The groan says it all -- dominant male deer have the deepest calls

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(PhysOrg.com) -- The low timbre and enticing vibrations of a deep voice have long been considered a key element of male attractiveness. Now it seems that it's not just human females that appreciate a husky vocalisation.

Research published this month in PLoS One, an online scientific journal, has shown that female fallow deer are attracted to a deep call. Data taken from a deer herd in Phoenix Park, Dublin indicate that the males with high dominance status also have the deepest 'groans' (the name of the fallow deer call). These males are also more successful when it comes to getting matings.

Males can groan up to 60 times a minute during the 'rut' — the deer mating season, which falls in October. This can increase up to 90 times a minute immediately after mating.

The deer's groan is directly related to body size. Deer share a vocal trait with humans — the descended larynx — which increases the length of their vocal tract and allows the groan to deepen. As the groan travels from the animal's vocal chords, through its throat and out of its mouth, it is uniquely modulated to create formant frequencies. It is these frequencies that indicate body size. In fact, the descended (and also mobile in the case of deer) larynx makes the animal sound bigger than he actually is, suggesting that false advertising in the search for a mate isn't an exclusively human trait. The frequencies produced by the vibrations of the vocal chords are closely linked to the dominance status of the

animals.

It was thought that the descent of the larynx was a pre-cursor to the evolution of human speech, by allowing greater freedom of movement of the tongue. For example, chimps and other primates have a larynx that is situated quite high up in the neck. However, recent research suggests that the descent of the larynx is more likely linked to size exaggeration, as is the case with deer.

The research gives us an insight into the evolution of vocal communication in a mammal, which also has implications for early human vocal development," said Dr Alan McElligott, biologist at The University of Nottingham, who has been studying the behaviour and biology of fallow deer since 1992.

The research also found that the deer with the deepest groans were also superior fighters in the herd — even though they may not be the largest in terms of body size.

"Fallow deer are extremely vocal," Dr McElligott added. "During the rut the dominant males groan once a second and there are very high levels of competition between them. Only a few males will gain most mating in any rut; most males never get any!" The sounds they make as they fight and mate are key features of this aggressive, competitive behaviour.

"The groans indicate to the females the 'quality' of their potential mate — this could have evolved due to the high levels of competition between males."

Dr McElligott and his colleagues recorded the groans and measured the size of the dominant males in the Phoenix Park herd over six years. The study focussed on 17 different dominant males, measuring their mating success. It proved for the first time that a mammal species other than

primates use their call to signal social dominance.

Dominance is key for males in a fallow deer herd. Usually, it is only the top five or six males in a herd who mate during the rut, with the weaker males often seeing no action at all. The dominant males don't have it easy though — they don't eat during the rut and can lose 25 per cent of their body weight. Males may mate many times in a day — one deer the team were studying managed 22 times in 11 hours. The vast majority of females typically mate just the once.

Provided by University of Nottingham

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