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Understanding the characteristics of eight Indian horse breeds for breed-specific regional identification

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Abstract

The horse's crucial role in India's and the world's history is well-documented in ancient Indian literature. The Vedas, Ramayana, Mahabharata, and Puranas all significantly feature the horse, including the tale of Uchhasrava, the first horse from the sea

Keywords: Indian horse breeds, Marwari, Kathiawari, equine biodiversity, breed characterization, phenotypic traits, conservation, indigenous horses

1. Introduction

Historical References

Ain-i-Akbari: One of the most detailed historical write-ups to come across is Abu Fazl's (court historian of Emperor Akbar) Akbarnama, within which specifically the Ain-i-Akbari (this is the Volume III of the Akbarnama and details the administrative systems of governance etc), published around the year 1599-1600. It details not only horses, but also specific allowances of food for particular horse breeds as well as detailed information on caretaking of the horses- such detail on the subject is not encountered elsewhere in works of this kind.

Ruk' at-i-Alamgiri: Aurangzeb's letter to his son, Md. Azam Shah Bahadur, within the *Ruk'at-i-Alamgiri*, reveals his delight upon receiving an "ambling horse." He expresses his pleasure in riding it, naming it 'Khūsh-Kharām' (walking smartly), and requests his son, known for his naming skills, to christen his other favorite horses, promising a list with color and breed details from the head groom (a list unfortunately lost). Translator J. Bilimora's footnote suggests this letter likely dates to Azam Shah's governorship of Gujarat (1703-1705), and the specific mention of the ambling gait strongly indicates the horse was likely a Kathiawari. This correspondence offers a glimpse into Aurangzeb's personal life and his appreciation for horses, particularly one with the distinctive gait of the Kathiawari breed.

Siraj Juzjani's 1260 *Tabakat-i-Nasiri* recounts Ulugh Khan's conquest near Kannauj during Sultan Altamsh's son's reign. The text mentions the defeat of Rana Dalaki wa Malaki (likely Dalkeshwar and Malkeshwar of Rewa, M.P.) and the capture of 1500 "peculiar breed" horses for the army. This suggests horse breeding in central India was established early in the millennium, given the region's historical significance (Kannauj, Ujjain). The passage hints at a distinct central Indian horse breed, though its specific characteristics remain unknown

Jahangir's *Tuzuk-i-Jahangiri* records his Gujarat visit where he received a "very handsome" and "pleasant to ride" Kachhi horse, valued at 1,000 rupees, noting it was the finest he'd received until then - a rare Mughal praise for a native Indian item. Later, meeting Jam Jassa, a prominent Gujarat zamindar near the Mahi River, Jahangir received 50 horses, 100 muhrs, and 100 rupees. The Jam, ruling near the sea, maintained 5,000-6,000 horses (up to 12,000 in war) and his region was known for expensive Kachhi horses, fetching 2,000-3,000 rupees. Jahangir honored him with a dress of honor.

J. Briggs' translation of Ferishta's 16th-century *Tarikh-i-Ferishta* describes the Jam Raja's Gujarat-adjacent, water-scarce land whose people often lacked food and clothing, subsisting mainly on camel and buffalo milk. The region, however, produced "fine horses" in abundance, and Arabian horses imported to India passed through Kutch, generating revenue. Briggs

controversially footnotes that Kathiawar bred India's finest horses due to Arabian crossbreeding, a claim the text acknowledges likely involves some mixing due to Gujarat's transit role but is probably an oversimplification.

Sir Walter Gilbey's 1906 book mentions a British horse-breeding commission in Ambala (1900-1901) that identified the Kathiawari, Marwari, Baluchi, and "Unmol" breeds as pure and worthy of preservation, equating their potential to that of Arabs. The commission recommended encouraging breeding in Kathiawar, Marwar, Baluchistan, and northern Punjab, and urged the Indian government to acquire the best stallions of these breeds for stud. Notably, the text positions the "Anmol" as a pure Punjabi breed and suggests that introducing Thoroughbred blood would be detrimental to these native lines

Archibald Adams' 1899 book on western Rajputana states Marwari horses are extensively bred in Marwar and celebrated for hardiness, beauty, and easy pace. They are noted for good height, ability to carry heavy weights despite light bones, and endurance like desert camels. The Rathore hold their horses in high regard, often prioritizing their care and considering them family. Adams also mentions a smaller, handsome, and hardy horse breed in Jaisalmer, though camels were more prevalent there. The Marwari horse was highly favored and widely used in Sirohi. The book contains a photograph, likely one of the earliest, of a Marwari horse.

In a 1920 speech at Jodhpur, Viceroy Lord Chelmsford praised the Marwari horse as equal to, if not superior to, other Indian breeds. He also noted the famous Nagore and Mallani cattle, highlighting the region's rich pastoral resources. Lord Chelmsford mentioned ongoing efforts to improve the state's horse breed and specifically develop the pure Marwari type.

The historical significance of equines, particularly horses, within India is well-established.

However, the period spanning 1951 to 2019 has witnessed a notable decline in the populations of horses, mules, and donkeys. A contributing factor to this trend is the lack of widespread understanding regarding pure breed identification, leading to indiscriminate breeding practices and consequent genetic dilution within progeny. This review article aims to delineate the distinct characteristics of eight recognized Indian horse breeds. By providing a comprehensive overview of these breed-specific traits, this study intends to facilitate accurate identification of these equines within their traditional breeding regions, thereby contributing to more targeted and effective conservation strategies aimed at preserving these valuable genetic resources.

Status of equines population in India

Indian horse breeds are unique due to their adaptation to diverse climates and their inherent sturdiness, endurance, and disease resistance. However, road development, mechanization, and crossbreeding have severely reduced their populations. With only a few thousand purebred individuals remaining (Singhvi, 2001; Yadav *et al.*, 2001) ^[14, 16], conservation strategies are crucial.

India has approximately 0.54 million horses according to the 2019 livestock census. Total number of horses and ponies in the country in 3.4 lakh in 2019 decreased by 42.2% over previous census. The total population of mules in the country is eighty four thousand in 2019, decreases by 57.1 over previous census. The total population of donkeys in the country is 1.2 lakh in 2019, decreased by 61.2 over previous census shown in (Fig. 1) Source 20th Livestock Census.

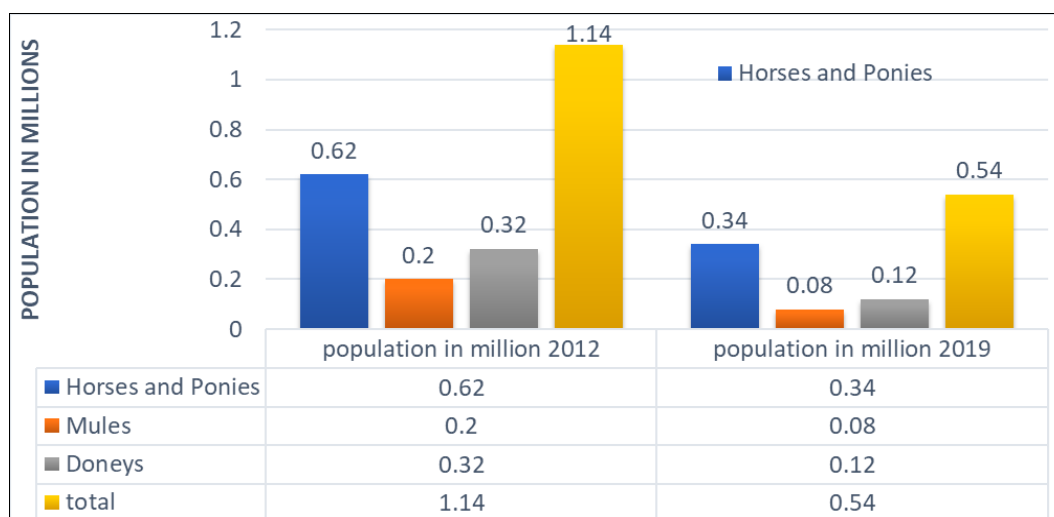


Fig 1: Population Trends of Horses, Mules, and Donkeys in India (2012-2019)

States such as Uttar Pradesh, Jammu & Kashmir, Rajasthan, Bihar, Gujarat, Maharashtra, and Punjab are among the leading regions with a substantial population of horses and ponies. According to data from the 20th Livestock Census, the equine population in Uttar Pradesh declined from 1.52 lakh to 0.76 lakh, reflecting a decrease of 50.14%. Similarly,

in Jammu & Kashmir, the population fell from 1.44 lakh to 0.63 lakh, a reduction of 56.17%. A downward trend in horse populations has been observed across most other states as well, with the exception of Gujarat, which recorded a positive growth of 19.42% during the same period.

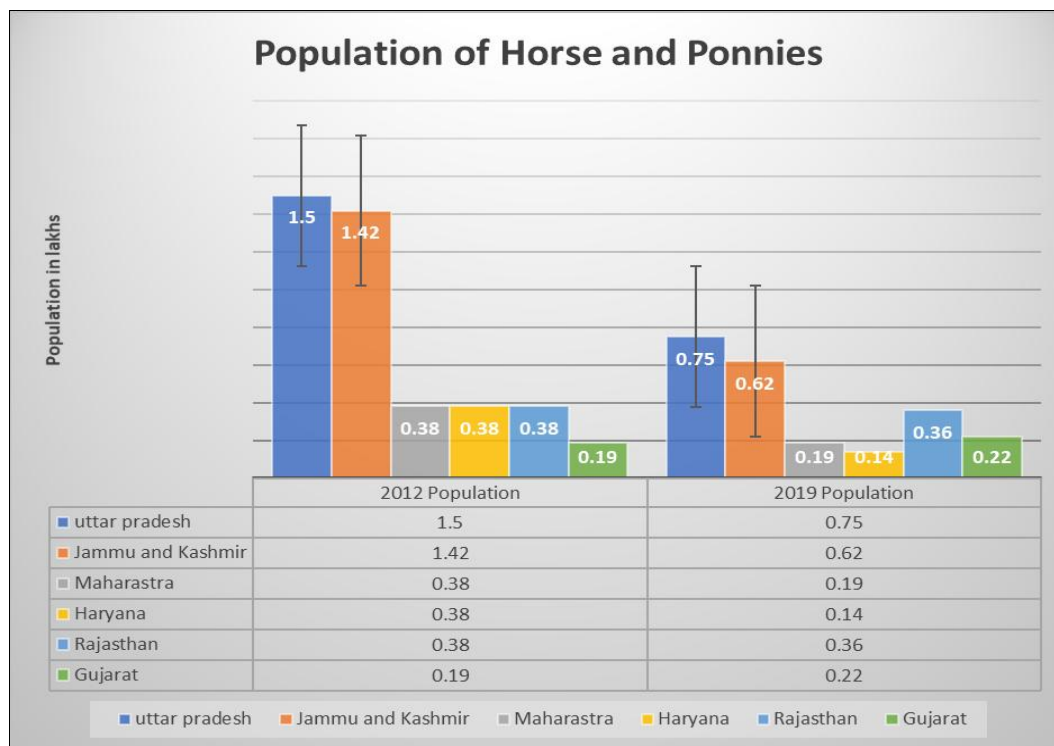


Fig 2: State-wise Population of Horses and Ponies in Major Indian States during 2012 and 2019

The Importance of Monitoring Equine Populations and Trends in India

Continuous monitoring of horse and pony populations is crucial for a multifaceted understanding of prevailing trends in breed preference, the status of genetic diversity, the identification and management of health and welfare issues, and the formulation of informed policies aimed at the sustainable management of these vital equine resources. Analysis of population dynamics between 1951 and 2019

reveals a concerning annual decline of 1.81% in the number of horses and ponies, alongside a similar annual decrease of 1.53% in the donkey population. All the four pony breeds are endangered breeds because of their shrinking number in their respective breeding tracts (Gupta *et al.*, 2012) [7]. These trends underscore the necessity for comprehensive monitoring to inform effective conservation and management strategies shown in (Table. 1).

Species	1951	1956	1961	1966	1972	1977	1982	1987	1992	1997	2003	2007	2012	2019
Horses And Ponies	1.5	1.5	1.3	1.1	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.6	0.6	0.3
Mule	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1
Donkeys	1.3	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.7	0.4	0.3	0.1

Source: Livestock Census, MoFAHD, DAHD, GO

Breed Classification in Indian Horses

India's equine landscape is characterized by a fascinating diversity of indigenous horse breeds, each shaped by centuries of adaptation to specific regional environments and human needs. Horse breeds India is inhabited to eight unique indigenous horse breeds. Distinct categorization systems for Indian horse breeds exist across different authors and organizations in India.

According to the National Commission on Agriculture (1976), horses (*Equus caballus*) in India can be placed broadly in two classes viz. the slow moving pack ponies and the fast running saddle horses used for riding or for drawing carriages. India

has two horse (Kathiawari and Marwari) and four pony (Manipuri, Spiti, Zanskari and Bhutia) breeds inhabiting in different agro-climatic regions (Gupta *et al.*, 2012) [7].

ICAR-NBAGR, the nodal agency for Indian livestock breed registration in Karnal, has registered eight horse breeds: Marwari, Kathiawari, Manipuri, Spiti, Bhutia, Zanskari, and Bhimthadi. In contrast, the FAO's DAD-IS lists nine breeds, including Arab, Chumarti, and Dakani, while using "pony" for some breeds listed by ICAR-NBAGR. Both sources acknowledge the distinctive and adaptive traits of these Indian equines.

Table 1: Registered horse breeds in India, (ICAR-NBAGR)

Indian registered horse breeds			
Breed	States	Accession number	Registered In Which Year
Kathiawari	Gujarat	INDIA_HORSE_0400_KATHIAWARI_07002	
Manipuri	Manipur	INDIA_HORSE_1200_MANIPURI_07003	
Marwari	Rajasthan	INDIA_HORSE_1700_MARWARI_07001	
Spiti	Himachal Pradesh	INDIA_HORSE_0600_SPITI_07004	
Zanskari	Jammu And Kashmir	INDIA_HORSE_0700_ZANSKARI_07006	
Kachchhi Sindhi	Gujarat And Rajasthan	INDIA_HORSE_0417_KACHCHHISINDHI_07007	
Bhimthadi	Maharashtra	INDIA_HORSE_1100_BHIMTHADI_07008	

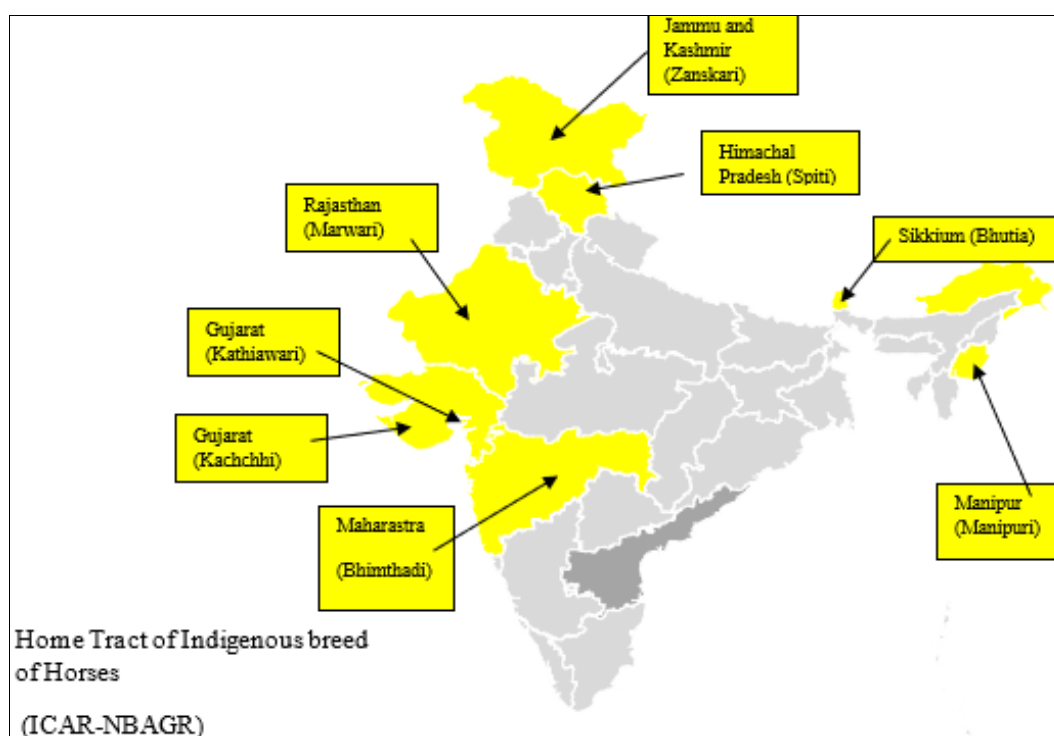


Fig 3: Geographical Distribution and Home Tracts of Indigenous Horse Breeds in India

1. Marwari

(Malani) breed of horse is the most popular and fascinating breed of horses in India. This breed is known for its endurance potential (Behl *et al.*, 2007, Gupta *et al.*, 2012) ^[6, 7]. Marwari horses contain the blood of Arab horses and were developed to produce multi-purpose horse breed, suitable for battle fields and travel for long distances at plain and hills with equal ease and hardiness (Singh1999) ^[15]. Based on historical references, it is also believed that the Marwari horses have been developed by breeding Kathiawari horses with the Arab, Persian, Turkestan, Sindhi/ Baluchi and other similar breeds (Gadhvi, 2017) ^[6]. Jun *et al.*, (2014) ^[9] confirmed strong Arabian and Mongolian inheritance in Marwari breed while DOIng whole genome.

Selective breeding by Rajput rulers to meet the needs of their cavalry resulted in development of this resilient and elegant breed. It has the influence of Turkman horses from central Asia. These days the Horses are bred for sports, as police chargers, ceremonial or marriage and for personal interest. Area called Malani (Madiyad, Malaan, Maheva) in Barmer district of Rajasthan is the nucleus of breeding of Marwari Horses. These are also found Banaskantha and Meshana districts of Gujarat bordering Rajasthan. Adult horses are managed stationary with fodder and concentrate. Herds are usually 2-3, sometimes up to 20. Owners provide high care, grooming twice daily.

Phenotypic Characterization of the Marwari Horse Breed

Head and Forehead	Refined, chiselled, convex; avg. face length 56 cm, width 21 cm.
Ears	Medium, curved inward at tips (180°); avg. length 13 cm, width 8 cm
Eyes	Large, wide-set, slightly convex shape
Nasal Bones and Nostrils	Flat nasal bone; long, rounded nostrils.
Shoulders and Neck	Muscular, broad shoulders; high, well-muscled neck.
Back and Withers	Medium saddle back; deep girth; defined withers. Avg. 151.80±0.80 cm
Quarters	Well-muscled and rounded.
Legs	Medium length, suitable for long-distance travel. Foreleg: 100.03±0.761 cm Hindleg: 100.82±0.555 cm
Shifle Joint	Well developed and placed apart from each other
Hock	Broad, strong high set and free of excessive tissue
Fetlock	Round and strong fetlock.
Pastern	Short, strong and forward sloping
Hoof	Front hoof is elongated and the hind hoof is round, the sole and wall are hard and strong
Tail	Well set and carried high; avg. length 44.45±0.25 cm.
Colour	common: dark brown, bay, piebald, chestnut, grey, etc

2.Kathiawari

Derived its name from the area of its origin i.e. Kathiwar area of Gujarat. Kathiawari, the native breed of Kathiawar area, Gujarat, is also known for its speed, stamina, endurance capability of fast moving, etc. (Zala, 2010) ^[17]. The Arabian horses, the first to be introduced in India by invaders/traders, are believed to have contributed substantially in the evolution of Kathiawari breed (Gupta, 2010, Kaura, 1961a,) ^[7, 10].

Might have Arab blood and also of duncoloured Mongolian horses. Famous for endurance, strong built and speed. Native to Saurashtra region of Gujarat. Also found in parts of Rajasthan, Madhya Pradesh, Punjab and Haryana. Adult horses managed stationary with fodder and concentrate, receiving utmost care and training. Stallions are not universally kept by mare owners.

Phenotypic Characterization of the Kathiawari Horse Breed

Head	Small, concave/dished profile.
Eyes:	Large, frog-like, set on broad forehead.
Forehead	Broad.
Ears	Small, scorpion-shaped, tips touch or nearly touch, rotate 180
Nostrils:	Large, rounded, outward flare, soft
Neck	Crested and stout.
Shoulders & Withers	Sloping shoulders, prominent withers.
Back & Body:	Short back, short-coupled body.
Quarters	Strong, almost square
Tail	Set high
Legs	Forelegs long; hind legs have well-laid hocks.
Feet, Hoof & Sole	Dense feet wall, round hoofs, hard concave sole, healthy frog.
Coat, Hair, Skin, Mane & Tail	shiny, refined coat; fine hair; smooth skin; long, bushy mane and tail.
Colour & Markings	Various greys (iron, dappled, flea-bitten), dun (often with zebra stripes on legs and dorsal band). Common: yellow dun, blue dun, chestnut, bay, skew-bald. Black not found in Kathiawadi horses.

3. Manipuri

Their descent is from Asiatic wild horse and Arabian horses. These alert ponies are known for their beauty, fastness and hardiness. Adult horses managed semi-intensively, primarily stationary, feeding on grazing, fodder, and concentrate.

Phenotypic Characterization of the Kathiawari Horse Breed

Head	Light and well proportioned with a straight profile
Ears	Alert and almond shaped, neither rotating nor touching of tips is seen
Muzzle	Wide
Nose	Slightly convex
Neck	Well formed with a full mane
Chest	Deep
Legs	Well - formed with a full mane
Back	Straight
Croup	Slightly slopping
Shoulders	Nicely Slopping
Tail	Well set

4. Spiti

These horses are believed to be the descendants of wild horses which used to inhabit the alpine region of Spiti, Ladakh and Tibet. There are two strains - Spiti and Konimare (comparatively taller). The spiti horses are primarily reared for transport purposes. The migratory horses kept by shepherds move with sheep and goat flocks and are used as transport carrier and for riding purpose. Main breeding tract is Kaja Subdivision of Lahul and Spiti district and Yanthang area of Kinnaur district. Sizable population is found in adjoining districts of Kullu, Mandi and Kangra. These horses thrive well in the height range of 5000 to 15000 ft above MSL. Adult horses managed in a backyard system, both stationary (Dec-May) and migratory (June-Oct to highlands). They feed on grazing, fodder, and concentrate. Herd size is typically 1-3, and they are reared by the Kannait community.

Phenotypic Characterization of the Spiti Horse Breed

Head	Straight and heavy look. the face has convex appearance
Ears	Erect, small, and wide, have a broad base and pointed tips
Eyes	Black
Neck	Short and has a thick mane
Mane	Longer, 20 to 30 cm long hairs
Chest	Deep
legs	Short with long coarse hairs
Back	Short and straight
Body	compact
Croup	Slightly slopping and muscular
Tail	Straight and long almost touching ground

5. Zanskari

The horses are known for their hardiness and ability to work at high altitude. Adult horses managed semi-intensively, primarily stationary, feeding on grazing, fodder, and concentrate.

Phenotypic Characterization of the Zanskari Horse Breed

Head	Straight and heavy look
Ears	Small, wide apart and has pointed tips
Eyes	Black, medium in size
Neck	Short and thick with long manes
Chest	Deep
Legs	Shorts with long coarse hairs
Back	Short and thick and straight
body	Heavy and well built
Croup	Slightly slopping and muscular
Tail	Long almost touching ground.

6. Kachchhi-Sindhi

This horse breed has its origin in Pachchham (Khavda) and Banni area of Bhuj Taluka of Kachchh district of Gujarat (India) and is locally known as Kachchhi Horse. The breeding tract is very close to the Sindh area on the border with Pakistan. Before partition both Kachchh and Sindh were considered the place of origin/ breeding tract of these horses. Hence these are named as Kachchhi-Sindhi. In Rajasthan, these are known as Sindhi horses. Generally used for transportation of goods or other materials like fodder, raw construction materials, etc. Majority of the Kachchhi-Sindhi horse owner maintain and keep these horses for riding purpose, as these are excellent for long distance riding because of special type of Horse gait called Rewal Chal. Also used for horse safaris.

This is a dry zone, rains are scanty. As a result, vegetation is also rare. Landscape is flat, soil is smooth in Banni and nearby greater and little Rann of Kutch while, sandy soil found in main land of Kachchh and Rajasthan. Excellent adaptability to both extensive and intensive housing system. Kachchhi horse breeders' practices vary by occupation: farmers use intensive rearing, while pastoralists employ semi-intensive. In the Banni area, pastoralists follow an extensive system with open mating, favoring mares over stallions. Stallion selection is meticulous, based on pedigree and physical traits. The 'challa' system prevents unwanted breeding in the extensive system.

Breeders consider Kachchhi-Sindhi horses as unique. Not only do they have distinct physical features but also quality of rewal chal, a special type of race. A rider can carry buttermilk (liquid) on the back of Kachchhi-Sindhi horse in open vessel to a long distance without any drop spilling out.

Phenotypic Characterization of the Kachchhi-Sindhi Horse Breed

Coat Colour	Common - bay & chestnut; others - roan, dun, grey, pinto. Dark extremities & zebra markings in ~10%.
Skin Colour	Mostly greyish black.
Muzzle	Greyish black; snip seen in ~50%
Face Markings	Star common, then strip; rare - blaze, bald.
Leg Markings	fetlock in ~20%; also pastern, stocking, coronet, ermine.
Head	few with convex profile. Prominent poll, wide.
Ears:	Curved at tips; don't touch when rotated 180
Eyes	Black or brown
Back	Mostly straight.
Tail:	Usually extends beyond hock
Temperament	Docile.
Body Size	Medium to large.

7.Bhutia

These are mainly used as pack and riding animal on hilly

terrains. Adult horses managed semi-intensively, primarily stationary, feeding on grazing, fodder, and concentrate.

Coat colour	Bay, grey chestnut and roan
Head	Large head with pronounced jaw and straight profile
Ears	Small, wide apart and has pointed tips
Eyes	Black, medium in size
Neck	Short
Shoulders	Straight
Chest	Deep
Legs	Short and strong
Back	straight
Body	Heavy and well built
Quarters	Sloping
Croup	Slightly sloping and muscular
Tail	Well set

8.Bhimthadi

Developed in the 17th and 18th centuries during the Maratha reign, this breed proved invaluable to Chhatrapati Shivaji

Maharaj's forces for warfare against the Mughal army in the challenging hilly terrain of western Maharashtra.

Head & Forehead	Medium, flat forehead, well-defined; face length ~52 cm, width ~19 cm. Mane covers part of the forehead.
Forehead Shape	Not chiseled, narrows down to a soft muzzle.
Head Markings	Common star, strip, snip, blaze, stripe & snip. Bald face rare.
Ears:	Large (~15 cm long, 10 cm wide), curved, tips don't meet; set away from the head
Eyes	Medium, round, convex, widely spaced.
Nasal Bone & Nostrils	Flat bone, oval nostrils.
Shoulders & Neck	Muscular, broad, long; high-set neck with strong base.
Back & Withers:	Slightly arched back; well-defined withers and croup slightly higher.
Cannon Bone:	Well-defined, ~22.5-29 cm; adapted for hilly, long-distance transport.
Fetlock & Pastern:	Round, strong fetlock; medium, forward-sloping pastern
Hoof:	Round, strong walls; not shod; suitable for hilly terrain.
Tail	Well set, ~38 cm (without switch), ~72 cm (with switch).
Colour	Mostly chestnut; also roan, bay, dark bay, grey, skew bald.

Table 2: ICAR-NBAGR Breed-Wise Report: Livestock and Poultry (20th Livestock Census)

Breed	Synonym	Origin	Breeding Tract of Marwari (Horse)	Location	Population Of (Horse)	Major Utility	Adaptability To Environment	Age At First Parturition (Months)	Parturition Interval (Months)
Manipuri		Manipur.	Manipur and assam	Longitude (deg.) 92. - 94.5 Latitude (deg) 24. - 26	2,558	Work - riding; Socio-cultural - game (Polo)		48.0	12.7
Kathiawari	Kathiawadi or kathi	Kathiwar area of Gujarat.	Surendranagar, Rajkot, Junagadh, Bhavnagar, Amreli	Longitude (deg.) 70. - 72. Latitude (deg) 20.5 - 22.6	23,9412	Socio-cultural-Game, religious ceremonies; Work-riding		55.0	
Marwari	Malani	Marwar region of Rajasthan.	Udaipur, Sikar, Pali, Jhunjhunu,	Longitude (deg.) 71.25 - 75.33	33,267	Socio-cultural-Game, religious ceremonies;	Arid and semi arid	62.6	21.08

			Barmer, Ajmer	Latitude (deg.) 25.22 - 27.42		Work-riding			
Spiti		alpine region of Spiti, Ladakh and Tibet	Lahul & Spiti, Kinnaur	Longitude (deg.) 76.5 - 78. Latitude (deg) 32.5 - 33.2	1,064	Work - Transport, riding, draught.	permanent snowline with arid cold climate without large vegetation	43.68	12.23
Zanskari		Ladakh region	Ladakh, leh	Longitude (deg.) 77.4 - 80. Latitude (deg) 33.5. - 35.	6,314	Work - draught, transport and riding; Socio-cultural - game (polo)	adapted to cold arid region		
Bhimthadi	Deccani, dakhani	Valleys of the bhima and nira rivers in the pune district	Pune, ahmednagar, satara, Solapur, sangli, kolhapur	Longitude (deg.) Latitude (deg)	5,134		Hilly terrains of western maharashtra		
Kachchhi-Sindhi	Kachchhi, Sindhi	Kachchh and Sindh were considered the place of origin/	Navsari, Kutchchh, Surat, Jaisalmer, Barmer	Longitude (deg.) 68.7 - 72.52 Latitude (deg) 22.44 - 28.23	3,926	Transportation, riding, sports, safaris, bagghi, trading.	Excellent drought & heat tolerance capacity in arid & semi arid region	42.8	13.96
bhutia		Himalayan region of india and nepal	Sikkim, darjeeling	Longitude (deg.) 88. - 90 Latitude (deg) 27. - 28.1	2340	Work - pack, riding	these are mainly used as pack and riding animal on hilly terrains.		

Breed		Colour		Height (avg. Cm.)		Body Length (avg. Cm.)		Heart girth (avg. Cm.)		Body weight (avg. Kg.)		Birth weight (avg. Kg.)		Any Peculiarity of the breed	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
1.kathiawari	Chestnut and bay with star and strips on face, sock and stocking	150.9	148.07	150.78	153.17	165.31	164.35	336.8	321.0	31.1	31.1			Famous for rewal gait which is special feature of this breed. Long and curly hairs are present on mane and tail dorsal stripping of brown colour along spine	
2.Manipuri	Common body colours are bay, dark bay, brown, reddish brown, grey, chestnut and roan	129.1	129.0	130.0	129.2	143.7	143.4	252.7	244.3	28.5	26.5			South-East Asian ponies and are famous for polo and riding purposes. It has a fairly elegant appearance as a result of Arab blood.	
3.marwari	The most prevalent body colours are: dark brown (musky or bhawar), bay (kumet), dark bay (telia kumet), chestnut (surang), dun (champa), grey (swet), fleabitten grey (kagra), skewbald (lal ablak), pie bald (kala ablak).	156.0	154.0	157.2	153.25	174.10	172.00	350-400	325-400	32.8	32.8			Strong limbs with clearly defined tendons, square frame and a thin coat which has the ability to cope with heat and cold without excessive dehydration. It has a well developed sense of smell and hearing which is very useful in desert.	
4.spiti	Highly variable ranging from chestnut to black. Grey colour is most predominant followed by brown and black.	132.14	131.19	117.3	110.0	150.0	136.0	227.84	203.77	31.85	29.93			The nuchal ligament in spiti ponies is very powerful elastic apparatus, which assists the extensor muscles of the head and neck. It is longer in comparison to other breeds of horses, which helps the animal to walk and carry load in steep mountains.	
5.zanskari	Common body colours are grey, black and copper.	147.0	132.0	129.86	123.07	148.50	144.50	283.12	296.36					Verge of extinction as only few hundred horses are present in the zanskari and other valleys of ladakh.	
6.kachchhi-sindhi	Mainly bay	145.52	144.66	133.15	134.66	157.22	163.21	301.91	209.92					Short pastern bone length & broader hoof, which is	

												responsible for better grip & covering long distance during riding, and possibly saves from limb problems.
7.bhutia	Predominant body colours are gray and bay.	132.0	130.0	128.57	129.18	147.57	150.00	320	300			Height at withers is from 130 to 132 cm and body weight 275 to 360 kg
8.bhimthadi	Predomiant coat colour is chestnut			132.5	131.7	142.0	139.7	267	252			

Table 3: Biometric Profiling of Various Indian Horse Breed

Breed		Height (avg. cm.)		Body Length (avg. cm.)		Heart girth (avg. cm.)		Body weight (avg. kg.)		Birth weight (avg. kg.)		Any Peculiarity of the breed
		Male	Female	male	female	male	female	male	female	Male	female	
1.Kathiawari	Chestnut and bay with star and strips on face, sock and stocking	150.9	148.07	150.78	153.17	165.31	164.35	336.8	321.0	31.1	31.1	Famous for Rewal gait which is special feature of this breed. Long and curly hairs are present on mane and tail Dorsal stripping of brown colour along spine
2.Manipuri	common body colours are bay, dark bay, brown, reddish brown, grey, chestnut and roan	129.1	129.0	130.0	129.2	143.7	143.4	252.7	244.3	28.5	26.5	South-East Asian ponies and are famous for polo and riding purposes. It has a fairly elegant appearance as a result of Arab blood.
3.Marwari	The most prevalent body colours are: Dark Brown (Musky or Bhawar), Bay (Kumet), Dark Bay (Telia Kumet), Chestnut (Surang), Dun (Champa), Grey (Swet), Fleabitten Grey (Kagra), Skewbald (Lal Ablak), Pie Bald (Kala Ablak).	156.0	154.0	157.2	153.25	174.10	172.00	350-400	325-400	32.8	32.8	strong limbs with clearly defined tendons, square frame and a thin coat which has the ability to cope with heat and cold without excessive dehydration. It has a well developed sense of smell and hearing which is very useful in desert.
4.Spiti	Highly variable ranging from chestnut to black. Grey colour is most predominant followed by brown and black.	132.14	131.19	117.3	110.0	150.0	136.0	227.84	203.77	31.85	29.93	The nuchal ligament in Spiti ponies is very powerful elastic apparatus, which assists the extensor muscles of the head and neck. It is longer in comparison to other breeds of horses, which helps the animal to walk and carry load in steep mountains.
5.Zanskari	Common body colours are grey, black and copper.	147.0	132.0	129.86	123.07	148.50	144.50	283.12	296.36			verge of extinction as only few hundred horses are present in the Zaskar and other valleys of Ladakh.
6.Kachchhi-Sindhi	Mainly bay	145.52	144.66	133.15	134.66	157.22	163.21	301.91	209.92			Short pastern bone length & broader hoof, which is responsible for better grip & covering long distance during riding, and possibly saves from limb problems.
7.Bhutia	Predominant body colours are gray and bay.	132.0	130.0	128.57	129.18	147.57	150.00	320	300			Height at withers is from 130 to 132 cm and body weight 275 to 360 kg
8.Bhimthadi	Predomiant coat colour is chestnut			132.5	131.7	142.0	139.7	267	252			

Conclusion

In conclusion, the phenotypic characteristics of Indian-bred horses, as exemplified by breeds like the Marwari, Kathiawari, Manipuri, Spiti, Bhutia, Zanskari, and Bhimthadi (and others recognized by DAD-IS), collectively demonstrate a remarkable adaptation to the diverse and often challenging environments of the Indian subcontinent. These breeds, through centuries of natural selection and selective breeding, have developed notable traits including exceptional endurance, a relative resilience to local diseases, a robust and

sturdy physique capable of withstanding demanding work, and a reliable sure-footedness crucial for navigating varied terrains, from arid plains to hilly regions. While individual breeds possess unique physical attributes and temperaments suited to their specific origins and traditional uses, they share a common thread of hardiness and practicality, reflecting their vital role in India's history, agriculture, and transportation. This inherent adaptability underscores the valuable genetic heritage represented by India's native horse breeds.

Conflict of Interest

Not available

Financial Support

Not available

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