



SheepSense

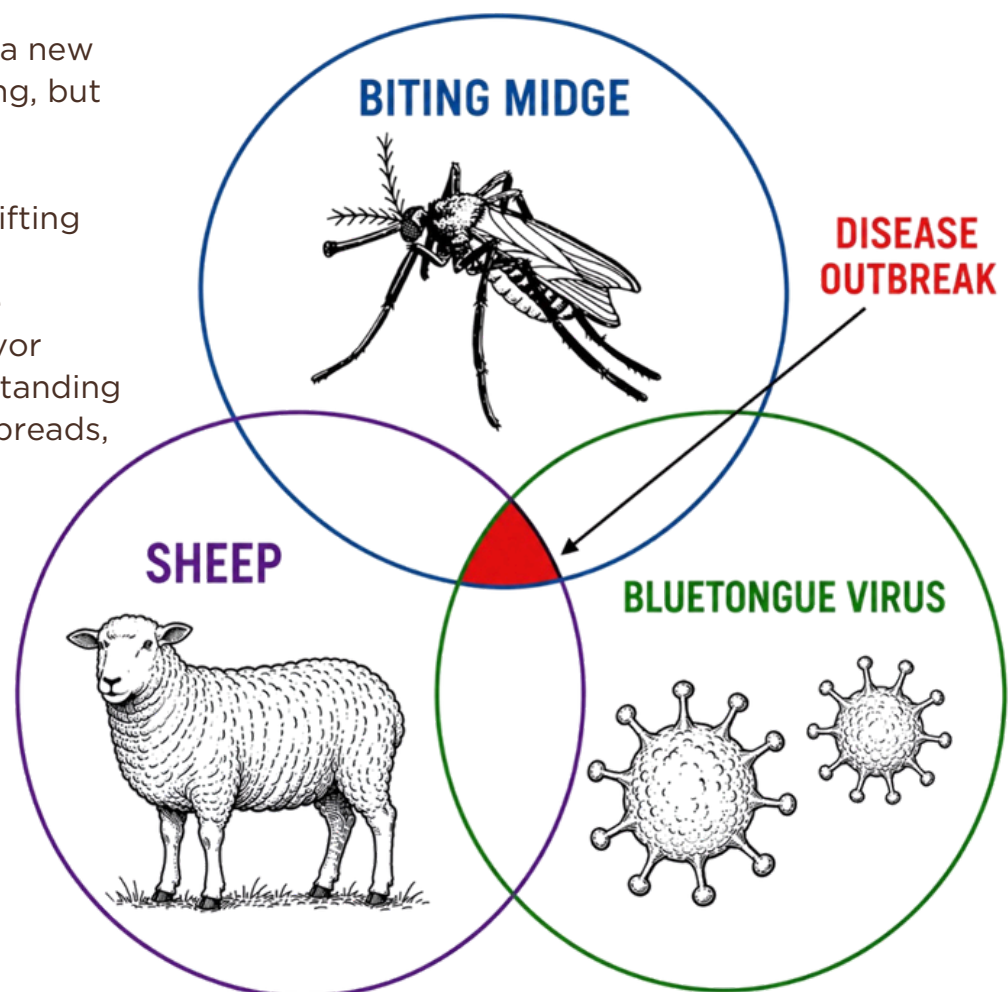
an applied research brief

Bluetongue in Wyoming Sheep Flocks

What Producers Need to Know About a Recurring Late-Summer Threat

In 2025, Wyoming sheep producers began hearing familiar reports: sheep going lame, swollen faces, excessive salivation, or unexpected deaths in the flock. At the same time, hunters and landowners began finding dead deer and pronghorn near ponds and creeks. In many cases, these events are linked to bluetongue virus, a disease that has affected livestock and wildlife across the western United States for decades.

Bluetongue is not a new disease in Wyoming, but changing weather patterns, drought conditions, and shifting insect populations continue to create conditions that favor outbreaks. Understanding how the disease spreads, recognizing early signs and taking practical management steps can help producers reduce losses and protect flock health.



Disease Transmission and Risk Factors

Bluetongue is a viral disease that affects ruminants, especially sheep. The virus is spread by tiny biting insects called *Culicoides* midges, often referred to as “no-see-ums” or gnats. Unlike contagious diseases that spread quickly from animal to animal, bluetongue depends on these insects for transmission. An infected midge bites a sheep and transfers the virus while feeding on the sheep’s blood. Once infected, sheep may become sick within several days.

The disease occurs worldwide, but it is especially important in the western and southern United States. Wyoming regularly experiences periodic outbreaks, usually during the late summer and early fall when midge populations are highest. In the Rocky Mountain West, outbreaks often occur in cycles every few years, typically following periods of drought or unusually warm weather.

Weather plays a major role in bluetongue outbreaks. Midges require moist environments to reproduce, but drought conditions can actually increase disease transmission. During dry years, livestock and wildlife gather around the few remaining water sources. Muddy pond edges, leaking

tanks, irrigation runoff, and manure-rich wet soil create ideal breeding areas for midges. At the same time, the concentration of animals around water increases the likelihood that infected insects will spread the virus between animals.

These tiny insects are most active during the evening and nighttime hours, especially around dusk and dawn. Sheep grazing in low wet areas during these times are at greatest risk of exposure. Producers often notice that outbreaks

are worse in lower elevations, below 7,000 feet, where conditions are warmer and insects remain active longer into the season.

Sheep are the domestic species most severely affected by bluetongue. While cattle often carry the virus without obvious illness, sheep can develop serious disease and death losses. The severity of illness depends on the strain of virus involved, the age and condition of the animal, and whether the flock has been previously exposed.

Early signs of bluetongue may look similar to several other diseases. Affected sheep often develop fever, depression, and weakness. Producers may first notice animals separating from the flock, refusing to move, or lameness. As the disease progresses, sheep may develop swelling of the lips, face, tongue, and muzzle. Excessive salivation and nasal discharge are common. Some animals develop sores or ulcers inside the mouth, making it painful to eat or drink.

The disease gets its name from one of its most recognizable symptoms: a swollen tongue that may appear blue or purple due to poor oxygen circulation. Although this classic “blue tongue” appearance does not occur in every case, severe swelling and inflammation in the mouth are common during outbreaks. Lameness is another major sign producers observe. Bluetongue damages blood vessels throughout the body, including those around the hooves. Sheep may appear still, reluctant to walk, or spend long periods lying down. In severe cases, hoof tissues may separate or slough. Animals that survive may continue dealing with hoof problems or poor condition for weeks afterward. Respiratory problems can also occur.

Swelling and inflammation may affect the lungs, leading to rapid breathing, pneumonia, or sudden death. Secondary infections often make the disease worse. Some sheep die quickly with little warning, while others gradually lose weight and condition over time.

Pregnant ewes are particularly vulnerable. The virus can affect the fetus at any stage of gestation. In sheep, bluetongue virus infection during early pregnancy may result in embryonic loss or abortion, often before obvious clinical signs are recognized. Infection during mid-gestation, particularly when the fetal brain is developing, can lead to congenital defects such as brain malformations, weakness, blindness, or neurologic disease in lambs. Late-gestation infections are generally less severe but may still result in weak-born lambs or newborns infected prior to birth.

Although sheep producers feel the greatest economic impact from bluetongue, the disease also affects wildlife across Wyoming. Deer, pronghorn, elk, moose, and bighorn sheep are all susceptible to becoming infected. In some years, large numbers of dead wildlife are discovered near rivers, reservoirs, and stock ponds. Wildlife outbreaks often happen at the same time producers begin seeing illness in domestic sheep. Pronghorn and deer are especially susceptible to hemorrhagic diseases caused by bluetongue virus and the closely related epizootic hemorrhagic disease virus. Wildlife officials in Wyoming commonly receive reports of dead animals during late summer outbreaks.

There is no evidence that bluetongue virus can cause any illness in humans.

Preventative Management Options

Unfortunately, there is no cure for bluetongue once animals become infected. Treatment focuses on supportive care. Producers can improve survival by reducing stress, providing easy access to feed and water, and separating affected animals from the rest of the flock when possible. Antibiotics may occasionally help control secondary bacterial infections, but they do not treat the virus itself.

Because there is no direct treatment, prevention becomes the most important management tool. The primary goal is reducing exposure to biting midges. One of the most effective steps producers can take is reducing standing water or muddy insect breeding areas around livestock facilities. Repairing leaking tanks and pipelines, improving drainage, and reducing manure buildup in wet areas may help lower midge populations. Complete elimination of breeding habitat is usually impossible, especially in irrigated or riparian areas, but reducing wet organic material can still help.

Timing of livestock grazing and housing may also reduce exposure. Since midges are most active during dusk and dawn, moving vulnerable animals indoors overnight, during peak insect season may decrease biting activity. Air flow from barn fans may reduce midge flight abilities, further reducing the chances of livestock exposure. Some producers use insecticides or repellents as part of a control program, though results vary. Because midges are extremely small and widespread, chemical control alone rarely eliminates risk. Still, insecticides may help reduce insect pressure during severe outbreak years. Insecticide applications for sheep should focus on the belly and flank, where the midge can most easily access.

Vaccines are available in some situations. Bluetongue is caused by at least 24 different virus serotypes, a distinct variation of the disease, that circulate in various regions. These differences matter because immunity is largely serotype-specific, and strains can differ in severity of disease between species. In the 2007 Big Horn Basin outbreak BTV-17 was identified and was associated with flock losses in Wyoming sheep as high as 35%. Vaccines may not protect equally against every strain present in a region. In some cases, vaccine use may create additional complications, particularly in pregnant animals. For these reasons, vaccination programs must be carefully planned.

Good overall flock management also plays an important role in reducing losses. Proper nutrition, parasite control, and minimizing unnecessary stress can help sheep maintain stronger immune responses during disease outbreaks. Healthy animals are generally better able to survive infection than animals already weakened by poor body condition or other illnesses. Producers should remain especially alert during late summer and early fall, particularly following drought conditions or periods of high insect activity. Early recognition allows producers to contact veterinarians quickly and implement supportive care before losses become severe. If sheep begin showing signs such as mouth sores, swollen faces, lameness, fever, or unexplained respiratory distress, veterinary consultation is important. Several diseases can resemble bluetongue, including foot-and-mouth disease and other serious foreign animal diseases. Laboratory testing may be necessary to confirm the diagnosis.

Wyoming sheep producers have always adapted to difficult conditions, from harsh winters, to drought and predators.

Bluetongue presents another challenge that requires observation, preparation, and sound management. By staying informed and working closely with veterinarians and University of Wyoming Extension, producers can better protect their flocks and reduce losses during outbreak years.

Next steps if you suspect Bluetongue in your flock

If bluetongue disease is suspected in sheep, cattle, goats, or wildlife, the Wyoming State Veterinary Laboratory (WSVL) offers a Hemorrhagic Disease PCR Panel that detects both Bluetongue virus (BTV) and Epizootic Hemorrhagic Disease virus (EHDV) from clinical samples. PCR testing looks for the genetic material of BTV and EHDV in a sample. A positive result indicates the virus was detected and is consistent with an active infection, while a negative result indicates the virus was not detected in the sample tested. Testing is available on lung, spleen, whole blood (in purple-top EDTA tubes), synthetic swabs, and other affected tissues. Early laboratory confirmation can help distinguish BTV/EHDV from other diseases that cause lameness, oral lesions, swelling, respiratory signs, or sudden death. Producers observing clinical signs compatible with bluetongue disease are encouraged to work with their veterinarian and submit samples to WSVL for PCR testing. The panel is performed Monday, Wednesday, and Friday, and samples should arrive the day before a scheduled testing day whenever possible to ensure prompt testing and reporting. More information on diagnostic testing and how to submit samples can be found at:

<https://www.uwyo.edu/wyovet/index.html>.



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