Mapping Alberta bighorn sheep winter range – RSF validation and inter-jurisdictional collaboration

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ABSTRACT: Poole *et al.* (2016) derived a winter range resource selection function (RSF) for bighorn sheep (*Ovis Canadensis*) populations in Elk Valley, British Columbia which are contiguous with those in south west Alberta. Alberta Environment and Parks staff and collaborators utilized an Alberta updated 2020 Earth Observation for Sustainable Development of Forests (ESOD) spatial dataset and are validating this RSF using additional GPS radio collar data collected during 2002-2020 (by Hogg, Paton, Ruckstuhl and Parks Canada). Albertan RSF values are being derived and validated using 95% kernel home ranges and methods similar to k-fold cross validation (Boyce *et al.* 2002). A Spearman's rank correlation coefficient is being calculated between the area-adjusted frequency for each class and the class rank (1-10). Preliminary results of the Spearman correlation using a sample of collar data indicate a significant positive association between the RSF values and winter habitat use ($P = 0.005$). These results demonstrate the utility of RSF's in describing sheep habitat use at the inter-provincial scale and highlights the benefits of multi-agency collaboration and data sharing. The results have already been used to efficiently inform prescribed burning planning in the Canmore area in Alberta. Additional efforts are underway to extend these products to northern Alberta sheep ranges. The supporting geographical information system products and methods may enable efficient creation of similar products for adjoining agencies.

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