

Wyoming

Population

Rocky Mountain Bighorn sheep populations throughout Wyoming have declined since the early 1990s from an estimated 7,000 sheep in 1990 to a low of 5,800 sheep in 2019. Since 2010 bighorn sheep numbers have generally declined, but showed some recovery in 2019 (Figure 1). At least some of this estimated increase is due to prospering reintroduced herds such as the Ferris/Seminole and Devil’s Canyon populations. After the 2021 hunting season it was estimated there were about 6,400 bighorn sheep. License issuance and harvest (Figure 1) has similarly declined over the past twenty years. In part, the decline in licenses issued and harvest is linked to several things other than population trend including harvest success, average age of harvested rams, and hunter effort. Because bighorn sheep hunting is so coveted (and now a once-in-a-lifetime opportunity), managers are very conservative with hunting opportunity, but harvest over the past decade has been consistent with change in population size (Figure 2).

Figure 1. Estimated population size and number of rams harvested.

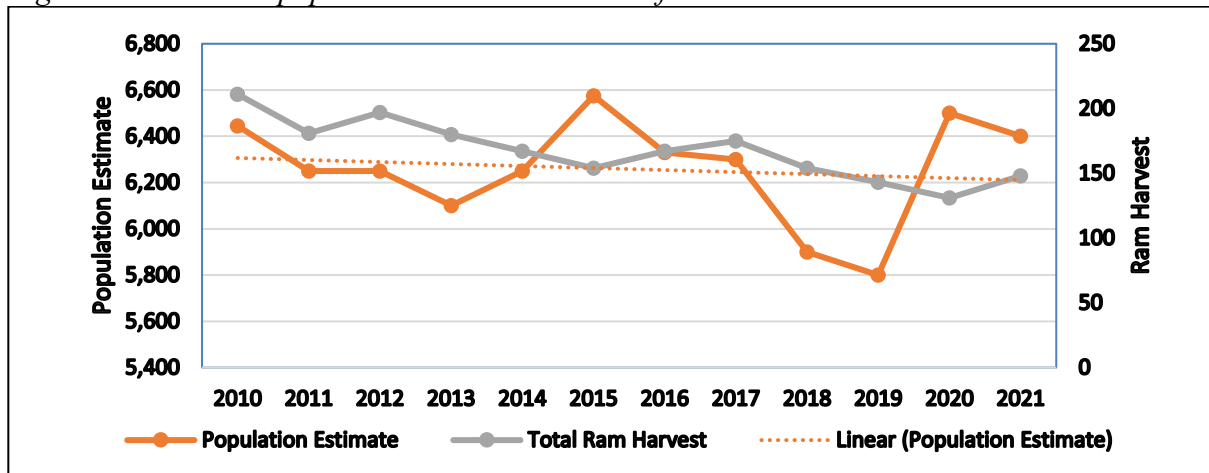
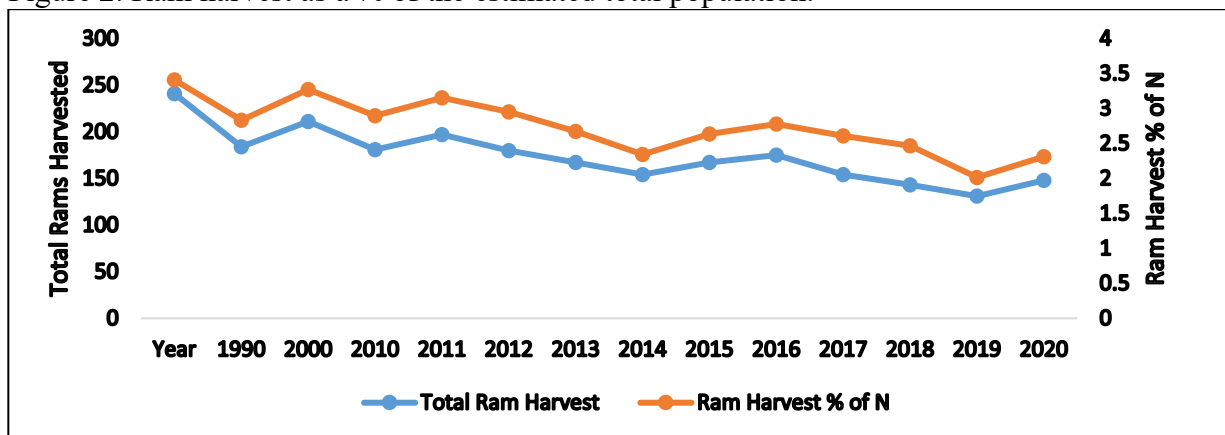


Figure 2. Ram harvest as a % of the estimated total population.



Disease and Herd Health

The Devil’s Canyon herd in northcentral Wyoming experienced an all-age die off. Immediately following the end of the 2022 hunting season a significant mortality event impacted the Devils Canyon Herd. The death of a GPS collared ewe in Late October revealed another 36 sheep carcasses over the course of three days. Fresh carcasses were necropsied and samples sent to the Wyoming Game and Fish Department’s Wildlife Health Laboratory. Four living sheep were removed by department personnel after exhibiting

clinical signs of pneumonia such as nasal discharge and extreme lethargy (unwillingness to move). Wildlife Health Laboratory staff concluded that this outbreak was triggered by a novel strain of the pathogen *Mannheimia haemolytica*. Disease related mortality continued through the fall and into the winter. By December 31, 2022: approximately 44% of the collared sheep (n=6 ewes: 6 rams) were lost to the pneumonia outbreak. Although the impact to the entire herd is not yet known, surveillance flights were conducted in November, December, January, and February where 30-83 sheep were counted. Spring recruitment surveys and summer trend counts will likely reveal the extent of this pathogenic episode.

Test and Remove

Given the significant and continual decline in bighorn sheep in the Whiskey Mountain Herd and following over a year's worth of in-depth discussion with other sheep experts, local managers and researchers took a novel approach for Wyoming and implemented "Test and Remove". The goal is to lower the prevalence of the pneumonia-causing pathogen, *Mycoplasma ovipneumoniae* (M. ovi), by removing "chronic carriers" and ultimately increase overall herd health and lamb survival. We decided to first test this approach with the smaller Red Rocks portion of the Whiskey herd. Testing for M.ovi has been conducted during captures each December and March since 2015. Based on these testing results, 11 ewes within the Red Rocks sub-herd have been removed (7 in 2022 and 4 in 2023). Of the 7 ewes removed between December 2021 and May 2022 during the initiation of this approach, detailed lab necropsies found 6 of 7 (86%) had chronic pneumonia and 4 of 7 (57%) had sinus masses. Of the 4 removed in 2023, 1 (25%) had chronic pneumonia and 2 (50%) had sinus masses. Though we have likely lessened the opportunity for mother-to-lamb and then lamb-to-lamb pneumonia transmission to occur, there are other untested ewes within this sub-herd from which transmissions could continue to occur. Lambing season in 2022 was the first glimpse at reproduction/survival after removing 7 of the chronic carriers. During 2022-2023 winter classifications, personnel counted 15 ewes, 7 lambs, 7 mature rams, and 1 yearling ram. This number of lambs (ratio of 47:100) has not been observed in this sub-herd in the past 6 years. In fact, this is more observed lambs than has been seen in the last 6 years combined. We are still in the beginning stages of the project, and are not making inferences about this increased number of lambs, but this is an encouraging step forward.

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