

Economic Development in the Name of Protecting the Environment in Rural China:
The Case of the Swan Islet National Nature Reserves

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以保护环境为名发展经济：以天鹅洲国家自然保护区为例

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Abstract

Swan Islet, located in the old course of the Yangzi River in Shishou, Hubei, central China, was chosen as a nature reserve first to conserve milu 麋鹿 (Père David's deer) in 1987 and white-fin dolphins 白鱀豚 in 1992. The local government then built dikes to protect this area from the annual high water of the Yangzi River, which turned a considerable amount of riverside wasteland into reclaimable land attractive to the local farmers. At the same time, more land was needed to feed the fast-growing herds of milu. In the river, dolphins and fisherfolk compete for resources. Different interests have caused conflicts between the government, farmers, and fisherfolk. Conflicts between governmental bureaus has made things even more complicated. With the increasing appeal of wetland preservation, the local government added wetland preservation to its agenda and applied for financial support from upper-level governments. Attempting to lure tourists with milu—a “national treasure”—and original wetlands, the local

government is hoping to promote eco-tourism and eventually to boost local economic growth, all in the name of protecting the environment.

Keywords

economic development, nature reserve, Swan Islet, Jiangnan Plain

摘要

天鹅洲位于长江中游湖北石首境内的长江故道内，初为放养原产中国的麋鹿、白鱃豚而设。为保护这些珍稀动物，地方政府进行了大量的基础建设，如修堤减少洪水威胁。这样不少以前的荒滩变成可垦地、同时麋鹿种群的繁衍又要更多的地盘；而禁渔也影响当地渔民的生产与生活。于是在保护区与农渔民之间，保护区与政府有关部门之间形成错综复杂的利益博弈。随着保护湿地呼声的加强与生态旅游的兴起，当地政府又加上湿地保护的内容、并以此为由向上级政府申请经费；同时以观赏麋鹿及湿地生态为名重点推介、发展旅游事业，以促进当地经济增长。

关键词

经济发展、自然保护区、天鹅洲、江汉平原

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China's environmental deterioration caused by economic construction—particularly environmental pollution from rapid rural industrialization and urbanization—since the 1979 economic reform has been well known and is inviting a chorus of criticism. Some have argued that this environmental degradation originated in “Mao's war against nature” in the early years of the People's Republic of China (PRC) (Shapiro, 2001). It is undeniable that over the past half century, China has developed its economy at the expense of its environment. Struggling with nature for survival in rural China, however, is not new. For instance, to protect farmland from annual high waters of rivers and to reclaim land to support a growing population, for centuries people in water-rich areas, such as the Jiangnan Plain of Hubei province in central China, toiled to build dikes (Zhang, 2014). This tradition continued in the collective era of the early PRC, when more riverbanks and lakes were reclaimed as farmland, thanks partly to the nationalization of rivers and lakes and the deep penetration of state power into rural society. As a result, from the 1950s to the 1980s, 150 lakes with a water surface of 5,000 or more mu (1 mu = 1/6 acre) in the Jiangnan area disappeared (HPWC, 2000: 137–48).

This has had obvious side effects, including a reduction in flood discharge areas, an increase of pressure on the dikes, a decrease in the number of species, and the shrinkage of wetlands. Nationwide, “reclamation was the primary cause for wetland loss” in China (An et al., 2007: 338). But farming on some of this reclaimed land makes little economic sense due to the

high level of the water table, which leads to low yields and entails the high cost of drainage. Thus, in many places people began to return farmland to lakes in the 1980s.

In the collective era, the development of agriculture was the primary goal of rural cadres, and land reclamation was a major means to develop agriculture. The highly centralized state was also able to mobilize hundreds of thousands of people to reclaim river beaches and lakes. Farmland has been returned to individual households to cultivate since 1979, but most young rural people are no longer interested in farming. Instead they flocked to coastal and urban areas in search of non-farming jobs. Furthermore, the chief goal of local cadres has also shifted to developing the economy, which usually means securing external investment and the development of industry (more precisely, manufacturing) instead of expanding agriculture via land reclamation.

Realizing the seriousness of the over-reclamation of lakes, and with the growth of China's economic strength, the Chinese government began to look for ways to solve this problem, such as the return of farmland to lakes, pastures, and forests, and the establishment of various kinds of nature reserves, including wetland preservation zones. Although it was not until the 1980s that China began to establish nature reserves on a large scale, the increase in its nature reserves has been nothing short of spectacular. As early as late 2003, the percentage of nature reserves in the total land of China exceeded that of all regions (except North America and Central America) in the world (Li, Zuo, and Jin, 2006: 10–11). However, unlike in the West, where the primary goal of nature reserves is to protect the natural environment itself, in China (as well as in many developing countries) the establishment of nature reserves also must take into consideration the welfare of the local people and the development of the local economy, which may be an even more important concern for the local government.

By the end of 2010, China's economy in terms of GDP surpassed Japan's and became the second largest in the world, a great achievement for China's economic reform. But China still has more than five hundred million people living in the countryside, and many are still struggling for their very survival. The nature reserves of China, however, are mostly located in the countryside, particularly in economically less developed rural areas (Wang, 2003: 3). Hence, conflicts between the development of nature reserves and the welfare of local residents are inevitable. The policies and measures applied by the governments to protect nature reserves, as well as the adjustment of national agricultural policy, have triggered some unpredictable chain reactions from farmers. After local governments combined the preservation of nature and the development of the economy, things have become even more complicated than the preservation of nature itself. The conflict between humans and animals and the economic game among groups with different interests in the Shishou Swan Islet nature reserves is a typical conflict between economic development and environmental protection, and also serves as a vivid example of the mutual interaction between human beings and their environment in contemporary rural China.

The Location of Swan Islet and the Origins of the National Nature Reserves

Swan Islet 天鹅洲 is located in the old course of the Yangzi River in Shishou, Hubei province, just north of the river's present course, in the middle-lower Yangzi River valley. This area is also within the southern part of the Jiangnan Plain. Before 1972, the Yangzi River surrounded the islet on three sides. There was a polder (or *yuan* 垸 in the local dialect) on the islet. Within the polder was a lake, marshes, and farmland, and surrounding it were river beaches. The Yangzi River changed its course naturally in summer 1972, which turned the area into an inland river islet located in the middle of the Yangzi River, surrounded by water on all sides. The Swan Islet

wetland thus includes both natural wetland, such as the old Yangzi River course, lakes, river beaches, marshes, and ponds, and manmade wetlands such as farmland and ditches. Its total area is 68.7 square kilometers, including a water surface of 19 square kilometers. There are 40 kilometers of river beaches and 20.9 kilometers of the old course of the Yangzi River. At its core is Swan Islet (Zhu, 2005: 58–60, 75). This is the best-preserved wetland in the middle-lower Yangzi River valley, and has been placed on the list of China’s important wetlands (Shishou Tourism, 2007: 8).

There are two nature reserves in the Swan Islet area. The first, the Shishou Milu National Nature Reserve 石首麋鹿国家级自然保护区, is located at a bend in the Yangzi River and includes the former river course at Swan Islet, comprising a wetland of 1,567 hectares, or 23,505 mu (Jianbao, 2008: inside front cover). The land in this reserve is fertile and rich in herbage—the plants encompass 161 genera and 220 species (among them, more than a hundred species are food sources for milu) (Cao, 2005: 111). The reserve also has 231 species of vertebrate animals, including 8 first- and 18 second-rank rare animals that are under special national protection (Zhu, 2005: 60–61). Because the area is large and food is abundant, many migratory birds may rest here—annually up to 200,000 birds belonging to 18 orders, 47 families, and 119 species (Shishou Tourism, 2007: 25).

Milu, or Père David’s deer (*Elaphurus davidianus*), originated in China about two to three million years ago and once were widely distributed across the country, including Hubei. Milu probably vanished in the wild around the turn of the twentieth century. Environmental change (with the climate turning cooler), the milus’ food preferences (they only eat a certain kind of plant), and human activities (mainly overhunting and over-reclamation) all contributed to the disappearance of wild milu in China (Xia, 2005: 16–17; Ding, 2004: 1–3). Eventually, there were

only a few captive milu in Nanyuan, the Qing royal hunting lodge in Beijing. In 1900, the Eight-Power Allied Forces (the UK, France, Germany, USA, Japan, Russia, Italy, and Austria-Hungary) invaded and ransacked Beijing, and all of the captive milu in Nanyuan were killed. Milu thus disappeared from China. Outside China (before World War II), there was only a small flock of milu at Woburn Abbey in England; all milu today are their offspring (Guo, 2005: 4; Cao, 2005: 9–11).

On August 24, 1985, the then owner of Woburn Abbey sent twenty-two milu to China as a gift. Twenty of them were stocked in Nanyuan; the remaining two were sent to Shanghai (Guo, 2005: 4). Soon some milu at Nanyuan in Beijing were sent out to breed in the wild in various places including Swan Islet. According to scholars, this is one of the best habitats for wild milu, as both historical documents and archaeological evidence indicate that milu once lived on the Jiangnan Plain and its surrounding areas for hundreds of thousands of years (Cao, 2005: 25, 111; Ding, 2004: 23–24).

The Swan Islet milu nature reserve was established in 1987; it was elevated to a provincial-level nature reserve of Hubei in 1991 and a national-level one in 1998. Unlike nature reserves that aim to preserve the existing life of the area, the purpose of the Swan Islet milu nature reserve is to reintroduce milu, a species that had disappeared from the wild, to its original habitat to reproduce its natural population. In 1993 and 1994, two flocks of milu (sixty-four head in total) were moved from Beijing to the Swan Islet reserve. Thanks to the natural environment of the reserve, which is conducive to milu thriving and reproducing, plus an abundance of the rich herbage attractive to milu, the milu population quickly increased and in time evolved into three subpopulations. The reserve has not only reached its goal of supporting a milu herd in the

wild, but it has also put an end to the long history of China having no wild milu (Shishou Tourism, 2007: 12–13; Jianbao, 2008.1: inside front cover).

The second nature reserve in the Swan Islet area is the Hubei Yangzi River Swan Islet White-fin Dolphin National Nature Reserve 湖北长江天鹅洲白鱔豚国家级自然保护区. It includes an 89-kilometer section of the Yangzi River course and the 20.9-kilometer old course of the Yangzi River at Swan Islet, with a total water surface that varies from 14.66 square kilometers (in winter) to 26.66 square kilometers (in summer). Before 1999, the old river course and the Yangzi River were connected with each other during the annual high-water season (usually from May to September), and both water and resources were exchanged between the two. The high quality of water and rich fishery foodstuff in the old river course made it an ideal place for the support and conservation of white-fin dolphins. The reserve was officially established as a national nature reserve in 1992 (Wang, 2003: 609; Shishou Tourism, 2007: 20; SMLG, 2014: 6).

The white-fin dolphin, also known as the “aquatic giant panda” 水中大熊猫 or “the goddess of the Yangzi River” 长江女神 (Shishou Tourism, 2007: 21), is unique to China. Over time, the number of white-fin dolphins in the wild plummeted, falling from about four hundred in 1984 to less than a hundred in 1995. The only white-fin dolphin living in the reserve died in 1996 due to illness caused by a wound, and no new ones have been placed in the reserve since then. The dolphins now living in the water of this reserve are actually black finless porpoises—these are not an endangered species—but their numbers were also decreasing, from about twenty-seven hundred in 1993 to only around a thousand in 2006. Overfishing, illegal fishing, water pollution, the building of sluiceways and dams, and the propellers of boats and ships are all threats to the survival of both white-fin dolphins and black finless porpoises, and all have

contributed to the decrease in their numbers (Anonymous, 2006a; Wang and Wang, 2008: 23, 68–69).

To enhance the management of the reserves, the government of Shishou in 1999 established the Management Committee of the Swan Islet Economic Development Zone, which has jurisdiction over the two nature reserves, one fishing farm, and six administrative villages, with a total of 2,633 households, a population of 11,594 persons, and 846.6 hectares (or 12,699 mu) of farmland, in 2005. Agriculture is the backbone of its economy (SMLG, 2014: 34, 49–50).

The Economic Game in the Reserves

The successive establishment of two national nature reserves in one place gradually attracted people's attention to Swan Islet. With the increase in the milu population and the stocking of black finless porpoises, a growing number of headlines appeared in newspapers and widespread discussion emerged in internet blogs. The establishment of scientific research bases in Swan Islet by research institutions such as the Institute of Hydrobiology (Chinese Academy of Sciences) and Yangtze University, and the inflow of capital from large organizations such as the World Wildlife Fund, also brought outside influences to the area. The local government has been trying hard to obtain investments from the upper-levels of government to stimulate local economic growth in the form of eco-tourism.

The local residents, whether farmers or fisherfolk, however, have different concerns. Most of them consider the conservation of rare and endangered species and the preservation of wetland as far less important than increasing their income and improving their standard of living. Furthermore, the potential value of scientific research and eco-tourism make little sense to them; how to increase their own income is always a more practical and immediate concern. As a result,

the changes in farming conditions thanks to government-funded infrastructural construction and the change of national policy on agriculture caused more frequent conflicts among the local farmers and the reserves, as well as among government bureaus that owned different parts of the reserve and usually have different priorities for the use of land, making things even more complicated.

There were several problems in the reserves. First of all, the competition for land among different parties. Reeds once widely grew along the Yangzi River.¹ In the past half century, however, with the development of the rural economy and the growth of the population, many river beaches in the Swan Islet area have been reclaimed as farmland or for other purposes; the acreage under reeds decreased dramatically, but the acreage under Italian poplar (*Populus euramericana* cv. 'I-214'), a fast-growing and high-yield tree and raw material for the paper-making industry, has continued to increase in recent decades.

In 1998, the Jiangnan area as well as the whole Yangzi River valley suffered a record-breaking summer high water, which directly affected the living conditions of the milu in the Swan Islet reserve (some deer fled the area). Partly to protect the reserve from future flooding, the local government built a dike between the old course and the present course of the Yangzi River,² which cut off the connection between the two and caused a series of chain reactions.

The construction of this dike, for example, lessened the threat from the annual high water of the Yangzi River. Once and again some floodplains (i.e., river beaches submerged under water

¹ Beach land along the Yangzi River is particularly conducive to the growth of reeds (SMLG, 2014: 65), and Shishou is famous for its large acreage of reed land on river beaches.

² The dike is 6.2 kilometers long. By 2005, the state investment for this dike and some related infrastructure exceeded 30 million RMB (roughly 3.7 million USD) (JMGL, 2015: 213).

during the high-water season but exposed after the water retreats) emerged and were soon reclaimed by the local farmers to grow Italian poplars or enclosed to raise crabs (a high-demand commercial aquatic product in recent decades). One source indicates that the original river beaches of the white-fin dolphin nature reserve, 28,000 mu in total, decreased to only 3,000 mu by the end of 2005. The acreage of the milu reserve has also been constantly encroached upon. The encroacher could be the Bureau of Reeds (of the Shishou government), which wired several thousand mu of land to grow reeds, or the local farmers who grew cotton on the land on which they encroached. As a result, of all the acreage originally allotted to the Swan Islet milu reserve, less than 2,000 mu was under the real control of the reserve, leaving less and less land for the milu herds (Zhang and Chen, 2006).

Before the dike was built, however, most local farmers viewed these flood plains or river beaches as useless since they were under water for most of the year. Only some audacious farmers ventured to plant crops on the beaches, which could be harvested at most once a year. It was very easy for anyone to contract for these beaches. Besides, at that time, the price of agricultural products was low, but there were many taxes and fees. Most farmers were not interested in cultivating regular farmland, let alone river beaches. Many young villagers flocked to urban or coastal areas in search of non-agricultural jobs and let their land lie fallow or rented it to others to grow Italian poplars (Wu, 2005).

At the beginning of 2004, the central government decided to reduce and/or remit agricultural taxes and taxes on special farm products. In Hubei, all agricultural taxes were remitted in 2005. This new policy had multidimensional and profound ramifications. In the Swan Islet area, it instantly changed the local farmers' view of land and farming. On the whole, they became more enthusiastic about farming. They cultivated not only their own "responsibility"

farmland but also started to reclaim river beaches to grow cotton and Italian poplars. These people had been living in the area for generations, and, as far as they were concerned, those river beaches were certainly theirs (Wu, 2005). Their behavior, however, not only damaged the wetland ecosystem but also reduced the land available for the milu herds.

The second problem was the competition for fishery resources between humans and dolphins. When the white-fin dolphin nature reserve was established, the livelihood of the local fisherfolk had not been satisfactorily addressed. It was difficult to ban them from fishing in the waters of the reserve. The result was competition for fish between the fisherfolk and the dolphins (Wang, 2003: 616). Even before the construction of the dike that divides the Yangzi River from its old course, it was obvious that fishery resources were being depleted and that fishery production in the old river course was decreasing, this thanks to the local tradition of fishing without releasing fry and the general reduction of fishery resources in the Yangzi River (assumed to be caused by overfishing). Things have gotten even worse since the construction of the dike in 1998. The connection between the Yangzi River and its old course was cut off, and the two were linked only through a sluiceway that largely restrained the circulation of water between the river and its old course. This degraded the quality of the water in the old river course. All of these changes had a negative impact on the growth and reproduction of many aquatic species. At the same time, the water level of the Yangzi River's old course in Swan Islet decreased from 34.5 meters to 32 meters, the fisherfolk continued to fish without releasing fry, and the number of black finless porpoises (which mainly feed on fish and are big eaters) increased. As a result, both the fisherfolk's catches and the species they caught decreased even further (Zhu, 2005: 76–78; Zhang and Chen, 2006).

The reserves' lack of funds exacerbated the problem. The reserves mainly rely on three sources for financial support: funds appropriated by the local government, special subsidies from the Ministry of Agriculture, and income from fishing in the old river course. With the expansion in the number of staff of the reserves, however, it became increasingly difficult for the reserves to make ends meet. But the reserves could not run without money. To solve this problem, as well as that of the decreasing availability of beaches, the reserves' administration dug fish-ponds, and even raised crabs to generate income, but all of this was harmful to the ecosystem of the old river course wetland. They knew this, but without money, the preservation of nature would come to nothing (Wu, 2005).

The essence of these problems is how to balance survival and development, an issue also confronting other reserves in China. The solution to this conundrum lies in resolving disputes over land ownership and identifying and exploiting sources of revenue (Wang, 2003: 10–11; Li, Zuo, and Jin, 2006: 7). In short, the issue is money. Compared to some other more intricate problems regarding ethnic, cultural, or national border disputes, the money issue is simpler and is relatively easy to solve. The methods the officials have come up with to solve this issue naturally focus on financial matters.

First, they moved some residents (mostly fisherfolk, plus some farmers) out of the reserves. In view of the decreasing fishery resources in the reserves and the seriously negative impact of fishing on the survival and reproduction of dolphins, the Shishou government in 2003 started to move fisherfolk out of the reserves or changed their way of making a living. The World Wildlife Fund also contributed some funds to help the fisherfolk switch to other work, mostly farming (Chen and Zhu, 2006; SMLG, 2014: 98). One source indicates that since 2007, 1,109 farmers who lived inside the milu reserve have signed an agreement with the government

to give up their 3,200 or so mu of cotton land, and that the government has allocated them the same amount of farmland outside the milu reserve (Xiao, Zhang, and Jiang, 2014: 73).

The second priority was to restore the original ecosystem—that is, to connect the old river course with the Yangzi River. The dike was built to protect the reserves from the annual high water of the Yangzi River. The reserves were protected, but without the natural flow of the Yangzi River water, the biotope of the wetlands inside the reserves was not good for the milu herds; the occasional exchange of water between the Yangzi River and its old course through the sluiceway largely restricted the exchange of materials between the two, and the quality of water in the old river course suffered accordingly. The stabilization of the water level in the old river course also caused disputes between the two reserves, as they required different water levels. Before the construction of the dike, when water levels rose and fell on a seasonal basis, the two reserves were at peace. Thus, in summer 2004, the administration started to open the sluiceway in a timely fashion to exchange water between the Yangzi River and its old course (Xin jing bao, 2004). In recent years, the white-fin dolphin reserve took many more steps—including stocking fish fry, transplanting aquatic plants, and sowing grass seed in shallow water—to “restore” the ecology (SMLG, 2018: 135).

The third factor was clearing away the Italian poplars in the reserves. In January 2007, a company belonging to the Bureau of Reeds enlarged its acreage under Italian poplars in the core area of the milu reserve, which not only affected the living environment of the milu herd, but also brought this issue to the attention of the provincial government. In March, the provincial government sent an investigation team to the milu reserve; it ordered the Italian poplar saplings that were planted that year—165,000 in total—to be immediately pulled out. In May, the provincial government called for a coordinating meeting among representatives of different

parties, at which they were asked to completely solve the problem of land competition between the local farmers and the milu herds to ensure the sustainable development of the reserve (Chen, 2007).

The fourth issue was sorting out property rights. A staff member of the Shishou's Bureau of Forestry told me during my visit in 2008 that a great deal of land inside the milu reserve was originally owned by the Bureau of Forestry and the Bureau of Reeds.³ They planted reeds and Italian poplars on their own land and thus felt that there were no grounds for finding fault with them. Besides, no one expected that the milu population would reproduce as quickly as it did. After the milu population increased, it turned out that the land was insufficient. Some correspondents did not know the truth; they reported that the problem was that the Bureau of Forestry, the Bureau of Reeds, the nature reserve, and the local farmers were competing for land. Their reports appeared in newspapers and caught the attention of the upper-level governments. A vice-governor of Hubei came to Shishou to coordinate different parties and to work out a solution. Eventually the provincial government allocated a huge sum of money and made clear who owned what land.

The last but definitely not the least important method applied by the local government has been the development of tourism.

Nature Conservation and the Tourist Economy

³ The land was not really "owned" by any bureaus: it was owned by the state but managed by different bureaus. By 2005, there were still 3,787 hectares, or 56,805 mu, of river-beach-reed-lands in Shishou that were owned by the state, all of which was managed by the Bureau of Reeds (SMLG, 2014: 208).

When the abovementioned conflicts came to the fore, the question arose: Are milu more important or are humans more important? This is a dilemma facing many nature reserves. The Swan Islet reserve is in a densely populated area, and the pressure on natural resources is great. The local residents recognize that the milu are a national treasure, but they do not want their livelihood to be ignored. The wetland ecosystem needs to be protected, but they also have to make a living. They believe it is the state's responsibility to conserve national treasures and protect the environment, but they should not be sacrificed for that mission (Wu, 2005). Although the government is constantly allocating more money for environmental protection, it is difficult for it to meet all the financial needs of all the reserves. The bodies that administer the reserves have to find their own solutions, and one of them is the development of wetland eco-tourism.

Developing eco-tourism is not an objective of the reserve administration alone; the local government also considers it one of its key economic strategies. Like all local governments in China today, the government of Shishou is desperately searching for any means to boost economic growth. As early as 1994, it invited some famous scholars to Shishou for advice on this matter. They suggested that, since Shishou had no large, central government-owned enterprise, it would be wise to use the two national treasures (i.e., the milu and the white-fin dolphin) to spread the fame of Shishou and to attract external investment (SMLG, 2014: 761–63). In the same year, a vice-governor of Hubei told the cadres of Shishou that the economic benefits of the Swan Islet reserve would be greater than that of a hundred factories (Dai, 1997: 182). The government of Shishou listened to them and took action. The Shishou city government has tried to find ways to turn a profit from the increasing popularity of the milu reserve. In 2006, Swan Islet was selected as one of the nation's outstanding tourist destinations, and Shishou was soon named (by the Ministry of Forestry) the "Hometown of China's Milu" (Shishou Tourism, 2007:

10). These steps made both the reserve and Shishou famous nationwide. At the same time, the central government also shifted the emphasis in its economic strategy from the development of coastal areas to the development of central China, where Shishou and the Swan Islet nature reserve are located. Thus, the government of Shishou asked the reserve administration to grab that opportunity by focusing on tourism, to scramble for investment, and to vie for support from all social sectors and government at all levels (Anonymous, 2006b).

In 2001, the government of Shishou decided to make tourism a strategic goal in order to pave the way to prosperity in Shishou, and in 2005 it designated tourism to the Swan Islet reserves as one of three cornerstones of local tourism (SMLG, 2014: 320–25). That is to say, the local government wanted to make tourism to the Swan Islet reserves a new engine for economic growth in Shishou. To reach this goal, the local government built a highway to improve transportation and applied diverse means to spread the fame of the milu reserve. For example, in cooperation with the magazine *Hubei Pictorial*, it published a special issue titled *Shishou Tourism* (2007). Emblazoned on its cover were the words “Hometown of China’s Milu—Shishou” and a picture of a flock of this beloved national treasure. In Shishou’s hotel rooms one can find a flyer, *Local Day Tours*, which lists the Swan Islet wetland as one of six local tourist sites. All this was actually part of the government’s plan to promote local tourism (Jianbao, 2008: 4). Many striking statues of milu now adorn Xiuling, the county seat of Shishou. Inside the office area of the milu reserve is a wetland center and a milu museum. The multimedia equipment in the museum is very similar to what one can find in a standard American university classroom. The investment has been huge.

In recent decades, with the increase of personal income and particularly disposable personal income, tourism has become a fashion as well as an important part of many Chinese

people's life, especially those who live in urban areas. At the same time, the number of official public holidays in China has also increased and such holidays have been intentionally put together to form so-called "long holiday vacations"—several days in a row. As a result, more and more people are venturing out on tours. If the Swan Islet reserves can seize this opportunity and attract enough tourists, this would be a perfect example of a successful combination of nature conservation and economic development.

The Swan Islet milu reserve officially kicked off its eco-tourism campaign on June 5, World Environment Day, 2008 (Jianbao, 2008: 15, inside back cover). In theory, the arrival of more and more tourists would not only instantly contribute to the local economy, but also help to spread the reserve's fame, thus bringing even more tourists and outside resources to the reserve—a virtuous cycle for its development.⁴

The Significance of the Case of the Swan Islet Nature Reserves

As discussed earlier, the river beaches in the Swan Islet area were traditionally wastelands, prone to flooding and not suitable for farming, and thus remained mostly uncultivated. After the establishment of the reserves, particularly after the 1998 flood when some milu left the reserve, the local government built a dike partly to protect both the milu herds from running away again and the land from the annual high water of the Yangzi River. The construction of this dike, however, also turned former waste river beaches into arable land that is good for growing cotton.

⁴ The reserves are currently not yet open to the public, although tourists can watch roaming milu through the fence. It is widely believed that they may open to the public soon, particularly after the nearby Shishou Yangzi River Bridge opened to traffic in October 2019, which makes travel to the reserves far more convenient.

Even so, before 2005, the conflict over land between the local farmers and the reserve was not a serious issue. At that time, the farmers had to pay various agricultural taxes and fees, which largely limited their net income from farming. Many young villagers left in search of non-farming jobs. The tax reform of 2005 and after, however, brought some farmers back to the land. As they no longer had to pay agricultural taxes, and the price of cotton happened to be high, their net income after deducting the cost of seeds, chemical fertilizers, and pesticides could be handsome. But their farmland is limited; thus, many farmers have turned to land or river beaches inside the reserve, which caused acute conflict between the farmers (whose priority is cultivating crops) and the reserve (which has to ensure that the milu herds are fed). At the same time, the ownership of land inside the reserve is actually not very clear. The Bureau of Forestry preferred to plant Italian poplars to provide raw materials for its partnered factory, while the Bureau of Reeds favored the growth of reeds as well as Italian poplars. In the old river course, fisherfolk were competing for fishery resources with dolphins. In other words, the conflicts and competition in the reserves have been multifarious and acute.

With the involvement of the World Wildlife Fund, the Institute of Hydrobiology, and Yangtze University, more external parties engaged in the same game. The reserve administration, the Bureau of Forestry, the Bureau of Reeds, and the farmers all represented the interests of different local groups. The external financial and scientific research institutes, however, also sparked conflict between local interests and outside interests. These external institutes were more interested in the preservation of the natural environment and its biotic population or its scientific value; they did not have any direct motivation nor face pressure to develop the local economy. The local government, on the contrary, has both a direct motivation and faces high pressure to develop the local economy—the title of the administrative unit of the area is “the Swan Islet

Economic Development Zone.” It took the conservation of the milu population, the white-fin dolphins (as well as the black finless porpoises), and wetland ecosystem as a great opportunity to vie for external funds, to promote tourism, and eventually to bring benefits to the local economy. It will do, and indeed has done, whatever it can to make the reserves more attractive, but the motivation to develop the local economy is far greater than the motivation to protect the environment. No matter how different their motivations, or whatever their starting points are, however, every participating party in the game wants to reach its goal in the Swan Islet reserves.

To solve the competition for fishery resources between human and dolphins, the reserve administration had on the one hand started to draw fresh water from the Yangzi River into the old river course, which would enrich the water there and enlarge the population of aquatic life, and on the other hand it also moved out the fisherfolk, which reduced pressure on the limited fishery resources. Other problems that had troubled the reserves for years, such as land ownership disputes and financial shortfalls, were also solved through the efforts of the government at all levels.

To be sure, in the Swan Islet reserves, thanks to the support of government at different levels and the great effort made by the staff members of the reserves, the conservation of the endangered milu and the reproduction of black finless porpoises have been remarkably successful. In the Swan Islet area, the milu population has grown to more than a thousand within three decades (Wang and Sun, 2015), making it the largest wild milu population in the world. The establishment of the Shishou milu nature reserve and the increasing population of wild milu has not only contributed to the return of milu to nature, but also provided a model for the successful return of endangered large animals to the wild and the restoration of their population. It is clear that the conservation of milu in the reserve has been a great success. Some observers

have even gone so far as to link the rise and fall of milu with the rise and fall of the national destiny of China—as, for instance, when China was weak and chaotic at the end of the Qing dynasty, milu disappeared from China, while, with China rising today, the milu population has not only been restored but is thriving (Guo, 2005).

Unfortunately, the conservation of the endangered white-fin dolphins in the reserve has failed to reach its goal. The only white-fin dolphin living in the old river course in the reserve died in the high-water season of 1996. Since then, not a single white-fin dolphin has been captured and placed in the reserve, mainly because of the continuous deterioration of water quality and the reduction of fishery resources in the Yangzi River. In November 1997, scientists in one investigation of the Yangzi River nonetheless found twenty-one white-fin dolphins (or twenty-one sightings) (Wang, 2003: 615). But in another, multinational scientific investigation in 2006, scientists failed to find any white-fin dolphins. They pessimistically concluded that this animal, which had lived in the Yangzi River for about twenty million years, was probably already extinct (Wang and Wang, 2008). According to a Finnish Chinese paleontologist, there were multiple reasons, particularly human factors, for this likely extinction (Turvey, 2008).

The protection of black finless porpoises in the reserve, however, has been successful. Their population in the water of the old river course has increased from five in 1992 to thirty-two in 2007, and they were all growing well. Again, this is the only successful example of ex situ conservation in the world of a species of fresh-water dolphin (Zhu, 2005: 75; Shishou Tourism 2007: 20). By 2016, there were about eighty black finless porpoises living in the reserve, representing a yearly rate of increase of 10 percent or so (SMLG, 2018: 135). At the end of 2016, the China Wildlife Conservation Association bestowed on Shishou the title “Hometown of

China's Black Finless Porpoises," a national recognition of the reserve's outstanding achievement in protecting these river dolphins.

With the increasing appeals for the preservation of wetland, the local government has added it to its agenda and has successfully obtained funds from upper-level governments. And, as noted earlier, the reserve administration now is energetically promoting eco-tourism to Swan Islet in the name of viewing milu and the wetland ecosystem. It is reasonable to conclude that the future of the reserves looks promising.

These kinds of state-centered solutions applied by reserve administrations in China are likely different from those in other countries, where elections or democratic discussions may play a more important role in decision-making and fundraising. But the abovementioned achievements in the conservation of milu and black finless porpoises in the Swan Islet reserves have been attained over about three decades in a densely populated yet resource-limited rural area. The history of the establishment of nature reserves is not yet long in China, and "China's wildlife protection remains a daunting task" (Li, 2007: 96), but some achievements are also encouraging (the most famous example would be the conservation of giant pandas).

Conclusion

The Swan Islet reserves were established to conserve milu and white-fin dolphins (as well as black finless porpoises), but the local government clearly has its own agenda. Its idea of eco-tourism is using milu to lure tourists, thus boosting the development of the local economy. In recent years, both the Shishou government and the government immediately above it—the (prefectural) government of Jingzhou—have made the development of tourism to the Swan Islet nature reserves one of their key economic strategies. From the perspective of drawing in

investment and upper-level governmental funds by using the development of tourism to the Swan Islet nature reserves, the government of Shishou has been so far very successful. The financial future of the reserves looks bright.

Unquestionably, the rapid economic development of China in recent decades has caused widespread environmental damage, which has had a broad range of negative consequences, including the likely extinction of the white-fin dolphin in the Yangzi River. However, the successful conservation of milu and black finless porpoises in the Swan Islet reserves demonstrates that, at the same time, the Chinese government at different levels has also made and is making efforts to protect the environment. A new study reveals that the world has been turning greener over the past two decades, and China, largely by planting more trees, is one of the chief contributors to this trend (Tabor, 2019).

In the past four decades, under the leadership of a nominally Communist party and following a model different from that of the West, China has created what is arguably an economic miracle. With the growing concern for environmental protection in China, which has led some observers to hope that “China can also create an environmental miracle and set a good example for other nations to achieve both socioeconomic and environmental sustainability” (Liu and Diamond, 2005: 1186), one can anticipate that the Chinese government at all levels, under its special sociopolitical system (or party-state system), will continue to make a special contribution to the preservation of wetlands in particular and to the protection of the environment in general.

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