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GRASSLANDS (DETAIL)
Jon Scott Anderson

GIANT STEPPES: PROTECTING MONGOLIA'S GRASSLANDS IN THE FACE OF A MINING BOOM

Amar Purev, a square-jawed preserve ranger with a no-nonsense demeanor, peers through binoculars from the window of an SUV as it bounces along a double-track path through a green-and-golden sea of hip-high grass. He spots only a few gazelles in the distance, but when the vehicle crests a hill, it halts: fifty yards away, hundreds of gazelles and their calves graze on stipa, or feather grass. Before Purev can open his door, the animals take off, coursing 40 miles per hour across the flat and boundless expanse that reaches to the horizon.

This grassy ocean is Mongolia's Toson Hulstai Nature Reserve, a protected area of more than 1 million acres. It is part of a 68 million-acre expanse of grasslands that stretch from forests to desert across the country's Eastern Steppe. The steppe is the largest intact temperate grassland on Earth, and this reserve protects calving habitat for the Mongolian gazelle, whose herds can eclipse the horizon with thousands of animals. Scientists estimate the gazelle population here at a million, rivaling the wildlife herds of Africa's Serengeti.

"It's one of the world's great free-ranging wildlife populations, and very few know about it," says Enkhtuya Oidov, The Nature Conservancy's Mongolia program director, from the front passenger seat of the vehicle. Roughly a decade ago the

Conservancy contributed to a global analysis that illuminated the vulnerable status of grasslands in Mongolia—on which gazelles depend. “Even I didn’t realize we had such a globally significant landscape,” she says.

About 200 herding families share the local grasslands with the wildlife and carry on Mongolia’s nomadic culture, which long predates the conquering khans. The herders often track the gazelles to find good water sources and pastures, and even to predict “dzuds”—the dreaded severe winters that can kill livestock.

“Gazelles,” says Amar (who, like most Mongolians, goes by his first name), “are a much better indicator of weather than the forecast from satellites.”

Over the past five years, Enkhtuya and her staff have met with herding families around Toson Hulstai to explain how their centuries-old local practices have preserved a substantial chunk of the world’s remaining grasslands—the planet’s least-protected and most-altered natural landscape. That message has

motivated a cooperative movement among people across the reserve and ushered in environmental protections and safeguards for herders. Renewed support from the government and backing from the Conservancy have reduced poaching, curbed harmful land uses, and restored wetlands and wildlife habitat. Amar, who was formerly the sole ranger on the reserve, is now one of six men patrolling Toson Hulstai.

“We have made progress,” Amar says. “But, of course, things don’t change overnight.”

In Mongolia, that last part is actually only half true. A massive transformation is riding like a tidal wave over the country. Since the fall of communism in Mongolia and the collapse of the Soviet Union in the early 1990s, Mongolia has shifted to a parliamentary democracy with a market economy and has undergone astronomical development—driven by the pursuit of its untapped mineral wealth. A country where more than 40 percent of the population lives in felt



NIGHT TIME
Sh. Chimeddorj

tents and follows a traditional nomadic lifestyle, Mongolia is now trying to strike a crucial balance, developing its resources while protecting its cultural and natural heritage.

Change can be seen just about everywhere in Mongolia’s capital city, Ulaanbaatar, a tumultuous and booming metropolis surrounded by rolling green mountains. Dozens of cranes fill the skyline, towering over high-rise construction projects and sleek office and

apartment buildings. The new buildings rise up next to old Buddhist temples, aging Soviet-era monuments, drab apartment blocks, and statues paying tribute to Genghis Khan (or Chinggis Khan, as he’s known in Mongolia,) the 13th-century Mongol emperor who united tribes of herders and conquered lands across Asia and Europe.

The people themselves seem to embody this mixture of old and new: Some wear traditional long coats, called



MONGOLIAN STEPPE
© Chris Pague
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“dels,” while others sport designer jeans. And the outskirts of this modern city are populated by hundreds of thousands of formerly nomadic herding families who live in “gers,” the circular felt tents also known by the Russian word “yurt.”

an exodus of poverty-stricken families to Ulaanbaatar. About one-fourth of Mongolia’s population lived in the capital in 1989; by 2010, the city was home to more than 40 percent of the country’s 2.74 million people.

Mongolia’s rapid urbanization and other seismic cultural shifts date back to the collapse of communism and the country’s pro-democracy protests of 1989 and 1990. Although many welcomed the political transition, the loss of Soviet subsidies and services devastated herders and others, triggering

Sitting behind a large desk in her office in Ulaanbaatar, Oyun Sanjaasuren, Mongolia’s minister of environment, says the government’s aim during the 1990s was just to create jobs and “more or less survive the transition.” It is clear that that effort has been hugely successful: in

2012 the annual economic growth rate in Mongolia exceeded 12 percent. “Unfortunately,” she adds, “the environment was overlooked.”

But that is changing. Officials are moving on a 1997 pledge to protect 30 percent of the country’s wild lands; about 17 percent are now preserved. And last year the government gave Oyun’s agency greater power as a “core ministry” while passing tougher environmental protection rules.

“We’re conserving a lot of important areas for future generations,” Oyun says. “But because there are still many pressing issues with schools, hospitals, and infrastructure, spending money on protected areas is not yet a priority.”

Still, the Mongolian government is working hard to get out in front of the development juggernaut taking place.

“If we understand early on where we have to protect biodiversity and nature,” Oyun says, “then we can plan accordingly.”

In 2008, government officials approached The Nature Conservancy to

help set conservation goals. Scientists had already recognized the ecological value of Mongolia’s intact grasslands and the Gobi Desert and their vulnerability to development. Enkhtuya and a few other staffers zeroed in on Toson Hulstai, which the Mongolian government had established 15 years earlier, as an “anchor site” where partners could demonstrate how to effectively manage a protected area—and build support for protecting more of the eastern grasslands.

With the first signs of daybreak on the grasslands, along the edge of Toson Hulstai Nature Reserve, Otgonbaatar Tsog and his family wake at 5 a.m. every day in summer and step from their two gers, the open doors facing south to catch the sunlight. About 200 goats and sheep bleat and chew and spit in a wandering mass around the camp, and a pungent barnyard smell hangs in the moist air.

Otgo, 57, has a long nose and faint mustache and resembles Clark Gable when he dresses in a bloused shirt and riding pants. He collects cow pies



SNOWDRIFT
Gerco de Ruijter

to fuel the cook stove in his ger one morning, while his wife, Gajid, and their daughter—home from college in Ulaanbaatar—dress in dels and take turns milking cows. Otgo’s youngest son speeds off on a motorbike to round up the family’s horses.

Otgo and Gajid both grew up on the grasslands, and they say they have noticed changes following the country’s political transition in the 1990s. During that time, herding families from around the country began

moving to the Eastern Steppe, camping at water sources, developing wells, and abandoning centuries-old nomadic practices adapted to the landscape. As a result, grasses didn’t grow as tall as they once had, and areas with water were overgrazed and trampled. Meanwhile, rising prices for cashmere led to a sharp increase in numbers of goats and more overgrazing. Illegal trapping and poaching, fed by market pressures from China, reduced the population of Mongolian marmots from more than

20 million in 1990 to just 5 million 12 years later. And an estimated 100,000 gazelles were illegally killed each year.

With different rules in the two provinces encompassed by Toson Hulstai and only one wildlife ranger on the job, the reserve initially offered little protection to deal with the pressures. “It was very hard because nomads are very independent people,” says Otgo, speaking inside his ger over a breakfast of rice and “süütei tsai,” a salty milk tea topped with fresh butter. Traditional Mongolian music plays on a radio, while his granddaughter watches “The Lion King” on a borrowed laptop.

In 2009, the Conservancy helped establish a management council for Toson Hulstai to bring together government representatives, local herder committees, and others from the region. The first of its kind in Mongolia’s Eastern Steppe, it sputtered at the start.

“When I came here for the first time, people weren’t talking much about the environment and wildlife,” says Conservancy field biologist Tuguldur

Enkhtsetseg. “They were only talking about their own grazing.”

During his first six months on the job, in 2009 and 2010, Tuguldur visited the roughly 200 families that live around the reserve. He talked with herders about their concerns, informed them of the global environmental importance of their homelands and enlisted them to participate in the council.

Through ongoing meetings, council discussions began to take on a new tone and opened communication with local government representatives. Using the Conservancy’s Conservation Action Planning framework, a step-by-step process for recognizing environmental values and impacts and setting management strategies and goals, the participants began to identify threats affecting herders and wildlife and to share ideas and plans for protecting pastures and habitat.

The council has established rules for fencing water sources and restricting commercial grass haying and new wells within the reserve to protect resources for



MULLEIN
Matt Regier

all herders and wildlife. The group has also worked with the local governments to prohibit herders from outside the region from moving onto the reserve. Amar, the ranger, estimates that before the council began its work outside herders grazed 15,000 horses on Toson Hulstai. Now, that number has dropped to 4,500. Local herders also help monitor poaching.

“Before, herders did not care about the land—it was just land,” Otgo says. “After, people understood how much wildlife is living around the grassland,

and why they are important for the grassland.”

Herders and rangers are gaining a more scientific understanding of their landscape and sharing their own knowledge with officials and land managers. As locals realize how they can help protect the grasslands, Otgo says, “people’s and herders’ attitudes are changing,” which is just as important as the new management decisions.

Building on the progress around Toson Hulstai, the Conservancy in

2010 teamed up with Mongolian scientists to complete an ecoregional assessment, a landscape-level study across more than 150,000 square miles of the eastern grasslands to set broader conservation strategies in the face of future mining, energy, and infrastructure development. Using planning software and on-the-ground observations, the Conservancy applied the analysis to identify 37 priority sites and more than 9 million acres for protection. These sites included gazelle breeding grounds, wetlands, intact grasslands, and areas facing the greatest development risks.

The recommendations helped spur the government’s 2012 designation of seven new protected areas—six proposed by the Conservancy—covering almost 865,000 acres in the grasslands, including Kherlen Toono Uul Nature Reserve, a 27,000-acre landscape where Genghis Khan kept a summer camp. The same year, the Mongolian government also incorporated the Conservancy’s approach to conservation planning into environmental

management guidelines.

“The ecoregional assessment of eastern Mongolia—and more recently, the assessment of the Gobi area—is proving very important for policymaking,” says Oyun, the environment minister. “It’s a good way of going forward.”

Among the largest deserts on Earth, the otherworldly Gobi covers about 500,000 square miles—and growing, because of desertification—with unending views of rock- and grass-covered golden sand dunes, crumpled fields of volcanic stone and petrified wood, and flat and barren Martian-red plains. In the southeastern Gobi, the stark desert beauty suddenly gives way to several of the world’s largest new mining operations.

Nearly 300 feet deep in the open pit of the Oyu Tolgoi copper and gold mine, an excavator grabs at waste rock and pivots to fill a two-story-tall, 290-ton-capacity dump truck. Jointly owned and operated by Rio Tinto, Turquoise Hill Resources, and the

Mongolian government, Oyu Tolgoi is an industrial complex of freshly painted blue buildings that cover more than 30 square miles. With a population of workers numbering in the thousands, the complex functions as a desert city and has its own reality-show-inspired talent contest, “O.T.’s Got Talent.”

But as Mongolia has begun its conservation balancing act, the country has taken a more moderate approach to mining. In 2009, environmental legislation, known as the “Law With the Long Name,” canceled hundreds of mining licenses in mountain headwaters and forests. In 2010, President Elbegdorj Tsakhiagiin suspended the issuance of any new licenses. “We don’t need to open the whole country to mining,” says Oyun, the environment minister.

The effects of the industrial-scale activities at the mines radiate across the country. New roads, rail lines, dust, and traffic fragment and degrade wildlife habitat and livestock pastures and block the movements of herders and animals.

Mining projects like this have brought prosperity to Mongolia—and, by the look of things, boosted truck and SUV sales back in Ulaanbaatar. Estimates value Mongolia’s mineral resources at more than \$1 trillion, and a 1997 minerals law opened some 40 percent of the country to exploration. In the south Gobi Desert, Tavan Tolgoi is one of the world’s largest deposits of coking coal, used to make steel. And Oyu Tolgoi will represent more than one-third of Mongolia’s gross domestic product once it’s fully developed in the next few years. Minerals already account for 80 percent of Mongolia’s export sales, much of that going to China, which shares a border to the south.

“There’s a lot of mining leases, and when you add the supporting infrastructure and [new] population concentrations in some areas, and all the demand for energy and water, it equals pressure on the resources,” says Gala Davaa, the Conservancy’s director of conservation in Mongolia.

The pressures can be traced back



YURTS / GER
© Jennifer Molnar
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along new and old roads toward China, which buys, processes, and consumes most of the minerals coming out of Mongolia. One company at Tavan Tolgoi paved its own road 150 miles to the border but charges other firms’ drivers to use it—so most drivers follow parallel dirt tracks that create wide paths of destruction. Planned rail lines and competing roads could further fragment the landscape.

Following successes in the grasslands,

the Mongolian government asked the Conservancy for assistance in getting a handle on the breakneck growth scattered throughout the Gobi. Again, the Conservancy carried out an ecoregional assessment—funded by Rio Tinto—identifying priority sites for conservation. These include springs and groves of slow-growing saxaul trees that indicate water and habitat for the “khulan,” the endangered and fleet-footed Mongolian wild asses that kick up rooster tails of dust

when they sprint away.

The Conservancy has also worked with the government in applying its Development by Design approach to conservation planning and mitigation; scientists analyze landscapes and local sites to determine which lands and waters are most—and least—sensitive to development impacts. Then they identify what investments in restoration and protection can help avoid or offset losses and minimize conflicts when development does occur.

That approach helped shape Mongolia's strengthened environmental impact assessment law, passed in 2012. The law establishes the use of biodiversity offsets—based on the Conservancy's mitigation strategy—enabling companies to proactively address environmental damage through compensation projects, rather than just doing post-development site rehabilitation. Offsets can be used to protect or restore important conservation areas or minimize impacts from development.

“Mongolia is trying to do its best to protect its natural environment, but the government needs a systematic approach and science,” says Gala. “We help the decision-makers with information and science.”

Though still in the early stages, Mongolia's acceptance of biodiversity offsets puts the country on the cutting edge of conservation planning—and closer to reaching its goal of protecting 30 percent of the country's valuable natural area. That also means preserving the culture that for centuries has lived on—and maintained—the open landscapes.

Back on the eastern grasslands, the late afternoon brings another round of milking for Otgo's family, along with other daily chores. The milk is turned into butter, fermented, and distilled to produce a low-alcohol vodka, or packed into cheesecloth sacks to dry and be sliced into “aaruul,” a dried curd. On this evening, Otgo's 4-year-old granddaughter feeds a lame goat kid from a bottle outside the ger, while on the other side of a tractor, one of

his sons butchers an adult goat, cleaning it with help from relatives.

Solar panels now allow nomadic families to use cell phones, watch TV, and even refrigerate food. Motorbikes and trucks have replaced horses for some tasks. Herders are benefitting from and adapting to technology, but some are also struggling to keep their connections to the past. Young people are now more likely to step away from herding and disperse to Ulaanbaatar or seek out high-paying mining jobs to support their families. Families whose pastures have been degraded by overgrazing or climate change are increasingly settling into camps and giving up on nomadic practices.

The changes occurring across Mongolia pose an existential challenge for traditional culture. When asked whether he worries that nomadic herding culture will disappear from Mongolia, Otgo stares and then simply answers, “Tiim.” Yes.

“Every year, the nomadic lifestyle is changing, bit by bit,” another local herder,

Dashmunkh Chuluunbaatar, says later.

People like Otgo and Dashmunkh have an intrinsic appreciation for what's at stake on the steppe and in the desert, for the remote, wild, and vulnerable landscapes that define the country. As night closes in around Otgo's gers, goats and sheep mill about and his granddaughter pedals a creaky bicycle with training wheels. His horses are tethered to a rope strung between two posts, in front of a sky filling with dark clouds and surrounded by a nearly empty backdrop with but a few distant lights on the horizon.

Otgo's family will pack up and move again in another 10 days, he says, to a place with good grass and few other families. He knows there aren't many other places on Earth where he could live his nomadic life—away from highways and paved roads, cultivated fields and fences.

“There's freedom,” he says, “in Mongolia.”

Joshua Zaffos, this article originally appeared in the February/March 2013 issue of Nature Conservancy Magazine.