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Third International Conference on Acoustic Communication by Animals

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LONG-TERM GOALS

The purpose of this conference is to bring together senior scholars, mid-career researchers and teachers, young investigators, and students to share ideas, data, and methods in the growing and exciting field of animal acoustic communication. The emphasis of this conference is the integration of information across animal taxa, and the enabling of exchanges between young investigators and more established investigators in the field. Another predominant aim of this conference is to consider acoustic communication, its mechanisms, and the detection of acoustic signals, particularly in noisy backgrounds. At the same time, the intent is to examine communication within the context of how it develops, how it evolved, and its neuroethological basis. The multi-level approach taken by this conference will advance the field of animal bioacoustics.

OBJECTIVES

Primary:

Bring biologists, engineers, and other scientists from various fields together to discuss animal acoustic communication and methods for studying it.

Secondary:

1. Educate attendees on acoustic communication by animals.
2. Provide more networking among experts in acoustic communication of different species and taxonomic groups.
3. Introduce new techniques and equipment in this rapidly emerging field.
4. Make attendees aware of research, software products, and equipment in the field so they do not have to rediscover or reinvent solutions.
5. Explore improving communications among scientists and engineers from various organizations and countries which work on various aspects of acoustic communication of animals.
6. Improve the understanding of basic acoustics, especially as it relates to animal communication.
7. Provide more networking between attendees with background in the physical and biological aspects of acoustical communication.

APPROACH

A group of outstanding investigators will be invited to present the plenary talks. At least one keynote address on topics in animal communication, the speaker to be chosen at a later date.
The organizers will cover registration for these speakers.

Some of the invited speakers, and the general topics they will discuss, are as follows:

Keynote Speaker: Peter Narins, mechanisms underlying acoustic communication in noise
Special Lecture: Jack Bradbury, new advances and understanding in animal communications

Invited Speakers

Peter Tyack cetacean communications

Christopher Clark acoustic environment of whales

Whitlow Au sound detection and echolocation by dolphins

Magnus Wahlberg sperm whale acoustics

Robert Dooling bird hearing

Ronald Hoy communication strategies in insects

Peter Narins vertebrate seismic communication

David Mellinger new approaches to software for animal signals

Richard Fay electrophysiological and behavioral studies of hearing by fishes

David Mann fish communications

Caitlan Rodwell elephant infrasonic and seismic communications

Annemarie Surlykke foraging dynamics of echolocating bats

Cynthia Moss bat foraging dynamics

WORK COMPLETED & RESULTS

The Third International Conference on Acoustic Communication by Animals was held August 1-5, 2011, at Cornell University in Ithaca, New York, and was a resounding success.

One hundred and thirty one people attended. Of these, about forty percent (52) were students, and seventy percent (91) presented their work. Participants came from 27 U.S. states, Canada, Mexico and 12 other countries, including those in Europe, South America, Australia and the Middle East. There were twenty participants representing the host institution, Cornell University.

A total of 96 oral and poster presentations were given. Of these, 14 were from invited speakers (including one keynote address), and 82 were submitted papers (all papers submitted for consideration were accepted). Thirty-eight submissions were accepted for talks, and 44 were posters. Of the 38 submitted oral presentations, 25 were from senior researchers and 13 from students. Of the 44 poster

presentations, just over half (23) were from students. All sessions were plenary and were loosely organized by ideas and concepts rather than by animal groups.

Taxa and Topics

Marine mammals (26 presentations) and birds (18) were the predominant taxa represented, together accounting for about half of the oral and poster presentations, followed by terrestrial mammals (14), bats (10), fish (8), invertebrates (7) and frogs (6).

Topics covered included cognition/language; song and call classification; rule learning; acoustic ecology; communication in noisy environments; environmental noise impacts; development and evolution of animal communication; and methodology for measuring and analyzing complex animal sounds, including new equipment and software.

Invited Speakers

The keynote speaker was Dr. Peter Narins (UCLA Department of Integrative Biology & Physiology), whose address entitled "Building on Darwin's Legacy: Environmental Influences on the Evolution of Communication Systems" was enthusiastically received.

The remaining invited speakers presented papers encompassing a variety of taxa and methodologies as follows:

- Whitlow Au, University of Hawaii, "The Soundfield Around an Echolocating Atlantic Bottlenose Dolphin."
- Sandra Blumenrath, University of Maryland, "Communicating in Social Networks and Natural Environments: Effects of Noise and Reverberation."
- Christopher W. Clark, Cornell University, "Communication Masking: The influence of Ship Noise on Marine Mammal Acoustic Habitats."
- Kurt Fristrup, National Parks Service, "Estimating the scope of noise masking in National Parks."
- Timothy Gentner, University of California San Diego, "Neural mechanisms for individual vocal recognition in songbirds."
- David Mann, University of South Florida, " Acoustic Communication in Fishes."
- David Mellinger, Oregon State University, "A method for detecting chirps, whistles, moans, and other tonal sounds."
- Ronald Miles, State University of New York, Binghamton, "Small Ears and Hearing Aid Microphones."
- Cynthia Moss, University of Maryland, "Acoustic Behaviors and Social Learning in Foraging Bats."
- Daniel Robert, University of Bristol, England, "Auditory biomechanics in microscale hearing organs."
- Annemarie Surlykke, University of Southern Denmark, "Gain control of Emitted Intensity in Echolocating Bats."

- Peter Tyack, Woods Hole Oceanographic Institution, "Cetacean Communication"
- Edward Walsh, Boys Town National Research Hospital, "Tiger Bioacoustics: An Overview of Vocalization Acoustics and Hearing in Panthera tigris."

Special Events

Most Symposium events were held at the Statler Hotel and Conference Center on the Cornell University campus. Evening programs included a networking dinner ("Bioacoustics and Pizza") for people with similar interests to share and discuss specific concepts and applications, and a reception and tour of the Cornell Lab of Ornithology, focusing particularly on the Bioacoustics Research Program and the Macaulay Library, the world's leading scientific collection of biodiversity media. The main Symposium was preceded on the opening day by a four-hour optional workshop in Acoustic Ecology, hosted by the Cornell Bioacoustics Research Program, and held at the Cornell Lab of Ornithology. The workshop was attended by 26 participants, of which 14 were students.

Financial Assistance and Awards

Funding assistance to attend the Symposium was provided to about 25 individuals, all of whom were students, or were travelling from outside the country or from a great distance within the United States. Assistance took the form of registration fee waivers and/or reimbursement of travel costs associated with attendance. All symposium costs were also waived for three local students who provided extensive logistical support. In addition, four students received cash awards for the best student presentations, as determined by a panel of judges.

Participant Evaluation

An evaluation summary was completed by 55 participants (about 42%). Responses were quite favorable, with the highest approval rates going to the keynote speaker and the tour of the Ornithology Lab. About 95% of respondents said that the Symposium met their expectations and they would attend a fourth such event. Suggestions for venue of a future Symposium were solicited, with the following locations receiving the most mention: U.S. West Coast (5), Hawaii (4), Fort Collins, Colorado (3), Woods Hole (2) and Europe (2).

IMPACT/APPLICATIONS

This conference is needed because there are no other meetings or conferences which focus just on animal acoustic communication. While the topic is covered at other conferences, such as the ASA, the Animal Behavior Society, and the Society for Marine Mammalogy, the research, and researchers, in animal acoustic communication are distributed among many widely diverse sessions at those conferences. The result is that the issues, methods, and results unique to animal acoustic communication become scattered, rather than consolidated. A focused conference helps focus the thinking and work of both established researchers and students.

RELATED PROJECTS

None.