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## The Case of the Spatsizi

by

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The people who have settled in North America since around 1600 have been so busily engaged in developing and using the resources of the continent that it is only quite recently that much consideration has been given to the need for preservation of some of the natural condition which once characterized this vast land. While more than a century ago Thoreau observed that "in wildness is the preservation of the world", basic concepts of wilderness preservation have evolved slowly. The first step was to set aside parks in which an important associated concept was the provision of outdoor recreation. The disappearance of wildlife under the pressures of human development led eventually to the establishment of wildlife sanctuaries of various kinds and sizes. More recently - in recognition that ecological systems once indigenous to British Columbia are threatened with extinction - this Province has undertaken to establish a system of ecological reserves, and thanks to the untiring leadership of such farsighted individuals as Dr. Vladimir Krajina this programme has made significant progress.

In spite of these important steps, there is a quite widespread feeling that the system of parks, wildlife sanctuaries and ecological reserves do not complete the need for preservation of some of the natural condition that once was North America. As Durward Allen (1975), one of North America's foremost wildlife biologists, wrote recently in Wildlife Review, the magazine of B.C.'s Department of Recreation and Conservation, "let us recognize that there should be a kind of 'pure' wilderness, where we do not tamper with anything".

This evening we should like to examine the rationale for the preservation of pure wilderness, present some basic concepts of wilderness, and apply these concepts to the design of a suitable management policy for the recently established Spatsizi Wilderness Provincial Park in northern British Columbia.

### Wilderness Preservation: Basic Concepts

The case for wilderness preservation and the kind of policy that is required to achieve wilderness preservation objectives are determined by what we value. Therefore, for you to understand fully the case we are making for wilderness preservation, we must define at the outset the value premise which underlies what we are

about to say. Our premise is that it is worthwhile to forego the consumptive use of some resources so that vestiges of the rich wilderness heritage of this country will be preserved for the benefit of future generations of Canadians. To achieve the desired result it is necessary that areas set aside for this purpose retain all the characteristics necessary to convey to the visitor a full sense of what the wilderness was like prior to European settlement.

This basic premise leads us to the following criteria for wilderness areas:

1. The area is sufficiently large to embrace a naturally sustainable ecological system containing its historic complement of large mammals.
2. The natural state of the area has not been modified by construction of transportation facilities, mining, timber harvesting, agriculture, dam construction or other developmental activities since European settlement.
3. No mechanical means of transportation in the area is permitted.
4. Use of the area for recreation purposes, including hiking, camping and hunting should be strictly regulated so neither the aspect of wildness nor the natural ecosystem is impaired.

The critical importance of the natural ecosystem as a basic feature of pure wilderness needs great emphasis. A fundamental concept underlying our thesis is that if wilderness areas are in fact to be representative of the Canadian heritage, the natural wildlife communities must be preserved too. To achieve this, wildlife management must be directed to preservation of the entire ecosystem and not to individual species.

There is growing awareness of the importance of this principle, and at a conference of Canadian and U.S. wildlife experts last spring at Airlie, Virginia, which met to draw up new guidelines for management of living wild resources, one of the four principles which emerged was that focus should be on maintaining the ecosystem rather than concentrating on any one species (Science News, April 1975). Gordon Haber, who is on our panel this evening, has expressed the point better than we can ever do (Haber, 1974), and I quote:

"This basic unit of nature /the ecosystem/ is like a living organism, with all of its many parts interacting in an elaborate way to promote homeostasis and self perpetuation. Because there are so many keen interdependencies, it is folly to try to manage the parts of an ecosystem as separate entities - just as it would be absurd to isolate the brain, the heart or the liver of the human body and attempt to maintain each by itself. Each part gains its sustenance and, most important, expresses its greatest beauty and biological significance not by itself, but as a contribution to the smooth operation of the whole. Accordingly, our first objective should be to monitor and protect the status of entire ecosystems, not merely of individual plant or animal species."

Let me emphasize, therefore, the distinct nature of the kind of wilderness areas we are advocating. Unlike our present Parks and B.C.'s only designated Wilderness, the Purcell Wilderness, which are designed to provide recreation opportunities, recreation use in the wilderness areas of the type we are proposing would be secondary to preservation of the natural condition of the area. In contrast to the wilderness system established in the United States where, except for Alaska, the natural ecological systems have already been drastically modified, we are seeking to capitalize on the availability in Canada of pure wilderness by proposing a system of areas which would preserve natural ecological systems that still contain their historic complement of large mammals.

The point we have made about the regulation of use of wilderness areas merits elaboration in view of experience both in the United States and Canada.

First, we have learned that once a wild area is identified as being attractive it tends to be over-run. The great interest in hiking, canoeing and camping that we have experienced in recent years has meant that many of our parks have become crowded and in the United States some designated wilderness areas have become so intensively used that their wilderness character has been impaired. There is ample evidence from both Canadian and U.S. experience, which we will not review here, that intensive development and use of wild areas for recreation purposes can seriously disturb the natural ecosystem.

Let me repeat that in our view the objective of wilderness preservation is not the provision of additional recreation opportunities. The objective is to preserve areas representative of the Canadian wilderness heritage and the recreation resulting therefrom is an incidental benefit. This means that a cornerstone of wilderness preservation policy - if it is to be fully effective in light of recent experience - must be a restriction upon use to levels consistent with the long term preservation of the wilderness.

Second, it is essential that hunting, if allowed, must be scientifically managed to provide absolute assurance that the natural ecosystem is not impaired. It must be at a low level of intensity and highly selective with regard to age and sex. Dr. Geist, one of our foremost wildlife biologists, in commenting on the effects of hunting on ungulates (Geist, 1971a), has observed:

"On an a priori basis it can be predicted that prolonged and extensive hunting will alter the biology of the species affected. Hunting will select for paedomorphism, early maturation, high reproduction, secretive habits, nervousness, inefficient conversion of ingested food, and increased efficiency in exploitation of escape terrain or cover. This will result ultimately in small, relatively short-lived forms of the species, with small horns or antlers. In addition, where several ungulate species co-exist, it is likely that

significant changes in habitat preference by one species may lead to the loss of other species.."

Our review of literature and discussions with wildlife biologists have led us to the following conclusions about the elements of an appropriate hunting policy for wilderness areas:

- The number of animals by age and sex that is allowed to be taken should be determined scientifically and precisely regulated, and ideally it should mimic as closely as possible the pattern of kill by natural predators.
- There should be no hunting of species near the top of the food chain which during their evolutionary history have been exposed only to low levels of exploitation by other species. This is particularly important for the social predators, such as wolves, but applies equally to the grizzly bear.
- Hunting should not be permitted where either a lack of knowledge or lack of regulatory staff makes it uncertain that a healthy wildlife population can be maintained if hunting is allowed. I emphasize healthy because current knowledge indicates that population size alone is not a sufficient indication of the health of a species, which may suffer serious behavioural disruption through hunting even though its numbers may be considered viable.

Implementation of this policy will require careful ongoing monitoring of the ecosystem and systematic regulation of hunting in wilderness areas.

While, as we said earlier, notable steps have been taken to preserve natural and wild environments, it is evident that no areas in British Columbia of sufficient size have been provided the protection required to meet the criteria we propose. We believe that two types of action need to be undertaken to develop a wilderness system for Canada:

- Firstly is the identification and evaluation of potential areas for such designation. Such an identification and evaluation should provide the basis for government action to develop and implement a management policy for selected areas that would assure the preservation of their wilderness characteristics.
- Secondly and more immediately is the development and implementation of management policies for areas that are obvious candidates for inclusion in a wilderness system.

We will not elaborate this evening on possible procedures for the identification and evaluation of potential areas for inclusion in a national wilderness system. This is an important task, but because of the urgency of the situation we will turn to the development of a management policy for an area that we believe is an obvious candidate for preservation as a true wilderness - namely, the newly established Spatsizi Wilderness Provincial Park.

## The Case of the Spatsizi

Last November the Provincial Government established the Spatsizi Wilderness Provincial Park and the Gladys Lake Ecological Reserve within it, covering a combined total area of one and three-quarter million acres. In announcing this action and in recognition of the richness of its wildlife, then-Minister Robert Williams referred to the park as a wilderness-wildlife preserve and likened it to one of the great African game parks. Whether its full potential as a true wilderness area will be realized will depend on how it is managed. We wish to provide you with a little more background on this area and suggest the kind of management policies called for in order to maintain it as a true wilderness-wildlife preserve in accord with the principles we have just outlined.

### The Nature of the Area

The term "the Spatsizi" generally refers to an area of about twenty-five hundred square miles between the Stikine and Klappan rivers, comprising the Spatsizi Plateau and Eaglenest Range of mountains. The Spatsizi River which flows through this area means in the Indian language "river of red goats", as the red soil from the iron pyrites in the rocks occurring along the river tinges the wool of the mountain goats pink.

Most people think of a plateau as being high flat country, a tableland. The Spatsizi Plateau is nowhere flat and varies between relatively gently undulating in the north to deeply broken and rather rugged country, particularly where the plateau adjoins the true mountains. The Eaglenest Range is correspondingly more rugged. Because of the altitude much of the country is above timberline, and even the river valleys, which are quite broad, are fairly open.

What makes the Spatsizi so special when a map of northern B.C. indicates vast roadless regions and several other plateaux? The principal reason is the relative overall abundance of wildlife living in a relatively unimpaired ecosystem. Here I must emphasize the word relative because, while it is true that there is still a relative abundance of wildlife compared with much of the Province, we wish to draw your attention to the urgent need for measures to preserve the Spatsizi before this rich ecosystem is damaged beyond recovery by human disturbance. Following this presentation Tommy Walker, who lived in the Spatsizi from 1948-68, who knows the Spatsizi as no one else does and has striven for its preservation for twenty years, will show a short film illustrating what it used to be like. We understand that what you will see in that film you will not see today, for it appears that the populations of Stone's sheep and mountain goats have been severely reduced and moose and caribou are under increasing hunting pressure. But these species are still to be found, and many others, including the wolf whose presence as the major predator is essential to maintenance of the natural ecosystem. If protective action is taken now, the long struggle to save the Spatsizi may not have been in vain.

Let us now turn to the problems of wildlife management and recreation use that must be confronted if we are to capitalize on the opportunity which the new ecological reserve and park provide to save the Spatsizi.

### Management Policy Issues

It is only appropriate at this point to emphasize that neither of us is a biologist. In commenting upon wildlife management policies for the Spatsizi we are bringing you a layman's interpretation of the literature on this subject. Fortunately our panel this evening comprises eminent biologists who will, I am sure, correct us if we are in error. For illustrative purposes we will focus attention upon the two most sought after trophy species, the Stone's sheep and Osborn caribou, which, probably more than anything else, have made the Spatsizi famous. But our concentration upon these two species in no way implies that a wildlife management policy should focus upon them.

The Ecological System. On the contrary, we wish to emphasize strongly that the sheep and the caribou are only two components of the ecological system, and if the pristine character of the Spatsizi is to be preserved, management must be directed to the maintenance of the ecological system as a whole, rather than any of its component parts in isolation from one another. This requires that the ecological system as a whole must be studied and understood. If, as a result, it is found that the Park fails to encompass the complete ecological system, it will be of critical importance either to alter the Park's boundaries accordingly, or to set up special "management units" adjacent to the Park to provide the necessary ecosystem protection (Hamer, 1974).

Let us not repeat the errors of the federal government in establishing Kluane and Nahanni National Parks in the Yukon, where the wildlife depend for their existence to a large extent on unprotected areas outside the parks (Geist, 1975a).

The Stone's Sheep is a subspecies of thinhorn sheep found in northern B.C. and the Yukon, and its striking appearance has led to the description of a sheep in evening dress. Because of the horn size attained, the rams are much sought after as trophies by hunters from all over the world. The sheep population of the Gladys Lake drainage of the Eaglenest Range was intensively studied by Dr. Valerius Geist in the sixties, so that the ecology and behaviour of this population has been well documented (Geist, 1971b). The Dease Lake extension of the B.C. Railway has since afforded a degree of access to sheep country that did not exist before, because in the absence of railway tracks vehicles are able to use the right-of-way and get very close to where the sheep are. Hunting pressure on sheep in the vicinity of certain lakes where aircraft can land has also been considerable in recent years, and it seems that these means of access have contributed to the decimation of the sheep population in the Eaglenest Range. Presumably in recognition of the critical

nature of the situation and of their inability to manage the area, the Fish and Wildlife Branch last summer prohibited airplane access to Gladys Lake and hunting in that area, which is now the new ecological reserve.

Accounts by Dr. Geist (1971b, 1975b) of mountain sheep reveal a highly social ungulate, with a complex social system that regulates its exploitation of its range. A fundamental point is, and I quote from his book, Mountain Sheep:

"Mountain sheep are loyal to their home ranges; their movements between seasonal home ranges are orderly and predictable".

A second point is that knowledge of home ranges is passed on from generation to generation through the dominant rams which are the ones with the largest horns, as well as old females, because these animals lead the younger ones from one seasonal range to another. It follows from this that if a sheep population is forced out of its range, and especially if the dominant rams are lost, the knowledge of the home range will be lost and the sheep population will be adversely affected. Again to quote Dr. Geist:

"If hunting causes sheep to vacate their accustomed areas and seek refuge on terrain where they would normally be rarely found, then we can expect deleterious effects on the sheep population as a whole. It means the loss of habitat to an animal. If this is wintering habitat, it means a decrease in population size".

Further, according to Dr. Geist, trophy hunting will result in a selection for nervous, poorly growing, excitable animals.

One final point in Dr. Geist's study we found to be particularly disturbing. Referring to measures to protect sheep in the United States and Russia, he states that:

"On the whole sheep have maintained their number and distribution at the level it was shortly after protection began".

As we understand this point, sheep do not easily recolonize habitat once they have been driven from it.

We draw two major conclusions from the studies of mountain sheep behaviour.

One is that a hard look should be made at the regulations which govern the hunting of mountain sheep. J.K.Morgan of the Idaho Fish and Game Department believes that hunting regulations must be changed so as to be non-selective for large horns (Morgan, 1973). It is also evident that harassment of sheep populations through hunting must be minimized if home range traditions are to be passed on to successive generations and healthy populations maintained.

The other is that the capability of the sheep population to recover in those parts of the Spatsizi where they have been greatly reduced is an open question. Referring to the Gladys Lake drainage,

Dr. Geist (pers. comm.) has emphasized that nobody can be certain whether the sheep will or will not recover to former levels, even if complete protection is afforded.

One final point needs to be made. No reliable data exist on the mountain sheep population in the Spatsizi Park beyond that collected by Dr. Geist over a decade ago in the Gladys Lake area. We have concluded that, while the behaviour of mountain sheep is quite well understood, neither up-to-date population data nor an understanding of the relationship of sheep to other components of the ecological system of the Spatsizi are adequate to permit the development of hunting policies that would assure the preservation of the sheep populations in the Park outside of the ecological reserve.

The Osborn Caribou is the largest of all caribou, only slightly smaller than the elk. While it is found in northern B.C. and the southern Yukon, it is localized within this region as it is restricted to mountain ranges with permanent cirque glaciers and ice-fields, the melt-off from which provides an all-year supply of green vegetation without which the caribou cannot exist. The Spatsizi reputedly supports not only the largest known herd of Osborn caribou, but the largest-bodied Osborn caribou of all are found in this region. Although no one as yet knows the precise combination of factors that favour the caribou in the Spatsizi, it seems that caribou attain the largest body size in wet, fairly cold mountains with moderate snowfall (Geist, 1974). The first overall assessment of its ecology and behaviour has been made by Dr. Geist (1974), but no thorough study of this subspecies has ever been made. Furthermore, the provincial Fish and Wildlife Branch have indicated to us (Hatter, pers. comm.) that knowledge does not exist on the size of the Spatsizi population of Osborn caribou, the population dynamics of the herds in the area or the total number killed annually by hunters. It is, we believe, quite clear that the knowledge does not now exist for sound management of these caribou. Dr. Geist (pers. comm.) has commented that, and I quote:

"Without a study of what I suspect is a very complex ecology of Osborn caribou, I hesitate to make any recommendations whatsoever as to the utility of small - or even large - ecological reserves to protect these animals".

One final point is worthy of consideration. Studies of other caribou populations have indicated that these animals tend to lead a particularly precarious existence. As a result, environmental factors may preclude reproductive success from compensating for hunting pressures (Kelsall, 1968). In a number of situations it has been demonstrated that hunting pressures have had a very deleterious effect (Bergerud 1967, 1971; Kelsall, 1968). Evidently, unlike some other species living less, one might say, on the margin of subsistence, an annual harvest based upon an estimated annual increment cannot be depended upon to maintain a population, since unpredictable climatic factors may affect the pregnancy rates of females in the population and increase drastically the mortality



rates of newborn calves (Kelsall, 1968). Since no studies have been made, no one knows if this applies to the Osborn caribou, but the possibility that it may lends support to the view that great care must be exercised if these caribou are to be preserved. The point to be made here is that sound management policies cannot be devised on the basis of a simple population count and an assessment of forage availability. The behaviour and ecology of the Osborn caribou requires careful study before a sound management policy can be developed.

Controlling recreation uses of the Spatsizi. An important facet of wildlife management in the Spatsizi is the need to regulate so-called non-consumptive recreation uses of the Park. This places a burden upon the Parks Branch to develop special policies to achieve the objective of the government in establishing the park - namely, to maintain it as a wilderness-wildlife preserve. It is of the utmost urgency that the Parks Branch recognize that the development of the kinds of facilities usually found in a park - roads, highly developed trails, developed campgrounds, lodges, etc., are inconsistent with this objective. I should like to quote once again from Dr. Geist (1971a):

"Wild ungulate populations are of greatest cultural value in national parks if they reflect the variables operating under pristine conditions, and not the effects of land cleared for recreational purposes, fertilized road banks, garbage dumps, visitor disturbances, management manipulations (such as population reductions) or the effects of disrupted migrations because snow ploughed off the roads in winter creates impassable barriers".

Furthermore, use by large numbers of hikers and horseback riders not only can destroy the solitude that is the essence of a true wilderness, but can adversely affect the vegetation and the wildlife. Too many horses can lead to overgrazing and the creation of badly eroded trails.

Few people who encounter and startle a wild animal which then flees probably realize the effect of this apparently harmless encounter on the animal. Such disturbance, however, increases the cost of living to the animal by causing it to expend additional energy, which it then must replace by consuming more. While isolated instances may not matter, repeated cases in a rigorous northern environment, where neither the animals nor the range can afford the extra toll, may be very harmful indeed (Geist, 1971c).

To those who believe that the Spatsizi is too remote to have much use, let us remind you that wilderness-type recreation is growing by leaps and bounds. From the reports we have received, the Bowron Lakes Park is already impaired by over-use. And with over-use being experienced south of the border, more and more Americans are looking north. The fame of the Spatsizi is spreading and with attention called to it by its park status, it is quite likely that demands to use the area will mount rapidly.

An important point that needs to be made is that regulation of such use should be initiated immediately. If one waits until crowding occurs it will be difficult to institute the necessary control measures, because a number of people will have established a vested interest in maintaining the high level of use. We are in no position to prescribe how regulation should be administered. We know from experience, however, that anyone canoeing the Thelon River in the Northwest Territories needs a permit to pass through the Thelon Game Sanctuary. Permits are now required in some of the U.S. Parks such as Mount McKinley in Alaska. Might not the same procedure be utilized in the Spatsizi, with the number of permits limited in accord with a pre-determined carrying capacity?

### Conclusion

Let us try to summarize the message we are seeking to convey this evening.

We started with a plea for steps to establish a system of true wilderness areas in Canada before it is too late. We recognize that this is not an easy task because the promising areas must be identified, and the advantages and disadvantages of including each candidate area in a wilderness system must be weighed and debated. Yet, we feel we owe it to our children as well as ourselves to preserve these representative vestiges of the rich Canadian wilderness heritage.

In discussing the concept of wilderness, we emphasized the importance of maintaining the natural integrity of the ecological system because, as Lois Crisler remarked, "wilderness without wildlife is mere scenery" (Crisler, 1958).

The establishment of the Spatsizi Park and the Gladys Lake Ecological Reserve offers a magnificent opportunity to preserve a true wilderness. But let us not lose sight of the fact that in order for this potential to be realized, it is of critical importance that sound management policies be adopted. Our conclusions with regard to the steps called for at this time are based on the following:

- The fact that the Stone's sheep population has been severely damaged and that there is some doubt about the capability of the population to recover fully.
- The fact that no one knows the size of the Osborn caribou herd or its population dynamics and that no comprehensive study of the ecology and behaviour of this sub-species of caribou has ever been made.
- The recognition by biologists that not enough is known about the effects of hunting on wildlife. Discussing the management of wild ungulates, Dr. Geist (1971a) comments: "We must also have studies on the effect of hunting on the biology of ungulates in its fullest ramifications. Only then can we set the rules of hunting in a rational fashion".

- The recognition by biologists that a large number of visitors to an area may have a major effect on the wildlife.

Proceeding from these considerations we arrive at the following conclusions with regard to the Spatsizi:

1. A moratorium should be placed on hunting in the Park until a biologically sound basis of knowledge is developed so that wildlife can be managed strictly in accord with the objective of maintaining the Park as a wilderness-wildlife preserve.
2. Major ecological studies must be launched to provide a basis for long-term management of the Park as a wilderness-wildlife preserve. These should include the studies required to define the approximate boundaries of the ecological systems encompassed by the Park, a long-range study of predator-prey interactions in these systems, an in-depth behavioural study of the Osborn caribou, and a long-range study of the Stone's sheep in the Gladys Lake Ecological Reserve in order to provide a thorough assessment of the effects of hunting on this species.
3. No additional facilities such as roads, trails, campgrounds, lodges, etc., should be developed in the Park and the use of mechanized equipment should be prohibited, so that its wilderness character is maintained and the natural wildlife habitat is disturbed as little as possible.
4. All recreation uses should be strictly limited, possibly through institution of a permit system.

We sincerely believe that if less than this is done we will run the risk of letting this magnificent opportunity slip from our grasp. If forthright action is taken to achieve the very laudable objectives of our government in establishing the Gladys Lake Ecological Reserve and the Spatsizi Wilderness Provincial Park, the Canadian people will have forever a piece of what Mackenzie, Fraser and Samuel Black and others found when they came here - a priceless wilderness in which the sheep, the caribou, the wolf and the grizzly lived in a natural relationship to one another and to other elements of the environment. Can we afford to miss such an opportunity to preserve this heritage?

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