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Panel members are requested to address themselves to four questions.

1. Are alpine and other bighorn sheep winter ranges in danger of destruction?
2. Should sheep ranges be preserved and/or rehabilitated?
3. What is being done today to achieve a better harmony and to prevent permanent damage to critical ranges?
4. What should and can be done in the future and what are the possibilities for preventing protection and reclamation?

I came to Alberta in 1968 and there was very little work or concern expressed about sheep habitations except for in a few areas and although there was probably more concern expressed, it was known by only a few informed people. In 1969 we got some idea of some of the big coal mining activities going on and in 1971 we learned the extent of exploration plans. We were faced with antiquated legislation at that time. Government mechanisms such as the Environment Conservation Authority have since been created.

The Fish and Wildlife Division was caught in the middle, literally - no staff to handle the situation. There now is a Mineral Surface Rights Committee and the Fish and Wildlife Division have a representative on this Committee. We now have more staff - two biologists on land use and one technician and are in the process of setting up a land-use/habitat section with a section head equivalent to our research and management section heads.

WILDLIFE - MINERAL RESOURCE CONFLICTS
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The comparison of the conflict between coal developments and bighorn sheep in Alberta has been based upon sheep winter ranges. Our feeling is that while summer ranges are vast, wintering areas, which occur in light snowfall zones or on wind swept slopes, are in short supply. In addition, sheep appear to be labile enough in the summer to avoid disturbed areas, however they are physically and perhaps behaviorally unwilling to do this during winters.

At present we have some 388,000 acres of bighorn sheep winter range in Alberta, outside of the National Parks. Approximately 80,000 acres, or about 21 per cent of this area, lies within existing coal dispositions. Since about 90 per cent of the mineable coal properties in the Province are now under lease, the general picture reflected by this data should be representative of what we can expect in the next decade.

These sheep winter ranges, which lie within existing coal dispositions, may be referred to as "conflict areas".

The natural sequence which companies follow in developing a mine area, could generally be summarized as follows:

1. obtain mineral lease for the area
2. general surface exploration
3. intense exploration of specific small areas
4. develop mine site, plant and begin mining
5. full operation - strip - spoil areas added underground

Of immediate concern for these conflict areas therefore, is not only their geographic location but also their relative position in this timetable of events. At present, some 3,000 acres of the conflict area have been explored by surface drilling, trenching, addits, or a combination of these methods. This represents about 4 per cent of the sheep ranges within coal leases. In addition, exploration in the near future has been proposed for some 9,000 acres of the conflict area, or 11 per cent of it. Therefore, some form of coal exploration has or will occur in about 14 per cent of the conflict area, or 11,000 acres.

Without a more detailed examination, one is tempted to conclude that the coal industry has really only set it's sights on some 11,000 acres of the Province's 388,000 acres of bighorn winter range. Extrapolating further a 3 per cent loss to our sheep herd of 4,000 animals, represents 120 head. Unfortunately this does not represent a realistic basis for comparison because individual ranges may be completely destroyed in some areas, while other areas are not touched. Compound these losses are range shrinkage due to forest succession, improved access, increasing harassment year-round, and a host of other problems.

We have prepared detailed resource maps of two areas which we have investigated to date. An examination of these small areas in detail may help to clarify the nature of the problem.

The Ya-ha Tinda area is well known for its elk and bighorn sheep populations: the large grassy flats and slopes of this area are the result of an unique microclimatic phenomenon which prevents forest encroachment of the grassland climax.

The first slide shows the physiographic feature of the general area, and depicts the critical range of elk in orange and bighorn sheep in blue. The Federally owned Ya-ha Tinda ranch is outlined in black in the center of the map.

The elk population numbers about 1,500 animals which move through the area during fall, winter and early spring, retiring to the park to the west during the summer. The total area needed by these elk is in the neighborhood of 37,000 acres. Some 200 bighorns reside on the winter ranges (in blue) using about 10,000 acres.

The second slide shows the domestic grazing pattern superimposed on the base map. About 710 head of cattle, and 330 horses use the area annually, however, little conflict with elk and sheep occurs except on the Ya-ha tinda ranch area. The grazing allotment surrounding the ranch property is reserved for big game use. The horse grazing presents the only serious overlap with big game. The ranch area is entirely within the critical area for elk and the Brewer's 110 horses, to the south, also overlap with the elk.

The third overlay projects the existing coal and petroleum and natural gas leases. They overlap with everything - including each other.

The sheep - coal conflict areas include about 5,000 acres or 50 per cent of the critical winter range. The range south and north of the ranch has undergone extensive exploration. If the coal property south of the ranch is developed, this land (the largest in the area) will be total climated. In situations like these, statistics can be misleading when based only on area calculations. If all the coal properties on this map were developed by strip methods, only two isolated and relatively insignificant ranges would remain intact. It is doubtful that sheep could survive at all on these areas.

The conflict between coal and elk is not severe. Some 8,000 of 37,000 acres are involved, or about 27 per cent.

If the oil and coal leases are combined, only 400 acres of sheep range and 4,000 acres of elk range remain unaffected. However, the method of resources' extraction must be considered here.

To the previously mentioned uses may be added:

1. 200 horses on the Ya-ha Tinda ranch, winter and summer require 200+ tons of hay plus grain for over winter.
2. a sulphur gas plant, and two proposed new ones
3. a proposed recreation complex which could include skiing, golfing, motels, snowmobiles.
4. a small logging operation exists in the area.
5. good fishing in the Red Deer River and in Klein and Eagle Lakes.
6. it should be noted that the eastern slope of the Rockies has been designated for watershed conservation.

A second area which involves one herd of sheep and the various dispositions of the land on which they reside, is known locally as the Sheep River area (or refuge).

The Sheep River bighorn sheep and mule deer herds are among the most accessible in the Province. Typically such herds exist on very small critical winter ranges, and at Sheep River these small grassy slopes are linked by the river canyon which the animals use as a travel route. The total winter range acreage is small, about 1,200 acres, of which 200 acres lies within coal leases. Almost the entire sheep range conflicts with petroleum and natural gas leases.

Other major users of the area include grazing by domestic stock, forestry and logging operations on the periphery of the area, and on important highways bisecting the area.

Recreation conflicts are anticipated in the near future as snowmobiles and A.T.V. become more prevalent. In such accessible areas, poaching may become a serious problem.

I hope these examples can serve as a basis for discussion by the other members of the panel. In the past such discussion has been hampered by the lack of comparative data which reflects the magnitude of the various conflicts.