



Short communication

Snow leopard poaching and trade in China 2000–2013

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ABSTRACT

The snow leopard is a flagship species of the alpine ecosystem in the Central Asia, with China comprising nearly 60% of the habitat and population. It was listed as endangered by IUCN and included in Appendix I of CITES in the 1970s. Poaching for its fur and bones is a significant and increasing threat to snow leopards globally. However, little detailed information is available on snow leopard poaching in China. Here, we collected all reported cases of snow leopard poaching and trade in China 2000–2013. We found that snow leopard parts were mainly traded in the major cities within their range provinces, but also began to emerge in a few coastal cities after 2010. Household interviews in the Sanjiangyuan Region in Qinghai Province showed that in this sub region alone, 11 snow leopards were killed annually, accounting for about 1.2% of the estimated snow leopard population there.

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1. Introduction

The snow leopard (*Panthera uncia*) is a flagship and keystone species in much of the alpine ecosystems of Central Asia, with only 4500–7500 individuals left in the world (McCarthy and Chapron, 2003). It has been listed as endangered by the International Union for Conservation of Nature (IUCN) since 1972 (Goodwin and Holloway, 1972), and included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1975 (McCarthy and Chapron, 2003). They are also legally protected at the national level in every range country (McCarthy and Chapron, 2003). However, poaching for the exquisite fur and highly valued bones remains a significant and mostly increasing threat to snow leopards range-wide (McCarthy and Chapron, 2003).

China is estimated to contain roughly 60% of snow leopard habitat and population, distributed primarily in Qinghai Province and the Tibet and Xinjiang Autonomous Regions, but also occurring in Gansu, Sichuan and Yunnan Provinces, and the Inner Mongolia Autonomous Region (McCarthy and Chapron, 2003). At the same time, China likely owns the largest potential market, with a billion people of increasing economic stature and traditions of utilizing wildlife for traditional purposes. As such, the combination of China's importance for the species and its threat through the poaching and trade of snow leopards makes China a determinant player in the species' survival. However, little detailed information

is known on this conservation concern, which impedes formulating targeted conservation strategies.

Here, through a combination of web searches and field data, we examined the pattern in poaching and trade of snow leopards in China. We analyzed all reported cases of poaching or trade of snow leopards from 2000 to 2013 across China, and also provided an estimate of the extent of poaching in snow leopard habitats of the Sanjiangyuan Region in Qinghai Province. This study provides critical information needed to combat snow leopard poaching and trade in China.

2. Methods

We looked up “雪豹” (the Chinese name for “snow leopard”) in Google news (<https://news.google.com/?hl=zh-CN>) and in the largest Chinese language-news platform – Baidu news (<http://news.baidu.com>), and collected all snow leopard-related poaching and trade reports in China since 2000. We recorded the time and location of the trade or poaching (if available), and the number of snow leopard parts (carcasses/pelts/bones). For each case, the numbers of body parts recorded were converted into the minimum number of animals. For example, if a case reported 27 pelts and 5 sets of bones, we assumed that 27 snow leopards were killed. Therefore our estimates should be viewed to represent the minimum number of snow leopard deaths.

To evaluate how well such cases reported by news media reflect the true situation of snow leopard-related cases investigated and prosecuted by the police agency in China, we checked the reported cases in Qinghai Province with a relevant official of Qinghai Forest

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Police Bureau. Qinghai Province lies in the center of the snow leopard range in China (Fig. 1), and contains the largest contiguous snow leopard habitat in China (Li, 2012). Qinghai Forest Police Bureau is a central information-processing center for all wildlife-related cases occurred in Qinghai Province. The official confirmed that the 9 cases from Qinghai Province we collected from Google or Baidu (No. 1, 2, 8, 14, 22, 30, 31, 42, 43 in Table A1) were all of the cases he knew occurred in Qinghai Province since 2000. This indicated that the cases reported by media reflected true situation of the cases investigated and prosecuted by the police agency.

In addition to this coarse scale review of snow leopard poaching in China, we also evaluated poaching at a finer resolution in the heart of snow leopard range. We chose the Sanjiangyuan Region in Qinghai Province, China's largest region of continuous snow leopard habitat (Li, 2012), to conduct household interviews investigating snow leopard killing. The Sanjiangyuan Region is located on the northeast edge of the Tibetan Plateau, and has an area of 360,000 km² and 682 villages (Fig. 1) (Editorial Committee of *Ecological Environment of Sanjiangyuan Nature Reserve*, 2002). Our modeling work estimated the Sanjiangyuan Region to have 89,602 km² of snow leopard habitat with the main variables of elevation, ruggedness and land-cover type, accounting for almost one quarter of the entire area (Li et al., 2013a). We overlaid county boundaries on the predicted snow leopard habitat to calculate the proportion of predicted snow leopard habitat relative to each county. Based on this proportion and the number of villages in each county, we estimated that there were 185 villages owning snow leopard habitat. Between 2009 and 2011, we did random semi-structured household interviews ($n = 144$) in 41 (22%) of these villages across the Sanjiangyuan Region that overlapped with snow leopard habitat (Fig. 1) (Li et al., 2013b). To get close with local people and reduce their worries, we usually found a local guide to accompany with us during the household interviews. We would have tea and chat about their daily life first, before we transit to other questions naturally. Using questions worded carefully to prevent self-incrimination, we asked local people about the number of snow leopards killed since 2000 in their village, and historical events related to snow leopard killings (Li et al., 2013b). For example, we would ask 'whether any snow leopards were killed in your village' instead of 'whether you have killed any snow

leopards'. We also asked the detailed date, time, place, people, events, numbers of snow leopards killed of each case, and count those with the same detailed information as one case, to avoid over counting the renowned cases that had been widely discussed among villages.

The average snow leopard density for the Qinghai Province was estimated at 1 individual/100 km² in Qinghai Province (Schaller et al., 1988). To estimate the proportion of the snow leopard population killed in the region annually, we therefore assumed a total population of about 896 snow leopards in the Sanjiangyuan Region.

3. Results

3.1. Snow leopard poaching and trade cases in China

We recorded 43 cases of snow leopard poaching or trade reported in the media in China 2000–2013. These involved the death of at least 98 snow leopards (Table A1). Among them, parts from at least 9 snow leopards (9 pelts and 2 sets of bones) were reportedly smuggled from Mongolia into the Inner Mongolia Autonomous Region (Table 1, Fig. 1). Other cases equated to at least 89 deaths, primarily in the snow leopard range Provinces or Autonomous Regions, including Gansu (7 cases and 34 deaths), Xinjiang (13 cases and 28 deaths), Qinghai (9 cases and 16 deaths) and Tibet (5 cases and 7 deaths) (Table 1, Fig. 2). The 89 deaths comprised 49 pelts, 36 carcasses and 12 sets of bones (Table 1).

The locations indicated by the media reports show that trade on snow leopard parts were mostly tracked down in the major cities within snow leopard range provinces, especially in Linxia, Gansu Province (3 cases and 30 deaths), Xining, Qinghai Province (4 cases and 8 deaths) and Golmud, Qinghai Province (3 cases and 5 deaths) (Fig. 2). These cities are conveniently located along efficient transportation networks (Fig. 2). After 2010, trade of snow leopards began to surface outside of snow leopard range, in faraway cities including Yiwu (in Zhejiang Province) and Jinan (in Shandong Province) (Fig. 2). Most of the poaching sites were located in snow leopard habitat near trade sites. Among them, Xinjiang (8 cases and 17 deaths) and Tibet (4 cases and 6 deaths) Autonomous Regions topped the list (Fig. 2).

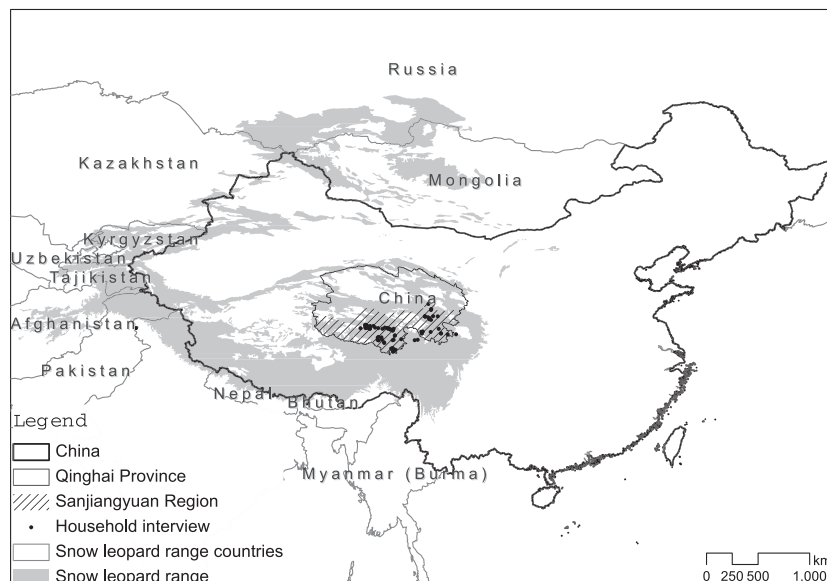


Fig. 1. Study area. All the 12 snow leopard range countries in the Central Asia are shown in the map. The grey area indicates the global range of snow leopards. The thick line outlines China, where we collected all the reported snow leopard poaching and trade cases 2000–2013. The diagonal line indicates the Sanjiangyuan Region and the black dots shows where we conducted household interviews.

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