

Wildlife Services

Protecting People
Protecting Agriculture
Protecting Wildlife

Wildlife Services, a program within the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), provides Federal leadership and expertise to resolve wildlife damage that threatens the Nation's agricultural and natural resources, human health and safety, and property.

Using an integrated approach that combines a variety of science-based methods, the program assists agricultural producers and others experiencing damage from predators, such as coyotes, foxes, and feral dogs.

Factsheet

March 2018

M-44 Device for Predator Control



The M-44 ejector device is an effective and environmentally sound wildlife damage management tool. The spring-activated device delivers a dose of cyanide powder to targeted animals. It uses a cyanide capsule that is registered as a restricted-use pesticide by the Environmental Protection Agency (EPA). The device can be used only by trained certified applicators.

Wildlife Services uses M-44 cyanide capsules under two EPA- approved pesticide registrations to control coyotes, feral (wild) dogs, and red and gray foxes that are either suspected of preying upon livestock, poultry, or federally designated threatened and endangered species or are vectors of communicable disease. Our use of M-44 devices strictly follows EPA label instructions, directions, and use- restrictions; applicable Federal, State, and local laws and regulations; and agency and program directives and policies.

Our personnel do not use M-44s on any property unless the land's owner or manager requests and agrees to our assistance. We must have a valid written cooperative agreement, agreement for control, Memoranda of Agreement, or other applicable document signed by the landowner or authorized representative to place any M-44s..

How an M-44 Works

The M-44 ejector device consists of four parts: a capsule holder wrapped with cloth, wool, or other soft material; a cyanide capsule (small plastic container holding less than 1 gram of sodium cyanide); a spring-activated ejector; and a 5- to 7-inch tubular stake. In the field, the stake is typically inserted with its top even with the surface of the ground. With the ejector cocked and set, the capsule is inserted into its holder and screwed onto the ejector. The ejector is placed into the stake and secured. Specially formulated smelly bait or other attractant, which elicits a "bite and pull" response by the target animal, is smeared on the wrapped capsule

The M-44 ejector device consists of a capsule holder wrapped with soft material, a small plastic container holding sodium cyanide, a spring-activated ejector, and a stake. Bilingual warning signs mark the location of each device.



holder. The M-44 device triggered when a canid, such as a coyote or feral dog, tugs on the baited capsule holder, releasing the plunger and ejecting sodium cyanide powder into the animal's mouth. The sodium cyanide quickly reacts with moisture in the animal's mouth, releasing hydrogen cyanide gas. Death is very quick, normally within 1 to 5 minutes after the device is triggered.

Wildlife Services personnel place M-44s along game and livestock trails, ridges, fence lines, seldom-used ranch roads, coyote and fox natural travel ways, rendezvous sites, and territorial marking sites/locations. Bilingual signs (English/Spanish) mark the general area and placement of each M-44. Trained personnel inspect each M-44 at least weekly. Although they are used mostly in the winter and spring, M-44s may be used year-round in some locations. When not in use, they are stored in secured, locked locations.

Use-Restrictions

Fifteen states, mostly in the west, authorize Wildlife Services to use M-44s in their state.

As part of the pesticide label's Directions for Use, EPA requires 26 use-restrictions, which provide instructions for the application, storage, and disposal of M-44s; training and safety requirements; and necessary recordkeeping. Individual State pesticide regulatory agencies can require additional restrictions on the use of M-44s in their state. Furthermore, Wildlife Services notifies hospitals and poison control centers in areas where they are using M-44s.

As part of our efforts to ensure the safe and responsible use of M-44s, Wildlife Services enhanced



A Wildlife Services biologist places a warning sign near an M-44 device. The devices are checked at least weekly.

its guidelines for how employees should implement the EPA use-restrictions. Wildlife Services posts more durable and visible warning signs at main entrances or commonly used access points to areas where M-44s are placed, as well as within 15 feet of each device.

Additionally, Wildlife Services certified applicators cannot place M-44s within 0.5 mile of occupied residences. A variance reducing that distance to ¼ mile may be approved in instances where features of the property and landscape are such that potential for human or pet exposure to an M-44 is not probable. Wildlife Services notifies residents within 0.5 mile of M-44 locations.

Preventing Agricultural and Ecological Damage

Coyotes, foxes, and feral dogs cause substantial damage to livestock and poultry producers, particularly those with sheep and goats. As part of a 2015 survey of producers, the National Agricultural Statistics Service (NASS) found that coyotes nationwide killed an estimated 118,032 sheep and lambs. Losses of adult sheep and lambs were valued at an estimated \$32.5

million for all predators. Dogs were credited with 21.4 percent of predator losses in adult sheep and 10.3 percent of predator losses to lambs.

According to a 2010 NASS survey, an estimated 180,000 goats were killed by predators. Based on the survey's data, Wildlife Services estimates the total value of goat predation losses is \$18.7 million.

Cattle and calf losses from predators totaled nearly 220,000 head during 2010. Coyotes and dogs were the top two predators that attacked and killed cattle and calves. A 2011 NASS survey found that coyotes killed an estimated 116,700 head valued at \$48.1 million; dogs killed an estimated 21,800 head valued at nearly \$10 million. Canids also kill thousands of swine, pet dogs and cats, equines, chickens, turkeys, ducks, geese, and other birds every year.

For producers, predation is the number one challenge they face that impacts their profitability. M44s are valuable tools for producers seeking to protect their livestock from this damage. Without an effective predator management program, combining lethal and nonlethal methods, losses to predators would be significantly higher. Unlike loss due to weather and age, over which producers have little control, loss to predators can be addressed through nonlethal and lethal tools.

As the data above shows, for producers, predation is the number one challenge they face that impacts their profitability. Without an effective predator management program that combines lethal and nonlethal methods, losses to predators would be significantly higher. Wildlife Services works closely with producers to identify the best approach and tools, such as M-44s, for protecting their livestock from this damage and maintaining their profitability. In fact, benefit-cost analyses conducted on predator management operations have shown that for every dollar spent on livestock protection, Wildlife Services' efforts save producers between \$2 and \$7 in losses.

Additionally, the EPA, in responding to a 2007 petition to ban the M-44, found not only that coyote and dog predation accounts for a significant portion of livestock losses due to predators, but that using M-44s is effective in reducing target species predation on livestock. Moreover, that negative long-term impacts of M-44 use on the targeted predator or non-target species populations are unlikely.

In addition to agricultural damage, predators can limit the recovery of threatened and endangered species. Placing a dollar value on any threatened and endangered species is difficult; the loss of even one animal can be catastrophic to a local population or species.

Wildlife Services has been successful in using M44s to protect the Rocky Mountain experimental flock of whooping cranes. Although M-44 devices have not been used often for threatened and endangered species protection, they are available to natural resource managers as a predator management tool when necessary.

Environmental Safety and Security

M-44 devices and cyanide capsules pose limited environmental risks due to their use pattern, low volume of use, and chemical characteristics. Each capsule contains approximately 0.03 ounces (0.97 grams) of the compound (0.88 grams of sodium cyanide and 0.09 grams of inert ingredients). Contact with carbon dioxide and acids in the soil rapidly dissolves the active ingredient into gas if, for some reason, the capsule's contents spill onto the soil. If carbon dioxide and acids are not present in the soil, the sodium cyanide filters through the soil and is degraded by micro-organisms or other processes. Research by Wildlife Services' National Wildlife Research Center indicates that the persistence of cyanide in soil is short-lived. Bioaccumulation is unlikely because the material is rapidly metabolized.

The M-44 is designed and used to remove wild canids, such as coyotes, foxes, and feral dogs, for the protection of agriculture

M-44s may be used only by trained certified applicators.

To protect staff using M-44s against the unlikely event of exposure, Wildlife Services requires that they wear Personal Protective Equipment consisting of a full face-shield, long-sleeved shirt, pants, shoes and socks, and waterproof gloves when installing or inspecting M-44s. No human fatalities have been associated with Wildlife Services' use of M-44s.

Because of potential security issues related to hazardous materials, Wildlife Services personnel take appropriate security measures when handling and storing M-44s. In a 2007–2009 review, EPA consulted with the Department of Homeland Security, who did not have security concerns regarding Wildlife Services' use of M-44s as a wildlife damage management tool.

Nontarget Hazards

To prevent harmful environmental effects, Wildlife Services assesses the potential impact of its activities before using any wildlife damage management tool, including the M-44. In placing M-44s, our personnel use their expertise in animal ecology and habitats, and consider animal behavior patterns to minimize the risk of attracting non-target animals. The use of specialized baits and lures attractive to canids minimizes that risk. Placing M-44s where depredations occur or at locations frequently visited by target species further improves target selectivity.

Because of the M-44's mechanical design, the device is triggered by pulling straight up, which also increases its selectivity for canids. From 1996 to 2006, more than 97 percent of the animals killed by M-44s were the target species listed on the product label.

Although it is a rare occurrence, unsupervised, free-roaming dogs may be attracted to M-44 devices and be susceptible to injury or death. Pet owners should leash and closely supervise their pets to keep them away from areas where M-44s may be in use. When an unintentional injury or death occurs, Wildlife Services reviews the circumstances to determine if procedural changes are needed.

The risk of secondary poisoning to scavengers is minimal. The M-44's cyanide powder causes chemical asphyxiation and blocks the use of oxygen in the target animal's blood. As a result, scavenger animals are not

likely to be harmed because virtually no poison remains in the tissues of the animal killed by the M-44.

We take great care in the use of M-44s and in confirming that our efforts do not jeopardize any threatened or endangered species or any other non-target species. M-44s are not used where federally listed threatened or endangered animal species might be harmed. In accordance with the National Environmental Policy Act, Wildlife Services analyzed the use and potential impacts of M-44s in numerous environmental assessments conducted at the state level. Wildlife Services also consults with the U.S. Fish and Wildlife Service to further safeguard federally listed threatened and endangered species or their critical habitat. Animals are not harmed because virtually no poison remains in the tissue of an animal killed by the M-44.

WS takes great care in its use of M-44s and in ensuring that its efforts do not jeopardize any threatened and endangered species or any other species. M-44s are not used where federally listed threatened and endangered animal species might be adversely affected. In accordance with the National Environmental Policy Act, the use and potential impacts of M-44s have been fully analyzed in a programmatic environmental impact statement and in numerous environmental assessments. Continuing consultations with the U.S. Fish and Wildlife Service further ensure that WS' use of M-44 cyanide capsules will not adversely impact any federally listed threatened and endangered species or their critical habitat.

Integrated Management

WS addresses damage using an integrated wildlife damage management approach. In selecting control techniques for specific wildlife damage situations, damage is confirmed and assessed. Personnel then consider the species responsible, frequency and extent of the damage, status of the species, local environmental conditions, environmental impacts, and other factors. These factors are evaluated and used to formulate strategies that may include use of one or more nonlethal or lethal techniques. Environmental analysis has concluded that WS' integrated management

approach, including the use of M-44, has not adversely impacted any target or nontarget species populations, including threatened and endangered species.

Additional Information

For more information about this and other Wildlife Services programs or to request assistance from a Wildlife Services State office, please telephone 1-866-4USDA-WS or contact our Operational Support Staff at 301-851-4009. Additionally, you can contact us by mail at: USDA-APHIS-Wildlife Services, 4700 River Road, Unit 87, Riverdale, MD, 20737.

To learn more about Wildlife Services and its programs, visit our Web site at: www.aphis.usda.gov/wildlifedamage.



United States Department of Agriculture
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