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To: [Grizzle, Betty](#)
Subject: recreation and denning females
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Hi Betty

I've been looking over the recreation study report some more. I had hoped that there would be more information on individual denning females and their movements relative to recreation, such as what was report in the 2010 progress report. I attached a quote from that report below as an example. I see that there are only 7 reproductive female years, and F1 and F2 were the only females that denned close enough to heavily recreated areas to provide information on their reactions to recreation while denning. Since denning females are the only individuals that are tied to a specific location in their home range (and are probably the most sensitive to human activity), I would have expected to see more emphasis given this class of wolverines in the results and discussion in the final report. When the final report discusses "indirect habitat loss", I have a hard time seeing the evidence for this because it would seem to me that only denning females would (or possibly would) be affected by increased activity. Perhaps other wolverines would be affected by very high intensity over broad areas but there is no evidence for this yet, except possibly the Centennials.. Note the sentence below: "The immediate areas around the dens were not conducive for winter recreation, being in large boulder fields." Talus was an important habitat feature for females. If snowmobiles avoid these areas naturally, we would need to know what level of intensity is necessary for females to abandon these dens. Even if recreation intensified, they may not abandon talus dens. Moreover, would denning wolverines adapt by foraging at night after the recreationists have gone home, as was reported in Sweden years ago?

From 2010 progress report:

"We recalibrated the density maps of the recreation intensity to look only at relative levels of recreation intensity within each home range. At the home range scale, the movements of F1 and M1 are not common in the highest density recreation landscapes in the southern portions of their home ranges but are found in moderate and low recreation areas (Map 12). Alternately, F2 movements are common through the highest recreation density landscapes found within her home range while M2 movements are broadly distributed across all types of recreation landscapes (Map 12). The den sites chosen by F1 and F2 were within landscapes that support lower levels of recreation intensity (Map 12), but were within a few hundred meters of pockets of higher recreation activity. The immediate areas around the dens were not conducive for winter recreation, being in large boulder fields. Still, we recorded snowmobiles within 100 m of the den of F1 on 3 occasions during her denning period between February 23 and February 27. On February 13, a group of 13 snowmobiles came within 65m of the den, traveling below and then around it to climb the headwall of the drainage. Our researchers unknowingly got within 50m of the den site while attempting to download data from F1 on February 24. A group of 3 snowmobiles travelled within 100m below the den on February 27. Alternatively, there were no recorded snowmobile tracks from our recreation GPS tracking within the drainage or immediate areas surrounding the natal den site of F2 during her stay at this den. On 1 instance, our researchers may have unknowingly come within 100m of the den site in an effort to download data from the female's collar. There was also no recorded recreation activity within 250m of her maternal den site, which she moved to in early March. We did record a group of 5 snowmobiles on January 24 and another group of 9 snowmobiles on February 7 that spent a considerable amount of time on the slope immediate adjacent to the maternal den later established by F2 (on March 7)."