The acoustics of rutting calls in male impala (*Aepyceros melampus*)

Volodin Ilya[1,2], Volodina Elena[2], Frey Roland[3]

1 Lomonosov Moscow State University, Russia
2 Moscow Zoo, Russia
3 Leibniz Institute for Zoo and Wildlife Research, Germany

http://www.bioacoustica.org

volodinsvoc@gmail.com

STUDY SITE AND ANIMALS

Namibia, Okambara Elephant Ranch, 15000 hectares (S 22.69, E 18.21)

May, 2015
800 free-ranging common impala

RECORDING

4 SongMeter SM2+ near a water pool

22 different recording places, 0.5-12 km to each other

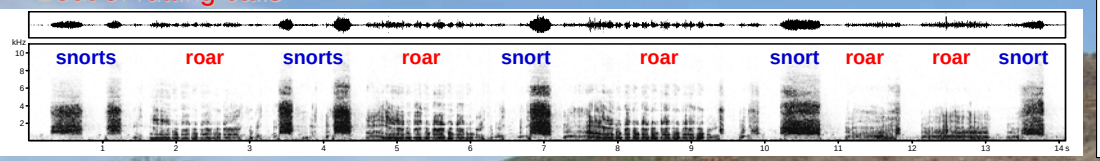
Recording schedule:
9 min with 1 min pause,
54 min per hour, 1080 min per night

From May 2 to May 28, 2015, from 14:00 p.m. to 10:00 a.m.
11,030 of 9-min wav-files (1655 h of recording in total)

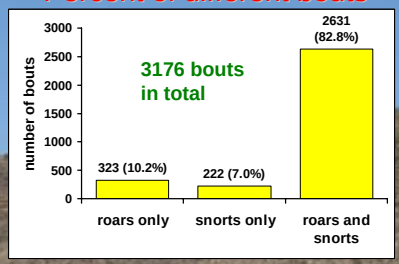
MALE RUTTING CALLS

Male impala produce bouts of rutting calls, roars and snorts. Most bouts consist of alternating roars and snorts.

Bout of rutting calls



Percent of different bouts



ACOUSTIC CORRELATES OF LARYNX RETRACTION

Oral vocal tract length estimation in video single frames

292.8±3.1 mm

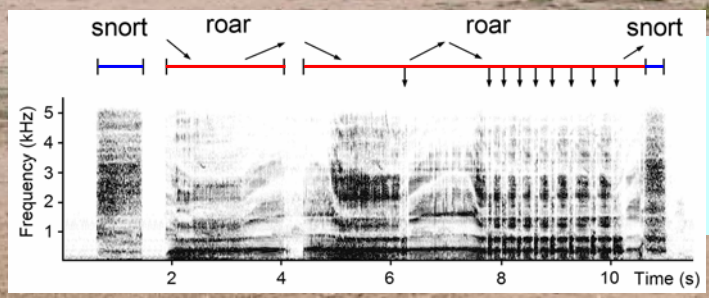
N = 12

400.8±6.6 mm

N = 15

The maximal vocal tract elongation was 108.0 mm or approximately 37%

Formants reflect larynx movements



up
down
pant

Impala is the fifth ruminant, in which males retract the larynx and elongate the vocal tract during rutting calls.

Goitred gazelle

Fellow deer

Red deer

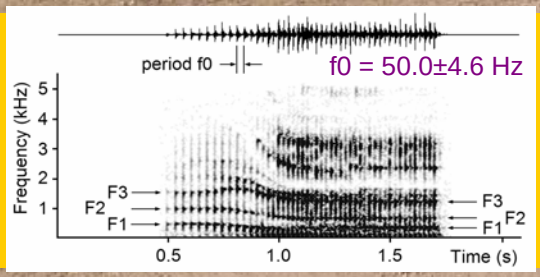
Mongolian gazelle

Oral vocal tract length estimation based on formant dispersion

N = 72 roars

Formants and larynx at highest position

dF = 592 ± 39 Hz
vtl = 297.2 ± 19.9 mm



Formants and larynx at lowest position

dF = 454±37 Hz
vtl = 388.3 ± 31.5 mm

The maximal vocal tract elongation was 91.1 mm or approximately 31%

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