

Because we rarely encounter problems with our horses' ears, we often take them for granted. The equine ear, however, is an indispensable communication tool. A horse's acute sense of hearing allows him to detect danger, communicate with other horses, and respond to his handler's vocal cues. Even the direction of a horse's ears imparts a world of information. If you watch carefully, they will reveal the animal's temperament and will even let you know where his attention is focused. Because the equine ear can convey so much information, learning how your horse's ears work and how his hearing differs from yours will help you better understand and predict his behavior.

**Structure of the Ear-** Horses' ears, like yours, are finely tuned instruments designed to convert sound waves in the environment into action potentials in the auditory nerve. This nerve, which is located at the base of the skull, then sends the information to the brain to be translated and interpreted.

To collect sound waves from the environment, a horse uses his pinna, the large, cup-like part of the ear that you can see. Made of cartilage, the pinna can rotate to capture sound waves from all directions. This useful ability is due to the fact that horses have 16 auricular muscles controlling their pinna. Humans, in contrast, only have three such muscles, all of which are vestigial (almost useless).

After being trapped by the pinna, the collected sound waves are funneled through the external ear canal (auditory canal) to the middle ear, where they cause the eardrum, a thin membrane, to vibrate. These vibrations are then sent through the ossicles, a series of three tiny bones called the malleus, incus, and stapes. Finally, they reach the inner ear, where they cause vibrations in a snail-shaped structure called the cochlea.

Running up and down the cochlea are sensitive hair cells that act as transducers. When these hair cells bend, they generate electrical signals that stimulate the auditory nerve. This nerve then passes the impulses on to the brain.

**Ears in Communication-** When attempting to hear something, horses will automatically flick their ears toward the source of the sound. Most horse owners are familiar with this phenomenon; we often see horses prick their ears forward when they are concentrating on something directly in front of them. This easily observable honing in on a noise is called the Pryer reflex, and it allows a horse to instinctively focus his attention on sound sources in the environment. Knowing that a horse intuitively directs his ears toward whatever he's focusing on can come in very handy, especially when riding. The Pryer reflex can help you anticipate and know the following:

- Anticipate a spook

- Where your horse's attention is directed

- A particular animal's temperament

Although horses have very sensitive hearing even at such high frequencies, their ability to locate the source of a sound is not very precise. Spooks very often arise from the fact that horses can only locate the general direction of a noise, not its exact origin. Not all

horses who fail to respond to a sound do so because they can't hear it. They may not be attending to the sound or they may have learned that the sound is not informative or important. We ignore most of the sounds around us even though we can certainly hear them.

**Hearing Loss-** Horses can lose their hearing. Like any other animal, horses can have hearing loss due to age, some antibiotics, ear mites, and genetic disorders. Age-related hearing loss generally begins to be noticeable in a horse's middle age (around 15 years), but can occur much earlier if a horse is exposed to loud sounds.

Horses that do lose their hearing generally compensate very well. If your horses does have a hearing loss, you should make sure your commands are loud and clear and given when there are not other competing noises around. You should not depend on the horse to know where sounds are coming from when out riding, and if the loss is severe, the horse may not detect oncoming vehicles or other animals. It might, therefore, be startled more than usual when something suddenly comes into view.

**Take Action-** Although ear problems arise infrequently in horses, horse owners should keep an eye out for excessive head shaking and discharge from your horse's ears. If your horse is shaking his head repeatedly and rubbing his ears on anything he can find to do the job, or if there is blood or fluid coming from his ears, you should call your veterinarian.

It is amazing how often no significant effort is made to find and treat the underlying cause. All too often, the problem is blamed on someone who grabbed the ear for restraint in the past. This is a possibility, however, every effort should be made to determine the cause and correct the problem. Too often people assume that it is a past bad experience that created the problem, and never investigate other possibilities.

**Take-Home Message-** Taking precautions will help keep your horse's ears comfortable and allow him to hear properly. Along with keeping him healthy, paying attention to your horse's ears will give you valuable insight into his behavior.

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