ISSN 1027-2992

CAT news

N° 84 | Autumn 2025

SPECIES SURVIVAL COMMISSION

CAT SPECIALIST GROUP

CATnews is the newsletter of the IUCN SSC Cat Specialist Group, a component of the Species Survival Commission SSC of the International Union for Conservation of Nature (IUCN). It is published three times a year, in spring, summer, and late fall. It features original articles and short communications relevant to the conservation of the free living wild cats, including news on the IUCN Red List and Green Status of Species assessments, important ex situ conservation breeding programmes, and from Species Working Groups affiliated with the Cat SG.

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The publication of CATnews is made possible through the support of **the Royal Commission for AlUla**, Kingdom of Saudi Arabia, and **Fondation Hans Wilsdorf**. CATnews can be subscribed to by joining the Friends of the Cat Group. It is shipped to all Members and Friends of the Cat Group three times a year.

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Design: Barbara Surber, werk'sdesign gmbh
Layout: Malini Pittet and Christine Breitenmoser
Print: Stämpfli AG, Bern, Switzerland
ISSN 1027-2992 © IUCN/SSC Cat Specialist Group
December 2025

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Cover Photo: Fishing Cat, Dudhwa National Park, India, 2017
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Endemic Chinese Mountain cats are threatened by domestic dogs

The Chinese mountain cat *Felis bieti*, endemic to the eastern Qinghai-Tibet Plateau in China, is one of the most elusive and endangered felid species worldwide and is currently Vulnerable on the IUCN Red List of Threatened Species™. Threats include large-scale poisoning of one of their main prey (pikas *Ochotona spp.*), illegal hunting and hybridisation with domestic cats *Felis catus*. During our monitoring of a breeding family discovered in the Sanjiangyuan Region, two individuals were found dead. Carcass examinations and local interviews suggest that predation by free-ranging dogs *Canis lupus familiaris* was the likely cause of death—a previously overlooked but potentially significant threat. Additionally, we have published genomic data of the two deceased individuals to support related conservation genomic research. These findings underscore the complex and evolving challenges faced by the Chinese mountain cat in a human-dominated landscape, calling for renewed conservation attention.

As the only endemic felid in China, the Chinese mountain cat exclusively inhabits the monotonous steppe and shrubland along the eastern part of the Qinghai-Tibet Plateau (Liao 1988, He et al. 2004). The cat is distinguished from its congeneric relatives by its orangish fur, dark-striped tail, clear-tufted ears and light blue pupils (Yin 2008). However, because of its secretive nature and rugged habitats, only a handful of reliable records of the cat have been made and even fewer scientific studies have been conducted (Webb et al. 2016, Han et al. 2020).

Currently, the IUCN Red List of Threatened Species™ classifies the cat as Vulnerable due to its "likely" small (fewer than 10,000 mature individuals) and "probably" declining population (Luo et al. 2022). Sanderson et al. (2010) noted that the cat is affected by illegal hunting and widespread poisoning programs targeting pikas. These poisoning campaigns were launched across the Qinghai-Tibet Plateau in 1958 to control "assumed pests" such as pikas and other rodents (Zheng & Cai 2007, Wu & Wang 2017), species that are important prey for the cats (Liao 1988). The cats thereby face the threat of secondary poisoning in addition to loss of prey.

Fig. 1. A breeding family of Chinese mountain cats discovered in September 2018 (Han et al. 2020; Photo Shan Shui Conservation Center)

Hunting for the pelt trade still took place in the 1990s and early 2000s and the cat's pelts were found openly sold in street stalls (Nowell & Jackson 1996, He et al. 2004, Chen et al. 2005). In addition to these threats, hybridisation between Chinese mountain cats and sympatric domestic cats has been documented through both genetic evidence and local observations (Yin 2008, Yu et al. 2021). Yu et al. (2021) found that domestic cats in the core range of the Chinese mountain cat carry 5–10% genetic admixture from the wild species, raising concerns that gene flow may threaten its genetic integrity. Other threats include habitat loss and road mortality associated with ongoing infrastructure development (Luo et al. 2022).

The monitoring of a breeding group of Chinese mountain cats has provided us with further important insights. In September 2018, an adult female cat and her two kittens (one male and one female) were discovered in the Gyatong Grassland of the Sanjiangyuan Region (Han et al. 2020, Fig. 1). Shortly after the kittens left their den, the adult female and the female kitten were found killed. Based on morphological examination of the carcasses, along with on-site interviews, we suggest that the cause of death was predation by free-ranging dogs—a previously overlooked but potentially significant threat to the survival of the Chinese mountain cat.

Methods

Study area

The cat family was discovered in the Gyatong Grassland (Chindu County, Yushu Prefecture, Qinghai Province of China). The grassland is in a central plain surrounded by gentle steppe mountains at elevations of 4,200–4,700 m (Fig. 2). The central plain is typical alpine meadow with the Ya-lung River flowing eastwards. It is covered with herbs, while shrubs are sparcely distributed on the shady sides of surrounding mountains (Fig. 3). The vegetation type is suitable habitat for the plateau pika *Ochotona curzoniae*, thus providing abundant food resources for meso-carnivores such as the Tibetan fox *Vulpes ferrilata*, red fox *Vulpes vulpes*, Pallas's cat *Otocolobus manul* and the Chinese mountain cat. The meadow also hosts eleven villages of Tibetan herdsmen. Their settlements and winter pastures are generally located in the central plains, while summer pastures are in surrounding mountain valleys. The dens of the Chinese mountain cats were all found in a valley and were only several hundred meters away from human settlements (Fig. 2).

Collection of carcasses and necropsy

The discovery and monitoring of the breeding family of Chinese mountain cats were described in Han et al. (2020). The family was closely monitored by camera traps until both kittens left the mother on 24 December 2018. Shortly after their independence, the female kitten (CMC-1) was found dead on 30 January 2019. About one week later, on 7 February, the dead body of the adult female (CMC-2) was also found by a local field ranger (Fig. 2). The identification of both dead cats was based on the distinctive black stripes on their tails (consistent with the information provided in Han et al. 2020).

Both bodies were carefully collected and stored under -20 °C for examination. External examination of the carcasses was conducted to measure body size and weight, evaluate general body condition, and inspect surface lesions. Lateral and ventrodorsal radiographs were taken of both bodies.

On-site interviews

We interviewed local herdsmen who live close to the sites where the carcasses were found to acquire any relevant information on the dead cats. Since previous investigations had suggested dog harassment towards both cats, semi-structured interviews were conducted involving 15 herdsmen living in the area where the cats occur (see Supporting Online Material

T1 for full interview questions), to collect information on dogs. The participation of herdsmen in the interviews was voluntary and anonymous. Information on the population of dogs in the area was further obtained through key informants such as heads of the village community.

Results

Carcass features and necropsy assessments

The adult female weighed 3.62 kg, with a body length of 68.2 cm and tail length of 29.4 cm; the female kitten weighed 2.62 kg, with a body length of 60.3 cm and tail length of 27.2 cm. Compared with the kitten, the adult clearly showed worn palm pads, claws, and greater tooth wear (especially her canine teeth) (Fig. 4C, D). Radiographic images showed that both carcasses had a severed cervical spine caused by a carnivore bite, with fracture in C3-C5 of CMC-1 (Fig. 4E, F), while the occipital bone was dislocated from C1 for CMC-2 (Fig. 4G, H). Other than these fatal injuries, no other health issue was detected. This suggested that the spinal injury was the cause of death.

On-site interviews

Local herders reported dog harassment towards both dead cats on the day before the first carcass was discovered. They witnessed the dog dragging the dead cat approximately 50 m away from its burrow (Fig. 2).

According to the village community heads, there are 27 domestic dogs and seven stray dogs in the range of the Chinese mountain cats (Fig. 5). All our interviewees said that their dogs were commonly set loose after sunset and during summer when they moved away from their village to summer pasture. Given that domestic dogs are allowed to roam freely for much of the time, there is no clear boundary between domestic dogs and stray dogs and thus we used 'free-ranging dogs' as a general designation for dogs in the region. In the case of stray dogs, all the interviewees suggested that the number of stray dogs had been increasing in recent years. Most interviewees said that they were unaware of the stray dogs' predation on wildlife. They were not averse to the capture of stray dogs so long as the dogs were not killed on-site and the control measures had no effect on domestic dogs.

Discussion

In this study, we identified killing by free-ranging dogs as one potentially critical threat

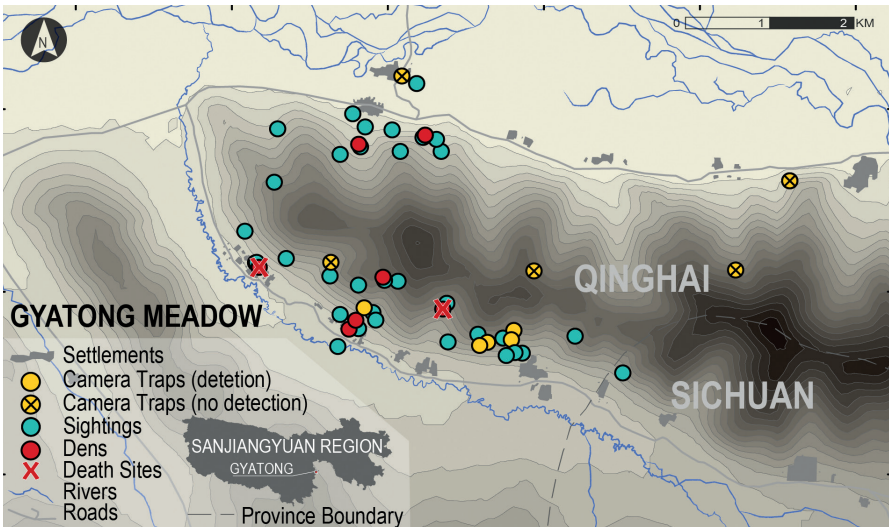

Fig. 2. Study area map with Chinese mountain cat records from 2017 to 2019. Red circles indicate cat dens and burrows. Yellow circles show camera trap locations, where black crosses denote sites with no Chinese mountain cat detections. Blue circles represent cat sightings,and red crosses mark the locations where the two individuals were found dead.

to the survival of Chinese mountain cats in the Gyatong Grassland, adding to our previous understanding of the major threats of pika poisoning programmes, illegal hunting and hybridisation with domestic cats (Sanderson et al. 2010, Luo et al. 2022). Although we cannot definitively prove that free-ranging dogs killed the cats—since no one witnessed or recorded the event—all evidence points to dogs as the likely cause. Along with previous research and our own observations of dogs preying on other local wildlife, we believe a thorough study is needed to understand the threat dogs pose to this unique felid. Furthermore, free-ranging dogs could potentially heighten the risk of disease transmission for wild carnivores (Furtado et al. 2016).

Liu's study (2020) in the Sanjiangyuan Region revealed that stray dogs have fairly large home ranges (10 km^2 on average), large body weight (over 20 kg), and a high hunting success rate brought by group-hunting strategies. These traits suggest they may act as apex predators, reducing native species' survival through direct killing, increased stress, and altered activity and habitat use (Lenth et al. 2008, Gingold et al. 2009, Young et al. 2011, Hughes & Macdonald 2013). For example, in New Zealand, just one stray dog killed about 500 kiwis *Apteryx australis* in six weeks, accounting for more than half of the local kiwi population (Taborsky 1988). This is particularly worrying in the context of the recent surge in the stray dog population in the Qinghai-Tibet region. The collapse of the Tibetan mastiff market along with the implementation of nomadic settlement projects has resulted in a dramatic decrease in the economic and productive value of domestic dogs, leading to widespread dog abandon-

Fig. 3. Landscape of the Gyatong Grassland (Photo Xuesong Han).

ment (Jenny 2012). Official statistics from 2016 show that there were more than fifty thousand dogs in Golog Prefecture (Qinghai province) alone, of which fourteen thousand were stray dogs (Yin et al. 2017). Besides the fairly high population density (4.6 individuals/km^2 near villages), their growth rate (10.3% on average) also indicates that this issue requires more attention (Liu 2020). In the Gyatong Grassland, local herdsmen also reported an increase in both the number of stray dogs and their predation on wildlife in recent years (Fig. 5, Yang et al. 2019).

In the case of Gyatong, our on-site interviews found that local dog-rearing practices blur the boundary between domestic and stray dogs, as dogs are often unchained at night or when owners are away, allowing them to roam and hunt (Messerschmidt 1983, Cui 2006). This increases spatiotemporal overlap with nocturnal Chinese mountain cats (Liao 1988), exposing them to predation risks. Other meso-carnivores are similarly threatened: in June 2019, two unattended dogs from a house 150 m from a cat den killed at least two Tibetan foxes, one steppe polecat *Mustela eversmanii*, four Asian badgers *Meles leucurus*, and one Himalayan marmot *Marmota himalayana* (Fig. 5, Fig. 6), with likely more unrecorded. The complexity of the issue is rooted in safety issues and conservation awareness of local herders. Currently, wolves and bears are two carnivores that have caused most human-wildlife conflicts on the Qinghai-Tibet Plateau (Dai et al. 2020). As the major "weapon" against them, unchained dogs, particularly Tibetan mastiffs, are of unparalleled importance to local herdsmen (Messerschmidt 1983). However, our interviews suggest that locals seem unaware of the killing behaviour of their dogs.

Potential solutions to mitigate this dog threat in Gyatong include: 1) persuading dog owners to send their dogs to a host family instead of setting them free when they are away; and 2) increasing awareness about the potential biodiversity loss caused by free-ranging dogs. It seems to us there is no feasible alternative to releasing dogs at night for now, unless current conflicts between humans, bears and wolves are alleviated.

In addition to direct threats such as poisoning and dog attacks, recent genomic studies have highlighted the risk of hybridisation with sympatric domestic cats, undermining the genetic integrity of Chinese mountain cats (Yu et al. 2021). However, due to the scarcity of available genetic samples, only a limited number of genomes have been analysed. In this study, we sequenced the whole genomes of the two deceased individuals, along with two suspected hybrids, to contribute genomic data that may support future conservation research. Interestingly, preliminary analyses revealed that, despite retaining typical morphological and ecological characteristics (Fig. 1), the two Chinese mountain cats carried mitochondrial DNA of domestic cats (see SOM Table T1). Given the limited sample size and analytical constraints, we present these findings in the Supplementary Online Materials to avoid overinterpretation and unsupported conclusions. The genomic data are publicly available at the National Genomics Data Center in China (GSA accession number: CRA011608, https://ngdc.cncb.ac.cn/gsa).

To summarize, based on the examination of two carcasses from a continuously monitored Chinese mountain cat family and surveys about free-ranging dogs in the area, we suggest that domestic dogs represent a previously overlooked threat to the species. By synthesising available knowledge and field observations, we highlight the complexity of the conservation challenges facing the Chinese mountain cat. In addition, we provide genomic data from these individuals to support future research in conservation genomics. We hope these findings will encourage increased research attention and conservation efforts for this endemic carnivore.

Acknowledgements

We are thankful to Chindu County Government, Yushu Forestry and Grassland Administration and Three-River-Source National Park Administration for supporting this study. We thank the "One Yangtze" Project of Huatai Securities (HTSC), and the "Gyatong Conserved Area" Project of the China Environmental Protection Foundation & Ant Forest for providing financial support. We gratefully acknowledge local rangers Jihti and Tserdo for their efforts in field investigations. We thank Peiyun Li, Ge Zhao, Xingyu Deng, Yidan Xia, Dapeng Zhu and Tianke Gao for their help in the examination of car-

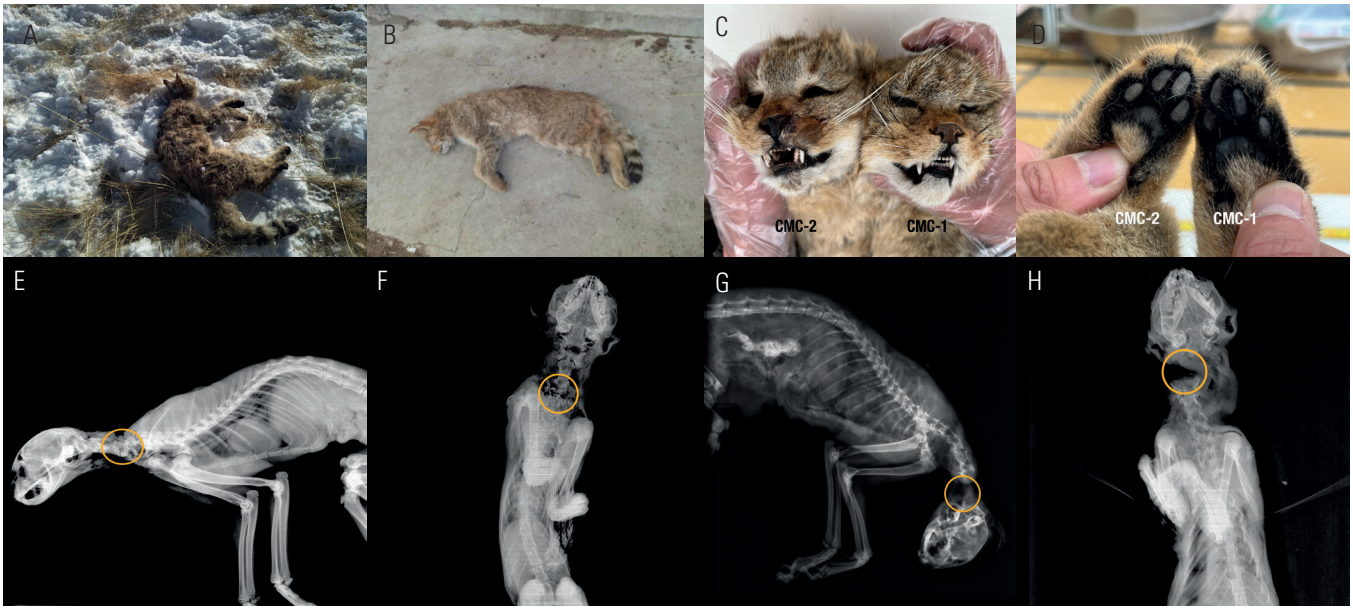

Fig. 4. Examination of the two carcasses. (A) The carcass of the female kitten (CMC-1); (B) The carcass of the adult female (CMC-2); (C) Comparison of the canine teeth; (D) Comparison of the paw pads; (E) X-ray image of the female kitten (CMC-1; lateral view); (F) X-ray image of the female kitten (CMC-1; front view); (G) X-ray image of the adult female (CMC-2; lateral view); (H) X-ray image of the adult female (CMC-2; front view).

casses. And we are grateful to Sandro Lovari and Lingyun Xiao for improving the manuscript. Permission for field surveys in Chindu County, Qinghai Province was granted by the Chindu County Government, Chindu Environment Protection & Forestry Bureau, and Administration Bureau of Three-River-Source National Park.

Fig. 5. Free-ranging dogs near the range of the Chinese mountain cats. A) A domestic Tibetan mastiff roaming unchained at night, photo-captured near a hiding burrow of a Chinese mountain cat; B) A free-ranging dog with a juvenile marmot in its mouth; C) Two domestic dogs unchained by their owner during his short absence.

References

Chen N., Li L., Sun S., Yin Y. & Sanderson J. 2005. Status of the chinese mountain cat in sichuan province (China). Cat News 43, 25–27.

Cui T. 2006. Tibetan Mastiff: Loyal guard dogs. China Nature 2, 51–53.

Dai Y., Xue Y., Hacker C., Zhang Y., Zhang Y., Liu F. & Li D. 2020. Human-carnivore conflicts and mitigation options in Qinghai province, China. Journal for Nature Conservation 53, 125776.

Furtado M. M., Hayashi E. M. K., Allendorf S. D., Coelho C. J., de Almeida Jácomo A. T., Megid J., Ramos Filho J. D., Silveira L., Tôrres N. M. & Ferreira Neto J. S. 2016. Exposure of free-ranging wild carnivores and domestic dogs to canine distemper virus and parvovirus in the cerrado of central Brazil. EcoHealth 13, 549–557.

Gingold G., Yom-Tov Y., Kronfeld-Schor N. & Geffen E. 2009. Effect of guard dogs on the behavior and reproduction of gazelles in cattle enclosures on the Golan Heights. Animal Conservation 12, 155–162.

Han X., Chen H., Dong Z., Xiao L., Zhao X. & Lu Z. 2020. Discovery of first active breeding den of Chinese mountain cat (*Felis bieti*). Zoological Research 41, 341–344.

He L., García-Perea R., Li M. & Wei F. 2004. Distribution and conservation status of the endemic Chinese mountain cat *Felis bieti*. Oryx 38, 55–61.

Hughes J. & Macdonald D. 2013. A review of the interactions between free-roaming domestic dogs and wildlife. Biological Conservation 157, 341–351.

Jenny S. 2012. Guardians of the Plateau: Tibetan Mastiffs and their People. The World of Chinese 2, 46–51.

Lenth B., Knight R. & Brennan M. 2008. The Effects of Dogs on Wildlife Communities. Natural Areas Journal 28, 218–227.

Liao Y. 1988. Some biological information about the desert cat in Qinghai. ACTA Theriologica Sinica, 128–131.

Liu M. 2020. Ecological research on free-ranging tibetan mastiffs and their relationships with local carnivores in Sanjiangyuan area. Doctoral dissertation. Peking University, pp. 31–36.

Luo S., Han S., Song D., Li S., Liu Y., He B., Zhang M. & Yamaguchi N. 2022. *Felis bieti*. The IUCN Red List of Threatened Species 2022: e.T8539A213200674. The IUCN Red List of Threatened Species. Accessed on 22 July 2022.

Messerschmidt A. 1983. The Tibetan Mastiff: Canine Sentinels of the Range. Rangelands 5, 172–174.

Nowell K. & Jackson P. 1996. Wild cats – status survey and conservation action plan. IUCN/SSC Cat Specialist Group. Cambridge, UK, pp. 96–97.

Sanderson J., Yin Y. & Drubgyal D. 2010. Of the only endemic cat species in China. Cat News Special Issue 5, 18–21.

Taborsky M. 1988. Kiwis and dog predation: Observations in Waitangi State Forest. Notoris 35, 197–202.

Webb R., Francis S., Telfer P. & Guillemont A. 2016. Chinese mountain cat and Pallas's cat co-existing on the Tibetan Plateau in Sichuan. Cat News 63, 31–33.

Wu L. & Wang H. 2017. Poisoning the pika: must protection of grasslands be at the expense of biodiversity? Science China Life Sciences 60, 545–547.

Yang L., Cao P., Li Z. & Dang W. 2019. Damage and control of free-ranging dogs in Tibet. Journal of Biology 36, 94–97.

Yin Y. 2008. A Distribution Study of Chinese Mountain Cat (*Felis bieti*) in the West of Sichuan. Doctoral dissertation. Peking University, pp. 38–40.

Yin H., Lu Z., Wang Y., Fan H., Zhong X. & Gengga. Y. 2017. Investigation of the Tibetan Mastiff economic collapse and stray dog issues on the plateau [in Chinese]. Global Human Geography 12, 10.

Young J., Olson K., Reading R., Amgalanbaatar S. & Berger J. 2011. Is Wildlife Going to the Dogs? Impacts of Feral and Free-roaming Dogs on Wildlife Populations. BioScience 61, 125–132.

Yu H., Xing Y., Meng H., He B., Li W., Qi X., Zhao J., Zhuang Y., Xu X., Yamaguchi N., Driscoll C., O'Brien S. & Luo S. 2021. Genomic evidence for the Chinese mountain cat as a wildcat conspecific (*Felis silvestris bieti*) and its introgression to domestic cats. Science Advances 7, eabg0221.

Zheng J. & Cai P. 2007. On Influence of Killing Rodents on Protection of Grassland Species Diversity. Chinese Journal of Wildlife 4, 37–39.

Supporting Online Material SOM Table T1 is available at www.catsg.org.

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Fig. 6. Carcasses of kills made by two free-ranging domestic dogs. From left to right: one skull of Himalayan marmot, four skulls of Asian badgers, one carcass of steppe polecat, and two carcass of Tibetan foxes.

Han et al. 2025. Endemic Chinese mountain cats are threatened by domestic dogs. Cat News 84, 28-31. Supporting Online Material.

Table S1. Sample semi-structured interview questions for local herdsmen in the Gyatong Grassland

Category	Questions
Sociodemographic data	Name, Gender, Age, Education level Occupation, Income source and level Years of residence Type and number of livestock
Chinese mountain cats	Sightings of Chinese mountain cats, including geographical location and habitat characteristics, temporal occurrence (e.g., time and season of sightings), observed behavior patterns Sighting frequency and changing trend Interactions between Chinese mountain cats and domestic cats and dogs Local knowledge and beliefs about the Chinese mountain cat
Domestic dogs	Number of domestic dogs Rearing methods (e.g., chained, free-ranging) Dog abandonment Events of domestic dogs interfering with wildlife
Stray dogs	Number of stray dogs in village Population trend of stray dogs in village in recent years Potential origin of stray dogs Disease and vaccination status of stray dogs Interactions between domestic dogs and stray dogs Events of stray dogs interfering with wildlife Events of stray dogs interfering with livestock Events of stray dogs attacking people
Attitudes and management measures of stray dogs	Attitudes towards stray dogs Involvement in feeding stray dogs and (if so) its frequency Situations when stray dogs should be managed (e.g., attacking people, hunting livestock, stealing food, transmitting disease, hunting wildlife) Desired compensation for damages and losses caused by stray dogs Desired stray dog management measures (e.g., killing, neutering, shelter, adoption) Desired number of stray dogs

Table S2. PCR reaction mixture composition for the genetic analysis

Component	Volume/μL

2×EasyTaq® PCR SuperMix (TransGen Biotech, Beijing, China)	10
Forward primer [0.2 μM]	2
Reverse primer [0.2μM]	2
BSA [0.5 μg/μl]	1
Template DNA	2
Nuclease-Free Water	3
Total	20

Table S3. PCR protocol for the genetic analysis

Step	Temperature	Time	Number of cycles
Initial denaturation	95 °C	15 min	
Denaturation	95 °C	30 s	
Annealing	65-55°C	30 s	down 0.5 °C per cycle
Extension	72 °C	30 s	
Denaturation	95 °C	30 s	
Annealing	55 °C	30 s	32 cycles
Extension	72 °C	30 s	
Final extension	56 °C	30 min	

Table S4. Primers used to sequence 9 nuclear loci and partial *CytB* gene

Locus	Primer name	Sequence 5'-3'	Size /bp	Source
CLU	CLU_f	AAGGGGCTTGCTGACTGG	193	Self designed based on Johnson *et al.*, 2006
	CLU_r	AGAGCAATATAGTGATGGGCCA		
HK1	HK1_f	CGGTTGTATCCTGGTAGCCT	294	Self designed based on Johnson *et al.*, 2006
	HK1_r	CGAGCTCTCTGGTTTCATGC		
RSA2	RSA2_f	TCCGGGTTTTGTTCCATCTT	294	Self designed based on Johnson *et al.*, 2006
	RSA2_r	TGGCCATGCTAAGGGAATAAAG		
GHR	GHR_f	TTAACCTCTGTGGCTGAGCA	658	Self designed based on Johnson *et al.*, 2006
	GHR_r	TTGATCCAGATCTCCTCAAGGT		
DGKG2	DGKG2_f	GGTCGTAGTCCATTCCTTGC	700	Self designed based on Johnson *et al.*, 2006
	DGKG2_r	CAGAAGCAAGGGGTGATGTC		
GATA3	GATA3_f	TCTCTCTAGTGCTGTGAAAACAAA	440	Self designed based on Johnson *et al.*, 2006
	GATA3_r	CGGAAAAGGCTTGCTGAG		
GNB1	GNB1_f	TGCCAGCTGTTAGCGAGTTA	650	Self designed based on Johnson *et al.*, 2006

	GNB1_r	AGGGAGGGCGTCGGTACT		
RAG2	RAG2_f	GATTTATGTCATGTCTGTTGTTGG	430	Self designed based on Johnson *et al.*, 2006
	RAG2_r	CTCCTGGCAATACTGTGCAA		
PLP	PLP_f	TCATCAATGTGTAAGTACCTGTCC	820	Self designed based on Johnson *et al.*, 2006
	PLP_r	GGCATGGATCCTGCATTAAC		
CytB	H15149	AAACTGCAGCCCCTCAGAATGATA TTTGTCCTCA	403	Kocher *et al.*, 1989
	CanidL1	AATGACCAACATTCGAAA		Paxinos *et al.*, 1997

References

Johnson W. E., Eizirik,E., Pecon-Slattery J., Murphy W. J., Antunes A., Teeling E., & O'Brien S. J. 2006. The late Miocene radiation of modern Felidae: a genetic assessment. Science 311, 73–77.

Kocher T. D., Thomas W. K., Meyer A., Edwards S. V., Pääbo S., Villablanca F. X., & Wilson A. C. 1989. Dynamics of mitochondrial DNA evolution in animals: amplification and sequencing with conserved primers. Proceedings of the National Academy of Sciences of the United States of America 86, 6196–6200.

Paxinos E., McIntosh C., Ralls K., & Fleischer R. 1997. A noninvasive method for distinguishing among canid species: amplification and enzyme restriction of DNA from dung. Molecular Ecology 6, 483–486.