

Study on the Problems and Countermeasures of Grassland Ecological Protection in Pastoral Areas-Taking the Case of Nomadic Pastoral System in the Arukhorqin Grassland

Qing GeLe,Xi Suozhu

Inner Mongolia Agricultural University, Hohhot, Inner Mongolia 010010, China

Abstracts:General Secretary Xi Jinping pointed out in the report of the 20th CPC National Congress, “We must firmly establish and practice the concept that green water and green mountains are golden silver mountains, and plan development from the perspective of harmonious coexistence between human beings and nature.”Ecological construction in pastoral areas is an important part of national ecological construction. With the advent of the new century, significant progress has been made in the economic and social construction of pastoral areas under the support and investment of the State, and the living conditions of the herdsmen have been significantly improved. However, there are still many problems in the development of pastoral areas. Especially the severe test of grassland ecological environment. Under these circumstances, the protection and restoration of the grassland ecological environment has become urgent.

Keywords: Steppe Ecology; Nomadic; Conservation

1. Overview of the nomadic pastoral system of the Aluqorqin steppe

The nomadic pastoral system of the Aluqorqin Grassland has been in the national spotlight since 2014, and on June 12, 2019, it was included in the second preliminary list of China’s Globally Important Agricultural Cultural Heritage. On May 20, 2022, the Food and Agriculture Organization of the United Nations (FAO) conferred the title of Globally Important Agricultural Cultural Heritage on the Arukhorqin Grassland Nomadic Pastoral System. By 2024, there will be 86 globally important agricultural cultural heritages, of which 22 are in China.

Bayanwendul Submu of Arukolqin Banner is the core area of the “Arukolqin Steppe Nomadic System” heritage site, located in Bayanwendul Submu of Arukolqin Banner in Chifeng City, Inner Mongolia Autonomous Region, including 23 gacha (villages), one forest protection station (Gengpi Temple) and one national nature reserve (Hanshan Forestry Farm). This area, as the core area of the grassland nomadic system, carries rich historical and cultural heritage and precious ecological resources, and plays a crucial role in protecting and inheriting the nomadic culture, and in promoting the protection and sustainable development of grassland ecology.

The nomadic system of the Arukhorqin steppe, this unique composite production system, dominated by animal husbandry, agriculture and forestry are interdependent and complement each other’s strengths. Its core area - Bayan Wendul Sumu, located in the northernmost tip of the Aluqorqin Banner, covering the six nomadic core zones of Itute, Ulanhada, Baozhi Wendul, Huidulun, Chagan Wendul and Tallinn flower. This vast land, Dalal River, Suji River and Haihar River intertwined through the flow of the total area of up to 5 million acres, of which 2.42 million acres of pasture, 119,000 acres of cropland, 2.45 million acres of woodland, but also contains the Hanshan Nature Reserve.The nomadic system has a clear division: the Hanshan Forest in the center, 21 gachas and 1 ranger station in the south constitute the winter and spring pastures; while the Talinghua gacha and Yatut gacha in the north are where the summer and fall pastures are located. It is worth mentioning that the 1 million acres of natural forest pasture in the north is well preserved because it has not been divided into households to build net fences.At the end of June 2023, there were a total of 5,646 households living here, with a total population of 14,875 people. The total number of livestock is as high as 432,000 heads/units, including 109,000 heads of large livestock and 323,000 sheep.The nomadic system of the Arukhorchin grassland is not only the only grassland nomadic system in the world showing Mongolian characteristics, but also an important green ecological barrier in the northern part of China, containing rich ecological value and reflecting the wisdom strategy of local herders to live in harmony with the natural ecological environment.

2. Effectiveness of ecological conservation measures in the Aluqorqin grasslands

In protecting and developing the grassland nomadic system, Arukolqin Banner has always adhered to the principle of “protection in

excavation and inheritance in development". In order to realize the sustainable development of the grassland nomadic system, the Banner has formulated a plan guided by the concept of "industrial integration and native nomadism". Through this plan, Arukhorqin Banner strives to maintain the originality of the grassland nomadic pastoral system, strengthen cultural inheritance and protection, promote industrial transformation, and shape local brands. These measures not only help to protect the uniqueness and ecological value of the nomadic grassland system, but also promote the prosperity of the local economy and rural revitalization.

In order to strengthen the protection of grassland ecology, Arukolqin Banner has set up the Tallinn Flower National Grassland Nature Park care center, and set up six care points. The soum party committee and government also led the establishment of "otel" party building consortium, successfully build the original ecological, all-round, efficient and convenient nomadic life service circle. At the same time, they recruited grassland ecological caretakers, and developed a relevant system. Through these initiatives, the realization of the nomadic core area of the full coverage of the video monitoring system, effectively improve the management capacity and level of nomadic areas. This series of measures not only helps to protect the grassland ecological environment, but also provides a solid foundation and guarantee for local rural revitalization.

At the same time, in order to safeguard the transhumance of herdsmen and the effective management of the summer camps of the grassland nomadic pastoralist system, the linkage strategy has been implemented, with the adoption of the temporary permit pass system and restrictive closure management, and the strict approval of passing vehicles, thus strongly maintaining the native ecological environment of the nomadic pastoralist core area. In addition, according to some provisions in the "Implementation Measures for Implementing Chifeng City's Regulations on Prohibition of Pastoral Rest and Grass-Livestock Balance in Arukolqin Banner (for Trial Implementation)" revised in 2021, the livestock carrying capacity of the summer camp in Bayan Wendul Sumu is clearly stipulated, i.e., every 10 mu of natural pastureland carries the livestock capacity of one sheep unit. The specific implementation of the livestock-carrying capacity is carried out by the relevant departments of the local soum gacha, and the methods of calculation and implementation are as follows: the livestock-carrying capacity is calculated on the basis of the number of heads of livestock that can graze in the summer camps of each herding household, based mainly on the area of the summer pasture of each household that has been determined during the period of the implementation of the "two-rights, one-system" policy. At the same time, the number of actual heads of livestock currently in each household is strictly counted on the basis of the herding household as a unit, and is strictly compared with the carrying capacity of its summer pasture. If violations of the grazing situation are found, according to the relevant provisions, each sheep unit fine of 100 yuan. The sheep unit conversion standards for various livestock are: adult sheep, goats, cattle, horses, camels, donkeys and mules are converted into 1, 1, 5, 6, 6, 3 and 5 sheep units, respectively; young animals of the current year are converted into adult animals on a 3:1 basis. Scientific approval of the appropriate amount of livestock to be carried in the nomadic core area has delayed the time of nomadic herding and reduced the number of head of livestock entering the area year by year, so that the nomadic herding system can realize recuperation and natural recovery. To date, the core area has met the requirements for grass-animal balance. In response to winter camps, the systematic management of sandy grasslands and the restoration of vegetation have effectively improved the production and living environment for herders.

A series of policy documents, such as the "Interim Measures for the Protection of the Nomadic Pastoral System of the Aluqorqin Steppe," have been formulated to increase the protection of pastoral areas. This system not only has rich ecological value, but also is the living heritage of Mongolian culture and an important ecological barrier in the north of China, which plays an important role in protecting the grassland ecological environment and promoting sustainable development, etc. As a green ecological barrier in the north of China, the nomadic pastoral system of the Aluqorqin steppe plays an important role in maintaining and improving the ecological environment. Through their traditional nomadic pastoralism, herders have realized the protection and management of grassland ecosystems, promoting the restoration of grassland vegetation and the maintenance of ecological balance. Their way of life and cultural traditions are interdependent and mutually reinforcing with the grassland ecosystem, constituting a unique and harmonious eco-social system.

3. Problems facing grassland ecological conservation in pastoral areas

3.1. Inadequate funding and technology for ecological conservation in pastoral areas

After dozens of years of evolution, some pastoral areas have gradually crossed over from traditional nomadic pastoralism to the trans-

formation of sedentary pastoralism, a transformation driven by technological progress and capital accumulation. However, sedentary pastoralism not only requires higher capital investment, but also relies on advanced scientific and technological equipment and efficient labor. This has put many ordinary herder families in a difficult situation, as they often lack the necessary technical support and financial assistance to meet the requirements of modern pastoral development. As a result, these families are forced to continue with traditional household production methods and face multiple challenges.

This status quo not only limits economic growth in pastoral areas, but also exacerbates the pressure on grassland ecosystems. If it is not possible to integrate individual herder families and promote appropriate scale production, then herders' dependence on pasture will limit their economic development and may exacerbate the conflict between family ranching and grassland ecological protection. At the same time, the intervention of family ranching fails to fundamentally change the traditional way of pastoralism, but may instead compete with ordinary herders, further increasing ecological pressure. Therefore, how to protect grassland ecology and promote the sustainable development of the pastoral economy while modernizing the pastoral industry has become an important challenge for these pastoral areas.

3.2. Ecological protection of pastoral grasslands increases the production costs of animal husbandry.

The increase in the cost of livestock production due to ecological protection and construction in pastoral areas can have a negative impact on herders' income and livelihoods. In the herders' perception, livestock is a symbol of wealth, and therefore herders' incomes are largely dependent on grassland animal husbandry. As measures for ecological and environmental protection are increasingly strengthened and implemented, this has led to a decrease in the number of livestock. This trend not only affects their traditional livelihood mode, but also directly relates to the stability of their economic income. When the number of livestock decreases sharply, it means that they are unable to obtain the expected income through animal husbandry, and then there will be a sharp drop in income. This problem is particularly acute in the current context of inadequate ecological compensation mechanisms.

As ecological protection measures continue to advance in grassland pastoral areas, the production and living styles of herders have undergone a profound transformation. During this process, production costs have risen significantly, especially the cost of acquiring fodder and forage. These cost increases reflect the economic adjustments that herders must make to adapt to the new environment. In order to adapt to the requirements of ecological conservation, more investments are also needed, such as fencing, sheds, water facilities and forage bases, all of which require substantial investments. Changes in the cost structure mean that they need to revisit their production strategies and livelihood patterns to ensure sustainable development.

Therefore, ecological protection and construction in pastoral areas has had a significant impact on herders' livelihoods and incomes, and effective policies and measures are needed to safeguard herders' livelihoods, promote grassland ecological protection and achieve sustainable development of the livestock industry.

3.3. Lack of awareness of grassland ecological environment protection in pastoral areas

Grassland ecological environment protection in pastoral areas faces many challenges, including insufficient awareness of ecological protection among herders, neglect of the ecological environment due to the primacy of economic interests, low motivation for public participation, and simple management by grass-roots organizations. Together, these factors have led to the deterioration of the grassland ecological environment and increased pressure.

In addition, the lack of enthusiasm for public participation is one of the factors affecting grassland ecological environmental protection. The lack of effective social mobilization and participation mechanisms and the lack of concern and action by many members of the public on issues of ecological environmental protection have made it difficult to achieve the desired results in grassland protection.

Moreover, the grassland management tools used by grass-roots organizations appear to be single and extensive. This management approach lacks systematicity and scientificity, and is often limited to basic activities such as traditional grazing and inspections. The lack of a comprehensive grassland ecological protection and management system involving the government, local enterprises, herdsmen, social organizations and individuals has led to inefficient use of resources, damage to the ecological environment, and a lack of effective monitoring and restoration mechanisms.

4. Countermeasures to the problem of grassland ecological protection in pastoral areas

4.1. Increased investment in science and technology and financing

First of all, the Government should increase its financial investment in ecological protection in pastoral areas. This can be done by adjusting the financial budget to increase the allocation of special funds for ecological protection projects in pastoral areas, while at the same time strengthening the mechanism of financial subsidies and incentives for ecological protection in pastoral areas, encouraging all sectors of society to participate in the cause of ecological protection, and expanding the sources of funding.

Secondly, local governments have the responsibility to raise the proportion of their investment in public finance and to allocate more funds to the protection of grassland ecosystems in pastoral areas. This requires not only the formulation of clear directions for the use of funds, but also the establishment of a set of transparent and effective fund-monitoring mechanisms to ensure that every penny is effectively utilized to promote the sustainable development of pastoral areas. This can be done by strengthening infrastructure development in pastoral areas, such as improving network communication facilities, optimizing waste disposal, and building modern waste transfer centers. These initiatives are crucial to improving the quality of life of pastoralists and promoting long-term ecological stability.

Thirdly, there is a need to apply advanced science and technology to production methods in pastoral areas and to increase efforts to promote them, so that traditional nomadic pastoralism can be combined with modern animal husbandry. This includes the introduction of efficient production techniques, ecological animal husbandry and breeding modes, and so on, in order to improve resource utilization efficiency and reduce pressure on the ecological environment. To promote the combination of modernization and traditional nomadic herding, the government should guide local herders to change the way of small-household operation, implement large-scale, intensive operation, financial subsidies for sheds and forage, scientific breeding, and the traditional nomadic ecological concepts and modernization combined with the development of pastoralism to drive the herders. The formation of market-oriented, large-scale, modernized relatively complete economic chain, that is, to protect the grassland ecology, but also to achieve the sustainable development of the pastoral economy.

4.2. Strengthening of ecological compensation policies and promotion of technological innovation by Governments

First, the policy of ecological compensation should be strengthened. The Government can partially compensate for the increase in livestock production costs by providing funds for ecological compensation. This can include direct subsidies or the provision of other forms of ecological compensation, such as resource tax reductions and exemptions and preferential environmental protection projects. In this way, the increased burden of the livestock industry due to ecological protection and construction can be alleviated and the production efficiency of the livestock industry can be improved.

Second, promote technological innovation and improve production efficiency. Through the introduction and promotion of advanced livestock production technologies, we have improved the productivity and resource utilization efficiency of the livestock industry, thereby effectively reducing production costs. These technologies are like “catalysts” for the development of the livestock industry, bringing us significant benefits and competitive advantages. This includes improving livestock feed formulations, improving livestock breeds, optimizing breeding management and other aspects. At the same time, with the help of scientific and technological innovation, low-carbon and environmentally friendly livestock production technology, in order to reduce the burden on the grassland ecological environment, to achieve ecological and economic coexistence, to achieve a win-win situation.

Thirdly, the coordinated management of animal husbandry and ecological protection should be strengthened. In the construction of ecological protection, full consideration should be given to the characteristics and needs of the animal husbandry industry, and flexible measures should be taken to minimize the adverse impact on livestock production. At the same time, a sound information feedback and communication mechanism should be established to resolve in a timely manner the difficulties and problems faced in the development of the animal husbandry industry.

4.3. Changing attitudes and establishing a correct concept of grassland ecological protection

First, Changing the traditional concept of environmental protection and establishing a correct understanding of and respect for the

grassland ecosystem is a way of protecting natural resources, but also a cultural self-awareness and a deep understanding of ecological balance and sustainable development. This not only requires the government to change from the traditional performance concept of blindly pursuing economic growth, but also requires all participants - including herders, enterprises and non-governmental organizations - to have a new understanding of the concept of ecological environmental protection.

Secondly, herders assume the important role of protecting and managing the grassland ecological environment. They are not only the guardians of the grasslands, but also direct participants in the construction of ecological civilization. Therefore, it is important to raise herders' sense of "ownership" and make them realize that they are the masters of the ecological environment. The government should play a guiding and promoting role, and establish closer communication channels with herders, social organizations and local enterprises to build a good environment for multi-party collaboration and joint promotion. Such a cooperative model can provide herders with more support and resources and ensure that ecological protection is effectively implemented.

Thirdly, there is a need to improve the construction of grass-roots organizations in terms of their management and service capacity. In this process, a system of multifaceted participation should be established, with the government, enterprises, herders, social organizations and individuals jointly participating in grassland ecological protection and management. The Government can strengthen the construction and training of grass-roots organizations and improve their management level and service capacity so that they can better play their role in grassland ecological protection.

5. Conclusion

As one of the most important ecosystems on Earth, grassland is not only an important place for plant and animal life to flourish, but also an indispensable link in the ecological cycle. Grassland ecosystems are directly related to the balance and stability of the Earth's ecosystems, and also affect the sustainable development of human society. Therefore, the protection of grassland ecology is not only an urgent task, but also the key to building an ecological civilization. We must take active measures to strengthen the protection of the grassland ecosystem and ensure that this valuable resource can be effectively managed and rationally utilized. Only in this way can we realize the beautiful vision of harmonious coexistence between human beings and nature.

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Author's Profile:

1. Qing GeLe (1998-), male, Mongolian, Arukorqin Banner, Chifeng City, Inner Mongolia, master's degree, research direction: administrative management of ethnic autonomous areas

2. Xi Suozhu (1966-), male, Mongolian, Naimanqi, Tongliao City, Inner Mongolia, dean of the School of International Education of Inner Mongolia Agricultural University, professor, master's tutor, the main direction is the study of the administration of ethnic autonomous areas.