IN RE: PETITION FOR SUSPENSION AND CANCELLATION OF M-44 SODIUM CYANIDE CAPSULES & SODIUM FLUOROACETATE LIVESTOCK PROTECTION COLLARS	**) DOCKET NO.**

1. INTRODUCTION:

Sinapu, Public Employees for Environmental Responsibility (PEER), Beyond Pesticides, Forest Guardians, Predator Defense, Western Wildlife Conservancy, Sierra Club, The Rewilding Institute, Animal Defense League of Arizona, and Animal Welfare Institute hereby petition the Administrator of the Environmental Protection Agency (EPA) to issue a Notice of Intent to Cancel the registration of M-44 sodium cyanide capsules (hereinafter M-44s) and sodium fluoroacetate (commonly known as "Compound 1080" or known as sodium monofluoroacetate), a toxicant only allowed in "livestock protection collars" (LPCs) pursuant to Section 6 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. § 136d). Further, we request that the Administrator suspend the registration of M-44s and LPCs under FIFRA 7 U.S.C. § 136d(c)(1).

Cancellation and suspension is warranted because these pesticides, when used in accordance with widespread and commonly recognized practice (FIFRA, 7 U.S.C. § 136a(c)(5)(5)), generally cause unreasonable adverse effects on the environment and pose an "imminent hazard" as defined by FIFRA (7 U.S.C. § 136(l)). Because continued use during the time required for cancellation proceedings would likely result in unreasonable adverse effects on the environment and involve unreasonable hazards to species listed as threatened or endangered under the Endangered Species Act (ESA), we request that these pesticides be cancelled and suspended at the earliest possible date.

The U.S. Department of Agriculture, Animal and Plant Heath Inspection Service, Wildlife Services (APHIS-WS) and others' continued usage of sodium cyanide and Compound 1080 as part of their "predator damage management" programs have resulted in unintended deaths of numerous species and domestic pets. Furthermore, these toxicants continue to place people at risk. For example, according to recently reported incidents, it appears that APHIS-WS failed to follow FIFRA use guidelines for M-44s. As a result, two dogs were poisoned in Utah in Spring 2006 within close proximity of humans. Moreover, APHIS-WS has jeopardized threatened and endangered species and species of special concern, such as wolves and swift foxes, with sodium cyanide as documented herein. Surveys indicate that between 11 and 71% of animals killed to prevent conflicts with humans or livestock were not involved in negative interactions and those data, if extrapolated to APHIS-WS, indicate that the agency overkilled 1.5 to 9.7 million animals "*without cause"* between 1996 and 2001 (Treves and Karanth 2003).

Most of the species that APHIS-WS killed were killed with various poisons. Nevertheless, of the 101,225 mammalian carnivores killed in 2004, 11,872 were killed with M-44s, and 45 were killed with Compound 1080 [Table 1, attached]. The total killed by M-44s and Compound 1080 was 12% and 0.04%, respectively. Thus, the

benefits of using these toxicants to livestock producers are low, while the risks and costs to people and wildlife (including endangered wildlife) are high. The risks far exceed the derived benefits.

Furthermore, because sodium cyanide and Compound 1080 could be used as bioterrorism agents, and because APHIS failed two federal audits in 2005 and 2006 concerning their handling of and accountability for lethal toxicants, the EPA should ban the manufacture and distribution of sodium cyanide as used for predator control and completely ban the manufacture and distribution of Compound 1080 at the earliest possible moment.

2. THE PARTIES:

Sinapu, a Colorado non-profit corporation, maintains its principal place of business in Boulder, Colorado. Sinapu is dedicated to the restoration and protection of native carnivores and their wild habitat in the Southern Rockies, and connected high plains and deserts. Sinapu's 1,000 members include outdoor recreationists, wildlife watchers, wildlife photographers, biologists, and hunters. Sinapu's staff and members have a wide range of interests in wildlife, from the aesthetic and ecological to the utilitarian. Sinapu's staff and members derive scientific, recreational, educational, and aesthetic benefits from wild carnivore populations including coyotes, wolves, pumas, bears, bobcats, foxes, skunks, badgers, as well as other wildlife.

Public Employees for Environmental Responsibility (PEER) is a nonprofit organization headquartered in Washington, D.C. It is a national alliance of local state and federal resource professionals. PEER works nation-wide with government scientists, land managers, environmental law enforcement agents, field specialists and other resource professionals committed to responsible management of Americas public resources. The work of PEER members involved with public lands and wildlife conservation is frustrated by the use of the predator control pesticides addressed in this petition.

Beyond Pesticides (formerly, National Coalition Against the Misuse of Pesticides) works with allies in protecting public health and the environment to lead the transition to a world free of toxic pesticides. Beyond Pesticides, located in Washington DC, has successfully been working toward this goal with grassroots organization from around the nation for 25 years.

Forest Guardians is a non-profit public interest organization dedicated to preserving the wildlands and wildlife of the American Southwest. Forest Guardians has a long history of interest and involvement in public lands administration, and is particularly concerned with the harm caused to large predators from grazing, logging, oil and gas extraction, and other consumptive use interests. The staff and 1,800 members of Forest Guardians use and enjoy public lands, waters, and natural resources for recreational, scientific, spiritual, educational, aesthetic, and other purposes. Forest Guardians and its members also participate in information gathering and dissemination, as well as education and public

outreach. Forest Guardians has been, and continues to be, a leading voice for promoting environmental interests in New Mexico, Arizona, Colorado, and Utah.

Predator Defense is a non-profit 501(c)3 organization based in Eugene, Oregon. Predator Defense, founded in 1990, is an active voice and political watch dog for predator species through out the United States. Predator Defense networks with other organizations to support conservation-related field research and efforts to preserve and enhance critical wildlife habitat. Predator Defense legally assists those who have suffered losses of companion animals to poisons and traps set by the USDA-Wildlife Services' program.

Prairie Preservation Alliance (PPA) is a Colorado-based conservation organization with members worldwide. Its mission is to restore and preserve the shortgrass prairie and associated native wildlife across its historical range. PPA's vision is to acquire habitat for the conservation of native prairie species. PPA is concerned about the affects of poisons on native species.

Western Wildlife Conservancy is a member-based non-profit organization located in Salt Lake City, Utah. The mission of Western Wildlife Conservancy is to protect and enhance native wildlife populations and their habitats in the Intermountain West through research, education and advocacy.

The Sierra Club is a broad-based, grassroots environmental conservation organization based in San Francisco, CA, with approximately 700,000 members in the United States and Canada, and 20,000 members in the State of Colorado (the Rocky Mountain Chapter). The goals of the Sierra Club are to: 1) Explore, enjoy and protect the wild places of the earth, 2) Practice and promote the responsible use of the earth's ecosystems and resources, 3) Educate and enlist humanity to protect and restore the quality of the natural and human environment, and 4) Use all lawful means to carry out these objectives. The "earth's ecosystems and resources" and "wild places" includes wildlife species and their habitats.

The Rewilding Institute is a non-profit, conservation think tank dedicated to science-informed protection and restoration of biological diversity at landscape and continental scales in North America. A primary focus of TRI is the restoration and conservation of ecologically effective populations of top predators.

The Animal Defense League of Arizona is an Arizona non-profit corporation dedicated to protecting and defending Arizona's animals. ADLA has worked to encourage the development of policies to protect mountain lions in our state, as part of its program for protection of wildlife and wildlife habitat, especially focal species such as large carnivores. Its members live throughout and outside Arizona. Many members enjoy outdoor recreation such as hiking, backpacking and many forms of wildlife watching. ADLA members derive recreational, educational, and aesthetic benefits from wild carnivore populations, as well as other wildlife.

The Animal Welfare Institute is a non-profit charitable organization founded in 1951 to reduce the sum total of pain and fear inflicted on animals. It is headquartered in Washington, DC and has over 25,000 members worldwide.

3. FACTUAL BACKGROUND & EVIDENCE OF HARM:

A. HISTORICAL SUMMARY—WHY THE USDA-APHIS-WS USES LETHAL TOXICANTS:

For centuries, the western dominant culture presumed that predators were evil and ravenous (Mighetto 1991). From the moment white settlers appeared in the New World, they began to exploit predator populations (e.g. Coleman 2004, Robinson 2005). Even the humanitarians of the late nineteenth century, who extended Christian notions of mercy and kindness to animals, distinguished between "good" and "bad" animals (Mighetto 1991). The New Humanitarians believed that (evil) predators preyed upon "innocent victims" such as deer or rabbits (Mighetto 1991). Under this context, predator and animal control became a widespread practice and institutionalized in a federal government agency starting in 1905. Congress too became involved in wildlife killing when it passed the Animal Damage Control (ADC) Act in 1931, which states:

> The Secretary [of the Department of Agriculture] is authorized to conduct investigations, experiments, and tests to determine the best methods of eradication, suppression, or bringing under control mountain lions, wolves, coyotes, bobcats, prairie dogs, gophers, ground squirrels, jack rabbits, brown tree snakes, and other animals injurious to agriculture, horticulture, forestry, animal husbandry, wild game animals, fur-bearing animals and birds. Another purpose of these investigations is to protect stock and other domestic animals through the suppression of rabies and tularemia in predatory or other wild animals. The Secretary is also directed to conduct campaigns for the destruction or control of these animals. In carrying out the Act, the Secretary may cooperate with states, individuals, agencies and organizations.

(7 U.S.C. § 426, as amended in 1987 and 1991).

As a result of the Animal Damage Control Act, massive trapping and poisoning campaigns occurred which resulted in the extirpation of numerous species including wolves, grizzly bears, kit and swift foxes, and jaguars. In response, the American Society of Mammalogists, in 1931, called the Predatory Animals and Rodent Control (PARC) agency, "'the most destructive organized agency that has ever menaced so many species of our native fauna (Edge).'" Seven decades later, the American Society of Mammalogists again condemned APHIS-WS's practices and called for fundamental reform (American Society of Mammalogists 1999, 2000).

As the Animal Damage Control Act demonstrates, before about 1940, the dominant western society failed to understand that predators play a critical ecological roles in

maintaining both biological diversity and ecosystem function (e.g. Leopold 1949, Crooks and Soule 1999, Logan and Sweanor 2001, Smith et al. 2003). Native herbivores, especially ungulates, had been wiped out by unchecked hunting regimes (Warren 1997), leaving predators with little else to eat. Native carnivores had little choice but to survive domestic livestock. This put carnivores into conflict with white settlers. Most were more concerned about utilitarian values; that is, protecting sheep or cattle, which made people money, but not protecting coyotes or wolves which exacted a toll on livestock operations.

By the 1950s and 1960s, both the scientific community and the public began to change their attitudes toward predators (Leopold 1949). This shift may have been in large part due to Farley Mowat's (now discredited) book, *Never Cry Wolf*, which was published in 1963 but became a Disney blockbuster in 1983. In it, Mowat depicted wolves as compassionate and social animals and dispelled the myth for a portion of the public that they were ravenous wanton killers (Dunlap 1988, Mighetto 1991). As a result of these tensions, people have and do demonstrate a complexity of perceptions about wildlife values (Kellert 1996, Kellert and Smith 2000, Teel et al. 2002). The new ideology concerning predators as a result of early scientific studies manifested into two attempts in the 1960s and 1970s to reform the agency that is now known as USDA-APHIS-WS.

As chair of an Interior-appointed commission, A. Starker Leopold (Aldo Leopold's son) issued the "Leopold Report" in 1964 to Stewart Udall, Secretary of the Interior, before a national wildlife conference (Dunlap 1988). The report described widespread abuses by PARC and emphasized the indiscriminate wildlife killing through the use of traps and poisons, particularly Compound 1080. According to the Leopold Report, the American populace especially seemed to favor native carnivores. The Report stated, "large carnivores in particular are objects of fascination to most Americans and for every person whose sheep may be molested by a coyote there are perhaps a thousand others who would thrill to hear a coyote chorus in the night" (Leopold et al. 1964).

Leopold's report indicated that PARC's operations were not based on science, but rather were responsive to the desires of the agricultural community, which was interested in more wildlife removals. The commission chaired by Leopold advocated a massive overhaul of PARC to ensure that the excessive wildlife killing by the agency would be curtailed. In addition, Congress recognized that PARC's operations were injurious to imperiled species. Subsequent to the Leopold Report, a Congressional hearing led to several reforms, including a restriction on the use of some toxicants, extensive training for agency personnel, the establishment of an outside advisory panel, and a name change. PARC became the *Division of Wildlife Services* within the U.S. Bureau of Sports Fisheries and Wildlife (Leopold et al. 1964, Dunlap 1988, USDA-APHIS-ADC 1994).

In 1971, a second report, the "Cain Report," was issued to the U.S. Department of Interior and Council on Environmental Quality, this time from a panel chaired by Stanley A. Cain (Cain et al. 1971). The Cain Report lamented that, some seven years after the Leopold Report, the Division of Wildlife Services continued to ignore the sentiments of the majority of the American population, who supported wildlife protection. In addition, the Cain Report found that wildlife research "showed again and again that predator

control was of very limited benefit in increasing populations of game species." The writers called for radical change with regards to wildlife management:

> Guidelines and good intentions will no longer suffice. The federal-state predator control program must be effectively changed. It must take full account of the whole spectrum of public interests and values, not only in predators but in all wildlife. This will require substantial, even drastic, changes in control personnel and control methods, supported by new legislation, administrative changes, and methods of financing (Cain et al. 1971).

The Division of Wildlife Services title lasted until 1973, when it reverted back to *Animal Damage Control*—a moniker it held for twenty-four years. In 1986, APHIS-WS was returned to the Department of Agriculture. In 1997, Animal Damage Control took back the name *Wildlife Services* in its attempt to foster a sense of professionalism with the public and to disguise its unpopular mission.

In past decades, this federal agency has also been interested in containing predator populations to benefit wild prey. In recent years, WS has promised state agencies, that if it kills predators, it can elevate prey species' numbers.

Yet, many peer-reviewed studies have shown that large native carnivores help stabilize ecosystem functions and increase the abundance of species (Crooks and Soule 1999, Henke and Bryant 1999, Smith et al. 2003, Ripple and Beschta 2006). Killing predators does not always lead to an increase in prey populations—unless prey species are *below* their carrying capacity (National Research Council 1997, Ballard et al. 2001, Logan and Sweanor 2001). If prey species such as ungulates are above their carrying capacity, removing predators will exacerbate starvation among the ungulates, not improve their lot (*e.g.,* Leopold, 1949). Wild carnivores kill and eat wild prey (*e.g.,* Husseman et al. 2003). But do wild prey species' populations decline because of it? We offer three examples relevant to the petition at hand. WS kills coyotes in order to benefit desert pronghorn, mule deer, and sage grouse:

First, a study on Sonoran pronghorn found that drought, not predation, is the primary cause for the decline of this endangered species (Bright and Hervert 2005). In their "Pronghorn Management Guide," Raymond Lee et al. (1998), write, "if suitable habitat is not available for a prey species, no amount of predator control will bring about flourishing populations of that prey species." For pronghorns, fawn survival is directly attributable to abundance of "nutritious grasses and forbs during late gestation and early lactation" (Lee et al. 1998).

Second, the Colorado Division of Wildlife concluded that the mule deer herds on the Uncompahgre Plateau in southwestern Colorado suffered from "poor quality winter range conditions" and disease, which contributed "to subsequent poor survival of fetal and neonatal fawns." High mule deer mortality *was not* linked to excessive predation by native carnivores (Watkins et al. 2002, Pojar and Bowden 2004).

Third, Dr. Clait Braun, retired Colorado Division of Wildlife grouse expert, stated in his affidavit, "No one has yet demonstrated that spring recruitment and breeding population size of sage-grouse have been or can be affected by predator control programs."[1] The loss of habitat from fires, grazing, weed invasion, and other factors is largely responsible for declining sage grouse populations. Grazing is known to degrade sage grouse habitat by eliminating grassy understory, destroying riparian and wet meadow areas, causing weed invasion. If there is not sufficient food for hens, the egg quality will be reduced. Moreover, weather—i.e. lack of precipitation can affect egg quality as well (id.).

A new study confirms Dr. Braun's statement. Mezquida et al. (2006) found that coyotes indirectly benefit sage grouse populations because: 1) coyotes control the number of mesopredators (red foxes, badgers, and ravens) who are more likely to prey on sage-grouse eggs and their young, 2) a decrease in coyotes may result in the increase of jackrabbits, which has two results: a) jackrabbits compete directly with sage grouse for sagebrush and forbs (for both food and cover); and b) increase in jackrabbits may lead to an increase in golden eagle populations, "the most important predator of adult sage grouse" (Mezquida et al. 2006).

Despite this empirically discovered knowledge, WS promises that its predator-killing program will benefit prey, but that misplaced belief presumes that predators dominate the relationships between themselves and their prey. If predators simply killed all of their prey, there would be neither. Myriad influences can determine the size of prey populations including habitat quality and quantity, disease, anthropogenic threats, and stochastic events.

In sum, white settlers to the New World determined that predators were evil and ravenous. This ideology became codified in federal agency actions by 1905 when the precursor to Wildlife Services was established. Congress, in 1931, passed the Animal Damage Control Act which further institutionalized wide-spread predator-killing programs. Biologists such as Aldo Leopold and others began conducting empirical studies and discovered that predators were necessary ecosystem actors. Others began to try to change PARC, and despite the high profiles of both the Leopold and Cain committees and their respective reports, fundamental reforms in the federal animal damage control program have never occurred. Rather, Wildlife Services continues to operate under the Animal Damage Control Act of 1931, and is still funded through partnerships with state and local governments and private parties such as the Cattlemen's and the Woolgrowers' Association. APHIS-WS continues to indiscriminately kill carnivores at alarming rates. In 2004, for example, Wildlife Services spent $101,490,740 to kill 2.7 million animals (USDA-APHIS-WS 2005b, c) [Table 1, attached].[2] Yet,

[1] Declaration of Dr. Clait Braun in Committee for Idaho's High Desert et al. vs. Mark Collinge et al. (April 2002).

[2] Wildlife Services was supposed to release their FY05 kill numbers and budget by June 2006. As of this writing, the numbers have still not been released despite repeated inquiry by Sinapu.

predators, on their own, do not determine prey species numbers because of a host of environmental and anthropogenic factors, and as we discuss in detail below, few predators actually kill domestic livestock.

B. THE IMPORTANCE OF CARNIVORES IN ECOSYSTEMS:

Along with a change of societal values, the science concerning carnivores has vastly improved over the last several decades. Large carnivores can modulate prey populations and make them more vigorous (*e.g.,* Murie 1940, Leopold 1949, Logan and Sweanor 2001). Carnivores contribute to ecosystem health and functionality—their effects cascade through all the trophic layers as these examples provide:

1. Wolves indirectly brought free-flowing water above ground in Yellowstone and thus created habitat for more species. After the wolf reintroduction into the Park in 1995, elk, which had decimated willow and aspen stands, were forced to be more mobile to avoid predation. With less elk herbivory, willow communities returned, beavers followed and used trees and shrubs to build their dams and lodges. Those structures not only brought water from underground to the surface, but made water flow more dependable. As a result, neotropical and water-wading birds and moose populations increased (Smith et al. 2003).

2. A new study indicates that the presence of pumas in desert ecosystems can have the same top-down effects resulting in increased biological diversity and functionality of rare riparian systems (Ripple and Beschta 2006).

3. Coyotes regulate mesopredators (that is, medium-sized carnivores such as skunks, raccoons, and house cats) and thus more ground-nesting birds survive (Crooks and Soule 1999) and rodent species' diversity is more robust (Henke and Bryant 1999).

In short, carnivores increase both the richness and complexity of animal life and indirectly contribute to better ecosystem function. Despite this important free work, what biologists call "ecosystem services," the federal government and others spend literally hundreds of millions of dollars annually in attempts to eradicate or scale back predator populations. Not only can this imperil native species and destabilize ecosystems, it has resulted in unintended consequences with generalists such as coyotes, which have increased their range several fold as discussed below.

Yet, in many western states, black bears, mountain lions, and bobcats have few protections despite their low fecundity and recruitment. While not considered sensitive, their survival may be imperiled by multiple threats, including habitat loss and persecution—particularly through indiscriminate means such as lethal poisons like sodium cyanide and Compound 1080. Other species, including grizzly bears, lynx, kit foxes, swift foxes, and wolves, are less malleable in the face of persecution and loss of

habitat. Consequently, even now, they face the threat of extirpation or extinction and thus unintended deaths from misplaced poisons could jeopardize their populations.

C. THE "SLEDGE HAMMER" APPROACH TO WILDLIFE MANAGEMENT:

APHIS-WS has done little to benefit ecosystem health, and instead contributes indirectly to habitat dysfunction because it kills so many species, especially top-level carnivores for ill-conceived livestock protection regimes, but also to increase prey species (e.g., deer, pronghorn, and elk). The numbers of predators killed to protect livestock is highly disproportionate— perhaps on order of 1.5 to 9.7 million animals were killed for the benefit of agricultural interests "without cause" (that is, indiscriminate killing) by federal agents during the period 1996 to 2001 (Treves and Karanth 2003).

Several conservation biologists have called high levels of predator killing the "sledgehammer" approach to wildlife management (Logan and Sweanor 2001, Mitchell et al. 2004, Stolzenburg 2006). Lethal controls, including poisons, are not selective for specific animals, but rather are used to remove the most individuals from an area (Mitchell et al. 2004).

For coyotes, traps, snares, and poison baits often attract younger animals, not the older or dominant individuals that are usually implicated in livestock depredations (Logan and Sweanor 2001, Mitchell et al. 2004, Stolzenburg 2006). In the past handful of years, several biologists have expressed their skepticism about the current course and efficacy of lethal predator controls that involve millions of dollars and tens of millions of animals (Treves and Karanth 2003, Mitchell et al. 2004, Berger 2006, Stolzenburg 2006).

APHIS-WS's approach to predator control is blanket, indiscriminate, and wasteful. With lethal methods, the agency does not pretend to capture the "single offending animal." Moreover, the General Accounting Office Report (1995) demonstrates that the use of non-lethal methods of predator control by APHIS-WS's is virtually nonexistent.

Is lethal pest control with sodium cyanide or Compound 1080 necessary to control predators? Is it necessary to kill predators in order to control them? (Questions paraphrased from Littin and Mellor 2005). The humaneness of predator control by sodium cyanide and Compound 1080 is certainly controversial (Marks et al. 2004, Littin and Mellor 2005, Hooke et al. 2006), and as we demonstrate here, their usage is neither economically nor biologically feasible when weighed against the danger these toxicants pose to the public and to nontarget species of all stripes.

Therefore, we request that the EPA carefully review this petition and find that these two pesticides are not essential in the practice of lethal predator control, and that the environmental risks and costs, as outlined in this petition, far outweigh the benefits. Furthermore, we request that the manufacture and sale of these toxicants used for this purpose be banned. The benefits will be to people, to wildlife, and to ecosystems.

4. EPA'S DUTIES UNDER THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT:

The EPA is responsible for the oversight of pesticide sales and use in the United States. Specifically, FIFRA charges the EPA with reviewing and registering chemicals for use as insecticides, fungicides, rodenticides, and pesticides (collectively "pesticides") in the United States. 7 U.S.C. §§ 136-136y. A pesticide generally may not be sold or used in the United States unless the EPA has registered it for that particular use.

The EPA may register a pesticide only after making the following determinations: (1) the labeling complies with FIFRA's requirements; (2) the composition claims are warranted; (3) the pesticide will perform its intended function; and (4) the pesticide will not cause unreasonable adverse effects on the environment. The culmination of the registration process is the EPA's approval of a label for the particular pesticide, which then may not be used in a manner inconsistent with that label. 7 U.S.C. §§136 et seq.

The EPA must classify pesticides for general or restricted use, depending on their particular risks. Where necessary to guard against unreasonable adverse environmental effects, the EPA must classify (or when the information becomes available, reclassify) a pesticide as "restricted." Restricted use pesticides may only be applied by a certified applicator or under the direct supervision of a certified applicator and application must follow all limitations on the frequency, type, location or protective measures associated with its use. 7 U.S.C. §§136 et seq.

Even after registering a pesticide, the agency retains discretionary involvement and control over that registration, and furthermore, it must review each registration every fifteen years. The EPA also has the authority to compel registrants to submit data on potentially unreasonable adverse effects that may be necessary for a re-registration review and can cancel pesticide registrations whenever "a pesticide or its labeling or other material required to be submitted does not comply with the provisions of this Act or, when used in accordance with widespread and commonly recognized practice, generally causes unreasonable adverse effects on the environment." (7 U.S.C. § 136d(b)).

The EPA's re-registration decisions require a determination of whether the pesticide causes unreasonable adverse effects to people or the environment when used according to product labeling. This determination is presented in a Re-registration Eligibility Decision (RED) document. The environmental assessment evaluates the likelihood that exposure to that pesticide may cause harmful ecological effects. The effects can be direct (*e.g.*, fish die from direct exposure due to a pesticide entering the waterway) or indirect (*e.g.*, birds become sick or do not reproduce normally after ingesting contaminated fish). The studies conducted during the environmental assessment include: defining the chemical properties of the pesticide; determining how the pesticide behaves in the environment; and assessing its impact on plants and animals not targeted by the pesticide.

The types of measures included in REDs to reduce risks that are of concern include: voluntary cancellation of pesticide products or deletion of uses; declaring certain uses ineligible or not yet eligible (and then proceeding with follow-up action to cancel the uses or require additional supporting data); restricting use of products to certified applicators; limiting the amount or frequency of use; improving use directions and precautions; adding more protective clothing and equipment requirements; requiring special packaging or engineering controls; requiring no-treatment buffer zones; employing ground water, surface water, or other environmental and ecological safeguards; and other measures (EPA 1994).

When Congress established a special statutory review procedure for administrative actions, courts found that procedure could generally be treated as the exclusive means of review. *See Sebben v. Brock,* 815 F.2d 475, 478 (8th Cir.1987), *rev'd on other grounds sub nom. Pittston Coal Group v. Sebben,* 488 U.S. 105, 109 S.Ct. 414, 102 L.Ed.2d 408 (1988); *City of Rochester v. Bond,* 603 F.2d 927, 931 (D.C.Cir.1979); *cf. Nagel v. Thomas,* 666 F.Supp. 1002, 1010 (W.D.Mich.1987). Because FIFRA has a comprehensive scheme for judicial review, the general federal question statute cannot be relied on as jurisdictional base for a FIFRA challenge. We believe Congress intended that FIFRA provide the exclusive means of canceling a registration. *See Merrell v. Thomas,* 807 F.2d 776, 782 n. 3 (9th Cir.1986), *cert. denied,* 484 U.S. 848, 108 S.Ct. 145, 98 L.Ed.2d 101 (1987) (In a suit to force the EPA to comply with the National Environmental Policy Act before registering pesticides, the Ninth Circuit stated that if Merrell had sued to cancel a pesticide registration, Merrell would have failed to exhaust administrative remedies.)

A. SODIUM CYANIDE:

In September of 1994, the EPA issued the Sodium Cyanide RED (Case # 3086) and classified sodium cyanide as a restricted use pesticide under FIFRA. Sodium cyanide is registered as a single dose poison used in M-44 ejector devices (discussion below). The 1994 RED found that sodium cyanide is highly toxic to warm-blooded animals and has therefore been placed in Toxicity Category 1, indicating the greatest degree of acute toxicity, for oral, dermal and inhalation effects (EPA 1994). The ecological risk assessment noted that any animal that is able to activate the trigger of the M-44 device will get a dose of sodium cyanide in the mouth and die. The ecological risk assessment acknowledged that M-44 will kill nontarget animals, including some endangered species. Ultimately, EPA found sodium cyanide will not pose unreasonable adverse effects to humans or the environment, and was therefore, registered for use (EPA 1994).

B. SODIUM FLUOROACETATE (COMPOUND 1080):

In the 1940s, Compound 1080 was used broadly as a pest control agent for rodents and predators. In 1972, EPA cancelled the usage of this agent but was subsequently petitioned by the U.S. Department of the Interior (USDI) and the livestock industry (EPA 1995). Petitioners requested that Compound 1080 be permitted for the limited use in

LPCs that is, bladders that contain the poison which are then strapped onto the head of a goat or sheep.

LPC on a Sheep, Courtesy, USDA-APHIS

In 1985, the EPA granted the petitioners' request and transferred authority to use LPCs to APHIS (EPA 1995). The June 1995 RED (Case # 3073) placed sodium fluoroacetate into Toxicity Category 1, "the highest degree of acute toxicity" (EPA 1995). In mammals, this toxicant can be absorbed through the "gastrointentinal tract, respiratory tract, or open wounds, but only slowly through intact skin" (EPA 1995). The RED also described Compound 1080 as "highly toxic" to a number of bird species (both grain- and meat-eating birds), to certain rodents, and to native carnivores. It was only "slightly toxic" to rainbow trout (EPA 1995). The RED found that scavengers, including those that are threatened and endangered under the ESA could be affected by Compound 1080 if those animals fed on the head or neck area of dead livestock that wore LPCs (EPA 1995). The amount of toxic material found in one LPC (0.7 to 2.1 mg/kg) could kill two to six 150-pound people (Connolly and USDA-APHIS-WS1998).

Despite the precautions under FIFRA which limit the usage of sodium cyanide and Compound 1080, people and their pets are routinely exposed and harmed by these toxicants. Moreover, endangered species such as wolves and condors have been killed by APHIS-WS when it has carelessly placed sodium cyanide in the environment (discussion below). As we have pointed out above, APHIS has been careless with controlling lethal toxicants—risking, as the Office of Inspector General reported—a potential bioterrorism threat.

5. THE EPA'S RESPONSIBILITIES UNDER THE ENDANGERED SPECIES ACT:

> As it was finally passed, the Endangered Species Act of 1973 represented the most comprehensive legislation for the preservation of endangered species ever enacted by any nation…The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost.…[T]he legislative history undergirding [ESA] § 7 reveals an explicit congressional decision to require agencies to afford first priority to the declared national policy of saving endangered species…[The ESA] reveals a conscious decision by Congress to give endangered species priority over the 'primary missions' of federal agencies.

(Emphasis added. *Tennessee Valley Authority v. Hill,* 437 U.S. 153 (1978).)

A. DUTY TO CONSERVE:

In keeping with the legislative intent behind the ESA, §7(a)(1) requires that all Federal agencies shall "utilize their authorities in furtherance of the purposes of [the Act] by carrying out programs for the conservation of endangered species and threatened species." 16 U.S.C. § 1536(a)(1). These requirements are the substantive embodiment of the Act's declaration: "It is…the policy of Congress that all Federal…agencies shall seek to conserve [listed] species and shall utilize their authorities in furtherance of the purposes of this Act." *Id.* § 1531(c)(1).

ESA § 2(b) states, in part, that "The purposes of [the Act] are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species…" *Id.* § 1531(b). The term "conserve" is defined in ESA § 3(2), which states that "'conserve,' 'conserving,' and 'conservation' mean to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary."

Both the legislative history and the language of the Act itself show that ESA § 7(a)(1) is a substantive duty similar to those duties imposed by Sections 7(a)(2) and 9. Indeed, courts have interpreted this mandate as "a specific, rather than a generalized duty to conserve species," (*Sierra Club v. Glickman,* 156 F.3d 606, 618 (5th Cir.1998); *Defenders of Wildlife v. Secretary, U.S. Dept. of the Interior,* 354 F.Supp.2d 1156 (D.Or. 2005)) and have held that federal agencies "must utilize all [of their] authorities" (*Rio Grande Silvery Minnow v. Keys,* 2002 WL 32813602 (D.N.M. April 19, 2002)) to conserve threatened and endangered species. Courts have held that "the ESA mandates that [all federal agencies, including the EPA] place conservation above any of the agency's competing interests." *House v. USFS,* 974 F.Supp. 1022, 1027 (E.D. Ken. 1997) (holding that the USFS was bound by both the ESA and its own Forest Plan to place an endangered bat at the top of its priority list).

The duty to conserve as imposed by Section 7(a)(1) is distinct and separate from agencies duties to consult and avoid substantive jeopardy. *See Defenders of Wildlife v.United States EPA,* 420 F.3d 946 (9th Cir.2005) (concluding that sections 7(a)(1) and 7(a)(2) impose separate and distinct requirements to mandate and authorize all federal agencies to conserve endangered species and their ecosystems). Courts have held that the recovery duty under Section 7(a)(1) is broader than the "no jeopardy" duty of Section 7(a)(2), requiring more attention to the species than would be necessary to merely avoid extinction. *Carson-Truckee Water Conservancy District v. Watt,* 549 F.Supp. 704 (D.Nev.1982), *aff'd sub nom., Carson-Truckee Water Conservancy District v. Clark,* 741 F.2d 257 (9th Cir.1984), *cert. denied sub nominee, Nevada v. Hodel,* 470 U.S. 1083 (1985). "[The Secretary] must do far more than merely avoid the elimination of protected species. [He or she] must bring these species back from the brink so that they may be removed from the protected class, and [he or she] must use all methods necessary to do so." *Defenders of Wildlife v. Andrus,* 428 F.Supp. 167 (D.D.C.1977).

Like all federal agencies, the EPA is bound by ESA §7(a)(1). Granted, the EPA's primary mission is not wildlife protection. However, when registered toxicants are being used in a manner that is known to harm threatened and endangered species, the EPA is required to utilize its available resources to combat such harm. In short, it must work to conserve those listed species that are affected and potentially affected by these substances. This means that the EPA must cancel or suspend the registrations of M-44s and LPCs immediately.

B. DUTY TO CONSULT:

When a species has been listed as threatened or endangered under the ESA, federal agencies are required to assess their programs and activities and ensure they do not jeopardize survival and recovery of listed animals or plants under Section 7(a)(2):

> each federal agency shall, in consultation with and with the assistance of the [Interior] Secretary, insure that any action authorized, funded, or carried out by such agency … is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary . . . to be critical.

16 U.S.C. § 1536(a)(2).

The ESA establishes an interagency consultation process to assist federal agencies in complying with this duty under Section 7. Federal agencies must consult with the appropriate expert fish and wildlife agency (the Fish and Wildlife Service (FWS) for terrestrial species and non-oceanic fish species, and the National Marine Fisheries Service for marine species) to determine whether their actions will jeopardize the survival or adversely modify the critical habitat of listed species, and, if so, to identify ways to modify the action to avoid that result.

An agency must initiate consultation under Section 7 whenever it undertakes an action that "may affect" a listed species or critical habitat. Conversely, an agency may be relieved of the obligation to formally consult on its actions only where the action will have "no effect" on listed species or designated critical habitat.[3] Effects determinations are based on the direct, indirect, and cumulative effects of the action when added to the environmental baseline and other interrelated and interdependent actions.

Furthermore, agencies may have to reinitiate consultation if threatened or endangered species are killed. The FWS in its biological opinion wrote:

[3]The appropriate federal wildlife agency must issue a concurrence with the action agency's "no effect" determination for the consultation process to be concluded.

> Since it is so unlikely that take [death] resulting from pesticide use will ever be discovered [upon a threatened or endangered species], if even one dead specimen is discovered whose death is attributable to the legal use of pesticides, then the use of that pesticide must cease in all occupied habitat of the species and consultation on that chemical for that species must be reinitiated (FWS 1993).

In 1998, an adult male grizzly was found near Helmville, Montana. It had died after it had triggered an M-44 and yet the usage of M-44s continues unabated in Montana (Exhibit 1). As the FWS's biological opinion makes clear, the agencies involved (EPA, APHIS-WS, and the FWS) have a duty to reconsult under §7(a)(2) of the ESA.

The usage of sodium cyanide ejectors (M-44s) is almost ubiquitous in the United States. While Compound 1080 is more restricted, the illegal stockpiling of this chemical has resulted in unintended deaths from illegal poisonings. Because a grizzly bear has recently died from an M-44, it makes sense for the EPA and FWS to reinitiate a consultation if these devices are not banned. Since species listed under the ESA have been harmed (wolves, grizzly bears, and condors), the EPA must consult with FWS, or in the alterative prevent the future manufacture and distribution of these toxicants for the purposes of predator control.

C. DUTY TO PROTECT:

Section 9 of the ESA prohibits the "taking" of listed species. "Take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19). *See Babbitt v. Sweet Home Chapter of Communities for a Great Oregon,* 515 U.S. 687 (1995). Section 9's "take" prohibition apply to federal agencies.

5. THE PUBLIC HEALTH SECURITY & BIOTERRORISM PREPAREDNESS & RESPONSE ACT:

Hydrogen cyanide has been a chemical warfare agent since World War I (Raza and Jaiswal 1994). Even in low concentrations, one can experience a variety of symptoms including headache, nausea, vomiting, and even respiratory arrest (Raza and Jaiswal 1994). Compound 1080 is colorless, odorless, tasteless, and quite water soluble; some countries have categorized this toxin as a threat to water supplies in the event of chemical warfare (Osweiler 1984). As we established (supra), the EPA considers sodium cyanide and sodium fluoroacetate Category 1 toxins. Lethal doses are very small (see below). Because these toxicants pose potential biological warfare threats, the following accounts and audits should alert the EPA of the potential for imminent hazard:

In the USDA Performance and Accountability Report for FY 2002, the Office of Inspector General (OIG) found that "APHIS could not account for 60 pounds of strychnine-treated bait and over 2,000 capsules containing sodium cyanide." (USDA-

APHIS-WS2002). The following year, APHIS could account for these toxins, but failed to put in place an "adequate chemical inventory and tracking system." (OIG 2004). In her February 2002 statement before Congress, Joyce Fleishman, Acting Inspector General for the USDA reported, "We found that APHIS lacks adequate accountability and control over hazardous pesticides and drugs maintained by some of its State offices for use in wildlife damage control" (Fleischman 2002). In a 2004 OIG report, Assistant Inspector General Robert Young found that:

> [APHIS-] WS is unable to fully account for its inventories of hazardous pesticides and controlled drugs and that these inventories are not always stored in a safe and secure manner . . . . Therefore, hazardous material remain vulnerable to undetected theft and unauthorized use, and may pose a threat to human and animal safety" (U.S.D.A 2004).

Some of the hazards involved in these reports include sodium cyanide, but also presumably Compound 1080, although that is not specifically delineated because of security reasons. Nevertheless, Wildlife Services is still not in compliance with national safety standards. In 2005 and again in 2006, the USDA OIG released audits revealing that APHIS was not in compliance with the Bioterrorism Preparedness and Response Act. In the first audit (June 2005), the OIG found that APHIS had not secured "dangerous biological agents and toxins" (OIG 2006a). In the second, the OIG found that APHIS was not complying with regulations concerning the security of toxins, that it had not secured access from unauthorized persons, that individuals using toxicants did not have adequate training, and that inventories had not been maintained to prevent the illegal possession (theft), transfer or sale of these toxicants (OIG 2006b). The OIG selected 10 of 75 sites to visit, and none were in compliance (OIG 2006b). The matter received national media attention (Quaid 2005).

Because APHIS cannot adequately safeguard the storage of sodium cyanide, prevent unauthorized access to these toxicants, or even account for the transfer of these chemicals, the public is at risk of "imminent hazard" as contemplated by FIFRA. Ultimately, Congress gave authority to the EPA to ensure that these pesticides are used in the public's interest as required by FIFRA. As we discuss below, the costs and the benefits of lethal toxicants used for predator control is not worth the price.

7. M-44S, SPRING-LOADED-SODIUM-CYANIDE BAITS, FACTUAL BACKGROUND:

The U.S. Department of Health and Human Services released their July 2006 Toxicological Profile for Cyanide. It provides the human lethal and non-lethal dose rates along with the symptoms of toxicity. In its 291 pages, the document discusses many facets of sodium cyanide poisoning. The following section describes the process of death in humans from this toxin:

> The signs of cyanide toxicity at concentrations leading to death in humans

> are well described. Intoxication at ≥2,000 ppm hydrogen cyanide is characterized by a brief sensation of dryness and burning in the throat due to local irritation, a suffusing warmth, and a hunger for air. Hyperpnea, and sometimes a brief outcry, follows the first breath. In <1 minute, apnea, a few gasps, loss of consciousness, and convulsions occur. Cardiovascular failure may also occur, although the heart may continue to beat for 3–4 minutes after the last breath. Reported signs sometimes include a bitter almond-like odor on the breath and (in light-toned individuals) a rose-colored hue of the skin. The total absorbed dose of hydrogen cyanide in such rapid deaths can be as low as 0.7 mg/kg. Dyspnea has been observed in survivors of inhalation poisoning incidents, and renal dysfunction (anuria followed by polyuria) was observed in one fatal inhalation exposure case. Similar signs of respiratory distress and renal dysfunction (albuminuria) were reported following ingestion of high doses of cyanide salts. Within a few minutes after swallowing the toxicant, the victim collapses, frequently with a scream. Dyspnea, convulsions, and death from asphyxia follow. Dermal exposure to cyanide results in comparable effects, but at higher doses. Based on case report studies, the following acute median lethal exposure levels for humans were estimated: an LC50 of 524 ppm for a 10-minute inhalation exposure to hydrogen cyanide, an LD50 of 1.52 mg/kg for the oral route, and an LD50 of 100 mg/kg for the dermal route, assuming that CN– is readily released from the compound. Animal studies also report dyspnea, convulsions, and asphyxiation as effects of high-acute exposure to cyanide by any route of exposure.
>
> Nonlethal exposures to hydrogen cyanide gas produces upper respiratory irritation, cough, altered sense of smell, nasal congestion, epistaxis, hemoptysis, and dyspnea in exposed workers. Workers acutely exposed to cyanogen, which dissociates into hydrogen cyanide and hydrocyanic acid, experienced nasal irritation. Other effects observed at nonlethal exposure levels include hypotension, heart palpitations, precordial pains, nausea and vomiting resulting from central nervous system stimulation or direct contact with cyanide, and albinuria. Animal studies also report bradycardia, arrhythmia, and T-wave abnormalities, vomiting, increased blood urea nitrogen, and histopathology of the renal proximal tubular epithelium and glomeruli. Hepatic effects have not been reported in humans, but have been observed in some animal studies.

(Health and Human Services, 2006).

While death from sodium cyanide toxicity is relatively quick, the description above clearly demonstrates the severe trauma to those who are exposed. Nevertheless, the federal government routinely poisons animals with this toxicant via M-44s.

These spring-loaded devices, complete with "olfactory attractants" (smelly bait), lure carnivores. When a carnivore tugs on the bait, the spring shoots a pellet of sodium cyanide into the mouth. When the cyanide pellet mixes with moisture, it turns into a deadly vapor. Sodium cyanide morphs into hydrogen cyanide gas, which is "readily absorbed into the lungs" (USDA-APHIS-ADC 1994). Death is rapid and far more humane than Compound 1080 (Goncharov et al. 2006, Hooke et al. 2006).

Placement of an M-44 into the ground.
Courtesy, Wildlife Damage

APHIS describes sodium cyanide as "acutely toxic to both avian and mammalian species, with LD_{50} levels generally below 10 mg/kg" (USDA-APHIS-ADC 1994). M-44s kill hundreds of non-target species (*i.e.*, bears, badgers, kit and swift foxes, bobcats, ringtail cats, javelinas, beavers, hawks, and pets) and thousands of target species (particularly coyotes and striped skunks) each year. In fiscal year 2004, Wildlife Services killed 11,980 animals with M-44s, including 117 dogs, 3 badgers, 5 bobcats, 10,630 coyotes, 277 gray foxes, 29 kit foxes, 387 red foxes, 19 swift foxes, 1 marmot, 96 opossums, and 7 ravens (USDA-APHIS-WS 2005a, and see Table 1). Because APHIS-WS generally works in remote rural areas, there is little oversight to determine if these numbers are accurate. We suspect underreporting commonly occurs, whether intentional or not.

After only two minutes, a victim of an M-44 device can die (Hooke et al. 2006). M-44s are highly dangerous for field personnel to place,[4] and potentially even more dangerous for the unsuspecting (humans) that might come in contact with them (Petel et al. 2004). FWS notes that bird deaths to M-44 poisoning are underreported because of birds' ability to leave the vicinity in a few seconds (FWS 1993).

The Environmental Protection Agency's M-44 use restrictions under FIFRA (EPA Registration No. 56228-15) make it illegal to use them "in areas where federally listed threatened or endangered animal species might be adversely affected." Despite such common sense federal laws and regulations, APHIS-WS has a track record of killing threatened or endangered species such as wolves and condors, as well as failing to adequately post notices—resulting in dead pets, and the agency may have harmed people—either directly or indirectly. In its Biological Opinion of 1993, the FWS noted that Animal Damage Control (one of "Wildlife Services" previous names) killed several non-target species of concern with M-44s: grizzly bears, kit and swift foxes, and ringtails. The agency found that M-44s could potentially jeopardize the continued existence of Florida panthers, jaguarundi, ocelot, Louisiana black bear, California condor, and

[4] In Australia, sodium cyanide applicators must have a respirator on hand, special clothing, and an antidote kit (Petel et al. 2004), whereas WS personnel are simply warned not to travel with cyanide capsules in the glove box or in tool boxes and to carry an antidote kit (USDA-APHIS 2001).

Hawaiian and Mariana crows (FWS 1993). In August 1998, Montana, Fish, Wildlife and Parks documented that a grizzly bear died from an M-44 (Exhibit 1).

APHIS's Colorado (2005) environmental assessment states, "although the M-44 is selective for canids, APHIS-WS takes some nontargets [species that they did not intend to kill] other than canids on rare occasions" (USDA-APHIS-WS 2005a). But M-44s may be selecting for the wrong animals, as a study at the Hopland Research and Extension Center showed. Younger coyotes were more likely to be attracted to M-44s than were older animals—the ones most likely to be implicated in livestock losses (Sacks et al. 1999, Mitchell et al. 2004). As stated previously, APHIS-WS likely kills many animals that were never involved in livestock conflicts (Treves and Karanth 2003).

As a result of a lawsuit filed by the San Juan Audubon Society, Sinapu, and Wildlife Damage Review in federal court (DC) in April 2000, US District Judge Ricardo Urbina ordered that the APHIS-WS stop using double sets of M-44s near the riparian corridors along the Green, Colorado, and San Juan/Mancos Rivers because of the potential to harm California Condors (*Gymnogyps californianus),* an endangered species. Judge Urbina's decision was influenced by the fact that a condor was killed by an M-44 in 1983. The risk to condors still persists. The FWS writes, "this species could be adversely affected due to the applications of avicides and secondary poisoning is possible from carrion killed by rodenticides that have persistent effects" (FWS 1993).

Because sodium cyanide is a toxicant that could harm unintended species or humans, the EPA should determine that the manufacture, distribution, and use of this toxin are not appropriate. Furthermore, the agency charged with the use of the substance, APHIS-WS, has demonstrated that it cannot be accountable and should no longer be authorized for its use.

A. THE USDA-APHIS-WS'S M-44 USE RESTRICTIONS VIOLATIONS:

In 1994, the EPA promulgated twenty-six use restrictions governing the placement of M-44s under FIFRA. Nevertheless, APHIS has, on a number of occasions, violated FIFRA and the ESA. By their very nature, M-44s are indiscriminate. As a result pets and humans have been put into danger. In each of the instances that follow, the use restrictions for M-44s were violated by APHIS. Because so many incidents have occurred, APHIS-WS's mishandling of these toxicants is a common and widespread practice across space and time.[5]

- In 1994, in New Mexico the APHIS-Animal Damage Control (now APHIS-WS) illegally placed several M-44's in the Gila National Forest. The New Mexico Department of Agriculture fined Animal Damage Control $1,000 and suspended the license of the trapper and his supervisor.

[5]Petitioners intend to provide supplemental information on additional incidents upon receipt of Freedom of Information Act responses from both the EPA and FWS.

- In 1994, in Oregon, Amanda Wood Kingsley was exposed to sodium cyanide after her dog triggered an M-44 on her private property. Ms. Wood suffered secondary poisoning after she gave her dog mouth-to-mouth. APHIS-WS illegally placed the device there without her knowledge or permission. (See Ms. Wood Kingsley's letter attached, Exhibit 2.)

- On March 3, 1999, while irrigating his farm in Crawford, Colorado with his three-year old daughter and his dog, Paul Wright witnessed his dog's death after it had triggered an M-44 illegally placed on Mr. Wright's private property. A lawsuit was filed February 2000 in federal court and the matter settled in 2001. The USDA paid the Wrights $9,500. (See Affidavit of Paul Wright attached, Exhibit 3.)

- In May 1999, an elderly Virginia couple lost their dog, Rufus, to an M-44. For more information, contact the Virginia Department of Agriculture at 804.371.6558.

- In December 1999, two bird-dogs were killed by sodium cyanide during a bird-hunting trip in New Mexico on state lands.

- In January 2000, a dog died from M-44 poisoning in Estacada, Oregon. (See news article attached, Exhibit 4.)

- In May 2001, Maggie and Johnny Watson's dog in Gardner, Colorado was poisoned by an M-44. Other neighbors' dogs may have also been similarly poisoned.

- On February 4, 2002, Danielle Clair's dog died by an M-44 allegedly set by APHIS-WS in Philomath, Oregon. (See letter to Representative Peter DeFazio attached, Exhibit 5.)

- On February 21, 2006, hunter Samuel Pollock's dog triggered an M-44 near Bruff Reservoir, which is managed by the Bureau of Land Management. (Debbie Hummel, "Dog Dies from Device used to Kill Predators," Daily Herald, March 15, 2006.) Pollock never saw any posted notices.[6]

- In April 2006, Sharyn and Tony Aguiar's two-year-old German shepherd was killed at a rock quarry in Utah. According to news reports, the couple filed a tort claim lawsuit against APHIS.

[6] Personal communication. February 28, 2006. Samuel Pollock and Wendy Keefover-Ring of Sinapu.

B. M-44s Jeopardize Threatened and Endangered Species:

The label requirements for M-44s make it illegal to use these devices "in areas where federally listed threatened or endangered animal species might be adversely affected. Each applicator shall be issued a map, prepared by or in consultation with the FWS, which clearly indicates such areas." 7 USC § 136j(a)(2)(G). Despite this requirement, APHIS has killed numerous special species with M-44s including California Condors, wolves, and at least one grizzly bear.

8. Compound 1080 (Sodium Monoflouroacetate) Factual Background:

In 1972, President Richard Nixon banned Compound 1080 (sodium flouroacetate), which was used to poison predators and prairie dogs and others. In 1985, under the Reagan/Watt Administration, the EPA was petitioned by the U.S. Department of the Interior and the livestock industry. As a result, EPA allowed this toxicant back in the limited form of LPCs (EPA 1995).

At present, Compound 1080 is registered for use only in the following 11 states: Idaho, Montana, New Mexico, Ohio (on a case-by-case basis), Pennsylvania, South Dakota, Texas, Utah, Virginia, West Virginia, and Wyoming. Of those states, Idaho, Utah, Virginia, West Virginia, Ohio, and Pennsylvania are operating under a state label (confidential personal communication, government official, 12/5/06). In 1998, California and Oregon banned Compound 1080.

Table 2
Toxicity of Compound 1080
(Source: USFWS 1993 Biological Opinion)

Species Affected	Lethal Dose for 50% of Test Population (LD_{50})
13 bird species (5 taxas) (unnamed)	5.5 mg/kg body mass
Black-billed magpie (carrion feeding extreme)	1.6mg/kg body mass
Turkey vulture (carrion feeding extreme)	20 mg/kg body mass
Golden eagle	3.5 mg/kg body mass
11 carnivore & 4 herbivore species (unnamed)	0.5 mg/kg body mass
Domestic dog	0.07 mg/kg body mass
Opossum	60 mg/kg body mass
Sheep, Cattle, Mule deer	< 1 mg/kg body mass

Compound 1080 is poisonous in small amounts [see Table 2.]. In humans, 2 to 10 mg/kg constitutes a lethal dose (Goncharov et al. 2006). In other words, between182 milligrams to 910 milligrams could kill a 200-pound person. The latency period for Compound 1080

to take affect is hours; in one study on animals, between 5.3 to 14.6 hours (Hooke et al. 2006). Connolly (1998) described a shorter period, one-half to two hours. Death to humans takes three to five hours (Goncharov et al. 2006).

Death by Compound 1080 is slow and unpleasant. Symptoms include convulsions, heart blockage, respiratory failure, hallucination, pain, and deep depression (Eason 2002, Goncharov et al. 2006). In January 2004, the FWS found a wolf who had been illegally poisoned by Compound 1080. According to a federal agent, the wolf, which was found near a rock slide, exhibited abrasions on its paws from convulsions, its teeth were clenched, and the body rigid ("Wolf Report" with FWS press release attached, Exhibit 6.)

Although it has been studied for decades, "no effective therapy has been elaborated," but ethanol has been the "most acceptable therapeutic agent for the past 60 years" (Goncharov et al. 2006). Alcohol must be administered immediately to be effective because it is a competitive inhibitor (Goncharov et al. 2006).

A. EFFICACY OF THE LIVESTOCK PROTECTION COLLARS & DISPOSAL HAZARDS:

LPCs strap a solution of Compound 1080, which is contained in two rubber bladder reservoirs, onto the necks of sheep or goats (USDA-APHIS-ADC 1994, Connolly 1998). The collars do not protect the individual that wears the collar, but the proponents' aim is to "target" the predator that kills sheep or goats. While targeting an individual animal is laudable, LPCs have inherent problems such as spills or tendencies for collars to disappear. Fundamental accountability and disposal problems associated with LPCs are inherent.

APHIS-WS wrote, "when the [livestock protection] collar is punctured, all contents are evacuated. Some of the compound enters the coyote's mouth, some falls around the mouth, some seeps into wool or hair near the collared sheep or goat, and some eventually falls to the ground" (USDA-APHIS-ADC 1994). By their design, spills associated with LPCs can occur. All of the contents of the spill may not be found, particularly if the carcass of the sheep or lamb is dragged. While some soil micro-organisms can break down 1080, conditions such as extreme cold or drought might cause 1080 residue to persist in the soil for several weeks or months (Eason 2002).

Furthermore, livestock protection collars can be easily lost or punctured by vegetation or barbed wire. In one study, 107 collars were either inadvertently lost or punctured, while only 57 were pierced by coyotes (Watson 1990). Connolly (1998) suggests that coyotes can bury collars or drag them away from sheep carcasses and that about half of missing collars were not recovered in research studies. Apparently, LPCs routinely go missing which constitutes "imminent harm" to the environment. 7 U.S.C. §136(1). More alarming, the EPA and APHIS rely on individuals to properly dispose of Compound 1080 once a spill has occurred.

Livestock producers, who have been trained by licensed applicators, are expected to incinerate or bury everything that has come into contact with Compound 1080. Those

that bury the toxicant must do so under three feet of soil (Connolly 1998). The burial site is supposed to be one-half mile from human habitation and away from water sources; no more than 10 collars can be buried at one site and the sites must be ten feet apart from each other (Connolly 1998). Relying on livestock producers to properly dispose of Compound 1080, without any oversight by certified personnel, presents potential problems including the theft or improper disposal that could cause intentional or unintentional human poisonings to occur.

Connolly (1998) writes that while the certified applicator of Compound 1080 is ultimately responsible for the disposition of this toxicant, "a noncertified person who has received adequate instructions" from a certified applicator may be able to "store collars, check collars in the field, remove collars, repair or dispose of damaged collars" as required by the use restrictions (Connolly 1998). As the USDA's Office of Inspector General has found, not even the federal government itself can be relied upon to properly maintain control over these dangerous toxicants (OIG 2006a) (supra). Because carcasses and spills associated with Compound 1080 must be handled as hazardous waste (Mitchell et al. 2004), and because the EPA relies upon individuals who may or may not be properly trained to handle this toxicant or who purposely do not handle this the waste from this toxicant properly, environmental risks could and probably do occur. For these reasons, the EPA should prohibit the usage of this substance in the U.S. and also ban its manufacture. Contamination to soil, water, and species from improperly stored or disposed Compound 1080 poses foreseeable imminent hazards to the environment.

B. USAGE VIOLATIONS INVOLVING COMPOUND 1080:

In 1989, a newly-hired predator control agent to the Wyoming office of the Wyoming Department of Agriculture found that those officials had hoarded Compound 1080 despite the ban. They sold 1080 to private individuals who used it to poison wildlife, including bald and golden eagles (Robinson 2005). In 1991, the FWS and the EPA raided the offices of the Wyoming Department of Agriculture; the FWS subsequently engaged in a law enforcement action that led to several convictions (Ibid.). (FWS's investigative documents involving many defendants attached, Exhibits 7 and 8.) But that would not be the end of illegal poisonings.

In 2001, approximately 30 pets were poisoned by 1080 in Grand Junction, Colorado and the investigating police officer, David Palacios, who handled the poisoned animals experienced, "'flu like symptoms, only 10 times worse'" (Lofholm 4/12/01). The Grand Junction police and federal investigators were never able to apprehend the culprit who ultimately dumped the poison into the local sewer system (Lofholm 3/15/01, 4/12/01).

The EPA's ELLS Pesticide Report shows that in 1984, 3 magpies died from Compound 1080 and in 1989, 58 ravens were poisoned by the substance. We do not know if these poisonings were legal under the auspices of the EPA's use restrictions, but on its face, they may have constituted violations of both FIFRA and the Migratory Bird Treaty Act.

Because of the historic illegal usage of Compound 1080 and the potential threat this can pose to wildlife, to people, and to pets, the EPA should ban this toxicant's usage.

C. NON-TARGET SPECIES & JEOPARDY OF SPECIAL SPECIES:

Most of the current literature on Compound 1080 research comes from New Zealand and Australia where Compound 1080 is used in baits or in M-44 ejectors. As a result of this practice, researchers have found that numerous non-target species (including herbivores) can die from Compound 1080 (Lloyd and McQueen 2000, Eason 2002, Martin and Twigg 2002, Martin et al. 2002, Marks and Wilson 2005). The FWS found that Compound 1080 used in LPCs is a "direct exposure risk to grizzly bears and gray wolves" and thus made jeopardy determinations related to Compound 1080 for those species (FWS 1993). APHIS found that Compound 1080 may affect golden eagles, bald eagles, ocelot, San Joaquin kit fox, ocelot, and jaguarundi (USDA-APHIS-ADC 1994).

It is commonly known that birds, such as vultures, ravens, magpies, hawks, and even mammals can flee an area in seconds, but since Compound 1080 takes hours to act, their poisoned corpses may not be found readily. Sodium flouroacetate is, however, "highly toxic to birds and mammals" (U.S. Department of Interior 1993) [Table 2.] Furthermore, Compound 1080 can cause secondary poisoning to predators and even to herbivores (FWS 1993, Eason 2002). But while Compound 1080 can be eliminated through metabolization by animals that receive non-toxic doses, carrion poisoned with 1080 can be toxic for many months (Eason 2002). The EPA's RED for 1080 states that scavengers, including those that are threatened and endangered, could be affected by Compound 1080 if those animals consume the meat around the head or neck of dead livestock that wore LPCs (EPA 1995).

Despite the foregoing, APHIS claims that while non-target species have been known to scavenge from a sheep or goat carcass wearing the collar, "none were known to be poisoned by Compound 1080" (USDA-APHIS-ADC 1994). APHIS's argument stands in opposition to the one drawn by the EPA and other researchers. Thus, the veracity of their claims about the lack of hazards involved in using Compound 1080 must be thoroughly critiqued by the reviewers of this petition.

Because of the toxicity of Compound 1080 and potential for primary and secondary poisonings (including the possibility of poisoning species listed as threatened or endangered under the ESA, such as lynx, wolves, grizzlies, and condors), and the likelihood that LPCs will be inadvertently punctured or lost, and that 1080 could be used as a weapon of terror, APHIS-WS should stop manufacturing and using this dangerous toxin.

9. EPA'S DUTY TO CONSIDER THE AGRICULTURAL ECONOMY:

As part of its duty in administrative reviews of pesticides pursuant to 7 USC §136d(b), the EPA's Administrator shall factor in the "production and prices of agricultural

commodities, retail food prices, and otherwise on the agricultural economy." Our analysis demonstrates that there are compelling economic reasons to prohibit M-44s and Compound 1080:

First, predators kill only a fraction of the nation's livestock – many more livestock die unintentionally from weather problems (i.e. drought or lightning), from a laundry list of health problems (i.e. birthing complications or disease), or from rustling [Figures 1 and 3, attached]. Mammalian carnivores killed 0.18% of the total U.S. cattle production in 2005 and 3% of the sheep production in 2004. In comparison nearly 4% of cattle and 5% of sheep died from non-predator causes [Figures 1 and 3].

Second, the taxpayer is forced to lay out hundreds of millions of dollars each year through federal, state, and local taxes to pay for lethal predator control programs. In fiscal year 2004, APHIS killed 2.7 million animals, including over 100,000 mammalian carnivores. [See Table 1, appended herewith]. Wildlife Services spent in excess of 100 million dollars in fiscal year 2004. APHIS-WS spends little resources on developing or using non-lethal means to "control" wildlife. More importantly, APHIS-WS kills few carnivores using M-44s (12%) and Compound 1080 (0.4%), but risks the health of the public and of species (including those that enjoy protections under the ESA).

Third, under FIFRA the standard use of care is defined as "when used in accordance with widespread and commonly recognized practice" (7 USC 136A(c)(5)(5). As demonstrated throughout this petition, APHIS-WS often violates FIFRA's label requirements. Further, according to the Office of Inspector General, APHIS has also violated the Public Health Security & Bioterrorism Preparedness & Response Act on two occasions. Therefore, pursuant to these statutes, APHIS's standard use of care amounts to a widespread and commonly recognized practice and must therefore be considered in the cost/benefit analysis undertaken by the Administrator.

Fourth, the biological costs of removing predators are at least two fold. Without carnivores in their habitats, ecosystems can fail to function (Smith et al. 2003, Ripple and Beschta 2006), and the numbers of species in those ecosystems decline (Crooks and Soule 1999, Henke and Bryant 1999, Smith et al. 2003, Ripple and Beschta 2006). Without predators, we lose free "ecosystem services" such as clean air and water.

Fifth, people have complex perceptions and values about wildlife (Kellert and Smith 2000, Teel et al. 2002).[7] According to the USDI, those values translate into hundreds of billions of dollars annually through the spending of wildlife watchers, anglers, and hunters. On the other hand, the sheep industry benefits only a handful of people. The Colorado Wool Growers Association has 170 members (Talley 2004) in a state of over four million people. The U.S. sheep industry has been in dramatic decline over the past 20 years and fluctuations in the sheep industry are tied to labor and hay prices, but not

[7] Americans maintain complex ideas about wildlife, their values are broken into categories: the scientific, naturalistic, aesthetic, humanistic, moralistic, or symbolic (Kellert and Smith 2000). The leading values toward wildlife are positive: moralistic and humanistic (affection) (Kellert 1996).

predation on livestock by coyotes and other carnivores (Berger 2006). The table "Sheep and Lamb Inventory" shows that the number of sheep and lambs in Colorado have decreased to 360,000 for 2004, compared with 690,000 in 1984 and from a high of 840,000 in 1990—a nearly 60% decrease (USDA-NASS and Colorado Depart. Agric. 2004) [Exhibit 9]. Even APHIS-WS admits, "the sheep and wool market had declined making it *uneconomical to raise sheep*" (APHIS-WS June 2005 CO PDM EA at 11, emphasis added).

Finally, native carnivores such as coyotes, wolves, bears, badgers, and lynx have the inherent right to exist. We humans have come to understand that the planet is a much poorer place without these species. As a result of this sentiment and the requirements of laws such as the ESA, reintroduction efforts have occurred such as the FWS's efforts to restore wolves back into the Northern Rockies and the Colorado Division of Wildlife's efforts to return lynx back into the Southern Rockies.

A. LIVESTOCK LOSSES AND PREDATORS:

I. CATTLE:

Every year the U.S. Department of Agriculture's National Agricultural Statistics Service (NASS) reports on the U.S. cattle production inventory. In 2005, U.S. producers raised 104.5 million head of cattle (NASS 2005a). Approximately every five years, NASS reports on unintentional cattle deaths as a result of predation, weather issues, disease etc. The latest cattle death report was released in May 2006 (NASS 2006). The government's own figures again show that mammalian carnivores kill very few livestock (0.18%) when compared with annual production levels.

Of the 104.5 million cattle that were produced in 2005, 190,000 (or 0.18%) died as the result of predation from coyotes, domestic dogs, and other carnivores (NASS 2006). In comparison, livestock producers lost 3.9 million head of cattle (3.69%) to all sorts of maladies, weather, or theft (NASS 2006) [Figure 1, attached].

Coyotes were the primary cattle predators—they killed 97,000 cattle in 2005, followed by domestic dogs—which killed 21,900 cattle. Wolves killed remarkably few cattle, 4,400 head, as did the felids (NASS 2006) [Figure 2, attached].

II. SHEEP:

In 2004, sheep producers raised 7,650,000 animals nationwide (NASS 2005b). Of that figure, native carnivores and domestic dogs killed 3% of the total production, or 224,200 sheep (NASS 2005c). In comparison, 5% of sheep died from illness, dehydration, falling on their backs or other causes (NASS 2005c) [Figure 3, attached].

Coyotes and domestic dogs were the main carnivores involved in sheep predation in 2004 (NASS 2005c) [Figure 4, attached].

Despite decades of predator control, which has resulted in more than 5 *million* deaths of predators in the last six decades, lethal predator controls do not benefit sheep growers (Berger 2006). Market forces (primarily the price of hay, wages, and lambs) play a far greater role in the decline of the sheep industry than do predators (Berger 2006). On the other hand, large-scale predator eradications are biologically expensive and inherently non-selective (Mitchell et al. 2004). In fact, one study found no correlation between the number of coyotes killed and the number of lambs lost (Knowlton et al. 1999, Mitchell et al. 2004). Socially and biologically expensive, lethal predator controls do little to benefit the sheep industry.

Sheep and lambs are frequently left unguarded on open range. USDA biologists Frederick Knowlton et al., write, "sheep have been selectively bred for thousands of years to produce animals that are tractable and suited to particular husbandry techniques" (Knowlton et al., 1999). Simply put, domestic sheep have few predator-avoidance strategies; therefore humans must take steps to protect them. Even wild sheep and goats use cliffs or steep terrain to avoid predators. How can domestic sheep expect to fare on open, relatively flat range?

There is no purpose or need to engage in broadscale wildlife-killing activities because few livestock are killed by predators, according to NASS's own data—0.18% of cattle and 3% of sheep nationwide. Berger (2006) reveals, using decades of evidence, that the sheep industry does not fare any better if predator control efforts are undertaken because the primary costs to ranchers involve hay and labor. The cost of removing native carnivores from ecosystems is enormous, however, in terms of biological diversity and functionality (Miller and Foreman 2003, Smith et al. 2003, Stolzenburg 2006).

B. THE ECONOMICS OF CARNIVORES IN THEIR ECOSYSTEMS:

Economic analyses can be more than a financial ratio model. The Administrator's analyses must consider trade-offs and long-term benefits and socio-cultural effects. Importantly, the definition of "cost-benefit" and "socio-economic" analyses are entirely different. The former refers to the value of the ratio of costs to benefits, while the latter refers to the effects to society—for example, what benefit does society derive when the federal government kills predators in a specific region? What benefits do healthy complex forests/grasslands/sagebrush provide to humans in terms of *ecosystem services* such as pure air, clean water, intact soils, and healthy plant communities that could potentially be used for medicinal purposes? How will killing predators alter plant communities that may later affect species of special concern? There is a myriad of intangible benefits from having small, medium, and large predators, and other species living in complex ecosystems.

In 2004, APHIS-WS killed 101,225 mammalian carnivores, 11,872 with M-44s. The total killed by M-44s represents 12% of the total number of mammalian carnivores killed. APHIS-WS also killed 108 non-mammalian carnivores (96 opossums, 1 marmots, 7

ravens, and 4 feral hogs) with M-44s. The total of all animals killed by sodium cyanide in 2004 equals 11,980.

On the other hand, APHIS-WS killed 45 animals (all coyotes) with Compound 1080, or 0.04% of the total number of mammalian carnivores killed. No other animals were killed with Compound 1080.

Therefore, because APHIS-WS kills only 12% of mammalian carnivores with sodium cyanide, and only 0.04% with Compound 1080, these toxicants are not necessary or even vital to their operations. Yet, the risk of stockpiling and using these toxicants pose an enormous risk to the public. The accidental poisoning of threatened or endangered species is also unacceptable because it could jeopardize populations. So when the Administrator balances out the risk to wildlife, people, and to pets, the Administrator must conclude the risk is too great and that the risk constitutes imminent harm.

C. THE ECONOMICS OF WILDLIFE WATCHERS, HUNTERS, AND ANGLERS:

The U.S. Department of Interior, Fish and Wildlife Service et al. reported that in the U.S. in 2001, 13 million people hunted, 34.1 million fished, but 66.1 million people were "wildlife watchers" (FWS and Census Bureau 2001). In their Colorado-specific report (FWS and Census Bureau 2003), agencies found that 1.55 million people were wildlife watchers who spent $624 million; hunters and anglers also participated greatly in Colorado's economy [Table 3.].

Table 3
U.S. Dept. Interior (2003). 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, Colorado.
Activities in Colorado by U.S. Residents.

	Anglers	Hunters	Wildlife Watchers
Participants	915,000	281,000	1,552,000
Total Expenditures	$645,891,000	$382,599,000	$624,402,000

According to a July 22, 2003 press release from the Colorado Division of Wildlife, "wildlife watching is a viable component of Colorado recreation, generating millions of dollars annually for the state's economy" (Colorado Division of Wildlife July 22, 2003).

Despite this complexity, utilitarian views trump other American values when it comes to wildlife management. While wildlife watchers and anglers each spent over $600 million, and hunters spent nearly $400 million on their interests (for a total of nearly $1.7 billion), Wildlife Services spent $101,460,740 killing wildlife—a contradiction of values.

As an economic exercise, compare hunting, angling, or wildlife watching to raising sheep or cattle. Ranching is a drop in the bucket compared to funds spent on wildlife watching in Colorado. And Colorado cannot begin to compare its wildlife watching with that of Wyoming or Montana which benefit from having a suite of native carnivores (wolves and

bears) in Yellowstone National Park. The Yellowstone area economy generates approximately $35 million dollars per year from wolf watchers <http://www.forwolves.org/ralph/wolf-economic-impact.htm>.

The socio-economic considerations for banning Compound 1080 and M-44s include:

- Analysis of economic importance of wilderness areas to recreationists, including hikers, hunters, anglers, and wildlife watchers.

- Analysis of economic sectors showing the relative importance of agriculture to other sectors of the economy. In comparison, how much does wildlife watching contribute to the economy?

- Analysis of the economic advantage derived by the agriculture sector by predator damage management—compared to other unintended livestock losses stemming from disease, illness, birthing problems or stochastic weather events etc.

- Analysis of the economic advantage derived by the agriculture sector by predator damage management when compared to other costs involved with the livestock industry such as labor or feed (hay).

- Analysis of the cost effectiveness of predator damage management programs to include a listing of the costs of apparently expensive methods such as poisoning verses the benefits derived from their use.

- Analysis of the opportunity costs that include effects to ecosystems by elimination of predators, including disruption of the predator/prey balance.

- Analysis of the cumulative effects to society, such as a decline in ecosystem services (*i.e.*, clean water, soil fertility) from the continuation of this program.

- APHIS-WS frequently violates FIFRA's label requirements and has violated the Bioterrorism Act, therefore, their standard use of care amounts to a widespread and commonly recognized practice and must therefore be considered in this cost/benefit analysis.

- Cost-benefit analysis for wildlife damage management in terms of society's willingness to pay for such control.

- Public surveys assessing the public's willingness to pay and/or willingness to accept lethal toxicant controls need to be conducted in order to determine quantifiable benefits and quantifiable costs of wildlife damage programs.

The EPA Administrator shall factor in the agricultural economy as part of his duty when reviewing pesticides under FIFRA. 7 U.S.C. §136d(b). Given that: 1) respiratory, birthing, and digestive problems, weather, and theft pose significantly greater problems

for livestock growers than does predation by carnivores, and 2) APHIS-WS kills on order of 100,000 mammalian carnivores each year. But in FY04, only 12% of predators were killed by M-44s and only 0.04% were killed by Compound 1080, the economics for allowing these lethal toxicants to exist is unjustifiable when weighed against the imminent harm these toxicants pose to the environment.

D. THE SOCIO- AND BIOLOGICAL ECONOMICS OF NON-LETHAL ALTERNATIVES:

Non-lethal methods of control can be very effective in reducing livestock losses. Unfortunately, livestock producers are not required to use these methods and few economic incentives favor non-lethal controls because producers enjoy highly-subsidized-lethal-predator controls.

But by failing to consistently help livestock growers with non-lethal wildlife control methods, APHIS-WS perpetuates the need to continue its lethal program and its unsafe usage of toxicants. To make our point, county commissioners in Marin County, California recently stopped their appropriations to APHIS-Wildlife Services. Instead, they invested $40,000 per year in non-lethal alternatives such as fences, bells, and guard animals for ranchers. After five years of this experimental program, County Commissioner Stacy Carlsen told a newspaper that ranchers experienced about a 2.2% loss of sheep compared with a 5% loss when Wildlife Services offered lethal controls (Brenner 2005). As the Marin County example shows, the idea of investment in long-term non-lethal controls can be more effective, more safe, and less controversial than the lethal approach. The Marin County experiment holds promise for a larger broad scale switch to non-lethal controls.

While coyotes have proven resilient in the face of persecution in the long term, their losses not only change their own population demographics but change the biological diversity in ecosystems. (These concepts are elaborated on in the coyote section below).

A variety of non-lethal techniques exist to protect livestock (Andelt 1996). Sheep, because of their docile nature, require special protections. Human herders and several types of guard animals (llamas, some breeds of dogs, and burros) can be used. Sheep and goats can be bonded with cattle because they more aggressively defend themselves than the sheep. Also concentrating sheep into small areas reduces livestock losses (Sacks and Neale, 2002). During lambing and calving season, researchers have advised ranchers to bring their livestock into barns, pens or sheds. Research on synchronizing the birthing season with that of wild prey species has also proven effective. Scaring devices, like strobe lights, firecrackers, and noisemakers or flandry (flags tied to ropes), offer yet other alternatives. Finally, ranchers should be advised to quickly remove all livestock carcasses to prevent scavengers from habituating to the taste of livestock. The use of two or more methods together has been proven to be the most effective.

Moreover, while not all coyotes kill sheep, APHIS-WS and others use the "sledge hammer" approach -- that is, killing a large number of predators so that the "offending animal" will be among the casualties; however, intensive lethal controls can affect coyote demographics (Mitchell et al. 2004). For coyotes, traps, snares, and poison baits often attract younger coyotes, and not the older or alpha animals that are usually implicated in livestock depredations (Mitchell et al. 2004).

10. SOME SPECIES AFFECTED BY SODIUM CYANIDE AND/OR COMPOUND 1080:

A. Lynx (*Lynx canadensis*):

Lynx could potentially trigger an M-44 because their close relative bobcats (*Lynx rufus*) are killed by M-44s on occasion. In FY04, APHIS-WS killed 5 bobcats with M-44s. Moreover, FWS considers M-44s a hazard to other cats such as Florida panthers, ocelots, and jaguarundis (FWS 1993). Cats are known to scavenge (Bauer et al. 2005) and thus the scented bait on an M-44 could lure this tufted-ear cat. Historically, lynx were easily trapped and poisoned (Schenk 2001, Schenk and Kahn 2002). Restored to Colorado in 1999, lynx are a threatened species under the ESA. Over 200 lynx have been released into Colorado since 1999, over 100 kittens have been born in that time, and the animals are dispersing into several states, especially Wyoming, Utah, and New Mexico.

Despite these advances in lynx' recovery, the August 23, 2005 biological opinion from the FWS fails to limit traps, snares, and M-44s in occupied lynx habitat in Colorado. Although mitigation measures for traps and snares are discussed, no effective mitigation can be made for M-44s, which are inherently indiscriminate. Worse, once lynx cross the New Mexico border, they are afforded no federal protections at all. Because it would be imprudent for the EPA to continue to allow the usage of M-44s in areas where lynx might live or where they may emigrate, the EPA and FWS should reinitiate consultation under §7(a)(2) of the ESA, and the EPA should ban these toxicants.

B. Wolves (*Canis lupis*):

Gray wolves are presently listed as endangered under the Endangered Species Act throughout all of their historic range in the Lower 48 States (except in those areas defined as "experimental/non-essential"), and a recent federal court ruling has found that recovery efforts for wolves have yet to effect recovery of the species across all or a significant portion of its former range, which includes Colorado. *Defenders of Wildlife v. Secretary, U.S. Department of the Interior*, 354 F. Supp. 2d 1156 (D. Or. 2005).

Lethal predator control activities, including the indiscriminate usage of M-44s within or adjacent to occupied wolf territory pose a significant threat to wolves' recovery—and to the ability of these nascent wolf populations to disperse into and occupy suitable wolf habitat outside of the reintroduction area.

In the past decade, numerous predator control activities by APHIS-WS have resulted in the incidental take of wolves. A sampling of some of these incidental take events

demonstrates that APHIS-WS predator control activities may adversely affect wolf recovery (including dispersal into other suitable habitat):

- January 1995, Priest River, Idaho – M44 sodium cyanide cartridge (lethal).
- May 1997, Alder, Montana -- M44 sodium cyanide cartridge (lethal).
- April 1998, Alder, Montana -- M44 sodium cyanide cartridge (lethal).
- December 1998, Powell, Wyoming -- M44 sodium cyanide cartridge (lethal).
- In Spring 2001, a wolf dispersing possibly from Minnesota or Canada was killed in South Dakota by an M-44. A year later forensic tests verified that it was a wolf (Brokaw 2002).

Moreover, wolves are dispersing from Yellowstone National Park and could potentially die from M-44s or Compound 1080 outside of the Yellowstone area. We know wolves are dispersing because of recent sightings and mortalities:

- one was killed on Interstate 70 near Idaho Springs, Colorado in 2004;
- the Colorado Division of Wildlife filmed a black wolf in North Park near the Colorado-Wyoming border in February 2006; and
- in August 2006, a wolf allegedly died while in a trap in Utah.
- In January 2004, a wolf was poisoned with Compound 1080 near Clayton, Idaho (Exhibit 6).

Because wolves are moving from the Northern Rockies into other habitats, and because sufficient mitigation measures by the FWS, APHIS-WS, and other federal agencies have not been undertaken, the EPA must step in and abolish M-44s and Compound 1080 because they can indiscriminately kill wolves, or in the alternative, reinitiate consultation pursuant to §7 of the ESA.

C. Swift Fox (*Vulpes velox*):

Prior to settlement by Europeans, swift foxes were abundant across short-and mixed-grass prairies of North America (Schauster et al. 2002b, Kamler et al. 2003, Finley et al. 2005). During the 19th century, however, tens of thousands of swift fox pelts were bartered at trading posts (Schauster et al. 2002a). Later, widespread cultivation of the Great Plains and predator-killing activities (involving broadcast toxicants—such as Compound 1080, sodium cyanide, and strychnine—shooting, trapping, and predation by domestic dogs), forced swift foxes into dramatic decline (Schauster et al. 2002a, Schauster et al. 2002b). They were largely extirpated (Fitzgerald et al. 1994).

In the 1950s, swift fox populations reportedly began to recover after poisoning campaigns lessened; researchers speculate they benefited the most after Compound 1080 was banned in 1972 (Schauster et al. 2002a).

In February 1992, the Biodiversity Legal Foundation and wildlife biologist Jon Sharps petitioned for the swift fox to be listed as endangered under the Endangered Species Act. In response to the listing petition, ten states—where swift fox ranged or had formerly

ranged—formed the Swift Fox Conservation Team (SFCT) (Stuart and Wilson 2006). In 1995, the FWS determined that their listing was "warranted, but precluded" because of other FWS priorities. In 1997, the SFCT wrote an assessment and drafted a conservation plan. As a result, in 2001, the FWS removed swift fox as a candidate for listing under the Endangered Species Act.[8]

Currently, the core area for swift fox populations are found in Colorado, Kansas, and Wyoming—although they are patchily distributed in the core area, and across their former range, their status remains a concern (Schauster et al. 2002a).

Despite removal from the ESA candidate list, swift foxes continue to be imperiled and their populations should be enhanced and recovered. Swift foxes should not be squandered because of indiscriminate predator controls, especially M-44s which are placed throughout the Mid-West and the West. In FY04, APHIS-WS killed 21 swift foxes, 19 with M-44s.

D. Kit Fox (*Vulpes macrotis*):

Kit foxes are slightly smaller than swift foxes. They range in western Colorado to California in habitats characterized by desert shrub, saxicoline brush, juniper-sagebrush, and rimrock habitats (Fitzgerald 1994). Like swift foxes, they dig their own dens and rely on lagomorphs, rodents, and birds in their diet (Fitzgerald 1994). Kit fox populations are in decline throughout their range because of historic predator and rodent control (Meaney et al. 2006). Currently their populations continue to decline across their range because of fragmentation of habitat, oil and gas development, ORV usage, and domestic livestock grazing (Meaney et al. 2006). There are less than 100 individuals in Colorado and they could be nearly extirpated. They are in decline in California, Oregon, Idaho, Utah, and Nevada (Meaney et al. 2006). They are still harvested in Arizona, New Mexico, and Texas although there are no population data (Meaney et al. 2006). They enjoy no federal protections (Meaney et al. 2006), although they should. In 2004, APHIS-WS killed 40 kit foxes—3 by leghold traps, 8 by neck snares, and 29 by M-44s.

E. Grizzly Bears (*Ursus arctos horribilis*):

Grizzly bears have large home ranges that include shrub cover, forested land and open areas. Home ranges are, on average, between 73 and 414 sq. km but can be as large as

[8] There is a scientific nuance here that merits elaboration. FWS characterized the fox as abundant and widespread on the basis of county data collected from 1995 –2000 [66 Fed. Reg. 1298]. The conclusion from their analysis of available data was that the foxes occupied 38 – 41% of their historic range. This suggests an error in FWS's logic, as the standard for listing species under the ESA since 1973 has included protection for species imperiled in a significant portion of their range. Surely 59 – 62% of the swift fox's range, which FWS characterizes as unoccupied, is a significant portion, especially given FWS's characterization in the Candidate Form that "swift fox populations appear to have been extirpated in North Dakota, are declining in South Dakota, and are present in low numbers in only a few counties in western Nebraska" [Id. at 4.]

2,600 sq. km. Bears primarily rely on vegetation for sustenance and are important seed dispersers in ecosystems. Bears also eat meat either through scavenging or hunting.

Each grizzly bear population in the Lower 48 is listed as threatened under the ESA, and distribution is primarily limited to recovery zones. One recovery zone—Selway-Bitterroot—has no bears at all. Despite the fact that their habitat is steadily shrinking because of anthropogenic threats, grizzly bears are an umbrella species; that is, as the bears disappear because of lack of habitat, other species will likely decline as well.

Grizzly bears' large spatial requirements increase the likelihood that a bear may happen upon an M-44. Grizzly bears are vulnerable to M-44s, and in even greater threat since the FWS issued its 1993 biological opinion concerning toxicants and wildlife. Low distribution numbers, low reproductive rates, disappearing and increasingly fragmented habitat as well as high human-caused mortality have put grizzly bears on the brink of extinction in the U.S.

According to the Montana Fish, Wildlife and Parks, one adult male grizzly was poisoned by an M-44 in August 1998 near Helmville, Montana (Exhibit 1). The intentional or accidental poisoning, especially if it involves a breeding female, can threaten viability of the grizzly bear population. Given the cumulative effects of increasing habitat fragmentation and isolation, we cannot afford to put any more bears in jeopardy.

Historic indiscriminate predator control activities are the reason the grizzly bear struggles in the U.S. Today, human-caused mortality is the single largest contributor of bear deaths. Using M-44s is irresponsible and unnecessary, and endangers grizzly bear populations.

The mandates of both FIFRA and the ESA require that the EPA ban the use of sodium cyanide and Compound 1080 because they pose an imminent hazards and unwarranted take of this species. Also, the EPA should reinitiate consultation under §7 of the ESA with the FWS for grizzly bears.

F. Coyotes (*Canis latrans*):

Despite being the target of elimination campaigns since at least 1905, the highly adaptable coyote has expanded its range three-fold. In most places in the West, wolves no longer exploit coyote populations. However, after wolves were reintroduced into Yellowstone National Park in 1995, coyote densities have declined by 50 percent in some areas and even up to 90 percent in wolf packs' core areas (Crabtree and Sheldon 1999, Smith et al. 2003). Perhaps because coyotes have evolved with such exploitation pressures, they have adapted to relentless human persecution with higher reproduction rates and other means for survival.

Despite their persecution, coyotes play a keystone role in the ecosystems they inhabit—preventing mesopredators (house cats, skunks, raccoons) from killing ground-nesting birds, to creating species richness and diversity, to protecting kit foxes from red

foxes (Cypher and Spencer 1998, Crooks and Soule 1999, Henke and Bryant 1999, Gompper 2002). Coyote eradication programs are also fiscally costly (Berger 2006).

When humans exploit coyote populations, these canids adapt by utilizing various breeding strategies such as producing more pups or increasing the number of females that breed in a population; thus, underscoring the need for APHIS-WS to use nonlethal controls and human-education techniques wherever possible. Moreover, the destruction of coyote territories through killing programs may make endangered species and other sensitive species more vulnerable to disease or to other predators (Sovada et al. 1995, Cypher and Spencer 1998, Kitchen et al. 1999).

The biological mechanisms for unanticipated consequences from coyote control are several:

- Where coyotes have been controlled, ingress of coyotes from outside the control area will replace killed coyotes and the ratio of males to females will increase (Knowlton 1972) After control actions, there may be an initial decrease in coyote population density, but the density may then promptly increase by the ingress of solitary coyotes or infusion from neighboring coyote packs (Crabtree and Sheldon 1999).

- Coyote control may result in the reproductive release of reproductively suppressed females, as follows: in unexploited coyote populations, coyotes have tight social networks in which only the alpha (dominant) pair of coyotes breed (Crabtree and Sheldon 1999). Subordinate individuals in the pack do not breed, likely due to the type of behavioral-physiological suppression found in many other mammals showing such reproductive skew (Wasser and Barash 1983). With exploitation, this reproductive repression disintegrates, and more coyotes within a social group will consequently breed (Crabtree and Sheldon 1999).

- Knowlton et al. (1999) found that unexploited populations of coyotes tend to have older family structures characterized by lower reproductive rates than exploited populations. The latter group is likely to be characterized by younger adult members, and larger numbers of breeding members with increased litter sizes (Knowlton et al. 1999).

- Coyote control can result in a smaller group size, which increases the amount of food per coyote and decreased intra-specific competition. This increased ratio of food per coyote leads to higher litter survival rates, as the increase in the availability of food improves conditions of breeding females. Pups consequently enjoy increased birth weights and increased survival rates (Goodrich and Buskirk 1995).

- Other researchers found low yearling reproduction, low litter size, and high pup mortality on their study site, where they describe exploitation levels as light (Gese et al. 1989). An increased rate of pup survival increases the need for more food

for pups, which may alter coyote forage and predation patterns (Gese et al. 1989), thus building in more unpredictability for a coyote control model.

- Mitchell et al. (2004) write, "new studies are needed that will examine coyote behavior and the efficacy of depredation management while following strict experimental protocols under operational conditions. These studies must be well designed, with appropriate controls and randomization. This level of rigor is rare in coyote depredation research."

- The coyotes most likely killed by M-44s are younger animals, not the older one that are most likely involved in livestock incidents (Sacks et al. 1999). Selective removals of coyotes (not broadscale removals) can be more effective for sheep producers (Blejwas et al. 2002).

11. LEGAL STANDARDS:

A. CANCELLATION:

FIFRA authorizes EPA to cancel a pesticide's registration if, "when used in accordance with widespread and commonly recognized practices, [the pesticide] generally causes unreasonable adverse effects on the environment" (7 U.S.C. § 136d(b)). Those effects include "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide" (7 U.S.C. §136 (bb)). The "environment" as used in this context would include all wildlife species, regardless of their federal status.

Additionally, the ESA at §7(a)(1) mandates that federal agencies have a specific and broadly defined duty to conserve threatened and endangered species and to provide programs to ensure for these special species' conservation. The ESA at §7(a)(2) requires that the EPA consult with the FWS to ensure that species and their habitat is not jeopardized by actions. Section 9 of the ESA prohibits the "take" of species, that is, one cannot harass, harm, injure or kill a threatened or endangered species.

As discussed in detail (supra), the evidence shows that continued registration of sodium cyanide and sodium fluoroacetate results in serious adverse effects on public health and safety, harm to species that do not enjoy special federal protections, and the potential for jeopardy for species of special concern in violation of FIFRA and the ESA.

Furthermore, alternatives to lethal toxicants can alleviate adverse economic consequences. In a cancellation proceeding, the registrants bear the burden of proving that the FIFRA cost-benefit standard has been met, and registrants will not be able to meet that standard here (40 C.F.R. § 154.5). Thus, EPA should act expeditiously to issue a Notice of Intent to Cancel registration of CCA (40 C.F.R. § 154.34(a)), and should set about preparing a comprehensive evidentiary record for cancellation proceedings.

B. SUSPENSION

FIFRA authorizes the EPA to suspend a pesticide's registration when the pesticide presents an imminent hazard to public health and the environment (7 U.S.C. § 136d(c)(3)). An "imminent hazard" is "a situation which exists when the continued use of a pesticide during the time required for cancellation proceeding would be likely to result in unreasonable adverse effects on the environment" (7 U.S.C. § 136d*(l)*). On a daily basis, the continued registration of sodium cyanide and Compound 1080 creates an imminent hazard into the foreseeable future because these toxicants are highly indiscriminate. Because there is a substantial likelihood that significant harm can come to both the public's health and safety "or will involve unreasonable hazard to the survival of a species declared endangered or threatened" (7 U.S.C. § 136d*(l)*), these pesticides must be suspended.

Furthermore, based on the nature and extent of the information presented in this petition, the risks to the public of continued use of the toxicants sodium cyanide and Compound 1080 during the cancellation process far outweigh the benefits associated with its continued registration. Consequently, FIFRA mandates that the EPA issue a suspension order to protect the public.

12. CONCLUSION:

FIFRA authorizes EPA to act as a regulatory gatekeeper for pesticides. Under FIFRA, EPA has the power to protect the public by issuing a Notice of Intent to Cancel registration of sodium cyanide and sodium fluoroacetate. As the foregoing evidence demonstrates, the legal standards for suspension and subsequent cancellation are met because the continued registration of these toxicants causes unreasonable adverse effects on public health and the environment, and because empirical studies and the governments' own data show that lethal predator control programs do little to protect the livestock industry; yet, lethal predator controls cost hundreds of millions of dollars each year. As we have demonstrated herein, the benefits of producing, distributing, and using these toxicants far outweigh the benefits that livestock producers might enjoy while using them. At risk is the health and safety of the public, of pets, and of species – particularly species of special concern.

As we have discussed herein, economically viable non-lethal alternatives are available to livestock growers such as guard animals, protective housing (i.e. pens and sheds), immediately removing livestock carcasses to avoid habituation, and the usage of electronic devices (i.e. strobes and sirens). Good husbandry practices such as concentrating flocks in small areas, and having humans around during the lambing and calving season can greatly reduce the risk of predation. But more important, the risk of predation is inherently miniscule—less than one percent for cattle and approximately three percent for sheep. Berger (2006) compared Eastern and Western sheep operations and found, using 60 years of data, that livestock growers suffered primarily from hay prices, labor costs, the value of lambs—but not from predation by carnivores.

While predators are known to kill and eat wild prey, WS kills many native carnivores in misguided attempts to bolster wild prey populations. Studies show that predator-prey relationships are complicated by a myriad of factors such as habitat loss, lack of nutrition because of drought, too much snow, or competition with native livestock etc. Killing predators only benefits prey populations if those prey are below their carrying capacity. Not the stuff of intuition, but these facts have been revealed through empirical study.

In FY04, APHIS-WS killed over 100,000 mammalian carnivores using the "sledge hammer approach" – but killed only 12% of carnivores by sodium cyanide, and only 0.04% by Compound 1080. Therefore, this limited use shows that these toxicants are not necessary or even vital to their operations. Yet, the risk of stockpiling and using these toxicants pose an enormous risk to the public. The accidental poisoning of threatened or endangered species is also unacceptable because it could jeopardize populations. So when the Administrator balances out the risk to wildlife, people, and to pets, the Administrator must conclude the risk is too great.

In 1994 when the EPA decided to allow the usage of M-44s, it could not have known the amount of inadvertent deaths it would cause. Since that time, M-44s have killed numerous non-target species by the thousands. Some of the species were threatened and endangered, some were people's pets, and people too (Amanda Woods, and potentially Paul Wright, and his then three-year old daughter (supra)).

APHIS cannot account for its handling of the substance:

- They pose a very real bioterrorism threat—the USDA OIG found them lacking in basic accountability when it comes to handling, storage, and access by unauthorized persons;
- APHIS has poisoned many dogs and indirectly harmed at least three people (supra). Two dogs died in Utah in Spring 2006; and
- They jeopardize threatened and endangered species, and species of special concern (supra).
- The EPA should reconsult with the FWS because of the imminent harm posed by these toxicants which has violated the prohibition of take of threatened or endangered species under the ESA.

For the reasons we have raised in this petition, the EPA should immediately suspend and ultimately ban the usage of sodium cyanide and sodium fluoroacetate used for predator controls.

13. REQUEST FOR RELIEF

Sinapu et al. request that the EPA:

> (1) Determine that sodium cyanide and sodium fluoroacetate when used for lethal predator control causes unreasonable adverse effects on public health, the

environment, and to species' populations (including those that are threatened or endangered);

(2) Determine that sodium cyanide and sodium fluoroacetate present an imminent hazard to public health and the environment because the unreasonable adverse effects resulting from their continued use cannot be avoided within the time necessary for cancellation hearings;

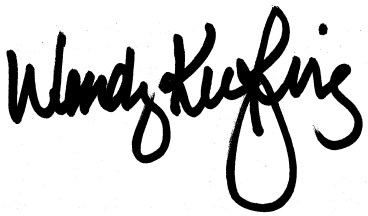
(3) Issue a Notice of Intent to Cancel the registration of all pesticide products used for predator control that contain sodium cyanide or sodium fluoroacetate;

(4) Immediately suspend the registrations of all pesticide products used for predator control that contain sodium cyanide and sodium fluoroacetate;

(5) Move as expeditiously as possible to complete the cancellation of all pesticide products used for predator control that contain sodium cyanide and sodium fluoroacetate;

(6) Pursuant to the ESA, reconsult with the FWS so that more threatened and endangered species are not harmed.

Respectfully submitted January 24, 2007, by



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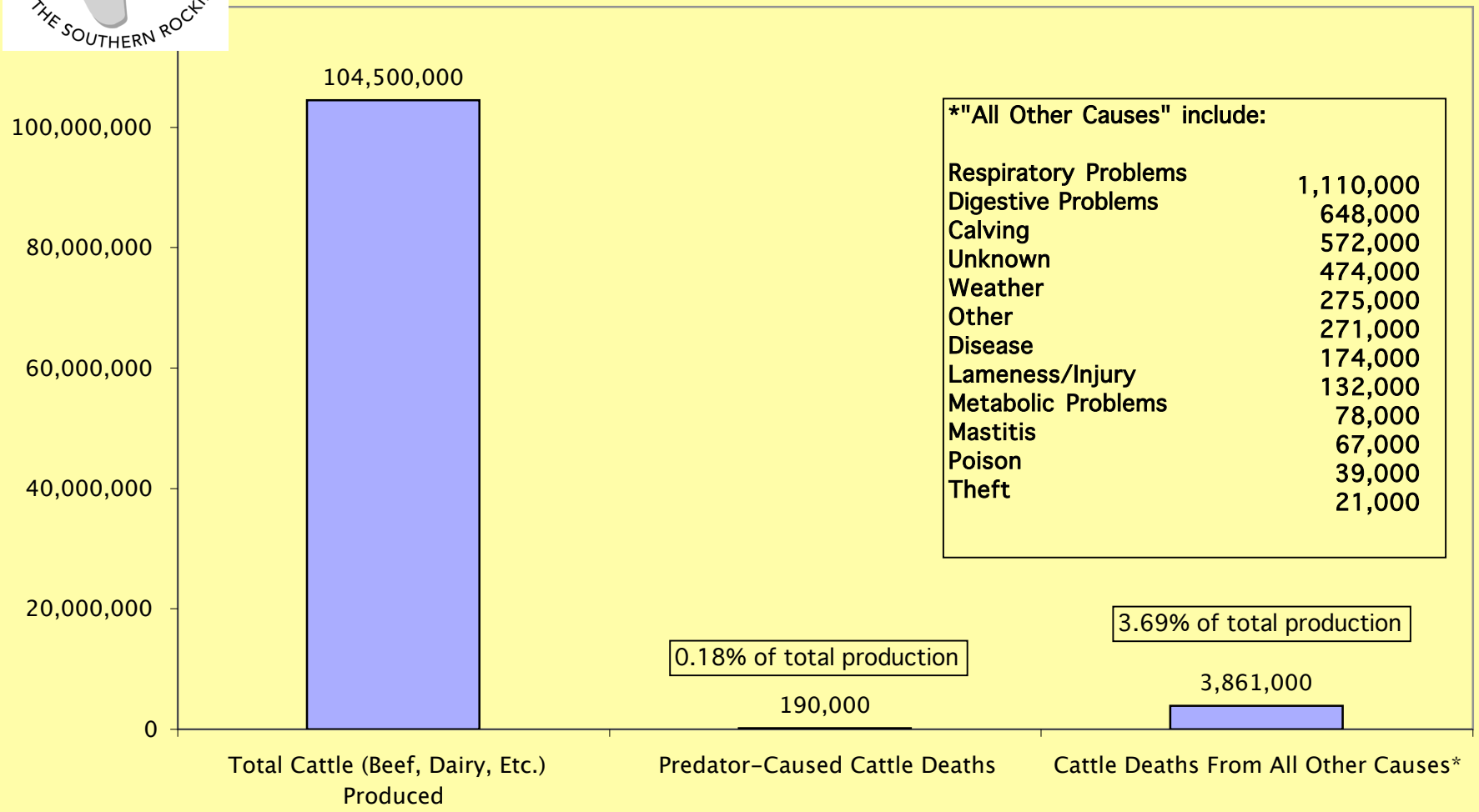
MAMMALIAN CARNIVORES KILLED BY USDA-APHIS-WILDLIFE SERVICES, FISCAL YEAR 2004 Table 1																	
	Trap -- 39%					Shoot -- 45%				Poison -- 12%		Other--3%	Den	Selectivity			Total
	Cage	Kill	Leghold	Leg-Snare	Neck Snare	Aerial Gunning	Spot	Call	Shot	M-44	LPC/ 1080		Denning	Intended	Unintended	Non-Target	
Badgers	4	8	221		179		3		27	3				253	8	184	445
Bears, Black	101		5	182	14		2	3	31			59		393	1	3	397
Bobcats	84	2	842	2	499	292	8	81	38	5		65		1,876	13	29	1,918
Coyotes	8	1	6,486	260	11,883	32,408	285	6,562	3,998	10,630	45	1,730	1,378	75,622	9	43	75,674
Dogs	12		63	4	138		4	8	172	117		380		379	25	115	519
Foxes, Arctic		2	118						16				9	145			145
Foxes, Gray	89		815		356	1	4	98	29	277		15	8	1,523	53	116	1,692
Foxes, Kit			3		8					29					1	39	40
Foxes, Red	20	4	422		473	155	38	53	203	387		99	155	1,875	15	119	2,009
Foxes, Swift			2							19						21	21
Mountain Lions	26		33	22	38				19			221		353	5	1	359
Otters, River	1	449	23		20		3							28	82	386	496
Raccoons	4,817	677	2,568		1,213		400	31	311	291		210		9,445	353	720	10,518
Ringtails			8							1		1		1		9	10
Skunks, Hog-nosed	1	2												1	2		3
Skunks, Hooded		15												15			15
Skunks, Spotted	8		9											8		9	17
Skunks, Striped	5,161	55	483		138		272	1	410	113		122	1	6,419	151	186	6,756
Wolves, Gray			110		12	60		4	2			2		190			190
Wolves, Mexican									1					1			1
TOTAL CARNIVORES	**10,332**	**1,215**	**12,211**	**470**	**14,971**	**32,916**	**1,019**	**6,841**	**5,257**	**11,872**	**45**	**2,780**	**1,551**	**98,527**	**718**	**1,980**	**101,225**
NON-CARNIVORES KILLED WITH M-44's BY USDA-APHIS-WS (FY04)																	
Hogs										4							
Marmots										1							
Opossums										96							
Ravens										7							
TOTAL M-44's										**11,980**							

Cattle Production & Deaths for 2005

Data From
USDA NASS (2006) Cattle Death Loss & USDA NASS (2005) Cattle Inventory

Figure 1

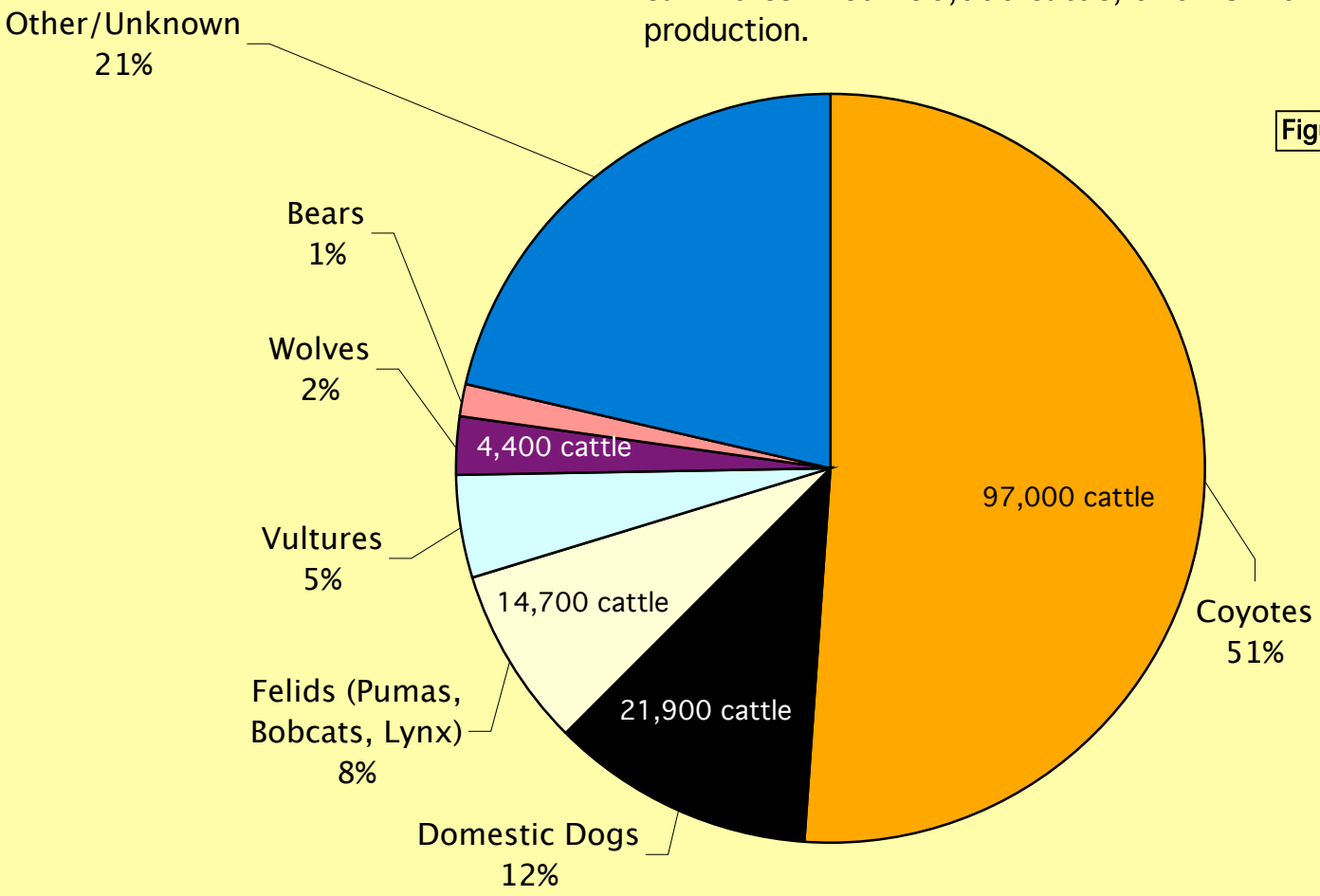


Mammalian Carnivores that Killed Cattle

Data From USDA NASS (2006) Cattle Death Loss

In 2005, 104,500,000 cattle produced in U.S. Mammalian carnivores killed 190,000 cattle, or 0.18% of the total production.

Figure 2



Sinapu
RESTORING & PROTECTING CARNIVORES IN THE SOUTHERN ROCKIES

Total Sheep & Lamb Production vs. Deaths (2004 data)

Data From: USDA NASS (2005) "Sheep & Goats Death Loss" & USDA NASS (2005) "Sheep"

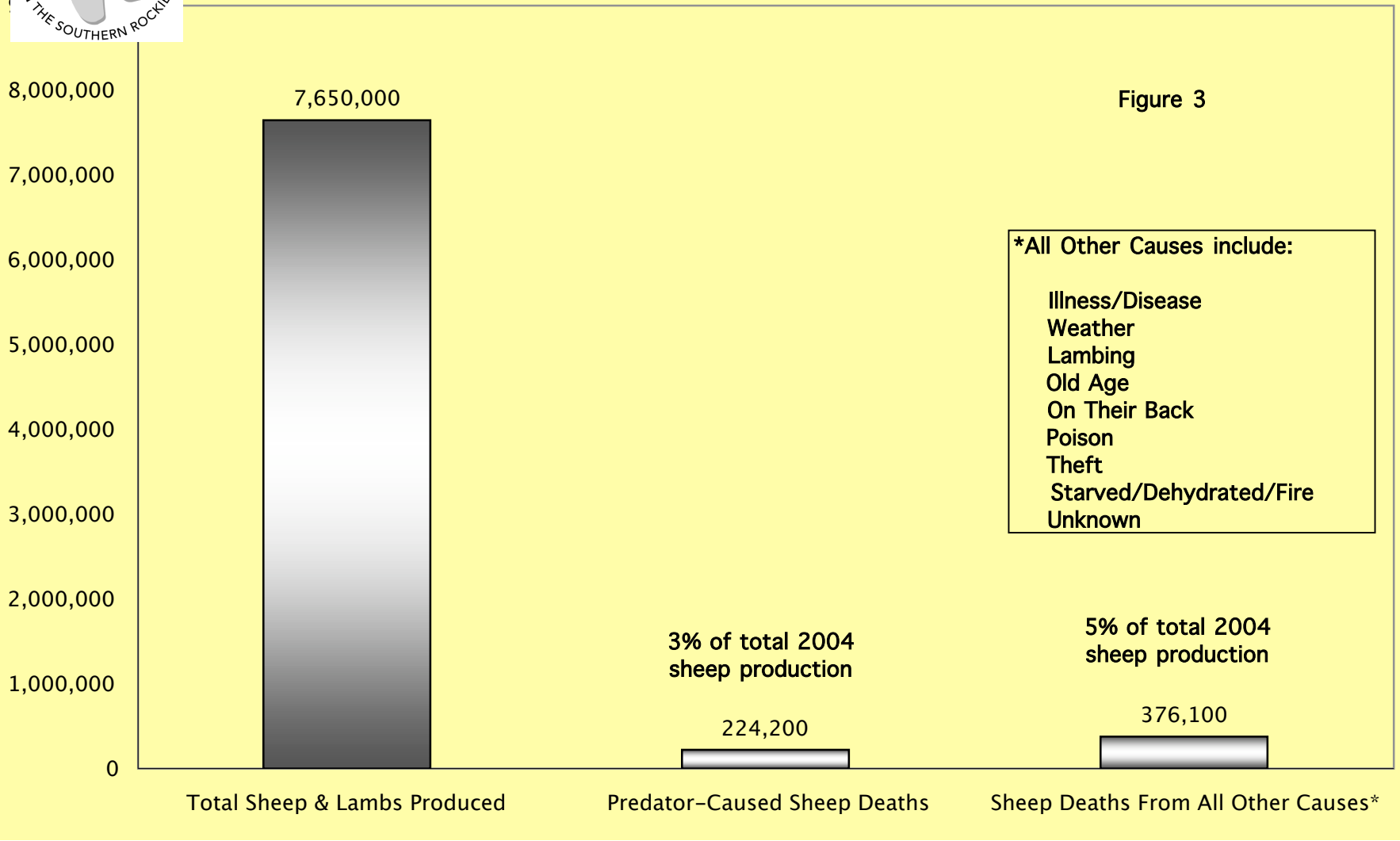
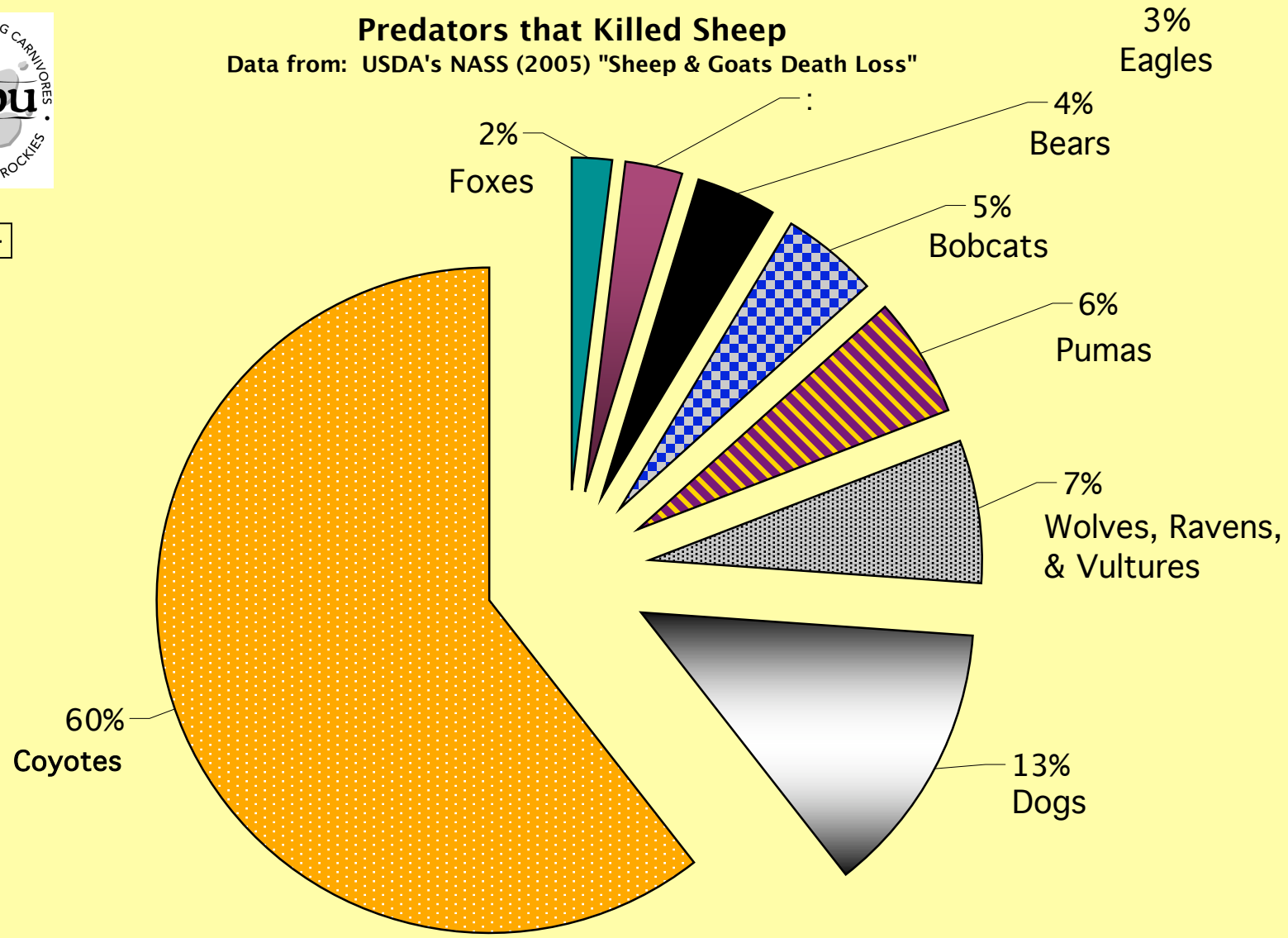


Figure 3

Figure 4


Predators that Killed Sheep
Data from: USDA's NASS (2005) "Sheep & Goats Death Loss"
3%
Eagles
2%
Foxes
4%
Bears
5%
Bobcats
6%
Pumas
7%
Wolves, Ravens,
& Vultures
13%
Dogs
60%
Coyotes