

Distress calls in wild-living neonate Mongolian gazelles (*Procapra gutturosa*): relationship with an open habitat, antipredatory strategy, vocal anatomy and testosterone



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BACKGROUND

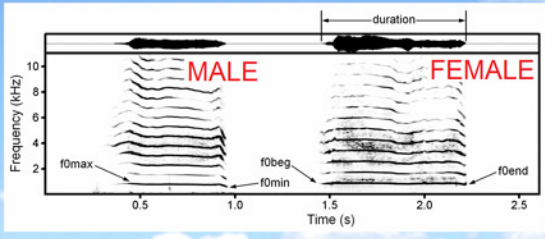
Neonate ruminants are born in either open or closed habitats. Neonates of species living in taiga, steppes or deserts have low-pitched "bass" distress calls compared to high-pitched "tenor" voices of species born in forests.



RESEARCH QUESTIONS

1. Do the acoustics the Mongolian gazelle neonate distress calls differ from those of other open-habitat and closed-habitat neonate ruminants?
2. Do body mass, serum testosterone and vocal anatomy predict the acoustics of Mongolian gazelle neonate distress calls?

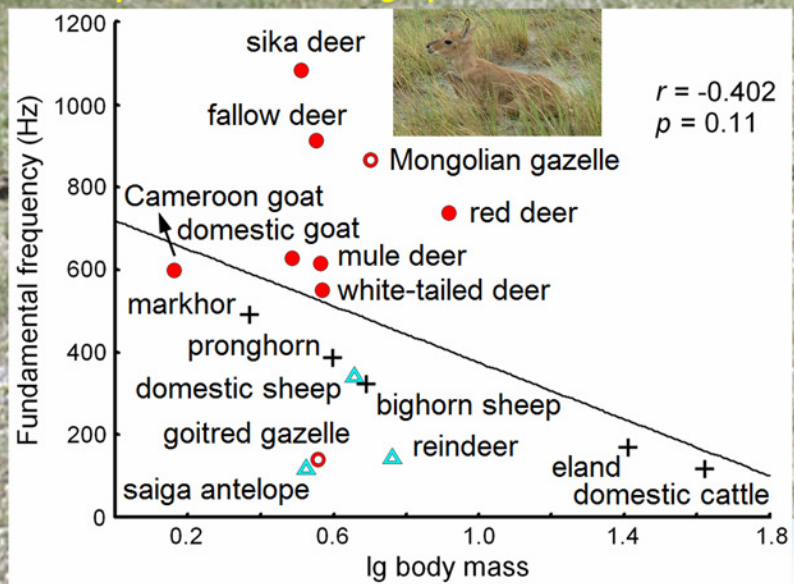
ACOUSTICS, BODY MASS AND TESTOSTERONE



Variable	Both sexes	Males	Females	ANOVA results
body mass (kg)	5.06 ± 0.46	5.44 ± 0.26	4.91 ± 0.44	$F_{1,21} = 7.50, P=0.013$
testosterone (ng/ml)	0.17 ± 0.09	0.23 ± 0.12	0.15 ± 0.07	$F_{1,19} = 4.04, P=0.060$
call duration (s)	0.38 ± 0.11	0.38 ± 0.13	0.38 ± 0.10	$F_{1,21} = 0.01, P=0.99$
call f0max (Hz)	867 ± 126	796 ± 114	893 ± 123	$F_{1,21} = 2.85, P=0.107$

COMPARISON WITH OTHER NEONATES

Against expectations, distress calls of hand-captured neonate Mongolian gazelles from open steppes of Mongolia and Dauria were as high-pitched as in neonate deer from the forest habitats. Proximate causes were short vocal folds (4 mm) and low serum testosterone levels in both sexes. Body mass was not responsible for the high-pitched voice.



empty symbols = open habitats; solid symbols = closed habitats; circles = hider species; triangles = follower species; crosses = undetermined hider/follower and habitat type status.

MALE LARYNX AND CALLS

NEONATE

ADULT

Sa Sci (2017) 104:50
 DOI 10.1007/s00114-017-1471-7

ORIGINAL PAPER

Unusually high-pitched neonate distress calls of the open-habitat Mongolian gazelle (*Procapra gutturosa*) and their anatomical and hormonal predictors

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