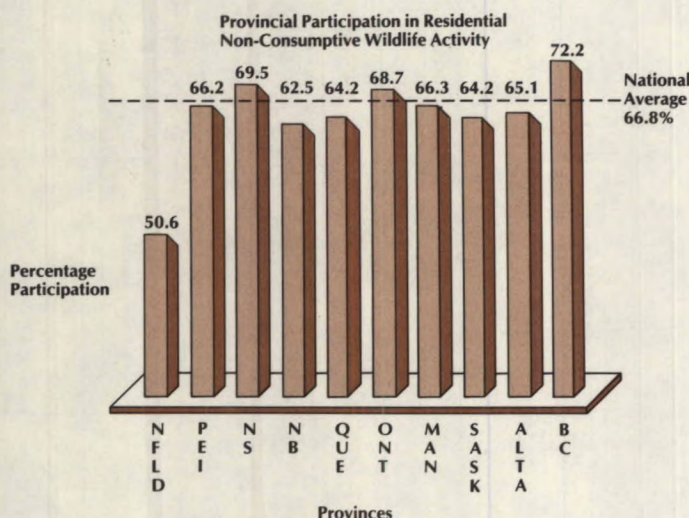


Figure 2.22*Profile of Participants in Non-Consumptive Residential Wildlife-Related Activities in 1981*

Most provinces (see Figure 2.23) had participation rates in non-consumptive residential wildlife-related activities below the national average. Ontario, British Columbia and Nova Scotia residents reported levels above the national average of 66.8 percent. Participation levels for residents of other provinces remained close to the national average with the exception of Newfoundland, which recorded a 50.6 percent participation rate.

Figure 2.23

Percentage of Canadians Participating in Non-Consumptive Residential Wildlife-Related Activities in 1981, by Province of Residence



2.3

Non-consumptive Wildlife-related Trips

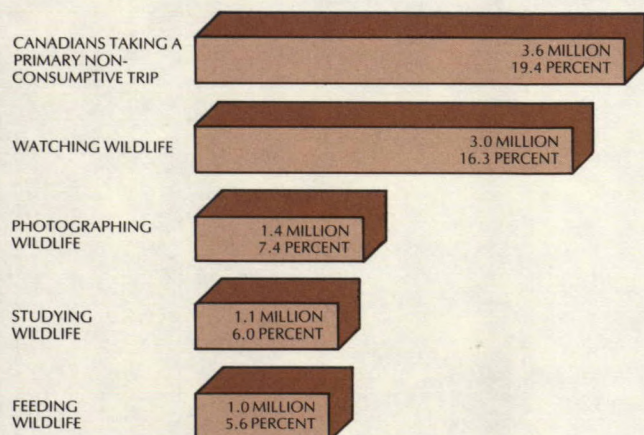
Canadians frequently encounter wildlife outside the residential setting. However, the forms of these encounters may vary substantially. To distinguish between them, two types of wildlife encounters were defined. The first type, and the most common, occurs during a trip or outing taken for business or pleasure that has a primary purpose other than to encounter wildlife. This form is quite different from wildlife encounters during a special trip or outing whose main purpose is to observe, photograph or study wildlife. Accordingly, the second type of wildlife encounter was classified as a primary non-consumptive trip or outing. These two distinct forms of encounters were addressed separately.

Primary Non-consumptive Wildlife-related Trips

Primary non-consumptive wildlife-related trips were taken by about 3.6 million persons (19.4 percent of the Canadian population). During these trips watching and photographing wildlife were the two most common activities. About 3.0 million Canadians watched wildlife (see Figure 2.31) and 1.4 million photographed wildlife. Studying wildlife was undertaken by 1.1 million Canadians and 1.0 million fed wildlife encountered during a primary non-consumptive trip or outing.

Canadians taking part in primary non-consumptive trips reported watching, feeding or studying waterfowl, other types of birds, and large and small mammals during their trips. On such trips 2.4 million Canadians reported seeing birds such as pigeons, hawks, owls and other birds (see Figure 2.32). Small mammals were spotted by 2.4 million Canadians, and 2.2 million reported seeing waterfowl such as ducks, geese, herons and cranes. Large mammals and other wildlife were encountered by fewer Canadians; about 1.6 million reported encounters with large mammals and 1.3 million sighted other forms of wildlife.

Figure 2.31
Number and Percentage of Canadians Participating in Non-Consumptive Wildlife-Related Activities While on Primary Non-Consumptive Wildlife-Related Trips or Outings in 1981



Participants originated from a cross-section of Canadian society, yet differed in several aspects. Figure 2.33 reveals that primary non-consumptive trips were most popular among males. Participants between 15 and 44 years of age were also disproportionately represented; those between 25 and 34 years of age represented 27.9 percent of trip takers. Most participants were urban residents and possessed a secondary school education. Participants with an education beyond secondary school (33.6 percent) were disproportionately engaged in this activity.

Figure 2.32
Number and Percentage of Canadians Encountering Wildlife While on Primary Non-Consumptive Wildlife-Related Trips or Outings in 1981

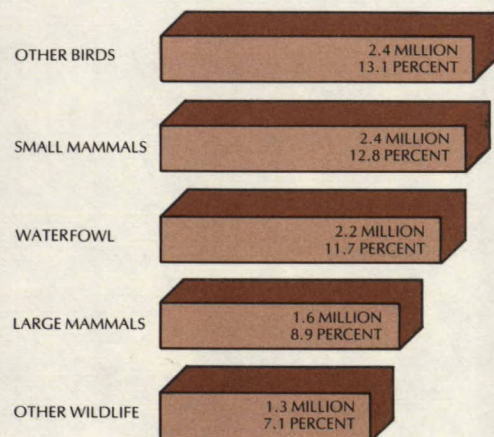
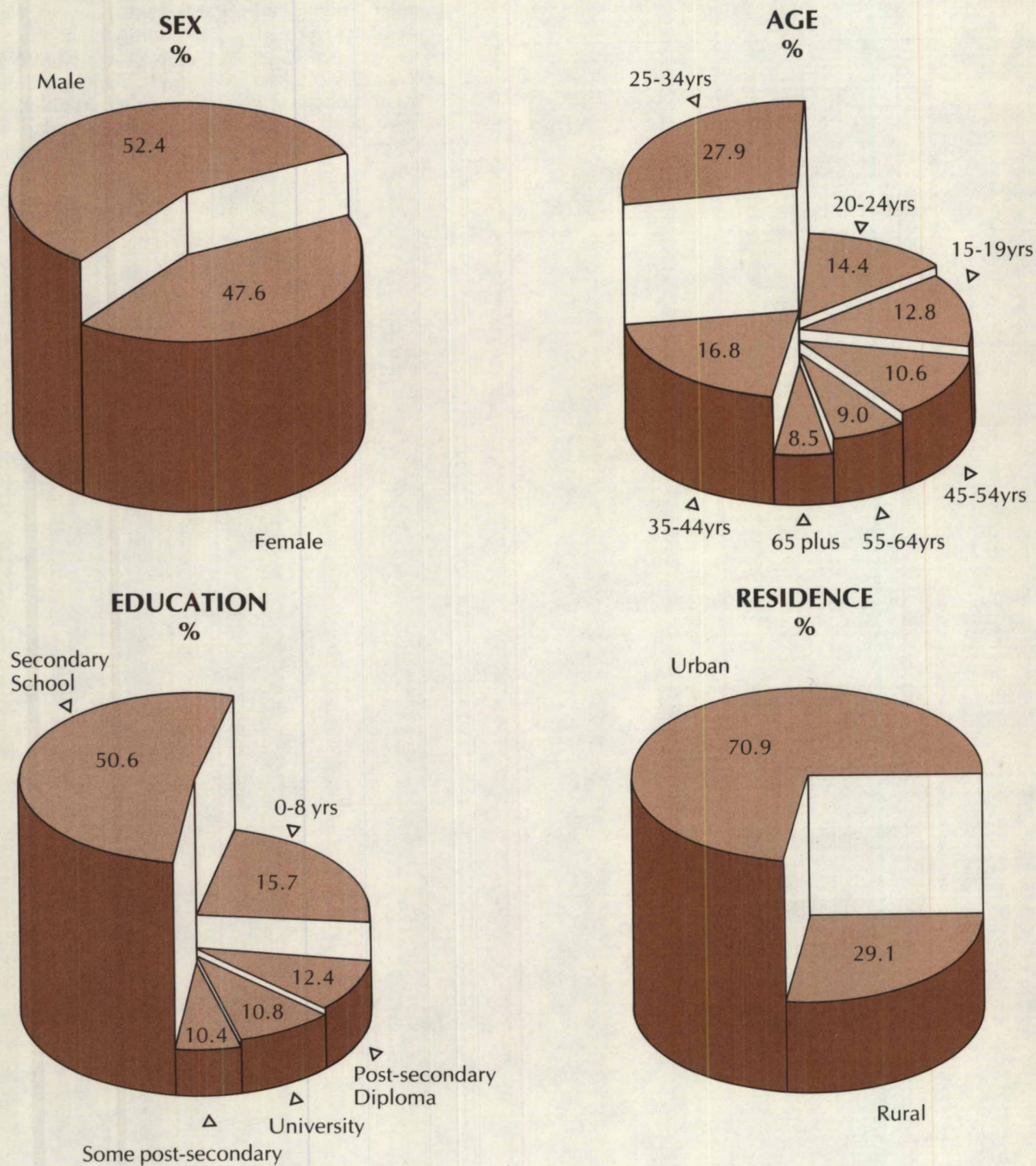


Figure 2.33

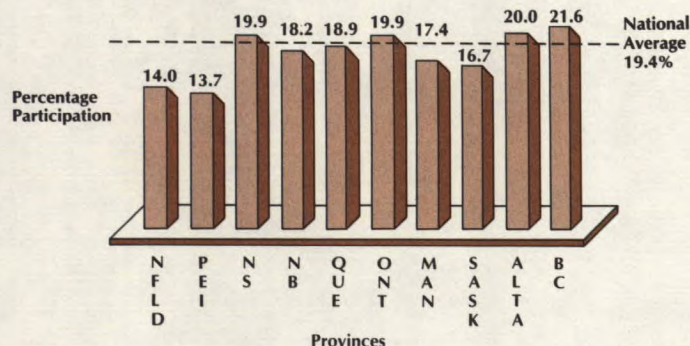
Profile of Canadians Participating in Primary Non-Consumptive Wildlife-Related Trips or Outings in 1981



Participation (see Figure 2.34) in primary non-consumptive wildlife-related trips in the provinces closely followed the national average. Residents of Nova Scotia, Ontario, Alberta and British Columbia recorded participation rates above the national average. Only Newfoundland and Prince Edward Island residents recorded participation rates appreciably below the national average; Prince Edward Island recorded the lowest at 13.7 percent.

Figure 2.34

Percentage of Canadians Participating in Primary Non-Consumptive Wildlife-Related Trips or Outings in 1981, by Province of Residence



Incidental Wildlife Encounters During Other Outings or Trips

In 1981, an estimated 8.1 million persons (43.9 percent of the Canadian population) encountered wildlife incidentally while on outings or trips taken for business or pleasure. The result of these encounters was an increased level of enjoyment reported by 92.5 percent of participants. As shown in Figure 2.35, Canadians who encountered wildlife during these other trips or outings took part in a number of activities related to wildlife. An estimated 7.3 million persons watched wildlife, 2.6 million fed wildlife, 1.4 million photographed wildlife and 0.4 million studied the wildlife they encountered.

During these incidental encounters, Canadians (see Figure 2.36) observed, photographed, fed or studied a variety of wildlife. Some 5.1 million persons reported seeing birds such as robins and sparrows, and 4.7 million Canadians reported sighting waterfowl, including ducks, geese, herons and cranes. Small mammals such as rabbits, squirrels, raccoons and foxes were seen by 3.8 million Canadians and large mammals such as deer, bears, moose and mountain sheep were sighted by 1.6 million Canadian residents.

Figure 2.35

Number and Percentage of Canadians Participating in Wildlife-Related Activities While on Other Trips or Outings in 1981

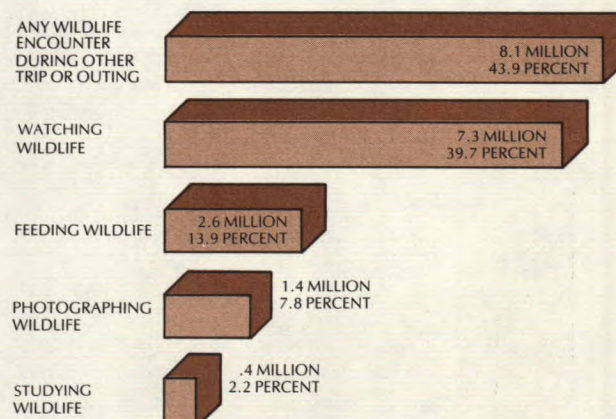


Figure 2.36

Number and Percentage of Canadians Encountering Wildlife Incidentally During Other Trips or Outings in 1981

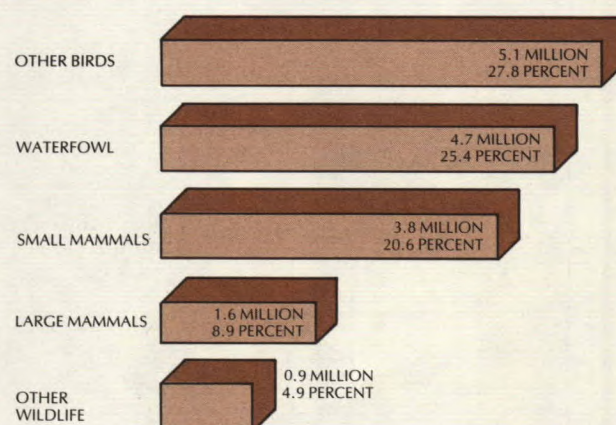
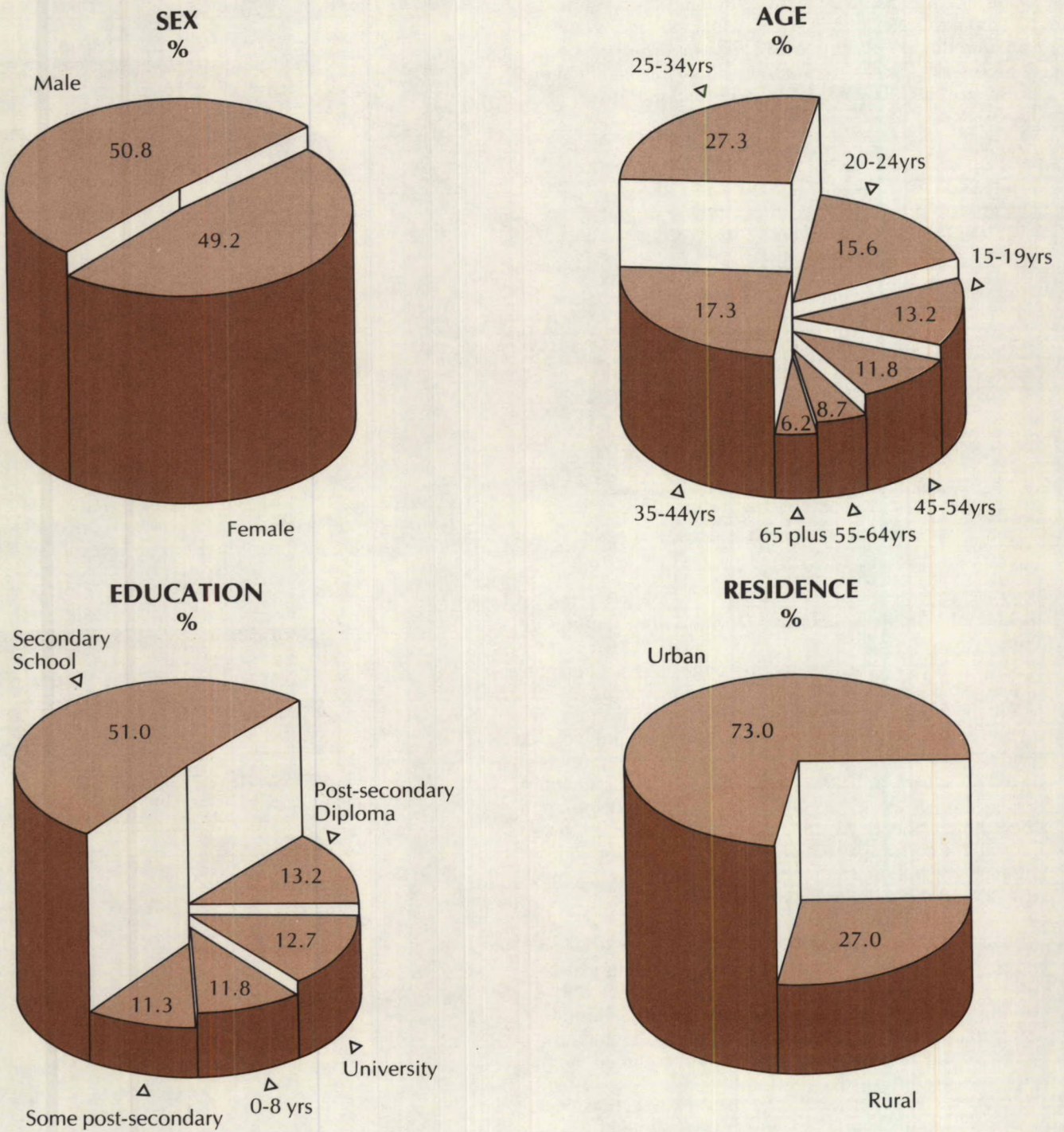


Figure 2.37
Profile of Canadians Who Encountered Wildlife Incidentally While on Other Trips or Outings in 1981

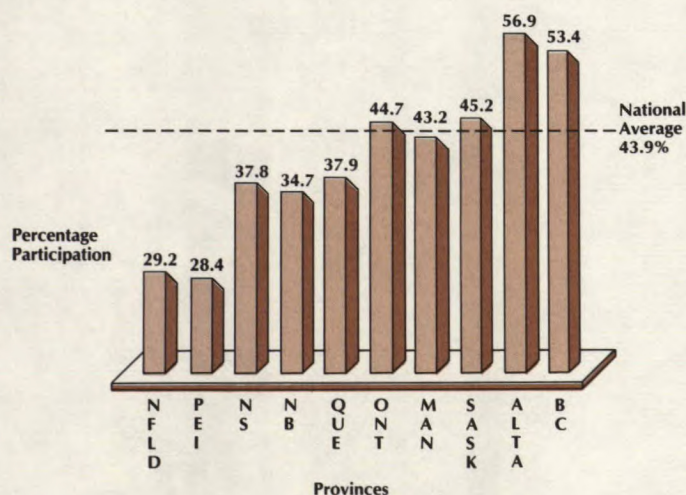


Those who encountered wildlife on other trips or outings (see Figure 2.37) tended to be concentrated among males. Canadians between 25 and 34 years of age were disproportionately engaged in this activity; those over 45 years of age had fewer encounters given their relative concentration in the Canadian population. Participants who possess an education beyond secondary school were disproportionately involved and comprised 37.2 percent of those who encountered wildlife incidentally in 1981.

Participation in trips and outings with incidental wildlife encounters showed a definite increase across Canada from east to west (see Figure 2.38). Residents of the Atlantic provinces and Quebec reported participation rates well below the national average. Residents of Ontario, British Columbia, and the Prairie Provinces, with the exception of Manitoba, recorded participation rates above the national average. The highest rate of incidental encounters with wildlife recorded was 56.9 percent by Alberta residents.

Figure 2.38

Percentage of Canadians Encountering Wildlife Incidentally During Other Trips or Outings in 1981, by Province of Residence



2.4

Consumptive Wildlife-related Activity — Hunting

Hunting wildlife is an established tradition in Canada. This section will provide information on the profile of hunters in 1981 and on those Canadians who have hunted at some time in their life. Both national and provincial participation rates are presented as well as rates of participation in the four hunting areas: waterfowl, other birds, small mammals and large mammals.

Hunting in 1981

About 1.8 million persons (9.8 percent of the Canadian population) hunted in 1981. Approximately 3.6 percent of Canadians 15 years of age and over (see Figure 2.41) hunted waterfowl, 5.3 percent other birds, 5.0 percent small mammals and 5.1 percent large mammals.

Hunters differ from the profile of the Canadian population in several ways. Those who hunted in 1981 (see Figure 2.42) were highly concentrated among Canadian males (90.0 percent) and rural residents (50.1 percent). Hunters between 15 and 34 years of age composed 59.4 percent of those who hunted in 1981, revealing the popularity of the activity in this age group. Hunting was less popular with Canadians over 45 years of age, constituting only 22.4 percent of those who hunted in 1981. The majority of hunters active in 1981 (78.3 percent) had secondary or elementary schooling.

Figure 2.41

Number and Percentage of Canadians Hunting Wildlife in 1981

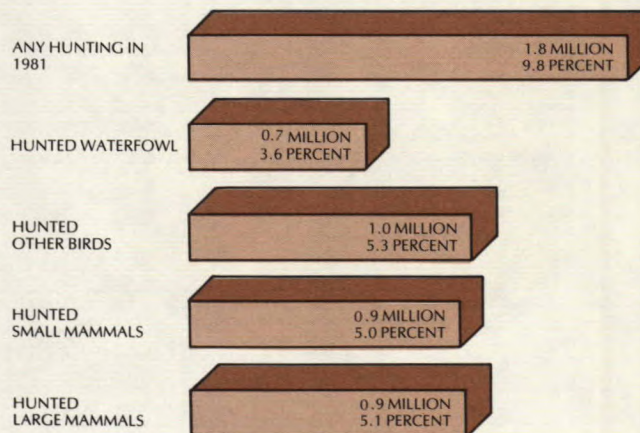
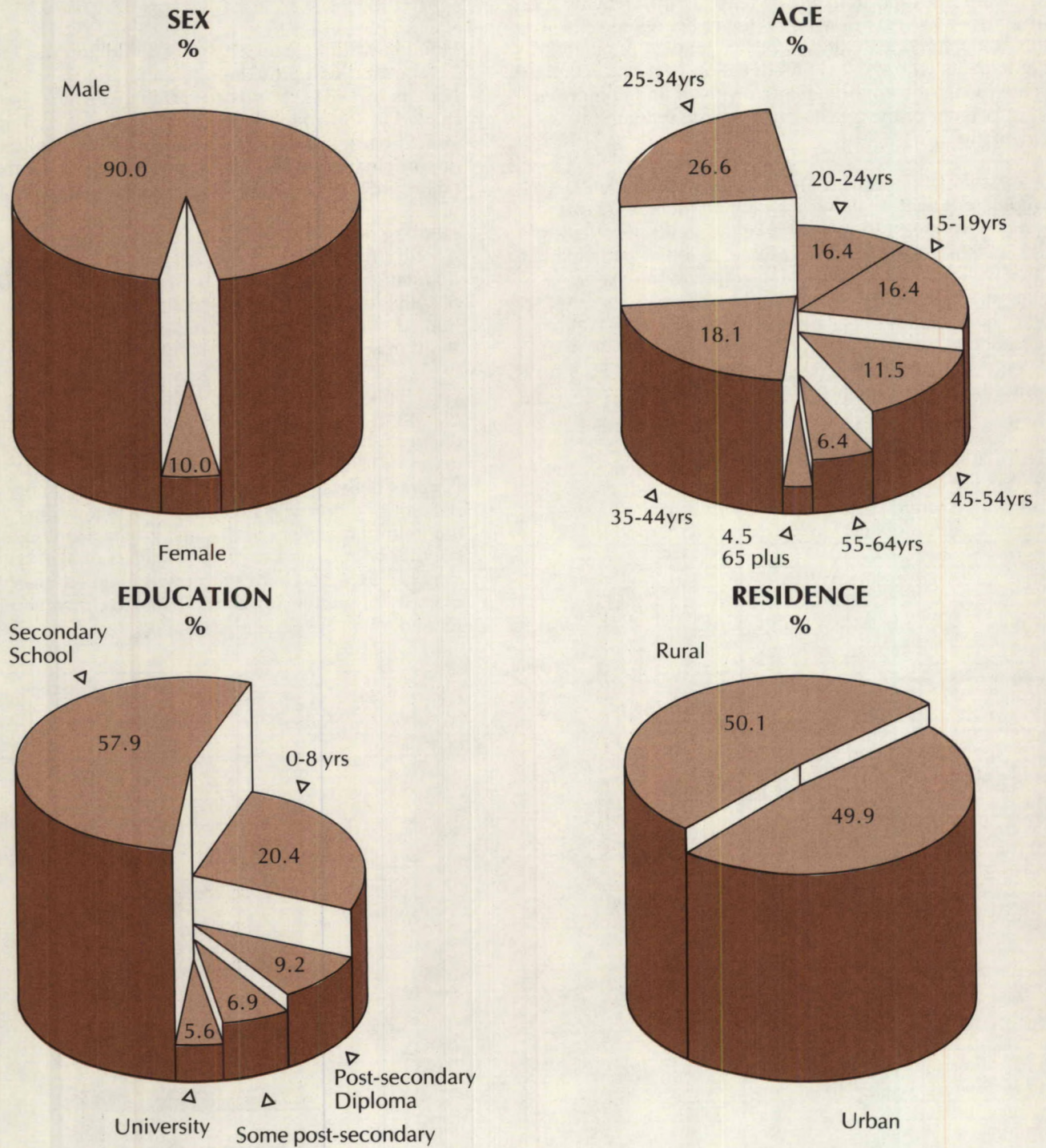


Figure 2.42
Profile of Hunters Active in 1981



Provinces (see Figure 2.43) in the Atlantic region, with the exception of Prince Edward Island, recorded participation rates by their residents at higher levels than other provinces. The residents of the Prairie Provinces all recorded participation rates above the national average of 9.8 percent. Quebec, Ontario and British Columbia residents joined those of Prince Edward Island with rates lower than the national average.

Previous Involvement in Hunting

In 1981, about 5.9 million persons (32.1 percent of the Canadian population) reported (see Figure 2.45) having had some hunting experience at some time during their lives. Although the profile of these past or intermittent participants differs substantially from that of the Canadian population as a whole, it is more similar to the Canadian profile than that of 1981 hunters. The majority were male and those between the ages of 25 and 35 (22.7 percent) were the largest single group. The majority of hunters (55.0 percent) were from urban areas, although rural residents were disproportionately engaged in hunting. Most hunters (75.5 percent), had primary or secondary schooling.

Estimates of the number of people having hunted previously placed the residents of five provinces above and those of the remaining provinces below the national average (see Figure 2.44). In the Atlantic region, Newfoundland was the only province to record a level above the national average of 32.1 percent. Quebec, Ontario, Manitoba and Saskatchewan were other provinces with higher levels of participation by their residents. All other provinces recorded unusually low rates of participation.*

Figure 2.43

Percentage of Canadians Participating in Hunting Wildlife in 1981, by Province of Residence

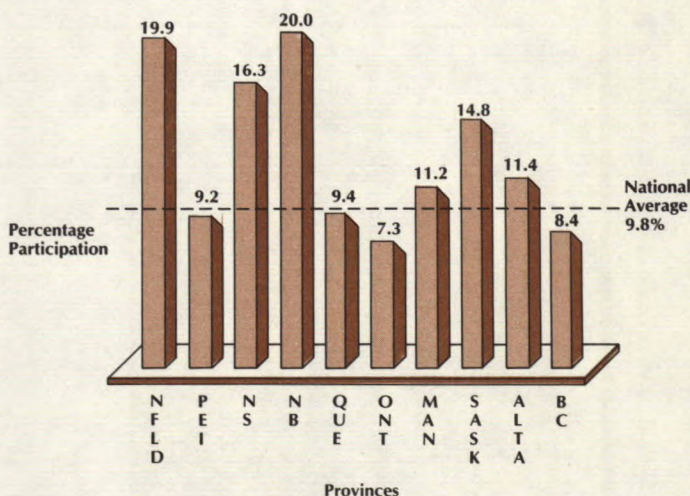
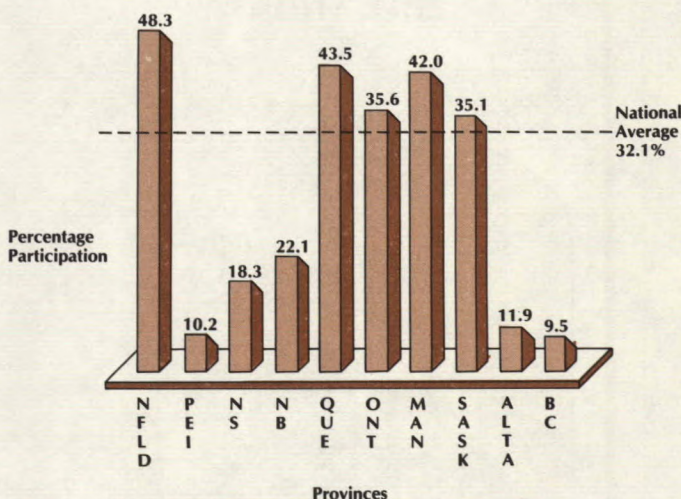


Figure 2.44

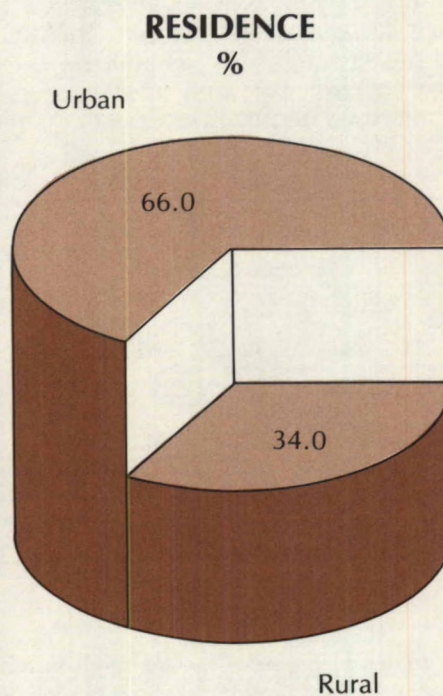
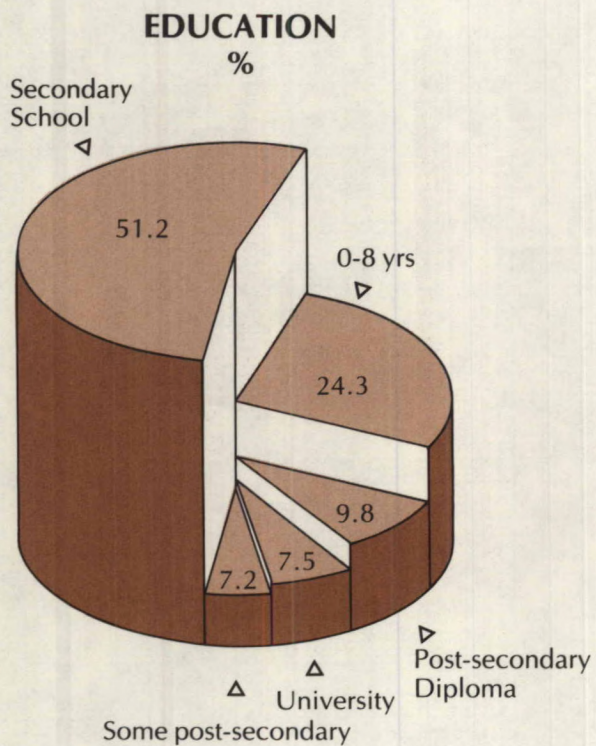
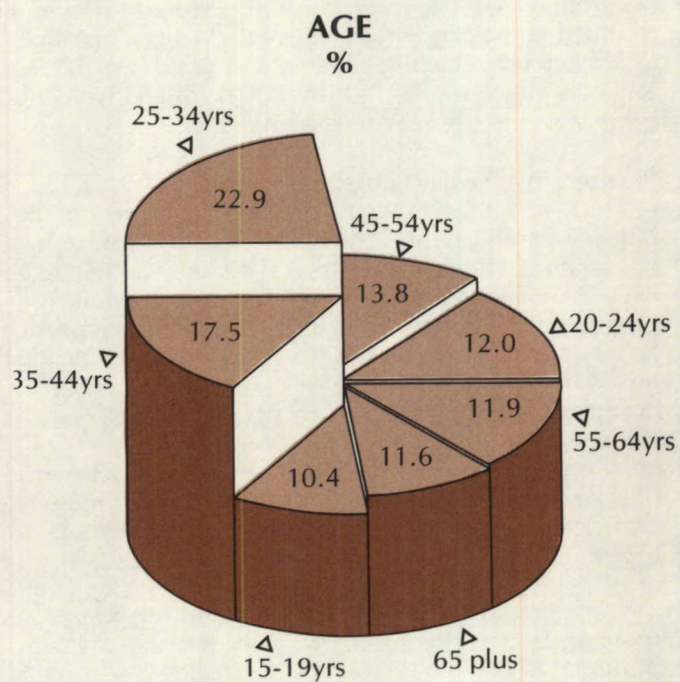
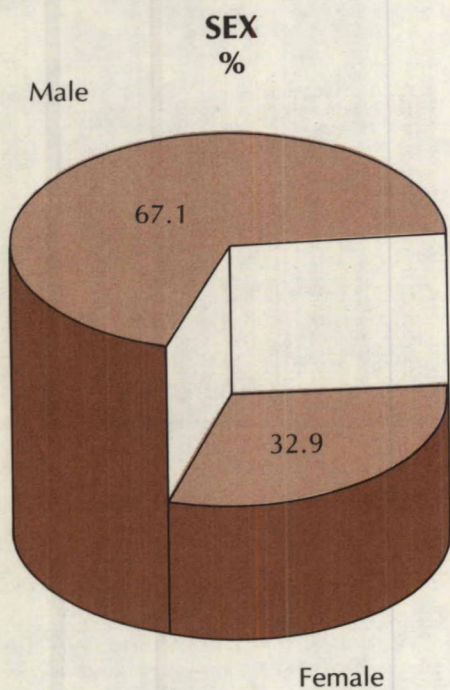
Percentage of Canadians in 1981 Who Have Hunted Wildlife at Least Once, by Province of Residence



*Note: Estimates of previous involvement in hunting by province of residence may be revised as a result of ongoing statistical analysis.

Figure 2.45

Profile of Canadians in 1981 Who Have Hunted at Least Once in Their Life



3.0

Time Spent Participating in Wildlife-related Activities

The amount of time engaged in an activity provides some measure of the extent of involvement in that activity. This information, along with expenditures related to the activity allows differentiation between simple involvement and a commitment to the activity.

Data outlining the total and average number of days engaged in wildlife-related activities are presented on a national and provincial level. Also, a profile by age is presented to identify variations in time engaged in different wildlife-related activities. As mentioned earlier, a day in this study referred to any part of a day engaged in an activity.

Figure 3.01 presents an overview of the total and average number of days on which Canadians took part in wildlife-related activities. Canadians were involved most in residential wildlife-related activities, followed by incidental encounters during a business or pleasure trip or outing, primary non-consumptive trips, and hunting.

3.1

Residential Wildlife-related Activities

In 1981, Canadians recorded approximately 754.4 million days engaged in residential wildlife-related activities around their residence or cottage; an average of 61.2 days per participant (see Figure 3.01). Prince Edward Island, Nova Scotia, Ontario and British Columbia residents recorded mean days well above the national average with Prince Edward Island residents recording a national high of 74.7 days. The number of days spent by Quebec and Newfoundland residents on residential wildlife-related activities was well below the national average (see Figure 3.02).

Figure 3.01

Total and Average Number of Days on Which Participants Engaged in Wildlife-Related Activities in 1981

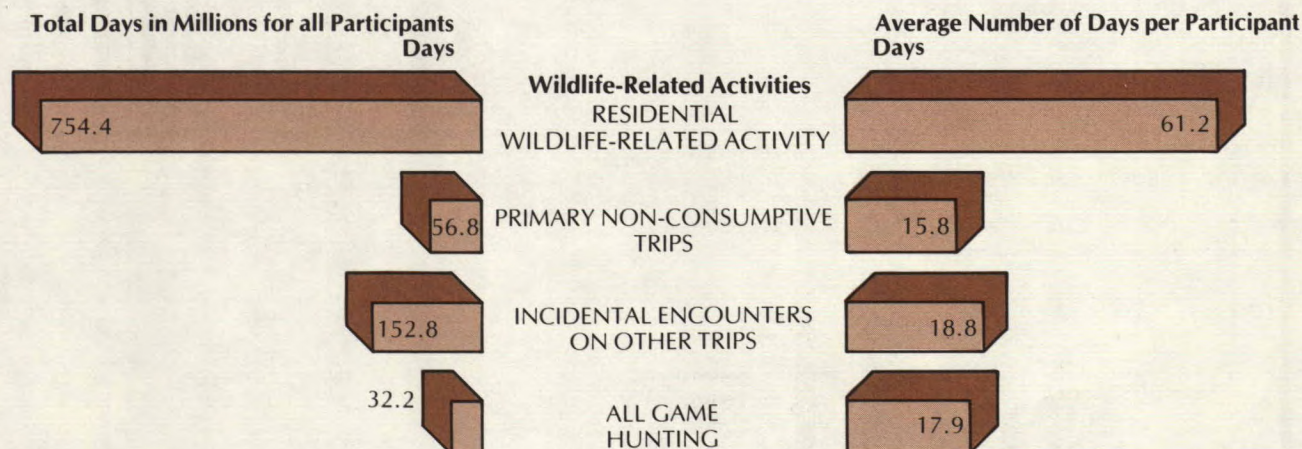
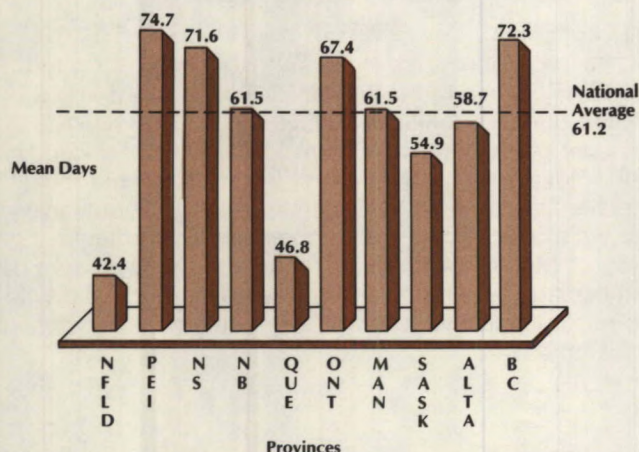


Figure 3.02

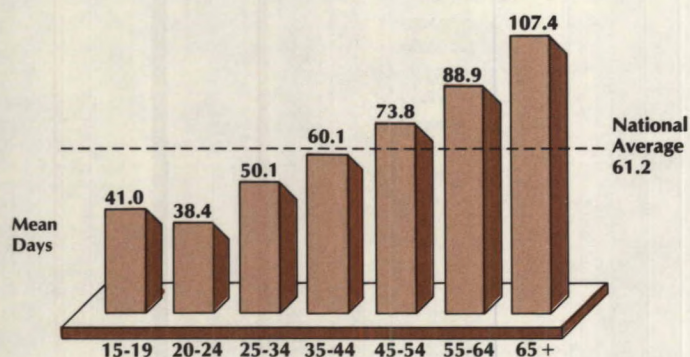
Average Number of Days on Which Participants Engaged in Residential Wildlife-Related Activities in 1981, by Province of Residence



The average number of days (see Figure 3.03) in which different age groups engaged in residential wildlife activities showed a great deal of variation. Younger participants tended to spend fewer days than others engaged in these activities with those 15-24 years of age averaging 40 days. Participants in older age groups show a tendency to devote increasing amounts of time to these activities with those over 65 years of age averaging 107.4 days per year.

Figure 3.03

Average Number of Days on Which Participants Engaged in Residential Wildlife-Related Activities in 1981, by Age Groups



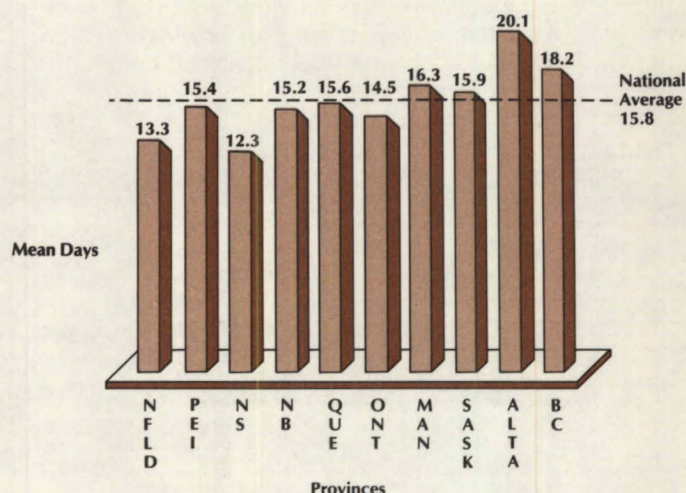
3.2

Primary Non-Consumptive Wildlife-related Trips

Canadians spent an estimated 56.8 million days engaged in primary non-consumptive trips in 1981, with each participant averaging 15.8 days (see Figure 3.01). Residents of Alberta and British Columbia (see Figure 3.04) recorded the highest average number of days engaged in such trips. Only Nova Scotia and Newfoundland residents recorded mean days noticeably below the national average, 12.3 and 13.3 days, respectively.

Figure 3.04

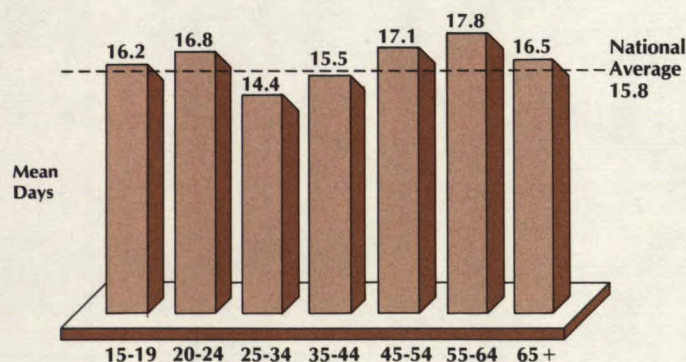
Average Number of Days on Which Participants Engaged in Primary Non-Consumptive Trips or Outings in 1981, by Province of Residence



The average number of days (see Figure 3.05) engaged in primary non-consumptive trips showed little variation across age groups, indicating a stable level of involvement throughout the age groups.

Figure 3.05

Average Number of Days on Which Participants Engaged in Primary Non-Consumptive Trips or Outings in 1981, by Age Groups



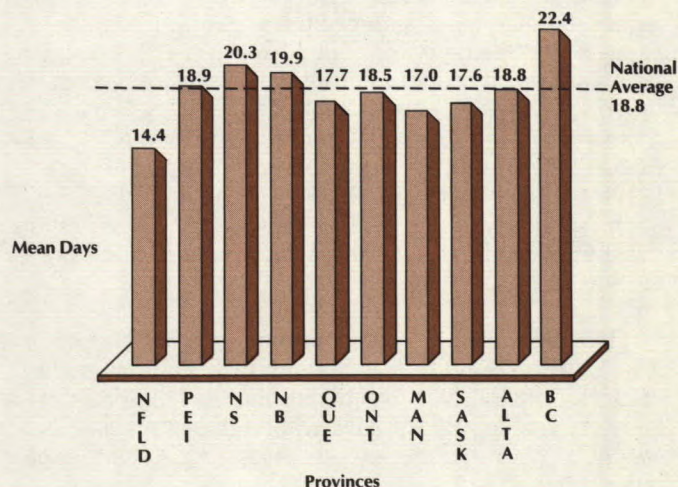
3.3

Incidental Encounters with Wildlife During Other Trips or Outings

About 152.8 million days were spent by Canadians in 1981 on trips that had incidental wildlife encounters, for an average of 18.8 days per participant (see Figure 3.01). Nova Scotia, New Brunswick and British Columbia residents surpassed the national average (see Figure 3.06) with British Columbia recording the highest, averaging 22.4 days. Other provinces recorded averages similar to the national mean with the exception of Newfoundland residents, who recorded the lowest provincial rate of 14.4 days.

Figure 3.06

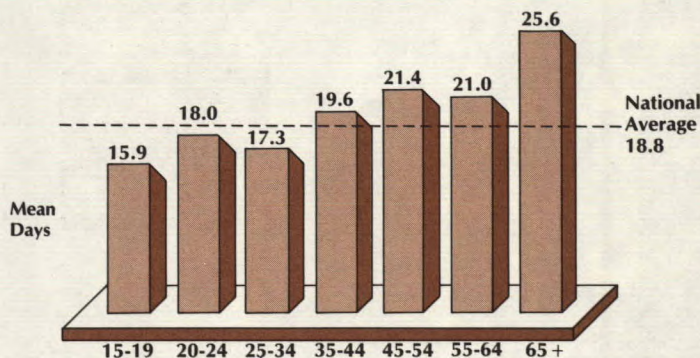
Average Number of Days on Which Participants Engaged in Other Trips or Outings with Incidental Wildlife Encounters in 1981, by Province of Residence



The average number of days Canadians were involved in trips or outings with incidental wildlife encounters (see Figure 3.07) tended to increase with age. The average number of days grew from 15.9 days for the 15-19 age group to 25.6 days for those 65 and over, a gain of nearly 10 days.

Figure 3.07

Average Number of Days on Which Participants Engaged in Other Trips or Outings with Incidental Wildlife Encounters in 1981, by Age Group



3.4

Hunting

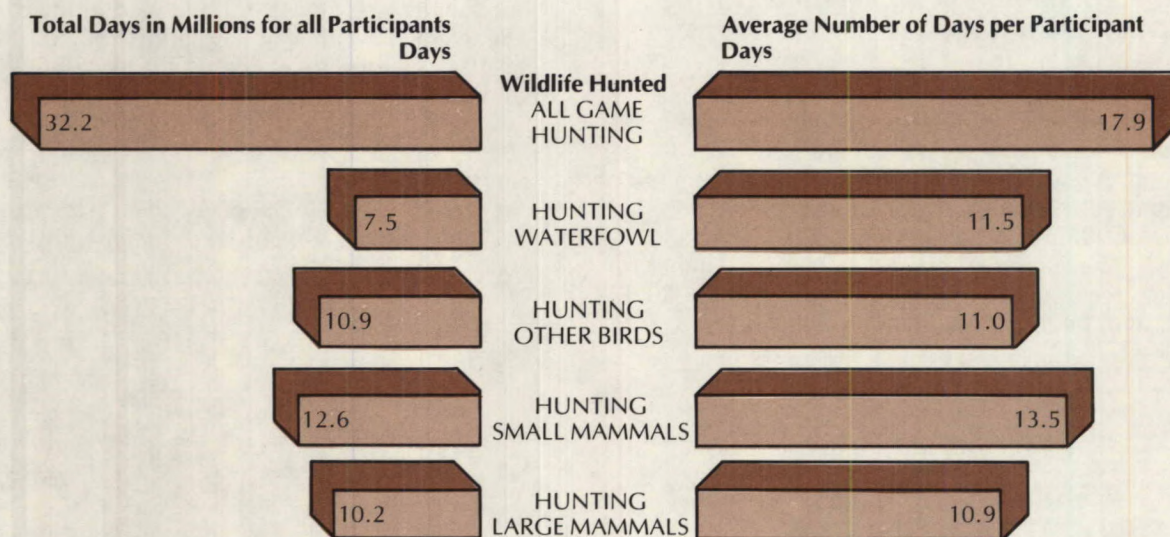
In 1981, Canadians spent an estimated 32.2 million days hunting (see Figure 3.08). With the exception of small game, the average amount of time spent on specific categories of game was about 11.0 days. The average time engaged in hunting for all game categories combined was almost twice as high at 17.9 days. An examination of the total days hunting indicated that Canadians hunted more than one type of wildlife during a hunting trip: the sum of the reported hunting days for each wildlife type was considerably larger (41.2 million days) than the total number of days spent hunting (32.2 million days).

Hunters residing in eastern provinces (see Figure 3.09) averaged more days hunting than did hunters in western Canada. Newfoundland hunters recorded the highest average at 23.3 days while hunters residing in Manitoba recorded the lowest average days spent hunting at 14.2 days.

Younger Canadians tended to hunt for more days on average than other Canadians (see Figure 3.10). The average number of days spent hunting in 1981 peaked at 21.4 days for those in the 15-19 age group and declined steadily, reaching a low of 14.5 days for those in the 45-54 age group.

Figure 3.08

Total and Average Number of Days on Which Participants Engaged in Hunting Wildlife in 1981



4.0

Expenditures on Wildlife-related Activities

Figure 3.09

Average Number of Days on Which Participants Engaged in Hunting Wildlife in 1981, by Province of Residence

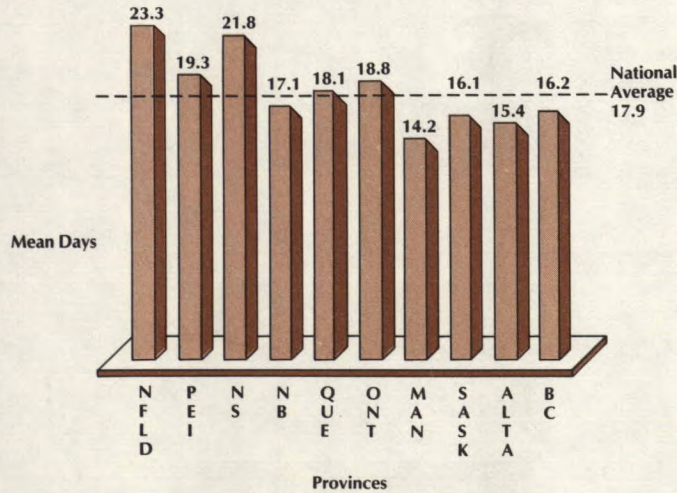
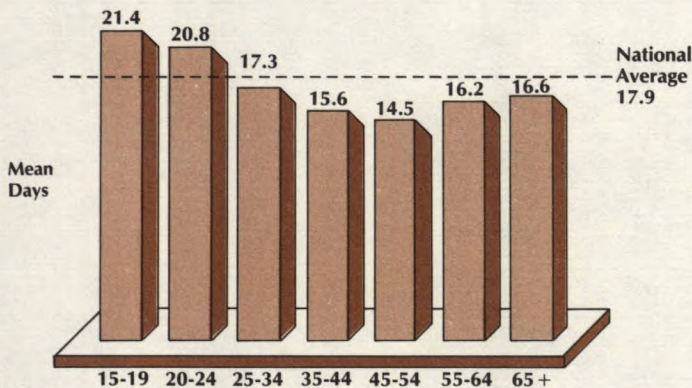


Figure 3.10

Average Number of Days on Which Participants Engaged in Hunting Wildlife in 1981, by Age Group



In this section the total and average expenditures by the participants in a number of wildlife-related activities are examined. Expenditures are broken down into four areas, equipment, transportation, accommodation and other purchases, and a percentage analysis of expenditures on certain wildlife-related activities is presented.

In 1981, Canadians spent approximately \$4.2 billion (see Figure 4.10) on various wildlife-related activities. Primary non-consumptive wildlife trips accounted for 49.9 percent of expenditures. Hunting claimed 28.2 percent and other wildlife-related activities accounted for 21.9 percent of expenditures.

4.1

Expenditures on Primary Non-consumptive Wildlife-related Trips

Canadians spent about \$2.1 billion (see Figure 4.10) on primary non-consumptive wildlife-related trips in 1981. Approximately 3.6 million Canadians took such trips and spent on average \$589 a year or about \$37 per trip day (see Figure 4.11). Residents of western Canada generally exceeded the national average for yearly expenditures and per trip day expenditures.

In 1981, about 52.7 percent of the \$2.1 billion spent on primary non-consumptive wildlife-related trips (see Figure 4.12) was used to purchase equipment. The rest was split between transportation (21.0 percent), food (12.6 percent), accommodation (8.1 percent) and other purchases (5.6 percent).

Figure 4.10

Total and Average Expenditures by Participants in Wildlife-Related Activities in 1981

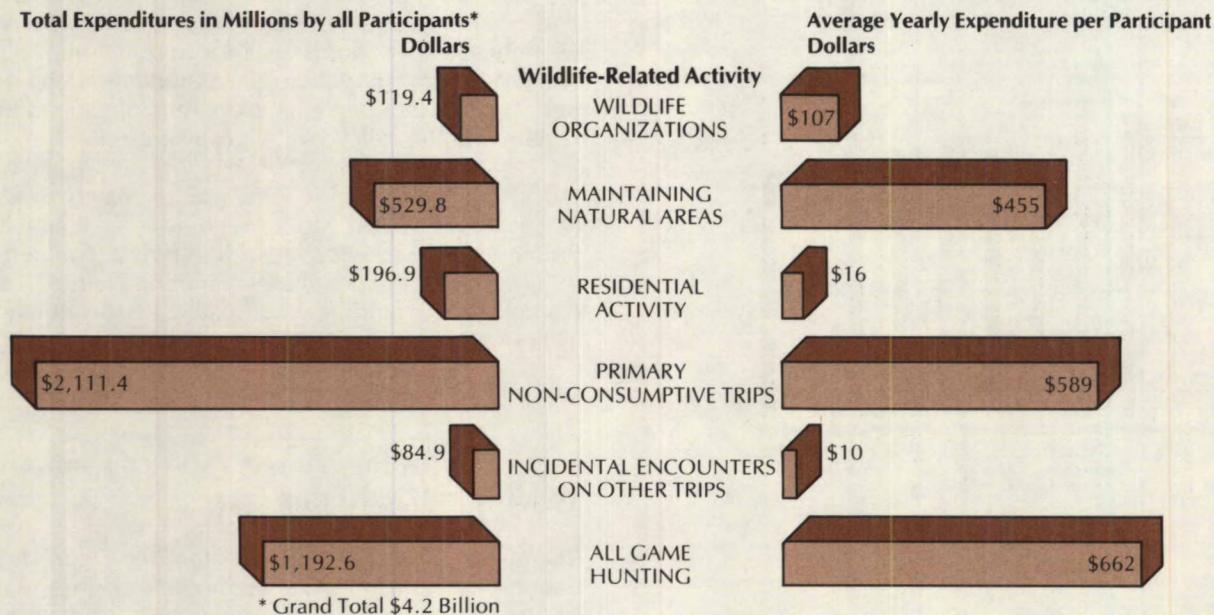


Figure 4.11

Average Expenditures per Participant for Primary Non-Consumptive Wildlife-Related Trips or Outings in 1981, by Province of Residence

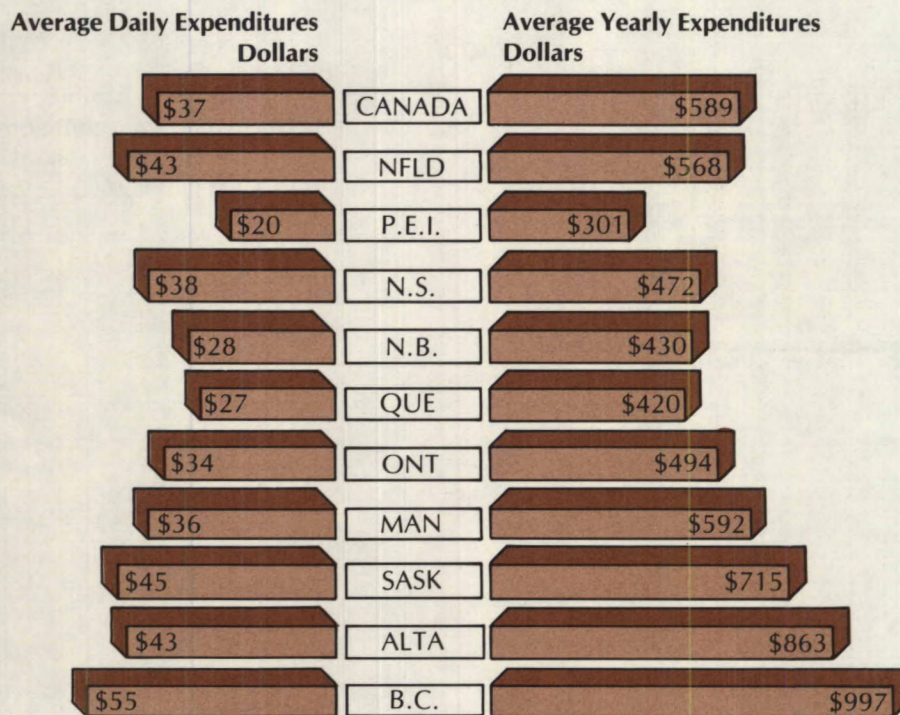
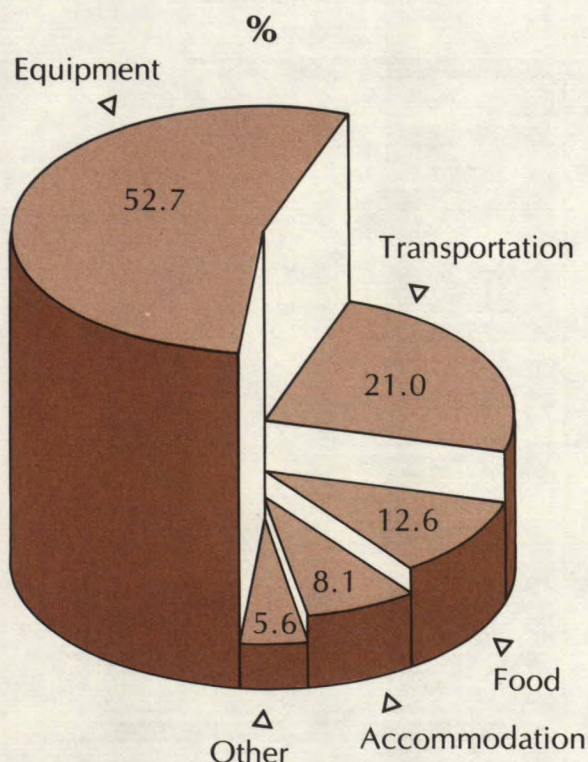


Figure 4.12

Percentage Distribution of 2.1 Billion Dollars Spent on Primary Non-Consumptive Wildlife-Related Trips or Outings in 1981



4.2

Expenditures on Hunting Wildlife

In 1981, Canadians who hunted spent about \$1.2 billion hunting wildlife, or \$662 per hunter (see Figure 4.21); waterfowl hunting accounted for \$231.2 million, or \$351 per hunter; other bird hunting \$286.1 million, or \$291 per hunter; small mammal hunting \$200.7 million, or \$216 per hunter and large mammal hunting \$474.7 million, or \$504 per hunter.

Yearly expenditures for hunting (see Figure 4.22) varied greatly across the nation. Residents of British Columbia and Alberta recorded the highest yearly expenditures followed by Nova Scotia and Manitoba residents. Expenditures per hunting day followed a similar pattern (see Figure 4.22) with British Columbia, Alberta and Manitoba residents exceeding the national average of \$37 per hunting day. Variation in reported expenditures tended to be highest in these 3 provinces.

Figure 4.21

Total and Average Expenditures by Participants on Hunting Activities for 1981

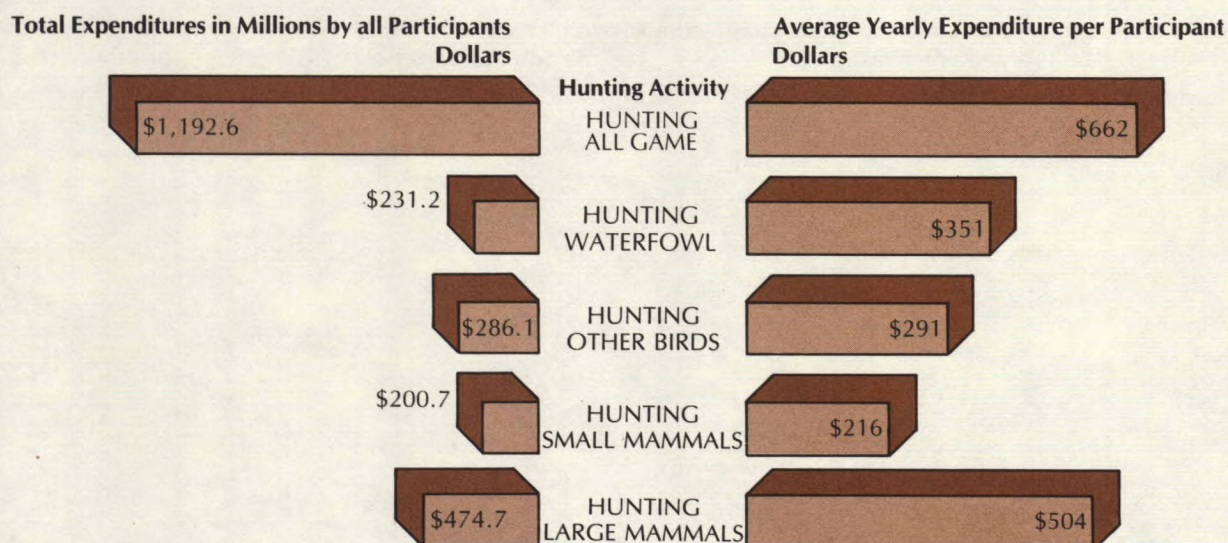
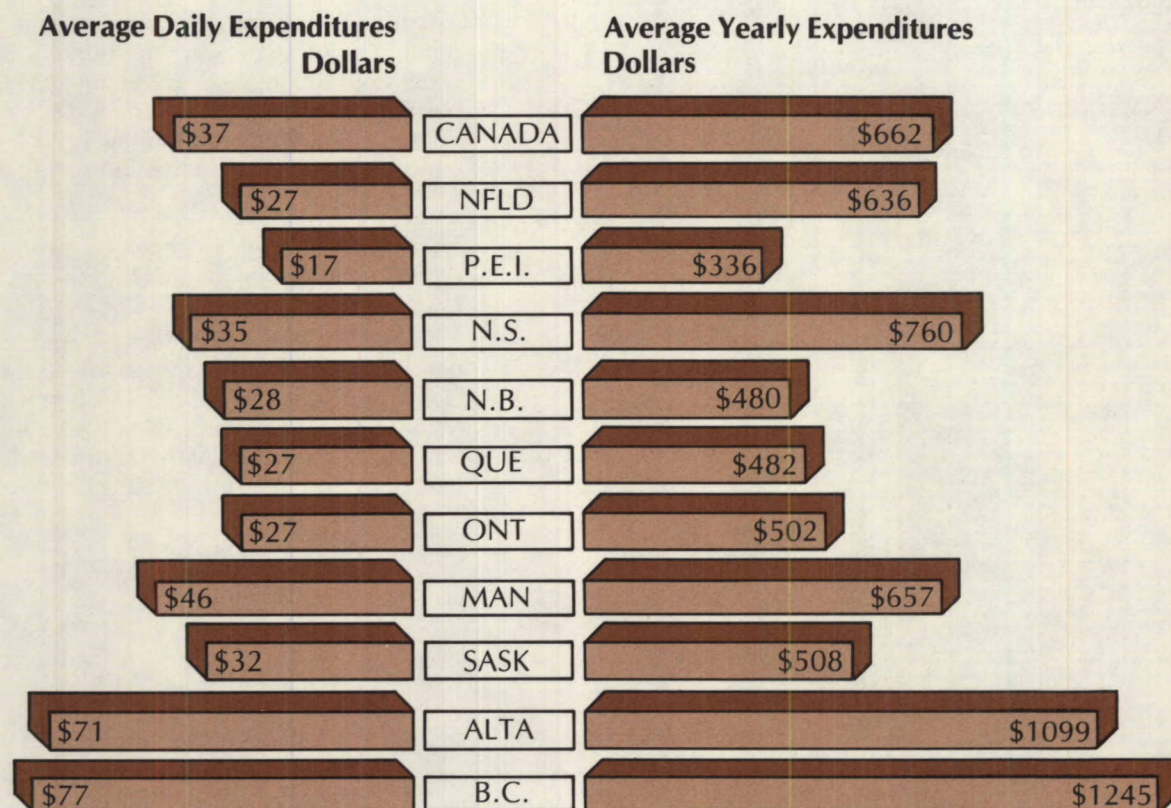


Figure 4.22*Average Expenditures per Participant for Hunting Wildlife in 1981, by Province of Residence*

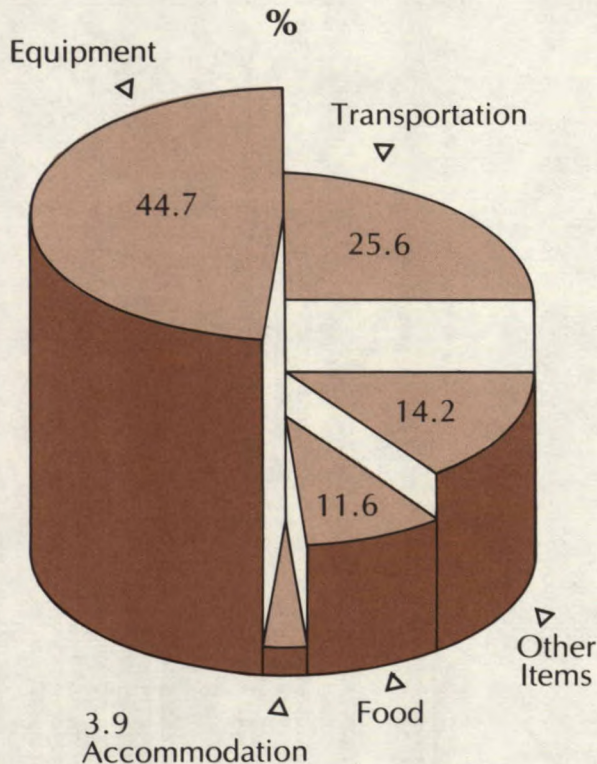
In 1981, expenditures for hunting wildlife (see Figure 4.23) totalled \$1.2 billion and were distributed as follows: 44.7 percent to equipment purchases, 25.6 percent

to transportation, 11.6 percent to food, 3.9 percent to accommodation and 14.2 percent for other items.

Attitudes Toward Wildlife

Figure 4.23

Percentage Distribution of 1.2 Billion Dollars Spent on Hunting Wildlife in 1981



4.3

Expenditures on Other Wildlife-related Activities

Expenditures on other wildlife-related activities accounted for 21.9 percent of the \$4.2 billion spent on wildlife during 1981. The largest amount in this category (see Figure 4.10), accounting for 12.5 percent of total expenditures, or \$529.8 million, was spent by about 1.2 million Canadians on maintaining a natural area for wildlife. Residential wildlife-related activity, while having a low yearly expenditure per participant of \$16, accounted for \$196.9 million, or 4.6 percent of total wildlife-related expenditures. Contributions to wildlife organizations and expenditures on other trips or outings accounted for a further 4.8 percent of wildlife-related expenditures. About \$119.4 million, an average of \$107.00 per participant, were spent on wildlife organizations in the form of donations or membership fees. A further \$84.9 million were spent by Canadians who encountered wildlife incidentally while on an outing or trip with each participant spending on average \$10.00 per year.

The attitudes held by Canadians were also a concern of this survey. In this section the level of interest shown in participating in non-consumptive, consumptive or membership activities is presented. Respondents were asked to indicate if they would be interested in participating in such non-consumptive activities as watching wildlife, feeding, photographing or observing wildlife. In a similar manner respondents were asked about consumptive activities such as collecting wildlife specimens, hunting or trapping, and membership activities like joining a club or contributing to organizations that protect or maintain abundant wildlife. The answers to these questions allowed an estimation of the potential demand for wildlife-related activities.

This section also presents the reported feelings of respondents on the matters of maintaining abundant wildlife and preserving endangered species. Respondents were asked to indicate how important these issues were to them. The results of these questions are presented for the Canadian population as a whole and also by province.

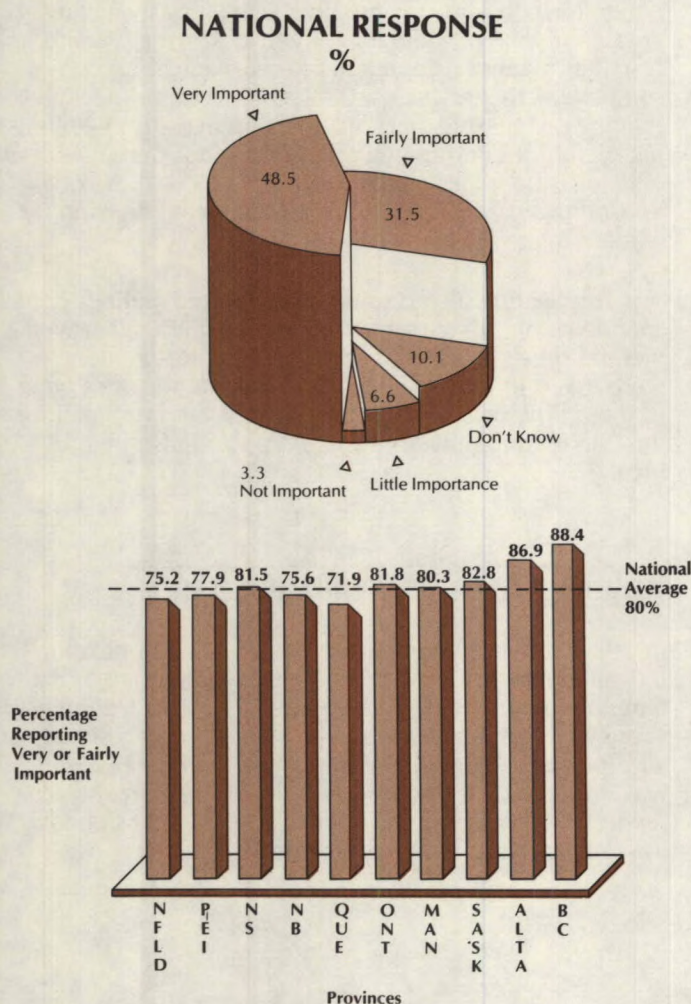
5.1

Attitudes Toward Wildlife Populations

In 1981, about 80 percent of the Canadian population indicated they felt it was very or fairly important to maintain abundant wildlife (see Figure 5.11). This feeling was strong across Canada with over 70 percent of residents of all provinces stating that maintaining abundant wildlife was important. At the provincial level, the percentage reporting very important or fairly important was about the same as that of the national level.

Figure 5.11

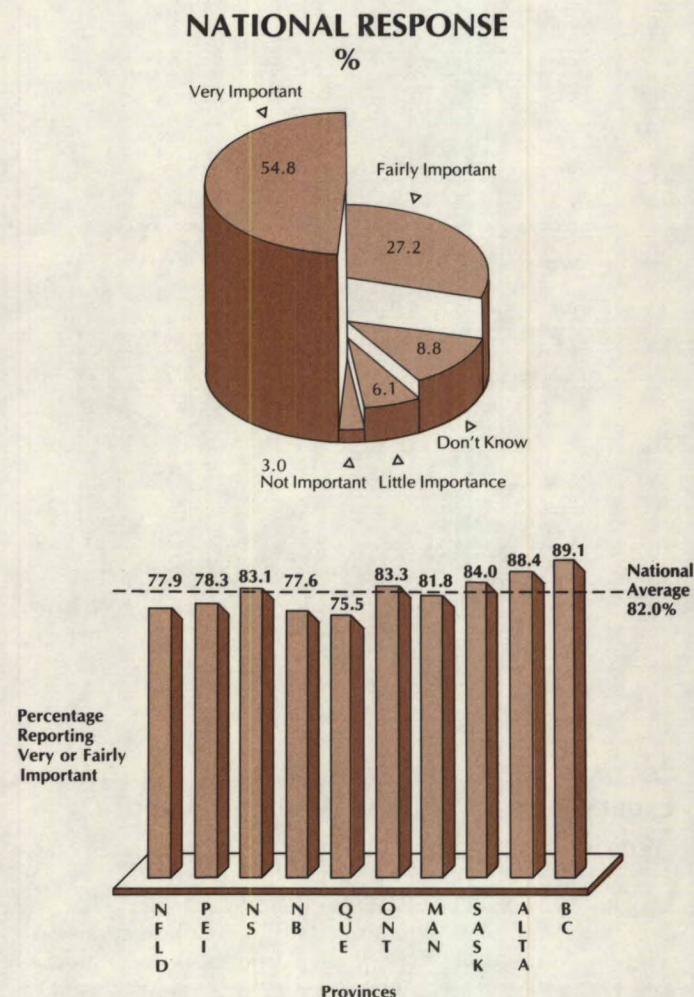
Percentage of Canadians Reporting Maintaining Abundant Wildlife to be Very or Fairly Important in 1981, by Province of Residence



When asked to indicate how important preserving endangered species was to them, 82 percent reported it was very or fairly important (see Figure 5.12). Once again, this strong support was reflected across Canada with all provinces exceeding the 75 percent level. As in maintaining abundant wildlife, the percentage of provincial residents stating that preserving endangered species was very important or fairly important closely followed the national figures.

Figure 5.12

Percentage of Canadians Reporting Preserving Endangered Species to be Very or Fairly Important in 1981, by Province of Residence



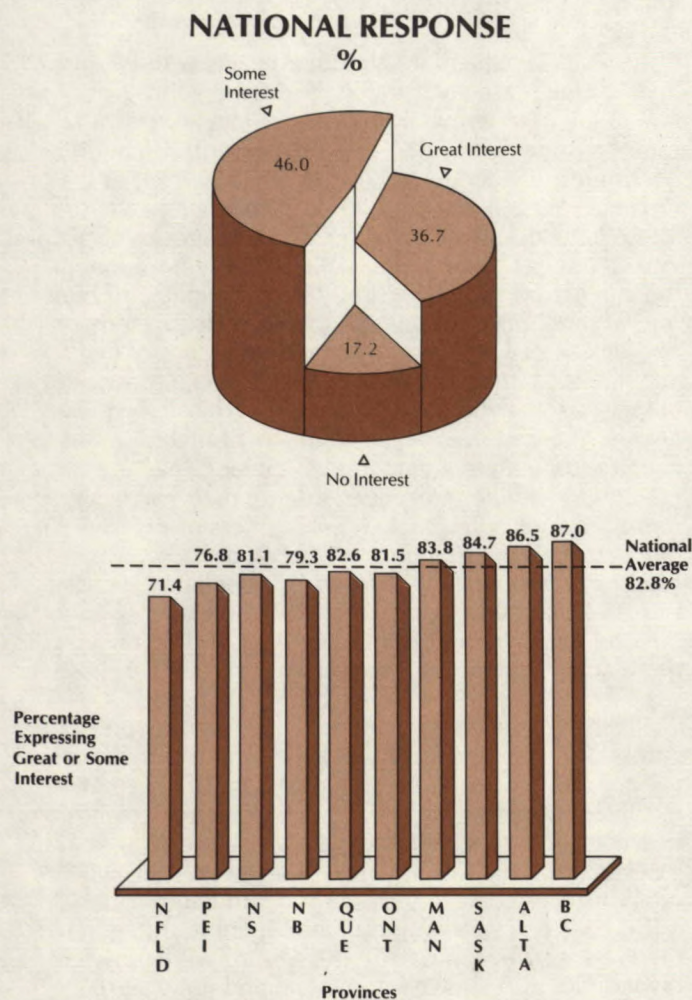
5.2

Attitudes Toward Wildlife-related Activities

The survey indicated high levels of interest in wildlife-related activities by Canadians. Non-consumptive wildlife-related activities (see Figure 5.21) were the most popular with 82.8 percent of Canadians expressing some or great interest in participating. This high level of interest was evident across the country, especially in the west. The appeal remained high in the other provinces but declined slightly in Atlantic Canada. Overall indications were that the vast majority of Canadians were predisposed to participate in non-consumptive wildlife-related activities.

Figure 5.21

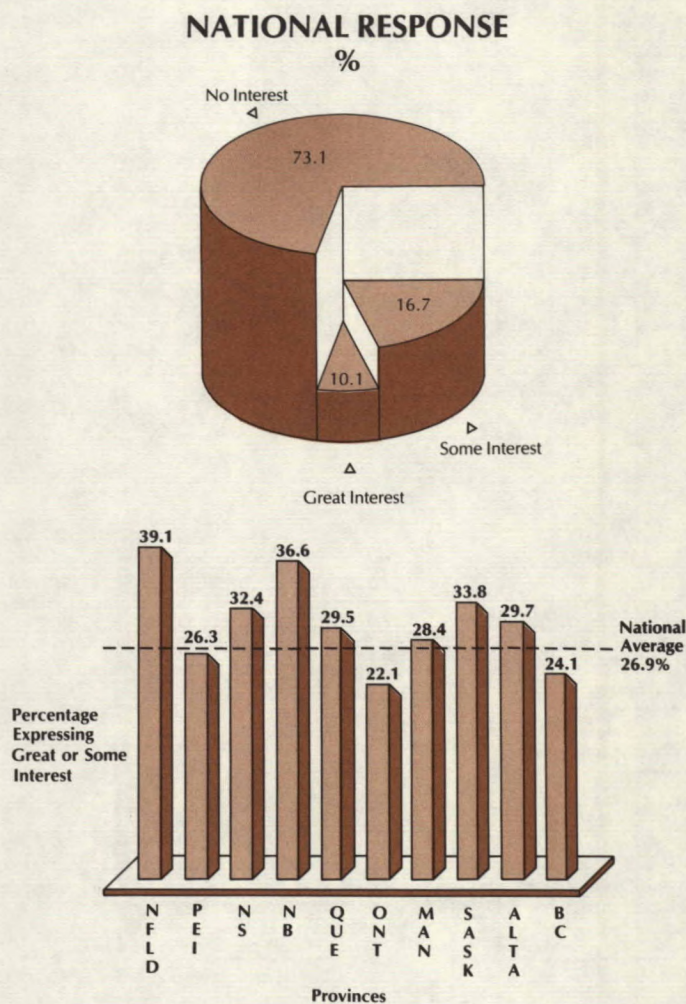
Percentage of Canadians Expressing Great or Some Interest in Participating in One or More Non-Consumptive Wildlife-Related Activities in 1981, by Province of Residence



In 1981, about 26.9 percent of Canadians indicated some or great interest in participating in consumptive wildlife-related activities (see Figure 5.22). The appeal was generally stronger among Atlantic and Prairie residents who reported levels substantially above the national average. The levels and patterns of interest show great similarity to those levels of hunting participation in 1981 and especially those reporting having hunted at some time in their life. These findings indicate that consumptive wildlife-related activities are strongly supported across Canada.

Figure 5.22

Percentage of Canadians Expressing Great or Some Interest in Participating in One or More Consumptive Wildlife-Related Activities in 1981, by Province of Residence

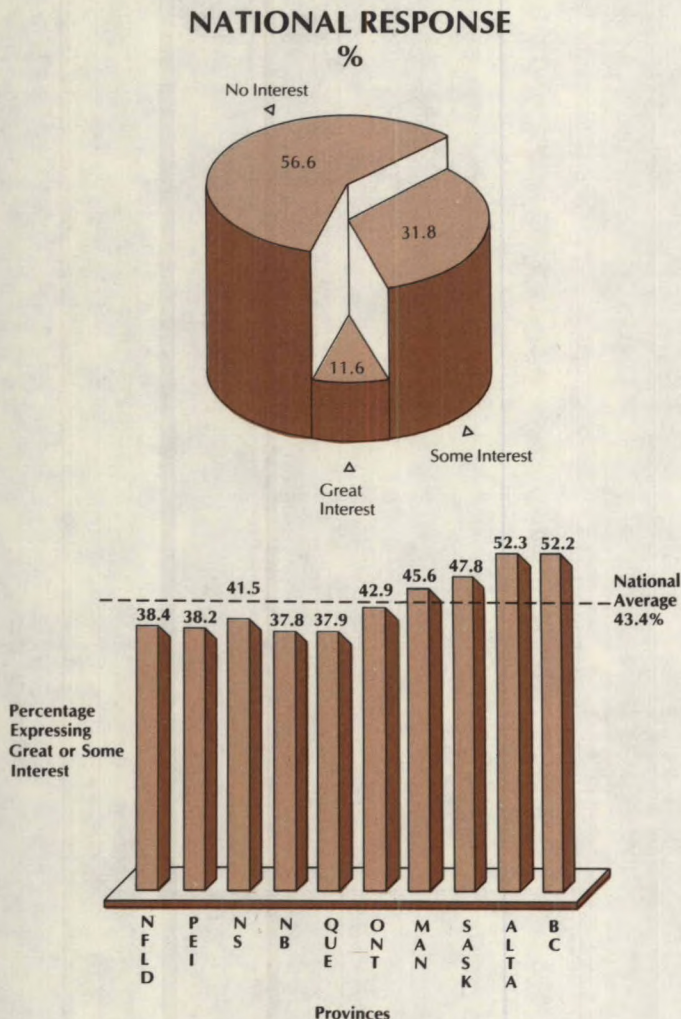


About 6.0 percent of Canadians indicated they participated in some form of wildlife-related organization. However, 43.4 percent (see Figure 5.23) indicated some or great interest in participating in a wildlife-related organization. This difference was present in all provinces with Canada's western provinces showing slightly higher levels of interest. The obvious differential between actual participation and expressed interest suggests a large pool of potential participants for this form of wildlife-related activity.

Conclusion

Figure 5.23

Percentage of Canadians Expressing Great or Some Interest in Participating in One or More Wildlife-Related Organizations in 1981, by Province of Residence in 1981



Overview of Findings

Most Canadians had some form of contact with wildlife during 1981. The most popular forms of wildlife-related activities were indirect and residential in nature. Participants in these activities came from all levels of society and from all parts of Canada.

Some Canadians sought out contacts with wildlife and engaged in activities that required a good deal of commitment in terms of time and money. Those who took consumptive or non-consumptive trips incurred expenditures that accounted for about 78 percent of the estimated \$4.2 billion spent on wildlife-related activities. These activities tended to attract unique groups of people whose profiles often differed considerably from that of the general population. Those that participated in hunting or undertook special trips to watch, feed, study or photograph wildlife seem to represent a core of dedicated participants. Yet each of these special groups attracts a somewhat divergent public. This diversity is also reflected in the varying amounts of time devoted to activities by different age groups. Older Canadians encountered wildlife more often around their residence or during trips or outings taken for business or pleasure than other age groups. Hunting, on the other hand, was pursued most frequently by a younger population. Special trips to feed, study, watch or photograph wildlife showed little relationship between the number of days engaged in these activities and the age categories.

Although wildlife-related activities were popular across Canada significant provincial and regional differences did occur. Greater percentages of the residents of Ontario and the western provinces were involved in indirect forms of wildlife activity, while the Atlantic provinces and the Prairie provinces showed greater involvement in hunting activity. Differences in participation rates, days engaged in and money spent for other activities were also evident. Attitudes toward wildlife, while favourable, also showed provincial and regional differences. These and other findings denote the complex and intricate relationship between man and wildlife in various parts of Canada.

Potential Implications

As the analysis of the data unfolds, these and other similar findings may have a significant impact on the future development of wildlife management across Canada. The following is a sample of potential implications for wildlife management:

— The increased awareness of wildlife management agencies of the extent and nature of the interest of Canadians in wildlife may lead to a reconsideration of current policies and programmes. Some government agencies may consider expanding current policies and programmes while others may develop new ones to address previously uncharted public interests. Non-governmental agencies could use the information for market analyses to promote increased memberships or stimulate monetary contributions toward wildlife conservation in Canada.

— The most popular wildlife activities are engaged in by a broad cross-section of the Canadian population, whereas other activities that are specialized and require more commitment are pursued by participants whose socio-demographic characteristics are different from those of the general population. This may have important implications in the fields of communications and planning. Efforts to communicate with these dissimilar groups will probably differ according to the characteristics of each group. The efforts necessary to regulate the groups' activities may also vary. These efforts and related wildlife management planning may benefit from the knowledge that certain activities apparently are pursued by participants with identifiable socio-economic and demographic profiles. Future planning may be enhanced inasmuch as it may be possible to forecast demand for wildlife-related activities based on forecasted changes in the profile of the Canadian population.

— The fact that a large number of hunters pursued more than one type of game during the year or on a given trip may have important implications for the current licensing practices of some wildlife management agencies, and their survey systems. In some instances changes might produce more efficient systems which would allow wildlife management to identify and sample more easily hunters who purchase more than one licence. The changes might also enable more effective control of non-sampling errors caused by double counting or memory failure and reduce the amount of response burden created by multiple surveys.

— The popularity of some wildlife activities varied considerably from province to province. This seems to be due in part to the differing socio-economic and demographic characteristics of the provincial populations, local customs and differences in accessibility to wildlife resources. If these differences persist and if agencies increase their efforts to manage wildlife to provide benefits to their publics, this may lead to future provincial or regional policies and programmes which increasingly differ from one another.

— The broad impact of wildlife on the quality of life was reflected in the increased enjoyment recorded by business or vacation travellers who encountered wildlife. The vast majority of travellers who encounter wildlife incidentally during trips or outings reported experiencing greater levels of enjoyment. Travellers who came into contact with wildlife also reported spending extra monies as a result of these incidental wildlife encounters. This suggests that provincial and national economies might benefit significantly by highlighting their wildlife resources in tourism advertising campaigns.

— Favourable attitudes toward abundant wildlife populations and the preservation of endangered species suggest that the Canadian public is highly supportive of current policies and programmes that promote these aspects. The favourable attitudes were reflected in responses to questions dealing with interest in wildlife-related activities. Contrasting the responses to the questions dealing with "participation in 1981" with those on "interest in participating" in various wildlife-related activities suggests that participation in consumptive wildlife-related activities and membership in wildlife-related organizations could possibly be increased by as much as 174 percent and 600 percent, respectively.

Future Analysis

While the results presented in this report may be encouraging for wildlife managers they remain very general. The daily stewardship of the resource requires considerably more specific and tailored information to function effectively. The data base offers a unique opportunity for managers to explore in greater detail the relationship between wildlife and people.

To fulfil this need and to increase the benefits to be derived from the survey, several specific supplemental reports to managers of wildlife are proposed. The reports should include:

- (a) *A methodology report on the data set and its analysis;*
- (b) *Socio-economic and demographic profiles of specific wildlife user groups;*
- (c) *Geographic and inter-provincial dimensions of wildlife-related activities in Canada;*
- (d) *The economic value of wildlife-related activities in Canada;*
- (e) *Recommendations on repeating or modifying the survey in 1986.*

The first would be a user's guide that documents the questionnaire and sample design, editing and statistical estimation procedures, explains the Statistics Canada Micro-Data Tape and the SPSS System File being created, contrasts various provincial socio-economic survey results with the Statistics Canada survey results and explains the differences. This report is needed to avoid inadvertent misuse of the complex data set and would be made available as soon as possible after the present report.

The remaining reports would explore specific aspects of the data set in more detail. The first of these reports (b) would consist of descriptive profiles of various types of participants and would be intended to help managers understand who their numerous client groups are and how special user groups differ from one another. Report (c) would examine inter-provincial differences and inter-provincial travel to engage in wildlife activities. This perspective should be especially valuable in view of the country's magnitude and diverse geography.

Report (d), although potentially one of the most appealing, may also be one of the most difficult and controversial in view of the difficulties encountered in arriving at an estimate of value for a mobile resource. This report may require the input of outside consultants in the field of resource economics.

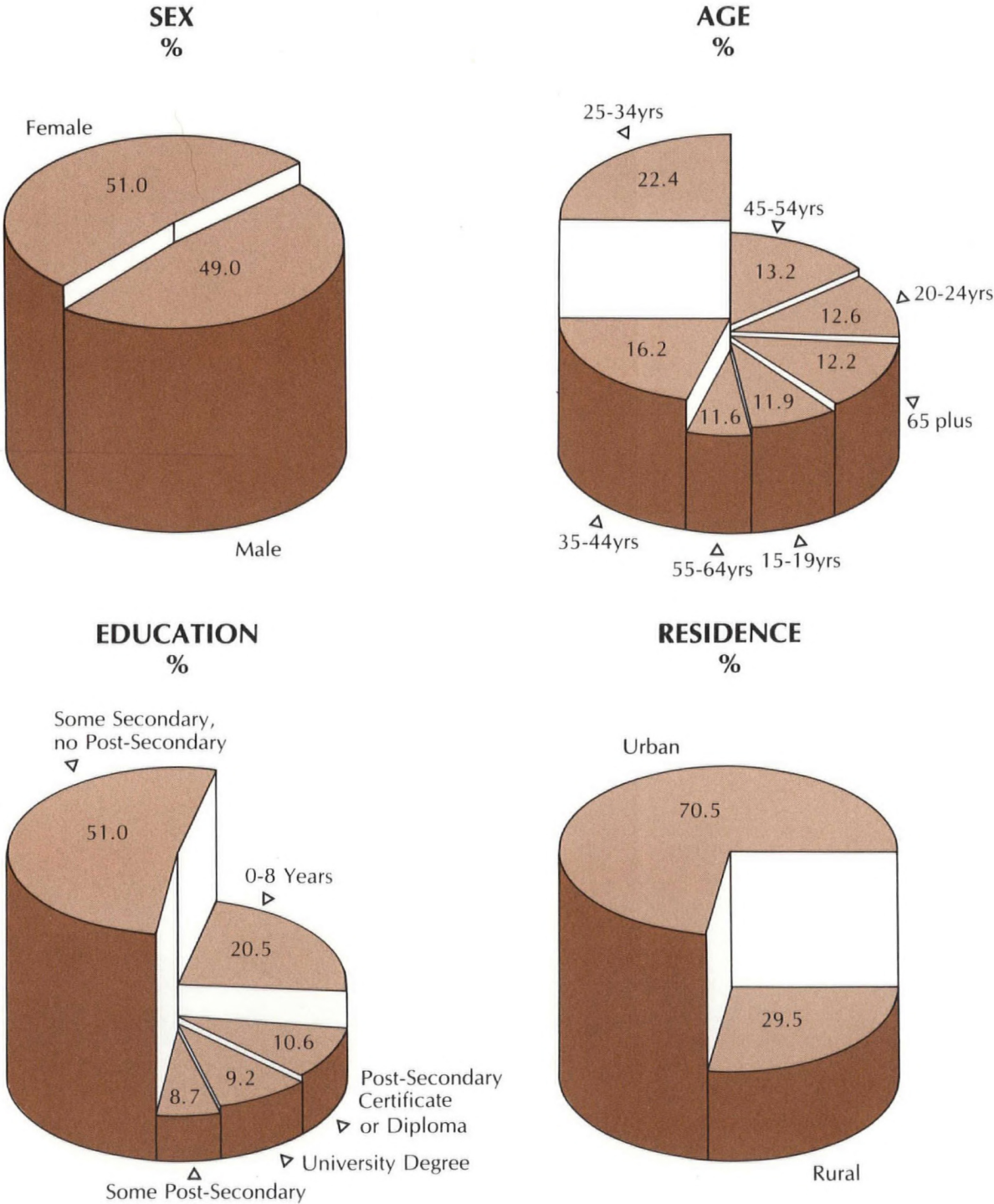
Report (e) would make recommendations on further needed research in the wildlife area. This would be based on the findings of the above-mentioned reports and the critical assessments of the originating sponsors. A detailed review of the procedures, designs and concepts used in the original survey would be undertaken and specific modifications would be recommended as required.

The final result of these additional reports would be a practical and relevant document prepared with the manager of wildlife resources in mind. The finished reports would produce a series of resource documents which could be used by managers to find solutions to a wide range of wildlife management issues.

TABLE A1: A Profile of the Canadian Population Aged 15 Years and Over
(Statistics Canada, 1981)

Characteristic	Number	Percent
Sex		
Male _____	9,051,956	49.0
Female _____	9,421,135	51.0
Age Group		
15-19 _____	2,191,046	11.9
20-24 _____	2,332,364	12.6
25-34 _____	4,137,979	22.4
35-44 _____	2,984,197	16.2
45-54 _____	2,430,164	13.2
55-64 _____	2,147,644	11.6
65 and over _____	2,249,698	12.2
Rural/Urban Residence		
Rural _____	5,445,235	29.5
Urban _____	13,027,856	70.5
Education		
0-8 Years _____	3,791,549	20.5
Some Secondary, no Post-Secondary _____	9,429,501	51.0
Some Post-Secondary _____	1,600,451	8.7
Post-Secondary Certificate or Diploma _____	1,950,878	10.6
University Degree _____	1,700,712	9.2
CANADA TOTAL _____	18,473,091	100.0

FIGURE A1: A Profile of the Canadian Population aged 15 Years and Over.



Appendix A **Profile of the Canadian Population** *(fold-out)*

Appendix B Current and Past Contributing Members of the Committee

A number of people have been actively involved in the development of the original survey idea and this report. The following is a list of those people who have participated in the Committee for a National Survey on the Value of Wildlife since its creation in 1980.

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Wildlife Administrative
Assistant
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Mr. P. Whiting
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Department of Renewable
Resources
Government of the Yukon
Territory
Whitehorse, Yukon Territory

WILDLIFE:

In this report wildlife is defined as wild animals, not pets or other domesticated animals. It includes waterfowl, other wild birds, small and large mammals and other wildlife in a natural environment. Animals in zoos or game farms were not classified as wildlife in this study with the exception of indirect wildlife-related activities.

Waterfowl:

Is defined as duck, geese, herons, cranes . . .

Other Birds:

Is defined as all other wild birds such as robins, sparrows, crows, pigeons, hawks, owls and upland game birds such as grouse, partridge, pheasants . . .

Small Mammals:

Is defined as small game and non-game species, for example: rabbits, squirrels, raccoons, foxes, groundhogs, beaver and other fur-bearers . . .

Large Mammals:

Is defined as big game and non-game species, for example: deer, bears, moose, mountain sheep . . .

Other Wildlife:

Is defined as all remaining wildlife such as butterflies, frogs, snakes, lizards . . . but does not include fish.

CONSUMPTIVE ACTIVITY:

Is defined as an activity whose purpose is the harvesting of wildlife. This usually means hunting wildlife although in some sections of the report collecting wildlife specimens and trapping are included.

NON-CONSUMPTIVE ACTIVITY:

Is defined as activities which do not involve the harvesting of wildlife such as observing, feeding, photographing or studying wildlife. Such activities as INDIRECT, RESIDENTIAL and WILDLIFE-RELATED TRIPS OR OUTINGS are non-consumptive activities.

WILDLIFE-RELATED ACTIVITIES:

In this report wildlife-related activities are defined as recreational activities that include, in some form, either direct or indirect contact with wildlife. Such activities as INDIRECT wildlife activities, RESIDENTIAL wildlife activities, PRIMARY NON-CONSUMPTIVE trips and OTHER TRIPS OR OUTINGS and CONSUMPTIVE wildlife activity are included in this category.

INDIRECT ACTIVITY:

Is defined as recreational activity which allows the participant to experience wildlife outside its natural setting through a variety of modes: reading, watching films or TV, purchasing art or crafts and visiting

institutions dealing with wildlife such as zoos, game farms, aquariums or museums of natural history. This is in contrast to direct contact with wildlife through residential and consumptive activities or during trips or outings.

RESIDENTIAL ACTIVITY:

Is defined as recreational activity that takes place around the home. Such activities as feeding, watching, studying, photographing wildlife or maintaining shrubs or plants for wildlife are included.

TRIP OR OUTING:

A trip is defined as a journey away from the place of residence for more than one day, an outing is defined as a journey away from the place of residence for less than one day.

Primary Non-consumptive Trip:

Is defined as a trip taken for the primary purpose of encountering wildlife to watch, feed, photograph or study them.

Other Trip or Outing:

Is defined as a trip with wildlife encounters, which had a main purpose other than encountering wildlife.

DAY:

Is defined as any part of a day (24 hours) spent participating in a given activity. An example of this definition is: if a hunter hunted 2 hours one day and 3 hours another day, it would be recorded as 2 days of hunting. If someone hunted 2 hours in the morning and 1 hour in the evening of the same day, it would be considered 1 day of hunting.

WILDLIFE-RELATED ORGANIZATION:

Is defined to include organizations such as a naturalist or conservation organization or a sportsman's club.

NATURAL AREA:

Is defined to include areas such as a woodlot, hedge, marsh, open field or similar natural area which provides food or shelter for wildlife.

COST:

Is defined as expenses incurred by the participant for the purchase of goods and services to be used primarily for participation in a wildlife-related activity. Goods bought for other purposes, but used in wildlife-related activities were *not* considered legitimate cost of wildlife activities.

Items considered in each category were as follows:

Natural Areas Costs:

Acceptable costs included the maintenance, improvement or purchase of natural areas. An example of improvement or provision of a natural area for wildlife would be to maintain or add to an area certain types of plants for the purpose of feeding or sheltering wildlife. The respondent could not include, for example, his/her cottage.

Residential Wildlife Activities Costs:

Such items as the cost of feeders, food for wildlife, birdhouses, magazines, films, cameras used primarily for wildlife would be included.

Transportation Costs:

Such items as the operation of private vehicles, gas, oil, car repairs, car rentals, planes, ferries . . . would be included.

Accommodation Costs:

Such items as cabins, lodges, motels and campgrounds . . . would be included.

Food Costs:

Such items as groceries, meals and beverages . . . would be included.

Equipment Cost:

Such items as cameras, camping gear, binoculars, special clothing, recording equipment, boats and motors and other vehicles such as snowmobiles and multiple terrain vehicles would be considered. For consumptive wildlife activity such purchases as guns and accessories, game carriers, calls, dogs, decoys, etc., would be included.

Other Item Costs:

Such items as feed for wildlife, books, film and film processing, as well as ammunition, guide fees, dog maintenance, equipment rentals and repairs for consumptive wildlife activity would be included.

Potential Sources of Error in Surveys

The figures in this report are estimates based on a sample of the Canadian population and as a result the underlying true population values may differ from the reported estimates. A difference between the estimate and true value can be attributed to two sources: sampling and non-sampling errors. Sampling errors are due to the fact that only a portion of the population is selected and had a different sample been selected a different estimate would have been calculated. They are a function of the sample size, the survey design and the estimation procedure. The inherent variability due to sampling error can itself be estimated from the variability in the selected sample. Non-sampling errors encompass all other sources of variability and include errors due to misreporting of values, due to selective nonresponse and data capture errors. These types of errors are difficult to evaluate but can be alleviated by careful questionnaire design, validation and quality control during data capture.

This appendix provides information on the sampling error in the survey as measured by the coefficient of variation. It also shows how this coefficient can be used to compute a confidence interval for a population parameter.

Coefficient of Variation

The coefficient of variation is a measure of the precision of the estimated value expressed as a percentage of the value. Each value or result presented in this report has an associated coefficient of variation. However, calculation of all these coefficients would be expensive and would substantially increase the size of this report. In order to reduce costs and simplify presentation of the results an approach has been used in which approximate coefficients of variation which apply to all values of similar magnitude are calculated. These approximate values are calculated to be generally conservative. In other words the "true" coefficients of variation are most often smaller than those presented here. Due to the large number of figures quoted in the text and a requirement to restrict the size of the appendices, coefficients of variation are generally presented only for estimates at the national level. However, additional estimates of the coefficients of variation for demographic profiles of participants and the attitudinal responses reported in Section 5 are given in another table.

The coefficient of variation for any national level estimate of participation rate, days spent or dollars spent can be found in Table D1. For example, for "any non-consumptive residential wildlife-related activity" in Table D1 the coefficient of variation for participation rate (expressed either as the total number participating or as a percentage of the Canadian population) is .4, the coefficient of variation for days spent (expressed either as total days or days per participant) is 1.1 and the coefficient of variation for dollars spent (expressed either as total dollars or dollars per participant) is 1.6.

Estimates of the coefficients of variation for the demographic profiles for a subpopulation (such as hunters, or participants in residential wildlife activities, etc.) or the attitudinal variables in Section 5, are available from Table D2. This table should not be used for days of participation or expenditures. One obtains the coefficient of variation from this table by finding the estimate given as a percentage of the subpopulation across the top of the table and the estimated number participating in the first column. For example, of the subpopulation of 3.6 million participants in primary non-consumptive wildlife-related trips, 8.5% are 65 years of age or older (see Figure 2.33). To estimate the number of people within this age group we take 8.5% of 3.6 million participants which corresponds to approximately 306 thousand persons. From Table D2 the coefficient of variation for participants (300,000) in this age group (8.5%) is between 4.3 and 4.4. For the attitudinal responses presented in Section 5 the coefficients of variation are derived by converting the percentage to numbers by multiplying by 18.47 million (the labour force survey population size) and using this row of the table to read across to the first available figure. For example, in Figure 5.11, the response "maintaining abundant wildlife is very important" was agreed to by 48.5 percent of the population or an estimated $18.47 \times 48.5/100 = 8.96$ million persons. In Table D2 the corresponding coefficient of variation for 8.96 million persons is 0.6.

Confidence Intervals

The coefficient of variation can be used to calculate confidence intervals for a population parameter such as the proportion of Canadians involved in a given wildlife-related activity. A confidence interval is a range of values within which one can assert the true population value falls with a given probability. Thus for any confidence interval there is associated a probability that it contains the true value. As the length of the interval increases, holding everything else fixed, the probability it contains the true mean increases.

A confidence interval on a value, Y , would be computed as follows:

$$Y \pm f Y (CV)/100$$

CV is the corresponding coefficient of variation. f is a factor which determines the probability the confidence interval encloses the mean. For large sample sizes $f = 1.6$ gives a 90% confidence interval, $f = 2.0$ gives a 95% confidence interval, and $f = 2.6$ gives a 99% confidence interval.

Example 1: *Number and percentage of participants in any non-consumptive residential wildlife-related activities.* The estimated number of participants is 12.3 million or 66.8% of the Canadian population with a coefficient of variation of 0.4. A 95% confidence interval for the number of participants is $12.3 \pm 2 \times 12.3 \times .4/100$ or a range of 12.20 - 12.40. Thus one is 95% confident that the true number of participants is between 12.20 million and 12.40 million people. The corresponding interval for the percentage participating is $66.8 \pm 2 \times 66.8 \times .4/100$ or a range of 66.3 - 67.3. Thus one is 95% confident that the true percentage of the Canadian population participating in this activity is between 66.3% and 67.3%.

Example 2: *Percentage of participants in primary non-consumptive wildlife-related trips who are 65 years of age or older.* The estimated percentage of this group who are 65 years of age or older is 8.5. The coefficient of variation as calculated previously is 4.4. Thus a 95% confidence interval on this percentage is $8.5 \pm 2 \times 8.5 \times 4.4/100$ or an interval of 7.8 - 9.2. One is 95% confident that the true percentage is between 7.8% and 9.2%.

Example 3: *Proportion of the Canadian population rating maintaining abundant wildlife populations as very important.* The estimated percentage was 48.5 and the coefficient of variation was estimated as 0.6. Thus a 95% confidence interval for this percentage is $48.5 \pm 2 \times 48.5 \times 0.6/100$ or a range of 47.9 - 49.1. One is 95% certain that the true percentage is between 47.9% and 49.1%.

TABLE D1

Approximate Coefficients of Variation for National Population Parameters

(—) Indicates Not Applicable

Variables	Coefficient of Variation for		
	Number and Percent of Population Participating in 1981	Total and Average Days/Participant	Total and Average Expenditure per Participant
<i>Any Indirect Wildlife-related Activity</i>	0.2	—	—
Watching Films or T.V. programmes	0.2	—	—
Reading About Wildlife	0.6	—	—
Visiting a Zoo Game Farm	0.6	—	—
Purchasing Wildlife Art Crafts or posters	1.3	—	—
Member of Wildlife Organizations	2.3	—	16.5
Maintaining Wildlife Areas	2.3	—	25.0
<i>Non Consumptive Residential Wildlife-related Activity</i>			
Any Residential Wildlife-related activity	0.4	1.1	1.6
Watching Wildlife	0.4	—	—
Feeding Scraps to Wildlife	0.7	—	—
Purchasing Feed for Wildlife	1.1	—	—
Studying Wildlife	1.2	—	—
Photographing Wildlife	1.3	—	—
Maintaining Plants for Wildlife	1.5	—	—
<i>Non-Consumptive Wildlife-related activity while on a Primary Non-Consumptive Wildlife-related trips</i>			
Primary non-consumptive wildlife-related trips	1.2	2.7	16.5
Watching wildlife	1.3	—	—
Photographing wildlife	1.9	—	—
Studying wildlife	2.3	—	—
Feeding wildlife	2.3	—	—
<i>Encountering wildlife while on Primary Non-Consumptive Wildlife-related trips</i>			
Other birds	1.6	—	—
Small mammals	1.6	—	—
Waterfowl	1.6	—	—
Large mammals	1.9	—	—
Other wildlife	2.2	—	—

Variables	Coefficient of Variation for		
	Number and Percent of Population Participating in 1981	Total and Average Days/Participant	Total and Average Expenditure per Participant
<i>Expenditures on primary Non-Consumptive Wildlife-related Trips or Outings</i>			
Transportation	—	—	16.5
Accommodation	—	—	16.5
Food	—	—	16.5
Equipment	—	—	16.5
Other	—	—	16.5
<i>Participation in Wildlife-related Activities while on Other Trips</i>			
Any wildlife encounter	0.6	1.9	16.5
Watching wildlife	0.7	—	—
Feeding wildlife	1.4	—	—
Photographing wildlife	2.0	—	—
Studying wildlife	3.8	—	—
<i>Encountering wildlife incidentally while on other trips</i>			
Other birds	0.9	—	—
Waterfowl	1.0	—	—
Small mammals	1.2	—	—
Large mammals	1.9	—	—
Other wildlife	2.5	—	—
<i>Wildlife hunting</i>			
Ever hunted	0.8	—	—
Any hunting in 1981	1.7	3.2	12.4
Hunted waterfowl	2.9	5.3	16.5
Hunted other birds	2.3	4.6	25.0
Hunted small mammals	2.5	4.4	16.5
Hunted large mammals	2.5	4.7	16.5
<i>Expenditures on wildlife hunting</i>			
Transportation	—	—	8.7
Accommodation	—	—	9.4
Food	—	—	9.7
Equipment	—	—	13.8
Other	—	—	8.3

TABLE D2 Approximate Coefficients of Variation for National Subpopulations Parameters

		Estimated Percentage of subpopulation													
		0.1	1.0	2.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	50.0	70.0	90.0
Estimated number in subpopulation in 000's	1	78.2	77.9	77.5	76.3	74.2	72.1	70.0	67.8	65.5	63.1	60.6	55.3	42.9	24.7
	2	55.3	55.1	54.8	53.9	52.5	51.0	49.5	47.9	46.3	44.6	42.9	39.1	30.3	17.5
	3	45.2	45.0	44.7	44.0	42.9	41.7	40.4	39.1	37.8	36.4	35.0	31.9	24.7	14.3
	4	39.1	38.9	38.7	38.1	37.1	36.1	35.0	33.9	32.7	31.5	30.3	27.7	21.4	12.4
	5	35.0	34.8	34.6	34.1	33.2	32.3	31.3	30.3	29.3	28.2	27.1	24.7	19.2	11.1
	6	31.9	31.8	31.6	31.1	30.3	29.5	28.6	27.7	26.7	25.8	24.7	22.6	17.5	10.1
	7	29.6	29.4	29.3	28.8	28.1	27.3	26.5	25.6	24.7	23.8	22.9	20.9	16.2	9.4
	8	27.7	27.5	27.4	27.0	26.2	25.5	24.7	24.0	23.1	22.3	21.4	19.6	15.2	8.7
	9	26.1	26.0	25.8	25.4	24.7	24.0	23.3	22.6	21.8	21.0	20.2	18.4	14.3	8.2
	10	24.7	24.6	24.5	24.1	23.5	22.8	22.1	21.4	20.7	19.9	19.2	17.5	13.6	7.8
	11	23.6	23.5	23.4	23.0	22.4	21.8	21.1	20.4	19.7	19.0	18.3	16.7	12.9	7.5
	12	22.6	22.5	22.4	22.0	21.4	20.8	20.2	19.6	18.9	18.2	17.5	16.0	12.4	7.1
	13	21.7	21.6	21.5	21.2	20.6	20.0	19.4	18.8	18.2	17.5	16.8	15.3	11.9	6.9
	14	20.9	20.8	20.7	20.4	19.8	19.3	18.7	18.1	17.5	16.9	16.2	14.8	11.5	6.6
	15	20.2	20.1	20.0	19.7	19.2	18.6	18.1	17.5	16.9	16.3	15.6	14.3	11.1	6.4
	16	19.6	19.5	19.4	19.1	18.6	18.0	17.5	16.9	16.4	15.8	15.2	13.8	10.7	6.2
	17	19.0	18.9	18.8	18.5	18.0	17.5	17.0	16.4	15.9	15.3	14.7	13.4	10.4	6.0
	18	18.4	18.4	18.3	18.0	17.5	17.0	16.5	16.0	15.4	14.9	14.3	13.0	10.1	5.8
	19	*****	17.9	17.8	17.5	17.0	16.6	16.1	15.5	15.0	14.5	13.9	12.7	9.8	5.7
	20	*****	17.4	17.3	17.1	16.6	16.1	15.6	15.2	14.6	14.1	13.6	12.4	9.6	5.5
	21	*****	17.0	16.9	16.6	16.2	15.7	15.3	14.8	14.3	13.8	13.2	12.1	9.4	5.4
	22	*****	16.6	16.5	16.3	15.8	15.4	14.9	14.4	14.0	13.5	12.9	11.8	9.1	5.3
	23	*****	16.2	16.2	15.9	15.5	15.0	14.6	14.1	13.7	13.2	12.6	11.5	8.9	5.2
	24	*****	15.9	15.8	15.6	15.2	14.7	14.3	13.8	13.4	12.9	12.4	11.3	8.7	5.1
	25	*****	15.6	15.5	15.3	14.8	14.4	14.0	13.6	13.1	12.6	12.1	11.1	8.6	4.9
	30	*****	14.2	14.1	13.9	13.6	13.2	12.8	12.4	12.0	11.5	11.1	10.1	7.8	4.5
	35	*****	13.2	13.1	12.9	12.5	12.2	11.8	11.5	11.1	10.7	10.2	9.4	7.2	4.2
	40	*****	12.3	12.2	12.1	11.7	11.4	11.1	10.7	10.4	10.0	9.6	8.7	6.8	3.9
	45	*****	11.6	11.5	11.4	11.1	10.8	10.4	10.1	9.8	9.4	9.0	8.2	6.4	3.7
	50	*****	11.0	11.0	10.8	10.5	10.2	9.9	9.6	9.3	8.9	8.6	7.8	6.1	3.5
55	*****	10.5	10.4	10.3	10.0	9.7	9.4	9.1	8.8	8.5	8.2	7.5	5.8	3.3	
60	*****	10.1	10.0	9.8	9.6	9.3	9.0	8.7	8.5	8.1	7.8	7.1	5.5	3.2	
65	*****	9.7	9.6	9.5	9.2	8.9	8.7	8.4	8.1	7.8	7.5	6.9	5.3	3.1	
70	*****	9.3	9.3	9.1	8.9	8.6	8.4	8.1	7.8	7.5	7.2	6.6	5.1	3.0	
75	*****	9.0	8.9	8.8	8.6	8.3	8.1	7.8	7.6	7.3	7.0	6.4	4.9	2.9	
80	*****	8.7	8.7	8.5	8.3	8.1	7.8	7.6	7.3	7.1	6.8	6.2	4.8	2.8	
85	*****	8.4	8.4	8.3	8.1	7.8	7.6	7.4	7.1	6.8	6.6	6.0	4.6	2.7	
90	*****	8.2	8.2	8.0	7.8	7.6	7.4	7.1	6.9	6.6	6.4	5.8	4.5	2.6	
95	*****	8.0	7.9	7.8	7.6	7.4	7.2	7.0	6.7	6.5	6.2	5.7	4.4	2.5	
100	*****	7.8	7.7	7.6	7.4	7.2	7.0	6.8	6.5	6.3	6.1	5.5	4.3	2.5	
125	*****	7.0	6.9	6.8	6.6	6.5	6.3	6.1	5.9	5.6	5.4	4.9	3.8	2.2	
150	*****	6.4	6.3	6.2	6.1	5.9	5.7	5.5	5.3	5.2	4.9	4.5	3.5	2.0	
200	*****	*****	5.5	5.4	5.2	5.1	4.9	4.8	4.6	4.5	4.3	3.9	3.0	1.7	
250	*****	*****	4.9	4.8	4.7	4.6	4.4	4.3	4.1	4.0	3.8	3.5	2.7	1.6	
300	*****	*****	4.5	4.4	4.3	4.2	4.0	3.9	3.8	3.6	3.5	3.2	2.5	1.4	
350	*****	*****	4.1	4.1	4.0	3.9	3.7	3.6	3.5	3.4	3.2	3.0	2.3	1.3	
400	*****	*****	*****	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.0	2.8	2.1	1.2	
450	*****	*****	*****	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.6	2.0	1.2	
500	*****	*****	*****	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.5	1.9	1.1	
750	*****	*****	*****	2.8	2.7	2.6	2.6	2.5	2.4	2.3	2.2	2.0	1.6	0.9	
1000	*****	*****	*****	2.3	2.3	2.2	2.1	2.1	2.0	1.9	1.7	1.4	0.8	0.8	
1500	*****	*****	*****	1.9	1.9	1.8	1.7	1.7	1.6	1.6	1.4	1.1	0.6	0.6	
2000	*****	*****	*****	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.2	1.0	0.6	0.6	
3000	*****	*****	*****	1.3	1.2	1.2	1.2	1.2	1.1	1.0	0.8	0.5	0.5	0.5	
4000	*****	*****	*****	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.7	0.4	0.4	0.4	
5000	*****	*****	*****	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.6	0.3	0.3	0.3	
6000	*****	*****	*****	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.3	0.3	0.3	
7000	*****	*****	*****	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.5	0.3	0.3	0.3	
8000	*****	*****	*****	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.3	0.3	0.3	0.3	
9000	*****	*****	*****	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.3	0.3	0.3	0.3	
10000	*****	*****	*****	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	
12500	*****	*****	*****	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	
15000	*****	*****	*****	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	

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