Wetland Parks in China*

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Abstract: Wetland Park is a newly developed model for wetland resources protection and wise use in China over the last decade. By establishing wetland parks, a large number of key wetland sites and wildlife habitats have been protected and restored, thus playing a significant role in expanding the protected area of wetlands in China. Thanks to the wise use of wetland resources and implementation of public education campaigns, the local ecological and people's living conditions have been greatly improved, and the public awareness on wetland conservation has been raised, which help create good enabling conditions for wetland protection and promote wetland conservation efforts across the country. However, some problems and gaps still exist in the development of wetland parks, which need to be addressed as soon as possible.

Key words: Wetland park, wetland protection system, protection and restoration, reform.

1. Concept of Wetland Parks

Wetland Park is a specific area that is protected and managed in line with relevant provisions so as to protect wetland ecosystem, wisely use wetland resources, and raise public awareness, conduct education and scientific research [1]. The wetland parks in China that are approved to be set up by State Forestry Administration are called national wetland parks.

Following a principle of “respecting nature, saving resources and adapting to local conditions”, the development of national parks in China is designed to protect and restore wetlands, conserve wetland biodiversity, maintain natural ecosystems and wisely use wetland resources [2].

In general, a wetland park in China has three functions: (1) protecting and restoring wetland ecosystem; (2) conducting public education; and (3) wisely using wetland resources [3]. To protect and restore wetland ecosystem, a wetland park will retain the original ecological features and natural conditions of wetlands, and protect wetland biodiversity, so that it can maintain the integrity of wetland structures and functions,

protect its ecological process and effectively exploit wetland ecological services. As for wetlands that have become or are being degraded, appropriate artificial intervention will be carried out to gradually restore them into healthy wetland ecosystems [4]. In terms of public education, wetland parks will be used as a platform to build a complete wetland public education system. These activities aim to promote the wetland functions and values; inherit wetland civilization; allow the general public to be fully aware of the fact that wetlands provide material basis for human development and that wetland is closely related to everyone; and involve the general public in wetland conservation efforts. As for wise use of wetland resources, we will utilize wetland resources sustainably while protecting them, and provide sites for recreation and entertainment and physical and cultural products for people through eco-tourism, ecological planting and breeding, and wetland cultural activities, etc.

2. Background

Before 2000, wetland sites under protection were dominated by wetland nature reserves [5]. However, most wetland areas not qualified for establishing nature reserves, which have some values for protection but suffer from severe human interference, have not

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yet been included in wetland protection system.

Wetland parks are the newly developed model for wetland resource protection and wise use over the last decade to meet the needs of wetland conservation in China. In June 2004, the State Council issued a Circular on Strengthening Wetland Protection and Management in China, clearly stating that wetland parks are the key elements of China's wetland protection system. This document has proposed innovatively the concept of wetland parks in China, thus adding new model for wetland conservation efforts in the country.

Establishing wetland parks is a specific action to implement the strategy of protecting and managing wetlands by different levels and types, as well as one of the most immediate and effective means to maintain and expand wetland area. Establishing wetland parks can not only engage the whole social community in wetland protection, but can help fully exploit various wetlands functions and benefits. It also plays an important role in improving regional ecological conditions, promoting sustainable socio-economic development and achieving harmonious development between human beings and nature.

3. Development of Wetland Parks in China

In February 2005, Xixi Wetland in Hangzhou was

approved by the State Forestry Administration (SFA) to establish the first pilot national wetland park in China. Over the next decade, national wetland parks in the country increased continuously (Fig. 1 and Fig. 2). The development has undergone three stages: starting stage, growth stage and rapid development stage. In 2017, SFA decided to adopt a system of upgrading provincial wetland parks to national ones. As of end 2017, more than 1,500 wetland parks of different types and levels had been approved by forestry authorities in China, covering a total area of approximately 4.066 million hectares. About 2.646 million hectares of wetland areas are put under protection, accounting for 4.5 percent of total wetland area in China. Among them, there are 898 national wetland parks, representing 58.0 percent of the total number of wetland parks. These national wetland parks cover an area of 3.625 million hectares, or 89.2 percent of total area of wetland parks. Up to 2.394 million hectares of wetlands are put under protection, accounting for 90.5 percent of total wetland area of wetland parks. There are over 600 wetland parks of other levels, which cover a total area of 441,000 hectares and protect 252,000 hectares of wetland sites.

National wetland parks have been established in 31 provinces, autonomous regions and municipalities directly under the central government in China (not

Fig. 1 Annual growth of national wetland parks in China.

Fig. 2 Total number of national wetland parks in China.

Fig. 3 Numbers of national wetland parks by province in China.

including Hong Kong, Macao and Taiwan) (Fig. 3). The largest number of national wetland parks is found in Hunan (70), which is followed by Shandong (68) and Hubei (66).

In terms of national wetland park area by province, three provinces in western China are ranked Top 3: Xinjiang, Qinghai and Inner Mongolia (Fig. 4). As for the proportion of each province's wetland area in total wetland area in China, the wetland area in Xinjiang accounts for only 3.7 percent, ranking the seventh

across China. However, the area of its national wetland parks is the largest in China, representing 26.75 percent of total area of national wetland parks in the country. The wetland area of national wetland parks in Xinjiang tops the list, accounting for 27.3 percent of total wetland area of national wetland parks across the country.

According to the standards of wetland categorization in China, national wetland parks consist of five types: riverine, lacustrine, palustrine, human-made, marine

Fig. 4 Areas of national wetland parks by province in China.

Fig. 5 Numbers of different types of national wetland parks in China.

and coastal national wetland parks. Among them, the number of riverine national wetland parks is the largest (428), accounting for 47.6 percent of the total number of national wetland parks in China. By the number of different types of national wetland parks, riverine parks are followed in turn by human-made, lacustrine, palustrine, marine and coastal ones (just 25). Percentage of the number of different types of national wetland parks in the total number of these parks is shown in Fig. 5.

4. Management of Wetland Parks

4.1 Relevant Policies

As the competent authority of wetland parks, SFA

is responsible for promoting the development of wetland parks by developing policies, enhancing systems and allocating funds. It has gradually improved the development and management level of wetland parks in China. In 2005, SFA issued the Circular on Carrying out Wetland Parks Construction and Development, making concrete arrangements for the development of wetland parks in China. In 2008, SFA issued Protocol on Construction of National Wetland Parks and the Standard on Assessment of National Wetland Parks. In 2010, it issued the Measures for the Administration of National Wetland Parks, the Guideline for the Master Plan of National Wetland Parks. As a result, the administrative systems

of national wetland parks have been gradually improved, thus laying a solid foundation for the standard management of wetland parks.

In 2013, the Rules on Wetland Protection and Management was published as a decree of SFA, which clearly defines the conditions of establishing national wetland parks, their application and acceptance procedures and management, etc..

In 2014, SFA issued the Circular on Further Strengthening Development and Management of National Wetland Parks, specifying the objective, direction, components and management of national wetland parks.

In late 2017 and early 2018, in order to adapt to the new situation of national wetland parks, SFA issued a series of documents (e.g., Assessment and Rating Criteria for National Wetland Parks, and Guideline on Master Plan of Wetland Parks) on the basis of revising the Rules on Wetland Protection and Management.

4.2 Management Mechanism

While forestry authorities at various levels are responsible for guiding and supervising the development of wetland parks from technical perspective, government authorities are in charge of administration of wetland parks. As for public welfare establishment, it is dominated by government investment, in which the ecological development of wetland parks drives the growth of other industries and jointly generates economic benefits. In terms of operation, governments entrust some of operation rights of wetland parks to enterprises to leverage the advantage of enterprises in practical operation.

4.3 Management by Zones

According to the Measures for Administration of National Wetland Parks (for Trial Implementation), a national wetland park in China can be divided into five functional zones: Zone for Wetland Conservation, Zone for Restoration and Rehabilitation, Zone for Public Education, Zone for Wise Use, and Zone for

Management and Service. In the Zone for Wetland Conservation, no activities that are irrelevant to wetland ecosystem protection and management can be undertaken except those necessary for wetland protection, monitoring and scientific research. In the Zone for Restoration and Rehabilitation, activities related to wetland protection and restoration should be implemented. In the Zone for Wise Use, the ecological experiencing and management activities that will not damage the wetland ecosystem's services and functions should be carried out. In the Zone for Public Education, the activities focusing on ecological demonstration, and popular science education can be implemented. In the Zone for Management and Service, such activities as wetland management, reception and service can be undertaken.

In general, to meet the major objective of national wetland parks in protecting wetland resources, the percentage for the area of the Zone for Wetland Conservation and the Zone for Restoration and Rehabilitation in the total area of a national wetland park normally should be more than 60 percent.

5. Major Achievements

5.1 Has Significantly Raised the Awareness of Governments at Various Levels on Wetland Protection

The development of wetland parks has helped fully motivate the local governments to protect wetlands, raise the awareness of government authorities and the general public on wetland protection, greatly improve the broader environment of wetland protection, and create a favorable atmosphere of public opinions for wetland protection [6]. Therefore, the development of wetland parks has become a key tool and platform in wetland protection and ecological development for governments at various levels.

5.2 Has Played a Crucial role in Fully Protecting Wetlands and Expanding the Area of Protected Wetlands

By establishing wetland parks, a large number of wetlands have been put under protection, preventing

some wetlands from getting lost. In addition, some key wetland sites and wildlife habitats have been restored, and some key biological species have been well protected. Overall, the regional water environment has been significantly improved, and the regional water eco-safety has been maintained.

5.3 Has Raised the Public Awareness on Wetland Protection

With the implementation of public education campaigns on wetland parks, approximately 100 million tourists have received education on wetland protection each year. The awareness of tourists and local people surrounding the wetland areas has been significantly raised, and the wetland knowledge has been disseminated, which have, in turn, raised the public awareness on wetland protection and made positive contributions to wetland protection efforts throughout the country.

5.4 Has Achieved good Social Gains

The development of wetland parks has greatly improved the ecological and people's living conditions, and provided key ecological recreational spaces for local communities. Moreover, it has created some new job opportunities and involved some social funds in wetland protection, which has significantly promoted the harmonious development of the local societies.

5.5 Has created Positive Economic Benefits

Through the wise use of wetland parks including eco-tourism, the local environment has been improved, which has attracted more investment, created huge, direct and indirect economic benefits, and significantly facilitated the local and regional socio-economic development.

6. Existing Problems

6.1 Problems in Development of Wetland Parks

6.1.1 Unbalanced Development

Unbalanced development of wetland parks exists in

different regions across China [7]. While the wetland parks are developing at a fast speed in the central and eastern areas, some key wetland sites in national key ecological function zones, water birds' flyways, ecologically fragile and sensitive areas, etc. have not yet been included into the wetland protection system.

6.1.2 Unreasonable Structure

There exists an unbalanced proportion between established national wetland parks and local ones. The proportion of number between the two types is calculated to be 1.38:1, and that of size between the two types is as large as 8.2:1, indicating that the number and size of local wetland parks are too small, which shows an inverted pyramid shape(Fig. 6).

6.2 Problems in Construction of Wetland Parks

6.2.1 Insufficient Scientific Understanding on the Concept of Constructing Wetland Parks

In constructing wetland parks, top priority should be given to wetland protection, and wetland resources can only be wisely used on the basis of protection. The ultimate goal is to better protect wetland ecosystems and their biodiversity. However, the phenomenon of excessive artificial construction still exists in the development of some wetland parks, which does not follow the principle of putting ecology first.

6.2.2 Poor Management of Wetland Parks

At present, some wetland parks are suffering from lack of a sound management institution, lack of

Fig. 6 Comparison between the protected wetland area of national wetland parks and that of local wetland parks in China.

effective management measures and good planning, which have constrained the good development of wetland parks[8]. In addition, some wetland parks just copy the model of urban parks in planning and construction, without reflecting the unique characteristics of wetland ecosystem.

6.2.3 Lack of Scientific Support System

Scientific research and monitoring of wetlands in wetland parks play an important role in improving the protection and management level of wetland parks. However, due to lack of professional technicians, an effective scientific support system in some wetland parks has not yet been put in place.

7. Next Steps for Wetland Park Development

7.1 Optimize Development Layout

Geographically, wetland parks should be evenly distributed, taking into account various factors such as river basins, wetland types, population, and socio-economic development. Priority should be given to establishing wetland parks in western areas, key ecological function zones, marine and coastal wetlands, etc. Favorable policies and financial support should also be offered for these wetland parks.

Wetland parks should be established by levels, with appropriate percentage for the number of wetland parks at different levels. In particular, local wetland parks are encouraged to be established.

7.2 Enhance Management

7.2.1 Strengthening Legislation on Wetland Parks

At present, no special regulations on wetland protection has been made available at the national level in China. It is important to promote the legislation on wetland protection at the national level, and issue the national regulation on wetland protection at the earliest possible date. It is also necessary to gradually improve the legal system related to wetland protection including laws, administrative regulations and standard.

Efforts should be made to establish and improve

measures for the approval, checking and acceptance of wetland parks, establish and manage wetland parks according to relevant procedures and technical standards, and ensure that the expected objectives of the wetland parks can be achieved.

7.2.2 Strengthening the Institutional Capacity

By referring to the institutional development of national parks, China needs to: 1) explore an effective management mechanism on wetland parks, and engage all the stakeholders in the establishment and development of wetland parks; 2) enhance the management institutions of wetland parks, establish relevant organizations, equip them with necessary equipment and facilities; and 3) build a management team with professional expertise and highly-effective management level, so as to bring into full play the roles of wetland parks.

7.2.3 Enhancing Wetland Protection and Restoration, and Improving Wetland Ecosystems' Functions

As wetland parks play a key role in China's wetland protection system, wetland protection and restoration is of utmost importance in establishing national wetland parks. In terms of wetland protection and restoration, wetland ecosystems should be taken into account to restore wetland hydrological and ecological processes and to maintain the balance of wetland ecosystems.

7.2.4 Enhancing Public Education in Wetland Parks

A concept of "targeting tourists anywhere, anytime" should be adopted for wetland parks, making the public education activities to run through the whole process of tourism. Firstly, these activities should be based on scientific knowledge. Secondly, the contents should be focused on different audiences in line with the characteristics of each wetland park. Different forms and languages can be used to conduct popular science education activities that are both informative and entertaining. Thirdly, these activities should also be organized for local schools and communities.

7.2.5 Improving the Effectiveness of Scientific Research and Monitoring

In the course of planning and developing wetland parks, special emphasis should be placed on the research and monitoring indicators which are scientific and practical, as well as on the role of monitoring in guiding the establishment and management of wetland parks. This will provide basis for decision-makers at different levels to conduct science-based policy-making, contribute to wetland biodiversity protection, restoration of degraded wetland ecosystems, prevention and control of alien invasive species, and wise use of wetland resources, and significantly improve the science-based management level of wetland parks.

7.3 Strengthen Supervision and Guidance

Forestry authorities at different levels are responsible for guiding and supervising the wetland parks within their jurisdiction. As for the national wetland parks that have been approved, in particular those that have been successfully accepted as formal ones after the pilot program, their supervision should be tightened. The forestry authorities are required to establish a regular inspection system, to guide and supervise the wetland parks that are being established or are proposed to be established, and to identify and solve the problems in time. As for the wetland parks whose wetland resources have been severely damaged and whose management is not well-organized, the relevant individuals or organizations will be held accountable for those results according to laws.

8. Prospect

Establishing wetland parks has helped expand the area of protected wetlands, add new form of wetland

protection, well protect the wetlands, and promote the wise use of wetland resources in China. It is, therefore, a key step for China to maintain its eco-security, improve the people's living conditions and build a beautiful China. Looking ahead, it is still necessary to improve the development and management levels of wetland parks, to establish a sound wetland protection and management system, and to use wetland resources more wisely, with an ultimate objective of generating more ecological and socio-economic benefits and gradually achieving the sustainable development of wetland ecosystems across the country.

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