

Impacts of Hunting and Response to Five Year Hunting
Closure on Idaho's Pahsimeroi River Mountain Goat Herd

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ABSTRACT

Idaho's Pahsimeroi River mountain goat herd has been inventoried by helicopter since the 1959-60 winter. Between June 1969, and February 1975, this herd was intensively studied to ascertain factors that contributed to its decline. The impacts of hunting were monitored by maintaining constant harvest levels during the first three hunting seasons of the study then followed by three years of manipulated harvest, the intent being to harvest enough animals each year to equal the previous year's kid production. The herd declined in direct proportion to the exploitation. Contrary to the law of compensation, the production of kids did not respond to exploitation but dropped in proportion to the total number of goats. The proportional decline in the ratio of adults to kids was highly significant ($r = 0.9834$). Based on changes in distribution and movement patterns of 27 marked goats, it was demonstrated that adult nannies dominate the winter social structure. The dominant nannies consistently selected the same winter ranges which were steeper, having greater snow shedding characteristics than adjacent, shallower cliffs utilized by subordinate animals. The key factor controlling winter range selection appeared to be physical (snow shedding) characteristics of the area and not available food supply. When exposed to exploitation, harvested dominant animals were replaced on their winter ranges by subordinate individuals from adjacent ranges. Contrary to the basic assumption of traditional game management philosophy, this goat herd failed to redistribute itself in relation to available food supplies following exploitation. Instead, redistribution occurred in relation to terrain. Therefore, food supplies available to unharvested animals failed to increase and harvest mortality was considered additive and not a compensatory form of mortality. Following the 1974 hunting season, the area was closed to all forms of exploitation and population trends were monitored at the same intensity as previously established. During the ensuing five year period closed to exploitation, kid production has increased and returned to conservative harvest levels. Total population numbers have not responded and remain static at post harvest levels. Herd recovery will depend upon the recruitment of expanded kid production into the re-productive age class.

QUESTION - RESPONSES

Malcolm Ramsey: What you've just described really does fit in with John's (Youds) modeling in that when you hammer the adults and ended up with a population decline and then when you stopped the hunting even though the productivity went up, that had very little influence on the rate of increase which is just as his model predicted.

Lonn Kuck: Yes. Time will tell.

John Youds: Lonn, I just wanted to comment about that r value presented since you stopped hunting. That was calculated for a 5 year period and in order to compare it with r values I was discussing you have to divide it by five. So it's actually value in comparison to mine of .033.

Daryll Hebert: Lonn, just one comment of interest. When I came down to the goat conference in '77, I had similar information in terms of what was happening in the East Kootenaiies, that the heavier you hunted the lower your population went and also your productivity goes proportionally lower. I was a little frightened when I came down to that because I'd been doing the same arguing in B.C.; talking about additive mortality rather than compensatory. I was getting the same sort of stuff that you are. A lovely piece of information that you had documented very, very well. It has lent considerable support to what's going on in British Columbia now. Ray Demarchi is even convinced and John and I have been modeling his goat populations for the last year, in fact we set up harvest rates on a quantitative basis with those things in mind. Just in the last 3 years, with this type of information, it's changed goat management over a pretty large part of North America. What I would really like to see; for me, in the next 4 or 5 years, I feel that the coastly goat population probably exemplify your principle that you've established more so than any other goat population that I've ever seen, the Rockies or any other part. I hope someday to be able to look at something on the coast. I think that principle is pretty wide spread.

Lonn Kuck: We took an 180 degree attitude towards hunting and it's taken a little bit of time. Our Game Managers didn't want to believe it, our administrators didn't want to believe. I said, "Well, they're finding the same thing in Canada." The guys are coming around and it's really going to benefit the populations of this state.

Jim Bailey: Why do you think you got such an abrupt increase in productivity when you stopped hunting?

Lonn Kuck: I think it's a behavioral response to the removing that adult nanny with kids. We were hunting nannies to the very end there. As soon as we quit killing those nannies that had kids at side, we saw an increase in the number of kids that were in the winter population. I think they were losing those kids in the first few months of winter without a nanny. When we started leaving those nannies out, with kids at side, the first response was we had kids with her. I think that mother was very important for that early survival of kids into the winter. That's the only way I can explain it. We haven't increased the food supply. The distribution is still really restricted, that's right in that real small area. We have not pushed that population out. Once we get that population out on these fringe areas, I'm still willing to except that we will get the same type of production on this population that we do from

introduced ones. There is so much food, out there. That's a pristine habitat just a mile away. That behavioral mechanism has to force those goats out. It's a natural mechanism to disperse animals.

Nike Goodson: I wasn't sure, there is a decline at the beginning that caused concern over the goats, were you hunting the goats during the initial decline?

Lonn Kuck: Yes. We've hunted them since 1954. We started out really low. We had a game manager up here, he was a real killer himself, he liked a lot of blood on the snow. He saw 217 mountain goats and thought we better get in there and protect that range. So he increased it to 40 permits. I came on, I tried a little harder. He was game manager here; he only had so many dollars and was flying the whole Salmon region. Well, I got in there and the goat population looked like it was going up. We interpreted that as an oscillating situation related to forage supply. All that increase was related to effort, my effort. That was the only study area I had. It looked like it was really going up, but the population all along was just going downhill.

Jim Bailey: Did you see any differences in average group size in relation to steepness of slope?

Lonn Kuck: The group size is related, I think in this case, to visibility. In these broken terrains it always stays very low. Our average group size is less than 3 in the winter time and it has stayed about that level. Group size has been significantly altered on the summer range, it's gone down considerably. Does that answer your question?

Jim Bailey: You've got fewer goats?

Lonn Kuck: Yes, just fewer goats.

Jim Bailey: I was think on winter range, steep slopes versus these areas that have been abandoned. Was the group size great on those areas before.

Lonn Kuck: No. It was insignificant, it was so small a difference.

Walt Bodie: Lonn, one comment, you might be a little careful in relating that re-production directly back to stopping of hunting. Because during the late "60's" the Pahsimeroi, deer, antelope and even elk had very low young survival rates and they have increased since "75", "76" and "77" and they are coming back.

Lonn Kuck: It's real interesting, we quit hunting deer the same time too.

Walt Bodie: But, we never hunted elk.

Lonn Kuck: I became very suspicious. I no longer compare mountain goats with anything else.