

Student Pages: Nevada Bighorn Sheep: On the Edge?

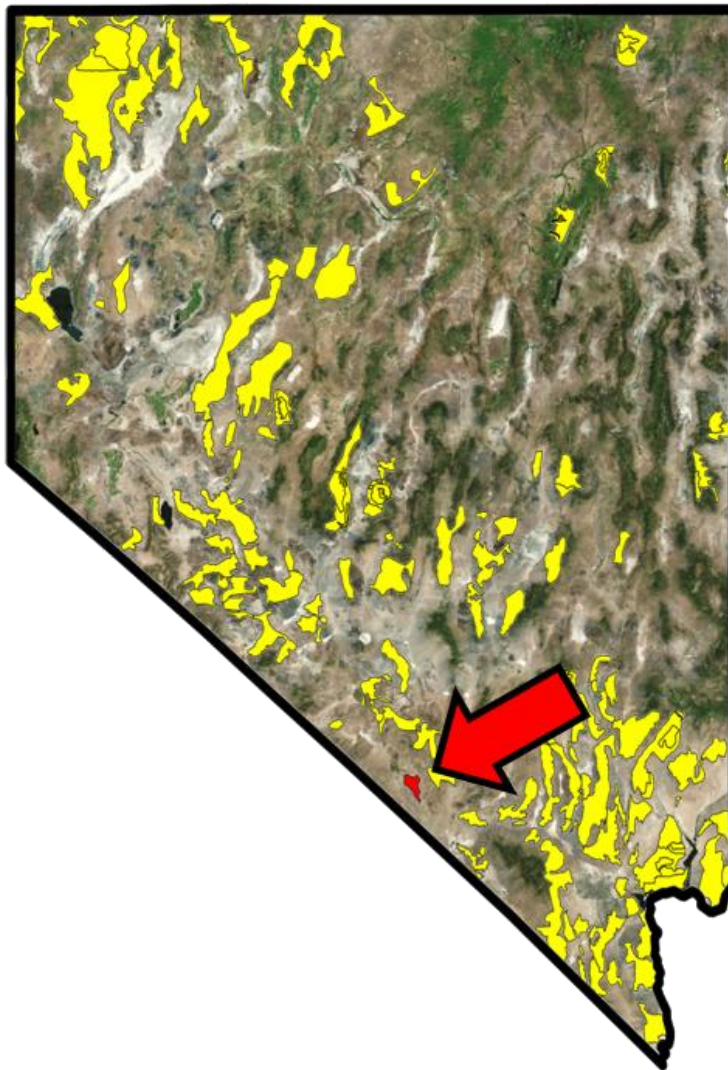
Team 4 Your bighorn sheep herd name is BARE MOUNTAIN HERD

Instructions for this Activity

You should be in one of 6 teams. Individually, read through the Background Information thoroughly, calculate the missing data in the Table 1-4, and create your graph. Then, work as a team to answer the questions and create a list of factors (things) that affect the conservation of your bighorn sheep herd. Then, as a team create a presentation that you will give to the rest of the class. At the end of these Student Pages, you will find a list of things you should include in your presentation.

BACKGROUND INFORMATION

The Bare Mountains Herd is located southeast of Beatty, Nevada and occupies about 30,599 acres.



Bighorn Sheep Subspecies

The subspecies of bighorn sheep in the Bare Mountain Herd is the desert bighorn sheep.

History and Habitat

The Bare Mountain Herd was re-established beginning in 1991 when 20 bighorn sheep were translocated TO the Bare Mountain area. These 20 wild bighorn sheep were trapped FROM the Muddys and Black Mountain Herd. In 1993, another 18 wild bighorn sheep were translocated TO the Bare Mountains area. These 18 wild bighorn sheep were also trapped FROM the Muddys and Black Mountains Herd. In 1995, another 5 bighorn sheep were translocated TO the Bare Mountain area, the 5 bighorn sheep came FROM another wild sheep herd in Nevada.

The size of the Bare Mountains Herd steadily increased over time. In 2014, the size of the herd was larger than the water resources in the Bare Mountains could support (the limited water supply was drying up). To manage this herd sustainably, the Nevada Department of Wildlife established an ewe hunt in 2014. They stopped the ewe hunt in 2018 because the bighorn herd size was decreasing due to a pneumonia outbreak.

More about the pneumonia outbreak: in 2014 the Bare Mountain Herd was exposed to *Mycoplasma ovipneumoniae*, which is a bacteria that causes pneumonia in wild bighorn sheep. By 2016-2017, pneumonia began to take its toll on the herd, as fewer lambs survived and fewer adults survived, too.

The bacteria *Mycoplasma ovipneumoniae* can be present in domestic goats and domestic sheep. Interestingly, even when domestic goats and domestic sheep carry this bacteria, the domestic goats and domestic sheep typically do not get pneumonia. However, if a wild bighorn sheep comes into contact with a domestic goat or sheep that has this bacteria, then the wild bighorn sheep can be exposed to the bacteria and subsequently get infected with pneumonia. Moreover, the newly infected wild bighorn sheep can then bring the bacteria back to its herd and infect the entire herd with pneumonia.

Research is being conducted on the Bare Mountain Herd. Biologists capture wild bighorns and sample their blood to monitor disease. Then, captured bighorns are released back into their habitat. Biologists also capture some bighorns in the Bare Mountain area and attach GPS collars on them, and then release the bighorns back into their habitat. With GPS collars, biologists can track bighorn sheep movements to understand how pneumonia spreads across the landscape. Biologists also use GPS data to better understand where bighorn sheep go and how wild bighorn sheep use resources on the landscape.

The habitat in the Bare Mountain area is primarily dominated by creosote bush, white bursage, and black brush. There is an understory of limited perennial plants, desert needle grass, some flowers, and a few cactus species like barrel, beavertail, and cholla. At the very highest elevations in the Bare Mountain area, there is typical Great Basin habitat including sagebrush.

There is not much water in the Bare Mountain area. There's only one known spring, Specie Springs, which was once a well flowing and productive spring. Now Specie Springs is dry much of the year due to continued overuse and damage by an overabundance of feral burros. Four water developments were built

specifically to help provide water for bighorn sheep. These four water developments are fenced off so feral burros can't use them. Bighorn sheep are dependent on these water developments from April - October. Interestingly, there is a small active gold mine in the Bare Mountain area and the owners of the gold mine are very supportive of the bighorn herd. The gold mine workers have maintained two water troughs for over ten years to help provide a vital water source to the bighorn sheep herd.

The Bare Mountain is connected to a larger series of mountainous terrain and canyons, which are off limits to the public. This large area is co-managed by the Department of Defense and Energy and is occupied by bighorn sheep that have a history of extensive movement. It is normal for bighorn sheep to move extensively when a landscape provides relatively sparse foods and water. On these types of landscapes, bighorn sheep might travel extensively searching for food and water. Unfortunately, extensive travel also means that wild bighorn sheep might come in contact with animals (wild or domestic) that have the bacteria *Mycoplasma ovipneumoniae*. This can increase the chances that wild bighorn sheep might contract pneumonia. This is exactly what happened in 2014 to this herd.

Wild Bighorn Sheep Translocation Program in Nevada

As of February 2019, Nevada biologists have translocated 3,380 bighorn sheep in Nevada!

The following wild bighorn sheep were translocated INTO the Bare Mountain Herd:

1991 - 20 bighorns, came from the Muddys and Black Mountains Herd in Nevada

1993 - 18 bighorns, came from the Muddys and Black Mountains Herd in Nevada

1995 - 5 bighorns, came from a different Nevada bighorn sheep herd

The following wild bighorn sheep were trapped FROM the Bare Mountain Herd and translocated INTO other wild bighorn sheep herds:

2011 - 25 bighorns trapped from the Bare Mountain Herd and translocated to a different NV bighorn herd

2013 - 50 bighorns trapped from the Bare Mountain Herd and translocated to a different NV bighorn herd

Factors Affecting the Conservation of the Bare Mountain Herd

The primary factors affecting the Bare Mountains Herd include disease and competition with an excessive number of feral burros.

Disease → Pneumonia continues to be an issue for this herd. Since 2015, almost no lambs have survived during the last few years.

Feral Burros → There are over 300 feral burros that live in the Bare Mountain area. These feral burros overgraze the small, relatively sparsely vegetated mountain and damage the limited and critical riparian areas.

Fortunately, the Bureau of Land Management (BLM) conducted a feral burro gather in 2017 and removed many of the feral burros, which will help the struggling bighorn sheep herd on the Bare Mountain.

Lack of water continues to be an issue. Also, there is some human disturbance to this herd: a desert road race occurs every year through the northern end of Bare Mountain with thousands of dune buggy type vehicles and motorcycles. Finally, there are a limited number of bobcats and coyotes. Predation is a relatively minor issue for the Bare Mountain Herd.

Graph It!

Using Table 1-4 on the following page, do the following:

1. Calculate the **Total Number of Bighorn Sheep Each Year** (HINT: add the Number of EWES yearlings, Number of RAMS yearlings, Number of EWES 2+ years old, and the Number of RAMS 2+ years old) for each year and put the answers in the column marked **Total Number of Bighorn Sheep Each Year** (the yellow shaded column).
2. After you have filled in all the missing data, create a graph showing the **Total Number of Bighorn Sheep Each Year**. Put **Year** on the x-axis and **Total Number of Bighorn Sheep Each Year** on the y-axis.

Table 1-4. Annual Population Estimate of Bighorn Sheep in the Bare Mountain Herd, for Years 1992-2018

YEAR	Number of EWES Yearlings	Number of RAMS Yearlings	Number of EWES 2+ years old	Number of RAMS 2+ years old	Total Number of Bighorn Sheep Each Year
1992	1	0	13	5	19
1993	2	2	26	8	
1994	5	5	25	10	
1995	4	4	28	19	
1996	5	5	30	21	
1997	8	8	32	24	
1998	6	6	37	30	
1999	3	3	39	34	
2000	6	6	38	33	
2001	6	6	38	32	
2002	6	7	38	32	
2003	5	5	39	30	
2004	9	9	38	30	
2005	11	11	43	31	
2006	13	13	48	37	
2007	10	10	55	40	
2008	6	6	70	47	
2009	13	13	81	53	
2010	10	10	85	54	
2011	14	14	89	55	
2012	35	35	92	55	
2013	24	25	118	83	
2014	28	28	101	90	
2015	22	15	114	98	
2016	13	12	115	99	
2017	15	15	97	92	
2018	12	12	90	86	

QUESTIONS (answer these as a group)

1. How many bighorn sheep were translocated TO this herd to establish it during 1991-1995, and where did these translocated sheep come from?
2. Based on the data you graphed for the number of total sheep observed, would you say that this herd has recovered from what happened in 2014? Why or why not?
3. Research is being done on this herd, what are biologists trying to find out with their research?
4. Sometimes human development like gold mining can negatively impact the conservation of wild animals. In the Bare Mountain area, there is one gold mine owner who is doing something good for wild bighorn sheep. What is this gold mine owner doing?
5. Bighorn sheep in the Bare Mountain area travel extensively looking for food and water. Although traveling extensively is natural and normal for wild bighorns, can you think of one negative thing that can happen as bighorns travel so extensively?
6. Feral burros are really cool animals, but when there are so many feral burros in one wild area it can be problematic. Why?

INSTRUCTIONS FOR CREATING YOUR PRESENTATION

Work as a team to put together a presentation that you will give to the rest of the class. Your presentation should include at least the following:

- 1) the subspecies of bighorn sheep in your herd
- 2) where your bighorn sheep herd lives
- 3) brief background information about the history of this herd and its habitat
- 4) the graph you created
- 5) information about how many wild bighorn sheep have been translocated TO the Bare Mountain Herd, specifically include the number of wild bighorn sheep that came from the Muddys and Black Mountains Herd in Nevada
- 6) information about what happened to the Bare Mountain Herd in 2014
- 7) a list of factors affecting the conservation of this herd
- 8) include photos of the Bare Mountain area, provided below

Photos of the Bare Mountain area provided by Mike Cox, Nevada Department of Wildlife:





