

# Wolf Tales

By JC Ryan

*“I woke up one morning thinking about wolves and realized that wolf packs function as families. Everyone has a role, and if you act within the parameters of your role, the whole pack succeeds, and when that falls apart, so does the pack.” -*

**Jodi Picoult**

*“Perhaps most important for nomads was the belief in the symbiosis that existed between wolf and humans on the steppe. Wolves were an integral part of keeping the balance of nature, ensuring that plagues of rabbits and rodents didn't break out, which in turn protected the all-important pasture for the nomads' herds.” -*

**Tim Cope**

# Table of Contents

Wolves and Humans .....	3
The Legend .....	3
Opinion: We didn't domesticate dogs. They domesticated us. ....	4
From the Scientific Records .....	6
Wolves are Intelligent .....	9
Wolves vs Dogs .....	12
Physical Differences .....	12
Dietary Differences .....	13
Developmental Differences.....	13
Behavioral Differences.....	15
Social Differences.....	15
Reproductive Differences.....	15
Want to Know More?.....	16
The History of Wolves and Humans .....	17
Humans Owe Their Survival To Wolves.....	17
10 Reasons We Need Wolves.....	18
Interesting Facts About Wolves .....	20
Additional Reading.....	21

# Wolves and Humans

## The Legend

Legend has it that Romulus and Remus, the twin founders of Rome, were abandoned as children and had to be suckled by a wolf until they were discovered by a wandering shepherd. Eventually they founded the great city on Palatine Hill, the very place where they had been cared for by the wolf. This is likely just a myth, but history abounds with stories of children who really were raised by animals.



Some researchers argue that dogs were first domesticated from wolves in Central Asia or China, others claim that humans first domesticated wolves in Europe. A new study suggests that dogs arose from two separate – possibly now extinct – wolf populations on opposite sides of the Eurasian continent.

There is however little doubt that dogs originated from wolves. See the next section “From the scientific records” for more details about this.

Accepting that as fact, the question is, how did it happen?

Some believe humans took some wolf pups, tamed them and taught them how to guard humans and help them with hunting. However, there are at least two scientists who disagree.

## **Opinion: We didn't domesticate dogs. They domesticated us.**

Scientists argue that friendly wolves sought out humans.

By Brian Hare and Vanessa Woods, for National Geographic News.

The authors ask the question: Who made the first moves toward friendship, humans or dogs?

In the story of how the dog came in from the cold and onto our sofas, we tend to give ourselves a little too much credit. The most common assumption is that some hunter-gatherer with a soft spot for cuteness found some wolf puppies and adopted them. Over time, these tamed wolves would have shown their prowess at hunting, so humans kept them around the campfire until they evolved into dogs.

But when we look back at our relationship with wolves throughout history, this doesn't really make sense. For one thing, the wolf was domesticated at a time when modern humans were not very tolerant of carnivorous competitors. In fact, after modern humans arrived in Europe around 43,000 years ago, they pretty much wiped out every large carnivore that existed, including saber-toothed cats and giant hyenas. The fossil record doesn't reveal whether these large carnivores starved to death because modern humans took most of the meat or whether humans picked them off on purpose. Either way, most of the Ice Age bestiary went extinct.

The hunting hypothesis, that humans used wolves to hunt, doesn't hold up either. Humans were already successful hunters without wolves, more successful than every other large carnivore. Wolves eat a lot of meat, as much as one deer per ten wolves every day—a lot for humans to feed or compete against. And anyone who has seen wolves in a feeding frenzy knows that wolves don't like to share.

Humans have a long history of eradicating wolves, rather than trying to adopt them. Over the last few centuries, almost every culture has hunted wolves to extinction. The first written record of the wolf's persecution was in the sixth century B.C. when Solon of Athens offered a bounty for every wolf killed. The last wolf was killed in England in the 16th century under the order of Henry VII. In Scotland, the forested landscape made wolves more difficult to kill. In response, the Scots burned the forests. North American wolves were not much better off.

By 1930, there was not a wolf left in the 48 contiguous states of America. (See "Wolf Wars.")

If this is a snapshot of our behavior toward wolves over the centuries, it presents one of the most perplexing problems: How was this misunderstood creature tolerated by humans long enough to evolve into the domestic dog?

The short version is that we often think of evolution as being the survival of the fittest, where the strong and the dominant survive and the soft and weak perish. But essentially, far from the survival of the leanest and meanest, the success of dogs comes down to survival of the friendliest.

Most likely, it was wolves that approached us, not the other way around, probably while they were scavenging around garbage dumps on the edge of human settlements. The wolves that were bold but aggressive would have been killed by humans, and so only the ones that were bold and friendly would have been tolerated.

You can read the rest of the article here:

<http://news.nationalgeographic.com/news/2013/03/130302-dog-domestic-evolution-science-wolf-wolves-human/>

*Dr. Brian Hare is the director of the Duke Canine Cognition Center and Vanessa Woods is a research scientist at Duke University. This essay is adapted from their new book, *The Genius of Dogs*, published by Dutton. To play science-based games to find the genius in your dog, visit [www.dognition.com](http://www.dognition.com)*

# From the Scientific Records

It is said that domestic dogs originated from wolf cubs over 40,000 years ago, in southeast Asia when they were tamed by humans and used as guards. Since that time wolves have been domesticated and used by humans for hunting and herding. Today there are about 400 breeds of domesticated dogs.



Looking at the images above and comparing that to the images of wolves below it poses a bit of challenge to be convinced that domestic dogs are related to wolves.

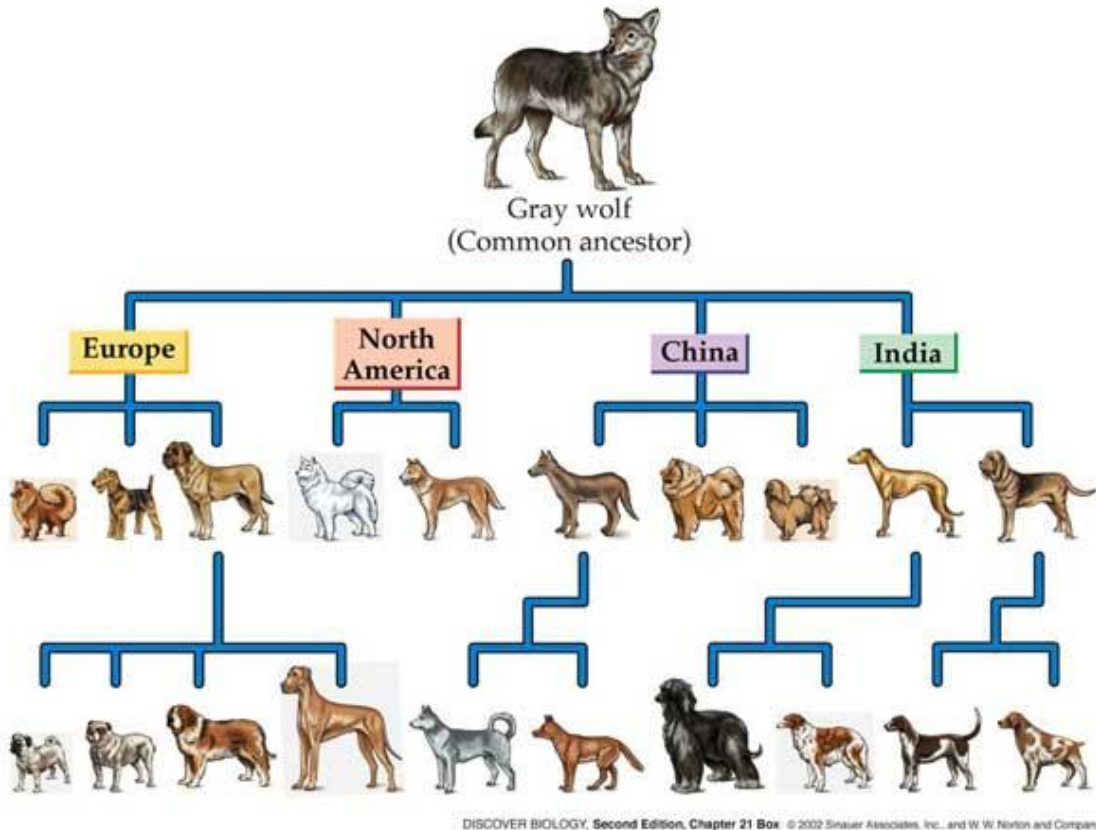


However, DNA studies of domestic dogs and wolves show that dogs are most closely related to the grey wolf. There is only a 0.2% difference between the DNA

of a domestic dog, and that of a grey wolf. The difference between a coyote and domestic dog is 4%.

The domestic dog is a member of genus *Canis* (canines), part of the wolf-like canids. The closest living relative of the dog is the gray wolf and there is no evidence of any other canine contributing to its genetic lineage.

Here is what some scientists say have happened:



Archaeological records show the first dog remains buried beside humans 14,700 years ago, and some disputed remains from about 36,000 years ago. These dates suggest that dogs appeared in the time of human hunter-gatherers and not agriculturists.

Scientists are not in agreement as to where the genetic divergence of dog and wolf took place — the most plausible proposals had always been that it took place in Western Europe, Central Asia, and East Asia. But more recently things got a bit more complicated with evidence showing that an initial wolf population had split into East and West Eurasian wolves which were domesticated independently

before going extinct into two distinct dog populations between 14,000–6,400 years ago, and then the Western Eurasian dog population was partially and gradually replaced by East Asian dogs that were brought by humans at least 6,400 years ago.

After all this time of divergence between wolves and dogs it has been found that different breeds of dogs have genetically become more closely related to each other than to their wolf counterpart. This means that Huskies (even though they may look more similar to wolves and have lived in the same geographic area) have more in common, genetically speaking, with Boxers than with grey wolves.



This means that dogs and wolves are farther removed from each other than humans have historically presumed.



# Wolves are Intelligent

Wolves have larger skulls, because they have bigger brains and are much smarter than dogs. Scientists have shown that adult dogs only ever attain the intelligence levels of those of wolf pups.

Therefore, it is thought that when wolves are comfortable with people, they might comply with your commands because they know what you're asking, they're wicked smart, or they just might not care enough.

It has been proven that when dogs are given a puzzle to solve, dogs will often look at their owners for guidance while wolves on the other hand, will try to solve the problem on their own.

**Wolves beat dogs on logic test** says Clara Moskowitz in an article on the Live Science website.

Wolves do better on some tests of logic than dogs, a new study found, revealing differences between the animals that scientists suspect result from dogs' domestication.

In experiments, dogs followed human cues to perform certain tasks despite evidence they could see suggesting a different strategy would be smarter, while wolves made the more logical choice based on their observations.

In fact, dogs' responses were similar to human infants, who also prioritize following the example of adult humans.

You can read the rest of the article here:

<http://www.livescience.com/5672-wolves-beat-dogs-logic-test.html>

**Who's (Socially) Smarter: The Dog or the Wolf?** This is a question that has been asked often.

One of the classic experiments that shows the cognitive difference between wolves and dogs is the pointing task: Whereas a dog—even a 3-month-old puppy—will readily follow the direction a person points in, wolves just don't get it. That contrast has been cited as evidence that dogs may have gained social intelligence not present in wolves. "But that story is too simple," says Friederike Range, a behavioral biologist at the University of Veterinary Medicine Vienna.

To dig deeper, Range and her colleague Zsófia Virányi studied a captive population of wolves and dogs raised together at the Wolf Science Center outside Vienna. For one thing, they found that wolves work together better than dogs do.

To test how well dogs and wolves could learn from one another, the researchers created a problem that wolves and dogs were equally motivated to solve: a food treat locked inside a box. The only way to open the box was with a lever. They trained one dog to operate the lever with its mouth, and another dog to use its paw. (The wolves were raised with the dogs and treated them as members of the same pack, Range says.) Then they let wolves and dogs see the box opened by one of those two methods. If dogs have better social intelligence across the board, they should do better than the wolves at learning by example and getting at the treat.

But the dogs did poorly, Range reported at the meeting. Only four out of 15 managed to open the box at all, and none used the method (mouth or paw) that they had been shown. Meanwhile, all 12 of the wolves got the treat, and nine of them did so by copying the method they had been shown.

*"The mainstream theory is that wolves became dogs when they started treating humans as their pack members,"* Range says.

Rather than gaining new cognitive abilities that wolves never had, such as so-called "theory of mind" required to learn complex tasks by watching others perform, dogs may have undergone an evolutionary tradeoff: losing some of the ability to learn from their own kind, but gaining the ability to learn from humans.

You can read the full article by John Bohannon in the Sciencemag website here: <http://www.sciencemag.org/news/2013/05/whos-socially-smarter-dog-or-wolf>

**Wolves found to be better at problem-solving task than domesticated dogs** reports Bob Yirka on the Phys.org website:

Monique Udell, a researcher with Oregon State University, has found via experimentation, that domestic dogs appear to have lost some of their problem-solving abilities as a result of their long history with humans. In her paper published in the journal *Biology Letters*, she describes a study she carried out and offers some theories on why she believes domesticated dogs may have lost some of their natural skills.

Udell notes that dogs have long been known to work with people as they go about their lives, in contrast to animals in the wild—one such striking behavior is their tendency to look back at their human companion when faced with a perplexing situation—seemingly asking for help. To learn more about this behavior, Udell enlisted the assistance of ten dogs that live as pets (and their owners), ten that live in shelters, and ten wolves that have been raised by humans.

You can read the full article by Bob Yirka here: <http://phys.org/news/2015-09-wolves-problem-solving-task-domesticated-dogs.html>

# Wolves vs Dogs

The two species are very closely related, and can even interbreed but there is no denying that in terms of size, form, and function, some breeds more closely resemble wolves than others. Dogs and wolves share 99.8% of their genes, they have the same number of chromosomes — 78 arranged in 39 pairs — which makes them capable of mating and even giving life to offspring; however, this 0.2% difference is enough to set wolves and dogs apart.

Wolves and dogs are different from a physical viewpoint as well as behavioral, intelligence, developmental, social and reproduction viewpoints.

Even though dogs and wolves are genetically similar, we must remember there are at least 15,000 years (if not much more) separating them and therefore dogs are a far cry from being the socialized wolves some people still tend to portray.

Over millennia, humans have selected and “designed” dogs to suit us, while wolves were subjected to the rule of natural selection — survival of the fittest.

Dogs are generally good at adapting to changing situations; whereas wolves are wary and do not adapt well to new environments and circumstances.

Due to human care and medicine, 65% of domesticated dogs living in a household, live an average of 10-13 years. Wolves in the wild have an average lifespan of 6-8 years.

## **Physical Differences**

Dogs are probably the most varied species on earth coming in all shapes, colors and sizes, but wolves, on the other hand, are quite uniform when it comes to appearance.

Wolves are quite skinny, and have long, gangly legs, so they run much faster than dogs. In a sprint, most adult dogs won't be able to keep up with a wolf pup.

Wolves and dogs both have 42 teeth, 20 teeth in the upper jaw and 22 in the lower jaw but... wolves have longer canines, to help them make quicker work of their prey.

Dogs have smaller jaws than wolves. Wolves have extraordinary jaw strength with crushing pressure of about 1,500 (lbs/square inch) compared to the average 740 (lbs/square inch) crushing pressure of a German Shepherd.

Dogs' eyes come in several colors, ranging from brown to blue eyes and even one eye of one color and one eye of another. Wolves tend to have eyes of various shades of yellow to amber, but never brown.

Coat color in dogs is very varied — their coat colors no longer play a main role for camouflaging in their surroundings. In wolves, however, coat color is still important for blending in their surroundings and it's therefore limited to white, black, grey, to red and tawny brown.

### **Dietary Differences**

Wolves are carnivores that require high amounts of energy to live in the wild. Their existence is closely intertwined with the availability of large herbivores such as deer, moose, caribou, and buffalo. On a day to day basis, wolves are opportunists and will eat any number of small birds and mammals, and even some indigenous plants and berries. But the overall health of the pack is dictated by the availability of large herbivores.

Dogs, through thousands of years of domestication, have adapted to a more omnivorous lifestyle and thus can survive on the many, varied nutritional offerings of humans, though meat would clearly be a preference for most.

Domestic dogs, for the most part, get their nutrition daily while wolves may go days or weeks between meals.

Wolves kill prey, while dogs live in partnership with humans. Dogs may therefore eye, stalk, chase, but without killing and ingesting. Wolves need to go through the entire predatory sequence from start to finish instead, to survive.

### **Developmental Differences**

Dogs develop slower than wolves.

“It takes 90 minutes for a dog to get used to a human, but 24 hours for a wolf,” says evolutionary biologist Dr. Kathryn Lord from the University of Massachusetts, who studied how seven wolf pups and 43 dogs reacted to smells, sounds and visual stimuli. She found that wolves develop faster than dogs.

When wolves begin exploring their world they are still blind and deaf, and although the animals are almost identical on a genetic level, these early experiences and developmental differences define their personalities, the researchers say.

She discovered both animals develop their senses at the same time. The sense of smell at two weeks; hearing at four weeks; and vision by six weeks, on average.

However, the two subspecies enter what's called the 'critical period of socialization' at different stages. This period of socialization is when animals begin exploring their world without fear.

All the smells, sights, tastes and noises these animals experience during this time become familiar and safe. As the period progresses, fear increases and once the window of socialization has closed new sights, sounds and smells will be seen as unfamiliar and scary.

For wolf and dog pups this period of socialization lasts for four weeks. During this time, dogs are usually introduced to humans and other animals so will be comfortable with them forever. Wolves traditionally are not, and this makes them consider humans as threats when and if they do eventually come into contact with them.

The study also found that wolves enter this period of socialization when they are two weeks old, whereas dogs don't enter it until they're four weeks.

This means that when wolves begin exploring their world they are still blind and deaf. By the time a wolf pup's sight and hearing has fully developed, they are closer to the end of their socialization window so their levels of fear are heightened.

This means that even if they come into contact with humans during this period, they may still be wary and fearful of them.

Wolves have a reputation for being feral beasts, but research has found that they first explore their world when they are still blind and deaf making it a scarier place than for dogs. Dr. Lord says, *'No one knew this about wolves, that when they begin exploring they are blind and deaf and rely primarily on smell at this stage. This is very exciting.'*

You can read the full article here:

**Why a wolf will never be man's best friend: Scientists find out why dogs become domesticated (and say the first month of their life is key)**

<http://www.dailymail.co.uk/sciencetech/article-2264622/Wolves-versus-dogs-Why-wolf-mans-best-friend-Scientists-dogs-domesticated.html>

**Behavioral Differences**

Wolves are crepuscular which means they're most active at dusk and dawn while dogs are most active during the daytime.

Dogs retain juvenile behaviors into adulthood while wolves don't. In other words, dogs like to play; much more so than wolves, and this play behavior is retained into adulthood. While adult wolves may occasionally play, play behaviors in dogs are more easily stimulated.

Dogs are much more prone to whining even as adults, while adult wolves seldom whine.

Dogs are inclined to barking for various reasons, while adult wolves very seldom bark. Wolves, though, rely on many other forms of vocal communication, and they use their signature howl for long-distance communication.

**Social Differences**

Domesticated dogs live among humans and are members of human social groups. Their social group include their human family, other dogs, and other pets living within the household.

Wolves on the other hand, live in packs consisting of a nucleus family of wolves with clearly defined hierarchies and behavior expectations.

Dogs are usually happy to accommodate other dogs and will socialize with a stranger for the rest of their lives.

Wolves tend to form tight family units and are generally not accepting of stranger wolves.

**Reproductive Differences**

Dogs are being selectively bred so as to help suit humans' purposes for work and companionship. Wolves, on the other hand, reproduce through natural selection through Mother Nature's "survival of the fittest."

The pups of domesticated dogs, living in the care and safety of humans have a higher chance of surviving, while wolf pups instead must endure many challenges.

Dogs tend to reach sexual maturity around 6 to 9 months of age. Wolves instead reach sexual maturity around 18 to 24 months of age.

Female dogs (with some exceptions) generally go into heat twice a year, while wolves go into heat only once a year. Female dogs can go into heat at any time of the year, while wolves are seasonal breeders, going into heat in the spring so their offspring have time to develop and become stronger before winter.

Dogs give birth in whelping boxes and their owners provide their puppies with “puppy mush” to help them transition into eating solid foods. Mother wolves build a den to raise the pups and will regurgitate their meals to help wean the pups.

### **Want to Know More?**

#### **Differences Between Wolves and Dogs**

<http://missionwolf.org/page/wolf-dog-difference/>

#### **What Are The Main Differences Between Dogs And Wolves?**

<http://iheartdogs.com/what-are-the-main-differences-between-dogs-and-wolves/>

#### **How Are Wolves & Dogs the Same?**

<http://pets.thenest.com/wolves-dogs-same-5102.html>

#### **Surprising DNA find about which dog breeds came first**

<http://archive.azcentral.com/families/articles/0520DOGSLIFE-ON.html>

#### **30 Fascinating Differences Between Wolves and Dogs**

<http://www.dailydogdiscoveries.com/differences-between-wolves-and-dogs/>

#### **Why wolves are forever wild, but dogs can be tamed**

<https://www.sciencedaily.com/releases/2013/01/130117152012.htm>



# The History of Wolves and Humans

We now know that there is a probably at least a 15,000-year-old history between wolves and humans. Let's have a look at our relationship over the ages.

## Humans Owe Their Survival To Wolves

Pat Shipman, a retired anthropologist from Pennsylvania State University, theorizes that early humans domesticated wolves into wolf-dogs that helped with hunting. This wolf-human alliance gave our ancestors an advantage over Neanderthals, another predator and a competitive species. With help from wolves, early humans survived. Neanderthals did not.

Scientists believe that modern humans evolved in Africa. When our ancestors reached Europe about 45,000 years ago, they encountered the Neanderthals, who dominated that continent. Within 5,000 years, Neanderthals had disappeared. Some scientists believe that climate change caused their demise.

But Shipman's new book, "The Invaders: How Humans and Their Dogs Drove Neanderthals to Extinction" presents a ground-breaking alternative.

*"At that time, modern humans, Neanderthals and wolves were all top predators and competed to kill mammoths and other huge herbivores," Shipman told Robin McKie, of The Guardian. "But then we formed an alliance with the wolf and that would have been the end for the Neanderthal."*

According to Shipman, *"Early wolf-dogs would have tracked and harassed animals like elk and bison and would have hounded them until they tired. Then humans would have killed them with spears or bows and arrows."*

*"This meant the dogs did not need to approach these large cornered animals to finish them off — often the most dangerous part of a hunt — while humans didn't have to expend energy in tracking and wearing down prey. Dogs would have done that. Then we shared the meat. It was a win-win situation."*

Shipman found no evidence that Neanderthals joined forces with wolves. As she told Worrall, *"They continued to do things in the same old Neanderthal way as life got hard and times cold. They continued to hunt the same animals with the same tools in the same way. And that lack of adaptability may have been a telling*

*failure as [modern humans] moved in. If you then add in wolf-dogs, Neanderthals were at a terrific disadvantage."*

Read the full article here:

<https://www.thedodo.com/wolves-helped-early-humans-survive-1081898359.html>

## **10 Reasons We Need Wolves**

**How wolves fight climate change, and 9 other reasons to protect canis lupus.**

By Maddie Oatman and Kiera Butlerapr.

**Reason #1:** Without wolves and other large predators, ecosystems can go haywire. A 2001 study found that when wolves went extinct in Yellowstone, for example, the moose population ballooned to five times its normal size and demolished woody vegetation where birds nested. As a result, several bird species were eliminated in the park.

**Reason #2:** Scavengers thrive when wolves are around. The species that help themselves to wolves' leftovers include ravens, magpies, wolverines, bald eagles, golden eagles, three weasel species, mink, lynx, cougar, grizzly bear, chickadees, masked shrew, great gray owl, and more than 445 species of beetle.

**Reason #3:** Wolf kills are also good for the soil. A 2009 study in Michigan's Isle Royale National Park found that wolf-killed elk carcasses dramatically enhanced levels of nitrogen and other nutrients.

**Reason #4:** Wolf kills feed more animals than hunting by humans, since wolves scatter their carrion over the landscape. Wolf kills benefit three times more species than human hunting kills.

**Reason #5:** When wolves disappeared from Yellowstone, coyotes preyed on pronghorn almost to the point of no return. But since wolves have returned, the pronghorn have come back. In fact, pronghorns tend to give birth near wolf dens, since coyotes steer clear of those areas.

**Reason #6:** Deer and elk congregate in smaller groups (PDF) when wolves are around. This helps reduce the transmission of illnesses like Chronic Wasting Disease.

**Reason #7:** Chronic Wasting Disease is a major threat to elk and deer in the West. Wolves can help by reducing sick animals' lifespans, in turn limiting the amount of time they can spread infections.

**Reason #8:** Yellowstone elk are less likely to overgraze near rivers and streams—damaging fragile ecosystems—when wolves are in the neighborhood.

**Reason #9:** Wolves help protect against climate change. A 2005 UC Berkeley study in Yellowstone concluded that milder winters, a product of climate change, have led to fewer elk deaths. This left scavengers like coyotes and ravens scrambling for food, but the problem was far less pervasive in areas where wolves were around to hunt elk.

**Reason #10:** Wolf tourism is an economic boon (PDF). Restoration of wolves in Yellowstone has cost about \$30 million, but it's brought in \$35.5 million annual net benefit to the area surrounding the park. Photo shows a Yellowstone Wolf Project biologist securing a VHF (very high frequency) tracking collar on a sedated wolf.

Read the full article here:

<http://www.motherjones.com/environment/2011/04/10-reasons-protect-wolves-climate-change>

# Interesting Facts About Wolves

1. A male and female that mate usually stay together for life. They are devoted parents and maintain sophisticated family ties.
2. Though many females in a pack are able to have pups, only a few will actually mate and have pups. Often, only the alpha female and male will mate, which serves to produce the strongest cubs and helps limit the number of cubs the pack must care for. The other females will help raise and “babysit” the cubs.
3. Unlike other animals, wolves have a variety of distinctive facial expressions they use to communicate and maintain pack unity.
4. Wolves have about 200 million scent cells. Humans have only about 5 million. Wolves can smell other animals more than one mile (1.6 kilometers) away.
5. Under certain conditions, wolves can hear as far as six miles away in the forest and ten miles on the open tundra.
6. Wolves can swim distances of up to 8 miles (13 kilometers), aided by small webs between their toes.
7. A wolf can run about 20 miles (32 km) per hour, and up to 40 miles (56 km) per hour when necessary, but only for a minute or two. They can “dog trot” around 5 miles (8km) per hour and can travel all day at this speed.
8. A hungry wolf can eat 20 pounds of meat in a single meal, which is akin to a human eating one hundred hamburgers.
9. In ancient Rome, barren women attended the Roman festival Lupercalia (named for the legendary nursery cave of Romulus and Remus) in the hopes of becoming fertile.
10. Biologists have found that wolves will respond to humans imitating their howls. The International Wolf Center in Minnesota even sponsors “howl nights” on which people can howl in the wilderness and hope for an answering howl.
11. Currently, there are about 50,000 wolves in Canada; 6,500 in Alaska; and 3,500 in the Lower 48 States. In Europe, Italy has fewer than 300; Spain around 2,000; and Norway and Sweden combined have fewer than 80. There are about 700 wolves in Poland and 70,000 in Russia.

On this website, you will find 62 fascinating facts about wolves.

<https://www.factretriever.com/wolves-facts>

# Additional Reading

**Can you domesticate a wolf?**

<https://www.quora.com/Can-you-domesticate-a-wolf>

**Can Wolves Be Tamed?**

<http://wonderopolis.org/wonder/can-wolves-be-tamed>

**Wolves as pets and working animals**

[https://en.wikipedia.org/wiki/Wolves\\_as\\_pets\\_and\\_working\\_animals](https://en.wikipedia.org/wiki/Wolves_as_pets_and_working_animals)

**Raising wolf-dogs**

<https://www.cesarsway.com/about-dogs/breeds/raising-wolf-dogs>