

Student Pages: Nevada Bighorn Sheep: On the Edge?

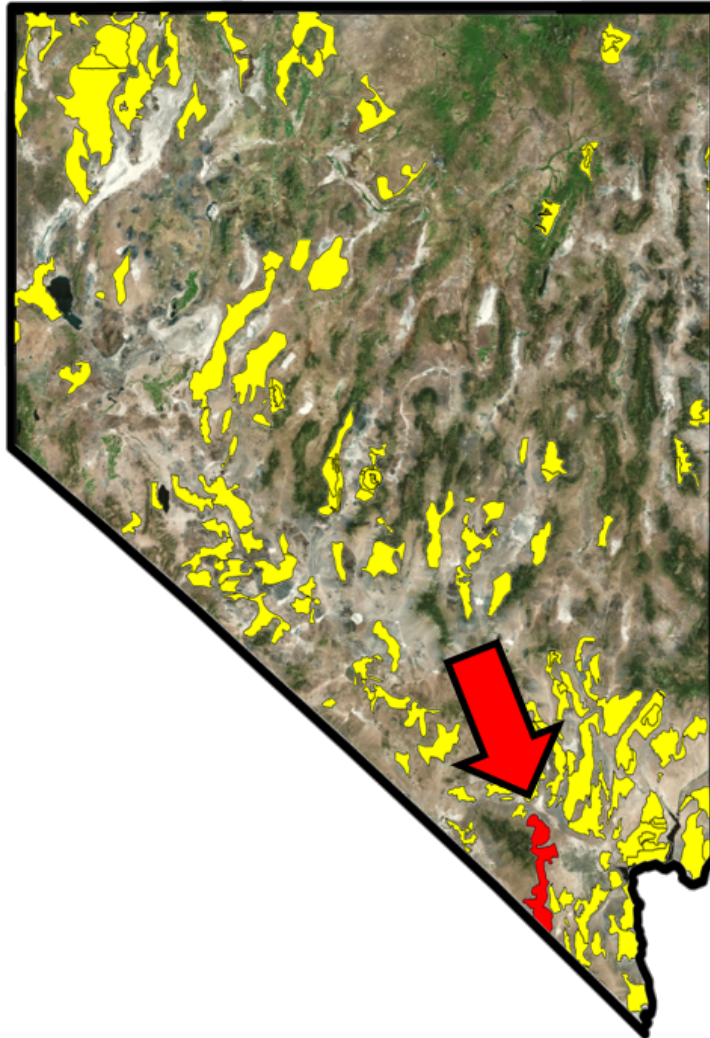
Team 5 Your bighorn sheep herd name is **SPRING MOUNTAINS HERD**

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 1-5, 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 Spring Mountain Herd is located west of Las Vegas, Nevada and occupies about 258,049 acres.



Bighorn Sheep Subspecies

The subspecies of bighorn sheep in the Spring Mountains Herd is the desert bighorn sheep.

History and Habitat

The Spring Mountains Herd is a native herd. The Spring Mountains area provides plenty of water with more than 25 natural springs. An additional 4 water developments (guzzlers) were built in this area to allow bighorn sheep the opportunity to broaden their distribution into the more rugged bighorn habitat (where springs are not available).

The habitat in the Spring Mountains area is primarily dominated by creosote bush, white bursage (*Ambrosia dumosa*), and black brush (*Coleogyne ramosissima*) with an understory of perennial Galleta grass, fluff grass (*Erionueron* spp), desert needle grass, and a rich flower component with peak bloom in late March/early April. In this area, there is a diversity of cactus species including barrel, beavertail (*Optunia* spp.), cholla, and others. At higher elevations of the Spring Mountains area, there is a diverse shrub component with more than enough forbs for wild bighorn sheep. Spring Mountains has the fifth highest mountain peak in the state, the mountain is almost 12,000 feet high! The mid to high elevations of the Spring Mountains area are forested, and bighorn sheep do not occupy this forested area. The very highest elevations of this mountain generates its own weather patterns, which helps provide added moisture to the lower elevations of the mountain range. This added moisture helps provide water and food for bighorn sheep at lower elevations. Because of all this, the Spring Mountains are considered a "sky island" in the Mojave Desert.

In June 2005, lightning strikes in the higher elevations near Potosi Peak ignited the Goodsprings Fire. The Goodsprings Fire consumed plants across 33,484 acres along a 3,940-foot elevation gradient.

In 2013 and through 2015, the Spring Mountains Herd was exposed to *Mycoplasma ovipneumoniae*, which is a bacteria that causes pneumonia in wild bighorn sheep. The source of the exposure to this bacteria is unknown, but pneumonia killed up to 20% of the adult wild bighorn sheep in this herd and pneumonia continues to cause poor lamb survival today. To monitor disease in this herd, Nevada Department of Wildlife biologists are currently conducting research. Biologists capture wild bighorns and sample their blood to determine whether sheep have the bacteria that causes pneumonia.

Wild Bighorn Sheep Translocation Program in Nevada

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

NO bighorn sheep have been translocated into the Spring Mountains Herd.

Factors Affecting the Conservation of the Spring Mountains Herd

Disease is a primary factor affecting the Spring Mountains Herd. Beginning in 2013 and through 2015, the herd experienced two separate pneumonia outbreaks from an unknown source.

Suburban sprawl is also a factor. The Spring Mountains area is close to Las Vegas so human disturbance is a conservation issue and causes habitat degradation, habitat fragmentation, and habitat loss. For example, several square miles of historic bighorn sheep habitat has been lost due to suburban sprawl near Las Vegas. The development of subdivisions in this area presents numerous problems including potential stress to wintering and lambing sheep, direct mortality from dogs and fences, loss of landscape connectivity, and direct loss of habitat.

Dispersed recreation is another factor affecting the conservation of this bighorn sheep herd. Within the Spring Mountain area, there is the Red Rock Natural Conservation Area, which draws tens of thousands of visitors from Las Vegas each year. Red Rock Natural Conservation Area is a rock climbing mecca, there are many hiking trails, and there is an extensive system of mountain bike trails. Some climbing routes and trails are very intrusive to bighorn sheep and some climbing routes and trails are close to critical spring resources that bighorn sheep need.

In the Spring Mountains area, there is also a very large number of feral horses and burros, which compete with wild bighorn sheep for food and water.

Wildfire has also affected the habitat in the Spring Mountains area.

Predators are also a factor. In the Spring Mountains area there are mountain lions, bobcats, and coyotes. Mule deer and elk herds share the Spring Mountains with bighorn sheep, so mountain lions are year-round residents in the Spring Mountains area. Mountain lions often prey on mule deer and elk, but mountain lions will opportunistically "prey switch" to bighorn sheep.

Graph It!

Using Table 1-5 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 1-5. Annual Population Estimate of Bighorn Sheep in the Spring Mountains Herd, for Years 1980-2018

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
1980	14	20	144	90	268
1981	31	32	140	87	
1982	27	27	148	93	
1983	26	26	148	96	
1984	24	25	148	95	
1985	25	26	148	96	
1986	24	24	148	95	
1987	22	22	147	95	
1988	23	24	145	92	
1989	36	39	141	90	
1990	22	23	138	99	
1991	19	19	133	98	
1992	21	21	127	96	
1993	19	19	124	95	
1994	22	22	124	91	
1995	21	21	126	91	
1996	21	21	125	89	
1997	26	26	117	87	
1998	22	22	114	87	
1999	35	35	117	86	
2000	22	22	130	97	
2001	12	12	131	92	
2002	21	21	122	76	
2003	34	34	123	77	
2004	34	34	136	88	
2005	26	26	146	99	
2006	24	24	150	102	
2007	29	29	151	101	
2008	21	21	157	103	
2009	25	25	153	102	
2010	25	25	154	98	
2011	13	13	154	95	
2012	25	25	141	84	
2013	15	15	142	88	
2014	19	19	134	79	
2015	12	12	127	74	
2016	3	3	113	62	
2017	6	6	95	46	
2018	9	9	81	38	

QUESTIONS (answer these as a team)

1. What happened in this area in 2005?
3. What happened in 2013 and 2015 that made the number of sheep in this herd decline?
4. Has this herd recovered from what happened during 2013 and 2015?
5. What is a "sky island"?
6. The Spring Mountains Herd occupies an area very close to Las Vegas, where there's lots of people. In what ways do humans cause issues for bighorn sheep conservation in the Spring Mountain area?
7. Feral horses are beautiful, majestic animals and feral burros are cool. However, do you think really LARGE herds of non-native feral horses and feral burros belong on habitats that support native wildlife species like wild bighorn sheep? Why or why not?

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 into the Spring Mountains Herd (if no sheep have been translocated into this herd, then state that)
- 6) information about what happened to this area in 2005
- 7) information about what happened to this herd in 2013 and 2015
- 8) a list of factors affecting the conservation of this herd
- 9) include photos of the Spring Mountains area, provided below

Photos of the Spring Mountains area are provided by Mike Cox at Nevada Department of Wildlife:







