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What Big Teeth You Have: Wolf Attacks on Humans

By DEBRA MITTS-SMITH



Do wolves attack humans? Or does the big bad wolf who gobbles up old ladies and little girls belong solely to the realm of fairy tales and legends?

With the rebound of wolf populations across parts of Europe and the United States, questions of whether wolves pose a threat to humans—and if so, to what degree—need to be answered. Research on the risk wolves pose to humans is not a theoretical line of inquiry; it has real-world meaning and application, especially if wolves are to survive and thrive alongside humans. In two reports published by the the Norwegian Institute for Nature Research, investigators provided answers and management recommendations.

Biologist John D.C. Linnell was the lead researcher and author of both reports. In 2002, his work, *Why Humans Fear Wolves: 1950–2002* sought “to summarize what is known about wolf attacks on humans in North America and Eurasia.” His 2021 report, *Wolf Attacks on Humans: 2002–2020*, updated the number of verifiable attacks, explored underlying patterns and risk factors, and identified areas for further research. Although these reports focused on recent wolf attacks in North America and Eurasia, both include historical accounts of attacks worldwide over the last 400 years. Linnell’s analyses of past and contemporary accounts show

While Linnell’s investigations found records of wolf attacks on people, the frequency and likelihood need to be put into context.

that a range of factors from ecological, socio-economic and technological to disease, habituation and the individual personalities of wolves not only play a role in the risk of a wolf attack, but also shape people's perceptions of and experiences with wolves.

Data collection proved to be challenging for both reports. The lack of a centralized agency for recording and archiving wolf attacks led researchers to survey a range of potential sources including peer-reviewed literature; historical works; medical, veterinary and forensic reports; news and media sources; and regional experts. Further, data varied in quality and detail due to lack of standardized reporting or follow-up procedures. For example, reports from North America and Western Europe were well documented and thorough, while many accounts from Eastern Europe, the Middle East and Asia were too fragmentary to be included in the study. Language barriers further complicated searching, identifying and corroborating the accuracy of accounts.

The wolf itself proved to be another complicating factor, as its controversial status makes it a target of false reporting. Researchers needed to identify and eliminate false reports. Correct identification of the canine involved in the attack—was it a wolf or a dog?—was also difficult to verify.

Linnell stressed that inaccurate or false accounts, fragmented reports and spotty reporting practices made obtaining an exact number of attacks impossible, cautioning that the numbers should be considered a minimum number of wolf attacks. He underscored that these accounts were important not only for the number, but also the kind of attacks reported.

Both studies identified three main types of attacks: those by rabid wolves, by predatory wolves, and defensive or investigative attacks. (Linnell et al. described investigative attacks as incidents in which “naïve wolves bit people as a way of ‘testing’ their suitability as prey.”)

Breaking down the numbers, from 1950–2002 in North America and Europe, 37 people were victims of rabid wolf attacks (four were fatal) and 31 predatory attacks (four were fatal). Drawing on fragmentary data from Russia and Asia, Linnell estimated that over the same fifty years records showed more than 1,330 rabid wolf attacks and more than 330 predatory attacks. From 2002–2020, the study reported 489 verifiable wolf attacks on humans, of which 380 were attributed to rabid wolves, 67 were predatory attacks and 42 were defensive/investigative attacks. Linnell stressed that these numbers need context, as they occurred worldwide, over 70 years, to a global human population numbering in the billions.

Currently, rabies is the main cause of wolf attacks on humans worldwide. Rabies, a virus affecting the central nervous system, is transmitted in saliva from bite wounds inflicted by an infected animal. Although the wolf is not considered to be a primary host of the virus, it can be infected by other rabid animals and transmit the disease to humans during an attack. According to Linnell, historical records suggest that “wolves develop an exceptionally severe ‘furious’ phase and can bite a large number of people (more than 30) in a single attack.” Records describing this kind of attack date to the 16th century throughout Western and Central Europe, Eastern Europe, India, China and the United States. Prior to Louis Pasteur's development of a rabies vaccine in the 1890s, rabies was almost always fatal. Even with modern treatments, severe attacks, as well as head and neck wounds from rabid animals, can still be fatal as the virus spreads more quickly than post-exposure treatment can act.

Widespread vaccination of domestic animals has helped to eliminate rabies from parts of Europe and North America. From 2002–2020, 380 humans were attacked by rabid wolves; 14 cases were fatal. These attacks occurred in areas where the virus remains prevalent: Turkey, Eastern Europe, southern Asia and the Middle East. To put the number of these attacks in perspective,



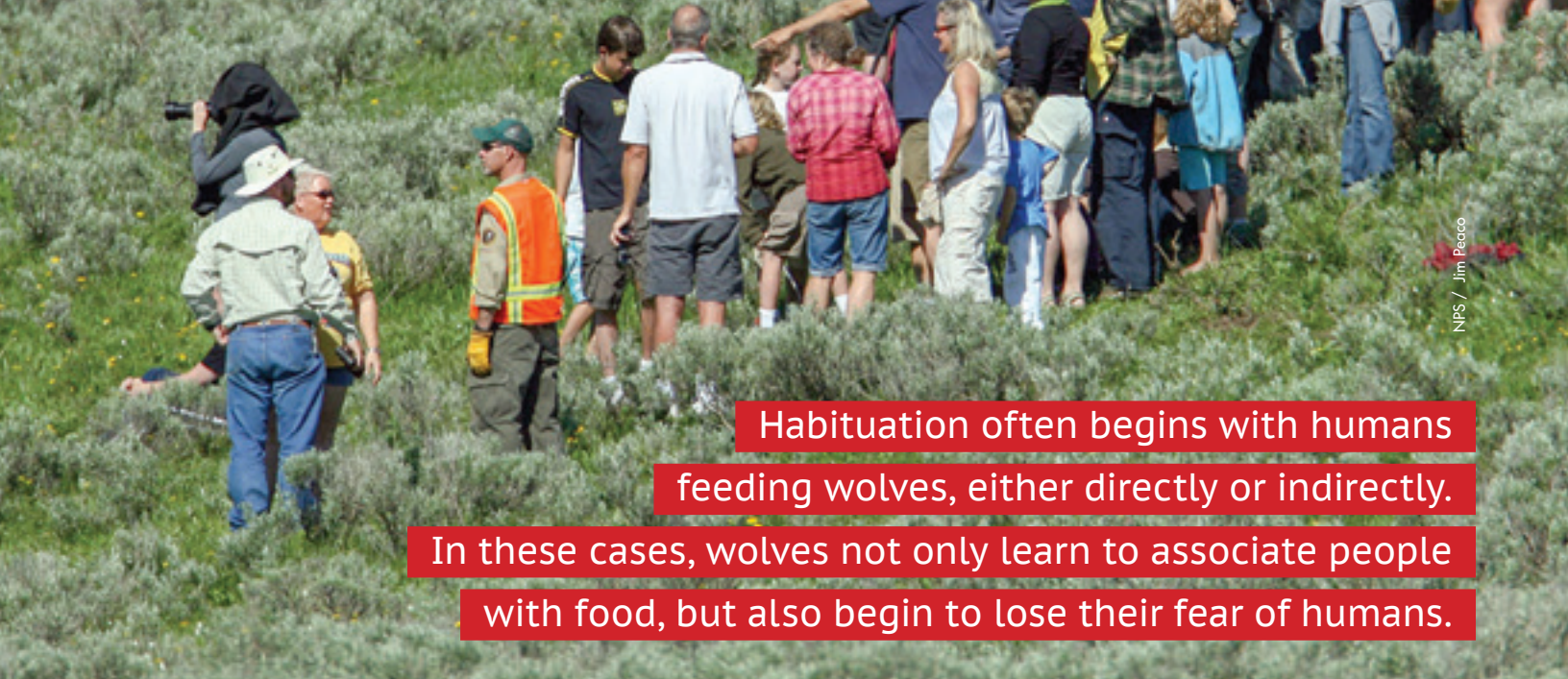
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Linnell pointed out that 99% of human rabies cases are due to attacks by domestic animals—especially dogs and cats. Wolves are a small part of the remaining 1%.

The report covering 2002–2020 listed 42 defensive or investigative attacks, three of which were fatal. Provoked or defensive attacks occurred when threatened or trapped wolves bit people in self-defense. The most common form of this attack involved shepherds protecting their livestock by attempting to kill or drive off a wolf (or wolves) without adequate weapons.

Predatory attacks refer to unprovoked attacks by healthy wolves. According to recent historical scholarship, predatory attacks were the most prevalent form of wolf attacks on people prior to the 20th century. For instance, Jean-Marc Moriceau's work, *Histoire du Méchant Loup (History of the [Big] Bad Wolf)* uncovered 3,069 accounts of wolf attacks from the 15th to 20th centuries. Of these attacks, 1,857 are attributed to predatory wolves and 1,212 to rabid wolves. From this and other historical studies, it appears that wolves targeted mostly children and women, raising the question of whether these wolves hunted humans selectively for their vulnerability.

Although predatory attacks are relatively rare today, the two Linnell studies underscore the importance of underlying causes to help prevent future attacks. By analyzing historical and present-day accounts of predatory attacks, researchers identified a range of factors associated with them, including ecological



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Habituation often begins with humans feeding wolves, either directly or indirectly.

In these cases, wolves not only learn to associate people with food, but also begin to lose their fear of humans.

(low abundance or absence of wild prey can cause wolves to turn to livestock and pets as prey); technological (for example, humans lack adequate tools to fend off an attack); socio-economic (poverty and vulnerable human populations); habituation (wolves no longer fear humans); and the personalities of individual wolves.

According to Linnell, some forms of habituation are potentially dangerous, while other forms are necessary.

Habituation often begins with humans feeding wolves, either directly (by offering them food, or putting out food for them) or indirectly (by leaving garbage dumps or livestock carcasses accessible to wolves). In these cases, wolves not only begin to associate people with food, but also begin to lose their fear of humans, increasing the risk of an attack. Yet habituation takes other forms—forms that may be necessary for wolves to survive. Wolves in Yellowstone National Park

have become used to navigating road traffic and being photographed. But as Linnell noted, large carnivores' survival requires large spaces that often extend beyond the boundaries of protected areas into human-altered and human-dominated landscapes, thus necessitating some level of habituation on their part. Large predators like wolves perform a tricky balancing act. They must adapt to the presence of humans and learn to tolerate human activities; at the same



Although the reports focus on recent wolf attacks,
both include historical accounts
over the last 400 years.

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time, for their own safety, wolves need to remain fearful of people and avoid them.

Linnell also explores the question of how the personalities of individual wolves contribute to wolf attacks. Although researchers have studied the individual personalities of captive animals and their behavior around humans, similar studies on wild animals have lagged. Questions such as whether the boldness or aggressiveness of individual wolves is genetic and whether habituation can trigger, influence or develop a wolf's aggressive tendencies remain unanswered. Linnell stresses that determining and understanding the wolf personality type or types that make individual wolves more prone to predatory attacks on humans is essential to helping prevent them.

To get a clearer picture of the potential risks associated with wolves, the researchers surveyed studies on the frequency and kinds of attacks on humans by other large predators including several species of bears, mountain lions, tigers and lions. The authors concluded that wolf attacks on humans can be likened to bear attacks on humans: they occur, but rarely. And while most individual wolves and bears are not dangerous, risks from habituated and food-conditioned animals are

real. Further, occasional unprovoked attacks can occur. As a further reminder that life is full of risks, the authors provided a brief overview of wildlife attacks on humans by snakes, insects, elephants, moose and bison. They even included people injured or killed in automobile collisions with deer.

Keys to preventing wolf attacks include prohibitions on people feeding wolves, removing food sources that attract wolves to humans, proper disposal of livestock carcasses, and enclosure of garbage sites and landfills. Where rabies is prevalent, the authors encourage vaccination of domestic animals and wildlife.

Responses to wolf attacks range from hunting to hazing (use of deterrents such as water or paint guns, whistles, horns or lights) to removal (live capture or lethal control) of aggressive wolves. The authors warn, however, that each of these responses has limited effectiveness, and lethal control and hunting are controversial.

So, do wolves attack humans? Linnell's investigations found that while there are recorded instances of wolf attacks on people, the frequency and likelihood of those attacks need to be put into context.

Linnell concludes, "In Europe and North America, we only found evidence

for 12 attacks (with 14 victims) of which two (both in North America) were fatal, across a period of 18 years. Considering that there are close to 60,000 wolves in North America and 15,000 in Europe, all sharing spaces with hundreds of millions of people, it is apparent that the risks associated with a wolf attack are above zero, but far too low to calculate." ■

Additional Reading

Linnell, John D. C., R. Andersen, Z. Andersone, et al. *The Fear of Wolves: A Review of Wolf Attacks on Humans:1950-2002*. NINA. Report no. 731: 1-65. Norwegian Institute for Nature Research Oppdragsmelding, 2002.

Linnell, John D. C., E. Kovtun, and I. Rouart. *Wolf Attacks on Humans: An Update for 2002-2020*. NINA Report no.1944: 1-46. Norwegian Institute for Nature Research, 2021.

Moriceau, Jean Marc. *Histoire du Méchant Loup: 3000 Attaques sur l'Homme en France (XVe-XX-e Siècle)*, 2nd edition. Paris: Fayard, 2007.

Debra Mitts-Smith researches and writes about the wolf in literature and art. Her book, *Picturing the Wolf in Children's Literature*, was published by Routledge in 2010. She is currently working on a cultural history of the wolf.