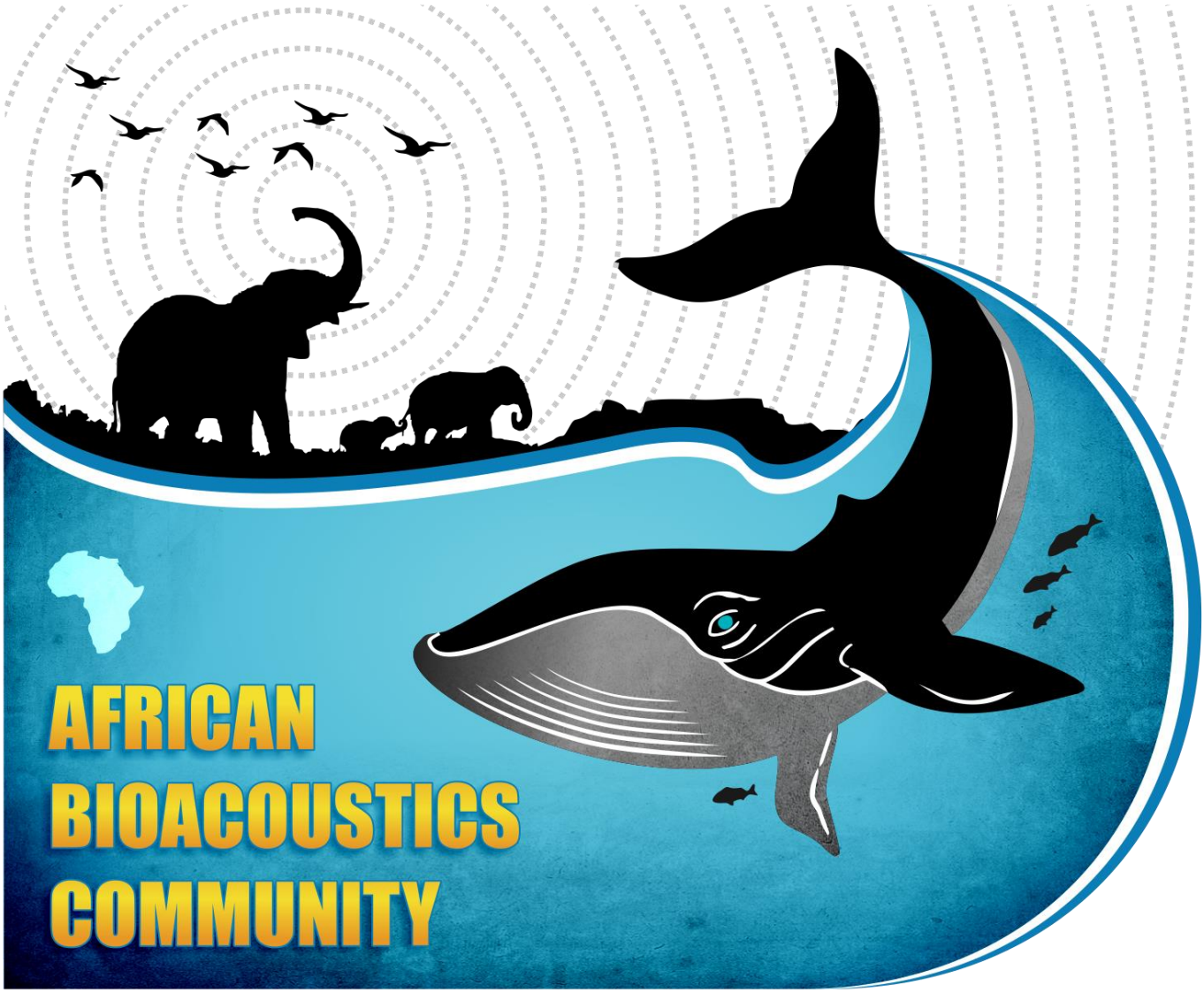

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The acoustics of rutting calls in male impala (*Aepyceros melampus*) - Volodin Ilya; Elena Volodina & Roland Frey

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Impala rutting behaviour was studied in a free-ranging population of about 800 animals from May 2 to 28, 2015 in Namibia. Acoustic recordings were done both manually and using automated recording systems (SongMeter 2+) along to video recordings on male impala rutting territories. Male impala bouts of rutting calls included explosive snorts and roars of three types: the pant-roars with rapid alternation of inhalations and exhalations, the continuous (pure exhalatory) roars, and the interrupted roars with one to few short inhalations. In total, we examined for the fundamental frequency and the first four formants 119 roars (one per bout): 18 continuous, 70 interrupted and 31 pant-roars. Positions of formants and video analysis indicated that during the roars, males retracted the larynx down to the maximum permissible mid-neck position by using a resilient thyrohyoid ligament. The resting oral vocal tract length measured on cadavers, was 315 mm. The average extended oral vocal tract based on seven video single frame pair estimates, comprised 374 mm. The oral vocal tract length, calculated based on measurements of the first four formants during the maximum retraction of the larynx was 380±37 mm and did not differ between types of roars, being 382 mm for the continuous roars, 376 mm for the interrupted roars and 389 mm for the pant-roars. The large vocal folds of impala males produced correspondingly low fundamental frequency of 49.4±3.9 Hz that did not differ between types of roars, being 48.7 Hz for the continuous, 50.0 Hz for the interrupted and 48.6 Hz for the pant-roars. We discuss that impala is another ruminant, in which males retract the larynx thus elongating the vocal tract during their rutting calls, as red deer *Cervus elaphus*, fallow deer *Dama dama*, Mongolian gazelle *Procapra gutturosa* and goitred gazelle *Gazella subgutturosa*. Supported by the RSF grant 14-14-00237.

The effect of anthropogenic noise and weather conditions on male calls of *Bullacris unicolor* - Rekha Sathyan & Vanessa Couldridge

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Acoustic communication in animals mainly relies upon specific contexts and environments for effective signal transmission. Increasing anthropogenic noise pollution and different weather conditions can disrupt acoustic communication in animals. In this study, we investigated call parameter differences between noisy and quiet environments in the bladder grasshopper *Bullacris unicolor*. We installed passive acoustic monitoring devices to record sound for three weeks in two different nature reserves in close proximity to each other, the Cape Flats Nature Reserve (CFNR) (high anthropogenic noise) and Tygerberg Nature Reserve (TNR) (low anthropogenic noise) in the Western Cape, South Africa. Weather conditions, including wind speed, temperature and humidity, were also recorded. We quantified the emission of calls of B. unicolor through visual inspection of the recordings. The CFNR presented significantly higher anthropogenic noise levels than the TNR. Surprisingly, the quantitative comparison of calls of B. unicolor between the two locations showed more calling activity in the noisy location than in the location with less anthropogenic noise. Call interval was positively correlated with anthropogenic noise in both locations. Peak frequency and call rate were affected by weather conditions; peak frequency increases and call rate decreases with increased wind speed. On the other hand, temperature was positively correlated with both of these call parameters. Our results indicate that both anthropogenic noise and weather conditions influence signalling in B. unicolor and may thus constrain long-distance acoustic communication in this species. Given that anthropogenic noise and weather conditions may be triggering grasshoppers to adjust their call parameters to avoid masking of their signals; our results highlight both the complexity of call evolution and the need to consider multiple causes when exploring this issue.