

RECLAMATION FOX UNGULATES IN SOUTHEASTERN BRITISH COLUMBIA

M.G. Stanlake

D.S. Eastman

E.A. Stanlake

Ministry of Recreation and
Conservation

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RECLAMATION FOR UNGULATES

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We have heard a lot about land use planning in reclamation -that reclamation should start before construction. However, there is another very important question that must be answered even before we start reclamation planning: why should we bother reclaiming this land at all?

Ideally, we want to return the land as quickly as possible to a productive state. If the land originally had no productivity, there is no need to reclaim it. Therefore, we have to find out what the capability of the land is before we decide WHY we are going to reclaim it. Then we decide HOW to reclaim it. It is not always possible to make the land look the same but we should strive to make it produce according to its best capability.

One important capability of land is the production of wildlife. Since some mines occur on valuable wildlife habitat, the Wildlife Research Section of the B.C. Fish and Wildlife Branch began a study in 1974 in southeastern B.C. on wildlife-mining interactions with respect to reclamation. In this talk, we give some general results and make some recommendations for reclamation based on our experience.

In the area we worked on, the land had several productivities, two of which were wildlife and aesthetics, i.e. visual appeal. Once the land surface is disturbed, the aesthetic value is lost. Most people do not consider a reclaimed pit aesthetically pleasing. Therefore, in our study areas, the productivity we wanted returned was the ability of the land to produce wildlife. The recommendations that we make are

based on the idea of returning the land to a productive state for wildlife as quickly as possible.

I will now describe briefly the results of our study and then give our recommendations and why we made them. The study was done in two parts:

1. the use of reclaimed land by wild ungulates; and,
2. the effect of coal exploration activities on sub-alpine winter ranges.

In the reclamation study, we found that ungulates use the reclaimed areas and that this use is increasing. However, use is still lower than for some of the more important surrounding natural plant communities. Full details of this study are in the final report (Stanlake, Stanlake and Eastman, in press).

In the exploration study, we found that the main effect on ungulates was the loss of range. The roads themselves posed no serious hazard to animal movements in the areas we studied. However, we did not study the effects of the increased access on harvest of wild ungulates: this topic bears careful study. A final report for the exploration road study is now available (Stanlake, Stanlake and Eastman 1976).

With this information and bearing in mind what I said earlier, I will go through our recommendations, starting with the ones for reclaimed strip mine.

1. During the mining of an area, leave "islands" of natural vegetation wherever possible. These "islands" should be planned for in the
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initial stages of the mining operation.

The reason we make this recommendation is quite simple, the islands provide not only a seed source for plants, but also cover for wild

ungulates. It has been shown that wild ungulates need "islands" of this type to utilize fully open areas such as a reclaimed strip mine.

The next three recommendations go together. I will go through them first and then give the rationale behind them.

2. Conduct more field trials on the suitability of native forbs and grasses for the reclaimed areas. In choosing native forbs -and grasses, emphasize their palatability and nutritive value to wild ungulates.
3. To enhance the reclaimed area for wild ungulates, plant more trees and shrubs, preferably browse species such as saskatoon and willow. For this, nurseries are required as well as site requirements for each species, e.g. soil, elevation, aspect, slope, precipitation, and amount of sunlight.
4. To increase slope stability and also to increase wildlife use at the beginning of the reclamation process, transplant clumps of natural grasses, forbs and shrubs onto the disturbed areas.

We would like to see natural vegetation back on these areas, since wild ungulates are most adapted to this type of vegetation. We emphasize palatability of this vegetation since it is usually no good having an area covered with vegetation that wildlife cannot use. It is conceivable that an area could have 100% cover, but if the vegetation is not palatable then the area is not reclaimed for ungulates at all - it is only green.

5. To reduce the number and variety of species planted, a correlation between species and area should be done to determine the most suitable species (preferably native) for a particular area.

This recommendation is pretty well self-explanatory.

6. Define the influence of various application rates of different fertilizers on annual growth, seed production, nutrient content and utilization of reclamation plant species. This information could then determine the most effective way to hasten the reclamation process through fertilization.

(Slides were shown to illustrate the difference between an area fertilized only when seeded - Placid Oil Mine - and an area fertilized annually - McGillivray Pit.) Proper seeding followed by inadequate maintenance fertilization will waste time and money.

The next set of recommendations are from the exploration study. I will try to give you an idea of the kind of thinking that went on when we were looking at these areas and then show you how the recommendations came to be. Originally we thought that exploration roads were a hazard to wildlife movement in that they would block migration routes across ranges and also that they would cause loss of range through destruction. We set about looking at the problem of the roads being a hazard and really to our surprise, we found that, in our opinion, on the roads we investigated, there was no hazard.

We were then left with range destruction as the main problem created by exploration roads. Therefore, our recommendations for reclamation of exploration roads are geared towards alleviating the destruction and returning what you can to production as quickly as possible.

- 1.a. Roads should be constructed in such a way as to protect the stability of the sidecast. On climbing roads that are pushed through unstable materials or, where there is a large unstable sidecast, the road should be insloped, adequately ditched and the water removed where safe to do so. In other cases, roads should be off-sloped where, in the opinion of the reclamation section involved, the sidecast material is stable enough to handle any ground-water that may seep into it.

- 1.b The sidecast and cut bank should be seeded as soon as possible after construction. In this way, vegetation can start immediately. From this time on, under no circumstances should any new material be pushed over the sidecast. In reopening the roads in the spring, any slump should be excavated and hauled away. If the road surface needs grading, the material should be graded from both sides towards the centre.

Bearing the above recommendations in mind and also remembering that we found these roads were not a hazard to wildlife movement, we make the following recommendation:

2. Exploration roads need not be resloped.

In many cases, refilling road cuts with sidecast material is infeasible because this sidecast is far out of reach of any conventional machinery. Any operation of this kind would only partially refill the cut and still leave a smaller sidecast and cutbank. More importantly, any resloping activity would destroy existing vegetation that has established, be it native or introduced.

When roads are resloped, you are getting back to exactly the same situation as when the road was first constructed - there will be new unstable material with no vegetation on it. No area is gained for wildlife and you are also going to lose the years of productivity that could have been gained if you had started work as soon as the roads were developed.

An example of the extent of the natural revegetation that can take place on these areas and that would be destroyed if the roads were re-sloped were illustrated by two slides, one showing an eight year old road and the other showing a road three years old. To bring machinery into these areas and destroy this vegetation just to attempt to return the land to its original shape would be a crime.

We offer a few more recommendations that could minimize damage to winter ranges.

3. The road should be kept open and the drainage maintained until the vegetation of the sidacast is complete. In this way, any slumps after the road is closed that may divert runoff into the sidecast will not be harmful. When the road is closed, the surface should be seeded and access to the road carefully regulated.
4. All adit refuse should be end-hauled and under no circumstances pushed down the hill.

It is very difficult to revegetate coal on southwest-facing slopes.
5. On roads where the cutbank is very steep or overhanging for some distance, small runouts should be cut down the cutbank at major animal trails to minimize any interference to animal movements.

One final recommendation concerns the role of the reclamation section in a mining company's organization. It has an indirect effect on reclamation for wildlife.

6. The reclamation section of any company should have control over the placement (this means the avoidance of specific danger areas where possible since the general placement of the roads will be dictated by the needs of the geologist) and construction of all exploration roads.

Only someone who is on site at all times will have the necessary intimate knowledge of an area to decide on the best possible approach to any problem. As these people will be responsible for the eventual reclamation, it is only reasonable that they should make the ultimate decision and interpretation of any recommendations for exploration road construction and reclamation.

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