

Syllable types and acoustic variables of ultrasonic vocalization in pup and adult fat-tailed gerbils (*Pachyuromys duprasi*)

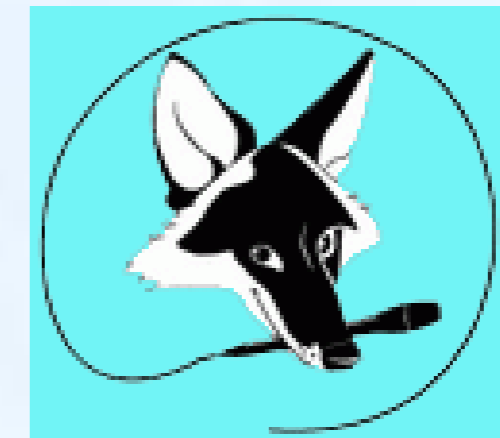
Volodin Ilya^{1,2}, Zaytseva Alexandra^{1,2}, Ilchenko Olga², Volodina Elena²

¹Lomonosov Moscow State University, Russia

²Moscow Zoo, Russia;

volodinsvoc@gmail.com

http://www.bioacoustica.org



Ultrasonic vocalizations (USVs) of laboratory rodents indicate animal emotional arousal and may serve as models of human disorders.

Aim: To develop the classification of the fat-tailed gerbil USV syllables and to compare their acoustics between pups and adults.



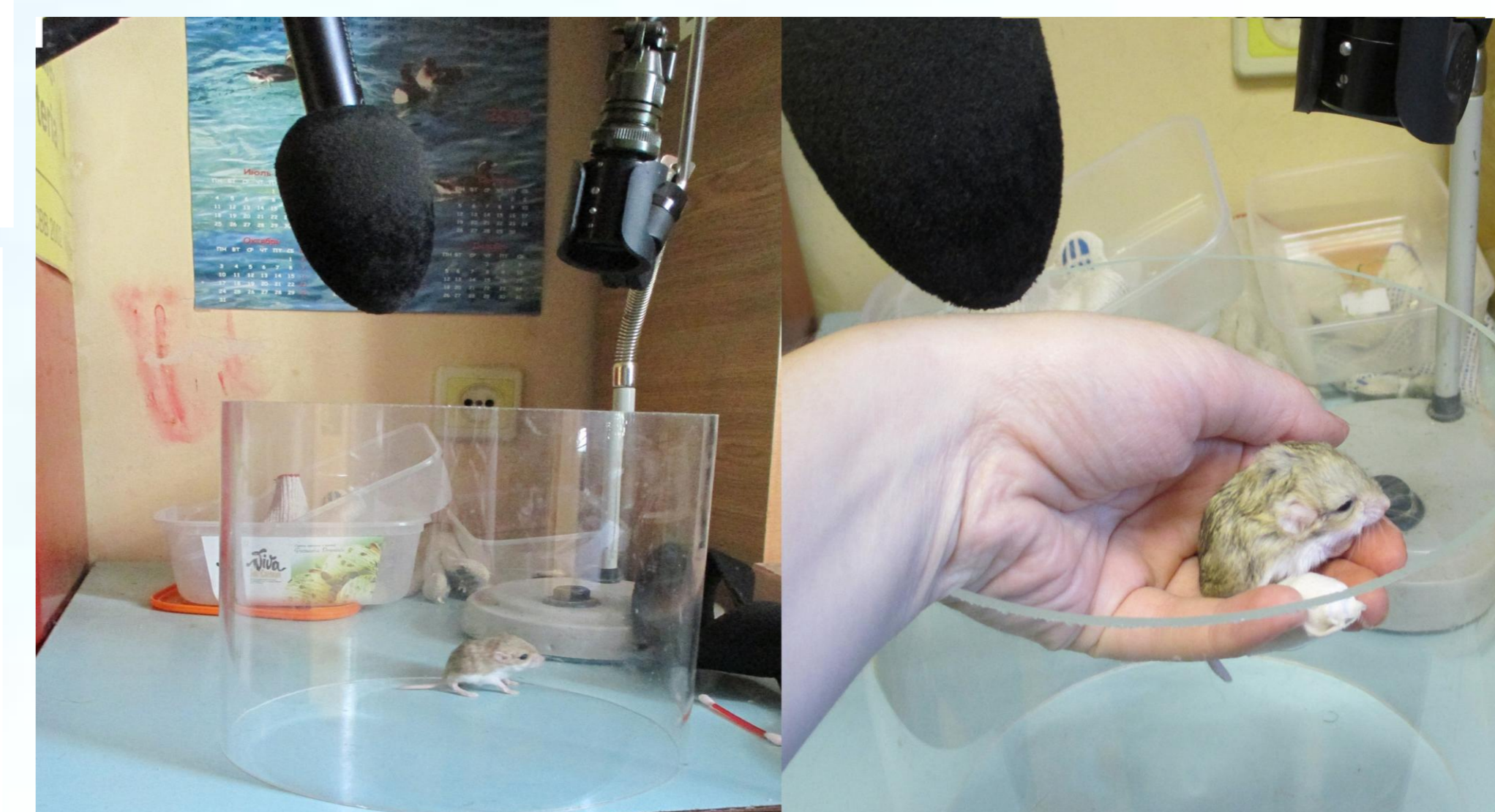
Classification of ultrasonic syllables

24 pups 5-10 d old from 10 litters (782 calls)
7 adults (3 male, 4 female) (232 calls)

Laboratory colony of Moscow Zoo

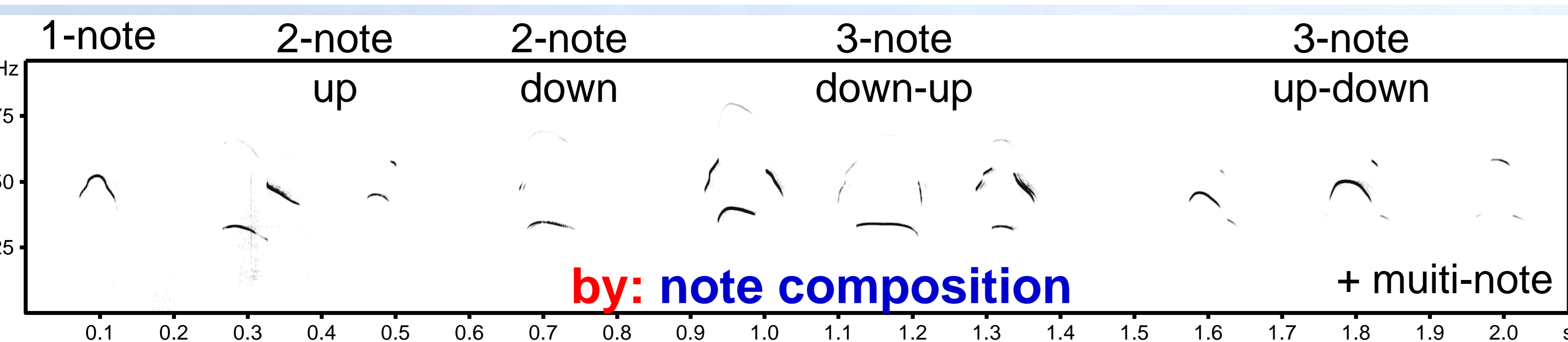
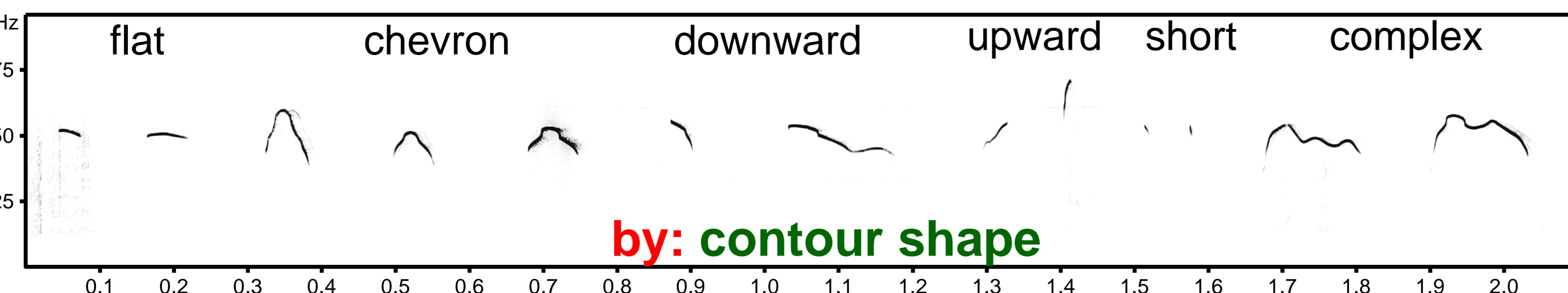
420-s isolation-and-handling tests

Pettersson D1000X (384 kHz, 16 bit)



Isolation stage
210 s

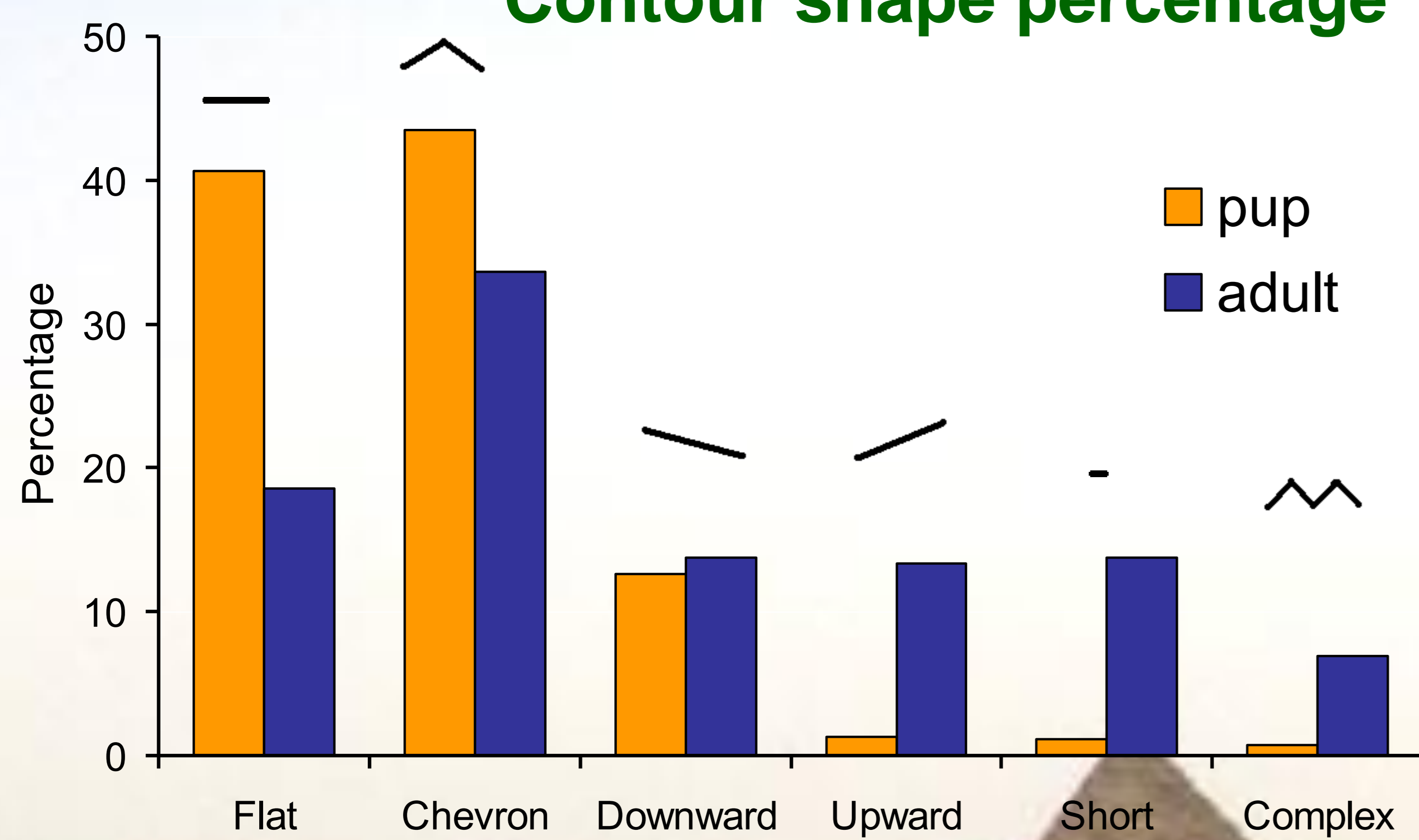
Handling stage
210 s



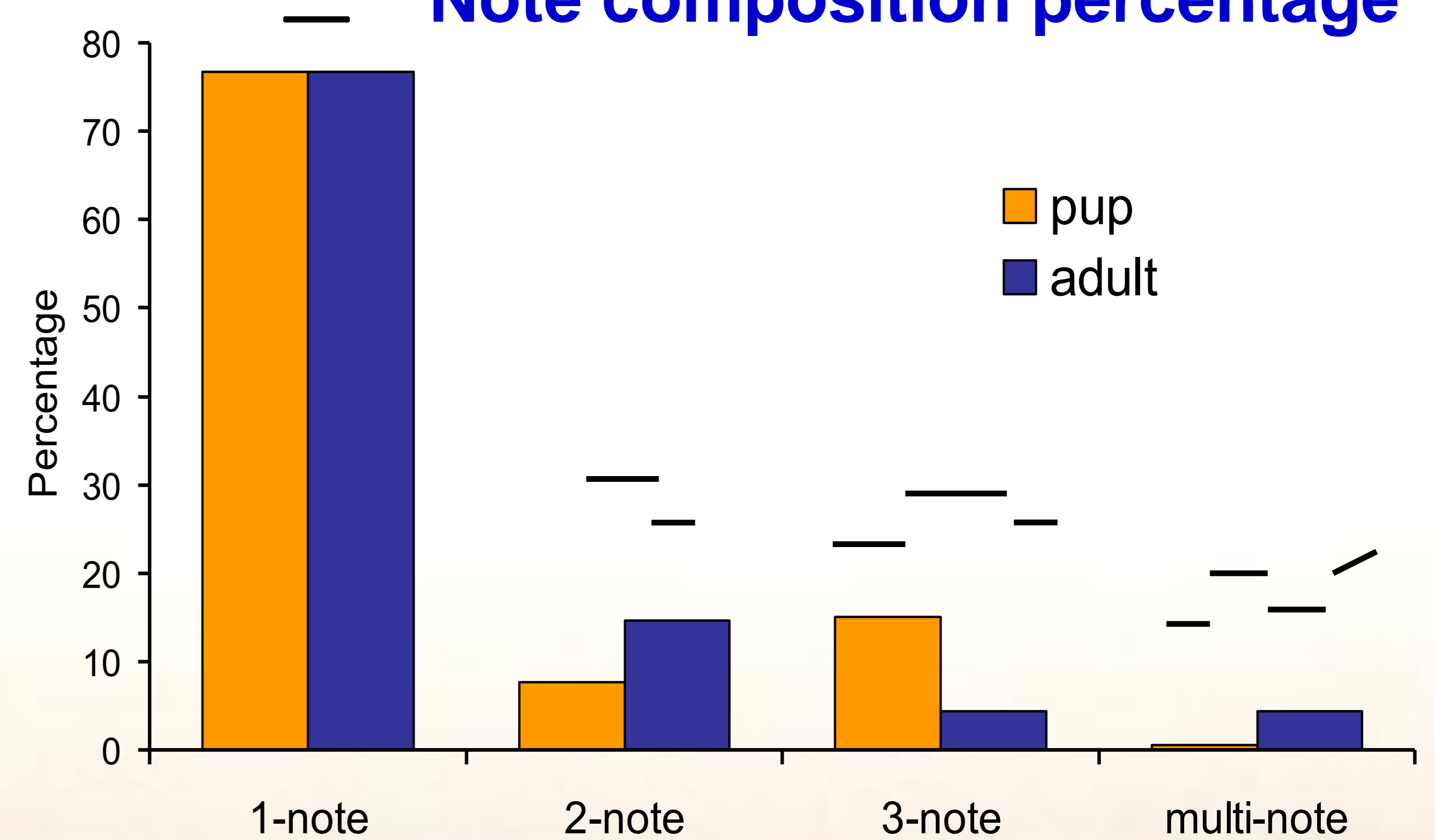
Of potential 36 USV syllable types, pups had 18, adults had 24 (16 overlapped)

Comparison of USV syllables between pups and adults

Contour shape percentage



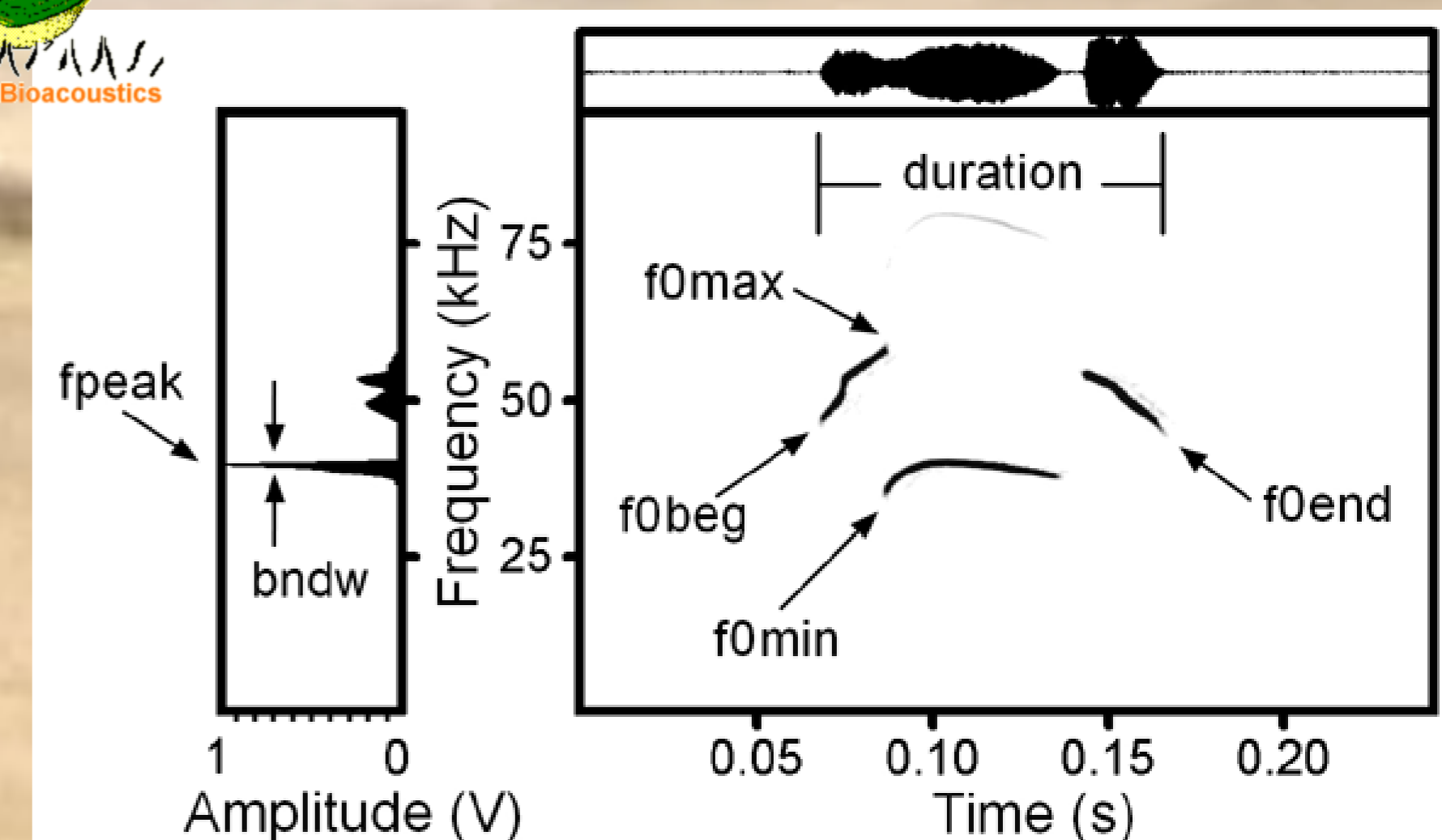
Note composition percentage



Acoustics

Variable	Pups	Adults
Duration	50.0 ± 31.0 ms	22.0 ± 32.7 ms
f0max	52.2 ± 5.7 kHz	66.8 ± 13.9 kHz
f0min	41.9 ± 6.7 kHz	51.1 ± 9.6 kHz
fpeak	47.9 ± 6.1 kHz	60.0 ± 10.5 kHz

Conclusion



Pup USV longer and lower in frequency than adult USV
This was also true for most widespread single-note Flat and single-note Chevron USV taken separately.

Ontogenetic pathway of fat-tailed gerbils USV (towards shorter and higher-frequency calls) resembles those of bats but not other rodents.



Support: RSF grant 19-14-00037

PLOS ONE

RESEARCH ARTICLE

Ultrasonic vocalization of pup and adult fat-tailed gerbils (*Pachyuromys duprasi*)

Alexandra S. Zaytseva^{1,2}, Ilya A. Volodin^{1,2*}, Olga G. Ilchenko², Elena V. Volodina²

OPEN ACCESS
Citation: Zaytseva AS, Volodin IA, Ilchenko OG, Volodina EV (2019) Ultrasonic vocalization of pup and adult fat-tailed gerbils (*Pachyuromys duprasi*). PLOS ONE 14(7): e0219749. <https://doi.org/10.1371/journal.pone.0219749>