



West Virginia University

News Ewe Can Use

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Predation!

Predation is one of the most persistent and frustrating challenges faced by many sheep producers. According to a 2000 report released by the National Agricultural Statistics Service in cooperation with Animal and Plant Health Inspection Service-Wildlife Services and National Animal Health Monitoring System, losses of sheep and lambs from animal predators in the U.S. totaled 273,000 during 1999. This represented 36.7% of the total losses from all causes and resulted in an

estimated loss of \$16.5 million to farmers and ranchers.

Approximately 41% of all lamb losses and 30% of all sheep losses were due to predation. Lamb losses cost producers an estimated \$9,054,000 and sheep losses an estimated \$7,448,000. In addition, U.S. farmers and ranchers spent an estimated \$8.8 million in 1999 on non-lethal predator control measures.

Sheep and lambs lost to predators in WV in 1999 totaled 3,600 and accounted for 45% of

the total losses from all causes. Approximately 47% of all lamb losses and 40% of all sheep losses were due to predation (Figure 1). The total value of sheep and lambs lost to predators in WV was estimated at \$194,000, with lamb losses estimated at \$123,000 and sheep losses estimated at \$71,000. Both the number and value of sheep and lambs lost to predators in WV declined between 1994 and 1999 (Figures 2 & 3).



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PREDATION LOSSES IN WV 1999

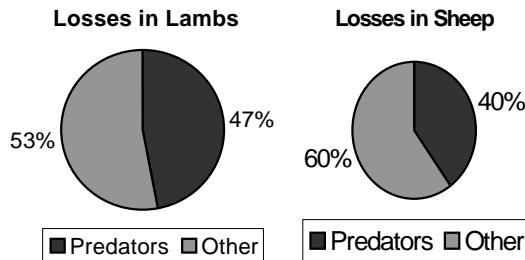


Figure 1

TOTAL WV SHEEP AND LAMBS LOST TO PREDATORS

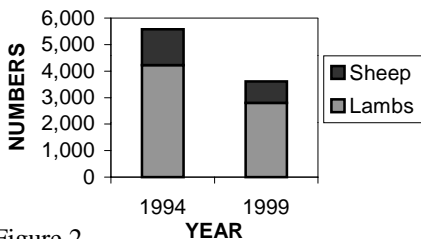


Figure 2

TOTAL VALUE OF WV SHEEP AND LAMBS LOST TO PREDATORS

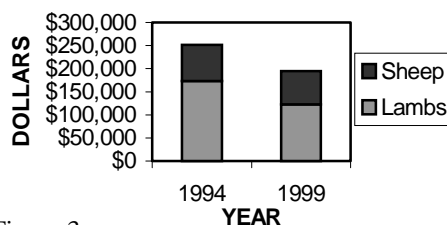


Figure 3

Correction

In the Fall/Winter 00/01 issue of *News Ewe Can Use*, the WVSMP's website address was listed incorrectly. The correct address is:
www.caf.wvu.edu/avs/sheep

WV Integrated Predation Management Program

The West Virginia Integrated Predation Management Program (IPMP) was established in 1996 to address coyote predation on livestock. State and federal funds dedicated to the program have allowed predation management services to be made available to all livestock producers in West Virginia. Program activities are provided by USDA Wildlife Services through educational programs and direct control of coyotes preying on livestock. The IPMP integrates both lethal and non-lethal predation management techniques.

The number of farmers participating in the program has shown a net increase each year. Participation has grown from 40 farmers in FY1996 to 121 farmers in FY2000. Farmers enter and leave the program based on their need for predation management services. Of the 121 farmers receiving services in FY2000, 31% or 38 farmers requested services for the first time. Last year, services were provided to farmers from 20 WV counties. Of services provided, 67% percent were to farmers in Pendleton, Pocahontas and Randolph counties.

During FY2000, Wildlife Services removed 204 depredating coyotes using snares, traps, shooting, M-44's, and live-

stock protection collars. This represented a 43% increase over the 143 coyotes taken in FY1999. The greatest numbers of depredating coyotes were captured in March through May. This not only corresponds to the period when many ewes and lambs are turned out to pasture, but also reflects Wildlife Service's emphasis on preventative removal of coyotes from farms with a persistent history of predation problems.

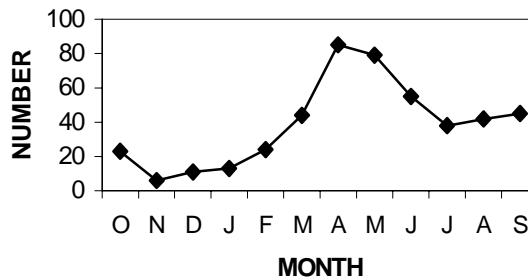
As the name implies, the West Virginia Integrated Predation Management Program integrates a number of non-lethal and lethal predation management techniques to prevent coyote predation. An effective non-lethal predation management technique that can be employed by farmers to reduce coyote predation is the livestock guarding dog (see related article page 4). Wildlife Services and West Virginia Department of Agriculture feel livestock guarding dogs can be a very important part of an integrated program. The IPMP offers farmers a \$100 reimbursement of the purchase price of a livestock guardian dog. Since the livestock guarding dog program was initiated in FY1999, a total of 22 dogs have been approved for cost-share.

WS admits that it is difficult to accurately determine annual reduction in preda-

tion resulting from program activities. However, the 40 original program participants have seen a significant reduction in livestock losses to predation. Prior to April 1996, these 40 farmers lost an estimated 1,111 sheep and goats to predators - an average annual loss of 27.8 head per farm. In FY2000, these same 40 farmers lost only 288 sheep and goats to predators - a 66% reduction and an average annual loss of only 2.38 head per farm.

The integrated predation management approach has proven successful, and West Virginia livestock producers are benefiting from the continued application of integrated predation management tools. If you would like more information or to request the services of the Integrated Predation Management Program, contact West Virginia USDA Wildlife Services at 304-636-1785. The WV Sheep Management Project and WV Wildlife Services will be co-sponsoring a special workshop on *Predation Management*, tentatively scheduled for Saturday, October 27, 2001 in Riverton, WV. Additional information will be available soon.

**COYOTES TAKEN BY MONTH IN WV
(Cumulative, 1997-2000)**



*Source: WV Wildlife Services. Fiscal year, October 1 - September 30.

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Who Done It?

A number of predator species threaten West Virginia livestock. The National Agricultural Statistics Service (NASS) Sheep and Goats Predator Loss Report for 1999 estimated total losses of sheep and lambs to all predators at 3,600 head in West Virginia. Total losses to coyotes were estimated at 58%, bears 8%, and dogs 30.6% (Figure 1). The number of lambs lost to coyotes in 1999 was estimated at 1,800, bears 200, dogs 700, and all other predators (including foxes, bobcats, and eagles) 100 head. The number of mature sheep lost to coyotes was estimated at 300, bears 100, and dogs 400 head.

Sheep and Lamb Predation by Predator Species in WV 1999

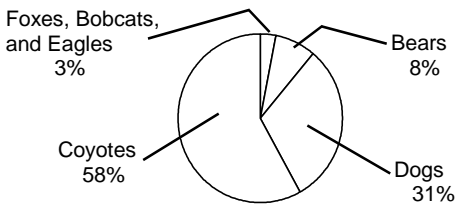


Figure 1

Who Done It? For an effective predator management program to be developed and implemented, it is important to identify the predator species responsible for killing sheep and lambs on a particular farm.

Predation tends to follow a seasonal pattern. Births, deaths, and dispersal of juveniles to new territories all have seasonal patterns. Many predators bear young in the spring and raise them throughout the summer. Predation typically increases during this period (see graph on page 2). Predation patterns may also shift when the relative abundance of one or more prey species changes.

An exception to these patterns of predation is the domestic dog. Most dogs do not fit the traditional definition of a predator. Dogs generally kill for sport, not to survive. However, the damage caused by dogs can be just as devastating as the damage caused by any wild predator.

Sheep obviously die from a variety of causes. Evidence that a carcass has been fed upon, does not necessarily mean that the animal was killed by a predator. The

presence or absence of subcutaneous (just under the skin) hemorrhage at the point of attack can help differentiate between a bonafide kill and opportunistic feeding on an animal that was already dead. Bites to a dead animal will not produce hemorrhage. Bites to a live animal will.

Each predator species has a particular method and pattern of killing that can help distinguish it from other predators. Coyotes typically attack sheep at the throat, biting just behind the jaw and below the ear. Dogs are usually relatively indiscriminate in where and how they attack. Careful skinning out of the neck and head region of a dead sheep will allow tooth punctures and hemorrhage around those punctures to be identified. Puncture wounds at the throat are typical of coyote attack. A coyote kill is usually much cleaner than a dog kill. General mutilation, ripped flanks, hindquarters, and head are typical of attack by dogs. Such evidence, however, is not always conclusive. Young or inexperienced coyotes may attack indiscriminately and dogs will sometimes attack at the throat.

Additional evidence such as hair, fur, tracks and scat may be needed to help identify the guilty predator. The shape of the track, nail marks, length of stride, and pattern of travel can be used to help differentiate between coyotes and dogs. Dog tracks are typically round, whereas, coyote tracks tend to be more oblong with the front toenails pointing inward (Figure 2). The hind track of a coyote tends to follow directly in

line with or fall on top of the front track. In contrast, the rear track of a dog tends to fall slightly to the side on the front track.

Predators also tend to have a particular pattern of feeding. Coyotes, foxes, mountain lions, and bobcats will usually begin feeding on a carcass in the flank, just behind the ribs and will consume viscera (liver, heart, and lungs) first. Bears generally prefer meat to viscera and will often eat the udder of a lactating ewe first. Pet dogs do not usually feed on the animals they kill. Mountain lions, and occasionally bobcats, will often cover a carcass with debris after feeding on it. Eagles skin out carcasses, leaving much of the skeleton intact on larger animals. With lambs, eagles may bite off and swallow the ribs. Feathers and droppings can often be found where eagles have fed.

Predators are opportunistic by nature. Young, old, loner, sick and weak animals are most likely to become victims. Removing sick and injured animals for treatment may help avert predation. More gregarious breeds of sheep (breeds with greater flocking instinct) tend to be less vulnerable to predators.

Removal and proper disposal of dead sheep and lambs from pastures is important since carrion (rotten meat) tends to attract coyotes, stray dogs, and other predators. While individual diets vary, a typical coyote diet is about 98% animal matter and only 2% vegetable matter (Figure 3). Car-

(Continued on page 7)

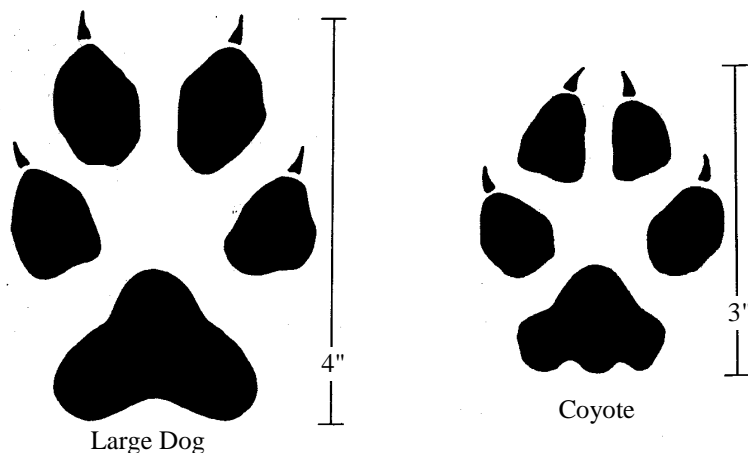


Figure 2

"Coyotes Kill Sheep. That's What They Do." "Guard Dogs Guard Sheep. That's What They Do."

Guard dogs guard sheep. Sounds simple enough. Guard dogs don't herd sheep. Guard dogs are not pets. Guard dogs guard sheep.

For centuries in Europe and in Asia, dogs have been bred and used to protect livestock from wild predators, including wolves and bears. In the US, however, except for the Navajo who have trained dogs to guard livestock for over 200 years, farmers and ranchers paid little attention to the use of guard dogs until the early 1970s. At that time, increased public concern over environmental and wildlife issues and public criticism of lethal predator control practices, forced the sheep industry to search for new methods to manage predation.

Many of the popular guard dog breeds bear the Old World name of the region where the breed originated. The Great Pyrenees from France, the Sharplaninetz from Yugoslavia, the Akbash and Anatolian Shepherd from Turkey, the Komondor from Hungary, and the Maremma from Italy are among the most common breeds of guard dogs found in the US today.

Some behavior patterns are common to all dogs and some, through selection, are genetically unique to a particular breed. Guarding dogs and herding dogs display distinct behavioral differences. The protective behavior of guarding dogs is largely instinctive, as is the herding behavior of herding dogs. Herding dogs react to the signals of the handler and display aggressive behavior toward the sheep. A guard dog, on the other hand, acts independently of the shepherd and is discouraged from aggressive behavior toward the flock.

Behavioral characteristics observed in herding dogs can be traced to the predatory behavior of their hunting ancestors. The use of herding dogs to gather and move sheep also relies on the instinctive "flight response" of sheep to a predator threat. Consider the way that a herding dog approaches and moves sheep. A herding dog will approach sheep in a stalking position - similar to that of a predator stalking its prey. The alert response in sheep is normally triggered by visual stimuli. As the herding dog approaches the sheep it retains visual contact with the sheep. The sheep

also retain visual contact with the herding dog, not moving until their flight zone has been penetrated at which point the sheep will turn and move away from the herding dog (instinctive flight response). This type of stalking behavior is inbred.

Guard dogs are selected to display much different behavior around sheep. Guard dogs display investigatory and submissive behaviors that are not threatening to sheep. Consider the way that a guard dog approaches and moves among sheep. A guard dog will approach sheep in a submissive posture, often with its ears back and eyes squinted, avoiding direct eye contact. A guard dog will often lie on its back allowing the sheep to sniff it - also a sign of submission.

It's probably a matter of debate whether the guard dog thinks it's a big bad sheep and a member of the flock or whether the guard dog thinks that the sheep are rather wimpy members of its pack. Either way, the guard dog must recognize and respect the shepherd as the "alpha" member of the flock or pack and the sheep as the lesser "beta" members to be protected.

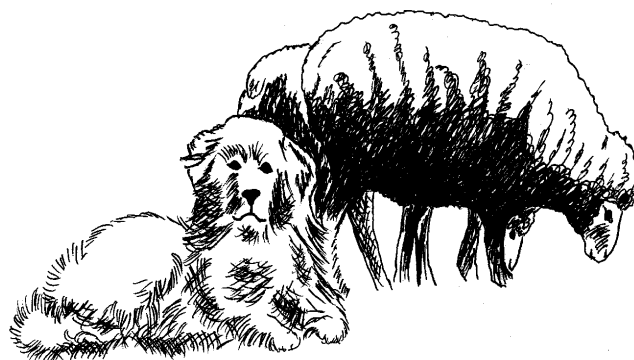
Most frequently, guard dogs protect sheep by acting as a deterrent - scent marking, patrolling, barking, and positioning themselves between the sheep and danger. Sometimes, however, a guard dog will pursue and engage a predator, particularly if there are two dogs guarding a flock.

Guard dogs require little formal training. The key to success is the establishment of a strong social bond between the sheep and the guard dog and the integration of the dog into the sheep operation. Guard dogs are not pets! Guard dogs are working partners!

Tips...

- A guard dog pup should be purchased from a reputable breeder and preferably come from working parents.
- A guard dog pup should be raised with sheep from an early age (about 8 weeks).
- A guard dog pup should not be overly shy or overly aggressive.
- Correct undesirable behaviors immediately such as chewing on lamb's ears, being overly playful and rough with lambs, and wandering.
- Remember that these large breeds of dogs develop slowly. Some dogs do not reach maturity until 18-30 months of age. Don't expect too much of your pup too soon.
- Maintain a good health care program that includes annual vaccinations and routine deworming.

WV Wildlife Services has available an excellent information package and video for those considering the purchase of a livestock guarding dog. The package includes: 1) a list of guard dog breed clubs, 2) a list of guard dog breeders, 3) recommended selection criteria, 4) information on raising and training a guard dog, and 5) other background and resource information. To request a guard dog information package, call WS at 304-636-1785.



Guard Llamas and Guard Donkeys

Most of the information about guard llamas and guard donkeys currently available is in the form of surveys, testimonials and anecdotal stories. Here are a few facts and a few things to consider about guard llamas and guard donkeys:

Statistics:

- In 1999, 28.2% of US sheep operations reported using guard dogs, 13.2% guard llamas, and 9.0% guard donkeys as non-lethal methods to prevent sheep and lamb losses to predators.
- In 1999 13.2% of West Virginia sheep farms reported using guard dogs, 5.3% guard llamas, and 16.8% guard donkeys as non-lethal methods to prevent sheep and lamb losses to predators.

Source: NASS Sheep and Goat Predator Loss (5/5/00).

Llamas:



- Llamas are members of the South American camel family, which also includes alpacas, guanacos, and vicunas.
- Llamas are native to grasslands and deserts of North America, but disappeared 10,000-15,000 years ago.
- Llamas are naturally aggressive toward coyotes and dogs. Responses include: alert attention, alarm call, walking or running toward the predator, kicking or pawing, herding behavior, and positioning between the flock and the predator.
- Llamas require a very short socialization period with sheep (a few hours to one week).
- Although llamas quickly bond with sheep, most prefer to associate with other llamas. Therefore, one llama per pasture (out of sight from other llamas) is recommended.
- Because husbandry practices for llamas are similar to those for sheep, few special management considerations are needed for food, water, or routine veterinary medical care.
- Llamas do not reach their full protective potential until 1 to 2 years of age.
- Llamas may have a guarding tenure in excess of 10 years.
- Llamas are generally compatible with other depredation practices such as traps, snares and M-44s.
- Most producers that use guard llamas give them a high approval rating.

Donkeys:



- Donkeys seem to have an inherent dislike for canid predators including dogs, coyotes and foxes. However, there is little information on the effectiveness of donkeys with non-canid predators such as bears, mountain lions, bobcats, or birds of prey.
- Test a new donkey's response to canids by challenging it with a dog in a small pen or pasture. Consider only donkeys that show overt aggression to an intruding dog.
- Use only a jenny or gelded jack. Intact jacks are too aggressive and may injure livestock (as may some jennies and geldings).
- Be alert for signs of aggression including chasing sheep, nipping at ears or wool, and preventing access to feed and water.
- Allow 4 to 6 weeks for a donkey to bond with the sheep. Stronger bonding may develop if a donkey is raised with sheep.
- Remove the donkey during lambing to avoid injuries to lambs or disruption of the lamb-ewe bond.
- Use only one donkey per group of sheep. When two or more adult donkeys are together, they tend to stay together, and not necessarily with the sheep.
- Donkeys are best suited to smaller flocks and pastures. Large pastures with rough terrain and widely scattered livestock lessen the donkey's effectiveness.
- Avoid feeds or supplements containing monensin (Rumensin) or lasalocid (Bovatec) as these are poisonous to a donkey.
- Donkeys have a fairly long useful life. Maintain routine veterinary care and trim hooves.
- Donkeys are generally compatible with other depredation practices such as traps, snares and M-44s.
- Reported success of donkeys in reducing predation is highly variable.

REMEMBER! Any guardian animal should be considered part of an integrated depredation control program that includes other non-lethal and lethal depredation control methods as necessary.

In the News...

Foot and Mouth Disease - The recent outbreak of foot-and-mouth (FMD) disease in Great Britain has spread, with new cases recently identified in France, Ireland, and the Netherlands. FMD is a highly contagious viral disease that affects cloven-hoofed animals including swine, cattle, sheep, goats, and deer. *The disease is not transmitted to humans and is not considered a human food safety concern.* However, because the disease spreads rapidly across a wide geographical area, FMD can have a devastating economic impact on the livestock industry.

FMD is characterized by fever and blister-like lesions. Lesions can be found on the tongue and lips, in the mouth, on the teats, and between digits of the hooves. Feed consumption drops due to the painful tongue and mouth lesions, sticky, foamy, stringy saliva is produced, milk production drops abruptly, and animals become lame and are reluctant to move. Affected animals can recover, but the disease leaves them debilitated.

FMD is considered the most contagious disease of livestock. Nearly 100 percent of exposed animals become infected. Large amounts of virus are found in all body secretions and excretions (saliva, milk, manure, urine). The virus survives in lymph nodes and bone marrow at neutral pH, but is destroyed in muscle when pH is <6.0 (i.e. after rigor mortis). Every time an infected animal exhales, large amounts of the infectious virus are released. Airborne spread of the virus has been documented for distances of over 100 miles. The virus can survive in contaminated feed and in the environment for up to one month. People spread the virus via contaminated shoes and clothing. The virus can also remain viable in human nasal passages for as long as 28 hours.

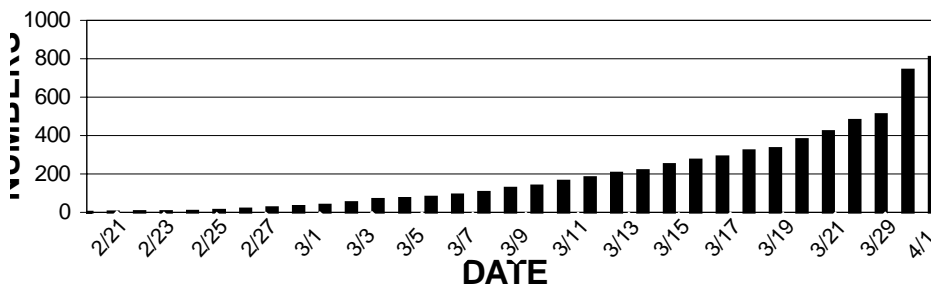
The virus is susceptible to destruction at temperatures over 133°F, to drying, and to acids or bases. One of the simplest means of disinfecting objects is to use vinegar (acetic acid) or lye (sodium hydroxide). Vaccines are available, but there are at least seven separate types and many subtypes of the FMD virus. Immunity to one type does not protect the animal against other types. *Bio-security is the best means of protecting livestock.*

The US has been free of FMD since 1929. The USDA has stepped up measures to protect against the spread of FMD to this country. These actions include:

- Temporarily prohibiting the importation of swine and ruminants, and any fresh swine or ruminant meat and other products of swine and ruminants from the European Union;
- Prohibiting travelers from carrying into the US any agricultural products, particularly animal products, that could spread the disease;
- Heightened alert at ports of entry to ensure passengers, luggage and cargo are checked as appropriate;
- Heightened alert and coordination with state agriculture officials and other USDA officials around the globe to monitor the situation;
- Sending a team of experts to the EU to monitor, evaluate and assist in containment efforts; and
- Public education campaign that includes additional signage at airports, public service announcements, information hotline, website, and other tools to inform the public about this important issue and about steps they can take to prevent the disease from entering the US.

Current information on foot-and-mouth disease and traveler Q&A are available at www.aphis.usda.gov.

CUMULATIVE FMD CASES (2/21/01 - 4/01/01)



*Source: USDA: APHIS

USDA NEWS RELEASE

USDA REMOVES QUARANTINED SHEEP FROM SECOND VERMONT FARM

MONTPELIER, VT, March 23, 2001 -- The U.S. Department of Agriculture, under the authority of the U.S. District Court, today removed a flock of approximately 126 quarantined sheep from a private farm in Vermont. Earlier this week, USDA officials removed 234 quarantined sheep from another nearby farm.

The sheep, imported from Belgium and the Netherlands in 1996, were placed under certain federal restrictions when they entered the country as part of USDA's scrapie control efforts. In 1998, USDA learned that it was likely that sheep from Europe were exposed to feed contaminated with bovine spongiform encephalopathy. At that time, the state of Vermont, at the request of USDA, imposed a quarantine on these flocks, which prohibited slaughter or sale for breeding purposes.

On July 12, 2000, several sheep from the flock tested positive for a transmissible spongiform encephalopathy. TSE is a class of degenerative neurological diseases that is characterized by a very long incubation period and a 100 percent mortality rate. Two of the better known varieties of TSE are BSE in cattle and scrapie in sheep. Unlike BSE, there is no evidence that scrapie poses a risk to human health. Based on current testing methodology, there is no way to determine whether the sheep have BSE or scrapie.

On July 14, 2000, USDA issued a declaration of extraordinary emergency to acquire the sheep. This action was contested by the flock owners. A federal district court judge ruled in favor of USDA based on the merits of the case. The flock owners appealed to the Second Circuit Court requesting a stay, which was denied.

The sheep will be transported to USDA's National Veterinary Services Laboratories in Ames, Iowa, where they will be humanely euthanized. Tissue samples will be collected from the sheep for diagnostic testing.

The owners will be compensated for the fair market value of the sheep.

"While we understand this is a very difficult time for both flock owners, the removal of these sheep from Vermont's pastures concludes a determined effort by USDA to safeguard American agriculture against the threat posed by these animals," said Craig A. Reed, administrator of USDA's Animal and Plant Health Inspection Service.

The United States has never had a confirmed case of BSE. The current situation in Europe highlights USDA's important role in safeguarding America's livestock from such devastating foreign animal diseases.

More information about TSE's and the Vermont issue is available online at www.aphis.usda.gov.

Who Done It?

(Continued from page 3)

lion makes up about 25% of the diet and domestic livestock and poultry about 15%.

So, *Who Done It?* The Wiley Coyote? When in doubt, and for help developing an effective predator management program, contact WV USDA Wildlife Services at 304-636-1785.

AVERAGE COYOTE DIET

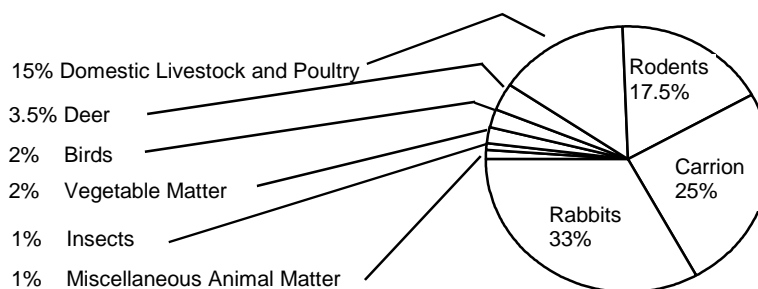


Figure 3.

*Coyote stomach contents collected during all months of the year from a 17 state area (8,263 coyotes sampled).

News Ewe Can Use

**WV Sheep Management Project
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Franklin, WV 26807-0096**

News Ewe Can Use

Mark Your Calendars!!!

Attention Wool Artisans and Crafters

Are you a weaver, spinner, felter, knitter, or crafter of items made from wool or with a sheep theme? If so, here is an opportunity for you to show off your talents. For the second consecutive year, the WV Purebred Sheep Breeders Show and Sale will also highlight our wool artisans and crafters by sponsoring a craft show.

The craft show will be held on Saturday, June 2, 2001 at the Tri-County Fairgrounds in Petersburg, WV from 11:00 a.m. until 5:00 p.m. To reserve a table, contact Sandy Smith, WV Purebred Sheep Breeders Assoc Sec/Treas, at (304) 257-4372 (evenings) or Georgette Plaughter, WVSMP at (304) 358-3661 (days). This is an excellent opportunity to feature your unique handcrafted

WV Purebred Sheep Breeders Show and Sale

Saturday, June 2, 2001
Tri-County Fairgrounds
Petersburg, WV

9:00 a.m. Club Lamb and Purebred Show
11:00 a.m.-5:00 p.m. Wool Craft Show
2:00 p.m. Junior Judging Contest and Skill A-Thon
5:00 p.m. Annual Lamb BBQ
7:00 p.m. Sheep Sale

For More Information
or a Sale Catalog Contact:

Blix McNeill 304-799-6698
Sandy Wilmoth 304-823-3682
Sandy Smith 304-257-4372