

TELLING THE VISUAL STORY OF MIGRATING PRONGHORN



The photographs above are courtesy of Joe Riis.

About 20 years ago, scientists made a surprising discovery about pronghorn, a hoofed mammal similar to antelope. Each spring, herds of pronghorn—sometimes hundreds at a time—make a trek of more than 100 miles into high mountain ranges. This migration, one of the longest in the world, isn't in the Andes in South America or the Himalayas in Asia. It's in Wyoming's Grand Teton National Park in the heart of North America's Rocky Mountains.

Joe Riis had just graduated from college with a degree in wildlife biology when he read about the pronghorn migration. He was fascinated. Riis had been interested in animal migrations since he was a boy growing up in the Great Plains of South Dakota. He hunted geese and ducks that came and went in predictable cycles throughout the year. "Where did these birds come from?" he wondered. "Where are they going? And why?"

Similar questions went through his mind after learning about pronghorn. Pronghorn look like antelope, but they technically aren't. They belong to a family all their own. The fastest land mammals in North America, they can outrun a coyote or a bobcat. Pronghorn are also great long-distance runners. For 6,000 years, since the last Ice Age, pronghorn have been making an epic migration each fall and spring in search of food.

Curious about what this impressive pronghorn migration looked like, Riis searched the Internet for photos. There weren't any. Seeing an opportunity, he decided to try to document pronghorn movement in photos and videos himself.

Asking a Geo-Inquiry Question

As recently as the 1990s, people knew very little about how ungulates (hoofed mammals) such as pronghorn, mule deer, and elk move during different seasons. In 1998, wildlife biologists mapped the pronghorns' migration trail using GPS collars. They found that the trail goes between the pronghorns' summer birthing grounds in Grand Teton National Park and their winter range in the Upper Green River Valley in Wyoming. This area is part of the Greater Yellowstone Ecosystem. Though partially in protected national parkland, the migration route extends through unprotected land owned by the state and by private owners.

Experts were increasingly concerned that habitat fragmentation (the division of large natural areas into smaller, more isolated remnants) could put this epic migration at risk. Impressed by this more than 100-mile migration, Riis wanted to preserve it.

Riis wondered if humans were impacting the pronghorn migrations. He added more specific questions. “What impact do fences have on pronghorn migration?” “How might roads and train tracks affect migrations?” “What impact does development have on migration, particularly energy development?” “Do large bodies of water, such as reservoirs, influence migration?”

Acquiring Geographic Information

Riis decided one of the best ways to find answers to these questions was to see the migration path from the perspective of the pronghorn. He arranged to walk the 100-mile trail himself to better understand it.

Riis recognized that capturing images of the migration in action might help encourage people to work together to protect these treks. Photographing pronghorn would be tricky, though. Pronghorn have evolved large eyes to help them spot predators. They can see 10 times better than humans can. If Riis moved at all, the pronghorn saw him, stopped, and changed direction. To observe how pronghorn naturally behave on their migration route, Riis set camera traps along the well-used trail. Triggered by motion, the camera traps captured images of the pronghorn—and any other animals—as they passed by.

For two years, Riis lived mostly in his truck. He hiked hundreds of miles, setting up cameras and then returning to retrieve them. “This type of photography takes time,” said Riis. “I need to show the energy and pulse of the migration.” Riis felt he was doing well if each month he captured one good photo!

To help identify man-made roadblocks that were impacting migration, Riis also documented the trail from the air, photographing from a small plane. When viewed from above, it was easier to locate places where pronghorn herds were not able to pass.

Organizing and Analyzing Geographic Information

Riis carefully sorted through the thousands of images he collected. He looked for photographs that clearly showed how the herds move during their migration. He was particularly interested in images that showed how human interference made the pronghorns’ already arduous journey tougher and more dangerous.

More than that, though, Riis was looking for powerful photographs—pictures that people could connect with to appreciate the drama of the pronghorns’ journey. Striving to link science and art, Riis wanted to share photos that move people to understanding and compel them to take action.

Developing a Geo-Inquiry Story

Migration routes are learned from one generation to the next. If an obstacle blocks the traditional migration route, the herd doesn’t typically find a new path. They just stop migrating. That’s not only bad for the pronghorn, it’s bad for the Grand Teton’s ecosystem and the entire Greater Yellowstone Ecosystem. Herds follow fresh green growth into the mountains in the summer. When winter approaches, they trek back down to their winter grazing areas, where the weather is less severe. The journey makes them stronger, and they produce more calves. Those healthier herds support predators and scavengers in the area, an important role.

Riis’s images showed how human presence—such as fences, housing developments, and roads—impedes migration. Pronghorn are fast, but they aren’t good at jumping over fences. Instead, they slip under or try to go through them. Sometimes they get caught in fences and die.

Riis identified road crossings where herds—at times numbering in the hundreds—dodge cars to cross the highway. Often, the crossing is unsuccessful. Those accidents can be deadly for the pronghorn and dangerous for the people in the cars.

“For these animals to survive,” says Riis, “they need to be able to move.” He didn’t think it would be too hard to keep the path protected, since it is only about a mile wide.

Taking Action

Riis's photographs and videos told a story that helped officials and landowners target where they needed to act to help preserve the migration trails. Riis showed images of animals caught in fencing to ranchers, who devised fencing modifications to allow migrating pronghorn to pass through them safely. Images of stressful highway crossings inspired the development of highway overpasses that enable the herds to cross safely.

The images, though taken about a decade ago, continue to have positive impacts. Decision makers still use the documentation in planning and development so that wildlife can move more freely and safely across the landscape.

Riis applied what he learned on the pronghorn expedition to other ungulate migrations, including mule deer and elk. "Some of the coolest wildlife migrations in the world are happening right in the middle of the United States," says Riis. "People just don't know about them because they don't see them."

Thanks to Riis, now people do see these migrations. He hopes his work sparks an interest in protecting the pronghorn—and the other ungulate species that make similar treks so important to the health of the ecosystem. Elk, mule deer, bighorn sheep, and moose all depend on the freedom to move through public and private lands to survive. Conserving migratory wildlife and its habitats challenges people to work together. If we can protect these natural wonders, Riis and his colleagues believe it will inspire us to work together to solve other conservation problems as well.



Photo courtesy of William Albert Allard