

# Cattle bulls can produce low-frequency roaring and high-frequency bugling with an unspecialized larynx



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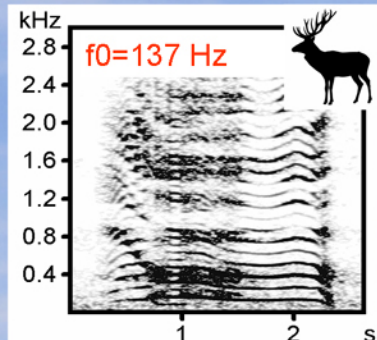
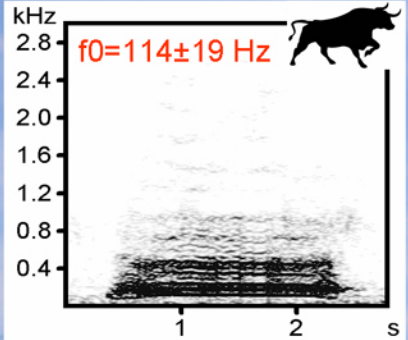


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<http://www.bioacoustica.org>

## LOW-FREQUENCY ROARS



Reby & McComb 2003. Anim Behav

## STUDY SITE AND ANIMALS

Namibia, Okambara Ranch  
(S 22.69, E 18.21)

May, 2015; January, 2016

Free-ranging crossbred  
Brahman x European cattle

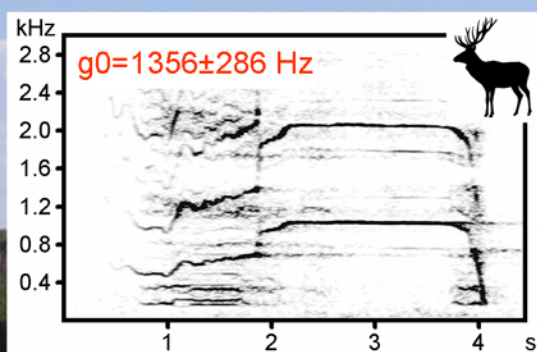
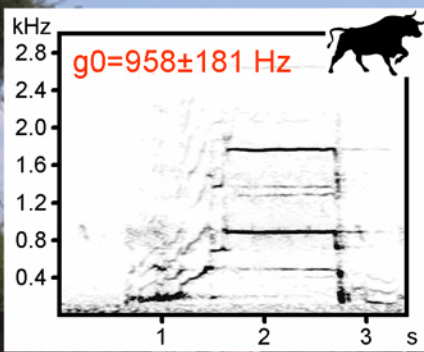
29 low-frequency bellows  
and 22 high-frequency bugles



Three mature bulls

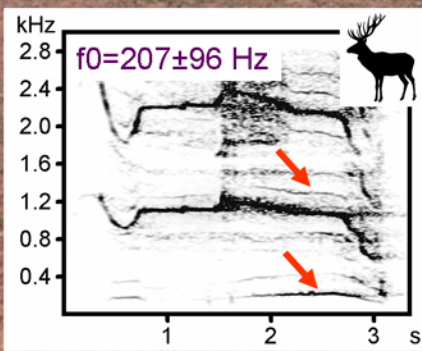
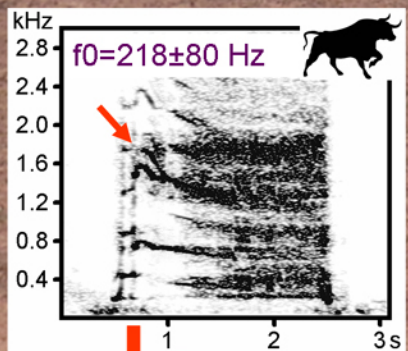


## HIGH-FREQUENCY BUGLES



Golosova et al. 2017. Mamm Res

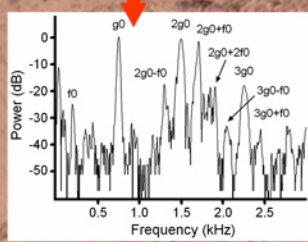
## BIPHONIC (HIGH&LOW FREQUENCY) BUGLES



Golosova et al. 2017. Mamm Res

f0 = 193 ± 27 Hz

Reby et al. 2016. JEB



Male free-ranging cattle and male red deer and wapiti display a remarkable convergence of low and high-frequency vocalization.

Vocal anatomy of cervids and bovids is strongly different.  
Cattle bulls have a typical ruminant larynx, lack extensible thyrohyoid ligament and larynx retraction.  
Cattle bulls represent an excellent model for investigating vocal production mechanisms and associated anatomy and behaviour.

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Mamm Res  
DOI: 10.1080/1364-017.0322-4  
ORIGINAL PAPER

Effects of free-ranging, semi-captive and captive management on the acoustics of male rutting calls in Siberian wapiti *Cervus elaphus sibiricus*

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Bull bellows and bugles: a remarkable convergence of low and high-frequency vocalizations between male domestic cattle *Bos taurus* and the rutting calls of Siberian and North American wapiti

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