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Evaluating Local Environmental, Cultural, and Economic Implications of the Chinese Park System: Taking Sichuan Province Parks as an Example

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Abstract

Studies of the modern-day Chinese park system invite us to examine ecotourism trends, resource management, and economic development as extensions of government policy goals (Wang and Yang, 1999; Ryan and Huimin, 2009; Wang and Bramwell, 2012). However, such studies often only focus on national-level parks and do not distinguish between the various types of Chinese parks on the basis of historical presence or lack of human activity in the park area. In order to fully understand the cultural, environmental, and economic impacts of the Chinese park system, we must examine the historical basis for and the cultural implications of the founding of these parks. Reflecting on nine parks in Sichuan Province, this paper suggests ways in which the differentiation of parks within the modern-day Chinese park system has influenced conservation and economic goals, culture, and tourism. How are government conservation priorities conveyed to local communities, and how are the ways in which local people and tourists engage with the environment affected by the establishment of these parks? Additionally, has the establishment of these parks and the resulting influx of tourism helped or hindered local communities, as well as conservation efforts? With the establishment of a completely re-designed Chinese National Park System in 2020, understanding the interplay between these factors is essential in evaluating the effectiveness of the new system.

Keywords: Biodiversity, Land Degradation, Nature Reserve, Forest Park, Scenic Area, Reforestation

Introduction

China is incredibly biodiverse. Although China only accounts for 6% of the world's total land area, its varied ecosystems- ranging from alpine deserts to moderate grasslands- account for 15% of the world's vertebrate animal species and 12% of plant species (Xu et al. 763). Globally, the establishment of protected areas in the form of nature reserves, national parks, and other park types is the predominant mechanism for conserving biodiversity; global conservation plans such as those outlined under Goal 15 of the United Nation's Sustainable Development Goals aim to halt biodiversity loss by sustainably managing forests, halting and reversing land degradation, and combating desertification (United Nations). In China, broad biodiversity conservation initiatives are chiefly undertaken at the national level through plans such as the National Biodiversity Conservation Strategy and Action Plan (Cao et al. 15621). The plan, which extends through the year 2030, identifies threats to native biodiversity and outlines a conservation strategy that includes establishing short term and long term goals, recognizing various spheres of possible implementation at local and regional levels, and identifying conservation mechanisms that can be enacted throughout China's various protected areas (Ministry of Environmental Protection).

Protected Areas in China include nature reserves, forest parks, world natural and cultural heritage sites, scenic zones, geological parks, wetland parks, and water conservancy scenic locations (Cao et al. 15619). Additionally, some parks are given a "national" designation, including National Nature Reserves, National Forest Parks, National Key Scenic Areas, National

Wetland Parks, and National Water Reserve Parks (Wang, Guangyu et al. 248). Other parks in China such as panda bases and water conservancy projects, while not protected areas in the formal sense, also perform important requisite conservation and education functions. This array of protected areas in China has developed due to two main driving forces: (1) a perceived need to set aside protected reserves due to concerns over natural resource depletion and (2) a growing middle class with an increasing interest in nature-based forms of recreation and tourism (Wang, Guangyu et al. 247-248).

The growth of this nature-based tourism has resulted in the emergence of a new ecotourism-based approach to conservation at the local level. Ecotourism is defined by the International Ecotourism Society as “responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education” (“What is Ecotourism”).

Ecotourism particularly focuses on small-scale travel that reaps benefits for the local environment and visitors alike; the economic benefits are channeled toward the promotion of sustainable development, alleviation of poverty, and financing of environmental protection measures for locals, while visitors benefit from high



Fig 1. Location of Sichuan Province from: Waldman, Lauren.

quality immersive nature experiences and an increased awareness of environmentally responsible travel behavior, and the importance of conservation initiatives (Li, Yanpeng et al. 2). These goals can also be further reinforced and transmitted locally.

Sichuan Province itself is one of the most biodiverse regions in all of China and is home to over 80% of the country's wild pandas (Holland). The eastern lowlands are occupied by the fertile Sichuan Basin, while the west is mountainous and includes the easternmost portion of the Qinghai-Tibet Plateau (Yiping, 113). The Longmen Mountains to the west of Chengdu separate the Tibetan Plateau to the northwest from the Sichuan Basin in the southeast, and the Longmen Fold and Thrust belt running parallel to these mountains was the site of the 2008 Wenchuan earthquake ("The Sichuan Earthquake").

This study focuses on nine sites in Sichuan Province in order to evaluate the implications of the park system in China as an extension of government conservation goals. These parks, including Tangjiahe Nature Reserve, Jianmenguan Forest Park, Jiuhuang Mountain, Qiqu Mountain Scenic Area, Dujiangyan Irrigation System, Chengdu Research Base, Qingcheng Mountain, Leshan Giant Buddha, and Emei Mountain encompass a wide variety of geographic locations, types of protected areas, primary conservation functions, cultural sites, and historical backgrounds in Sichuan Province. All of these sites are additionally rated as AAAA or AAAAA Tourist Attractions- the highest two ratings on a scale from A-AAAAA. These ratings indicate that the sites are accessible, safely operated, unique in their cultural/historical significance, and have a high tourist volume each year (Ryan and Huimin 26).

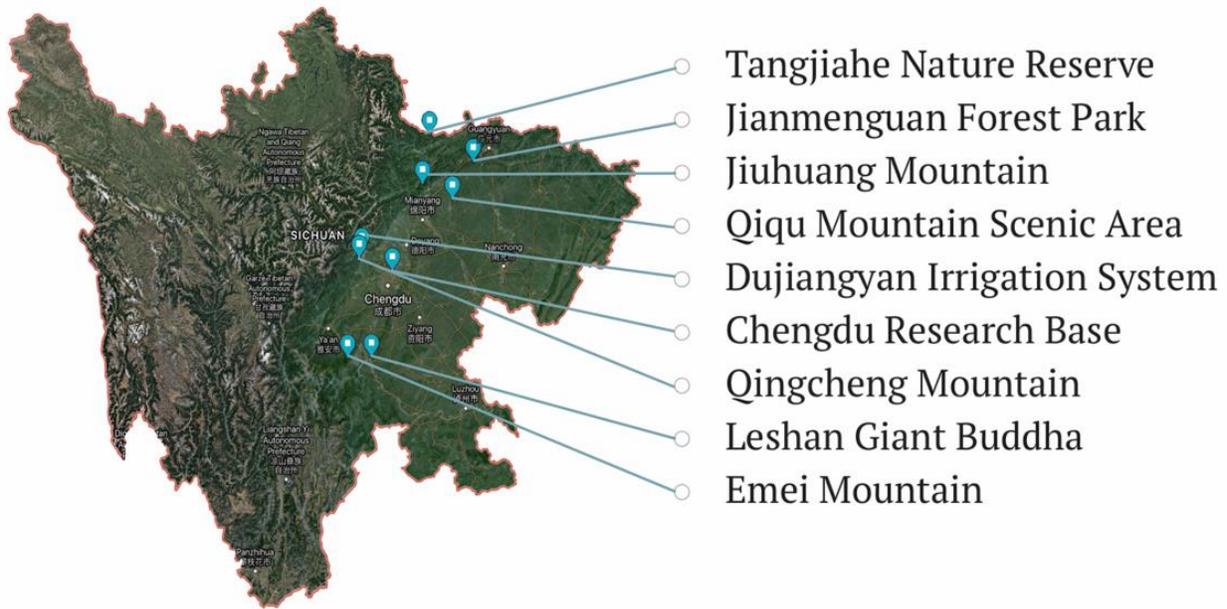


Fig 2. Location of Nine Parks in Sichuan Province from: Waldman, Lauren.

Park Profiles

Tangjiahe Nature Reserve is located on the northern border of Sichuan Province in the Longmen Mountains and was established in 1978 primarily to protect Giant Pandas, Golden Monkeys, Clouded Leopards, and Takin, as well as several rare plant families (“Tangjiahe National Nature Reserve”). Humans have historically lived within the present park boundaries and the area poses historical significance as a battle site during the Kingdom of Shu and the Ming Dynasty, as well as a major battle site for the Red Army in 1935 (“Tangjiahe National Nature Reserve”). Currently, there are no people residing within the park’s boundaries, although ruins of the former village site still stand in the river valley.

Within the sharp cliffs of Jianmenguan Forest Park is Jianmen Pass- another important cultural battle site and one of the 100 red tourist attractions in China, which are attractions with historical significance to Chinese Communism. The area also has important geologic significance: it is a rare example of a city-wall conglomerate cliff Danxia landscape (“Interpretation of Jianmenguan Scenic Area”).

As for the mountains, Jiuhuang Mountain is located in the Qiang Autonomous region in the north of Sichuan and contains striking karst limestone caves (Zhang and Langong 42). To the southeast, Qiqu Mountain is a National Scenic Area and a National Forest park with the largest grove of ancient cypress in the world (“Brief Introduction of Qiqu Mountain”). To the northwest of Chengdu, Qingcheng Mountain is a World Heritage Site, as well as a National Scenic area and National Historical Site (UNESCO). It is also the site where the philosopher Zhang Ling founded Daoism, and there are a number of Daoist temples on the mountain. It is increasing becoming a prominent ecotourism site in Sichuan Province that seeks to reconcile its cultural heritage with its geology and biodiversity. The fourth of these mountain sites, Emei Mountain was declared a World Heritage site for Nature and Culture in 1996 and is one of the four sacred Buddhist mountains in China (Food and Agricultural Organization of the United Nations 11).

The Leshan Giant Buddha was carved out of a Danxia landform in the 8th century and depicts Maitreya. At 71 meters tall, the Giant Buddha is the tallest premodern statue in the world (Zhao 8). Situated to the north, the Chengdu Research Base of Giant Panda Breeding is a world-class research facility, conservation education center, and international educational tourism destination for the conservation of Giant Pandas, as well as Red Pandas (“Chengdu Research Base of Giant Panda Breeding”). Finally, situated near Qingcheng Mountain, the Dujiangyan Irrigation System has been in continual use for over 2,250 years and uses natural topographic and hydrologic features to prevent seasonal flooding, divert water for irrigation, and drain sediment (“Mount Qingcheng and the Dujiangyan Irrigation System”).

Site	Location	Year Formal Park Established	Classification of Park	Area (km ²)	Tourist Attraction Rating	Religious Significance	Historical Presence of People	People Living in Park
Tangjiahe National Nature Reserve	Qingchuan County	1978	National-Level Nature Reserve	400	AAAA		• (Qiang, Di, Han, Fan)	
Jianmenguan National Forest Park	Jiange County	1992	National-Level Forest Park and Scenic Area	33	AAAAA		•	•
Jiuhuang Mountain Scenic Area	Beichuan Qiang Autonomous County	2010	Scenic Area	25	AAAA		(Qiang)	•
Qiqu Mountain Scenic Area	Zitong County	1996	Scenic Area	30	AAAA	Taoist, Confucian	•	•
Dujiangyan Irrigation System	Dujiangyan City	1982	UNESCO World Heritage Site, Scenic Area	5300 (Total Irrigation Area)	AAAAA		•	•
Chengdu Panda Research Base	Chengdu City	1987	Research Center	1	AAAA			
Qingcheng Mountain	Dujiangyan City	1982	UNESCO World Heritage Site, Scenic Area	200	AAAAA	Taoist	•	•
Leshan Giant Buddha	Leshan City	1996	UNESCO World Heritage Site, Scenic Area	0.18	AAAAA	Buddhist - Maitreya	•	•
Emei Mountain	Emeishan City	1996	UNESCO World Heritage Site, Scenic Area	154	AAAAA	Buddhist, Confucian	•	•

Fig 3. Classification of Parks in Sichuan, China from: Waldman Lauren

Park Evaluations

Tourism and Economic Effects

Domestic tourism emerged in China as a product of government policy, increasing disposable income, and the transformation of leisure culture in China in the 1990's. After the adoption of the five-day work week in 1995, domestic tourism promotion became a policy priority, and the increase in number of holidays, as well as the introduction of three-week-long "golden week" holidays during the October and May State Holidays and the Lunar New Year transformed the domestic tourism industry (Nyíri 5-6). However, as noted by Chris Ryan and Gu Huimin, while the national government increasingly sought to decentralize its role in tourism planning in the early 2000's by specifying levels of plan implementation locally, regionally, and

nationally, 'top down' planning effectively continued with little input from tourist sites themselves (19). In recent years, however, increasing emphasis is being placed on tourism planning at the local level, particularly with regard to the implementation of conservation initiatives (Ryan and Huimin 21).

While agriculture remains the primary contributor toward employment generation and Gross Regional Product (GRP) in Sichuan Province, the economy is also very reliant on tourism: tourism's contribution toward GRP doubled in the years from 2000 to 2010 and continues to rise (Li, Yan et al. 536). In terms of tourism trends, domestic tourists significantly outnumber foreign tourists- data from 2010 provides that while there were 272 million tourists overall that visited the province that year, there were 271 million domestic tourists and only 1 million international tourists (Li, Yan et al. 537). However, international tourists had an impact approximately three times larger than that of domestic tourists on per capita regional income (Li, Yan et al. 538). Among the nine sites in Sichuan Province, tourism can largely be divided into four categories: religious purposes, day excursions, ecotourism, and resort experience.

Qiqu Mountain, Qingcheng Mountain, Emei Mountain, and the Leshan Giant Buddha, as religious sites with an important religious cultural heritage, are important pilgrimage for Taoists and Buddhists, respectively. Additionally, as there are a number of temples at these sites, monks live within the confines of the parks. It is important to note, however, that the vast influx of tourists visiting these sites for secular sightseeing and leisure have altered the sites' original functions as sacred places and in some cases have interfered with the ability of religious practitioners to engage in religious excursions. At the Leshan Giant Buddha, the two Buddhist temples- Lingyan and Wuyou- used to be frequented by locals, but because Linyun Temple now

charges an entry fee, locals now only frequent Wuyou Temple and argue that heritage protection is given priority over religious practice (Zhao 9).

Day excursions are another primary mode of tourism in Sichuan Province. Sites near urban population centers have a number of day tourists, such as Qingcheng Mountain outside of Dujiangyan, the Dujiangyan Irrigation System itself, the Leshan Giant Buddha outside of Leshan City, and the Chengdu Research Base of Giant Panda Breeding in central Chengdu. Some days tourists also visit incorporate single-day visits to sites like Jiuhuang Mountain and Jianmen Scenic Area as a part of multi-day itineraries. The creation of amenities like glass walkways, gorge zip lines, ski resorts, and even theme parks also encourages day tourism at these sites (Nyíri 15). However, particularly in minority areas such as the Qiang Autonomous Region where Jiuhuang Mountain is located, there is concern that the presence of such “tourist trap” features often commodify minority cultures, while others argue that the influx of tourism in such areas encourages minority communities to “reconnect” with their traditional lifestyle, albeit for tourist-driven purposes (Nyíri 16).

Ecotourism is often deeply ingrained in efforts to promote economic development in forested, less developed regions, as well as nature conservation in such communities (Li, Yanpeng 1). Yet, a lack of tourism planning, infrastructure, and adequate environmental protections may have the opposite effect and instead overwhelm the capacity of a given area to meet prescribed ecotourism goals. The rapid development of mountain tourism has a host of negative consequences if it cannot be properly managed, including increases in waste production, water use, and pollution emissions, as well as habitat destruction (Zhang, Yu-ling 2556). Additionally, there is also misunderstanding at the local level about exactly what ecotourism entails; one study in Western Sichuan found that many local residents and government officials

alike think ecotourism is merely a way of enabling people to recreate in the natural world (Fang 114). If ecotourism initiatives are properly implemented, however, positive economic and environmental benefits can be reaped both for the local community and conservation efforts. By involving local community members in environmental management, a more sustainable ecotourism culture can be established at these sites. Conversely, if residents are denied the opportunity to participate in local environmental conservation initiatives, their animosity toward the government's conservation efforts increases (Zhang, Yu-ling 2556).

Local communities at these sites in Sichuan province are deeply tied to and affected by ecotourism. At Emei Mountain, development of sustainable commercial enterprise under an ecotourism framework positively affected biodiversity conservation on the mountain ("Community-Based Commercial Enterprise Development for the Conservation of Biodiversity in Mount Emei World Heritage Site" 51-52).

At Qingcheng Mountain, where nearly all locals that reside on the backside of the mountain are involved in tourism industries, it was found that educating locals about environmental degradation as part of ecotourism education was the most powerful tool in eliciting environmental conservation behavior (Zhang, Yu-ling 2563). Other economic ecotourism avenues are also emerging at Qingcheng Mountain: the presence of the luxury Six Senses Qingcheng Mountain Resort markets a high-end, luxury ecotourism resort experience to tourists. Qing Cheng Mountain Resort's website proudly proclaims that "sustainability is primary" and that they are committed to "improving the ecological and carbon footprint of operations through the responsible actions and efforts of all, including hosts and guests" by purifying all of their own drinking water, growing their own organic vegetables and mushrooms, working with the conservation organization Panda Mountain to restore Panda habitats at Wolong

Nature Reserve, and purchasing goods from the local Qiang minority village (“Sustainability is Primary at Qing Cheng Mountain”). Still, while these commitments to sustainability are commendable, it is uncertain how many of these benefits are reaped by the local community from patrons at the insular, high-end resort.

Conservation Effectiveness

The Chinese Government’s adoption of an “ecological civilization” that aims to promote resource conservation and utilization, protection of natural ecosystems and biodiversity, and land development patterns imposes environmentally-cognizant planning on previously largely unchecked rapid economic development, but the effectiveness of conservation policies, particularly with regard to the Chinese Park System, is debatable (Li, Peng 64). Although China’s large-scale network of nature reserves provides protection for 90% of terrestrial ecosystem types, 85% of wildlife species, and 65% of higher plant communities by land area alone, geographical coverage alone is not enough to effectively meet conservation goals (Cao et al, 15619-15621). Ineffective management of Protected Areas, coupled with unsound legal protections at these sites, interfere with the goals of conserving China’s biodiversity.

Protected Areas in China are overseen by a system that manages sites based on the profile of the site itself and fits within the hierarchical administrative division in China (Cao et al, 15662). Because each park is managed by a different government jurisdiction, each of which has its own objectives and priorities, there is a lack of adequate balance between protecting local ecosystems and achieving other economic and social goals. For example, although the National Government is responsible for approving the designation of National Forest Parks, most of the funding for these parks is provided by the provincial and/or local governments, and studies in

Sichuan Province have found that local governments struggle to balance conservation and economic priorities in their management of these sites (Wang, Guangyu et al, 256).

With regard to restoration of degraded ecosystems, the severe droughts and floods of 1997 and 1998 prompted by decades of ecological exploitation prompted the Chinese Government to implement the National Forest Conservation Program and the Grain-to-Green Program in 1998 and 1999, respectively. These programs sought to conserve existing forest cover through logging bans and restore forests in ecologically sensitive areas through afforestation and reforestation, and a checkpoint study found that such policies are effectively increasing forest cover, particularly in ecologically crucial areas in Sichuan Giant Panda Sanctuary (Li, Yu et al, 43). Studies such as these are crucial to monitor the effectiveness of management activities within China's network of Protected Areas, and other strategies, such as monitoring wildlife via remote-trip cameras in Sichuan have also shown promising results. At Tangjiahe Nature Reserve, a recent remote-trip camera study found over 20 distinct species of

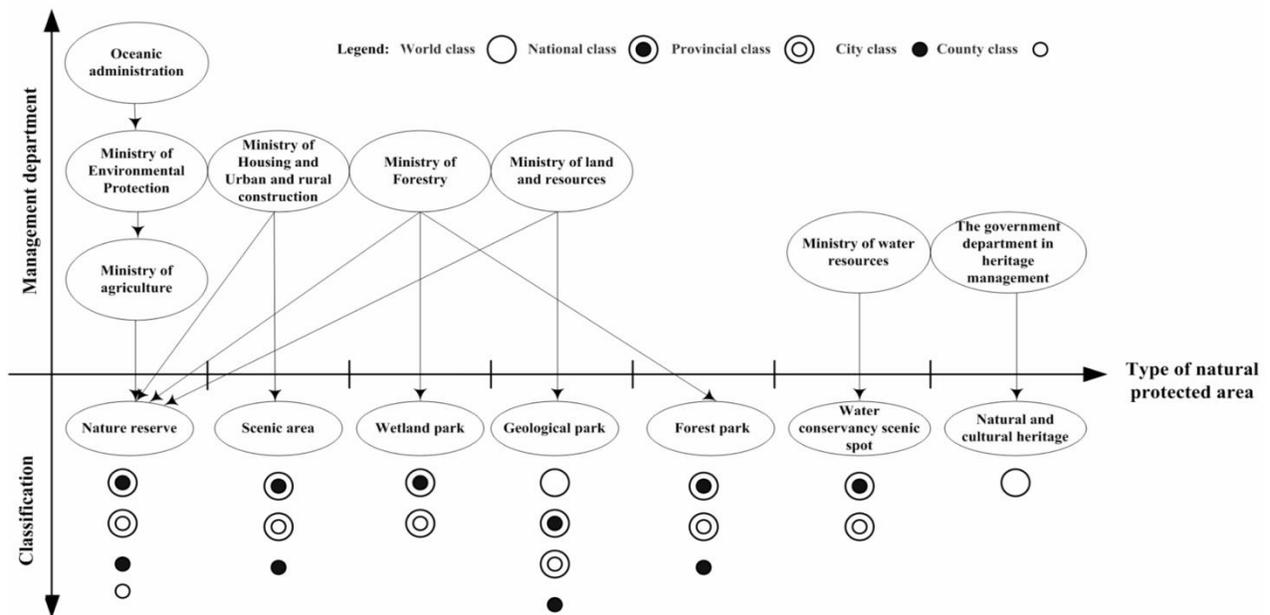


Fig 4. Management of Parks within China from: Cao, et al. "Analysis of the Network of Protected Areas in China Based on a Geographic Perspective: Current Status, Issues and Integration." *Sustainability*, vol. 7, no. 11, 2015, pp. 15622.

protected animals within the confines of the reserve, and their frequency of sighting suggested that their numbers have vastly increased since earlier population studies and subsequently the founding of the reserve in 1978 (Wang, Dajun et al, 947).

At the nine parks examined within this study, seven are present in rural or semi-rural areas of the province, and six have people presently living within the area's boundaries. As the human impacts on the environment may economically and socially enhance or environmentally hinder conservation goals—either through rural tourism or living in these ecologically fragile areas—it is necessary to examine the implications of human activity in these areas. At the only rural site without human inhabitants, Tangjiahe Nature Reserve, although conservation goals can be implemented without consideration for the environmental impacts of the local population, environmental impacts are still felt immediately outside of the park's boundaries where the relocated population exerts pressure on the environment immediately downstream of the reserve. At other sites like Mount Qingcheng and Mount Emei, the pressures of both the local population's activities and tourism activity can be felt on the local environment. At Mount Emei, there are approximately 16,000 people living among 16 villages within the boundaries of the World Heritage Site, and such people are not permitted to partake in grazing or agriculture ((“Community-Based Commercial Enterprise Development for the Conservation of Biodiversity in Mount Emei World Heritage Site” 12). Yet, collection of firewood still poses a significant environmental threat; several individuals harvesting bamboo were observed while conducting research at the site in January of 2019. At Mount Qingcheng, although the local governments have actively promoted the use of relatively clean energy sources like natural gas, energy sources such as firewood remain predominant sources of energy in tourist areas and pose concerns regarding local environment degradations and CO₂ emissions (Liu, Jun et al, 9).

It is evident that the achievement of conservation goals is largely dependent on economic activity, oversight, various levels of governance, and conservation policies within the unique cultural and environmental strata of each of these parks. Yet, how are the conservation goals themselves transmitted to tourists and the local community? One such way is through informational signs that describe the importance of ecotourism in the area, draw attention to the natural and cultural legacy of the area, or provide simple yet memorable slogans encouraging individuals to keep environmentally conscious actions in mind. These simple slogans range from “Protect the beautiful sceneries,” to, poetically, “The greatness of a nation and moral progress can be judged by the way its animals are treated,” and “Green mountains and waters are invaluable treasures”. Such signs are found throughout at all nine of the featured sites in Sichuan Province and provide a subtle visual cue for encouraging environmental thought and action, particularly as a tourist.



Fig 5. Environmental Conservation-Minded Signs at Mount Qingcheng, Jianmenguan Scenic Area, and Jiuhuang Mountain from: Waldman, Lauren

Current Discourse

Contemporary discourse concerning parks in China seeks to reconcile the sites' natural and ecological heritage with ecotourism and greater tourism trends, the Protected Area system of management in China, and future directions for park development in China. One tourism study calls attention to the frequent coupling of natural heritage sites in China, such as geoparks, with cultural and/or religious sites, and how tourists can better learn about geosciences when such experiences are merged with cultural attractions (Ren et al. 113). Other analyses employ a comparative perspective when considering possible management directions for China's National Park system; after all, the new Chinese National Park system is based off of the US's National Parks (Holland). At US National Parks, the permitting and reservation system is an effective mechanism for managing resource protection and visitor numbers in the backcountry, where controlling visitor numbers is essential. Since China has no such permitting system, the implementation of such a permit requirement can help control overcrowding in ecologically fragile areas, with the added bonus of generating revenue that can benefit the local community and conservation efforts (Kong et al). Additionally, scholars note that in instances where official government conservation policies aren't being effectively implemented, studies are necessary to determine how effective given management systems and policy are. Yet, Robert Weller notes in his book *Discovering Nature: Globalization and Environmental Culture in China and Taiwan* that in order to exist, "environmental organizations in China must stay close to official policy and must tread carefully even when pointing out that practice does not match policy" (163). Going forward, it is necessary to continue researching the numerous factors involved in the implementation of conservation goals at these sites and others throughout Sichuan Province and China as a whole to understand the interplay between local and national interests in terms of

tourism, conservation, and cultural preservation, and how to best reconcile these interests in the interest of an overarching conservation plan with opportunities for local input and oversight.

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