National Park Service
U.S. Department of the Interior

Zion National Park

The Ugly
Bighorn Sheep Mystery

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Bighorn Sheep Mystery Worksheet

Desert bighorn sheep have lived in southern Utah for thousands of years. Unfortunately through hunting, habitat loss, and other factors, there were no bighorn sheep in the area by the early 1950s. Bighorn sheep were reintroduced to Zion National Park and are now thriving with a population of over 500 sheep.

However, in the spring one year, rangers noticed a change in the population. It was a cold winter with deep snow that lasted well into the spring, even as lambs were being born. Park rangers noticed that the herd was huddling closer than normal to try to stay warm. The herd was also trying to stay in more sheltered and protected areas and in the lower elevations of the park where they usually don't go.

In spring, visitors started reporting scabs around the mouths of many of Zion National Park's bighorn sheep. A few weeks after the first report, there were a large number of bighorn sheep with scabs around their mouths.

Some of the herd was seen on the edge of the park where a farmer had a herd of domestic sheep. One of his sheep escaped its pen and the farmer finally found it mingling with the desert bighorn sheep in the park. He brought his sheep back and soon noticed scabs forming on its mouth as well. He separated it from the rest of his herd and gave it antibiotics but they did not seem to help the symptoms. None of his other sheep contracted the disease.

Zion was busy with visitors in the spring and park rangers reminded visitors not to approach wild animals, including the bighorn sheep. One visitor noticed she had developed scabs on her hand after visiting the park. When she went to see a doctor, she admitted to petting a small lamb, and getting close to many bighorn sheep to take their pictures.

After about two months, it seemed the disease had run its course, and fewer and fewer scabs were noticed on the bighorn sheep.

Questions

1. State the signs that a disease was spreading through the bighorn sheep population.
2. Would antibiotics be helpful in curing this disease?
3. Do you think the disease is a virus or an infection caused by another microorganism (bacteria, protozoa, etc.)? Why do you think that?
4. Why do you think that this disease occurred at the time it did? (Think about the seasons and behavior of the bighorn sheep.)
5. Can the disease in the bighorn sheep affect humans? How do you think it spread?
6. What are at least two things that people could do to stop the spread of this disease?

Bighorn Sheep Mystery Answer Key

Teacher's note: This story is fiction but based on an outbreak of sore mouth disease, or contagious ecthyma, caused by the parapox virus. While contagious ecthyma can sometimes be painful for animals, it is not deadly. It is caused by sheep inhaling or ingesting infected scabs.

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Questions (and answers):

1. **State the signs that a disease was spreading through the bighorn sheep population.**

   Scabs appeared around the mouth. First there were a few sheep infected, then more.

2. **Would antibiotics be helpful in curing this disease?**

   No. The farmer gave antibiotics to his sheep and it did not cure the disease or alleviate the symptoms.

3. **Do you think the disease is a virus or an infection caused by another microorganism (bacteria, protozoa, etc.)? Why do you think that?**

   It is a virus. It was not cured by antibiotics, which only work on living things (bacteria, protozoa, etc.). Also, it seems to be highly infectious between the sheep.

4. **Why do you think that this disease occurred at the time it did? (Think about the seasons and behavior of the bighorn sheep.)**

   The cold winter was hard on the bighorn sheep population. The snow made it more difficult to find food and the sheep would have used up a lot of energy treading through the deep drifts. Lambing season is also a difficult time for sheep. Further, because of the cold, the sheep were huddled together; this close proximity helped the disease spread. They may have gotten infected because they went to lower elevations than usual because of the cold; the infectious scabs may have been in these areas where they had not been in a long time.

5. **Can the disease in the bighorn sheep affect humans? How do you think it spread?**

   Yes, it was spread when a person got too close to some sheep and touched a lamb. It cannot spread to humans by just being around the sheep though since there were many other visitors who observed the diseased sheep but did not contract the disease.

6. **What are at least two things that people can do to stop the spread of this disease?**

   List could include: don't go near wild animals, don't touch wild animals, keep domestic herds away from wild ones, report symptoms to proper authorities, make sure wild animals have a healthy and large habitat.