



THE DIVERSITY OF CALLS IN THE SPECKLED GROUND SQUIRREL (*Spermophilus suslicus*)



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INTRODUCTION

To date, all studies of acoustic communication in the speckled ground squirrel and other Eurasian *Spermophilus* species were devoted to the most characteristic and prominent whistle alarm call (Nilol'skii, 1979, *Zool. Journal.*, 58: 1183-1194). However, captured into live-traps speckled ground squirrels produce also a lot of other calls. The purpose of this study was to provide quantitative and qualitative descriptions of their structures.

RESULTS

We subdivided calls into two structural classes: **tonal** and **wideband**.

1. Alarm whistle (n=463) – most common, repeatedly produced high-frequency (mean±SD = 9.49±0.73 kHz), weakly modulated call. Duration (241±62 ms) is the longest among all call types.

4. Grunt (n=203) – variable call of duration 84±47 ms, with two accented frequency ranges 0.43±0.12 kHz and 4.25±0.76 kHz.

5. Chirr (n=59) – long (123±56 ms) and intensive pulse call (pulse period 10.8±1.7 ms). The four accented frequency ranges were 0.44±0.09 kHz, 8.38±1.36 kHz, 3.46±0.72 kHz and 5.22±0.85 kHz.

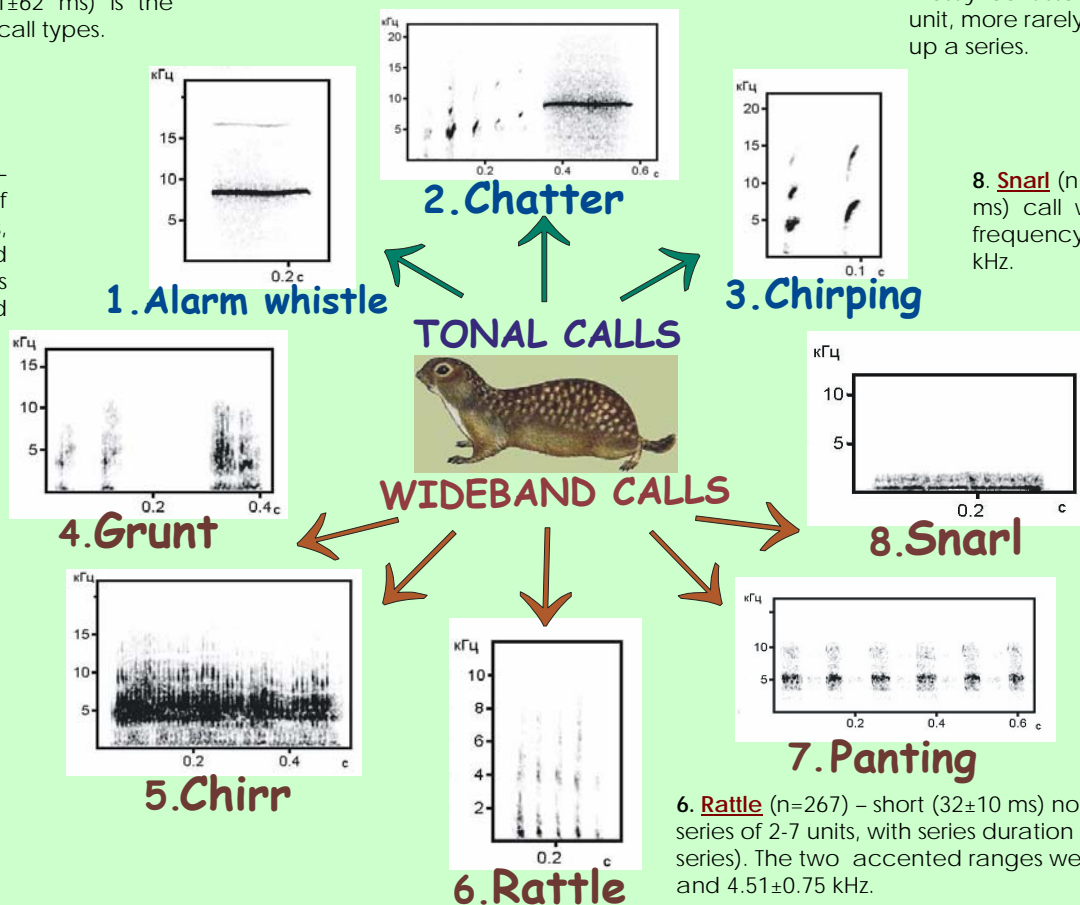
2. Chatter (n=154) – very short (19±7 ms) call notes, varying in frequency from 3.45 to 10.59 kHz and produced in series of 1-5 units with irregular silence intervals (41±30 ms) and ended with alarm whistle.

3. Chirping (n=50) – short notes (29±12 ms), similar with chatter, but occurred independently from alarm whistle, singly or in series. Mostly consisted of a single call unit, more rarely a few units make up a series.

8. Snarl (n=19) – long (183±72 ms) call with an accented frequency range 0.37±0.05 kHz.

7. Panting (n=98) represents a series of forced exhalations, each 47±17 ms, with silence intervals 66±24 ms. Two frequency ranges were accented: 5.15±0.30 kHz and 9.29±0.79 kHz.

6. Rattle (n=267) – short (32±10 ms) notes, occurred in series of 2-7 units, with series duration 203±99 ms (n=84 series). The two accented ranges were 0.48±0.23 kHz and 4.51±0.75 kHz.



CONCLUSION

Similarly with American species of *Spermophilus*, the speckled ground squirrels produce the high diversity of agonistic calls.

The whistle alarm call is emitted in response to various factors of disturbance (both aerial and terrestrial). The wideband calls are used both for intraspecific communication and in other situations of close-range danger.

