

## **Beaver Reintroduction and Willow Changes in the Southern Absaroka Beartooth Wilderness**

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Willow is a critical component of the southern Absaroka Beartooth Wilderness (ABW) ecosystem because it provides critical forage and habitat to local wildlife populations. Riparian meadows in the southern ABW were once occupied by beaver, but by the mid-1900's they were extirpated through trapping, disease, and willow stand degradation from moose browsing. After several decades of absence, 50 beaver were reintroduced by the Forest Service and Montana Fish, Wildlife, and Parks starting in 1986. While factors such as reduced moose browsing may have supported a recovery of willow height, we hypothesized that reintroduced beaver contributed to an increase in willow canopy cover. Therefore, our objective was to analyze the long-term success of beaver colonies in the southern ABW and quantify changes in willow canopy cover. We used annual stream-side surveys across four drainages in the southern ABW to record the number and location of beaver colonies from 1986 to 2021, and aerial imagery to describe changes in willow canopy cover in 13 meadows occupied by beaver. Using binomial regression, we evaluated the relationship between willow canopy cover and beaver colony density and longevity. We found that beaver have remained at carrying capacity over the last two decades, and average willow canopy cover increased from 16% in 1981 to 37% in 2019. The probability of willow occurrence increased the longer beaver occupied an area and with colony density. This study shows that beaver in the southern ABW persisted for decades after reintroduction and enhanced willow habitat.