



WILDLIFE OF NORTHERN PAKISTAN

Gilgit-Baltistan & Chitral

Biodiversity · Endangered Species · Protected Areas · Threats

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Glossary

Abbreviations

Term	Meaning
GB	Gilgit-Baltistan
KPK / KP	Khyber Pakhtunkhwa Province
NP	National Park
CCHA	Community-Controlled Hunting Area
VCC	Village Conservation Committee
IUCN	International Union for Conservation of Nature
WWF	World Wide Fund for Nature
SLF	Snow Leopard Foundation
MoCC	Ministry of Climate Change (Pakistan)
UNDP	United Nations Development Programme
SMART Patrol	Spatial Monitoring and Reporting Tool used for anti-poaching monitoring
EBA	Endemic Bird Area
CPEC	China-Pakistan Economic Corridor
GLOF	Glacial Lake Outburst Flood
PKR	Pakistani Rupee
USD	United States Dollar
ha	Hectare (10,000 m ²)
km²	Square Kilometer

Ecological / Conservation Terms

Term	Definition
Endemic Species	A species found naturally only in a specific geographic area.
Flagship Species	A species is used to represent and promote the conservation of a broader ecosystem.
Biodiversity Hotspot	A region with exceptionally high biodiversity and high levels of endemism that is under significant threat.
Ungulates	Hoofed mammals such as ibex, sheep, and deer.
Depredation	Livestock losses caused by predator attacks.
Retaliatory Killing	Killing of wildlife by humans in response to livestock loss or perceived threats.
Extirpation	Local extinction of a species from a particular area, while it survives elsewhere.
Transboundary Conservation	Conservation efforts that involve multiple countries sharing ecosystems or wildlife populations.
Population Recovery	Increase in species numbers due to conservation efforts or improved habitat conditions.
Protected Area	A geographically defined area designated for the conservation of nature and biodiversity.

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Executive Summary

Northern Pakistan contains some of the most ecologically significant mountain ecosystems on Earth. The region encompassing Gilgit-Baltistan and Chitral lies at the convergence of four major mountain systems, the Karakoram, Himalaya, Hindu Kush, and Pamir, creating exceptional environmental gradients and habitats that support rare and globally threatened wildlife. This report compiles current data on vertebrate biodiversity, endangered species, protected areas, conservation programs, and major threats affecting wildlife in these regions. Drawing from government wildlife surveys, international conservation organizations, peer-reviewed scientific research, and community monitoring programs, the document aims to provide a concise but evidence-based overview of biodiversity status and conservation priorities.

Particular attention is given to flagship and threatened species such as the Snow Leopard (*Panthera uncia*), Himalayan Brown Bear (*Ursus arctos isabellinus*), Markhor (*Capra falconeri*), and Himalayan Musk Deer (*Moschus cupreus*). These species not only represent ecological indicators of mountain ecosystem health but also play an important role in conservation awareness and community-based wildlife management programs. The report also highlights the success of community-based conservation initiatives such as the Community-Controlled Hunting Areas (CCHA) program, which has demonstrated how local participation and economic incentives can contribute to wildlife recovery.

At the same time, the region faces increasing pressure from climate change, habitat fragmentation, infrastructure development, and human-wildlife conflict. Understanding these pressures and the current status of key wildlife populations is essential for designing effective conservation policies and ensuring the long-term survival of these unique ecosystems.

459

Total Vertebrate Species (GB)

Mammals, Birds, Reptiles, Amphibians, Fish

200–420

Snow Leopards in Pakistan

4th largest population globally; GB hosts >60%

5,500+

Markhor (2023)

Recovery: 2,500 (1994) → 5,500+ — 120% increase

1.8M ha

Total Protected Area (GB NPs)

5 national parks; >33% of GB is legally protected

63+

CCHAs in Gilgit-Baltistan

388+

GLOF Events Documented

1. Overview of Biodiversity

1.1 Species Richness —Gilgit-Baltistan

Based on data from WWF-Pakistan and the Forest & Wildlife Department, Gilgit-Baltistan (2024), the region supports the following documented vertebrate diversity:

Taxonomic Group	Species Count	Key Notes
Mammals	54	Includes 6 species endemic to Pakistan
Birds	362	200 Passeriformes; ~100 resident, ~120 passage migrants
Reptiles & Amphibians	23	Includes endemic species; studies ongoing
Fish (Freshwater)	20	Cold-water specialists; Snow Trout; Indus tributaries
Total Vertebrates	459	Excluding invertebrates, invertebrate diversity under documented

1.2 Chitral Gol National Park — Species Diversity

Chitral Gol National Park (CGNP) is Pakistan's most intensively studied protected area in the north, with the following documented species:

Category	Count / Detail
Birds	173 species across 37 families
Small Mammals	15 species
Amphibians	3 species
Flagship Species	Kashmir Markhor (<i>Capra falconeri cashmiriensis</i>), Snow Leopard
Notable First	First record of Asiatic, White-toothed Shrew (<i>Crocidura pullata</i>) in Pakistan
Bird Area Status	Western Himalayan Endemic Bird Area (EBA)

Source: WWF-Pakistan Management Plan for Chitral Gol National Park

1.3 Geographic & Ecological Context

Attribute	Detail
GB Area	72,971 km² — Pakistan's largest administrative unit by area
Elevation Range	500 m (valley floors) to 8,611 m (K2, world's 2nd highest peak)
Mountain Ranges	Karakoram, Western Himalayas, Hindu Kush, and Pamir — all converge here
Glaciers	>7,000 glaciers; one of the largest non-polar glacier concentrations on Earth
Forest Cover	~2,492 km² natural forest (3.4% of land area); heavily fragmented
Climate Zones	Alpine tundra, subalpine scrub, temperate forest, semi-arid valley floors
Chitral District	~14,850 km²; Khyber Pakhtunkhwa; borders Afghanistan; Hindu Kush dominated
Biodiversity Hotspot	Falls within the Himalayan Hotspot — 1 of 36 globally recognized hotspots

1.4 Why This Region Matters for Pakistan

- GB and Chitral host >60% of Pakistan's entire snow leopard population — a species ranked Vulnerable globally.
- The region falls within the Himalayan Biodiversity Hotspot (1 of 36 globally recognized hotspots).
- The Indus River Flyway (4th International Migratory Bird Route) passes through, providing critical staging habitat for hundreds of migratory species.
- Chitral Gol National Park hosts the world's largest confirmed population of Kashmir Markhor.
- Deosai National Park holds the largest and most stable population of Himalayan brown bear in Asia.
- The region borders China and Afghanistan, enabling cross-border wildlife movement vital to genetic diversity.
- Two mammal species are endemic to Pakistan, with their core ranges in GB.

2. Endangered and Threatened Species

Population estimates are drawn from government annual surveys, Snow Leopard Trust (2025), IUCN Red List (2024), and peer-reviewed literature. Where ranges are given, they reflect study uncertainty rather than population fluctuation.

2.1 Key Species with Population Estimates

Species	Scientific Name	Est. Population	IUCN Status	Pakistan Status
Snow Leopard	Panthera uncia	200–420 (Pakistan)	Vulnerable	Vulnerable nationally

Species	Scientific Name	Est. Population	IUCN Status	Pakistan Status
Himalayan Brown Bear	Ursus arctos isabellinus	~150 (Pakistan)	Least Concern	Critically Endangered
Markhor	Capra falconeri	5,500+ (Pakistan)	Near Threatened	Near Threatened
Himalayan Ibex	Capra sibirica	7,294 (GB, 2024-25)	Least Concern	Least Concern
Blue Sheep (Bharal)	Pseudois nayaur	1,785 (GB, 2024-25)	Least Concern	Endangered
Ladakh Urial	Ovis vignei vignei	151 (GB, 2022-23)	Vulnerable	Endangered
Himalayan Musk Deer	Moschus cupreus	~300 (GB)	Endangered	Critically Endangered
Marco Polo Sheep	Ovis ammon polii	40–150 (seasonal)	Near Threatened	Endangered
Himalayan Black Bear	Ursus thibetanus	Part of 1,000–1,500 Pk	Vulnerable	Endangered
Woolly Flying Squirrel	Eupetaurus cinereus	Extremely rare	Endangered	Endangered
Snow Trout (sp.)	Schizothorax spp.	Declining	Data Deficient	Vulnerable

Source: Snow Leopard Trust (2025); Forest & Wildlife Department GB (2024); IUCN Red List (2024)

2.2 Snow Leopard (Panthera uncia) Detailed Profile

Global Context: Pakistan's snow leopard population is the 4th largest globally, ranking alongside India for 3rd/4th place. The global population is estimated at 4,500–7,000 individuals (IUCN, 2024).

Parameter	Data
Global Population	4,500–7,000 individuals (IUCN 2024)
Pakistan Estimate	200–420 individuals (Snow Leopard Trust, 2025)
GB Share	>60% of Pakistan's population
Karakoram Range	~103 individuals
Hindu Kush Range	~45 individuals
Himalayan Range	~38 individuals
Pamir Range	~25 individuals
Pakistan's Global Rank	4th (tied with India); ~10% of global population
Key Protected Habitats	Khunjerab NP, Central Karakoram NP
Primary Threats	Retaliatory killing, poaching, prey depletion, habitat loss, and climate change

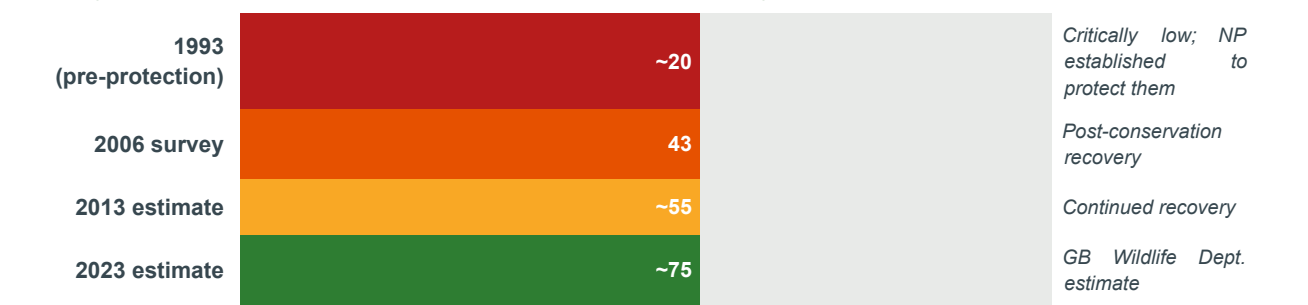
Parameter	Data
Conservation Program	Snow Leopard Foundation (SLF) 40,000 households engaged

2.3 Himalayan Brown Bear (*Ursus arctos isabellinus*) Detailed Profile

Status Paradox: Though listed as Least Concern globally, the Himalayan brown bear is Critically Endangered in Pakistan, with fewer than 150 individuals surviving in isolated sub-populations.

Parameter	Data
Pakistan Population	~150 individuals (Nawaz, 2008; updated GB Wildlife Dept. 2022)
Primary Sub-population	Deosai National Park — the largest and most stable
Secondary Populations	Minimergh, Nanga Parbat area, Central Karakoram NP, Khunjerab NP
Deosai Population Trend	Recovered from ~20 (1993) to 43 (2006) to ~75 (est. 2023)
IUCN Global Status	Least Concern (sub-species isabellinus listed separately)
Pakistan National Status	Critically Endangered
Primary Threats	Livestock competition, poaching for fat/pelt, habitat degradation, and climate change
Conservation Note	Deosai NP was established in 1993 specifically to protect this species

Himalayan Brown Bear — Deosai NP Population Recovery



2.4 Markhor (*Capra falconeri*) — Pakistan's Conservation Success Story

120% Population Recovery: The Markhor is Pakistan's national animal and its conservation represents one of the most successful community-driven wildlife recovery programs globally. The IUCN downlisted it from Critically Endangered (1994) to Near Threatened (2015).

Parameter	Data
Total Pakistan Population	5,500+ (2023) — up from 2,500 in 1994; 120% recovery
Astore Markhor (GB)	1,463 individuals across GB (survey data 2024)
Suleiman Markhor	2,540 individuals (Balochistan)
Kabul Markhor	Present in Chitral and upper KPK
Chitral Gol NP Population	Progressive increase confirmed by successive surveys
Economic Revenue (1990+)	USD 5+ million generated from trophy hunting since 1990
IUCN Status Change	Critically Endangered (1994) → Near Threatened (2015)
Primary Driver of Recovery	Community-Controlled Hunting Areas (CCHA) program

Pakistan Markhor Population Recovery (1994–2023)

1994 (baseline)	2,500	Critically Endangered — IUCN 1994
2004 (estimate)	3,500	CCHA program gaining momentum
2014 (estimate)	4,500	Near Threatened reclassification 2015
2023 (survey)	5,500+	120% recovery over 30 years

Markhor Sub-species — Pakistan Population Distribution (2024)

Suleiman Markhor (Balochistan)	2,540	Largest sub-population; Torghar Conservation Project
Kabul/Flare-horned (Chitral/KPK)	~1,497	Chitral Gol NP + KPK valleys; upward trend
Astore Markhor (GB)	1,463	15 CCHAs surveyed across Gilgit-Baltistan 2024

Source: GB Forest, Parks & Wildlife Department (2024); IUCN Red List (2015, 2024)

2.5 Musk Deer (Moschus cupreus) — Critically Endangered in Pakistan

Parameter	Data
GB Population Estimate	~300 individuals (Fakhar-i-Abbas et al., 2015)

Parameter	Data
Priority Area — Dumot	~100 individuals (highest concentration)
Randu / Jutial / Jagot	40–60 individuals each
Former Strongholds	Astor, Harmosh, Drosh — now <25 each; severely depleted
IUCN Global Status	Endangered
Pakistan Status	Critically Endangered
Primary Threat	Poaching for musk pods (used in traditional medicine and perfumery)
Habitat Requirement	Dense forest with >20% cover; affected by deforestation

Source: Fakhar-i-Abbas et al. (2015), *Journal of Bioresource Management*

2.6 Ladakh Urial (*Ovis vignei vignei*) — Declining

Parameter	Data
GB Population	151 individuals (GB Wildlife Dept., 2022-23 survey)
Range	Restricted to Ladakh (India) and Gilgit-Baltistan (Pakistan) only
Confirmed Killings	70 illegal killings documented, 2000–2013
Local Extirpations	Extirpated from 6 localities in the past decade
Threats	Illegal hunting (primary), habitat degradation, livestock competition
IUCN Status	Vulnerable
Pakistan Status	Endangered

2.7 Marco Polo Sheep (*Ovis ammon polii*) — Seasonal Visitor

Parameter	Data
Current Visiting Population	40–150 individuals (seasonal migrants from China)
Historical Population	~300 (1974) → ~20 (1988) → 40–150 (current)
Primary Location	Khunjerab National Park corridor
Key Threat	Pakistan-China border fencing blocks migration routes
Additional Threats	Karakoram Highway disturbance, dietary competition with livestock
IUCN Status	Near Threatened
Pakistan Status	Endangered; dependent on transboundary management
Conservation Need	Formal transboundary agreement with China for Pamir corridor

Current Population — All Key Species at a Glance

Current Population Estimates — Key Wildlife Species, Northern Pakistan (2024)

Himalayan Ibex (GB)	7,294	2024-25 CCHA survey; +32% from previous year
Markhor (Pakistan)	5,500+	All sub-species combined; national total 2023
Blue Sheep (GB)	1,785	2024-25 CCHA survey; +35% from previous year
Ladakh Urial (GB)	151	2022-23 official survey; Endangered (Pk.)
Musk Deer (GB)	~300	Estimate; Critically Endangered in Pakistan
Brown Bear (Pakistan)	~150	All sub-populations; Critically Endangered
Snow Leopard (Pakistan)	200–420	SCR estimate mid-point; 4th globally
Marco Polo Sheep (visiting)	40–150	Seasonal migrants from China; mid-range est.

Source: GB Forest, Parks & Wildlife Department (2024-25); Snow Leopard Trust (2025); Fakhar-i-Abbas et al. (2015)

3. Protected Areas and Conservation Efforts

3.1 National Parks — Gilgit-Baltistan

As of 2024, Gilgit-Baltistan has 5 formal national parks gazetted under IUCN Category II management. Combined, they protect approximately 1,798,388 hectares.

National Park	Est.	Area (ha)	Key Species	IUCN Cat.
Central Karakoram NP	1993	973,845	Snow leopard, Marco Polo sheep, Ibex, Markhor	II
Deosai National Park	1993	358,400	Himalayan brown bear, Snow leopard, Wolf, Blue sheep	II

National Park		Est.	Area (ha)	Key Species	IUCN Cat.
Khunjerab National Park	National	1975	227,143	Marco Polo sheep, Snow leopard, Blue sheep, Brown bear	II
Hundarap-Shandoor NP		1993	165,000	Ibex, Snow leopard, Marmot, Wetland birds	II
Qurumber National Park	National	2011	74,000	Snow leopard, Markhor, Ibex	II
TOTAL		—	1,798,388	—	—

Source: Forest, Parks & Wildlife Department, Gilgit-Baltistan (2024)

3.2 Chitral Gol National Park (KPK)

Attribute	Details
Established	1984 (previously Wildlife Sanctuary since 1971)
Total Area	7,750 hectares
Location	Chitral District, Khyber Pakhtunkhwa
Flagship Species	Kashmir Markhor (largest confirmed global population), Snow Leopard
Bird Status	173 species; 37 families; Western Himalayan Endemic Bird Area
Small Mammals	15 species documented
Core Zone VCCs	12 Village Conservation Committees
Buffer Zone VCCs	3 Village Conservation Committees
Key Achievements	Markhor population on upward trajectory; Snow leopard confirmed by camera traps and radio collaring

3.3 Community-Controlled Hunting Areas (CCHAs)

The CCHA program in Gilgit-Baltistan is internationally recognized as a model for community-based wildlife conservation. Revenue from international trophy hunting licenses is channeled directly to local communities.

Metric	Statistics
Number of CCHAs (2024)	63+ (active and operational)
Trophy Species	Himalayan ibex, Blue sheep, Markhor

Metric		Statistics
Potential Harvest (2024-25)		146 ibex, 36 blue sheep (calculated at 2% sustainable harvest rule)
Community Revenue Share		80% of trophy hunting revenue returned to local communities
Total Beneficiaries		400,000+ rural villagers across 65+ villages
Cumulative Revenue (since 1990)		USD 5+ million
Annual Trophy Hunt Revenue (2023)		PKR 210 million (government reported)
Himalayan Ibex Count (2024-25)		7,294 — a 32% increase from 5,511 in 2023-24
Blue Sheep Count (2024-25)		1,785 — a 35% increase from 1,322 in 2023-24
Markhor Trophy Permit (Jutial)	USD 131,000–136,000	International quota: per permit issued
Himalayan Ibex Permit Fee	USD 6,000–9,000	Per permit, varies by CCHA location
Blue Sheep Permit Fee	USD 3,500–5,000	Per permit, varies by CCHA location
Potential Ibex Harvest 2024-25	146 animals max.	2% sustainable harvest rule applied to 7,294 count
Potential Blue Sheep Harvest	36 animals max.	2% sustainable harvest rule applied to 1,785 count

Source: Forest, Parks & Wildlife Department, GB Annual Survey Report (2024-25)

CCHA Wildlife Population Change (2023-24 vs 2024-25 Survey)

Ibex — 2023-24	5,511	Baseline year
Ibex — 2024-25	7,294	+32% increase
Blue Sheep — 2023-24	1,322	Baseline year
Blue Sheep — 2024-25	1,785	+35% increase

Source: GB Forest, Parks & Wildlife Department (2024-25 Annual Survey)

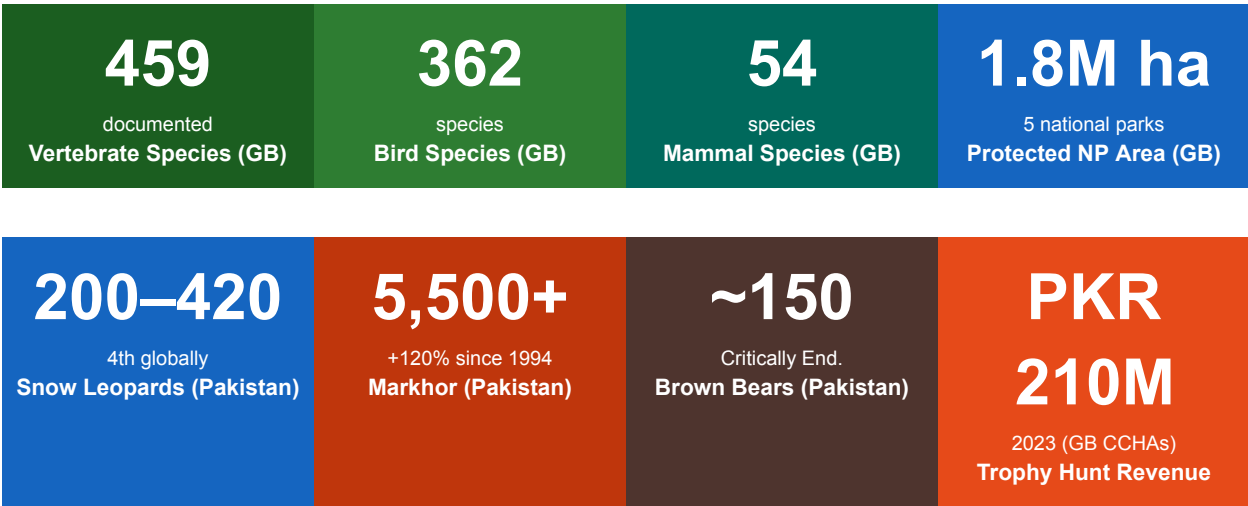
3.4 Key Conservation Organizations

Organization	Focus Area	Key Activities
Snow Leopard Foundation (SLF)	Snow leopard & research community conservation	Camera-trapping, genetic studies, livestock insurance; 40,000 households engaged in GB & Chitral
WWF-Pakistan	Multi-species; GB & Chitral	SMART patrolling, Chitral Gol NP management support, wildlife surveys, HWC mitigation

Organization	Focus Area	Key Activities
IUCN Pakistan	Policy, Red List, protected areas	Red List assessments for Pakistani species, PA management planning, conservation law
GB Forest, Parks & Wildlife Dept	62 protected areas in GB	Annual surveys, CCHA licensing, anti-poaching, brown bear monitoring
KPK Wildlife Department	Chitral Gol & Broghil NP	Park management, VCC coordination, markhor protection
UNDP / MoCC Pakistan	National conservation programs	Silk Route Eco-Tourism, Ten Billion Tree Tsunami, GLOF mitigation projects

4. Statistical Data and Population Trends

4.1 Wildlife Statistics — Key Figures at a Glance



4.2 Population Trends (Estimated, 1994–2024)

Species	1994	2004	2014	2024	30-Year Trend
Markhor (Pakistan)	2,500	3,500	4,500	5,500+	+120%
Himalayan Ibex (GB CCHAs)	4,000	4,500	5,000	7,294	+82%
Blue Sheep (GB CCHAs)	~800	~1,000	~1,200	1,785	+123%
Snow Leopard (Pakistan)	~300	~280	~250	200–420	Stable/Variable

Species			1994	2004	2014	2024	30-Year Trend
Marco Polo Sheep (visiting)			~20	~35	~50	40–150	+Variable
Brown Bear (Deosai NP)			~20	~43	~55	~75	+275% (Deosai)

Source: Estimated figures based on GB Wildlife Dept. surveys, Snow Leopard Trust, WWF-Pakistan (2024)

4.3 Protected Area Size Comparison

National Park Area — Gilgit-Baltistan (hectares)

Central Karakoram NP	973,845 ha	Largest NP in Pakistan
Deosai NP	358,400 ha	Brown bear stronghold
Khunjerab NP	227,143 ha	Pakistan's first NP (1975)
Hundarap-Shandoor NP	165,000 ha	Ungulate habitat
Qurumber NP	74,000 ha	Northwest frontier

Source: Forest, Parks & Wildlife Department, GB (2024)

4.4 IUCN Status Distribution — Key Northern Pakistan Species

Species by IUCN Threat Category (Northern Pakistan)

Critically End. (Pk.)	3 species	Brown Bear, Musk Deer, Snow Leopard (Pk. national status)
Endangered	5 species	Ladakh Urial, Marco Polo, Black Bear, Flying Squirrel, Snow Trout
Vulnerable	3 species	Snow Leopard, Ibex (IUCN), Urial (IUCN)
Near Threatened	2 species	Markhor, Marco Polo Sheep (IUCN)
Least Concern	3 species	Blue Sheep, Brown Bear (global), Ibex (Pk.)

5. Major Threats to Wildlife

5.1 Threat Assessment Matrix

Threat	Severity	Primary Affected Species	Geographic Focus	Urgency
Poaching	85%	All ungulates, predators	Region-wide	Critical
Human-Wildlife Conflict	80%	Snow leopard, Brown bear, Wolf	All valleys	Critical
Habitat Destruction	75%	All species; musk deer esp. affected	Urban peripheries	High
Climate Change	70%	Snow-dependent species, riparian habitats	High altitudes	High
Livestock Competition	65%	Ungulates, Brown bear, Ibex	Grazing zones	High
Infrastructure (CPEC/Roads)	60%	Marco Polo sheep, Snow leopard	Khunjerab, KKH corridor	High
Tourism Pressure	50%	Brown bear, Markhor, migratory birds	NP boundaries	Moderate
Invasive Species/Feral Dogs	45%	Markhor, ground-nesting birds	Chitral Gol, village edges	Moderate

Source: GB Wildlife Dept., Conservation Biology Journal (2023); Cambridge University Press (2026)

5.2 Human-Wildlife Conflict — Detailed Statistics

Livestock Depredation (Hushey Valley, 2008-2012 study)

Metric	Data
Households affected	90% of 130 surveyed households in study area
Annual loss per household	0.8 animals per household per year on average
Snow leopard (% of attacks)	60% — 223 confirmed incidents
Wolf (% of attacks)	37% — 140 confirmed incidents
Unknown predator	3% — 12 incidents
Economic impact per household	PKR 9,853 (~USD 101) per year
Relative income impact	Equivalent to ~10% of mean annual household income

Regional Livestock Loss (2018 Data)

Valley	Animals Lost	Total Economic Loss (PKR)	Avg. Loss per Household (PKR)
Shimshal Valley	233 animals	PKR 8,017,000	PKR 100,213
Khunjerab Valley	125 animals	PKR 3,602,000	PKR 33,981

Source: Conservation Biology Journal (2023); Cambridge University Press, Oryx Journal (2026)

5.3 Retaliatory Killing — Snow Leopard

Metric	Data
Confirmed snow leopard killings	13 documented cases (2011–2018)
Estimated unreported killings	Likely higher; remote areas with limited monitoring
Primary trigger	Livestock depredation events
Community response (survey)	64% prefer reporting to Village Conservation Committees (VCCs) for compensation
Attempted retaliatory killing	Only 1% of affected herders reported attempting to kill predators
Conservation implication	VCC compensation programs are highly effective at reducing retaliatory killing

5.4 Climate Change — Key Indicators

Climate Impact	Affected Species / Systems
Upward snowline migration	Snow leopard, Himalayan ibex, Marco Polo sheep — shrinking habitat
Glacier retreat (7,000+ glaciers)	Water-dependent species, riparian ecosystems, valley communities
Vegetation zone upward shift	All herbivores; reduced alpine pasture quality
GLOF events (388+ documented)	Riparian ecosystems, fish populations, valley habitats
Extreme weather events	Migratory birds (timing disruption), breeding success of all species
Increased livestock pressure	As pastoralists shift to higher altitudes, wildlife habitat shrinks
Snow cover reduction	Musk deer (less cover); prey species more vulnerable to predation

6. Data Sources and References

Primary Government Sources

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- KPK Wildlife Department — Chitral Gol National Park Management Plans and VCC Reports

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