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Conservation Strategies for Markhor in Jammu and Kashmir with special reference to Kaj – I – Nag National Park

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Abstract:

The purpose of this study was to determine the dangers to Markhor in Kaj – I – Nag National Park, with a particular focus on determining the stresses and factors that contribute to Markhor's discomfort during their stay in the locations. Interactions with local residents, security authorities, and gujjars and bakarwals, shepherds grazing their sheep in protected regions, revealed the causes. A concerted effort was made to resolve the challenges confronting enforcement agencies charged with the conservation of the Markhor. Following thorough study, necessary suggestions were made. The relevant authorities may begin the suggestions to conserve this natural asset.

Introduction:

The markhor (*Capra falconeri falconeri*) is one of the biggest and most majestic members of the Caprinae or goat family and is designated as Pakistan's official "National Animal." It features the family's most magnificent horns, with enormous, spiralling, twisting horns that are either straight or flaring in form, depending on the subspecies. Markhor are extraordinary climbers, effortlessly ascending rocks and even going into oak trees to munch on leaves. Among the threats include rising hunting pressure, greater competition from domestic goats and sheep, and disease outbreaks as a result of increased animal interaction.

Regrettably, the markhor has been threatened with extinction across its territory, which is mostly contained inside Pakistan's boundaries. Markhor are vital to the ecosystem, both as a rare source of wild food for big animals like as wolves and snow leopards and as a cultural symbol both locally and regionally. The flare-horned markhor (*C. f. falconeri*) is a subspecies of markhor found in Pakistan's Gilgit-Baltistan Province. Despite being the most common and widespread of the three markhor subspecies, and despite international and national protection, flare-horned markhor numbers declined by half between 1970 and 2000. The remaining populations were tiny, highly scattered, very vulnerable to poaching, and fast diminishing. Peerzada et al. (2010) published an initial study titled Markhor in Kajinag National Park: Critical habitats and interactions with livestock, concluding that poaching poses a significant hazard to livestock.

When GGT first published about the markhor in 2011, the world's population had been reduced to about 2,500 adults. In northern India's Jammu and Kashmir state, the figure was

uncomfortably close to 400. Until 2015, the species was classified as Endangered. Fortunately, their numbers have begun to recover in recent years as a result of increased conservation efforts. The IUCN Red List of Threatened Species now classifies the markhor as "near threatened," with a global population of fewer than 10,000. Humans are the markhor's primary predators owing to their desire for its magnificent horns. They are frequent victims of trophy hunting, a scourge that also affects cherished creatures like as elephants (whose ivory tusks are pursued) and rhinoceros (which are hunted for their horns). Although hunting the markhor is prohibited in Afghanistan and India, poaching and subsequent sale of their horns on the underground market continue.

Markhors are likewise under danger of extinction as their favoured habitats dwindle. Since the 1980s, their home in Pakistan has seen a steady decline in forest cover due to a variety of factors, including logging for fuel and construction materials, coal mining, and domestic animal overgrazing. This has significantly reduced the markhor's grazing territory, making food supplies more rare. Historically, markhors were mostly hunted for their flesh. Goat meat is consumed in a number of places across southern Asia, and a 200-pound wild goat may offer a significant amount of nutrition for those who lack easy access to other forms of meat.

During the British occupation of India (which encompassed modern-day Pakistan at the time), hunters described the challenges associated with hunting the markhor. The animals' high elevation in the highlands west of Ladakh made following them difficult. And the perilous circumstances of the Northern Indian winter made hunting anything difficult, much alone a nimble goat proficient at concealment in the highlands. Nowadays, the whole markhor subspecies is protected by law.

community-based conservation projects that are rigorously monitored. Poaching is nearly non-existent now that it is harshly punished.

Materials & Methods:

The dangers to the extinction of the Markhor were extensively analysed via contact with residents, security personnel, and Wildlife Department officials. The current study endeavour examined potential hazards and habitat degradation. The dangers were amalgamated, and amazing ideas for Markhor conservation measures were made, including habitat restoration, manpower engagement, decrease of human interference, enlargement of the protected area, and enhancement of Markhor's biological behaviour.

Results

Kaj-I-Nag is located on the north bank of the Jhelum, between two nations' LOCs (Lines of Control), namely India and Pakistan. Around 70 kilometres west of Srinagar, along the Jhelum River, sits this location. The Kaj – I – Nag range reaches an elevation of about 14000

feet above sea level. Kaj – I – Nag is made up of three protected areas together referred to as the Kaj – I – Nag range or block.

01. The Limber Wild Animal Refuge

02. Lachipora Wildlife Refuge

03. The Naganari Protected Area

The Kaj – I – Nag range in Jammu & Kashmir has been regarded as one of the ideal sites for Markhor (Ranjitsinh et al. 2004). The location is located in the northern Baramulla District of the state's Kashmir region. The Markhor has identified a range of threats in Jammu and Kashmir that might jeopardise the markhor. The majority of these concerns stem from the LOC's closeness to war zones between India and Pakistan (Line of Control). Others are associated with the region's traditional hunting habits. The following details are provided:

Poaching: By and large, sportsmen regard Markhor as the stalker's greatest prize. When properly mounted, with his long flowing beard and majestic spiral horns, he deserves to rank top as a trophy and as a stalker's accomplishment" (Burrard, 1925). For generations, poaching has been the primary danger to Markhor across its habitat. Lydekker (1898) already believed Markhor to be in immediate danger of extinction in the pir panjal because to excessive hunting. Shooting ethics were minimal, and amounted to nothing more than "shot what you can, where you can, and how you can." The Markhor suffered much and were almost annihilated. According to Burrard (1925), licences for shooting in Kaj-i-nag and Shamshabari were in high demand due to their reputation for producing exquisite heads. The majority of these regions were isolated and were shut off from the rest of the world throughout the winter owing to excessive snowfall. Locals used to ambush Markhor in the snow, capturing them and then slaughtering them for meat. Locally, markhor meat is considered to be the best wild meat.

Grazing: The gujjars and bakerwals have a vast quantity of animals, which they rely on for survival. They usually travel to alpine and sub-alpine pasture during the summer months of June to September to take advantage of seasonal fluctuations in food availability in the Pir panjal range. Gujjars and their animals usually travel locally, while bakerwals from Ponch and Rajouri go to Kashmir with their livestock. Gujjars, bakerwals, and local shepherds build summer grazing campuses in a variety of locations inside or next to existing protected areas. Limber, Lachipora, Naganari, and Gulmerg-Boniyar are largely grazing areas for indigenous people. There are a few reports of bakerwals accessing the limber Wildlife Sanctuary's higher reaches. Grazing looks to be severely curtailed in some places as a result of changing lifestyles and also owing to restricted access to certain pastures for security reasons.

Deforestation, fuel wood extraction and collection of non- timber forest produce: The demand The demand for wood in Kashmir is quite strong due to its extensive usage in building. Deforestation occurs mostly in regions not under the supervision of the wildlife

department, while herders may be responsible for some deforestation in protected areas for building and fuel. Throughout the course of the current investigation, trees were witnessed being chopped down by local residents inside the Lachipora Wildlife Sanctuary. Local residents, nomadic herders, and defence personnel collect wood mostly to cook and stay warm throughout the winter. Local residents enter protected areas in certain locations to obtain highly prized mushrooms (gucchi) and medicinal plants.

Turmoil: Nilkant-poonch, Gulmerg-Boniyar, Lachipora Wildlife Sanctuary, and Shamshabari are all located next to the LOC (Line of Control) and have historically been shelled. Thus, animals in close proximity to the LOC (Line of Control) would constantly be at risk of death or injury from shelling and cross-firing. The barrier seems to have permanently split the Markhor communities.

Lack of infrastructure: There is a widespread shortage of field personnel across the Markhor range, and those who are there are ill-equipped, generally inexperienced, and lacking in basic infrastructure for monitoring the region.

Lack of control over some areas by the wildlife Department: The wildlife department's personnel has limited access to several sites for security concerns.

Lack of awareness: Numerous stakeholders exist in the area, including indigenous peoples, migratory herds from elsewhere, the military forces, and personnel from different government departments. There is widespread misunderstanding of wildlife in general, and Markhor in particular, as well as its perilous condition among them.

Disease transmission: There is a distinct probability that disease may move from cattle to Markhor. According to reports, diseases such as foot and mouth are prevalent in cattle and may spread to Markhor. Nawaz (2002) reported an epidemic of enterotoxaemia in domestic goats in Kaigah, a section of PoK, not far from the LOC (Line of Control). This infection might have extended to the Markhor as well.

Recommendation

Markhor's recurrence and dangers are unclear at the moment. On the basis of this, some preliminary but essential suggestions are made here to improve the species' conservation in Jammu & Kashmir. The following suggestions are based on the survey:

- At the moment, the Hirpura WLS (Wild Life Sanctuary) and the Kaj-i-nag area have the highest chance of population recovery and serve as a potential 'source population' for Markhor conservation and restocking across its range. Any conservation programme should prioritise key areas.
- The Kaj-i-nag range is comprised of three continuous protected areas: Lachipora WLA (Wild Life Area) (about 114 km²), Limber WLA (approximately 44 km²), and Naganari

Conservation Area (approximately 20 km²). The Lachipora WLS (Wild Life Sanctuary) is still in the Forest Department's authority, and the Wildlife Department plays no role in its management. It is critical that the designated protected area be transferred to the

wildlife Department for future management. There is an immediate and critical need to combine the three protected areas into a single unit and to zone the region to include inviolate core zones. The three combined protected areas' limits should be expanded and revised to include both summer and winter habitats for markhor and other critically endangered species such as the western tragopan. The main inviolate region should be recognised as a national park, maybe as kaj-i-nag National Park. The adjacent lands with a resident human population or use might be declared as a wildlife sanctuary, acting as a buffer zone for the National Park. An endeavour should be made to precisely define the boundaries of both the proposed National Park and the nearby Sanctuary and to record them on the map.

- All stakeholders, including indigenous peoples, gujjars, bakerwals, forest department personnel, other government employees, and the military forces, must be taught on conservation problems in general and markhor in particular. Well-targeted programmes emphasising markhor as a distinctive piece of local history may assist in altering their attitudes.
- The Wildlife Department, in general, and particularly in the Markhor districts, suffers a dearth of properly equipped and qualified personnel. Capacity development is required in the areas of law enforcement, wildlife monitoring, and management planning. The crew is in desperate need of high-altitude apparel and camping equipment. Monitoring cottages should be erected inside animal sanctuaries, at the very least in Limber and Hiripura, to promote frequent patrolling of the region.
- A rescue and rehabilitation centre for animals rescued from unlawful custody or in wounded condition might be developed. Due to the fact that the majority of the Pir Panjal Markhor's distribution occurs near the border, there is a risk of injury from shelling. Additionally, the environment is quite rough, and during the winter, landslides may cause harm to the Markhor. A Markhor was said to have been stuck in LOC fence and perished, while a brown bear narrowly escaped. Additionally, a Markhor was said to have been killed by landslides. Due to the vulnerable condition of these damaged creatures, they may be saved and treated. A well-managed research institution is required to gradually build up such a population via rescued animals. This facility may be developed only in the kaj-i-nag region. This subject requires specific expertise and should be approached in the context of a long-term dialogue strategy for the species.

Grazing by livestock should be strictly regulated in the Kaj-i-nag wildlife sanctuary. In the Kaj-i-nag wildlife sanctuary, summer grazing by migrant gujjars and bakerwals seems to

have driven Markhor to a less-than-optimal location inside the protected area. This must be addressed immediately in order for Markhor populations to recover in the area.

- A more in-depth study of the species' ecology is required. This stage will significantly aid in understanding population dynamics, unique habitat needs, and dietary preferences, as well as in identifying more prospective Markhor locations in Jammu and Kashmir for animal reintroduction (after negating the threats that caused its extinction).
- Wildlife tourism has to be developed in order to give opportunities for observing markhor and other wildlife species. Limber WLS (Wild Life Sanctuary) and Hirpura WLS (Wild Life Sanctuary) need their own eco-tourism plans (Wild Life Sanctuary). This must be done in the interests of habitat protection and animal species conservation, particularly endangered species such as the Markhor.

Table 1: Identification of species during survey

S.No	Common Name	Scientific Name	Distribution		Total No.
			Max	Min	
1	Markhor	<i>Capra falconeri</i>	Lachipora Limber	Kaj-i-Nag Naganari	10
2	Black Bear	<i>Selenoretos thidetanus</i>	Lachipora Limber	Kaj-i-Nag	×
3	Brown Bear	<i>Ursus arctos</i>	Kaj-i-Nag	Lachipora Limber Naganari	×
4	Hill Fox	<i>Vulpes Vulpes</i>	Lachipora Limber Kaj-i-Nag Naganari		06
5	Muskdeer	<i>Moschus crysogater</i>	Limber Lachipora Naganari	Kaj-i-Nag	12

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