

PETER M. NARINS, PhD

COQUI: A HANDY MODEL FOR ACOUSTIC COMMUNICATION IN NOISE

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In this talk, I shall discuss the responses of the Puerto Rican Coqui to playbacks of acoustic stimuli and what we can learn from them. For example, presenting high-level, periodic tones to vocalizing males in their natural habitat results in a clear shift in their calling pattern in that they avoid acoustic overlap with the playback stimulus. In addition, in response to aperiodic interfering tones, males of this species initiate their calls in the gaps between the interfering tones more often than would be expected by chance alone. The Coqui also have a remarkable ability to shift their call timing in response to small intensity shifts in the background noise. Moreover, their calls, auditory sensitivity and their territorial behavior all appear to be co-dependent on altitude. Clearly this species is a remarkable model for understanding acoustic communication in high levels of background noise and deserves widespread conservation efforts (Support: UCLA Acad. Sen. grants to PMN).

Peter M. Narins received his B.S. and M.E.E. in Electrical Engineering and his Ph.D. in Neurobiology & Behavior from Cornell University. He is currently a Distinguished Professor of Neuroethology in the Department of Integrative Biology & Physiology at UCLA. He has led or participated in more than 55 scientific overseas research expeditions to seven continents plus Madagascar, and has lectured on the evolution of communication systems both in English worldwide and in Spanish to universities throughout Latin America and Spain. He is an editor of the *Journal of Comparative Physiology*, and has received the Senior U.S. Scientist Award of the Alexander von Humboldt Foundation and a Fulbright Award (Montevideo, Uruguay). He was elected Fellow of the Guggenheim Foundation, Acoustical Society of America, Animal Behavioral Society, and AAAS. He is an Honorary Member of the Cuban Zoological Society and Professor *Ad Honorem* at the University of the Republic, Montevideo, Uruguay. Dr. Narins has been carrying out pioneering work for more than 40 years on the selective pressures sculpting and mechanisms underlying the evolution of sound and vibration communication in amphibians and mammals. He grounds his research in a unique combination of rigorous experimental field studies and quantitative physiological measurements. He provided the first example, in the Puerto Rican coqui treefrog, of sexual dimorphism in a vertebrate sensory system. He discovered the mechanism that prevents the sensitive inner ear of this frog from being overstimulated when the male produces its extremely high intensity calls. More recently, his comparative research approach led to the discoveries of ultrasonic communication in the concave-eared torrent frog (China), the first species of songbird demonstrated to produce ultrasound (China), the first amphibian capable of modulating his call to produce purely ultrasonic calls (Malaysia), and a novel system of seismic communication in a remarkable sand-dwelling mammal, the Namib Desert golden mole (Namibia). pnarins@ucla.edu