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CONFLICT AND COEXISTENCE: A REVIEW OF HUMAN–SNOW LEOPARD CONSERVATION DYNAMICS IN PAKISTAN

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Abstract

The snow leopard (Panthera uncia) is an ecologically and evolutionarily significant apex predator that plays a vital role in sustaining the balance of Pakistan's high-mountain ecosystems. Nevertheless, its long-term survival is increasingly threatened by habitat fragmentation, declining prey populations, and persistent human–wildlife conflict.

This review critically examines four major conservation strategies implemented in Pakistan: community-based conservation initiatives, predator-proof livestock enclosures, compensation and insurance schemes, and habitat restoration programs. Recent studies reveal both the achievements and shortcomings of these interventions, providing a balanced evaluation of their overall effectiveness. Livestock depredation remains the primary driver of human–snow leopard conflict, often resulting in retaliatory killings that undermine local support for conservation efforts.

Addressing these complex challenges requires adaptive management approaches, participatory governance, and stronger cross-sector collaboration to align conservation goals with local livelihood needs. The review further identifies three critical knowledge gaps: (1) the lack of standardized conflict reporting systems, (2) insufficient and inconsistent monitoring of snow leopard populations, and (3) limited coordination in transboundary conservation planning. Bridging these gaps is essential for informing evidence-based policy and developing sustainable coexistence strategies that protect both snow leopards and the socioeconomic well-being of the mountain communities that share their habitat.

Introduction

One of the most common species found in the central Asian mountain ranges is *Panthera uncia*. It is believed that there are between 4,000 and 65,000 snow leopards in the world (Tom McCarthy, Mallon, & Schwartz, 2023). On the mountain ranges of northern Pakistan, you can find 200–420 snow leopards in the provinces of Gilgit– Baltistan (GB), Khyber Pakhtunkhwa (KPK), and Azad Jammu and Kashmir (AJK). *P. uncia* is classed as Vulnerable (VU) due to a global population above 2,500 individuals, as stated by (Rostro-García, Kamler, Clements, Lynam, & Naing, 2019).

Taxonomy

The snow leopard, known scientifically as *Panthera uncia* Schreber (1776), belongs to the Felidae family and the Pantherinae subfamily. The snow leopard doesn't have that thick pad of fibroelastic tissue in its vocal folds, which means it can't 'roar' like other big cats. Because of this, it used to be categorized in its own separate genus called Uncia. Recent evolutionary analyses place the snow leopard in the genus Panthera, where it is most closely related to the tiger (Panthera tigris), with a divergence period estimated at 2 million years. Two subspecies that are not often recognized were identified by Stroganov (1962). The existence of significant

intraspecific variation in snow leopards may be clarified by further genetic research. Like all Pantherinae, snow leopards have 38 diploid chromosomes, with 36 being the fundamental number. Two acrocentric and seventeen metacentric chromosomes are present. The banding pattern of the karyotype is almost identical to that of other Pantherinae. Snow leopard remains from Altai caves in the upper Pleistocene are the only verified findings in the nearly nonexistent fossil record (Network, 2014).

Common Names

Snow leopard, *ounce* (English); *léopard des neiges* (French); *Schneeleopard*, (German); *pantera de las nieves* (Spanish); *snezhniy bars* (Russian); *xue bao* (Chinese); *palang-i-barfy* (Dari); *bharal he*, *barfani chita* (Hindi, Urdu); *shan* (Ladakhi); *hi un chituwa* (Nepali); *ilbirs*, *akilbirs* (Kyrgyz) *irbis* (Kazakh), *irvis* (Mongolian); *sah*, *sarken* (Tibetan); *chen* (Bhutanese), *pes* (Wakhi), *palang* (Pamiri), *babri barfi* (Tajik).

Distribution

Pakistan possesses the third biggest population of *P. uncia* globally, with the most substantial population being in Gilgit Baltistan (Ale, Shrestha, & Jackson, 2014). The foremost national parks in Gilgit Baltistan are the Central Karakoram National Park (CKNP) and the Khunjerab National Park (KNP). Both National Parks provide suitable habitats for snow leopards. The geographical distribution of the snow leopard can extend to an area of approximately 1,000 square kilometres (Suryawanshi, Khanyari, Sharma, Lkhagvajav, & Mishra, 2019). Many believe that the Karakoram mountain plays a crucial role in preserving the genetic diversity of the snow leopard (Fox, Chundawat, Kachel, Tallian, & Johansson, 2024).

People and animals alike rely on mountain habitats. The *P. uncia* habitat is home to several significant species, including *Betula utilis*, *Cedrus deodara*, *Juniperus communis*, *Picea smithiana*, *Pinus wallichiana*, *Quercus ballot*, and *Taxus baccata*. Approximately 78 distinct varieties of medicinal plants exist. Approximately 80% of the population is engaged in agriculture, with fruits, grains, vegetables,
and fodder being among the most important products cultivated in the region. They play a crucial role in the economy of Gilgit Baltistan.

A fundamental requirement of the local agricultural economy is livestock, which is of paramount importance. According to reports, the number of cattle in Great Britain is 4.56 million, and their survival is contingent upon the availability of alpine pastures (Fatima, Altaf, Nazer, & Abbasi, 2019).

In the alpine and subalpine zones, snow leopards preferred to live on ridges, gullies, cliffs, and rocky outcrops. Nevertheless, *P. uncia* has been found in flat or slightly undulating ground in Mongolia and Tibet, as long as there is enough cover to hide. In China and Russia, they tend to avoid dense woods in favour of more open coniferous ones. P. uncia was typically spotted at elevations of 3000–4500 meters, except in its northern range, when snow leopards were sighted at elevations of 900–2500 meters (Alexander, Zhang, Shi, & Riordan, 2016).

The IUCN (2010) classifies Panthera uncia as a severely endangered species in Pakistan. It is vanishing from several regions of its distribution in Asia (Thomas McCarthy, Mallon, Sanderson, Zahler, & Fisher, 2016). This species is intuitive in mountain ranges and occurs at an altitude of 3000- 4500 m. It was widely distributed in the past with a distribution range of
10.47 million km², but presently its range has been reduced to 3.20 million km² (Thomas McCarthy et al., 2016). In addition to the uplands of central Asian countries,
P. uncia is restricted to the Altay, Tien, Pamir, Shan, Kun Lun, Hindu Kush, Karakoram, and Himalaya ranges. Between 4,000 and 6,500 snow leopards may inhabit its diverse habitat, yet the species' legal status is mostly unknown (Chetri, Odden, Devineau, & Wegge, 2019). The *P.uncia* in Pakistan inhabits relatively arid highland regions, including the Swat, Dir, Kohistan, and Chitral areas
of Khyber Pakhtunkhwa (KPK), as well as the Gilgit Baltistan (GB) sections of the Northern Areas and the Neelam Valley (Buzzard, MaMing, Turghan, Xiong, &

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Zhang, 2017). The northern, remote mountain valleys of the Chitral region also have a very low snow leopard population (Ghosh-Harihar et al., 2019). The snow leopard inhabits a vast territory, extending up to 1,000 square kilometres. The species holds a distinguished position globally and is regarded as a prime example of the remarkable ecosystem of the greater Himalayas (Alexander, Gopalaswamy, Shi, & Riordan, 2015). The natural habitats of Pakistan's *P. uncia* span approximately 80,000 square kilometres, with nearly half of this area deemed optimal for their existence (Din, Hameed, Ali, & Nawaz, 2024). As indicated by, globally, the population of snow leopards exceeds 2,500 individuals, thereby categorizing Panthera uncia as an endangered species. Pakistan boasts the third-largest population of *P. uncia* worldwide, with the most significant concentration of this species located in Gilgit-Baltistan.

Two of GB's most notable national parks are Central Karakoram National Park and Khunjerab National Park. Both parks include potential habitats for the species. It is believed that the snow leopard's genetic variety is helped along by the Karakoram Mountain(Lovari, Kachel, Xueyang, & Ferretti, 2024). (Mahmood et al., 2021) said that just 311 of Asia's 719 terrestrial protected areas still feature this species, whereas 719 did in the past (Mahmood et al., 2021). The snow leopard (*Panthera uncia*; Figure 1) is an iconic endangered species found exclusively in high mountain ecosystems, with a limited distribution across 12 nations in Central and Southern Asia, including Pakistan (Figure 2). The global population of these creatures is decreasing due to factors such as poaching, retaliation, and habitat damage; their numbers range from 2,710 to 3,386 (Li et al., 2020), and climate change (Alexander et al., 2015), The annual poaching of snow leopards has ranged from 221 to 450 instances, or around 4 per week, since 2008. Over 90% of these occurrences take place in only five countries: Pakistan, China, India, Mongolia, and Tajikistan (Din et al., 2022).

FIGURE 1 Snow leopard photo captured at the Khunjerab National Park, Pakistan.

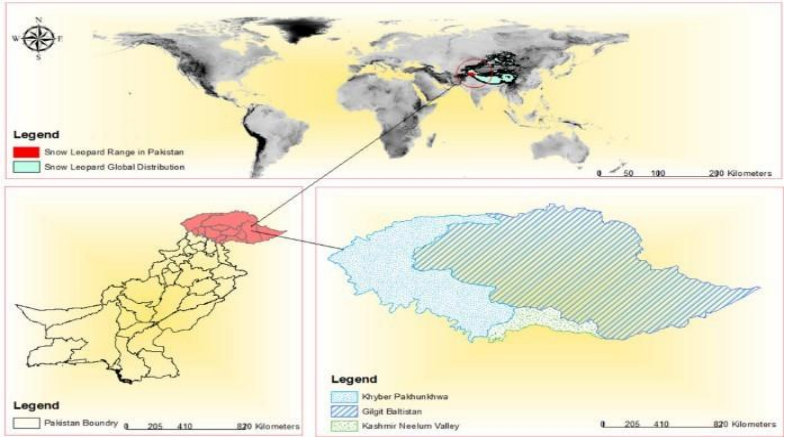


FIGURE 2. Snow leopard distribution range in Pakistan (IUCN).

There are between 200 and 420 snow leopards in Pakistan, but their lives are in greater danger for six main reasons (Kazmi et al., 2021).

(I) Poaching: Over the past seven years, 13 snow leopards have been slain in Khunjerab National Park (KNP) and its surrounding conservancies. Nevertheless, a professional evaluation indicates that the circumstances are far more dire than the reported annual statistics imply (Maheshwari & Niraj, 2018).

(II) Competition for main prey: The increasing population of feral dogs is leading to heightened competition with snow leopards for their primary natural prey, the markhor (*Capra falconeri*). In the past 15 years, feral dogs have resulted in the deaths of 392 markhor within the 77.4 km² expanse of Chitral Gol National Park (CGNP), while data for ibex (*Capra sibirica*) and markhor mortality are not available in other regions (Khattak et al., 2021).

(III) Illegal killing of primary prey: In the habitats of snow leopards in Pakistan, there is a significant incidence of illegal killings of ibex and markhor for their meat. Recently, over 100 ibex were killed for prominent individuals and government officials (Mir, 2020). The population of markhor has decreased from 2,868 in 2019 to fewer than 800 currently due to unregulated hunting practices (Ahmad & Nabi, 2022).

(IV) Trophy Hunting (TH): The current trophy hunting program for snow leopard prey in 2020).

(V) Conflict between humans and snow leopards: The snow leopard is known to prey heavily on domestic livestock (Ahmad, Nabi, Hacker, Strelnikov, & Luan, 2022). In an effort to preserve their way of life, pastoralists kill a large number of snow leopards annually (Ahmad et al., 2022).

(VI) Environmental factors and lack of research: Climate change, habitat loss, fragmentation, and isolation, along with the China-Pakistan Economic Corridor (CPEC), present numerous environmental challenges (Nabi, Ullah, Khan, Ahmad, & Kumar, 2018). Snow leopard conservation is further hindered by the wildlife department's lack of funding and collaboration with research, as well as the research area's inaccessibility and geopolitical sensitivity.

The snow leopard's primary food source, prey animals, are being decimated by feral dogs. A larger and more numerous population of wild dogs is appearing (Kok et al., 2023). Should be managed through castration and sterilization techniques. Community members ought to be informed about effective methods for managing food waste, while municipal and wildlife agencies should collaborate to regulate the population of feral dogs in CGNP and surrounding regions.

As the top "specialist predators," snow leopards are in danger of going hungry if unregulated hunting, poaching, and feral dog populations continue to decimate their primary food source. Poaching and vengeful killings would be exacerbated as a result of snow leopards' increased propensity to hurt cattle.

Given the significant decline in the primary prey, it would be wise for the species to reevaluate the current TH policy. To effectively manage and regulate ibex and markhor hunting, it is essential to implement stringent measures against influential government officials and hunters. Contemporary herders are aware of the endangered status of the snow leopard; yet, they maintain a negative perception of the species due to its predation on sheep. Assistance for pastoralists experiencing financial losses is little or nonexistent. The government is responsible for fully supporting the local populace (T. U. Khan et al., 2025).

1. Conflict between humans and snow leopards

The natural world constitutes an essential element of the biological system

considering the impact of human activities. Conflicts emerge between humans and animals when human activities and needs negatively impact wildlife (Lumetsberger et al., 2017). Snow leopards are compelled to inhabit areas next to human populations, necessitating the search for space and sustenance. The discord between humans and wildlife is increasingly problematic in conservation biology (Farrington et al., 2019). The issue of human-wildlife conflict poses a considerable challenge for management and affects human needs (Naha et al., 2020).

It is understood that human activities can negatively impact carnivore populations through direct persecution. The reduction of prey availability and habitat destruction. Limited carnivorous species demonstrate adaptability and even success in environments modified by human activity, and in certain contexts, carnivores may derive advantages from interspecific interactions (R. K. Sharma, Bhatnagar, & Mishra, 2015).

Carnivore populations can persist in the presence of significant human populations if social resilience is strong, conflicts are managed effectively, and conservation strategies are successfully executed. The snow leopard faces numerous obstacles in its environment and is in danger of going extinct (Li et al., 2020).

The health of biological systems is significantly impacted by large predators, and significant habitat alterations have been associated with carnivore dominance (Janečka et al., 2011). An exponential increase in both human populations and domesticated animals has precipitated the degradation of rangelands and a decline in hoofed animal populations, resulting in heightened mortality rates among carnivores and increased predation on currently under investigation, particularly domestic livestock (Shi, Sun, Song, & Ali, 2025). Consequently, the formidable carnivores exhibited considerable trepidation in response to the actions of humans, which were instigated and financed by human endeavours (Thapa, 2022). The endangered Snow Leopard flourishes in the isolated and challenging altitudes of Southern and Central Asia, situated near a significant population of domesticated animals maintained by the agricultural community below. Over the course of hundreds of years, *P.uncia* has wiped out domesticated animals. Research indicates that 12% of the livestock property crosses the snow leopard's range, which has led to issues for farmed animals. Increased populations of animals and feral prey lead to heightened hunting activity in *Panthera uncia*. However, the geographical and temporal dynamics of predation vary both within rural regions and in neighbouring areas (Suryawanshi, Bhatia, Bhatnagar, Redpath, & Mishra, 2014). Research on dietary practices reveals that the incidence of animal killings ranges from fifteen to seventy percent, influenced by socio-biological factors affecting the types of domesticated animals that are slaughtered (Schofield, 2019). The subtle environment, minimal thickness, limited conveyance, and remote living space render *P. uncia* challenging to study. Furthermore, the existing socio- environmental data predominantly derive from sparse observations throughout its range, largely restricted to protected areas (Network, 2014). Domesticated animals are a significant source of conflict between authorities and residents in the Indian subcontinent, as they cause damage within their territories. Snow leopards are once again being held accountable for their unfortunate fates due to a variety of causes, including infections, incidents, and the consumption of poisonous flora (Raina et al., 2025). Carnivorous species, including the snow leopard, play a significant role in the conflict due to their large home ranges and the requirement to address needs primarily met by humans. The primary threats to snow leopards include illegal trade of body parts, conflicts with local communities, and deficiencies in regulatory frameworks, enforcement capabilities, and awareness regarding their conservation (Carter & Linnell, 2016). Various threats encompass natural disasters, inadequate law enforcement, a decline in prey animal populations, population growth, poverty, urban development, and advancements in hydroelectricity (Gross et al., 2021).

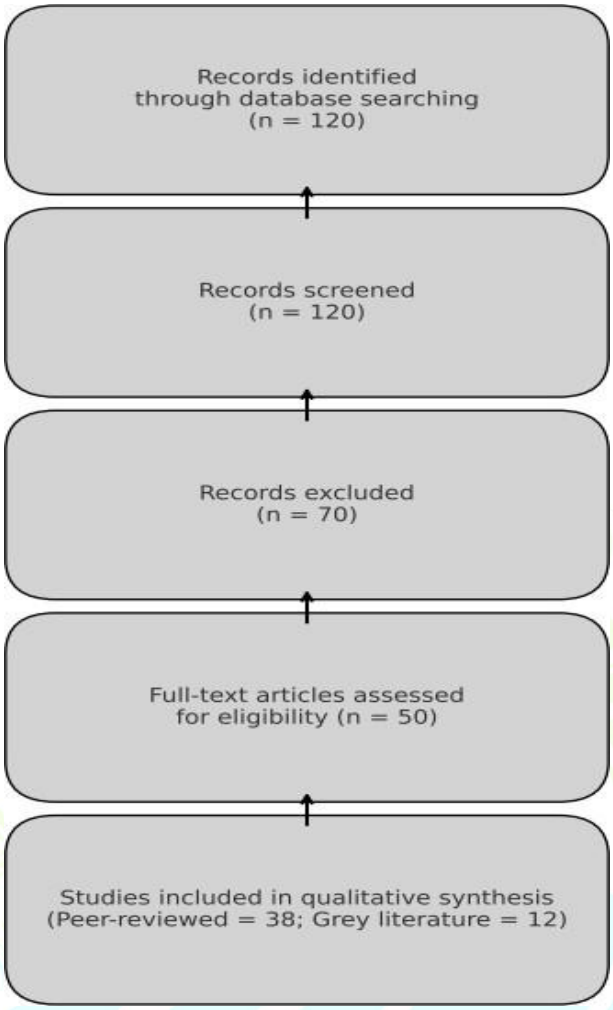
2. Strategies for Conservation

Historically, efforts have been made to restore the *P. uncia* population through the establishment of extensive natural protected

areas. Nonetheless, the success of these initiatives is contingent upon the active participation of the local populace. Strategies that are solely financial yield a minimal return (three percent) in contrast to the significant losses incurred by the *P. uncia* (Kansky & Knight, 2014). In an effort to compensate herders for their diligent efforts and mitigate their dissatisfaction with the P.uncia, the Project Snow Leopard
(PSL), in collaboration with the Baltistan Wildlife Conservation and Development Organization (BWCDO), has initiated the inclusion of local ranchers and Ecotourism enterprises from Gilgit Baltistan into a protective framework (Krafte Holland, Larson, & Powell, 2018). Project Snow Leopard is monitored by both the resident board of trustees and the project administrators. Officials from PSL and the local board of trustees chose the amount to provide to the concerned owners due to the fact that *P. uncia* preyed on Domesticated animals. It may aid in maintaining the safety of snow leopards in the region. Snow leopards are said to reside in the twelve gorges of the Chitral area, which is overseen by the Snow Leopard Trust and the Snow Leopard Information Management System (SLIMS) (Moheb, Fuller, & Zahler, 2023), according to the WWF-P and another *P. uncia* Protection Program. Numerous challenges to these species and their habitats suggest that landscape-level conservation strategies must be grounded in accurate data regarding the survival requirements of the species. The Global Snow Leopard Environmental Protection Program (GSLEP) is an initiative aimed at safeguarding snow leopards and their extensive environment, including twelve nations and supporting one billion individuals. The selection of model scenes for the GSLEP activity necessitates identifying territories that exemplify the primary habitat of the species. This approach allows conservation efforts in the forthcoming decade to concentrate on safeguarding areas that presently sustain or could potentially sustain a larger population of snow leopards. Ongoing mechanical advancements, including molecular approaches and camera trapping, contemplate aggregate solid proximity recordings that can be employed to generate a realistic species distribution based on precise data and advance scientific procedures like MaxEnt.

3. Methods

This narrative synthesis review examined the Pakistani human–snow leopard conflict and mitigating initiatives. We found relevant material by rigorously searching peer-reviewed journals, grey literature, and program reports from 2000 to 2025. We searched Google Scholar, Web of Science, and Scopus for "snow leopard," "Pakistan," "human-wildlife conflict," "livestock depredation," "community
conservation," "insurance," and "habitat restoration". Programmatic evidence not published in academic publications was also examined in conservation organization and government reports (WWF-Pakistan, the Snow Leopard Foundation, the Snow Leopard Trust, and GSLEP).
About 120 sites were found in the first search. 38 peer-reviewed publications and 12 grey literature reports were saved after the abstracts were read and copies were thrown out. These were carefully looked at to learn more about the reasons for conflict, where they happen, how well interventions work, and the effects on policy. Many people talked about how important clear evidence is, how to find knowledge gaps in the area, and how to use third-party data sources to strengthen the evidence.



4. Goals

Human leopard *P. uncia* conflict across Pakistan is both geographically differentiated but essentially homogenic in terms of both its causes and outcomes; almost identical to livestock predation, and the problem that undermines rural livelihoods, and which in response sets in motion the mechanisms of retaliatory killing. Human leopard conflicts are common in the valleys of Khunjerab, Shimshal, Hushe, and Baltistan within the core snow leopard habitat in Gilgit- Baltistan (GB), where high-pressure pastoralism, prey depletion, and sprawl of infrastructure (roads, vehicular traffic, and tourism) promote the risks of prey-domestic-animal conflicts.Such community-based programs, such as predator-proof enclosures on livestock and livestock insurance schemes (which have been tested in Baltistan), have been demonstrated in their effectiveness to reduce livestock depredation and build local

tolerance (M. Z. Khan, Khan, Awan, & Begum, 2018).

In Khyber Pakhtunkhwa (KP), especially in the Chitral, Broghil and Qurumber districts, a co-existence between the snow leopard, ibex and markhor can be noted, but in recent times, the predator has been observed to target livestock. Such a transition may be enhanced by declines in wild food sources and supplementary stressors, at least among ungulate predators, specifically feral dog predation of ungulates. In turn, the present-day local mitigation measures in such contexts include the corrals, community-led insurance programs, and domestic livestock vaccination. (Nawaz et al., 2025).

The distribution of snow leopard (Panthera uncia) populations in Azad Jammu & Kashmir (AJK) is known to be highly patchy currently, with the population mostly confined to high Himalayan valleys, especially Shounter and upper Neelum. These areas undergo the seasonal transhumance with livestock, which often occurs at night with attacks on the corrals which predators, mostly snow leopards, take part. In recent conservation efforts in AJK, attempts have been made to incorporate predator-proofing structures and new insurance models into these marginal lands to not only solve the human-wildlife conflict but also create a conservation disincentive to mountain communities (K. Sharma et al., 2024).

Baluchistan is also a highly dissimilar region compared to the other analyzed areas. As compared to these regions, no presence of snow leopards has been confirmed in Baluchistan; predator-prey interactions recorded in the province refer to common leopard (*Panthera pardus*) or sheep-eating wolf (*Canis lupus*) and not to snow leopards (Ullah et al., 2024).

In Pakistan, snow leopards occupy 80,000 km², with the source of human- wildlife conflict being attributable to a combination of alpine pastures used by livestock on which snow leopards and people compete, shrinking wild prey populations, and encroaching infrastructure. As empirical studies show, the combined methods of mitigation, that is, predator-proof corrals, insurance, vaccination schemes, and specific protection of susceptible animals, are the most efficient in the decrease of depredation and sustainable coexistence (Nawaz et al., 2025).

5. Interventions

Efforts to mitigate human–snow leopard conflict in Pakistan have centred on four key interventions, each with notable successes and limitations.

i. Community-based conservation initiatives: Programs enacted in Gilgit- Baltistan and Chitral have been proven to increase local ownership, awareness of environmental sensitivity and the reduction of retributive homicides. These programs provide material gains that have been pegged on conservation, therefore, allowing communities to have direct access to economic gains via ecotourism and trophy-hunting ventures. However, such measures are extremely reliant on external funding and, to some extent, have issues of long-term viability once international funding is removed (Bari et al., 2022).

ii. Predator-proof livestock enclosures: Wild carnivore predation on nights in the corrals poses a continuous source of risk to livestock production, notably in high-altitude settings, but adoption of visible-light-based repellents, whose effectiveness has been proven, has failed to gain large-scale acceptance, owing to high implementation costs and logistical limitations that and hamper large-scale rollout (Rashid, Shi, ur Rahim, et al., 2020).

iii. Compensation and insurance programs: Community-based wildlife management projects, initiated in Baltistan and further spread by Snow Leopard Foundation, have shown the potential to mitigate economic losses suffered as a result of livestock predation and to create an element of intercommunal tolerance. They can only be as effective as they have transparent processes of verification, continued funding, and strong communal faith; their credibility can be undermined significantly by time-wasting or controversy over the arising of claims (Koju, Bashyal, Buzzard, Shrestha, & Beisch, 2024).

iv. Habitat restoration programs: Recent efforts to limit poaching of prey species, control grazing management plans, and restore degraded alpine rangelands cannot be underestimated in reducing snow leopard's reliance on domestic livestock, but can only be profitable when enforcement is steady and when transnational landscapes are managed in a concerted manner. The drawn-out aspects of prey recovery become a further challenge, since the ecological resilience of the wild ungulate

population is slow in nature (WWF-Pakistan, 2024; GSLEP Pakistan, 2024). Evidence in a set of interventions shows that one singular Rather, a comprehensive program that incorporates infrastructure to protect the livestock, economic safety nets, a sense of belonging in the communities, along with a viable long-term habitat restoration, is the most promising theme to help mitigate conflict and ensure coexistence between the pastoral communities and the snow leopards in Pakistan.

6. Critical Gaps

Although there have been tangible efforts to address the challenges of human- snow leopard conflict in Pakistan, there still exist several important research gaps. First of all, most of the studies are limited to Gilgit-Baltistan and Chitral only, and there is hardly any information was gathered in Azad Jammu and Kashmir, and no information was reported in Balochistan. Second, the effectiveness of long-term programs, estimation of cost-effectiveness at the spatial and socioeconomic level, is rarely carried out; also, social equity is evaluated regarding the marginalized population to a limited extent. Third, the role of mega-infra-structure operations, prey population decline, and lack of enforcement of the conflict patterns has not been thoroughly studied (Nawaz et al., 2025). To address the weaknesses discussed so far, policy-makers should create a national conflict observatory to report on incidents systematically, fund independent impact assessments on mitigation tools, and sustainably develop compensation and insurance programs. Combining the practices of predator-proofing and the enhancement of herding strategies into the vocabulary of summer pasture utilization, along with the focused efforts in livestock vaccination and professional programs on systematized prey recovery, is essential to the improvement of predator-livestock coexistence in Pakistan. At the same time, it is paramount to introduce wildlife-focused intervention does not work in isolation.

planning of the infrastructure in sensitive mountain corridors to protect snow leopard movements and resource use. When taken together, these components represent what is known as a holistic approach to so-called evidence-based policy making and enhancing the long- term co-existence between snow leopards and the pastoral communities in the area (Shah, Karim, Bhatti, & Kumar, 2024).

7. Conclusion

To coexist peacefully with snow leopards, local populations must be given more power and assistance in developing stronger, more environmentally friendly links with their surroundings, where Panthera uncia is viewed as a valuable asset rather than a nuisance to be eliminated.

8. Recommendations

1. Conservation initiatives require precise information on species and their habitats. Wildlife habitats are essentially areas where animals may find water, food, and space to wander. So it's critical to understand the Snow leopard's nutritional context.
2. Society's conservation initiatives for *P.uncia*, its prey, and its habitats must be enduring and accountable to the environment, finances, and the community.

From the start of protection applications, everyone who contributes, regardless of age, gender, or position, is attempting to help, which improves tactics and ensures environmental responsibility.

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