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RESEARCH ON THE PROTECTION AND SUSTAINABLE DEVELOPMENT OF QINGHAI HOH XIL — A WORLD NATURAL HERITAGE IN CHINA

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The Qinghai Hoh Xil Heritage Site retains the most complete alpine desert ecosystem in China. In 2017, Qinghai Hoh Xil was included in the World Heritage List by the UNESCO World Heritage Committee as a natural heritage. The site has unique biodiversity, with more than one-third of plant species and all herbivorous mammals endemic to the plateau. In addition, the site protects the complete migration route of the Tibetan antelope. Based on the analysis of the world natural heritage protection and management concepts and methods, this article briefly introduces the heritage resources of Qinghai Hoh Xil, analyzes the threats faced by the development of region, and proposes sustainable development protection and management measures and suggestions.

Keywords: World Natural Heritage; Hoh Xi; sustainable development; protection management; biodiversity.

ИССЛЕДОВАНИЕ ПО ОХРАНЕ И УСТОЙЧИВОМУ РАЗВИТИЮ КУКИШИЛИ — ВСЕМИРНОГО ПРИРОДНОГО НАСЛЕДИЯ В КИТАЕ

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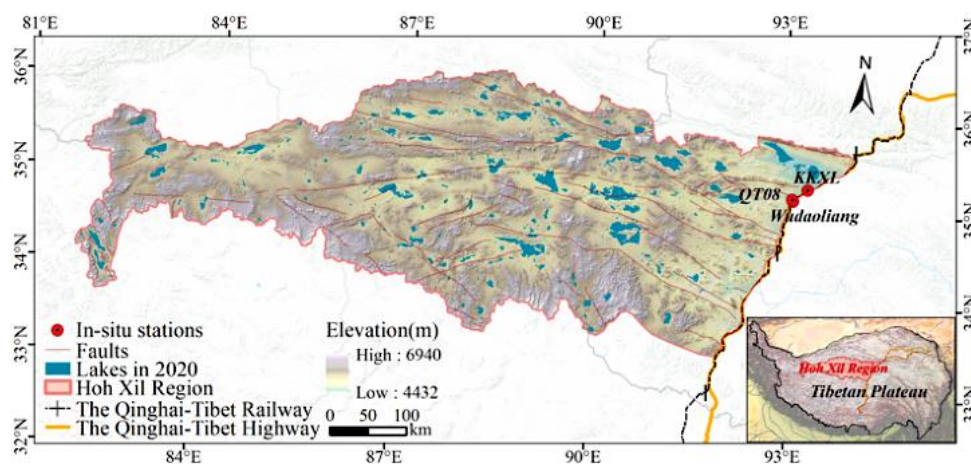
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На территории наследия Кукишили сохранилась наиболее полная экосистема альпийской пустыни в Китае. В 2017 г. Кукишили включен в Список всемирного природного наследия ЮНЕСКО. Данная территория обладает уникальным биоразнообразием: более трети видов растений и все травоядные млекопитающие являются эндемичными для плато. Кроме того, данная местность защищает весь путь миграции тибетской антилопы. На основе анализа концепций и методов защиты и управления всемирного природного наследия, в статье кратко представлены ресурсы наследия Кукишили, анализируются угрозы, с которыми сталкивается развитие регионе, а также предлагаются меры и предложения по устойчивому развитию и менеджменту защиты и управления.

Ключевые слова: всемирное природное наследие; Кукушили; устойчивое развитие; охранный менеджмент; биоразнообразие.

Natural heritage refers to natural areas with geological, physical geography, physiological structure, ecology, natural scenic spots and natural aesthetic values, including natural ecological areas, natural scenic spots and fossil sites, etc. Natural heritage is a treasure trove of various biological species and natural ecosystems [1]. The adequate protection and management of world natural heritage sites is of great significance and value to the harmonious and sustainable development of man and nature. Qinghai Hoh Xil is a nature reserve with a well-preserved original ecological environment in the world. It is also one of the nature reserves with the largest area, the highest altitude, and the richest wildlife resources in China. This place is known as the "Third Pole of the World" and the gene bank of rare wild animals on the Qinghai-Tibet Plateau. In 2017, Qinghai Hoh Xil was officially listed as a World Natural Heritage at the World Heritage Conference held in Poland.

The natural heritage is located at the northeastern end of the Qinghai-Tibet Plateau and is the largest, highest and youngest plateau in the world. The site covers an area of 3,735,632 hectares, of which the buffer zone area is 2,290,904 hectares, including large alpine mountains and grassland systems with an altitude of more than 4,500 meters (Fig.). Known as the "Third Pole" of the world, Hoh Xil has a cold plateau climate, with the annual average temperature below zero. As a result of its ongoing geological formation, the region encompasses large areas of flattened land and basins on the Tibetan Plateau. This is the area with the highest concentration of plateau lakes, showing an unusually diverse landscape of lake basins and high-altitude inland lakes [2]. The region's unique geographical formation and climatic conditions foster an equally unique biodiversity.



Geographic location and topography of the Qinghai Hoh Xil region [3, P. 3]

Qinghai Hoh Xil is the most complete plateau planation on the Qinghai-Tibet Plateau and the densest plateau lake basin in the world. It has a diverse

inland plateau lake and wetland landscape formed by the "glacier-river-lake" system at different stages of evolution. The meadows around the lakes in this area are concentrated spawning grounds for Tibetan antelopes. Thousands of Tibetan antelopes migrate every year between the lake basin lambing ground and the alpine grassland overwintering ground, constituting the long-distance migration phenomenon of large mammals that is rare in the world and the only existing large mammal in China [4, P. 8].

Qinghai Hoh Xil is a key habitat for a large number of rare and endangered wild animals such as Tibetan antelopes and wild yaks. The four main large-scale ungulate herbivores living in alpine meadows and alpine grasslands are all endemic to the Tibetan Plateau. Alpine grassland accounts for 45 % of the total vegetation on the site, dominated by *Stipa purpurea*. Other vegetation types include alpine meadows and alpine talus. More than one-third of the higher plants found in the area are endemic to the plateau. There are 74 species of vertebrates in Hoh Xil, including 19 species of mammals, 48 species of birds, 6 species of fish, and 1 species of reptile (sand lizard) [5].

Qinghai Hoh Xil has unique natural landscapes and rich wildlife resources. With the development of economy and society, the protection and management of heritage sites are facing many new threats. First of all, the Tibetan antelope in Hoh Xil has become the main target of poachers because of its precious cashmere and medicinal value. Poaching has not only led to a sharp decrease in the number of Tibetan antelopes and other wild animals, but has also had a serious impact on the balance of the entire ecosystem. Secondly, pastoral communities are an integral part of Qinghai Hoh Xil and are mainly distributed in the eastern region. Overgrazing poses a threat to the original ecological environment of the heritage site and the normal reproduction of wild animals, further leading to the reduction of the distribution area of wild animals [6, P. 890]. Furthermore, changes in the natural environment caused by extreme climate events such as drought, snowstorms, and local heavy precipitation have had a significant impact on the aesthetics and biodiversity value of the Qinghai Hoh Xil heritage site. At the same time, infrastructure construction and tourism development have destroyed the habitats of wild animals [7, P. 95] and intensified the risk of species extinction.

On the basis of rational utilization of natural heritage, we should improve the effectiveness of natural heritage protection and achieve harmonious coexistence between man and nature. First of all, the government should improve the laws and regulations related to heritage sites and strengthen the protection and management of the area. Law enforcement agencies should severely crack down on illegal trade, poaching, illegal mining and other illegal activities to protect the safety of wildlife resources in heritage sites. Secondly, using big data information technology, the heritage site establishes a

monitoring database to achieve zoning management. The heritage site monitors the herdsmen grazing range and the number of livestock, and manages the number of wild animals in the pasture to effectively manage the herdsmen grazing behavior. However, as one of the important concepts of World Heritage, public participation is one of the necessary conditions to ensure the good operation of the heritage site. Through tourism participation, government compensation and livestock reduction, we will build a comprehensive heritage resource protection system. Finally, we should strengthen international exchanges and cooperation, learn from advanced international concepts and experiences, and jointly promote the sustainable development of the global world natural heritage cause.

Qinghai Hoh Xil, as a world natural heritage, not only has rich animal and plant resources and ecological value, but also faces many challenges and threats. Therefore, on the basis of rational development of natural heritage, the government should strengthen the construction of laws and regulations, implement scientific grazing and use information technology for efficient management, which is of great significance to the sustainable development of heritage sites. Protecting natural resources and promoting the harmonious coexistence between man and nature require the efforts and participation of all parties in society to jointly promote the vigorous development of heritage site protection and sustainable development.

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