

## —NATURAL RESOURCES—

# Bark Ranger Gracie Reports for Duty: Use of a Specially Trained Wildlife Shepherding Dog to Manage Habituated Wildlife in Glacier National Park

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In July 2016, Glacier National Park became the first National Park Service unit to use an employee-owned dog to help manage habituated wildlife. Now in its second year, Glacier's wildlife shepherding program has proven both popular and effective—though there is much still to be learned. The project was made possible by the park's friends group, the Glacier National Park Conservancy.

## Background

Located at an altitude of 6,646 feet along the Continental Divide in Glacier National Park, Logan Pass is one of the most popular visitor stops on the park's iconic Going-to-the-Sun Road. The pass is noted for its scenic views and abundant wildlife. Historically, Logan Pass has reached visitor capacity by the late-morning hours, meaning that all of the approximately 230 parking spots were full. Now, with increased visitation, the parking lot is filling up by early morning (Figure 1) (NPS 2016).



Figure 1. Logan Pass parking lot. (NPS photo)

The increase in visitation has also impacted wildlife. A recently completed study (Sarmiento and Berger 2017), funded through the Going-to-the-Sun Road Corridor Management Plan Environmental Impact Statement project (GTSR CMP/EIS), indicated that increased human presence has altered the behavior of mountain goats and bighorn sheep in the Logan Pass area. The study found that these wildlife tolerate the high number of visitors in return for safety from predators. With approximately 6,000 people and 1,900 vehicles visiting the pass each day, grizzly bears, mountain lions, and wolves tend to avoid the area, creating a “safe zone” for goats and sheep. A secondary benefit to these animals is the salt provided by fluids leaking from vehicles (Figure 2), sweaty backpacks left unattended, and urine deposits along the Hidden Lake Trail.



Figure 2. Mountain goat licking antifreeze from the Logan Pass visitor center parking lot, with a visitor far too close. (NPS photo)

All this puts visitors and wild ungulates in increasingly close proximity. Habituated wildlife have been documented at Logan Pass at least since the 1970s. Scoping for the GTSR CMP/EIS revealed that human-wildlife interactions are a source of concern for both the public and park employees. And like other parks, Glacier has seen its visitors engaging in increasingly risky behaviors around wildlife in recent years (Figures 3 and 4). At Logan Pass, examples include approaching mountain goats and bighorn sheep for selfies and other photos, attempting to feed wildlife, and using their vehicles to chase bighorns through the parking lot.<sup>1</sup>

The park's response to this growing problem has been a combination of visitor education and wildlife hazing. Signage and personal contacts provide visitors with information on how to safely view and enjoy park wildlife. Park employees also employ various methods of wildlife hazing in the Logan Pass parking lot.



Figure 3. Visitor taking a selfie with bighorn rams in the Logan Pass parking lot. (NPS photo)



Figure 4. The mistaken assumption that habituated wildlife are "tame" often leads visitors to approach them too closely. (NPS photo)

These include shaking plastic bags or a box of rocks, clapping hands, shouting, and/or snaking a bullwhip along the ground (Figure 5). Law-enforcement rangers also may use their sirens or aversive-conditioning rounds (crackershells and rubber bullets) to move wildlife away. However, the animals soon learn that these noises and techniques do not always carry consequences, and the actions lose their effectiveness.



Figure 5. Park ranger attempting to haze a bighorn sheep using a plastic bag. (NPS photo)

## The Idea

In 2015, in response to continued concern from the public and park employees, I began looking for creative ways to keep wildlife and visitors safely apart. From Sarmento and Berger (2017), I knew that even habituated mountain goats retain some of their natural aversion to predators, and that they exhibit that aversion even in response to something that only resembles a predator—such as a graduate student dressed up in a bear suit (yes, Sarmento and Berger 2017 is a pretty fascinating read). And then one night, as I sat petting my family's new border-collie puppy, Gracie (Figure 6), I wondered: could we leverage ungulates' innate fear of carnivores and use a dog as to haze ungulates at Logan Pass?

There was plenty of precedent. In recent years, Glacier's Canadian sister park, Waterton Lakes National Park, contracted with a company that used trained border collies to haze habituated mule deer out of the Waterton town site. Because it offered refuge from predators, the deer would enter the town site to have their fawns. Then they became aggressive toward residents, visitors, and their pets. After several injuries occurred, the border collies were hired to haze the

<sup>1</sup>In June 2017, the park's popular Avalanche Creek trail was temporarily closed after a group of people nearly completely surrounded a grizzly bear along Avalanche Lake, causing the bear to swim out into the lake to create distance between itself and the crowd.





Figure 6. Gracie, prior to the start of her training. (NPS/A.W. Biel)

deer out of the developed area (D. Mattson, pers. comm.). The program was so successful that after five years, the park took a year off from hiring the dogs to see if the deer returned. In spring/summer 2016, no fawning was reported in the town site and there were no human–wildlife encounters.

Following a \$32 million renovation of the National Mall’s Reflecting Pool, National Park Service officials, in Washington, D.C., contracted with the border-collie “Geese Police” (Figure 7) to keep the pool and lawn areas free of goose droppings, potentially saving many thousands of future tax dollars in cleanup and repairs. The success of this program to date has been well documented. Even Glacier itself is on this list: in the 1990s, the park contracted with the Missoula-based Wind River Bear Institute to haze habituated grizzly bears away from park roads using Karelian bear dogs. This program was successful but also labor-intensive and expensive, costing up to \$1,000/day for each dog/handler team.

Realizing it would be far more economical to have my dog and me trained to perform wildlife hazing/shepherding than it would be to hire contractors—and that my own border collie was an appropriate breed for the job—I started floating the idea with park leadership, wildlife-management peers, and regional-office staff. In response, I was encouraged to go forth and find funding to make the project happen. I wrote a proposal that built on the park’s existing model of combining wildlife hazing and visitor education: Gracie and I would be not only a wildlife shepherding team, but also ambassadors for wildlife safety.



Figure 7. In Washington, D.C., the “Geese Police” help keep the National Mall and Reflecting Pool free of geese (and their excrement). (Photo courtesy Doug Marcks)

## Training, Funding, and Questions

NPS sources declined to fund the project. Instead, the park’s friends group, The Glacier National Park Conservancy, stepped in and agreed to support it via private donation. This meant training for both Gracie and me. After the necessary project compliance was completed, the Wind River Bear Institute (WRBI), in Florence, Montana, was chosen to do the training. WRBI’s experience and knowledge of human–wildlife interactions (including at Glacier), their impeccable safety record, and their experience and track record of training Karelian bear dogs to shepherd habituated black and grizzly bears throughout the world all figured into this decision.

First, Gracie and I underwent an assessment to determine if we both had the proper temperament and aptitude to conduct the work. WRBI decided that we did, in fact, appear to be trainable. Then, over a period of 10 weeks, we developed our skills. Gracie learned verbal commands that allowed her to work at a distance from her handler. These included commands designed to control her direction and speed of movement; order her to stop and lay down at a distance; to wait and stay, regardless of temptation; and the all-important recall command that ensures she can be called off of anything at any time and immediately return to her handler.

Considerable focus was also given to her human socialization skills. Gracie and her trainers spent lots of time learning how to properly meet and greet strangers in local businesses, on Missoula's busy bike path, and at crowded community events. I learned how to administer the verbal cues and properly handle Gracie on a lead in crowds. Then we both learned to move domestic sheep from one place to another in a safe, low-stress manner, by applying pressure from a distance (Figure 8).

Once we both graduated from the training, Gracie and I continued to practice our skills until the GTSR opened to Logan Pass. In the meantime, I worked with park staff from multiple divisions to develop a consistent message about how visitors can safely view park wildlife. I also tried to address concerns raised by the public and park employees: Would visitors still be able to see mountain goats and bighorn sheep at



Figure 8. Gracie and the author honed their herding skills by practicing on domestic sheep. Gracie was trained not to come in contact with the animals. Instead, she and her handler move sheep by applying pressure from a distance. When the sheep feel the dog and her focused "border-collie stare" are getting too close for comfort, they move away. (NPS/A.W. Biel)

Logan Pass? Would it be harder to convince visitors to keep their own dogs on-leash if they saw Gracie working off-leash? Was there potential for injury to wildlife, Gracie, or park visitors? How would Gracie's training with domestic sheep translate to larger, more intimidating bighorn sheep and mountain goats?

Aside from my own experience-based opinions, the answers to these questions would remain largely unknown until Gracie actually made an appearance at Logan Pass.

## The Initial Test

On that first evening, Gracie and I arrived at the pass with our WRBI trainers in tow. Two bighorn rams were in the parking lot, cleaning up food scraps and garbage left behind by visitors (Figure 9). Gracie was immediately interested in the sheep and the sheep were definitely interested in her. With Gracie on-leash, we slowly approached the sheep, which turned and



Figure 9. Bighorn rams in the Logan Pass parking lot.

moved 35 yards away, according to our rangefinder—a bit beyond the 25-yard distance that Glacier's visitors are required to keep between themselves and this type of wildlife. The sheep remained out of the parking lot for over one hour, continually casting a wary eye toward Gracie and me as we patrolled the lot's perimeter.

The next morning, we arrived to find six rams in the parking lot. In less than five minutes, we had moved them all safely across the Going-to-the-Sun Road, to a distance of about 75 yards from visitors and into a more natural setting (Figure 10). These animals remained out of the parking lot for nine hours.





Figure 10. After wildlife are moved a safe distance away from the parking lot, the shepherding stops. This helps ensure that visitors can still view these animals at Logan Pass. (NPS/A.W. Biel)

## The Results

Over the course of the summer, park staff and volunteers collected data documenting the effectiveness of the different hazing techniques. The distance that wildlife moved in response to Gracie ranged from 30 to 75 yards, versus a range of 33–100 yards for the traditional techniques described earlier in this article. When Gracie was used to move wildlife, they remained out of the area for 15 minutes to 9 hours, versus 10–15 minutes with the traditional techniques. Data collection and analysis are ongoing—but to date, it appears that Gracie can safely move wildlife away from areas of high visitor use to a point where visitors can still enjoy them and the wildlife remain out of the area for a longer period of time than when more traditional techniques are used.

The results and experiences from summer 2016 helped us to address the concerns raised by visitors and staff. To maximize safety of visitors, wildlife, and Gracie in the busy parking lot, we quickly decided that Gracie would only work on-leash at Logan Pass—especially since on-leash work had proved effective at moving sheep. We also found that when hazed, the sheep consistently moved at least the desired distance

away (25 yards) but not so far that visitors could no longer easily view them. Not only could they still be photographed, but they could also be photographed in a more attractive, natural setting (Figure 11) than that of the paved parking lot, surrounded by vehicles (see Figure 9). There were no injuries to wildlife, visitors, or Gracie over the course of the summer and, as per her training, Gracie never came in contact with any animal. The use of domestic sheep for training purposes proved an effective tool that translated well to bighorn sheep and other ungulates.



Figure 11. Bighorn rams graze on a hillside after being hazed from the Logan Pass parking lot. Wildlife shepherding encourages these animals to move a safe distance away, but not so far that can no longer be seen by visitors. This photo, showing the same rams in roughly the same spot seen in Figure 10, was taken with a point-and-shoot camera from the vantage point of Figure 10. (NPS/A.W. Biel)

As the wildlife shepherding program begins its second year, we are continuing to collect data for each wildlife shepherding event, regardless of method. I am working with the Rocky Mountain Cooperative Ecosystem Studies Unit coordinator and a teacher of advanced math at a Missoula junior high to analyze the existing data and assist with data collection. The data will be used for a class project analyzing the effectiveness of using a wildlife working dog versus other hazing techniques.

## Winter Work

With the success of the summer behind us, it was determined that Gracie would also work through the winter months in the park's headquarters (HQ)/residential area. In winter, white-tailed deer frequent the housing area because the plowed roads make for easy travel and the presence of people discourages the presence of predators—for the most part. In

recent years, there have been so many deer at HQ that mountain lions have been a frequent sight—even in daylight hours (Figure 12). This creates safety concerns for park residents with small children and pets, and a lion was removed from the population after one such encounter a couple years ago. I thought if we could move the deer out of the housing area, at least during the daylight hours, then there might be a reduction in the sign and sightings of mountain lions, making the area safer for residents and employees. In short, I wanted to try moving the lions' grocery store out of the neighborhood.



Figure 12. Mountain lion photographed from an employee's office window in 2015. (NPS/R. Lawrence)

Gracie and I patrolled the perimeter of the housing area at least once a day and shepherded any deer within its boundaries to places outside the developed area. After two or three days, the deer learned that when they saw Gracie coming, they needed to move away (Figure 13). Through this work, we learned that there are four main ingress/egress areas the deer use to enter or leave the housing area. When we showed up, they would quickly move toward one of these routes.

After the initial shepherding events, the deer started to leave as soon as they saw Gracie. Over the course of winter, I received only two reports of mountain-lion tracks around the perimeter of the housing area and no reports of sightings among the houses, where they had been commonly seen in previous winters. While several other factors may have also helped determine mountain-lion distribution, I feel confident that moving the deer out of the area contributed to the low number of lion sightings.



Figure 13. In winter, deer are moved out of the park headquarters/residential area to discourage the presence of mountain lions in the developed area. (NPS/A.W. Biel)

## Public Response

Although the wildlife-shepherding part of Gracie's job gets most of the attention, her work as an ambassador for wildlife safety may be even more important. The actual shepherding events are often completed in less than five minutes. After that, she and I make visitor contacts, usually upwards of 100 per night. We use this time to explain what Gracie does for the park and to remind people to be safe around all wildlife—especially habituated animals that may seem tame. People's interest in the dog make this possible; she is a people-magnet, which gives me the chance to spread our messages. Gracie and I have also made presentations to about 15 local school and community groups in the past year, and there is a social-media outreach component. Gracie's Instagram feed, with almost 13,000 followers, allows us to communicate messages about wildlife safety, pet regulations, and myriad other issues to people before they ever arrive in the park (Figure 14).

The most surprising aspect of this project has been the degree to which it has captured the public's imagination. After some initial local print, television, and radio coverage, Gracie's story was picked up by National Public Radio and has subsequently appeared in the Washington Post, Outside Magazine, and countless other online outlets, including the U.S. State Department's ShareAmerica website. Earlier this year, our daughter was reading a cartoon adventure in her Ranger Rick magazine when she suddenly realized



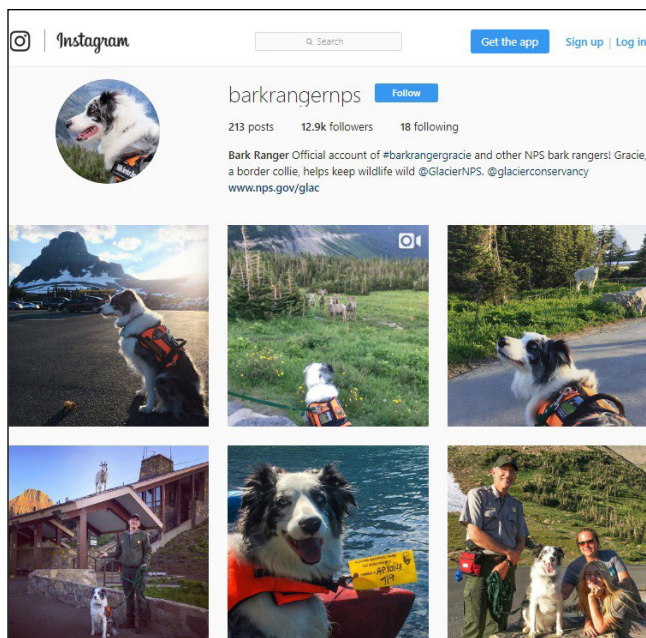


Figure 14. Gracie's Instagram account allows the park to reach the public with messaging before they arrive in the park.

the story was about Gracie and me (the cartoon me is much younger and blonder than the real me). Gracie has marched in local parades, appeared at a park Instameet, and met several visiting VIPs, including former Secretary of the Interior Sally Jewell, U.S. Senator Steve Daines (Figure 15), and Facebook mogul Mark Zuckerberg. In addition, the project earned an award for "Outstanding Public Engagement of the Year" from the Public Lands Alliance, by popular vote. It's exciting to have a national platform from which we can promote the goals and messages of this project.

## Project Enhancements

In 2017, we enhanced our wildlife-safety messaging with the addition of a set of trading cards (Figure 16). The cards help park staff to reinforce positive visitor behavior around wildlife and try to couple corrective actions with a positive message.

For example, a card might be given to a person who encounters a mountain goat on the trail and chooses to move away from it, or encourages others to move away. On the other hand, a card might also be given to a person who had to be told to move away from that same animal—as a way to reinforce the message of why it's important to stay away and allow that visitor to take something positive away from their interaction with park staff.

Each of the 11 cards has a nice photograph, some fun facts, a safety slogan, and the possible consequences if an animal starts looking to humans as a source of food. One card provides general information and advice about safe wildlife viewing. Nine cards feature different park animals that park staff identified as commonly habituated. The last card shows Gracie and explains the wildlife shepherding program. All cards prominently display the message, "Wildlife may not know better, but YOU do! Stay away 25 yards" (100 yards for bears). With support from the Glacier National Park Conservancy, 100,000 cards were professionally printed and are being distributed for use by staff across the park.



Figure 15. U.S. Senator Steve Daines talks with the author after meeting Gracie at an Instameet celebrating the NPS Centennial. (NPS/A.W. Biel)

Several park staff have expressed interest in participating in the wildlife shepherding program. If these staff show aptitude for handling a dog and reading the body language of wildlife, and funding is available, we may work with their supervisors to explore the possibility of creating additional dog/handler teams that can cover other areas of the park where wildlife shepherding and associated visitor outreach might be useful.





Figure 16. Trading cards are being used to enhance the park's wildlife-safety messaging.

## Conclusion

To date, Glacier's wildlife herding program has proven to be a cost-effective tool for safely moving habituated wildlife and educating the visiting public, as well as a public success story. It is by no means "the solution" to the issues it addresses, but is another

tool in box for wildlife management. The ultimate goal is less about changing wildlife behavior than it is about changing human behavior. We want to help bring about a paradigm shift in public perception of habituated wildlife—where instead of wanting to approach them, visitors are more inclined to give wildlife the respect and room they need to safely co-exist with humans (Figure 17).

## Literature Cited

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Sarmiento, W. M., and J. Berger. 2017. Human visitation limits the utility of protected areas as ecological baselines. *Biological Conservation* 212:316–325.



Figure 17. Gracie watches a group of bighorn rams that she and the author prevented from entering the Logan Pass parking lot. (NPS/A.W. Biel)