Short Communication

Giant Panda National Park, a step towards streamlining protected areas and cohesive conservation management in China

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ABSTRACT

The Chinese government recently finalized a plan to establish a Giant Panda National Park in 2020, one of the first national parks in the country. The plan will extend protection status to a significant amount of areas that were previously unprotected; it will also bring many of the existing giant panda protected areas under one authority in order to improve effectiveness and reduce inconsistencies in management. We provide an overview of the history and status of giant panda conservation and the rationale for creating the park. We also give first-hand information on details of the park design, including its general objectives, geographic range, zone divisions, management and funding structure, as well as analysis of the challenges and opportunities ahead. As a new conservation model for China, the Giant Panda National Park has the ambitious goal of standardizing conservation across a large region. It is a major step toward significantly expanding the amount of area protected and establishing a cohesive conservation network for a sustainable giant panda population in the wild.

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1. Conservation history

The giant panda (Ailuropoda melanoleuca) is one of the most well-known and beloved global icons of biodiversity conservation. It once roamed much of China and northern parts of Myanmar and Vietnam, however, climatic changes during the Pleistocene drastically reduced its range. Giant panda distribution has been further reduced during recent centuries due to human activities (e.g., agricultural expansion, infrastructure development, logging, etc.) (Pan, 2014). The current giant panda population inhabits a small fraction of its historical range in southwestern China.

Due to the imperiled status of giant pandas, the Chinese government designed and implemented a set of conservation policies to protect and restore giant panda habitat (Wang et al., 2007), while greatly expanding the number of protected areas within the giant panda range. In the early 1960s, the first four panda reserves (Wolong, Baihe, Wanglang, and Labahe) were

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established in China, and a decree was issued prohibiting the hunting of a range of animals, including the giant panda (Yu et al., 2004). By 2015, the number of protected areas established for the purpose of giant panda conservation was increased from 4 to 67, covering 67% of the giant panda population and about 54% (1.4 million ha) of the species’ suitable habitat (State Forestry Administration, 2015). Giant panda conservation particularly benefited from large-scale conservation policies that were put into effect in the early 2000s, such as the Natural Forest Protection Program (NFPC) and Wildlife Conservation and Nature Reserves Development Programs (WCNRDP) (Wang et al., 2007). The NFPC initiates a large-scale logging ban and incentivizes afforestation, while the WCNRDP expands the network of protected areas and improves their management capacity.

2. Current status

Four range-wide surveys were carried out between 1976 and 2013 (State Forestry Administration, 2015). Results from the most recent fourth National Giant Panda Survey show that number of giant pandas in the wild has reached 1864 - a 17% increase over the results of the third National Giant Panda Survey completed in 2003. During the same period giant panda habitat increased by 12% (State Forestry Administration, 2015). As a result of strengthened government efforts in forest and habitat conservation, habitat loss poses less threat to giant panda populations than it did in the past (Wei et al., 2015). Based on these successes, the IUCN Red List has downgraded the giant panda’s extinction risk from “Endangered” to “Vulnerable”. However, giant pandas still face many challenges (Swaingood et al., 2018). Anthropogenic habitat degradation, climate change, habitat fragmentation, increasing tourism, pathogens, and environmental pollutants are ongoing threats to the integrity of their habitats and populations (Songer et al., 2012; Wei et al., 2015; Xu et al., 2017; Yang et al., 2017).

In addition, effectiveness of protected areas within the giant panda range is negatively impacted by fragmented and inconsistent management across the area, thereby reducing their capacity for achieving consistent conservation goals. Within the giant panda range, a single protected area may be subject to the management of multiple departments or agencies which set goals and corresponding management rules for protected areas under their own jurisdictions. For example, Huanglong, a famous protected area for giant panda conservation, has multiple designations including the national nature reserve, national forest park, national scenic and historical area, world heritage site, and biosphere reserve. The management objectives associated with those designations are overlapping to some extent and sometimes conflicting, and it is unclear which set of objectives should be prioritized when conflicts occur (Tian et al., 2019). The lack of standardization has led to major problems with potential implications for giant pandas and associated wildlife. First, there is no comprehensive classification of protected areas to ensure that conservation goals across the entire giant panda range are met. For example, many protected areas within the giant panda range often focus on functions that can generate economic returns, such as tourism or recreation, rather than prioritizing protection of ecological functions needed to support giant pandas and ecosystem services. In addition, there is a lack of legal mechanisms defining the roles and jurisdiction of different management agencies in protected areas. It is often unclear which departments should be accountable for various issues, or who should be held responsible or rewarded for negative or positive results. Those management issues can substantially limit the potential for protected areas to deliver desired conservation outcomes (Xu et al., 2019). To address those challenges, institutional changes are needed to streamline the conservation management of giant pandas (Li et al., 2016).

3. Giant Panda National Park

The Chinese government recently finalized a plan (National Forestry and Grassland Administration & National Park Administration, 2019) to establish a Giant Panda National Park (GPNP) (Fig. 1). Covering an area three times the size of Yellowstone National Park, the GPNP will be one of the first national parks in the country. The plan will extend protection status to a significant amount of areas that were previously unprotected, bringing many of the existing giant panda protected areas under one authority in order to improve effectiveness and reduce inconsistencies in management. After a 3-year pilot period, the GPNP will be officially established in 2020. The GPNP is designed to reflect the guiding principle of “protecting wilderness and intactness of natural and ecological systems, and maintaining natural heritage for future generations”. The GPNP’s main goal is to improve connectivity between isolated populations and habitat of giant pandas, and eventually achieve a sustainable population in the wild. Giant pandas also serve as an umbrella species, bringing protection to a host of flora and fauna in the southwest and northwest China. The GPNP is intended to provide stronger protection for a high number of endemic species that are distributed across giant panda range (Li and Pimm, 2016) and significantly improve the ecosystem sustainability in the region. Within its proposed boundaries, the park will harbor at least 3446 known plant and 641 vertebrate species that are distributed over many different ecosystem types (National Forestry and Grassland Administration & National Park Administration, 2019).

When fully enacted, the GPNP will span 12 cities (prefectures), 30 counties covering 27,134 km² area, encompassing 18,101 km² of known giant panda habitat and, 1631 known wild giant pandas, according to the latest fourth National Giant Panda Survey data (National Forestry and Grassland Administration & National Park Administration, 2019). The GPNP will encompass five (Qinling, Minshan, Qinghai, Daxiangling, Xiaoxiangling) of the six mountain ranges where giant pandas are currently present. The GPNP will include 70.25% of the existing giant panda habitat, 87.5% of the known wild giant panda population. Sichuan province, the province with the largest number of wild giant pandas and the most habitat area, will
comprise the majority (74.36%) of the GPNP land within its the jurisdiction, followed by Shaanxi (16.16%) and Gansu province (9.48%).

One of the top objectives of the GPNP is to increase connectivity between isolated populations, facilitate movement of individuals and genes, strengthen the metapopulations, and reduce the loss of genetic diversity within subpopulations. Based on China’s fourth National Giant Panda Survey, giant pandas are distributed in 33 isolated populations in the wild, 18 of which will be included within the boundaries of GPNP. Among those 18 populations, 6 of them have a population size larger than 100; 3 of them have between 30 and 100 individuals; and 9 of them have less than 30 individuals.

The GPNP incorporates 81 protected areas with varying levels of official status, including nature reserves (at national, provincial, and county level), geoparks, and scenic spots, comprising a total of 21,347 km² of protected land, which covers 78.67% of the land designated for the GPNP. The establishment of the park will extend protection status to 21.33% of the park land (3787 km²) that were previously unprotected.

The GPNP land will be divided into two main zones (Fig. 1): the core protection zone (74.23%), and the general control zone (25.77%) (National Forestry and Grassland Administration & National Park Administration, 2019). The core protection zone prioritizes encompassing suitable giant panda habitat, areas of high population density, and key corridors within existing
protected areas. The general control zone includes areas targeted for ecological restoration, habitat improvement, and establishing new corridors. It is also the area where some human settlement and production are allowed, and where ecotourism and education outreach can take place.

The GPNP is designed to follow the 4-tier management system, composed of the headquarters, provincial administrations, branch offices, and field stations. The headquarters of GPNP is led directly by the National Forestry and Grassland Administration & National Park Administration. Located in Chengdu, Sichuan Province, the headquarters is responsible for establishing consistent and cohesive park planning, conservation policies and standards, organizing natural resource inventory surveys, budgeting and allocating central government funding, approving major construction projects, supervising and monitoring progress, and coordinating cross-province work. Under the GPNP headquarters, three provincial Giant Panda National Park Administrations are created within the provincial Forestry and Grassland Administrations, and they directly manage the national park branch offices, and field stations. The provincial National Park Administrations, branch offices, and field stations jointly are responsible for conservation and restoration on the ground, providing licensing services, conducting natural resource monitoring surveys, enforcing regulations, facilitating relocation of local industry, and out-migration of park residents.

Previously, various protected areas within the giant panda range were financed differently through a mixture of funding sources from local, provincial, and central governments based on their location and classification. The GPNP will receive increased funding support from the central government for implementation of major projects such as infrastructure development, corridor building, subsidies provision, and scientific research and monitoring.

4. Challenges and opportunities

The creation of the GPNP will significantly increase the amount of protected land for giant panda conservation, as well as increase the ecosystem resilience and sustainability in the region for human and wildlife alike. It will also improve effectiveness and reduce inconsistencies in conservation management. Particularly, the GPNP will be able to set consistent conservation goals across the entire area within its range, and have clear policies and guidelines on enforcement, tourism, infrastructure development within the park. The consolidation will lend strong protection for giant panda and other endangered fauna and flora across the park. It will also streamline the enforcement process against unauthorized natural resource extraction activities which previously was scattered across different government departments depending on the status of the protected areas. The establishment of the GPNP will provide opportunity to provide residents sustainable jobs such as in ecotourism, education outreach, and conservation. It will result in a more resilient local economy that is compliant to the conservation requirement set out by the GPNP, where the local communities will have a stake in the success of the GPNP.

Many details regarding multiple aspects of GPNP are still being finalized. Challenges exist involving acquisition and transfer of land ownership, integrating existing protected areas and different management units into the GPNP system. Significant work still remains in order to streamline management structure and communications between the headquarters, and the offices at provincial, local levels, as well as balancing the needs between local communities and conservation goals.

Particularly, one of the major challenges is consolidating 81 individual protected areas including giant panda reserves along with protected areas with other designation and create cohesive management structure for over 5000 staff (National Forestry and Grassland Administration & National Park Administration, 2019) at various protected area units. The plan of allowing provincial and local government to retain authority to some extent over national park personnel appointments at the provincial and local levels will provide a mechanisms to increase local government buy-in, but at the same time it could create additional intricacies for achieving cohesive management. The existing plan for the GPNP has outlined a semi-vertical management structure across the headquarters, provincial administrations, branch offices, and field stations. The chain of command from the provincial administration below is mostly vertical, while headquarters (answering directly to State Forestry and Grassland Administration & National Park Administration in Beijing and is responsible for setting up overarching conservation policies and guidelines for the park) would have limited mandate to directly manage the provincial administrations. Such structure is designed to strike a balance between provincial autonomy and direct management of the central government while maintaining both the funding and support from the local governments and the existing staff level at the provincial and local offices, it also allows the local governments to help facilitate key issues such as emigration of residents and providing subsidies. However, it could be problematic if the provincial level national park administrations respond to different sets of incentives and responsibilities decided by the provincial government which might not align well with the goals of the headquarters. We recommend in future the GPNP adapts a complete vertical structure in which all provincial national park administrations are directly responsible to the headquarters. The proposed structural change will require a significant increase of GPNP budget from the central government, which we see small likelihood of happening in near future. But the recommended structure will allow all administrative levels of the national park to work synergistically and systematically towards consistent conservation objectives and it will contribute to a more effective organizational structure in long term.

Additionally, over 5500 local residents currently reside inside the core protection zone (National Forestry and Grassland Administration & National Park Administration, 2019), (The resident number surrounding the park is much higher, since the settlements and villages with higher population density were mostly excluded from the GPNP range) posing a significant challenge to the proposed plan of mobilizing and facilitating emigration of the residents within the core protection zone.
Although there is no plan to relocate residents in the general control zone, they will be required to transition to livelihoods that are not heavily dependent on natural resource extraction and are in accordance with park regulations. With a significant more population residing around the park, the transition from an economy primarily based on natural-resource-extraction (e.g., harvesting of bamboo shoots, medicinal herbs, and free ranging cattle) to more ecofriendly livelihoods and the removal of existing mining and hydroelectric power plants will inevitably place stress on local economy in near term. It could also create tension between local communities and the enforcement branch of the park. The success of those transition plans hinges on the ability of the government to provide sufficient subsidies, retraining and welfare programs to incentivize smooth transitions. The previous studies within giant panda range (Liu et al., 2016; Ma et al., 2019) have also demonstrated that ecofriendly household and community economies, particularly ecotourism can elevate conservation awareness, increase household income, and ultimately improve the efficacies of conservation efforts. Through various versions of the GNPN development plan and the related executive orders, the Chinese government has reiterated its plan to significantly ramp up effort to strengthen eco-tourism, retraining, and employment within local communities (National Forestry and Grassland Administration & National Park Administration, 2019). With careful planning, tourism development can promote the shift from traditional livelihoods such as herb collection, and livestock husbandry to new livelihoods, such as working as tour guide and operating small tourism businesses, which have much fewer negative impacts on ecosystems. However, an unregulated tourism boom could also have negative environmental impacts. The key to balancing the trade-offs between the benefits of ecotourism and its negative environmental impact lies in enforcing strict zoning control (e.g., no tourism activities within core protection zone) and implementing a system that controls the overall number of tourists and scale of tourism operations within the park.

The GNPN spans a vast region which encompasses areas with drastically different culture, ethnic composition, and economies, as well as endemic fauna and flora species. The goal of setting up a consistent conservation management standards across the national park is by no means in conflict with having adaptive policies that provide some degree of flexibility based on local characteristics. For instance, the enforcement of the ban on natural resource extraction should be carried out at various level of intensity and pace due to different degrees of poverty within local communities and the dependency of households on extractive activities such as bamboo shoot harvesting. The GNPN habitat management guidelines should also consider the specific climate, habitat type, terrain, and key subspecies in different regions to maximize the efficacy of corresponding conservation planning and practices. Specifically, once the national level legislations are finalized, provincial and county governments and legislatures are also expected to enact laws and executive orders to supplement the national law. The provincial and county level policies will have much more detailed language on implementation and enforcement to adapt to local needs.

Lastly, the new national park model requires new legislation to prohibit or restrict unsustainable human activities within the park. As the new laws are being drafted, passed, and enacted, the focus should be on empowering the GNPN as the main body of enforcement, to take initiative and consolidate law enforcement responsibilities that were formerly distributed across multiple government branches and agencies. For instance, formerly, patrolling and enforcement against illegal fishing within protected areas were the responsibility of the agriculture department as it involves violation occurring within water bodies. Although the newly amended Wild Protection Law and the Regulations on Nature Reserves empower nature reserves as the main bodies of enforcement to take initiative and consolidate law enforcement responsibilities, the mandate does not automatically extend to GNPN because of its new institutional status. As of the date when this paper is submitted, the GNPN has yet to be authorized by the National People’s Congress to exercise the power to impose administrative penalties. During the government restructuring process in recent years, various law enforcement units that used to be in charge of enforcement within nature reserves (e.g., forest police managed by Forestry and Grassland Administrations) has been consolidated into police forces. One significant difference between the GNPN and many national park models outside of China, for instance the United States National Park System is that park police stationed in GNPN were not managed or financed by the park. We believe that in the long term, enabling the GNPN to directly manage the park police could promote more effective effort in enforcing. However, currently there is little discussion among the policy makers about when and how this transition might take place. A well-defined enforcement authority should help deter and prosecute illegal activities during the interim period when the new legislations designed specifically for national parks are being drafted, finalized, and implemented.

The GNPN is one of the ten pilot National Parks being initiated in China and has the ambitious goal of standardizing giant panda conservation across a broad area to achieve “One protected area with one title, one regulation, and one management agency” (Li et al., 2016). Establishing the Giant Panda National Park is a major step toward significantly expanding the amount of protected area and establishing cohesive conservation network for growing and supporting a sustainable giant panda population in the wild and provide protection for many endemic and endangered species in the area.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.gecco.2020.e00947.
References


