

CHAPTER 3 - HORSE ETHNOLOGY

Horse (*Equus caballus* ; 2n=64)

1. HISTORY, EVOLUTION & DOMESTICATION OF HORSES

Historians and archaeologists agree that the oldest known ancestor of the horse lived about 50 million years ago (Lehmann & Stepan, 2000).

Eocene archaeological era: Hyracotherium

In North America and Eurasia begins the evolution of the horse, about 45 - 55 million years ago, the size of a fox. It has 4 toes on the front feet and 3 on the back feet. Its teeth are similar to those of mammals, because it eats tender leaves.

Oligocene Era: Meshippus (4 toes)

The Meshippus replaces the Hyracotherium from which it originates, 40 - 25 million years ago. It is larger than its ancestor and has 3 toes per foot. Its teeth change. Herds of Meshippus cross Eurasia, and those that remain in America disappear due to the cold climate.

Miocene Era : Merychippus (3 toes)

25 - 5 million years ago, the Merychippus appeared. Its teeth form high crowns to be able to graze on grass rather than leaves. The legs now have a small primitive hoof topped with 2 useless toes. It lives in the plains with a length of now 35 inches.

Pliocene Era : Plihippus Equus (1 toe)

This descendant of Merychippus spreads across Europe, Asia, Africa, and returns to America. He is the grandfather of the modern horse. He is the first to have a real hoof and his teeth are very close to those of our modern horses. He is the modern horse and this is the demographic explosion. His hoof is solid and his

teeth are long to withstand the abrasion of sand through the grasses. He develops on all continents. In America, 8,000 years ago, he disappears again due to the climate and probably because of humans.

Domestication

Over the last **4,000 years** (around 3500 BC) in Central Asia, the horse was domesticated. The evolution of the species was accompanied by significant changes (Pageat, 2011). This domestication fundamentally transformed long-distance travel and warfare (Librado et al., 2022).

2. CLASSIFICATION

The horse (*Equus Caballus*) is from the family of Equids, of the order of perissodactyls, the class of Mammals arising from the phylum of chordates. Table number 1 represents this classification.

Table 1 : Taxonomy of horse species (Linnaesu, 1785, Benhamadi et al, 2016).

Kingdom	Animalia
Phylum	Chordata
Sub Phylum	Vertebrata
Class	Mammalia
Sub class	Theria
Order	Perissodactyla
family	Equidae
Genus	Equus
Species	E.ferus
Subspecies	E.ferus cabbalus
Life expectancy	25 – 30 years
Speed	40 – 48 km/h (At gallop)

● **Physiologic parameters**

Rectal temperature TR: 37.5-38°C

Heart rate HR: 28-40 bpm (adult), 40-60 bpm (one-year-old foal), 80-100 bpm (foal up to 6 months), 120 bpm (newborn foal)

Respiratory rate RR: 8-18 movements/min (adult), 14-15 movements/min (foal)

Spontaneous ovulation, Discontinuous estrous cycle, Cycle duration: 3 weeks, Estrus duration: 2-10 days, Gestation 11 months (Villemin, 1984)

DIFFERENTES PARTS OF BODY'S HORSE

Après la morphologie dite générale qui apprécie le cheval dans son ensemble, on peut ensuite examiner les différentes parties du corps du cheval, une à une. Les parties du corps du cheval se divisent en trois parties : -L'avant-main, le corps et l'arrière-main (Luis noel, 1980). Les trois différentes grandes parties du corps :

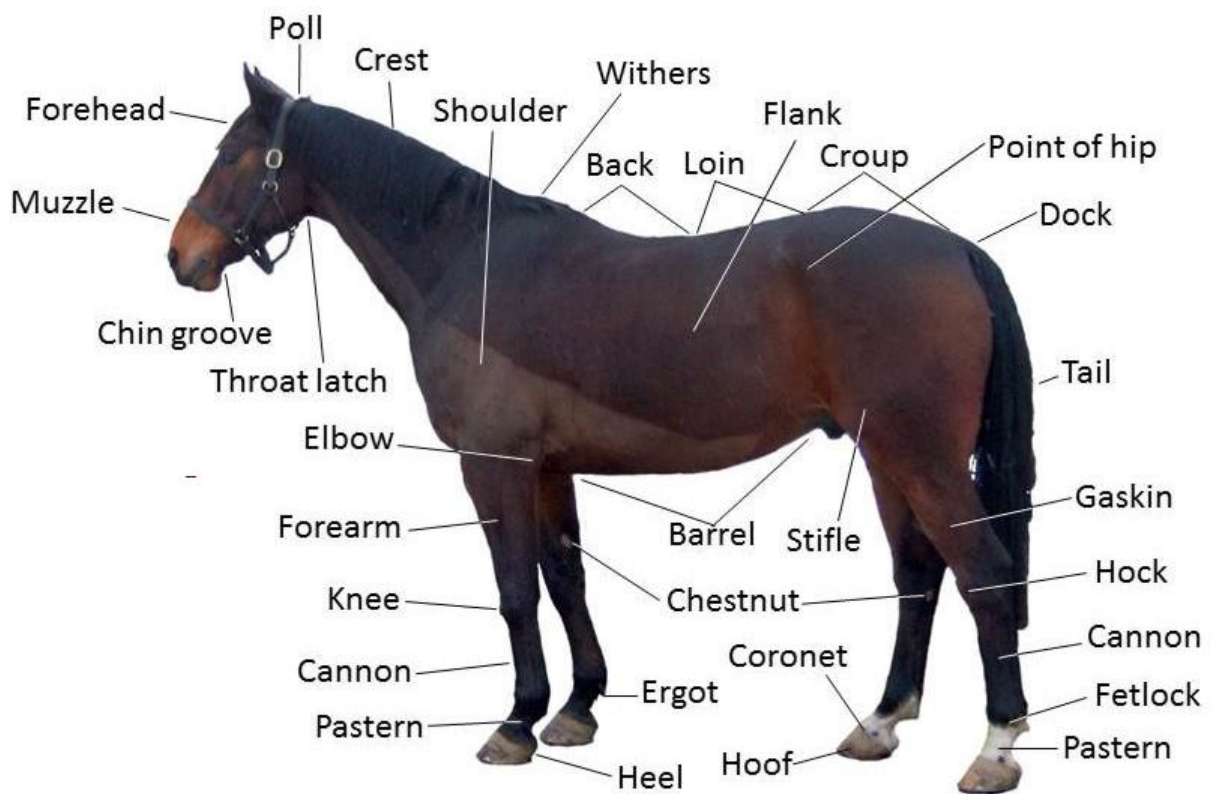
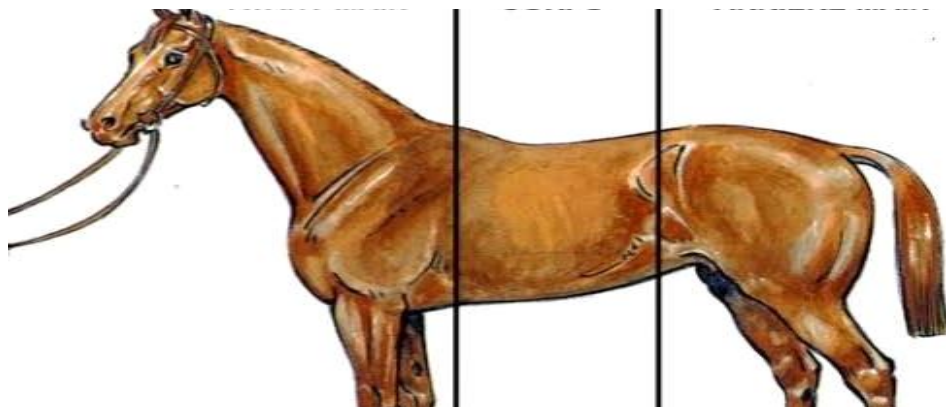


Figure1 : Different parts of the horse's body (Owain Davies, 2010; Goody, 2000; Pavord, T and Pavord, M ,2007).



Forehand- Body -Backhand

Figure2 : Conformation of different parts of the horse's body (Cited by Khaldi and Berais 2022).

- **Forehand**

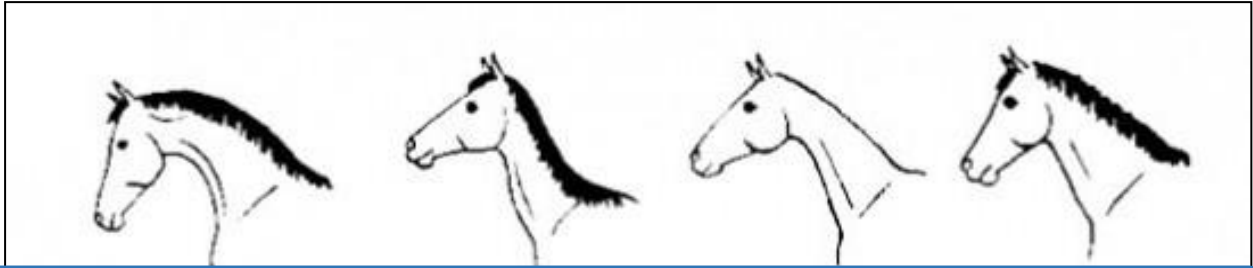
The forehand of a horse is made up of three main parts: the head, the neck, the forelimbs.

- **Head**

The head is made up of many parts. The most important are: the ears, the forelock, the eyes, the cheeks, the nostrils, the mouth. It is on the head that the different types of **profile** (facial line) are appreciated: concave, straight, convex.

- **The neck**

The neck, in general, is essentially made up of muscle. One can find there some morphological elements of the horse: the mane and the trachea. It is on this part of the horse's body that one can appreciate the different morphological types of neck.



Swan-neck collar - inverted deer-neck collar - thin - thick

Figure 3 : Different kinds of Neckline

- **Forelimb (Front limb or Anterior legs)**

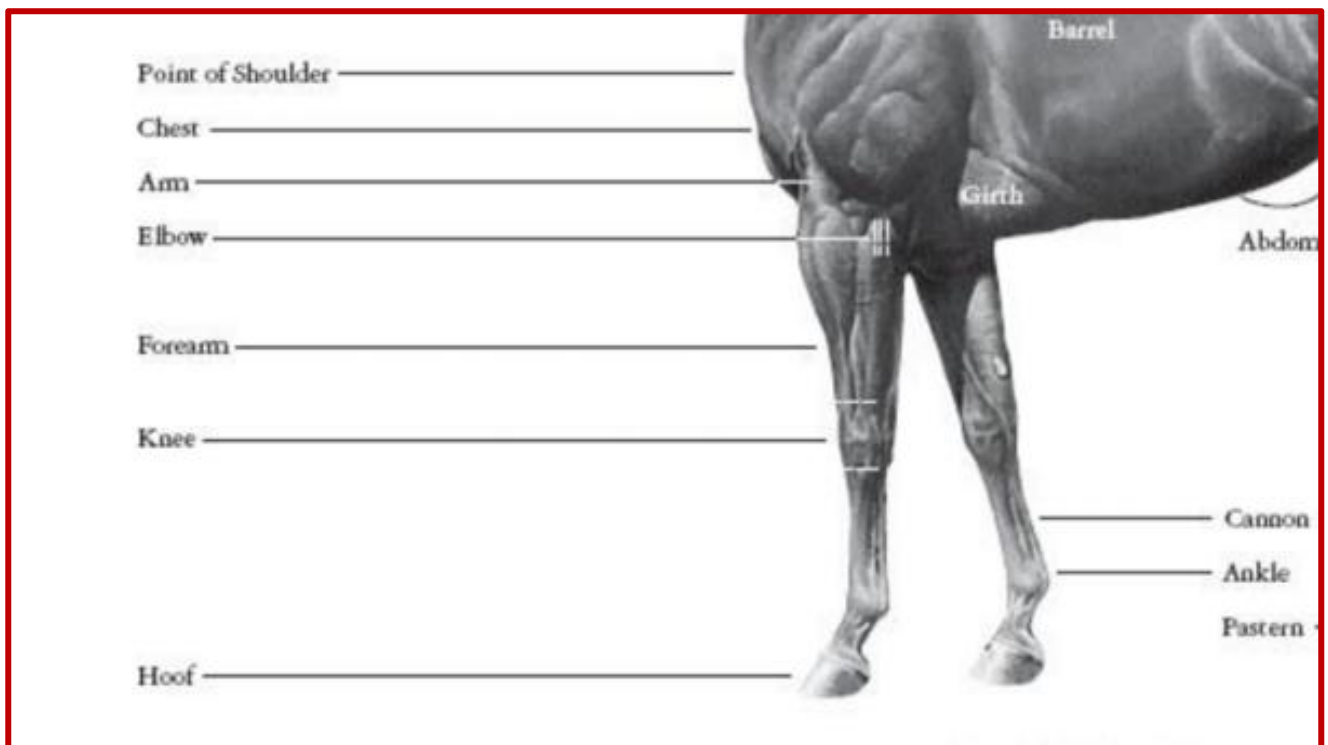


Figure 4 : the hoes forlimb (<http://quizlet.com>; visited March 19th 2026)

The front limb of a horse also consists of many parts. The main ones that can be noted are: the shoulder, the chest, the forearm, the knee, the cannon, the fetlock, the pastern, the hoof.

- **THE BODDY**

The body is the place where the rider positions himself when riding a horse. There are many parts. The main morphological parts are: The withers, The back, The belly. It is also where the sheath is located in males and geldings.

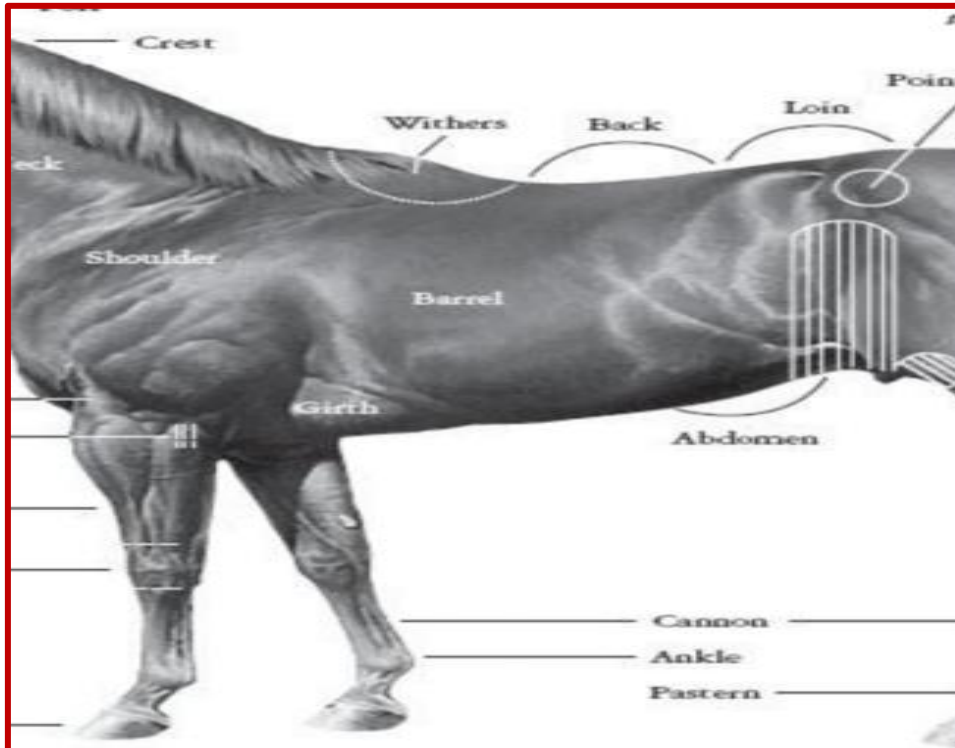


Figure 5 : Differentes parts of the horse's boddy (pinterest.com; visited March 19th 2026)

Differents types of the horse's back

The back part is important in the horse because it is the part that is used to carry the rider's weight. The back is one of the fragile parts of the body. The horse can have different back profiles: the long back, the short back, the hollow back or saddled horses: linked to insufficient musculature



From left to right : Long back - short back -, hindquarters, and saddled back

Figure 6 : Types of back in horses (<http://pinterest.fr> cited by Khaldi and Berais, 2022)

- **HIND QUARTERS**

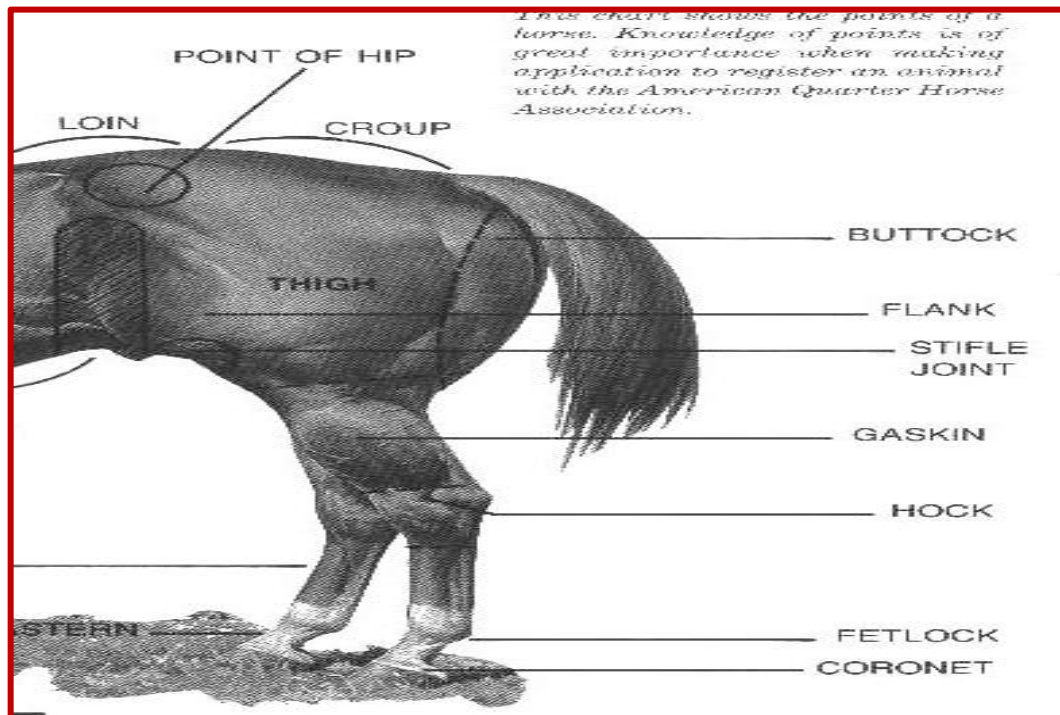


Figure 7 : The hindquarters (<http://what is this.com> visited march 19th 2026)

The hindquarters are the back part of the horse. This is where the horse's power and impulse come from. The main parts are: The croup, The hips, The thigh, The stifle, The hock, The cannon, The fetlock, The hoof.

THE FOOT OF THE HORSE

At the end of each limb is a hoof, which is the horse's foot. The hoof contains and protects living internal parts that are very sensitive. The hoof grows about 1 cm per month. The growth and condition of the hooves depend on several factors: Diet; Season; Whether the foot is shod or not; The horse's origin; Frequency of hoof care. The horn of an unshod hoof grows faster than that of a shod horse, and the hind hooves grow faster than the front ones. The horn can be of 2 colors: white or black. Black horn is more resistant than white horn.

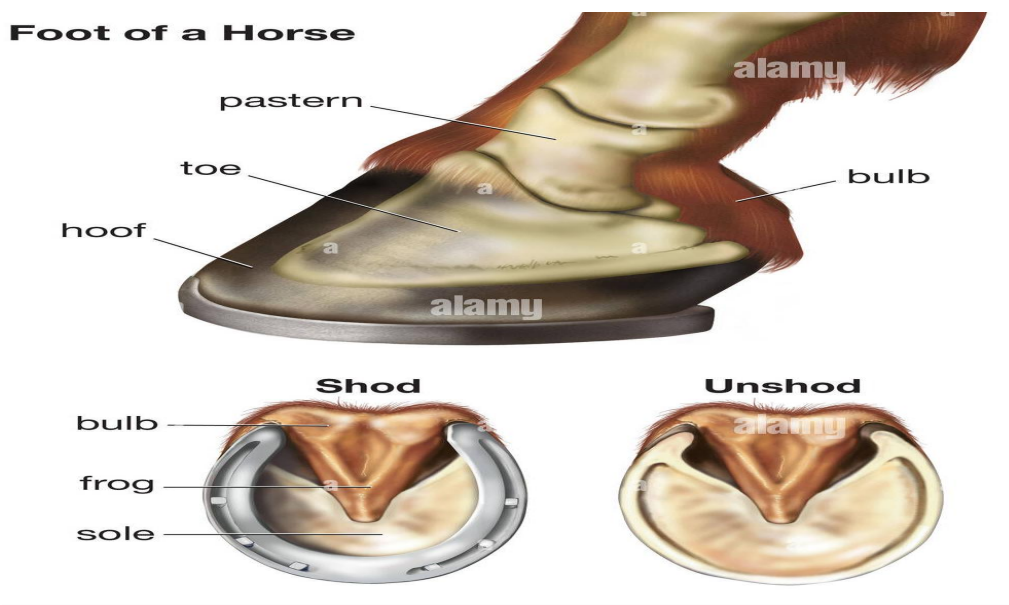


Figure8 : The hoof (<http://alamy.com> visted March 19th 2026).

3. GENERAL ETHNOLOGY



Figure 9 : Photo of a horse (Source : Anonymel)

The morphology of the horse corresponds to the study and description of the external parts and the general appearance elements of the horse. It may involve strengths and weaknesses. Morphology cannot be improvised: it has its own vocabulary. **Morphology** also allows Stud-Books to define breed standards and the registration of new breed representatives. It is also important in certain equestrian events such as shows or hunters because the horse is judged according to physical standards.

. **Morphology** is also used **to assess** a horse's **potential** in a **discipline**. **For example:** a horse with a strong hindquarters will be more suitable for show jumping. For passing the 'gallops,' practicing horseback riding, or breeding, a good knowledge of morphology is essential. So-called 'general' morphology: The overall external physique is called general morphology. So-called 'general' morphology is based on three themes: Size, Profile, The ratio of its different proportions (height at the withers - girth).



Figure 10 : Horse Shire & Pony Shetland (Anonyme1)

3.1. VARIATION OF SIZE

Horses exhibit a great diversity of size. The smallest ponies do not measure more than 50 cm at the withers, while Shires regularly exceed 2 m at the withers (HG). Size is also called 'height at the withers.' Size is the distance from the ground to the top of the withers (the bone located at the base of the neck). The measurement must be taken on a flat surface. The horse may be shod or unshod. It is expressed in centimeters or meters. For each size, there are categories

- **Hypometric**: the smallest ones, like the **Shetland** or **Falabella** breed.
- **Eumetric**: horses of a size considered classic, about 1.55 m at the withers.
Example: Barb Horse (see below), **Jutland Horse**, **American Appaloosa** breed.
- **Hypermetric**: the largest specimens, like the **Shire** or **Clydesdale** breed.

3.2. VARIATION OF PROFILE

The profile defines the appearance of the head and particularly the profile. It concerns the conformation of the nasal bone. Some types of profiles are specific to the horse breed. Profiles can be of the type:

- **Convex or arched:** The nasal bone is rounded in shape. Like the English Thoroughbred, Straight to semi-convex **Barb horse breed** (Rahal, 2009), Straight to semi-convex **Morgan Horse breed** (Nicky, 2017).
- **Straight or rectilinear:** The profile is straight. Example Straight to semi-convex **Barb breed** (Rahal, 2009), **Marwari Horse breed** (Nicky, 2017)
- **Concave or hollow:** The profile is hollow in the middle. Like the **purebred Arabian horse, Arab-Barb breed** with straight or concave head contours (Rahal, 2009). The prefix sub indicates a less pronounced profile, while the prefix ultra indicates a very pronounced profile. (1) Ultra-concave Profile, (2) Concave Profile, (3) Straight Profile, (4) Trapezoidal Profile, (5) Convex Profile, (6) Ultra-convex Profile.



Figure11 : Variation of Profile in horses

3.3. VAIRATION O F DIFFERENTS PROPORTIONS



Figure 12 : Variation of proportions : Akhal-Teke (1), French Saddlebred (2), Shetland (3)

The overall and general appearance of a horse is called proportions. A horse's proportion takes into account the size of its limbs relative to the size of its body and the width of the horse relative to its height. There are three categories of horses:

- **The longilinear or dolichomorphic:** These are the so-called **light horses**. Slender, they are taller than they are wide and have long limbs. These are mainly racehorses and endurance horses, such as the Thoroughbred, the **Arabian Thoroughbred**, and the **Akhal-Teke** breed (1).
- **The medioline or mesomorphic:** These are horses with so-called average morphology. Their proportions are generally balanced. Many saddle horses are of the medioline type, such as the Selle Français breed (2) and the **Anglo-Arab, Barb** (Rahal et al., 2009), **Swiss Franches-Montagnes** breed.

- **The breviline or brachymorphic:** These are horses with a compact, rounded profile and short limbs. They are heavy and massive. The breviline horse can be a draft horse such as the **Ardennes, Breton**, or rustic ponies like the **Shetland breed** (3). (Cited by Khaldi and Berais, 2022).

4. SPECIAL ETHNOLOGY

4.1. BREEDS OF HORSES THROUGH THE WORLD

4.1.1. Domesticated horses (*Equus caballus*)

- **Asian breeds**

Arab breeds: Horses of Iraq, Horses of Nejd, Horses of Yemen, Horses of Oman, Horses of Hejaz, Horses of Bahrain, Horses of Mesopotamia.

Persian breeds; Turkish breeds.

- **African breeds:** **Races of Nubia;** races of Numidia. Races of Chad: Dongola type, Barbe type, Kirdi type (or Logone Pony).

- **European races**

Spanish or Andalusian breeds.

English breeds: English racehorse (Thoroughbred and Anglo-Arabian Thoroughbred), Hunter or hunter horse, Black horse, Suffolk, Lincolnshire horse.

French breeds: Horses of the Pyrenees (Pottoks from the Basque Country and Mérens from Ariège). Horses of Auvergne, Burgundy or Nivernais horses, Limousin horses, Anglo-Norman horses, Corsican horses, Horses of Morbihan and Cornwall, Horses of Poitou, Percheron horses, Boulonnais horses, Flemish horses, Ardennes horses, Franc-Comtois horses.

Dutch breeds: Dutch Horse, Friesian Horse

German and Central European breeds: Mecklenburg horse, Holstein horse, German horse, Hungarian horse; Kings of Poland (perhaps descendants of the Tarpas from Central Asia); ponies: Austrian Haflinger, Westphalian Dulmen, Polish pony.

Danish and Russian breeds: Danish horse, Russian horse.

a. English thoroughbred horse



Figure 13 : English thoroughbred horse (Cited by Khalid and Berais,2022)

- **Origin**

In the 18th century, the **English** passion for sport led to the creation of a new category of horses. In 1535, Henry VIII issued a decree prohibiting the breeding of horses under 150 cm. This breed was introduced to Algeria in the 19th century.

- **Characteristics**

The Thoroughbred is a **long**, slender horse of large size, averaging **1.65 m** at the **withers**, which gives a very harmonious overall and athletic impression. The profile is rather straight, the forehead is broad, and the head is distinct. The shoulder is long and sloping, allowing the appropriate amplitude of gallop strides. The chest is broad, deep, and pointed, the back is straight, the croup is horizontal and long, the forearms are long and barrel-shaped, and the pasterns are short. The

most common color is bay (Fawn, Brown to chocolate with black manes, ear edges, and lower legs); chestnut (Fawn, Brown to reddish without black hairs) and gray can also be present. (Rahal et al, 2009).

b. French Trotter



Figure 14 : **French Trotter** (Cited by Khalid and Berais, 2022)

- **Origin**

The production is used only for racing. Comes from an **English thoroughbred** crossed with a **Norman trotter**.

- **Characteristics**

WH: 1.6-1.7 m, Head straight to slightly convex, shoulders straight becoming more sloping, allowing for a wider forehand movement and an average height. It is a very compact horse. The coat is generally made up of **bays** or **chestnuts** or bay **brown**. Horses of this breed, considered unsuitable for racing, are often directed towards the discipline of harness trotting (Khalid and Berais, 2022; Meyer, 2024)

c. French Saddle horse



Figure 15 : **French Saddle horse** (Meyer,2024 ; Cirad)

- **Origin**

Light saddle horse breed selected in France for leisure and show jumping, living in Normandy, the Centre, and the Centre-East.

- **Characteristics**

Height at the withers 1.6-1.8 m. Weight between 400kg-550kg. The **color** of its coat is **bay** or **chestnut**, its temperament is calm but energetic. It is a half-blood: Anglo-Normans were crossed with Thoroughbred breeders. It is used for show jumping and eventing.

d. Shire horse (draft horse)

- **Origin**

It is a **draft horse** breed from the east of England. It is nicknamed the **gentle giant**.

- **Characteristics**

It is the **largest, heaviest, and strongest** of all horses. Its height (**WH: 1.73 m**). The coat is **black, bay, brown bay, or gray**. It is used for draft work and

equestrian tourism. It has been exported to Germany, South Africa, North and South America, and Australia.



Figure : 16 : Shire breed horse (Meyer,2024 ; Cirad)

4.1.2. Wild or stray horses (*E. caballus* / *E. ferus*)

- **Wandering horses of Asia**

Tarpan (the original wild subspecies has been extinct since the 1760s, but the name continues to be used to refer to some horses returned to the wild), Muzins, Steppe or Tatar horses, Bareback horse.

- **Wild horses of Africa**

Kumrah or dwarf horse.

- **Wild horses of South America**

Cimmarones (Argentina), Mustangs (Paraguay).

- **Wild horses of North America**

Mustangs (Mexico and United States)

Feral horses of Oceania.

- **Wild horses of Europe**

French horses (Camargue horses, Horses of the dunes of Gascony).

Horses of southern Russia.

Horses of the British Isles (Long-haired Shetland ponies, Connemaras of Ireland, Ponies of Wales).

Horses of Norway, Lapland, and Iceland.

4.1.3 PONIES

The different ponies in the world are as follows: Shetland Pony, New Forest Pony, Exmoor Pony, Logone Pony, Welsh Pony, Austrian Haflinger, Westphalian Dulmen.

a. The New Forest Pony



Figure17 : The New Forest Pony Breed (Albertella, 2008)

- **Origin**

Is a breed of pony indigenous to the islands of Great Britain. The breed is indigenous to the New Forest in southern England, where the horses have lived since the last Ice Age.

- **Characteristics**

New Forest Ponies have an average **height** of **1,23 m** to **1,46 m** and are available in many **solid colors** (unicolor) , including **brown**, **bay**, and **gray**. Other common shades are **chestnut**, **black**, and **roan**. They are well-built with a slightly sloping shoulder that gives them a straight profile, making them perfect for driving and riding. They have a short neck and a prominent head, and most have large hooves with strong hind limbs. They also have a calm temperament, making them ideal for most pony enthusiasts and also one of the best horse breeds for a first-time owner.

b. Poney Exmoor



Figure18 : Exmoor Pony Breed (Meyer, 2024 ; cirad)

- **Origin**

The Exmoor pony is the **oldest** of the **native British** pony breeds that have roamed the open moorlands of southern England for centuries. They are thought to be the descendants of horses that entered Great Britain before it even became an island. (Nicky, 2017).

- **Characteristics**

Two unique characteristics of this breed are : **The upper eyebrows** that are **hooded** to protect them from rain and wind, as well as **The snow gutter** – a group of short hairs on the upper part of the tail designed to channel rain along the horse's body. Exmoors are generally brown with a broad forehead, large prominent eyes, and small ears. Their ribs are well-sprung and their body is deep. Their legs are short with well-developed bones and joint support. Their height at the withers (**HW**) ranges from **1,14 to 1,24 m** hands for stallions and from **1,13 m - 1,23 m** hands for mares. They weigh on average **3,4 to 3,8 kg**, and their overall appearance is one of strength and balance. (Nicky, 2017).

4.2. LOCAL BREEDS

The equine population in 2008 was represented by two breeds and several crossbreeds: Barb, Arabian Thoroughbred, Barb-Arab. The conservation of these populations is relatively good but remains, given the small population size,

threatened by the effects of inbreeding. For the Arabian Thoroughbred, there are three varieties in Algeria (ITELV, 2008). In 2024, Labbaci et al. report that the Algerian equine population is estimated at **46,356 horses**, composed of **90% Barb and Arab-Barb horses** (and Algerian saddle horses). The remaining 10% is distributed among Arabian horses, English Thoroughbreds, and French Trotters (FAO, 2021 cited by Labbaci et al., 2024).

4.2.1. Barb horse



Figure 19 : Barb horse breed (At left: cited by Khalid cited by and Berais, 2022 ; At righte Meyer, 2024)

- **Origin**

With the discovery, in the 1980s, of a wild horse in the Maghreb, it is now accepted that the Barb horse is of **indigenous** origin.

- **Cradle**

Cradle of the breed: Algeria, Morocco, Tunisia, and Libya (Khalid and Berais, 2022)

- **Characteristics**

Coat: Chestnut, Burnt Chestnut, Black, Gray, or Dark Bay. In Algeria, it is mostly gray.

Height: 1.40m to 1.5m. Eumetric and medium-lined (World Organization of the Barb Horse, 1989)

Hooves: rather small, cylindrical and hard, with short cannons.

Back: Short, sometimes sharp,

Croup “like a lectern”, a short neck, the Barb has the morphology of a sturdy and efficient horse.

Behavior: Lymphatic at rest, bubbling when stimulated. It is a false cold temperament combined with true intelligence. Physically very enduring and able to withstand all deprivations. (ITELV, 2008).

4.2.2.Purbred Arab Horse, Arabian

- **Origin**

One of the oldest known pure horse breeds is the Arabian Thoroughbred breed . It is a horse from a harsh desert civilization, selected in Middle Eastern countries based on criteria of flexibility, service, endurance, lightness, and above all, beauty. In Algeria, the number of horses is estimated at 1,000, of which 90% come from the Chaouchaoua State Stud of Tiaret (Rahal et al., 2009).

- **Characteristics**

Coat: Often gray, frequently dapple gray, sometimes bay or chestnut, rarely black.

Eyes: black, bright and expressive, set high on the head.

Head: square, broad and flat forehead.

Height: 1.4 m to 1.55 m or more.

Ears: short, spear-shaped, and always moving.

Tail: set high (“proudly carried”).

Weight: 350 to 400 kilograms.

Particular aspects: straight and long neck; high and strong withers; long and well-positioned shoulder; broad and deep chest; powerful limbs; good legs and good

hooves, very hard hooves.

General appearance: elegant and distinguished horse. (ITELV,2008) 20082008).



Figure20 : Estalion Arabian (At right cited by Khalid and Berrais, 2022 ; At left Meyer, 2024)

4.2.3. Arab-barb breed

- **Origin**

This breed, Arab-Barb, is a creation of the Tiaret Stud Farm (founded in 1877), initially dedicated to breeding the Arab and Barb varieties, the main varieties in Algeria (Benabdelmoumene, 2003; Kadri, 2006; Benhamadi et al., 2016 cited by (Khalid and Berais, 2022)

.Characteristics

The Arabian variety differs from the Barb in that it is lighter, drier, and more delicate, with a longer body, straight or concave head contours, a short and high tail, and a more horizontal croup (Gaudois, 1989; French National Stud, 2010 cited by Khalid and Berais, 2022). 15 Quantities of pure Arabian Barbs, egistered e Algerian pedigree (Rahal et al., 2009).



Figure 21 : Arab-Barb breed (Khalid and Berrais, 2022)

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