Spatial and Temporal Patterns of Elk Aggregation on Fossil Butte National Monument

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As wildlife managers strive to limit disease transmission among their herds, information about when and where animals are congregating is crucial for making effective management decisions. We investigated the density of an elk herd that winters on Fossil Butte National Monument, WY over a five-year period from 2005 to 2010 using GPS collar data from 68 female elk to assess the spatial and temporal patterns of disease transmission risk. Using a daily proximity index and kernel density estimates, we determined that contact rates between the elk in each year were highest during the fall and winter months while the elk herd was predominately located on the Monument. This suggests that management actions taken on the Monument may have an important impact on disease transmission risk for the herd across the year, although the herd migrates to a different range in the summer. This information is particularly relevant to the Monument given the Monument's proximity to other locations with Chronic Wasting Disease (CWD). We plan to compare these results with density metrics for an elk herd that winters on the Cokeville Meadows Wildlife Refuge, WY. We anticipate that similar information across additional populations will be useful for untangling the interactions of density, population size, and environmental transmission on disease transmission dynamics.