



2019 Annual Wolf Report



On The Cover: Clockwise from top left: A wolf walking on the Park road. *NPS Photo/Kai Shafer*; Wolf tracks in silt. *NPS Photo/Kaija Klauder*; A black wolf in Denali Park . *NPS Photo/Claire Abendroth*; Wolf tracks on the Teklanika River. *NPS Photo/Kaija Klauder*

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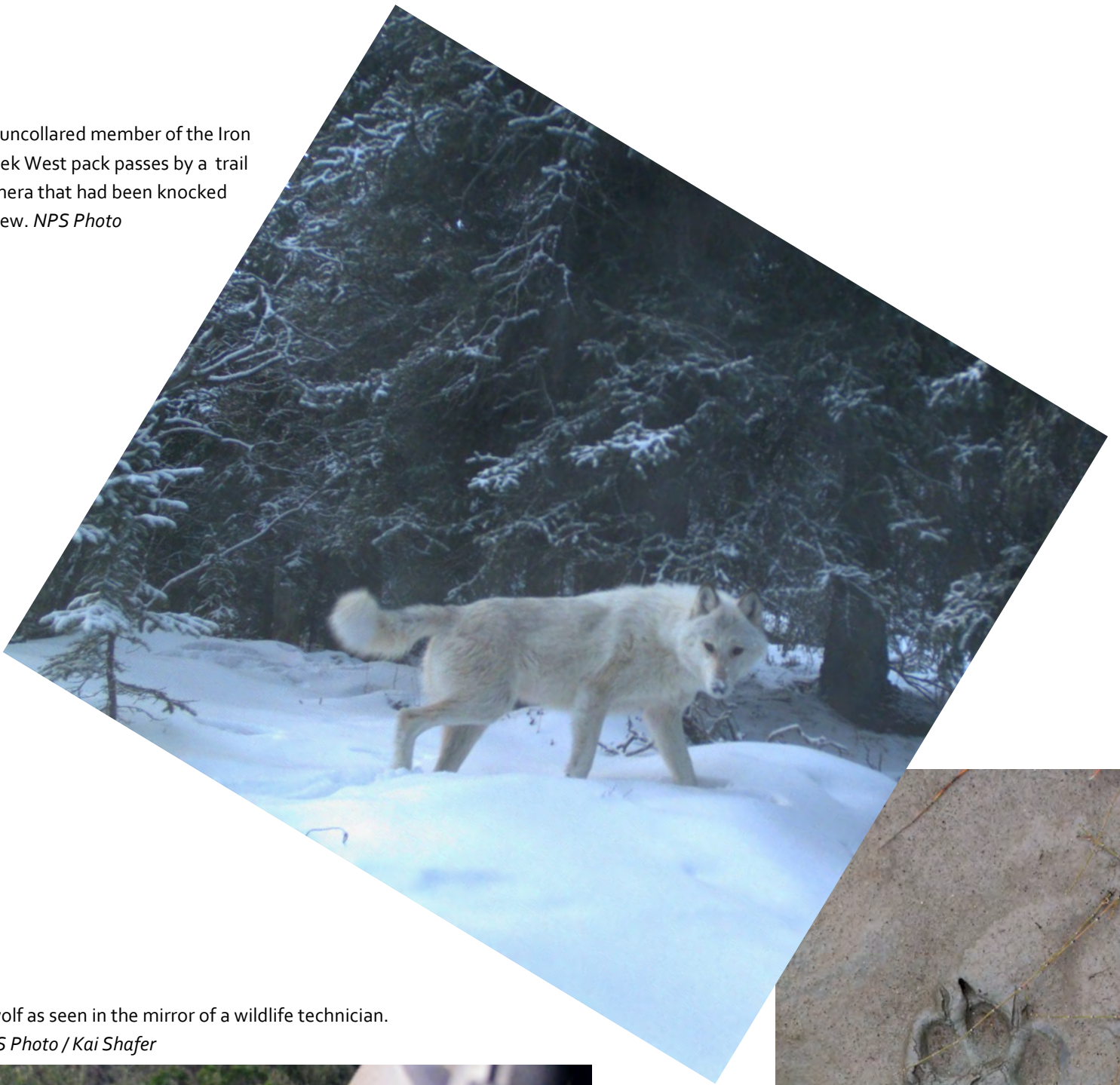
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An uncollared member of the Iron Creek West pack passes by a trail camera that had been knocked askew. *NPS Photo*



A wolf as seen in the mirror of a wildlife technician.
NPS Photo / Kai Shafer



Wolf tracks in silt. *NPS Photo / Kaija Klauder*

Background

Wolves are one of six keystone large mammal species in interior Alaska, along with grizzly bears, black bears, moose, caribou, and Dall sheep. Wolves are important to people and to the ecosystem as a whole. As a top predator, wolves may play a key role in influencing ungulate populations, such as caribou. This may also influence vegetation patterns and promote species diversity .

Wolves are found in all three parks of the Central Alaska Monitoring Network (CAKN): Denali National Park and Preserve (Denali), Yukon-Charley Rivers National Preserve, and Wrangell-St. Elias National Park and Preserve. Indeed, wolves are specifically identified in the enabling legislation and management objectives of all three CAKN parks.

This report summarizes efforts to monitor wolves in Denali National Park and Preserve through December 2019. The main goal of monitoring is to track how many wolves there are and where they're moving. However, a variety of additional data is obtained in the monitoring process. This information can help future wildlife management and research, and can also help develop scientific models of predator/prey systems.

For example, scientists use data obtained from wolf monitoring to help protect wolf dens as part of the Denali Wolf-Human Conflict Management Plan. In heavily visited portions of the park, managers want to know where active wolf dens and rendezvous sites (pup rearing areas) are so that they can be protected from disturbance.

Additionally, data on the genetic, physical, and immunological characteristics of wolves, obtained in the course of wolf capture, will be important in evaluating long-term changes in wolf populations in Alaska.

Information gathered through wolf monitoring can also help scientists determine whether the park packs are being impacted by activities happening outside of the parks, such as intensive wolf harvest or wolf control.



NPS Photo

Wolves are important to people in Alaska. Some value the opportunity to hunt or trap wolves while others value their existence or the opportunity to see a wolf. Wolves are of great significance to Denali's visitors because of the exceptional opportunities to view wolves in Denali. The unique long-tenured research project in Denali allows scientists around the world to understand how wolves live in a relatively intact ecosystem, and will be invaluable for years to come.

Park-wide monitoring of wolves in Denali was initiated by Resource Management Ranger John Dalle-Molle in 1986, with principal investigators L. David Mech and Layne Adams. Field work and project management from 1986 to 2016 was conducted by Dr. Layne Adams, Dr. Steve Arthur, Dr. Bridget Borg, John Burch, and Tom Meier. In 2019, Dr. Bridget Borg oversaw the program, and field work and program support was conducted by biological technician Kaija Klauder.

Wolf Project Goals

Wolf management in Denali isn't just about Denali — the National Park Service looks at the big picture when it comes to data collection. Parks across the country are grouped into Inventory and Monitoring Networks, and all the parks in a network work together to accomplish long term research and monitoring goals. One key element of this process is that all the parks make sure to collect specific types of data the same way, so that it is comparable across parks. Alaska is part of the Central Alaskan Network (CAKN), along with Wrangell-St. Elias National Park and Preserve, and Yukon-Charley Rivers National Preserve. The following are some of the measurable objectives for wolf monitoring programs across CAKN (Meier et al. 2009, see sidebar).

- Capture and radio-collar 1-3 individuals in each wolf pack identified in the study area.
- Determine the demography (numbers, colors, age structure) of monitored wolf packs.
- Obtain genetic samples from captured wolves.
- Determine pack size for each collared pack in fall (early winter) and spring (late winter).
- Detect pack extinction and pack formation events in the population.
- Locate non-radio-collared wolf packs on Park and Preserve lands using aerial snow tracking.
- Detect changes in wolf density, pack size, and home range size over time.
- Monitor and detect changes in the physical, immunological, and genetic makeup of the wolf population over time.

These two goals are specific to Denali:

- Investigate the effects of wildlife management activities on the natural and healthy character of wolves in Denali.
- Investigate the biological and social characteristics of wolf viewing by visitors in Denali, and factors that may affect wolf viewing opportunities.

**National Park Service**



Central Alaska Inventory & Monitoring Network

The 2009 wolf monitoring protocol, one of the first protocols approved for the Central Alaska Network's Inventory and Monitoring Program, identifies the long term monitoring objectives for Denali's Wolf Project . It also lays out procedures that parks use to collect the data.

National Park Service
U.S. Department of the Interior



Wolf Monitoring Protocol for Denali National Park and Preserve, Yukon-Charley Rivers National Preserve and Wrangell-St. Elias National Park and Preserve

August 2009
Natural Resource Report NPS/CAKN/NRR—2009/168



2019 Summary



In 2019, 14 wolf packs were monitored in the Denali study area and 77 aerial tracking flights were conducted to observe wolf pack locations, obtain pack counts, locate den sites and provide estimates of pups produced. Information from these flights also documented wolves feeding at kills 43 times comprised of 14 caribou, 19 moose, 2 sheep and 8 unknown kill species.

In 2019, staff captured and collared a total of 25 wolves, including 22 previously uncollared wolves and 3 collared wolves that were recaptured to replace failed collars. Wolves were monitored to estimate survival, pack size, den locations, and denning success. In November, 2 new packs were located and collared in the eastern area of the park (Tekla and Sunday Creek) and one pair was collared in the interior of the park (North Face). The number of wolves counted in the study area in spring 2019 was 70 wolves in 10 packs. There was evidence that 6 packs denned in the park in 2019, and 5 packs recruited an estimated 16 pups to the population. Nine collared wolves died in 2019: 2 were harvested, 4 were killed by wolves, 3 died of natural causes. The fall population estimate was 74 wolves in 12 packs, reflecting the addition of the Tekla, Sunday Creek and North Face packs and the loss of the Wolf Creek Pack.

An index of wolf viewing in 2019 was drastically reduced from 2018, driven largely by the loss of the Riley Creek West pack, which had provided sightings in 2018 when they denned along the Toklat River and later moved to rendezvous site not far from the Park Road. Both adults from the pack were killed by other wolves in winter 2018 and the fate of the remaining pups was unknown.

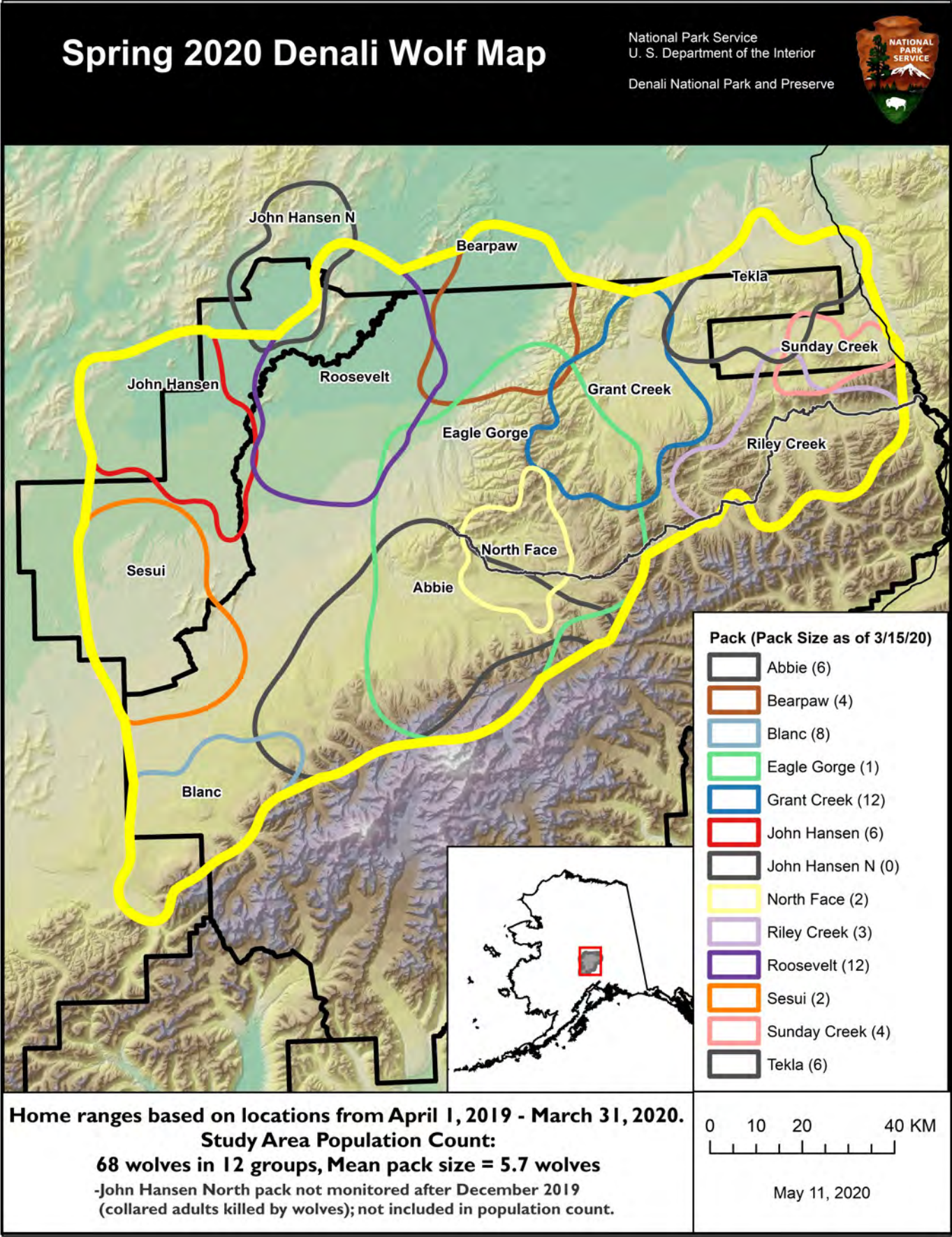
In addition to addressing our long-term monitoring goals, the Denali Wolf Project worked with regional, national, and international collaborators on several research projects.

Reproduction and Mortality

2019

	Spring Pack Count	Fall Pack Count	Reproduction		Mortality	
PACK			Dennded	Fall Pup Count	Natural	Human- Caused
Description						
Eastern Region						
Eagle Gorge	2	1	No		1	Killed by wolves
Grant Creek	7	14	Yes	5		
Iron Creek West	0	—	—	—	2	Harvested
Riley Creek	1	3	No			
Riley Creek West	0	—	—	—		
Sunday Creek	—	6	—	—		
Tekla	—	10	—	—		
Western Region						
Abbie	6	7	Yes	1		
Bearpaw	15	4	Yes	0	1	Killed by wolves
Blanc	5	9	Yes	5		
John Hansen	15	4	Yes	2	1	Natural unknown
North Face	—	2	—	—		
Roosevelt	12	12	Yes	3		
Sesui	1	2	No			
Wolf Creek	6	0	No		2	One natural unknown, one starved
Out of Study Area						
John Hansen North	6	6	Yes	3	2	Killed by wolves
Somber	Lost monitoring of this pack in February	—	—	—		
TOTALS	76	80		19	7	2

Spring 2020 Population Map



Pack Narratives

EASTERN PACKS

Eagle Gorge

Pack Counts: Spring – 2 | Fall – 1

Collared Wolves: 1604GF, 1802GM

Although Eagle Gorge began the year with 5 members, by the March count only 1604GF and 1802GM remained in the pack. In early April an emaciated 1802GM was killed by other wolves. 1604GF, now alone, went on a foray north of the Park in late April, reaching 13 miles north of the northern boundary on the Toklat River. In the summer she spent considerable time to the west of her traditional territory, coming surprisingly close to the Abbie den on one occasion. Meanwhile Abbie pack pushed east, seemingly absorbing much of Eagle Gorge's former territory. Through August and September 1604GF traveled throughout her traditional territory despite the presence of Abbie wolves. During an August 2019 flight, the pilot noted that she still looked very healthy. Beginning in October 2019, 1604GF began spending most of her time north of the Park road, in the hills where caribou

congregate. In November, she made a trip to the northwest shore of Lake Chilchukabena, avoiding Bearpaw and Roosevelt packs along the way. She ended the year in the Kantishna Hills area, still alone, moving between areas used by several packs including North Face, Bearpaw, and Grant Creek.

Grant Creek

Pack Counts: Spring – 7 | Fall – 14

Collared Wolves: 1501GM, 1402GF, 1906GF, 1915GF

In March 2019 we collared a young female in Grant Creek, 1906GF. 1906GF spent all of May alone, at the north edge of the pack's territory, before rejoining the pack in June. Grant Creek denned at the same den they used in 2018 along Wigand Creek, producing at least 5 pups. Grant Creek maintained their traditional Wigand flats territory throughout the summer. In the fall, they spent more time pushing west into the hills, including an October trip to the west side of the Kantishna Hills. October counts for this pack numbered 14. In November, we collared another adult female in this pack, 1915GF.

Iron Creek West

Pack Counts: Spring – 0 | Fall – NA

Collared Wolves: 1804GM, 1814GF

January 2019 saw the two remaining wolves in the pack, 1814GF and 1804GM, traveling separately, many miles apart from one another. In February, the pilot saw 1804GM feeding on a moose kill in Grant Creek's territory. Just 3 hours later, Grant Creek had taken over the kill and 1804GM had fled six miles to the east, where he was spotted looking tired and hot. But not, as it turned out, from fleeing for his life. Instead, the pilot witnessed 1804GM successfully bring down a bull caribou he had been chasing, and begin to feed. Both 1804GM and 1814GF were trapped in early March, a few

HOW TO NAME A COLLARED WOLF:

1. Last two digits of the year
2. The order of wolves collared that year
3. One letter for the color of the wolf (G = gray, B = black)
4. One letter for the sex of the wolf (F = female, M = male)

How would you name this wolf? A gray female that was the 7th wolf collared in 2017.

days apart from one another and in the same area.

Riley Creek

Pack Counts: Spring – 1 | Fall – 3
Collared Wolves: 1202BF, 1911GM

The aging Riley Creek matriarch 1202BF remarkably survived the winter of 2018-2019, alone and injured. By April, 1202BF was seen with one and occasionally two other wolves, and that month we collared adult male 1911GM, one of her companions. 1202BF's limp never went away – photos and videos from the Park Road during summer 2019 show that her right rear leg supported virtually no weight. This small pack did not den, although trail cameras along the Teklanika River showed 1202BF often passing through this familiar area near the den site. 1202BF and 1911GM often traveled separately during the summer, though in late fall and winter they traveled together more often. The fall count for this pack remained at 3 wolves.



A young black wolf passes in front of a trail camera. NPS Photo

Sunday Creek

Pack Counts: Spring – NA | Fall – 6
Collared Wolves: 1914GM, 1921GF, 1922GF

The Sunday Creek pack was first collared in November 2019. Three wolves were collared: Adult male 1914GM, adult female 1921GF, and a female pup 1922GF. By late December the collar of 1914GM was no longer transmitting and he was no longer seen with the pack. This pack resides along the northeast corner of the park.

Tekla

Pack Counts: Spring – NA | Fall – 10
Collared Wolves: 1912GF, 1913BM

The Tekla pack was collared in November 2019. A pack of ten, we collared adults 1913BM and 1912GF. This pack ranges north of the Stampede Corridor.

WESTERN PACKS

Abbie

Pack Counts: Spring – 6 | Fall – 7
Collared Wolves: 1909GM, 1910GF, 1916GM

The Abbie pack was collared in March of 2019, beginning with 1909GM and pup 1910GF. This pack's territory ranges roughly from the Herron river in the west to the Thorofare river in the east, and as far north as Wonder Lake. Abbie pack dened in the Slippery Creek area, producing at least five pups but only recruiting one. The GPS portion of 1910GM's collar failed in September 2019. Luckily in November 2019 we were able to collar 1916GM. The fall count for Abbie pack was 7 wolves. In the last few days of 2019, 1909GM left the pack and began traveling alone.

Bearpaw

Pack Counts: Spring – 15 | Fall – 4
Collared Wolves: 1006BF, 1805GM, 1606GM, 1813GF

In April 2019, Bearpaw male 1606GM was killed by other wolves. In the same month 1813GF dispersed to the west. She eventually settled along the Kuskoswim River near McGrath, where she and a male companion

were shot in late December 2019. Meanwhile, 1805GM left his natal pack of Wolf Creek in April, and joined the Bearpaw pack in mid-May. Bearpaw pack again denned in the Sandless Lake / Flume creek area, although it was not clear if 1006BF whelped or was attending a younger female. In either case, no pups were ever observed and it appears that reproduction was not successful. In September the GPS portion of 1805GM's collar failed, but the VHF continued to function. The fall count for this pack was 4.

Blanc

Pack Counts: Spring – 5 | Fall – 9

Collared Wolves: 1907GM, 1908BF, 1918GF

Blanc was first collared in March of 2019 with 1907GM and 1908BF. Blanc's territory is the far southwestern corner of the Park, including the upper reaches of Highpower Creek and the Swift Fork River. The pack denned near the Swift Fork and produced at least 5 black pups. In May, 1907GM dispersed and headed northeast through the heart of the park. Unfortunately, his collar transmitted only intermittently and then failed. He was last seen in November in the Stampede corridor. In November we collared another wolf in this pack, adult female 1918GF. The pack's fall count was 9 wolves.

John Hansen

Pack Counts: Spring – 15 | Fall – 4

Collared Wolves: 1302GM, 1707BF

John Hansen pack used a new den site in 2019, in the vicinity of previous dens south of Minchumina. At least 2 pups were produced. Our ability to monitor this pack was hampered over the summer and fall: first, the six-year-old 1707BF died of unknown causes (starvation likely) in September. The remaining collared wolf, nine-year-old 1302GM, was mostly separate from the pack starting in mid-summer. In addition, 1302GM's collar began to fail, making him difficult or impossible to locate. Reports from Lake Minchumina confirm that a resident pack still exists, but the full pack count is

unknown. 4 wolves, including 1302, were seen together in late September.

John Hansen North

Pack Counts: Spring – 6 | Fall – 6

Collared Wolves: 1605GM, 1816GM, 1902GM

By early 2019, this pack had shifted its territory north, and was primarily outside of the boundary of the Preserve. In April 1816GM dispersed, taking a long journey to the northeast that eventually ended 60 miles northeast of Circle, where his chewed collar was picked up. Meanwhile 1902GM, presumed younger brother of 1605GM, left his natal pack of John Hansen and immediately joined 1605GM in John Hansen North. The pack denned and produced at least 3 pups, and their fall count was 5 wolves. However in mid-December, the small pack had the misfortune to run into Roosevelt pack (12 strong), and both 1605GM and 1902GM were killed; the fate of the remaining members is not known.

North Face

Pack Counts: Spring – NA | Fall – 2

Collared Wolves: 1917GM, 1920GF

The North Face pack got its name because its first member, 1917GM, was captured in November 2019 on the tundra bench just across from the North Face Lodge in Kantishna. At 121lbs, this large male was in



exceptionally good health. The next day we collared his companion, female 1920GF. This pack's relatively small territory includes the Moose Creek drainage, Thorofare pass, and south to Clearwater Creek.

Roosevelt

Pack Counts: Spring – 12 | Fall – 12

Collared Wolves: 1811GF, 1904GF, 1903BF

After 1811GF's collar failure in June 2018, this pack became difficult to monitor. Luckily, in March of 2019 1811GF was re-captured and fitted with a working collar. Two other wolves were collared at this time: adult female 1904GF and adult female 1903BF. The Roosevelt pack denned along the Kantishna River and produced at least 4 pups. By fall they were 12 strong and patrolling a large territory along the greater McKinley River area.

Sesui

Pack Counts: Spring – 1 | Fall – 2

Collared Wolves: 1808GM, 1919GF

In 2019, the last collared wolf from Sesui pack, 1808GM, was alone and traveling widely. In March, he forayed east from the Wigand Flats to the Toklat River. In April, he made a long foray to the west, 60 miles west of the western boundary of the park before returning east in May and June and moving widely in the southwestern part of the park. He eventually settled into

the territory previously occupied by Wolf Creek. It's unknown if he joined with any former Wolf Creek wolves, but most visual observations during flights saw him alone. In September he picked up a companion, and we were able to collar her in November, 1919GF, resulting in a fall count of 2.

Somber

Pack Counts: Spring – NA | Fall – NA

Collared Wolves: 1501F

1501F's collar failed in February of 2019. Because this pack resided entirely outside the boundary of the Park, no attempts were made to continue monitoring this pack.

Wolf Creek

Pack Counts: Spring – 6 | Fall – 0

Collared Wolves: 1805GM, 1806GF, 1815GF

In January 2019 both collared females died; 1815GF of starvation and 1806GF of unknown natural causes, possibly killed by other wolves. Following the loss of these 2 females, the remaining collared wolf, 1805GM was seen with only 2-3 other wolves during tracking flights in January and February. 1805GM left his natal pack and territory in April 2019 and subsequently joined the Bearpaw pack. No collared wolves remained in the Wolf Creek pack and that marked the end of the monitoring of this pack.

A wolf peeks into frame on a trail camera photo.

NPS Photo



Wolf Management

COLLARING

Denali has been collaring members of the wolf population since 1986 in order to track movements, estimate territory locations and sizes and estimate the population size and density. Current methods of wolf monitoring used in Denali follow the Wolf Monitoring Protocol for Denali National Park and Preserve, Yukon-Charley Rivers National Preserve and Wrangell-St. Elias National Park and Preserve, Alaska (Meier et al. 2009). In brief, this method involves capture and radio-collaring of one or two members of each wolf pack in the study area and locating and counting wolves during aerial tracking flights periodically through the year. Morphological data, including sex, weight, age and color, and blood and tissue samples for genetics and disease analysis, are gathered from captured wolves.

In 2019, staff captured and collared 25 wolves during three capture efforts, including 3 recaptures of wolves collared in previous years to replace aging or failed collars.

CLOSURES

Two closures around previously active den sites were put in place in 2019 following Denali's Wolf Human Management Plan. The Wolf Human Management plan stipulates that a closure will automatically be implemented around a den that was active in the previous two years, until it can be determined if the den is active or not.

Teklanika Wolf Closure

The Teklanika Wolf Closure was implemented on April 25th, 2019. In 2019 it was determined that this den was not in use and the closure was lifted on July 11th 2019. The area closed encompassed areas south of the Teklanika bridge and along Igloo Creek.

Toklat Wolf Closure

The Toklat Wolf Closure was implemented on April 25th, 2019. In 2019 it was determined that this den was not in use and the closure was lifted on July 11th 2019. The area closed was north of the park road along the east side of the river. The area was bounded by a small unnamed creek to the south, the first low peaks to the east and a shallow valley to the north. The western boundary was determined by the west edge of the Toklat River channels.



A panoramic shot from inside the helicopter during capture operations. *NPS Photo / Bridget Borg*

Outreach and Collaborations

TALKS

- “Between a Risk and a Hard Place: Scavenging Patterns and Habitat Selection of Carnivores in the Subarctic,” MSLC Summer Speaker Series, Denali National Park, AK – Kaija Klauder
- “Wolf Updates” Resources Day, Denali National Park, May June 2019 — Bridget Borg

OUTREACH

- Science Academy Field Days, 4 groups, citizen science pellet plot surveys, June– August 2019 – Bridget Borg and Kaija Klauder
- Intensives program field day, August 2019, Kaija Klauder
- Discovery Camp field days, June 2019, Kaija Klauder
- Wolves of Denali Field Course August 2019 – Bridget Borg
- Continued updates to wolf web page: <https://www.nps.gov/dena/learn/nature/wolves.htm>
- Ongoing collaboration with independent filmmaker Ramey Newell on upcoming documentary “A Good Wolf.”
- “The Riley Creek wolf pack’s sole survivor.” 2/28/2019 <https://news.uaf.edu/the-riley-creek-wolf-packs-sole-survivor/>
- "Kieling's Wild World – Wilderness in Danger", 24.03.2019, <https://www.zdf.de/dokumentation/terra-x/kielings-wilde-welt-wildnis-in-gefahr-100.html>

COLLABORATIONS

- Wolf Hunting adjacent to National Parks: measuring impacts to wolf populations, pack stability and long-

term research. Collaboration with Yellowstone and Grand Teton National Parks and Yukon Charley National Preserve

- Disease Screening of North American Wolves, Ellen Brandell, University of Pennsylvania
- Canid Cohesion Project, Dave Keiter and John Bensom, University of Nebraska.
- Follicular Dysplasia and Lice Investigations, Dr. Kimberlee Beckmen, Mark Nelson, Alaska Department of Fish and Game



Students learn about wildlife tracks. NPS Photo/Eric Filardi



WOLF-HUMAN INTERACTIONS: WHAT IS THIS WOLF COMMUNICATING?

Interactions between wolves and humans are extremely rare. However, if you do see a wolf, it is helpful to understand their behavior when determining how you should respond.



NEUTRAL

A wolf that has its ears slightly forward or slightly back, is walking or trotting, and may only glance in your direction is neutral about your presence. Enjoy the lucky sighting and do not try to attract its attention.



CURIOUS

A wolf that fixes its gaze on you with its ears pricked might be curious about you. It may approach you slowly or walk around you to get a better look at you. Curious behavior usually results in the wolf leaving once it realizes that you are a human.



HOWLING

Wolves howl to communicate with pack members, often as a chorus. Wolves will howl before a hunt or to communicate with pups. Howls may also be used as a warning to other wolves to stay away.



(c) Bio Expedition

PREDATORY / AGGRESSIVE

When a wolf has its eyes fixed on you, ears forward, is standing tall, and has its tail up, it is acting aggressive or dominant. A predatory wolf will often rush at its prey with little stalking behavior.



*Mech and Boitani 2003
and Coren 2001*



wolf.org

FEAR / DEFENSIVE

A wolf with ears pinned back and down, hackles raised, crouching, and tail between its legs is acting out of fear or defense. The bigger the threat, the more defensive a wolf will be.



*Mech and Boitani 2003
and Coren 2001*

WHAT SHOULD I DO IF A WOLF APPROACHES ME?



Wolves are wild animals! Stay at least 25 yards away from wolves at all times. Never feed a wolf. **If a wolf approaches you, DO NOT RUN! Get tough!** To get it to leave:

- Shout aggressively
- Maintain eye contact
- Throw rocks



FOR MORE INFORMATION ON WOLVES IN DENALI, VISIT:
[HTTPS://WWW.NPS.GOV/DENA/LEARN/NATURE/WOLVES.HTM](https://www.nps.gov/dena/learn/nature/wolves.htm)



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