Bighorn Sheep Movements and Mineral Lick Use in Waterton-Glacier International Peace Park

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ABSTRACT We used bighorn sheep telemetry data collected in Glacier National Park, Waterton Lakes National Park, and the Blackfeet Reservation in northwestern Montana to examine bighorn sheep movements and use of known mineral licks. Over 168,400 GPS locations were collected between 2002 and 2011 on 94 bighorn sheep individuals from 17 different social groups. We examined the proximity of bighorn sheep telemetry locations to 13 known mineral licks to describe timing and frequency of mineral lick use. After estimating bighorn sheep kernel home ranges, we evaluated how movements toward the lick, timing, and frequency of use varied depending on location of the mineral lick relative to bighorn sheep home ranges. Of the 86 adult sheep with sufficient data to detect mineral lick visits, 76 individuals had GPS locations near known mineral licks, primarily between May and August. We found that social groups consistently used the same mineral lick and visitation rates were generally influenced by distance between the mineral lick and home range, with the highest rates when the mineral lick was within the home range. Duration of mineral lick visits was variable, but ewes generally visited mineral licks more frequently and for a longer duration than rams. Given that nearly all animals used mineral licks, population estimates, or at least minimum population size, may be obtainable from sampling at them.

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