

Research on Sustainable Community-Based Conservation of the Last 150 Wild Yangtze Alligators

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Due to the cultural belief in dragon, indigenous communities living with the last 150 wild Yangtze Alligators spontaneously provide alligators with physical and emotional care. Being excluded from their ecological systems by policies launched for the protected zones and nature reserves as well as by outside intruders, indigenous residents always find themselves victims of conservation projects. This article articulates feasibility of community-based conservation of endangered species by describing the efforts both the communities and government have put in to protect the Yangtze alligators in Anhui Province, China. It attempts to propose re-examination of relevant government policies and sustainable commercial practices.

Keywords: commercial practice, Yangtze alligator, community-based conservation

INTRODUCTION

Community-based conservation is a new concept and practice which has been labeled as “community-based”. It is a whole range of conservation projects, which is slightly different from a strictly environmental approach (Dressler et al. 2010). Taking the conservation work on the habitat of the last 150 wild Yangtze alligators and the nature reserve’s changing mode as a case, this article examines the relationship between indigenous people and the natural resources in their home areas, and argues that conservation always works effectively when local community residents are involved in it, whereas the species-centered conservation method excluding indigenous people requires re-thinking. I illustrate the roles that indigenous people have been playing in the conservation of endangered Yangtze alligators in the wild, and analyze the challenges in their livelihood improvement. I also examine the changing mode of the nature reserve, attempting to claim that conservation should be by, with and for indigenous people.

Media reported widely that a total of 32 artificially bred Chinese alligators were released at the Chinese Alligator National Nature Reserve (hereinafter refer to as CANNR) in Anhui province on May 20, 2020. The reserve plans to release 280 Chinese alligators in the wild by 2020, with the remaining 248 to be released in the future. From 2003 to 2013, 66 captive-bred Chinese alligators were released into the wild in the reserve for 10 consecutive years. Chinese alligator is unique to China, but as a result of man-made damage to wild habitat, environmental pollution caused by heavy use of chemical fertilizers, and human hunting, the wild population of Chinese alligators declines to less than 200, far smaller than the number of wild pandas. Therefore, the state forestry administration decided to start the project to release alligators into the wild natural habitat, and to put the artificially-bred alligators back in the wild to restore the wild alligator population. As the world’s largest breeding base for Chinese alligators, the Xuancheng

Chinese Alligator National Nature Reserve in Anhui Province has bred more than 10,000 artificial Chinese alligators.

CANNR is located in Xuanzhou District, bordering Langxi County, Guangde County, Jing County and Nanling County in Wuhu City, Anhui Province. The geographical coordinates are between 118°21'18" E and 119°27'55" E, and between 30°37'54" N and 31°04'12" N, with a total area of 18,565 hectares. Founded in 1979, it was upgraded to a provincial nature reserve in 1982 and a national nature reserve in 1986. The main protection objects are Chinese alligators and their living environment. On February 5, 2021, it was named as the fifth batch of national forest and grass science popularization bases by Chinese Society of Forestry, and its validity period is from 2021 to 2024.

Conservation of endangered species is a hot topic in current years. However, it is easily connected to non-profit, charity and voluntary practice. Motivation of natural conservation is always positive and the actual outcome is opposite. Conservation of Chinese Alligator, also called Yangtze Alligator, in Xuancheng district has explored a sustainable approach of combining conservation with community-based livelihood improvement, local culture and regional development.

A conflict occurred in Zhang Village located in the south of Xuancheng region, Anhui Province in August 1998 when eight villagers assembled on the village road and blocked the vehicle of CANNR. They protested angrily, demanding CANNR staff to release a male alligator captured from their village. The nature reserve team explained to them that the alligator was for a scientific research, and there was no intention of doing any harm to it, instead, the nature reserve would find a wife for him to breed. Yet the villagers still disagreed, they forced the nature reserve team to release that male alligator. "Bring his wife here rather than taking him away from us." The villagers declared. It was not because of certain conservational intention that the villagers prevented the alligator from being taken away from the village, but their geomantic belief. In the eyes of local villagers, Yangtze alligators are their dragons bringing peaceful life, good fortune and geomancy (fengshui 风水). They call Yangtze alligator Soil Dragon (tu long 鼉龙). Such conviction has built strong connection between indigenous residents with Yangtze alligators, and plays a critical role in alligator conservation. On the other hand, the nature reserve, given the severe situation of extinction of wild alligators, focused specifically on preserving the alligators with an alligator-centered perspective. After years of practice, the nature reserve administrators start to raise concern for local culture and psychology in their conservation work.

The first section of this paper observes the community members' behaviors, describing how their geomantic belief helps the alligator conservation, and how they acted differently toward Yangtze alligators before and after their knowledge of the alligator's extinction. The second section examines the threats to the alligators and challenges indigenous villagers face in conservation. Specifically, I look into the influences from inside and outside of the communities to alligator conservation. In this section, I argue that the threats to alligators from outside of local communities are more severe and need wider social concern, while the threats caused by local traditional behaviors are easier to manage. The third section analyzes the feasibility of community-based conservation mode, and discusses with the case study how the nature reserve acts when their conservation plan embraces both alligators and local people.

During this research, I kept myself in two positions: the first is as an NGO worker to support wild Yangtze alligator conservation project in Xuancheng. I worked as a Pride Program Manager with Rare, which is a NGO in conservation headquartered in Arlington, Va. USA. The project is called Pride Project. The second is as a researcher with notions of objectivity and neutrality, that is, a researcher outside of the community and project. I visited the sites frequently, conducting, mentoring and monitoring behavior change events, as well as carrying out focus group and in-depth interviews, looking into local residents' geomantic belief, awareness, attitudes, indigenous knowledge, and sense of community-based conservation. I carried out questionnaire surveys and collected the data, which turned out to be supportive to the project and this research.

SECTION 1. COMMUNITY BEHAVIOR AND SOIL DRAGON CONSERVATION

Lao Zhang is the first known person in China who is able to vocally communicate with wild alligators. “I call them Zhang Long (张龙), dragons with my family name Zhang. When I want to see them or have food for them, I will loudly call out this name, and five of them who live close by will crawl to me from different directions.” Lao Zhang told me his story with alligators during a field visit in his village in November, 2013. Lao Zhang’s full name is Jinrong Zhang. He has been living in Changle Village at Xuancheng region of Anhui Province for more than 74 years. To build closer relationship with Yangtze alligators, he always feeds them with poultry viscera, small fish and shrimps.

Even in China, not many people know that Yangtze alligators are locally named as Soil Dragon. However, Yangtze alligator was very common at the beginning of the 20th century along the Yangtze River, thus they were named Yangtze alligator. It used to live in Shanghai, Zhejiang, Anhui, Jiangxi, Jiangsu, Hunan and Hubei Provinces. In the 1940s and 1950s, people could see Yangtze alligators living in wetlands widely along the Yangtze River. In the 1970s, there were more than 2000 Yangtze alligators in China and the number dropped to 400 in 1985.¹

The Yangtze alligator, with only 200 left in the wild in 2018, is listed as an Appendix I species of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and a critically endangered species in the Red List of IUCN (Wang 2014). Chaolin Wang, investigator of CANNR, pointed out the factors causing the depletion of Yangtze alligators: living space conflicts with expanding agriculture, industry and urbanization, poisons from leech elimination movement, breaking of food chain due to pollution, and killing by human beings and natural enemies.² Moreover, legal and illegal overfishing of commercial fish³ through draining ponds, and destructive electrofishing⁴ of wild fish has caused the shortage of food for alligators. Also, the survival rate of newly hatched alligators is as low as two percent.

Lao Zhang was appointed as the guardian person by the nature reserve in 1985. He took the lead in protecting alligators ever since. Due to his close relationship and easy approach to alligators, especially the baby alligators, many outsiders intended to pay him high price with the purpose of trafficking alligators. But Lao Zhang always rejected illegal dealers’ demands for baby alligators and eggs. “They are our creatures, our dragons and our geomancy protectors. Why do I sell them?” said Lao Zhang to me.

This belief is simple in indigenous communities, since dragon has special spiritual meanings to Chinese people, who consider themselves as descendants of dragon. Residents in Xuancheng region, Anhui Province, feel blessed as they live with the Soil Dragons. Xuancheng is located in the southeast of Anhui Province, adjacent to Jiangsu and Zhejiang, near Shanghai and Hangzhou, belonging to the ancient Wuyue. The city covers an area of 12,340 square kilometers, ranking fourth in Anhui province. Xuancheng is district with a long history and flourishing culture. In 109 B. C., the Western Han Dynasty set up Danyang Prefecture and it was successively known as Xuancheng Prefecture, Xuanzhou and Ningguo Prefecture. During the Tang Dynasty, Xuanzhou, Suzhou and Hangzhou were listed as the three central cities in the south of the Yangtze River. Based on the government statistics, Xuancheng is also an ecological area with a forest coverage rate of 59.34%. It is the only provincial ecological city in Anhui Province, and all the 7 counties and districts under its jurisdiction are national ecological counties. The ecological system of the city is intact, and the good air quality rate is over 90%. The air quality reaches the second-level of national standard all year round, and the water quality of centralized drinking water sources meets the standard rate of 100%.

Cultural belief also raised villagers’ attachment to and appreciation of alligators, whom they treat as part of their community or family, especially when they were informed by the nature reserve staff that their soil dragons were facing the danger of extinction. As mentioned, the villagers prevent alligators from being taken away from their villages, and the same story has happened many times. Villagers would also do various things to protect alligators: they assist CANNR to shield alligator eggs with fences, collect newly hatched alligators to safe ponds, and feed alligators frequently. They rescue injured alligators, and report illegal behaviors that hurt alligators and habitat to the nature reserve office.

With the awareness that they individually could not protect the last 200 alligators, the villagers set up a co-management system with the help from CANNR. In May 2011, the Charter of the Co-Management Committee was passed and a co-management committee was established in two villages, Zhongqiao Village (located in the southwest of Xuancheng region, Anhui Province) and Changle Village (northeast of Xuancheng region), where the majority of alligators dwell in. A patrol team was set up by the co-management committee. The co-management committee banned electrofishing and set a closed fishing season from April to October each year. If the patrol teams discover illegal fishing activities, they would take measures to stop them. For those perpetrators that continue the illegal behaviors, the teams would report to the local fishery bureau and police substations to penalize the perpetrators. All the members of the co-management committee and the patrol team had been working voluntarily, until the government promoted the patrol team to an official unit since March 19, 2019.

SECTION 2. CHALLENGES FOR INDIGENOUS COMMUNITIES IN CONSERVATION

Although communities have put large amount of efforts to protect alligators, they could not do all the conservation work. To be specific, villagers are not able to cure injured alligators without technical support from CANNR, and they don't have scientific knowledge to conserve and monitor. They also do not have enough power to punish illegal destructive behaviors. Therefore they rely on the nature reserve office for technical support and regulation enforcement. There are challenges for protecting alligators and local people wellbeing. To some degree, some community-based conservation projects do not operate thoroughly, and cause some negative impacts. To be specific, these projects displaced local communities and restricted access to land and resources, leading to the outcomes already highlighted: joblessness, homelessness, marginalization, food insecurity, etc. (Adams and Hutton 2007).

Some issues leading to the degradation of alligator's habitat are beyond the community's control. Due to the rising living expense, the villagers inevitably encounter life pressures. Like other peasants throughout China, communities in Anhui have to increase the input into their land, and apply chemicals and pesticides to assure grain yield. Therefore agricultural pollution becomes a threat to alligator habitat, of which peasants do not give much rational consideration or do not have much choice. Besides, when villagers stop overfishing or draining the pond water to protect the habitat of alligators, they will lose this part of income from the ecological systems.

Moreover, urbanization and modernization have been changing the structure of rural communities, specifically the demographic composition, which brings a new challenge to the conservation of ecological system around indigenous communities. Official statistics shows that the number of Chinese primary natural villages has decreased from 3,600,000 in 2000 to 2,700,000 in 2010. That is to say, 80 primary natural villages disappear every day. In a period of 5 years, 84,630,000 of rural population have migrated to urban areas (Yue and Li 2013). In Xuancheng region, many young residents become migrant workers, and their wages are the main incomes for their families. In April 2019, following President Xi Jinping's instruction on ecological protection, Chinese government banned a construction project of cottage and hotel construction seizing the nature reserve, saved 417 hectares of land (Xi 2018). Given such challenging context of modernization and urbanization, how to conserve natural resources is a question for policy makers and all community inhabitants.

Killing for marketing needs are particular behaviors which put alligators in a severe situation. People want the skin of alligator for luxury commercial products like purses, belts, etc. In the market, the price for an alligator is about 1500 Chinese yuan per inch. Even though hunting wild alligator is illegal and those who violate the law will be sentenced for 3 years in jail, domestic alligator are very popular in restaurants, especially in east coastal cities. Therefore, the attempt of capturing wild alligators happens frequently for the purpose of high market prices, leather trade, food business, or breeding.

Some new technologies or industrialized concepts from outside also have negative impacts on local residents. For example, some villagers adopt electrofishing, carrying a battery and holding two poles with electric wires. They put both positive and negative electrode poles into the stream or lake water and then

turn the battery on. Most fish get stunned and killed by this tool. And those fish survived from electric fishing would lose the capability of reproduction.

Villagers' traditional or new behaviors turn out to be destructive to ecological system due to their insufficient knowledge about the consequences. Early survey shows that among 345 local villagers about 30% of the villagers did not know that the alligator is endemic in their home area; less than 51% percent of the villagers know their soil dragons are endangered; and only 12% of local villagers who fish, understand that over fishing causes alligators' food deficiency (Wang 2014).

The foresaid challenges imply that indigenous people, their indigenous knowledge and traditional behaviors are not the main cause of over-exploitation of natural resources. Local inhabitants have been interactively living with local animals and forests for generations, and centuries. On the contrary, major threats to local communities and biodiversity are from development and outside factors. What's more, the threatening factors from local residents are reversible, while the outside ones are irreversible and much severer. This is controversial since the objectives of community development and conservation are not always consistent (Berkes 2004). The following section analyzes how CANNR balances conservation and livelihood improvement through a community-based conservation approach.

SECTION 3. COMMUNITY-BASED APPROACH TO WILD YANGTZE ALLIGATOR CONSERVATION

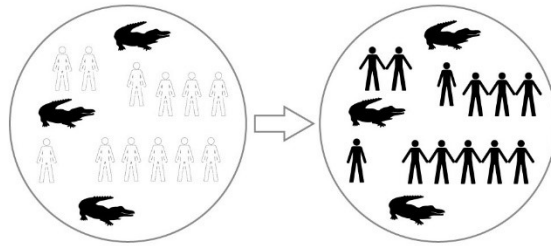
Conservation sometimes focuses more on protected wildlife and local communities' behavior change with inadequate awareness of indigenous people as victims of conservation. In certain areas, local residents lose the natural resources they rely on with insufficient compensation. Conservation work even causes resource conflicts between native people and wildlife. Therefore, a hide and seek game between local residents and nature reserves happens repeatedly. Contradictorily, increasing efforts from nature reserve office and other government departments leads to see growing destructive behaviors toward ecosystems.

To protect Yangtze alligators, China established the nature reserve CANNR in 1982 and promoted it to the national level in 1986. Mission of this nature reserve is to protect alligators and their habitat, conduct scientific research, change local residents' behaviors, and enforce the prohibition of illegal activities. During the last 30 years of interaction with local communities, the nature reserve office has been busy trying to prevent local residents from overfishing in the ponds that provide food to alligators. However, the ponds have always been overfished and drained.

At the early stage, the nature reserve office concentrated on alligators and local villagers are listed as one of the threat elements for their certain behaviors like draining the ponds and electric fishing. As cooperation with other institutions such as international NGOs increases, CANNR eventually changes their standing position: to focus on both alligators and local residents through benefit exchange. Consequently, local villagers have changed their behaviors towards a positive impact on alligators. In Xuancheng region, the CANNR has started a new approach of community-based conservation since 2012. After seven years of practice, their conservation brings in optimistic outcome: the 2014 monitoring showed that the number of wild alligators grew to 150, and 200 in 2018. Therefore, community-based conservation leads to a progressive result.

Instead of sacrificing local inhabitants' benefits, or even removing them from their land in order to protect wildlife, community-based conservation is an approach to incorporate improvement to the lives of local people while conserving areas through the creation of national parks or wildlife refuges (Gezon 1997). Diagram 1 below shows that CANNR has applied a community-based approach aligning alligator conservation with indigenous livelihood improvement.

DIAGRAM 1
CONSERVATION APPROACH: COMMUNITY-BASED RATHER THAN
ALLIGATOR-CENTERED



First, CANNR respects and incorporate local cultural and religious psychology in their conservation work. Besides the soil dragon-related geomantic culture, local villagers compare Yangtze alligator to panda, and they are proud of having it in their communities. Such connection with Yangtze alligators and auspicious concepts is not an odd case in Xuancheng. Local people have close relationship to animals and landscapes, usually considering them sacred. For example, villagers around the Poyang Lake think Siberian Crane as bird of fortune, which brings in fertility, official position, health, and wealth. What's more, the fishermen along the Dongting Lake do not eat finless porpoise. They consider the porpoise as animal of good luck. CANNR has prioritized this cultural aspect in their conservation regulations and practice, which is not common in other nature reserves in China in the past.

Second, sustainable commercial approach of benefit exchange with Xuancheng rural communities has led to increased biodiversity and better management of the protected area. Taking local residents' livelihood into account, the nature reserve office opened the lease right for villagers instead of closing the ponds and playing the game of hide and seek. They lease the ponds to village co-management committee and provide aquaculture technology trainings. The nature reserve office and international NGO offer interest free loan of 20,000 yuan and free fishfry to each pond leaser.⁵ The lease agreement requires the villagers to maintain fixed water level and certain amount of fish in the ponds that are most important to alligators. This helps the alligators to have enough healthy fish. Such approach could also be found in other areas of the world.

Third, co-management system has raised the sense of ownership and pride among villagers. Co-management mechanism plays a pivotal role in the conservation endeavor, specifically prohibition of electrofishing, provision of financial assistance and technical training, control of water levels of ponds and reservoirs where the alligators inhabit, and adoption of effective fish farming technologies. Co-management system has also set a closed fishing season from April to October each year, when the villagers are not allowed to use any tools to conduct fishing activities. Ostrom has described such relationship between individual and institutional levels as:

In all cases, individuals must overcome their tendency to evaluate their own benefits and costs more intensely than the total benefits and costs for a group. Collective choice rules...affect the breadth of interests represented and involved in making institutional changes, and they affect decisions about which policy instruments are adopted (Ostrom et al. 1999, 281).

All villagers could join the co-management and have their voices in it. The villager patrol teams prevent illegal destructive fishing. Nowadays, the fish stocks in natural river channels and ditches have increased. What's more, through the co-management agreement with fish farming contractors, cultured fish stocks in the ponds and reservoirs have been maintained at a sufficient level. As a result, the overall fish resources and the number of the Chinese alligators have increased. To be specific, compared with 2010, monitoring data of 2014 indicated the amount of wild fish increased from 6.5g/m² to 7.2 g/m², and

of commercial fish from 185.85 g/m² to 481.95 g/m² (Wang 2014). As I have mentioned, the number of wild alligators increased by 50 from 2014 to 2018.

Meanwhile, according to the government preliminary estimate, the GDP of Xuancheng District reached 160.75 billion yuan in 2020, raised by 4%. Revenue in the general public budget was 16.84 billion yuan, increased by 2%. The added value of industries above designated size increased by 6.2%. Total retail sales of consumer goods increased by 2.2%. In addition, fixed asset investment increased by 6.7%, and total imports and exports increased by 4%. The per capita disposable income of urban and rural residents rose by 5.4% and 7.9% respectively.

It is illogical to separate indigenous people from their sacred animals when trying to protect wildlife and biodiversity. On the contrary, the protection of endangered species could be compatible with the regional development, community livelihood and local culture. With community-based concept, sustainable commercial practice and co-management system for ecological conservation, local people become a core factor of preserving wildlife, rather than the opponents of conservation.

CONCLUSION

Without the active participation of indigenous villagers, the conservation of Yangtze alligators could be much harder, or even impossible. Community members protect alligators spontaneously, since they believe alligators are their geomancy guardians. Even though indigenous villagers have encountered various challenges in conservation and livelihood improvement, the threats from outside of the communities such as urbanization, marketization, and pollution are much severer and irreversible. This requires nature reserve departments and all social sectors to work jointly for biodiversity conservation, and among all the sectors, indigenous residents to play the core role.

CANNR formulated an approach of conservation from alligator-centered to community-based with sustainable commercial practice for benefit exchange. That is, to protect endangered species goes hand-in-hand together with indigenous people's geomantic culture, income and wellbeing. By respecting local cultural and religious beliefs and managing natural resources through a co-management system, conservation work can be integrated with indigenous tradition and livelihood improvement. The promising result of the community and conservation protection proves that the community-based conservation is a new methodology which is worth applying in China.

ACKNOWLEDGMENTS

"Your pandas are happy in Scotland and hope the Yangtze Alligators are fine". Paul Butler, Senior Vice President of Rare, wrote this e mail to Rare China after his site visit to CANNR in December 2011, when the two pandas, Tian Tian and Yang Guang arrived in the United Kingdom. I thank him for his encouragements and mentorship. I thank my colleagues for their support and thank our campaign fellow in CANNR, Mr. Renping Wang for his passion and hard work. My special thanks go to the community members in Xuancheng region, Anhui Province, who make me believe conservation is possible.

ENDNOTES

1. Data provided by CANNR.
2. Personal communication during the field trip to CANNR, November 2018.
3. Commercial fish includes bighead carps, grass carps, chubs and crucian carps.
4. Electrofishing, also electric fishing, is a fishing method using extend battery into water with two poles/wires, by doing which kill the fish by stunning it.
5. Rare Pride Campaign, an international NGO, provided joint fund support to wild Yangtze Alligator conservation.

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