

IMPACT ON THE COLUMBIA TREATY AND McNAUGHTON  
PROPOSALS ON WILDLIFE IN SOUTHEASTERN B.C.

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Wildlife in the Kootenay region

The Kootenay region as considered from the wildlife view is geographically co-incident with the broad area containing the major elements of the Columbia Treaty and the McNaughton proposals for water management. Wildlife as treated in this report will be primarily game species since this component of the resource is the most used, and best known insofar as assessment is concerned.

The East Kootenay (essentially the Rocky Mountain Trench) is known throughout the world to big game hunters and probably supports greater numbers and more varied species of big game than any comparable area in North America (Pearse and Bowden, 1966). The area also supports a large waterfowl migration and production habitat, large populations of upland birds and a freshwater sport fishery of high quality. The western component of the Kootenay region lacks the variety and numbers of wildlife found in the Trench but does contain fair populations of big game, an excellent fishery and one of the largest waterfowl staging areas of the interior of the Province. Besides these consumptive elements the broad Kootenay region is well endowed with other fauna which augment the importance of the area for a broad spectrum of wildlife use.

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Qualified estimates of big game populations have been suggested for the East Kootenay by Pearse and Bowden (1966) and give some idea of the kinds and numbers of animals found in the area:

Deer (mule and whitetailed)	60,000 - 80,000
Elk	20,000 - 25,000
Mountain goat	15,000 - 20,000
Moose	7,000 - 8,000
Bighorn sheep	2,000 - 3,000
Black bear	1,500 - 3,000
Grizzly bear	500 - 1,000
Caribou	200 - 400
Cougar	250 - 750

#### Hunting and harvest

The Kootenay, which comprises about 8% of the provincial land area, contains about 10% of the resident hunter population and is visited by hunters from other parts of the province as well as many from outside B.C. Some appreciation of the relative hunting intensity sustained by the region and the game harvest it provides may be seen in the following 1970 Game Harvest Questionnaire Analysis (Department Recreation and Conservation):

<u>Species Hunted</u>	<u>Estimated No. Hunted</u>			<u>Estimated Kill</u>		
	<u>Kootenay</u>	<u>Province</u>	<u>% Htg. Koot.</u>	<u>Koot.</u>	<u>Province</u>	<u>% Koot.</u>
Mountain caribou	68	2,588	2.6	7	949	0.7
Deer	16,765	105,512	15.8	7,023	65,830	10.6
Elk	6,801	7,801	87.2	1,469	1,638	89.6
Moose	3,183	42,548	7.5	683	16,450	4.2
Goat	657	3,774	17.8	151	1,386	10.9
Sheep	245	1,278	19.2	30	248	12.2

From the above, the importance of the area for big game hunting, especially for elk, sheep, goat and deer is substantially demonstrated. The low ranking of caribou and moose is largely a reflection of their low regional density and accessibility.

To the big game harvest can be added a fairly substantial amount of hunting pressure and harvest provided by both upland birds and waterfowl, ranging from 17,000 to 40,000 birds for each group (Taylor, 1960).

#### Economic values

Pearse and Bowden (1966) estimated that in 1964 a total of 15,000 hunters used the East Kootenay for some 147,000 hunter-days. This would mean a Kootenay regional total of not less than about 200,000 hunter-days, which on the basis of the East Kootenay study, would approximate some \$2.5 million spent in B.C. on wild-life-based recreational activities.

Water Control and Effect on Wildlife

The wildlife environment in its undisturbed state is subject to many natural impacts which may be imposed with adverse results rather suddenly or over a long period. Often what may initially be a catastrophe in time becomes a benefit through subsequent development of conditions favorable to animal populations in the affected area. Fire is an example of a natural impact of this type, which, though initially devastating, is followed by seral successions which return the environment through periods of high suitability for animal use. However, artificial dislocations to the environment through the extensive flooding that accompanies operations such as the Columbia Treaty and proposed McNaughton projects are premanent and offer little opportunity for ecological recovery. Water depth and seasonal fluctuations in pondage level between water storage and drawdown are great and occur with such regularity that conditions for seral establishment common about naturally formed water bodies are minimal. Instead, these artificially manipulated situations present periods during which the environment becomes aesthetically degraded and sterile. It may be of some value to fish perhaps, but of little or no value to terrestrial wilflife. About the best that can be said for such developments, from an ecological view, is that some are less damaging than others.

Although an accurate and complete assessment of water impoundments, diversions and control regimes, insofar as their influence on wildlife is concerned, is lacking for most existing and proposed water management schemes in B.C., some of the more obvious impacts imposed by the various projects are considered for game species below:

Columbia Treaty-Libby Dam

Losses to wildlife

Birds - Some 350 acres of marsh productive mainly of Canada geese and some ducks will be lost through the flooding of the Kootenay River and considerable ruffed grouse, sharp-tailed, grouse, Franklins and blue grouse habitat will also be destroyed. Some displacement of ospreys, great-blue herons and golden eagles from the pondage area is suggested (Smith, 1969).

Mammals - Ungulate big game species will be most severely affected by the Libby operation. Smith (1969) estimates that flooding will destroy about 18,000 acres of critical winter range for some 6,000 white-tailed deer and 500 elk. The possible encroachment of cattle on the remaining surrounding game winter ranges will intensify this loss for wildlife, particularly for bighorn sheep and mule deer. Some fur-bearing species, mainly beaver will also be adversely affected.

Economic losses for the Libby project represented in the reduction of ungulate game were estimated to have a capital

value of \$1,551,000 with annual benefits of \$115,000 (Pearse and Bowden, 1966).

Gains to wildlife - Nil

Columbia Treaty - Duncan Dam

Losses to Wildlife

Birds - There is a lack of recorded field data for Duncan Lake and Duncan River waterfowl populations using the area, but reports suggest some Canada goose production and some duck production occurred here regularly in the past. Greatest habitat losses resulting from the dam will affect several square miles of C.L.I. Class 3 flood plain marsh above Duncan Lake.

Mammals - Ungulate game, mainly deer and elk, would suffer low to moderate losses of prime C.L.I. Class 3 and some Class 2 winter range. Some fur-bearing species might also be displaced particularly on the upper Duncan River flood plain.

Gains - Some increase in water area for migrating waterfowl but of no beneficial significance. No gains for mammals.

Columbia Treaty - Arrow Dam

Losses

Birds - Since there is relatively little marsh involved in the Arrow Lake complex and because topography imposes strong

limitations on the usefulness of these wetlands for waterfowl the effects of the Arrow Dam is minimal on an environment already naturally poor (C.L.I. Class 6) for migratory birds. Waterfowl use of the area is typically low.

Mammals - Big game populations about the Arrow Lakes are of relatively low numbers and consist almost entirely of deer. A few elk occur on the north side of the south end of Lower Arrow Lake. Since the slopes rise relatively steeply from each side of the lake shores flooding affects only a limited amount of moderately rated ungulate (C.L.I. Class 3) winter range. Hence the Arrow Dam impact on game and fur species of the region could be considered low, or at worst, moderate.

Gains - Nil.

Columbia Treaty - Mica Dam

Losses

Birds - The flooding of the Columbia River valley by the Mica Dam will inundate some 40 square miles of river marsh extending east from Bush Lakes up the Bush River and south on the Columbia River to Beaver River. A smaller area of similar habitat about Kinbasket Lake will also be flooded. These are substantial portions of the upper Columbia system which are of moderate value (C.L.I. Class 3) for waterfowl as staging areas and for some production of Canada geese. Waterfowl densities



are generally light except during the late summer and fall months. The impact on both migratory and upland birds (ruffed and Franklins grouse) could be classed as moderate when these areas are compared with the prime marshes and lowlands of the Columbia between Blaeberry and Canal Flats. The latter habitat contains the largest breeding population of Canada Geese in B.C. and has been estimated as high as 800 pairs (D. A. Munro, 1948). The extensive flooding of the Canoe River from Boat Encampment almost to Valemont is of little consequence because of the generally low quality (C.L.I. Class 6 and 7) of the area for waterfowl use.

#### Losses

Mammals - The area from Beavermouth to Boat Encampment along the Columbia River is of moderate value as range for moderate densities of moose, caribou and elk (C.L.I. Class 3). **About Boat Encampment range quality declines to class 4 or 5 and continues as class 4 up the Canoe River to Hugh Allen Creek. Ungulate densities are relatively low here but improve on the class 3 winter ranges from Hugh Allen Creek to Valemont. The general impact of the Mica Dam on game and fur species is generally of moderate degree.**

McNaughton Proposal - Dorr and Bull River Dams

Losses - Birds - Small marshes at Waldo and Big Sand Creek on the Kootenay River flood plain would be lost. These are prime rated (C.L.I. Class 3) lands of moderate capability for waterfowl production and some goose nesting occurs here annually. Smith (1969) doubts that flooding would significantly affect migrational use, but substantial loss of grouse habitat can be expected.

Mammals - A moderate amount of prime big game winter range of critical value to mule and white-tailed deer, elk and moose would be lost on the flood plain and lower benches of the Kootenay River.

Gains - Nil

McNaughton Proposal - Bull River - Luxor Dams

Losses - Birds - Some ponds of prime quality (C.L.I. Class 3) for waterfowl production would be destroyed on the flood plain and lowlands of the Kootenay River from Bull River to Canal Flats. Heavy loss of over 30 miles of excellent migration and production marsh along the Columbia River from the north end of Columbia Lake to Edgewater would result from flooding and drawdown over the existing marshlands. Goose production would be the major waterfowl loss and ruffed grouse would be the upland bird species most seriously affected.

A secondary impact of importance might be expected in the West Kootenay region between the Canada-U.S. border and the

south end of Kootenay Lake. Here the diminished flow of the Kootenay River could adversely change the amount and quality of the existing wetlands, which at present comprise one of the most important staging areas for waterfowl in the B.C. interior.

Mammals - The Bull River-Luxor structures would cause very substantial losses of prime quality big game winter range of critical value to mule and white-tailed deer, elk, moose and bighorn sheep. Loss of habitat would also be heavy for muskrats and other fur-bearers of the Columbia flood plain.

#### Gains

Birds - No gains of value.

Mammals - Some possible increase in the amount of land available to ungulate mammals on the flood plain south of Kootenay Lake. This might be accompanied by losses in marsh habitat used by fur-bearing species.

## Summary and Ranking of Project Impact on Wildlife

Any attempt to assess the impact of environmental changes imposed on wildlife by the various components of the Columbia Treaty and McNaughton proposals must acknowledge the limitations of existing biological information. The severity of these impacts varies with the major animal groups involved, the degree to which the quality and quantity of environment is affected, the density of total wildlife numbers and the importance of the affected environment to their welfare. The following is a subjective impression and ranking of the various water management operations as resolved from a consideration of these factors.

1. From the total wildlife view the McNaughton proposal would seem to have had the greatest adverse impact of all projects. It would have been destructive of the greatest amount of high quality, most heavily used critical big game range and important waterfowl migration and production habitat. It would have affected the greatest animal numbers and would have involved the greatest loss to the economic return generated by wildlife in the region. The 123 miles of river bottom from the U.S. border north to Edgewater contains the most and best waterfowl and big game environment of the total impoundment areas.
2. The Libby project, though relatively small in area, affected an important, much used big game winter range of considerable recreational and economic significance. It also had value for some upland bird species, though its importance for waterfowl was limited. It ranked second in order of impact suffered.
3. Mica Dam, though the longest in miles of river affected, contained relatively low ungulate populations and lower quality big game range. Waterfowl was the group most disturbed by environmental change but

compared to the quality and quantity of the total Kootenay waterfowl habitat the overall impact was only moderate. Recreational and economic aspects were not significant elements in the impact of this project on wildlife.

4. Duncan Dam was one of the smallest projects in terms of miles of stream flooded. Its importance to wildlife was mainly to the waterfowl component for a moderate production of Canada geese and some ducks. The impact on relatively low ungulate populations would have been through only low to moderate environmental losses.
5. The Arrow Dam, although it affected one of the greatest number of miles of waterways was felt to have had the lowest environmental impact insofar as wildlife were concerned. This was largely a result of topographic limitations which restricted severely the natural potential this area had for waterfowl. The physical extent of flooding imposed by the dam was low and the effect on relatively low populations of waterfowl and big game was minimal.

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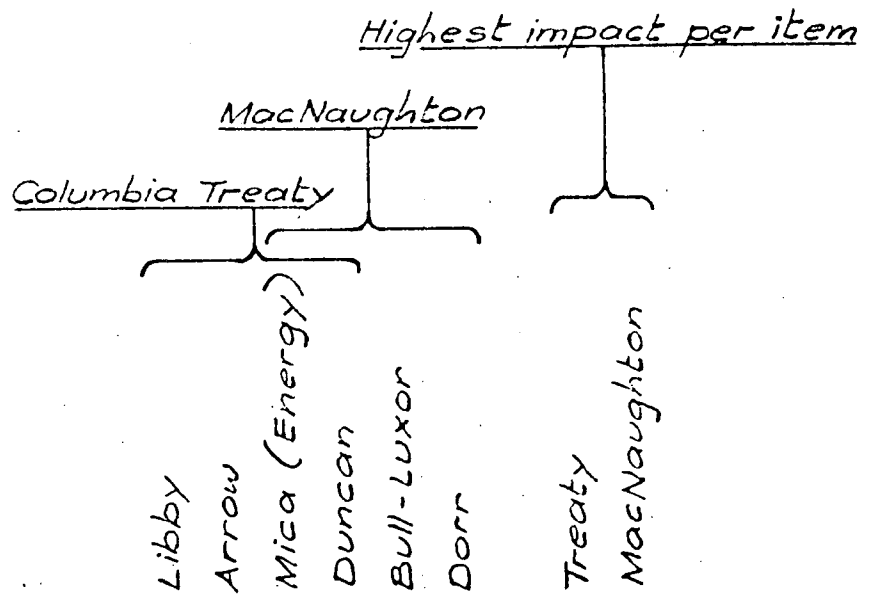
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COMPARATIVE IMPACT MATRIX  
 COLUMBIA TREATY PROJECTS -  
 MACNAUGHTON PROPOSAL



		Libby	Arrow	Mica (Energy)	Duncan	Bull-Luxor	Dorr	Treaty	MacNaughton
MS	Population displacement	1	3	1	1	3	2		✓
I	Agriculture	1	2	1	1	3	1		✓
I/ERL	Forestry	0	3	3	3	1	0	✓	
MS	Mining	1	2	1	2	2	1	✓	✓
	Developed areas	1	2	0	0	3	1		✓
PS	Native people	0	0	0	0	3	3		✓
WS	Parks and reserves	1	0	0	0	3	1		✓
LI	Monuments and sites	1	1	1	0	3	2		✓
MS	Transportation patterns	2	1	1	0	3	3		✓
LI	Recreation	2	3	2	2	3	2		✓
MS	Land stability	No comparative studies							
2/FS	Water quality general	1	1	1	1	1	1	✓	✓
MS	Water flood control	✓	✓	✓	✓	✓	✓	✓	✓
PS	Air quality	0	0	0	0	0	0	✓	✓
ES	Air climate	1	0	1	0	1	1		✓
RL	Flora	2	2	3	2	2	2		✓
WS	Wildlife birds	2	1	2	2	3	2		✓
WS	Wildlife mammals	3	1	2	2	3	3		✓
ES	Fish resident	2	2	1	2	2	3		✓
ES	Fish sea run	0	0	0	0	0	0	✓	✓

Legend:

- 3 - high impact
- 2 - moderate
- 1 - low
- 0 - no impact