

A Holistic Approach to the Management of Big Game

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Abstract: The concept of carrying capacity is central to big game population management objectives. Holistic management practices rest on the concept that carrying capacity of rangelands can vary significantly from year to year, due to annual variations in climate. While long term average annual precipitation may be 10 inches on a particular site, yearly precipitation may easily vary from 5-15 inches (50-150% of normal) in consecutive years. Research in northern Utah suggests that animal condition and population dynamics of big game are significantly influenced by climatic factors. Multiple linear regression analysis suggests that yearly variation in pregnancy, survival and recruitment rates of mule deer, pronghorn and elk can be largely explained by yearly variation in summer precipitation, winter snow depth and big game population density. Results of this analysis are consistent with a theory that population increase or decrease is primarily due to forage availability, which in turn is influenced by climate and population size (competition). Results also suggest indices of animal condition may be useful in determining population size relative to carrying capacity. Quantity (biomass) and quality (protein and energy content) of rangeland forage can vary more than 100% between wet and dry years. Management tools such as rest, grazing, fire and reseeding can be incorporated into a holistic management plan to provide for seasonally critical big game needs, entice big game to move to or from specific areas, increase nutritional quality of rangelands and mitigate, to some extent, the negative effects of drought and severe winters. Holistic management examples from the Lost Creek area are presented.