Quantification of Animal Communication Complexity Using Information Theory I. An Inter-species Comparison of Signaling Systems

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Information theoretic measurements of communication repertoires quantify the organizational complexity and potential communication capacity of signaling systems with unknown structure and function. The most important advantage of measuring signaling systems quantitatively is that it allows one to examine qualitatively different communication systems on a truly comparative scale. We will illustrate the utility of this information theoretic approach by outlining various quantitative measures of animal communication that have appeared in the literature since 1954 and discussing the trends in how communication systems are organized.