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| RESEARCH ARTICLE

Ecological Protection Status and Protection Countermeasures of Qinghai-Tibet Plateau

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| ABSTRACT
The Qinghai-Tibet Plateau has its unique advantages and is an important natural area to regulate the human living environment. At present, China's rapid economic development and social progress, with the rapid population growth, the ecological balance of the ecological environment affect the Plateau, which is indispensable in human life and development and is a necessary condition for steady and sustainable growth and people's living standards; it also plays a decisive role in the sustainable development strategic goal of the whole country. Due to the extreme nature of natural conditions and human activities, the biodiversity in the Qinghai-Tibet region is in danger, with serious soil erosion and sensitive ecological and environment. In order to protect the ecological environment of the Tibetan Plateau, strengthen the research and scientific management of the natural area and its ecosystem, establish and improve the nature protection mechanism; at the same time, strengthen the biodiversity maintenance of the alpine area of the Tibetan Plateau, implement a series of countermeasures of the ecological system, so as to restore the area to the original situation and provide more ecological service functions. This paper first analyzes the reasons for the fragile and sensitive ecological environment in the Qinghai-Tibet Plateau area, then analyzes the current situation and existing problems of ecological protection, and puts forward corresponding protection measures for various problems. On the basis of the above, the ecological protection countermeasures of the Qinghai-Tibet Plateau are discussed. In this paper, the investigation method and the literature research method are adopted to collect and analyze the existing research results, comprehensively understand the current situation of ecological protection on the Qinghai-Tibet Plateau, and analyze them in detail. The results show that: (1) the economic development level of the Qinghai-Tibet Plateau area is low, and there is a contradiction between resource development and utilization and ecological environment protection; (2) the biodiversity in the Qinghai-Tibet Plateau area is threatened, the ecological service function is reduced, the Qinghai-Tibet Plateau has a vast territory, changeable climate and serious soil erosion. (3) Due to the impact of human activities on the environment, the contradictions between natural, social and economic development and ecological environment protection are increasingly prominent; (4) Ecological protection is faced with many problems and protection is difficult. Generally speaking, there are many problems and challenges in the ecological protection work in the Qinghai-Tibet Plateau, facing severe tests.

| KEYWORDS

Qinghai-Tibet Plateau, Ecological protection, Fragile ecological environment, Protection strategy, ecosystem

| ARTICLE INFORMATION

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1. Introduction

Known as the “roof of the world”, “the third pole of the Earth”, and “the water tower of Asia”, the Qinghai-Tibet Plateau is the highest, largest and youngest plateau in the world (Gao et al., 2021). It has a unique ecosystem and plays an important role in water conservation, soil layer conservation, soil fixation, carbon immobilization and biodiversity conservation. At the same time, the Qinghai-Tibet Plateau was also one of the most abundant and diverse species of organisms, the harshest and harshest ecological environment quality, and the fastest-changing rate of sustained social and economic development in the history of the earth (Xu et al., 2017). Due to the unique and fragile natural geographical environment, the ecological status of the Qinghai-Tibet Plateau has been widely concerned by scholars and government officials at home and abroad and has a very important position

in the study of global change. The Qinghai-Tibet Plateau is an important part of major global ecosystems such as grasslands, forests and wetlands. In this context, with the growth of population, human influence on the Qinghai-Tibet Plateau is increasingly intensified. The Qinghai-Tibet Plateau has become one of the worst environmental quality areas in China, which is also a fragile and sensitive ecosystem. In order to better protect and rationally utilize the unique, precious and fragile resources and environment of the Qinghai-Tibet Plateau, this paper combined with the existing relevant research results, elaborated the status quo and existing problems of the ecological protection of the Qinghai-Tibet Plateau. In order to protect the Qinghai-Tibet Plateau and restore the ecological environment, feasible protection countermeasures were put forward.

2. Plateau Ecological Environment is Fragile

The Qinghai-Tibet Plateau mainly includes Qinghai, Tibet and provinces and cities in Yunnan, Sichuan and Gansu (Fu et al., 2021). The Qinghai-Tibet Plateau Reserve is not only the area where the Tibetan ethnic population is the lowest in China but also one of the boundaries where the ecosystem is seriously fragile in the world. It is plagued by serious climate problems and has a significant impact on human production activities. In addition, the plateau has magnificent and steep terrain, a steep altitude, an extremely bad climate, and an extremely fragile ecological environment. Due to the sensitive Qinghai-Tibet Plateau and the unscientific development, research, construction and utilization in recent years, it is possible that more common, serious and complex geological problems of natural environmental pollution may have occurred at the same time in different latitudes of the country, such as the massive melting of glaciers, the rapid rise of snow lines, the significant reduction of river flow, the significant reduction of forest vegetation, and the obvious serious situation of soil fertility and salinization, Due to the increasingly obvious expansion of soil resources due to weathering and desertification, the scarce and endangered wild protected animal and plant resources have been significantly reduced, the biodiversity has been further destroyed, and flood disasters have occurred frequently. These kinds of ecological status can make the ecological model of the whole Qinghai-Tibet Plateau, which is still in the stage of continuous uplift, more complex, sensitive and unstable (Wang, 2008).

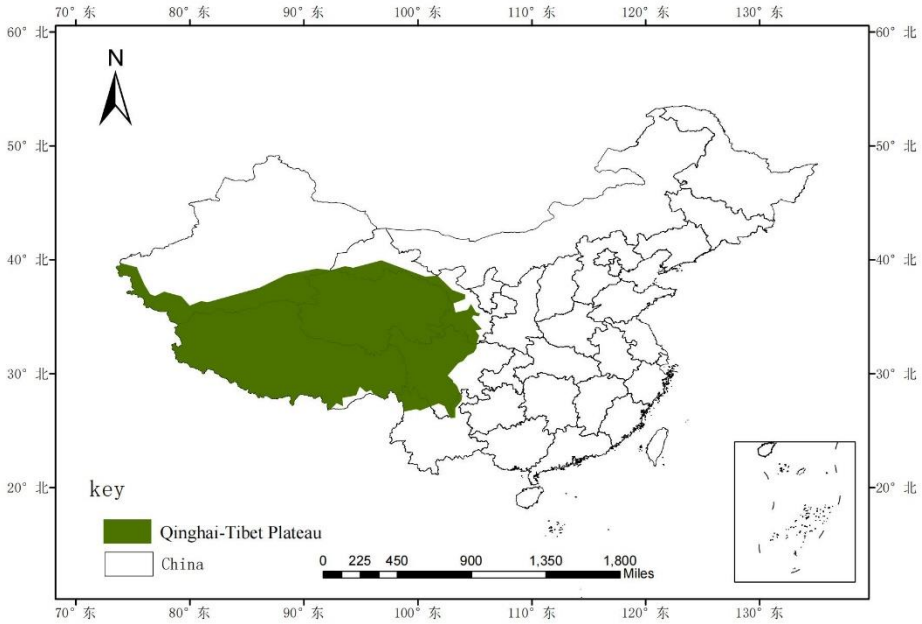

Figure 1. Qinghai-Tiber Plateau

3. Ecological Environment Status

3.1 Serious Water and Soil Loss

The Qinghai-Tibet Plateau has complex landforms and various types of soil and water loss. With the implementation of Western development, the population entering Tibet is gradually increasing, human activities are becoming more frequent, and the demand for resources is also increasing. The impact of human factors on the environment is constantly expanding, and soil loss on the Qinghai-Tibet Plateau is further aggravated. Due to deforestation in Tsowa Township, Mangkang County, Tibet, and land reclamation in the Niyang River reach and Zawang County, the green ecological environment has deteriorated, water and soil erosion has intensified, and flash floods and landslides have frequently occurred. According to the statistics released by the Ministry of Water Resources, in 2020, the area of water and soil outflow on the Qinghai-Tibet Plateau reached 60. 85 square kilometers

(Chen et al., 2020). Compared with 2019, there is a downward trend, but the overall loss area is still very large, and it still ranks top five in the ranking of soil and water loss areas across the country.

3.2 Plateau Vegetation is Damaged

The unique location of the Qinghai-Tibet Plateau, the single plant community, the reduction of economic trees, the complex relationship between agriculture and animal husbandry, the low level of social and economic development, coupled with the extreme natural weather and other factors, have resulted in the backward development of forestry, and it is difficult to recover the original vegetation after being damaged. However, the vegetation of the Qinghai-Tibet Plateau has been degraded and threatened the protection of the original vegetation due to the blind development of animal husbandry and excessive development of grassland by herdsmen. Secondly, The Qinghai-Tibet Plateau has a small forest area and low coverage, which is difficult to recover from once damaged.

3.3 Biodiversity Threatened

Biodiversity protection in the Qinghai-Tibet Plateau is still a major resource base to ensure the sustainable development and survival of human beings in the Qinghai-Tibet Plateau. The overall planning system of biodiversity and its protection system should complement each other with the ecological policies and systems in these major areas. Many kinds of natural animals and plants on the Qinghai-Tibet Plateau, such as large areas of artificial grassland, forests, lake marshes, large areas of artificial wetlands and desert grasslands, have been extensively destroyed by devastating natural disasters. The number of some unique or rare species on the plateau wetlands is facing the threat of loss and extinction. Due to the comprehensive and indirect effects of various factors, such as the immature development of human knowledge and the lack of understanding and rational utilization, the number of species in large areas of primitive grazing grassland communities and native natural grazing grassland plant communities in the Qinghai-Tibet Plateau has rapidly and significantly decreased, and the number of poisonous and weed species has also increased to a near extreme; However, there are only 24 species of artificial grazing grass and poison grass recorded in the Qinghai-Tibet Plateau found in China from the end of the 20th century to the beginning of the 1970s, By 1996, it had reached nearly 100 species and 164 species (The following are 93 genera belonging to 42 families (Sun et al., 2012). In some mountainous areas of Yunnan, Inner Mongolia, degraded grassland with serious or complete degradation process has occurred. The poisonous grass community has also begun to degenerate and become a major type of grassland community in the grassland, forming such a large area of degraded grassland mainly composed of perennial herbage such as Stellera chamaejasme and taproot plants. In recent years, China has invested a large amount of money in the manual mining of rain ferns and winter insects. Natural resources such as summer grass fossils and many other rare wild protected plant resources in China, such as fritillaria, and there are at least more than 100 kinds of endangered rare wild plant species in the Tibet Autonomous Region project, which are either in the period of rapid growth and breeding failure or have been endangered or even extinct.

3.4 The Ecosystem Service Function is Continuously Reduced

The most important environmental service guarantee functions of the Qinghai-Tibet Plateau Wetland Ecosystem Service Center can be roughly summarized into the following two aspects: the service and protection functions of the ecosystem environment, including the service and protection functions of the Qinghai-Tibet Plateau ecological water conservation, soil fertility and its vegetation conservation, biodiversity survey, research and evaluation, ecological diversity restoration and protection, wind and sand fixation construction and other environmental protection services; The service function of the economy, however, with the deterioration of the ecological environment in China in recent years, the service function of the economic ecosystem of the Qinghai-Tibet Plateau will continue to decline, and it is difficult to meet the requirements of the basic service function.

4. Problems Faced by Ecological Protection

4.1 Lack of Systematic and Perfect Ecological Protection Regulations

Because there are a large number of natural wildlife reserves on the Qinghai-Tibet Plateau in China and their distribution areas are relatively scattered, although there are many local laws and regulations on nature reserves, most of the laws do not specifically address the natural particularity of the Qinghai-Tibet Plateau region, and the objects of ecological protection areas defined in the relevant regulatory system are relatively specific and single, For example, the regulations issued by the Tibet Autonomous Region, such as the Administrative Measures for the Adjustment of Local Nature Reserves in the Tibet Autonomous Region and the Administrative Measures for the Closure and Banning of Nature Reserves, Important Wetlands, Wild Animals, and Desertification Land in the Tibet Autonomous Region, lack effective legal constraints on the protection system of other types of forest nature reserves in the country. We should first closely combine the overall policy and regulation construction of various types of natural reserves in the Qinghai-Tibet Plateau with the actual policies and regulations of various natural reserves in the region to establish and improve a more systematic, complete, comprehensive and feasible comprehensive policy and regulation system for the ecology and protection of natural reserves in the main regions of the Qinghai-Tibet Plateau, To provide strong support for the basic legal, environmental protection to promote the coordinated, healthy and harmonious development of the ecological environment in the main region (Hu, 2020).

4.2 Multi-party Management and Low Management Efficiency

In recent years, China has increasingly attached great importance to the work of natural ecological protection. The different work departments of prefectural and municipal governments have actively applied for different types of natural reserves, which to some extent has led to the same natural reserve in the Tibetan Plateau region being managed by the relevant units in each region because it is distributed in many adjacent regions; Even if the nature reserves are distributed in the same area, there are also cases of cross-management by different affiliated units.

4.3 Poor Economic Foundation, Resource Economy Leads to Over-development

The structure type of agriculture and animal husbandry in the Qinghai Tibetan area is complex and single; the output and scale benefit are generally lower than those in the general province, the industrialization process and start of agriculture and animal husbandry are late, the supporting facilities of agriculture and animal husbandry infrastructure and the basic deviation of safe and clean production and regulatory production conditions in pastoral areas, the overall low livestock output rate and the low level of mutton commodity rate, and the long-term low return rate of crop production, but the development foundation is not stable, Various secondary natural disasters are also prone to occur frequently in pastoral areas, and the rate of returning to poverty due to the death of livestock affected by frost disasters has reached about 25%. The agricultural and animal husbandry production development and production development model in the whole Tibetan region is still hovering at two stages, namely, the relatively low productivity level of agricultural and animal husbandry and extensive development. The economic structure of Tibetan areas in Qinghai is still basically a resource economy. In the development of resources in the Tibetan region of Qinghai, there are problems such as the indiscriminate cutting and digging of coal resources, Tibetan medicine and cordyceps sinensis, the overgrazing of agriculture and animal husbandry, the random hunting of rare animals, and the insufficient compensation for the development of water conservancy engineering resources, which have led to the consumption of resources, the decline of grassland vegetation, the serious desertification ratio, the global warming, the rising snow line, the reduction of the flow of the source water of the three rivers, the landslides Global environmental problems with high risk such as landslides and natural disasters.

4.4 Due to the Impact of Human Activities on the Environment and the Increasingly Prominent Contradiction between Natural, Socio-economic Development and Ecological Environment Protection

First, the degradation or vicissitude of the green ecological environment immediately affected the local people's right to subsistence and property rights, causing a large number of farmers and herdsmen to lose their homes and become ecological refugees; The second is that the lawn, mountain forest, agricultural land, wind and snow have declined or become smaller, and a large number of farmers and herdsmen rely on agriculture, forestry and animal husbandry to survive. The urgent shortage of network resources may transfer to cities and towns and eastern areas, resulting in settlement congestion in cities and towns and eastern areas, attracting various social phenomena; Third, the number of sellers entering the Tibetan plateau to develop network resources has gradually increased, and the personal behaviors of mining, gold mining, medicine mining, poachers, and wood cutting have continued, resulting in local ecological environment problems and affecting national integration; Fourth, because the ecological environment in Tibet has been declining, disputes and contradictions often arise among the provinces, counties and townships in Tibet because of competing for water resources, mountain forests, grasslands, mineral resources, traditional Chinese medicine, and land resources, affecting social stability; Fifthly, the increasing number of outsiders has brought pressure on local energy consumption, per capita income, culture and education, transportation, medical treatment, housing, student employment, etc. , which immediately affects the harmonious coexistence between people and between people and nature; The six are mainly due to the impact of foreign advanced religious culture, modern advanced scientific and technological civilization and other factors on the traditional moral, cultural and spiritual values of China and Tibetans and the world's mainstream values. Tibetan folk traditional culture refers to a kind of national culture that is colorful, unique, profound and has a long history. The main values of Tibetan ethnic culture are characterized by the emphasis on the basis of kindness, such as compassion or charity, altruism and the willingness and cooperation between people and nature. There should be an emotional relationship between people and people full of tolerance, love and mercy. And the foreign western cultural values and the mainstream cultural values of the domestic modern society and culture are all about competition, efficiency and social interests, which is the social interest relationship between people. The violent collision between two completely different national cultural concepts and social values will further produce some factors that are impossible to coexist harmoniously (Zhang, 2011).

5. Ecological Protection Countermeasures for Qinghai-Tibet Plateau

5.1 Strengthen Ecological Protection and Construction

The basic premise of environmental protection construction is that capital construction cannot be separated from the protection of resources. It is necessary to strengthen the more reasonable, scientific, effective and safe protection of the existing mountain forests, lawns, protection of rare wild animals, water resources utilization and other projects in the Reserve to avoid recession and new destruction. The Plan clearly points out that it will improve the development and maintenance of natural grassland, ecological park, forest restoration and important biological heritage diversity, promote the prevention and control of national desertification

boundaries and control of water and soil loss areas in the whole province, and enhance the protection and control of forest boundary and the regional prevention and control of key geological disasters based on the renovation of more than 10 key ecological functional areas in the province, such as the Three Rivers and Eight Sources and the Tarim Basin Nature Reserve, Improve the construction and maintenance level of various nature and nature reserves. The best and most effective way to maintain the ecological and environmental protection of the earth is to build a variety of protected areas, limit the impact of economic development and other factors on activities, and repair the natural ecosystem software so as to ensure sustainable use of biological and mechanical resources for the all-round development of natural ecology (Jiang, 2022).

5.2 Change the Mode of Economic Development and Establish a Circular Society

Not only to vigorously develop the economy but also to protect the environment, the circular economy is the only practical choice and provides a new driving force for the change of the new development concept. The traditional "exploit resources and drop resources" is a unilateral flow pattern of matter and energy, with the continuous reduction of resources, and the corresponding increase of waste, which puts great pressure on the ecological model. The advocacy of green development refers to the development mode of continuous recycling of resources in accordance with the reshaping of ecological resources in economic development activities, requiring repeated circulation of compounds and energy and following the norms of "recycling, recycling and recycling", so that most of the whole social and economic development system and the whole process of demand and supply will not cause or only lead to little waste. For areas with environmentally sensitive resource problems, such as the Tibet Plateau, which are difficult to compare in terms of production and consumption of social resources and ecological environment and comprehensive treatment, exploring the current situation and future development trends to develop a circular ecological economy is to accelerate the in-depth implementation of the scientific outlook on the development of socialism with characteristics, continuously leapfrog the major trend of the development era and achieve sustainable circulation-driven development The national priority regional strategy put forward in an important era of the general trend and the most realistic basic conditions of important productive forces.

5.3 Vigorously Develop Industries with Resource Advantages

There are a large number of restricted development zones on the Qinghai-Tibet Plateau. The total area of land used outside the various types of natural ecological protection and development zones and within the areas prohibited for development in nature reserves accounted for at least half or more of the total area of the whole country at that time. Therefore, the scientific protection, development and reconstruction of the natural resources in the fragile and degraded areas of the Qinghai-Tibet Plateau should focus on the areas that can be restricted, and the general trend of ecological development should not be completely restricted. Under the premise that nature conservation is the priority economic choice, it is necessary to give full play to its comparative advantages according to the actual situation and vigorously protect and develop the pillar industries and advantaged residents of the ecological resources. In order to improve the development of social and economic productivity per capita in all regions of Tibet, we can gradually ease the various conflicts in the protection of the green ecological environment and local economic development and rebuild the Tibetan Plateau, where people rule and human nature develop in harmony. According to the development mode of comparative advantageous resources, the plateau region should develop leading industries and characteristic economies with their own comparative advantages. If the heavy chemical industry with hydropower project as the main body and the raw material industry with advantageous resources as the raw material, etc., then the regional economic belt can be formed to promote the overall social and economic development of the region.

5.4 Ecological Migration in Moderation

Ecological migration is one of the means to reduce the energy crisis and protect the sensitive ecological environment by exporting the population. Ecological migration is an important way to protect and rebuild the Tibetan Plateau. According to the characteristics of population distribution in the plateau area, the ecological migration should be dominated by the internal structural mobility of the plateau area and assisted by external migration. The former mainly refers to areas with relatively poor network resources or poor living environments, and then to areas with comprehensive agricultural development zones, key network resources development zones or better living conditions, namely, promoted the development and key development areas. Ecological immigration should strictly abide by the standards of government-led, voluntary and so on, so as to minimize some problems of ethnic relations brought by ecological immigration. The latter is mainly Party cadres, personnel and technical personnel in other places, which should be combined with industrial and technological innovation in other places. For example, we should grasp the breakthrough of the "natural protection Project", the protection of "three Rivers Source" and the construction of natural protected areas, and transfer the population of scattered villages living in extreme daily natural conditions, frequent waterlogging disasters, and basically having no living environment for people to the areas along the Linjiang River (referring to the areas along the rivers of Tibet), along the road, along the dam (DAMS with good natural conditions)To build a new village of ecological migrants on top of households, cultivate a follow-up industrial chain of sustainable development, and promote the urbanization process of the Qinghai-Tibet Plateau at the same time (Tian et al., 2022).

5.5 Establish an Effective Protection Mechanism and Strengthen Supervision

5.5.1 Establish and Improve the National Park System and the Natural Resources Monitoring System

The Qinghai-Tibet Plateau has the largest glacier in the world and is known as the "third pole on Earth", which is of great significance to the ecological security of the Qinghai-Tibet Plateau. The first step is to strengthen the protection of glaciers. Secondly, relevant laws and regulations should be passed to manage the Qinghai-Tibet Plateau national park and establish national parks in Tibet (Zeng et al., 2022).

5.5.2 Establish and Implement A Biodiversity Protection Plan

We will strictly and scientifically protect and utilize rare wild protected animal and plant resources on the Qinghai-Tibet Plateau, strengthen publicity on the protection of endangered species of wild animals and plants on the Plateau, and safeguard the integrity of the ecological system. We will strengthen the protection of wildlife populations and the living environment on the Qinghai-Tibet Plateau and strictly prohibit all activities that damage wildlife. We will carry out comprehensive environmental improvement and prohibit man-made damage to the Qinghai-Tibet Plateau ecosystem. Increase capital investment and improve its management methods and management level. Establish a sound system for protecting biodiversity (Li et al., 2008).

5.5.3 It is Necessary to Strengthen the Construction of Ecological Risk Monitoring, Assessment and Standard System of Monitoring and Assessment for the Whole Qinghai-Tibet Plateau and Improve the Environmental Early Warning, Assessment and Emergency Response Mechanism

According to the monitoring results, a new index system framework and a new index system suitable for the identification of ecological construction and ecological environmental protection functions of the Qinghai-Tibet Plateau should be established by using advanced evaluation methods to evaluate the important safety ecological environment and social environmental ecological guarantee technical measures on the Qinghai-Tibet Plateau (such as the protection plan and major construction projects of the Qinghai-Tibet Plateau ecological safety barrier construction and the Qinghai-Tibet Plateau regional livelihood)State construction and environmental protection planning), scientific research on the effect of maintaining the national ecological security barrier on the Qinghai-Tibet Plateau, analysis of the direct impact of important green ecological and environmental protection projects on the ecological environment protection in the Qinghai-Tibet Plateau, environmental quality changes and sustainable social development, especially to increase participation in the arid plateau areas of ChinaBased on the effect of global environmental governance ability, the author scientifically studies and derives countermeasures and suggestions on environmental and safety protection of ecological demonstration zone construction, standard design of construction engineering, implementation mechanism and follow-up supervision and assurance (Li, 2022). At the same time, it is clearly necessary to put forward the adaptive adjustment work plan that is conducive to the global environmental and ecological governance model so as to improve the overall social role of the ecological and environmental security ecological barrier system of the regional countries and its positive economic influence in effectively facing the global climate change environment (Yang, 2021).

6. Conclusion

On this basis, the natural environment of Tibet is analyzed, and the ecological environment status and existing problems of the Qinghai-Tibet Plateau are put forward. Through the investigation, study and comprehensive evaluation of the natural conditions and ecosystem characteristics in different regions of the Qinghai-Tibet Plateau, it is found that the Qinghai-Tibet Plateau is rich in species, but due to the harsh local climate environment, the biodiversity has suffered a great threat, resulting in the extinction of many rare species in the wild. In view of these problems, some countermeasures are put forward to protect the biodiversity of the Qinghai-Tibet Plateau. In addition, specific ecological protection measures have been proposed to address such problems as the fragile natural environment, serious water and soil erosion and serious environmental pollution in Tibet. The above studies show that the ecological environment of the Qinghai-Tibet Plateau is very fragile due to poor natural conditions and frequent human activities, and effective measures should be taken to protect it. At the same time, due to the influence of human activities, ecosystem degradation, soil erosion and other serious problems. The above suggestions are to restore and improve the local environment so as to better restore, develop and utilize the biodiversity of the Qinghai-Tibet Plateau region (Wu & Ye, 2022).

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