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The diversity of calls in the Speckled ground squirrel *(Spermophilussuslicus)*

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The live-trapped speckled ground squirrels produce many distinctive calls toward humans. Here we describe and analyze these vocalizations. We recorded calls from 24 male and 24 female adult animals, sitting in live-traps, in their natural colony in Moscow region, in summer 2003 and 2004. We selected records consisting at least one call type besides the alarm whistle. In total, we analyzed 1313 calls (taking no more than 10 calls of each type per record) and subdivided them into eight call types. The 3 tonal call types included: 1. Alarm whistle (n=463) - intensive, high-frequency (mean±SD = 9.49±0.73 kHz) call of duration 241±62 ms. 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 with irregular silence intervals (41±30 ms) and ended with whistle. 3. Chirping (n=50) - short notes (29±12 ms), similar with chatter, but occurred independently from whistle, singly or in series. The 5 wideband call types included: 4. grunt (n=203) - variable call of duration 84±47 ms, with accented frequency ranges 0.43±0.12 kHz and 4.25±0.76 kHz. 5. Rattle (n=267) - short (32±10 ms) notes, occurred in series of 2-7 with series duration 203±99 ms (n=84 series). The accented ranges were 0.48±0.23 kHz and 4.51±0.75 kHz. 6. Chirr (n=59) - long (123±56 ms) and intensive pulse call (pulse period 108±1.7 ms). The 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. 7. Snarl (n=19) - long (183±72 ms) call with an accented range 0.37±0.05 kHz. 8. Panting (n=98) a series 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. We discuss functions of these calls as warning against aerial and terrestrial predators and defense against close-distant danger. Supported by RFBR (grant 06-04-48400).