

## VIBRATIONAL COMMUNICATION IN ORTHOPTERA

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Vibrational communication is widespread in many insect orders. But among Orthoptera which use for communication mostly sound signals it can be found rather seldom. Until recently vibrational signals (VS) have been recorded only in some Tettigonioidae (*Ephippiger*, *Meconema*). Besides it is known that such signals can be produced by some species of Acridoidea (Oedipodinae) and Grylloidea (*Arachnocephalus*). For the first time we have studied VS in two species of *Tetrix* (Tetrigoidea) and *Arachnocephalus vestitus* (Mogoplistidae, Grylloidea). For recording VS piezo-electric receivers were used. Tetrigids males produce signals of the three types: calling, rivalry and courtship, using mostly middle legs which do not produce any visible movements. Besides, body tremulation and periodical openings of wings can be seen. All the VS consist of more or less distinct pulses united into rhythmically repeated groups - echemes and sequences. At least calling and courtship have distinct species-specific characters. Males of *A. vestitus* produce VS by percussive drumming of palps or tip of abdomen and also use tremulation of front and middle legs. The VS recorded by us are produced by the males only in the presence of females and therefore can be considered as courtship ones. The females answered the males with abdominal percussion. Comparison of vibrational communication in different groups of Orthoptera shows that VS are produced with the use of percussion and visible or invisible tremulation. In the latter case vibrations are emitted, as we expect, by rhythmic isometric contractions of muscles. The VS frequency depends on the features of the substrate. The temporal patterns of these signals are rather complicated - mostly not less than those of sound signals of Orthoptera. In all investigated orthopterans vibrational communication is likely to be a secondary phenomenon. The transition from sound communication to vibrational one leads to decrease of range of communication but on the other hand also reduces decamouflaging effect. Domination of vibrational communication in the abovementioned orthopterans is determined by specific features of their behaviour and first of all by the features of their populations and communities.

Index terms: vibrational signals, communication, Orthoptera.