



Beyond their ability to captivate the human imagination, bears are integral ecosystem managers. They provide insect control and enrich soil when they break open logs; they fertilize forests with fish carcasses and by eating fruit and nuts; they provide forest clean-up as scavengers; and, as predators, they help keep populations such as deer and moose in balance. Despite these ecosystem services, bears can be legally hunted in 27 U.S. states. Many of these states allow hunting practices deemed cruel and “unsporting,” including spring hunts, baiting, hounding, and the selling and trade of bear parts.

# Balanced Ecosystems: A Necessity, Not a Choice

BY MARY HOLMES | PHOTO ©CAMILLA H. FOX/PROJECTCOYOTE.ORG

Apex predators, also known as alpha predators, occupy the top positions in the food chain. They have no predators who can prey on them and play an important role in maintaining biodiversity in the ecosystem. When apex predators are removed from the ecosystem, dire consequences can, and most certainly do, arise. Lack of apex predators brings about a trophic cascade, which has far-reaching effects throughout the ecosystem.

**The beautiful and elusive cougar** — also known as the mountain lion or puma — is one of many native carnivores targeted by trophy hunters throughout the West. Texas still allows barbaric trapping of mountain lions. The mass killing of native carnivores is actually counterproductive to sound wildlife management and can lead to increased conflicts with livestock, pets, and people.

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First of all, why do we need apex predators? To begin with, they help keep the number of prey animals in check by weeding out slow, weak, and dying animals; this practice also increases the health of the population as a whole. Secondly, left to their own devices, a herd of herbivores (an apex predator's usual prey) will stay in one place and eat everything around them until there is nothing but bare ground, before they move on. The presence of apex predators keeps the prey moving; if prey don't keep moving they will become an apex predator's next meal. This gives the vegetation time to rebound, and leaves smaller plants and grasses for smaller herbivores. But it doesn't end here – the remaining vegetation helps to prevent soil erosion, which in turn reduces run-off into rivers and streams. Less run-off means less flood damage.

When apex predators are reduced in numbers, the ecosystem suffers from trophic cascade. This means an increase

in prey, a decrease in vegetation, more soil erosion, more runoffs, and more flooding, which eventually affects humans. According to a study published in the journal *Bioscience*, "The catastrophic decline around the world of 'apex' predators such as wolves, cougars, lions or sharks has led to a huge increase in smaller 'mesopredators' that are causing major economic and ecological disruptions, a new study concludes. . . . in North America all of the largest terrestrial predators have been in decline during the past 200 years while the ranges of 60 percent of mesopredators have expanded. The problem is global, growing and severe, scientists say, with few solutions in sight."

The study continued, "Primary or apex predators can actually benefit prey populations by suppressing smaller predators, and failure to consider this mechanism has triggered collapses of entire ecosystems.

"Cascading negative effects of surging mesopredator populations have been documented for birds, sea turtles, lizards, rodents, marsupials, rabbits, fish, scallops, insects and ungulates. The economic cost of controlling mesopredators may be very high, and sometimes could be accomplished more effectively at less cost by returning apex predators to the ecosystem. Human intervention cannot easily replace the role of apex predators, in part because the constant fear of predation alters not only populations but behavior of mesopredators. Large predators are usually carnivores, but mesopredators are often omnivores and can cause significant plant and crop damage.

"The effects of exploding mesopredator populations can be found in oceans, rivers, forests and grasslands around the world. Reversing and preventing mesopredator release is becoming increasingly difficult and expensive as the world's top predators continue to edge toward obliteration."

*Smithsonian Magazine* refers to the practice of "wildlife management" thusly, "Eliminating predators from an area may be seen as a good thing; you've gotten rid of the animal that has been killing off your livestock or even your neighbors. Others often see the loss of these species with a somewhat sad, romantic eye; how awful to never again see such a creature. But the reality of the loss of predators is far worse, say ecologists reporting in *Science*, and 'may be humankind's most pervasive influence on nature,' they write.

"Part of that is because the worst extent of such a disappearance—extinction—is irreversible, unlike other environmental impacts, such as climate change." Then it goes on to discuss trophic cascades.

*Science Magazine* ecologists report:

*We propose that many of the ecological surprises that have confronted society over the past centuries—pandemics, population collapses of species we value and eruptions of those we do not, major shifts in ecosystem states, and losses of diverse ecosystem services—were caused or facilitated by altered top-down forcing regimes associated with the loss of native apex consumers or the introduction of exotics. Our repeated failure to predict and moderate these events result not only from the complexity of nature but from fundamental misunderstandings of their root causes.*

*Greener Ideal* takes a somewhat less drastic stance. "Apex predators are key to the health of an ecosystem. They maintain the balance between prey species and the rest of the system. Without them, everything gets out of balance, leading to cycles of population explosions and crashes, depleted lands, stunted forests, and flooding rivers. While human intervention can solve some of these issues, it is so much better to let the predators perform the task they were designed to do." Nonetheless, the underlying sentiment is – nature can take care of itself; human intervention is not the answer.

North American apex predators are usually vilified and subject to extirpation. In medical terminology, according to

Merriam-Webster, extirpation means the "complete excision or surgical destruction of a body part." Indeed, this is the appropriate choice of words, because it clearly indicates that removal of one body part affects the remainder of the body with negative consequences to the remaining body parts. We have forgotten how important the ecosystem is; our manipulation of existing populations of apex predators upsets the biodiversity.

NRDC, the National Resources Defense Council, Inc., gets straight to the point – USDA Wildlife Services spends most of its time and efforts eliminating predators who are threats to livestock and agriculture, no matter what the environmental consequences. Its stated mission belies its true intent. "The mission of USDA APHIS Wildlife Services (WS) is to provide Federal leadership and expertise to resolve wildlife conflicts to allow people and wildlife to coexist. WS conducts program delivery, research, and other activities through its Regional and State Offices, the National Wildlife Research Center (NWRC) and its Field Stations, as well as through its National Programs." According to NRDC, Wildlife Services "continues to kill over a hundred thousand carnivores a year claiming that the removal of these predators is not likely to have a broader impact on the ecosystem."



**This black bear cub**, captured by Camilla Fox of Project Coyote in Yellowstone National Park (YNP), is only protected if he stays within the confines of the park. Outside of YNP, black bears can legally be trophy hunted for a \$19 license fee for Montana residents.

Photo ©Camilla H. Fox/ProjectCoyote.org

Let's talk about wolves, who were delisted from the Endangered Species List effective January, 2021. Delisting means one thing – the wolf population can again be controlled by individual states, and wolves can again be hunted by the public. The Trump Administration claimed this as a major environmental

victory; most scientists say the delisting is premature. The International Wolf Center lists five reasons many feel the endangered classification is still necessary.

1. In the contiguous 48 states, the gray wolf currently occupies only about 10 percent of its former range.
2. Most of the gray wolf's former habitat in these 48 states is unsuitable for wolves, and probably never will be suitable, due mainly to human encroachment.
3. Public attitudes toward wolves are mixed, with many residents of the gray wolf's range holding strong anti-wolf opinions.
4. The long-term trends in land use suggest that much of the current or potential wolf range will continue to be developed and, thus, rendered unsuitable for wolves, even in Minnesota.
5. It was only after gray wolves were given protection by the Endangered Species Act that wolf populations in the United States began to increase.

livestock production in wolf habitat, fluctuations in primary prey populations; insufficient or ineffective law enforcement, and disease. These factors have affected wolf populations locally and globally by destroying habitat, creating barriers to dispersal and migration between habitats, and reducing prey populations upon which wolves depend."

Going back to the subject of trophic cascades, Project Coyote referenced a Canadian study which "noted the negative effect of wolf exclusion by humans on various native species that might not otherwise be viewed as mutually dependent on each other. Researchers discovered that wolf exclusion decreased aspen recruitment, willow production, and increased willow and aspen browsing intensity. Beaver lodge density was negatively correlated to elk density, and elk browsing had an indirect negative effect on riparian songbird diversity and abundance."

**Trophic cascades in Yellowstone: The first 15 years after wolf reintroduction** discusses in some detail the positive and widespread ecological effects of the reintroduction of wolves into Yellowstone Park.

penning, range riders, noise making devices called rag boxes, and electric fencing.

4. Furthermore, exclusion systems are often used in the form of "turbo fladry." This is a combination of an ancient Eastern European technique that deploys a long string with hanging colorful flags and modern technology (above-ground electrified wires) to prevent wildlife from attacking livestock. When properly installed and maintained electrically charged perimeters with fladry can keep domestic animals safe inside a defined area by keeping potential predators out.

Project Coyote concludes, "Coexistence between humans and wolves presents many challenges requiring changes in long-held beliefs, values, and practices with regard to livestock production in wolf-occupied areas. Many resources and organizations now exist to educate and assist livestock owners with evolving techniques that will keep their sheep and cattle safe by using predator-friendly management tools that deter attacks."

It is clear we need to make these changes. Apex predators are not pests, but valuable members of the food chain. We need to protect and preserve them, for the sake of biodiversity and the continued existence of our planet.

For more information on Project Coyote, and the wolves, visit: [projectcoyote.org/](https://projectcoyote.org/)

**Below** Project Coyote estimates that more than half a million coyotes are killed in the U.S. alone- more than one per minute. Coyotes can often be killed in unlimited numbers year-round with unimaginably cruel and indiscriminate methods from snaring to baiting, hounding, poisoning, aerial gunning. They are the most targeted species in wildlife killing contests which are still legal in more than 40 states.

Photo ©Camilla H. Fox/ProjectCoyote.org

## Apex predators are key to the health of an ecosystem ...

### Greener Ideal

According to Kristen Boyles, an attorney with Earthjustice, "This is no 'Mission Accomplished' moment for wolf recovery. Wolves are only starting to get a toehold in places like Northern California and the Pacific Northwest, and wolves need federal protection to explore habitat in the Southern Rockies and the Northeast." Delisting means the wolf populations will again be "managed" by state and tribal agencies. "Managing" means killing, pure and simple.

Project Coyote has much to say about threats to wolves. "Since wolves are an apex predator, they experience little to no mortality from other species in their natural environment. In some instances, wolves kill each other during territorial disputes and conflicts within and between packs. However, most wolf mortality comes from humans and their activities. Habitat fragmentation and urban sprawl have played a pivotal role in the conflict between humans and wolves. Influences on gray wolf habitat and mortality include: habitat conversion for human uses, inadequate regulatory protections, authorized human hunting and trapping, illegal killing, killing or removal in response to conflicts with

As stated previously, most of the conflict that exists is between apex predators and ranchers. One of the primary wildlife management tools used by state and tribal agencies is the promotion of Wildlife Killing Contests. Project Coyote is one of a host of wildlife advocacy organizations working to get these contests banned. They maintain, and rightfully so, that it is possible to peacefully coexist with apex predators, if humankind is willing to do its part. Here is just a sampling of non-lethal methods of apex predator management.

1. Use of radio-collar telemetry and remote camera data so that ranchers can be notified to move livestock out of apex predator locations.
2. Chemical, visual, and auditory distractions can be utilized to induce wolves to stay away.
3. Other measures include wolf translocation, removal of dead, sick, and diseased livestock where carcasses might be easily scavenged by wolves, the use of trained guard dogs and night watchmen, shed lambing and night

