Bison Demography In Yellowstone National Park 1902 To Present[TWS]

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Once nearly extirpated across its range, the population of American bison (*Bison bison*) in Yellowstone National Park (YNP) has increased from just 22 animals in 1902 to > 3000 in modern times. This conservation success came about as a result of shifting management paradigms to correspond with population size of the bison herds. Park managers initially used intense animal husbandry practices to foster herd growth. As herd size increased, the USDI National Park Service implemented a free-range system of management known as natural regulation. Most recently, several agencies employ periodic removals when bison leave park boundaries and come into conflict with local livestock operations. Today, we have over a century of bison population information on the Northern and Central herds. We analyzed 47 years of ground count data together with 51 years of aerial count data to investigate changes in population growth rates. We used piecewise log-linear analysis of count data to estimate

the population growth parameter λ during periods of uninterrupted growth, and we used a series of ratio estimators to estimate λ during periods in which frequent removal occurred. We also examined effects of snowfall, summer precipitation, and elk population numbers on population growth rates of bison. Our research provides a context to interpret controversial bison movements outside the park and demographic evidence that bison have changed their spatial use patterns within YNP.