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Protecting wildlife corridors remains more theory than practice

by Mary Ellen Hannibal

Every May for the past five years, Jackson Hole, Wyo., has celebrated the return of 300 or so *Antilocapra americana* to nearby Grand Teton National Park. The revelry is not just to honor the animals for completing their remarkable 120-mile-long seasonal migration. It also salutes a Herculean communal effort: the 2008 signing of a forest plan amendment establishing federal protection of "The Path of the Pronghorn," the 45-mile portion of the migration that traverses U.S. Forest Service land.

The pronghorn travel from Grand Teton to the Upper Green Valley, in search of respite from heavy snows that hamper winter foraging. Along the way, they cross paths with powerful interests -- namely, one of the most significant natural-gas developments in recent years. In the late 1990s, "fracking" technology, combined with 3-D seismic surveys, enabled a mind-boggling increase in the extraction of natural gas from the area. In 1994, 40 gas wells were approved for drilling in the Jonah Field; by 2006, there were 3,100. In 2008, 4,399 additional wells were approved at the nearby Pinedale Anticline Project. The pace has slowed during the economic downturn, but development continues.

In the early 2000s, two prominent biologists with the Wildlife Conservation Society, Joel and Kim Berger, observed that the proliferating development associated with drilling was making it harder for pronghorn to move freely, potentially preventing them from completing their migration. The Bergers spearheaded biological studies and public outreach, and Kniffy Hamilton, who was then supervisor of Bridger-Teton National Forest, worked to safeguard the portions of the migration route that fall under agency jurisdiction. Along the Path of the Pronghorn, which narrows to about a half-mile wide in many places, aboveground drilling facilities are now prohibited, though subsurface drilling is still allowed.

The Wyoming Department of Transportation is building two wildlife highway overpasses on the migration route south of the protected corridor, and volunteers and conservation groups have cleared away unnecessary fences and redesigned hundreds of miles of other fences on national forest and private land so that pronghorn can crawl underneath them. Together, these efforts have kept an important wildlife migration route alive. But despite its success, the Path of the Pronghorn remains the only official national migration corridor in the United States.

We congratulate ourselves for protecting places like Grand Teton National Park. But putting an artificial boundary around a natural area does not adequately protect its inhabitants. Absent connection with one another, ecosystems are doomed to unravel: Isolation leads to inbreeding within individual populations, and disrupts key relationships among species. After wolves were extirpated from Yellowstone National Park, newly unafraid elk chowed down aspen stands crucial to beavers, and the beaver followed the wolf out of the ecosystem. Ever since wolves were reintroduced, the park's beaver population has steadily increased, and various bird and fish species have begun to recover.

Yet wildlife corridors are difficult to define, much less legislate. Animals like pronghorn, which have a clear and traceable movement pattern, are lucky -- it's relatively easy to mark out the territory they need and safeguard it. But all of nature essentially relies on movement of one sort or another, and most of those movements are far less disciplined. A pronghorn corridor is substantially different than a migration route used by a wolverine, or a frog, or a migrating bird or butterfly. Depending on the location and the species in question, a corridor can be anything from an enormous swath of undeveloped land to a strategically placed line of fencing.

One way to identify multi-purpose wildlife corridors is to target an "umbrella" species, a large carnivore, for example, hoping that protecting its wide range will protect other species as well. The Path of the Pronghorn does not quite fall into this category, because only a very narrow stretch of land is protected; on the other hand, some of that land does provide habitat for other species that the state of Wyoming considers to be among its "75 Species of Greatest Conservation Need."

Some scientists are skeptical about the benefits of protected wildlife corridors, saying that animals may not use them as intended and fearing that the linkages might encourage the spread of invasive species. But a recent review of 78 experiments from 35 studies found that protected corridors increase movement between habitat patches by about 50 percent. On the wildlife overpasses and underpasses that connect habitat divided by the Trans-Canada Highway in Banff, researcher Tony Clevinger documented more than 70,000 individual animal crossings by elk, moose, wolves, bears and other species over a 14-year period.

Paul Beier, a professor in the School of Forestry at Northern Arizona University, has perhaps designed and helped implement more wildlife corridor protections than anyone else. While corridors do promote animal movement, he says, the main challenge is designing and managing them -- making sure they are broad enough, and protected enough, to support animal movement. Accomplishing that is not a scientific problem, but a political one.

The importance of landscape connectivity was first recognized by conservationists more than 20 years ago, when groups such as the Wildlands Network (then known as the Wildlands Project) and Yellowstone to Yukon proposed regional efforts to achieve conservation on a continental scale. The Wildlands Network seeks to create "megalinkages" of habitat down the entire length of North America and along the Eastern Seaboard; Yellowstone to Yukon envisions connections throughout more than 500,000 square miles of the United States and Canada. While many conservation biologists support them, these goals long seemed out of reach. But climate change, which is expected to force animals to move uphill and toward the poles in search of more hospitable habitat, has helped corridors gain broader traction among environmentalists, philanthropists and policy-makers. "Funders tell me, 'Every organization walking through here now mentions *connectivity*,'" says Kenyon Fields of the Wildlands Network.

Fields, who is based in Washington state, leads a working group through which representatives from several conservation groups attempt to include connectivity in federal land agency planning. The working group is currently battling to keep connectivity language in proposed revisions to the Forest

Service guidelines, and in President Obama's America's Great Outdoors initiative. "But the real task," says Fields, "is to move the ball beyond sunny policy rhetoric and vagaries to action on the ground."

In many cases, that means gaining support not only from scientists, conservationists and agencies, but also from a broad spectrum of private landowners and other interests. In their campaign for the Path of the Pronghorn, Berger and his colleagues were careful to recruit diverse allies. They held town meetings and solicited input from locals. Ranchers and hunters, who might have opposed the corridor, signed on, as did the extractive industries in the area. One major holdout still remains -- the Bureau of Land Management, which has not enacted any additional protections for pronghorn on the portions of the corridor that cross its land. When corridor supporters met with then-Wyoming Gov. Dave Freudenthal, "he got the concept immediately," says Berger. "He told us to show him agreement was gathering from the ground up. It was appropriate and that's what we did."

Freudenthal not only backed the Path of the Pronghorn, but also took the concept to the Western Governors' Association, a coalition of 19 Western states and three Pacific islands. In 2007, just before the Path of the Pronghorn got Forest Service protection, Freudenthal championed a WGA policy resolution called "Protecting Wildlife Migration Corridors and Crucial Wildlife in the West." Since then, a WGA habitat council has been working to create user-friendly online tools for corridor planning, coordinating region-wide information on wildlife habitats and building a West-wide database of existing corridors. It's easier said than done: States collect data on wildlife within their boundaries, but in different ways, and states can be territorial about their data. Nor is there any legal requirement that land managers incorporate any of this information. Nevertheless, the WGA recently unveiled Arizona's Habimap.org and the Southern Great Plains Crucial Habitat Assessment Tool. This will help coordinate efforts in Colorado, Kansas, New Mexico, Oklahoma and Texas to model crucial habitat, including corridor connections, for the lesser prairie chicken, which is in the initial stages of listing under the Endangered Species Act.

The Western states can draw inspiration from at least one previous collaborative effort to protect migrations on a grand scale. In 1986, the U.S. Fish and Wildlife's Division of Bird Habitat Conservation established a program to protect migratory birds across North America. Canada and the U.S. signed a North American Waterfowl Management Plan that included several regional efforts. One of the most successful of these is the Lower Mississippi Valley Joint Venture, in which not just federal agencies but also states, nonprofits, private landowners and hunting organizations like Ducks Unlimited share scientific data and collaborate on protection of migratory flyways over multiple jurisdictions. Sam Hamilton, the former Fish and Wildlife Service director who died unexpectedly in 2010, expanded this model to include multiple species. He established Landscape Conservation Cooperatives (LCCs), defined by ecoregion across the nation and even over our borders, to promote landscape connectivity and interjurisdictional cooperation. These LCCs are just getting under way, beginning, as such endeavors often do, by aligning models and datasets so they can be used by everyone involved.

"This is a change in the way we do conservation," says Yvette Converse of the Fish and Wildlife Service. She directs the Great Northern LCC, almost half of which is located in British Columbia and which includes federal, state and tribal organizations as well as nonprofits. Among its efforts is the "Washington Connected Landscapes Project," which is identifying habitat linkages in the Columbia Plateau ecoregion. Converse credits Interior Secretary Ken Salazar with "pulling together a coordinated response" and adds, "I've never seen a message that is so consistent coming from the top. It's clear there's a big picture going on here."

It's too early to tell if LCCs will be effective. Though they are "a great initiative," says Paul Beier, they "may limit themselves to helping managers describe and think about connectivity without going the last step" to actually conserving and managing the lands. Coordinated information is one thing; coordinated

decision-making is quite another.

Last year, Rep. Rush Holt, D-N.J., introduced legislation that recommended state mapping of important habitat linkage areas. Holt's bill did not make it out of the House, but he plans to reintroduce it. Of course, the law would be a top-down directive, and as such might not exactly inspire recalcitrant states to identify corridors on their land. And since the bill lacks accountability, it wouldn't solve the core problem, as articulated by Rob Ament, senior conservationist with the Center for Large Landscape Connectivity in Bozeman, Mont.: "How do we get an actual designation for those key, connecting landscapes?"

Local partnerships like the one that created the Path of the Pronghorn could protect other wildlife movement routes. But in many cases, the boundaries of the routes are less clear, the species at stake are less beloved, and opponents have more to lose from corridor protection. Ament and Kenyon Fields envision a truly binding national corridors bill, which they see as a natural successor to the 1964 Wilderness Act. Both top-down and bottom-up approaches may be necessary to establish meaningful wildlife corridor policy.

Meanwhile, animals and the larger environment do their thing, and don't necessarily follow our guidelines. This spring, an estimated 30-40 percent of the herd that uses the Path of the Pronghorn did not make it all the way to Jackson Hole. Mark Gocke of Wyoming Game and Fish says deep snow at a juncture of their route seems to have slowed down pregnant females, and he wonders if they stopped and gave birth before they could complete their journey. Most of them probably survived, but Gocke wonders whether the fawns that didn't complete the trip "will learn to migrate." The existence of or lack of protections on their migration route had nothing to do with the impact of this snowfall on the pronghorn -- proving once again that nature has a will of its own.

Mary Ellen Hannibal's book, The Spine of the Continent, about large landscape connectivity, climate change, and the West, will be published in fall 2012. She is currently an Alicia Patterson Foundation fellow.

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