

Senses of the Horse

Horses have very keen senses. These keen senses were needed for survival when horses lived in the wild. The senses of the horse include:

- sight
- smell
- hearing
- touch
- taste.

Sight

Sight is extremely important to horses. Their vision allows them to see potential danger at great distances. Their total range of vision is thought to be as much as 350 degrees. That is almost a complete circle – 360 degrees – around the body! However, horses also have some real blind spots that any working with them must be aware of. Understanding how horses see is very important for safety, for training and even for assessing their athletic capability in different situations.

The horse has both monocular and binocular vision.

- Monocular vision means that the horse can see out of its right eye and the left eye totally independently. In other words, a horse's right eye could be looking at a dog approaching from the right at the same time its left eye is looking at you approaching with a halter to catch it in the pasture.
- Binocular vision refers to both eyes working in unison, looking at the same thing at the same time. A horse uses binocular vision to look "head on" at something. The horse will turn its head or even its whole body in an effort to use binocular vision and look at something with both eyes.

Research indicates that a horse raises and lowers its head in an effort to better focus on a given object.

Monocular vision gives the horse a very large view of the world around it, enabling it to perceive potential danger all the way to the horizon along both sides of the body. This wide field of monocular vision makes the animal extremely perceptive of motion. Horses see even small movement at great distances --- though not in much detail.

It is interesting to note that the pupil (the slit in the eye that allows light in) is more horizontal in the horse than in many other animals. (A cat's pupil is more vertical, for example; a human's is more round.) The horizontal pupil allows for greater vision over a wide horizon.

Monocular vision has been essential for the horse's survival by increasing the animal's ability to see and sense danger from which it can run away – what is called the "fright and flight" reaction. Horses typically prefer to run away from danger, rather than stay and fight (a reaction known as "fright and fight" behavior), although they could do either.

A horse's binocular vision is more acute than its monocular vision. Binocular vision allows the animal to see with greater detail by focusing on something with both eyes. The range of a horse's binocular vision is about 65 degrees directly in front of its head. This area of binocular vision is the only area where it sees objects in three dimensions – length, height,

and width. Binocular vision allows the horse to see with better depth perception than does monocular vision. However, it cannot use binocular vision for anything close then 4 to 6 feet directly In front of it, as this area is one of the four major blind spots in the horse's field of vision.

These four blind spots are:

1. Front of the Head – the area directly in front of the horse's head when the animal is using binocular vision. As just mentioned, experts estimate that typically this blind spot ranges out 4 to 6 feet in front of the animal. It is triangular in shape.
2. Under the Head and Neck – the area directly under a horse's head and neck is a blind spot as well. For this reason, a person should not cross in front of the horse in this area – so remember not to duck under the head or neck of the horse that is tied or in cross ties.

NOTE: The above two blind spots are particularly important to anyone working with horses. A rider or handler needs to be conscious of the visual limitations of the horse in such situations as: nearing a jump, approaching a barrel in a barrel pattern, stepping over an object on the trail, crossing a stream and many more.

Another thing to understand is that a horse's speed of approach to an object can affect its ability to see the object. Repetition and mental conditioning can help train horses to negotiate successfully in situation, such as jumping and barrel racing, in which object become more difficult to see as they horse nears them. The horse may lower its head in an effort to focus both eyes on the object and see it in more detail.

3. Over the Head, Neck and Back – this blind area starts at the back of the eyes and continues over the top of the head, down the neck, and over the back to the dock of the tail. Ever wonder why a horse gets startled if you remove your jacket or shirt while mounted? Or why a horse is afraid of clippers? The problem may be not just the noise, but the fact that the animal can't see what's causing the noise!
4. Behind the Horse – the area directly behind, to the width of the animal's rump, is another complete blind spot. Even when the horse turns its head to see behind itself, at best it is only using one eye – monocular vision, which can see long distances but with little detail or depth perception.

Anyone who works with horses must remain aware, at all times, what a horse CANNOT see its handler, or anything else, in its blind spots. This is a safety issue, because something that horse cannot see, or cannot see clearly, can startle or frighten it. Any time you're around horses, you need to be thinking at all times – and staying aware of what they may be thinking.

Some more interesting information about horses' eyesight:

- The size of the horse's eyeball (known as the globe) is larger than that of any other mammal, including the elephant and the whale.
- Horses see better at night than humans do.
- Humans are believed to have better overall eyesight than horses, even though horses can see motion at much greater distance than humans do.
- Experts believe that eyesight capability varies among horses, just as it does among humans. (In other words, some horses can see better than others.)
- Recent research indicates that horses can see in colors, although they may have more difficulty seeing red than other colors.

Smell

Another term for the sense of smell is the olfactory sense. Although there is little research in horses to document how it works, researchers generally agree that the horse's sense of smell is very acute.

The sense of smell is very important to the horse, who uses it to:

- locate food
- ensure that food and water are of acceptable quality
- identify other horses
- identify people
- identify objects
- smell potential predators or other dangers
- identify marked territory of other horses or herds
- initiate sexual and breeding behavior
- mares also use smell to identify their own foals

Horses in the wild were and are very dependent upon their keen sense of smell of survival. Even today's domesticated horses depend greatly upon it. The equine sense of smell is so keen that a horse can identify a familiar person coming across the pasture – even in the dark. You may have observed a horse smelling the ground where another horse has urinated or defecated. You have probably also seen a horse curl its upper lip and hold its head in the air – a social and sexual behavior known as the Flehmen response.

Horses may refuse to eat or drink hay, feed or water that is of poor quality because it does not smell good to them. The reaction is extremely important, as the horse's digestive and respiratory systems are very sensitive. Eating or drinking poor-quality, moldy or tainted food or water can cause colic, heaves, poisoning, or even death. A horse's keen sense of smell is one safeguard against such incidents. Many horses react negatively to the medicinal smell of any veterinarian that comes within sniffing range.

As these examples demonstrate, a horse's sense of smell is indeed very keen!!

Hearing

The horse also has very good hearing. Its ears can each rotate about 180 degrees; with both ears working together, the horse can capture sounds in almost any direction – practically a full 360 degrees – without moving its head.

The horse can hear sounds in a wide range of frequencies, including almost any sound that a person can hear and more. Humans tend to have more sensitive hearing in the lower frequency range of sounds but not hear as well as a horse in higher frequencies. Like man's, the horse's hearing capability diminishes with age.

Hearing range is measured in "hertz". Here are the normal human and equine hearing ranges:

- Man – 500 hertz to 8 kilohertz
- Horse – 55 hertz to 33.5 kilohertz

Horses tend to react to sounds that humans may not perceive. Two reasons for this:

1. Horses can hear sound in ranges that humans cannot.
2. Horses can move their ears and hear in almost any direction.

If you see your horse prick up its ears in a certain direction, PAY ATTENTION! It's sensing something you cannot!

Touch

The horse's sense of touch – the tactile sense – is very acute. A horse can perceive even the slightest touch to different parts of its body. Perhaps the best example is the horse's ability to detect the extremely small movement of a few hairs when an insect lands on its coat. The insect weighs next to nothing; the horse's weight is likely to be 1000 to 1200 pounds. Yet the horse senses the small insect and voluntarily shakes its skin, which shakes the hairs and causes the insect to leave.

Most horses enjoy being touched by humans once they have been “desensitized” and taught to trust human hands. There are many popular and very successful “desensitization programs” to build this trust, especially in newborn foals.

Most horse prefer a “soft”, smooth touch, rather than a rough pat. With training, most horse will learn to step aside in response to a very light hand against the body and a verbal request to “step over” or “move over”.

A few areas are very sensitive for most horses. Typically