Individual identity in mother and young contact calls of the endangered saiga antelope *Saiga tatarica*

Sibiryakova Olga[1], Volodin Ilya[1,2], Frey Roland[3], Zuther Steffen[4], Kisebaev Talgat[4], Salemgareyev Albert[4], Volodina Elena[2]

[1] Lomonosov Moscow State University, Russia
[2] Moscow Zoo, Russia
[3] IZW-Berlin, Germany
[4] Association for the Conservation of Biodiversity of Kazakhstan (ACBK), Kazakhstan

osibiryakova@bk.ru

http://www.bioacoustica.org

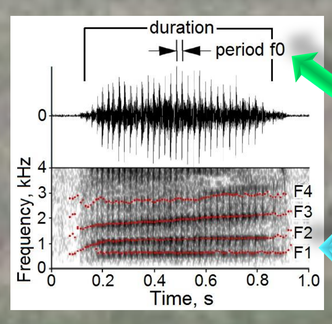
- **Saiga antelope is the rare ungulate species that live in open steppes and give birth in huge groups**
- **Young saigas hide only 48hours after birth, then they follow the herd**
- **In the herd mother and her offspring constantly maintain contact by acoustic signals**

How do mothers and young recognize each other among thousands conspecifics?

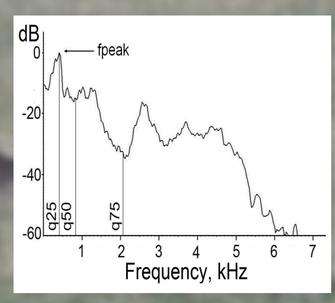
Materials and Methods

- Northern Kazakhstan, natural breeding grounds, May 2014
- Automated recording systems SongMeter SM2+
- Contact calls emitted before the re-union of mother and young
- 235 hours of recordings
- 192 oral calls from 21 adult female, 168 nasal calls from 18 adult female; 197 oral calls from 22 juvenal

Acoustic analysis



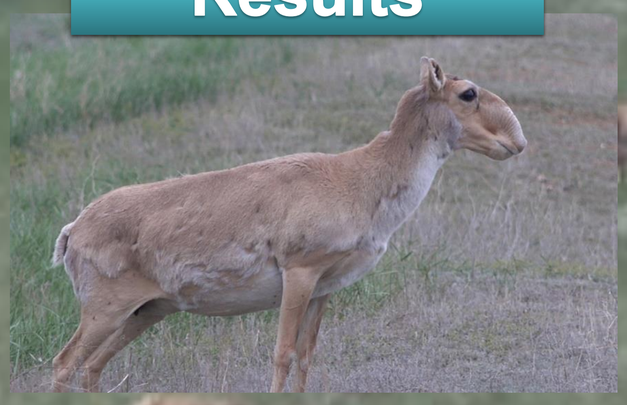
- Duration
- Fundamental frequency (fo)
- Formant frequencies (F1 – F4)



Power variables:

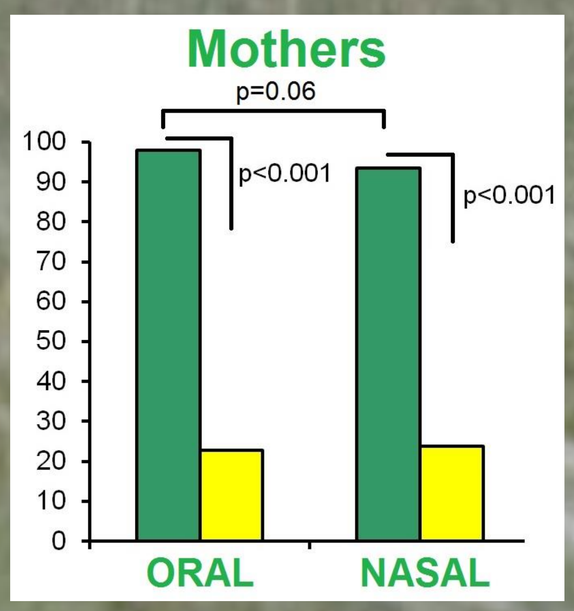
- Peak frequency
- 3 quartiles

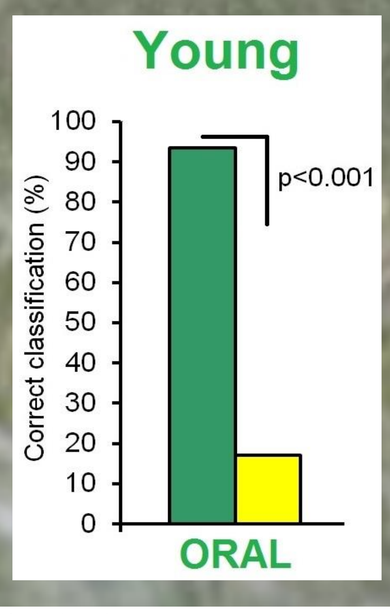
Results



- Saiga mothers and young produced two type of calls: oral and nasal
- Mothers vocalised more often than the young (62.6% vs 33.2% sound files).
- Both mothers and young produced oral contact calls more often than nasal contact calls

Individuality of mother and young contact calls





Discriminant function analysis (DFA); χ2 test

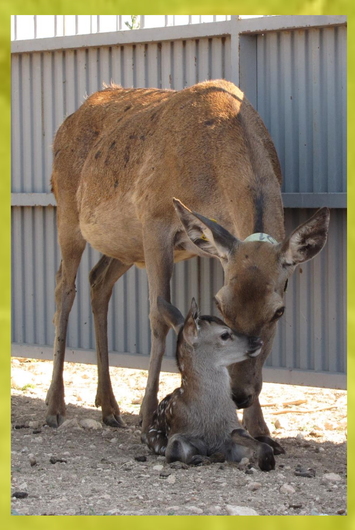
Actual value Random value

Key variables:

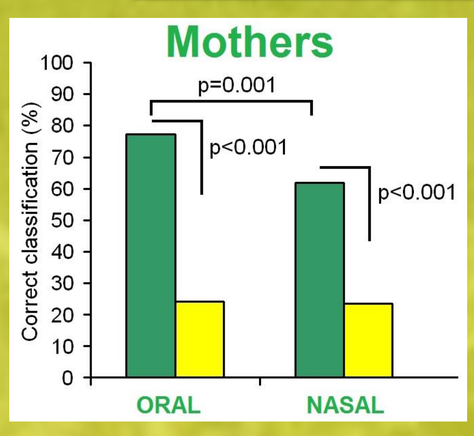
- Fundamental frequency
- 2nd and 3rd formants

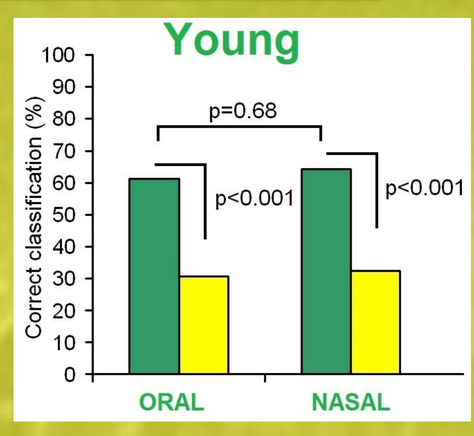
In comparison with Red deer:

(Sibiryakova et al., 2015)



Young hide during first 7-10 days





Actual value Random value

Discriminant function analysis (DFA); χ2 test

- Saigas mothers and young have extremely high vocal individuality
- Both mothers and young have the same cues to individuality in oral and nasal contact calls: fundamental frequency and 2nd and 3rd formants
- Very high vocal individuality might result from their "follower" anti-predator strategy

Supported by the Russian Foundation for Basic Research, grant No 16-34-01230