

# Effect of human presence on red deer behaviour in game farming: new stag vocalizations identified from automated recordings



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**AIM** Human presence affects animal behaviour of trophy animals bred on game farms. The aim of this study was to reveal the hidden vocal types in untamed European red deer stags.



*Cervus elaphus hispanicus*

## METHODS

The experimental farm of the University of Castilla-La Mancha (Albacete, Spain)  
Four stags (of 7.5, 5.5, 4.5 and 3.5 years old) kept together  
No hinds, no humans  
22-26 January 2018  
Automated recordings:  
29 min record / 1 min pause  
180 audio files, each 29 min  
34 h at day, 56 h at night

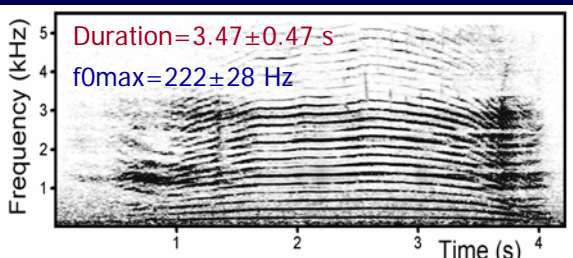


SongMeter SM2+

## RESULTS

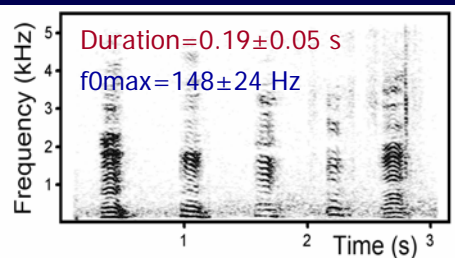
90 h of recordings included 679 stag calls: 55 roars, 597 contact calls, 27 bellows

### Roars



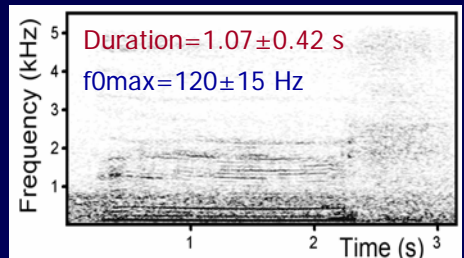
Rutting roars: no differences  
Duration=1.96-2.53 s, f0max=223-270 Hz  
Stags produce roars in the absence of hinds

### Contact calls



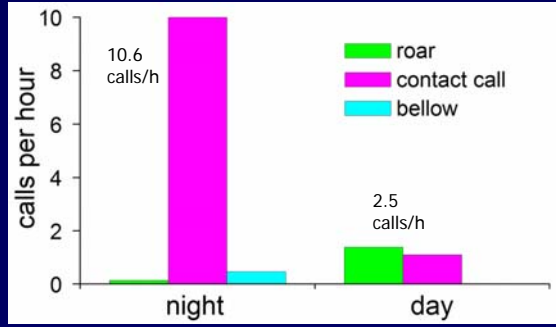
Hind contact calls are longer  
Duration=0.65-0.79 s, f0max=173-209 Hz  
Contact calls and bellows were unknown in European red deer stags

### Bellows



Similar with domestic cattle bull bellows  
Duration=1.45-1.50 s, f0max=144-160 Hz

Stag produce contact calls and bellows mainly at night, and roars mainly at daytime



## CONCLUSION

Apparent behavioural deficits in animals bred on game farms can be side-effects of human presence. These behavioural activities can be revealed with automated devices in the absence of people.

Stags vocalize only without people. Keepers never heard stag calls out of the rut.



Wait when humans out, then talk