

COMMENTS ON TRANSPLANTING

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I have found these last presentations on bighorns quite fascinating to say the very least. A number of years ago I wrote a number of states and provinces trying to decipher the results and deficiencies of mountain sheep introductions.

At this time I started corresponding and looking into European literature on introductions of animals which biologically are rather similar to mountain sheep, namely the ibex. However, I also had some experience with the movement patterns and the manner in which domestic goats in the feral state had taken over the landscape. This stimulated me toward thinking along somewhat unusual lines as far as the introduction of animals are concerned, animals which are quite different in their biology from such animals as have been successfully managed on this continent. The successfully managed species are white-tailed deer, moose, pheasants, rabbits and also waterfowl. These are characterized by an ability to produce a surplus of young, a surplus of young which is scattered to go and establish home ranges and new populations. This makes a lot of sense in the biology of moose. You find that when habitat conditions are bad, and therefore restricted, moose are confined to alluvial bottoms or other refuge habitat. You may also find them confined to subalpine areas where they can winter. It is from these refuge areas that they can disperse into new habitat created by forest fires so that forest fire is, in a sense, a very important part of the habitat of moose. Moose have the adaptability to scatter their young and occupy the newly created terrain. It is quite different with mountain sheep. Mountain sheep belong to a group of animals that does not appear to disperse youngsters. They conserve youngsters. Everything I know in the biology of these animals is consistent with the view that when dispersal does take place it takes place in different ways. I have noticed a few examples that were mentioned here - for instance, you mentioned that just prior to the die-off you found your sheep were dying off due to the introduction of domestic sheep into the area, and behold, a number of miles away you discovered a little band of sheep.

The literature suggests that dispersal is correlated with ecological hardships or catastrophies and is undertaken by groups, not by individuals. For instance in the ibex introduction in Switzerland - and Switzerland has done a lot to introduce the ibex - they found that the species dispersed along mountain ranges, not across mountain ranges, and that they would disperse in correlation with relatively hot, dry summers that produced a decline in the forage production. In other words, when conditions got tight you found that groups of ibex - not individuals - moved out and began colonizing the areas of the land that previously had not been colonized.

I have been further fascinated by the figures that you have produced from Montana. They corroborate and expand considerably on what previously was sent to me from Montana. The ratio of successful to unsuccessful transplants was

rather fascinating, too, because not all of the transplants have been successful. There are some theoretical reasons why some transplants will not be successful. If you have a continuous piece of habitat, uninterrupted by bands of timber or timbered valleys, then one expects a gradual dispersal of sheep throughout that habitat. If, however, the habitat is broken up into small patches, such as is normally found in the Canadian Rockies, then one cannot expect to find sheep reoccupying these patches - without some help from us. Introduce them in the conventional manner and you can rest assured that they will colonize the immediate vicinity of the release site, as long as the habitat is continuous. (It could happen, of course, that under some circumstances the introduced population overshoots carrying capacity and groups of sheep wander off in search of forage. However, this has certainly not been the rule, although it may have happened.) Under natural conditions small patches of habitat are held together by very precise migratory movements, and home range knowledge appears to be maintained traditionally. Young following old accept the home range patterns of the old. This has to be somehow duplicated during reintroductions of sheep into mountains with patchy sheep habitat.

A number of years ago I thought that the best way to do this would be to take young sheep and literally imprint them on human beings and lead them around through this countryside. However, first you have to know your area very well, you have to plot the range, you have to get a pretty good idea of where they will be able to survive in winter and summer and fall, and so on. Then lead them through this area, so that they can develop knowledge of this country. I thought at that time I had hit upon something original, very outlandish, ridiculous according to conventional business. I am aware of that, but in fact I had been upstaged by a good number of years by a gentleman you may know; his name is Dr. Tom Bergerud. Tom was faced with a problem of reintroducing caribou in Newfoundland. At first they would dump caribou in one place that looked like caribou country, and the animals would take off and you would never see them again. This is what you would expect when you have a very open piece of countryside that does not confine them naturally. They take off.

What Tom did was just what I have indicated, but he made another elaboration which is worthwhile noting. He and his helpers took the caribou calves, imprinted them, and led them around the area where they wanted the population to be. Then they put in (and this is an important point) wild calves they had caught, so that now you had the imprinted ones as well as a group of wild ones that did not have too much experience with human beings. The wild ones adopted the same route that was now used by the animals that were familiar with the country.

True to expectations, because if you raise young ungulates you tend to imprint them, the males tend to mistake you for a rival when they become sexually mature. It can be quite embarrassing - very embarrassing, as a matter of fact - and it can also be very troublesome as was found out. The caribou bulls in the group that were more than 2-1/2 or 3-1/2 years old were found wandering around lumber camps in Newfoundland with rather unpleasant results, as one logger was rescued from underneath antlers, a number of bulls were shot, and a number of them had their heads caved in by axes. So what can you predict after someone has shot all the marked animals and the populations have been permanently ticking on and are being hunted at the present time? What I am saying, therefore, is that leading young sheep is not nearly as ridiculous as

it sounds, because something similar has in fact been done and does work. So this is one of the techniques that could be used.

I note that there is a tone of sadness involved in bighorn management. The tone of sadness is, "Look, we have been trying to look after these animals for so many years, and they have not dispersed to occupy their original state or increased to their original population densities." I do not see any reason why we should not be able to reintroduce and establish new sheep populations. I think it is possible to do this, provided the land is available and provided we are willing to experiment with some rather ridiculous techniques at the same time. There is no reason whatsoever why our children and grandchildren should not look at multifold populations of the bighorn populations that are available today. I think that we have a great job ahead of us. I do know that reintroductions with various methods have been partially successful, and I believe you can get better results. I am an optimist as far as bighorn sheep and their future are concerned. Thank you.