THE RANGE OF CHOICE IN DECISION-MAKING: THE CASE OF LAND ACQUISITION FOR WILDLIFE IN BRITISH COLUMBIA

by

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ABSTRACT

This thesis examines the range of choice in decision-making, specifically the identification of alternatives. It uses the range of choice, both full and practical, as a theoretical framework for examining this aspect of the decision-making process. Land acquisition for wildlife in British Columbia is the topic explored.

Competition for wildlife habitat intensifies as demands for the land base increase. While some land uses are compatible with wildlife, others permanently alter wildlife habitat. Typically, agencies responsible for wildlife have very little direct control of the land on which the resource depends. Obtaining administrative control of land, defined broadly as land acquisition, is one of the more important activities carried out by wildlife managers.

This thesis investigates a number of case studies involving past decisions by British Columbia wildlife managers to acquire land, focussing on the identification of alternative tenure types. Also studied are the major factors that have influenced the wildlife managers' range of choice. These factors are categorized as traits of the decision-makers and characteristics of the decision-making environment.

The full range of choice for acquiring administrative control of both privately- and publicly-owned land for wildlife is reviewed. Alternatives range from the outright purchase of private land to an expression of interest in public land. They also include encouraging individuals and agencies to consider wildlife needs in their land use decisions.

It is noted that wildlife managers in British Columbia have not considered the full range of choice in their past decisions to acquire land for wildlife. This conclusion reaffirms research conducted in other resource management disciplines, most notably water management.

Although some wildlife managers may give implicit consideration to all potential alternatives, most do not have knowledge of or experience with the full range of choice. The most significant factor affecting the range of choice on privately-owned land is funding availability for land purchase. On Crown land, a major factor is mistrust in the history of relationships between individuals involved in a decision.

Two of the factors found to influence wildlife managers' range of choice, knowledge and/or experience and history of relationships, are mentioned in the literature. Their influence on the range of choice is consistent with previous findings. Although funding availability is also found in the literature, it is discussed in the context of administrative costs rather than land purchase costs. Its influence on wildlife managers' range of choice thus cannot be compared to other findings.

It is recommended that the Wildlife Branch develop a provincial strategy to guide its land acquisition activities. This strategy should include the identification of the full range of choice available to wildlife managers for acquiring administrative control of land for wildlife. It is also recommended that political commitment to the wildlife resources of the Province be increased. It is hoped that this research will enhance wildlife managers' knowledge and use of the potential range of choice for acquiring land for wildlife, and that the recommendations will be followed to improve the decision-making process.

Examiners:

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TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

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DEDICATION

For my parents, who have given me all the prerequisites for happiness and fulfilment, especially their love and encouragement. Dad, this convocation is for you! Mom, I will always remember how hard you worked to achieve your personal goals; you remain my greatest mentor.

CHAPTER 1

INTRODUCTION

1.1 Preamble

> Although (wildlife) habitat is a complex ecological phenomenon, it also can be described in the simplest of terms; it is real estate ... Most habitat areas are either privately owned where land use control rests with the owner or are public lands subject to uses often contrary to the best interests of wildlife ... Therefore, habitat preservation efforts must seek to control land use or means to influence land use decisions so that wildlife habitat values are maintained (Retfalvi, 1982, p. 65).

In most of North America, wildlife is a publicly-owned resource that ranges on both privately- and publicly-owned lands. Individuals and agencies responsible for managing it are thus faced with a serious dilemna. Although charged with stewardship of wildlife resources, they typically have very limited jurisdiction over the habitat upon which those resources depend (Ryder and Boag, 1981).

Wildlife has traditionally been viewed as expendable whenever it has competed for the land base with other resources (Ryder and Boag, 1981). Competition for habitat comes in a variety of forms. Long-term and sometimes irreversible wildlife habitat losses can result from land use activities like subdivision developments, hydroelectric impoundments and large surface mines. Shorter-term habitat alterations can be effected by such activities as road building and domestic animal grazing.

Increasing pressures on wildlife habitat throughout North America have precipitated the need for wildlife managers to obtain greater administrative control of both privately- and publicly-owned lands. Obtaining administrative control of habitat, defined broadly here as land acquisition, is one of the more important activities carried out by wildlife managers. Alternatives for acquiring administrative control may be as weak as an expression of interest in privately- or publicly-owned lands, or as strong as a wildlife agency holding title to private land or obtaining exclusive administrative control of public land.

In British Columbia, wildlife is managed by the Wildlife Branch, Ministry of Environment and Parks. Like other wildlife management agencies, the Wildlife Branch has very little administrative control of the lands of the province. The majority of the land in the province is publicly-owned (93%). This Crown land is managed primarily by another agency, the Ministry of Forests and Lands. The remainder of the provincial land base is under various forms of private tenure.

Until 1978, the Wildlife Branch had no explicit goals and objectives. Since that year, the stated goal of the Branch has been:

> to maintain the diversity and self sustainability of species representative of the major biophysical zones of the province and to ensure that, within the constraints of land capability and biological limits of each species, wildlife is available in sufficient abundance to meet the aesthetic, cultural, recreational and economic needs of society (Ministry of Environment, 1985).

In the most recent set of management objectives for the Wildlife Branch, the objective which pertains most specifically to habitat management is:

> to minimize the deleterious effects of man's activity on wildlife habitat and to protect or acquire those habitats critical to wildlife, consistent with the Branch's objectives for wildlife production and the public's demand for wildlife based recreation (Ministry of Environment, 1985).

In trying to meet this objective, wildlife managers can employ a range of habitat management techniques. These include the protection of wildlife habitat from other land uses, the enhancement of habitat using techniques like prescribed burning, and land acquisition.

The Wildlife Branch began to acquire administrative control of selected provincial lands in the 1930's, with the majority of acquisition occurring after 1970. It currently has some form of tenure on approximately 180 areas of important habitat, totalling some 900,000 hectares or just under 1% of the provincial land base (Ministry of Lands, Parks and Housing, 1985). Administrative control has been acquired under several different tenure types, including outright land purchase, lease, and transfer of administrative control from other Crown agencies.

Due to the escalation of land uses that compete with wildlife for the provincial land base, there is a need to assess the lands acquired by the Wildlife Branch to date. Such an assessment should ascertain whether the acquired properties are contributing to Wildlife Branch goals and objectives, and whether their costs are justified. An examination of past decisions of the Wildlife Branch to acquire

administrative control of the privately-owned and Crown lands of the province provides a framework for this assessment. The examination focusses on the identification of alternative tenure types, using White's (1961) theoretical, or potential and practical range of choice in resource management decision-making as a foundation.

The potential range of choice involves the identification and evaluation of all possible alternatives that will solve a particular problem and/or meet stated goals and objectives. Consideration of the full range of choice provides some assurance that the most effective solution to a specific problem will be applied.

The potential range of choice assumes the decision-maker has perfect knowledge and is free from such encumbrances as personal experience and values. The practical range of choice, on the other hand, accounts for the foibles of decision-makers and other constraints that contribute to a narrowing of the number of alternatives considered. Alternatives identified under the practical range of choice can be considered a sub-set of the potential.

The range of choice that is perceived and acted upon by a decision-maker is influenced by both internal and external factors. Examples of internal factors that operate to restrict the range of choice are the knowledge, experience and personal biases of the decision-maker. External factors include such practical constraints as the quantity and quality of information available, the costs associated with the decision, and the amount of time provided for undertaking all aspects of the decision-making process.

There is a tendency for decision-makers to operate consistently within the practical range of choice. This tendency was first identified in the water management field. For example, the historic preference for solving water supply problems has been to increase the supply of water through the construction of additional storage, rather than manage demands for the water through alternatives like recycling or water pricing (Wong, 1969; MacIver, 1970; Johnson, 1971; Sewell et al., 1985).

Current literature on the range of choice is almost exclusively restricted to water management, particularly water supply. This thesis will extend the research to the discipline of wildlife management. It will examine the range of choice exercised by wildlife managers for acquiring administrative control of lands important to wildlife in British Columbia. Past decisions to acquire land will be investigated, focussing on the identification of alternative tenure types. The factors that may have influenced the managers' range of choice will be identified and compared with factors that have been shown to influence managers in other professions. Finally, speculation about the need for a future strategy for land acquisition for wildlife will be made in the context of the potential and practical range of choice and the research evidence.

1.2 Research Structure and Procedure

Chapter Two outlines a conceptual model for examining the range of choice considered for acquiring administrative control of land for wildlife. The potential range of choice for acquiring administrative control of wildlife habitat on privately-owned and publicly-owned lands is reviewed. The potential range of choice comprises various land acquisition alternatives, zoning, and mechanisms under the category of cooperative management, through which wildlife agencies attempt to influence other agencies to consider their needs in land use decisions. Incorporated in this review is a discussion of the advantages and disadvantages of each alternative to both the landowner and the agency acquiring land for wildlife.

Major factors that can influence the identification of alternatives are then described. These factors are categorized as traits of the decision-maker, such as knowledge, experience and values, and characteristics of the decision-making environment, like timing and funding. This section identifies how these various factors influence the range of choice.

Chapter Three identifies the practical range of choice for acquiring administrative control of land for wildlife in British Columbia.

With the potential and practical range of choice for land acquisition and major factors that can influence the range of choice outlined, Chapter Four examines several case studies of land acquisition for

wildlife in British Columbia. The intent of these case studies is to examine past decisions to acquire properties under different tenure types throughout the province, to assess those decisions in terms of whether the full range of choice was considered, and to compare the major factors influencing the range of choice with those identified in the literature.

The research is undertaken in two ways: (1) a search of 167 files available in Victoria on properties that had been acquired by the Wildlife Branch to the fall of 1986; and (2) a questionnaire, administered in an interview format, on a selection of properties. The file search is used to identify, at a cursory level, whether alternatives were examined, to speculate on characteristics of the decision-making environment that may have influenced the range of choice, and to select a sample of properties for the questionnaire. The questionnaire sample of eleven properties encompasses six of the ten tenure types under which the Wildlife Branch has gained administrative control. At least one property from each of the eight geographic areas currently administered by the Branch is sampled. The interviews are focussed on the wildlife managers, although some other individuals who were involved in the decisions are included. An attempt is made to determine through the interviews what traits of the decision-makers (the wildlife managers) and characteristics of the decision-making environment had a major influence on the range of choice for land acquisition.

The file search and interview results are then assessed in terms of the potential range of choice for land acquisition and the major factors influencing the range of choice that were reviewed in Chapter Two.

On the basis of the analysis in Chapter Four, Chapter Five provides conclusions with respect to the range of choice, and makes recommendations about future land acquisition for wildlife in British Columbia.

CHAPTER 2

THE RANGE OF CHOICE AND CONSIDERATION OF ALTERNATIVES IN DECISION-MAKING

2.1 A Conceptual Framework for Examining Decisions to Acquire Administrative Control of Land for Wildlife

Decision-making is studied in a variety of disciplines, including economics, psychology, political science and geography. Common to these disciplines is the identification of basic steps involved in the decision-making process, namely problem definition, establishment of goals and objectives, formulation of alternatives, evaluation of alternatives, choice of an alternative, and implementation (Hamill, 1968; Lord and Warner, 1973; Mitchell, 1971; Sewell, 1973; Sutherland, 1977; Miller, 1983).

This thesis focusses on one step of the decision-making process, the formulation or identification of alternatives. Alternatives are identified through the decision-making behaviour of key actors involved in the decision-making process.

In all decision-making situations, more than one alternative can be identified by the decision-maker. White (1961) provides a conceptual framework for examining the spectrum of alternatives available by distinguishing between the theoretical, or potential and the practical range of choice.

The potential range of choice comprises all possible courses of action which might be open to the decision-maker in a given circumstance. It compares with the comprehensive theory of decision-making (e.g. Dror, 1968 and Zeckhauser and Shaefer, 1968).

The comprehensive theory of decision-making is viewed here to constitute a normative model; it describes how a decision ought to be made from the advocates' perspective. In the context of alternative formulation, the theory assumes that decision-makers have the time, expertise and resources to identify and assimilate a comprehensive list of alternatives. In other words, the decision-maker will consistently examine the full or potential range of choice.

White's practical range of choice can be considered a sub-set of the potential. An exhaustive list of alternatives is not prepared, either because the decision-maker is unaware of all possibilities or doesn't given them all consideration due to internal and/or external influences. These influences, which include decision-makers' knowledge, comprise the decision-making context.

In terms of alternative identification, a decision-making theory first described by Simon in 1945 (Simon, 1976) compares with the practical range of choice. According to this "behavioural" theory of decision-making, decision-makers tend to narrow the range of choice to consider only those alternatives that will produce satisfactory results, rather than the optimal ones (Kates, 1962; Downs, 1976; Cutt

and Tydeman, 1976; Simon, 1976; Janis and Mann, 1977). The behavioural theory is considered here to constitute an empirical model; it describes how a decision is made. The distinction between the normative and empirical models in terms of the range of choice is therefore an exhaustive versus selective treatment of alternatives.

The decision-making variables discussed above are decision-making behaviour, actors, and the decision-making context. The key components of these variables and the major interactions between decision-making behaviour and the decision-making context are shown schematically in Figure 1. This model provides a framework for examining the range of choice exercised by wildlife managers in British Columbia.

The decision-making behaviour of concern is the identification of alternative tenure types. Alternative identification, or the range of choice, can be considered a continuum. The full range of choice is the most comprehensive level of the continuum. The practical range of choice is a sub-set of the full range of choice and is comprised of three levels. Wildlife managers are the key actors or decision-makers. As shown in Figure 1, the alternatives they identify, or their range of choice, is influenced by both their personal traits and by characteristics of the decision- making environment.

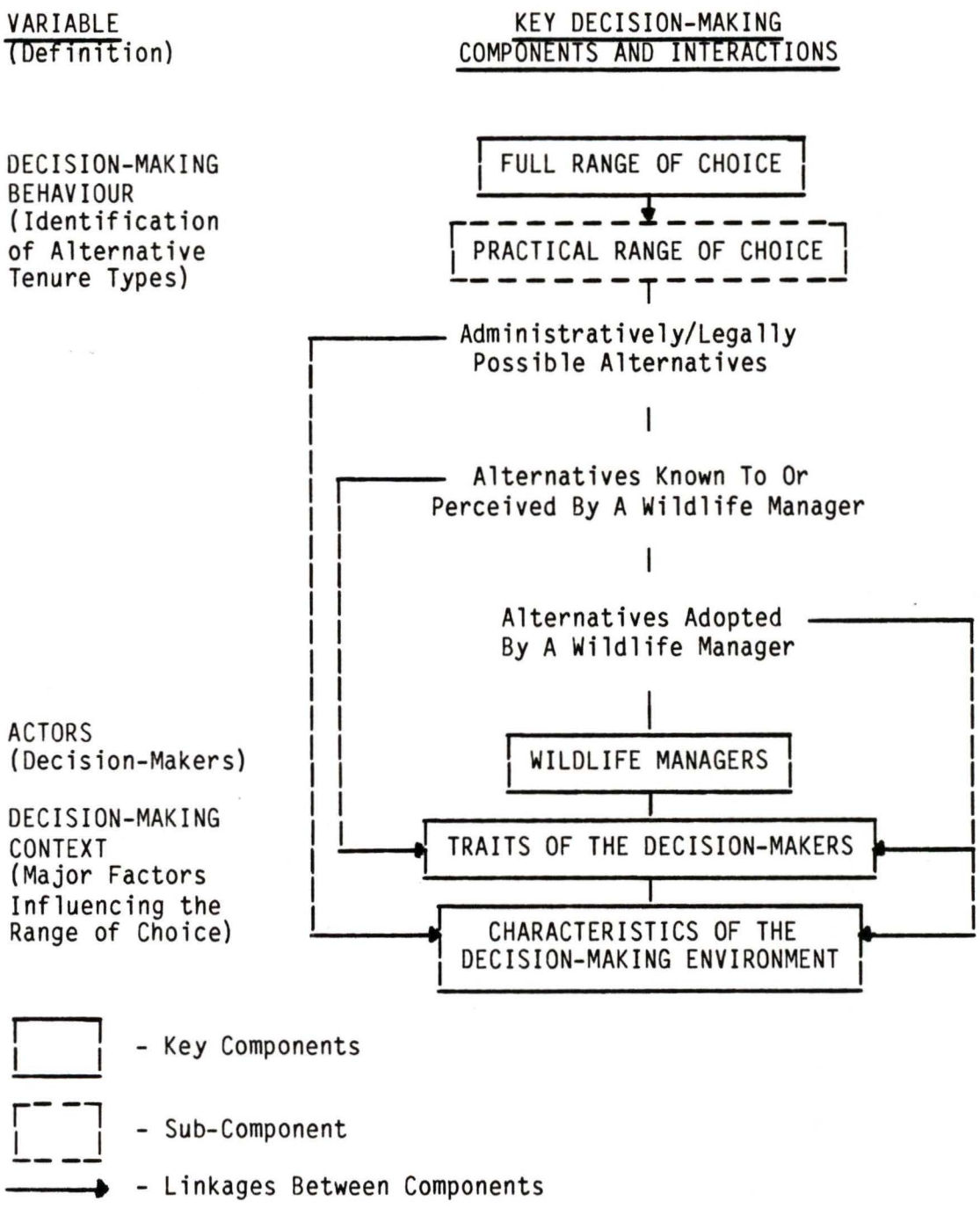

FIGURE 1. A CONCEPTUAL MODEL FOR EXAMINING DECISIONS TO ACQUIRE ADMINISTRATIVE CONTROL OF LAND FOR WILDLIFE

2.2 The Potential Range of Choice for Acquiring Administrative Control of Land for Wildlife

The alternatives available for acquiring administrative control of both privately- and publicly-owned lands have been grouped into three major categories: 1. various forms of land acquisition; 2. zoning; and 3. cooperative management.

Zoning and cooperative management are processes which allow wildlife management agencies to provide recommendations about the uses of privately- and publicly-owned lands. By participating in cooperative management processes such as land use planning, a wildlife agency can state its management needs and try to influence other agencies to consider them in land use decisions. As a result, wildlife management may be carried out in conjunction with other land uses, the activities of other agencies or landowners may be altered to better protect wildlife habitat, or lands may be designated for dominant use by wildlife.

In light of the extremely small proportion of land in British Columbia that is currently administered by the Wildlife Branch, identification of the potential range of choice for acquiring administrative control of land for wildlife would be incomplete without a discussion of cooperative management alternatives. These alternatives have the potential for maintaining wildlife habitat by placing the land in categories which will allow only those uses that are compatible with wildlife management intent (Haigis and Young, 1983).

2.2.1 Acquisition of Privately-owned Lands

2.2.1.1 Fee Simple Interest

On private lands, the most secure means for acquiring administrative control of land for wildlife is to acquire fee simple ownership (Whyte, 1968; Bryant, 1972; Hamilton and Baxter, 1977). Fee simple interest in land can be acquired through land purchase, gift or donation, bequest, trade, or by the government through expropriation.

Although outright purchase of property gives a public agency the most secure form of land tenure, it has the great disadvantage of being the most costly way to establish management intent. There are administrative, capital and maintenance costs, as well as annual property and dyke taxes in some jurisdictions (Coughlin and Plaut, 1978; Whyte, 1968; Retfalvi, 1982; among others).

In the case of land purchase by a government agency, political and public sanction is required in addition to sufficient funding. Since private conservation groups tend to operate under less scrutiny, they may have the advantage of securing better purchase bargains than public agencies (Whyte, 1968 and Cowtan, 1982). In the United States, land purchases by private conservation organizations or land trusts[1] now protect 275 200 ha of wildlife habitat (Browne, 1984).

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[1] A land trust is a non-profit entity created by law. It is flexible as to scale and scope, and it facilitates permanent commitment of the land (Johnson, 1978).

If a government agency wants to purchase land and funds are lacking, there is a possibility that an equitable exchange of public land for private land can be negotiated (Macenko and Neimanis, 1983 and Clawson, 1983a). Since such an exchange is voluntary, parties are unlikely to participate in one unless benefits are perceived (Clawson, 1983a). General public interest must be served by the exchange. Land exchanges can be difficult to arrange, particularly if they require interagency involvement. Another disadvantage is that the publicly-owned property may be important to wildlife, thus diminishing the gains from the exchange.

Full title to land can also be acquired by a government agency through gifts or donations and bequests. These alternatives relieve the receiver of paying capital costs; a gift or donation can also give a tax advantage to the donator (Browne, 1984). The new landowner is still responsible for paying administrative and maintenance costs and taxes, however.

Although some public agencies have legislated powers of expropriation, these are only employed in situations of extreme public need (Macenko and Neimanis, 1983). Expropriation is thus unlikely to be used for land acquisition for wildlife, except in very sensitive areas.

Once title to land is obtained, the landowner is still obligated by the statutory rights of various governments and agencies (Hamilton and Baxter, 1977).

2.2.1.2 Less-Than-Fee-Simple Interest

It may not always be necessary to obtain all the rights associated with the land to acquire administrative control for wildlife management. Alternatives for acquiring less-than-fee-simple interest in land are leases, easements, right-of-ways (a type of easement), and restrictive covenants. These alternatives involve the acquisition from a landowner of one or more rights to the land so that public interest may be served without an agency having to purchase full title (Whyte, 1968).

Leases provide full privileges or exclusive use and possession of the land for the term of the lease, and are less costly than outright purchase (Cowtan, 1982 and Haigis and Young, 1983). The period of tenure for a lease can vary considerably (Bryant, 1972). A public agency can seek leases to ensure land use compatible with that on adjacent public lands, thus reducing the problems of mixed ownership without the need for purchase (Leman, 1984).

The main disadvantage of a lease is its impermanence (Cowtan, 1982). Another is that the leaseholder is constrained by all of the restrictions pertaining to fee simple title as well as by the terms of the lease (Hamilton and Baxter, 1977). For example, the terms of the lease may dictate that the holder is unable to undertake any activity that will alter the character of the land. Finally, there are administrative costs associated with seeking out a leasing arrangement (Haigis and Young, 1983).

Easements and right-of-ways are charges which may be applied to a title at the owner's consent. The charges run with the land, that is, they remain in effect even after ownership has changed (Cowtan, 1982).

With easements, both physical access to and the right to dictate the use of the property covered by the easement are acquired. In the United States, easements are the less-than-fee-simple interest alternative in widest use for protecting resources by limiting development (Strong, 1983). Most states define easements as: positive, where the easement holder has a right to make some active use of the land subject to the easement; negative, where the holder has a right to prevent the landowner from engaging in specified uses of the land (Strong, 1983 and Netherton, 1979); appurtenant, where benefits from the easement are enjoyed by an adjacent property owner; and "in-gross", where benefits of the easement are enjoyed by the larger public (Strong, 1983).

Negative easements in-gross are often referred to as conservation easements (Strong, 1983). Conservation easements restrict the right of landowners to develop or use their property. For example, property owners could convey their rights to harvest timber, subdivide the land, construct roads or buildings, or allow hunting or grazing (Cowtan, 1982). There has been little experience in Canada with easements "in-gross", and their enforceability is still uncertain (Haigis and Young, 1983).[2]

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[2] Easements "in-gross" give one party certain rights or privileges on the land of a second party even though the first party does not own adjacent land. The question relating to easements "in-gross" is whether or not they run with the land or if they are only between the two original parties.

Under existing Canadian law, essential qualities of an easement are: (a) There must be a dominant tenement[3] and a servient tenement[4]. The rights of the owner of the dominant tenement who also holds the easement are enhanced while those of the owner of the servient tenement are reduced; (b) The easement must accommodate the dominant tenement, in that the easement shall be solely for the benefit of the dominant tenement; (c) The dominant and servient owners must be different persons (Weeks, 1979; Cowtan, 1982; Silverstone, 1974). The need for a dominant tenement can be a serious obstacle to effective use of this alternative.

Another prerequisite of an easement is a good relationship between the easement owner and the landowner (Whyte, 1968). A general advantage of easements to both the holder and the landowner is their flexibility. The owner of the easement may sell, give away or transfer it back to the owner of the land at any time. Similarly, the landowner and easement owner may at any time mutually agree to enlarge, diminish or alter the characteristics of the easement (Arnold and Woods, 1979). Although there is a reduction in present property tax revenues on land with an easement (Smith, 1971 and Silverstone, 1974), the tax effect is typically minor because the land outside the easement remains on the tax rolls (Smith, 1971).

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[3] One for the benefit or advantage of which an easement exists or is enjoyed.

[4] One which is subject to the burden of an easement existing for and enjoyed by another tenement.

Due to the relative unfamiliarity in Canada with easements as a land use tool, there is a reluctance for them to be used. If landowners don't understand the mechanism or its consequences to them, few will be prepared to grant restrictions on their property (Smith, 1971 and Silverstone, 1974). Strong (1983) points out the need for a budget for education of staff and landowners in any easement programme.

Another difficulty with easements arises over the valuation of the foregone rights to develop the property (Smith, 1971 and Silverstone, 1974). The value of those rights is usually calculated by subtracting the value of the land with reduced possibility of development from the value of the land with full development potential. It is difficult to be accurate and precise with this valuation (Silverstone, 1974).

Easements cost less than the purchase of full title (Whyte, 1968; Smith, 1971; Silverstone, 1974). In the United States, easements acquired by the Fish and Wildlife Service were found to cost between 5% and 14% of the lands' fee simple value (Strong, 1983). Maintenance costs usually remain the responsibility of the landowner (Smith, 1971; Coughlin and Plaut, 1978; Silverstone, 1974). Other advantages of easements to their holders are their flexibility, since the easement can be tailored to a specific problem, and the security they can afford for protection and control over future development, since easements pass in perpetuity (Silverstone, 1974).

A landowner receives payment where an easement is purchased by a public agency (Arnold and Woods, 1979 and Strong, 1983), however, most conservation organizations are offered easements by gift or donation

(Strong, 1983). The market value of the property with an easement may increase if, for example, a scenic view is retained (Smith, 1971). Alternatively, there may be a reduction in both value and property taxes because development is restricted. In the latter case, the reduced property taxes on the land may act as incentive for people to sell or donate property rights (Arnold and Woods, 1979; Silverstone, 1974; Cowtan, 1982). Since the landowner can use the land outside the easement, more than one use of the land is facilitated (Smith, 1971 and Arnold and Woods, 1979).

A great deal of planning and thought must go into easements before they are acquired (Arnold and Woods, 1979). Easement restrictions can be difficult and expensive to enforce (Smith, 1971 and Silverstone, 1974), especially when the land is transferred to second and third owners (Coughlin and Plaut, 1978 and Cowtan, 1982). A landowner may be inclined to violate the easement restrictions over time, particularly if those restrictions leave no reasonable economic use of the land (Coughlin and Plaut, 1978). Strong (1983) thus recommends a budget for inspection staff as part of any easement programme. The main disadvantage of easements to the landowner is a loss of potential revenues from foregone opportunities to develop her/his land intensively (Smith, 1971).

The right-of-way is a type of easement for which only the right of physical access to the property is acquired. Advantages and disadvantages of the right-of-way are similar to those of easements.

Restrictive covenants represent the last alternative for acquiring less-than-fee-simple interest in land. Restrictive covenants place restrictions on the uses a landowner may put to her/his land. The other feature distinguishing restrictive covenants from easements and right-of-ways is that they can be charged in favour of government agencies without the existence of a dominant tenement. Although this makes it easier to acquire them, the disadvantage of restrictive covenants is that, in the absence of other regulations, they may not protect adjacent properties from uses that adversely affect wildlife (Cowtan, 1982). With the exception of the problems associated with the need for a dominant tenement, the advantages and disadvantages of restrictive covenants are similar to those for easements.

2.2.1.3 Management Agreements

Management agreements are understandings between a landowner and a public agency that wildlife habitat will be preserved, subject to the fulfilment of specified conditions. They usually involve the owner agreeing not to take any action that would negatively affect habitat, on condition that the public agency provides management services (Haigis and Young, 1983). Feist (1979) identifies the following advantages of management agreements: they afford a means of enlisting the cooperation of a landowner in the pursuit of a particular policy objective; they help foster a climate of goodwill and cooperation between the government and a landowner and promote a joint approach to

the implementation of policies on conservation; they are invaluable as a means of channelling public money to the private sector for matters of public interest; they possess flexibility and versatility and can be initiated by either party; and they can be used as a stop-gap measure pending the introduction of legislation or solutions like tax concessions.

Since a management agreement is a voluntary undertaking between consenting parties, it is subject to revision or cancellation in accord with its terms. Most agreements rely on the altruism of the landowner. In Britain, negotiating agreements has been found to be a time-consuming and lengthy process, with the duration of the agreement difficult to agree upon. Other problems are the existence of legal limitations on what can be offered in the form of ex gratia payments or considerations, and budgetary constraints on the financial resources that can be devoted to the agreements (Feist, 1979). Since management agreements offer no long-term security for the investment of public monies, their costs can be difficult to justify. In addition, management agreements are subject to pressure from other, economically more rewarding activities that may be in direct conflict with conservation objectives (Goode, 1984). There are also some uncertainties about the legality and enforceability of management agreements (Haigis and Young, 1983). Finally, a major disadvantage of management agreements is that they are only enforceable between the original parties to the agreement; they are not a registered interest.

2.2.1.4 Incentives to Private Landowners

Financial and other special incentives can sometimes be used to encourage private landowners to participate in the management of publicly-owned wildlife on their land.

Financial incentives can involve either property tax or income tax. For example, annual property taxes can be lowered as a result of the restrictions on the use of a property (Arnolds and Woods, 1979). Individuals are more inclined to donate land to a public agency if they can deduct those donations from income for tax purposes.

Another type of incentive which involves no cost is the official designation of important habitats. This option relies heavily on the "public spiritness" of landowners. In return for the special designation, the landowner receives recognition in such forms as special certification, publication of her/his name, posting of the property, plaques and media attention (Haigis and Young, 1983).

2.2.1.5 General Observations

The above alternatives, with the exception of the non-tax incentives to private landowners, represent the full range of choice for acquiring administrative control of wildlife on privately-owned lands. The order in which they are discussed represents the greatest to the least amount of management control afforded by the alternative to a public agency.

Used alone, any of the alternatives has limitations, many of which are described. Used in combination, the alternatives can strengthen one another, for example, the purchase of easements on land buffering property which has been acquired in fee simple (Whyte, 1968). Although fee simple is the most costly alternative, it is also the most secure. It may at times be the only option when no amount of incentive will persuade landowners to preserve their land for wildlife (Haigis and Young, 1983).

2.2.2 Acquisition of Publicly-owned Lands

Public lands are managed by a multitude of agencies and for a wide variety of uses. In Canada, the majority of land is under public ownership, with predominant control by provincial authorities in the provinces and by federal authorities in the territories (Macenko and Neimanis, 1983). Much of the land in the United States is also under public ownership, particularly in the west. Predominant control is by two federal agencies, the U.S. Forest Service and the Bureau of Land Management (Leman, 1984).

2.2.2.1 Legislative Statutes

Legislative statutes provide for both the direct administration and the indirect protection of land for wildlife.

Legislative statutes that give direct control of a piece of land to a wildlife management agency afford that agency the maximum amount of latitude to carry out its management activities. Munro (1961) noted that historically, although there was statutory provision for the Crown to acquire lands, no province had legislation with specific reference to land acquisition for the purpose of wildlife management. Such legislation does exist today. An example is Manitoba's Wildlife Act (1980), which facilitates the designation of Wildlife Management Areas by Order-in-Council (Polonyi, 1984). Designated wildlife areas under federal statute in Canada include migratory bird sanctuaries, which are established under the Migratory Birds Convention Act, 1970 (Fenge et al, 1977). The Canada Wildlife Act (1973-74) contains a provision which enables the Canadian Wildlife Service to accept administration and control of public lands for wildlife conservation and to acquire or lease lands for migratory bird or other wildlife habitat with the concurrence of the provinces (Retfalvi, 1982). An example of designated wildlife areas in the United States is national wildlife refuges (Hagenstein, 1984).

Since these lands are managed for wildlife as the primary use, the above types of statute represent the optimal method for a wildlife agency to acquire administrative control of public lands. Other land uses are permitted only if they are compatible with wildlife. It may take a long time to establish a wildlife area under legislative statute, thus frustration levels within a public agency may be high. In addition, there may be opportunity costs associated with waiting for

a decision. Finally, there may be political influence over the selection of an area, and uncertainty of long-term protection in light of the potential for government policies and control to change (Cowtan, 1982).

Some legislative statutes that give administrative control to other agencies also afford some protection to wildlife. Examples include ecological reserves in British Columbia (Foster, 1980), and various acts establishing parks and public forest lands. Although a wildlife agency may carry out some cooperative management activities with the legislated agency, it has no mandate to directly administer the area. In addition, it has no assurance that uses of the land that are inconsistent with the preservation of certain species (Cowtan, 1982) or stated wildlife management objectives will not be permitted. Legislative statutes that give administrative control to other agencies also have the disadvantages of taking a long time to be established and uncertainty of tenure due to changes in government policies.

2.2.2.2 Inter-agency Interactions

Macenko and Neimanis (1983) provide an overview of the types of inter-agency interactions involving public lands in Canada. These include, in order from the greatest to the least advantage to a wildlife agency, the transfer of land title to a wildlife agency, land exchange or trade between a wildlife agency and another agency, the transfer of administrative and/or management control to a wildlife

agency, and the establishment by a wildlife agency of management interest in land administered by another agency.

The transfer of land title gives equivalent powers to fee simple ownership of private land. Costs of maintaining the land must be borne by the wildlife agency. In the case of land trades or exchanges, there is an obvious requirement for the wildlife agency to have administrative control of some land, and to consider it advantageous to give up that control in favour of attaining an alternate piece of land. The time required for negotiating such an exchange varies. The transfer of administrative and/or management control to a wildlife agency requires existing legislative statutes and amicable relationships between agencies. Both agencies must bear staff and time costs to negotiate such transfers. The final alternative for inter-agency interactions represents an informal process. Its success is dependent to a large degree on individuals in the administering agency giving consideration to the stated management interests of the wildlife agency in any decisions involving the land parcel of interest.

2.2.3 Zoning on Private Land

Zoning by-laws impose detailed provisions governing land development (Haigis and Young, 1983). Land use zoning ordinances impose general permission for development of areas and withhold that permission from other areas (Denman, 1978). The intent of zoning is to guide

future land use decisions so as to encourage those that complement one another and preclude those which conflict (Sullivan, 1964).

Since zoning restricts land use, it can negatively affect land values (Esau, 1974 and Jackson, 1981) and result in lost tax revenue (Cowtan, 1982). A high degree of cooperation between provincial and municipal governments is required, since both have to be willing to put restrictions on areas and to turn down applications for the re-designation of zoned lands (Haigis and Young, 1983). Long-term protection of the land is thus uncertain (particularly in urban areas) as pressures for development increase (Cowtan, 1982). In addition, there are administrative costs associated with monitoring applications for re-designation in order to ensure that zoning restrictions are maintained. Finally, the enforcement of zoning by-laws tends to be very lax (Thompson, 1974).

Until zoning was initiated in the 1920's and 1930's, little effort was made to control the private use of land without outright purchase (Kusler, 1983). Zoning has traditionally had an emphasis on how land should be developed for urban use, rather than whether or not it should be developed (Hinds et al., 1979). In addition, local zoning ordinances have been found lacking in their ability to protect vital ecological systems (Esau, 1974). Frustrations with the limitations of zoning has led to the adoption of greater provincial, state and federal control of development through planning and land use regulations, starting in the 1960's.

2.2.4 Cooperative Management on Privately- and Publicly-owned Lands

Cooperative management alternatives on both privately- and publicly-owned lands are comprised of land use plans primarily. Land use plans are policy documents which set out the proposed or intended use of land within a given geographic area.

Land use plans can be considered more as acts of faith than firm guidelines. They can be useful and effective if accepted voluntarily by the holders of property rights in land (Denman, 1978) or if adhered to rigidly by public agencies. Otherwise, their utility is limited.

Another type of land use control on private land is the transfer of development rights. This allows landowners to sell the rights to develop their land separate from the land itself. That is, transfer of development rights separates development rights from the property so that they can be exercised elsewhere (Woodbury, 1975). The agency involved acquires partial rights from the landowner in return for payment of the value of the development. Landowners can either use the development rights themselves or sell them to another party, thus they receive compensation for the development restrictions placed on their property (Haigis and Young, 1983). In theory, landowners are then prevented from utilizing their property for activities that would destroy or adversely affect the rights purchased (Johnson, 1978).

2.3 Major Factors Influencing the Range of Choice

The range of choice considered by a decision-maker is influenced by both internal and external factors, categorized here as traits of the decision-maker and characteristics of the decision-making environment, respectively.

2.3.1 Traits of the Decision-maker

2.3.1.1 Knowledge

Knowledge is considered here to mean the decision-maker's awareness of all potential alternatives (White, 1961). In his study of flood control, Kates (1962) found that water managers who adopt the greatest number of alternative measures were the ones who were aware of a wider range of choice than their colleagues. A decision-maker requires knowledge in order to determine the consequences of each alternative (Simon, 1976). For example, Sewell (1965) found that engineers' failure to perceive the effectiveness of possible flood control solutions resulted in their concentrating on a narrow range of alternatives.

2.3.1.2 Experience

Decision-makers often narrow their range of choice with increasing length of tenure in an organization and with increasing experience of a particular problem or decision-making situation. There is a tendency to consider only the alternatives in the "immediate neighbourhood of existing procedure" (Cutt and Tydeman, 1976) and to rely primarily on alternatives that have been tried before (Sewell, 1965 and Anderson, 1984). "Only policies which differ incrementally from the status quo are seriously considered, and, in consequence, decision-makers focus upon a quite limited number of alternatives in making choices" (Ingram, 1963, p. 150). In his study of water supply, MacIver (1970) found that over half of the water managers sampled selected the alternative with which they were most familiar. Similarly, Johnson (1971) found that alternative solutions to water quality problems were frequently only those which had been explicitly considered in the past.

2.3.1.3 Training

A decision-maker's training or education can also have an effect on her/his range of choice. Simon (1976) notes that individuals' training may supply the facts necessary for dealing with decisions, provide a frame of reference for thinking, teach "approved" solutions, or indoctrinate the values affecting decisions. Education affects the choices perceived to be open to the decision-maker as well as the

attitudes she/he forms towards the choices presented by others (Marcy, 1978).

Barker (1977) found that training differences between engineers, geographers and economists, among other disciplines, were reflected in their perception of air quality problems, the importance of air pollution relative to other environmental issues, and how much they knew about air quality. Sewell (1973) found that as a result of their training, engineers did not consider the full range of choice regarding flood control. They tended to emphasize structural solutions, rather than longer-term solutions like zoning by-laws. Increasing education was found by MacIver (1970) to increase decision-makers' perception of available water supply alternatives, and by Johnson (1971) to increase decision-makers' innovation in finding solutions to water quality problems.

2.3.1.4 Values; Perceptions and Attitudes; Personalities

Values can be defined as fundamental beliefs and guides to human behaviour (Krueger and Mitchell, 1977). They can have both a conscious and unconscious effect on the decision-maker, and they can result in a narrowing of the number of alternatives considered (Moyse, 1982). Values are affected by an individual's knowledge and by how involved she/he is with an issue (Groves and Kahalas, 1976). Within an organization, an individual's values are influenced by the exercise of

authority and through the development of organizational loyalties (Simon, 1976).

Perceptions comprise an individual's sensory and cognitive impression of a situation (Krueger and Mitchell, 1977). They may change over a short time period (Marcy, 1978). Attitudes are the preferences and opinions of the decision-maker (Krueger and Mitchell, 1977). They are more stable than perceptions and take longer to formulate (Marcy, 1978).

Perceptions and attitudes can result in a decision-maker focussing on one alternative or one set of alternatives, avoiding extreme alternatives, and compromising in one direction or another (Moyse, 1982). They are influenced by decision-makers' personal experiences (Wong, 1969; Roder, 1960; Kates, 1962), ambitions (Cutt and Tydeman, 1976), and by their knowledge of problems, professional training, and personality traits (Kasperson, 1969; White, 1969; Kates, 1962; O'Riordan, 1976). The range of choice may be limited as a result of the decision-makers' perception of the problem to be solved (Kates, 1962; White, 1964; Sewell, 1965), organizational goals and objectives (Sharkansky, 1970), what the public and/or politicians want (Barker, 1977 and Sewell, 1973), and what information is relevant to the decision (Ingram, 1963). Decision-makers' attitudes may result in the tendency to give undue preference to alternatives that are most favourable to their personal interests (Downs, 1976).

Although not well covered in the literature, personalities could conceivably have a significant influence on decision-makers' range of

choice. Personalities are molded by past experience and by inherent psychological and genetic factors. In one study, personalities were found to have an important influence on the decision-making behaviour of public health officials (McMeiken, 1970).

2.3.2 Characteristics of the Decision-making Environment

2.3.2.1 Institutional Setting

The institutional setting can work in a number of ways to limit the range of choice considered by the decision-maker. As a rule, only alternatives clearly authorized through present institutional arrangements are seriously considered (Davis, 1968). Organizational characteristics often preclude the adoption of courses of action which involve excessive complication or too drastic a change in existing procedure (Cutt and Tydeman, 1976). Investments in existing policies and programmes (Anderson, 1984) or the legacy of long-term, irrevocable decisions such as those involving large fixed costs (Simon, 1976) may preclude many alternatives from being considered. Past perceptions of problems and their solutions tend to get built into an organization (Davis, 1968).

Sharkansky (1970) identifies five features of public administration systems that discourage the identification of all potential alternatives: (1) the multitude of problems, goals and policy commitments imposed on the decision-maker; (2) barriers to collecting information

regarding "acceptable" goals and policies; (3) personal needs, commitments, inhibitions and inadequacies of the decision-maker (which interfere with her/his assessment of goals and policies); (4) structural difficulties within administrative units; and (5) deviant behaviour of individuals (p. 38). Table 1 lists other organizational policies that can affect the range of choice considered within a public organization. The policies are categorized according to whether they extend or contract the search for alternatives.

Legislation (White, 1964; Sewell, 1965; Cutt and Tydeman, 1976), agency mandate (MacIver, 1970), and the way organizational goals and objectives are defined (Simon, 1976) are other institutional factors that influence the number and type of alternatives considered. Goals and objectives should be specific enough to guide the search for alternatives (Lord and Warner, 1973). The existence of implicit goals and objectives, in addition to explicit ones, can prohibit such specificity (Sewell, 1965). The alternative eventually selected seldom, if ever permits complete achievement of objectives, but is more often merely perceived to be the best solution available (Simon, 1976).

In a public agency, political pressures can impinge on the decision-maker (Anderson, 1984) and place limitations on the choice of options (Cutt and Tydeman, 1976). Politicians often support certain kinds of alternatives over others, and what an agency feels it can do depends to some extent on its interpretation of the kinds of alternatives that will maintain or strengthen political support (Davis, 1968).

TABLE 1

ORGANIZATIONAL POLICIES THAT EXTEND OR CONTRACT
THE SEARCH FOR ALTERNATIVES

Policies that tend to extend degree of search and increase diversity of alternatives considered.	Policies that tend to contract degree of search and narrow diversity of alternatives considered.
Allow a long time before conclusions must be reached.	Enforce a very short deadline.
Bring many people into decision making.	Restrict decision making to a small number.
Insure that those involved have a wide variety of views and interests - even conflicting.	Insure that those involved have similar views and interests.
Reduce number of persons to whom final decision must be justified or intelligibly communicated.	Increase number of persons to whom final decision must be justified or intelligibly communicated.
Increase proportion of analytically skillful or highly trained persons participating, or to whom it must be justified or communicated.	Decrease proportion of analytically skillful or highly trained persons participating, or to whom it must be justified or communicated.
Isolate those making decision from pressures of responsibility for other decisions, especially short deadline ones.	Assign the decision to those immersed in making other decisions, especially short deadline ones.
Reduce proportion of extremely busy persons to whom decision must be intelligibly communicated.	Increase proportion of extremely busy persons to whom decision must be intelligibly communicated.

Source: Downs, 1976.

Similarly, a public agency must weigh alternatives in terms of comprehensive public values (Simon, 1976) and political support.

2.3.2.2 Information Availability

Decision-makers have a tendency to pursue an understanding of the implications of a single alternative in some depth before abandoning it to pursue others (Simon and Newell, 1971). Uncertainty about an alternative often provides the incentive for the acquisition of more information. If more than one alternative is being considered, people tend to make decisions on the basis of comparable information about them (Guthrie, 1976).

Factors affecting what information is generated, transmitted and evaluated include the decision-maker's perception of the decision and what is at stake, the expected impact of the information, the resources of the organization (data base and expertise), and the decision-makers' goals and interests (Ingram, 1963), as well as the organizational goals (Simon, 1976). Information gathered in the decision-making process should provide a basis for how well an alternative meets objectives, shed light on the suitability of the objectives, and reveal any new problems that the adoption of the alternative might create (Lord and Warner, 1973).

2.3.2.3 Timing

If time pressure is high, a minimum number of alternatives will be considered (Downs, 1976). Some feasible alternatives must be relinquished, and may, as a result, be permanently excluded from future consideration.

A conflict or perceived crisis shortens the time frame within which a decision-maker feels she/he must act, which can result in the repetition of alternatives previously considered (Moyse, 1982). White (1969) points out that crisis situations are particularly unsuited to promoting the consideration of complex and less well understood alternatives. Sewell (1965) supports this statement by showing that much of the adjustment to flooding in Canada has been in reaction to crisis, with the "inevitable result of narrowing the range of choice".

2.3.2.4 Cost and Funding Availability

Since costs associated with administrative factors like staff and their time can rise more than proportionately with the number of alternatives considered, it is often more practical to choose from among alternatives already used than to expand the range of choice (Downs, 1976). On the other hand, the existence of funding constraints in the specific case of land purchase conceivably could increase the probability of considering additional alternatives.

2.3.2.5 Complexity of the Decision

The more complex the decision, the fewer alternatives will be considered (Downs, 1976). Complexity increases if more than one individual is involved in a decision, as the opinions of all actors must be included as criteria for alternative consideration (Simon, 1976).

2.3.2.6 History of Relationships

Another factor that may influence the identification of alternatives is the history of relationships of those involved in a decision (Mumford and Pettigrew, 1975). White (1969) describes how a bitter and protracted dispute between agencies over selected flood control measures resulted in a lack of discussion of many other feasible alternatives. Relationships are affected by the personalities of the individuals involved, agency and/or personal affiliations, conflicting jurisdictions and/or goals and objectives, and the lack of mechanisms for integration.

2.4 Summary

This chapter outlines a conceptual model for decisions involving the acquisition of administrative control of land for wildlife (Figure 1). Key components of that model are decision-making behaviour (potential and practical range of choice), actors or decision-makers

(wildlife managers), and major factors influencing wildlife managers' range of choice (traits of the decision-makers and characteristics of the decision-making environment).

The chapter introduces the concepts of the potential and practical range of choice; explains why the comprehensive theory of decision-making, in which all possible alternative courses of action are identified, is seldom practiced; identifies, based on a literature review, the full range of choice available to a wildlife agency to acquire administrative control of both privately- and publicly-owned lands; and finally, describes the major factors that can influence the identification of alternatives and seeks to demonstrate how those factors affect a decision-maker's range of choice.

The following chapter will identify the practical range of choice for acquiring administrative control of land for wildlife in British Columbia, using the alternatives provided in this chapter as a foundation.

It is apparent from the literature review that there exist a variety of means for acquiring administrative control of land for wildlife, whether for providing outright protection or for carrying out a broader spectrum of management activities. There appears to be room for variation in the methods actually practised, however.

A review of the land acquisition methods used by the Canadian provincial and federal governments shows a focus on outright purchase, some use of land exchange and the transfer of administrative control, and limited or no use of many of the other available alternatives

(Macenko and Neimanis, 1983). Similarly, Retfalvi (1982) indicates that while wildlife agencies and others have attempted many means of acquiring partial title to land, other means "remain within the realm of possibilities".

The tendency for decision-makers to operate consistently within the practical range of choice was first pointed out in the water management field. In the case of water supply, the historic preference has been to construct new storage facilities over other alternatives like renovating waste water and recycling (e.g. Wong, 1969; MacIver, 1970; Johnson, 1971; Sewell et al., 1985). For water quality, the emphasis has been on setting standards and imposing fines, rather than such alternatives as providing incentives to polluters to reduce discharges of harmful effluents (OECD, 1975; Davis, 1968; Sewell et al., 1985). In the case of flood control, there has been a concentration on alternatives like dykes and dams over instituting land use regulations or flood insurance policies (Kates, 1962; White, 1964 and 1969; Sewell, 1965 and 1973). Similar examples have been cited for the management of drought hazard (Saarinen, 1966).

Whyte (1968) states that "for most agencies, one innovation is enough. They know remarkably little about the pros and cons of approaches others are using, and do not seem particularly interested in finding out" (p. 65). "Whenever presented with the opportunity to use one tool to the exclusion of several, a public agency tends to choose the simpler device. Faced with the difficulty of choosing among

several measures and of seeking legislative support for them, it avoids complicating the picture" (White, 1969, p. 53).

Two of the risks of concentrating on a narrow range of choice are that the selected alternatives may not be the cheapest, and they may not be the most effective means of dealing with a particular problem (Davis, 1968). Davis feels that organizations must make specific provision for considering alternatives, including the incorporation of the authority, flexibility and motivation required to enable them to successfully analyse them.

Expanding the range of choice and institutional change are two of the "emerging issues" that have been identified in the water management field (Sewell, 1985 and Sewell et al., 1985). If the range of choice is to be broadened, institutional change must occur and a conscious attempt must be made on the part of the decision-maker to recognize her/his personal biases, cooperate with others involved in the decision, and adequately assess political and public support.

CHAPTER 3

THE PRACTICAL RANGE OF CHOICE FOR ACQUIRING ADMINISTRATIVE CONTROL OF LAND FOR WILDLIFE IN BRITISH COLUMBIA

This chapter identifies the practical range of choice for acquiring administrative control of land for wildlife in British Columbia. Alternatives are categorized as acquisition of privately-owned lands, acquisition of Crown lands, zoning and cooperative management on privately-owned lands, and cooperative management on Crown lands.

3.1 Acquisition of Privately-owned Lands

3.1.1 Fee Simple Interest

The Wildlife Branch can secure fee simple ownership of privately-owned lands directly through purchase, donation or bequest.

The Minister of Environment and Parks has the authority, under Section 3 of the Wildlife Act (1982), to acquire and administer "land, improvements on land and timber, timber rights and other rights on private land" for the management or protection of wildlife. Such areas may be acquired by direct purchase, donation or bequest.

Section 11 of the Wildlife Act (1982) allows the Minister to spend money from the Habitat Conservation Fund for "acquisition of land for

the maintenance of a population of any species of fish and wildlife and its habitat". (The Habitat Conservation Fund was established in 1981 as a special purpose fund by an amendment to the 1966 Wildlife Act. It is administered by the Recreational Fisheries and Wildlife Branches of the Ministry of Environment and Parks.) Under the former Wildlife Act (1966), land purchases had to have the approval of the Lieutenant-Governor in Council.

Private land donations and bequests involve the transfer of fee-simple interest to the Wildlife Branch.

Crown agencies holding title to a property are exempt from paying property taxes under Section 398 of the Municipal Act (1979) and Section 13(q) of the Taxation (Rural Area) Act (1979). However, the Minister of Finance pays grants in lieu of taxes on provincial properties on which improvements have been made (Section 2 of the Municipal Aid Act, 1979). On lands held within dyking improvement districts, annual dyke taxes are paid (Section 84 of the Drainage, Ditch and Dyke Act, 1979). Maintenance costs are the responsibility of the agency. In the case of donations, arrangements regarding the lease of all or a portion of the donated land and/or the buildings on it can be negotiated through a "lease for life" agreement.

Purchase of land important to wildlife by other agencies and donations or bequests to such agencies are alternatives to purchase by and donations or bequests to the Wildlife Branch. Other agencies involved in fee simple alternatives include Wildlife Habitat Canada,

The Nature Conservancy of Canada, and the Nature Trust of British Columbia.

Land exchanges are another alternative for the Crown to acquire fee simple title to land in British Columbia. Under Section 90(1) of the Land Act (1979), Crown land may be exchanged for privately-owned land of comparable value, or for other land of less value together with payment for the difference in value. In order for the Wildlife Branch to acquire administrative control of exchanged land, it would have to obtain a Section 101 Land Act transfer from the Ministry of Forests and Lands. (Section 101 transfers were introduced in 1980 as an amendment to the Land Act).

The Ministry of Transportation and Highways is empowered to acquire or take possession of land for the establishment of a reserve for wildlife under Section 18(c) of the Ministry of Transportation and Highways Act (1979). Administrative control of such lands by the Wildlife Branch would have to be arranged by transfer.

There is no provision in the Wildlife Act that allows the Wildlife Branch to expropriate land.

3.1.2 Less-Than-Fee-Simple Interest

Although the Wildlife Branch has an opportunity to negotiate a lease agreement with any private landowner, it currently leases land for wildlife from the Nature Trust of British Columbia exclusively. The Nature Trust, formerly the National Second Century Fund of British

Columbia, was established in 1971 with money remaining from the federal government centennial grants to the province. It usually leases land to the Minister of Environment and Parks for a period of 99 years at a nominal rental of one dollar (Cowtan, 1982). The Ministry has full management rights subject to the terms of the lease.

Since it is a non-profit organization acquiring land for the benefit of British Columbians, the Nature Trust is exempted from paying property taxes outside of municipal boundaries under Section 13(q) of the Taxation (Rural Area) Act (1979). As properties cannot quality for an exemption from taxes until the year following the one in which the acquisition was made, the Ministry usually is responsible for taxes during its first year of the lease tenures. On lands held within municipalities, the Nature Trust is required to pay property taxes, as there is no clause in the Municipal Act (1979) that fits its activities. Municipal taxes are a cost borne by the Ministry of Environment and Parks, as each lease agreement states the Ministry will pay any levies made against the leased property. A grant in lieu of taxes has been negotiated in some cases. Maintenance costs on leased lands are the responsibility of the Ministry.

Typically, a lease is acquired where full management rights to a property and/or management authority in perpetuity are not felt to be required. Due both to its length of tenure and low cost, a Nature Trust lease can be considered to be almost equivalent to fee simple title.

Easements, right-of-ways and restrictive covenants are the other less-than-fee-simple title alternatives that can be used by the Wildlife Branch to acquire administrative control of private lands. As noted in the literature review, easements and right-of-ways require the existence of both a dominant and servient tenement. In British Columbia, however, the requirement for a dominant tenement can be exempted by the Minister of Forests and Lands under Section 214(1) of the Land Title Act (1979). The Ministry of Environment and Parks has been granted this exemption.

Both easements and right-of-ways grant their holders the right to use a property for a specific purpose. Such rights are incorporated into the land title as a charge or encumbrance, and they run with the land.

Rather than grant the use of private land to another individual or agency, restrictive covenants restrict the use property owners can make of their land. Restrictive convenants that benefit wildlife can be initiated in three ways. First, property owners may voluntarily give up certain rights on their lands. Second, the Ministry of Environment and Parks can recommend restrictive covenants on private lands within floodplains under Section 82 of the Land Title Act (1979). Third, recommendations can be made by the Ministry of Environment and Parks for restrictive covenants as a condition of subdivision permits. Under Sections 86 and 87 of the Land Title Act (1979), subdivision plans may be approved only if they are in the public interest.

3.1.3 Management Agreements

Section 3 of the Wildlife Act (1982) gives the Minister of Environment and Parks authority to enter into management agreements.

3.2 Acquisition of Crown Lands

3.2.1 Legislative Statutes

This section describes the legislative statute that empowers the Wildlife Branch with direct administrative control of provincial Crown lands, and it identifies those provincial and federal statutes that provide indirect protection of land for wildlife. Each statute mentioned below is described in more detail in Appendix A.

The Wildlife Act (1982) provides the authority for the Minister of Environment and Parks, with Cabinet's approval, to reserve areas of important (fish and) wildlife habitat through the designation of Wildlife Management Areas. Wildlife Management Areas provide the Wildlife Branch with the strongest form of administrative control of Crown lands of the province.

Wildlife Management Areas (WMA) can be established only on areas where the Ministry of Environment and Parks already has administrative control of the land base. Such control can be attained through direct ownership of private lands, or through the transfer of administrative control of Crown lands from other agencies. Although no WMAs had been

proclaimed to the end of 1986, a number of properties have been proposed for designation.

In Wildlife Management Areas, Director's orders, permits or Order-in-Council regulations concerning use and occupation can be used to manage habitat effectively. The availability of these mechanisms is considered to make the WMA designation more useful than reserves or transfers of Crown land under the Land Act alone (Ministry of Environment, 1986).

Three types of WMAs are currently provided for under the Wildlife Act (1982):

1. Wildlife Management Area - an area of water or land of special importance to fish and wildlife, designated under Section 4 and administered for the purposes of conservation and intensive management of fish and wildlife.
2. Critical Wildlife Area - a Wildlife Management Area, or part thereof, designated under Section 5(1) which provides habitat for any species of wildlife which has been legally designated as an endangered or threatened species, pursuant to Section 6 of the Wildlife Act.
3. Wildlife Sanctuary - a Wildlife Management Area, or part thereof, designated under Section 5(2) where hunting, angling and/or trapping are prohibited, and access is restricted.

The second and third designations can be applied only if the area already has WMA status. This legislative change has resulted in existing sanctuaries established under the former Wildlife Act (1966)

having lost their status, for example, Delkatla Slough in the Queen Charlotte Islands and the Starratt property in the Omineca area.

A fourth designation, the Wilderness WMA[1], is proposed. It would be larger in size than the other types of WMAs, and management would be less intensive. It is anticipated that the Wildlife Act (1982) will be amended to include this category of WMA, consistent with the recommendations in the Wilderness Advisory Committee's report, "The Wilderness Mosaic" (1986).

Three pieces of legislation grant administrative control of land to federal wildlife agencies, sometimes in concert with the Wildlife Branch. National Wildlife Areas, such as the Vaseaux in the Okanagan, can be established under the Canada Wildlife Act (1973-74). The Migratory Birds Convention Act (1970) allows for the designation of bird sanctuaries for migratory species. An example in British Columbia is Esquimalt Lagoon on Vancouver Island. A unique piece of legislation, the Creston Valley Wildlife Act (1979), protects a major waterfowl breeding area in the West Kootenays.

Two provincial statutes set aside land areas that are largely uninfluenced by human activities. Although administrative control is granted to other agencies and intensive management activities that might benefit wildlife cannot always be carried out, these statutes

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[1] A Wilderness Area is defined as "an expanse of land, preferably greater than 5,000 hectares retaining its natural character, affected mainly by the forces of nature with the imprint of modern man substantially unnoticeable" (Ministry of Environment, 1986).

provide long-term protection for those wildlife species that occur within the designated boundaries.

The first statute is the Ecological Reserves Act (1979), which is administered by the Ecological Reserves Unit of the Ministry of Environment and Parks. Ecological reserves are established as "ecological benchmarks", gene pool reserves and/or areas of long-term research and scientific study. The second statute is the Environment and Land Use Act (1979), under which the Purcell Wilderness Conservancy in the West Kootenays was established. This is the only designation of its type.

Tracts of land in which many of the permitted activities are compatible with wildlife are set aside through the provincial Park Act (1979) and the federal National Parks Act (1970). Regular wildlife inventories as well as research programmes are conducted in many of British Columbia's parks.

Provincial forests, designated under the Forest Act (1979), also afford some protection to wildlife. The management of wildlife within Provincial forest boundaries is expressly provided for in the Act (Part 2, Section 5). The Ministry of Forests and Lands has prepared a discussion paper on the designation of "natural areas" within Provincial forests (Ministry of Forests, 1986). Such areas would have similar status to parks, in that many land use activities that are incompatible with wildlife would not be permitted.

The Greenbelt Act (1977) allows the Minister of Forests and Lands to acquire and reserve Crown land as greenbelt land. Greenbelt lands

are not Crown lands as defined in the Land Act. The Greenbelt Act exempts designated lands from the provisions of any other provincial statute except the Ecological Reserves Act, the Environment and Land Use Act, and the Waste Management Act (1982).

Several greenbelt properties were purchased through provisions of the Greenbelt Protection Fund Act (1972) at the request of various provincial and local government agencies, including the Wildlife Branch. Funds to administer the Act, administered first by the B.C. Land Commission and later by the Lands Branch, were established in 1973. The Greenbelt Act (1977) repealed the Greenbelt Protection Fund Act and abolished the Greenbelt Fund.

The Land Act (1979), which regulates the disposition of Crown land outside of Provincial forests, allows for several types of reservations and designations of Crown land for various purposes. Lands reserved or designated under the Act are excluded from alienation. Sections of the Land Act that are relevant to wildlife management are included in Appendix A.

3.2.2 Inter-agency Interactions

Land title can be transferred to the Wildlife Branch and exchanged or traded with the Wildlife Branch by an agency from another level of government (federal or local). It is left to the discretion of the provincial Registrars of Title as to whether a new title is prepared or

the old title notes that the government jurisdiction has changed (R. Walker, pers. comm.).

Section 101 of the Land Act allows the transfer of administration of Crown land to any Ministry of the government by ministerial order. Section 101 transfers, created in 1980, are one of the most effective means for the Ministry of Environment and Parks to acquire administrative control of important wildlife habitats.

On Crown land within a Provincial forest, a Minister's Order under Section 101(2) of the Land Act could be prepared ordering the transfer of the land to the Ministry of Environment and Parks. The order would be signed by the Minister of Environment and Parks and the Minister of Forests and Lands. As the land would remain in the Provincial forest, the provisions of the Forest Act (1979) would apply to it.

Consignments of land to the Ministry of Environment and Parks have occasionally been granted by other agencies. Two areas have been consigned by the Ministry of Transportation and Highways to the Wildlife Branch by a letter of agreement between the two responsible Ministers. The letter confers management rights to the Ministry of Environment and Parks, however the land title remains in the name of the Ministry of Transportation and Highways. These consignments occurred prior to the creation of Section 101 Land Act transfers.

Land under the jurisdiction of the Ministry of Transportation and Highways could be transferred to the Ministry of Environment and Parks by a highway closure under Section 9 of the Highway Act (1979), then a

joint transfer under Section 101 of the Land Act. Such a transfer would be appropriate for the current Ministry of Transportation and Highways consignments.

Section 7(2) of the Greenbelt Act (1977) allows the Minister of Forests and Lands to delegate, in writing, the management of greenbelt land. Such consignments do not, however, establish the right of the Ministry of Environment and Parks to administer those lands.

For the Ministry of Environment and Parks to acquire administrative control of greenbelt lands acquired after 1977, the Minister of Forests and Lands would have to dispose of those lands under Section 5 of the Greenbelt Act and then transfer administrative control to the Ministry of Environment and Parks under Section 101 of the Land Act.

Greenbelt properties acquired prior to 1977, under the Greenbelt Protection Fund Act (1972), were not placed on the greenbelt register and thus cannot be consigned to the Ministry of Environment and Parks. The Ministry can obtain administrative control of these greenbelt lands through Section 101 Land Act transfers directly, however.

Under the Land Act (1979), four types of Crown land reservations or designations can be obtained from the Ministry of Forests and Lands. Order-in-Council reserves may be established by the Lieutenant-Governor in Council under Section 11. These reserves may be used to set aside a parcel of Crown land for permanent use by a Crown Ministry or agency. Prior to the creation of Section 101 transfers, Order-in-Council reserves were the strongest form of Crown land reserve available.

A second type of Crown land reservation, map reserves, are established under Section 12 of the Land Act. These reserve from alienation certain Crown land which is required by a Crown Ministry or agency for a specific purpose.

The third type of reservation, notations of interest, are also established under Section 12 of the Land Act. Notations of interest can be located on land within or outside a Provincial forest.

Designated Use Areas are Crown lands which are designated for a particular purpose under Section 13 of the Land Act. Applications for land uses which are incompatible with the designated use are not accepted.

Although there is no legal distinction between a map reserve and a notation of interest, in practice the former implies a much stronger form of protection (Dick et al., 1977). The Ministry of Forests and Lands invariably turns down any Crown land applications for map reserve areas. It informs the Wildlife Branch, through the referral process, of Crown land applications for areas under notations of interest. If the Wildife Branch indicates that the proposed land use is incompatible with wildlife, the application is often turned down.

3.3 Zoning and Cooperative Management on Privately-owned Lands

On private lands within municipal boundaries, the Wildlife Branch and other provincial agencies have no formalized opportunities to provide input to land use decisions (Ministry of Municipal Affairs,

1983a). On the private lands of the province outside of municipalities, the Wildlife Branch can identify important habitats and try to influence land use decisions by providing input to zoning by-laws and land use plans. It should be noted that there are laws restricting the amount by which opportunities to develop can be constrained by zoning. In addition, it would appear that municipal councils and regional district boards have the unrestricted discretion to create any zone they please, so long as proper procedure is followed. The only grounds on which their decisions can be questioned is if there is evidence of bad faith, such as malice or personal benefit (Ince and Pereboom, 1984).

Over the past decade, provincial agency input to land use plans and zoning by-laws has been substantially altered. The Municipal Amendment Act, 1977 provided for and listed requirements for the preparation of official settlement plans in unincorporated areas. These land use plans established development policies for extensive, and primarily rural unincorporated areas of a regional district (Ince and Pereboom, 1984). During plan preparation, regional districts were required to give formal consideration to the stated objectives, policies and programmes of government agencies (Corke, 1983).

Provincial input to official settlement plans, including input on wildlife concerns and interests, was obtained via referrals to

Technical Planning Committees (TPCs)[1] and Regional Resource Management Committees (RRMCs)[2]. The Ministry of Environment (now Environment and Parks) was represented on both of these committees. A major function of the TPCs and RRMCs with respect to official settlement plans was to ensure that proposed plans and by-laws did not conflict with or obstruct the provincial interest (Ministry of Municipal Affairs, 1983a).

Bill 9, the Municipal Amendment Act, 1983 repealed Section 815 of the Municipal Act which required that the regional district board be advised by a TPC on certain planning matters, in particular official settlement plans and zoning, subdivision and development permit by-laws. Also in 1983, RRMCs were abolished by Cabinet. The 1983 amendment stated that regional districts were to refer by-laws directly to provincial agencies, including the Ministry of Environment and Parks, for review and comment (Ministry of Municipal Affairs, 1983b).

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[1] Technical Planning Committees were established in the mid-1960's. TPC membership was comprised of officials of several provincial agencies, regional district and municipal staff, and other agencies such as B.C. Hydro and Power Authority. TPCs were established to facilitate discussion of provincial and other agency input to regional district zoning and land use planning.

[2] Regional Resource Management Committees were established by Order-in-Council in 1975. RRMC membership was comprised of senior officials of several ministries, including all the natural resource management ministries. RRMCs were established to provide a common administrative framework for integrated resource management at the regional level throughout the province. Each RRMC was to act as the key inter-ministry vehicle for achieving integrated planning, allocation, development and management of Crown lands and natural resources under provincial jurisdiction (Roles and Responsibilities: Environment and Land Use Technical Committee and Regional Resource Management Committees, June, 1972).

Most recently, Bill 62, Municipal Amendment Act, 1985 was introduced. This bill establishes official community plans and rural land use by-laws, the current mechanisms through which the Wildlife Branch can provide input to land use decisions on privately-owned lands.

Official community plans may be adopted by a municipality for any land within its area of jurisdiction and by a regional district for any non-municipal area designated by the Minister of Municipal Affairs as a community plan area. Official community plans are policy documents; specific by-laws are needed to implement them (Ministry of Municipal Affairs and Transit, 1986a and 1986b). Rural land use by-laws, on the other hand, combine policies guiding land use and the by-laws required to implement them.

Under Bill 62, local governments may use development permits to manage development in areas with special needs or conditions, as long as those areas are identified in the official community plan. One of the five recognized reasons for such designations is "natural environment protection". Although development permits cannot be used in rural land use by-laws, there is provision for restrictions on the use of land that is subject to environmentally sensitive development (Section 952(1)(b)(ii)).

3.4 Cooperative Management on Crown Lands

Cooperative management on the Crown lands of the province is offered primarily through the Wildlife Branch's participation in the

planning processes of other agencies. Since the Ministry of Forests and Lands administers the vast majority of the Crown land base, the discussion is limited to planning processes initiated by it.

For wildlife and habitat, the major strength of the Ministry of Forests Act (1979) is Section 4(c), which acknowledges the need to consider wildlife in planning the use of Provincial forests. The Ministry of Forests and Lands operates a hierarchical planning system for lands within Provincial forests. The various levels of that system are shown in Figure 2 and are described below, starting at the lower end of the hierarchy.

Land use referrals constitute the most frequently used, most site specific, and least formal level of the planning hierarchy. Since 1970, operational proposals for timber, range and recreational uses of Provincial forests have been referred to the Wildlife Branch for comment prior to their approval (Pearse, 1976).

The referral process provides the Wildlife Branch with the opportunity to advise the Ministry of Forests and Lands where there may be a potential conflict as a result of a particular proposal, and what measures could be taken to avoid that conflict. The requirement is for the Ministry of Forests and Lands to consider the comments of the Wildlife Branch (as well as other resource agencies); it doesn't necessarily have to implement them.

The local resource planning process of most importance to the Wildlife Branch is Coordinated Resource Management Planning. It was introduced to the province in 1974 in response to the need for

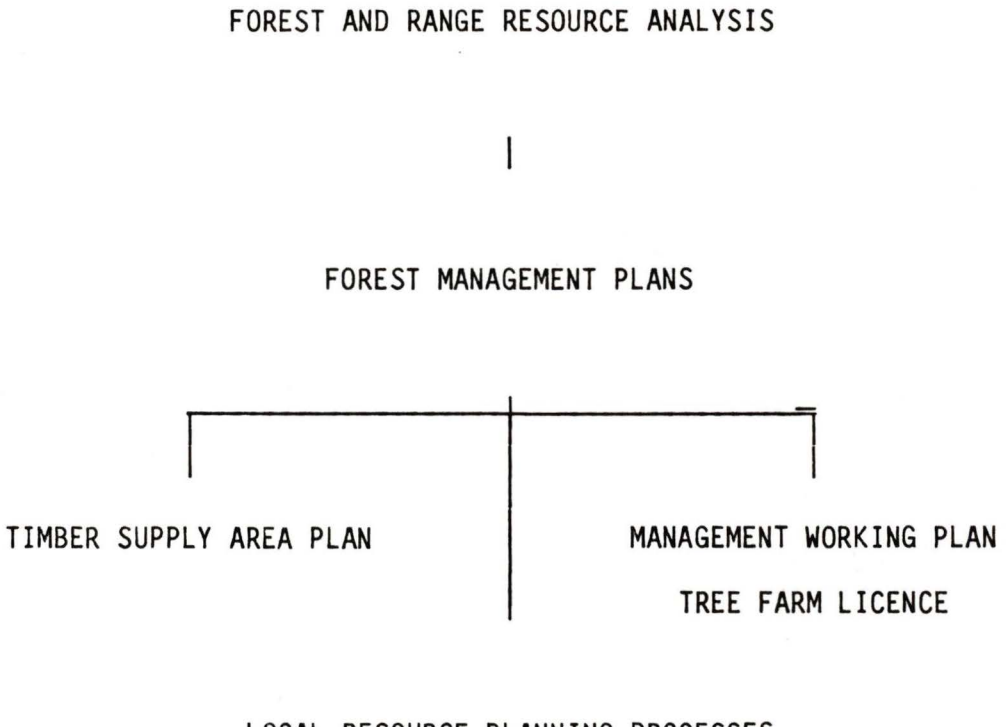

FIGURE 2

PLANNING HIERARCHY FOR PROVINCIAL FOREST LANDS

resolving land use conflicts on Crown rangeland, particularly conflicts between cattle grazing, timber production and wildlife management. Actual and potential users of the Crown land discuss land use within a study area with the purpose of arriving at a multiple use plan agreed to by consensus of the planning group. The plan specifies conditions such as grazing intensities, rotation type, fence and trail construction, and habitat manipulation. Conflicts within the working groups used to be appealed to the RRMCs. Although Coordinated Resource Management Plans have become a useful tool to the Wildlife Branch for expressing its management needs on Crown rangeland within Provincial forests, their usefulness is diminished by the loss of the RRMCs.

The next level of the planning hierarchy is forest management plans. Two types of planning units are recognized at this level, the Timber Supply Area (TSA) and the Tree Farm Licence (TFL). Timber Supply Areas are geographical areas defined for harvesting, planning and regulation. Tree Farm Licences carry a term of 25 years and cover an area of Crown land that includes any private lands held by the licensee.

A major consideration at this planning level is the amount of timber that can be made available to different sectors of the forest industry. The plans are also to identify or anticipate how other government programmes might influence how the Ministry carries out its responsibilities. In the case of the Wildlife Branch, for example, reductions of the Annual Allowable Cut may be required in order for the Wildlife Branch to meet its management objectives for a particular

species or group of species. Opportunities for the Wildlife Branch to input to TSA and TFL plans are provided at several stages of the planning process. This planning level is gaining importance as methodologies and information improve.

At the upper end of the hierarchy, planning is carried out at a provincial level. Section 7 of the Ministry of Forests Act (1979) requires the Ministry of Forests and Lands to prepare a Resource Analysis in 1979 and 1984; thereafter every 10 years. The Resource Analysis is to include a summary of public policy, which includes an assessment of the impacts of present and proposed Ministry policies on other agencies and an assessment of the interactions of the programmes of other agencies with the policies of the Ministry of Forests and Lands. The first two documents have been prepared (Ministry of Forests, 1980 and 1984).

Planning for Crown lands outside Provincial forests has undergone major changes in the 1980's. The former Ministry of Lands, Parks and Housing had a planning process which included referrals, Crown land plans and deferred area plans. As of the end of 1986, referrals are the only process that is regularly applied by the new Ministry of Forests and Lands. All Crown land applications are referred to the Wildlife Branch for comment. This referral system, initiated in the 1950's, is mandatory on all applications (Ahrens, 1982).

3.5 Summary

This chapter identifies the range of choice available to wildlife managers in British Columbia for acquiring administrative control of privately-owned and Crown lands. It demonstrates that, with the exception of expropriation, there is enabling legislation for all of the potential alternatives outlined in Chapter Two.

Recent changes in legislation provide stronger opportunities for the Wildlife Branch to acquire administrative control of both private and Crown lands. Of particular advantage are changes to the Wildlife Act which enable the Branch to acquire private land with ministerial approval only, and which facilitate the establishment of Wildlife Management Areas. Section 101 Land Act transfers provide a new and strong form of tenure on Crown lands.

In contrast to the land acquisition alternatives, opportunities for Branch input to the cooperative management alternatives have generally become more restricted. On Crown land outside Provincial forests, Branch input is limited to its response to referrals. On private lands, the formalized ability for ministries to present and discuss their input to land use plans and by-laws through TPCs has been removed. The abolishment of RRMCs has had the additional, significant impact of the loss of a vehicle for inter-ministry integration and conflict resolution at the regional level.

The following Chapter presents several case studies of land acquisition for wildlife in British Columbia. The range of choice considered by wildlife managers in past decisions to acquire administrative control of land for wildlife is examined. Evidence on the range of choice considered is based on a content analysis of all land acquisition files available in Victoria, and on a questionnaire administered in an interview format.

CHAPTER 4

CASE STUDIES: LAND ACQUISITION FOR WILDLIFE IN BRITISH COLUMBIA

4.1 Research Methodology

The purpose of the case studies is to examine the range of choice considered by wildlife managers in their decisions to acquire administrative control of land for wildlife.

Three variables are used in the research, following Ackoff (1953): decision-making behaviour, actors (individuals involved in the decision-making) and context (time-place-setting). Decision-making behaviour, specifically the identification of alternative tenure types in decisions to acquire land for wildlife, is treated as the dependent variable. The independent variables are traits of the decision-makers (defined as wildlife managers in British Columbia) and characteristics of the decision-making environment.

Table 2 lists a number of hypotheses which link alternative identification to traits of the decision-makers and characteristics of the decision-making environment. Each hypothesis indicates whether an independent variable is thought to expand or contract the search for alternatives, and uses the literature review presented in Chapter Two as support.

Two basic research methodologies were utilized to collect evidence on the range of alternative tenure types identified in the decision-

TABLE 2. RESEARCH HYPOTHESES

A. Hypotheses Linking Decision-making Behaviour With Traits of the Decision-makers

1. As a decision-maker's knowledge (awareness of potential alternatives) increases, the search for alternatives expands.

2. As a decision-maker's experience (length of time on the job) increases, the search for alternatives contracts.

3. As a decision-maker's experience (frequency with which alternative tenure types have previously been employed) increases, the search for alternatives contracts (that is, the more likely a decision- maker is to choose alternatives previously used).

B. Hypotheses Linking Decision-making Behaviour With Characteristics of the Decision-making Environment

1. If information available on an alternative is considered by the decision-maker to be inadequate, the search for alternatives expands.

2. If the time available for making a decision is considered by the decision-maker to be inadequate, the search for alternatives contracts.

3. If funding is considered by the decision-maker to be a constraint, the search for alternatives expands.

4. As the number of individuals involved in a decision increases, the search for alternatives expands.

5. As the variety of views and interests and/or conflicting views and interests of the participants involved in a decision increases, the search for alternatives expands.

C. Other Hypotheses

1. Decision-makers' perception of the available alternatives increases with training (years of education).

2. Decision-makers' innovation regarding alternative identification increases with training (years of education).

3. Only alternatives for which present institutional arrangements provide clear lines of authority are considered.

4. Alternatives most likely to be identified are those which maintain or strengthen political and public support.

making process, and what factors influenced the decision-makers' range of choice.

In fall 1986, a content analysis was undertaken of all Wildlife Branch land acquisition files available in Victoria. All properties that had been acquired by the Wildlife Branch to that time (according to information available in Victoria) are listed alphabetically in Appendix B, by tenure type, for each of the eight regions and sub-regions that are administered by the Branch (Figure 3).

Four decision-making steps were looked for in the content analysis: (1) initial request to acquire a property; (2) identification of alternative tenure types; (3) discussion of alternatives; and (4) decision on tenure type. Also recorded for each property, where the information was available, were size (in hectares), year of acquisition, species of primary concern, and significant habitat characteristics. For properties acquired prior to 1978, Dick et al. (1977) was used to supplement the file contents for this additional information.

The content analysis of the files is used to derive preliminary observations regarding the range of choice applied in past decisions to acquire land for wildlife, specifically whether or not alternatives were identified and what factors influenced the range of choice. The factors that appear to have influenced the range of choice are tested against the research hypotheses which link decision-making behaviour to characteristics of the decision-making environment. This evidence is presented in Section 4.2.

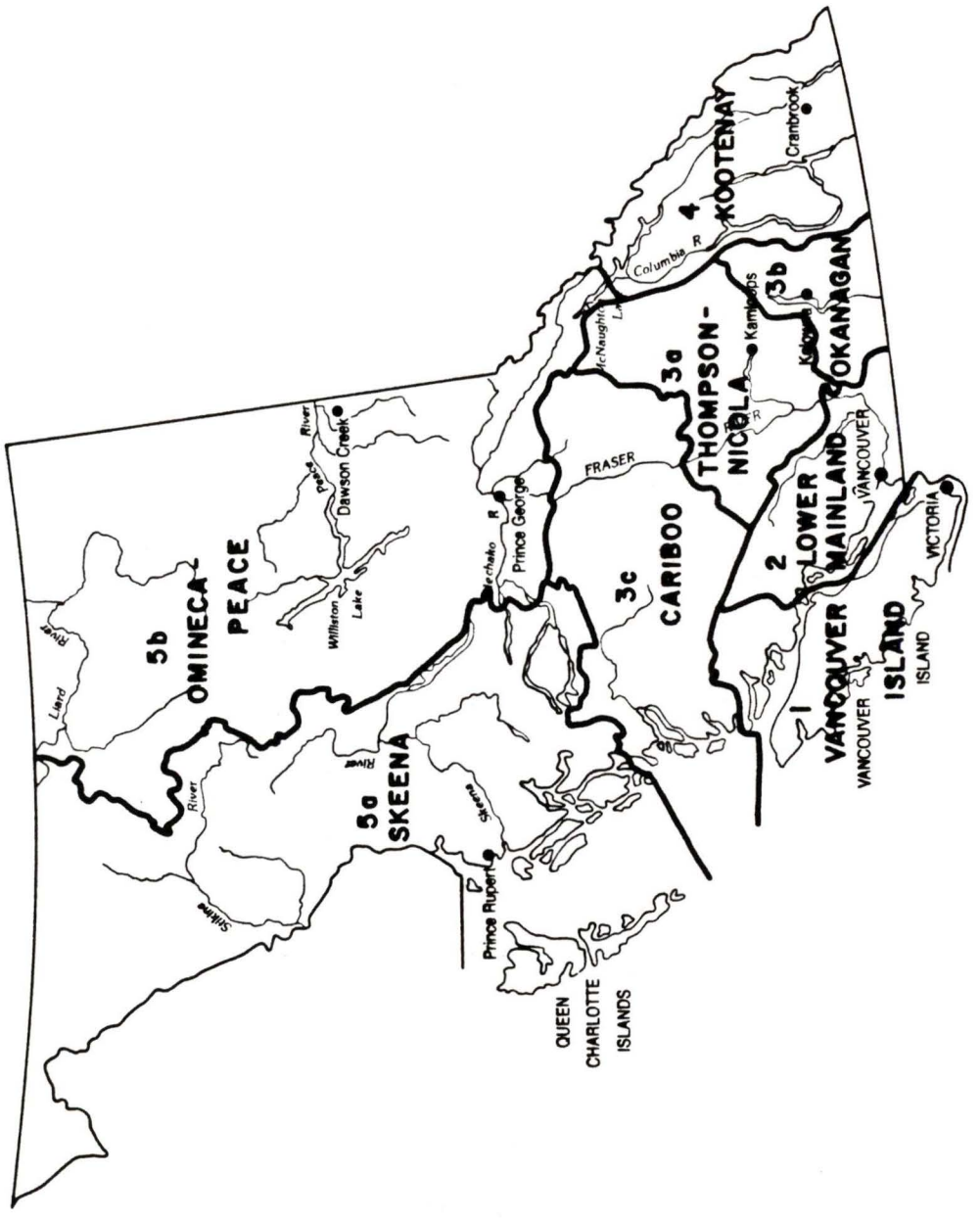

FIGURE 3. ADMINISTRATIVE REGIONS AND SUB-REGIONS
OF THE WILDLIFE BRANCH, MINISTRY OF ENVIRONMENT AND PARKS

The second research methodology, a questionnaire administered in an interview format, was initiated upon completion of the file content analysis. The interviews were conducted in January and February, 1987 and were based on a questionnaire of 50 questions that focussed on: (1) traits of the decision-makers, (2) the decision-makers' knowledge of and experience with the potential range of choice for acquiring land for wildlife, (3) general questions about acquiring land for wildlife, and (4) the context within which decisions on the sampled properties were undertaken.

The questionnaire, a copy of which appears as Appendix C, utilized a structured format and focussed on open-ended responses. Respondents were allowed to make comments other than those forwarded in response to the specific questions. In addition, all respondents were given an opportunity at the end of the interview to provide their general views on the topic of land acquisition for wildlife. The interviews averaged 50 minutes in duration.

The questionnaire was pre-tested on one wildlife manager in Victoria, and as a result was reorganized. The final version was used in interviewing eighteen respondents: twelve wildlife managers, an employee of Ducks Unlimited, an employee of the Nature Trust, three Lands managers, one of whom is no longer employed by the Ministry of Forests and Lands, and a private citizen. The formal questionnaire was not used in interviewing the private citizen.

The interviews are used to elaborate on and confirm evidence obtained from the files on alternative identification and major factors

influencing the range of choice. The research hypotheses linking decision-making behaviour to both traits of the decision-makers and characteristics of the decision-making environment are tested. The questionnaire results, together with background information on each property sampled, are provided in Section 4.3. The observations noted in Section 4.4 represent a compilation of the evidence gathered from the two sources.

4.2 Evidence From the File Search

A total of 167 files, covering 94% of the properties for which administrative control had been acquired by the Wildlife Branch to the fall of 1986, was reviewed. Evidence derived from the file search for each property sampled is provided in Appendix B and is summarized for each tenure type below.

4.2.1 Privately-owned Lands

4.2.1.1 Branch Purchases

Thirteen properties have been purchased by the Wildlife Branch, either individually or jointly with other agencies. Three of the files, or 23%, indicated that alternative tenure types to purchase were identified. Two of those three properties are in the Kootenay region. In the case of Wigwam Flats, land exchange was suggested by the Branch

as an alternative to purchase. For the Cutts property, alternatives offered by the landowner included lease and land exchange. For the third property, Antler's Saddle in the Okanagan, the property owner suggested land exchange as a possible alternative to purchase.

The file contents give the impression that many of the land purchases made by the Branch have been opportunistic in nature. Typically, the landowners have approached the Branch indicating their interest in selling land, or the Branch has approached the landowner indicating interest in buying. In the former case, if the property was important to wildlife and money was available, the purchase was made. In the latter case, money was not necessarily available when a property owner's interest in selling her/his land was solicited.

There seems to have been a reliance on the Greenbelt Fund for purchasing valuable wildlife habitat, while it was in operation between 1973 and 1977. During that time, 13 Greenbelt purchases were made at the request of the Wildlife Branch, whereas only one property was purchased by the Branch itself (Wigwam Flats). Prior to the creation of the Habitat Conservation Fund, all Branch purchases except the Ashnola were made in the Kootenay region.

As of the fall of 1986, the Habitat Conservation Fund had been used to purchase four properties for wildlife. Initially, the Habitat Acquisition Account of the Fund received money from interest earned on the Crown Land Fund (money collected through lease or sale of Crown land to private industry or to individuals). The first three purchases were made with Crown Land Fund money (Stellako River, Antler's Saddle

and Skull Mountain). The Ministry of Forests and Lands (then Ministry of Lands, Parks and Housing) became the owner initially, since expenditures from the Crown Land Fund were possible only under the Ministry of Lands, Parks and Housing Act (1979) and with the authority of the Lieutenant-Governor in Council. The Cabinet, on the advice of the Ministry of Lands, Parks and Housing then passed an Order-in-Council transferring administration and control of the properties to the Ministry of Environment and Parks (then Environment). The Ministry of Environment and Parks now holds the titles to these properties pursuant to Section 101 of the Land Act.

Since 1983, Crown Land Fund monies have no longer been directed to the Habitat Conservation Fund, and only one purchase has been made through the Fund. The purchase of the Cutts property in the Kootenays was jointly funded by the Habitat Conservation Fund and other agencies, including the Nature Trust and Wildlife Habitat Canada. Of the three other properties purchased in the 1980's, Kootenay Landing and Ladner Marsh were made with assistance from the federal government and Pend D'Orielle was made with compensation money from B.C. Hydro and Power Authority.

4.2.1.2 Donations

Just two properties have been donated to the Wildlife Branch. They are Moberly Marsh in the East Kootenays, donated by the

Bergenhams, and Cranberry Marsh in the Omineca, donated for the creation of a waterfowl sanctuary by Mrs. Starratt.

According to the files, alternative tenure types, specifically an easement and outright purchase, were suggested by the landowners of Moberly Marsh. A letter from the Wildlife Branch to the owners indicates a preference for donation or purchase, because those alternatives afford more flexibility for future management.

4.2.1.3 Greenbelt Purchases

Thirteen Greenbelt properties have been acquired specifically for wildlife. Of the nine files reviewed, two or 22% indicated the identification of alternatives to Greenbelt purchase. In the case of Sturgeon Bank in the Lower Mainland, land exchange was considered as an alternative. The file doesn't state why this alternative was rejected, however. When Churn Creek in the Cariboo region was being considered for purchase, the Greenbelt funds were returned to the Consolidated Revenue Fund. Since funds were no longer readily available, a suggestion was made to lease the property for six months with an option to purchase. Subsequently, the money became available so the lease alternative was not pursued.

4.2.1.4 Land Exchanges

Privately-owned land considered to be of value to wildlife has been exchanged for Crown land on two occasions. Alternatives were considered for one of the two (50%).

The first land exchange involved the Dale property in the Creston valley, Kootenay region. Mr. Dale offered the exchange of his land to the Crown for Crown land on Vancouver Island of equal value. The exchange was made in 1969, after which the deed to the land was transferred to the Ministry of Environment and Parks (then Recreation and Conservation). Subsequently, an Order-in-Council was passed that added the property to the Creston Valley Wildlife Management Authority.

The second land exchange involved the Junction property in the Cariboo region. In 1968, the Wildlife Branch requested the property owner of the Junction to consider selling it to them for wildlife management. Although the owners rejected that request, they indicated they would consider an easement as an alternative to purchase. Finally, a land exchange was negotiated. In 1973, an area of 1285 hectares was conveyed to the Crown in exchange for 1962 hectares of land in a nearby area as well as a 20 year grazing lease over an additional 1933 hectares. Administrative control of the property was later acquired by the Wildlife Branch under a Section 101 transfer. It is not clear from the file why the land exchange alternative was ultimately adopted.

Land exchange is also mentioned as a possible alternative for three other properties. These are Cattermole/McGillivray Creek in the Lower Mainland (a 99 year lease and map reserve), Little Fort in the Thompson-Nicola (a consignment from the Ministry of Transportation and Highways), and Wigwam Flats in the Kootenays (a Branch purchase).

Different factors contributed to the rejection of the land exchange alternative. For Cattermole/McGillivray Creek, the file indicates that Lands personnel foresaw difficulties in carrying out survey requirements on the property. In the Little Fort case, land exchange appears to have been rejected on the grounds that Ministry of Transportation and Highways staff would have to go through too many stages to authorize it. Finally, the Wigwam Flats file indicates a rejection of land exchange based on political influence (the Minister in charge was not in favour of the proposal) as well as the difficulty of complying with the legislation (Section 90(1) of the 1979 Land Act), which provides for exchanges on the basis of comparative values but precludes the exchange of Crown lands on a hectare for hectare basis.

4.2.1.5 Leases

Thirty-four properties are leased by the Wildlife Branch, all from the Nature Trust. Of the 33 files reviewed, just three or 3% indicated that alternative tenure types to a Nature Trust lease were identified. Land exchanges were proposed for both Cattermole/McGillivray Creek in

the Lower Mainland and Wigwam Flats in the Kootenays, whereas land consignment was sought by the Branch in the case of Addington Marshes in the Lower Mainland.

Reasons for rejecting the land exchange proposals are identified in the previous section. It seems consignment was rejected for Addington Marshes because the land was in an Agricultural Land Reserve and the owners had expected to turn it over to the B.C. Land Commission. Later, the Land Commission decided the property should no longer be held by them and a purchase offer by the Nature Trust was accepted.

All leased properties have been acquired since the 1971 formation of the Nature Trust. Over a third of the leases are held on properties in the Kootenay region, and almost half of them were acquired for the management of waterfowl.

Where initial requests to lease a property were included in the files, they took the form of the Nature Trust writing to the Wildlife Branch and asking it for assurance that it was interested in leasing a particular property. If affirmation was given, the Nature Trust typically proceeded with acquiring the land and subsequently leased it to the Branch. Properties acquired by the Nature Trust are either purchased or donated. Some properties appear to be leased by the Branch at the request of Ducks Unlimited. Once the lease is obtained, the two agencies often carry out joint management.

4.2.1.6 Easements, Right-of-ways, Restrictive Covenants

There is no reference in the files to easements, right-of-ways or restrictive covenants. The very few easements and right-of-ways held by the Wildlife Branch on private lands are used for access. Although the Branch requests some restrictive covenants on private lands as part of the referral process, it currently has no mechanism in place for finding out whether these covenants are applied (R. Walker, pers. comm.).

4.2.1.7 Management Agreements

Up to the fall of 1986, the Wildlife Branch had not been involved in any management agreements as defined in Chapter Two. However, it is currently exploring entering into third party agreements. Such agreements would involve property owners granting permission to a third party to enter their property and conduct management activities on behalf of the Wildlife Branch (R. Walker, pers. comm.).

4.2.2 Crown Lands

4.2.2.1 Order-in-Council Reserves

The Order-in-Council reserve is the type of tenure under which administrative control was first acquired by the Wildlife Branch. The

first Order-in-Council reserve, Yalakom Creek in the Thompson-Nicola sub-region, was established in 1907. The majority of the others were acquired between the late 1950's and the early 1970's. None of the files indicate the identification of alternative tenure types to Order-in-Council reserve.

Although most of the Order-in-Council reserves have been acquired for waterfowl management, the vast majority of the land area they comprise is for ungulates. This is due to the immense size of the White River reserve in the Kootenays, which was acquired in 1936 and encompasses 313,326 hectares, or 79% of the total land area within this tenure type.

4.2.2.2 Section 101 Transfers

Eight properties are known to have been acquired by the Wildlife Branch under Section 101 transfer, three of which are pre-1977 Greenbelt properties (Tofino on Vancouver Island and Pitt Marshes and Mud Bay in the Lower Mainland region). The three Habitat Conservation Fund purchases are not included in the property or area totals.

Just four of the Section 101 files are available in Victoria, of which one (25%) indicates alternative tenure types were considered. For Chilanko Marshes in the Cariboo region, land was held under a grazing lease adjacent to land deeded to Nature Trust. The alternatives were for Nature Trust to apply to Lands for leasehold tenure and for the Ministry of Environment and Parks to apply for a Section 101

transfer. There is no indication in the file why the latter alternative was chosen.

4.2.2.3 Consignments

Five land consignments have been acquired, two from the Ministry of Transportation and Highways, two from Lands through Section 7(2) of the Greenbelt Act, and one from B.C. Hydro and Power Authority. The B.C. Hydro consignment has expired. Alternative identification for the Greenbelt properties is discussed in Section 4.2.1.3. According to the files, no other tenure types were considered for any of the other consigned properties.

4.2.2.4 Map Reserves

A total of 75 map reserves have been acquired by the Wildlife Branch under Section 12 of the Land Act. Approximately 10 reserves for patrol cabins are not included in the totals. It appears that no Designated Use Areas have been acquired (Section 13 of the Land Act). Although the contents of all files were reviewed, only one on Vaseaux Lake in the Okanagan indicated the identification of alternatives to a map reserve. The alternative considered was purchase of the property by the federal government. The reasons for the selection of a map reserve are not contained in the files.

Map reserves reserve Crown land from alienation for a specific public purpose. There are several different types, including reserves which are exclusively for wildlife (wildlife management reserves), reserves which allow several uses (multi-use management reserves and wildlife, grazing, forestry reserves), and reserves which are for recreation and/or recreational access. Reserves are sometimes requested for all unencumbered or unalienated land within a given area.

Almost all map reserves were acquired in the 1960's and 1970's (41% and 44%, respectively). Most reserves were acquired for the management of waterfowl (41%) or ungulates (33%), and 89% of the total land area under reserve is for ungulates.

4.2.2.5 Notations of Interest

Nineteen notations of interest have been acquired by the Wildlife Branch to date, two of which are in Provincial forest. According to the file content analysis, alternatives to notation of interest were considered for five properties (26%).

Notations of interest are the weakest form of administrative protection afforded by a Crown reserve. Identified alternatives take the form of the initial request being for a stronger form of tenure, either a map reserve or an Order-in-Council reserve. Rejection by Lands was due to the presence of other, sometimes conflicting land use activities. Four of the five properties for which a stronger form of tenure was requested are in the Kootenay region.

Of the total land area under notation of interest, excluding Carp Lake in the Thompson-Nicola region, 77% is in the Kootenays.

4.2.3 General Observations

The file search evidence illustrates that the full range of choice has not been examined in past decisions to acquire land for wildlife. Just 17 of the 167 files reviewed (10%) indicate that alternative tenure types to the ones chosen were considered. Table 3 presents the evidence on the number and percentage of files reviewed in which alternatives were identified. For six of the ten tenure types (Branch purchases, donations, Greenbelt purchases, land exchanges, Section 101 transfers, and notations of interest), 20% or more of the files showed that alternatives were identified. For the remaining four tenure types, alternatives were named in 3% or less of the files sampled.

The first general observation that can be made is that whereas alternatives were considered for all of the private tenure types, no alternatives were identified for two of the five Crown tenure types.

Even where alternative tenure types were mentioned, it is apparent that the full range of choice was not considered. For example, for two of the properties purchased by the Branch, it appears that land exchange was the sole alternative considered. The full range of choice on privately-owned lands encompasses a number of additional alternatives, including donation, lease, easement, restrictive covenant, and management agreement.

TABLE 3. IDENTIFICATION OF ALTERNATIVES FOR EACH TENURE TYPE, BY REGION

REGION	BRANCH PURCHASE No. (%)	DONATION No. (%)	GREENBELT PURCHASE No. (%)	LAND EXCHANGE No. (%)	LEASE No. (%)	ORDER-IN-COUNCIL No. (%)	SECTION 101 TRANSFER No. (%)	CONSIGN-MENT No. (%)	MAP RESERVE No. (%)	NOTATION OF INTEREST No. (%)
1 Vancouver Island	N/A	N/A	0 (0)	N/A	0 (0)	0 (0)	N/A	N/A	0 (0)	0 (0)
2 Lower Mainland	0 (0)	N/A	1 (33)	N/A	2 (100)	0 (0)	Unk	0 (0)	0 (0)	0 (0)
3a Thompson-Nicola	0 (0)	N/A	N/A	N/A	N/A	0 (0)	Unk	0 (0)	0 (0)	1 (50)
3b Okanagan	1 (50)	N/A	0 (0)	N/A	0 (0)	N/A	Unk	N/A	1 (20)	0 (0)
3c Cariboo	N/A	N/A	1 (100)	1 (100)	0 (0)	0 (0)	1 (33)	N/A	0 (0)	0 (0)
4 Kootenay	2 (25)	1 (100)	0 (0)	0 (0)	1 (13)	0 (0)	N/A	0 (0)	0 (0)	4 (67)
5a Skeena	N/A	N/A	0 (0)	N/A	0 (0)	N/A	N/A	N/A	0 (0)	0 (0)
5b Omineca-Peace	0 (0)	0 (0)	N/A	N/A	0 (0)	N/A	N/A	N/A	0 (0)	N/A
Total	3 (23)	1 (50)	2 (22)	1 (50)	3 (3)	0 (0)	1 (33)	0 (0)	1 (1)	5 (26)

No. = Number of Files Reviewed in Which Alternatives Were Identified.
% = Percentage of Files Sampled for Which Alternatives Were Identified.
N/A = Not Applicable (No properties acquired).
Unk = Unknown (Files not available).

Where alternatives are identified, the file search evidence cannot be used to test those research hypotheses that link decision-making behaviour with traits of the decision-makers. However, limited observations can be made about the influence of certain characteristics of the decision-making environment on alternative identification.

Two factors appear to have influenced alternative identification on privately-owned lands, time availability and funding constraints. Contrary to the research hypothesis based on Downs (1976) and supported by evidence collected by Sewell (1965), a limited amount of time available for decision-making seems to have expanded the search for alternatives. In the case of both Branch and Greenbelt purchases, if a decision to purchase was not forthcoming in a short time period after the sale offer had been made, other alternatives were suggested by either the property owner or the Wildlife Branch. Second, it appears from the file search that funding constraints in the case of both Branch and Greenbelt purchases led to an expansion of the alternatives considered. This observation is consistent with the research hypothesis.

Factors contributing to the general lack of alternative identification for the Crown land tenure types are difficult to ascertain from the files. It can be speculated that information on acquisition alternatives on Crown lands is readily available to the decision-makers. If so, the decision-maker may be knowledgeable enough to request only the alternative which will provide the type of protection and/or management desired. This speculation would support the hypothesis based on Simon

and Newell (1971) and Guthrie (1976) that the availability of adequate information contracts the search for alternatives.

The above observations, albeit limited, cannot be broadly interpreted due to the following limitations of the research:

1. With the exception of map reserves and leases, the sample sizes (number of properties acquired by tenure type) are very small.
2. Some files were difficult to obtain. This was particularly true in the case of the older Order-in-Council reserves and the newer Section 101 transfers. The older files may have been discarded, as an attempt to locate them in Provincial Archives failed. The fact that Section 101 transfers are relatively new could mean that the files are available only in regions.
3. The files are of variable quality in terms of the amount of information they contain. The files on leases and map reserves, in particular, appear to be incomplete. For the most recently acquired leases, the files contain a copy of the lease only. The first three decision-making steps looked for in the content analysis are thus absent. The files on map reserves often contain only the letter requesting the reserve and the letter granting that request. It is therefore possible that alternative tenure types were both identified and discussed, but written correspondence was not prepared or is missing. The relatively large sample sizes for these two tenure types are thus not necessarily a reliable index of comprehensiveness.

There are a number of additional observations that can be made based on the content analysis of the land acquisition files. The first observations are derived from Table 4, in which the number and area of properties acquired under each tenure type are presented for the eight administrative regions. It can be seen that in terms of total numbers, map reserves are by far the dominant type of land tenure under which administrative control has been acquired by the Wildlife Branch. This tenure type comprises 42% of the total number of properties. Second, the geographical distribution of properties acquired is uneven across the province. The Kootenay region has 31% of the total number of properties acquired and 56% of the total land area under the various tenure types.

The number and area of properties acquired for each species group is displayed in Table 5. Ungulates and/or waterfowl are the species groups for which almost all properties are acquired (38% for ungulates, 38% for waterfowl, and 7% for a species mix of ungulates and waterfowl, totalling 83%). The greatest proportion of the land acquired to date is for ungulates (83%).

Another observation is that there seem to be some parallels between the tenure types under which land has been acquired and the decade of acquisition. As already noted, the earliest acquisitions were Order-in-Council reserves, starting at the turn of the century. This was the only tenure type in existence until the late 1950's. The 1960's are represented primarily by notations of interest and map reserves, with the occasional Branch purchase. This situation is

TABLE 4. NUMBER AND AREA OF PROPERTIES ACQUIRED UNDER EACH TENURE TYPE, BY REGION

REGION	BRANCH PURCHASE		DONATION		GREENBELT PURCHASE		LAND EXCHANGE		LEASE		ORDER-IN-COUNCIL		SECTION 101 TRANSFER		CONSIGNMENT		MAP RESERVE		NOTATION OF INTEREST		TOTALS BY REGION	
	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]	No.[1]	Area (ha)[2]
1 Vancouver Island	0		0		2	108	0		12	351+	1	32698	0		0		9	3794	2	2687	26	39638
2 Lower Mainland	1	75	0		3	2549	0		2	286	5	10514	2	6070	1[4]	76[4]	6	8521	3	17339	22	45430
3a Thompson-Nicola	1	259	0		0		0		0		3	11607	1	4240	1	152	7	7535	2	50	15	23843
3b Okanagan	2	567	0		2	701	0		3	406	0		0		0		5	11999	3	5146	16	18819
3c Cariboo	0		0		1	124	1	(1285)[3]	2	267	1	111	5	11938	0		7	7039	1	2023	17	21502
4 Kootenay	8	966	1	665	4	1219+	1	Unk	8	1221	3	333479	0		1[4]	450[4]	24	82109	6	96339	56	516448+
5a Skeena	0		0		1	49	0		3	133	0		0		0		6	1688	2	1501	12	3371
5b Omineca-Peace	1	87	1	176	0		0		3	366	0		0		0		11	239941	0		16	240570
Total	13	1954	2	841	13	4750+	2	Unk[3]	33	3030+	13	388409	8	22248	3[4]	678[4]	75	362626	19	125085	180	909621+

[1] Number - Total Number of Properties.
[2] Area - Area of Properties, Where Known.
[3] Area Included Under Section 101 Transfer.
[4] Greenbelt Property Excluded From Total.

TABLE 5. NUMBER AND AREA OF PROPERTIES ACQUIRED FOR DIFFERENT SPECIES GROUPS, BY REGION

REGION	UNGULATES		WATERFOWL		WATERFOWL & UNGULATES		UNGULATES & OTHER SPECIES		WATERFOWL & OTHER SPECIES		THREATENED & ENDANGERED SPECIES		OTHER SPECIES		NO SPECIFIC SPECIES		UNKNOWN		TOTAL, BY REGION	
	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area
1 Vancouver Island	4	391	16	37250	0	0	0	0	1	93	1	1	3	1903+	1	Unk	0	0	26	39638+
2 Lower Mainland	0	0	13	19565	0	0	0	0	3	11422	0	0	2	360	2	7983	3	6100	23	45430
3a Thompson-Nicola	9	23362[2]	4	329	1	152	0	0	0	0	0	0	0	0	1	Unk	0	0	15	23843
3b Okanagan	10	17553	3	532	1	595	0	0	0	0	0	0	1	139	0	0	0	0	15	18819
3c Cariboo	8	16756	3	3835	2	361	0	0	3	485+	1	65	0	0	0	0	0	0	17	21502+
4 Kootenay	27	486382	16	16941	7	2516	1	195	0	0	0	0	1	79	2	10335	2	Unk	56	516448+
5a Skeena	2	170	9	2893	0	0	0	0	0	0	0	0	0	0	1	308	0	0	12	3771
5b Omineca-Peace	8	207204	5	731	1	4766	2	27869	0	0	0	0	0	0	0	0	0	0	12	3371
Total	68	751818	69	82076	12	8390	3	28064	7	12000+	2	66	7	2481+	7	18626	5	6100	180	909621+

[1] Species = Species group(s) for which a property is primarily acquired.
[2] Excludes 28,350 ha Carpenter Lake.

repeated in the 1970's, with the addition of Greenbelt purchases. The few donations and consignments were acquired in the late 1960's and early 1970's. The 1980's have been dominated by Nature Trust leases, Habitat Conservation Fund purchases and Section 101 transfers.

A final observation is that the requests for acquiring administrative control of land for wildlife are not well substantiated. Typically, a request indicates only that a particular property is "important to wildlife"; further rationale is not provided. This observation was made for all tenure types.

4.3 Evidence From the Questionnaire

A number of criteria were considered in choosing the stratified sample of eleven properties for the questionnaire. The eleven properties and many of the criteria considered are listed in Table 6, and the location of each property is shown in Figure 4.

Since decision-making behaviour is the dependent variable in the research, the first criterion considered was representation of the decision-making population. Actors involved in the decision-making process typically include wildlife managers, landowners and individuals working for private agencies in the case of private tenure types, and wildlife managers and other Crown agency personnel in the case of Crown tenure types. However, the actual decision-makers in terms of alternative identification are considered here to be represented by the wildlife managers in regions and Victoria only. In order to try and

TABLE 6. LIST AND CHARACTERISTICS OF THE SAMPLED PROPERTIES

PROPERTY NAME	REGION	TENURE TYPE(S)	LAND STATUS	ALTS. IDENTIFIED	IF YES, WHICH	YEAR ACQUIRED	SPECIES FOR WHICH PRIMARILY ACQUIRED
Somenos Lake	1 Vancouver Island	Greenbelt Purchase	Private	No	-	1973	Waterfowl
		Nature Trust Lease	Private	No	-	1978	
McGillivray Creek	2 Lower Mainland	Nature Trust Lease	Private	Yes	Land Exchange	1985	Waterfowl
Skull Mountain	3a Thompson-Nicola	Branch Purchase	Private	Yes	Land Exchange; Nature Trust Lease	1983	Mule Deer
		Map Reserve	Crown	No	-	1985	
Vaseaux Lake	3b Okanagan	Nature Trust Lease	Private	No	-	1985	California Bighorn Sheep
		Section 101 Transfer	Crown	No	-	Pending	
Junction	3c Cariboo	Land Exchange	Private	Yes	Purchase; Easement	1973	California Bighorn Sheep
		Section 101 Transfer	Crown	No	-	1981	
Three Sons	4 Kootenay	Greenbelt Purchase	Private	No	-	1973	Rocky Mountain Elk
Wigwam Flats	4 Kootenay	Branch Purchase	Private	Yes	Land Exchange	1977	Rocky Mountain Bighorn Sheep
		Nature Trust Lease	Private	No	-	1980	
Delkatla Slough	5a Skeena	Greenbelt Purchase	Private	No	-	1974	Waterfowl
		Section 101 Transfer	Crown	No	-	Pending	
Stellako River	5b Omineca-Peace	Branch Purchase	Private	No	-	1981	(Fish) Deer and Moose
Cecil Lake	5b Omineca-Peace	Map Reserve	Crown	No	-	1975	Waterfowl
Huhn's Slough	5 Omineca-Peace	Nature Trust Lease	Private	No	-	1986	Waterfowl

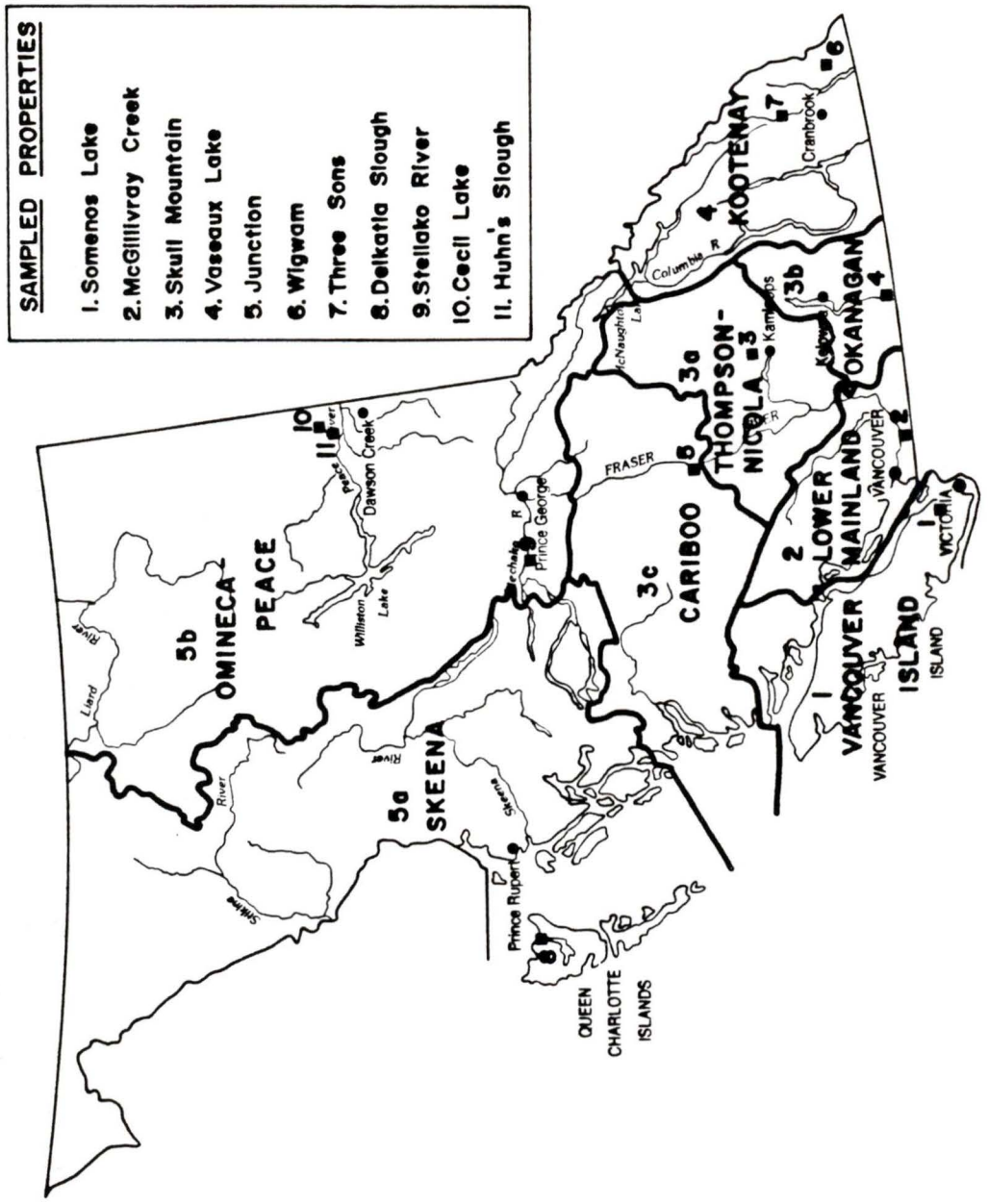

FIGURE 4. LOCATION OF THE SAMPLED PROPERTIES

sample a major proportion of these managers, at least one property per administrative region and sub-region was chosen (Figure 4). An attempt was made to interview more than one individual who was directly involved in each case study decision. For five of the properties (one Crown, two private and two mixed), one wildlife manager and one decision-maker from outside the Wildlife Branch were interviewed. For each of four other properties, two wildlife managers were interviewed.

A diversity of tenure types was chosen. Four of the five tenure types that have been used on private land are included in the sample, representing twelve separate parcels. Donations were excluded because there are only two in existence. On Crown land, two of the tenure types that have been used, Section 101 transfers and map reserves, are sampled. Five parcels of land are represented by these two tenure types. Consignments were excluded because they have not been used often, and because the mechanism for conveyance has changed since they were first used (a Section 101 Land Act transfer is now required). Order-in-Council reserves were excluded because they were all acquired over 20 years ago (prior to the mid-1960's). Although an attempt was made to include a notation of interest in the sample, no wildlife managers could be found who had been involved in decisions on the more recent ones (mid-1970's). Four of the eleven sampled properties are a mixture of private and Crown tenure types, and two have parcels under two different private tenure types.

For the private properties only, the identification of alternatives was considered in sample selection. A mixture of properties was selected, some for which the Victoria files indicated alternatives were considered. The known identification of alternatives facilitated a focussing of the interview questions.

As noted in Section 4.2.3, the file search indicates a concentration of properties acquired for either waterfowl or ungulates. The sample properties were chosen to equally represent these two species groups.

The selection of at least one property per region/sub-region satisfies the criterion of a wide geographic distribution. Finally, the sample covers a wide time span, from the early 1970's to the mid 1980's.

Administrative regions and tenure types are disproportionately sampled. Two properties were selected from the Kootenay region because it has such a large proportion of the total number of properties (30%) and total geographic area (50%) over which the Wildlife Branch has acquired administrative control. More than one property in the Omineca-Peace was selected to improve the representation of the regional wildlife managers.

Three Branch purchases and three Greenbelt purchases are sampled. Excluding donations and land exchanges, for which the sample size is just two properties each, these are the tenure types for which the greatest proportion of files indicated that alternatives to the chosen tenure type were identified. In addition, observations from the file

search on factors influencing the range of choice are based entirely on these two tenures. A total of five Nature Trust leases are sampled, however, three of these were included because they were associated with another tenure type selected (Somenos Lake, Wigwam Flats and Vaseaux Lake).

Background information on each of the eleven properties sampled is provided in Appendix E.

Evidence from the questionnaire must be interpreted with some caution due to the size of the samples from which it is obtained. First, the number of decision-makers, or those individuals who were directly involved in the decisions throughout their duration, is small. (The sample is comprised of twelve wildlife managers and five other decision-makers). This problem is inherent in any hierarchical organization, and it has the inevitable result of reducing the amount of evidence that can be collected on the personal traits of the decision-makers. Second, just eleven properties, or seventeen case studies, are sampled. Although this decreases the probability of selecting properties for which alternatives were considered, this limitation is lessened to some degree by use of the file search evidence in sample selection. The small number of case studies also reduces the amount of evidence on characteristics of the decision-making environment.

Due to the sample sizes, the questionnaire results do not lend themselves to conclusive statements on wildlife managers' range of

choice. They do, however, bring insights into the range of alternatives considered by professionals in a previously unexplored discipline, and into the major factors influencing those individuals' range of choice.

4.3.1 The Range of Choice Considered

Of the eleven wildlife managers interviewed about private land parcels, four or 27% said they considered all possible tenure types in addition to that decided upon, four indicated the only alternative they gave consideration to was outright purchase by the Wildlife Branch or by another agency, and three said they didn't consider any alternatives to the chosen tenure type.

Of the wildlife managers interviewed about Crown land parcels, two, or 33% of those sampled, said they considered all possible tenure types in addition to the one chosen. Neither of these managers is familiar with the full range of choice for acquiring Crown land, however.

At least one alternative tenure type was actively considered for four of the private land parcels - Junction, McGillivray, Skull Mountain, and Wigwam Flats. No alternatives were actively considered for any of the six Crown land parcels. These findings corroborate the file search evidence.

4.3.2 Major Factors Influencing the Range of Choice

The evidence on major factors influencing the range of choice is first presented for the factors that are identified in Chapter Two. It is discussed in terms of whether it is consistent with, inconsistent with or has no bearing upon the research hypotheses in Table 2. Additional factors found to have influenced the range of choice are then identified and examined.

4.3.2.1 Traits of the Decision-makers

The first traits considered are the decision-makers' knowledge and use of alternative tenure types. Respondents were first asked to identify all the alternatives they were aware of for acquiring administrative control of private land in British Columbia. Following Kates (1962), the alternatives they mentioned are categorized as "perceived as common". Tenure types that were not identified in response to the first question, but that the respondents said they are familiar with when prompted, are categorized as "perceived as uncommon". Alternatives categorized as "not perceived" are those which were neither identified initially by, nor are familiar to, the respondents. The decision-makers were also asked whether they have personally used each of the potential alternatives and if so, how many times. Tenure types that have been used are categorized as "adopted". The Crown land alternatives were addressed the same way in subsequent questions.

Evidence from the questionnaire on the knowledge and use of private land alternatives is provided in Table 7. Almost all of the potential alternatives for acquiring administrative control of private land are known to the twelve wildlife managers interviewed. Perceived as common alternatives are outright purchase, lease, and gift or donation. Alternatives perceived as uncommon include management agreement, restrictive covenant, land exchange, expropriation, and easement or right-of-way. Land exchange and management agreement are each unfamiliar to just one wildlife manager.

Two alternatives, outright purchase and lease (Nature Trust only), have been adopted by ten of the twelve managers interviewed, and land exchange has been used by half of them.

All of the potential alternatives are known to the four other respondents. Perceived as common alternatives for acquiring administrative control of private land are outright purchase and lease. All other alternatives appear to be perceived as uncommon. Three of the four other respondents are in a position to adopt private land alternatives. All three have used outright purchase and gift or donation, and two have adopted land exchange, lease and easement.

Table 8 presents the questionnaire evidence on the knowledge and use of Crown land alternatives. Both designated use area and land trade with another level of government are not perceived as potential alternatives by almost half of the wildlife managers. Order-in-Council reserve is unfamiliar to just one manager. The alternatives that are perceived as common are map reserve, Section 101 transfer, notation of

TABLE 7. KNOWLEDGE AND USE OF POTENTIAL ALTERNATIVES FOR ACQUIRING ADMINISTRATIVE CONTROL OF PRIVATE LAND

Alternative	Respondents (sample size)	NUMBER OF RESPONSES: Knowledge of Alt. Perceived As Common	Perceived As Uncommon	Not Perceived	Use of Alt.[1] (times used) >5	3-5	<3	0	N/A	Adoption[1] of Alt.
Outright Purchase	Wdl Mgrs (12)	10	2	0	3	2	5	2	-	10
	Other (4)	4	0	0	2	1	0	0	1	3
Gift or Donation	Wdl Mgrs (12)	7	5	0	0	0	4	8	-	4
	Other (4)	2	2	0	1	0	2	0	1	3
Expropri-ation	Wdl Mgrs (12)	2	10	0	0	0	0	12	-	0
	Other (4)	0	4	0	0	0	0	3	1	0
Land Exchange	Wdl Mgrs (12)	3	8	1	0	4	2	5	1	6
	Other (4)	0	4	0	1	1	0	1	1	2
Lease	Wdl Mgrs (12)	9	3	0	4	3	3	2	-	10
	Other (4)	4	0	0	2	0	0	1	1	2
Easement or Right-of-way	Wdl Mgrs (12)	1	11	0	1	0	1	10	-	2
	Other (4)	2	2	0	0	0	2	1	1	2
Restrictive Covenant	Wdl Mgrs (12)	3	9	0	2	2	1	7	-	5
	Other (4)	0	4	0	1	0	0	2	1	1
Management Agreement	Wdl Mgrs (12)	5	6	1	1	0	2	8	1	3
	Other (4)	0	4	0	0	1	0	2	1	1

N/A - Not Applicable

[1] Information on the adoption of private tenure types was not obtained from the Ducks Unlimited employee because that agency is not involved directly in land acquisition.

TABLE 8. KNOWLEDGE AND USE OF POTENTIAL ALTERNATIVES FOR ACQUIRING ADMINISTRATIVE CONTROL OF CROWN LAND

Alternative	Respondents (sample size)	NUMBER OF RESPONSES Knowledge of Alt.[1]			Use of Alt.[1] (times used)					Adoption[1] of Alt.
		Perceived As Common	Perceived As Uncommon	Not Perceived	>5	3-5	<3	0	N/A	
Order-in-Council Reserve	Wdl Mgrs (12)	7	4	1	2	1	1	7	1	4
	Other (2)	2	0	0	2	0	0	0	0	2
Section 101 Transfer	Wdl Mgrs (12)	10	2	0	0	4	3	4	0	7
	Other (2)	2	0	0	2	0	0	0	0	2
Map Reserve	Wdl Mgrs (12)	12	0	0	9	0	1	2	0	10
	Other (2)	2	0	0	2	0	0	0	0	2
Designated Use Area	Wdl Mgrs (12)	0	7	5	0	0	0	7	5	0
	Other (2)	2	0	0	2	0	0	0	0	2
Notation of Interest	Wdl Mgrs (12)	9	3	0	7	0	1	4	0	8
	Other (2)	2	0	0	2	0	0	0	0	2
Trade With Another Level of Government	Wdl Mgrs (12)	0	7	5	0	0	0	7	5	0
	Other (2)	0	2	0	0	0	0	2	0	0
Consignment	Wdl Mgrs (12)	1	11	0	1	2	4	5	0	7
	Other (2)		Unknown							

N/A - Not Applicable

[1] Information on the knowledge and use of alternatives was obtained from the Lands managers only, since neither Ducks Unlimited nor the Nature Trust is involved in Crown land acquisition.

interest and, excluding one manager, Order-in-Council reserve. Alternatives perceived as uncommon are consignment from another agency and, by those managers to whom they are familiar, designated use area and trade with another level of government.

Additional alternatives mentioned by some of the managers are Wildlife Management Area (five), cooperative management such as referrals and interagency planning (two), and ecological reserves (two).

Map reserves have been adopted by ten of the twelve managers interviewed, notations of interest by eight managers, and Section 101 transfers and consignments by seven managers each.

Just two of the other respondents have been involved in Crown land management, both as Lands managers. From the Lands perspective, consignment from another agency is considered to encompass a number of the other alternatives (that is, Lands consigning Crown land to other agencies such as the Wildlife Branch). The only potential alternative that is perceived as uncommon is trade with another level of government. All other potential alternatives are perceived as common by the Lands managers, and each has been adopted by them.

Some of the potential tenures types are not perceived to be alternatives for acquiring 'administrative control' of land for wildlife. As defined in the introduction to the questionnaire (Appendix C), the term 'administrative control' includes alternatives as weak as map notation of interest and as strong as outright purchase. However, when questioned about their knowledge of the potential alternatives, some managers commented that they don't consider certain tenure types to

meet this definition. An example on private land is expropriation, which is perceived by some respondents to be a vehicle for acquiring administrative control of land rather than an alternative. A Crown land example is notation of interest, which is not perceived by some respondents to give any form of administrative control to the Wildlife Branch.

It is possible that managers who are knowledgeable about all potential alternatives give implicit, not explicit, consideration to the full range of choice. In other words, they may sub-consciously think about all possible alternatives in initial stages of their decision-making and then eliminate those alternatives that they don't consider applicable to a site-specific situation.

The wildlife managers' knowledge of potential alternatives does not vary greatly. However, this measure of knowledge is based on the potential alternatives they are aware of now, rather than what they were aware of when the decisions about the sampled properties were made. One of the wildlife managers indicated his lack of knowledge or familiarity with other alternatives for acquiring private land resulted in his pursuing purchase only. A second wildlife manager said he would have considered additional alternatives for acquiring a Crown parcel if he had been familiar with them. Similarly, one of the Lands managers indicated he pursued approval of those alternatives he was most familiar with. These observations are consistent with the hypothesis "As a decision-maker's knowledge (awareness of potential alternatives)

increases, the search for alternatives expands", which is based on research conducted by Kates (1962) and by Sewell (1965).

A second hypothesis, "As a decision-maker's experience (length of time on the job) increases, the search for alternative contracts", was tested by subtracting the number of years since the decisions on the sampled properties were made from the current measure of years on the job (specifically, the number of years a manager has been involved in decisions to acquire land for wildlife in B.C.). Those biologists who indicated they had considered all possible alternatives were excluded from the analysis.

At the various times the decisions were made, the work experience of the seven wildlife managers who indicated they considered no or few alternatives for the private parcels ranged from one year to twenty-two years. The experience of the four managers who considered no or few alternatives for the Crown parcels ranged from six to twenty-three years. It would thus appear that experience expressed as length of time on the job did not have any influence on the decision-makers' range of choice.

Individual experience may influence what tenure types are considered feasible, however. One wildlife manager stated in the interview that when he first became involved in land acquisition decisions, he thought about other alternatives, but that he quickly narrowed the list down when he discovered which alternatives were practical. He said he hasn't since considered the 'rejected' alternatives, but admits he "probably should revisit them once in a while".

One of the research hypotheses states that decision-makers' perception of available alternatives increases with training or years of education, a finding of both MacIver (1970) and Sewell (1973). This hypothesis cannot be proved. For both private and Crown tenure types, wildlife managers are generally aware of the same total number of potential alternatives regardless of their training. Educational level attained by the managers ranges from Bachelor to Doctorate degrees.

Similarly, the hypothesis based on Johnson's research (1971), "Decision-makers' innovation regarding alternative identification increases with training or years of education", cannot be proved.

Although the wildlife managers are familiar with some of the more innovative approaches for acquiring land for wildlife, such as management agreements, these alternatives have seldom been adopted. Staffing and/or funding constraints are often cited by the managers as factors that affect their ability to pursue a new alternative.

The final hypothesis linking decision-making behaviour with the frequency with which alternative tenure types had previously been employed cannot be tested based on the sampled properties. There is no way of determining the frequency with which the wildlife managers had employed various tenure types when the decisions on the sampled properties were made. Only a current measure of that type of experience is available.

There is, however, some evidence to suggest that the tenure types considered most often for acquiring private land are also those that have been used the greatest number of times by the wildlife managers.

On private land, outright purchase, lease and land exchange have been adopted by half or more of the wildlife managers. Most have used these alternatives often (more than five times) or frequently (three to five times). The anomaly is restrictive covenant which, although often used by several of the wildlife managers, was never considered as an alternative for acquiring any of the sampled properties. On Crown land, designated use area and trade with another level of government have not been used by any of the managers, nor were they considered as an alternative for any of the sampled properties.

Many of the individuals interviewed, both wildlife managers and others, consider personalities and attitudes to have an effect on decision-making. Comments included "generally speaking, personalities and attitudes affect everything", "this decision could have been brought together much sooner if not for conflicting opinions", "attitudes of Lands has a lot to do with the decision", and personalities and attitudes were "absolutely critical" to the decision. Personalities were also found to be an important influence in McMeiken's (1970) research on decisions made by public health officials. It cannot be determined whether personalities and attitudes expand or contract the search for alternatives. No questions were asked that addressed values or perceptions.

4.3.2.2 Characteristics of the Decision-making Environment

Characteristics of the decision-making environment about which hypotheses on decision-making behaviour have been formulated include information, time, funding, and complexity of the decision (number of individuals involved in the decision and views and interests of individuals involved in the decision). For half of the properties for which alternatives were actively considered, the wildlife managers indicated none of these characteristics had any effect on their range of choice.

Characteristics of the decision-making environment had an influence on decision-making behaviour for just two of the privately-owned properties. The range of choice was felt to be affected by the views and interests of individuals involved in the decision and by funding for one, and by time and funding for the other. Neither information availability nor the number of individuals involved in the decisions were reported to have a bearing on decision-making behaviour. The reader is again alerted to the very small sample size and the ability to be conclusive about the evidence.

One of the wildlife managers felt a lack of time available for making the decision contracted his search for alternatives. This finding is consistent with the hypothesis, which is based on Downs (1976) and Sewell (1965).

The views and interests of different individuals involved in one of the Branch purchases were found to be similar and to have resulted

in additional alternatives being identified. This evidence is inconsistent with the research hypothesis, which is based on Downs (1976).

Funding was found to affect the range of choice for both of the properties for which alternatives were actively pursued. In both cases, funding was felt to be a constraint, and the wildlife managers indicated this constraint resulted in them considering additional alternatives. These observations are consistent with the research hypothesis.

For an additional five private parcels, two Greenbelt purchases, two Nature Trust leases and one Branch purchase, the wildlife managers felt that the availability of funding had resulted in them considering fewer alternatives. For these five properties, it appears that the availability of funding was the main reason why no alternative tenure types were identified.

4.3.2.3 Additional Factors

The perceived strength of different tenure types may have an influence on the range of choice considered for acquiring land. For all privately-owned parcels, the managers' first preference for tenure was purchase by either the Wildlife Branch or other agencies. All managers are satisfied with the tenures they acquired, which include Branch purchase, Nature Trust lease and Greenbelt purchase.

Where alternative tenure types were actively considered for a sampled property, the managers were asked how they would rank them.

For the private tenure types, both Nature Trust lease and land exchange were preferred over Branch purchase, Nature Trust lease was favoured over land exchange, and Branch purchase was favoured over easement.

For the Section 101 transfers on Crown land, all managers expressed a first preference for that tenure type because it provides the most security. They remain satisfied with having acquired the transfers. For the other two Crown parcels under map reserve, that tenure was the managers' first preference at the time of acquisition. However, they are not now satisfied with these reserves because they feel a stronger form of tenure is needed. Order-in-Council reserve, Section 101 transfer and Wildlife Management Area were all mentioned as possible alternatives.

Although no alternative tenure types were actively considered for the Crown parcels, the wildlife managers indicated in discussions a preference for Section 101 transfers over Order-in-Council reserves, and for Order-in-Council reserves over map reserves.

The Lands managers agree that Section 101 transfer is the strongest form of tenure the Wildlife Branch can obtain under the Land Act. They believe that Order-in-Council reserves also represent a very strong tenure type, as the Minister of Environment and Parks would be informed of any possible cancellations and would have an opportunity to argue for their retention.

Table 9 lists respondents' comments on the advantages and disadvantages of a number of private and Crown tenure types. These comments were obtained through responses to specific questions and in

TABLE 9. RESPONDENTS' COMMENTS ON THE ADVANTAGES AND DISADVANTAGES OF DIFFERENT TENURE TYPES

TENURE TYPE	ADVANTAGES	DISADVANTAGES
Private		
Branch Purchase	- Recognition by the public that land must sometimes be bought. - No worries about a lease.	- Once owned, it becomes Crown land and can be lost at the stroke of a pen. - Still Crown land and thus under influence of the legislature. - Actively seeking a purchase can inflate the price. Good negotiator needed. - Order-in-Council can still be passed transferring the land to another Crown agency. Still Crown land but under another use.
Donation		- Unlikely to be given land of significant value to wildlife. - Can't see government employees soliciting them. - Land values are such that the property owners would sell rather than donate.
Land Exchange	- Provides a basis for negotiation. - No cost to the Crown. - Often more acceptable to the vendor. - Can be more palatable politically.	- Can lose another piece of property with wildlife values. - Have to get a subsequent transfer of administrative control from Lands. If don't get that, less than complete benefit. - Long-term benefit for the province as a whole not great because still alienating land.
Nature Trust	- Outside control and input. Better if you can't trust the Crown.	
Lease	- Security of tenure (government is less likely to interfere). - Flexibility of lease - Better if someone else spends the money. - Better agency to deal with because has the money and the ability to expedite decisions quickly.	
Other		- Either lump sum payment or annual fee required. No guarantee of money being available. Government has reneged on previous agreements.
Lease		- Must be for a long enough time period to see benefits of management. For example, habitat enhancement may take a minimum of 30 years.
Management Agreement	- No cost.	- Habitat Conservation Fund cannot be used for enhancement.

TABLE 9. RESPONDENTS' COMMENTS ON THE ADVANTAGES AND DISADVANTAGES OF DIFFERENT TENURE TYPES (Continued)

Easement	- Useful for retaining recreational access.	- When property changes hands no longer have the easement. - For an easement over an entire property need to have the land surveyed and can't afford to do that.
Restrictive Covenant		- Zoning change easily effected by a Regional District.
<u>Crown</u>		
Section 101 Transfer	- Lands views as a contract. - Most secure form of tenure. - Don't need Lands' approval to carry out management.	
Order-in-Council Reserve		- Lands changes regularly. - Still threat of losing due to political influence.
Map Reserve	- Best when don't want permanent control.	- Can be easily changed. - Minimum amount of control. - Any ideas for alternate uses are entertained by Lands. - Needs Lands' approval to carry out management.
Notation of Interest		- Really no control at all.

general discussions. It is apparent from some of these comments that not all respondents have an accurate understanding of certain alternatives. For example, registered easements remain with the land title even after a property changes hands.

It should be noted that over half of the parcels sampled are under the tenure types perceived to be strongest by the wildlife managers (Branch purchase and Nature Trust lease on private land and Section 101 transfer on Crown land). There is no evidence to suggest that these tenure types are considered to have any serious disadvantages (Table 9)[1]. Therefore, unless some obstacle to obtaining land under these tenures is encountered, the likelihood of alternative identification and examination appears to be small.

Perceived management needs, including the type or types of management activities the wildlife manager intends to carry out on a property, the time period over which the wildlife manager feels administrative control of the property is needed, and whether the manager feels the property is threatened by conflicting land uses appear to have an influence on the range of choice.

For all but two of the private parcels, the managers intended to carry out intensive management activities like habitat enhancement. Administrative control of all parcels was felt to be needed in perpetuity, and all but two properties were felt to be immediately

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[1] Although many managers feel that Branch purchases are subject to cancellation by the Crown, this is a misconception. They do not become Crown land per se, and once title to land is held by the Ministry, the likelihood of its being revoked is remote.

threatened by other land uses when they were acquired. It can be speculated that these three factors had an influence on the tenure types considered practical by the wildlife managers, since the strongest tenure types (fee simple alternatives) were their first preference for tenure. (Nature Trust leases are considered here to be a fee simple alternative since they involve outright purchase by another agency).

For all but one of the Crown parcels, the managers intended to carry out intensive management activities. Administrative control of all properties was felt to be needed in perpetuity, and all were felt to be immediately threatened. Again, it might be speculated that these factors had an influence on what was considered to be the practical range of choice. Even where a map reserve is the current form of tenure, in retrospect the managers feel an alternative which gives stronger administrative control is now needed.

As noted in the file search evidence, opportunity is a factor that influences the range of choice on private land. Obviously land has to be for sale in order for purchase to be a practical alternative. Evidence from the questionnaire that lends support to the importance of opportunity is the comment "if there is a willing vendor and money is available, we buy it".

Table 10 lists respondents' opinions about zoning and land use planning, the alternatives to acquiring administrative control of land. Although zoning was considered for achieving management ends on two of the private properties, it was not used in either case. For one

TABLE 10. RESPONDENTS' COMMENTS ABOUT ALTERNATIVES TO ACQUIRING ADMINISTRATIVE CONTROL OF LAND

A. Private Land - Zoning

- Insecure because municipal zoning is subject to quick change with councils changing every two years. If there are no alternatives for control will try to use it.
- Generally, zoning is not very effective in this region. No way to protect wildlife over the long-term.
- Not permanent enough; always considered for re-zoning.
- Generally, zoning is valuable. Should be part of a provincial strategy.
- Generally, zoning is a very useful tool, recognizing the limitation that control of adjacent Crown land cannot be effected by it.
- Zoning requires constant vigilance.

B. Crown Land - Land Use Planning

- Generally, such mechanisms have their place. Success is dependent on the attitudes of the other agencies.
- Generally, land use planning is valuable. Should be part of a provincial strategy.
- Coordinated Resource Management Plans (C.R.M.P.s) probably the best there is. Problem is agencies sticking to their commitments. In this region, Forests is okay, Lands is terrible. If could get a commitment would be better.
- In theory, land use planning mechanisms are great, but have to push to make them work.
- Generally, such mechanisms are very useful. Have had some benefits from Crown land use plans, for example.
- Planning generally is not very effective. Provides poor security for the wildlife resource.
- Land use referrals are the biggest laugh. Agencies sometimes don't receive them until a project has already been approved.
- If there is a large land area involved and no major land use commitments, inter-agency planning provides a way better opportunity for meeting wildlife management needs.

property, zoning was not used because control of the adjacent Crown land could not be effected by it. In the other case, the property was purchased through the Greenbelt Fund before zoning needed to be tried.

As noted in Chapter Three, there are limitations under law restricting the amount by which opportunity to develop can be constrained by zoning. Table 10 shows that another factor contributing to zoning rarely being considered to protect wildlife from detrimental uses is a mistrust of politicians. Zoning controls are seen to be subject to the whims of whatever political body has decision-making power. Since the composition of these bodies changes regularly, even favourable zoning decisions are perceived as temporary.

Mistrust of the Crown, both politicians and other agencies, appears to be the major factor influencing the range of choice on Crown land. The only tenure type under the Land Act that wildlife managers seem to be confident won't be tampered with or rescinded is Section 101 transfer (Table 9). Order-in-Council reserves are considered subject to cancellation at the discretion of the politicians, although they are felt to be more secure than map reserves. It was noted in several interviews that map reserve status has not assured that alienation won't take place. Although the Wildlife Branch is supposed to be notified through the referral process of applications for alienation on parcels under notation of interest, the managers say this has not always occurred.

Some perspectives on the history of relationships between agencies were provided by the Lands managers interviewed. One manager stated

that the use by the Wildlife Branch of the various tenures under the Land Act, excluding Section 101 transfer, is dependent on how much faith and trust Branch members put in Lands staff, on the attitudes of individuals in Lands, and on the relationship between the two agencies. Although the Lands managers note that the purpose of a map reserve is to prevent alienation, they acknowledge that map reserves can be cancelled or ignored at the discretion of Lands personnel.

Perhaps as a result of the extended time period over which mistrust of other agencies has occurred (almost 30 years), little consideration is given to cooperative management activities as an alternative to acquisition. Cooperative management alternatives were not considered for any of the Crown properties under Section 101 transfer or for one of the map reserves. The second map reserve came about as a result of the review and rejection of a land use referral. The observation that conflict in the history of relationships between agencies reduces the range of choice considered is consistent with White's (1969) findings.

Land use planning was given mixed reviews by the various respondents (Table 10). Although cited as a viable alternative by many individuals, most feel that agency commitment to such processes needs to be strengthened. In addition, many managers perceive the usefulness of these activities to be dependent on the attitudes of other agencies.

An attempt was made to determine whether the involvement of politicians, the general public, public interest groups or the media had any influence on the range of choice. Although several managers

indicated one or more of these groups was involved in decisions about the sampled properties, none of them felt that this involvement caused them to focus more heavily on a particular tenure type.

The predominant reasons given by the wildlife managers for why the Wildlife Branch needs to acquire administrative control of land for wildlife are: to meet management objectives, because so much of the prime wildlife land is already alienated, so the Branch can have some control over other land uses, and because wildlife is the highest and best use in some areas. The mistrust of other agencies is reflected in the responses, which include "no other agency will look after our interests", acquiring control "makes other agencies aware of the importance of wildlife; without special status they don't care", "other agencies don't have direct concern over the long-term the way the Wildlife Branch does", and "decisions that benefit wildlife are often retracted by other agencies".

Comments about the way the Wildlife Branch has acquired land in the past make it clear that there is no guiding provincial strategy. All five of the outside respondents and 75% of the wildlife managers think past decisions by the Wildlife Branch to acquire land have been ad hoc in nature. Specific observations are that acquisition has been done "without support at senior levels, and mainly via regional initiatives without guiding provincial policies", has been "very hit and miss because of the lack of a provincial perspective", has been carried out "without priorities at the provincial level", is "not

necessarily based on rationale", and has been conducted "without much thought to priorities or how to fund management, for example, maintenance costs".

Just half of the eight administrative regions and sub-regions have current documentation of the land over which they have some form of administrative control. Six of the eight have documentation of properties they would like to acquire, although some of these future lists are for one tenure type only, outright purchase.

Five of the wildlife managers have some knowledge about the land acquired in other regions. Of those five, just two said they try to place their regional acquisition decisions into a provincial context. One manager said he can't do this because there is no provincial context or strategy.

One wildlife manager feels that in many cases properties have not been carefully chosen, which he believes has led to a credibility problem with other agencies. One of the Lands managers also mentions this problem, noting that Lands has not always had a clear understanding of how or why the Branch has acquired land in the past. Two of the Lands managers also feel that the justification or rationale for past requests for land has sometimes been inadequate, an observation that was also made in the file search. This potential or real credibility problem with other agencies could be manifested as mistrust of the Wildlife Branch.

The respondents unanimously agree that a provincial strategy is required. Although their views differ about how a strategy is defined

and what it would comprise, it is clear that the absence of such a strategy may have an influence on the wildlife managers' range of choice.

Dick et al. (1977) made the following observations almost ten years ago, stating the (former) "Fish and Wildlife Branch's habitat acquisition programme has been largely ad hoc in nature with no clearly defined relationship to (fish and) wildlife objectives. Habitat units have been reserved or purchased as the opportunity arose with little attempt to priorize land assembly, adopt a consistent approach to acquisition between regions, or to assess the budgetary commitments to a habitat management programme."

The final factor affecting the identification and examination of alternatives is an apparent lack of political commitment to land acquisition for wildlife in British Columbia. As one manager notes, "In terms of government policy, acquisition has been an abomination. The Wildlife Branch has worked, and is working in a policy vacuum."

The lack of political commitment is reflected in a number of ways, the most notable of which are decreasing funding and staffing levels. The Wildlife Programme's operational funds have declined from $1,697,000 in 1982/83 to $1,148,000 in 1986/87. The acquisition account of the Habitat Conservation Fund has not had access to the Crown Land Fund since 1983. As a result of the restrictions in funding, there has been increasing reliance on other agencies like the Nature Trust and Wildlife Habitat Canada to purchase land for wildlife. One wildlife manager's biggest criticism of the way the Wildlife Branch

has acquired land in the past is that there is no money for acquisition. He says he is forced to go to outside agencies for money, and he "doesn't like to beg". Another manager notes that Branch acquisition has always been done on borrowed funds, and that he too has to "beg" for money. Finally, one of the managers states that even if the Branch did have money, he would prefer cooperative funding and another agency holding the title because "government doesn't fulfil its commitments".

Funding is required for all aspects of management, including staffing, maintenance costs, and operational costs. Its influence on the range of choice has been discussed.

Another indication of the lack of political commitment to wildlife is the fact that no Wildlife Management Areas have yet been established, even though the legislation that defines them was passed in 1982.

A letter discovered during the file search provides a final example. It is a prominent Cabinet Minister's response to the (Fish and) Wildlife Branch's objection to an agricultural lease application on a high capability ungulate winter range. The letter states, in part,

> "I am, to say the very least, angry about the inference by your people in the field that the area in question would be set aside as a wildlife refuge... To place a moratorium (in this area) would make as much sense as the Tweedsmuir Conservancy Area, which has eliminated hundreds of square miles of the most beautiful wildlife area in British Columbia from use by our citizens."

4.3.3 General Observations

Evidence from the questionnaire shows that the full range of choice has not been examined in past decisions to acquire land for wildlife. Of the twelve wildlife managers interviewed, about a third said they considered all possible alternatives in their decisions to acquire the private and Crown parcels in the sample. Alternatives were identified for 24% of the parcels sampled. For these four private parcels, consideration was given to one or two other tenure types only, not all of the tenure types that are potentially available.

The questionnaire evidence illustrates that the wildlife managers' range of choice is influenced by a number of factors. The first of these are the decision-makers' use of the potential tenure types on private land, and their knowledge and use of the potential Crown land alternatives.

The characteristic of the decision-making environment that has the most significant effect on the range of choice on private land is funding availability. There is some evidence to suggest that time and the views and interests of other individuals involved in a decision can influence decision-making behaviour.

Additional factors that influence the range of choice for acquiring administrative control of land for wildlife include: the perceived or actual strength of the potential tenure types, the level of management a wildlife manager feels is necessary on a property, the opportunity for purchasing private land, a mistrust of politicians and

other agencies, the absence of a provincial strategy for acquiring land, and an apparent lack of political commitment to land acquisition for wildlife.

A couple of additional observations can be made based on the questionnaire evidence. First, the wildlife managers' answers to the specific questions about the sampled properties were corroborated by the other respondents interviewed. Second, the Lands managers have both greater knowledge of, and experience with the Crown tenure types than the wildlife managers.

Some limitations of the questionnaire research are listed below:

1. The sample size is very small, thus it lends itself to illustrative, rather than conclusive evidence on the range of choice.
2. A conscious attempt was not made at the time of sample selection to try to interview more that the one former Lands manager who was known to be directly involved in a 1970's case study. When it was belatedly decided to interview other Lands managers, it was difficult to find the specific individuals who were involved in the other case studies that had been selected. The file search evidence was thus relied on for identifying the two current Lands managers who were interviewed. It was discovered at the interviews that neither of these individuals had been directly involved in decisions on any of the case studies, however.
3. One of the properties leased from the Nature Trust did not provide useful evidence on decision-making behaviour, because the wildlife manager had not been directly involved in the decision. This

property was a poor choice for the sample in terms of alternative identification as well, since another tenure type mentioned in the file was actually considered for a different parcel of land.

4. The wildlife managers' memories were found to be a problem in obtaining evidence on one of the properties. Although the property was recently acquired, the acquisition had been initiated several years earlier. The file indicated alternative tenure types had been considered since its inception. However, when the wildlife managers were asked about their decision to acquire the property, they did not mention these other alternatives.

4.4 Summary

Both the file search and questionnaire evidence show that all potential tenure types have not been considered in past decisions to acquire land for wildlife. For private and Crown lands, the range of choice may be influenced by the decision-makers' knowledge of, and/or experience with alternative tenure types.

For private land, opportunity to purchase, funding availability, and time are all major factors influencing the range of choice. Evidence from both the file search and questionnaire clearly illustrate that a lack of funding expands the search for alternatives, and the availability of adequate funding contracts that search. The shortage of adequate funding may be linked to a lack of political commitment to

land acquisition for wildlife, and both factors can be shown to have resulted in increasing reliance on other agencies for funding.

The file search evidence linking time to the search for alternatives is inconsistent with the research hypothesis, whereas the questionnaire evidence is consistent with it. For the property on which the file search evidence is based, however, the lack of time available for making the decision was the result of an inability to obtain adequate funding. It is probable that if funding had been available within a suitable time period, time would not have had an effect on the decision.

The questionnaire evidence also demonstrates that the views and interests of individuals involved in a decision can affect decision-making behaviour. Views and interests are connected with personalities and attitudes, as well as values and perceptions.

The major factor influencing the range of choice on Crown land is felt to be mistrust of other agencies and politicians. This lack of trust over a number of years appears to have resulted in a current focus on the strongest tenure type available (Section 101 transfer), as well as a lack of consideration to cooperative management activities such as land use planning.

Additional factors felt to have some effect on decision-making behaviour are the perceived strength of different tenure types, the level of management considered necessary and, specific to zoning of private land, mistrust of politicians. Pervading all of the above factors are the absence of a provincial Wildlife Branch strategy for

land acquisition and the apparent lack of political commitment to the concept of acquiring land for wildlife in British Columbia.

The next chapter presents conclusions about the range of choice considered by wildlife managers in their decisions to acquire administrative control of land for wildlife. Recommendations pertaining to future land acquisition are then provided.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The demands for land in British Columbia are numerous and increasing. While some land uses are compatible with wildlife, others such as urban settlement, intensive agriculture and hydroelectric development permanently alter wildlife habitat. Many of these incompatible land uses have occurred in areas of the province that are of primary importance to wildlife.

Management responsibility for the majority of wildlife species in British Columbia rests with the Wildlife Branch, Ministry of Environment and Parks. The Wildlife Branch has some form of administrative control of approximately 1% of the total provincial land base. If the strongest tenure types are considered only, that is, full title to private land and Section 101 Land Act transfer on Crown land, this figure is reduced to .0003%. It is obvious that the Wildlife Branch must rely largely on other agencies to assist it in meeting its management objectives, most notably the Ministry of Forests and Lands.

A number of alternatives are available to wildlife management agencies for acquiring administrative control of land and for influencing other agencies to afford protection to wildlife. These alternatives, together with their advantages and disadvantages, are identified in Chapter Two.

The literature outlines a number of steps in any decision-making process, one of which is the identification of alternatives. It has been discovered by a number of researchers that decision-makers seldom give consideration to the full range of choice, that is, they do not identify all possible alternatives.

The range of choice considered by Wildlife Branch managers was examined through their past decisions to acquire land for wildlife in British Columbia. On the basis of the theoretical framework and the case studies, several broad conclusions and recommendations can be advanced.

Past decisions by the Wildlife Branch to acquire land for wildlife have been ad hoc in nature. Acquisition decisions have been made in a policy vacuum, both at the programme and government levels. Many properties have been acquired in response to opportunity and/or the threat of other, incompatible land uses. There is an uneven geographical distribution of properties acquired, and a concentration on two species groups.

It can be concluded that wildlife managers in British Columbia have not considered the full range of choice discussed by White (1961) in their past decisions to acquire administrative control of land for wildlife. As found by Netherton (1979), the most sought after tenure type on private land is full title through purchase. Except for leases from the Nature Trust, which due to their nature can be considered equivalent to acquiring full title, alternatives which provide partial title have been little explored or utilized. In addition, wildlife

managers have tended to focus on a select number of the many alternative tenure types available for acquiring administrative control of Crown land. These latter observations support those made by Retfalvi (1982) and Macenko and Neimanis (1983).

The conclusion that wildlife managers have not examined the full range of choice in decision-making reaffirms research conducted in other resource management disciplines, most notably water management. Two of the three major factors that have influenced wildlife managers' range of choice are also consistent with previous findings.

Wildlife managers' range of choice is affected by their lack of knowledge of and/or experience with every potential alternative for acquiring administrative control of privately-owned and Crown lands in British Columbia. Their consideration of alternatives is reduced by their lack of knowledge of the full range of choice, an observation also made by Sewell (1965). In addition, similar to the water managers studied by Johnson (1971), the wildlife managers tend to most often consider those alternatives they have more frequently adopted in the past. It is possible that those managers who have both knowledge of and experience with all potential alternatives give implicit consideration to the full range of choice. This cannot be proved with the research evidence, however.

Another influence on the range of choice considered is the wildlife managers' mistrust of other agencies and politicians. The consequences of this mistrust have been twofold. First, there has been increasing emphasis on the stronger forms of tenure (fee simple

interest, including Nature Trust lease on private land, and Section 101 transfers on Crown land). Second, little active consideration has been given to trying to meet management objectives using the remaining potential acquisition alternatives, zoning, or cooperative mechanisms like planning. Poor relationships between agencies were also found by White (1969) to reduce the range of choice considered by water managers for flood control.

Mistrust may also work the other way, that is, the Wildlife Branch may be mistrusted by other agencies. Lands personnel have often not been satisfied with the Wildlife Branch's justification and documentation of its requests to acquire administrative control of land.

The most significant factor affecting the wildlife managers' range of choice on privately-owned land is funding. The availability of funding for land purchase appears to reduce the wildlife managers' search for alternatives. This finding is not found in the literature. Downs (1976) links a reduction in the range of choice to the increased costs of staff and time associated with the consideration of additional alternatives.

A lack of funding for purchasing privately-owned land is the more common situation in British Columbia. This lack of funding appears to expand the wildlife managers' range of choice. One of the most commonly considered alternatives is purchase by another agency such as the Nature Trust and subsequent transfer of administrative control to the Wildlife Branch. The reliance on other agencies for funding is increasing, and may to some degree explain the distribution and

characteristics of currently administered properties. For example, about two-thirds of the Nature Trust leases were acquired for waterfowl, and the majority of those properties are on the coast (Appendix B). It can be assumed that the lack of adequate funding for land acquisition programmes is linked at least in part to insufficient political commitment to British Columbia's wildlife resources.

The major limitation of this research is the size of the samples on which the conclusions are based. It is recommended that future research on the range of choice examine a minimum of 100 case studies. This larger sample size would increase the probability of selecting decisions for which alternatives were actively considered. It would also expand the evidence on the influence of characteristics of the decision-making environment on the range of choice.

A second recommendation is that all case studies involve decisions that were made five or fewer years ago. Recent case studies would improve the recollection of the decision-makers. In addition, measures of their knowledge and experience would be current and would apply to the contemporary range of choice. (The potential range of choice may change over time. For example, new innovations could add potential alternatives.)

Finally, it is recommended that the influence of decision-makers' values, perceptions and attitudes, and personalities on the range of choice be further explored. Increasing the sample of outsiders involved in the decisions might enhance insights into these factors.

Recommendations specific to land acquisition for wildlife in British Columbia follow. First, the Wildlife Branch should develop a provincial strategy to guide its land acquisition activities. This strategy should identify policies and procedures for land acquisition, including alternatives like participation in the planning processes of other Crown agencies. It should also be complementary with procedures of other land acquisition agencies like the Nature Trust and Wildlife Habitat Canada. Other agencies or jurisdictions that have land acquisition strategies which may be useful as references are Wildlife Habitat Canada, the British Columbia Parks Branch, the provinces of Saskatchewan, New Brunswick and Ontario, and the states of Wyoming and Washington. The United States' Nature Conservancy Heritage Programme may also provide ideas on an approach to land acquisition for wildlife.

As a result of this research, it is recommended that the Wildlife Branch undertake the following additional projects as prerequisites to, or simultaneously with the development of a strategy. These include:

(a) A report on land acquisition for wildlife in British Columbia. This report would provide all wildlife managers with an equal knowledge of the full range of choice, as well as a basis for the development of procedures associated with each alternative. The report should provide, for each potential tenure type as well as zoning and cooperative mechanisms such as planning, the following: description, legislative basis, advantages and disadvantages to the Wildlife Branch, steps required to effect administrative control,

and the wildlife management activities that can be carried out, including approvals needed from other agencies and steps for attaining such approvals, if applicable. References considered to provide an excellent basis for a report of this kind are van Hees, 1983, Haigis and Young, 1983, and Ince and Pereboom, 1984.

(b) A computerized inventory of the properties the Wildlife Branch has some form of administrative control of and procedures for keeping it up-to-date. (Action on this recommendation is underway. The computer programme was completed in January, 1987, and data input is scheduled to begin April, 1987). Once current properties are inventoried, an assessment of each parcel should be done to verify that it is still contributing to Branch programme objectives.

(c) Revised goals and objectives for the Wildlife Programme, which clearly lay out the overall direction the Wildlife Branch intends to take with respect to land acquisition. (This step is also underway, with a first draft scheduled for completion in March, 1987).

(d) Wildlife species and habitat management priorities for each administrative region and sub-region and for the province. Regional and provincial wildlife management plans currently being prepared will provide these priorities.

A third recommendation arising from this research is that both other agencies and politicians be held accountable for their land use decisions that affect wildlife. This will require:

(a) Consistent regional policies on how various tenure types will be adjudicated, including types of information required from the Wildlife Branch to justify their requests for acquiring administrative control;

(b) The adoption of contractual agreements between agencies, where applicable;

(c) Explicit government policies on land acquisition;

(d) The reinstitution of inter-agency forums for discussing and attempting to resolve land use conflicts at the regional level, for example, the former Regional Resource Management Committees and Technical Planning Committees; and

(e) An explicit mechanism to facilitate appeals of regional land allocation decisions to senior levels of government such as the Environment and Land Use Technical Committee and the Environment and Land Use Committee of Cabinet.

The fourth, and probably most important recommendation is that the provincial government give some tangible recognition to the wildlife resources of the province. Such recognition could be conveyed through a number of means, including the active solicitation of funding earmarked for wildlife management, the establishment of some Wildlife Management Areas, and increases to the Wildlife Branch's operating budget. An example of a mechanism for increasing funding is renewed access to the Crown Land Fund.

It is hoped that the findings, conclusions and recommendations of this thesis will aid in the realization of a stronger political commitment to the wildlife resources of British Columbia, and that this commitment will be reflected in explicit policies and in land use decisions in which wildlife is recognized as an equal partner with other natural resources.

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Personal Communication

Bob Walker. Wildlife Branch, Ministry of Environment and Parks, Victoria, British Columbia. December, 1986.

APPENDIX A

PROVINCIAL AND FEDERAL STATUTES THAT PROVIDE FOR THE ADMINISTRATION AND PROTECTION OF PROVINCIAL LANDS FOR WILDLIFE

WILDLIFE ACT

The conservation and management of wildlife is administered by the Province under the Wildlife Act. Under this Act, wildlife means game and any other species of vertebrates designated as wildlife by the Lieutenant-Governor in Council.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Designation	Wildlife Management Area	S.4	Ministry of Environment and Parks, Wildlife Branch	A wildlife management area is an area set aside for a specific term to allow the Recreational Fisheries and Wildlife Branches greater control over part of the land base on which fish and wildlife are intensively managed. Use and occupation of these areas can be controlled by Director's orders, permits and Order in-Council regulations but is subject to prior rights granted.
Designation	Critical Wildlife Area	S.5(1)	Ministry of Environment and Parks, Wildlife Branch	A critical wildlife area provides habitat for any species of wildlife which has been legally designated as an endangered or threatened species, pursuant to Section 6 of the Wildlife Act.
Designation	Wildlife Sanctuary	S.5(2)	Ministry of Environment and Parks, Wildlife Branch	A wildlife sanctuary is an area where hunting, angling and/or trapping are prohibited and access is restricted. A sanctuary can be designated in an area only if it already has wildlife management area status.

CANADA WILDLIFE ACT

This Act allows for the Federal government to work with other governments and private agencies to conserve and manage wildlife under their authority as is given in the British North America Act.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Designation	National Wildlife Areas	S.10	Canadian Wildlife Service/ Recreational Fisheries and Wildlife Branches	Areas purchased by or gifted to the Federal Government and usually associated with Provincial reserve lands. They are established for research, conservation and interpretation in respect of migrating birds or, with agreement of the Government of the Province having an interest therein, other wildlife.

Source: Land Allocation Terminology, Ministry of Lands, Parks and Housing.

MIGRATORY BIRDS CONVENTION ACT

This Act represents a convention between Canada and the United States for the protection of migratory birds in the two countries. Migratory birds are defined in the Act. The Governor in Council may make regulations which are necessary to protect the migratory game, migratory insectivorous and migratory nongame birds that inhabit Canada during the whole or any part of the year.

CATEGORY	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Reservation	Migratory Bird Sanctuary	S.4 S.S.(1)(2) Migratory Bird Sanctuary Regulations (SOR/74-514)	Canadian Wildlife Service	A migratory bird sanctuary is an area set apart for the protection of the habitat and protection of the migratory birds using that habitat from disturbance of any kind.

CRESTON VALLEY WILDLIFE ACT

This Act protects the Creston Valley Region of B.C., a major wildlife breeding area that supports the population of a number of waterfowl species.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Designation	Creston Valley Wildlife Management Area	S.3	Canadian Wildlife Service	Area set aside for the protection of waterfowl. Area cannot be decreased in size, except by Act of the legislature, unless the decrease is to make the area conform with natural boundaries.

Source: Land Allocation Terminology, Ministry of Lands, Parks and Housing.

ECOLOGICAL RESERVES ACT

This Act empowers the Cabinet to reserve public lands for ecological purposes.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Reservation	Ecological Reserve	S.2	Planning and Ecological Reserves Section, Ministry of Environment and Parks	Areas established by Order-in-Council as ecological "benchmarks", gene pool reserves and/or areas of long term research and scientific study. Casual non-consumptive use is specifically allowed; however, activities such as hunting, fishing and camping are not allowed.

ENVIRONMENT AND LAND USE ACT

The Environment and Land Use Act gives the Provincial Cabinet powers to make orders and regulations to deal with any matter involving land use, as long as it acts within the constitutional jurisdiction of the Province.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Reservation	Wilderness Conservancy	S.6	Parks and Outdoor Recreation Division, Ministry of Environment and Parks	Established by Order-in-Council. An expanse of natural environment which contains outstanding or representative examples of scenery and natural history uninfluenced by the activities of man, and which is particularly suitable for extensive primitive recreational use. Will be maintained as a roadless tract in which both natural and ecological communities are preserved intact and the progression of the natural systems may proceed without alienation.

Source: Land Allocation Terminology, Ministry of Lands, Parks and Housing.

PARK ACT

This Act is the statute controlling Provincial parks in the Province. It defines "park" as any Crown land established as a Park under the Act.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Tenure	Park Use Permit	S.15, S.16 S.18	Parks and Outdoor Recreation Division, Ministry of Environment and Parks	A licence, issued under the Park Act, which authorizes the occupancy, use, development, exploitation, or extraction of a natural resource on or in a park. Conditions re: issuance vary depending on whether a park is Class A, B or C.
Tenure	Resource Use Permit	S.12 S.S.(4) S.15	As above.	A licence, issued under the Park Act, which authorizes an activity or course of behaviour or conduct or the occupancy, use, development, exploitation, or extraction of a natural resource on or in a Recreation Area.
Designation	Class A Park	S.6	As above.	Class A Parks are established by Order-in-Council or Statute. They are intended to preserve and/or provide opportunity to utilize outstanding natural, scenic, historic and recreational features for the use, inspiration and enjoyment of the public of B.C. They have a high degree of protection from exploitation and alienation.
Designation	Class B Park	S.6	As above.	Class B Parks are established by Order-in-Council. They are parks that are intended to protect recreational resources and natural features for the inspiration and enjoyment of the public of B.C., while allowing certain resource commitments to be developed.
Designation	Class C Park	S.6	As above.	Class C Parks are established by Order-in-Council. They are intended to serve the recreational needs of communities of unorganized areas that do not have the means to provide and operate parks of their own. They are administered by a Park Board of three to seven members appointed by the Minister.
Designation	Nature Conservancy	S.6	As above.	Nature Conservancies are established by Order-in-Council. They are wilderness areas within parks retained in a natural condition for the preservation of their ecological and scenic features.
Designation	Recreation Area	S.6	As above.	Recreation Areas are established by Order-in-Council. They are established as areas for the application of the "principles of multiple land use" compatible with their primary recreational use. May include foreshore areas.

Source: Land Allocation Terminology, Ministry of Lands, Parks and Housing.

NATIONAL PARKS ACT

This Act establishes the parks named in the Schedule as National Parks of Canada.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Designation	National Park	S.3, S.4	Parks Canada	These areas are established through amendments to the National Park Act. The only National Park in B.C. which does not have its boundaries established by this statute is the Pacific Rim National Park. That Park is established pursuant to the West Coast National Park Act. National Parks and their resources are for the benefit, education and enjoyment of the people of Canada. They are to be maintained and used so as to leave them unimpaired for the enjoyment of future generations.

FOREST ACT

The main purposes of the Forest Act include modifying existing forest tenure agreements in order to encourage intensive forest management; providing measures for deleting areas and reducing allowable cuts to accommodate non-timber uses of Crown land; and, providing measures for increasing allowable cuts to recognize good performance under the various tenures.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Designation	Provincial Forests	Part 2, Section 5	Ministry of Forests and Lands	Lieutenant-Governor in Council may designate forest land as Provincial Forests and publish notice in the Gazette. Provincial Forests shall be managed for timber production, forage production and grazing for livestock and wildlife, recreation, water, fisheries and wildlife resource purposes.

Source: Land Allocation Terminology, Ministry of Lands, Parks and Housing.

GREENBELT ACT

This Act governs the Provincial Government's acquisition of lands which are suitable for preservation as greenbelts and its reservation of Provincial Crown lands for the same purpose.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Tenure	Greenbelt Land	S.1, S.2, S.3	Ministry of Forests and Lands	With approval of the Lieutenant-Governor in Council, the Minister of Forests and Lands may acquire land on behalf of the Crown as greenbelt land.
Tenure	Lease Right-of-Way Easement	S.8 S.8 S.8		The Minister of Forests and Lands may lease or grant a right-of-way or easement over greenbelt land in accordance with the Land Act to any person on terms consistent with the continued existence, nature and use of the land as greenbelt land in conformity with the purpose of the Greenbelt Act.
Reservation	Greenbelt Land	S.1, S.2 S.3	Ministry of Forests and Lands	The Crown, by order of the Lieutenant-Governor in Council, may reserve Crown land as greenbelt land. A record of all land reserved or acquired under this Act is maintained in a greenbelt register.

Source: Land Allocation Terminology, Ministry of Lands, Parks and Housing.

LAND ACT

The purpose of this Act is to regulate the disposition of Crown land in British Columbia. The Act establishes procedures by which private individuals can acquire public lands, and defines the rights which flow with the transfer.

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Reservation	Order-in-Council Reserve	S.11	Ministry of Forests and Lands	May be established by the Lieutenant-Governor in Council for any stated purpose as well as be established merely to reserve land from alienation. For example, it may be used to set aside a parcel of Crown land for permanent use by a Crown Ministry or agency. Reserve must be gazetted in the B.C. Gazette.
Reservation	Map Reserve	S.12	Ministry of Forests and Lands	Refers to an area noted on departmental reference maps by a file number. Used to reserve from alienation, certain Crown land which is required by a Crown Ministry or Agency for a specific purpose.
Designation	Designated Use	S.13	Ministry of Forests and Lands	The Minister may, if he considers it advisable in the public interest, designate the most desirable use of any area or portion of Crown land, and he may withdraw such area or portion of Crown land from disposition under this Act for any purpose other than the use so designated, and he may cancel the withdrawal.
Map Notation	Map Notation	S.12	Ministry of Forests and Lands	This is the weakest form of administrative protection. A Forest Service notation is placed on Forest Service maps and records if located within Provincial Forest or on Lands Records maps and records if outside Provincial Forest. It is noted by file number only.
Reservation	Wildlife Management Reserve	S.11, S.12	Ministry of Forests and Lands	Established for the purposes of conservation and management of critical wildlife habitat. May be established by Lieutenant-Governor in Council or by letter of agreement.
Reservation	Use Recreation Enjoyment of the Public Reserve (U.R.E.P.)	S.11, S.12	Ministry of Forests and Lands	Established to prevent unwarranted alienation of Crown land recognized as possessing significant recreational potential; may include foreshore. May be established by Lieutenant-Governor in Council or by letter of agreement.

Source: Land Allocation Terminology, Ministry of Lands, Parks and Housing.

LAND ACT (Continued)

CATEGORY[1]	TERMINOLOGY	PERTINENT SECTION OF ACT	AGENCY RESPONSIBLE	DESCRIPTION AND PURPOSE
Reservation	Section 101 Transfer	S.101	Ministry of Forests and Lands	If he considers it advisable in the public interest, the Minister may transfer, on terms and conditions he considers appropriate, the administration of Crown land to any Ministry of the government.

Source: Land Allocation Terminology, Ministry of Lands, Parks and Housing.

[1] Designation - specification of a type of use which may occur on a designated area of land.
Reservation - limitation, exception, restriction or qualification attached to use of a specified area of Crown land.
Tenure - type of right or title by which property is held and used.
Map Notation - notation placed on a status map to indicate an agency's interest in a specified area.

APPENDIX B

FILE SEARCH EVIDENCE FOR EACH PROPERTY, BY REGION AND TENURE TYPE

BRANCH PURCHASES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R[1]	ID[1]	DIS[1]	DEC[1]
1-Vancouver Is. - Nil								
2-Lower Mainland Ladner Marsh (also OIC)	75	1981	Waterfowl					
3a-Thompson Nicola Skull Mountain	259	1983	Mule Deer (Winter & Spring Range)		✓	X	X	✓
3b-Okanagan Ashnola River (also map reserve)	321	1968	California Bighorn Sheep (Winter Range)	S. Aspect, Grasslands	X	X	X	✓
Antler's Saddle (also Greenbelt)	246	1982	Mule Deer (Winter Range)		✓	✓	✓	✓
3c-Cariboo - Nil								
4-Kootenay Bull River (also map reserve, consignment)	45	1968	Ungulates (Winter Range)	S. Aspect, Grass-Shrub	✓	X	X	✓
Columbia Lake (also OIC)	194	1972	Ungulates (Winter Range)	S. Aspect, Grass-Shrub & Mixed Forest	✓	X	X	✓
Cutts Property	365	1985	Ungulates		✓	✓	✓	✓
Kootenay Landing	2	1981	Waterfowl		✓	X	X	✓
Pend D'Oreille	158	1985	Deer (Winter Range)		X	X	X	✓
Sheep Mountain	119	1960	Ungulates (Winter Range, Migration Route)	S. Aspect, Grasslands	✓	X	X	✓
Wigwam Flats (also 99 year lease)	4	1977	Ungulates (Winter Range)	Grass-Shrub, Mixed Forest	✓	✓	✓	✓
Wolf Creek (also notation of interest)	79	1970	Ungulates (Winter Range)	S. Aspect, Grass-Shrub & Mixed Forest	✓	X	X	✓
5a-Skeena - Nil								
5b-Omineca Peace Stellako River	87	1981	Ungulates (Winter Range)		✓	X	X	✓

DONATIONS

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
1-Vancouver Is. - Nil								
2-Lower Mainland - Nil								
3a-Thompson-Nicola - Nil								
3b-Okanagan - Nil								
3c-Cariboo - Nil								
4-Kootenay Moberly Marsh	665	1971; 1973	Waterfowl (Breeding & Resting); Ungulates (Winter Range)	Floodplain Marshes, Mixed Grass/ Forest	✓	✓	X	✓
5a-Skeena - Nil								
5b-Omineca-Peace Cranberry Marsh/Starratt (also 99 year lease)	176	1971	Waterfowl	Marsh, Wet Meadows	✓	X	X	✓

GREENBELT PURCHASES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
1-Vancouver Is. Somenos Lake (also 99 year lease)	51	1973	Waterfowl	Wet Pasture, Freshwater Marsh, Submergent Vegetation	X	X	X	✓
Tofino-Browning Passage (also map reserve)	57	1974	Waterfowl	Marine, Intertidal Mudflats	✓	X	X	✓
2-Lower Mainland Mud Bay (Lot 495)	59	1974	Aquatic Birds	Marine, Intertidal Mudflats & Salt Marsh	✓	X	X	✓
Pitt Lake (also OIC)	1478	1973	Sandhill Cranes (Resting); Ducks (Nesting)	Freshwater Marsh & Bog	X	X	X	✓
Sturgeon Bank (also notation of interest)	1012		Waterfowl (Resting)	Intertidal Mud Flats, Salt & Estuarine Marshes	✓	✓	✓	✓
3a-Thompson-Nicola - Nil								
3b-Okanagan Antler's Saddle (also Branch purchase)	106	1974	Ungulates (Winter Range)	Grass-Shrub Communities	✓	X	X	✓
Grand Forks (also 99 year lease)	595	?	Ungulates (Winter Range); Waterfowl (Nesting)	Open Grass-Shrub, Mixed Forest Communities				
3b-Cariboo Churn Creek	124	1976	California Bighorn Sheep	Grassland, Mixed Forest	✓	✓	✓	✓
4-Kootenay Bummer's Flats (also map reserve)	419	1973	Waterfowl (Nesting); Ungulates (Winter Range)	Floodplain Marsh, Wet Meadows, Open Forest Range Land				
Duncan River (also 99 year lease; consignment)								
Newgate	314	1974	Ungulates (Winter Range)	Open Grass-Shrub & Mixed Forest	✓	X	X	✓
Three Sons (Premier Ridge)	486	1973	Ungulates (Winter Range)	Floodplain Marshes & Wet Meadows; S. Facing Grass-Shrub & Mixed Forest	✓	X	X	✓

GREENBELT PURCHASES (Continued)

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
5a-Skeena Delkatla Slough (also map reserve)	49	1974	Waterfowl	Estuary, Salt Marsh				
5b-Omineca-Peace - Nil								

LAND EXCHANGES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
3c- Cariboo Junction	1285	1973	California Bighorn Sheep		✓	✓	✓	✓
4- Kootenay Dale Property		1969	Waterfowl		✓	X	X	✓

LEASES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
1-Vancouver Is.								
Buttertubs Slough	22	1977	Waterfowl	Freshwater Marsh	✓	X	X	✓
Cluxewe	42	1982	Waterfowl	Salt and Freshwater Marsh	X	X	X	✓
Dudley			Waterfowl		X	X	X	✓
Englishman River	4	1984	Waterfowl		✓	X	X	✓
Kingcome Inlet I	93	1981	Waterfowl, Grizzly Bear		✓	X	X	✓
II	47	1984	Waterfowl		✓	X	X	✓
Lazo Marsh I	33	1976	Waterfowl	Freshwater Marsh, Modified Upland	X	X	X	✓
II	16							
Salmon River I (also notation of interest)	38		Roosevelt Elk	Floodplain, Meadow Upland Deciduous	X	X	X	✓
II	32	1981			X	X	X	✓
Somenos Lake (also Greenbelt)	21	1978	Waterfowl	Nesting and Rearing Habitat	✓	X	X	✓
Thetis Island	3	1984?	Bats		✓	X	X	✓
2-Lower Mainland								
Addington Marshes	243	1978	Waterfowl	Dyked Marshland	X	✓	X	✓
McGillivray Creek/ Cattermole (also map reserve)	43	1985	Waterfowl		✓	✓	✓	✓
3a-Thompson-Nicola - Nil								
3b-Okanagan								
Grand Forks (Greenbelt, appl. 101 transfer)	193	1975	Deer		X	X	X	✓
Shorts Creek	122	1983	California Bighorn Sheep		✓	X	X	✓
Vaseaux Lake (also map reserve)	91	1985	California Bighorn Sheep		✓	X	X	✓

LEASES (Continued)

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
3c-Cariboo								
Chilanko Marshes	202	1980	Waterfowl; Furbearers	Shallow Floodplain	X	X	X	✓
Tautri Lake	65	1982	White Pelican (Feeding)		X	X	X	✓
4-Kootenay								
Duncan River I (also Greenbelt)	108	1977	Waterfowl; Ungulates		X	X	X	✓
II	3	1981			X	X	X	✓
Madison	726	1986	Waterfowl; Ungulates		✓	X	X	✓
RCMP Flats	236	1980	Waterfowl; Ungulates	Marshland	X	X	X	✓
Walter Clough	61	1980	Waterfowl		X	X	X	✓
Wasa Slough (also map reserve)	79	1979	Migratory Birds, esp. Whistling Swan, Great Blue Heron	Shallow Lake	X	X	X	✓
Wigwam Flats I (also Branch purchase)	4	1978	Rocky Mountain Bighorn Sheep (Winter Range)	Grass/Shrub; Mixed Forest	X	✓	X	✓
Wigwam Flats II	4	1980	Rocky Mountain Bighorn Sheep (Winter Range)	Grass/Shrub; Mixed Forest				
5a-Skeena								
Kitsumkalum Lake	46	1984	Waterfowl		X	X	X	✓
Lakelse Lake	35	1985	Waterfowl					
Owen Lake	52	1981	Moose		✓	X	X	✓
5b-Omineca-Peace								
Cranberry (Starratt) (also Donation)	53	1978	Waterfowl		X	X	X	✓
Fort St. John Potholes (Huhn's Slough)	90	1986	Waterfowl		✓	X	X	✓
Mt. Robson	223		Moose		X	X	X	✓

ORDER-IN-COUNCIL RESERVES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
1-Vancouver Is.								
Beaver Cove	32698	1980	Waterfowl		X	X	X	✓
2-Lower Mainland								
Duck and Barber Islands	336	1959	Waterfowl (Nesting, Resting, Feeding)	Deltaic Islands	X	X	X	✓
Ladner Marsh (also Branch purchase)	74	1959	Waterfowl (Resting)	Deltaic Marsh	✓	X	X	✓
Pitt Lake (also Greenbelt) 101?	267	1958	Sandhill Crane (Resting), Ducks (Nesting)	Freshwater Marsh and Bog	✓	X	X	✓
Roberts Bank	9677	1961	Waterfowl (Resting), Shore-birds, Raptors, Marine Mammals	Intertidal Mud Flats, Salt & Estuarine Marshes	X	X	X	✓
Woodward Island	160	1961	Waterfowl (Nesting, Resting, Feeding)	Deltaic Islands	✓	X	X	✓
3a-Thompson-Nicola								
Hemp Creek (also map reserve)	432	1959	Ungulates (Migration and Winter Range)	Mixed Forest	X	X	X	✓
Tunkwa Lake	3	1971	Waterfowl (Breeding)	Nesting & Rearing Habitat	✓	X	X	✓
Yalakom Creek	11172	1907	Ungulates (Winter Range)	Open Rangeland, S. Exposure	✓	X	X	✓
3b-Okanagan - Nil								
3c-Cariboo								
Loch Lomond	111	1971	Canada Geese (Nesting, Resting)	Mixed Forest, Islands	✓	X	X	✓
4-Kootenay								
Columbia Lake (also Branch purchase)	5584	1958	Ungulates (Winter Range)	S. Aspect, Grass-Shrub, Mixed Forest	X	X	X	✓
Columbia Marshes	14569	1947	Waterfowl (Nesting)	Floodplain	X	X	X	✓
White River	313326	1936	Ungulates	S. Aspect, Grass-Shrub, Mixed Forest	X	X	X	✓
5a-Skeena - Nil								
5b-Omineca-Peace - Nil								

SECTION 101 LAND ACT TRANSFERS

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
1-Vancouver Is. - Nil								
2-Lower Mainland Boundary/Mud Bays (notation of interest)	200ac							
Pitt Lake (OIC, Greenbelt)								
3a-Thompson-Nicola Dewdrop (also map reserve)	4240	1985	California Bighorn Sheep Deer					
Skull Mountain (also Branch purchase)	- - -	- - -	- See Branch Purchase - - -	- - -	-	-	-	-
3b-Okanagan Antler's Saddle (also Greenbelt; Branch purchase)	- - -	- - -	- See Branch Purchase - - -	- - -	-	-	-	-
3c-Cariboo Chilanko Marshes (also 99 year lease)	283	1982	Waterfowl, Furbearers		✓	✓	X	✓
Deer Park	4240		California Bighorn Sheep					
Junction (also land exchange)	4325	1981	California Bighorn Sheep	Grasslands	✓	X	X	✓
Tautri Lake (also 99 year lease)		1984	Waterfowl, Wildlife (White Pelican?)		✓	X	X	✓
Upper Cariboo	3090		Moose					
4-Kootenay - Nil								
5a-Skeena - Nil								
5b-Omineca-Peace Stellako River (also Branch purchase)	- - -	- - -	- See Branch Purchase - - -	- - -	-	-	-	-

CONSIGNMENTS

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
1-Vancouver Is. - Nil								
2-Lower Mainland Serpentine Fen	76	1968	Waterfowl (Nesting and Resting)	Deltaic Marsh and Upland	✓	X	X	✓
Sturgeon Bank (also Greenbelt; notation of interest			See Branch Purchase					
3a-Thompson-Nicola Little Fort	152	1977	Waterfowl	Domestic Pasture	X	X	X	✓
3b-Okanagan - Nil								
3c-Cariboo - Nil								
4-Kootenay Bull River (also map reserve and Branch purchase)	450	1969	Ungulates (Winter Range)	S. Aspect, Grass-Shrub	X	X	X	✓
Duncan River (also Greenbelt; lease)			See Branch Purchase					
5a-Skeena - Nil								
5b-Omineca-Peace - Nil								

MAP RESERVES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
1-Vancouver Is. Esquimalt Harbour	19	1972	Waterfowl (Resting)	Intertidal Mud Flats	X	X	X	✓
Gold Lake	285	1968	Roosevelt Elk	Wet Meadow	✓	X	X	✓
Hardy Bay	141	1977	Waterfowl	Estuarine Marsh	X	X	X	✓
Kyoquot & Nootka Sounds	1	1967	Sea Otter		X	X	X	✓
Lanz and Cox Islands	1900	1959	Marine Birds (Nesting)	Forbs, Grasses, Shrubs	✓	X	X	✓
Overton River	?	1973	Great Blue Heron		✓	X	X	✓
Oyster Lagoon	8	1971	Waterfowl (Stopover)	Estuary	✓	X	X	✓
Plumper Cove	?		No specific species		X	X	X	✓
Tofino-Browning Passage (also Greenbelt)	1440	1968	Waterfowl	Marine, Intertidal Mud Flats	✓	X	X	✓
2-Lower Mainland Chehalis River	30	1959			X	X	X	✓
Green River	189	1971	Waterfowl (Resting)	Freshwater Marsh	✓	X	X	✓
McGillivray Creek (also 99 year lease)	301	1967	Ducks, Heron, Waterfowl, Deer	Floodplain, Marsh and Upland	X	X	X	X
Reifel Refuge (also OIC)	18	1965	Waterfowl		X	X	X	✓
Ryder Creek	49	1972	No specific species		X	X	X	✓
Widgeon Creek	7934		No specific species		X	X	X	✓
3a-Thompson-Nicola Glacier Lake	?	1954	No specific species		X	X	X	X
Hemp Creek (also OIC)	432	1964	Ungulates (Migration Route and Winter Range)	Forested	✓	X	X	✓
Kamloops Lake/Dewdrop	6429	1969	Mule Deer (Winter Range)	S. Aspect, Open Range	✓	X	X	✓
Little White Lake	259	1969	Waterfowl		X	X	X	✓

MAP RESERVES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
Nahatlatch Lake	31	1960	Waterfowl (Resting)	Eutrophic Lake, Submergent Vegetation	X	X	X	✓
Salmon Arm Foreshore	36	1962	Waterfowl (Resting)	Mud Flats	✓	X	X	✓
Wells Gray Park	348	1959	Ungulates		✓	X	X	✓
3b-Okanagan Ashnola River (also Branch purchase)	11443	1969	California Bighorn Sheep (Winter Range)	S. Aspect, Grasslands	X	X	X	✓
Kettle River	24	1973	Ungulates (Winter Range)		✓	✓	X	✓
Otter Lake	60	1974	Waterfowl	Eutrophic, Productive	✓	X	X	✓
Swan Lake	465	1968	Waterfowl (Nesting)	Productive, Considerable Submergent Vegetation	X	X	X	✓
Vaseaux Lake (also 99 year lease)	7	1973	Waterfowl	Marshland	✓	✓	X	✓
3c-Cariboo Goose Islands	2272	1968	Waterfowl (Nesting)	Bog, Rocky Upland	X	X	X	✓
Horse Lake	218	1963	Waterfowl, Ungulates	Freshwater Marsh	X	X	X	✓
Horsefly Bay	143	1962	Waterfowl, Ungulates	Freshwater Marshes, Lakeshore	✓	X	X	✓
Klinaklini River	1720	1972	Ungulates (Winter Range)	Floodplain	✓	X	X	✓
Konni Lake	506	1971	Ungulates (Winter Range)	S. Aspect, Grass-Shrub & Mixed Forest	✓	X	X	✓
Moffatt Creek	728	1964	Moose	Grass and Willow Meadow	✓	X	X	✓
Puntzi Lake	1452	1973	Waterfowl (Nesting and Feeding)	Freshwater Marshes	✓	X	X	✓
4-Kootenay Alkali Lake	33	1969	Waterfowl (Nesting)	Eutrophic Lake, Submergent Vegetation	✓	X	X	✓
Beaverfoot	52339	1950	Ungulates	SW Aspect, Grass/Shrub & Mixed Forest	✓	X	X	✓

MAP RESERVES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
Big Sheep Creek	1765	1960	No Specific Species	(Access Corridor)	✓	X	X	✓
Bull River (also Branch purchased)	64	1956	Ungulates (Winter Range)	S. Aspect, Grass-Shrub	✓	X	X	✓
Bummer's Flats (also Greenbelt)	359	1974	Waterfowl (Nesting) Ungulates (Winter Range)	Floodplain Marsh, Wet Meadows, Open Forest Rangeland	✓	X	X	✓
Canal Flats	205		Waterfowl		X	X	X	✓
Cedar Creek	32	1972	White-tailed Deer (Winter Range)		X	X	X	X
Creston Mountain			Waterfowl		✓	X	X	✓
Deer Park	14474	1969	Ungulates (Winter Range)	S. Aspect, Grass-Shrub & Forest	X	X	X	✓
Elizabeth Lake	85	1969	Waterfowl	Emergent, Submergent Vegetation	✓	X	X	✓
Elk River	1442	1969	Ungulates (Winter Range)	SW Aspect, Mixed Forest, Grass-Shrub	X	X	X	✓
Fassiferne	1344	1975	Ungulates (Winter Range)	S. Grass-Shrub, Mixed Forest	✓	X	X	✓
Fenwick-Fort Steele	548	1974	Waterfowl (Nesting)	Floodplain Marshes	✓	X	X	✓
Golden	8568	1973	No Specific Species		X	X	X	✓
Kimberley Airport	195	1972	Upland Game Birds, Ungulates	Climax Grassland	✓	X	X	✓
Larsen Lake	47	1969	Waterfowl (Nesting)	Emergent, Submergent Vegetation	X	X	X	✓
Lot 12717	65	1972	Ungulates (Winter Range)	S. Aspect, Grass-Shrub & Mixed Forest	X	X	X	✓
McGinty Lake	23	1969	Waterfowl (Nesting)	Emergent, Submergent Vegetation	✓	X	X	✓
McMurdo Station	120	1972	Ungulates (Winter Range)	S.W. Aspect	✓	X	X	✓
Queen's Bay	46	1974	Mule Deer	Winter Range	X	X	X	✓
Reed Lakes	123	1969	Waterfowl (Nesting and Resting)	Emergent, Submergent Vegetation	✓	X	X	✓
Saugum Creek and Lake	46	1969	Waterfowl (Nesting)	Marshes	X	X	X	✓

MAP RESERVES

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
St. Mary's Lake	50	1969	Waterfowl (Nesting)	Emergent, Submergent Vegetation	✓	X	X	✓
Wasa Slough (also 99 year lease)	136	1973	Waterfowl (Nesting)	Freshwater Marsh	✓	X	X	✓
5a-Skeena								
Bearskin Bay	314	1967	Waterfowl	Sheltered Estuary	✓	X	X	✓
Delkatla Slough (also Greenbelt)	616	1970	Waterfowl	Estuary and Saltmarsh	✓	X	X	X
Khutzeymateen	302	1970	Waterfowl (Resting and Feeding)	Sheltered Estuary	✓	X	X	✓
Haney Lake	118	1970	Ungulates	S. Aspect, Grass-Shrub & Mixed Forest	✓	X	X	✓
Morley Lake	308	1966	No Specific Species	Boreal Forest	✓	X	X	✓
Watun River	30	1970	Waterfowl	Sheltered Estuary	✓	X	X	✓
5b-Omineca-Peace								
Beatton River	3696	1970	Ungulates, Upland Game Birds	Boreal, Mixed Forest	✓	X	X	✓
Cameron Lake	86734	1970	Ungulates (Winter Range)	Boreal, Mixed Forest	✓	X	X	✓
Cecil Lake	256	1975	Waterfowl (Nesting)	Productive, Shallow	✓	X	X	✓
East Pine	464	1969	Ungulates (Winter Range)	Open River Break, Boreal Forest	✓	X	X	✓
Grove Burn	24173	1967	Ungulates, Carnivores, Furbearers	Sub-Boreal Forest in Early Succession	✓	X	X	✓
Hominka River	4766	1969	Waterfowl, Ungulates	Riparian	✓	X	X	✓
Hudson Hope	482	1971	Ungulates (Winter Range)	Open River Breaks	✓	X	X	✓
Kiskatinaw River	34516	1971	Ungulates (Winter Range)	Open River Breaks, Boreal Forest	✓	X	X	✓
Nechako River	156	1949	Waterfowl	Floodplain & River Islands	✓	X	X	✓
Peace River	50242	1970	Ungulates	Floodplain, Open River Breaks	✓	X	X	✓
Sukunka River	34456	1970	Ungulates (Winter Range)	Floodplain	✓	X	X	✓

NOTATIONS OF INTEREST

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
1-Vancouver Is. Mud Bay/Baynes Sound	2651	1974	Waterfowl	Saltmarsh, Mudflats	X	X	X	✓
Salmon River (also 99 year lease)	36	1979	Elk (Winter Range)	Floodplain, Meadow, Upland Deciduous	✓	X	X	✓
2-Lower Mainland Boundary Bay	5907	1965	Waterfowl (Resting)	Marine, Intertidal Mudflats, Salt Marsh	X	X	X	✓
Sturgeon Bank	11432	1965	Waterfowl (Resting)	Intertidal Mudflats, Salt & Estuarine Marshes	✓	X	X	✓
Westham Island	? Fore-shore only	1965	Waterfowl (Resting)	As above	X	X	X	✓
3a-Thompson-Nicola Carpenter Lake	28350	?	Mule Deer (Winter Range)	Grass/Shrub & Mixed Forest	✓	✓	✓	?
Perry River/Rock Creek	50	1974	Caribou (Migration)	Climax Forest	✓	X	X	✓
3b-Okanagan Nkwala	139	1973	Upland Game Birds	Open Rangeland	✓	X	X	✓
Shorts Creek (also 99 year lease)	1169	1975	Ungulates	SW Aspect, Grass/Shrub	X	X	X	✓
Spallumcheen Forest	3838	1972	Deer (Winter Range)	Forb, Shrub & Mixed Forest	✓	X	X	✓
3c-Cariboo Bella Coola River	2023	1968	Ungulates (Winter Range)	Floodplain	✓	X	X	✓
4-Kootenay Blaeberry/Kicking Horse Rivers	14417	1974	Ungulates (Winter Range)	SW Aspect, Grass/Shrub & Mixed Forest	✓	✓	✓	✓
Kootenay Park	4400	1969	Ungulates (Winter Range)	S. Aspect, Winter Range	✓	✓	X	✓
Kootenay R. (Canal Flats)	76876	1969	Ungulates (Winter Range)	SW Aspect, Grass/Shrub & Mixed Forest	✓	✓	X	✓

NOTATIONS OF INTEREST

PROPERTY	AREA (ha)	YEAR ACQUIRED	SPECIES	HABITAT	R	ID	DIS	DEC
Spring Lake	210	1972	Waterfowl	Lake, Emergent & Submergent Vegetation	X	X	X	✓
Wilmer Marsh	355	1973	Waterfowl (Nesting)	Floodplain Marsh	✓	✓	X	✓
Wolf Creek (also Branch purchase)	81	1970	Ungulates (Winter Range)	S. Aspect, Grass/Shrub & Mixed Forest	✓	X	X	✓
5a-Skeena Naden Harbour	1193	1968	Waterfowl (Resting, Feeding)	Estuary, Intertidal Mudflats	✓	X	X	✓
Yakoun River	308	1973	Waterfowl (Resting, Feeding, Staging)	Riparian, River Estuary, Intertidal Mudflats	✓	X	X	✓
5b-Omineca-Peace - Nil								

[1] R - Initial request to acquire the property.
ID - Identification of alternative tenure types.
DIS - Discussion of alternatives.
DEC - Decision on tenure type.

APPENDIX C

COPY OF QUESTIONNAIRE

QUESTIONNAIRE

INTRODUCTION

I'm playing two roles today. One role is a graduate student preparing a Master's thesis on land acquisition for wildlife in B.C. The other role is a planner assisting in the development of a land management strategy for wildlife in B.C.

I have adopted a broad definition of land acquisition, namely the acquisition of some form of administrative control of land, Crown and private, for wildlife. I am referring specifically to administrative control by the Wildlife Branch. Such control may be weak as a map notation of interest, or as strong as outright purchase.

The research for my thesis is based on a content analysis of land acquisition files available in Victoria, and on this questionnaire. The purpose of the questionnaire in terms of the thesis is to examine the factors behind your decisions to acquire land for wildlife. In other words, I want to find out why you make the choices you do.

In terms of the land management strategy, your answers will be used to determine what the Wildlife Branch has done and is doing now with respect to land acquisition, as well as what regional staff think it should be doing. The land management strategy will be a component of the provincial wildlife plan.

I will start with some general questions, and then I will ask you a set of questions about your involvement in the decision to acquire the _____ property.

I will start with some personal questions about you.

1. How many years have you worked as a biologist?

2. How many years have you worked for the Wildlife Branch?

3. How many years have you been involved in decisions to acquire administrative control of land for wildlife?

4. What educational level have you attained?

5. Now I would like you to take your time and tell me all of the alternatives you are aware of for acquiring administrative control of Crown land in B.C. for wildlife.

6. Now I will go through the list you have given me and ask you whether or not you have personally used the tenure type to acquire land for wildlife and, if so, how many times.

7. From my literature review, I discovered that some additional tenure types can also be used. For each of these additional tenure types, I will ask you whether it is familiar to you, whether you have personally used it to acquire land, and, if so, how many times you have used it.

8. Now please tell me all of the alternatives you are aware of for acquiring administrative control of private land in B.C. for wildlife.

9. I will go through the list you have given me and ask you whether or not you have personally used the tenure type to acquire land for wildlife and, if so, how many times.

10. From my literature review, I discovered that some additional tenure types can also be used. For each of these additional tenure types, I will ask you whether it is familiar to you, whether you have personally used it to acquire land, and, if so, how many times you have used it.

ALTERNATIVES, CROWN LAND	NUMBER OF TIMES USED F	O	S	N
1. Order-in-Council Reserve				
2. Section 101 Transfer				
3. Map Reserve				
4. Designated Use Area				
5. Notation of Interest				
6. Trade With Another Level of Government				
7. Consignment From Another Agency, e.g. Greenbelt				
? Wildlife Management Area				
? Cooperative Land Use Planning				
? Other Legislation				

ALTERNATIVES, PRIVATE LAND	NUMBER OF TIMES USED F	O	S	N
1. Outright Purchase				
2. Gift or Donation				
3. Expropriation				
4. Land Exchange (Private for Crown)				
5. Lease				
6. Easement or Right-of-way				
7. Restrictive Covenant				
8. Management Agreement				

F - Frequently (more than 5 times)
O - Often (3-5 times)
S - Seldom (1-2 times)
N - Never (0 times)

Now I'll ask you some general questions about acquiring administrative control of land for wildlife.

1. Do you think a comprehensive, provincial strategy for land acquisition is required?

2. What do you think about the way the Wildlife Branch has acquired land in the past?

3. Have you been exposed to, and impressed by, a land acquisition policy in another jurisdiction or area that you consider to be a really good model for the Wildlife Branch to follow?

4. Why do you think the Wildlife Branch needs to acquire administrative control of land for wildlife?

5. On a regional basis, do you have any kind of plan, map or other documentation that indicates what land you have now, and what you want to acquire?

6. Do you know which of the additional properties you would try to buy, versus using other alternatives?

7. Do you have any knowledge about the land acquired in other regions? If so, do you consciously consider this information when making your regional acquisition decisions such that your regional program is placed in a provincial context?

8. In this region, generally speaking, do you consider wetland or upland habitat to be most important for acquisition?

9. In this region, generally speaking, what species or species group do you feel land should be acquired for?

10. Provincially, do you feel that acquisition should be focussed on a particular habitat type or species group?

11. What benefits, if any, do you think WMAs and Critical Wildlife Areas will provide?

Now I'll ask you some specific questions about the _____ property.

1. In your view, what were the main reasons why the property was acquired?

2. Was there a particular species or species group that you were most interested in managing there?

3. What type or types of management activities did you intend to carry out on the property?

4. Was your success in managing another property considered in your decision to acquire this one?

5. For what time period did you feel administrative control of the property was needed?

6. Was the property immediately threatened? Was it threatened in the near future, that is, within the next 5 years?

7. Did the Wildlife Branch initiate this acquisition, or did someone else?

8. When acquisition of the property was first being considered, what was your first preference for tenure on it?

9. In coming up with that preference, did you consider all possible alternative tenure types?

10. What other tenure type or types, if any, did you personally consider for the property in addition to (tenure type chosen)?

11. The file indicates (additional tenure type(s)) was/were also identified. Is this correct? If yes, who proposed them?

12. How would you rank the various alternative tenure types considered?

13. So far, the alternative tenure types we've discussed involve direct administrative control by the Wildlife Branch. For this property, did you ever consider using vehicles that exist outside the Wildlife Branch, for example, ecological reserves?

14. When you were considering acquiring this property, did you ever think that you might be able to achieve your management ends through cooperative land use activities like referrals or other types of land use planning like CRMPs (Crown)/through zoning (private)? Generally speaking, how valid or useful do you think this type of vehicle is?

15. How many individuals, in addition to you, would you say participated directly in the decision to acquire the property?

16. Would you say the various individuals involved in the decision had different views and interests, or similar views and interests?

17. In your opinion, did these compatible/conflicting views result in you considering a greater number of tenure types for the property, or fewer?

18. What effect, if any, do you think the personalities and attitudes of individuals in other agencies involved in this acquisition decision had on its outcome?

19. Did you feel there was an adequate amount of information available on each of the alternative tenure types considered?

20. If no, do you feel this resulted in you gathering more information where it was lacking, or do you feel it resulted in you giving consideration to those tenure types that you knew more about?

21. Did you feel time was a constraint in this decision? In your view, was too much time taken, or was there not enough time available?

22. Do you feel this time constraint resulted in you considering a greater number of tenure types, or fewer?

23. Did you feel there was an adequate amount of funding available to pursue different alternatives?

24. Did the presence of another agency with money have an influence on the decision to acquire the property? (Greenbelt purchases and Nature Trust leases only.)

25. Do you feel the (lack/availability) of adequate funding resulted in you considering a greater number of tenure types, or fewer?

26. Were any of the following groups involved in the decision to acquire the property (politicians, general public, public interest groups, media)?

27. If yes, do you feel the involvement of (group) caused you to focus more heavily on a particular tenure type or types? Which one(s)?

28. Having acquired this property, are you satisfied that you got it under the best possible tenure type? If no, with the benefit of hindsight, what tenure type, if any, should it be?

29. What disadvantages do you feel this alternative has over the current type of tenure?

30. Are you satisfied with the management activities that you have carried out on the property? If no, why not?

Thank you very much for your time. Do you have any additional comments or questions to ask of me?

APPENDIX D

INTERVIEW RESPONDENTS

Marty Beets
Habitat Section Head, Cariboo Sub-region
Ministry of Environment and Parks
Williams Lake, B.C.

Tom Burgess
Wildlife Section Head, Lower Mainland Region
Ministry of Environment and Parks
Surrey, B.C.

Murray Clark
Area Manager, Northern Region
Ducks Unlimited
Prince George, B.C.

Ray Demarchi
Wildlife Section Head, Kootenay Region
Ministry of Environment and Parks
Cranbrook, B.C.

Frank Edgell
Executive Director, Lands Services
Ministry of Forests and Lands
Victoria, B.C.

Ron Erickson
Executive Director
The Nature Trust of British Columbia
West Vancouver, B.C.

Ray Halladay
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Fred Harper
Habitat Section Head, Omineca-Peace Sub-region
Ministry of Environment and Parks
Fort St. John, B.C.

Daryll Hebert
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Bill Kreller
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Ministry of Environment and Parks
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Al Peatt
Wildlife Biologist, Okanagan Sub-region
Ministry of Environment and Parks
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Dave Phelps
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Earl Warnock
Regional Director, Northern Region
Ministry of Environment and Parks
Prince George, B.C.

Pre-test

Rod Silver
Wildlife Biologist, Wildlife Branch
Ministry of Environment and Parks
Victoria, B.C.

APPENDIX E

BACKGROUND INFORMATION ON THE SAMPLED PROPERTIES

SOMENOS LAKE

This property is located on the west foreshore of Somenos Lake, 1.6 kilometers north of Duncan in the Vancouver Island region. Two parcels were sampled, a 51 hectare Greenbelt purchase acquired in 1973 and a 21 hectare Nature Trust lease acquired in 1978.

Management objectives for both parcels are waterfowl management and public education. The parcels were acquired for waterfowl primarily (ducks, geese and swans). Proposed management prescriptions include nesting islands for geese, food production for ducks and geese, sub-irrigation, water level regulation, plant species change, viewing towers and public tours.

McGILLIVRAY CREEK

This property is located 6 kilometers north of Yarrow at the confluence of the Sumas River, Vedder Canal and the Fraser River in the Lower Mainland region. One parcel was sampled, a 43 hectare Nature Trust lease acquired in 1985.

The management objective for McGillivray Creek is protection. It was acquired for waterfowl, herons, other wading birds, and aquatic furbearers primarily. No active management prescriptions are planned, pending further investigation.

SKULL MOUNTAIN

Skull Mountain is located on the west side of the North Thompson River, 45 kilometers north of Kamloops in the Thompson-Nicola sub-region. Two parcels were sampled, a 259 hectare Branch purchase acquired in 1983 and a map reserve, size unknown, acquired in 1985.

Management objectives for both parcels are the protection and enhancement of mule deer winter range. The parcels were acquired for mule deer and badger primarily. Proposed management prescriptions include prescribed burning, selective logging and controlled grazing.

VASEAUX LAKE

This property is located on the east side of Vaseaux Lake between Oliver and Penticton in the Okanagan sub-region. Two parcels were sampled, a 26 hectare Nature Trust lease acquired in 1985 and a pending Section 101 transfer of unknown size.

The management objective for both parcels is protection of low elevation winter range for California bighorn sheep, the species for which the parcels were primarily acquired. Proposed management prescriptions for Vaseaux Lake include protection, clearing of bitterbrush, range improvement, conversion of orchard to irrigated pasture, and fencing for livestock control.

JUNCTION

This property is located at the junction of the Chilcotin and Fraser Rivers, 10 kilometers west of Alkali Lake in the Cariboo sub-region. Two parcels were sampled, a 1285 hectare land exchange acquired in 1973 and a 4765 hectare Section 101 transfer acquired in 1981 (the Section 101 incorporates the land exchange parcel).

The management objectives for the Junction are protection and enhancement of habitat for California bighorn sheep, the species for which it was primarily acquired. Proposed management prescriptions include controlled domestic grazing, prescribed burning, and vehicle closures.

THREE SONS

This property is located along the Kootenay River in the vicinity of its confluence with Wolf Creek, 7 kilometers northeast of Wasa Station in the Kootenay region. The parcel sampled is a 486 hectare Greenbelt purchase that was acquired in 1973.

The management objectives for Three Sons are the protection and enhancement of floodplain habitat and ungulate winter range. The property was acquired for white-tailed deer, Rocky Mountain elk, mule deer and Rocky Mountain bighorn sheep primarily. Proposed management prescriptions include a rotational grazing system, logging, prescribed burning, and controlled access.

WIGWAM FLATS

This property is located south of Elko near the confluence of the Elk and Wigwam Rivers in the Kootenay region. Two parcels were sampled, a 4 hectare Branch purchase acquired in 1977 and a 4 hectare Nature Trust lease acquired in 1980.

The management objective for both parcels is the protection of ungulate winter range. The parcels were acquired for Rocky Mountain bighorn sheep, Rocky Mountain elk, mule deer, and white-tailed deer primarily. The management prescription is protection.

DELKATLA SLOUGH

This property is located on Masset Sound just south of Masset in the Queen Charlotte Islands, Skeena sub-region. Two parcels were sampled, a 49 hectare Greenbelt purchase acquired in 1974 and a Section 101 application, size and status unknown.

The management objectives for Delkatla Slough are the protection and enhancement of waterfowl and other bird habitat. Species for which the property was primarily acquired are waterfowl (mostly geese), rare shorebirds, and other water and forest bird species. Proposed management prescriptions include public viewing towers and interpretive trails, fencing, research, vegetation manipulation, and habitat protection.

STELLAKO RIVER

This property is located adjacent to the Stellako River near Vanderhoof in the Omineca-Peace sub-region. The parcel sampled is a 87 hectare Branch purchase that was acquired in 1981.

The management objectives for Stellako River are maintenance of recreational access and enhancement of ungulate habitat. The property was acquired for fish, deer and moose primarily. The proposed wildlife management prescription is habitat enhancement for deer.

CECIL LAKE

Cecil Lake is located about 1 kilometer from the community of Cecil Lake and 6 kilometers east of Fort St. John in the Omineca-Peace sub-region. The parcel sampled is a 256 hectare map reserve that was acquired in 1975.

The management objectives for the property are protection of waterfowl habitat (the species for which the property was primarily acquired) and maintenance of recreational access. Proposed management prescriptions are water level control and the development of nesting islands.

HUHN'S SLOUGH

Huhn's Slough is located about 7 kilometers northeast of Dawson Creek in the Omineca-Peace sub-region. The parcel sampled is a 90 hectare Nature Trust lease that was acquired in 1986.

The management objective for the property is protection of a waterfowl marsh. Waterfowl (mostly dabbling ducks) are the species for which the property was acquired. Proposed management prescriptions are water level control and the development of internal nesting sites.

VITA

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Place of Birth: VANCOUVER, B.C. Date of Birth: JULY 28, 1954

Educational Institutions Attended,
With Dates of Entering and Leaving:

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Honors and Awards:

Phi Beta Kappa, 1977.

Publications:

Bailey, L.D. and E.M. Nessman. "Outdoor Recreation Participation: Southeast Coal Block, 1980". Victoria, B.C.: B.C. Ministry of Environment and Ministry of Lands, Parks and Housing, 1982.

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THE RANGE OF CHOICE IN DECISION-MAKING:
THE CASE OF LAND ACQUISITION FOR
WILDLIFE IN BRITISH COLUMBIA

Author

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LYNN DIANE BAILEY

JULY 8, 1987

Date