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## **Organism ID'd That May Be Killing Sheep**

By KEITH RIDLER 07.02.07, 5:01 PM ET

An organism that may have played a part in killing thousands of bighorn sheep in the West over the last five decades and in thwarting repopulation efforts has been isolated in a lab and found in struggling bighorn herds in the wild, biologists say.

Research done at Washington State University on tissue taken from dying lambs captured in Hells Canyon - a chasm that borders Idaho, Oregon and Washington - isolated a type of bacteria called mycoplasma ovipneumoniae.

Biologists say that could be the initial organism that attacks the sheep and works by inhibiting the ability of hairlike structures in airways to eliminate bacteria that lead to deadly pneumonia.

Biologists have known that pneumonia often proves fatal to the wild sheep, but have been stumped for years as why so many bighorns are susceptible.

"This is the first problem I've worked on where there is quite a bit of evidence piling up where the agent is a mycoplasma," said Tom Besser, a professor in WSU's department of veterinary microbiology and pathology. He works at the Washington Animal Disease Diagnostic Laboratory on the school's Pullman, Wash., campus.

In herds known to be infected with mycoplasma, anywhere from half to all the lambs die each year from pneumonia. The lambs are most susceptible mainly because their immune systems are not fully developed, said Frances Cassirer, a wildlife research biologist with Idaho Fish and Game.

Among adult bighorns that hadn't previously been exposed to mycoplasma, 25 percent to 75 percent die, she said, noting the variation could be due to how many were initially exposed or to how virulent a strain of the disease is at work.

She said pneumonia is the leading killer of bighorn herds infected with mycoplasma. In herds not infected, the leading cause of death is predators, mainly cougars, she said.

After WSU researchers identified the mycoplasma, biologists in Idaho, Washington, Oregon, California and the Canadian province of Alberta sent the researchers blood samples previously collected from 18 herds.

Researchers found antibodies to the mycoplasma in herds that saw deaths due to pneumonia, but not in herds that were not experiencing large losses due to pneumonia.

"We found some really promising patterns and things seemed to fit together really well," Cassirer said.

More tests are being done to confirm whether mycoplasma is leaving bighorns open to pneumonia. One test involves infecting captive bighorn lambs at Washington State University to see how they react.

Biologists say about 2 million bighorns once inhabited the West, but they disappeared over most of their range in the 1800s and early 1900s due to unregulated hunting and disease believed to have been carried by domestic animals.

Repopulating projects and added protection in the last 50 years have now boosted bighorn numbers to about 50,000, Cassirer said.

But sweeping epidemics of a mystery illness have wiped out thousands of Rocky Mountain bighorns, California bighorns, Sierra Nevada bighorns, and desert bighorns since reintroductions began. Cassirer said precise numbers of deaths are not known.

Vic Coggins, a biologist with the Oregon Department of Fish and Wildlife, said pneumonia likely was the main reason, even more than unregulated hunting, for the bighorns' decline from 2 million. He said habitat loss also factored in, but there is enough habitat available now across the West to support far more than the current population.

"Easily," he said. "We estimate that in Hells Canyon we could have over 10,000."

Currently, the area has a population of about 900, he said.

Cassirer said biologists aren't finding that infected herds can build up a resistance with successive generations.

"If it's happening, it's not obvious to us," she said. "That's why we're looking for another solution because the sheep might not be able to deal with it on their own."

She said she didn't know how bighorn herds already infected with mycoplasma - if that's a crucial factor in what's killing them - could be helped.

She said attempts to find mycoplasma vaccines for domestic sheep have failed, and even if one existed it would be difficult to administer to bighorns in the wild.

Besser said mycoplasma is found in domestic sheep, but they typically survive. He said he didn't know if domestic sheep were transmitting the bacteria to wild sheep.

But Greg Dyson, executive director of the Hells Canyon Preservation Council, is convinced domestic sheep are making bighorns sick.

"All indications are that the domestics are passing diseases and killing off the bighorns," said Dyson. "And the bighorns just can't get a foothold to become re-established. There have been entire herds that have died off."

In May the U.S. Forest Service, facing a lawsuit from Dyson's group and two other environmental groups that share his concerns, announced that it was restricting domestic sheep grazing in some areas of the Payette National Forest this summer. The forest borders Hells Canyon.

In a federal court lawsuit filed in late June against the U.S. Department of Agriculture over sheep grazing on land near Yellowstone National Park, the Western Watersheds Project and the Center for Biological Diversity claim that allowing domestic sheep to graze in the greater Yellowstone region of Idaho and Montana puts wild bighorn sheep herds at risk of catching diseases from the domesticated animals.

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