Individual identity in hind and calf contact calls of Siberian wapiti Cervus elaphus sibiricus during separation

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- Mother-offspring vocal recognition is critically important for survival of the young for many mammals.
- Vocal recognition is based on individual features of calls and known for many ungulates
- Red deer is the species with a broad distribution area from Europe to Asia that forms many subspecies displaying a strong divergence of vocal characteristics
- Unknown whether some differences exist in vocal recognition between subspecies

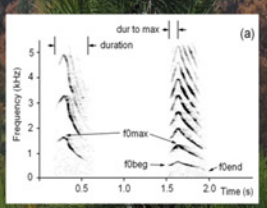
Materials and Methods

- Russia, Kostroma region, velvet anthlers farm, December 2015
- Recorder Marantz PMD-660 with an AKG-C1000S microphone or a Sennheiser K6-ME66 microphone
- Contact calls of mothers and 5-6-month-old offspring emitted during 5 days after separation for winter keeping
- 134 oral (open-mouth) calls from 9 mothers(14-15 per individual) and 129 oral calls from 9 young (10-15 per individual).

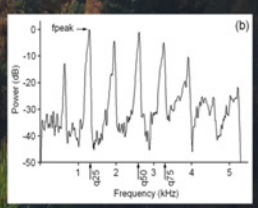
Acoustic analysis

Avisoft Bioacoustics

Praat

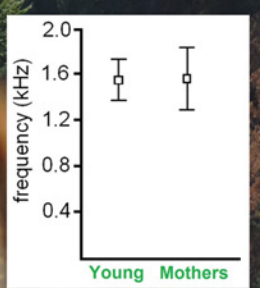


- Duration
- Fundamental frequency (maximum, begin and end)
- Power variables (Peak frequency, 3 quartiles)



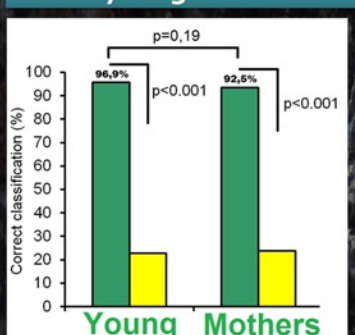
Results

- Whereas western subspecies of Red deer and other ungulates display ontogenetic increase of fundamental frequency (that might be account by the age-related increase of the vocal folds), Siberian wapiti mothers and young have **not significant differences in the maximum fundamental frequency** (1.44±0.25 kHz and 1.46±0.24 kHz respectively)



Tukey post hoc results significant differences: *p < 0.05; ***p < 0.001

Individuality of mother and young contact calls



Actual value

Random value

Discriminant function analysis (DFA): χ2 test

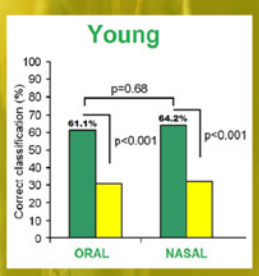
Key variables:

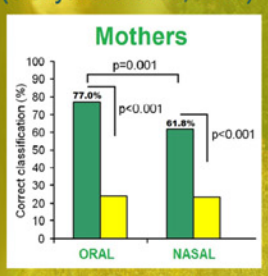
Duration

Begin and Maximum fundamental frequency

In comparison with Iberian Red deer:

(Sibiryakova et al., 2015)





Actual value

Random value

Discriminant function analysis (DFA): χ2 test

- Siberian wapiti mothers and young have extremely high vocal individuality
- Both mothers and young have the same cues to individuality in the oral contact calls: duration as well as begin and maximum fundamental frequency

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