A photograph of two dark brown horses nuzzling each other. The horse on the right is leaning its head towards the horse on the left. The background is a light, textured surface, possibly sand or dry grass.

Jane Myers and Stuart Myers

**A Horse is a Horse
- of Course -**

Equiculture Publishing

Contents

A horse is a horse of course

What horses are...

What horses are not...

Horse behaviour and 'lifestyle'

Natural living horses

Domestic horses

Communication

Vocalisations and other noises

Body language

Intelligence and learning ability

Training effects

Time-budgets of horses

Time spent grazing

Time spent sleeping

Time spent loafing

Herd and social behaviour

Grazing and feeding behaviour

Paddock/field behaviour

Dunging behaviour

Sexual differences

Individual differences

Abnormal horse behaviour

Improving the 'lifestyle' of domestic horses

Introducing a new horse to an established herd

Further reading - A list of our books

Recommended websites and books

Bibliography of scientific papers

Final thoughts

A horse is a horse of course

Understanding horse characteristics is a very important part of horse ownership. By reading this book you will learn about what it really means to be a horse and how by understanding and utilising this knowledge it is possible to improve the health and welfare of your horse.

What horses are...

This section looks at why horses are built the way they are, their physiology, and how the physiological characteristics of horses are linked to their behaviour, just as they are with all animals including humans.

Horses are part of the equine family which also includes asses (donkeys) and zebra (and of course ponies which for the sake of clarity will be encompassed with horses in this book). The equine family used to be much larger but many species of equine are now extinct.

Domestic horses are part of the equine family which includes donkeys and zebra.



Equus ferus caballus is the scientific name for domestic horses. They can usually produce offspring with other members of the equine family (such as a horse/donkey cross which results in a

mule) but any resulting offspring are *usually* unable to reproduce (are sterile). In their natural environment, equines were/are hunted by predators such as large felines and canines although in modern times many of their natural predators have also become extinct.

These horses are doing 'what comes naturally' to any grazing herbivore. Grazing is the most important behaviour that horses carry out. Horses spend (or should spend) more time grazing than all of their other behaviours put together.



Horses are *herbivores* (plant/herbage eaters). There are three main types of herbivore, ruminants, pseudo-ruminants and non-ruminants:

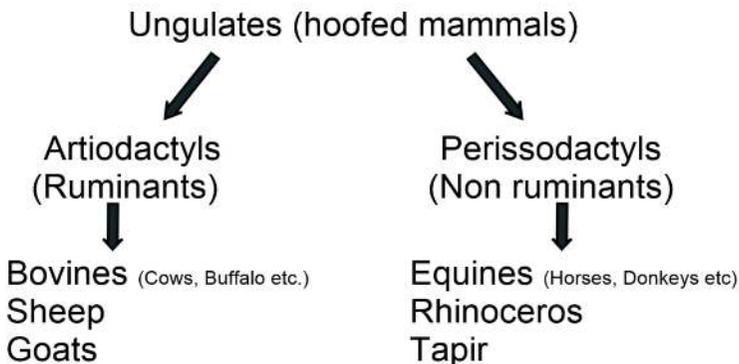
- The ruminant group includes animals such as cows, sheep, goats, yak, buffalo, moose and other animals such as bison, gazelle, antelope, deer and giraffe.
- The pseudo-ruminant group are camelids, i.e. camels, alpacas and llamas.
- The non-ruminant group includes all *equines*, but also rhinoceros and tapirs, which are the only living relatives of the equine family. Elephants are also non-ruminants.

Humans, pigs and dogs are also non-ruminants but they are *omnivore* which means that they usually eat meat *and* plants.

Your horse is more closely related to tapirs and rhinoceros than to sheep and cows.



Ruminants and non-ruminant grazing *herbivores* (apart from elephants) are all part of the group of animals called *ungulates*, which simply means hoofed mammals (pigs are ungulates too despite being omnivores), however there are many important differences between ruminants and non-ruminants despite them both belonging to the *ungulate* group. It is important to understand the differences between the two animal types because it is often presumed that all grazing animals have the same or similar needs which can lead to management and welfare issues.

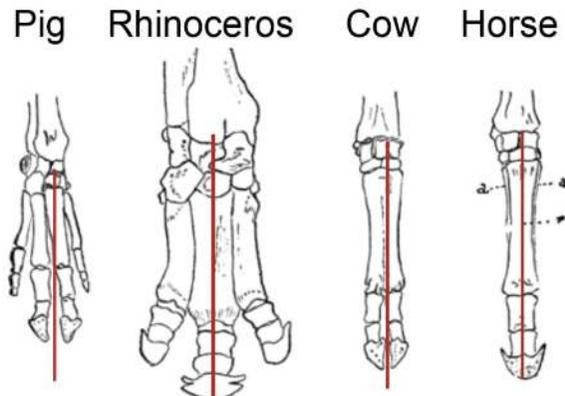


The main differences are in the feet and in the digestive systems but also in behaviour. Ruminants such as cows and sheep etc. are 'even toed ungulates' (*artiodactyla*) because the line of symmetry in

the foot goes between the second and third toes. Non-ruminants (i.e. equines, rhinoceros and tapirs) are 'odd toed ungulates' (*perissodactyla*) as the line of symmetry in the foot goes through the middle of the third toe. In equines only the third toe remains, the others have almost disappeared through the process of evolution (the 'splint' bones at the side of the cannon bones are all that remains of the second and fourth toes).

It is the differences in the digestive systems (which also results in differences in behaviour) that are particularly important. Ruminants (such as cows and sheep) have a *rumen*. This is a large area that is positioned *before* the intestines and this is where they carry out much of their digestion. Therefore another name for ruminants is *foregut fermenters*. Ruminants initially chew and swallow their food more quickly than equines because they regurgitate it later to 're-chew' it more thoroughly (sometimes called 'chewing the cud'). Non-ruminants (such as equines) do not have a rumen and carry out most of their digestion in their intestines (after the stomach) hence equines are called *hindgut fermenters*.

*The line of symmetry in the foot goes **between** the middle digits in animals such as pigs and cows and **through** the middle digit in animals such as rhinoceros and horses.*



Source: http://en.wikisource.org/wiki/Popular_Science_Monthly/Volume_52/January_1898/Feet_and_Hands_I

Fermentation is *very* important to *all* herbivores. Plant material is impossible to digest in the same way that carnivores (animals, such

as cats, that eat only meat) and omnivores digest meat and certain other food types (meat eaters mainly use digestive juices that are rich in enzymes to digest their food). Grass plants in particular are coated with a very tough substance called cellulose. Herbivores require assistance to break down this cellulose, therefore animals that predominantly eat plants have to host (provide a home for) large numbers of micro-organisms (sometimes called 'friendly bugs') that will break the cellulose down for them in to a form that they can then digest.

These micro-organisms in the gut are so important that without them a horse cannot survive. When you feed a horse you are actually feeding billions of micro-organisms that in turn feed your horse. This is a good example of what is termed a 'symbiotic relationship' because each organism needs the other for survival.

What is regarded as the leg and hoof of a horse (from below the 'knee' or hock) is actually the same as the middle toe or finger, and its fingernail or toenail, on a primate (such as us). The joint on the front leg of a horse that is commonly called the 'knee' is the same joint as our wrist (carpus) and the joint on the hind leg of a horse called the hock is the same as our ankle (tarsus).



Therefore, ruminants (such as cows and sheep) host these micro organisms mainly in the foregut and non-ruminants (such as horses) host these micro-organisms mainly in the hindgut. Horses have a very large *caecum* (which is the same organ as the human appendix but relatively much larger and more important to the animal) and a *huge* large intestine (LA). The caecum and LA are where the greatest numbers of these very important microorganisms ('friendly bugs') live. Omnivores (such as humans and dogs) also provide a home in their gut for beneficial micro-organisms that help them with the digestion of plants. However these microorganisms are not as crucial to them because omnivores eat other types of food as well (such as meat/fish etc.).

There are many important differences between horses and ruminants (such as cows). In particular they differ in their behaviour and in the way that they digest their food. This horse is doing its job of 'standing guard' over its only companion, a cow, while the cow lies down. The cow does not take its turn and 'stand guard' over the horse when the horse lies down because cows do not do this! An example of why animals need their own kind as companions (although in this case it is better than no companion) because different species have different behaviours.



The mouth parts of cows and horses also differ significantly. Horses have six upper and six lower incisor teeth which meet edge to edge. This means that they can clip grass and other plants *very* close to the ground. They also have a highly mobile (prehensile) top lip which allows them to be extremely selective when they are grazing. Cows have only lower incisors (of which there are eight) and their top lip is not very mobile at all, instead a cow's tongue is highly mobile (prehensile). Cows have to rely on their tongue to break the grass and so cannot eat very short grass. Sheep and goats also have mobile lips (like horses) and are also able to eat very close to the ground. This ability of a horse to eat very short grass is beneficial in the wild where forage may be difficult to obtain at times, but can work against your horse (and your land) in the domestic situation because it leads to overgrazing if you do not manage your pasture properly.

Horses have six upper and six lower incisors which meet edge to edge, like a pair of scissors in the mouth!



Horses are highly successful as wild and feral animals in various climates around the world. Two of the reasons that horses are able to survive in very harsh conditions are due to this ability to eat very short grass (therefore, if necessary, they can eat what other animals leave behind) *and* they do not need to 're-chew' (ruminate) their food (which takes time and energy). Horses can increase the amount they eat, even if this food is very low in energy, by

increasing the amount of time they spend eating (up to 20 hours a day if necessary). Ruminants take time to extract the maximum amount of nutrition out of every mouthful, whereas horses rely on maximising their intake instead.

Another very important fact about horses is that gastric acid is made and secreted into the stomach continuously (rather than just as a meal is eaten which is the case with most omnivores). A free-living horse has access to fibre most if not all of the time (even when this fibre is very poor quality and low in energy, such as leaves and even twigs). This means that a free-living horse can nearly always find something fibrous to eat and so the acid in the stomach is usually buffered by the saliva that the horse swallows while chewing. If domestic horses do not have access to enough fibre (and therefore they are not chewing and swallowing enough saliva) this acid reaches critical levels in the stomach and causes *gastric ulcers*. Gastric ulcers are a *very* common occurrence in domestic horses due to the way that these horses are usually managed (on a diet that is too low in fibre). Not getting enough fibre is also a reason why domestic horses will sometimes eat poisonous plants, strip the bark from trees or chew fences. Indeed horses will eat almost anything rather than allow painful gastric acid to build up in their stomach. For this reason 'starving' even a fat horse is not the right way to go about managing weight (more about this later).

Domestic horses range in size far more than their more natural living counterparts. Wild and feral horses are usually between 12hh (hh = 'hands high') and 15hh but are most commonly around 14hh.

One 'hand' equals four inches or approximately 10 cm. The use of the 'hand' is an ancient but still widely used way of measuring horses from the wither (top of the shoulders) to the ground.

Domestic horses have been manipulated (by breeding) to range in size from less than 8hh to more than 20hh. Apart from size however, free-living *and* domestic horses share the same the physiological and behavioural characteristics.

Horses have very sensitive skin which is necessary for detecting flying pests and parasites. In the free-living situation some species of insects suck blood and will seriously debilitate a horse over time. Horses can ‘twitch’ their skin in many areas of the body and will stamp a front leg or even kick forward with a back leg at their belly if they feel the light touch of an insect or what they perceive to be an insect (so be careful to touch a horse firmly otherwise it may think an insect has landed on its’ skin).

Domestic horses have a larger size range than their more natural living counterparts but they all share the same physiological and behavioural characteristics.



Some parts of the horse are even more sensitive than others and these include the top lip, muzzle, flanks, eyes, ears, feet and legs. The top lip has many nerve endings and, as already mentioned, is highly mobile (prehensile) which allows a horse to select certain plants. The muzzle is covered in whiskers that help a horse to ‘feel’ in much the same way as a cat uses its’ whiskers to ‘feel’. These whiskers should never be removed (but in the case of domestic horses often are). The flanks are sensitive to the extent of being very ticklish in some horses. The eyes, ears, feet and legs are

essential to wild horse survival therefore a horse that is not accustomed to being handled by humans is particularly wary of these areas being touched.

The relatively large eyes of a horse are situated on the *sides* of the head which gives excellent all round vision at the expense of sharp forward focusing vision. In effect, a horse has a much wider peripheral vision and can see much further than we can, but has a smaller focal point. Horses are unable to focus on objects at the same speed that we can and this lack of sharp focusing can cause a horse to be anxious about an object until the object has been properly identified. If horses cannot ascertain what a potentially scary object is very quickly then they prepare for flight because in the wild spending time thinking about what to do next could lead to being caught and eaten.

The eyes of a horse are situated high on the head so that they can see predators approaching while grazing. This also reduces the amount of grass seeds that get into the eyes.



By contrast a horse can detect moving objects in the distance that a human eye would struggle to see. Horses also notice when *unfamiliar* objects are positioned in a *familiar* place because they

take the *whole* situation into account when looking for potential dangers.

A horse's eyes are situated a long way from the mouth in order to lift the eyes out of the grass when grazing and increase vision. This also has the advantage of reducing the amount of grass seeds that get into the eyes (a potentially dangerous occurrence for a horse).

When the head is in the grazing position a horse can see along either side of its' legs. At all times a horse has a small blind spot directly in front of the face (between the eyes) and is unable to see the area below and behind the chin.

Having a long neck allows a horse to see directly behind and directly in front with only small movements of the head. If a horse becomes aware of a possible danger the head is immediately raised above the level of the body where all round vision is easily possible. The only time a horse is unable to see behind their body is when the head is straight forward and level with the body (the usual position of the head when being ridden).

The positioning of the eyes on the side of the head means that the horse has excellent all round vision. Grazing herbivores tend to all share this characteristic whereas predators (such as ourselves, cats and dogs), have their eyes positioned facing forwards.



In addition to raising the head for better vision, the long neck allows a horse to easily reach the ground to graze, but also acts as a balance for the body while moving at speed. Yet another function of

the long neck is to permit the head to swing from side to side to bite at flies on the body or to reach out to nip/bite another horse. The teeth are sharp and the jaws are extremely strong (because a horse spends so much time biting plants and chewing). A bite from a horse causes a crushing rather than a tearing injury (as is the case with a cat or dog bite). Horses nip or bite each other when playing or asserting themselves, but they also use their front teeth (incisors) to mutually groom one another, an essential bonding behaviour among horses.

The ears of a horse are situated right on top of their head and are serviced by numerous muscles (in us most of these muscles have disappeared through the process of evolution). These muscles enable each ear to swivel 180 degrees providing the horse with potentially 360 degrees of hearing without even having to move the head. The ears also work independently so that a horse can have one ear facing forward and one back at the same time, or one ear 'fixed' on something and the other 'ranging' and searching for other sounds. The possibilities are endless. This gives a horse the ability to hear very well indeed, so a horse can hear objects approaching well before we humans can. The ears serve the dual function of being used for hearing *and* for signaling certain behaviours as part of the body language of horses.

This horse is using one ear to listen behind as he also looks and listens forward. A horse's long neck has various functions including lifting the head above the body for all round vision and hearing.



The hoof of a horse is relatively very small and lightweight (compare it to a human foot) on the end of a leg that is concertinaed (the joints are always partially bent when the horse is standing or moving slowly) which allows a lot of extension when running and kicking. This means that very little energy is required to move the hoof and it can move very quickly, it also means that a horse can kick with accuracy, speed and strength if required. If a horse is being attacked by a predator it can defend itself by kicking backwards *and* running away at the same time. This relatively lightweight hoof has a small area of contact (like stiletto heels on a soft floor) it is capable of causing a lot of damage to potential predators.

A horse is also capable of striking forward with a front leg if necessary. In the free-living situation a horse that is surrounded by predators will strike at them with a front leg or even rear to use both front legs to strike and stamp if they cannot get away.

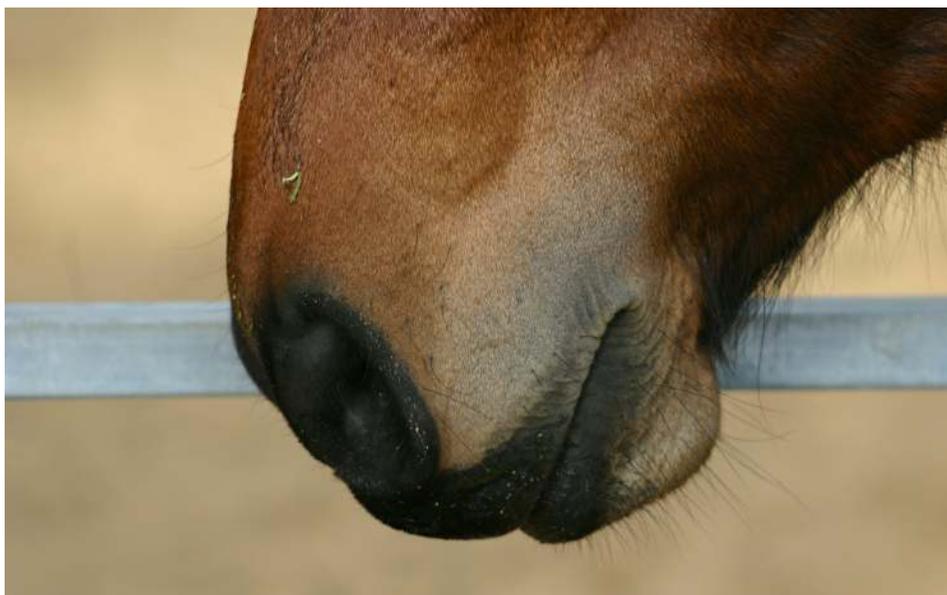
The hoof of a horse is relatively very small and lightweight on the end of a leg that is built to have maximum extension. Horses can kick with speed and accuracy.



Horses have a strong sense of smell. As well as being necessary for food selection, a horse uses this sense of smell when assessing a potentially dangerous situation. Many horses are unsettled in windy weather and one reason for this is thought to be because wind distorts and adds to the normal noise level making it more difficult for a horse to hear potential danger. The wind also brings various scents that a horse then has to decipher.

Horses do not like wind and rain together and will turn their rump into the wind and rain to protect their head. Turning their rump in this way causes the tail to 'fan out' across their rump which helps to keep the hairless areas directly under the tail warm and dry. At the same time the wind blows the rest of the tail between the back legs to help protect the hairless areas between the back legs (the udder of a female and sheath of a male horse) and the belly. For this reason the tail of a domestic horse that 'lives out', like the whiskers, should not be cut (except to shorten it slightly if it grows long enough to drag on the ground).

The whiskers of a domestic horse should never be removed (but often are). A horse needs these whiskers to 'feel' with, in much the same way as a cat.



The long forelock and mane of a horse is there to protect the head and neck from rain and from flies. They also help to keep these parts of the body warm when necessary so again they should always be left intact in a horse that spends time outdoors.

Horses have very large lungs which enable them to accelerate from slowly walking and grazing to moving very quickly indeed if and when necessary. This can be achieved at just a moment's notice. Horses are also able to keep up speed for relatively long distances. In comparison to a cheetah for example, which is *extremely* fast but can only run at high speed for very short distances, a healthy horse can sprint fast enough to get away from most predators *and* keep up a reasonable level of speed for hours if necessary. Therefore horses are supreme grazing athletes in many respects.

Horses are supreme grazing athletes in many respects. Healthy horses will run around on a fairly regular basis if given the opportunity.



The way that horses are built, their physiology, is closely linked to their behaviour, and in turn is vital for their survival. Everything about horses, including their large eyes, long legs, sensitive skin and all of the other things that make horses what they are, has evolved for a purpose. That purpose is to thrive in a range of climates and landscapes throughout the world as a free-living, grazing, herd animal.

What horses are not...

As humans it is very easy to assume that animals 'are just like us' and that they want the same things that we do. Domestic horses have no input into who owns them, how they are kept and what their owners do to them therefore it is very important that we *understand* what is important to them (and what is not) so that we can continually strive to improve the way that we keep them.

It is commonly regarded as 'normal' and 'good horse care' for a horse to be permanently separated from other horses. It is also common for domestic horses to stand around for many hours a day with nothing to do and not enough fibre to eat. These and other practices have become normalised in the horse world and this is a very sad situation for the domestic horse.

Horses are large grazing herbivores and are meant to eat grass and a variety of other plants. They are also meant to live as part of a herd and move around for many hours a day.



We have established that horses are large grazing herbivores and that they are not ruminants, like cows or sheep. But there are other

important facts that we need to acknowledge about horses and how we interact with them. It is important *not* to label horses (or any animals for that matter) with human characteristics (to anthropomorphise) but instead to try to view their behaviour from their perspective. It is a curious human characteristic to look for human behavioural traits in many things ranging from inanimate objects such as their car to animate creatures such as their pets and other animals. Humans then use this misinformation as a reason for treating these objects or creatures in a certain way. This is not usually done with any malicious intent, quite the opposite in fact, but the problem is that while it can be fun for humans to anthropomorphise (and harmless in the case of inanimate objects such as their car) it is not helpful and can actually be harmful because it disregards an animal's real needs and replaces them with human needs.

We tend to think that horses have the same needs as we do. This horse is stabled full time and the mark on the wall is due to a stereotypic behaviour (head swinging).



Beware of attaching human emotions and needs to horses as this may impede understanding of their true behaviour and can even lead to welfare issues. For example, contrary to popular opinion,

horses do not bear grudges (a common human failing!). They do not sulk if they cannot 'have their own way' (another common human failing!). There is no proof that horses see us as they would see another horse (it is highly unlikely in fact because we look nothing like a horse!) so acting like an 'alpha mare' is not likely to get your horse's 'respect' (only fear if you insist on trying to dominate your horse). Another common misconception about horses is that they deliberately set out to upset or even hurt you. This is why horses are often labelled with descriptions such as 'lazy', 'mean' or even 'cunning'. Likewise it is common to hear horse people say that a horse 'knows he is doing wrong' when in fact horses are horses and have no concept of what we humans regard as 'right' and 'wrong'.

Another example is that we might think that a horse 'needs' a warm stable and/or lots of rugs because as humans that is what we tend to value highly, albeit human versions i.e. a warm house and clothes. But horses usually place a higher value on other things instead. They value freedom to move, the companionship of other equines and high fibre foodstuffs. Horses do need shade (in hot weather) and shelter (in bad weather) however it is best if a horse can choose when to access these resources rather than having them forced upon them as they so often are in the domestic situation.

Horses need high fibre foodstuffs and they need the companionship of other horses. They also need movement and lots of it. Horses do not move because they know they need to 'keep fit' they move because they have an innate need to move, a subtle but important difference.



Another example is that we humans often value (in ourselves and others) such behaviours as risk taking (for thrills and 'personal development'), education (in order to 'better ourselves') and exercise (because we know we should). Horses have no concept of 'personal development'. They do not strive to challenge themselves because it will 'do them good', in fact they resist taking risks 'just for the fun of it' (as we do). They do not exercise themselves to 'keep fit', they move because they have an innate *need* to move.

There are many other important differences between humans and horses. Humans are by nature one of the top predators (hunters) on earth whereas horses are hunted by predators (carnivores and omnivores). These differences often lead to a lack of understanding because as predators we tend to think a certain way whereas our horses think quite differently! It is a good idea to keep reminding yourself that you are the one with the plan, the agenda; the domestic horse is just trying to figure out which behaviours will help them to survive and thrive.

Beliefs about modern horsekeeping is an assortment of ideas, superstitions etc. from a time when horses were kept for a purpose (for work) combined with now when horses are kept mainly (in the western world) for recreation. If you are struggling to understand what you need to do in order to improve the welfare of your horse always try to think about what the basic requirements are for a horse. Free-living (wild/feral) equines usually have access to the things that they need to survive and thrive. Many domestic horses do not and this can lead to welfare issues. All of these important needs and how you can provide them will be covered in more detail throughout the rest of this book.

Acknowledging that horses are not like humans does not mean that we should disregard or even say that horses do not have emotions, feelings etc. Horses are a complex animal that have intricate needs. As humans we should strive to understand what is really important to horses rather than simply assume that they want what we do. This means that we have to learn about horse behaviour.

Horse behaviour and ‘lifestyle’

We owe it to our domestic horses to understand and acknowledge their behaviour properly. In order to learn how a domestic horse *should* behave we actually need to start with learning about the behaviour of free-living horses. We cannot surmise what is normal horse behaviour by watching domestic horses, because domestic horses have to modify their behaviour due to man-made constraints such as fences, feed times and so on. In a natural setting horses carry out behaviours without being hampered by such constraints.

Free-living equines such as these Konik ponies have a rich and varied ‘lifestyle’. These particular ponies are part of a grazing project in the UK that aims to recreate bio-diverse (multi species) grassland from land that was previously farmland.



**This is the end of the
free section of *A Horse
is a Horse - of Course***