

## Editorial Note

Modern snow leopard (*Panthera uncia*) science is relatively young. In the early 1970s, published scientific observations of the species were limited to scattered observations and one of the first global snow leopard distribution maps published in 1972 (Hemmer, 1972). Wild sightings were rarely documented and in 1971 George Schaller's photo of a snow leopard in Pakistan was front-page news of *National Geographic*. The 1980s marked the beginning of long-term field research, including the first intensive ecological studies and early telemetry work in Nepal (Ahlborn & Jackson, 1988; Jackson & Ahlborn, 1989). During the 1990s, the field expanded rapidly and there was a growing call for standardization. New survey methods were developed (including SLIMS protocols), habitat modelling using GIS was introduced, and the importance of local communities in snow leopard conservation became increasingly recognized (McCarthy et al. 2024). During this period, conservationists were realizing that protecting snow leopards wasn't just about data, but also about people co-existing with the species.



**Figure 1.** Photo by Prasenjeet Yadav



**Figure 2.** Global snow leopard meeting held in Seattle in 2002, convening researchers and practitioners, contributing to the Snow Leopard Survival Strategy and the formation of the Snow Leopard Network. (Photo thanks to the Snow Leopard Network.)

The early 2000s marked a shift toward coordination at a global scale and building a snow leopard community. The Snow Leopard Survival Strategy was published in 2003 (McCarthy & Chapron, 2003), alongside the establishment of the Snow Leopard Network, providing a shared platform for collaboration across countries and setting global priorities. It was at this time that technological advances reshaped the field. Camera trapping provided one of the first snow leopard population level assessments (using capture-recapture techniques) in 2006 (Jackson et al. 2006). This opened the door for much better understanding of the status of snow leopards at the population scale. Long-term study sites were established. Satellite GPS collars revealed new insights into movement, home-range size and dispersal, underlining how large areas snow leopard populations require (Johansson et al. 2016). By the 2010s, large-scale camera-trap surveys, genetic tools, and spatial capture-recapture models moved snow leopard research from inference to real understanding of population status (Sharma et al. 2014; Suryawanshi et al. 2021). More recently, initiatives such as PAWS (Population Assessment of the World's Snow Leopards) have enabled national and regional population assessments and strengthened the evidence base for global status evaluations (Sharma et al. 2024). This work continues as the snow leopard community works towards understanding trends and the species' level of vulnerability.

This Snow Leopard Reports Special Issue builds on that trajectory. It brings together twelve country updates.

This Snow Leopard Reports Special Issue builds on that trajectory. It brings together twelve country updates prepared alongside the ongoing snow leopard IUCN Red List and Green Status assessments. While the formal outcomes of those assessments will be published with the IUCN Cat Specialist Group in due course, these papers capture the work that underpins these global efforts.

This Special Issue came into being with a request from the IUCN Cat Specialist Group for an updated global status review, almost ten years after the previous IUCN Red List assessment (McCarthy et al. 2017). An open call for interest in participating or contributing was issued through the Snow Leopard Network in 2024. Lead authors were selected to coordinate each country contribution. In many cases, they worked closely with additional researchers, practitioners, and country government agencies to compile inputs and review evidence. In other countries, government structures took the lead in coordinating national efforts. Across contexts, the approach remained flexible, while strong coordination and country ownership were prioritised. This process has proved rewarding and offering special insights.

Some papers you will read synthesise existing literature and datasets into national overviews. Others present new analyses that add resolution to our understanding of snow leopard distribution, population status, and conservation priorities. A major breakthrough is the scientific community in China coming together to consolidate efforts across the country and provide a standardized national level population estimate that has not been available at this scale until now. Given that over 60% of snow leopard habitat lies within China, this contribution takes on a particular significance. These country level reports also draw upon the PAWS effort, with 6 countries having completed PAWS standardized assessments. All contributions build on earlier work, including the most recent global synthesis of snow leopard biology and conservation (McCarthy & Mallon, 2024), but with a more targeted focus. The result is a set of most recent profiles, developed collaboratively, that are comparable, transparent, and grounded in recent scientific findings.

Across the range, a clearer pattern is beginning to emerge: while knowledge is improving, it is also revealing a more uneven reality. While overall population estimates, particularly in China, represent a significant advance and suggest a broadly positive picture at national scale, in several parts of the range, particularly at the margins and in lower-elevation systems, there is now documented evidence of localised decline or loss, including sites in China reclassified from “possibly extant” to “possibly extinct” and confirmed range contractions in parts of Pakistan and Russia. At the same time, repeated survey efforts in countries such as Mongolia and Bhutan, and parts of Central Asia, are beginning to provide evidence of stable populations in well-protected or actively managed landscapes. However, these areas represent only a portion of the species’ range. In China, 19% of the ‘extant’ snow leopard range falls within protected areas, while in Mongolia 28.1% of predicted distribution is included within the State Protected Areas network (as reported in this volume), with the majority of the species’ distribution occurring outside formal protection in multi-use landscapes. Areas of uncertainty are also being more clearly delineated through improved survey coverage and application of standardized population assessment approaches. Together, this indicates that snow leopard persistence is increasingly associated with connected, well-managed landscapes, while more isolated populations face greater risk.

In several parts of the range, particularly at the margins and in lower-elevation systems, there is now documented evidence of localised decline or loss.

---

Snow leopard conservation today is complex. It extends well beyond ecology alone. It spans governance, infrastructure development, climate change, community livelihoods, and policy. Addressing these challenges requires cooperation across disciplines and institutions, across national frontiers and sustained engagement by governments, NGOs, researchers, and local communities working together. By 2026, the Snow Leopard Network has grown to more than 768 individual members, reflecting both the scale of the challenges ahead and the strength of the community



**Figure 3.** Snow leopard researchers and practitioners gathered in September 2025 in Hustai National Park, Mongolia to discuss the draft country chapters and synthesize evidence on snow leopard status, threats, and conservation priorities across range countries.

responding to them. Differences in perspective are inevitable in a field this diverse, but what matters is the willingness to come together, share evidence, and move forward collectively.

These country updates reflect that spirit. Led by in-country scientists, supported by diverse teams, and informed by a workshop in Mongolia (Figure 3), they bring together many voices and a shared effort. To me, they reflect the kind of collective commitment needed to secure the future of snow leopards across their range. Looking ahead, they also highlight the value of strengthening conservation efforts across borders and bringing organisations together around shared priorities and sustained investment.

This Special Issue took more than a year to prepare and would not have been possible without the many authors, reviewers, government representatives, practitioners, and researchers who contributed their time and expertise. Thank you to everyone who made it possible.

I hope you enjoy reading the Special Issue chapters as much as I did.

**Justine Shanti Alexander, PhD**  
 SLN Steering Committee Member  
 WCS Mongolia

## References

- Ahlbom, G. and Jackson, R.M. (1988) Marking in free-ranging snow leopards in west Nepal: a preliminary assessment. In: Proceedings of the Fifth International Snow Leopard Symposium.
- Hemmer, H. (1972) *Uncia uncia*. Mammalian Species, 20, pp. 1–5.
- Jackson, R.M. and Ahlborn, G. (1989) Home range and movements of snow leopards (*Panthera uncia*) in Nepal. National Geographic Research, 5(2), pp. 161–175.
- Jackson, R.M. (1996) *Home range, movements and habitat use of snow leopard (Uncia uncia) in Nepal*. Unpublished report / dissertation.
- Jackson, R.M., Roe, J.D., Wangchuk, R. and Hunter, D.O. (2006) Estimating snow leopard population abundance using photography and capture–recapture techniques. Wildlife Society Bulletin, 34(3), pp. 772–781.
- McCarthy, T. and Mallon, D. (eds.) (2024) *Snow Leopards*. 2nd edn. Biodiversity of the World: Conservation from Genes to Landscapes. London: Academic Press (Elsevier).
- McCarthy, T.M. and Chapron, G. (2003) *Snow Leopard Survival Strategy*. Seattle, USA: International Snow Leopard Trust and Snow Leopard Network.
- McCarthy, T.M., Mallon, D.P. and Zahler, P. (2024) What is a snow leopard? Biogeography and status overview. In: Mallon, D. and McCarthy, T. (eds.) *Snow Leopards*. 2nd edn. Biodiversity of the World: Conservation from Genes to Landscapes. London: Academic Press, pp. 31–41. <https://doi.org/10.1016/B978-0-323-85775-8.00056-X>
- McCarthy, T.M., Mallon, D.P., Jackson, R., Zahler, P. and McCarthy, K.P. (2017) *Panthera uncia*. The IUCN Red List of Threatened Species 2017: e.T22732A50664030. Available at: <https://dx.doi.org/10.2305/IUCN.UK.2017-2.RLTS.T22732A50664030.en> (Accessed: 13 January 2026).
- Sharma, K., Bayrakschmith, R., Tumursukh, L., Johansson, O., Sevger, P., McCarthy, T. and Mishra, C. (2014) Vigorous dynamics underlie a stable population of the endangered snow leopard *Panthera uncia* in Tost Mountains, South Gobi, Mongolia. PLOS ONE, 9(7), e101319.
- Sharma, K., Alexander, J.S., Durbach, I., Kodi, A.R., Mishra, C., Nichols, J., MacKenzie, D., Ale, S., Lovari, S., Modaqiq, A.W. and Zhi, L. (2024) PAWS: Population Assessment of the World's snow leopards. In: Mallon, D. and McCarthy, T. (eds.) *Snow Leopards*. 2nd edn. London: Academic Press, pp. 437–447.
- Suryawanshi, K.R., Reddy, A.R., Sharma, M., Khanyari, M., Bijoor, A., Rathore, D., Jaggi, H., Khara, A., Malgaonkar, A., Ghoshal, A. and Patel, J. (2021) Estimating snow leopard and prey populations at large spatial scales. Ecological Solutions and Evidence, 2(4), e12115.



Photo by Prasenjeet Yadav