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Echolocation-like pulse emission for communication by Japanese horseshoe bats, Rhinolophus ferrumequinum nippon

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It has been reported that the bats communicate with conspecifics by various types of vocalizations, which are different from echolocation pulses. However, we have found pulses used for communication, which were emitted when a bat walked to another individual, appeared to be very similar to those for echolocation. Data have shown two evidences. First, the bats never approached another one without emitting pulses. Second, the bats emitted echolocation-like pulses whose CF2 frequency sequentially changed during the approaching behavior. Such pulses were never emitted by an isolated bat. The changes in CF2 frequency were clearly different from Doppler-shift compensation. If this frequency shift was caused by Doppler-shift compensation, the bat should be moving as fast as 1-5 m/s in the cage. Thus, we suggest that these CF2 frequency shifts may play an important role for communication during the approaching behavior to a conspecific animal. [The research supported by a grant to RCAST at Doshisha Univ. from MEXT and by the Innovative Cluster Creation Project promoted by MEXT.]