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The Indian Wild Ass of The Little Rann of Kachchh: Ecology, Conservation and Challenges

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Abstract

The Indian Wild Ass (Equus hemionus khur), also known as the Khur or Ghudkhar, is a subspecies of the Asiatic wild ass endemic to the Rann of Kachchh in Gujarat, India. Historically widespread across northwestern India and western Pakistan, the species now primarily inhabits the Little Rann of Kachchh. It has successfully adapted to the extreme saline desert environment, demonstrating unique behavioral characteristics and ecological significance. This research paper explores the natural history, taxonomy, habitat preferences, and conservation challenges facing the Indian Wild Ass. The species plays an important role in the ecosystem by assisting seed dispersal and regulating vegetation dynamics. However, increasing human encroachments, habitat fragmentation, overgrazing, and developmental activities pose significant threats to its survival. Conservation initiatives, including the establishment of the Indian Wild Ass Sanctuary, have contributed to population recovery, with numbers reaching approximately 7,672 individuals as of 2024. Continued efforts in habitat preservation, ecological research, and community engagement are imperative to ensure the long-term sustainability of this near-threatened species.

Keywords: Equus hemionus khur, Saline desert, Seasonal wetland, Bets, Prosopis juliflora

Introduction

The Indian Wild Ass (Equus hemionus ssp. khur), locally known as the Khur or Ghudkhar in Gujarati is a subspecies of the Asiatic wild ass native to the Rann of Kachchh which is found only in and around Little Rann of Kachchh (LRK) and parts of the Greater Rann of Kachchh (GRK) in the Gujarat State (Pandit et al. 2020). The Little Rann of Kutch, located on the Kathiawar Peninsula in northern Gujarat, western India, is a saline desert renowned for its distinctive ecosystem and diverse flora and fauna (Smielowski and Raval 1988). The Indian Wild Ass (Equus hemionus khur) was formerly widespread in the arid zone of northwestern India and Pakistan, westwards through much of central Asia. The khur probably went extinct in Baluchistan and the extreme south of Pakistan, on the Indian border, during the 1960s (Corbet and Hill 1992). Wild Ass Equus hemionus khur has become extinct in Rajasthan four decades ago (Sharma et al. 2013). Indian Wild Ass has been kept under Schedule-I of the Wildlife Protection Act, 1972 (Government of India 2023). Indian Wild Ass (Equus hemionus ssp. khur) was most recently assessed for The IUCN Red List of Threatened Species in 2015. Equus hemionus ssp. khur is listed as Near Threatened (IUCN 2025).

The Little Rann of Kachchh (LRK) is surrounded by Kachchh, Banaskantha, Patan, Surendranagar, and Morbi districts of Gujarat State, India. The Little Rann of Kachchh has a triangular configuration and a 5,180 sq. km area with its south-western apex connected with the Gulf of Kachchh (Babbar et al. 1994).

A large portion of the LRK is under legal protection as the Wild Ass Sanctuary (Joshi et al. 2018) which was declared as 'Wild Ass Wildlife Sanctuary' in 1973 (Pasha et al. 2015). Wild Ass Sanctuary encompasses an area of 4953.70 sq. km. of the Little Rann of Kachchh and the districts of Surendranagar, Rajkot, Patan, Banaskantha, and Kachchh (PCCF & HoFF, n.d.), across different regions of Gujarat, India.

Natural History and Taxonomy

Asiatic wild ass (Equus hemionus), which were the most abundant large herbivore species rooming across the entire Eurasia, during the Pleistocene (Moehlman 2002). The Asiatic populations of the northeast (kiangs and dziggetais) and of the southeast (onagers, Turkmen kulans, khurs, and hemippi) have been continually separated by the Central Asian massif, which was covered by glaciers during the cold periods (Kuhle 2011). The Asiatic wild ass (Equus hemionus) is found throughout Central Asia ranging from Mongolia and China to Uzbekistan, Kazakhstan, Turkmenistan, Iran, India, and Israel (IUCN 2024). There are six geographically isolated subspecies of Asian wild ass (Table 1). The Subspecies Syrian Wild Ass (Equus hemionus hemippus) is considered by Talbot (1960) to be extinct.

Table 1: Subspecies of Asian Wild Ass (Equus hemionus)

Common Name	Scientific Name
Syrian Wild Ass	Equus hemionus hemippus (extinct)
Iranian Wild Ass	Equus hemionus onager
Trans-Caspian Wild Ass	Equus hemionus kulan/finschii
Mongolian Wild Ass	Equus hemionus hemionus/ dzigettai
Gobi khulan	Equus hemionus luteus
Indian Wild Ass	Equus hemionus khur

The Indian wild ass Equus hemionus khur is a bright yellowish sandy colour and a line of the same colour extending down the back to the root of the tail. The lower parts are white (Gee 1963). The animal has an upright, dark mane that extends from the back of the head, down the neck, and along the back to the base of the tail (Menon 2003). The females are always white on the underside and have streaks of white on the rump, on the underside of the neck, and on the back of the head (Smielowski and Raval 1988). Wild asses usually live in groups of up to 12 individuals, although single animals, mainly stallions, are seen occasionally. It is a polygynous species, an adult stallion leading a group of mares and young. The stallion is usually darker in colour, and always stays some distance from its group. They escape from predators by running at a speed approaching 60 km per hour (Sinha 1983). They can tolerate temperatures of up to 44°C, quenching their thirst by eating shrubby seablite or lani Suaeda fruticosa, which contains plenty of saline water (Smielowski and Raval 1988).

Habitat and Ecology

The Wild Ass Sanctuary, Little Rann of Kachchh is a typical ecological system with a saline desert climate having the least floral diversity and unique faunal diversity (Rina et al., 2009). The Little Rann of Kachchh (Figure 1) is a salt-impregnated wilderness area that is recognized as a space without a counterpart on the globe (Hussain and Roy, 1993; Merh and Patel, 1988), which represents a unique ecosystem with the combination of saline desert and a vast seasonal wetland. Islands (locally called bet) are the unique ecosystems in the LRK landscape that are known to support a variety of wild animal species including the flagship species of LRK, viz Indian Wild Ass (Equus hemionus khur) (Shah 1993). Arid zones, grassland,

and scrubs are the preferred habitat of the Indian Wild Ass (Equus hemionus khur). Joshi et al. (2018) studied vertebrate faunal diversity in the Little Rann of Kachchh (LRK), documenting 260 species of wild vertebrates, including mammals, birds, reptiles, and amphibians. Around 74 elevated plateaus or islands are locally called 'bets'. The largest plateau, called Pung Bet, has an area of 30.5 km², and the highest island, Mardak, is 55 m in elevation in the LRK (Singh, 1999; Parmar et al., 2014; Joshi et al., 2018; Mori et al., 2024). The area is a seasonally flooded wetland ecosystem (Merh and Malik, 1996; Rina et al., 2009). Monsoon rains, which last from July to September, with an average rainfall being 517.8 mm, transform this habitat into a grassy meadow with saline pools (Smielowski and Raval 1988). However, most of the Rann gets dried by the end of November or mid-December, except for low-lying parts such as Adesar (i.e., around Nanda bet), where the waters dry up by January (Parmar et al., 2014; Patel, 1971). The Indian wild ass exhibits seasonal breeding, predominantly during the monsoon. During this period, dominant males secure territories with better habitats, while subordinate males occupy less favorable areas. Females move between territories to choose mates with superior habitats. Females with young often form small groups of 2–5 adults. It is one of the fastest Indian animals, with speeds clocked at about 70–80 km/h (Sharma et al. 2013).

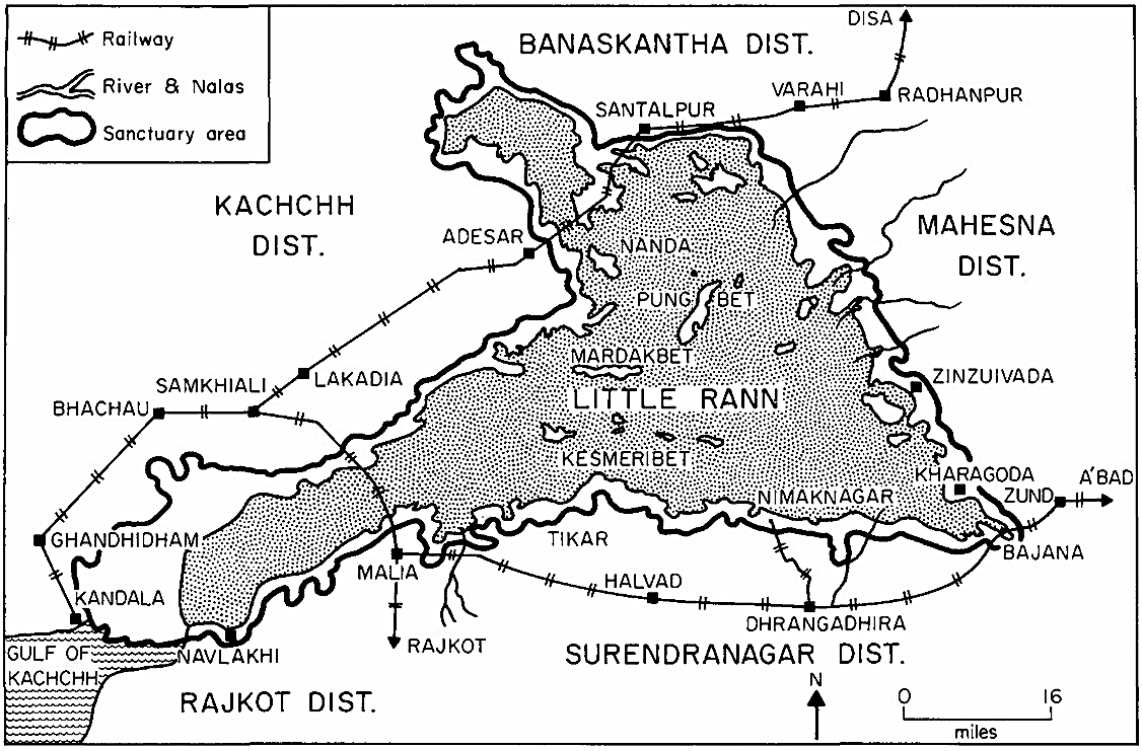

Figure 1: Little Rann of Kachchh Wild Ass Sanctuary (Smielowski and Raval 1988).

The Indian Wild Ass plays a vital role in the ecosystem through seed dispersal and vegetation management. Grazing clears pathways for smaller species, while dung deposition enriches soil fertility, promoting biodiversity in an otherwise barren landscape (Thakkar 2024). The wild asses are generalist herbivores feeding on grasses during monsoon and winter. Wild Ass usually grazes between dawn and dusk feeding on grass, leaves and fruits, agricultural crop, Prosopis pods, and saline vegetation. The preferred forage species include members of the Cyperaceae family during monsoons, and as the vegetation dries up (during late winter and summer), dried annual graminoid species and crops form a large part of their diet. During summer, they browse on Prosopis pods and leaves. Equids primarily feed

during the day (Pratt et.al. 1986); however, in irrigated tracts of their habitat, Khur have adapted to become more active during the night, raiding resource-rich croplands (Shah 1993). The wild asses feed mainly on Cyperus capillaris, Andropogon sp., Dichanthium annulatum, Aristida alscansiovis and Iseilema prostratum (Smielowski and Raval 1988), along with leaves of pilu, tooth- brush tree or salt bush Salvadora persica and leaves and pods of mesquite tree Prosopis juliflora (Smielowski and Raval 1988). About 56 species of palatable grasses were recorded from the open grasslands around LRK, contributing significantly to the available fodder (Kanodia and Nanda 1966). The potential habitat utilized by the wild ass was categorized into Rann, saline grasslands, Prosopis scrublands, and fallow lands, based on the distribution of vegetation communities. Plant species preferred by wild ass and other herbivores are Demostachya bipinnata, Eleusine compressa, E. indica, Dactylotenium aegyptium, Dicanthium annulatum, Sporobolus arabicus, Eragrostis tremula, Cyperus spp., Aristida spp., Apluda mutica, Chloris spp., Cenchrus spp., Aeluropus lagopoides, Echinochloa colonum, Suaeda spp., Blumea spp. and pods of Prosopis juliflora (Bhandari 1978). Monitoring of forage availability throughout the year indicated that during lean periods (February-June), the animals wander far from the Rann in search of food. Most villages around the Rann meet their fuel wood requirements by collecting branches of an exotic mesquite Prosopis juliflora, growing on cultivable wasteland and in areas unavailable for cultivation (Goyal et al. 1999).
Seasonal variation in habitat preference is observed, with medium and high-density scrubland utilized during the summer and winter seasons, while croplands are preferred during the monsoon and winter due to the concentrated availability of resources (Shah 1993). Pods of Prosopis juliflora form a major component of the diet of the Wild Ass during summer, as most of the ground becomes devoid of vegetation due to trampling by cattle. Proximity to water is another critical factor regulating spatial pattern of habitat utilization as Wild Ass similar to other equids need to drink water at least once during the day (Shah 1993).

Conservation and Challenges

Indian Wild Ass primarily inhabit savanna, shrubland, grassland, and desert ecosystems, and their movement patterns suggest a continuing decline in habitat quality and extent (IUCN 2025). Once Indian Wild Ass was found in Jaisalmer and Bikaner of the Rajasthan state in western India, western Pakistan, Sindh, Baluchistan, Afghanistan, and south-eastern Iran. Today, its last refuge is found in the Indian Wild Ass Sanctuary, situated in the Little Rann of Kachchh and the surrounding areas of the Greater Rann of Kachchh in Gujarat, India. It can also be found in Surendra Nagar, Banskantha, Mehsana, and other districts of Kachchh.
The Wild Ass population which had got confined to the Little Rann sometime in the past has now spread to the Greater Rann as well, bordering Rajasthan, Pakistan, and the Arabian Sea. (Sharma et al. 2013). In 1946, Ali (1946) recorded 3000-5000 individuals, and 10 years later, Wynter-Blyth (1956) estimated 4000 individuals. During the 1960s, numbers dropped suddenly: in 1962, there were only 860-870 individuals (Gee 1963), and by 1967, only 362 remained. Expeditions of forest guards had found a great number of dead wild asses, their death being attributed to disease called Surra, caused by an arthropod-transmitted protozoan Trypanosoma evansi and transmitted by flies Culicoides spp. in domestic animals in 1958, 1960, and 1964 (Gee, 1963; Spillett, 1968) which have also been responsible for South African Horse Sickness and this coupled with drought reduced the population to 720 in 1976. The declaration of the Little Rann of Kachchh as a wildlife sanctuary in 1973 led to the recovery of the population to 2839 individuals in 1999. The area has a large reserve of table salt and its extraction is a serious threat to the habitat of the wild ass. The species is increasingly threatened by developmental activities leading to habitat loss and

fragmentation (Srivastav and Nigam 2010).

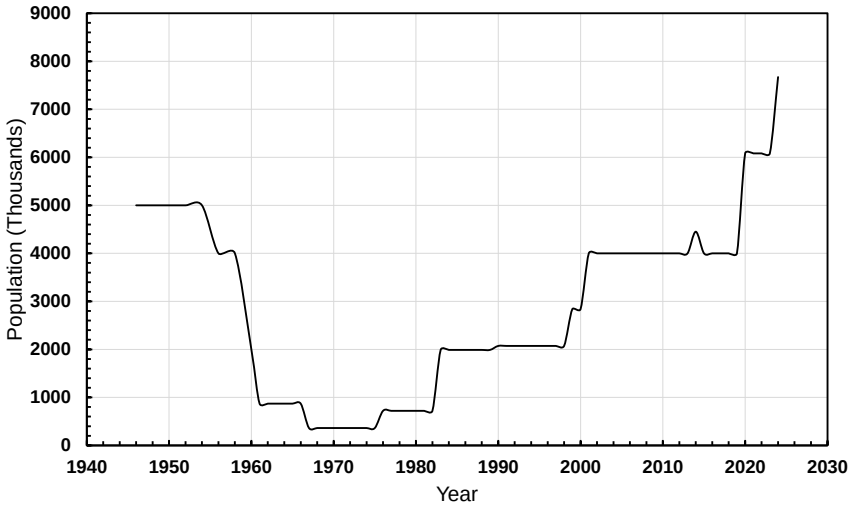

Figure 2: Trends in the population of the Indian Wild Ass (Equus hemionus ssp. khur) within the Little Rann of Kachchh, India.

The Indian Wild Ass (Equus hemionus ssp. khur), a subspecies evaluated by the IUCN Red List, has been classified as "Near Threatened" following its global assessment in May 2015. The population trend is increasing, with approximately 2,000 mature individuals out of around 4,000 in 2015. The population of wild asses in Gujarat has been estimated at 7,672 individuals as per the 10th Wild Ass Population Estimation (WAPE) conducted by the Gujarat government in 2024 (Figure 2). This marks a significant increase from previous years, showcasing successful conservation efforts.

The Wild Ass Sanctuary, the final haven for the Indian Wild Ass, is under significant ecological strain, with multiple threats jeopardizing its wildlife. Key issues include uncontrolled cattle grazing, salt farming, and transportation disruptions caused by heavy vehicles and highways. Threats to Khur in the Little Rann of Kachchh in India arise from increasing human activities. Habitat loss is exacerbated by excessive Prosopis juliflora plantation (Kaczensky et al. 2020), fishing, and illegal encroachments. Environmental challenges like siltation, natural calamities, and Narmada Canal irrigation projects worsen salinity and reduce soil fertility. Poaching and illegal mining further strain the sanctuary's fragile balance, while activities such as woodcutting, crop damage by Wild Asses, and religious pilgrimages add to the disturbances. An estimated 30-35% of the Khur population lives outside the protected area, and human-Khur conflicts are increasing, particularly crop raiding. In recent years, Khur has also been increasingly hit on the major Express highway (Kaczensky et al. 2016). Collectively, these threats emphasise the urgent need for effective conservation measures to protect the sanctuary’s ecosystem and wildlife (Parmar 2018).

Figure 3: A museum exhibit featuring a specimen of the Indian Wild Ass within a diorama depicting the Rann of Kachchh at the Rajiv Gandhi Regional Museum of Natural History., Sawai Madhopur, Rajasthan.

Discussion

The Indian Wild Ass shows evolutionary adaptation to extreme environments, with its speed, diet flexibility, and reproductive strategy ensuring survival in the Rann of Kachchh. Its ecological role in seed dispersal and soil enrichment highlights its importance beyond mere survival, contributing to the desert's biodiversity (Thakkar 2024). Conservation success reflects effective policy, yet the balance between human activity and wildlife preservation remains delicate. Irrigation canals and crop raiding, often misattributed to the Khur rather than species like nilgai, highlight the need for better land-use separation (Shah 1993). The Khur presently have expanded their range from beyond LRK to the Rajasthan and Pakistan borders in the north and west, as well as the Nalsarovar Sanctuary and Bhal areas of Gujarat (Singh 2001), along with an increase in their population (Shah 2004).

Conclusion

The Indian Wild Ass (Equus hemionus khur), endemic to the saline desert plains of the Little Rann of Kachchh in Gujarat. This region, designated as a Wildlife Sanctuary, provides a crucial habitat for the species, allowing it to thrive despite the harsh environment. The Indian Wild Ass exhibits remarkable adaptability to extreme climatic conditions, feeding on saline vegetation and foraging across arid landscapes. However, habitat fragmentation, encroachment, and anthropogenic pressures pose considerable threats to its survival. Conservation efforts, including habitat restoration and monitoring, have been spearheaded by organizations such as the Gujarat Ecological Education and Research (GEER) Foundation (GEER 1999). These initiatives have played a vital role in maintaining biodiversity while ensuring the long-term preservation of this iconic species. The Indian Wild Ass of the Rann of Kachchh exemplifies nature's resilience in harsh environments, yet its survival hinges on continued conservation efforts. The species' ecological contributions, from seed dispersal to habitat creation, highlight its importance to the Rann's biodiversity. While population growth since the 1970s is encouraging,

challenges such as habitat encroachment and climate change demand sustained action. Expanding its range into Rajasthan and enhancing habitat management within the sanctuary offer promising avenues for its long-term preservation. Protecting the Indian Wild Ass is not only a matter of species conservation but also evidence of the broader health of the Rann of Kachchh ecosystem. Future research should focus on long-term population dynamics and the impact of climate change, particularly altered monsoon patterns, on the Rann's ecosystem. Enhanced conservation strategies can be achieved through advanced monitoring tools such as GPS tracking, educational programs in schools, mass awareness campaigns, active participation of NGOs, and the establishment of Interpretation Centres and exhibitions (Figure 3). These initiatives collectively contribute to more effective and sustainable conservation efforts.

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