CALIFORNIA FARM BUREAU FEDERATION
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July 7, 2014

Mr. Michael Sutton, President
California Fish and Game Commission
1416 9th Street, Room 1320
Sacramento, CA 95814

RE: Wildlife Resources Committee Agenda Item 5: Update and Suggestions of Possible Changes to Predator Management Policies/Regulations

Dear Mr. Sutton:

The California Farm Bureau Federation (Farm Bureau) is writing to provide input into the ongoing discussions surrounding predator management in California. Farm Bureau represents more than 77,000 members as it strives to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of California's resources. California's farmers and ranchers see significant annual losses to predators and other wildlife and utilize a wide range of tools to limit this damage. Farm Bureau members often rely on wildlife damage control experts to assist in controlling problem wildlife. It is important that farmers and ranchers continue to have a wide range of tools available to protect their livestock and crops from damage and it is with this in mind that Farm Bureau submits these comments on the proposals put forth by Project Coyote and the Humane Society of the United States (HSUS) on possible changes to California's policies, regulations and statutes governing predator management.

Farm Bureau was a member of the subcommittee formed by the Wildlife Resources Committee at its first meeting June 12, 2013. The subcommittee met once and each member of the subcommittee was tasked with reviewing California's current policies, regulations and statutes governing predator management and providing recommendations on how she would change those rules. Each member recognized that the Fish and Game Commission (Commission) only has jurisdiction to change policy and regulations, but still thought it important to consider possible changes to statutes as part of the exercise. These recommended changes were provided to Commission staff who compiled the document outlining proposed changes. It is important to recognize that the three sets of proposed changes that came from Project Coyote, HSUS, and Farm Bureau, were submitted as recommendations from our respective organizations, and were not discussed or agreed upon by the subcommittee. It is with this in mind, that Farm Bureau submits comments on the proposed changes submitted by Project Coyote and HSUS.

Fish and Game Code

FGC §4000

Farm Bureau does not have a concern with identifying a consistent rationale for classifying species as game, non-game, and fur-bearers as identified by HSUS under Fish and Game Code (FGC) Section 4000. However, it is important to ensure that any reclassification does not add species to the list of those needing depredation permits from the Department of Fish and Wildlife (DFW). The species requiring a

depredation permit, as specified in California Code of Regulations (CCR) Title 14 Section 401, are: elk, bear, bobcat, beaver, wild pigs, deer, wild turkeys, or gray squirrels. Farm Bureau does not believe species should be added to this list and would urge that wild pigs, a non-native species that causes millions of dollars of damage to agricultural and natural lands throughout much of California, should be removed from the list of species requiring depredation permits.

FGC §4002 and 4003

HSUS and Project Coyote both question the allowance of the use of poisons to take fur-bearing mammals in FGC Section 4002 and the authority of DFW to permit the use of poisons for take of fur-bearing mammals in FGC Section 4003. Currently there is one anticoagulant[1] registered for use to control muskrats, a fur-bearing mammal. Muskrats damage crop, rangeland and water management structures throughout their range in California. Farm Bureau opposes removing the allowed use of this anticoagulant to protect farms and ranches from muskrat damage.

FGC §4004

HSUS and Project Coyote both make recommendations for changes to FGC Section 4004. Interestingly this section was changed just last year, which brings into question why additional changes would be necessary so soon after significant revisions were adopted. HSUS recommends changing the daily trap check requirement to a 24 hour checking requirement. While this sounds like a minor change, it is rather significant. A 24 hour trap check would create significant legal risk to wildlife damage prevention specialists who are currently following the law and checking their traps daily. For example, if a trap is set at 6:00 AM on Monday, the specialist would have to return by 6:00 AM Tuesday or risk being found out of compliance with the law. This may not be feasible given inclement weather, tidal influences in estuarial areas, physical ailments and unexpected changes in work schedules of the individual setting and checking the trap.

While changing the requirement from daily to 24 hours would likely cause significant hardship to individual wildlife damage prevention specialists, it is unlikely to provide significant benefit to wildlife. The vast majority of animals are captured in traps during nighttime hours and traps are set during daylight hours, so the animal would only be in the trap from the time it is captured at night until the next day when the trap will be checked before daylight hours end. This change would also seem to present a challenge for law enforcement personnel to properly enforce.

Project Coyote recommends banning the use of snares or cable restraints for the take of fur-bearing mammals. In many cases, snares are the only tool left to control wildlife damaging property. Removing this tool would significantly restrict the ability of wildlife damage experts from controlling damage to California's farms and ranches. California prohibits the use of steel jawed leghold traps and recently reduced the allowable size of conibear traps set on land to six by six inches. These restrictions leave snares and cable restraints as one of the only tools left to control fur-bearing mammals damaging crops and other property. It is also important to recognize that California law[2] prohibits the discharge of a firearm with 150 yards of any dwelling without the permission of the owner. This restriction means that if snares and cable restraints were prohibited, there would be areas of the state where it is unlikely that any tools would be available to control problem wildlife.

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[1] Rodent Bait Block Diphacinone
[2] FGC §3004

FGC §4152

HSUS and Project Coyote recommend a number of changes to FGC Section 4152 with which Farm Bureau has concerns. Farm Bureau opposes HSUS's recommended change requiring trap checks every 24 hours rather than daily, as discussed above. HSUS proposes requiring that all non-target species be released unharmed and shall not be taken. While significant care is taken when trapping wildlife to ensure it is done humanely, it is nearly impossible to entirely eliminate potential harm to wildlife when trapped. Creating this requirement will create significant risk of liability to anyone trapping wildlife and will likely reduce the availability of trapping services to California's farmers and ranchers. The U.S. Fish and Wildlife Service recognizes the inescapable fact that it is impossible to completely eliminate the risk of harm to non-target wildlife and grants incidental take of species listed under the federal Endangered Species Act to Wildlife Services through a biological opinion. California should also recognize this and not adopt an impossible standard of releasing non-target wildlife from traps unharmed.

Both HSUS and Project Coyote recommend combining FGC Section 4152 with Section 4181, which seems to imply a desire to require depredation permits before any nongame wildlife damaging crops or property could be taken by a landowner, tenant, or their agent. Farm Bureau opposes efforts to add new species to the list of those needing depredation permits. Obtaining a depredation permit means a property owner needs to wait until damage occurs before they can obtain a permit. Often DFW requires challenging and costly actions prior to authorizing a permit and it is inappropriate to require depredation permits for all species of wildlife. For example, one farmer growing watermelons in northern California had significant losses from deer eating his crop. In order to obtain a depredation permit from DFW to control the deer damage, the farmer implemented numerous measures to scare the deer off, including sleeping in his field with his dog. Even with implementation of these measures, damage continued and DFW refused to issue a depredation permit and ultimately the farmer gave up on the crop and stopped farming watermelons. Adding additional species, or further curtailing issuance of depredation permits as Project Coyote recommends by adopting DFW policy in statute, would further hurt farming and ranching and Farm Bureau opposes these proposals.

FGC §4153 and 4154

HSUS and Project Coyote both raise concerns with FGC Section 4153 and 4154. These are important sections that allow DFW to respond to problem wildlife and to exercise their authority in managing wildlife in California. Adding additional requirements to adopt findings and publicly notice decisions will slow down DFW's ability to react to wildlife management needs and address problem wildlife. The desire for this change seems to stem from the mistrust and dislike of the U.S. Department of Agriculture's Wildlife Services. Please find the attached letters from Animal and Plant Health Inspection Service Administrator, Kevin Shea, and from a large coalition of organizations supporting Congressional funding of USDA's Wildlife Services. Both of these letters provide specific detail about the value Wildlife Services provides to all citizens and I will include a few highlights here.

California's livestock producers face continual challenges in protecting their livestock from numerous predators. In 2009, 13,800 sheep and lambs, worth nearly $1.4 million, were lost to predators in California[3]. California's cattle producers lost 9,600 cattle and calves, worth more than $4.1 million, to predators in 2010[4]. While predator loss is not a significant loss to the overall value of California's beef

[3] USDA NASS Sheep and Goat Death Loss, May 2010
[4] USDA NASS Cattle Death Loss, May 2011

cattle, predator losses are not distributed equally across the landscape. One rancher may see no losses, while another rancher loses ten percent of his calves. It is also important to recognize that predator death losses in cattle have been on the increase since 1991. According to USDA figures, predator losses have more than doubled over that time[5]. Of known predators, coyotes accounted for the highest percentage of cattle and calf death losses nationally[6]; contributing to over half of all predator caused losses. Coyotes are the number one predator of sheep and lambs. Unfortunately USDA does not gather data on specific predator losses for sheep and lambs in California, but anecdotal evidence suggest the national data is representative of California sheep and lamb losses. In California, coyotes kill nearly 73 percent of all cattle and calves lost to predators[7].

A study done in 2009[8] estimated revenue and job losses in 10 California counties[9] and 22 crops[10] from bird and rodent damage. This study found that in those 10 counties, farmers lost an estimated $168 million to $504 million from rodent and bird damage to 22 crops. In addition to revenue losses, the study estimated that within the 10 counties analyzed jobs lost due to this damage ranged from 2,100 to 6,300.

Nationally, wildlife causes more than $12.8 billion in damage each year to natural resources, public infrastructures, private property and agriculture. In California alone, Wildlife Services works to protect over $5.1 billion in resources. Wildlife Services works to prevent, minimize or manage this damage and to protect human health and safety from conflicts with wildlife. Wildlife Services specialists help to protect public health and safety at airports, provide surveillance and response to outbreaks of wildlife diseases, provide protection for food safety, protect livestock and other agricultural resources from depredations by mammals and birds, protect threatened and endangered species, and resolve a multitude of other human/wildlife conflicts. Wildlife damage to U.S. livestock, aquaculture, small grains, fruits, vegetables and other agricultural products has been estimated to reach nearly $1 billion annually. Wildlife predators cause more than $126 million in death loss to livestock; field crop losses due to wildlife total $619 million annually; and losses to vegetables, fruits and nuts total $146 million annually. As a result, Wildlife Services is an essential program to agriculture production both in California and nationally.

Wildlife Services' Congressional mandate is to administer a professional wildlife management program and this authority gives California's Wildlife Services program the ability to enter into cooperative service agreements with "States, local jurisdictions, individuals, and public and private agencies, organizations, and institutions" to assist in resolving human-wildlife conflicts. Wildlife Services bases its activities on science and utilizes resources from the National Wildlife Research Center (NWRC) to guide its actions. NWRC assists Wildlife Services and others with development of non-lethal and lethal methods; considering economics, effectiveness, and humaneness.

Wildlife Services assists farmers and ranchers throughout the U.S. to help prevent and reduce wildlife damages to livestock and crops. Wildlife Services professionals in California protect over $610 million in livestock resources annually and 75 percent of Wildlife Services cooperative agreements in California are

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[5] USDA APHIS Cattle and Calves Predator Death Loss in the United States, 2010, February 2012
[6] USDA NASS Cattle Death Loss, May 2011
[7] Ibid.
[8] Shwiff, S.A., K Gebhardt, and K.N. Kirkpatrick, 2009. The Economic Impact of Bird and Rodent Damage to California Crops. USDA/APHIS/Wildlife Services, National Wildlife Research Center, Fort Collins, CO.
[9] Fresno, Kern, Monterey, Napa, Riverside, San Diego, San Joaquin, Stanislaus, Tulare, and Ventura
[10] Almond, Artichoke, Broccoli, Carrots, Cherries, Oranges, Lemons, Table Grapes, Wine Grapes, Alfalfa Hay, Lettuce, Melons, Nursery Flowers, Nursery Containers, Peaches, Pistachios, Rice, Wild Rice, Spinach, Strawberry, Tomato, and Walnut

with small farmers and ranchers. This partnership does not only involve lethal control, but Wildlife Services employees also provide technical assistance to farmers and ranchers on nonlethal methods that could help prevent future losses. In addition to helping farmers and ranchers, Wildlife Services provides significant assistance to citizens through their work to prevent bird strikes at airports; to limit damage to natural resources by controlling nonnative species, including feral pigs; and working to prevent the spread of wildlife-borne diseases, such as West Nile virus, avian influenza, pandemic H1N1, Hantavirus and rabies. Wildlife Services also works with wildlife management agencies to protect threatened and endangered species from predation by other wildlife.

Despite allegations made in the media and by groups opposed to Wildlife Services, Wildlife Services in California complies with all federal and state statutes and regulations including the ban on steel jawed leghold traps, sodium cyanide, and sodium flouroacetate. Wildlife Services does not eradicate predators from the environment. Using DFW's coyote population model, Wildlife Services statewide take of coyotes is 18 percent of the total estimated population. This level is considered low magnitude and is far lower than where the cumulative impact would begin to affect the population.

FGC §4181

HSUS recommends changes to FGC Section 4181, which are a little unclear in the document summarizing the proposed changes. If the changes are as outlined below, Farm Bureau does not have concerns with the proposed change.

(a) …No iron-jawed or steel-jawed or any type of metal-jawed trap shall be used to take any ~~bear~~ wild animal pursuant to this section…"
(b) The permit issued for taking ~~bears~~ species pursuant to subdivision…
(b)(2) What efforts were made to solve the problem without killing ~~the bears~~.
(b)(3) What corrective actions should be implemented to prevent re~~oc~~currence.

FGC §4181.1

HSUS recommends changes to FGC Section 4181.1 regarding who may receive a pig carcass taken by a property owner, their employee, or agent when encountered damaging property. This proposed change is premature. Assembly Member Frank Bigelow (R – O'Neals) introduced AB 2268 this year, which furthered the discussion about how California should change its policy regarding feral pigs. AB 2268 did not pass this year, but stakeholders have committed to continuing discussing how best to manage feral pigs. It is also important to recognize that under federal law[11] people are prohibited from accepting meat that has not been inspected by a USDA inspector.

In regards to feral pigs, Farm Bureau would like to remove the requirement to obtain a depredation permit for property owners being damaged by feral pigs. It is Farm Bureau's belief that there should not be impediments to removing a non native species that causes millions of dollars of damage to farms, ranches, and native habitat. Currently depredation permits limit the number of pigs that may be taken under the permit, removing the requirement to obtain a depredation permit would allow more pigs to be taken.

[11] Federal Meat Inspection Act 21 USC §610

FGC §4185

HSUS proposes further limiting methods of take for bears in Riverside and San Bernardino Counties by altering FGC Section 4185. This section was added in 1957 and has remained unchanged since 1983. It seems unnecessary to have separate rules for these two counties and Farm Bureau is opposed to further restricting the types of traps used to trap bears that are damaging beehives. Farm Bureau would instead recommend eliminating this section and allowing the same methods of take that are allowed for other bee keepers in the state.

FGC §4190

HSUS raises concerns with FGC Section 4190 due to lawsuits filed over a similar provision in Arizona. Farm Bureau has concerns with relocating predators that are known depredators. Simply relocating a problem animal is unlikely to prevent the animal from killing livestock or damaging other property again. Once an animal is proven as a problem it should be humanely euthanized. If they are not euthanized, all predators, not just large predators, should be tagged or otherwise be clearly identified.

Title 14 California Code of Regulations

Title 14 §265

Both HSUS and Project Coyote recommend prohibiting the use of dogs to take wildlife by changing Title 14 Section 265. Farm Bureau strongly opposes this proposal. California's farmers and ranchers depend on wildlife damage management specialists to take predators who have killed livestock. These specialists regularly use dogs to pursue these predators. Dogs are also necessary when wildlife damage management specialists pursue predators threatening human health and safety. These specialists use dogs to pursue fox and raccoons to keep their dogs trained and in shape for depredation activities. Without this ability, the effectiveness of these hounds would be diminished.

Title 14 §401

Through Farm Bureau's participation in the predator subcommittee and member's initial review of the policies, regulations, and statutes governing predator management, Farm Bureau recommended changes to Title 14 Section 401. Farm Bureau recommended that changes be made to DFW's regulations governing the depredation permit process. Farm Bureau recommends the following changes:

> (a) Application. A person who is a property owner or tenant may apply to the department for a permit to take elk, bear, beaver, wild pigs, deer, wild turkeys, or gray squirrels that are damaging or destroying, or ~~immediately~~ threatening to damage or destroy, land or property. <u>The department shall respond to an application as soon as possible, but no later than 72 hours after receiving the application. Should the department fail to respond, an application shall be deemed accepted and a permit issued.</u>

Add a new subsection:

> <u>Take of Bears Damaging or Threatening to Damage Bee Hives. When issuing a permit authorizing take of bears that have damaged or are</u>

> threatening to damage bee hives, the department shall consider the feasibility of methods to prevent damage and deter future damage. Fencing shall not be required in instances where installation is infeasible.

Farm Bureau believes there should be greater flexibility in the issuance of depredation permits. There are instances where historical data shows that a certain species caused damage in an area before, and a culprit is exhibiting behaviors that lead up to damage, DFW should be allowed to issue a depredation permit even if the threat isn't "immediate." For example, beavers that occur near orchards or along flood control levee systems are likely to cause damage and an "immediate" threat shouldn't be necessary to obtain a depredation permit. Clearly, given the request to remove the reference to "immediate," Farm Bureau is opposed to HSUS's recommendation to remove reference to "immediately threatening to damage or destroy" for the reasons stated above.

Farm Bureau recommends having a time certain requiring a response from DFW when an application is received for a depredation permit. Property owners with damage or threatened damage need to respond to this damage quickly if they are to stop the damage. If the desire is to target the offending animal quick responses to depredation permit applications should be the goal, because the faster DFW responds to a permit application, the more likely that the offending animal will be able to be removed.

Finally, Farm Bureau hears regularly from its members who raise bees that some of the permit requirements placed in their depredation permits to respond to problem bears are completely unachievable. This is particularly true for queen bee breeders, whose hives are spread out over an extensive area. DFW often requires that the queen bee breeders must fence all of their bee hives in order to obtain a permit. Not only is the area much too large to economically fence, but often it is on leased land and fencing would severely limit the landowner from grazing livestock where the bee hives are located meaning that the bee keeper would no longer be welcome on the land. The proposed changes would give DFW greater flexibility when taking into account other actions the beekeepers have taken to protect their hives from bear damage.

Title 14 §460

Commission staff recommended making clarifying changes to Title 14 Section 460, which would make clear that take of the species listed in the regulation,[12] is prohibited for fur and allowed incidentally and for depredation. Farm Bureau is supportive of these changes as river otters and foxes do cause damage to farms and ranches.

Title 14 §461 and 464

Project Coyote recommends eliminating the provision of Title 14 Sections 461 and 464 that allow the use of dogs to pursue gray fox and raccoons. Farm Bureau opposes removing these provisions for the reasons discussed above in regards to Section 265.

Title 14 §472

Farm Bureau is strongly opposed to the changes recommended by HSUS and Project Coyote to Title 14 Section 472. All the species listed in Section 472 cause significant property damage each year and limiting

[12] Fisher, marten, river otter, desert kit fox and red fox

take of these species will increase the damage they cause. According to data provided to Wildlife Services by individuals utilizing its services, between 2002 and 2012, coyotes in California have caused nearly $13.2 million in damages to human health, property, and at risk wildlife. The bulk of these damages were losses to California's farmers and ranchers through lost livestock, damage to irrigation systems and lost and damaged crops.

According to a report[13] to the California Department of Food and Agriculture's Vertebrate Pest Control Research Advisory Committee the National Wildlife Research Center found that Consumers in the U.S. accrue annual benefits of between $2.8 billion and $3.7 billion from California rodent control and between $1.5 billion and $2.1 billion from California bird control protecting California crops. The California farmers who grow these crops accrue annual benefits of between $600 million and $900 million from rodent control and their benefits from bird control range from $500 million to $600 million.

California's livestock producers work hard to protect their livestock from pain, suffering, and death caused by predator attacks. Livestock producers do not simply react to predators after losses, but work proactively to implement loss prevention strategies to decrease predator losses. California beef producers (unfortunately USDA does not gather data on prevention methods employed by California's sheep producers) implement a number of non-lethal methods to prevent losses of their cattle and calves. These methods include using guard animals, exclusion fencing, frequent checking to increase human presence, and removing livestock carcasses from grazing areas. Some of these methods are employed by up to 75 percent of California beef producers[14].

According to USDA[15], in 2010 livestock producers throughout the U.S. spent $188.5 million on non-lethal methods to control predators. However, non-lethal methods are not effective in all situations and even in situations where they may be effective they are not always successful. Predators are highly adaptable and often quickly learn how to overcome non-lethal methods, requiring significant investment in labor and materials to continually protect against predators. Lethal control of wildlife must always remain available as a valuable tool in preventing the losses they cause.

California livestock producers have lost numerous tools to control predators. California prohibits the use of steel jawed leg traps and livestock protection collars, which are targeted at the exact predator trying to kill a sheep or lamb. Snares are prohibited for use in the ranges of the San Joaquin Kit Fox and Sierra Nevada Red Fox. In these areas, firearms are the only remaining tool to control predators. Further restrictions on methods of take and the number of animals allowed to be taken will negatively impact California's farmers and ranchers and lead to greater crop and livestock losses.

Finally, it is important to recognize that California has non-native invasive species that need significant efforts to control; a prominent example is feral pigs. While feral pigs are currently designated a game species, as mentioned above, there are ongoing discussions about how to improve California's policies governing feral pig management and creating restrictions on unlimited take would set a bad precedent when it comes to controlling feral pigs.

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[13] Shwiff, S.A., A. Anderson, K. Gebhardt, K.N. Kirkpatrick. 2011. The economic benefit of bird and rodent pest control to protect California crops. Report prepared for the CDFA, Vertebrate Pest Control Research Advisory Committee.
[14] USDA NASS Cattle Death Loss, May 2011
[15] USDA National Agriculture Statistics Service. 2011. 2010 Montana and United States Cattle Predator Losses.

Title 14 §475

Both HSUS and Project Coyote recommend eliminating the use of recorded or electrically amplified bird or mammal calls or sounds to take coyotes, bobcats, American crows, or starlings in Title 14 Section 475. Farm Bureau is opposed to this change. Wildlife damage management specialists use electronic callers to address many depredation issues. Elimination of this provision would limit the ability of these specialists from helping farmers and ranchers reduce depredation of their crops and livestock. This is especially true in areas of the state where snares are prohibited, such as within the range of the San Joaquin kit fox. In that area calling and shooting is the only tool available to assist agricultural producers with coyote damage.

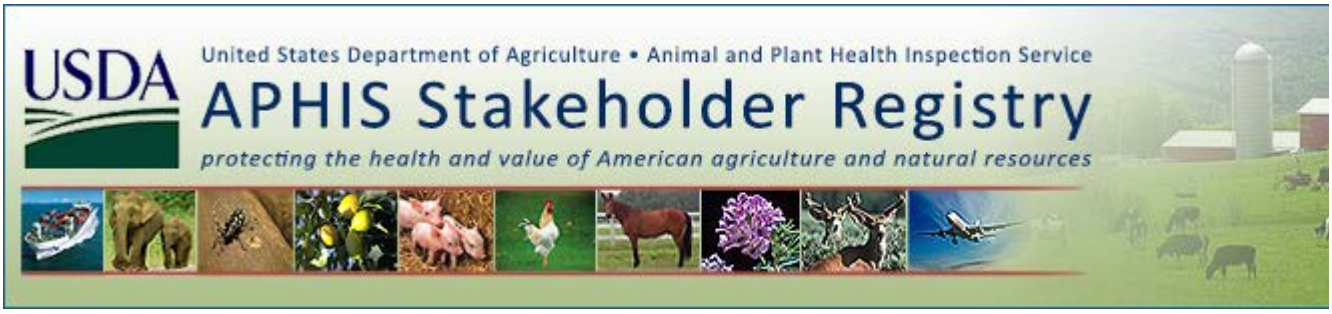
Project Coyote recommends further changes to Title 14 Section 475 by eliminating the use of dogs to track a trapped animal. Farm Bureau opposes this proposed change. The proposal seems counterintuitive, as using dogs to track an animal caught in a trap would lead to finding the animal quicker. Reducing the time an animal is trapped would seem to be a broadly supportable concept. Wildlife damage prevention specialists utilize dogs to track down trap drags that have been placed to address wildlife damaging crops and livestock. Restricting the ability of these specialists would negatively impact farmers and ranchers and would seem to also be less humane to the trapped animal.

Farm Bureau appreciates the opportunity to comment on the many ideas being discussed by the Commission's Wildlife Resources Committee regarding predator management. The issues being discussed are extremely complex and require significant consideration to ensure there are no unintended consequences. Extensive discussion has already occurred on this topic, as evidenced by the lengthy changes proposed by members of the predator subcommittee, however much more discussion is necessary before any changes are made. Farm Bureau will continue to participate in this discussion and will continue to provide information regarding the impact changes may have on California's farmers and ranchers.

Sincerely,

Noelle G. Cremers
Director, Natural Resources and Commodities

CC: Members, Fish and Game Commission
Mr. Sonke Mastrup, Executive Director, Fish and Game Commission
Mr. Chuck Bonham, Director, Department of Fish and Wildlife
Mr. Dan Yparraguirre, Deputy Director, Department of Fish and Wildlife



Dear Stakeholders:

Over the last several years, a handful of prominent newspapers have published biased stories about Wildlife Services that I consider an affront to the wildlife biologists and other professionals in the program who provide outstanding service to all Americans. In a couple of instances, I've written to the editors of the papers that ran the stories to express my dissatisfaction and I'm glad they published my responses. But given the word limit on letters to the editors, I haven't been able to write as much to defend Wildlife Services as I'd like, and what I've submitted has often been condensed even further.

So that's why I'm writing this letter today. I'm proud of Wildlife Services, its employees, and the vital work it does for American agriculture. I very much want to address the false information about Wildlife Services I've read, and continue to read, about the program. I can't do it all in one letter, though, so I intend to send additional letters periodically over the coming months, and post them all to the APHIS Web site.

Today, I'd like to respond to the allegations in a recent story in the Washington Post that Wildlife Services is "out of control," less than transparent, and harmful to wildlife in the United States.

The American people, through its elected representatives in Congress, have funded Wildlife Services annually for over one hundred years. This year, Congress provided $20 million in new funding to Wildlife Services to begin a Nation-wide program to control feral swine and reduce the damage they cause to agriculture, property, and natural resources. In today's era of lean budgets, Congress trusts Wildlife Services and values the program as one that is well-managed, environmentally responsible, and effective. Nothing could be farther from the truth than to say that Wildlife Services is rogue, irresponsible, and out of control.

Wildlife Services is also supported by every U.S. natural resource and professional wildlife management organization in the country. The program is run by professional wildlife biologists who adhere to the public trust doctrine and love and respect our Nation's wildlife and animals. They simply recognize that managing human-wildlife conflicts sometimes requires lethal control. Wildlife Services is not alone in this belief: professional wildlife managers and natural resource protection organizations all recognize that lethal control is an integral part of responsible wildlife management. We do not apologize for putting the interests of human health, safety, and people's livelihoods on an equal footing with the noble cause of preserving wildlife.

Some argue and try to convince others that Wildlife Services kills 4 million bears, wolves, and coyotes annually. This is patently false; these predators represent a very small percentage of the animals Wildlife Services removes each year. And overall, the numbers of animals killed are a very small percentage of their overall populations in the United States. Wildlife Services' work is not endangering any native wildlife population in our country—far from it, actually. For example, last year, out of a

national population of almost 3.9 million resident Canada geese, WS took just 23,000 to protect airports and aviation, recreational areas, and agriculture.

Last year, as is the case every year, the vast majority of the animals killed by Wildlife Services were birds, mostly invasive species like European starlings that eat crops, foul water and livestock feed with disease, roost in large numbers in neighborhoods, and threaten airplanes full of travelers. Because of increased requests for help, we removed more birds last year than in previous years. Just for some perspective, there are trillions of birds in the United States; the 3.5 million we removed are far less than the 1 to 4 billion cats kill every year and hardly indicative of an "out of control" agency.

What is often lost in the conversation regarding Wildlife Services is that the program is a worldwide leader in the development and use of nonlethal wildlife management tools. Our National Wildlife Research Center devotes the majority of its research funding to the development or improvement of nonlethal wildlife damage management tools and methods. Last year, using the latest and innovative methods developed at the Center, Wildlife Services moved or dispersed without harm almost 18 million animals—more than 80 percent of the program's wildlife encounters.

We are fully transparent about all of Wildlife Services' work—both lethal and nonlethal. We respond to every request for information about the program to the fullest extent of our ability under the Freedom of Information Act and other laws passed by Congress. For the last 16 years, we have published management reports (available at www.aphis.usda.gov/wildlife_damage/) detailing all of Wildlife Services' work, including numbers of wildlife dispersed and lethally removed. The numbers that critics of the program use to attack the program, twisted as they are, are pulled directly from these reports on our Web site. We also make a full and accurate reporting each year of the numbers of animals that we unfortunately mistakenly kill. From FY 2006 through FY 2012, Wildlife Services' unintentional lethal take was one-tenth of one percent. While we regret each of these instances, we have learned from them, taken corrective action, and continually strive to improve and prevent the unintentional killing of animals.

Wildlife Services is made up of thoroughly trained wildlife professionals and others who are fully accountable to Congress and the public, comply with all laws, and are dedicated to preserving native ecosystems. It is disappointing when they are unfairly criticized and vilified for the work they do. Without them, there'd be more birds colliding with airplanes, endangering passengers; less support for wild wolf packs in the West; more endangered wildlife species across the country; more incidents of people contracting rabies from raccoons and skunks; and more wildlife and animals that die in emergencies and natural disasters. Not to mention farmers and ranchers having a harder time making a living and higher food prices at the grocery store for the rest of us.

I'll say it again: I'm proud of Wildlife Services and the work it does. I look forward to sharing more information with you about the program in the months to come.

Kevin Shea

Kevin Shea
APHIS Administrator

March 17, 2014

The Honorable Harold Rogers
Chairman, Committee on Appropriations
United States House of Representatives
Capitol Building H-307
Washington, D.C. 20515

The Honorable Nita Lowey
Ranking Member, Committee on Appropriations
United States House of Representatives
Capitol Building H-307
Washington, D.C. 20515

Dear Chairman Rogers and Ranking Member Lowey:

The 169 undersigned organizations represent a broad range of food producers, wildlife organizations, sportsmen, local governments and resource interests that benefit from the cooperative efforts of the USDA-APHIS/Wildlife Services (WS) program. We write in strong support of sufficient funding for this critical program and in opposition to any effort to restrict or eliminate WS funding.

Wildlife causes more than $12.8 billion in damage each year to natural resources, public infrastructures, private property and agriculture. WS works to prevent, minimize or manage this damage and to protect human health and safety from conflicts with wildlife. Wildlife damage to U.S. livestock, aquaculture, small grains, fruits, vegetables and other agricultural products has been estimated to reach nearly $1 billion annually. Wildlife predators cause more than $126 million in death loss to livestock; field crop losses due to wildlife total $619 million annually; losses to vegetables, fruits and nuts total $146 million annually; and 70 percent of catfish farmers incur wildlife-related damage resulting in losses of $10 million to $13 million annually from double-crested cormorants in Mississippi alone. As a result, WS is an essential program in agriculture production in the United States.

The spread of wildlife-borne diseases to humans, livestock and other wildlife is a growing concern. WS monitors and manages pests and diseases in the United States. WS is often the first line of defense in reducing and eliminating diseases such as the West Nile virus, avian influenza, pandemic H1N1, chronic wasting disease, pseudo rabies, bubonic plague, Hantavirus, lyme disease, bovine tuberculosis and rabies. In fact, rabies-associated costs range from $300 million to $450 million annually in the United States primarily for pet vaccinations, education, diagnostics, post-exposure treatment and case investigations. WS also prevents entry and controls invasive species such as feral swine, nutria, the brown tree snake, European starlings and the beaver. Feral swine are a subject of increasing concern as potential carriers or catalysts for a variety of diseases. It is estimated that there are more than 5 million feral swine in 38 states that cause an estimated $1.5 billion in damage annually with more than $800 million of damage to agriculture resources.

In fiscal year (FY) 2012 alone, WS conducted 67,842 technical assistance projects to reduce wildlife damage to property in urban, suburban and rural locations as well as airports across the country, which include homes, schools, industrial facilities, roads, bridges, airport runways, dams and electrical and water systems. One example of this work is WS efforts in reducing deer collisions with automobiles,

which injure an average of 29,000 people annually and cause more than $1 billion in damage. In addition, WS works to protect wetlands habitat, riparian habitat, tidal marsh and timber from a variety of pest species including feral hogs, nutria and beavers, which alone cause millions of dollars of damage each year -- more than any other U.S. wildlife species. WS expended more than $18.6 million to protect property from wildlife damage in FY2012, up from $16.1 million in 2008.

Protection of natural resources is a growing need for WS. Last year, WS invested resources in conservation of game species including mule deer, bighorn sheep, antelope and waterfowl in eight states. In FY2012, WS spent $6.5 million for cooperative work with federal and state agencies to protect and assist 169 threatened or endangered species in 35 states, Puerto Rico, Guam and the U.S. Virgin Islands. In more than 95 percent of the projects, local threatened and endangered species either increased or remained stable.

More than 130,000 wildlife strikes with civil aviation have been reported since WS began keeping records in 1990. In FY2012, there were more than 10,700 wildlife collisions with civil aircraft reported, with an additional 5,930 strikes reported by military aviation costing the total aviation industry more than $700 million annually. WS provided direct services at 354 airports in FY2012 including population management through harassment, habitat modification or removal. Technical assistance, such as initial consultations and wildlife hazard assessments, was provided at 772 airports across the country.

As the “Miracle on the Hudson” demonstrated in 2009, the management of wildlife hazards on and near our nation’s airports is a critical safety priority. WS provides valuable support to the aviation community in addressing these hazards. From its assistance in preparing FAA-required wildlife hazard assessments to its help with managing hazardous wildlife populations, WS staff ensure that U.S. airports both meet the regulatory obligations under 14 CFR Part 139 and reduce the safety risks associated with aircraft wildlife strikes. WS also assists the FAA in monitoring national trends regarding wildlife populations and the hazards they pose to aviation. At a time when airports are facing significantly expanded wildlife hazard management requirements through recently issued FAA Advisory Circulars and grant assurance modifications, its role will be even more critical to the aviation community going forward.

It has been WS's cooperative nature that has allowed it to accomplish all of the above listed programs and has made it the most cost effective and efficient program in the federal government in the areas of wildlife damage management and public health and safety. WS has more than 2,000 cooperative agreements, up 20 percent from FY2000, and, in FY2012, had 90,641 access agreements to professionally monitor and manage wildlife on private, state and federal lands.

WS cooperators include agriculture, forestry, private industry, state wildlife agencies, state departments of health, state departments of agriculture, schools, universities, counties, local governments, Indian nations, homeowner associations, conservation groups and others that, together with WS, mitigate the damage and dangers that public wildlife can inflict.

Chairman Rogers and Ranking Member Lowey, we appreciate your demonstrated leadership and strong support of this essential program. Our organizations are committed to working with you to strengthen WS resources and to ensure a continued federal partnership in the responsible management of our nation’s wildlife.

Air Line Pilots Association, Int'l
Airlines for America
Airports Council, International – North America
American Association of Airport Executives
American Beekeeping Federation
American Farm Bureau Federation
American Feed Industry Association
American Horse Council
American Sheep Industry Association
American Society of Agricultural and Biological Engineers
American Veterinary Medical Association
Animal Health Institute
Association of American Veterinary Medical Colleges
Association of Fish and Wildlife Agencies
Association of National Grasslands
Catfish Farmers of America
Catfish Institute
Congressional Sportsmen's Foundation
Livestock Marketing Association
Mule Deer Foundation
National Aquaculture Association
National Association of Counties
National Association of Federal Veterinarians
National Association of State Departments of Agriculture
National Cattlemen's Beef Association
National Farmers Union
National Milk Producers Federation
National Pork Producers Council
National Renderers Association
National Rifle Association
National Shooting Sports Foundation
National Sorghum Producers
North American Meat Association
Public Lands Council
Rocky Mountain Elk Foundation
Safari Club International
Society for Range Management
Sportsmen for Fish and Wildlife
State Agriculture and Rural Leaders Association
United States Animal Health Association
U.S. Cattlemen's Association
USA Rice Federation
Wild Sheep Foundation

Alabama Catfish Producers
Alabama Farmers Federation
Alabama Meat Goat and Sheep Producers
Arizona Cattle Feeders Association
Arizona Cattle Growers' Association
Arizona Cattlemen's Association
Arizona Wool Producers Association
Arkansas Cattlemen's Association
Arkansas State Sheep Council
Association of Oregon Counties
California Agricultural Commissioners and Sealers
California Cattlemen's Association
California Farm Bureau Federation
California Wool Growers Association
Colorado Cattlemen's Association
Colorado Wool Growers Association
Connecticut Sheep Breeders Association, Inc
Delaware Sheep and Wool Producers Association, Inc
Delta Council
Eastern Regional Conference of the Council of State Governments
Empire Sheep Producers
Florida Cattlemen's Association
Garden State Sheep Breeders Inc
Georgia Cattlemen's Association
Georgia Sheep and Wool Growers Association
Hawaii Sheep and Goat Association
Idaho Cattle Association
Idaho Farm Bureau
Idaho Wool Growers Association
Illinois Lamb and Wool Producers Inc
Independent Cattlemen's Association of Texas
Indiana Sheep Association
Iowa Cattlemen's Association
Iowa Sheep Industry Association
Kansas Livestock Association
Kansas Sheep Association
Kentucky Cattlemen's Association
Kentucky Sheep and Wool Producers Association
Louisiana Cattlemen's Association
Maine Sheep Breeders Association
Maryland Sheep Breeders Association
Massachusetts Federation of Sheep Associations
Meat Sheep Alliance of Florida, Inc
Michigan Sheep Breeders Association
Midwestern Legislative Conference of the Council of State Governments
Minnesota Lamb and Wool Producer Association

Minnesota State Cattlemen's Association
Missouri Cattlemen's Association
Missouri Sheep Producers
Montana Association of State Grazing Districts
Montana Farm Bureau Federation
Montana Public Lands Council
Montana Stockgrowers Association
Montana Wool Growers Association
Nebraska Cattlemen, Inc.
Nebraska Sheep and Goat Producers
Nevada Cattlemen's Association
Nevada Wool Growers Association
New Hampshire Sheep and Wool Growers Association
New Mexico Cattle Growers' Association
New Mexico Department of Agriculture
New Mexico Farm & Livestock Bureau
New Mexico Federal Lands Council
New Mexico Trappers Association
New Mexico Wool Growers, Inc
North Carolina Sheep Producers Association
North Dakota Lamb and Wool Producers Association
North Dakota Stockmen's Association
North Dakota Department of Agriculture
North Dakota Game and Fish Department
Northeast States Association for Agricultural Stewardship
Ohio Cattlemen's Association
Oklahoma Cattlemen's Association
Oregon Cattlemen's Association
Oregon Dairy Farmers Association
Oregon Department Agriculture
Oregon Farm Bureau Federation
Oregon Forest Industries Council
Oregon Outdoor Council
Oregon Seed Council
Oregon Sheep Growers Association
Oregon Small Woodlands Association
Oregonians for Food & Shelter
Pennsylvania Cattlemen’s Association
Pennsylvania Farm Bureau
Pennsylvania Sheep and Wool Growers Association
South Carolina Sheep Industries Association
South Dakota Cattlemen's Association
South Dakota Sheep Growers Association
South East Dairy Farmers Association
Sportsmen for Fish and Wildlife Idaho
Tennessee Cattlemen’s Association
Tennessee Sheep Producers Association
Texas and Southwestern Cattle Raisers Association
Texas Cattle Feeders Association
Texas Farm Bureau
Texas Pork Producers Association
Texas Sheep and Goat Predator Management Board
Texas Sheep and Goat Raisers' Association
Texas Wildlife Damage Management Association
United Dairymen of Arizona
U.S. Cattlemen’s Association
Utah Cattlemen's Association
Utah Department of Agriculture and Food
Utah Farm Bureau Federation
Utah Wool Growers Association
Vermont Sheep and Goat Association
Virginia Farm Bureau
Virginia Cattlemen’s Association
Virginia Sheep Producers Association
Wasco County Livestock Association
Washington Cattlemen's Association
Washington Cattle Feeders Association
Washington Forest Protection Association
Washington State Sheep Producers
West Virginia Cattlemen's Association
West Virginia Shepherds Federation
Western United Dairymen
Wisconsin Sheep Breeders Cooperative
Wyoming Animal Damage Management Board
Wyoming Farm Bureau Federation
Wyoming Game and Fish Department
Wyoming Sportsmen for Fish & Wildlife
Wyoming Stock Growers Association
Wyoming Wild Sheep Foundation
Wyoming Wool Growers Association

United States Department of Agriculture
National Agricultural Statistics Service

News Release

Cooperating with the Montana Department of Agriculture
10 W 15th Street, Suite 3100 · Helena, MT 59626

2010 Montana and United States Cattle Predator Losses
Released: May 12, 2011
For more information contact: Christel Pachl or Thomas Chard at 1-800-835-2612.

Montana cattle producers lost 23,000 head of cattle, weighing 500 lbs or more, and 57,000 calves, weighing less than 500 lbs, to all causes during 2010, according to the USDA, National Agricultural Statistics Service, Montana Field Office. A special report released every five years details the types of cattle and calf losses and the value of the losses.

During 2010, a total of 1,000 head of cattle and 4,200 calves were lost to predators. The total value of the cattle lost to predators was $1.1 million dollars and the value of calves lost to predators was $1.6 million. Wolves were the largest cause of cattle losses with 44.0 percent of the total lost during 2010, while coyotes were the largest cause of calf losses with 46.9 percent during 2010.

A total of 22,000 cattle and 52,800 calves were lost to non-predator causes. The value of non-predator losses was $43.6 million. The value of cattle losses were $23.3 million and calf losses were $20.3 million. The leading categories of non-predator cattle losses were: unknown non-predator with 24.3 percent, other non-predator with 19.7 percent, and respiratory problems with 16.9 percent. The leading categories of non-predator calf losses were weather-related problems with 27.1 percent, calving problems with 22.4 percent, and unknown non-predator with 15.4 percent.

The use of non-lethal predator control practices were published in this report. The most common types of non-lethal predator practices utilized by Montana cattle producers were: carcass removal, 36.9 percent; guard animals, 34.6 percent; culling, 30.1 percent; frequent checks, 26.6 percent; and night penning of animals, 19.8 percent.

In the United States, cattle and calf losses from predators and non-predator causes totaled 3.99 million head (excluding Alaska) during 2010. This represents 4.3 percent of the 93.9 million cattle and calves in the United States at the beginning of 2010. Losses of cattle weighing more than 500 pounds totaled 1.73 million head or 43.4 percent of total losses. Calves weighing less than 500 pounds lost to all causes totaled 2.26 million head or 56.6 percent of total losses.

U.S. cattle and calf losses from animal predators totaled nearly 220 thousand head during 2010. This represented 5.5 percent of the total deaths from all causes and resulted in a loss of $98.5 million to farmers and ranchers. Coyotes and dogs caused the majority of cattle and calf predator losses accounting for 53.1 percent and 9.9 percent, respectively.

Cattle and calf losses from non-predator causes totaled 3.77 million head or 94.5 percent of the total losses during 2010. Respiratory problems represented the leading cause of non-predator deaths, accounting for 28.0 percent, followed by digestive problems at 13.4 percent.

Non-lethal predator control measures cost farmers and ranchers throughout the United States $188.5 million during 2010. Use of guard animals was the most common method at 36.9 percent. Exclusion fencing, frequent checking, and culling were the next most commonly used methods of preventing cattle and calf losses at 32.8 percent, 32.1 percent, and 28.9 percent, respectively.

#end#

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United States Department of Agriculture
National Agricultural Statistics Service

Montana Sheep and Lamb Loss 2012

Cooperating with the Montana Department of Agriculture
10 W 15th Street, Suite 3100 · Helena, MT 59626
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Montana Sheep and Lamb Loss 2012

Total Loss, Cause of Death and Value of Loss

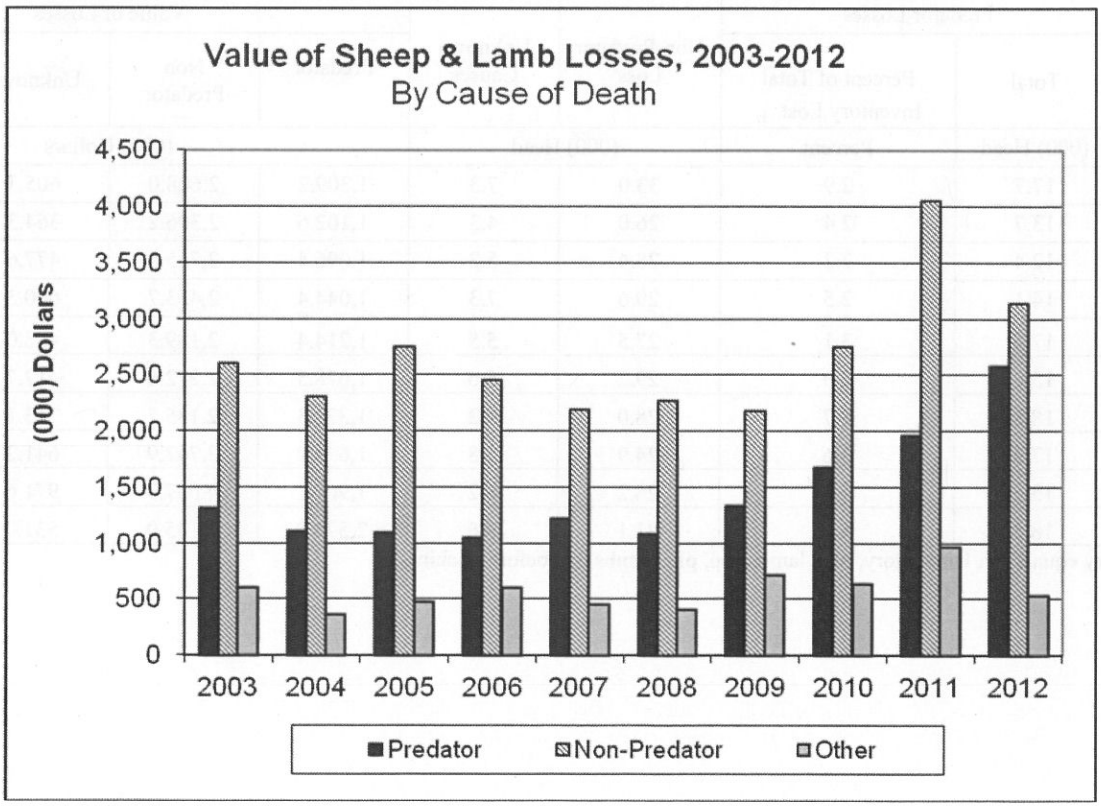
Released: February 22, 2013

Montana sheep and lamb producers lost 43,000 animals to weather, predators, disease and other causes during 2012, representing a total value of $6.2 million, according to a survey conducted by USDA, National Agricultural Statistics Service, Montana Field Office. The total number of sheep and lambs lost was 5,000 head less than last year, and the total value of inventory lost was 11 percent less than a year ago. The January 1, 2012 inventory was 2 percent less than the previous year. Sheep and lamb deaths amounted to 9.6 percent of the January 1 inventory and lambs born, down 0.9 percent from last year.

The number of sheep and lambs lost to all predators totaled 18,300 head, up 4,700 head from last year. Lamb losses by all predators amounted to 14,100 head, up 37 percent from last year. The number of sheep lost to all predators totaled 4,200, up 900 head from a year ago. Predators caused an estimated $2.6 million in losses in 2012, up 31 percent from the previous year. Losses due to predators amounted to 4.0 percent of the January 1 inventory plus lambs born and 42 percent of all sheep and lamb deaths. Coyotes remained the largest predator for both sheep and lambs. Coyotes accounted for 76 percent of the predator caused losses and 32 percent of all death losses in the state. The value of losses attributed to coyotes was $1.9 million.

The total value of non-predatory losses was $3.1 million in 2012, compared with $4.1 million in 2011. Non-predatory losses accounted for 49 percent of all losses. The largest non-predatory cause of losses was lambing complications at 6,000 head. Sheep lost to non-predatory factors totaled 6,700 head, unchanged from 2011. Non-predatory lamb losses came in at 14,400 head, 7,100 head less than a year ago.

Producers reported less sheep and lambs lost to unknown causes this past year. Lambs lost to unknown causes totaled 2,500 head, compared with 4,200 head last year. Unknown causes claimed 1,100 sheep, compared with 2,000 head last year. The value of sheep and lambs lost to unknown causes decreased to $0.5 million.



Methodology and Definitions

The sheep and lamb survey utilized multi-frame sampling procedures. The survey involved drawing a random sample from a list of livestock producers maintained by the USDA, National Agricultural Statistics Service, Montana Field Office. In addition, sheep producers living in a selected sample of area segments were interviewed. This procedure assures complete coverage of sheep producers by accounting for ranchers/farmers who may not be on the list.

Sheep and lamb loss estimates published by the USDA include sheep losses for the entire year, but include only those lamb losses that occur after docking. This special report also includes an estimate of lambs lost before docking.

Cooperation

This study was undertaken at the request of the Montana Wool Growers Association who also provided funding. The USDA, National Agricultural Statistics Service, Montana Field Office conducted the survey and expresses appreciation to all cooperating sheep producers.

Table 1: Sheep & Lambs: Inventory, Death Loss, and Percent of Total Inventory Lost, Montana, 2003-2012

Year	January 1 Inventory	Lamb Crop	All Sheep Losses	Lamb Losses			Total Loss	Percent of Total Inventory Lost 1/
				Before Docking	After Docking	All Lambs		
	(000) Head							Percent
2003	310	275	17	21	20	41	58	9.6
2004	300	260	13	17	14	31	44	7.6
2005	295	255	12	19	15	34	46	8.1
2006	280	255	14	20	17	37	51	9.2
2007	275	255	14	18	18	36	50	9.1
2008	270	235	14	19	17	36	50	9.5
2009	255	235	15	21	20	41	56	11.0
2010	245	220	13	18	17	35	48	9.9
2011	230	205	12	20	16	36	48	10.5
2012	225	210	12	15	16	31	43	9.6

1/ Total inventory equals January 1 inventory, plus lamb crop, plus lambs lost before docking.

Table 2: Sheep & Lambs: Death Losses by Cause and Value of Loss, Montana, 2003-2012

Year	Predator Losses		Non-Predator Loss	Unknown Causes	Value of Losses			
	Total	Percent of Total Inventory Lost 1/			Predator	Non Predator	Unknown	Total
	(000) Head	Percent	(000) Head		(000) Dollars			
2003	17.7	2.9	33.0	7.3	1,309.2	2,608.0	605.7	4,522.9
2004	13.7	2.4	26.0	4.3	1,102.6	2,306.2	364.3	3,773.1
2005	12.4	2.2	28.4	5.2	1,096.4	2,755.6	477.6	4,329.6
2006	14.1	2.5	29.6	7.3	1,044.4	2,453.7	600.3	4,098.4
2007	17.0	3.1	27.5	5.5	1,214.4	2,189.3	458.0	3,861.7
2008	15.2	2.9	29.2	5.6	1,078.3	2,272.6	412.7	3,763.6
2009	18.8	3.7	28.0	9.2	1,328.3	2,185.7	713.1	4,227.1
2010	17.3	3.6	24.9	5.8	1,676.9	2,747.9	641.2	5,066.0
2011	13.6	3.0	28.2	6.2	1,967.1	4,057.3	971.6	6,996.0
2012	18.3	4.1	21.1	3.6	2,574.0	3,135.0	531.0	6,240.0

1/ Total inventory equals Jan 1 inventory, plus lamb crop, plus lambs lost before docking.

Table 3: Sheep & Lambs: Death Losses by Cause, Montana 2011-2012

Cause of Loss	SHEEP LOSS				LAMB LOSS				TOTAL LOSS			
	Number of Head		Value in Dollars (000) 1/		Number of Head		Value in Dollars (000) 2/		Number of Head		Value in Dollars (000)	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Predators												
Bear	400	400	103.6	84.0	300	400	32.4	48.0	700	800	136.0	132.0
Bobcat	--	--	--	--	--	--	--	--	--	--	--	--
Coyote	2,500	2,700	647.5	567.0	7,300	11,200	788.4	1344.0	9,800	13,900	1,435.9	1,911.0
Dog	--	500	--	105.0	300	400	32.4	48.0	300	900	32.4	153.0
Eagle	100	--	25.9	--	900	400	97.2	48.0	1,000	400	123.1	48.0
Fox	--	--	--	--	700	600	75.6	72.0	700	600	75.6	72.0
Mountain Lion	100	300	25.9	63.0	200	400	21.6	48.0	300	700	47.5	111.0
Wolf	100	100	25.9	21.0	100	200	10.8	24.0	200	300	36.7	45.0
Other Animals	--	--	--	--	200	100	21.6	12.0	200	100	21.6	12.0
Unknown Predators	100	200	25.9	42.0	300	400	32.4	48.0	400	600	58.3	90.0
Total Predators	**3,300**	**4,200**	**854.7**	**882.0**	**10,300**	**14,100**	**1,112.4**	**1,692.0**	**13,600**	**18,300**	**1,967.1**	**2,574.0**
Non-Predators												
Total Diseases	1,300	1,000	336.7	210.0	3,800	3,300	410.4	396.0	5,100	4,300	747.1	606.0
Lambing Complications	900	800	233.1	168.0	3,600	5,200	388.8	624.0	4,500	6,000	621.9	792.0
Old Age	2,100	2,700	543.9	567.0	--	--	--	--	2,100	2,700	543.9	567.0
On Back	300	200	77.7	42.0	100	--	10.8	--	400	200	88.5	42.0
Poison	300	400	77.7	84.0	300	500	32.4	60.0	600	900	110.1	144.0
Theft	100	--	25.9	--	300	--	32.4	--	400	--	58.3	--
Weather Conditions	1,300	900	336.7	189.0	11,800	4,700	1,274.4	564.0	13,100	5,600	1,611.1	753.0
Other	400	700	103.6	147.0	1,600	700	172.8	84.0	2,000	1,400	276.4	231.0
Total Non-Predators	**6,700**	**6,700**	**1,735.3**	**1,407.0**	**21,500**	**14,400**	**2,322.0**	**1,728.0**	**28,200**	**21,100**	**4,057.3**	**3,135.0**
Unknown Causes	**2,000**	**1,100**	**518.0**	**231.0**	**4,200**	**2,500**	**453.6**	**300.0**	**6,200**	**3,600**	**971.6**	**531.0**
Total Loss	**12,000**	**12,000**	**3,108.0**	**2,520.0**	**36,000**	**31,000**	**3,888.0**	**3,720.0**	**48,000**	**43,000**	**6,996.0**	**6,240.0**

1/ Using average reported value for Ewes 1+.
2/ Using average reported value for Market lambs under 1 year.
-- Denotes less than 100 head.

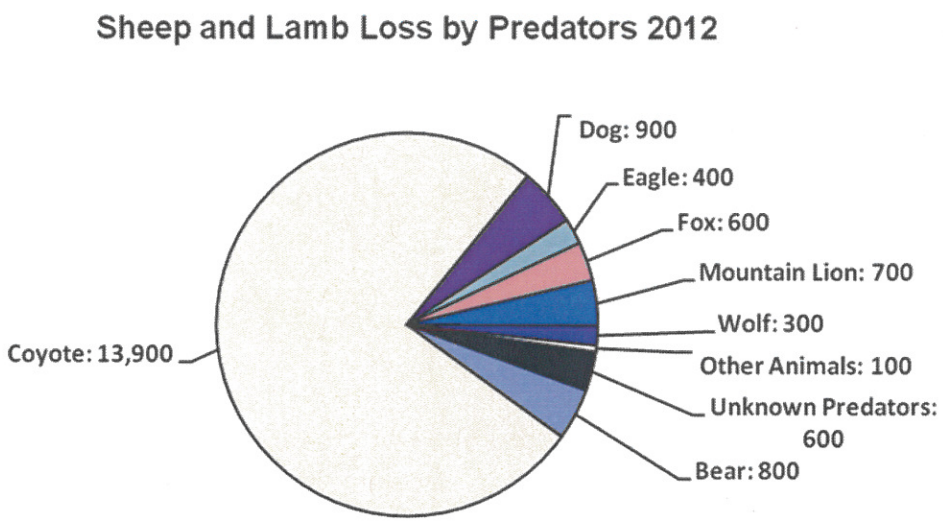


Table 4: Sheep & Lambs: Percent of Death Losses by Cause, Montana, 2003-2012

Cause of Loss	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Predators										
Bear	1	2	1	1	1	2	1	2	2	2
Bobcat	--	--	--	--	--	--	--	--	--	--
Coyote	20	21	19	20	23	20	26	25	20	32
Dog	2	2	1	1	2	1	1	2	1	2
Eagle	2	2	2	2	2	2	1	2	2	1
Fox	2	2	2	1	2	3	2	3	2	1
Mountain Lion	1	1	--	1	1	1	1	1	1	2
Wolf	1	1	1	1	1	1	1	1	--	1
Other Animals	--	--	--	--	--	--	--	--	--	--
Unknown Predators	2	1	1	1	2	1	1	1	1	1
Total Predators 1/	**30**	**31**	**27**	**28**	**34**	**30**	**34**	**36**	**28**	**43**
Non-Predators										
Digestive	**	7	**	**	**	**	1	**	**	**
Internal Parasites	**	**	**	**	**	**	1	**	**	**
Respiratory	**	10	**	**	**	**	4	**	**	**
Metabolic	**	2	**	**	**	**	1	**	**	**
Other Diseases	**	3	**	**	**	**	3	**	**	**
Total Diseases	**14**	**22**	**17**	**13**	**16**	**11**	**10**	**10**	**11**	**10**
Lambing Complications	15	11	13	13	13	11	8	11	9	14
Old Age	6	8	7	6	6	7	5	6	4	6
On Back	2	1	2	1	1	1	1	1	1	--
Poison	2	2	3	3	2	2	1	1	1	2
Theft	3	--	1	1	1	1	--	1	1	--
Weather Conditions	11	12	15	18	14	23	24	18	27	13
Other	5	3	5	3	2	3	2	3	4	3
Total Non-Predators 1/	**57**	**59**	**62**	**58**	**55**	**58**	**50**	**51**	**59**	**49**
Unknown Causes	**13**	**10**	**11**	**14**	**11**	**11**	**16**	**12**	**13**	**8**
Total Loss 1/	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

1/ Totals may not add due to rounding.
-- Denotes less than 1 percent.
** Not Available.

Steve Anderson
Director

Carmen Pennington
Agricultural Statistician

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ECONOMIC BENEFITS OF PREDATOR CONTROL

- Bodenchuk, Michael J., J. Russell Mason, and William C. Pitt. "Economics of predation management in relation to agriculture, wildlife, and human health and safety." (2000).
    - Benefit-Cost analysis of control methods found the ratio of benefit to cost to be between 2:1 and 22:1.
    - The total value of livestock saved, calculated by assuming a baseline of livestock killed in the absence of predator management, minus the number killed with management, multiplied by the market value of the livestock is $62,606,770.
- Jones, K. 2004. Economic Impact of Sheep Predation in the United States. Sheep and Goat Research Journal. 19.
    - Benefit-Cost ratio between 3:1 and 27:1 for Wildlife Service control methods.
        - Specific control methods were not discussed.
    - In addition to direct losses, predation can have further indirect losses across the economy.
- Pearson, E.W., M. Caroline. 1981. Predator control in relation to livestock losses in central Texas. Journal of Range Management. 34(6): 435-441.
    - The total cost of predator control in 21 Texas counties was $260,000.
    - Without predator in 21 Texas counties, the livestock loss to predators was estimated to be $1.2 million.
    - Benefit-Cost ratio was found to be 4.5:1. The average cost per sheep protected was 46 cents.
        - Specific control methods were not discussed.
- Wagner, K.K., M.R. Conover. 1999. Effect of preventative coyote hunting on sheep losses to coyote predation. The Journal of Wildlife Management. 63(2): 606-612.
    - Estimated the cost of keeping a wildlife services specialist in the field to hunt coyotes for a year to be $50,000.
    - Preventive hunting of coyotes produced $1,865 in benefits at a cost of $893. A benefit-cost ratio of 2.08:1.
- Engeman, Richard M., et al. "An economic analysis of predator removal approaches for protecting marine turtle nests at Hobe Sound National Wildlife Refuge." *Ecological Economics* 42.3 (2002): 469-478.
    - Benefit-Cost ratios for three species of marine turtles all found predator control to be cost-effective.
        - Loggerhead turtles: 3.24:1 in comparison to no control
        - Green turtles: 5.64:1 in comparison to no control
        - Leatherback turtles: 3.78:1 in comparison to no control.
- Engeman, Richard M., et al. "An economic assessment of the potential for predator management to benefit Puerto Rican parrots." *Ecological Economics* 46.2 (2003): 283-292.

- Benefit-Cost ratios for the endangered Puerto Rican parrots increased as the number of parrots saved increased.
    - Even one parrot saved yielded a positive ratio of 1.01:1 for minimum cost estimates and 2.60:1 for median cost estimates.
    - Ten parrots saved resulted in ratios of 10.12:1 for minimum cost estimates and 26.01 for median cost estimates.
- Net benefits of control methods relative to location, predator type, and number of parrots saved were all found to be positive.

LETHAL CONTROL METHODS

- Aerial Hunting
    - Shwiff, S. A. and R. J. Merrell. 2004. Coyote Predation Management: An economic analysis of increased antelope recruitment and cattle production in south central Wyoming. *Sheep and Goat Research Journal*. 19: 29-33.
        - The main control method was aerial hunting from fixed winged aircraft.
        - Benefit-Cost ratios were found to be between 6.38:1 and 15.01:1 for cattle production.
        - Benefit-Cost ratios were found to be between 21.66:1 and 392.78:1 when accounting for both cattle and antelope saved from coyote depredation.
    - Jones, K. 2004. Economic Impact of Sheep Predation in the United States. Sheep and Goat Research Journal. 19.
        - Aerial hunting and ground removal were used to control coyote populations in an effort to curb predation of mule deer in three different areas.
            - Henry Mountains: Control costs were found to be $6.96 per square mile in 1997 and $8.69 per square mile in 1998. The benefit:cost analysis for lethal coyote removal was found to be 11.4:1.
            - Bookcliffs: Control costs were found to be $66.87 per square mile. The benefit:cost analysis was found to be 18:1.
            - Pahvhant: $27,480 was spent on control methods in this area. The benefit:cost analysis was found to be 22.6:1.
    - Wagner, K.K., M.R. Conover. 1999. Effect of preventative coyote hunting on sheep losses to coyote predation. The Journal of Wildlife Management. 63(2): 606-612.
        - Cost of aerial coyote hunting was estimated at $425 per hour, and $185 per coyote.

    - Smith, Ronald H., Don J. Neff, and Norman G. Woolsey. "Pronghorn response to coyote control: a benefit: cost analysis." *Wildlife Society Bulletin* 14.3 (1986): 226-231.
        - Average annual aerial gunning control cost was $17,200 (in 1983 dollars)
        - Across 8 simulated control schedules benefit-cost ratios ranged from 1:1 to 1.58:1.
- Livestock Protection Collars
    - Walton, M.T. 1991. Use of livestock protection collars to protect sheep and goats. Fifth Eastern Wildlife Damage Control Conference. Paper 50.
        - Cost of $200 per collar when 10 collars are purchased.
        - Average cost of $1,828 for a 52-week period.
- Berger, Kim Murray. "Carnivore-Livestock Conflicts: Effects of Subsidized Predator Control and Economic Correlates on the Sheep Industry." *Conservation Biology* 20.3 (2006): 751-761.
    - From an economic perspective, fluctuations in sheep production owe significantly more to market behaviors rather than predator losses.
    - While initial regression results demonstrated a positive relationship between predator control and sheep production, the application of hierarchical partitioning showed that market changes (price of hay and wages) accounted for 77% of the change in sheep production compared to 6% of production change explained by predator control efforts.
    - This paper argues that predator control may not effectively decrease livestock losses.
        - Does not include data on livestock losses though, just changes in sheep production including natural mortality, disease, and slaughter of sheep and lambs in addition to predation.

NON-LETHAL CONTROL METHODS

- Livestock Protection Dogs
    - Green, Jeffrey S., Roger A. Woodruff, and Todd T. Tueller. "Livestock-guarding dogs for predator control: costs, benefits, and practicality." *Wildlife Society Bulletin* 12.1 (1984): 44-50.
        - Rudimentary benefit-cost analysis implied that guard dogs were cost-effective in defending livestock.
            - 1st year expenses for a guard dog estimated at $883. Thereafter, estimated annual costs were $286.
            - 68 ranchers estimated that the use of guard dogs would produce annual sheep and goat savings of $3,836.

    - Lorenz, Jay R., Raymond P. Coppinger, and Michael R. Sutherland. "Causes and economic effects of mortality in livestock guarding dogs." *Journal of range management* (1986): 293-295.
        - The longer a guard dog lives and provides sufficient livestock protection, in effect lowers the cost of the dog.
            - Dogs who offered 10 years of service were found to have an effective cost of $316/year. Given this cost, few lambs (approximately 10) would have to be saved to justify the use of guard dogs.
    - Gehring, Thomas M., Kurt C. VerCauteren, and Jean-Marc Landry. "Livestock protection dogs in the 21st century: is an ancient tool relevant to modern conservation challenges?" *BioScience* 60.4 (2010): 299-308.
        - The cost of purchase and training of livestock protection dogs in this study was between $1,800-3,200 per dog.
            - The cost of the dog itself was between $500-700 per dog.
        - Given training, maintenance costs, and a 10 year working life, estimated cost of a livestock protection dog was between $850-8500 per year.
- USDA NASS. 2006. 2005 Montana and United States Cattle Predator Losses. http://www.nass.usda.gov/Statistics_by_State/Montana/Publications/Press_Releases_Livestock/historic/catprdls.htm. Accessed 7/8/2013.
    - In 2005 farmers and ranchers throughout the United States spent $199.1 million on non-lethal methods to control predators.
    - Methods used include: culling (31.7%), frequent checks (31.4%), guard animals (21.8%), predator exclusion fencing (21.1%), carcass removal (18.5%), herding (9.6%), night penning (9.9%), fright tactics (7.8%), and other (11.7%).
- USDA NASS. 2011. 2010 Montana and United States Cattle Predator Losses.
    - In 2010 farmers and ranchers throughout the United States spent $188.5 million on non-lethal methods to control predators.
    - Methods used include: carcass removal (36.9%), guard animals (34.6%), culling (30.1%), frequent checks (26.6%), night penning (19.8%).
- Shivik, John A. “Non-lethal Alternatives for Predation Management.” *Sheep & Goat Research Journal* 19 (2004).
    - Due to high costs and propensity for habituation, non-lethal methods may not be appropriate for large scale predator control.
    - Non-lethal methods lend themselves to highly individualized behaviors of a particular target predator. For this reason, non-lethal methods may be useful in the control of endangered species.
- Shivik, John A. "Tools for the edge: what's new for conserving carnivores." *BioScience* 56.3 (2006): 253-259.

- Cost per unit effort and estimated duration of effectiveness for non-lethal management tools:
    - Fertility Control: $600/animal. Lasting 2-3 years (coyote)
    - Fladry: $781/km ($1328/km of electrified fladry). Lasting 60 days (wolf), less than 2 days (coyote), ineffective for black bears.
    - Guard dog: $200-450 initial cost, $250/year. The estimated duration would be equal to the life of the guard animal.
    - Hazing/Translocation: More than $400/animal (bear). Lasting 40 days.
    - Lights, noise, simple stimuli: $50-200. Lasting several days (wolf, coyote)
    - Radio or movement activated guard: $3000. Lasting 3 months(wolves), 3 weeks (black bears. bald eagle, turkey vulture)
    - Training Collar*: $200-300/collar. Lasting 1-9 months (coyote), ineffective (wolf)
        - *The training collar differs from the livestock protection collars discussed above. These collars are made of hard plastic so that predators cannot attack in the same manner and are thus discouraged, but have no chemical or lethal component.

Coyote (*Canis latrans*), 100+ Years in the East: A Literature Review

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DISPERSAL (SEE JUVENILE AND MOVEMENTS)

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From the site: "A number of publications and videotapes on coyote trapping, snaring, and calling; guardian dogs; and other methods of preventing coyote problems are available for distribution or loan from the Kentucky Department of Fish and Wildlife Resources, the U.S. Department of Agriculture Animal Damage Control office in Louisville, or the Cooperative Extension Service, University of Kentucky."

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Coyotes: a potential role in deer herd management. Texas Natural Wildlife, Texas A & M Agrilife Research.
http://agrilife.org/texnatwildlife/coyotes/table-of-contents/coyotes-a-potential-role-in-deer-herd-management/

Bowns, J.E. **Interpreting physical evidence of coyote predation**. Texas Natural Wildlife. (Other articles listed on site)
http://agrilife.org/texnatwildlife/coyotes/table-of-contents/interpreting-physical-evidence-of-coyote-predation/

From the State of Massachusetts, Office of Energy and Environmental Affairs page, ten links below to various topics on coyotes. ('Coyotes' search)
http://www.mass.gov/eea/searchresults.html?output=xml_no_dtd&client=mg_eea&proxystylesheet=massgov&getfields=*&ie=UTF-8&oe=UTF-8&tlen=215&sitefolder=eea&filter=0&startsite=EOEEAx&q=coyotes&site=EOEEAx&x=0&y=0

1. **Eastern Coyote in Massachusetts**

2. **Hunting of Fox, Coyote, and Bobcat | MassWildlife**

3. **Coyote Hunting Regulations | MassWildlife**

4. **More About Eastern Coyotes | MassWildlife**

5. **Resolving Conflicts with Coyotes | MassWildlife**

6. **Preventing Conflicts with Coyotes | MassWildlife**

7. [PDF]**Living With Wildlife Eastern Coyotes in Massachusetts**

   ... The eastern **coyote**, Canis latrans, is well established through- out most of **...Coyotes** thrive in suburban/urban as well as rural areas, and will utilize **...**

8. [PDF]**Understanding Coyotes**

... Actual **coyote** attacks are extremely rare: Since the 1950s, when Eastern **Coyotes** were first found in Massachusetts, there have been only four **...**

9. [PDF]**Guide to Online Game Check – Furbearer Hunting/Salvage**

   ... to check your hunted/salvaged **coyote** or fox online. **...** Use this guide for **coyotes** or fox that were salvaged during the hunting season **...**

10. [PDF]**Guide to Online Game Check – Furbearer Hunting/Salvage**

    ... to check your hunted/salvaged **coyote** or fox online. **...** Use this guide for **coyotes** or fox that were salvaged during the hunting season **...**

Wild Earth Guardians site, Livestock Losses page (includes statistics and charts)

http://www.wildearthguardians.org/site/PageServer?pagename=priorities_wildlife_war_wildlife_livestock_losses

May, 2014

Coyote Predation Bibliography

Books

Reference Type: Book
Record Number: 575
Author: S. B. E. A. Linhart
Year: 1980
Title: AVOIDANCE OF PREY BY CAPTIVE COYOTES PUNISHED WITH ELECTRIC SHOCK
Short Title: AVOIDANCE OF PREY BY CAPTIVE COYOTES PUNISHED WITH ELECTRIC SHOCK
Abstract: Source: WESW

Reference Type: Book
Record Number: 761
Author: F. C. Craighead
Year: 1951
Title: A BIOLOGICAL AND ECONOMIC EVALUATION OF COYOTE PREDATION
Short Title: A BIOLOGICAL AND ECONOMIC EVALUATION OF COYOTE PREDATION
Abstract: A study of coyote populations on the Jackson Hole Elk Refuge made in 1950 indicated that coyotes are an asset, not a liability, in controlling rodent populations. There was no correlation found between elk and coyote populations. Only in areas of intensive land use was coyote-control considered necessary and then rodent control must be undertaken as well Source: WESW

Reference Type: Book
Record Number: 554
Author: S. P. Young and H. H. Jackson
Year: 1951
Title: The clever coyote. Pt. I. a. II
Publisher: The Stackpole Co.
Short Title: The clever coyote. Pt. I. a. II
Abstract: A compendium in two parts: the first on life history, economics and control by Young and the second on taxonomy by Jackson. Part I includes a discussion of expansion of range of the coyote in North American from its original plains distribution. A chapter on habits and characteristics considers size, coloration, longevity, tracks, voice, cannabalism, movements, sex ratios, reproduction, enemies and related topics. Coyotes do not mate for life. Females probably breed when one year old; the gestation period is 60-63 days. Litter size averages five with a maximum of 19; two or even three litters may be housed in one den; the male helps care for the pups. Parasites and diseases are briefly reviewed. Stress is given food habits and the importance of the coyote as a predator. Rabbits and small rodents are common fare but deer, antelope and possibly some other valuable wild species as well as livestock often are reduced by coyote predation. Procedures for trapping and hunting coyotes are described. The general ineffectiveness of the bounty system and the greater value of the trapper-instructor system of predator control are described. In Part II brief discussions of fossil records, measurements, species identification, molts and sex and age variation is followed by complete taxonomic descriptions and skull photographs of 19 subspecies. || ABSTRACT AUTHORS: G. A. Petrides Source: BIOSIS
Author Address: Harrisburg, Pa., Washington, D. C.

Reference Type: Book
Record Number: 809
Author: D. A. Wade
Year: 1973
Title: CONTROL OF DAMAGE BY COYOTES AND SOME OTHER CARNIVORES
Short Title: CONTROL OF DAMAGE BY COYOTES AND SOME OTHER CARNIVORES
Abstract: Source: wesw

Reference Type: Book
Record Number: 776
Year: 2006
Title: Coyotes Not the Cause of Sheep Decline
Volume: 109
Number of Pages: 16-16

Short Title: Coyotes Not the Cause of Sheep Decline
ISBN: 10484949
Abstract: The article reports on the decline of the population of sheep in the U.S. The government-subsidized predator control has failed to prevent a long-term decline in the sheep industry. Based from the study conducted by the Wildlife Conservation Society market forces played the biggest factor for dropping off in sheep numbers. Coyote predation is often cited as the primary cause of the sheep industry's decline. Coyotes account for 75 percent to 95 percent of carnivores killed annually, but mountain lions, bobcats, wolves, black bears, and grizzly bears are also removed Source: WESW
Notes: 3

Reference Type: Book
Record Number: 806
Author: L. B. Keith, A. W. Todd and C. A. Fischer
Year: 1981
Title: Population ecology of coyotes curing a fluctuation of snowshoe hares
Volume: 45
Number of Pages: 629-629
Short Title: Population ecology of coyotes curing a fluctuation of snowshoe hares
ISBN: 0022541X
Abstract: Source: wesw
Notes: 3

Reference Type: Book
Record Number: 813
Author: C. R. Gustavson, K. N. Lowell and H. Frank
Year: 1987
Title: TASTE AVERSION CONDITIONING IN WOLVES, COYOTES, AND OTHER CANIDS: RETROSPECT AND PROSPECT
Number of Pages: 169-200
Short Title: TASTE AVERSION CONDITIONING IN WOLVES, COYOTES, AND OTHER CANIDS: RETROSPECT AND PROSPECT
Abstract: Source: WESW

Reference Type: Book
Record Number: 808
Author: M. D. Hobson and J. L. Cooke
Year: 1990
Title: Wildlife Research and Surveys: Effects of Predator Control on Desert MuleDeer Numbers
Number of Pages: 1990-1990
Short Title: Wildlife Research and Surveys: Effects of Predator Control on Desert MuleDeer Numbers
Abstract: The response of mule deer numbers to predator control on Black Gap Wildlife Management Area (BGWMA) was examined for 1982-1989. Twenty-five mountain lions and 62 coyotes were taken from BGWMA during the study period with most of the lions removed during the first 2 years. Coyotes were removed at a nearly uniform yearly rate over the study period. The trends of predator populations could not be determined with confidence, however, comparisons to rabbit trends implied that coyote numbers were substantially reduced on BGWMA while predators appeared to cycle with rabbits in Big Bend National Park (BIBE). Javelina numbers on BGWMA could not be estimated, but the distributions of indexed density did not show any trend during the study. Estimating mule deer numbers proved complex for the study period and a new perspective on interpretation of transect surveys is proposed which accounts for inconsistent animal density over the area, inconsistent group size, the lack of independence in animal behavior, and the critical density created by the transect design itself. Mule deer on BGWMA are thought to have increased from 1982 until 1986-87 and then declined through 1989. The causes of this change could have been some combination of predator control, vegetative change, and factors from outside of the study area, but the contribution from these potential influences could not be distinguished. Predator control on BGWMA proved expensive during the study period and, though an impact on the mule deer population was expected, the direct effect could not be measured definitively. Recommendations which include the ecological implications of the study are provided Source: WESW

Conference Proceedings

Reference Type: Conference Proceedings
Record Number: 546
Author: W. F. Andelt

Title: Behavioral Ecology of Coyotes: Implications For Reducing Predator-Livestock Conflicts
Pages: 79-82
Date: 1984
Short Title: Behavioral Ecology of Coyotes: Implications For Reducing Predator-Livestock Conflicts
Pub Place: Wildlife & Ecology
Abstract: Source: WESW

Reference Type: Conference Proceedings
Record Number: 726
Author: J. A. Till, J. E. Borrecco, R. E. Marsh, J. E. Borrecco and R. E. Marsh
Title: Behavioral effects of removal of coyote pups from dens
Pages: 396-399
Edition: 15
Date: 1992
Short Title: Behavioral effects of removal of coyote pups from dens
ISBN: 05076773
Pub Place: AGRIS, Zool. Record, AGRICOLA, Wildlife & Ecology
Abstract: Predation by coyotes upon domestic sheep is a serious economic problem for some sheep producers in the United States. One of the few depredation control techniques that has been quantitatively analyzed is denning, the process of removing pups from the dens of depredating coyotes. The significance of coyote prey selection and territoriality are discussed with regard to the efficacy of denning and possible future depredation management strategies Source: WESW

Reference Type: Conference Proceedings
Record Number: 680
Author: D. Slate
Title: COYOTES IN THE EASTERN US: STATUS AND IMPLICATIONS--DAMAGE PROBLEMS AND ECONOMIC LOSSES FROM COYOTES IN THE NORTHEASTERN U.S
Volume: 3
Pages: 325-326
Date: 1987
Short Title: COYOTES IN THE EASTERN US: STATUS AND IMPLICATIONS--DAMAGE PROBLEMS AND ECONOMIC LOSSES FROM COYOTES IN THE NORTHEASTERN U.S
Pub Place: Wildlife & Ecology
Abstract: Source: WESW

Reference Type: Conference Proceedings
Record Number: 524
Author: R. J. Burns, J. R. Mason, R. M. Timm and A. C. Crabb
Title: Effectiveness of Vichos non-lethal collars in deterring coyote attacks on sheep
Pages: 204-206
Edition: 17
Date: 1996
Short Title: Effectiveness of Vichos non-lethal collars in deterring coyote attacks on sheep
Pub Place: AGRICOLA, Wildlife & Ecology
Abstract: The Vichos anti-predator collar, developed in 1993, dispenses a formulation of 3% capsaicin oleo resin when punctured. In tests conducted in Utah, coyotes were not deterred from sheep predation by contact with the Vichos collar. pcp Source: WESW

Reference Type: Conference Proceedings
Record Number: 516
Author: A. T. Cringhan
Title: NON-LETHAL METHODS OF REDUCING PREDATION ON LIVESTOCK BY COYOTES AND DOGS: A PROGRESS REPORT
Date: 1976
Short Title: NON-LETHAL METHODS OF REDUCING PREDATION ON LIVESTOCK BY COYOTES AND DOGS: A PROGRESS REPORT
Pub Place: Wildlife & Ecology

Abstract: Source: wesw

Reference Type: Conference Proceedings
Record Number: 558
Author: E. E. Horn
Title: SOME COYOTE WILDLIFE RELATIONSHIPS
Pages: 283-286
Date: 1941
Short Title: SOME COYOTE WILDLIFE RELATIONSHIPS
Pub Place: Wildlife & Ecology
Abstract: Arguments for and against coyote control and account of studies of food habits and ecologic relationships of coyotes in California that are still in progress. Author's conclusions: 'Study of scats and stomachs from Santa Barbara County, California, showed that deer constituted a large part of the diet of coyotes. Removal of these predators from 160 square miles has been followed by increased survival of fawns, and by a decrease in rabbits and rodents. Coyotes in the foothills of Madera and Fresno Counties feed principally on squirrels and other rodents. Deer are not present. Rodents and rabbits decreased after removal of coyotes, and some species are again increasing. These studies indicate that coyotes play a measurable part in regulating the numbers of deer, but do not control the rodent-rabbit populations. Increased research on specific ecological units is essential to develop management plans that include predator control.' Source: wesw

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Journal Articles

Reference Type: Journal Article
Record Number: 760
Author: J. C. Kilgo, H. S. Ray, C. Ruth and K. V. Miller
Year: 2010
Title: Can coyotes affect deer populations in southeastern North America?
Journal: Journal of wildlife management
Volume: 74
Issue: 5
Pages: 929-933
Short Title: Can coyotes affect deer populations in southeastern North America?
ISSN: 0022541X
DOI: 10.2193/2009-263
Legal Note: Zool. Record, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: east south central states of usa
southern states of usa
usa
north america
america
developed countries
oecd countries
gulf states of usa
southeastern states of usa
canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
cervidae
deer
ruminants
artiodactyla

ungulates
odocoileus
south atlantic states of usa
Abstract: The coyote (Canis latrans) is a recent addition to the fauna of eastern North America, and in many areas coyote populations have been established for only a decade or two. Although coyotes are known predators of white-tailed deer (Odocoileus virginianus) in their historic range, effects this new predator may have on eastern deer populations have received little attention. We speculated that in the southeastern United States, coyotes may be affecting deer recruitment, and we present 5 lines of evidence that suggest this possibility. First, the statewide deer population in South Carolina has declined coincident with the establishment and increase in the coyote population. Second, data sets from the Savannah River Site (SRS) in South Carolina indicate a new mortality source affecting the deer population concurrent with the increase in coyotes. Third, an index of deer recruitment at SRS declined during the period of increase in coyotes. Fourth, food habits data from SRS indicate that fawns are an important food item for coyotes during summer. Finally, recent research from Alabama documented significant coyote predation on fawns there. Although this evidence does not establish cause and effect between coyotes and observed declines in deer recruitment, we argue that additional research should proactively address this topic in the region. We identified several important questions on the nature of the deercoyote relationship in the East. © 2010 The Wildlife Society. Source: geobase
Notes: 10.2193/2009-263

Reference Type: Journal Article
Record Number: 720
Author: K. M. Berger
Year: 2006
Title: Carnivore-livestock conflicts: Effects of subsidized predator control and economic correlates on the sheep industry
Journal: Conservation biology
Volume: 20
Issue: 3
Pages: 751-761
Short Title: Carnivore-livestock conflicts: Effects of subsidized predator control and economic correlates on the sheep industry
ISSN: 08888892
DOI: 10.1111/j.1523-1739.2006.00336.x
Legal Note: MEDLINE, Zool. Record, BIOSIS Prev., CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: north america
america
developed countries
oecd countries
usa
canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
artiodactyla
ungulates
homo
hominidae
primates
Abstract: Despite the importance of carnivores in terrestrial ecosystems, many nations have implemented well-coordinated, state-funded initiatives to remove predators, largely because of conflicts with humans over livestock. Although these control efforts have been successful in terms of the number of carnivores removed, their effects on the viability of the industries they seek to protect are less understood. I assessed the efficacy of long-term efforts by the U.S. government to improve the viability of the sheep industry by

reducing predation losses. I used regression analysis and hierarchical partitioning of a 60-year data set to explore associations among changes in sheep numbers and factors such as predator control effort, market prices, and production costs. In addition, I compared trends in the sheep industry in the western United States, where predator control is subsidized and coyotes (Canis latrans) are abundant, with trends in eastern states that lack federally subsidized predator control and that were (1) colonized by coyotes before 1950 or (2) colonized by coyotes between 1950 and 1990. Although control efforts were positively correlated with fluctuations in sheep numbers, production costs and market prices explained most of the model variation, with a combined independent contribution of 77%. Trends in sheep numbers in eastern and western states were highly correlated ($r \geq 0.942$) independent of the period during which they were colonized by coyotes, indicating either that control has been ineffective at reducing predation losses or that factors other than predation account for the declines in both regions. These results suggest that government-subsidized predator control has failed to prevent the decline in the sheep industry and alternative support mechanisms need to be developed if the goal is to increase sheep production and not simply to kill carnivores. ©2006 Society for Conservation Biology. Source: GEOBASE
Notes: 10.1111/j.1523-1739.2006.00336.x

Reference Type: Journal Article
Record Number: 732
Author: M. D. Fanning, J. J. Mullahey, S. Coates, D. H. Thornton and M. B. Main
Year: 2003
Title: Cattlemen's perceptions of coyotes in Florida
Journal: Florida scientist
Volume: 66
Issue: 1
Pages: 55-62
Short Title: Cattlemen's perceptions of coyotes in Florida
ISSN: 00984590
Legal Note: Zool. Record, Wildlife & Ecology
Abstract: The rapid expansion and increase of coyotes (Canis latrans) throughout Florida during the last several decades has increased concerns over potential loss of livestock among Florida cattlemen. We surveyed Florida beef cattle producers during 1998 to ascertain their perceptions of coyotes in Florida. We distributed surveys through the Florida Cattleman and Livestock Journal and during the 1998 Florida Cattlemen's Association Annual Convention (Marco Island, FL). Fifty-six surveys, 25 from northern counties and 31 from southern counties, were completed. The number of producers from both north and south Florida reporting loss of calves to coyote predation increased 7-fold from 1992 through 1997. Peak periods of livestock damage by coyotes were reported during November through April in both regions, which corresponded with cattle parturition and mating and pupping by coyotes. The number of cattlemen employing coyote control measures, and the total hours devoted to coyote control, steadily increased from 1992 (3 producers and 5 hours, respectively) through 1997 (31 producers and 843 hours, respectively). The predominant methods of coyote control were firearms (73%) and trapping (27%). The number of coyotes reported killed by ranchers increased from 13 during 1992, to 100 during 1997. Forty-one percent of cattlemen surveyed reported seeing coyotes as solitary individuals, and 54% reported seeing coyotes in small groups of 2-4. Ninety-eight percent of producers surveyed perceived the number of coyotes in Florida to be increasing, and 69% felt that coyotes were causing a decline in wildlife on their ranches. Ninety-eight percent of the cattlemen surveyed indicated that there was a need for research on coyotes in Florida. Source: ZOOR

Reference Type: Journal Article
Record Number: 713
Author: J. C. C. Neale, B. N. Sacks, M. M. Jaeger and D. R. McCullough
Year: 1998
Title: A comparison of bobcat and coyote predation on lambs in north-coastal California
Journal: Journal of wildlife management
Volume: 62
Issue: 2 SUPPL.
Pages: 700-706
Short Title: A comparison of bobcat and coyote predation on lambs in north-coastal California
ISSN: 0022541X
Legal Note: AGRIS, Zool. Record, BIOSIS Prev., AGRICOLA, GEOBASE, Scopus, Wildlife & Ecology
Keywords: bobcat
Abstract: The authors investigated predation on lambs by bobcats (Lynx rufus) relative to coyotes (Canis latrans) from June 1994

through November 1995 at Hopland Research and Extension Center (HREC) in north-coastal California, where both predators occur at equally high densities. Lamb losses during this study were typical for HREC and surrounding ranches and included 64 (5.3% of lambs pastured) confirmed predator kills and 134 (11.1%) missing individuals. Fifty-seven of the predator-killed lambs were attributed to coyotes, whereas none were assigned to bobcats. The proportion of bobcat scats containing sheep remains was small (4.2%), and occurrence did not peak in the lambing season, suggesting that sheep consumed by bobcats were scavenged. Sheep were common in coyote scats (21.4%) and occurred most frequently in scats from the winter-spring lambing season. Coyotes were responsible for all lamb kills in intensively monitored pastures for which predator species could be identified. Use of space by radiocollared bobcats was not noticeably influenced by the presence of lambs. The authors concluded that bobcats were not important predators of lambs at HREC and not the cause for the relatively large numbers of lambs missing and unaccounted for each year Source: WESW

Reference Type: Journal Article
Record Number: 598
Author: P. N. Lehner and A. Olsen
Year: 1978
Title: CONDITIONED AVOIDANCE OF PREY IN COYOTES
Journal: Journal of wildlife management
Volume: 42
Issue: 3
Pages: 676-679
Short Title: CONDITIONED AVOIDANCE OF PREY IN COYOTES
ISSN: 0022541X
Legal Note: Zool. Record, BIOSIS Prev., Wildlife & Ecology
Abstract: The learning capacity of the coyote (Canis latrans) has influenced the trend of recent research on nonlethal control methods. The principle of aversive conditioning to inhibit predation was used. The effectiveness of a conditioned avoidance procedure using self-delivery of punishment to inhibit predatory behavior in coyotes was examined. Importance of prominent conditioned stimuli and the effect of alternate prey on the establishment and duration, respectively, of conditioned avoidance were also evaluated. Source: BIOSIS

Reference Type: Journal Article
Record Number: 738
Author: M. J. MacGregor, E. G. Perkins, C. Asa and D. C. Skinner
Year: 2013
Title: Contraception has gone to the coyotes (Canis latrans)
Journal: Journal of zoo and wildlife medicine
Volume: 44
Issue: 4, Suppl.
Short Title: Contraception has gone to the coyotes (Canis latrans)
ISSN: 10427260
Legal Note: MEDLINE, CAB Abs.
Keywords: canis
eukaryotes
eukaryotic cells
animals
chordata
vertebrates
mammals
carnivores
fissipeda
canidae
Abstract: Coyotes (Canis latrans) are predators of livestock. Current management programs, primarily lethal control, are ineffective for long-term management of predation. Controlling reproduction of coyotes may reduce depredations if territory fidelity is maintained by breeding pairs. Surgical sterilization is successful in altering predatory behaviors of coyotes but may provide a challenge for field implementation. An alternative approach is the development of a one-time non-transferable chemical contraceptive. This research is investigating the efficacy of a single high dose treatment of a sustained release gonadotropin-

releasing hormone agonist, deslorelin, on coyotes as a long term contraceptive. Male coyotes were administered 47 mg deslorelin subcutaneously. Preliminary data show full suppression of the reproductive axis for over 12 mo as indicated by complete absence of sperm. Source: CAB
Author Address: Pomona USA

Reference Type: Journal Article
Record Number: 709
Author: B. N. Sacks and J. C. C. Neale
Year: 2007
Title: Coyote abundance, sheep predation, and wild prey correlates illuminate Mediterranean trophic dynamics
Journal: Journal of wildlife management
Volume: 71
Issue: 7
Pages: 2404-2411
Short Title: Coyote abundance, sheep predation, and wild prey correlates illuminate Mediterranean trophic dynamics
ISSN: 0022541X
DOI: 10.2193/2006-564
Legal Note: Zool. Record, BIOSIS Prev., AGRICOLA, CAB Abs., GEOBASE, Scopus, Wildlife & Ecology
Keywords: rainfall
canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
america
ovis
bovidae
ruminants
artiodactyla
ungulates
Abstract: Sheep predation by coyotes (Canis latrans) is a major problem for sheep producers in North America. Solutions are facilitated by a basic understanding of the trophic dynamic context of this problem, one that likely varies geographically in important qualitative ways. Little is known about vertebrate trophic dynamics in Mediterranean ecosystems, where prey are diverse and their biomass is strongly influenced multi-annually by variable rainfall. We used long-term data sets from north-coastal California, USA, to investigate whether wild prey fluctuations caused immediate negative effects on sheep predation via a reduction in the coyote functional response or delayed positive effects on sheep predation via a numerical response by coyote predators. Because we could not measure prey biomass directly, we used variables associated with lower trophic levels (e.g., annual plant productivity, vole abundance, rainfall) as proxies for wild prey biomass. Coyote population growth rate was positively correlated with lower-trophic-level variables of the previous year, suggesting a numerical response, and sheep (ad F + lambs) predation was positively correlated with coyote abundance in the current year. Sheep predation also was negatively correlated with lower-trophic-level variables of the current year, suggesting an immediate buffering effect of wild prey on sheep predation. Together, coyote abundance and lower-trophic-level variables explained 47% of the multi-annual variation in sheep kills. The negative pathway between lower-trophic-level variables and sheep predation was stronger than the positive pathway, possibly due to the erratic nature of multi-annual fluctuations in lower-trophic-level variables, which could prevent the numerical response from reaching its full potential. Monthly analyses revealed a type III functional response of coyotes to lambs, which is expected to enhance buffering effects of wild prey on sheep predation. Our findings suggest the dominant effect of wild prey biomass on sheep predation by coyotes in this Mediterranean-type community is as a buffer. Source: GEOBASE
Notes: 10.2193/2006-564

Reference Type: Journal Article
Record Number: 775

Author: R. R. Wilson, J. K. Young and J. A. Shivik
Year: 2011
Title: Coyote capture vulnerability relative to space use and trap density
Journal: Journal of wildlife management
Volume: 75
Issue: 3
Pages: 721-725
Short Title: Coyote capture vulnerability relative to space use and trap density
ISSN: 0022541X
DOI: 10.1002/jwmg.95
Legal Note: BIOSIS Prev., Zool. Record, GEOBASE, Scopus, AGRICOLA, Wildlife & Ecology
Abstract: Coyotes (Canis latrans) are reported to be less vulnerable to capture in familiar areas of territories, however, most studies do not control for trap density across the territory. We determined if accounting for trap density provided a better explanation of observed capture rates. Based on a sample of 24 captured coyotes (6 inside core areas and 18 on peripheries of occupied areas) the best fitting model describing capture location only accounted for trap density and not relative time spent in each region. Our results suggest that coyote capture rates are a function of trap density in an area and not novelty avoidance. Placing traps in core areas of territories can increase the probability of capturing individuals from specific territories to increase the effectiveness of management or research activities. © 2011 The Wildlife Society. Source: geobase
Notes: 10.1002/jwmg.95

Reference Type: Journal Article
Record Number: 719
Author: F. F. Knowlton, E. M. Gese and M. M. Jaeger
Year: 1999
Title: Coyote depredation control: An interface between biology and management
Journal: Journal of range management
Volume: 52
Issue: 5
Pages: 398-412
Short Title: Coyote depredation control: An interface between biology and management
ISSN: 0022409X
Legal Note: Zool. Record, AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
canis
ovis
bovidae
ruminants
artiodactyla
ungulates
north america
america
developed countries
oecd countries
Abstract: Predation by coyotes (Canis latrans) on livestock continues to plague producers in the United States. Agricultural interests are concerned about coyote predation because sheep inventories in the U.S. have declined >85% in the past 60 years, with a 25% decline between 1991 and 1996. This decline in sheep numbers has been attributed to low economic returns among producers, with coyote predation cited as a major causative factor. Generalizations about the magnitude and nature of depredations can be misleading because of the varied nature of sheep operations, including size of operations, differences in management, and environmental circumstances surrounding individual operations. Coyote depredation rates appear to be influenced by sheep

management practices, coyote biology and behavior, environmental factors, and depredation management programs. Most nonlethal depredation control techniques fall within the operational purview of the producers. The major controversy regarding depredation management focuses on programs that remove coyotes to prevent or curtail predation on domestic stock, especially on public lands. Differences in the magnitude, nature, and history of problems caused by coyotes, as well as the circumstances in which they occur, dictates a need for a variety of techniques and programs to resolve problems. The resolution of coyote depredation upon livestock remains controversial for producers, resource managers, and the general public. Because various segments of society attach different values to coyotes, resolution of depredations should use management programs that integrate the social, legal, economic, and biological aspects of the animals and the problem. Preferred solutions should involve procedures that solve problems as effectively, efficiently, and economically as possible in the least intrusive and most benign ways. Predation management requires a partnership among producers and wildlife managers to tailor programs to specific damage situations so the most appropriate techniques can be selected. This paper attempts to clarify the issues surrounding depredation management, synthesize past and current research, and provide information to resource managers associated with coyote depredation management. This synthesis integrates current understandings of coyote biology and behavior, the nature of depredations upon sheep producing enterprises, and the merits of various depredation control strategies and techniques. Source: GEOBASE

Reference Type: Journal Article
Record Number: 714
Author: B. R. Mitchell, M. M. Jaeger and R. H. Barrett
Year: 2004
Title: Coyote depredation management: Current methods and research needs
Journal: Wildlife society bulletin
Volume: 32
Issue: 4
Pages: 1209-1218
Short Title: Coyote depredation management: Current methods and research needs
ISSN: 00917648
DOI: 10.2193/0091-7648(2004)032[1209:CDMCMA]2.0.CO;2
Legal Note: Zool. Record, BIOSIS Prev., CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
Abstract: This paper examines the severity of livestock depredation by coyotes (Canis latrans), reviews evidence implicating breeding (or "alpha") coyotes in the majority of incidents, evaluates currently used depredation control techniques, and suggests directions for future research. Nonlethal control ranges from varied animal husbandry practices to coyote behavioral modification or sterilization. These methods show significant promise but have not been proven effective in controlled experiments. Therefore, many livestock producers rely on lethal control, and most employ nonselective strategies aimed at local population reduction. Sometimes this approach is effective; other times it is not. This strategy can fail because the alpha coyotes, most likely to kill livestock, are the most resistant to nonselective removal techniques. An alternative is selective lethal control. Livestock Protection Collars (LPCs) and coyote calling are the primary selective lethal approaches. However, LPCs do not have support from the general public due to the toxicant used, and the factors affecting the selectivity of coyote calling have not been studied. The greatest impediments to effective coyote depredation management currently are a scarcity of selective control methods, our lack of understanding of the details of coyote behavioral ecology relative to livestock depredation and wild prey abundance, the absence of solid research examining the effectiveness of different control techniques in a variety of habitats and at multiple predation intensities, and the dearth of rigorous controlled experiments analyzing the operational efficacy of selective removal versus population reduction. Source: GEOBASE
Notes: 10.2193/0091-7648(2004)032[1209:CDMCMA]2.0.CO;2

Reference Type: Journal Article
Record Number: 731

Author: D. Boisjoly, J. P. Ouellet and R. Courtois
Year: 2010
Title: Coyote habitat selection and management implications for the Gaspésie caribou
Journal: Journal of wildlife management
Volume: 74
Issue: 1
Pages: 3-11
Short Title: Coyote habitat selection and management implications for the Gaspésie caribou
ISSN: 0022541X
DOI: 10.2193/2008-149
Legal Note: AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: alces
cervidae
deer
ruminants
artiodactyla
ungulates
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
north america
america
developed countries
commonwealth of nations
oecd countries
canis
canidae
fissipeda
carnivores
lepus
leporidae
lagomorpha
small mammals
canada
rangifer
Abstract: Anthropogenic disturbances can promote establishment and growth of predator populations in areas where secondary prey can then become threatened. In this study, we investigated habitat selection of eastern coyotes (Canis latrans), a relatively new predator in the vicinity of an endangered population of caribou (Rangifer tarandus caribou). We hypothesized that coyotes in the boreal forest depend mainly on disturbed habitat, particularly that of anthropogenic origin, because these habitats provide increased food accessibility. Coyotes would likely take advantage of moose (Alces alces) carcasses, berries, and snowshoe hares (Lepus americanus) found in open habitats created by logging. To test these predictions, we described coyote diet and habitat selection at different spatial and temporal levels and then compared resource availability between habitats. To do so, we installed Global Positioning System radiocollars on 23 individual coyotes in the Gaspsie Peninsula, eastern Qubec, Canada. Coyotes selected clear-cuts of 520 years and avoided mature coniferous forests both at the landscape and home-range levels. Clear-cuts of 520 years were found to contain a high availability of moose carcasses and berries, and vulnerability of snowshoe hares is known to increase in clear-cuts. The importance of these 3 food resources was confirmed by the characteristics of core areas used by coyotes and diet analysis. Moose remains were found at 45 of core areas and coyote diet comprised 51 moose on an annual basis. Anthropogenic disturbances in the boreal forest thus seem to benefit coyotes. Our results indicated that the relationship between coyotes and caribou likely involves spillover predation. This knowledge allows managers to consider spillover predation by coyotes as a possible threat for endangered caribou population when the predator depends mainly on habitat of anthropogenic origin and to suggest methods to alleviate it when developing management plans. © 2010 The Wildlife Society. Source: geobase
Notes: 10.2193/2008-149

Reference Type: Journal Article

Record Number: 527
Author: J. A. Shivik, R. H. Barrett and M. M. Jaeger
Year: 1996
Title: Coyote movements in relation to the spatial distribution of sheep
Journal: Journal of wildlife management
Volume: 60
Issue: 2
Pages: 422-430
Short Title: Coyote movements in relation to the spatial distribution of sheep
ISSN: 0022541X
Legal Note: AGRIS, Zool. Record, BIOSIS Prev., AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
artiodactyla
ungulates
pacific states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
californie
ovin
coyote
mouvement
comportement
relation predateur proie
california
ovinos
movimiento
comportamiento
relaciones predator presa
Abstract: Coyotes (Canis latrans) are a major predator of domestic sheep (Ovis aries) grazed on open range, but studies have not examined how coyote movement patterns change in relation to this temporally intermittent and spatially clumped food resource. Using 8 resident coyotes in the Sagehen Creek watershed, Nevada County, California, we found that coyote core areas (64% adaptive kernal estimator) overlapped more while sheep were in the basin, that at least 1 resident animal followed the sheep into other animals' core areas, and that coyotes did not avoid each other in areas where sheep were concentrated. We conclude that under the conditions of our study, territoriality in coyotes does not limit coyote access to sheep. Conclusions drawn by studies of coyotes not influenced by sheep may be spurious if inferences are made to sheep-influenced populations. Source: BIOSIS

Reference Type: Journal Article
Record Number: 711
Author: W. F. Andelt, R. L. Phillips, K. S. Gruver and J. W. Guthrie
Year: 1999
Title: Coyote predation on domestic sheep deterred with electronic dog-training collar

Journal: Wildlife society bulletin
Volume: 27
Issue: 1
Pages: 12-18
Short Title: Coyote predation on domestic sheep deterred with electronic dog-training collar
ISSN: 00917648
Legal Note: Zool. Record, AGRICOLA, BIOSIS Prev., CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: ovis
bovidae
ruminants
artiodactyla
mammals
vertebrates
chordata
animals
ungulates
eukaryotes
eukaryotic cells
canis
canidae
fissipeda
carnivores
mountain states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
Abstract: The effectiveness of an electronic dog-training collar to deter captive coyotes (Canis latrans) from killing domestic lambs was investigated at the National Wildlife Research Center's Predator Research Facility in Utah, USA, in 1997. Coyotes were shocked whenever they attempted to attack lambs during a 22-week period. The collar averted all 13 attempted attacks on lambs by 5 coyotes, greatly reduced the probability of subsequent attempted attacks, and caused coyotes to avoid and retreat from lambs for over 4 months. It is concluded that this approach to aversive conditioning has potential to reduce coyote predation on domestic sheep in limited areas and may apply to a variety of other problems involving carnivore predation on domestic or endangered species. Source: CAB

Reference Type: Journal Article
Record Number: 519
Author: F. W. Sampson
Year: 1945
Title: THE COYOTE PROBLEM IN MISSOURI
Journal: Missouri conservationist
Volume: 6
Issue: 7
Pages: 4-5
Short Title: THE COYOTE PROBLEM IN MISSOURI
ISSN: 00266515
Legal Note: BIOSIS Prev., Wildlife & Ecology
Abstract: So-called Missouri "wolves" are almost exclusively coyotes [Canis l. latrans]. Identification, especially of dog-coyote hybrids, is often difficult and best left to museums. Coyote pups are often confused with fox pups, but the shape of the pupil of the eye-vertically elliptical in the fox and circular in the coyote-as described by Jordan (1929) and Pratt (1935), is a dependable character to separate these spp. Coyotes may cause extensive damage under conditions of concentration of livestock or poultry. Control of damage is best effected through elimination of individual killers, rather than by attempts at wholesale reduction of coyote populations. The Division of Predator and Rodent Control, U. S. Fish and Wildlife Service, cooperates with the Missouri Conservation Commission and county or local sources through employment of trained trappers who work on a spot-control basis. This method has proved effective in reducing livestock losses. || ABSTRACT AUTHORS: W. O. Nagel Source: BIOSIS

Reference Type: Journal Article
Record Number: 581
Author: T. S. Hardisky
Year: 1997
Title: Coyote Research/Management: The Distribution and Abundance of Coyotes in Pennsylvania
Journal: Coyote research/management: the distribution and abundance of coyotes in Pennsylvania
Pages: 4-4
Short Title: Coyote Research/Management: The Distribution and Abundance of Coyotes in Pennsylvania
Legal Note: Wildlife & Ecology
Abstract: Source: wesw

Reference Type: Journal Article
Record Number: 712
Author: L. Charles Stoddart, R. E. Griffiths and F. F. Knowlton
Year: 2001
Title: Coyote responses to changing jackrabbit abundance affect sheep predation
Journal: Journal of range management
Volume: 54
Issue: 1
Pages: 15-20
Short Title: Coyote responses to changing jackrabbit abundance affect sheep predation
ISSN: 0022409X
Legal Note: Zool. Record, AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
lepus
leporidae
lagomorpha
small mammals
ovis
bovidae
ruminants
artiodactyla
ungulates
mountain states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
Abstract: Domestic sheep ranchers generally perceive abundances of natural prey and coyotes (Canis latrans) as important factors affecting coyote predation rates on sheep. To determine the effect of a changing natural prey base of coyote predation rates, we estimated coyote density and predation rates on ewes and lambs during part of one cycle of black-tailed jackrabbit (Lepus californicus) abundance on a 2,300 km² area of the Idaho National Engineering Laboratory in southcentral Idaho from 1979-1985. We used 100, 1.6-km scat collection lines and 80, 111.6-km flushing transects to asses coyote and jackrabbit densities, respectively. Ewe and lamb loss rates were determined from questionnaires sent to all 13 producers grazing sheep on the area. Spring coyote

density varied from 0.10 to 1.39 coyotes km~-2~ in response to a systematic fluctuation in jackrabbit density from 0 to 243 jackrabbits km~-2~. Reported total loss rates of ewes and lambs varied from 2.2 to 42.1 ewes/10~5~ ewe days and 33.0 to 163 lambs/10~5~ lamb-days and were linearly and directly related to coyote density ($p < 0.005$). Ewe and lamb loss rates were independent of jackrabbit density ($p > 0.18$) except for one year when jackrabbits were virtually absent from the study area and the loss of lambs escalated dramatically. Our data suggest the increased losses of lambs resulted from reduced buffering by natural prey
Source: WESW

Reference Type: Journal Article
Record Number: 542
Author: J. C. Kilgo
Year: 2009
Title: Coyotes in the east: Are they impacting deer?
Journal: Forest landowner
Volume: 68
Issue: 2
Pages: 5-8
Short Title: Coyotes in the east: Are they impacting deer?
ISSN: 10879110
Legal Note: AGRICOLA, Scopus
Abstract: Hunters and landowners in the eastern US express their concerns about the number of coyotes and whether coyotes are affecting deer and other wildlife. Coyotes are known as an effective predators of fawns and other small animals in the West. A recent research at the US Department of Energy's Savannah River Site (SRS) forested area in western South Carolina is focused on the possible effects of coyotes on deer. The study includes the coyotes themselves, their population size, their movements and habitat use, survival and mortality, and food habits. The study can also lead to a direct assessments of their impact on the deer population. The eastern US is now fully occupied by coyotes, while many eastern states have only seen well-established populations in last few years. Deer managers and hunters need to take effective measures for the survival of deer populations from coyotes.
Source: SCOPUS

Reference Type: Conference Proceedings
Record Number: 580
Author: D. Slate
Title: COYOTES IN THE EASTERN US: STATUS AND IMPLICATIONS--DAMAGE PROBLEMS AND ECONOMIC LOSSES FROM COYOTES IN THE NORTHEASTERN U.S
Volume: 3
Pages: 325-326
Date: 1987
Short Title: COYOTES IN THE EASTERN US: STATUS AND IMPLICATIONS--DAMAGE PROBLEMS AND ECONOMIC LOSSES FROM COYOTES IN THE NORTHEASTERN U.S
Pub Place: Wildlife & Ecology
Abstract: Source: WESW

Reference Type: Journal Article
Record Number: 743
Author: C. M. Mackinnon, A. C. Kennedy and D. W. Colpitts
Year: 2007
Title: Details of Eastern Coyote, canis latrans, predation on great black-backed gull, larus marinus, eggs on boot Island national wildlife area, Nova Scotia
Journal: Canadian field-naturalist
Volume: 121
Issue: 4
Pages: 426-428
Short Title: Details of Eastern Coyote, canis latrans, predation on great black-backed gull, larus marinus, eggs on boot Island national wildlife area, Nova Scotia
ISSN: 00083550
Legal Note: GEOBASE, Scopus, Wildlife & Ecology

Keywords: eggshell
Abstract: The article focuses on the colonization of Canis latrans or commonly known as Eastern Coyote in the eastern part of Canada. It says that coyote came in New Brunswick in 1970 and was found in Nova Scotia by 1980 and in Prince Edward Island in 1983. It mentions that numerous studies on the nature of coyotes found out that White-Tailed deer and Snowshoe Hare are two of the most important prey species. It notes that coyote are also believed to be consuming nesting seabirds as many tracks and scats of coyote are traced in several off-shore island in eastern Canada. It cites that in May 10, 2004 a coyote was seen doing an act of egg depredation in Boot Island. Source: WESW

Reference Type: Journal Article
Record Number: 749
Author: J. F. Kamler, W. B. Ballard, M. C. Wallace, R. L. Gilliland and P. S. Gipson
Year: 2007
Title: Dietary overlap of swift foxes and coyotes in Northwestern Texas
Journal: American midland naturalist
Volume: 158
Issue: 1
Pages: 139-146
Short Title: Dietary overlap of swift foxes and coyotes in Northwestern Texas
ISSN: 00030031
DOI: 10.1674/0003-0031(2007)158[139:DOOSFA]2.0.CO;2
Legal Note: Zool. Record, BIOSIS Prev., AGRICOLA, Wildlife & Ecology, GEOBASE, Scopus
Abstract: Predation by coyotes (Canis latrans) has been documented as the main cause of mortality in most populations of swift foxes (Vulpes velox), although reasons for such high predation rates were often unclear. Additionally, coyotes kill but generally do not consume swift foxes, suggesting coyotes kill for reasons other than food. To better understand ecological relationships between these species, we studied dietary overlap of syntopic coyotes and swift foxes in northwestern Texas from 1998 to 2000. Both species consumed the same food items and had similar seasonal changes in diets, although the order of these items differed for each species. Overall, coyotes and swift foxes had high dietary overlap (Ro = 0.856), although some dietary partitioning was evident based on food size categories. Dietary overlap was least in summer (Ro = 0.714) and greatest in winter (Ro = 0.859). Swift fox diets were dominated by small food items (i.e., rodents and insects), whereas coyote diets had nearly equal representation of all food classes. The similarity in diets between coyotes and swift foxes indicated the potential for resource competition between these species, although we did not determine food availability. Regardless, the killing and spatial displacement of swift foxes by coyotes throughout their distribution might be due to their high food resource overlap, especially because coyote populations tend to be limited by prey availability. Source: GEOBASE
Notes: 10.1674/0003-0031(2007)158[139:DOOSFA]2.0.CO;2

Reference Type: Journal Article
Record Number: 759
Author: M. A. Sovada, A. B. Sargeant and J. W. Grier
Year: 1995
Title: Differential effects of coyotes and red foxes on duck nest success
Journal: Journal of wildlife management
Volume: 59
Issue: 1
Pages: 1-8
Short Title: Differential effects of coyotes and red foxes on duck nest success
ISSN: 0022541X
Legal Note: Zool. Record, BIOSIS Prev., Fish & Fisheries, GEOBASE, Scopus, Wildlife & Ecology
Keywords: red fox
Abstract: Low recruitment rates prevail among ducks in the Prairie Pothole Region of North America, primarily because of high nest depredation rates. The red fox (Vulpes vulpes) is a major predator of duck eggs, but fox abundance is depressed by coyotes (Canis latrans). We tested the hypothesis that nest success of upland-nesting ducks is higher in areas with coyotes than in areas with red foxes. We conducted the study during 1990-92 in uplands of 36 areas managed for nesting ducks in North Dakota and South Dakota. Overall nest success averaged 32% (95% CI = 25-40) on 17 study areas where coyotes were the principal canid and 17% (CI = 11-25) on 13 study areas where red foxes were the principal canid (P = 0.01). Both canids were common on 6 other areas, where nest success averaged 25% (CI = 13-47). Habitat composition, predator communities with the exception of canids, and species composition of duck nests in coyote and red fox areas were similar overall. Upon examining only nests with gtoreq 6 eggs on the last

visit prior to hatch or depredation, we determined nests with evidence characteristic of fox predation accounted for 4% of depredated nests in coyote areas and 27% in fox areas (P = 0.001). An expanding coyote population is contributing to higher overall nest success. Management of coyotes may be an effective method for increasing duck nest success. Source: BIOSIS

Reference Type: Journal Article
Record Number: 509
Author: C. S. Blakesley and J. C. McGrew
Year: 1984
Title: Differential vulnerability of lambs to coyote predation
Journal: Applied animal behaviour science
Volume: 12
Issue: 4
Pages: 349-361
Short Title: Differential vulnerability of lambs to coyote predation
ISSN: 01681591
Legal Note: Zool. Record, CAB Abs., Wildlife & Ecology, Scopus
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
small mammals
eukaryotes
eukaryotic cells
north america
america
developed countries
oecd countries
Abstract: Coyote-lamb interactions in 65-ha pastures were observed during a study of Komondor dogs guarding sheep. Vulnerability of lambs to coyote predation was related to total time lambs were exposed to coyotes in the enclosures and total time present in the flock. Lambs were most vulnerable during the first two weeks of exposure (P < 0.001, X2 = 49.3), and were somewhat less vulnerable in the next 4 weeks of exposure. If the lambs survived 6 weeks of exposure, their chances of succumbing to predation were small. Lambs were most vulnerable if they were added to an established flock. Orphan lambs were more vulnerable than ewe-reared lambs. Even though the coyotes in this study were persistent in attacking lambs, their success was limited for at least 3 reasons. First, the lambs sometimes refused to run from the coyotes. In addition, they occasionally actively defended themselves by foot-stomping, butting and approaching the coyote. Finally, no lambs were killed while in close proximity to a guardian dog. Based on this study, predation might best be reduced by minimizing introductions of new lambs, and especially orphan lambs, to established flocks, and by using a guardian dog, if possible. © 1984. Source: SCOPUS

Reference Type: Journal Article
Record Number: 733
Author: F. F. Knowlton and S. M. Ebbert
Year: 2002
Title: Disposition of fluid from Livestock Protection Collars following coyote attacks on collared goats
Journal: International biodeterioration and biodegradation
Volume: 49
Issue: 2-3
Pages: 199-204
Short Title: Disposition of fluid from Livestock Protection Collars following coyote attacks on collared goats
ISSN: 09648305
DOI: 10.1016/S0964-8305(01)00123-8
Legal Note: BIOSIS Prev., AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canis

canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
capra
bovidae
ruminants
artiodactyla
ungulates
Abstract: We estimated the amount of fluid from Livestock Protection Collars (LPCs) that was ingested by coyotes during attacks on domestic goats (Capra hircus). The minimum dose coyotes received from both small (30 ml) and large (60 ml) LPCs was 0.1 ml, although the average amount of fluid ingested by coyotes was 1.0 and 4.9 ml for the small and large LPCs, respectively. Secondarily, we also determined (1) that once an LPC bladder was punctured, 85-90% of the fluid was dispensed, and (2) the amount of LPC fluid retained on the skin and wool of the animal attacked, averaged 7.5 and 12.7 ml for small and large LPCs, respectively (range = 3.9-22.0 ml). On average, 56% of the LPC fluid dispensed during a coyote attack was not accounted for in these trials. Suggestions for enhancing the portion of LPC fluid ingested, and thereby reducing environmental risks and contamination, are presented. © 2002 Elsevier Science Ltd. All rights reserved. Source: GEOBASE
Notes: 10.1016/S0964-8305(01)00123-8

Reference Type: Journal Article
Record Number: 742
Author: J. Witczuk, S. Pagacz and L. S. Mills
Year: 2013
Title: Disproportionate predation on endemic marmots by invasive coyotes
Journal: Journal of mammalogy
Volume: 94
Issue: 3
Pages: 702-713
Short Title: Disproportionate predation on endemic marmots by invasive coyotes
ISSN: 00222372
DOI: 10.1644/12-MAMM-A-199.1
Legal Note: GEOBASE, CAB Abs., BIOSIS Prev., Zool. Record, Wildlife & Ecology
Keywords: aplodontia
aplodontidae
rodents
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
ruminants
artiodactyla
canis
canidae
fissipeda
carnivores
felis
felidae
lepus
leporidae
lagomorpha

marmota
sciuridae
apec countries
developed countries
north america
america
oecd countries
arvicolinae
muridae
pacific northwest states of usa
pacific states of usa
western states of usa
usa
Abstract: We investigated predation by nonnative coyotes (Canis latrans) on endemic Olympic marmots (Marmota olympus) in Olympic National Park, Washington, in 2005 and 2006. Although nearly the entire marmot range is protected within the park, declines and local extirpations of the species have been documented. Through analyses of carnivore scat across the range of the Olympic marmot we determined the distribution and relative density of coyotes and characterized the extent to which coyotes and native carnivores preyed on marmots. We used mitochondrial DNA analysis of scats to determine carnivore species, and microsatellite markers for individual coyote identification. Scat analysis indicated that invasive coyotes are widespread and the numerically dominant carnivore on sampled trails within the Olympic highlands-71% (301 of 426) of all scats verified to species arose from coyote. Out of all carnivore scats collected, 11.6% (111 of 958) contained marmot remains. For 85% of the samples with marmots, coyotes were confirmed as the predator. The remainder arose from bobcat (13%) and cougar (2%). Coyotes were the predominant marmot predator across all months and in most regions of the park. Twelve out of 13 coyote individuals identified with genetic markers preyed on marmots. Marmots ranked 5th in frequency of coyote diet items, after snowshoe hares (Lepus americanus), mountain beavers (Aplodontia rufa), voles, and cervids. Scat analysis indicated that in the Olympic Mountains, the coyote as an invasive generalist predator is subsidized by abundant multiple prey, and appears to be the primary terrestrial predator on the endemic Olympic marmot. We conclude that predation by coyotes on marmots is widespread and substantial across the marmot's species range, and therefore likely driving observed marmot declines and extinctions. © 2013 American Society of Mammalogists. Source: GEOBASE
Notes: 10.1644/12-MAMM-A-199.1

Reference Type: Journal Article
Record Number: 727
Author: K. M. Berger and E. M. Gese
Year: 2007
Title: Does interference competition with wolves limit the distribution and abundance of coyotes?
Journal: Journal of animal ecology
Volume: 76
Issue: 6
Pages: 1075-1085
Short Title: Does interference competition with wolves limit the distribution and abundance of coyotes?
ISSN: 00218790
DOI: 10.1111/j.1365-2656.2007.01287.x
Legal Note: MEDLINE, Zool. Record, AGRICOLA, Wildlife & Ecology, GEOBASE, Scopus
Keywords: survival
Abstract: 1. Interference competition with wolves Canis lupus is hypothesized to limit the distribution and abundance of coyotes Canis latrans, and the extirpation of wolves is often invoked to explain the expansion in coyote range throughout much of North America. 2. We used spatial, seasonal and temporal heterogeneity in wolf distribution and abundance to test the hypothesis that interference competition with wolves limits the distribution and abundance of coyotes. From August 2001 to August 2004, we gathered data on cause-specific mortality and survival rates of coyotes captured at wolf-free and wolf-abundant sites in Grand Teton National Park (GTNP), Wyoming, USA, to determine whether mortality due to wolves is sufficient to reduce coyote densities. We examined whether spatial segregation limits the local distribution of coyotes by evaluating home-range overlap between resident coyotes and wolves, and by contrasting dispersal rates of transient coyotes captured in wolf-free and wolf-abundant areas. Finally, we analysed data on population densities of both species at three study areas across the Greater Yellowstone Ecosystem (GYE) to determine whether an inverse relationship exists between coyote and wolf densities. 3. Although coyotes were the numerically dominant predator, across the GYE, densities varied spatially and temporally in accordance with wolf abundance. Mean coyote densities were 33% lower at wolf-abundant sites in GTNP, and densities declined 39% in Yellowstone National Park following wolf

reintroduction. 4. A strong negative relationship between coyote and wolf densities (β = -3.988, P < 0.005, r2 = 0.54, n = 16), both within and across study sites, supports the hypothesis that competition with wolves limits coyote populations. 5. Overall mortality of coyotes resulting from wolf predation was low, but wolves were responsible for 56% of transient coyote deaths (n = 5). In addition, dispersal rates of transient coyotes captured at wolf-abundant sites were 117% higher than for transients captured in wolf-free areas. 6. Our results support the hypothesis that coyote abundance is limited by competition with wolves, and suggest that differential effects on survival and dispersal rates of transient coyotes are important mechanisms by which wolves reduce coyote densities. © 2007 The Authors. Source: GEOBASE
Notes: 10.1111/j.1365-2656.2007.01287.x

Reference Type: Journal Article
Record Number: 728
Author: J. L. Harrington and M. R. Conover
Year: 2007
Title: Does removing coyotes for livestock protection benefit free-ranging ungulates?
Journal: Journal of wildlife management
Volume: 71
Issue: 5
Pages: 1555-1560
Short Title: Does removing coyotes for livestock protection benefit free-ranging ungulates?
ISSN: 0022541X
DOI: 10.2193/2006-481
Legal Note: Zool. Record, BIOSIS Prev., AGRICOLA, CAB Abs., GEOBASE, Scopus, Wildlife & Ecology
Keywords: ruminants
artiodactyla
mammals
vertebrates
chordata
animals
ungulates
eukaryotes
eukaryotic cells
mountain states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
great plains states of usa
canis
canidae
fissipeda
carnivores
cervidae
deer
odocoileus
Abstract: We studied the effects of coyote (Canis latrans) control for livestock protection on native ungulates during 2003 and 2004 on 7 sites in Utah and Colorado, USA, totaling over 1,900 km2. We found no relationships between coyote control variables and offspring/female deer ratios. However, control effort (no. of hr spent aerial gunning for coyotes) and success (no. of coyotes taken) were positively correlated with numbers of mule deer (Odocoileus hemionus) and pronghorn (Antilocapra americana) observed per kilometer of transect. Our results suggest that coyote control for livestock protection may increase densities of mule deer and pronghorn in areas where it is conducted. Source: GEOBASE
Notes: 10.2193/2006-481

Reference Type: Journal Article
Record Number: 521

Author: J. K. Young, S. N. Glasscock and J. A. Shivik
Year: 2008
Title: Does spatial structure persist despite resource and population changes? Effects of experimental manipulations on coyotes
Journal: Journal of mammalogy
Volume: 89
Issue: 5
Pages: 1094-1104
Short Title: Does spatial structure persist despite resource and population changes? Effects of experimental manipulations on coyotes
ISSN: 00222372
DOI: 10.1644/07-MAMM-A-198.1
Legal Note: Zool. Record, CAB Abs., AGRICOLA, Wildlife & Ecology, GEOBASE, Scopus, BIOSIS Prev.
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
southern plains states of usa
west south central states of usa
southern states of usa
usa
north america
america
developed countries
oecd countries
great plains states of usa
gulf states of usa
Abstract: We tested the influence of a change in food resource distribution on space use and diet of coyotes (Canis latrans). We focused on 2 facets of space use: maintenance of home ranges by residents, and establishment of home ranges by immigrants after a coyote removal program. The study was conducted on 2 populations of coyotes in southern Texas. In both populations, a clumped, high-quality food source was added to randomly selected feeding stations to measure the influence of food distribution and abundance on home-range patterns, trespassing rates, and consumption of native prey. In established home ranges, coyotes visited and foraged at stations regularly and were found closer to stations during the treatment period. Although there was no overall treatment effect on home-range size ($F = 1.66$, d.f. = 5, $P = 0.15$), home ranges without supplemental food remained stable in size, whereas home ranges that had received supplemental food increased during the posttreatment period ($t = 2.09$, d.f. = 1, $P = 0.04$). Core areas showed a similar trend; there was no overall treatment effect ($F = 1.51$, d.f. = 2, $P = 0.24$); however, core areas of home ranges that received supplemental food were smaller than those of controls during the treatment period ($t = 2.71$, d.f. = 1, $P < 0.01$). There were no statistical differences in occurrence of any species, such as small mammals or white-tailed deer (Odocoileus virginianus), in scats of treatment versus control coyotes. Coyotes within the study site after removals were located closer to feeding stations during treatment than posttreatment ($F = 8.83$, d.f. = 1, $P < 0.02$, $n = 897$) periods, yet home-range size with supplemental food was larger than home-range size during the posttreatment period. Our findings suggest that a resource other than food influences coyote spatial patterns. © 2008 American Society of Mammalogists. Source: GEOBASE
Notes: 10.1644/07-MAMM-A-198.1

Reference Type: Journal Article
Record Number: 739
Author: R. D. Andrews, E. K. Boggess and R. A. Bishop
Year: 1978
Title: DOMESTIC ANIMAL LOSSES TO COYOTES AND DOGS IN IOWA
Journal: Journal of wildlife management
Volume: 42

Issue: 2
Pages: 362-372
Short Title: DOMESTIC ANIMAL LOSSES TO COYOTES AND DOGS IN IOWA
ISSN: 0022541X
Legal Note: Zool. Record, BIOSIS Prev., CAB Abs., Wildlife & Ecology
Keywords: ovis
bovidae
ruminants
artiodactyla
mammals
vertebrates
chordata
animals
ungulates
eukaryotes
eukaryotic cells
bos
sus scrofa
sus
suidae
suiformes
canis
canidae
fissipeda
carnivores
small mammals
west north central states of usa
north central states of usa
usa
north america
america
developed countries
oecd countries
corn belt states of usa
Abstract: Losses of domestic livestock to coyotes (Canis latrans) and dogs were investigated from claims filed at county courthouses in Iowa [USA] between 1960 and 1974. A total of 5800 claims was examined, representing losses of 18,309 sheep, 826 cattle, 2257 swine and 6839 chickens, turkeys, geese and ducks. For all reported sheep losses, 49% were attributed to dogs and 36% to coyotes. The proportions of cattle, swine and poultry killed by dogs also were greater than those attributed to coyotes. Since 1960, the proportion of the predator loss attributed to coyotes has increased, although there was no change in the total magnitude of predation losses. Predators killed a mean of 1.5 of the lambs born and maximum of 3.5% of the total sheep production on the 14-county area. Sheep, swine and poultry losses were greatest in the summer or early fall and cattle losses were greatest in the spring. The magnitude of depredations appeared to be more a function of livestock availability than of predator density. Traditional management tools that result in the taking of coyotes primarily in the fall and winter (hunting, trapping and bounties) have little effect on coyotes during the season when the greatest livestock losses are occurring. Source: BIOSIS

Reference Type: Journal Article
Record Number: 584
Author: W. F. Andelt and P. S. Gipson
Year: 1979
Title: Domestic turkey losses to radio-tagged coyotes [Predation, turkey farm]
Journal: Journal of wildlife management (usa)
Volume: 43
Issue: 3
Pages: 673-679
Short Title: Domestic turkey losses to radio-tagged coyotes [Predation, turkey farm]
ISSN: 0022541X
Legal Note: AGRIS

Abstract: Source: AGRIS

Reference Type: Journal Article
Record Number: 684
Author: W. F. Andelt and P. S. Gipson
Year: 1979
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Short Title: Domestic turkey losses to radio-tagged coyotes [Predation, turkey farm]
ISSN: 0022541X
Legal Note: AGRIS
Abstract: Source: AGRIS

Reference Type: Journal Article
Record Number: 708
Author: M. M. Conner, M. M. Jaeger, T. J. Weller and D. R. McCullough
Year: 1998
Title: Effect of coyote removal on sheep depredation in northern California
Journal: Journal of wildlife management
Volume: 62
Issue: 2 SUPPL.
Pages: 690-699
Short Title: Effect of coyote removal on sheep depredation in northern California
ISSN: 0022541X
Legal Note: AGRIS, Zool. Record, BIOSIS Prev., AGRICOLA, GEOBASE, Scopus, Wildlife & Ecology
Abstract: The authors used 13 years of historical data to investigate effects of coyote (Canis latrans) removal on depredation of domestic sheep. The 2,168-ha study area (Mendocino County, California) maintained >1,000 breeding ewes that produced lambs yearly. Records from 1981 through 1994, which included numbers of sheep, numbers of sheep known killed by coyotes, known numbers of coyotes removed, and annual numbers of trapper hours were summarized and analyzed on a yearly, seasonal, and monthly basis. The authors used regression analysis and found that annual, seasonal, or monthly depredation losses were not correlated with number of coyotes removed. Both annual number of lambs killed and number of coyotes removed were positively correlated with number of trapper hours. They used a cross-correlation analysis to detect any relation between coyote removal and subsequent depredation losses at all monthly intervals from 0 to 24 months. They found a trend of low negative correlation between depredation losses and number of coyotes removed for lags of 2-12 months, suggesting some reduction of sheep killing due to control efforts. Low correlations within years may be due to inconsistent removal of depredating coyotes while removing primarily young, nondepredating coyotes. Lack of correlation between years may have occurred because past control efforts have not had a lasting reduction on coyote density due to immigration, the compensatory nature of control efforts on coyote mortality, reproductive compensation in the resident coyote population, or all three factors Source: WESW

Reference Type: Journal Article
Record Number: 716
Author: K. K. Wagner and M. R. Conover
Year: 1999
Title: Effect of preventive coyote hunting on sheep losses to coyote predation
Journal: Journal of wildlife management
Volume: 63
Issue: 2
Pages: 606-612
Short Title: Effect of preventive coyote hunting on sheep losses to coyote predation
ISSN: 0022541X
Legal Note: Zool. Record, AGRICOLA, BIOSIS Prev., Wildlife & Ecology, Scopus
Abstract: Aerial hunting is commonly used by agriculture agencies in the Intermountain West to reduce coyote (Canis latrans)

predation on domestic sheep. We assessed the effect of aerial hunting of coyotes on sheep losses to coyotes, and the need for corrective predation management (hours of work, device nights) on the same pastures when sheep arrived for the subsequent summer grazing season (3-6 months after aerial hunting). Comparisons were made between paired pastures with (treated) and without (untreated) winter aerial hunting from helicopters. Average (x +- SE) pasture size was 45.2 +- 14.1 km2 (n = 21) for treated pastures and 30.9 +- 4.6 km2 (n = 21) for untreated pastures. There was an average of 1,098 +- 88 ewes and 1,226 +- 149 lambs in treated pastures, and 1,002 +- 149 ewes and 1,236 +- 79 lambs in untreated pastures. The number of dead lambs located and confirmed killed by coyotes (confirmed kills) was less in treated pastures (2.7 +- 0.6) than in untreated pastures (7.3 +- 1.6; P = 0.01). To estimate total lamb losses to coyotes, we multiplied the proportion of known lamb deaths that were confirmed coyote kills by the number of missing lambs and added the resulting figure to the number of confirmed kills. These estimates of lamb loss to coyotes were also lower in treated (11.8 +- 6.2) than untreated pastures (35.2 +- 8.1; P = 0.02). Hours required for summer coyote control also were less (P = 0.01) in treated pastures (37.3 +- 8.5) than in untreated pastures (57.2 +- 11.3). Winter aerial hunting increased the mean number of coyotes killed annually per pasture from 2.0 +- 1.0 to 5.7 +- 1.1 (P = 0.04), but it did not affect the number of coyotes removed during summer coyote control (P = 0.52). Based on 1995 values for Utah lambs and labor, winter aerial hunting of coyotes had a benefit:cost ratio of 2.1:1. Source: BIOSIS

Reference Type: Journal Article
Record Number: 750
Author: J. A. Kolbe, J. R. Squires, L. F. Ruggiero and D. H. Pletscher
Year: 2007
Title: The effect of snowmobile trails on coyote movements within lynx home ranges
Journal: Journal of wildlife management
Volume: 71
Issue: 5
Pages: 1409-1418
Short Title: The effect of snowmobile trails on coyote movements within lynx home ranges
ISSN: 0022541X
DOI: 10.2193/2005-682
Legal Note: Zool. Record, BIOSIS Prev., AGRICOLA, Wildlife & Ecology, GEOBASE, Scopus
Abstract: Coyotes (Canis latrans) and Canada lynx (Lynx canadensis) are sympatric throughout much of the lynx's southern range. Researchers and managers have suggested that the presence of compacted snowmobile trails may allow coyotes to access lynx habitat from which they were previously excluded by deep, unconsolidated snow. This could then allow coyotes to more effectively compete with lynx for snowshoe hares (Lepus americanus), the lynx's primary prey. We investigated how coyotes interacted with compacted snowmobile trails by conducting carnivore track surveys and by snow tracking adult coyotes (4 M, 8 F) in areas of western Montana, USA, with both documented lynx presence and recreational snowmobile use. Coyotes remained in lynx habitat having deep snow throughout the winter months. They used compacted snowmobile trails for 7.69% of their travel distance and traveled on them for a median distance of 124 m. Coyotes used compacted forest roads (5.66% of total travel) and uncompacted forest roads (4.62% of total travel) similarly. Coyotes did not travel closer to compacted snowmobile trails than random expectation (coyote x- distance from compacted trails = 368 m, random expectation = 339 m) and the distance they traveled from these trails did not vary with daily, monthly, or yearly changes in snow supportiveness or depth. However, they strongly selected for naturally shallower and more supportive snow surfaces when traveling off compacted snowmobile trails. Coyotes were primarily scavengers in winter (snowshoe hare kills composed 3% of coyote feed sites) and did not forage closer to compacted snowmobile trails than random expectation. The overall influence of snowmobile trails on coyote movements and foraging success during winter appeared to be minimal on our study area. The results of this study will allow land managers to better assess the effects of snow-compacting activities on coyotes and lynx. Source: geobase
Notes: 10.2193/2005-682

Reference Type: Journal Article
Record Number: 718
Author: R. J. Burns, D. E. Zemlicka and P. J. Savarie
Year: 1996
Title: Effectiveness of large livestock protection collars against depredating coyotes
Journal: Wildlife society bulletin
Volume: 24
Issue: 1
Pages: 123-127
Short Title: Effectiveness of large livestock protection collars against depredating coyotes

ISSN: 00917648
Legal Note: AGRIS, BIOSIS Prev., AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: intoxication
ovis
bovidae
ruminants
artiodactyla
mammals
vertebrates
chordata
animals
ungulates
eukaryotes
eukaryotic cells
canis
canidae
fissipeda
carnivores
north america
america
developed countries
oecd countries
Abstract: The effectiveness of large livestock protection collars (LLPC's) to kill coyotes (Canis latrans) that attacked sheep was investigated. The LLPC, designed for sheep and goats 22.7 kg, contained the same formulation of Compound 1080 (sodium fluoroacetate) as the smaller collar (LPC) registered by the Environmental Protection Agency in 1985. In 32 tests involving 19 sheep wearing LLPC's, 12 coyotes made 14 neck or throat attacks. In 10 of the 14 attacks (71%), LLPC's were punctured and all 10 coyotes died. Coyotes that punctured collars showed signs of intoxication in an average of 203 minutes and died an average of 93 minutes later. Time to death did not differ among coyotes that punctured 1 collar compartment versus 2 compartments. The LLPC was more effective in deterring coyote predation on large sheep than the previously registered small LPC. Source: CAB

Reference Type: Journal Article
Record Number: 717
Author: K. M. Blejwas, B. N. Sacks, M. M. Jaeger and D. R. McCullough
Year: 2002
Title: The effectiveness of selective removal of breeding coyotes in reducing sheep predation
Journal: Journal of wildlife management
Volume: 66
Issue: 2
Pages: 451-462
Short Title: The effectiveness of selective removal of breeding coyotes in reducing sheep predation
ISSN: 0022541X
Legal Note: Zool. Record, BIOSIS Prev., AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
artiodactyla
ungulates

pacific states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
Abstract: We evaluated the effect on sheep losses of selectively removing breeding coyotes (Canis latrans) from territories in California, USA, experiencing depredations. Breeding pairs of coyotes were the primary predators of sheep, and they killed sheep only within or on the periphery of their territories. Removal of either or both members of a breeding pair reduced or eliminated predation in that territory during the subsequent 3-month period. Killing of sheep by coyotes resumed sooner in territories that overlapped lambing pastures than in those that did not. For territories with access to lambs, the average time interval until killing of lambs resumed (43 days) approximated the time for a replacement pair of coyotes to become established. Removals of breeding coyotes during the nonlambing season did not reduce losses during the following lambing season. Although <33% as many coyotes were removed per unit time during selective control as during nonselective control, lambing-season lamb losses were lowest during the selective removal period. During the nonlambing period (when predation on sheep was low) sheep losses were similar under selective, nonselective, and no control. These results suggest that selective targeting of breeding coyotes, which is more socially acceptable than nonselective population reduction, also can be more effective in reducing sheep losses. Source: CAB

Reference Type: Journal Article
Record Number: 748
Author: S. E. Hoover and M. R. Conover
Year: 1998
Title: Effectiveness of volatile irritants at reducing consumption of eggs by captive coyotes
Journal: Journal of wildlife management
Volume: 62
Issue: 1
Pages: 399-405
Short Title: Effectiveness of volatile irritants at reducing consumption of eggs by captive coyotes
ISSN: 0022541X
Legal Note: AGRIS, BIOSIS Prev., AGRICOLA, Wildlife & Ecology, GEOBASE, Scopus
Abstract: Egg predation by mammalian predators can significantly reduce recruitment of ground-nesting birds. The authors hypothesized that they could teach predators not to open eggs by giving them prior exposure to eggs injected with volatile trigeminal irritants. To test this, they examined the effectiveness of ten such chemicals in reducing food and egg consumption by coyotes (Canis latrans). The subjects did not significantly reduce their consumption of food when one of the chemicals was placed beside it. However, following injection into eggs, nine of ten chemicals significantly reduced the amount of egg consumed by coyotes, seven increased the time coyotes spent before opening the egg, and three (pulegone, allyl sulfide, cinnamaldehyde) decreased the average time of food consumption. These results suggest that a chemical must be directly associated with a food item to reduce its consumption by coyotes. Additionally, coyotes continued to consume untreated food and eggs during posttreatment trials. Further trials are needed to investigate the potential of treating avian nests or producing dummy eggs that facilitate a generalized avoidance of eggs. In these situations, pulegone or cinnamaldehyde may have potential for deterring predation of eggs by canids Source: wesw

Reference Type: Journal Article
Record Number: 723
Author: S. M. Karki, M. L. Klavetter and E. M. Gese
Year: 2007
Title: Effects of coyote population reduction on swift fox demographics in southeastern Colorado
Journal: Journal of wildlife management
Volume: 71
Issue: 8
Pages: 2707-2718
Short Title: Effects of coyote population reduction on swift fox demographics in southeastern Colorado
ISSN: 0022541X
DOI: 10.2193/2006-275
Legal Note: Zool. Record, AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus

Keywords: survival
mountain states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
great plains states of usa
canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
vulpes
Abstract: The distribution and abundance of swift foxes (Vulpes velox) has declined from historic levels. The causes for the decline include habitat loss and fragmentation, incidental poisoning, changing land use practices, trapping, and predation by other carnivores. Coyotes (Canis latrans) overlap the geographical distribution of swift foxes, compete for similar resources, and are a significant source of mortality amongst many swift fox populations. Current swift fox conservation and management plans to bolster declining or recovering fox populations may include coyote population reduction to decrease predation. However, the role of coyote predation in swift fox population dynamics is not well-understood. To better understand the interactions of swift foxes and coyotes, swift fox population demographics (survival rates, dispersal rates, reproduction, density) was compared in areas with or without coyote population reduction. On the Piñon Canyon Maneuver Site, Colorado, USA, 141 swift foxes were monitored for 65226 radio-days between 15 December 1998 and 14 December 2000 with 18035 total telemetry locations collected. Results revealed that juvenile swift fox survival rate increased and survival was temporarily prolonged in the coyote removal area. Adult fox survival patterns were also altered by coyote removal, but only following late summer coyote removals and, again, only temporarily. Coyote predation remained the main cause of juvenile and adult fox mortality in both areas. The increase in juvenile fox survival in the coyote removal area resulted to a compensatory increase in the juvenile dispersal rate and an earlier pulse in dispersal movements. Adult fox dispersal rate was more consistent throughout the year in the coyote removal area. Coyote removal did not influence the reproductive parameters of the swift foxes. Even though juvenile survival increased, swift fox density remained similar among the areas due to the compensatory dispersal rate among juvenile foxes. It is concluded that the swift fox population in the area is saturated. Although coyote predation appeared additive in the juvenile cohort, it is compensatory with dispersal. Source: CAB
Notes: 10.2193/2006-275

Reference Type: Journal Article
Record Number: 518
Author: S. E. Henke and F. C. Bryant
Year: 1999
Title: Effects of coyote removal on the faunal community in western Texas
Journal: Journal of wildlife management
Volume: 63
Issue: 4
Pages: 1066-1081
Short Title: Effects of coyote removal on the faunal community in western Texas
ISSN: 0022541X
Legal Note: Zool. Record, BIOSIS Prev., CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates

chordata
animals
eukaryotes
eukaryotic cells
small mammals
lepus
leporidae
lagomorpha
lynx
felidae
heteromyidae
rodents
dipodomys
mustelidae
badgers
sylvilagus
north america
america
developed countries
oecd countries
southern plains states of usa
west south central states of usa
southern states of usa
usa
great plains states of usa
gulf states of usa
Abstract: Coyotes (Canis latrans) play a keystone role in the population regulation of microherbivores and mesopredators in certain ecosystems. Despite this fact, coyote control measures still are implemented. We evaluated the effects of removing coyotes on sympatric populations of rodents, lagomorphs, raptors, and mammalian mesopredators in a shortgrass prairie ecosystem of western Texas. Faunal communities were examined on two treatment and two comparison 5,000 ha sites of mixed grassland and shrubland habitats for one year before coyote removal and for two years during coyote removal. We removed 354 coyotes by aerial gunning on treatment sites. Removal efforts were initiated every third month from April 1990 to January 1992. Coyote density was reduced from 0.12 ± 0.01 (x_ ± SE) to 0.06 ± 0.01 coyotes/km~2~ on treatment sites. Density on comparison sites remained stable at 0.14 ± 0.01 coyotes/km~2~. We found no differences in faunal population estimates between comparison and treatment sites for the year before coyote removal. Within nine months following the initiation of coyote removal, rodent species richness and rodent diversity declined on treatment sites. Without coyote predation, the Ord's kangaroo rat (Dipodomys ordii) became the most abundant rodent in shrublands and was the only rodent species caught in grasslands after 12 months of coyote removal. Rodent density and biomass, black-tailed jackrabbit (Lepus californicus) density, and relative abundance of badgers (Taxidea taxus), bobcats (Felis rufus), and gray foxes (Urocyon cinereoargenteus) increased on treatment sites. Variation in the density of desert cottontail rabbits (Sylvilagus audubonii) and raptor richness, diversity, and density was not related to coyote density. Our findings were consistent with the predator-mediated coexistence hypothesis, which suggests that a keystone predator (coyote) can influence faunal community structure Source: WESW

Reference Type: Journal Article
Record Number: 599
Author: D. E. Brown and M. R. Conover
Year: 2011
Title: Effects of large-scale removal of coyotes on pronghorn and mule deer productivity and abundance
Journal: Journal of wildlife management
Volume: 75
Issue: 4
Pages: 848-855
Short Title: Effects of large-scale removal of coyotes on pronghorn and mule deer productivity and abundance
ISSN: 0022541X
DOI: 10.1002/jwmg.99
Legal Note: BIOSIS Prev., Zool. Record, Wildlife & Ecology, GEOBASE, Scopus
Keywords: survival
Abstract: We tested the hypothesis that predation by coyotes (Canis latrans) impacts pronghorn (Antilocapra americana) and mule

deer (Odocoileus hemionus) populations. We did so by examining the effects of coyote removal on pronghorn and mule deer populations within 12 large areas (> 10,500 km2) located in Wyoming and Utah during 2007 and 2008. Pronghorn productivity (fawn to adult female ratio) and abundance were positively correlated with the number of coyotes removed and removal effort (hours spent hunting coyotes from aircraft) although the correlation between pronghorn productivity and removal effort was not statistically significant (P = 0.08). Mule deer productivity and abundance were not correlated with either the number of coyotes removed or removal effort. Coyote removal conducted during the winter and spring provided greater benefit than removals conducted during the prior fall or summer. Our results suggest that coyote removal conducted over large areas increases fawn survival and abundance of pronghorn but not mule deer. [copyright] 2011 The Wildlife Society. Source: ZOOR
Notes: 10.1002/jwmg.99

Reference Type: Journal Article
Record Number: 532
Author: C. Bromley and E. M. Gese
Year: 2001
Title: Effects of sterilization on territory fidelity and maintenance, pair bonds, and survival rates of free-ranging coyotes
Journal: Canadian journal of zoology
Volume: 79
Issue: 3
Pages: 386-392
Short Title: Effects of sterilization on territory fidelity and maintenance, pair bonds, and survival rates of free-ranging coyotes
ISSN: 00084301
DOI: 10.1139/cjz-79-3-386
Legal Note: Zool. Record, BIOSIS Prev., CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: survival
canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
artiodactyla
ungulates
north america
america
developed countries
oecd countries
mountain states of usa
western states of usa
usa
Abstract: Predation on sheep by coyotes (Canis latrans) is a longstanding problem for sheep producers. Current research suggests that surgical sterilization of coyotes could prove to be an effective method of reducing their depredation rates on domestic sheep by modifying their predatory behaviour. However, for sterilization to be a viable management tool, the territorial and affiliative behaviours of pack members would need to remain in place. We tested whether surgically sterilized coyotes maintained pair bonds and territories in the same manner as intact coyotes. We also examined if territory fidelity and survival rates differed between sterile and intact coyotes. The study was conducted 400 km2 of the Deseret Land and Livestock Ranch in northeastern Utah, USA between June 1997 to April 2000. Ten males and 9 females were sham-operated and radio-collared, while 20 males and 6 females were surgically sterilized and radio-collared. We monitored members of 5 sterile and 4 intact packs during 1998, 6 sterile and 7 intact packs during 1999, and 4 sterile and 6 intact packs through the 2000 breeding season. Behaviourally, sterile packs appeared to be no different than intact packs. A half-weight association index showed that social dyads within sterile coyote packs were located together as frequently as dyads within intact packs. Simultaneous radiolocations of members of sterile packs showed that members

of sterile packs were significantly closer to each other than would be expected from random locations. There was no difference in size of degree of overlap between territories of sterile and sham-operated coyote packs. Sterile coyotes had a higher annual survival rate than reproductive animals in 2 of the 3 years, and there was no difference in the level of territory fidelity. We concluded that surgical sterilization did not modify the territorial or affiliative behaviours of free-ranging coyotes, and therefore sterile coyotes could be used as a management tool to exclude other potential sheep-killing coyotes. Source: CAB
Notes: 10.1139/cjz-79-3-386

Reference Type: Journal Article
Record Number: 604
Author: J. A. Till and F. F. Knowlton
Year: 1983
Title: EFFICACY OF DENNING IN ALLEVIATING COYOTE CANIS-LATRANS DEPREDATIONS UPON DOMESTIC SHEEP
Journal: Journal of wildlife management
Volume: 47
Issue: 4
Pages: 1018-1025
Short Title: EFFICACY OF DENNING IN ALLEVIATING COYOTE CANIS-LATRANS DEPREDATIONS UPON DOMESTIC SHEEP
ISSN: 0022541X
Legal Note: BIOSIS Prev.
Abstract: Bands of domestic sheep lambing on the open range in south central Wyoming [USA] were monitored for predator losses before and following C. latrans removals. Experimental treatments, including no removal (control), removal of 2 adults and their pups and removal of pups only, were replicated 15 times each. Predation incidents (events) declined 98.2% and the number of sheep killed was reduced by 98.8% when adults and pups were removed. Removing only litter of pups resulted in a decrease of 87.7% in predation incidents and total kills decreased 91.6%. Overall, 23 of 30 predation sequences terminated immediately; in all instances predation caused within 3 days after removing adult coyotes, their pups or both. In terms of offending individuals, denning can be a selective means of coyote depredation control. Removing only litters of offending adults can be nearly as effective in stopping losses as removing the adults. Litter size did not appear to influence kill frequencies. A cost-effectiveness analysis is presented. Source: BIOSIS

Reference Type: Journal Article
Record Number: 740
Author: L. E. Meadows and F. F. Knowlton
Year: 2000
Title: Efficacy of guard llamas to reduce canine predation on domestic sheep
Journal: Wildlife society bulletin
Volume: 28
Issue: 3
Pages: 614-622
Short Title: Efficacy of guard llamas to reduce canine predation on domestic sheep
ISSN: 00917648
Legal Note: AGRICOLA, BIOSIS Prev., CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: lama
camelidae
tylopoda
artiodactyla
mammals
vertebrates
chordata
animals
ungulates
eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
canis

canidae
fissipeda
carnivores
north america
america
developed countries
oecd countries
mountain states of usa
western states of usa
usa
Abstract: Coyotes (Canis latrans) can pose serious economic threats to sheep producers throughout the western USA. At the same time, important segments of the public prefer environmentally benign means to resolve conflicts with wild species. We evaluated the effectiveness of guard llamas to reduce canine predation on domestic sheep by placing 20 llamas with Utah sheep producers and comparing data collected from these flocks over 20 months (May 1996 through December 1997) with similar data collected from flocks without llamas. Comparisons included proportion of flocks with losses to predators and mean predation rates on ewes and lambs. We also conducted surveys to assess producer opinions about including llamas in their sheep management programmes. In all comparisons of lamb losses between treatments and controls, losses sustained by control flocks in the first summer grazing season (SGS1) were significantly greater than in flocks with llamas. Among treatment flocks, losses were similar for SGS1 and the second summer grazing season (SGS2). Among controls, losses were greater in SGS1 and dropped to levels similar to treatment flocks in SGS2. The results suggest that predation may have to reach a threshold before guard llamas have noticeable effects on losses. Surveys of producers with llamas indicated strong support for using llamas as guard animals for sheep. Source: CAB

Reference Type: Journal Article
Record Number: 571
Author: S. B. Linhart, J. D. Roberts and G. J. Dasch
Year: 1982
Title: ELECTRIC FENCING REDUCES COYOTE CANIS-LATRANS PREDATION ON PASTURED SHEEP
Journal: Journal of range management
Volume: 35
Issue: 3
Pages: 276-281
Short Title: ELECTRIC FENCING REDUCES COYOTE CANIS-LATRANS PREDATION ON PASTURED SHEEP
ISSN: 0022409X
Legal Note: BIOSIS Prev.
Abstract: Field tests to evaluate electric fencing for protecting pastured sheep from coyote predation were conducted in North Dakota and Kansas [USA] in 1977 and 1978. In 1979, 37 western sheep producers using electric fences to exclude coyotes were interviewed and relevant data were recorded and analyzed. An all-electric 12-wire, 168-cm-high fence with alternately charged and grounded wires spaced 13 and 15 cm apart stopped ongoing coyote predation on the 2 North Dakota test sites. Four or five strands of electrified wire, offset 13 cm from existing woven and barbed wire sheep fences, effectively prevented further coyote predation at 2 Kansas sites. Sheep producers interviewed expressed a high to moderate degree of satisfaction with the use of electric fencing as a coyote management technique. Sheep management practices on 2-thirds of the ranches remained unchanged after electric fence installation and nearly all producers continued to use other control methods. Of the producers, 60% stated that they experienced some type of maintenance problems but many of these problems may have been due to poor construction techniques or a failure to check their fences periodically. Cost-benefit factors associated with the use of electric fencing, study limitations and further research needs are discussed. Source: BIOSIS

Reference Type: Journal Article
Record Number: 710
Author: M. M. Conner, M. R. Ebinger and F. F. Knowlton
Year: 2008
Title: Evaluating coyote management strategies using a spatially explicit, individual-based, socially structured population model
Journal: Ecological modelling
Volume: 219
Issue: 1-2
Pages: 234-247
Short Title: Evaluating coyote management strategies using a spatially explicit, individual-based, socially structured population

model
ISSN: 03043800
DOI: 10.1016/j.ecolmodel.2008.09.008
Legal Note: Zool. Record, CAB Abs., AGRICOLA, Wildlife & Ecology, GEOBASE, Scopus
Keywords: management
canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
north america
america
developed countries
oecd countries
Abstract: Managing canid predation on livestock is the leading challenge facing canid conservation worldwide. However, removing canids, and coyotes in particular, to reduce livestock predation is environmentally and socially controversial. In addition, it can be expensive and logistically difficult to field evaluate the myriad of potential selective, spatial, and temporal canid management strategies. Here, we develop a spatially explicit, individual-based simulation model to evaluate commonly used or promoted coyote control strategies. We began with an already constructed non-spatial, individual-based stochastic coyote population model that incorporated behavioral features, such as dominance and territoriality. We added a spatial component and enhanced the social rule set to more realistically model coyote movement and territory replacement. This model merges coyote spatial, social, and population ecology into a management framework. The development, structure, and parameterization of this model are described in detail. For lethal methods, model results suggest that spatially intensive removals are more efficient and long lasting compared to random removal methods. However, sterilization appears to be the management strategy offering the largest and most lasting impact on coyote population dynamics. We recommend adding spatial prey/livestock density and environmental components to this model to further enhance its ecological reality and management usefulness. Although this model is applied to coyotes in particular, it is applicable to many canid species of conservation concern. This model provides a tool to assist in the development of more effective and socially acceptable livestock predation management strategies. © 2008 Elsevier B.V. Source: GEOBASE
Notes: 10.1016/j.ecolmodel.2008.09.008

Reference Type: Journal Article
Record Number: 520
Author: M. M. Turner, A. P. Rockhill, C. S. Deperno, J. A. Jenks, A. R. Jarding, T. W. Grovenburg, R. W. Klaver and K. H. Pollock
Year: 2011
Title: Evaluating the effect of predators on white-tailed deer: Movement and diet of coyotes
Journal: Journal of wildlife management
Volume: 75
Issue: 4
Pages: 905-912
Short Title: Evaluating the effect of predators on white-tailed deer: Movement and diet of coyotes
ISSN: 0022541X
DOI: 10.1002/jwmg.109
Legal Note: BIOSIS Prev., Zool. Record, Wildlife & Ecology, GEOBASE, Scopus
Keywords: survival
Abstract: Coyotes (Canis latrans) may affect adult and neonate white-tailed deer (Odocoileus virginianus) survival and have been implicated as a contributor to the decline of deer populations. Additionally, coyote diet composition is influenced by prey availability, season, and region. Because coyote movement and diet vary by region, local data are important to understand coyote population dynamics and their impact on prey species. In southeast Minnesota, we investigated the effect of coyotes on white-tailed deer populations by documenting movement rates, distances moved, and habitats searched by coyotes during fawning and nonfawning periods. Additionally, we determined survival, cause-specific mortality, and seasonal diet composition of coyotes. From 2001 to 2003, we captured and radiocollared 30 coyotes. Per-hour rate of movement averaged 0.87 km and was greater (P = 0.046) during the fawning (1.07 km) than the nonfawning period (0.80 km); areas searched were similar (P = 0.175) between seasons.

Coyote habitat use differed during both seasons; habitats were not used in proportion to their availability (P < 0.001). Croplands were used more (P < 0.001) than their proportional availability during both seasons. Use of grasslands was greater during the fawning period (P = 0.030), whereas use of cropland was greater in the nonfawning period (P < 0.001). We collected 66 fecal samples during the nonfawning period; coyote diets were primarily composed of Microtus spp. (65.2%), and consumption of deer was 9.1%. During the study, 19 coyotes died; annual survival rate range was 0.33-0.41, which was low compared with other studies. Consumption of deer was low and coyotes searched open areas (i.e., cropland) more than fawning areas with dense cover. These factors in addition to high coyote mortality suggested that coyote predation was not likely limiting white-tailed deer populations in southeast Minnesota. [copyright] 2011 The Wildlife Society. Source: ZOOR
Notes: 10.1002/jwmg.109

Reference Type: Journal Article
Record Number: 510
Author: R. J. Burns
Year: 1980
Title: EVALUATION OF CONDITIONED PREDATION AVERSION FOR CONTROLLING COYOTE PREDATION
Journal: Journal of wildlife management
Volume: 44
Issue: 4
Pages: 938-942
Short Title: EVALUATION OF CONDITIONED PREDATION AVERSION FOR CONTROLLING COYOTE PREDATION
ISSN: 0022541X
Legal Note: Zool. Record, Wildlife & Ecology
Abstract: An attempt was made to instill a prey-killing aversion with lithium chloride in parent coyotes, to explore mechanisms used in transmitting information about food to pups Source: WESW

Reference Type: Journal Article
Record Number: 588
Author: P. J. Savarie and R. T. Sterner
Year: 1979
Title: Evaluation of toxic collars for selective control of coyotes that attack sheep
Journal: Journal of wildlife management
Volume: 43
Issue: 3
Pages: 780-783
Short Title: Evaluation of toxic collars for selective control of coyotes that attack sheep
ISSN: 0022541X
Legal Note: AGRICOLA
Abstract: Source: AGRICOLA

Reference Type: Journal Article
Record Number: 774
Author: B. R. Patterson and F. Messier
Year: 2000
Title: Factors influencing killing rates of white-tailed deer by coyotes in Eastern Canada
Journal: Journal of wildlife management
Volume: 64
Issue: 3
Pages: 721-732
Short Title: Factors influencing killing rates of white-tailed deer by coyotes in Eastern Canada
ISSN: 0022541X
Legal Note: Zool. Record, BIOSIS Prev., Wildlife & Ecology, GEOBASE, Scopus
Abstract: Predation affects the dynamics of many ungulate species. Until recently, little attention has been given to understanding the underlying processes and relationships in predator-prey systems. The authors examined factors affecting killing rates of white-tailed deer (Odocoileus virginianus) by coyotes (Canis letrans) in Nova Scotia, Canada. Snowshoe hare (Lepus americanus) and deer

abundance, distribution, and relative vulnerability of deer, and coyote group size all significantly influenced killing rates of deer by coyotes in winter. Groups of coyotes initiated proportionately more chases than single coyotes but chase success differed little among groups of one to four coyotes. Snow depth had a positive influence on success of pursuits. More kills were observed in areas of low deer density relative to areas with high deer densities. The mean distance of deer kills to recent clearcuts was significantly shorter than expected in an area where deer yarded during winter, but not in an area where deer did not aggregate during winter. Predator-prey ratios may not be a reliable indicator of predation rates of deer by coyotes because factors such as relative abundance and vulnerability of alternate prey, winter severity, and coyote social behavior also influence killing rates Source: WESW

Reference Type: Journal Article
Record Number: 603
Author: B. C. Thompson
Year: 1978
Title: FENCE-CROSSING BEHAVIOR EXHIBITED BY COYOTES
Journal: Wildlife society bulletin
Volume: 6
Issue: 1
Pages: 14-17
Short Title: FENCE-CROSSING BEHAVIOR EXHIBITED BY COYOTES
ISSN: 00917648
Legal Note: Zool. Record, BIOSIS Prev., Wildlife & Ecology
Abstract: Source: WESW

Reference Type: Journal Article
Record Number: 574
Author: C. M. Ferrel, H. R. Leach and D. F. Tillotson
Year: 1953
Title: FOOD HABITS OF THE COYOTE IN CALIFORNIA
Journal: California fish and game
Volume: 39
Issue: 3
Pages: 301-341
Short Title: FOOD HABITS OF THE COYOTE IN CALIFORNIA
ISSN: 00081078
Legal Note: BIOSIS Prev., Wildlife & Ecology
Abstract: This study was initiated by the Department of Fish and Game in 1941 to determine the food habits of the coyote. Canis latrans. in California. The results revealed the coyote to be a varied eater. Rodents were the most important source of food and, together with rabbits, made up nearly half of the total vol. of prey consumed. Other important items in the diet were remains of domestic livestock and deer. Miscellaneous items included insects, reptiles, carnivores, insectivores, and unidentified materials in varying amts. Birds contributed less than 5% of the total food and much of this was other than game sp. Plant foods were of least importance to the coyote's fare. California coyotes were found to be 96% carnivorous and 4% herbivorous. In all, some 3,982 stomachs were collected and analyzed, of which 2,222 contained food. || ABSTRACT AUTHORS: Authors Source: BIOSIS

Reference Type: Journal Article
Record Number: 511
Author: B. N. Sacks and J. C. C. Neale
Year: 2002
Title: Foraging strategy of a generalist predator toward a special prey: Coyote predation on sheep
Journal: Ecological applications
Volume: 12
Issue: 1
Pages: 299-306
Short Title: Foraging strategy of a generalist predator toward a special prey: Coyote predation on sheep
ISSN: 10510761
Legal Note: Zool. Record, BIOSIS Prev., CAB Abs., AGRICOLA, GEOBASE, Scopus, Wildlife & Ecology
Keywords: canis

canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
cervidae
deer
ruminants
artiodactyla
ungulates
ovis
bovidae
Abstract: How predators select domestic relative to wild prey is of relevance to depredation management and presents opportunities to investigate foraging theory as applied to mammalian carnivores. Domestic prey have numerous qualities that should increase their energy value to predators relative to wild prey. However, whether a predator specializes on domestic prey should also depend on the relative importance of energy efficiency and nonfood-related activities to the predator's fitness, as well as the composition of the alternative prey base. The authors used radiotelemetry, carcass surveys, and fecal analysis to investigate (1) whether breeding coyotes killed sheep disproportionately to sheep abundance, (2) whether coyotes consumed wild prey disproportionately to wild prey abundances and (3) the effects of sheep abundance on consumption of five principal wild prey. Coyote pairs killed sheep in proportion to sheep abundance within territories, suggesting that coyotes did not specialize on sheep. Occurrences in scats of four small wild mammalian prey were not significantly correlated with abundance of sheep in territories, but occurrence of deer in scats was negatively correlated with abundance of sheep in territories. Small prey generally comprised a minor portion of the coyote diet. During the lambing period, consumption of deer was lower where sheep were available than where they were not and was inversely correlated over time with sheep predation rate. During the non-lambing period, when only larger sheep were present, consumption of deer was similar where sheep were available and where they were not, and there was no significant relationship between monthly consumption of deer and sheep predation rate. Because coyotes did not specialize on sheep, lambs, or any other prey, these results suggest that their foraging strategy emphasized minimizing time spent with food acquisition over maximizing net energy gain Source: WESW

Reference Type: Journal Article
Record Number: 523
Author: W. B. Robinson
Year: 1943
Title: The 'Humane Coyote-getter' vs. the steel trap in control of predatory animals
Journal: Journal of wildlife management
Volume: 7
Issue: 2
Pages: 179-189
Short Title: The 'Humane Coyote-getter' vs. the steel trap in control of predatory animals
ISSN: 0022541X
Legal Note: BIOSIS Prev., Wildlife & Ecology
Abstract: The merits and shortcomings of a patented device known as the "Humane coyote-getter" have been compared with those of the steel trap in the control of predatory animals in Wyoming, Colorado and New Mexico. Results obtained from 82,820 trap-set days and 107,215 coyote-getter days revealed that, when trapping conditions are favorable (June to Oct.)the trap was superior in performance whereas under less favorable conditions (Nov. to May) the reverse was true. The coyote-getter was generally more selective than the trap in the capture of coyotes, being less destructive to small mammals, birds of prey, ground-nesting birds, deer, antelope, and domestic sheep. The coyote-getter was more destructive to herder's dogs, bears and cattle. The coyote-getter kills rapidly and thus may be considered more humane than the steel trap. The implement is considered to be an adjunct to, rather than a substitute for, the, steel trap in operational control of coyotes. The humane coyote-getter operates by discharging from an explosive cartridge a quantity of NaCN into the mouth of the predator that attempts to feed on or pick up a scented lure. || ABSTRACT AUTHORS: W. B. Robinson Source: BIOSIS

Reference Type: Journal Article
Record Number: 756
Author: J. F. Kamler, W. B. Ballard, P. R. Lemons Ii, R. L. Gilliland and K. Mote
Year: 2003
Title: Impacts of coyotes on swift foxes in northwestern Texas
Journal: Journal of wildlife management
Volume: 67
Issue: 2
Pages: 317-323
Short Title: Impacts of coyotes on swift foxes in northwestern Texas
ISSN: 0022541X
Legal Note: Zool. Record, BIOSIS Prev., AGRICOLA, Wildlife & Ecology, GEOBASE, Scopus
Abstract: The distribution of swift foxes (Vulpes velox) in the western Great Plains has been dramatically reduced since historical times. Because coyotes (Canis latrans) have been identified as the main cause of mortality in swift fox populations, we studied the impacts of coyotes on swift foxes in northwestern Texas, USA. We radiomarked and monitored 88 swift foxes and 29 coyotes at 2 study sites from 1998 to 2000. On site 1, coyotes had relatively high abundance (41 [plus or minus] 6.8 scats/2 km) and survival (0.90), whereas swift foxes had low survival (0.47), low density (0.24-0.31 foxes/km2), and low recruitment (0.25 young/adult), and killings by coyotes (n = 8) were the major cause of death. On site 2, coyotes had relatively low abundance (19 [plus or minus] 4.9 scats/2 km) and survival (0.54) due to greater human persecution, whereas swift foxes had relatively high survival (0.69), high density (0.68-0.77 foxes/km2), and high recruitment (1.3 young/adult), and few (n = 2) were killed by coyotes.-Our initial results suggested that swift foxes benefited from lower coyote numbers. To test this hypothesis, we removed 227 coyotes on site 1 during the final year of our study. Subsequently, coyote abundance decreased (18 [plus or minus] 4.5 scats/2 km), whereas swift foxes had increased survival (0.63), increased density (0.68 foxes/km2), and increased recruitment (1.2 young/adult), and few (n = 3) were killed by coyotes. All parameters remained consistent on site 2. Our results indicate that coyotes can suppress swift fox populations, and that reductions in coyote numbers can change a swift fox population from a sink to a source. Source: zoor

Reference Type: Journal Article
Record Number: 746
Author: D. A. Wade
Year: 1982
Title: IMPACTS, INCIDENCE AND CONTROL OF PREDATION ON LIVESTOCK IN THE UNITED STATES, WITH PARTICULAR REFERENCE TO PREDATION BY COYOTES
Journal: Impacts, incidence and control of predation on livestock in the united states, with particular reference to predation by coyotes
Issue: 10
Pages: 1-20
Short Title: IMPACTS, INCIDENCE AND CONTROL OF PREDATION ON LIVESTOCK IN THE UNITED STATES, WITH PARTICULAR REFERENCE TO PREDATION BY COYOTES
Legal Note: Wildlife & Ecology
Abstract: Source: WESW

Reference Type: Journal Article
Record Number: 725
Author: K. M. Berger, J. Berger and E. M. Gese
Year: 2008
Title: Indirect effects and traditional trophic cascades: A test involving wolves, coyotes, and pronghorn
Journal: Ecology
Volume: 89
Issue: 3
Pages: 818-828
Short Title: Indirect effects and traditional trophic cascades: A test involving wolves, coyotes, and pronghorn
ISSN: 00129658
DOI: 10.1890/07-0193.1
Legal Note: MEDLINE, Zool. Record, BIOSIS Prev., AGRICOLA, Wildlife & Ecology, GEOBASE, Scopus
Keywords: survival

Abstract: The traditional trophic cascades model is based on consumer-resource interactions at each link in a food chain. However, trophic-level interactions, such as mesocarnivore release resulting from intraguild predation, may also be important mediators of cascades. From September 2001 to August 2004, we used spatial and seasonal heterogeneity in wolf distribution and abundance in the southern Greater Yellowstone Ecosystem to evaluate whether mesopredator release of coyotes (Canis latrans), resulting from the extirpation of wolves (Canis lupus), accounts for high rates of coyote predation on pronghorn (Antilocapra americana) fawns observed in some areas. Results of this ecological perturbation in wolf densities, coyote densities, and pronghorn neonatal survival at wolf-free and wolf-abundant sites support the existence of a species-level trophic cascade. That wolves precipitated a trophic cascade was evidenced by fawn survival rates that were four-fold higher at sites used by wolves. A negative correlation between coyote and wolf densities supports the hypothesis that interspecific interactions between the two species facilitated the difference in fawn survival. Whereas densities of resident coyotes were similar between wolf-free and wolf-abundant sites, the abundance of transient coyotes was significantly lower in areas used by wolves. Thus, differential effects of wolves on solitary coyotes may be an important mechanism by which wolves limit coyote densities. Our results support the hypothesis that mesopredator release of coyotes contributes to high rates of coyote predation on pronghorn fawns, and demonstrate the importance of alternative food web pathways in structuring the dynamics of terrestrial systems. © 2008 by the Ecological Society of America. Source: geobase
Notes: 10.1890/07-0193.1

Reference Type: Journal Article
Record Number: 753
Author: J. A. Shivik, D. J. Martin, T. J. DeLiberto, M. J. Pipas and J. Turnan
Year: 2005
Title: Initial comparison: Jaws, cables, and cage-traps to capture coyotes
Journal: Wildlife society bulletin
Volume: 33
Issue: 4
Pages: 1375-1383
Short Title: Initial comparison: Jaws, cables, and cage-traps to capture coyotes
ISSN: 00917648
DOI: 10.2193/0091-7648(2005)33[1375:ICJCAC]2.0.CO;2
Legal Note: Zool. Record, AGRICOLA, BIOSIS Prev., CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
Abstract: The need for alternative predator capture techniques is increasing because of concerns about the efficiency, selectivity, and injury of currently available capture methods. There also is a need for comparative data evaluating new or seldom used methods. In an initial evaluation, we first surveyed wildlife managers for information on cage-trapping; using these data, we conducted a field study of 4 coyote (Canis latrans) capture systems for animal damage management. We tested the Softcatch[registered trademark], Collarum[registered trademark], Wildlife Services-Turman, and Tomahawk[registered trademark], systems for capturing coyotes in Arizona and south Texas during 2001 and 2002. We determined capture efficiency and selectivity and performed whole-body necropsies to identify trap-related injuries. Surveys indicated that coyotes usually were captured in large (>1.6-m-length) cage-traps baited with meat or carcasses. in our field evaluation, we estimated a capture efficiency (percentage of coyote captures per capture opportunity) of 0% for the Tomahawk cage-trap, 87% for the Collarum, 88% for the WS-T throw arm, and 100% for the SoftCatch. Cage-traps were the least selective, capturing 34 noncoyote animals, and Collarums were the most selective, capturing no noncoyote animals. The WS-T and SoftCatch devices showed intermediate selectivity of 50% and 69%, respectively. All devices showed low injury scores relative to I. awed devices in previous studies; 92%, 57%, and 92% of coyotes captured in the Collarum, WS-T, and SoftCatch showed no indicators of poor welfare, respectively. Source: ZOOR
Notes: 10.2193/0091-7648(2005)33[1375:ICJCAC]2.0.CO;2

Reference Type: Journal Article
Record Number: 594

Author: J. T. Springer and C. R. Wenger
Year: 1981
Title: INTERACTIONS BETWEEN AND SOME ECOLOGICAL ASPECTS OF COYOTES AND MULE DEER IN CENTRAL WYOMING
Journal: Interactions between and some ecological aspects of coyotes and mule deer in central wyoming
Short Title: INTERACTIONS BETWEEN AND SOME ECOLOGICAL ASPECTS OF COYOTES AND MULE DEER IN CENTRAL WYOMING
Legal Note: Wildlife & Ecology
Abstract: DURING THE STUDY COYOTE PREDATION HAD NO SIGNIFICANT IMPACT ON MULE DEER POPULATIONS, BUT IF THE COYOTE POPULATION INCREASED DUE TO LOWER LEVELS OF PREDATOR CONTROL AND FUR HARVEST, PREDATION BY COYOTES COULD REDUCE THE DEER POPULATION Source: WESW

Reference Type: Journal Article
Record Number: 694
Author: J. T. Springer and C. R. Wenger
Year: 1981
Title: INTERACTIONS BETWEEN AND SOME ECOLOGICAL ASPECTS OF COYOTES AND MULE DEER IN CENTRAL WYOMING
Journal: Interactions between and some ecological aspects of coyotes and mule deer in central wyoming
Short Title: INTERACTIONS BETWEEN AND SOME ECOLOGICAL ASPECTS OF COYOTES AND MULE DEER IN CENTRAL WYOMING
Legal Note: Wildlife & Ecology
Abstract: DURING THE STUDY COYOTE PREDATION HAD NO SIGNIFICANT IMPACT ON MULE DEER POPULATIONS, BUT IF THE COYOTE POPULATION INCREASED DUE TO LOWER LEVELS OF PREDATOR CONTROL AND FUR HARVEST, PREDATION BY COYOTES COULD REDUCE THE DEER POPULATION Source: WESW

Reference Type: Journal Article
Record Number: 768
Author: S. D. Gehrt and S. Prange
Year: 2007
Title: Interference competition between coyotes and raccoons: A test of the mesopredator release hypothesis
Journal: Behavioral ecology
Volume: 18
Issue: 1
Pages: 204-214
Short Title: Interference competition between coyotes and raccoons: A test of the mesopredator release hypothesis
ISSN: 10452249
DOI: 10.1093/beheco/arl075
Legal Note: Zool. Record, BIOSIS Prev., GEOBASE, Scopus, Wildlife & Ecology
Keywords: survival
Abstract: Some predator species appear to conform to the mesopredator release hypothesis (MRH), in which larger predators help limit populations of smaller predators. This hypothesis has been used to explain the possible relationship between coyotes, mesopredators, and resultant cascades involving nonpredators. However, relationships between coyotes and noncanid mesopredators are poorly understood, and predictions from the MRH have rarely been rigorously tested. We monitored sympatric raccoon and coyote populations to assess 2 predictions derived from the MRH: coyote predation is an important cause of mortality in raccoon populations or raccoons avoid areas used by coyotes. Between March 2000 and September 2001, we recorded 3553 locations for 27 radio-collared raccoons and 1393 locations for 13 coyotes captured on the Max McGraw Wildlife Foundation in Illinois, USA. No raccoon mortality from coyote predation was observed during the study, and raccoon survival was >0.7 each season. All raccoon 95% home ranges exhibited overlap with 95% coyote home ranges in each season. The mean proportion of raccoon locations within 95% coyote home ranges did not vary by sex but did vary by season. Raccoon overlap of coyote core areas varied considerably among individuals within seasons, ranging from 0% to 83%. However, 45% of raccoons had <10% overlap with coyote core areas, whereas only 14% of raccoons exhibited >50% overlap. Mean overlap with core areas did not vary by season or sex. For those raccoons with home ranges overlapping coyote core areas, mean proportion of observed raccoon locations within coyote core areas was generally greater than the mean proportion of random locations. Scent-station experiments failed to document raccoon avoidance of specific sites that had been marked with coyote urine. We did not find support for a mortality prediction or avoidance prediction to support MRH with regard to raccoons and coyotes. These results suggest that relationships among mammalian predators may not be simply dictated by body size, particularly for species outside the Canidae. © The Author 2006. Published by Oxford University Press on behalf of the International Society for Behavioral Ecology. All rights reserved. Source: GEOBASE
Notes: 10.1093/beheco/arl075

Reference Type: Journal Article
Record Number: 737
Author: E. M. Gese, R. L. Ruff and R. L. Crabtree
Year: 1996
Title: Intrinsic and extrinsic factors influencing coyote predation of small mammals in Yellowstone National Park
Journal: Canadian journal of zoology
Volume: 74
Issue: 5
Pages: 784-797
Short Title: Intrinsic and extrinsic factors influencing coyote predation of small mammals in Yellowstone National Park
ISSN: 00084301
Legal Note: Zool. Record, AGRICOLA, BIOSIS Prev., Wildlife & Ecology, GEOBASE, Scopus
Abstract: We examined the intrinsic (age, sex, and social status) and extrinsic factors (snow depth and hardness, temperature, cloud cover, wind speed, and habitat) influencing coyote (Canis latrans) predation of small mammals in Yellowstone National Park, Wyoming. We observed 54 coyotes (49 residents from 5 packs, plus 5 transients) for 2507 h from January 1991 to June 1993. We observed 6433 prey detections by coyotes during which coyotes made 4439 attempts to capture prey, resulting in 1545 successful prey captures. The age of the coyote influenced prey-detection rates, predation attempts, and capture rates, plus the proportions of prey attacked after being detected and capture success. Pups had higher prey-detection rates and higher attempt rates than alphas and betas, but capture rates were similar. Snow depth and hardness and habitat type were factors influencing detection rates, predation attempt rates and capture rates. Coyotes hunted mainly in mesic meadows and shrub-meadows, where prey-detection rates, predation attempt rates, and capture rates were highest. Snow depth influenced coyote predation on small mammals, prey-detection rates, predation attempt rates, and capture rates being highest in low snow cover and lower in deeper snow. Our findings indicated that young, inexperienced coyotes detected and attacked small mammals at a higher rate than older coyotes. Yearlings and adults were more selective, and thus detected and attempted to capture prey at a lower rate than pups. Overall, however, pups and older coyotes captured similar numbers of prey per hour. Source: SCOPUS

Reference Type: Journal Article
Record Number: 766
Author: B. W. Zoellick, H. M. Ulmschneider, B. S. Cade and A. W. Stanley
Year: 2004
Title: Isolation of snake river islands and mammalian predation of waterfowl nests
Journal: Journal of wildlife management
Volume: 68
Issue: 3
Pages: 650-662
Short Title: Isolation of snake river islands and mammalian predation of waterfowl nests
ISSN: 0022541X
DOI: 10.2193/0022-541X(2004)068[0650:IOSRIA]2.0.CO;2
Legal Note: Zool. Record, BIOSIS Prev., Wildlife & Ecology, GEOBASE, Scopus
Abstract: In 1990-1992, we studied predation of waterfowl nests by mammalian predators on 30 islands in a 64-km reach of the Snake River in southwestern Idaho, USA, to identify river flows necessary to protect and enhance migratory bird use of Deer Flat National Wildlife Refuge. We monitored 235-314 Canada goose (Branta canadensis) nests each year and 122 duck nests, primarily mallard (Anas platyrhynchos), in 1991. We calculated island isolation as the flow energy (width x average water velocity [m2/sec]) a predator encountered in crossing to an island. Density of goose nests increased as island isolation increased ($P < 0.001$). In contrast, visits of terrestrial predators to islands, mammalian predation of goose nests, and variance in predation rates decreased as island isolation increased ($P < 0.01$). Nests were most frequently depredated by raccoons (Procyon lotor), coyotes (Canis latrans), badgers (Taxidea taxus), and mink (Mustela vison). Multiple regression models explained 67% of the variance in nest density and 48% of variance in predation rates ($P < 0.01$). Variables of secondary importance relative to island isolation were island size and percentage of farmland on the adjacent mainland. Fewer geese nested ($P < 0.01$) and predation rates were greater ($P = 0.06$) on large islands, and more geese nested on islands adjacent to farmland ($P = 0.04$). We also analyzed rates of nest predation relative to river flows for 21 islands from 1953 to 1992. Mammalian predation of goose nests decreased as island isolation increased with greater river flows ($P < 0.01$). To identify levels of isolation needed to protect use of islands by nesting waterfowl, we estimated rates of change in nest densities and predation rates with island isolation for a range of regression quantiles. We then calculated levels of island isolation at river flows ranging from 110 to 340 m3/sec. Below flows of 250 m3/sec, nest predation rates increased rapidly. Flows ≥340 m 3/sec adequately isolated Snake River islands for nesting waterfowl. Predator visitation and nest predation rates were at a low level, and

variability in the rates was at a minimum for these flows. Source: GEOBASE
Notes: 10.2193/0022-541X(2004)068[0650:IOSRIA]2.0.CO;2

Reference Type: Journal Article
Record Number: 767
Author: S. B. Linhart and R. T. Sterner
Year: 1979
Title: KOMONDOR GUARD DOGS REDUCE SHEEP LOSSES TO COYOTES: A PRELIMINARY EVALUATION
Journal: Journal of range management
Volume: 32
Issue: 3
Pages: 238-241
Short Title: KOMONDOR GUARD DOGS REDUCE SHEEP LOSSES TO COYOTES: A PRELIMINARY EVALUATION
ISSN: 0022409X
Legal Note: AGRIS, BIOSIS Prev., Zool. Record, AGRICOLA, Wildlife & Ecology
Abstract: Komondor dogs (4) were trained to attack captive coyotes [Canis latrans] and to stay within fenced sheep pastures. The dogs, used in pairs, were then evaluated on 3 ranches (65-330 ha pastures) to determine their potential in protecting sheep from coyote predation. Daily checks of sheep losses were made on each ranch for 3 consecutive 20-day periods: preceding placement of the dogs, during their time in pastures, and after their removal. Sheep kills by coyotes decreased significantly during and following use of the dogs, suggesting some potential for the deterrence of coyote predation, at least under fenced-grazing conditions. Source: BIOSIS

Reference Type: Journal Article
Record Number: 762
Author: W. F. Andelt and S. N. Hopper
Year: 2000
Title: Livestock guard dogs reduce predation on domestic sheep in Colorado
Journal: Journal of range management
Volume: 53
Issue: 3
Pages: 259-267
Short Title: Livestock guard dogs reduce predation on domestic sheep in Colorado
ISSN: 0022409X
Legal Note: AGRICOLA, CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
small mammals
eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
artiodactyla
ungulates
felis
felidae
panthera
ursus
ursidae
mountain states of usa

western states of usa
usa
north america
america
developed countries
oecd countries
great plains states of usa
Abstract: The authors surveyed the effectiveness of livestock guard dogs for reducing predation on domestic sheep in Colorado during 1993. The number of producers using dogs increased from about 25 in 1986 to >159 in 1993. The proportion of sheep with dogs increased from about seven percent in 1986 to about 68% in 1993. Producers with dogs, compared to producers without dogs, lost smaller proportions of their lambs to predators, especially coyotes (Canis latrans Say), and smaller proportions of ewes and lambs to black bears (Ursus americanus Pallas) and mountain lions (Felis concolor L.). Overall, producers who did not have guard dogs lost 5.9 and 2.1 times greater proportions of lambs to predators than producers who had dogs in 1986 and 1993, respectively. Proportions of sheep killed by predators decreased with the number of years that producers used guard dogs. Mortalities of ewes to predators regardless of type of operation and lamb mortality on open range decreased more from 1986 to 1993 for producers who obtained dogs between these years compared to producers who did not have dogs. Of 160 producers using dogs, 84% rated their dogs overall predator control performance as excellent or good, 13% as fair, and three percent as poor. More producers (n = 105) indicated effectiveness of their dogs did not change with time, compared to producers (n = 54) indicating effectiveness changed. More producers (n = 35) also indicated their dogs became more effective over time compared to producers (n = 19) indicating their dogs became less effective. Estimates provided by 125 producers indicate that their 392 dogs saves $891,440 of sheep from predation during 1993. A total of 154 of 161 (96%) producers recommend use of guard dogs to other producers Source: wesw

Reference Type: Journal Article
Record Number: 530
Author: D. o. W. Colorado
Year: 2003
Title: Living with wildlife in coyote country
Journal: Coexisting with wildlife
Short Title: Living with wildlife in coyote country
Legal Note: Wildlife & Ecology
Abstract: Coyotes are adaptable predators that will adjust their diet depending on the availability of food. In Colorado, they are hunted for game and fur, and landowners may kill one if it threatens their livestock. Its distinguishing features are its long narrow snout, pointed ears, and general dog-like appearance. They are found in all habitats, and are even found to thrive in urban areas in close proximity to humans. The availability of prey determines their sociability. If the prey items are small mammals, they tend to be alone and if the prey is large, like a deer, they attack in larger groups. Coyotes mate for life and never abandon their young. A list of precautions is given to those who live in coyote country Source: WESW

Reference Type: Journal Article
Record Number: 564
Author: R. J. Burns
Year: 1983
Title: MICRO ENCAPSULATED LITHIUM CHLORIDE BAIT AVERSION DID NOT STOP COYOTE CANIS-LATRANS PREDATION ON SHEEP
Journal: Journal of wildlife management
Volume: 47
Issue: 4
Pages: 1010-1017
Short Title: MICRO ENCAPSULATED LITHIUM CHLORIDE BAIT AVERSION DID NOT STOP COYOTE CANIS-LATRANS PREDATION ON SHEEP
ISSN: 0022541X
Legal Note: BIOSIS Prev.
Abstract: Experiments were conducted with microencapsulated LiCl to find a concentration that would produce optimum sheep-bait aversion and to test the transfer of the bait aversion to sheep killing aversion in naive (no sheep-killing experience) and sheep-killing coyotes (C. latrans). LiCl at 1.08 g/500 g of sheep flesh, fed to coyotes at a rate of 500 g of treated flesh/10 kg of coyote body wt, produced the strongest bait aversion of the 4 concentrations tested. After showing strong aversion to baits fed at the above concentration, most coyotes (both naive and experienced) killed and fed on lambs, showing no transfer from bait aversion to predation aversion. Source: BIOSIS

Reference Type: Journal Article
Record Number: 534
Author: R. J. Burns
Year: 1983
Title: Microencapsulated lithium chloride bait aversion did not stop coyote predation on sheep [Canis latrans]
Journal: Journal of wildlife management
Volume: 47
Issue: 4
Pages: 1010-1017
Short Title: Microencapsulated lithium chloride bait aversion did not stop coyote predation on sheep [Canis latrans]
ISSN: 0022541X
Legal Note: AGRIS, Wildlife & Ecology
Abstract: Objectives were to: (1) find the amount of microencapsulated lithium chloride that produced the strongest sheep-bait aversion in coyotes; and (2) test the transfer of bait aversion to sheep-killing aversion in naive and in sheep-killing coyotes Source: WESW

Reference Type: Journal Article
Record Number: 773
Author: J. F. Benson and B. R. Patterson
Year: 2013
Title: Moose (Alces Alces) predation by eastern coyotes (Canis latrans) and eastern coyote × eastern wolf (Canis latrans × Canis lycaon) Hybrids
Journal: Canadian journal of zoology
Volume: 91
Issue: 11
Pages: 837-841
Short Title: Moose (Alces Alces) predation by eastern coyotes (Canis latrans) and eastern coyote × eastern wolf (Canis latrans × Canis lycaon) Hybrids
ISSN: 00084301
DOI: 10.1139/cjz-2013-0160
Legal Note: GEOBASE
Keywords: genetic analysis
Abstract: It has been widely assumed that coyotes (Canis latrans Say, 1823) are incapable of killing adult moose (Alces alces (L., 1758)) and previous studies of coyote predation support this assumption. However, eastern coyotes and eastern coyote × eastern wolf (Canis lycaon Schreber, 1775) are larger than western coyotes and appear to rely on larger prey in some areas. We used a combination of GPS telemetry, genetic analysis, and field investigation to test the hypothesis that eastern coyotes and coyote × wolf hybrids are capable of preying on adult moose in central Ontario. Our hypothesis was supported, as we documented four definitive cases of eastern coyotes and (or) eastern coyote × eastern wolf hybrids killing moose ≥1.5 years old. Predation by coyotes and coyote × wolf hybrids probably does not represent a threat to moose population viability in central Ontario, but our results suggest that researchers and managers in other areas with declining moose populations that are sympatric with eastern coyotes and (or) coyote × wolf hybrids should consider coyote predation as a potential source of mortality. © 2013 Published by NRC Research Press. Source: geobase
Notes: 10.1139/cjz-2013-0160

Reference Type: Journal Article
Record Number: 769
Author: K. A. Fagerstone, J. J. Johnston, P. J. Savarie, R. Mason, P. Rodgers and M. Shelton
Year: 2004
Title: Predacides for canid predation management
Journal: Sheep & goat research journal
Volume: 19
Pages: 76-79
Short Title: Predacides for canid predation management
Legal Note: AGRICOLA, CAB Abs.

Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
Abstract: Currently, three predacides are available for use in controlling coyotes, foxes, wild dogs and arctic fox. These predacides include gas cartridge (with sodium nitrate and charcoal as active ingredients), sodium cyanide (M-44) and Compound 1080 (monofluoroacetic acid). This paper provides a description of these three toxicants and the current status of their use in predator control in the United States. Source: cab
Author Address: Bowling Green USA

Reference Type: Journal Article
Record Number: 592
Author: M. Bekoff, C. R. Gustavson, D. J. Kelly and J. Garcia
Year: 1975
Title: Predation and aversive condition in coyotes
Journal: Science
Volume: 187
Issue: 4181
Short Title: Predation and aversive condition in coyotes
Legal Note: AGRICOLA
Abstract: Source: agricola

Reference Type: Journal Article
Record Number: 765
Author: J. C. Kilgo, M. Vukovich, M. J. Goode, H. S. Ray and C. Ruth
Year: 2012
Title: Predation by coyotes on white-tailed deer neonates in South Carolina
Journal: Journal of wildlife management
Volume: 76
Issue: 7
Pages: 1420-1430
Short Title: Predation by coyotes on white-tailed deer neonates in South Carolina
ISSN: 0022541X
DOI: 10.1002/jwmg.393
Legal Note: BIOSIS Prev., GEOBASE, Zool. Record, Scopus, Wildlife & Ecology
Abstract: Coyotes (Canis latrans) are novel predators throughout the southeastern United States and their depredation of white-tailed deer (Odocoileus virginianus) neonates may explain observed declines in some deer populations in the region, but direct evidence for such a relationship is lacking. Our objective was to quantify neonate survival rates and causes of mortality at the United States Department of Energy's Savannah River Site (SRS), South Carolina to directly evaluate degree of predation in this deer population. From 2006 to 2009, we radio-monitored 91 neonates captured with the aid of vaginal implant transmitters in pregnant adult females and opportunistic searches. Overall Kaplan-Meier survival rate to 16 weeks of age was 0.230 (95% CI=0.155-0.328), and it varied little among years. Our best-fitting model estimated survival at 0.220 (95% CI=0.144-0.320). This model included a quadratic time trend variable (lowest survival rate during the first week of life and increasing to near 1.000 around week 10), and Julian date of birth (survival probability declining as date of birth increased). Predation by coyotes was the most frequent cause of death among the 70 monitored neonates that died, definitively accounting for 37% of all mortalities and potentially accounting for as much as 80% when also including probable coyote predation. Predation by bobcats (Felis rufus) accounted for 7% (definitive) to 9% (including probable bobcat predation) of mortalities. The level of coyote-induced mortality we observed is consistent with the low recruitment rates exhibited in the SRS deer population since establishment of coyotes at the site. If representative of recruitment rates across South Carolina, current harvest levels appear unsustainable. This understanding is consistent with the

recent declining trend in the statewide deer population. The effects of coyote predation on recruitment should be considered when setting harvest goals, regardless of whether local deer population size is currently above or below desired levels, because coyotes can substantially reduce fawn recruitment. Published 2012. This article is a U.S. Government work and is in the public domain in the USA. Copyright © The Wildlife Society, 2012. This article is a U.S. Government work and is in the public domain in the USA. Source: GEOBASE
Notes: 10.1002/jwmg.393

Reference Type: Journal Article
Record Number: 771
Author: S. K. Canon
Year: 1995
Title: Predation of big game and livestock in the Texas Trans-Pecos
Journal: Predation of big game and livestock in the texas trans-pecos
Short Title: Predation of big game and livestock in the Texas Trans-Pecos
Legal Note: Wildlife & Ecology
Abstract: The author discusses problems of predation of livestock and big game by mountain lions, bobcats, and coyotes in the Texas Trans-Pecos. A shift from sheep to cattle ranching has lessened the intensity of predation on livestock. Predator control efforts have increased for the protection of pronghorn, mule deer, and desert bighorn in this west Texas area. lgh Source: WESW

Reference Type: Journal Article
Record Number: 591
Author: B. W. O'Gara, K. C. Brawley, D. R. Hennie and J. R. Munoz
Year: 1983
Title: Predation on domestic sheep on a western Montana ranch (Mortality, coyotes, control)
Journal: Wildlife society bulletin
Volume: 11
Issue: 3
Pages: 253-264
Short Title: Predation on domestic sheep on a western Montana ranch (Mortality, coyotes, control)
ISSN: 00917648
Legal Note: Wildlife & Ecology
Abstract: Source: WESW

Reference Type: Journal Article
Record Number: 691
Author: B. W. O'Gara, K. C. Brawley, D. R. Hennie and J. R. Munoz
Year: 1983
Title: Predation on domestic sheep on a western Montana ranch (Mortality, coyotes, control)
Journal: Wildlife society bulletin
Volume: 11
Issue: 3
Pages: 253-264
Short Title: Predation on domestic sheep on a western Montana ranch (Mortality, coyotes, control)
ISSN: 00917648
Legal Note: Wildlife & Ecology
Abstract: Source: WESW

Reference Type: Journal Article
Record Number: 406
Author: L. Gorski, C. T. Parker, A. Liang, M. B. Cooley, M. T. Jay-Russell, A. G. Gordus, E. R. Atwill and R. E. Mandrell
Year: 2011
Title: Prevalence, Distribution, and Diversity of Salmonella enterica in a Major Produce Region of California
Journal: Applied and Environmental Microbiology
Volume: 77

Issue: 8
Pages: 2734-2748
Date: Apr
Short Title: Prevalence, Distribution, and Diversity of Salmonella enterica in a Major Produce Region of California
ISSN: 0099-2240
DOI: 10.1128/aem.02321-10
Accession Number: WOS:000289459300021
Abstract: A survey was initiated to determine the prevalence of Salmonella enterica in the environment in and around Monterey County, CA, a major agriculture region of the United States. Trypticase soy broth enrichment cultures of samples of soil/sediment (n = 617), water (n = 252), wildlife (n = 476), cattle feces (n = 795), and preharvest lettuce and spinach (n = 261) tested originally for the presence of pathogenic Escherichia coli were kept in frozen storage and later used to test for the presence of S. enterica. A multipathogen oligonucleotide microarray was employed to identify a subset of samples that might contain Salmonella in order to test various culture methods to survey a larger number of samples. Fifty-five of 2,401 (2.3%) samples yielded Salmonella, representing samples obtained from 20 different locations in Monterey and San Benito Counties. Water had the highest percentage of positives (7.1%) among sample types. Wildlife yielded 20 positive samples, the highest number among sample types, with positive samples from birds (n = 105), coyotes (n = 40), deer (n = 104), elk (n = 39), wild pig (n = 41), and skunk (n = 13). Only 16 (2.6%) of the soil/sediment samples tested positive, and none of the produce samples had detectable Salmonella. Sixteen different serotypes were identified among the isolates, including S. enterica serotypes Give, Typhimurium, Montevideo, and Infantis. Fifty-four strains were sensitive to 12 tested antibiotics; one S. Montevideo strain was resistant to streptomycin and gentamicin. Pulsed-field gel electrophoresis (PFGE) analysis of the isolates revealed over 40 different pulsotypes. Several strains were isolated from water, wildlife, or soil over a period of several months, suggesting that they were persistent in this environment.
Notes: Gorski, Lisa Parker, Craig T. Liang, Anita Cooley, Michael B. Jay-Russell, Michele T. Gordus, Andrew G. Atwill, E. Robert Mandrell, Robert E.
URL: <Go to ISI>://WOS:000289459300021

Reference Type: Journal Article
Record Number: 540
Author: G. E. Phillips and G. C. White
Year: 2003
Title: Pronghorn population response to coyote control: Modeling and management
Journal: Wildlife society bulletin
Volume: 31
Issue: 4
Pages: 1162-1175
Short Title: Pronghorn population response to coyote control: Modeling and management
ISSN: 00917648
Legal Note: Zool. Record, BIOSIS Prev., Wildlife & Ecology, GEOBASE, Scopus
Abstract: Removing coyotes (Canis latrans) to benefit ungulate populations is controversial and may be effective only in limited circumstances. We modeled pronghorn (Antilocapra americana) population dynamics to evaluate potential outcomes of management with and without coyote control at Hart Mountain National Antelope Refuge (HMNAR) in southeastern Oregon. We simulated pronghorn population trajectories at HMNAR using a stochastic, population-projection model parameterized with fawn/doe ratios (fawns/doe) from mid-July classification counts on the refuge and survival rates estimated from winter population surveys and summer classification counts at Beaty's Butte Wildlife Management Unit (BBWMU). The model incorporates randomness due to environmental and demographic conditions that cause pronghorn survival to fluctuate over time. We evaluated cases without and with coyote control (where coyote control was applied during the initial 3 years of simulations), using several different assumptions about historical fawn/doe ratios at HMNAR. Source: GEOBASE

Reference Type: Journal Article
Record Number: 772
Author: J. M. Jones and A. Woolf
Year: 1983
Title: Relationship between husbandry practices and coyote use of swine in west central Illinois
Journal: Wildlife society bulletin
Volume: 11
Issue: 2

Pages: 133-135
Short Title: Relationship between husbandry practices and coyote use of swine in west central Illinois
ISSN: 00917648
Legal Note: Zool. Record, Wildlife & Ecology, GEOBASE, Scopus
Abstract: Four major food items were identified for Canis latrans: plant material (not important), cottontail rabbit Sylvilagus floridanus, rodents and swine. West central Illinois coyotes exhibited little seasonal change in diet. Livestock remains occurred in all seasons. Swine occurred most frequently; cattle remains appeared infrequently (<5%), and sheep hair was recorded only once. In winter 1979-1980, swine were the 2nd most important mammalian item; thereafter, it was 3rd. Consumption of carrion likely accounted for most swine ingested. -from AuthorsCanis latrans cottontail rabbit Sylvilagus floridanus Source: GEOBASE

Reference Type: Journal Article
Record Number: 780
Author: W. F. Andelt
Year: 1999
Title: Relative effectiveness of guarding-dog breeds to deter predation on domestic sheep in Colorado
Journal: Wildlife society bulletin
Volume: 27
Issue: 3
Pages: 706-714
Short Title: Relative effectiveness of guarding-dog breeds to deter predation on domestic sheep in Colorado
ISSN: 00917648
Legal Note: AGRICOLA, BIOSIS Prev., CAB Abs., Wildlife & Ecology, GEOBASE, Scopus
Keywords: ovis
bovidae
ruminants
artiodactyla
mammals
vertebrates
chordata
animals
ungulates
eukaryotes
eukaryotic cells
canis
canidae
fissipeda
carnivores
small mammals
mountain states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
great plains states of usa
Abstract: Predators kill significant numbers of domestic sheep in Colorado and the western United States. Thus, I obtained data from 119 sheep producers who used 1 breed of livestock guarding dog (either Akbash, Great Pyrenees, or Komondor) in 1993 and 59 producers who used multiple breeds (including Anatolian Shepherd) in 1995 to assess relative effectiveness of breed of dogs to deter predation on domestic sheep in Colorado. For producers using 1 breed of dog, estimates of ewe and lamb mortalities to most predators in most types of sheep operations, value of sheep saved from predators, and ratings of effectiveness did not vary among breeds of dogs. Producers using multiple breeds of dogs rated Akbash as more effective than Great Pyrenees to deter predation. More producers also rated Akbash as more effective than Komondors to deter predation by all predators combined and by coyotes (Canis latrans). More producers rated Akbash as more aggressive, active, intelligent, and faster than Great Pyrenees. More producers also rated Akbash as more aggressive, attentive, trustworthy, active, and faster than Komondors. Anatolians were rated as faster than Great Pyrenees. Great Pyrenees were rated as less active than Komondors. Most producers indicated that the most important attributes of dogs were high aggressiveness to predators, great attentiveness to sheep, and great trustworthiness,

whereas fewer producers indicated that great activity level, great intelligence, and fast mobility were important attributes. Source: GEOBASE

Reference Type: Journal Article
Record Number: 513
Author: M. Collinge
Year: 2008
Title: Relative risks of predation on livestock posed by individual wolves, black bears, mountain lions, and coyotes in Idaho
Journal: Proceedings of the vertebrate pest conference
Volume: 23
Pages: 129-133
Short Title: Relative risks of predation on livestock posed by individual wolves, black bears, mountain lions, and coyotes in Idaho
ISSN: 05076773
Legal Note: Zool. Record, AGRICOLA
Abstract: Source: ZOOR

Reference Type: Journal Article
Record Number: 729
Author: B. N. Sacks, K. M. Blejwas and M. M. Jaeger
Year: 1999
Title: Relative vulnerability of coyotes to removal methods on a northern California ranch
Journal: Journal of wildlife management
Volume: 63
Issue: 3
Pages: 939-949
Short Title: Relative vulnerability of coyotes to removal methods on a northern California ranch
ISSN: 0022541X
Legal Note: Zool. Record, AGRICOLA, BIOSIS Prev., CAB Abs., GEOBASE, Scopus, Wildlife & Ecology
Keywords: canis
canidae
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mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
artiodactyla
ungulates
north america
america
developed countries
oecd countries
pacific states of usa
western states of usa
usa
Abstract: Evidence suggests that predation on domestic sheep by coyotes (Canis latrans) is caused primarily by breeding pairs with territories overlapping sheep. Accordingly, we investigated vulnerability of coyotes to removal methods relative to factors associated with reproduction and territoriality. We collected live and lethal coyote capture data during April 1993-February 1998 on a north-coastal California sheep ranch. Routine coyote removal was conducted in response to sheep depredation before and during (part of) the study. Younger (nonbreeding) coyotes generally were more vulnerable to capture than older (potentially breeding) individuals, although age bias varied among removal methods. Recaptures of radiocollared coyotes in foothold traps and snares indicated a bias

toward progressively younger individuals (juv > yearling > ad; P = 0.002). Proportionally more juvenile and yearling coyotes were removed by M-44s (sodium cyanide ejectors) than by traps and snares (P = 0.016). We found no difference between traps and snares in the ages of coyotes taken (P = 0.50). Vulnerability of younger coyotes was likely elevated by lack of experience and more time spent in unfamiliar areas where they were least able to avoid capture devices. Coyotes were caught more often than expected outside of core areas of their territories with both traps (P = 0.001) and snares (P = 0.02). Older coyotes were most vulnerable in spring and summer when rearing pups, after most depredation occurred. Radiocollared breeders (P = 0.012) and uncollared coyotes of breeding age (P = 0.052) were captured less often during the non-pup-rearing period than the pup-rearing period. These results suggest conventional control in northern California is poorly suited to the segment of the coyote population killing the most sheep, particularly during the time of year when most sheep depredation occurs. Efficacy of control methods might be improved by conservative use of conventional devices to minimize learned avoidance by coyotes, and by greater reliance on methods such as livestock protection collars that are specific to depredating individuals throughout the year. Source: GEOBASE

Reference Type: Journal Article
Record Number: 544
Author: A. M. Kitchen, E. R. Schauster and E. M. Gese
Year: 1999
Title: Resource partitioning between coyotes and swift foxes: Space, time, and diet
Journal: Canadian journal of zoology
Volume: 77
Issue: 10
Pages: 1645-1656
Short Title: Resource partitioning between coyotes and swift foxes: Space, time, and diet
ISSN: 00084301
Legal Note: Zool. Record, BIOSIS Prev., GEOBASE, Scopus, Wildlife & Ecology
Abstract: In its current distribution and abundance, the swift fox (Vulpes velox) has been significantly reduced from its historic range. A possible cause is competition with, and predation by, coyotes (Canis latrans). We investigated the level of spatial, temporal, and dietary resource use overlap between swift foxes and coyotes at the Pinon Canyon Maneuver Site in southeastern Colorado. We captured and radio-tracked 73 foxes and 24 coyotes from April 1997 to August 1998. We collected 10 832 and 5350 locations of foxes and coyotes, respectively. Overall, home-range sizes of foxes and coyotes were 7.6 +- 0.5 (mean +- SE) and 19.8 +- 1.9 km2, respectively. A high degree of interspecies spatial overlap was apparent, with fox home ranges being overlapped by coyote home ranges by as much as 100% and coyote sign (tracks and scats) being evident in all swift fox home ranges. There was no evidence of temporal avoidance of coyotes in fox movement patterns. Coyotes traveled significantly farther than foxes during diurnal hours; foxes spent the majority of diurnal hours in or on top of dens. Coyotes and foxes showed a high index of overlap for dietary resources, although some dietary partitioning was apparent. Swift foxes specialized in small prey, such as insects and rodents, while coyotes used greater proportions of large prey, such as lagomorphs and ungulates. Interference competition was evident, with 48% (12/25) of fox mortalities identified as confirmed or probable coyote-caused deaths. In each case, death occurred outside either the fox's home range or the 85% isopleth of that range, indicating that coyotes are more likely to attack a fox successfully when it is a substantial distance from a den. We propose that swift foxes are able to coexist with coyotes, owing to year-round den use and a degree of dietary partitioning. Source: BIOSIS

Reference Type: Journal Article
Record Number: 735
Author: M. M. Jaeger, R. Mason, P. Rodgers and M. Shelton
Year: 2004
Title: Selective targeting of alpha coyotes to stop sheep depredation
Journal: Sheep & goat research journal
Volume: 19
Pages: 80-84
Short Title: Selective targeting of alpha coyotes to stop sheep depredation
Legal Note: AGRICOLA, CAB Abs.
Keywords: canis
canidae
fissipeda
carnivores
mammals

vertebrates
chordata
animals
eukaryotes
eukaryotic cells
Abstract: This paper is a review of the current state of knowledge about the coyotes that kill livestock, particularly sheep, and methods that can be used to target them. The important research findings upon which this is based will be discussed. The main thrust of the paper will deal with a series of studies done in California between 1993 and 2002. These were undertaken jointly by the National Wildlife Research Centre and the University of California at Berkeley. These studies represent the most intensive investigation to date of predation ecology of coyotes in the presence of sheep. In addition, future research needs will be discussed. Source: cab
Author Address: Bowling Green USA

Reference Type: Journal Article
Record Number: 512
Author: W. E. Howard, R. M. Timm, G. E. Connolly and W. M. Longhurst
Year: 1976
Title: SHEEP KILLING BEHAVIOR OF CAPTIVE COYOTES
Journal: Journal of wildlife management
Volume: 40
Issue: 3
Pages: 400-407
Short Title: SHEEP KILLING BEHAVIOR OF CAPTIVE COYOTES
ISSN: 0022541X
Legal Note: BIOSIS Prev., AGRICOLA, Wildlife & Ecology
Abstract: One to 4 pen-reared coyotes (Canis latrans) and 1-6 sheep were released in 38 tests within a 1600 m2 pen and their interactions were observed from a blind. One or more sheep were killed in 20 tests. Latency to attack averaged 47 min in 21 tests. Eight of 11 coyotes individually killed 16-32 kg lambs. The coyotes attacking sheep most frequently were 2 yr old males and females paired with these males. Yearling males attacked less frequently and unpaired females did not attack. Six of 7 kills by male-female coyote pairs were made primarily by the male. Each coyote that killed sheep clamped its teeth in or near the larynx region of the sheep and held on until the sheep succumbed. This technique left characteristic tooth marks and hemorrhaging. The sheep appeared to die primarily of suffocation. Killing time averaged 13 min in 20 tests. Food-deprived coyotes fed on the kills for an average of 25 min and consumed an average of 2.0 kg/kill. The body parts most frequently eaten from kills were digestive organs and muscle from the hind leg, neck, shoulder and head. Three of 4 coyotes fed before tests killed sheep but did not feed on the kills. Defensive behavior by the sheep appeared to deter coyote attacks in 12 tests. Source: BIOSIS

Reference Type: Journal Article
Record Number: 722
Author: R. M. Timm and G. E. Connolly
Year: 2001
Title: Sheep-killing coyotes a continuing dilemma for ranchers
Journal: California agriculture
Volume: 55
Issue: 6
Pages: 26-31
Short Title: Sheep-killing coyotes a continuing dilemma for ranchers
ISSN: 00080845
Legal Note: CAB Abs., Wildlife & Ecology
Keywords: canis
canidae
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vertebrates
chordata
animals

eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
artiodactyla
ungulates
pacific states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
Abstract: Predation on sheep by coyotes on the UC Hopland Research and Extention Center's research sheep has increased and also caused a great loss to many ranchers in California's North Coast region. Despite using both lethal and nonlethal methods to prevent or control predation, sheep and lamb losses continue to be a management challenge. To protect their livestock, ranching communities were helped by federal wildlife specialists who used traditional means of leg-traps, poisons, snares, and shooting to control predation. But losses still increased and so nonlethal methods like electric-fencing, keeping the livestock near human activity, lambing in sheds, penning the animals at night were tried. Despite such efforts the loss seemed uncontrollable. Missing lambs may have died due to other reasons but the maximum loss can be attributed to coyotes. Researchers at Hopland have carried out a series of studies on reducing predation by examining the sheep-killing behavior of coyotes in captivity. Trappers usually use odors and scents to attract coyotes to traps. Guard dogs and llamas were used to reduce coyote predation but this method was not that effective because it was successful only in a few selected areas. Electric wire fences also came into use but the cost for maintenance was so high that even though it kept the coyotes at bay it was incurring economic loss. Radio telemetry data have shown that territorial, breeding coyotes are primary predators and so control should be concentrated on individual coyotes. The use of livestock protection collars (LPG) has yielded the most successful results. The collar containing toxic doses of sodium fluoroacetate kills coyotes while they are attacking the sheep. But this method was banned in California. Numerous techniques have been tried in an effort to save the sheep and lambs, but until the present the success rate has been low Source: wesw

Reference Type: Journal Article
Record Number: 602
Author: G. W. Lynch and R. D. Nass
Year: 1981
Title: SODIUM MONO FLUORO ACETATE 1080 RELATION OF ITS USE TO PREDATION ON LIVESTOCK IN WESTERN NATIONAL FORESTS USA 1960-1978
Journal: Journal of range management
Volume: 34
Issue: 5
Pages: 421-423
Short Title: SODIUM MONO FLUORO ACETATE 1080 RELATION OF ITS USE TO PREDATION ON LIVESTOCK IN WESTERN NATIONAL FORESTS USA 1960-1978
ISSN: 0022409X
Legal Note: BIOSIS Prev.
Abstract: Concern over certain animal damage control methods used by the USA Fish and Wildlife Service (USFWS), primarily the predacide Compound 1080, prompted a Presidential Order in 1972 banning the use of toxicants on public lands. This continuing ban of 1080 use was reinforced by the recent policy address issued by the Secretary of the Interior. Following the initial ban, greater emphasis was placed on aerial hunting of coyotes for prevention and correction of damage to sheep and goats. Aerial hunting is expensive and has only liminted application in timbered, mountainous areas of many national forests. In the period since toxicants were banned, number of grazing livestock reported as lost to predation on western national forests has increased. Numbers of toxic bait stations (1080) used throughout the west, from 1960 until the 1972 ban, showed a strong inverse relationship with numbers of livestock reported lost to predation on national forests during these same years. Source: BIOSIS

Reference Type: Journal Article
Record Number: 529
Author: W. B. Robinson

Year: 1952
Title: SOME OBSERVATIONS ON COYOTE PREDATION IN YELLOWSTONE NATIONAL PARK
Journal: Journal of mammalogy
Volume: 33
Issue: 4
Pages: 470-476
Short Title: SOME OBSERVATIONS ON COYOTE PREDATION IN YELLOWSTONE NATIONAL PARK
ISSN: 00222372
Legal Note: BIOSIS Prev., Wildlife & Ecology
Abstract: Predation by the coyote, Canis latrans, primarily on the calves of the elk, Cervus canadensis, is described. Other phases of predation are not considered. Hunting habits of coyotes are described in detail. || ABSTRACT AUTHORS: W. H. B Source: BIOSIS

Reference Type: Journal Article
Record Number: 572
Author: E. K. Boggess
Year: 1975
Title: SOME POPULATION PARAMETERS OF IOWA COYOTES AND AN ANALYSIS OF REPORTED LIVESTOCK LOSSES
Journal: Some population parameters of iowa coyotes and an analysis of reported livestock losses
Short Title: SOME POPULATION PARAMETERS OF IOWA COYOTES AND AN ANALYSIS OF REPORTED LIVESTOCK LOSSES
Legal Note: Wildlife & Ecology
Abstract: Source: WESW

Reference Type: Journal Article
Record Number: 721
Author: A. D. Latham, M. C. Latham, M. S. Boyce and S. Boutin
Year: 2013
Title: Spatial relationships of sympatric wolves (Canis lupus) and coyotes (C. latrans) with woodland caribou (Rangifer tarandus caribou) during the calving season in a human-modified boreal landscape
Journal: Wildlife research
Volume: 40
Issue: 3
Pages: 250-260
Short Title: Spatial relationships of sympatric wolves (Canis lupus) and coyotes (C. latrans) with woodland caribou (Rangifer tarandus caribou) during the calving season in a human-modified boreal landscape
ISSN: 10353712
DOI: 10.1071/WR12184
Legal Note: GEOBASE, CAB Abs., BIOSIS Prev., Zool. Record, AGRICOLA, Wildlife & Ecology
Keywords: canada
apec countries
commonwealth of nations
developed countries
north america
america
oecd countries
canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells

odocoileus
cervidae
ruminants
artiodactyla
rangifer
ursus
ursidae
Abstract: Context Woodland caribou (Rangifer tarandus caribou) populations have declined across most of North America. Wolf (Canis lupus) predation on adults is partially responsible for declines; however, caribou declines also can be attributed to low calf survival. Wolves and invading coyotes (C. latrans) may contribute to mortality of calves. Aim We assessed wolf and coyote food habits and population and individual level selection for caribou-preferred habitats (bogs and fens) during the caribou calving season (15 April to 30 June) in north-eastern Alberta, Canada, to determine what role these predators might play as a mortality factor for caribou calves. Methods We deployed global positioning system and very high-frequency (VHF) radio-collars on 32 wolves and nine coyotes in January 2006-January 2008, and VHF collars on 42 adult female caribou individuals in 2003-08. We assessed wolf and coyote habitat selection using used-available resource-selection functions, and spatial overlap of wolves and coyotes with caribou using logistic regression to estimate coefficients for latent selection-difference functions. We collected and analysed scats to assess wolf and coyote food habits. Key results Wolves generally avoided caribou-preferred habitats, particularly bogs. Most coyotes selected caribou-preferred habitats (bogs and/or fens); however, relative to caribou, they were found closer to upland forests. Hair from adult and calf caribou was uncommon in wolf and coyote diet and caribou is likely to be an uncommon alternative prey for these predators. Conclusions We found that >25% of wolf packs and most coyotes selected caribou-preferred habitats during the calving season. Although caribou was not an important prey, limited secondary predation, by these predators and black bears (Ursus americanus), on adult and calf caribou is likely to be contributing to caribou population declines. Implications We caution that predation on caribou is likely to escalate as coyotes expand into this region and increasing human disturbance continues to create habitat for white-tailed deer (Odocoileus virginianus), which is an important prey for both wolves and coyotes.© CSIRO 2013.
Source: GEOBASE
Notes: 10.1071/WR12184

Reference Type: Journal Article
Record Number: 563
Author: D. Pyrah
Year: 1980
Title: STATEWIDE WILDLIFE RESEARCH.: EFFECTS OF COYOTE POPULATIONS IN THE MISSOURI BREAKS OF CENTRAL MONTANA
Journal: Statewide wildlife research.: effects of coyote populations in the missouri breaks of central montana
Short Title: STATEWIDE WILDLIFE RESEARCH.: EFFECTS OF COYOTE POPULATIONS IN THE MISSOURI BREAKS OF CENTRAL MONTANA
Legal Note: Wildlife & Ecology
Abstract: PERIOD COVERED: 7/1/79-6/30/80. 'SOCIAL DISTRIBUTION AND POPULATION DYNAMICS OF COYOTES WERE STUDIED IN THE MISSOURI BREAKS OF CENTRAL MONTANA FROM 1976 TO 1979. RELOCATIONS OF RADIO-MARK ED COYOTES INDICATED FOUR ADULT SOCIAL CLASSES: DEN BREEDERS, SUPERNUMARY DEN NONBREEDERS, NOMADS AND DISPERSERS.' FROM ABSTRACT Source: wesw

Reference Type: Journal Article
Record Number: 663
Author: D. Pyrah
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Title: STATEWIDE WILDLIFE RESEARCH.: EFFECTS OF COYOTE POPULATIONS IN THE MISSOURI BREAKS OF CENTRAL MONTANA
Journal: Statewide wildlife research.: effects of coyote populations in the missouri breaks of central montana
Short Title: STATEWIDE WILDLIFE RESEARCH.: EFFECTS OF COYOTE POPULATIONS IN THE MISSOURI BREAKS OF CENTRAL MONTANA
Legal Note: Wildlife & Ecology
Abstract: PERIOD COVERED: 7/1/79-6/30/80. 'SOCIAL DISTRIBUTION AND POPULATION DYNAMICS OF COYOTES WERE STUDIED IN THE MISSOURI BREAKS OF CENTRAL MONTANA FROM 1976 TO 1979. RELOCATIONS OF RADIO-MARK ED COYOTES INDICATED FOUR ADULT SOCIAL CLASSES: DEN BREEDERS, SUPERNUMARY DEN NONBREEDERS, NOMADS AND DISPERSERS.' FROM ABSTRACT Source: wesw

Reference Type: Journal Article
Record Number: 777

Author: A. R. Dood
Year: 1977
Title: STATEWIDE WILDLIFE RESEARCH.: EFFECTS OF COYOTE PREDATION ON MULE DEER FAWN SURVIVAL IN THE MISSOURI BREAKS
Journal: Statewide wildlife research.: effects of coyote predation on mule deer fawn survival in the missouri breaks
Short Title: STATEWIDE WILDLIFE RESEARCH.: EFFECTS OF COYOTE PREDATION ON MULE DEER FAWN SURVIVAL IN THE MISSOURI BREAKS
Legal Note: Wildlife & Ecology
Abstract: PERIOD COVERED: 7/1/76 - 6/30/77. 9 FAWNS WERE RADIO-COLLARED, FOUR OF THE 9 WERE KILLED BY COYOTES WITHIN 36 DAYS Source: wesw

Reference Type: Journal Article
Record Number: 752
Author: J. M. Houben, R. Mason, P. Rodgers and M. Shelton
Year: 2004
Title: Status and management of coyote depredations in the Eastern United States
Journal: Sheep & goat research journal
Volume: 19
Pages: 16-22
Short Title: Status and management of coyote depredations in the Eastern United States
Legal Note: AGRICOLA, CAB Abs.
Keywords: bos
bovidae
ruminants
artiodactyla
mammals
vertebrates
chordata
animals
ungulates
eukaryotes
eukaryotic cells
canis
canidae
fissipeda
carnivores
east north central states of usa
north central states of usa
usa
north america
america
developed countries
oecd countries
corn belt states of usa
ovis
appalachian states of usa
southern states of usa
south atlantic states of usa
Abstract: During the 1990s, the USDA APHIS Wildlife Services (WS) programs in Virginia, West Virginia and Ohio initiated programs designed to assist producers experiencing livestock depredations by coyotes. The WS program documents livestock losses, requests for assistance and management activities through its Management Information System (MIS). WS uses the MIS system to produce annual reports on coyote depredation management activities. The National Agricultural Statistics Service (NASS) surveys and WS reports have not been analysed on a regional basis or in the context of the range expansion of the coyote in the eastern United States. This paper reviews this data and examines the effectiveness of WS programs aimed at managing coyote depredation on livestock (sheep and cattle) in the eastern United States. Source: cab
Author Address: Bowling Green USA

Reference Type: Journal Article
Record Number: 770
Author: M. M. Jaeger, K. M. Blejwas, B. N. Sacks, J. C. Neale, M. M. Conner and D. R. McCullough
Year: 2001
Title: Targeting alphas can make coyote control more effective and socially acceptable
Journal: California agriculture
Volume: 55
Issue: 6
Pages: 32-36
Short Title: Targeting alphas can make coyote control more effective and socially acceptable
ISSN: 00080845
Legal Note: CAB Abs., Wildlife & Ecology
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
ovis
bovidae
ruminants
artiodactyla
ungulates
pacific states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
Abstract: Killing of sheep by coyotes has forced many ranches out of business. Despite the use of many lethal and nonlethal devices, the depredation by coyotes has not declined. The situation is complicated by growing public opposition to the use of lethal methods and chemical attractants. The use of non-lethal alternatives has been proposed because they are more humane. The effective use of selective removal of the 'alphas' which might reduce losses at HREC was under study. The types of control used over the years have been ineffective, either situation-wise or because they were difficult to maintain financially. Therefore, use of non-lethal methods is proposed as the first choice. Nonselective methods to control predation have not been successful as sheep killing is still prevalent and there is no relationship between the number of coyotes killed and sheep killed. This emphasizes the fact that coyotes were not the only predators, so the non-selective method was found to be non-effective. Studies carried out on captive coyotes show that all coyotes do not kill sheep for sport, unlike domestic dogs. Evidence suggests that sheep become part of the coyote prey base when they are available year-round. Studies reveal that alphas were responsible for the maximum of sheep deaths and betas and transients were not associated with any of these kills. The reason that no relationship was found between numbers of coyote removed and subsequent depredation losses was that coyote removals were highest during the lambing season. This suggests that nonselective removal is effective when it coincides with pup rearing. When alpha coyotes were removed from territories, sheep depredation was significantly reduced for three months, after which new alpha coyotes moved in and began killing sheep. Alternative methods like culling and shooting are now explored to selectively control alpha coyotes Source: wesw

Reference Type: Journal Article
Record Number: 734
Author: B. N. Sacks, J. C. C. Neale, D. R. McCullough and M. M. Jaeger
Year: 1999
Title: Territoriality and breeding status of coyotes relative to sheep predation
Journal: Journal of wildlife management
Volume: 63

Issue: 2
Pages: 593-605
Short Title: Territoriality and breeding status of coyotes relative to sheep predation
ISSN: 0022541X
Legal Note: Zool. Record, AGRICOLA, BIOSIS Prev., CAB Abs., Wildlife & Ecology, Scopus
Keywords: ovis
bovidae
ruminants
artiodactyla
mammals
vertebrates
chordata
animals
ungulates
eukaryotes
eukaryotic cells
canis
canidae
fissipeda
carnivores
pacific states of usa
western states of usa
usa
north america
america
developed countries
oecd countries
Abstract: Coyote (Canis latrans) depredation is a chronic problem for sheep producers in the western United States. Due to increasingly localized control efforts, behavior of individual coyotes in sheep-ranching environments is becoming a more important consideration. We radiotracked 14 coyotes on a year-round sheep-ranching facility in north-coastal California during September 1993-December 1995. Breeding coyote pairs used mutually exclusive territories (maximum overlap between 90% adaptive kernel home ranges = 4%). Nonbreeding coyotes were transient or varied in their degree of fidelity to putative natal territories but generally avoided cores of nonnatal territories. Breeding coyotes whose territories contained sheep were the principal predators of sheep. In the 1994 lambing period (1 Jan-31 May), radiotelemetry indicated that 1 breeding male was responsible for 71% of 65 kills. In the 1995 lambing period, 4 breeding pairs were strongly implicated in 92% of 48 kills and were suspected of 85% of 26 additional kills; nonbreeders were not associated with sheep depredation. Depredation was reduced only when territorial breeders known to kill sheep were removed. These results suggest the need for management to target breeding adults in the immediate vicinity of depredation. Efforts to remove individuals >1 territory-width away from problem sites are unlikely to reduce depredation and may exacerbate the problem by creating vacancies for new breeders that might kill sheep. Source: SCOPUS

Reference Type: Journal Article
Record Number: 528
Author: W. B. Robinson
Year: 1948
Title: THALLIUM AND COMPOUND 1080 IMPREGNATED STATIONS IN COYOTE CONTROL
Journal: Journal of wildlife management
Volume: 12
Issue: 3
Pages: 279-295
Short Title: THALLIUM AND COMPOUND 1080 IMPREGNATED STATIONS IN COYOTE CONTROL
ISSN: 0022541X
Legal Note: BIOSIS Prev., Wildlife & Ecology
Abstract: To meet the need for an additional method of coyote control for winter use in acute predation areas, expts. were conducted with meat stations impregnated with thallium sulfate and compound 1080 (Na fluoroacetate). Control, approaching local extirpation in some instances, was attained. The 2 poisons are considered equally effective for coyotes, but 1080 is more selective, easier to apply, cheaper and more readily available. Some casualties among other wildlife are inevitable and precautions must be taken to protect their general populations. Stations should be widely spaced (averaging not more than one per township) to limit

danger zones for the smaller and more sedentary carnivorous mammals, and sites along streams and in forests should be avoided. The lethal baits should be exposed late in the fall and removed as early as possible in the spring. Compound 1080 should be carefully regulated and distributed in the station carcass to limit its toxicity to the more resistant creatures, particularly hawks and eagles, which have tolerances 50-100 times that of coyotes. Although thallium and 1080 are severe in their killing actions, may be dangerous in the hands of inexperienced operators, and their use results in waste of coyote fur and some losses among other wildlife, their employment may be justified in those cases where necessary reductions in coyote numbers cannot be accomplished by other means. || ABSTRACT AUTHORS: W. B. Robinson Source: BIOSIS

Reference Type: Journal Article
Record Number: 525
Author: E. M. Gese
Year: 1999
Title: Threat of predation: Do ungulates behave aggressively towards different members of a coyote pack?
Journal: Canadian journal of zoology
Volume: 77
Issue: 3
Pages: 499-503
Short Title: Threat of predation: Do ungulates behave aggressively towards different members of a coyote pack?
ISSN: 00084301
Legal Note: Zool. Record, BIOSIS Prev., Wildlife & Ecology, GEOBASE, Scopus
Abstract: Wild ungulates have evolved a variety of antipredator strategies to deter or escape predation by carnivores. Among wild canids, the dominant pair of a pack often initiates attacks upon prey. Previous observations in Yellowstone National Park, Wyoming, showed that the alpha pair in a coyote (Canis latrans) pack most often leads attacks on ungulates during winter. We were interested in determining whether ungulates can distinguish (perhaps by body size or posture) which members of a coyote pack are the alpha individuals, and whether they initiate and direct aggressive behavior towards those members of the pack that pose the greatest threat of predation to themselves and (or) their offspring. During 2507 h of behavioral observations on 54 coyotes between January 1991 and June 1993, we observed 51 interactions between coyotes and adult elk (Cervus elaphus), bison (Bison bison), and pronghorn antelope (Antilocapra americana) in Yellowstone National Park. The interactions analyzed here are those in which the ungulate appeared to initiate aggressive behavior towards the coyote(s) and were not a response to an attack by the predators. We found that aggression by ungulates towards coyotes was highest during the summer months, when calves and fawns were present; female ungulates were more frequently aggressive than males. The frequency of aggression of adult ungulates towards small and large groups of coyotes was equal to the frequency of occurrence of these groups. Ungulates directed aggressive behavior more frequently towards alpha coyotes and were less aggressive towards beta coyotes and pups. Large ungulates, particularly elk and bison, appeared to perceive that alpha coyotes posed a greater threat to themselves and their offspring. The smaller ungulate, the pronghorn antelope, directed aggressive behavior equally towards all coyotes. Adult ungulates were probably responding to the larger body size of the alpha coyotes and the tendency of alpha coyotes to travel at the front of the pack. Source: GEOBASE

Reference Type: Journal Article
Record Number: 755
Author: T. M. Gehring, M. L. Provost, A. C. Cellar and K. C. VerCauteren
Year: 2010
Title: Utility of livestock-protection dogs for deterring wildlife from cattle farms
Journal: Wildlife research
Volume: 37
Issue: 8
Pages: 715-721
Short Title: Utility of livestock-protection dogs for deterring wildlife from cattle farms
ISSN: 10353712
DOI: 10.1071/WR10023
Legal Note: BIOSIS Prev., Zool. Record, Wildlife & Ecology, GEOBASE, Scopus, AGRICOLA
Abstract: Context. Livestock producers worldwide are negatively affected by livestock losses because of predators and wildlife-transmitted diseases. In the western Great Lakes Region of the United States, this conflict has increased as grey wolf (Canis lupus) populations have recovered and white-tailed deer (Odocoileus virginianus) have served as a wildlife reservoir for bovine tuberculosis (Myobacterium bovis). Aims. We conducted field experiments on cattle farms to evaluate the effectiveness of livestock-protection dogs (LPDs) for excluding wolves, coyotes (C. latrans), white-tailed deer and mesopredators from livestock pastures. Methods. We integrated LPDs on six cattle farms (treatment) and monitored wildlife use with tracking swaths on these farms, concurrent with

three control cattle farms during 2005-2008. The amount of time deer spent in livestock pastures was recorded using direct observation. Key results. Livestock pastures protected by LPDs had reduced use by these wildlife compared with control pastures not protected by LPDs. White-tailed deer spent less time in livestock pastures protected by LPDs compared with control pastures not protected by LPDs. Conclusions. Our research supports the theory that LPDs can be an effective management tool for reducing predation and disease transmission. We also demonstrate that LPDs are not limited to being used only with sheep and goats; they can also be used to protect cattle. Implications. On the basis of our findings, we support the use of LPDs as a proactive management tool that producers can implement to minimise the threat of livestock depredations and transmission of disease from wildlife to livestock. LPDs should be investigated further as a more general conservation tool for protecting valuable wildlife, such as ground-nesting birds, that use livestock pastures and are affected by predators that use these pastures. © CSIRO 2010. Source: GEOBASE
Notes: 10.1071/WR10023

Reference Type: Journal Article
Record Number: 600
Author: T. Hoffman, W. D. Edge and S. L. Olsen-Edge
Year: 1996
Title: Wildlife damage management to protect livestock: ecological effective or socio-political appeasement
Journal: Special report - oregon state university extension service
Issue: 953
Pages: 101-107
Short Title: Wildlife damage management to protect livestock: ecological effective or socio-political appeasement
Legal Note: CAB Abs.
Keywords: canis
canidae
fissipeda
carnivores
mammals
vertebrates
chordata
animals
eukaryotes
eukaryotic cells
north america
america
developed countries
oecd countries
Abstract: Wildlife damage management in the USA is described with reference to predation of livestock, primarily by coyotes (Canis latrans). It is considered that control programmes do not reduce coyote populations for more than 1-2 years and 7% of animals taken are non-target species. Adverse effects on the populations of target and non-target animals were not found. Humaneness, human health and safety, economic impacts and sociopolitical considerations are discussed. Source: CAB
Author Address: Corvallis USA

Reference Type: Journal Article
Record Number: 781
Author: R. D. Andrews, G. G. Zenner, T. G. LaGrange and A. W. Hancock
Year: 1992
Title: Wildlife Research and Surveys in Iowa: Coyote Ecology Investigations
Journal: Iowa department of natural resources
Pages: 30-30
Short Title: Wildlife Research and Surveys in Iowa: Coyote Ecology Investigations
Legal Note: Wildlife & Ecology
Abstract: The following items are attached: (1) Appendix I - Some Population Parameters of Iowa Coyotes and an Analysis of Reported Livestock Losses (Summary) (E.K. Boggess); (2) Appendix II - Coyotes and Dog Depredation on Sheep (J.M. Schaefer); (3) Appendix III - Home Range, Habitat Selection, and Dispersal of Coyotes in Southern Iowa (Abstract) (G.D. Jones); (4) Appendix IV - Domestic Animal Losses to Coyotes and Dogs in Iowa (J. Wild. Manage. 42(2):362-372:1978; E.K. Boggess, R.D. Andrews, R.A. Bishop) (5) An Assessment of Coyote and Dog Predation on Sheep in Southern Iowa (J. Wildl. Manage. 45(4):883-893:1981; J.M. Schaefer, R.D. Andrews, J.J. Dinsmore); and (6) Recognizing and Reducing Sheep Predator Losses (J.M. Schaefer, R.D. Andrews, J.J. Dinsmore,

1981) Source: wesw

Mitchell, B.R., M.M. Jaeger, and R.H. Barrett. **Coyote depredation management : current methods and research needs.** 2004. Wildlife Society Bulletin 32(4):1209-1218. http://www.uvm.edu/~bmitchel/Publications/Mitchell_Coyote_depredation.pdf

Eastern coyote/coywolf research. Publications page. Descriptions and links to many articles
http://www.easterncoyoteresearch.com/publicationspage/

Knowlton, F.F., E.M. Gese, and M.M. Jaeger. **Coyote depredation control: An interface between biology and management.** 1999. Journal of Range Management 52:398-412

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Compiled May 2014

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1976

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