

# Equine

## HEARING

# senses

*Your horse's hearing is finely tuned to detect even the smallest sound made by approaching predators, which can explain the way he reacts to certain noises. Vet Sophie Wilkinson from Fellowes Farm Equine Clinic tells us more*

### Our expert



Sophie Wilkinson BVetMed MRCVS is a vet at Fellowes Farm Equine Clinic, a member of XLEquine. She has a particular interest in equine lameness and surgery.

**W**e've all experienced that feeling out riding when our horse has heard something that's unnerved him. His head suddenly comes up, ears pinned forward in the direction of the sound, you can feel his heart pounding in his chest and he becomes restless. And more often than not, you have absolutely no idea what he's heard.

For you, being able to hear plays a huge part in communicating with others. But for your horse,



the main role of hearing is to alert him to approaching danger rather than listening to vocalisations from other horses. Your horse's ancestors evolved to have a keen flight response to sudden or loud sounds as a defence against predators, and this is something your horse still has.

Learning more about your horse's hearing and how his ears work will help you understand his behaviour and, if you really tune in to how he uses his ears, you can even predict when some behaviours are about to happen, such as spooking.

### The equine ear

The equine ear can be divided into three parts, the outer ear, middle ear and inner ear.

The **pinna** is the main part of the **outer ear** and consists of cartilage covered with a thin layer of skin. It is specially shaped to capture sound waves, which are then funnelled into the ear canal.

The **ear canal** is a long, tubular structure that amplifies sounds before they reach the eardrum.

The **eardrum** (tympanic membrane) is a thin membrane that separates the outer ear and the middle ear. It vibrates as sound waves move over it.

On the other side of the eardrum is the **middle ear** (tympanic cavity). This air-filled cavity contains three tiny bones – the **hammer**, **anvil** and **stirrup**. One end of the hammer is attached to the eardrum, then the bones are attached end to end, with the stirrup at the end of the chain attached to a membrane called the oval window.

### DID YOU KNOW?

Horses are most sensitive to sound that is a similar level to that of quiet human speech, so this is the ideal way to talk to your horse.

### DID YOU KNOW?

The three small bones within the ear are the smallest in your horse's body.

The **oval window** is a membrane that covers an opening in the skull, dividing the middle and inner ear. When the attached stirrup bone vibrates, the membrane vibrates, which causes the fluid within the inner ear to vibrate, too.

The **inner ear** contains the **cochlea**, which is an organ shaped like a snail shell. It is filled with fluid that moves as vibrations from the oval window travel through it. The movement in the fluid stimulates tiny hair cells within the cochlea that create electrical signals. **Auditory nerves** sit under these hair cells and they send the electrical signals to the brain, where they are interpreted as sound.

Two tubes connect the cavity in the middle ear and the throat, called the **Eustachian tubes**. These tubes allow the pressure in the middle ear to be adjusted so there is equal pressure either side of the eardrum, which enables it to vibrate effectively.



*Each ear has 10 muscles and is able to rotate 180 degrees*

### Special features

Your horse's ears have several special features that enable him to effectively collect sounds...

- Their large cup shape makes them like a radar and enables him to detect even soft, faint noises – try cupping your ear and you'll see what a difference it makes.
- They are able to rotate 180 degrees, so he is able to hear all around him without moving his body. His ears contain 10 muscles that enable them to move in this way, whereas humans only have three.
- Each ear can be moved independently so your horse can collect several sounds from different directions at the same time.
- When your horse hears a sound, his ears will automatically flick towards it so he can hear it better. This is known as the Pryer reflex.

### DID YOU KNOW?

Your horse can protect his ears from loud sounds by laying them flat back.

Their cup-shaped ears are effective at capturing sounds



Each ear can be moved independently

**DID YOU KNOW?**

If your horse hears something suspicious while eating, he'll stop chewing so he can hear more clearly. You'll often see your horse doing this in his field.

*Horses are particularly sensitive to the high-pitched squeaks and cracks associated with the stealthy approach of a predator*

**Desensitising to sound**

Some horses are more sensitive to sound than others and while some are on high alert after hearing even relatively everyday noises, others simply aren't that bothered, even by loud, more unusual ones. If your horse is a more sensitive type, exposing him to new sounds in a safe and familiar environment is the best way to teach him to accept them. Rewarding him, typically with food, will help him associate the sound with something pleasant.

When you know sudden noises are likely to be a problem, such as a thunderstorm brewing or a local firework display, cotton wool or equine earplugs can help to muffle sounds and make your horse feel less stressed. ■

**DID YOU KNOW?**

It is thought that horses are more spooky when it's windy because the wind distorts sounds and prevents them hearing clearly, and it also carries sounds that the horse is unable to pinpoint the source of.

**Tuned in**

Horses hear better than people and are able to detect sounds at both higher and lower frequencies. They hear in the range of 14 Hz to 25 kHz, whereas humans hear in the range of 20 Hz to 20 kHz. Horses are also particularly sensitive to the high-pitched squeaks or cracks associated with the stealthy approach of a predator.

**DID YOU KNOW?**

Deafness in horses is rare. However, horses who develop hearing loss or are deaf tend to adapt well and it doesn't usually cause a serious problem.