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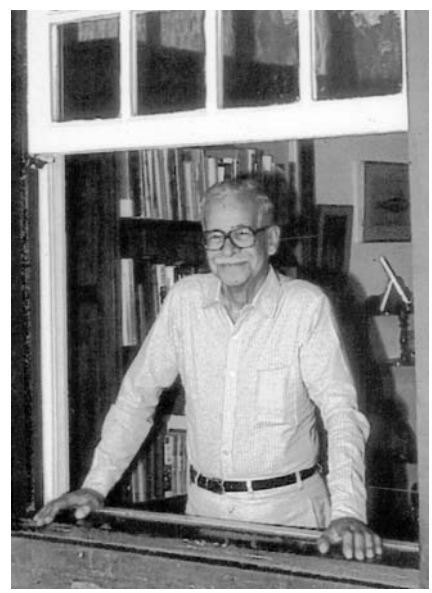
ADVANCES IN BIOACOUSTICS



To the memory of Aristides Azevedo Pacheco Leão
(3 August 1914 – 14 December 1993)

PRESENTATION

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This issue of the Annals of the Brazilian Academy of Sciences is devoted to Bioacoustics and presents some of the results of the XIX International BioAcoustics Congress – IBAC that was held for the first time in Brazil in August 2003. Under the name "Advances in Bioacoustics", this publication represents the state-of-the-art of the various topics discussed during that congress. It is the first time that the proceedings of these congresses have been organized into a special publication, and we hope that the organizers of future meetings will continue the series.

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It all began in Paris on a nice day in the spring of 1973. My old master Henri Heim de Balsac invited me to join him at the next weekly session of the Académie des Sciences, where the President of the Brazilian Academy of Sciences was to be received and would present a project of cooperation in ecological field research in Northeastern Brazil. Dr. Aristides Azevedo Pacheco Leão was also anxious to bring to Brazil the recent technical advances in birdsong recording and analysis. When I was presented to him as a young PhD in Ecology and a field ornithologist with experience in Bioacoustics, Dr. Aristides, as he was known by his friends in Brazil, invited me for lunch the following day. This is why I can, thirty years later, recognize Aristides Leão as the father of Bioacoustics in Brazil and pay at last the tribute I owe him.

Although the study of animal sounds has always been a fascinating goal, it was frustrated until the appearance of high-fidelity portable recorders in the late 1950´s. Dedicated recordists then started to establish wildlife sound archives and biologists of various brands, mostly ethologists, but also systematicians and field ecologists, began to elaborate new theories incorporating such data. For the first time, a natural signal of communication was subjected to rigorous physical analysis and replication, opening entirely new fields of research. Expectations were high, and it became absolutely necessary to define norms, promote exchanges and discuss models to be tested from the new data gathered. That is when a group of both amateurs and scientists decided to found an International BioAcoustics Council with the purpose to gather everybody interested in animal sound communication, in order to stimulate the exchange of data and ideas. Thus, the IBAC was founded in 1969 in Denmark and its first meeting was held in 1971 in Scotland. To further its goal, IBAC is open free of charge to any interested person, the modest costs of administration being supported by the most active laboratories in the field. A small bulletin was circulated, later replaced by an internet web page, presently hosted at www.cultura.ufpa.br/ibac.

International meetings have been held regularly since 1971, mostly in European countries. During the XVIII IBAC in Italy in 2001, Maria Luisa Malu da Silva and I proposed to host the next meeting in Brazil. This would be the first IBAC in Latin America, and we wanted to introduce several changes in the organization of the meeting. We suggested the name be changed from Council meeting to Congress, preserving the well-known acronym IBAC, and that the meeting be held biennially. Contributions were to consist of free communications organized into thematic symposia with two co-conveners, and other activities were to be implemented, particularly workshops to attract students. Our proposal was promptly accepted and we began to organize the XIX IBAC. Strong support was immediately received from the Brazilian Academy of Sciences, which stimulated other organizations, private and public, to join and provide the necessary logistical support for a successful conference.

Why Brazil? If we were able to bring the XIX IBAC to Brazil and to introduce so many changes in this traditional body, it is obviously because Brazil has gained over the years a high respect in this field of research. All of this began, as stated above, when the famous neurophysiologist Aristides Azevedo Pacheco Leão, then President of the Brazilian Academy of Sciences, went to Europe to invite young field ecologists for a new research project in Brazil. Because Dr. Aristides was also a keen birdwatcher and an enthusiastic recordist, he invited me, on the condition that I bring my recording equipment and a parabola. After four trips and 500 bird species

duly recorded, identified and edited, I decided that it was time to accept an invitation of the recently created, but already famous Universidade Estadual de Campinas-UNICAMP to found a Laboratory of Bioacoustics with a national sound archive. This was established in 1978 and the archive, which I named Arquivo Sonoro Neotropical, soon became one of the 10 major wildlife sound collections in the world! This has been possible thanks to the collaboration of many colleagues, amateurs and students, each one contributing their special skills. Brazilian people are very sensitive to sound, and birdsongs and other animal voices are extremely popular: the LP "Aves do Brasil" produced by Johan Dalgas Frisch in 1962 is still today the only world-wide hit of wildlife sounds. Scientists, particularly herpetologists like Werner Bockermann and Dino Vizotto and amateur ornithologists like José Carlos Reis de Magalhães besides J. Dalgas Frisch, were trying to use that new tool, Bioacoustics, from its beginning, but technical difficulties with the operation of open-reel recorders and analogue sonographs, that were a nightmare for the early bioacousticians, posed even stronger barriers in the tropics.

Today, thanks to the digital treatment of sounds, the recording, archiving, copying and analysis of wildlife acoustic signals are much easier. However, the need for technically accurate recording and fully detailed documentation remains the same and must be reinforced, lest it be forgotten together with the past difficulties of carrying and operating heavy and delicate equipment. Furthermore, new frontiers of research, based on more advanced technologies and more elaborated concepts and concerns, have been opened, bringing new challenges for the bioacousticians.

Bioacoustics, called more poetically Zoophony by Hercule Florence upon his return from the tragic Langsdorff expedition through Brazil in 1826-29, is a rapidly expanding field of research. International congresses and periodic publication of new results are indispensable for its full development. It is clear from the contents of the present issue, that the areas and organisms covered are very diverse, from crickets to whales, from neurophysiology to physics. We hope that this publication will help all interested colleagues to follow some of these advances.

EDITORIAL NOTES

This publication has been made possible thanks to the help of various organizations and people. From the beginning, the firm support of the Brazilian Academy of Sciences, principally through its Vice-President Dr. Carlos Eduardo Rocha-Miranda, was decisive for the success of the XIX IBAC and of this publication. The financial support of the Conselho Nacional de Desenvolvimento Científico e Tecnológico-CNPq covered also part of the cost of this issue.

The Congress was made possible thanks to the financial support received mostly from CNPq and CAPES, but also from private sponsors, particularly Aracruz Celulose S.A. After other frustrated contacts, Belém was chosen in response to the enthusiastic participation offered by the Universidade Federal do Pará-UFPA. From this point, the XIX IBAC gained many other sponsorships, namely from Sociedade Brasileira de Neurociências e Comportamento, Avisoft Bioacoustics, CenDoTec, University of Chicago Press, Instituto de Estudos Superiores da Amazônia-IESAM, Fundação Amazônica Yoshio Yamada, Museu Paraense Emílio Goeldi, Museu de Biologia Mello Leitão, Atualidades Ornitológicas, Paratur, Panfletur, Beira Rio Hotel, and Telemar. We want to thank also the participants, both senior scientists and young students, who

traveled long journeys and presented high-level research, making this IBAC another fruitful and enjoyable meeting on Bioacoustics.

The present publication would not have been possible without the collaboration of Dr. Lucia Mendonça Previato, Editor-in-Chief of the Annals of the Brazilian Academy of Sciences, and of her Editorial Assistant Isa Maioli. However, I assume the responsibility for this issue, which editing followed various steps. All papers went through at least two referees, were edited by me and revised by my two co-editors, to be finally checked carefully by the journal Editorial Board. I am glad to thank publicly the colleagues who contributed to the preparation of this issue, Maria Luisa Malu da Silva and Roderick A. Suthers as co-editors, Peter R. Marler and Christine Portfors as revisors and referees for various papers, César Ades, Luiz dos Anjos, Thierry Aubin, David Chesmore, Laure Desutter-Grandcolas, Matija Gogala, Nicolas Mathevon, Claudio V. Mello, William L. Overal, Richard Ranft, Patrick Sellar, and Dietmar Todt as referees.

Forty of the 70 contributions presented and discussed during the XIX IBAC are published here, generally in a revised version. The other contributions were already submitted to another journal, or were retained by the authors for further elaboration. Some of these papers may be submitted for possible publication in later issues. For practical purposes, the dates of reception and of acceptance of the manuscripts (already edited by the IBAC Editorial Committee) were standardized uniformly as 15 January and 5 February, respectively.

It was not possible to retain the organization of the papers into symposia, because several contributions are missing from one or another symposium. However, we tried to follow some order in the topics covered: vocal learning, neurophysiological control, propagation constraints, specific repertoires (including Man), techniques and archives.

All papers of this and other issues of the Annals of the Brazilian Academy of Sciences "Anais da Academia Brasileira de Ciências" are available, free of charge, in pdf format at www.scielo.br/aabc.

The whole issue can be cited as: Vielliard JME, Silva ML da and Suthers RA (Eds), Advances in Bioacoustics. Rio de Janeiro: *An Acad Bras Cienc* 76(2): 189-466.