

REVIEW ARTICLE

Human Attacks by Large Felid Carnivores in Captivity and in the Wild

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Whereas those who live in the native ranges of the large feline carnivores are well aware of the risks of cat and human encounters, North Americans and Europeans are increasingly exposed to exotic animals through travel, ecotourism, leisure pursuits in rural areas, occupational exposure, zoo and animal park visits, wild habitat encroachment at the urban-wildlands interface, and contact with exotic pets. In encounters during which persons have been severely injured, lapses in animal management protocols, lack of appropriate adult supervision, and intoxication have been reported. Unlike common domestic pets that have lived in close association with humans for thousands of years, no matter where individual large felines may have been raised, they remain wild carnivores with strong prey-drive and territorial instincts. The emergency management of large felid attacks is similar to that of other major trauma: stabilization; management of significant orthopedic, neurologic, vascular, and soft tissue injuries; antibiotic coverage provided for the number of organisms that inhabit their mouths and the potential for tetanus and rabies; and early management in survivors of likely posttraumatic stress disorder. We must actively explore responsible measures globally that can be taken to ensure biologically appropriate, ethical, safe, and sustainable conservation of these large carnivores in both their natural habitats and captivity.

Key words: carnivore attacks, animal bite, felid carnivores, public health, animal conservation

Introduction

Americans keep more animals as pets than any other country. Commonly, this involves dogs, cats, birds, horses, and fish. In 2006, 37.2% of households owned 1 or more dogs (72.1 million), and 32.4% owned cats (81.7 million).¹ In the last several decades, an increasing variety and number of exotic animals have also become popular as pets.² The United States is the largest importer of wildlife worldwide. According to US Fish and Wildlife Service data, more than 650 million animals were imported legally into the United States between 2003 and 2007 for zoos, exhibition, food, research, game ranches, and pets.³ As these exotic animals become difficult for owners to handle, many are voluntarily or involuntarily relinquished to animal welfare organizations and dealers. News agency reports highlight a number of exotic animal attacks and animal

welfare organizations being pressed beyond their capabilities to handle the increasing number of large, potentially dangerous animals they receive. Lapses in animal management protocols, inadequate facilities, lack of appropriate adult supervision of children, and intoxication have been implicated in these occurrences.

Data collected by The Humane Society of the United States, a large animal rescue organization, suggest that fewer than 400 of the estimated 5,000 to 7,000 captive tigers in the United States are held at facilities accredited by the Association of Zoos and Aquariums. Despite the passage of the Captive Wildlife Safety Act in 2004 and bans on exotic animal ownership in 19 states, that would suggest that the remaining tigers, as well as other large felines, are housed at unaccredited breeding facilities, roadside and traveling zoos, private menageries, and game farms. Unaccredited facilities pose a threat to the community owing to a higher likelihood of fatal attack or injury occurring in these facilities or by animals that escape, create a significant burden for law enforcement and emergency response agencies, and jeopardize sanctuary and conservation efforts.^{4,5} Between 1990 and

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2011, more than 300 dangerous incidents involving large feline carnivores were reported in 44 states. Four children died and dozens of others lost limbs or suffered other traumatic injuries. Sixteen adults were killed, and more than a hundred were mauled.⁴

Between 1990 and 2010, 172 large feline carnivores also escaped, with an unclear number of these animals recaptured or killed; and 94 captive large felines were killed.⁴ In 2011, the Big Cat Rescue database, another large animal welfare organization, indicated that 75% of all attacks were reported in the United States.⁵ Although not providing data on numbers of incidents, the US Department of Agriculture (USDA), which has jurisdiction over exotic animal care in the United States, has issued a number of statements and instituted changes in procedure that would support concerns raised by animal welfare organizations about these issues. In February 2000, the USDA issued a position statement, *Large Wild and Exotic Cats Make Dangerous Pets*, stating that “Large wild and exotic cats such as lions, tigers, cougars, and leopards are dangerous animals. The USDA Animal and Plant Health Inspection Service (APHIS) believes that only qualified, trained professionals should keep these animals, even if they are only to be pets. Care and handling of these wild and exotic cats should be left to trained professionals who have the knowledge and means to maintain them properly. APHIS’ Animal Care (AC) program is responsible for enforcing the Animal Welfare Act, which includes regulating and inspecting exhibitors of wild and exotic animals. AC personnel have seen too many instances where wild and exotic cats kept by untrained people have not only harmed people but suffered themselves due to poor care.”⁶

In 2013, the Animal and Plant Health Inspection Service petitioned to amend the Animal Welfare Act to prohibit public contact with large and exotic cats, bears, and nonhuman primates and define a “sufficient distance” that must be kept from these animals by the public. This petition also addressed the prevention of public handling or early separation of immature species from their mothers. Comments from the public were due October 4, 2013.⁷ The USDA also initiated more stringent inspection requirements for large felid carnivore enclosures in August 2013.⁸ On July 29, 2013, Senator Richard Blumenthal of Connecticut introduced Bill S.1381, *The Big Cats and Public Safety Protection Act*. This bill would amend the prior Lacey Act Amendments of 1981 to prohibit private possession of large and exotic cats except at certain facilities, such as accredited zoos. Bill S.1381 would require a person who currently possesses a large and exotic cat to register with the USDA to be able to keep it.

Except at accredited zoos and research and educational institutions, this act would outlaw the breeding of any large and exotic cat. This bill is being reviewed by the Senate Committee on Environment and Public Works.⁹

Globally, injuries caused by animals are responsible for thousands of deaths annually. Large feline carnivores pose major threats to humans in their native habitats, despite dwindling populations due to loss and degradation of habitat, diminishing natural prey populations, poaching, illegal wildlife trade, “canned hunting,” and other threats to their survival.^{10,11} For those who are unaware of this industry, “canned hunting” refers to game farms or hunting ranches that breed and raise animals or buy exotic animals so that hunting enthusiasts can pay for a guaranteed kill and trophy.^{12,13}

Much of what we know about large-carnivore attacks on humans is derived from case reports and small case series regarding the management of injuries that occurred. Both wild and captive felid attack data are incomplete and suffer from significant flaws in collection, as such, available numbers vary widely. This article will review the threat posed to humans by large and exotic cats in both the wild and captivity, discuss the evaluation and management of large feline carnivore attacks, and discuss these interactions in the setting of the public health and conservation issues raised.

Methods

Articles and book chapters published from 1950 through 2013 were searched using Medline and the PubMed, MD Consult, CINAHL (Cumulative Index to Nursing and Allied Health Literature), JSTOR (Journal Storage), Cochrane, and Google Scholar databases. An extensive electronic search strategy was also developed to obtain information available on the Web. MeSH (Medical Subject Heading) key words and terms used in the searches were as follows: big cat, felid, feline, lion, tiger, leopard, cheetah, mountain lion, puma, jaguar, wild, wilderness, captivity, zoo, circus, canned hunting, game ranch, attacks, injuries, trauma, management, occupational, communicable diseases, zoonotic, zoonoses, environmental microbiology, bacterial infections, rabies, infection, infectious, microorganism, pathogens, pathogenic, occupational exposure, occupational health, incidence, prevalence, epidem*, occurrence, prevalence, exposure, etiology, emerging, risk factors, risk assessment, and conservation.

Relevant articles, papers, and online resources were selected by screening the titles (first step), abstracts (second step), and entire articles (third step) retrieved through the database searches, with further articles retrieved from references in the initial sources (fourth

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