Elk Mountain Bighorn Sheep Sightability Project Summary

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The goal of our proposed project is to develop a helicopter based sightability model for bighorn sheep (BHS) in the Black Hills (specifically Elk Mountain) similar to that developed by South Dakota Game Fish and Parks (SDGFP) for elk. The study will be conducted in tandem with SDGF&P using in-kind matching costs borne by each agency and contributions from non-profit sportsmen's groups and organizations. The project entails drop net capture and VHF radio collaring of up to 40 bighorn sheep, disease testing of captured BHS, helicopter and ground based surveys for BHS, and sightability model development based upon topographic and vegetative features to compensate for BHS available for observation but not detected.

The Elk Mountain Bighorn Sheep herd resides on the Wyoming / South Dakota Stateline southeast of Newcastle, WY and has been managed jointly by Wyoming and South Dakota for 18 years. The Wyoming portion of the herd is comprised of Wyoming Bighorn Sheep Hunt Area 20; and the South Dakota side falls within South Dakota highborn sheep hunt unit BH2.   This bighorn sheep herd has been hunted since 2008, and currently six licenses are issued annually, three any ram tags valid in South Dakota and three for Wyoming. In Wyoming, 25% of the issued tags (every fourth tag) is sold to a non-resident, while South Dakota permits only residents to hunt bighorn sheep, aside from the single auction license issued.

Garnering an accurate population estimate of this high profile herd is vital to its management, and two methods have been tried with limited success: A ground based survey relying on radio collared BHS was developed as part of a graduate student project in 2013. This method has produced estimates very wide confidence intervals that limit its utility, and completing the required ground surveys each year has proved difficult. In addition, securing access across private lands for data collection in Wyoming has become impossible without paid access agreements, and this technique requires ongoing radio collaring efforts. A forward-looking infrared (FLIR) survey was attempted in June, 2018 to replace the afore mentioned survey. However, the FLIR system was not able to effectively detect BHS in the Black Hills.

The proposed project should result in an improved and reliable method to estimate bighorn sheep (BHS) numbers in the Black Hills, one that does not require radio collaring of sheep on a regular basis or crossing of private lands. Capture, disease testing and collaring of BHS will occur during the winter of 2019-2020. Helicopter survey efforts will take place in 2020, and possibly 2021. A final sightability model will be developed by the summer of 2021.

Detecting and managing disease transmission in wild sheep is critical to maintaining their viability on the landscape. As such, all captured BHS will be sampled and tested for a variety of pathogens. Diagnostics on respiratory pathogens, trace mineral and selenium analysis, and internal parasites (intestinal and lung) will be conducted by the Wyoming State Vet Lab and Game and Fish Lab.