

## **A Year in the Life of the White-tailed Deer**

### **How well do deer hear?**

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So, just how good are a deer's ears? Can they hear your muffled cough at 200 yards? Can they hear those deer whistles that you put on your truck?

Trying to understand how well a deer hears (or sees, or smells) is an extremely daunting task. We can't just ask them "Did you hear that"?, so instead we have to rely either on behavioral observations or some type of advanced technology. Thankfully, in the past few years, there have been a couple of research studies conducted that can give us a good idea of how a deer hears.

However, before we get to these studies, let's think about the structure of the deer's ears. The large external ears (or pinnae) of the deer work somewhat like a satellite dish. They help to amplify the sound (just like cupping your hands behind your ears), but because they can move independently of each other they also help the deer evaluate what is happening in all directions. We've all noticed how deer continually shift the direction of the ears, and simply by watching the ears a hunter can get a good idea of what the deer is thinking. When traveling together, deer often keep track of each other by listening. So, if you see a lone deer, watch its ears! If it frequently cups one or both ears to the rear, you have a good bet that there is another deer following.

Similarly, if a deer is looking directly at you, don't be too concerned if its ears are moving in different directions. However, if it has both ears cupped toward you – you've been spotted and he's trying to get all of the information he can. By comparing the signals that each ear receives the deer can accurately locate the source of a sound.

All hunters have stories that point to the acuity of a deer's hearing ability: "I just lightly bumped my bow on the stand and that guy just bolted!" or "I couldn't believe how smart that buck was! He heard me click off the safety at 75 yards!" But let's put this in perspective. Deer live in the woods 24 hours a day, 7 days a week. It's their home. They know what sounds are normal there, and what sounds are not. They've heard those sounds all their life. So the crashings of a grey squirrel through the leaves or the rustle of a brown thrasher in a hedgerow are barely noticed. But the unnatural cadence of a human's walk or a ting of metal-on-metal is instantly identified as foreign and raises suspicion. It's just like in your home or office. Certain noises are 'normal', but something different or unusual is instantly identified as abnormal.

But still the question remains - is a deer's hearing better than ours? With the large external ears you might expect this to be the case. However, two recently released studies cast some doubt.

A couple of years ago, David Osborn and Larry Marchinton here at the University of Georgia discovered an unpublished study by Mr. Arthur Stattelmann who researched the hearing capability of deer confined to a sound-proof room. They compiled the data from this research and reported some interesting results. They described the study as follows: "The deer was conditioned to seek and accept food whenever it heard a sound. A machine called an audiometer was used to create a wide range of sounds varying in intensity (loudness as measured in Decibels) and frequency (tone as measured in Hertz). The intensity at each frequency was increased until it produced a positive response from the deer. When repeated over time this procedure provided some understanding of what sound the deer was able to hear. The results of the experiment are presented (in the accompanying graph) and are compared to some common sounds and the minimum hearing capability of humans and the domestic cat. Deer and humans apparently can detect sounds of low-to-moderate frequency at approximately the same intensity. A cat can hear much fainter sounds than either the deer tested or humans across a wide range of frequencies. Deer probably detect high frequency sounds slightly better than humans. These findings may shock many hunters who have formed opinions about the hearing ability of deer based on personal experiences".

Dr. Kenneth Risenhoover at Texas A&M University, who used some sophisticated technologies to generate audiograms for 5 adult deer, recently substantiated this research. His results were very similar to those from the Georgia study: "Evoked potentials (responses) were detected and recorded at intensity levels of up to 85 dB in a frequency range of 0.5 to 12 Khz. Evoked potentials from the 5 deer tested indicated that the range of greatest hearing sensitivity was between 1 and 8 Khz, with a marked peak centered at 4 Khz."

This research all seems to indicate that a deer's hearing is really not that more acute than ours. They are not like the \$6 Million-Dollar Man (or was it the Bionic Woman?) who could hear the bad guys whispering at a quarter-mile. Instead, a deer knows you're in the woods simply because you are making some noises that aren't supposed to be there!

Oh, and about those deer whistles for your truck - Based on the research at Texas A&M and at the University of Georgia, it seems very unlikely that deer whistles would be effective at reducing deer-vehicle accidents because the high frequencies produced appear to be out of the hearing range of deer. And besides, why wouldn't they just be able to hear your truck even without a whistle?