

The Roundup

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Non-Lethal Predator Protection Tools

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As many of you are aware a new wolf pack has been identified in Tulare County. The press release was published on August 11, 2023. With the confirmed presence of a wolf pack comes obvious concerns for livestock safety and well-being. Wolves in California are protected under California's Endangered Species Act and the federal Endangered Species Act making it illegal to intentionally kill or harm wolves in the state. This designation makes non-lethal methods the only approved methods for protecting livestock from predation. More information on gray wolves in California can be found at:

<https://wildlife.ca.gov/Conservation/Mammals/Gray-Wolf>

There are five methods of livestock protection to consider for your livestock, the first is **electric fencing**. Electric fencing is typically used with sheep and goats as they tend to be more nomadic grazers, however it can be useful for night penning in high predator pressure areas. It is effective against wolves, coyotes and bears. A short write-up on electric fencing can be accessed at:

<https://ucanr.edu/sites/Rangelands/files/305120.pdf>

Another method proven to be helpful against wolves is **turbo fladry** or electrified fladry. Turbo fladry is generally a strand of polywire with plastic flagging attached. Fladry is traditionally red, but there is no evidence that one color is better than another. Turbo fladry is attached to one strand of electric fencing polywire and usually strung around a night-penning area or a calving pasture, especially in areas with high predator pressure. More information on turbo fladry can be found at:

<https://ucanr.edu/sites/Rangelands/files/305119.pdf>



Livestock carcass management is helpful at avoiding attracting predators, this primarily applies to bone piles and areas near homes or areas where livestock tend to be concentrated. According to CDFA code, animals may be buried on the owner's property within 3 miles of where they died. Currently animal composting is prohibited in California. The primary recommendations regarding livestock management are to avoid creating bone piles, move deceased animals away from areas where livestock concentrate or away from calving pastures, and to bury them when possible. Roadside dumping of deceased animals is prohibited. For more information on carcass management visit:

<https://ucanr.edu/sites/Rangelands/files/307752.pdf>

Fox lights, or motion sensing lights are positioned outside of night-penning areas or lambing or calving pastures. They should be near the pasture and aimed away from the livestock. The idea is that when a

predator comes near, the light turns on and scares them away. There are many types of predator deterrence motion lights available for sale. An internet search for fox lights or motion lights for predators returns a long list of options, YouTube videos, and more. In some instances, the lights can be programmed to flash in random order to mimic the presence of humans. While a number of resources are available online to learn about fox lights, I was not able to find an objective summary of their effectiveness. I will continue to look and post a link on my webpage when I find more information. Anecdotal information suggest fox lights work best when used with another deterrent tool.

Livestock guardian dogs are perhaps the most effective tool to protect against all predators including wolves, coyotes, mountain lions, and bears. Many are probably familiar with LGD's or at least the concept that a Great Pyrenees or similar breed of dog is bonded to livestock at a young age and these dogs then follow the herd or flock and provide protection for the livestock by barking and chasing off predators. More information on LGD's can be found at the following links:

<https://ucanr.edu/sites/Rangelands/files/305121.pdf>

<https://ucanr.edu/sites/placervevadasmallfarms/files/326059.pdf>

<https://ucanr.edu/sites/placervevadasmallfarms/files/357299.pdf>

<https://ucanr.edu/blogs/RanchingintheFoothills/index.cfm?tagname=Livestock%20guardian%20dogs>

Wildlife cameras can be helpful in confirming the presence of wolves, wolf numbers, and age estimates. These could be especially helpful in instances where predation has occurred and an application is submitted to CDFW for the wolf reimbursement program. For information see:

<https://ucanr.edu/sites/placervevadasmallfarms/files/302932.pdf>

The use of multiple livestock protection tools is recommended for the most effective predator deterrence, especially in areas with high predator pressure. Typically this involves something that wolves perceive as a threat and then another tool to reinforce the presence of a threat. For example fox lights in combination with turbo fladry. There are more resources available on non-lethal protection tools than I have listed here and UCANR has a publication on the topic <https://anrcatalog.ucanr.edu/pdf/8598.pdf>. Please reach out with specific questions.

Buying Livestock Drugs in California

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A livestock producer recently contacted UCCE regarding a problem he was having getting livestock dewormers shipped to a California address from out-of-state online retailers. Three different online retailers told him that they don't have a license to ship the products to California. This was a headscratcher since the same retailers have previously shipped the same products to California.

The problem triggered an exploration into the regulation of livestock drugs in California, which is helpful to understand the issue encountered with the online retailers. Below is a brief description of how livestock drugs are regulated in California, with many references to lists published by the California Department of Food and Agriculture (CDFA), and a final suggestion on what to do if you encounter the same denial to sell a dewormer or other livestock drug.

Here are the basics of California Livestock Drug Regulations

When you buy livestock drugs from a store or an online retailer you usually don't know or need to know the regulatory process that permits such transactions, unless you are buying an antimicrobial drug that requires a prescription. Drugs that don't require a prescription are classified as either a "livestock drug" or a "restricted livestock drug." Here are the different livestock drug classifications and their corresponding regulations:

1. **Livestock Drug** – does not have any restrictions to sell or purchase
2. **Restricted Livestock Drug** – the drug retailer is required to have an approved retailer license issued by CDFA to sell the drug in California
3. **Restricted Livestock Drug, Rx** – the retailer has the same requirement as with a Restricted Livestock Drug and the buyer must have a veterinary prescription to purchase the drug

Some restricted livestock drugs are further classified as Type A VFD (Veterinary Feed Directive) or Type A Non-VFD, but most livestock producers don't need to worry about Type A livestock drugs unless they are a confined animal feeding operation (CAFO). Here you can download a complete list of [CDFA Approved Livestock Drug Registrations](#) and their classifications.

More on the Drug Classifications

Most drugs for livestock fall under the "Livestock Drug" classification and include drugs such as antiseptics, topical medications, pain relievers, vitamins, minerals, nutrients, insecticides, and many more.

Drugs in the "Restricted Livestock Drug" category include hormones, dewormers, coccidiostats, medicated feed additives and a handful of other drugs. Here you can find a list of "[Restricted Livestock Drugs](#)." Purchasing "Restricted Livestock Drugs" in California is typically not a problem unless the retailer does not have an approved retailer license with CDFA.

Drugs classified as "Restricted Livestock Drug, Rx" include medically important antimicrobial drugs such as penicillin, oxytetracycline, sulfamethazine and others. Here is a list of "[Restricted Livestock Drugs, Rx](#)" that were available without a prescription prior to 2018 in California." These are drugs that require a prescription from your veterinarian to be purchased in the state of California, as mandated by the Livestock: Use of Antimicrobial Drugs law ([FAC § 14400 – 14408](#)). Other livestock drugs, including antimicrobials such as tulathromycin or gamithromycin have always required a prescription and will continue to do so in the future. If you do not have a veterinarian's prescription, then you must establish a veterinary-client-patient relationship (VCPR) with a veterinarian so that the veterinarian knows you and your livestock operation and has confidence in your animal care practices and ability to properly use and administer the prescription drugs.

Why Did the Retailers Decline Selling the Dewormer Products

While one of the retailers clearly does not have a retailer license to sell restricted livestock drugs in California, the other two retailers do have an approved retailer license. When we contacted the two retailers who do have an approved retailer license, they both indicated that the purchases were denied due to a website error and suggested that the purchaser call their customer service phone number to order the restricted products. Given this response we suspect there may be confusion or glitches among some out-of-state online retailers on selling restricted livestock drugs in California. A contributing factor may be recent changes made across the nation regarding medically important antimicrobials. On June 11, 2023, the US Food and Drug Administration implemented GFI # 263 and all medically important antimicrobials in the nation now require a prescription from a veterinarian. The rest of the country

essentially now follows what California has already been practicing since 2018. The drugs that were previously “Restricted Livestock Drugs, Rx” are now Federally labeled as Rx drugs and no longer require a special designation for sale to California residents. It did not, however, change the label status of other “Restricted Livestock Drugs” in California.

If you find yourself in a similar situation in which an online retailer declines the sale of a dewormer product or other restricted livestock drug, you can first check if the retailer has an approved retailer license using this [CDFA Restricted Livestock Drug Licensee list](#). If the retailer is listed as having an approved license then you should call their customer service number to order the product and let them know of the website error so that it can be corrected.

You can find all the referenced lists of restricted livestock drugs, licensed retailers and information about the Livestock Drug Program in California at this CDFa website <https://www.cdfa.ca.gov/is/ffldrs/LivestockDrug.html>.

Vesicular Stomatitis Virus: An Unwelcome Guest in Livestock’s Mouth

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On May 18, 2023, Vesicular Stomatitis Virus was detected in a horse premises in San Diego County. Since then, several more counties in the southern half of California have reported positive cases of vesicular stomatitis, mainly in horses. Two cattle premises and a rhino in a wildlife park were also confirmed positive for the virus. A current map of affected counties with quarantined premises can be accessed through the California Department of Food and Agriculture (CDFA) at [this link](#). The CDFa also offers a number of informational materials related to Vesicular Stomatitis Virus on this dedicated [webpage](#).

What is Vesicular Stomatitis Virus (VSV)?

Vesicular Stomatitis (VS) is a contagious viral disease that often affects horses, but can also lead to clinical signs in cattle, swine, wild ruminants, small ruminants, and llamas and alpacas, causing painful sores and blisters in their mouths and on their hooves. Though not typically fatal, VS can have significant economic and welfare impacts on affected animals. In rare cases, people can also become infected and develop flu-like symptoms. Understanding VS during the current outbreak is crucial for producers, veterinarians, and anyone involved in the livestock industry.

Transmission and Spread

VSV primarily spreads through direct contact with infected animals. The virus can also be transmitted through contaminated equipment, feed, or water sources. Certain insects, such as, midges, sandflies, and black flies, can carry and spread the virus from one animal to another. However, there are still some uncertainties about how the virus spreads between animals and between premises.



Midge



Black fly

Clinical Signs

Once animals are infected with VSV, it takes about 2 to 8 days for the first clinical signs to appear. Common signs include the formation of painful blisters and sores in the mouth, on the tongue, and around the lips which causes the excessive drooling and reluctance to eat. The virus may also cause similar painful lesions on the hooves and teats. In severe cases, the animals may experience lameness due to hoof lesions further contributing to decreased feed and water intake. Severely affected animals may be dehydrated with metabolic and acid-base derangements (especially ruminants as they produce a large amount of saliva which is critical for buffering the rumen). Animals may lose condition due to the painful lesions.

Impact on Cattle and Livestock Industry

VSV is classified as a "reportable disease," which means it must be reported to the local authorities upon detection. The reason for this classification is the potential for VSV to mimic the signs of other more dangerous diseases, such as foot-and-mouth disease (FMD). Once VSV is suspected, a quarantine will be issued so animals may not leave from the premises until cases have resolved. Timely reporting and temporary movement restrictions for affected premises is the best way to reduce the spread of VS. Call your local veterinarian or your CDFA Animal Health Branch if you suspect a case of VS in your livestock. There is no "punishment" for having the disease in your livestock, other than being under temporary quarantine. Affected animals won't be eliminated as is the case for other livestock diseases such as bovine tuberculosis or Newcastle disease in poultry. If everyone stays vigilant and reports cases of VS, spread of the disease will be minimized.

Plan ahead for interstate livestock movements

When shipping cattle or other livestock interstate, there may now be additional restrictions for the certificate of veterinary inspection required by the importing state. Make sure you plan ahead and discuss with your veterinarian when to schedule visits for health certificates for interstate movement. The same may be true when taking animals to a livestock fair.

Prevention and Control

Preventing VSV outbreaks requires a combination of biosecurity measures and vigilant monitoring. Livestock owners should:

1. Implement strict biosecurity protocols to limit contact between healthy and potentially infected animals.
2. Regularly inspect animals for any signs of the disease, such as blisters, sores, or lameness. Wear gloves when examining mouths to avoid exposure to the virus.
3. Isolate and quarantine suspected cases immediately to prevent further spread.

4. Practice proper sanitation and hygiene when handling livestock and equipment. The virus is susceptible to disinfection with various products including diluted bleach, iodine, quaternary ammonium, and phenolic compounds.
5. Minimize exposure to potential insect vectors by using repellents or insecticides. Check the [VetPestX](#) website for information on available products to kill or repel the most important vectors.

Unfortunately, there is no vaccine available for VSV, so biosecurity, hygiene, and vector control are the best ways to prevent the disease. It's important to note that there is no specific treatment for VSV, and supportive care is the mainstay for affected animals. Veterinarians may recommend pain relief, hydration support, and providing soft and easily consumable feed.

Neospora in Beef Cattle

By Dr. Gabriele Maier, UCD Beef Cattle extension veterinarian

What is Neospora?

Neospora caninum is a single celled, parasitic protozoal organism, and the most commonly diagnosed cause of bovine abortions in many regions of the world. Although it may be more common in dairy cattle, beef herds are not immune to it. In the US, studies found a median seroprevalence of 13% in beef cattle estimated to cause an annual loss of US \$111 million. Cows and other ruminants are intermediate hosts, while dogs and other canids are definitive hosts, in which *Neospora* undergoes sexual replication. Dogs, coyotes, or gray wolves typically get infected through consumption of aborted fetuses or infected meat. They will pass the infective form of *Neospora* called oocysts in the feces. When oocysts are accidentally ingested by intermediate hosts such as cattle, they sporulate in the gut and release so-called tachyzoites, which make their way out of the gut and into muscle as well as through the placenta to the developing fetus. The outcome is an aborted fetus, a mummy, a stillborn calf, or rarely a calf born with neurologic deficits such as abnormal gait or birth defects. However, transmission can also occur from infected cow to her fetus where a normal calf is born. Birds, including chickens, sparrows, and crows have also been identified as intermediate hosts and may contribute to the dissemination of *Neospora* when eaten by canids, but more research is needed to confirm. People do not seem to become infected with *Neospora*.

Can cows transmit *Neospora* between each other?

A cow can only infect her own fetus with *Neospora*, there is no cow-to-cow transmission even when a cow aborts from *Neospora*.

What do you see in affected cattle?

Aborting cattle show no other signs of disease and abortions can happen at any time during pregnancy starting at 3 months but are most common during mid-gestation between 4 - 7 months of pregnancy. There may be abortion storms where many cows abort at the same time or there may just be an uptick in abortions above the background level that typically occurs during a season. Infection in early pregnancy may lead to more severe consequences though than infection during the last trimester of pregnancy.

Is there a vaccine or treatment?

No commercial vaccines are available, neither are any drug treatments. The only option to deal with *Neospora* is through management and preventive measures.

How do you know you are dealing with *Neospora* abortions?

It is always good to call the diagnostic lab and ask what tissues they would like to have submitted for a particular case. In general, for abortions, placenta, fetus, and blood from the dam are all important. For *Neospora* in particular, the most common sites to find it in the fetus are in the brain, heart, or liver. If you don't have a placenta or a fetus, which is often the case, it might still be helpful to submit blood from cows that have aborted and those that have not aborted to support a diagnosis of *Neospora* abortion. A positive test means that the cow was exposed to *Neospora* in the past, will stay infected for life, and is more likely but not guaranteed to abort because of it. Infected cows may also test negative on a blood test early in the infection but will likely test positive later on. Serial blood tests several months apart can help detect those cases.

It is not known what triggers the recrudescence of *Neospora* once a cow is infected. Recrudescence means, she got infected sometime in the past, *Neospora* formed tissue cysts in muscle that stay mostly undetected by the immune system, but later on, *Neospora* causes an abortion. Stress, disease, pregnancy, or other immune-suppressing events may be involved, but the science is still lacking to clearly define the cause of recrudescence.

Should you test herd additions?

If you are concerned about *Neospora* in your herd, it is good to ask about abortion history in the seller herd. To be on the safe side, an ELISA screening test will help to eliminate those that test positive and who might be at higher risk of *Neospora* abortion in the future.

How to manage *Neospora* once you know it's in the herd

Testing and culling may be one option, depending on the percent positive in the herd. However, that may not be feasible if there are a lot of cows that test positive. Another option is not to keep replacement heifers from positive cows or test them before making that decision, so the problem does not propagate. Testing calves before they drink colostrum would be ideal, so there is no confounding with maternal antibodies. Since there is very little chance of positive cows transmitting *Neospora* other than to their own calves, keeping those cows does not elevate the risk of *Neospora* infections or abortions in other cows. Positive cows are more likely, however, to abort or have a calf that is infected in utero.

What about cows with high genetic merit that test positive?

Embryo transfer is a way to protect a calf from a dam with high genetic merit and that has tested positive. Make sure the embryo recipient tests negative. In this manner, you can still take advantage of a cow's genetics without running the risk of a *Neospora* abortion.

What about dogs and coyotes?

There is no good test for dogs and they are only infected for brief periods of time. It is therefore not recommended to get rid of dogs on the ranch if there is a problem with *Neospora*. Keeping dogs from defecating anywhere near feed is an important control measure though. In addition, promptly cleaning up any parts of the placenta or aborted fetuses so dogs don't have access to them is important as well. Protecting feed sources from coyotes, and having a rodent control program, so coyotes aren't attracted to feed sources that may be infested with rodents, can also lower the risk.



Mushroom poisonings – a danger to cattle?

By Dr. Gabriele Maier, UCD Beef Cattle extension veterinarian
Dr. Robert Poppenga, CAHFS toxicology section head

The atmospheric river event in October of 2021 followed by mild temperatures in northern California turned many grasslands green but may have also resulted in advantageous growing conditions for many types of mushrooms. Different species of mushrooms have a particular growing season between fall and spring, but overall, they require moisture to grow, which we now finally have. If you encounter lots of mushrooms where cattle graze, you may wonder whether they can pose a danger to your livestock. As with many other poisonous plants (although mushrooms are technically not plants), cattle will avoid them if other food sources are available, but occasional accidental ingestions can occur, and it doesn't take much to cause problems.

There have been two documented cases of mushroom poisoning in beef calves in California a few years back in 2008 and 2009. In both calves that died from mushroom poisoning, amanitin, the toxic substance that is found in three different genera of mushrooms *Amanita*, *Galerina*, and *Lepiota*, was detected. The calves were from Sonoma and Napa counties and both were found dead without any previous signs of illness.

The most common species of amanita containing poisonous mushrooms along the West Coast are *Amanita phalloides* (Death Cap) and *Amanita ocreata* (Destroying Angel). Death Cap is common in the San Francisco Bay area and along the Pacific Coast and is abundant in warm, wet years. It is found close to oak, birch, and pine trees, but can also be found in open pastures in the Central Valley. The Destroying Angel occurs all the way from Baja California along the Pacific coast to Washington and is commonly found in the foothills and valley floor of California's Central Valley.



Amanita phalloides (Death Cap), Credit: Archenzo, CC BY-SA 3.0
<<http://creativecommons.org/licenses/by-sa/3.0/>>, via Wikimedia Commons

Poisonings from amanitin have also occurred in people, dogs, and horses. The poison is extremely potent, and one or two Death Caps could kill an adult cow or horse. The toxic mechanism for amatoxins is the blocking of RNA polymerase, an enzyme necessary for producing messenger RNA, ultimately required for protein synthesis. Liver and kidney cells have a high metabolic rate and are particularly vulnerable to this toxin, which leads to necrosis in these organs. Live necrosis was noted on both calves that fell victim to the poisonous mushroom ingestion, which is a typical finding also in blue-green algae poisoning, cocklebur ingestion, or copper toxicosis.

What should you do if you suspect poisonous mushroom growing in your fields?

There are field guides that can help identify mushrooms, but this is not a trivial endeavor. Many mushrooms look very similar to each other so making an identification based on an online photo is difficult. Local mycologists or mushroom hunters may be able to help. Another idea is to use a phone app called iNaturalist where users upload pictures of organisms and other users, many of whom are scientists,

help identify them. The app is a joint initiative of the California Academy of Sciences and the National Geographic Society where all users may help contribute to the identification of uploaded plants, animals, or fungi. There is no guarantee that the app will provide an accurate identification, but it will allow the user access to many enthusiasts and professional botanists and zoologists and certainly presents an improvement over using a picture guide. Finally, there is a test kit available that identifies amatoxins in small amounts of mushroom tissue or urine of an animal that is suspected of having consumed the poisonous mushrooms. The test is less sensitive than lab testing at CAHFS, so negative results have a chance to be false. The kit was developed by the USDA Agricultural Research Service and costs \$45 for 3 tests or \$205 for 15 tests. Unfortunately, due to high demand, the kits are sold out at the moment, but should be available again in early 2022 from this site: <https://amatoxtest.com/>. If the mushrooms you found are identified as poisonous, it is best to pull them out and discard them. To avoid any contact with the mushrooms, wear gloves and wash your hands after handling them.

What should you do if you suspect mushroom poisoning in cattle?

As always when encountering sudden death in livestock, contact your veterinarian to discuss the case and get help with identifying the cause. There are many causes of sudden death in cattle and a good history combined with a field necropsy is the best strategy to get to the bottom of it. If no obvious cause can be found and you have observed mushrooms where the animal was grazing, collect some of them and submit together with the carcass or tissues to the diagnostic lab. Taking a close-up focused picture of the mushrooms may also be helpful in making a diagnosis. Toxicological tests are necessary to confirm a diagnosis and the best tissues to submit are rumen content, liver, kidney, and urine. However, to be able to rule out other causes, additional tissues or the entire carcass should be submitted.

Unfortunately, there are no specific treatments or antidotes for these types of poisonings. Supportive care to help an animal clear the toxin from its system is all that can be done for surviving animals with suspected mushroom poisoning.

The chances of mushroom poisonings in cattle are certainly slim, but they should be on your radar if nothing else seems to make sense, especially when conditions are right for mushrooms to grow.