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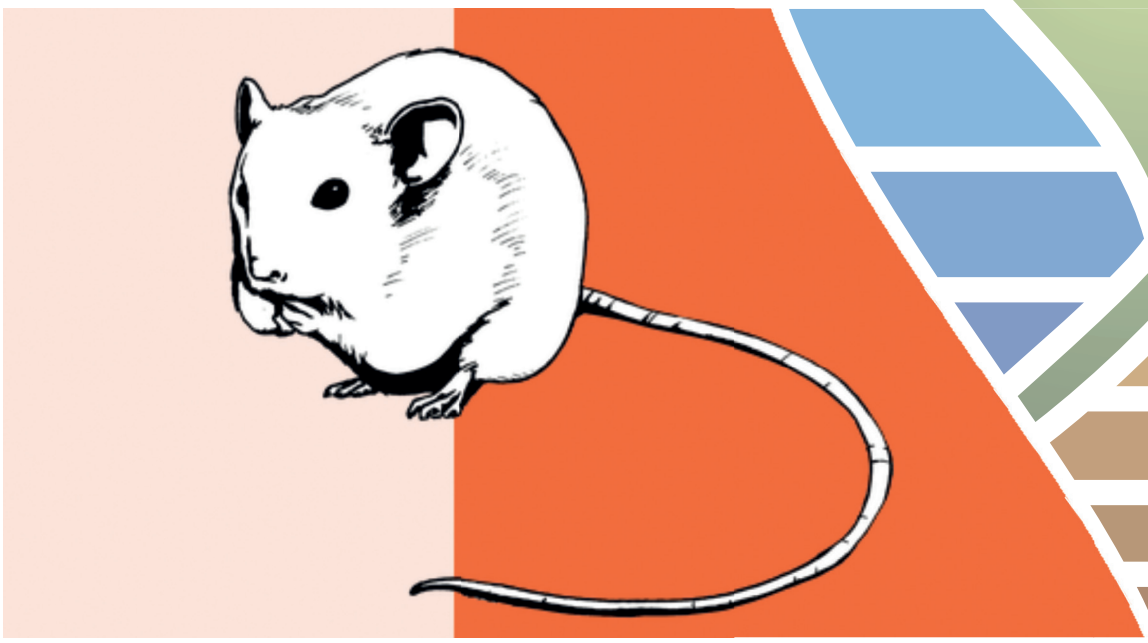

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Poster Session 1 – Rodent Behaviour

22 Age-class differences in the acoustic structure of ultrasonic calls of yellow steppe lemmings (*Eolagurus luteus*)

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A common pathway of the vocal ontogeny of mammalian audible calls displays a descent of fundamental frequency from pups to adults. A distinctive pathway (increase of fundamental frequency with age) found in rodents ultrasonic calls (rats and mice) might be related with a distinctive production mechanism (whistle). We investigated the ultrasonic isolation calls in captive yellow steppe lemmings *Eolagurus luteus* at five age-classes: Age1 (1-5 days), Age2 (10-16 days), Age3 (20-28 days), Age4 (35-42 days), Age5 (57 days-adults), 5 individuals per age-class, 25 individuals in total. Each individual was recorded for 2 min at 22°C using a recorder Pettersson D1000X (384 kHz, 16 bit), then weighed and measured for body variables. Calls (5 per individual, 125 in total) were examined using Avisoft SASLab Pro software for duration, fundamental frequency and power variables, contour shape and nonlinear phenomena. Animal body weight and body length increased from 6.47±2.62 g and 43.8±8.39 mm at Age1 to 78.90±22.36 g and 127.3±11.9 mm at Age5. Frequency contours were most variable at Age1. Chevron contour prevailed at Age1 (60% calls), whereas the ascending contour at Ages2-5 (56-92% calls). Non-linear phenomena included both frequency jumps (44% calls) and biphonations (32% calls) at Age1 and only frequency jumps at Ages2-5 (28-60% calls). Duration decreased from 77±24 ms at Age1 to 30-33 ms at Ages3-5. Maximum fundamental frequency and depth of frequency modulation were higher at Ages1-2 (49.6-51.5 and 19.7-19.8 kHz respectively) than at Ages3-5 (38.3-42.2 and 8.7-13.3 kHz). Minimum fundamental frequency was lower at Age5. Peak frequency and power quartiles decreased from Age1 to Age5. Against expectations based on potential whistle mechanism of vocal production, the fundamental frequency and duration of the lemming ultrasonic calls decreased with age and body growth, displaying the common ontogenetic pathway of mammalian audible calls. Supported by the RSF grant 14-14-00237.