

USING CLIMATIC DATA IN WILDLIFE STUDIES™

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Twenty to 30 years of daily climatic data is now available from foothill and mountain locations at approximately 90 SNOTEL sites in Montana. Historic and near real-time data from these SNOTEL sites is now available on the web. By combining the SNOTEL data with that collected at valley Climatological stations, it is possible to develop profiles of temperature, precipitation and snow water equivalent (SWE) for most areas in the state. Additional parameters such as growing degree-days, soil moisture deficits (using Keetch Byram Drought Index) can be generated from the original data. Relationships developed in recent years using these data will be presented. These include Winter Severity Index for elk, bison, moose, pronghorn, mule deer and white-tailed deer. Migration and distribution of elk have been related to SWE and snow models developed to relate distribution of elk over time to the forage available on winter range. Production of forage, whitebark pine cones, Western larch cones, and huckleberries have been related to these climatic variables. Phenology of plants and trees has been related to growing degree-days. Dates of spring emergence for bears, date of emergence for salmon flies, date of nesting initiation, hatching success, and clutch size of American pipits, have all been related to snowpack and climatic variables. Streamflow, reservoir levels and outflows have been predicted using winter snowpack and spring precipitation variables. Climatic and snow data has also been used to identify long-term trends and variability of mountain climate. Examples of these and other relationships will be presented.