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NORTHWEST WILDLIFE PRESERVATION SOCIETY

Grey Wolf

Canis lupus



Photo credit: Darren Colello

By Nicole Lee

An icon of the Canadian wilderness, the grey wolf resides in much of the northern hemisphere and goes by many names; grey wolf, Arctic wolf, common wolf, Mexican wolf, plains wolf, timber wolf, and tundra wolf. The largest member of the canine family, the grey wolf (*Canis lupus*) is an apex predator and well adapted to survive and hunt in its environment.

Canis lupus is a social creature and lives with others of its kind for most of its life in the form of a pack. Made up of a pair-bonded male and female (at the top of the social hierarchy), their offspring, and occasionally former members of other packs, this highly organized collection of wolves works together defend territory, raise young, and take down large prey animals. They bond by working together, play fighting, grooming each other and howling in chorus.

Although no longer considered vulnerable, this species has faced its share of adversity. When westward expansion and human development changed the natural landscape in the 1800's, there were fewer large mammals for wolves to eat. In response, wolves sometimes turned to livestock for sustenance and thus gained a negative spotlight in the eyes of the public. The government responded by issuing bounties, or rewards, for the killing of wolves, resulting in extirpation of the species from much of its native range.

Now, with a healthier population after lifting of the bounties and land use changes, the grey wolf continues to be a symbol of Canada's natural wildlife. But, the threats have not disappeared. Currently, the grey wolf is still in the news. Preservation of the species is competing with restoration of the mountain caribou

NWPS Headquarters
720-1190 Melville Street
Vancouver, BC V6E 3W1

NWPS Vancouver Island
PO Box 39058
RPO James Bay
Victoria, BC V8V 4X8

t Vancouver 604.568.9160
t Victoria 778.967.3379
e info@northwestwildlife.com
w www.northwestwildlife.com

population. A draft management plan prepared by the BC Government Ministry of Forests, Lands, and Natural Resource Operations proposes wolf culls to allow the endangered caribou populations to recover. This is a heated topic and public hearings for the management plan closed in December 2012. The final draft is now being compiled.

Preservation of this species would be aided by increased understanding of their role in nature, namely, the way they interact with and alter prey populations. Better population inventories would allow monitoring of the species to give a more accurate picture of their status. Minimizing habitat destruction will directly help by allowing wolves to continue to have their naturally large ranges and indirectly help by reducing unnatural wildlife interactions—such as that between the wolf and the caribou—which lead to tough management decisions that place one species against another. We can help the grey wolf by supporting initiatives that promote learning more about these creatures and protecting their natural habitat.

Characteristics

While the name grey wolf suggests a grey colour, there is great variation to this general observation. With a light yellow base coat interspersed among whites, greys, blacks, and sometimes tans or browns, these wolves range in overall colour from almost pure white to jet black and all shades in between. Wolves in the Arctic tend to resemble their environment with a mostly white coat, whereas wolves in a highly forested area tend to blend into their environment with a grizzled grey-brown or black coat. These differences in colour illustrate how over time, organisms adapt to their environment. In this case, the differences in coat colour serve to camouflage the species and likely aid in concealment, useful for sneaking up on prey.

Canis lupus has a pointed muzzle, erect ears, and a bushy tail. Like other canine species, it is a digitigrade, meaning that when it walks, it places weight on the digits (or toes) of its feet, and not the heel. While the front paws have five toes, one is regressed and not used for walking, but rather, is found up on the middle of the foot. The hind paws only have four digits. So, both the front and hind paws leave prints showing four digits. Claws and some of the pads of the feet are also visible in wolf tracks. The forefoot tracks are larger and rounder than the hindfoot tracks, which are more ovoid. Wolf tracks generally show splayed toes – the large surface area serves to disperse weight, which can be especially useful when running on soft ground or snow. Claws are used for traction while running. Compared with a domestic dog of similar size, *C. lupus* has a narrower frame, resulting in tracks that show the right and left feet closer together than would be observed for a dog.

Wolves are the largest canid in the world, reaching up to 90cm (35.4 in) at the shoulder, and 2.0m (6.5 ft) in length from the tip of their nose to the tip of their tail, and up to 64 kg (140 lbs) in weight. Their paws are around 10cm (3.9 in) long and 9.5cm (3.7in) across, their skulls 22-28cm (8.6-11.0in) long, with males tending to be overall larger than the females. The winter coat on a grey wolf averages 5-6.3cm (2.0-2.5in) long, making them appear larger than they really are.

Life Cycle

Wolves reach sexual maturity during their second year, but seldom begin breeding that young. In the highly structured social hierarchy that grey wolves adhere to, an alpha pair (one male and one female) lead the pack. They are also the pair that usually mates; however, if conditions are overall good for the pack, other pairs may also mate.

Wild wolves only breed one time a year, generally from March to April, although this can vary with latitude. Once paired, wolves mate for life. After a nine week gestation period, litters of five or six pups, but sometimes more, are born. Birthing takes place in a den – in coniferous forests and in the tundra, this usually means a hole dug in the ground whereas in mixed forests, it can be inside of an old tree stump or inside a rock crevice.

NWPS Headquarters
720-1190 Melville Street
Vancouver, BC V6E 3W1

NWPS Vancouver Island
PO Box 39058
RPO James Bay
Victoria, BC V8V 4X8

t Vancouver 604.568.9160
t Victoria 778.967.3379
e info@northwestwildlife.com
w www.northwestwildlife.com

The entire pack plays a role in raising the pups, which are born blind and deaf. Pups remain in the den for about two weeks and then begin to move around outside. While their parents are out hunting, other members of the group sometimes babysit. By mid-autumn, they are ready to travel with the pack and take part in hunting and other activities.

Skills and strength for hunting are developed through play with fellow wolves. Young wolves bump bodies and prop their forelimbs around the necks of comrades. They hide behind obstacles and jump out unexpectedly at each other. Even mature wolves continue to play with each other. After training for at least a year, adolescent wolves can hunt for themselves.

Grey wolves typically live eight years, but can live for 13 or more in the wild. In captivity, it is generally up to 16 years of age.

Habitat

The grey wolf lives in wild and remote areas in open tundra and forests, occupying northern habitats with suitable prey densities. Studies have found that wolf densities are highest where prey biomass is highest.

Geographically speaking, this area includes locations in the northern hemisphere from 75° N to 50° N in Canada, Alaska, northern USA, Europe, and Asia. The wolves are common across Canada, except on the island of Newfoundland (where they were extirpated by 1911) and the southern portions of the prairie provinces where human populations are high. In the United States, they occupy Alaska and parts of Idaho, Montana, Wyoming, Michigan, Minnesota, Washington, and Wisconsin. However, the present range of the species has been greatly reduced when compared with its historical range, most especially in the continental US and Europe. Strong wolf populations today only occur in Canada, Alaska and parts of Russia.

About 200 years ago, grey wolves were the most widely distributed mammal species and occupied large areas of North America, Asia, and Europe, refraining only from deserts, tropical rainforests, and the highest of mountain peaks. They were found in every part of the northern hemisphere that supported large mammalian prey. The worldwide range is now about two-thirds of its historical range, the decline attributed to poisoning, habitat loss, and intentional removal of wolves because they were viewed as a threat to livestock. In British Columbia, the present range represents a 20% reduction from the wolves' historical range about 200 years ago. (However, in the contiguous US, it has been exterminated from about 95% of its range).

On a smaller spatial scale, wolf packs live in an area of land they mark as their territory and they defend that territory from other wolves. If another pack intrudes, fights occur, often resulting in deaths. The size of a wolf pack's territory varies depending on the environment, including the size and type of prey available.

Wolves are intelligent, social animals that hunt their prey in packs, which enables them to kill large animals. Hunts are more pack-oriented in the winter months when the pups of that year will already have joined the pack; however, in summer months, wolves sometimes forage for food in pairs or solo, while certain members of the pack must instead devote attention to raising the pups. Since the summer hunts are often done in smaller groups with no snow to preserve wolf tracks, it is rarer to observe hunting behaviour and less is known about wolves' hunting strategy during these months. In the winter, one can follow their tracks in the snow or more easily spot them from aircraft. A relatively newer technique used to study hunting behaviour is placing radio-transmitting collars on wolves to track their movement.

For this species, hunting requires endurance. On average, for every 10 large mammals chased by a pack, only one is killed, giving the species a hunting success rate of about 10%. Wolves can travel up to 64km/h (40mph) for 20 minutes, but their usual pace is closer to 6-10km/h (3.7-6.2mph). Generally, they

NWPS Headquarters
720-1190 Melville Street
Vancouver, BC V6E 3W1

NWPS Vancouver Island
PO Box 39058
RPO James Bay
Victoria, BC V8V 4X8

t Vancouver 604.568.9160
t Victoria 778.967.3379
e info@northwestwildlife.com
w www.northwestwildlife.com

do not run at full speed until they get as close to their prey as possible. Over the course of a single day, wolves have been recorded travelling up to 200km (124mi).

Large mammals make up grey wolves' main prey. In British Columbia, this includes deer, elk, caribou, moose and bison. Rarely, wolves eat smaller mammals such as rodents, rabbit, raccoon even beaver, as well as birds,

A wolf will not easily give up on prey that ventures into the water as they themselves are comfortable wading in water. With a highly acute sense of smell, they can detect scents up to 2.8km (1.75mi) away in ideal atmospheric conditions. They also have a well-developed sense of hearing, able to detect the howls from other wolves 10km (6mi) away in the forest and 16km (10mi) away in the open. These senses are useful in directing wolves to prey.

Hunting usually takes place at night. Once it has approached sufficiently close, a wolf may chase its prey and bite at its tendons. Another tactic is to chase and drive prey in the direction of other pack members. Wolves only kill to survive. In summer months, their diet consists mainly of young animals that are not yet coordinated or experienced enough to escape from their predators. In winter months, wolves target weaker members of herds, old or young. But, if there are no obvious weaker members, all individuals are targeted, and it may take an entire pack to bring an animal down.

Wolves have 40-42 teeth instead of 32 like humans. They use their one-inch (2.54cm) long canine teeth to grasp their prey and their sharp carnassials to sever meat into portions manageable to swallow. Their strong jaws help them crush bones and extract marrow, so they can leave behind little waste.

Behaviour

Wolves are very social animals, living with other wolves most of their lives. To facilitate their interactions, wolves have various modes of communication. Vocalizations, from howls to barks, whimpers and growls, can serve many functions. Within a pack, a spontaneous collection of howls works to reinforce the group bond. Howling may mark a rendezvous site or serve to coax young who are separated from their parents. It may function to protect freshly killed prey from other packs or signal that certain territory is already claimed. Because the pitch of the howl says something about the wolf (larger and healthier individuals tend to have deeper howls), howling works to facilitate the attraction of a mate. The other types of vocalizations are used for shorter-range communication. Barks can be either offensive (e.g. initiating confrontation) or defensive (e.g. warning the pack that a threat is coming). Growls are low-pitched and indicate dominance or confrontation. Whimpers are higher-pitched and show submission, serve as a greeting between wolves, and are used as a gentle form of communication between parents and pups.

Similarly, body language can also indicate a playful versus aggressive nature. Wolves mark their territory with scents including that from urination. Additionally, each wolf has an individual and personalized scent originating from scent glands—one around the anus and one on the back just in front of the base of the tail. These glands help differentiate individuals. Wolves will also scratch or paw at trees or the ground to leave visual markers of their presence.

The pack structure of wolves is highly organized with a dominant male and female pair at the top of the hierarchy. The pack also includes the dominant pair's pups, offspring from previous litters, and rarely, adults from other packs. These groups range in size from 2 to 30 individuals. The effects of the ranking can be seen manifested in the posture and behaviour of animals of different status. Studies of wolves reveal that dominant wolves hold their tails high, bristle their manes and stand stiff-legged. In the presence of a dominant wolf, a subservient wolf will show contrasting behaviour: it will cower on the ground and hold its ears back, tucking its tail between its legs. If an adult wolf is kicked out of a pack, it will search for a mate and try to establish a new pack. Wolves collaborate on activities from raising young to hunting. However, the pack bond does seem to be stronger in the winter months when hunting involves all members of a pack. In the summer, the pups (and adult guardians) are confined to the den for a period

NWPS Headquarters
720-1190 Melville Street
Vancouver, BC V6E 3W1

NWPS Vancouver Island
PO Box 39058
RPO James Bay
Victoria, BC V8V 4X8

t Vancouver 604.568.9160
t Victoria 778.967.3379
e info@northwestwildlife.com
w www.northwestwildlife.com

of time and then emerge from the den to explore and play around outside, developing coordination and other hunting skills.

The social bond is further reinforced by grooming one another –licking and gently nibbling at each other’s fur to remove foreign matter. Reciprocal grooming is especially important during courtship and is also used to help reassure and nurse injured wolves.

Threats

Grey wolves are apex predators and do not have any natural predators of their own. They do however share their habitat with a variety of large carnivores that can offer competition, such as cougars, black bears, grizzly bears and even tigers and leopard in parts of northern India. Interactions among grizzly bears probably do occur on a regular basis throughout northern Canada and Alaska. And the biological rank between these species depends greatly on the situation. For example a large wolf pack after making a kill may successfully defend it against a young grizzly bear, however conversely a mature male bear may push off a smaller wolf pack from a potential meal.

However, far and away the main threat to wolves comes from humans. Wolves and humans have had a long and difficult history together, most especially for the wolves. Stories, myths and misconceptions have surrounded the wolf for centuries. These began in Europe and continued through into North America as this continent was settled. Thousands and thousands of individual wolves have been shot, trapped, poisoned and harassed in every possible way simply out of fear and misunderstanding of the species natural behaviour. The reality of the wolf is that they are strong, intelligent, shy, social, and cunning mammals that want little to do with humankind. Attacks on humans in Northern America are non-existent. In addition, to the direct killing of wolves throughout their range, they have experienced extensive habitat loss, most especially throughout Europe and the continental United States. As the human population continues to increase rapidly, natural habitats for all species, but especially those requiring huge ranges like that of wolves’, declines at a similar rate. These two combined factors make life for wolves always a challenging struggle, however the resilience of the species cannot be underestimated.

In the late 1970’s, wolf population declines halted and the species began to recover. Around that time, there was also a general shift in human populations from rural areas to cities, which allowed wolves to re-colonize some parts of their natural range. Currently the grey wolf population in Canada is approximately 50,000 individuals, with around 8,000 in British Columbia.

What We Can Do To Help

Grey wolf preservation would be aided by an increased understanding of the species in the wild. In BC, this could mean taking more accurate population inventories so the population can be monitored for changes. Academically speaking, there are gaps in knowledge when it comes to wolves’ interactions with their prey species, including the conditions under which they limit, regulate, and control prey populations. As hunting and poisoning are still permitted in BC, a re-evaluation of these regulations would also benefit the species.

We can avoid activities that lead to habitat destruction and habitat fragmentation such as urban sprawl and excessive development in currently undeveloped wildlife spaces. Preserving wolf habitat will not only benefit this species, but because a healthy wolf population indicates a healthy environment, it would be beneficial for a myriad of other species.

We can also take time to learn about the wildlife in our region and the interconnectedness of the living and non-living factors in our environment to increase our appreciation for nature. We can volunteer to

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NWPS Vancouver Island
PO Box 39058
RPO James Bay
Victoria, BC V8V 4X8

t Vancouver 604.568.9160
t Victoria 778.967.3379
e info@northwestwildlife.com
w www.northwestwildlife.com

help organizations like Northwest Wildlife Preservation Society and support causes that aim to protect wolves and their natural habitat. These are important steps to take toward the preservation of large carnivores like wolves. Respect and a greater understanding of this incredible species is paramount.

Other Interesting Facts

The stories of Little Red Riding Hood and the Boy Who Cried Wolf suggest that humans should be wary of wolf attacks. However, there are no records of a healthy, wild wolf killing a person in North America. There have even been instances where scientists have lived in close proximity with wolves and even temporarily removed pups from the dens to study them, all the while remaining unharmed.

Wolves fear people in areas where they are hunted and trapped, but in remote areas (e.g. the Canadian Arctic), wolves allow people to live in very close proximity to them.

In the winter snow, other pack members tend to follow the tracks of the leader to conserve energy.

The wolf's closest cousin, is in fact our dogs, which evolved from wolves more than 11,000 years ago.

Wolves can tolerate temperatures to -60 degrees Celsius.

Wolves' pack power and coordination allow them to be the only animal to bring down the largest of all terrestrial animals in North America; the bison. Bison can weigh as much as 15 times an individual wolf.

Where & When to view the animal.

Grey wolves are present throughout much of Canada year-round, but are generally fearful of human presence, and therefore not easy to observe. The highest population of wolves in British Columbia occur in the province's northern provincial parks. Wolves can also be viewed in quality zoological institutions that dedicate a lot of space and natural enrichment for these highly intelligent animals.

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720-1190 Melville Street
Vancouver, BC V6E 3W1

NWPS Vancouver Island

PO Box 39058
RPO James Bay
Victoria, BC V8V 4X8

t Vancouver 604.568.9160

t Victoria 778.967.3379

e info@northwestwildlife.com

w www.northwestwildlife.com

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t Victoria 778.967.3379
e info@northwestwildlife.com
w www.northwestwildlife.com