

# **THE VALUE OF MOOSE IN WELLS GRAY PARK**

**R. Y. Edwards**

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**British Columbia Forest Service**

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## INTRODUCTION:

This report will show that the moose of Wells Gray Park can be conservatively evaluated as a million dollar resource. This year over 700 hunters were attracted to the park, clear proof that there is need for good hunting, and that good hunting can provide recreation for many people. Over 100 moose were shot. As this report will show, even this inadequate harvest has a meat value alone of \$18,000.00. If each hunter spent only \$30.00, the money exchanged in the pursuit of Wells Gray moose was \$21,000.00. Recreational value is not included in these values.

This report deals with the value of the Wells Gray herd in terms of the meat it produces, and recommends intensive winter range management as the only way to perpetuate this million dollar resource.

## MOOSE PRODUCTION:

The following calculation assumes an equal sex ratio in the park herd. We have figures for females, and there is no evidence to show that male survival is different.

Our figures show that the herd in the fall consists of:

Over 2.5 years	38%
2.5 years	17%
1.5 years	20%
Calves	<u>25%</u> (conservative calculation)
	100%

Females 2.5 years old and older breed in the fall, so at present there are 27 productive females for every 100 animals.

Studies this fall showed 100% pregnancy in cows of breeding age. Twinning is common. The number of embryonic calves per cow is about 1.5. Thus, for every 100 animals, 27 cows each produce 1.5 calves, or 100 animals produce 40 calves. (This assumes no prenatal deaths.)

If this herd is considered as capital, it is bearing annual interest at the rate of 40%!

However, a moose enters the huntable herd at 18 months. There is a potential annual adult herd increase of 40%. But death will claim some of these moose in the two year period from conception to 18 months of age. Mortality in this herd has been very low. However, to be conservative, let us assume that this annual adult herd increase is not 40% but 25%. This is still a high interest rate and will be used in the calculations below.

### **MOOSE VALUE:**

It is estimated by biologists, guides and woodsmen familiar with park moose that the dressed weight of moose from this area averages about 450 lbs. Since this average will decrease as the herd is more heavily cropped and as young animals form a larger proportion of the kill, 400 lbs. dressed weight is a conservative figure.

The value of moose meat is not easily determined. Beef seems to be the most similar meat with commercial value. Beef carcasses sell for about \$0.50 per lb. to Forest Service camps. There are few beef cuts available at \$0.50 per lb. in our butcher stores, which further supports using this figure as the value of moose meat. Thus, \$0.45 per lb. would be a conservative value to place on moose meat.

Thus, the meat value only of one moose is about 400 lbs. x \$0.45 = \$180.00 when figured conservatively. Other people have estimated the value of a moose at from \$200.00 to \$250.00.

Thus, the annual crop from 100 moose is 25 moose worth \$4,500.00, a herd of 1,000 moose produces a \$45,000.00 annual harvest, and a herd of 2,000, about the size of the present park herd, produces meat, on a sustained basis, worth \$90,000.00.

On the basis of usual industrial investment, a herd of 1,000, yielding \$45,000.00 annually, is the equivalent of a \$900,000.00 investment yielding interest at 5%, or of a \$2,250,000 investment at 2%.

In land use, value has little meaning unless related to area.

In this moose herd, as in many ungulate herds, winter range is the key to herd survival. Nothing short of agricultural or urban development can destroy the summer range. The hundreds of square miles of summer range need practically no management. The survival of this herd of 2,000 depends almost entirely upon maintenance of winter range, which now covers about 100 square miles.

This is a happy situation, wherein perhaps only 1/10 of the land used needs management to perpetuate the resource. Thus, again using a herd of 1,000 animals as a datum, these moose are present largely because of about 50 square miles of winter range, and the \$45,000.00 annual crop from this herd is largely the result of these 50 square miles. Thus each square mile produces \$900.00 each year, and each acre \$1.41.

If each acre were used for 150 years to produce moose instead of timber, that acre would have produced \$42,469.00 using compound interest at 5% by the end of the 150 year period, or \$1,303.50 at the low banking rate of 2% ( $C_n = \frac{a(1.0p^n - 1)}{1.0p - 1}$  where C is the total in "n" years of an annual payment "a" bring p%).

In addition, when timber values are calculated, the cost to harvest must be deducted from the crop value. In wildlife cropping, recreation has positive and not negative value, hunting is recreation, so harvesting value is added to crop value to determine the final value.

The value of this moose herd is calculated for meat alone, and there has been no attempt to assess aesthetic, recreational or research values.

## **MAINTAINING THIS VALUE:**

This production cannot be sustained naturally upon a perpetual basis. Moose winter range of the excellence required exists only in open, willow covered burns. In the Clearwater Valley this type of vegetation begins to disappear about 20 years following burning. Encroaching conifers, by this time, begin to take over the range. The result is that if the vegetation is not managed, moose populations and the harvests from them decline as coniferous cover increases. As a result, management is faced with two alternatives:

- (a) Let succession destroy the range, but at the same time ensure proper cropping through the rise and decline of the herd by offering hunters adequate but temporary developments and services.
- (b) Through vegetation management, ensure a sustained game yield, and offer hunters permanent services and developments.

The first, (a), is the usual method in practice. It consists of cropping game, but not of controlling the size of crop. This is similar to liquidation logging.

The second, (b), is not yet widely practiced, except for agricultural game and some aquatic fur species. This procedure is like true forestry since it ensures sustained yields.

A sustained yield of moose in Wells Gray Park would be a financially justified endeavour, considering only the meat values of the crop. This assumes, however, that the government department concerned will not show a profit on the venture, but rather that the public will receive good return for expenditures on their behalf.

In managing winter range for 1,000 moose, on a 20 year rotation basis, if only half of the value of each harvest is returned to the resource in the form of management, there is an average annual expenditure allowable of \$0.70 per acre, or if treated only every 20 years, of \$14.00 per acre.

Management methods cannot be fully discussed. This would be a pioneer venture, and preliminary experimental treatment would be absolutely necessary.

Three methods could be tried to manage moose range:

- (a) Herbicidal treatment of deciduous cover to kill old growth and to induce suckering. Coniferous trees must be individually poisoned or cut.
- (b) Vegetation removal with mechanical equipment.
- (c) Controlled burning.

Of these, the expense of the first two would be many times that of burning. Burning, however, involves certain risks which will decrease with knowledge and planning. It also involves the greater obstacle of being opposed by a solidly entrenched prejudice against fire of any kind upon public lands.

Experiment may show chemical and/or mechanical treatment financially justified. Controlled burning, however, would be so much cheaper that its trial seems justified.

Burning could yield valuable information on fire, and could be regarded secondarily as fire research. It would also serve to train personnel in fire fighting methods.

## **CONCLUSIONS:**

The intensive management of moose winter range is financially sound. Such a program must include those lowland areas not now in the park, but which are proposed as part of the Battle Mountain addition to the park.

Burning would be the cheapest method for perpetuating the moose herds of the area, although chemical and mechanical methods are probably justified.

Brief experimental work would soon show success and costs of the three methods.