



A young boy on horseback minding his family's herd of goats, Mongolia © Nick Hall

# Arkhangai Foodscape

Community-based conservation to protect rangelands



**LOCATION:** Mongolian Steppe  
**SIZE:** 5.5 million hectares

MONGOLIA

### SYNOPSIS

Rangelands are the planet's most widespread terrestrial ecosystem and support carbon storage, water, habitat for wildlife and pollinators, and forage for livestock. Grasslands and rangelands are home to 30% of the global human population and directly support the livelihoods of some 500 million pastoralists and ranchers.

Pastoralists hold traditional ecological knowledge embedded in their cultures, institutions, and daily herding practices, enabling sustainable use of these semi-arid, variable, remote, and often rugged landscapes. Global and regional environmental and socioeconomic changes threaten rangelands, pastoralist lifeways, and the values they provide to humankind.

The Mongolian *aimag* (region) of Arkhangai is a pastoralist foodscape in the Mongolian steppe that supports a large population of seminomadic pastoralists and is experiencing degradation both through increased grazing pressure and climate change. Community-based conservation that creates land rights for

## ARKHANGAI



**97.7%**  
MOLLISOLS IN MOUNTAINOUS-HILLY AREAS WITH LOW DENSITY LIVESTOCK GRAZING AND SCATTERED CROP PRODUCTION

**2.3%** OTHER

FIGURE 1. Map of Arkhangai foodscape. The bars represent the most extensive foodscape classes within the foodscape. The color of bars indicates the intensity groups corresponding to those classes: scattered cropland and grazing (yellow). The other category includes the classes that each made up <5% of the foodscape area.

herders can help limit degradation and enhance pastoralist livelihoods while conserving rangelands and biodiversity.

### DESCRIPTION OF FOODSCAPE

In Mongolia, rangelands account for 70% of the country's land area<sup>2</sup> that directly support the lifeways of 300,000 seminomadic pastoralists, roughly 10% of the population. Half of the country's inhabitants benefit from the economic activity generated from pastoralism. The most common livestock pastoralists herd across the steppe are sheep, cows, yaks, goats, and horses.

Experienced herders here seek to harmonize livestock needs with daily, seasonal, and interannual changes in plants, weather, and water availability. In practice, herders in the Arkhangai foodscape, like those in the rest of Mongolia, follow repeated patterns of seasonal movements among customary winter, spring, summer, and autumn pastures with a goal of meeting the changing physiological demands of their livestock with the most suitable available resources.<sup>3</sup>

A young girl milking her family's herd of dairy cows, Mongolia  
© Nick Hall

Mongolia's grasslands encompass three major ecological zones, the mountain-forest-steppe, steppe, and desert-steppe, as well as multiple unique ecosystems. The Arkhangai foodscape is representative of habitat for iconic and endangered species including red deer, Siberian Ibex, and musk deer; birds such as the Steppe Eagle, Saker Falcon, and Eurasian Spoonbill; and carnivores such as the snow leopard, grey wolf, Eurasian lynx and Pallas's cat.

Mongolian pastoralists have experienced significant transitions in modern history. During the socialist regime (1921-1992), livestock were managed under a collective system. Herders were paid employees of the state herding cooperative systems, which provided production inputs and support as well as social services that offered herders a relatively high quality of life. Collectives also governed pasture use, setting stocking rates, allocating pastures, and directing seasonal movements.<sup>3</sup>

The shift to a democracy and a market economy in the early 1990s marked notable changes to Mongolia and its rangelands, affecting herder well-being, rangeland governance, and resulting pasture conditions. State collectives were dissolved and livestock were privatized and allocated to individual herders. Local governments were charged with regulating pasture use and enforcing traditional norms such as setting aside grazing

reserves for use in winter, but in practice local officials lacked the political will or resources to enforce laws.<sup>4</sup>

#### CHALLENGES

Thirty years of Socialist rule had eroded trust and customary norms to the extent that they were largely ineffective. Livestock privatization, combined with weak formal governance and the absence of pastoral institutions, led to increasing poverty and wealth disparities among herder households<sup>5</sup> and declining herd mobility.

There were also increases in year-round and out-of-season grazing (or "trespassing") on reserved winter pastures<sup>6</sup> as herd numbers grew. These factors led to conflicts over pasture and water and growing concern about herder well-being and rangeland conditions. Many of these stressors continue to affect food systems today through their influences on pastoralists and sensitive grassland ecosystems.

The Arkhangai foodscape is in the north-center of Mongolia, to the west of the capital Ulaanbaatar, where human modification of rangelands has been more intense than in other parts of the country. Livestock density in Arkhangai is higher than in most other parts of the country.

The socioeconomic drivers of change here have been exacerbated by climate change. Landlocked and far from the natural climate regulation provided by oceans, temperatures in Mongolia have already risen by over 2°C in the past 50 years and are expected to increase 6°C by the end of the 21st century.





A view from a mountain top above  
Khan Khentii Protected Area.  
Khentii *aimag*, Mongolia  
© Nick Hall

Rains now occur later and with more temporal and spatial variability, leading to decreased grassland productivity.<sup>7</sup> With greater frequency of droughts, pasture plants are not present during the expected season and are patchier, increasing risk of livestock mortality.<sup>8</sup>

Drought and overgrazing have also contributed to more severe *dzuds*, a term for a severe winter in which a large number of livestock die. A single *dzud* in the 2009–2010 winter killed more than 10 million livestock across the country (23.4% of the total herd).<sup>9</sup>

While human populations have declined in rural areas, the total number of livestock has increased, and herd compositions have shifted toward a greater proportion of goats, which are particularly damaging to grasslands. The combination of socioeconomic and climatic factors has led to a 32% decline in the number of herders since 2000.

Women and girls increasingly leave the countryside to seek higher education and a professional career in urban areas. These trends in turn affect family dynamics<sup>10</sup> and diminish the likelihood of transmitting and maintaining traditional ecological knowledge and lifeways over generations.

The social organization of herding is shifting, with more absentee-owned livestock and an increase in contract herders taking the place of owner-operators of family herding enterprises.<sup>11</sup> Growing and increasingly concentrated livestock populations coupled with declining herd mobility and a changing climate increase rangeland degradation, including potentially irreversible changes in plant community

composition, productivity, and soil retention.

Given these trends, linked ecological and cultural tipping points could occur if overuse by livestock reduces productivity and increases vulnerability to severe winters, thus leading to a wave of rural-urban migration and accompanying loss of herding knowledge and cultural identity.<sup>12</sup>

Given the prominence of livestock for food systems and for broader commercial enterprises, integrating sustainability considerations into social and economic systems can incentivize and shape grazing practices on sensitive grasslands within the Arkhangai foodscape.

## SOLUTIONS

The community structure is an important unit for traditional herders. In particular, community-based conservation is a set of approaches emphasizing the role of communities in managing their natural resources, and it often includes a set of practices, including nature-based solutions, that range from facilitating the formalized devolution of rights to communities, to enabling the co-management of resources and co-learning among communities, state, and nonstate actors.

Since the late 1990s and early 2000s, Mongolian community-based conservation has proliferated, with several international donors and NGOs/ENGOs supporting Mongolian herder communities as Community-Based Organizations to support formal recognition of sustainable rangeland management. By 2006, more than 2,000 groups were organized with assistance from 14 different organizations.<sup>13</sup> The Law on Environmental Protection of Mongolia in 2012 enables Community-Based Organizations

members' rights to the resources on their customary lands, including management of forests and wildlife.

Within the Arkhangai foodscape, there are newly emerging Community-Based Organizations managing designated Local Protected Areas. Khoid Mogoin Gol-Teel Local Protected Area (137,000 ha) in Bulgan soum is managed by the Union of Conservation Communities; herders managed to stop poaching there and achieved a dramatic reduction in illegal logging, which resulted in a population increase of marmots (36%), Saker falcon (21%), and Steppe eagle (38%) against the baseline three years ago.<sup>13</sup>

Several studies have also found significant positive impacts of community-based conservation efforts on human and environmental outcomes in Mongolia,<sup>14-16</sup> including addressing resource management issues, strengthening social networks, and using traditional and innovative rangeland management practices.<sup>16</sup> These positive behavioral changes were also associated with many benefits to the communities, including access to more information sources, stronger leadership, more opportunities for knowledge exchange, clear and enforceable rules for resource use,<sup>17</sup> and enhanced adaptive capacity in the face of climate hazards.<sup>18-19</sup>

Strengthening these institutions is a priority for managing the dynamic and shifting demographic, climate, economic, and political conditions that currently threaten Mongolian rangelands now and into the future.

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