

A Glimpse at Ethology in Latin America

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The state of the art of Ethology in five Latin America countries is briefly presented here. The overall outlook regarding research laboratories and themes is promising: the community is numerous, active and there are topics addressing all aspects of animal behavior, especially in large countries like Brazil and Argentina. Ethology as an undergraduate discipline is generally a sub-category of Biology, being taught mainly at Zoology/ Psychology/ Ecology/ Agriculture Courses and at Medical Veterinary Schools, often as an eligible discipline. Ethology as a formal major Graduate Program is rare and mainly restricted to Brazil. Regular Ethology meetings are held in Argentina, Brazil and Uruguay. In Chile and Venezuela there is a small but very active community. Studies of animal behavior are often carried out in other areas than Biology, and there is a clear overlap of interest regarding the major topics of Ethology. Behavioral ecology, conservation, management and animal welfare are a priority in most countries, probably reflecting a general concern regarding endangered species and habitats of the continent. Here we present information aiming to create a network that will increase collaborations among researchers working within the ethological framework in Latin America. The IV *Simpósio de Etologia na América Latina*, entitled “*Desarrollo de la Etología en Latinoamérica: ¿hacia un futuro regional ?*” was held in November, 2013, as part of the XXXI *Encontro Anual de Etologia* (EAE), in São Paulo, SP, Brazil. The state of art of Animal Behavior in Argentina, Brazil, Chile, Uruguay and Venezuela were presented there and a set of six questions guided the presentations: 1) What are the main Ethology topics being studied in laboratories in your country? - 2) Are there undergraduate or graduate programs in the main universities? - 3) Is there an Animal Behavior Society? How interested is the community in establishing close ties among institutes or laboratories elsewhere in Latin America? - 4) Is there a site, a journal, a page on a social networking site for contact, communication and divulgation of original data? - 5) How active is the community regarding the wiliness to organize congresses, symposia, meetings, workshops, on-line courses regarding Ethology? - 6) Are there funding agencies to support exchange programs and research in Ethology? Additional data were collected from the last two EAE regarding researchers from Latin America that attended EAE meetings and a list of names and laboratories was compiled (see appendix). It should be emphasized that the compilation of information presented here is far from complete. It represents a brief overview of the current status of Ethology in only five Latin American countries, and therefore it should be updated continuously with new data from the countries treated here as well as supplemented with data from other countries. Such a constantly updated list would facilitate the creation of networks that should increase collaborations among researchers working within the ethological framework in Latin America.

Keywords: Ethology; network; animal behavior; Latin America.

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Presentamos brevemente el estado de la Etología en cinco países de América Latina. En general, con respecto a la investigación en laboratorios y temas de estudio la situación es prometedora: la comunidad es numerosa, activa, y los temas abarcan todos los aspectos del comportamiento animal, especialmente en países grandes como Brasil y Argentina. La Etología como disciplina de grado, por lo general es una subcategoría de la Biología, siendo impartida principalmente en cursos de Zoología /Psicología/ Ecología/Agricultura, y en las facultades de Medicina Veterinaria frecuentemente como disciplina opcional. No es frecuente que la Etología sea un programa formal de Posgrado, lo cual está principalmente restringido a Brasil. Se realizan encuentros regulares de Etología en Argentina, Brasil y Uruguay. En Chile y Venezuela se encuentran comunidades pequeñas pero muy activas, ligadas a la Etología.

Los estudios de comportamiento animal se realizan frecuentemente en áreas distintas de la Biología, y hay una clara superposición de intereses respecto a los principales tópicos de la Etología. La ecología comportamental, la conservación, el manejo y el bienestar animal son prioridades en muchos países, lo que probablemente refleja una preocupación general respecto a las especies y hábitats amenazados en el continente.

Aquí presentamos un informe preliminar orientado a crear una red que aumente la colaboración entre los investigadores que trabajan en el marco de la Etología en América Latina. El IV Simposio de Etología de América Latina, titulado “Desarrollo de la Etología en Latinoamérica: ¿hacia un futuro regional?” se realizó en Noviembre de 2013, como parte del XXXI Encontro Anual de Etologia (EAE), en São Paulo, SP, Brasil. Invitados de cinco países -Argentina, Brasil, Chile, Uruguay y Venezuela- presentaron información sobre el estado del arte del comportamiento animal en sus naciones y las presentaciones fueron guiadas por un cuestionario de seis preguntas: 1) ¿Cuáles son los principales temas de estudio y laboratorios de Etología en su país? - 2) ¿Hay programas de grado o posgrado en las principales universidades? - 3) ¿Hay una sociedad de Comportamiento Animal? ¿Qué tan interesada está la comunidad en establecer vínculos estrechos entre institutos o laboratorios en otros lugares de América Latina? - 4) ¿Hay un sitio de internet, una revista o un en una red social para contacto, comunicación y divulgación de datos originales? - 5) ¿Qué tan activa es la comunidad respecto a la organización de congresos, simposios, encuentros, talleres y cursos on-line referidos a Etología? - 6) ¿Hay agencias de financiamiento para sostener programas de intercambio e investigación en Etología? Adicionalmente se recolectaron datos de los últimos dos EAE concerniente a los investigadores en América Latina que asistieron a los mismos y se compiló una lista de nombres y laboratorios.

Palabras clave: Etología; red; comportamiento animal; América Latina.

Main laboratories and topics of common interest

In large countries like Argentina and Brazil there are different approaches to Ethology, such as Animal Cognition, Applied Ethology, Behavioral Ecology, Conservation & Animal Welfare, Evolution of Behavior, Evolutionary Psychology/ Human Ethology, Neuroethology and Behavioral Physiology, which are well represented by many laboratories (Table 1, 2, 3 and appendix). There is a clear overlap of interests among all countries regarding the following topics: i) Animal Welfare and Applied Ethology; ii) Behavior Ecology mainly of insects, spiders, fish, bats, endemic rodents, birds and primates; iii) Communication and Sensory Ecology; iv) Social behavior of bees, and other insects, including agricultural pests and vectors of human diseases, and v) Neuroethology.

Uruguay: laboratories and main topics

In Uruguay there is a *Sección Etología* at the *Instituto de Biología*, linked to the *Facultad de Ciencias*,

Universidad de la República Uruguay (URU). The *Laboratorio de Etología, Ecología y Evolución (EEE)*, and the *Laboratorio de Ecología del Comportamiento (EC)* are located at the *Instituto de Investigaciones Biológicas Clemente Estable (IIBCE)*, of the “*Ministerio de Educación y Cultura*” (MEC) (Table 1).

1. The main topics at *Sección Etología* (URU) are: 1) Communication in derived vertebrates (Dr. G. Francescoli); 2) The role of sexual selection in population differentiation processes (Dra. B. Tassino); 3) Primate Behavior in captivity (MSc. S. Corte); 4) Applied Ethology regarding animal welfare (MSc S. Corte); 5) Social behavior of bees and bumblebees, (MSc. G. Invernizzi); 6) Ecoethology of subterranean endemic rodents (G. Izquierdo), 7). Reproductive behavior of annual fishes (Dra. B. Tassino); 8) Reproductive strategies of “lobos marinos” (Dra. B. Tassino) and 9) Communication and social behaviour in subterranean rodents (Dr. Gabriel Francescoli).
2. At the “Facultad de Ciencias” (URU) Ethology is also studied in other areas such as: I.

Entomology: Control of insect pest in agroecosystems: the role played by spiders (Dra. C. Viera); II. Physiology: Behavioral physiology (Dra. A. Ferreira); III. Vertebrates: a) Interaction of pinnipeds and artisanal fishing (Dra. D. Szteren), b) Sexual selection of annual fish (Dr. M. Loureiro); IV. Systematics and Natural History of Vertebrates: a) The Biology of Anurans (Dr. R. Maneyro), b) The Biology of Reptiles (MSc. M. Meneghel); V. Neurosciences: Models of perception using electrolocation by electrical fish of weak discharge (Dr. L. Gómez).

3. The following projects are carried out at the Facultad de Veterinaria (URU): I. Physiology (Dr. R. Ungerfeld): 1) Ovine sexual behavior; 2) Social hierarchy and its effect upon production and reproduction; 3) Reproductive biology of wild deer; 4) Weaning of beef cattle; - II. Animal Welfare Group, under the supervision of Dr. S. M. Huertas: a) Bovine transport: welfare aspects; b) Studies of social interaction of two horse groups in semi-natural enclosures.
4. At the Chemical Ecology Laboratory (URU), Dr. A. González and Dr. C. Rossini are responsible for the following lines of research: Insect behavior in relation to chemical communication and chemical characterization of semichemicals: a) the context of intraspecific communication (pheromones); b) the role of plant kairomones; and c) the role of allomones defenses.
5. The main focus at MEC/ IIBCE/ EEE is "Behavior, ecology and evolution of Neotropical spiders" (Dr. F. Costa) and the main research lines are: a) sexual behavior, sexual selection, reproductive strategies, and reproductive isolation; and b) social, parental, predatory, and territorial behavior. At MEC/ IIBCE/ EC the main research line is "Web construction and habitat selection" (Dr. C. Viera) and topics include: a) the evolution of sociality in spiders, and b) predatory and nest-building behaviors of spiders applied to pest management. At IIBC I. the line of research entitled "Neuromodulation of aggression in electrical fishes" is carried out under the supervision of Dr. A. C. Silva (Neurophysiology/ The neural basis of behavior).

Venezuela: laboratories and main research lines

In Venezuela researchers directly linked to Ethology can be found at the "Universidad de los Andes" (ULA), in Merida, at the "Universidad Simón Bolívar" (USB) and "Universidad Central de Venezuela" (UCV), both in Caracas (Table 1). The main lines of research are: a) sensory ecology of bats (olfaction) (Drs. M. Muñoz-Romo and P. Ramone); b) the distribution of Chagas' disease vector in cities of Venezuela, and the geometry of the vector's eggs (*Rhodnius*) (Dr. E. Aldana) at ULA; c) Behavioral ecology, conservation and management of terrestrial vertebrates with emphasis on capybaras (*Hydrochoerus hydrochaeris*) (Dr. E. Herrera), at USB; d) Termites, ants and cash crops (Dr. K. Jaffe), and e) sensorial ecology of frogs (Dr. Z. Tarano), at UCV.

Ethology at the Graduate and Undergraduate level

Ethology is taught as a discipline in undergraduate and graduate institutions of every country, but rarely as a major program (Table 1). An exception is the Graduate Program of *Neurociências e Comportamento* (NeC), at the Institute of Psychology, *Universidade de São Paulo*, Brazil, which offers Master and Doctoral Degrees in Neuroscience and Behavior, including Animal Behavior. Graduate programs of Biology, Ecology, Psychology, Zoology, Medical Veterinary and Medicine have laboratories where students can develop dissertations that focus on animal behavior topics. In general the scenario at the undergraduate level is similar. Ethology is offered as a discipline, often as elective, mainly as part of Courses of Biology, Psychology and Veterinary Medicine.

In Venezuela, Ethology is a course at the undergraduate level of the *Licenciatura en Biología* and there is not a formal Graduate Program. In Uruguay Ethology is part of what is called *Licenciatura en Ciencias Biológicas* and it is also possible to get a degree of *Especialización en Etología*.

These main disciplines in undergraduate programs in Uruguay are: 1. Introduction to Ethology, 2. Biosemiotics and Animal Communication, 3. Methods in Ethology, 4. Behavioral Ecology and 5. Concepts in animal welfare. At the Graduate level it is offered as a Master Degree in Biological Sciences (Zoology) and a Doctorate degree in Biological Sciences (PhD), within the *Programa de Desarrollo de las*

Ciencias Básicas (PEDECIBA/ <http://www.pedeciba.edu.uy/indice.php>) (Table 1).

In Brazil the teaching of Ethology is unevenly distributed among the regions (Southeast> South> Northeast> Central-West= North) and within undergraduate programs (Psychology> Biology> “Animal Science”> Veterinary Medicine>> Ecology> Agronomy= Engineering of production= Aquaculture= Oceanography= Medicine). A recent study revealed that in Brazil 26% of the undergraduate programs in Veterinary Medicine present Ethology as a discipline (Borges et al, 2013).

In Argentina there are no Ethology graduate programs or specialization in Ethology. Nonetheless, animal behavior topics are addressed at the undergraduate and graduate level. Animal Welfare as a discipline is taught at Medical Veterinary Schools, and the Biology of Behavior is studied at Schools of Psychology and Schools of Biology. Tables 1, 3 and appendix summarize the main institutions, topics of undergraduate and graduate programs and the main lines of research carried out in this country.

Societies, Congresses, Meetings and Workshops

1. Societies of Ethology are found in Brazil and Chile and these are members of the International Council of Ethology (ICE), according to the ICE site (http://www.ethologycouncil.org/?page_id=166) (Table 1). The “*Asociación Argentina de Ciencias del Comportamiento*” (AACC), founded in 1987, has Psychology as its main focus. AACC is member of the International Union of Psychological Sciences and it promotes biannual meetings in Argentina. The “*XIV Reunión Nacional y III Encuentro Internacional De La Asociación Argentina de Ciencias del Comportamiento*” was held at the *Facultad de Psicología, Universidad Nacional de Córdoba*, in August 2013. In the same year a meeting entitled “COMPORTA 2013” was held in Mar del Plata, Argentina, focusing upon Animal Behavior. There are also societies for Neuroscience, Ecology, Chemical Ecology that promote their own regular meetings, in which animal behavior is a topic that is addressed. A similar fact occurs with specific societies for different taxa as for the study of mammals, herpetology, entomology, etc. Many of

those societies and associations have also their own journal.

2. In Brazil the *Sociedade Brasileira de Etologia* (SBEt) promotes annual meetings (EAE), and since 2010 it has included the Latin America Symposium of Ethology. SBEt has also been responsible for the *Revista de Etologia* since 1998. There are many specific societies that include behavior as a topic, such as the *Sociedade Brasileira de Primatologia* (www.cbprimatologia.org.br), *Sociedade Brasileira de Zootecnia* (executiva@sbz.org.br), *Sociedade Brasileira de Mastozoologia* ([sbmz.com.br](http://www.sbmz.com.br)), *Sociedade Brasileira de Ictiologia* (<http://www.sbi.bio.br/>), and so on. These societies regularly promote their own meetings.
3. In Uruguay, although small, the community is very active, participating in Congresses and Workshops. Since 2007 a biannual meeting *Jornadas Uruguayas de Comportamiento* (JUCA) has been organized.

Concluding remarks:

The data presentation at the Symposium “*Desarrollo de la Etología en Latinoamérica: ¿hacia un futuro regional?*” was followed by a debate that included among others Dr. Martin Giurfa, representing Argentina, and Dr. Gabriel Ramos-Fernandez, from Mexico. The scenario that emerged is the clear potential for integration that exists among researchers of Ethology in Latin America. Research areas incorporate every major aspect of Ethology. There are laboratories willing to accept exchange students and financial support is available.

There is also a sound structure for education of Ethology in most countries. Nonetheless an aspect that should be emphasized is the fact that “Ethology” and “Animal Behavior” are embedded within other courses and programs at most universities, thus it is not identified by title, so it is often difficult to have access to information regarding course catalogs. A proposal that emerged from the discussion was to organize a future EAE in Argentina, as a step to break the institutional barriers that presently exist, thereby increasing integration and exchange of knowledge within Latin America. Another step is to increase the exchange of information through social media. In this respect SBEt has a site, which is willing to accept information regarding laboratories, including research areas, and educational programs of other countries in Latin America.

References

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Table 1. A glimpse of Ethology in Latin America (Argentina, Brazil, Chile, Uruguay and Venezuela): data presented at IV *Simpósio Latino-americano de Etologia*, “*Desarrollo de la Etología en Latinoamérica: hacia un futuro regional?*” that was held in November of 2013, as part of the XXXI *Encuentro Anual de Etología* (EAE), in São Paulo, SP, Brazil

Country	1 Major topics and laboratories	2 Graduate/ Undergraduate Programs	3 Societies	4 Journal, site, social networking sites	5 Congresses Meetings Workshops	6 Funding agencies
Argentina	There are many laboratories at different provinces that address the major topics of Ethology (also see appendix)	Ethology is offered as an elective discipline both at the undergraduate and graduate levels at public universities. It is not offered as the major degree at any level.	A large and very active community The <i>Asociación Argentina de Ciencias del Comportamiento</i> (AACC), exists since 1987 as a member of The International Union of Psychological Sciences	http://www.aacconline.org.ar/ (AACC) www.grieta.org.ar/ (COMPORTA) <i>Revista Argentina de Ciencia del Comportamiento</i> (RACC), a publication of AACC focusing on Medicine, Health Sciences and Mathematics http://www.psych.unc.edu.ar/racc/index.php/comportamiento	AACC promotes biannual meetings/ main focus is on Psychology 1 st <i>Congreso Argentino de Biología del Comportamiento</i> /Comportamiento 2013, main focus is on Animal Behavior Grupo de Investigación y Educación en Temas Ambientales (GrIETA), San Eduardo del Mar, Argentina	Yes, there are two main national organizations that support research funds and doctoral and postdoctoral fellows, but none specifically for Ethology
Brazil	There are many laboratories at different universities that address the major topics of Ethology (Table 2) USP is the largest research university in the country	There are many undergraduate programs especially within Psychology, Biology and Veterinary Medicine courses. There is a <i>Neurociência e Comportamento</i> Graduate Program at USP offering Master and Doctorate Degrees	<i>Sociedade Brasileira de Etologia</i> (SBEt), member of ICE. There are many other societies focusing on specific aspects of Ethology, such as <i>Sociedade Brasileira de Primatologia</i> (SBP), <i>Sociedade Brasileira de Zootecnia</i> (SBZ), <i>Sociedade Brasileira de Mastozoologia</i> (SBMZ), etc	<i>Revista de Etologia</i> , since 1998 SBEt has a site and a page: http://www.etologiabrasil.org.br/sbet/?p=revistas https://www.facebook.com/socieda debrasileiradectologia?ref=hl SBP (www.cbprimatologia.org.br) SBZ (executiva@sbz.org.br) SBMZ (sbmz.com.br/) <i>Sociedade Brasileira de Etologia</i> (www.sbi.bio.br/) http://www.sbi.bio.br/ br/)	Large community; regular congresses, meetings and workshops are organized by different societies in Brazil (CNPq) and graduate levels (CNPq/ CAPES) There is a state public agency at most states supporting their universities, the main one is FAPESP, in SP State	There are two main federal agencies that finance research and scholarships at the undergraduate (CNPq) and graduate levels (CNPq/ CAPES) There is a state public agency at most states supporting their universities, the main one is FAPESP, in SP State

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Table 1 (continuation)

Country	1 Major topics and laboratories	2 Graduate/ Undergraduate Programs	3 Societies	4 Journal, site, social networking sites	5 Congresses Meetings Workshops	6 Funding agencies
Chile	Few (<i>sensu stricto</i>). There are laboratories working with behavior in other research lines	No	<i>Sociedad Chilena de Etología</i> , member of the ICE	No, but could be developed sociedad.etologia@gmail.com	Small community	There are agencies supporting Doctorate and Post doctorate levels, but none specifically for Ethology
Uruguay	Many laboratories mainly at the <i>Universidad de la República de Uruguay</i> , and at IIBCE, linked to the <i>Ministerio de Educación y Cultura</i> (MEC)	Yes, Biology Undergraduate program (<i>licenciatura</i> , Ethology as a specialization), <i>semestrales</i> , Introduction to Ethology, Biosemiotic and Animal communication, Methods in Ethology, Behavioral ecology and welfare concepts Graduate PEDECIBA master in Zoo and Doctorate in Ethology	No (Society)	No (Journal) Sites of institutions where there are laboratories of Ethology: http://www.eto.fcien.edu.uy/ http://www.iibce.edu.uy/EEE/ lineasdeinvestigacion.htm http://www.iibce.edu.uy/ <u>ECOCOMP/lineasdeinvestigacion.htm</u> emails <i>Sección Etología: tucoxxi@gmail.com</i> <i>Facultad de Veterinaria: rungerfeld@gmail.com</i> (Dr. R. Ungerfeld) and <i>Stellamaris32@gmail.com</i> (Dr. A.M. Huertas)	Small and very active community that promotes <i>Jornadas Uruguayas de Comportamiento Animal</i> (JUCA) since 2007, biannuals	Yes

(continues)

Table 1 (continuation)

Country	1 Major topics and laboratories	2 Graduate/ Undergraduate Programs	3 Societies	4 Journal, site, social networking sites	5 Congresses Meetings Workshops	6 Funding agencies
Venezuela	Small community but very active and productive	Undergraduate under Biology No Graduate (formal)	No	No	No	No

The following questions were asked to researchers of Argentina, Brazil, Chile, Uruguay and Venezuela: 1) What are the main Ethology topics being studied in laboratories in your country? - 2) Are there undergraduate or graduate programs at the main universities? - 3) Is there an Animal Behavior Society? How interested is the community in establishing close ties among institutes or laboratories elsewhere in Latin America? - 4) Is there a site, a journal or a page on social networking sites for contact, communication and divulgation of original data? - 5) How active is the community regarding the willingness to organize congresses, symposia, meetings, workshops, on-line course on Ethology? - 6) Are there funding agencies to support exchange programs and research in Ethology?

Table 2. Institutions and contact information of the main Graduate Programs and laboratories regarding Ethology in Brazil (main source: Eduardo Bessa at http://www.etologia.org.br/sbet/Etologia_cursos.pdf and the XXX EAE and XXXI EAE programs and sites)

University	Institution, research lines, major degree and information contact	
<i>Centro de Biotecnologias e Biotecnologia (CBB), Universidade Estadual do Norte Fluminense Darcy Ribeiro (UENF), Campos dos Goytacazes, RJ</i>	Research line: Bioacoustics and Conservation	Contact: Dr. Carlos Ruiz Miranda (http://lattes.cnpq.br/4792329130263027) http://buscatextual.cnpq.br/buscatextual/visualizacv.do?metodo=apresentar&id=K4703660Z1
<i>Centro de Ciências Biológicas (CCB), Universidade Federal de Santa Catarina (UFSC), Florianópolis, SC</i>	Research line: Neuroethology	Contact: Dr. José Marino Neto http://buscatextual.cnpq.br/buscatextual/visualizacv.do?id=W90768
<i>Depto de Zootecnia e Desenvolvimento Rural, (CCA,) UFSC</i>	Researchline: Applied Ethology	Dr. Maria José Hoetzel, (mjhoetzel@cca.ufsc.br) LETA- <i>Laboratório de Etologia Aplicada</i> Dr. Luis Carlos Pinheiro Machado Filho (pinheiro@cca.ufsc.br) www.dzdr.cca.ufsc.br

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Table 2 (continuation)

University	Institution, research lines, major degree and information contact
<i>Centro de Fauna Silvestre, DPB / CBRN, Secretaria do Meio Ambiente do Estado de São Paulo, São Paulo, SP (SMA/ CBRN/DPB/CFS)</i>	Research line: Behavioral Conservation Contact: Dr. Dilmar Oliveira http://buscatextual.cnpq.br/buscatextual/visualizacv.do?metodo=apresentar&id=K4768268P0
<i>Centro de Pesquisas Biológicas de Indaial (Capesbi), Indaial, SC</i>	Research line: Primatology Contact: MSc. Julio C. Souza Jr (www.furb.br/bugio) http://buscatextual.cnpq.br/buscatextual/visualizacv.do?id=C263963
<i>Centro de Pesquisas René Rachou (CPqRR), Fundação Osvaldo Cruz (IOC Fiocruz), Belo Horizonte, MG</i>	Research line: Behavioral physiology, chemical communication, insect control Contact: Dr. Marcelo Gustavo Lorenzo (marcelo@cpqrr.fiocruz.br)
<i>Departamento de Biologia (DBI) Universidade Federal de Lavras (UFLA), Lavras, MG</i>	Contact: Dr. Antonio Fernandes Nascimento Junior http://www.ufla.br
<i>EMBRAPA, Tabuleiros Costeiros</i>	Contact: Dr. Marcos Antonio Barbosa Moreira (mmoreira@cpatc.embrapa.br)
<i>Escola de Artes, Ciências e Humanidades, (EACH), USP, São Paulo, SP</i>	Research line: Cronobiology (<i>Grupo Multidisciplinar de Desenvolvimento e Rítmos Biológico</i>) Contact: Dr. Luiz Silveira Menna Barreto (menna@usp.br) www.temponavida.com/gmdrb http://buscatextual.cnpq.br/buscatextual/visualizacv.do?id=K4780033Z2
<i>ETEC Paulino Botelho, Centro Paula Souza, São Carlos, SP</i>	Research line: Fish behavior Contact: MSc. Bianca Rantin (bianca.rantin@gmail.com)
<i>Faculdades Integradas de Taquara (Faccat), Instituto Superior de Educação de Taquara, Taquara, RGS</i>	Research line: Applied Ethology (<i>Fêlins no coletivo, Transtornos de ansiedade e Dermatopatias, Nível de apego humano e ansiedade em animais, Terapia mediada por animais e comportamento social de crianças institucionalizadas</i>) Contact: Dr. Ceres Berger Faraco http://lattes.cnpq.br/3329858569503868
<i>Faculdades Integradas do Pontal (FACIP), Universidade Federal de Uberlândia (UFU), Uberlândia, MG</i>	Research line: Taxonomy, animal behavior, ecology and systematic Contact: Dr. Arioaldo Antonio Gianetta http://lattes.cnpq.br/0244103788687530
<i>Fundação Universidade Regional de Blumenau, Departamento de Ciências Naturais (FURB), Blumenau, SC</i>	Research line: Primate behavior Contact: Dr. Zelinda M. B. Hirano lattes.cnpq.br/3748749588924134

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Table 2 (continuation)

University	Institution, research lines, major degree and information contact
<i>Instituto de Ciência Naturais e da Terra, Universidade do Estado de Mato Grosso (UNEMAT), Tangara da Serra, MT</i>	Research line: Fish behavior; Ethology and Education Contact: Dr. Eduardo Bessa www.scienceblogs.com.br/bessa http://buscatextual.cnpq.br/buscatextual/visualizacv.do?id=P549243
<i>Instituto de Saúde da Secretaria de Saúde do Estado de São Paulo, São Paulo, SP</i>	Research line: Playing, social interactions among children Contact: Dra Maria de L. Salum e Morais (salum@isaude.sp.gov.br)
<i>Museu de Zoologia da USP, (MZUSP), São Paulo, SP</i>	Research line: Cronobiology Contact: Dra Mirian D. Marques (mimarque@usp.br) www.mz.usp.br
<i>Pontifícia Universidade Católica de São Paulo (PUC)- Faculdade de Psicologia, São Paulo, SP</i>	Research line: Canine behavior Contact: Dr. Mauro Lantzman (maurolantzman@gmail.com)
<i>Universidade de Brasília (UNB)</i>	Degree: Ecology (http://www.comportamento-animal.unb.br/) Contact: Dr. Regina H. F. Macedo (rhfinacedo@unb.br)
<i>Universidade de São Paulo (USP)</i>	Degree: Comparative Biology / Entomology / Psychobiology / Psychology / Faculdade de Filosofia Ciências e Letras de Ribeirão Preto, RP, SP http://www.ffclrp.usp.br/posgraduacoes/posgraduacao_programas.php Degree: Neurosciences & Behavior / Psychology Instituto de Psicologia, São Paulo, SP www.ip.usp.br/posg/nec/ Dissertations and doctorate theses on Ethology can be carried out at other Institutes / Schools / Departments (Biology, Zoology, Ecology, Oceanography, Veterinary Medicine, Agriculture, Medicine, Dentistry, Engineering, Ethnology, and Anthropology)
<i>Universidade Estadual de Campinas (UNICAMP), Campinas, SP</i>	Degree: Ecology ecologia@unicamp.br
<i>Universidade Estadual de Santa Cruz (UESC), Ilhéus, BA</i>	Research line: Bioacoustic and Applied Ethology <i>Laboratório de Etologia Aplicada (LABET)</i> Contact: Dr. Sérgio L. Nogueira / slgnose@uesc.br Dra Selenie Nogueira (selenieuesc@gmail.com) http://lattes.cnpq.br/7824824785994078

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Table 2 (continuation)

University	Institution, research lines, major degree and information contact
<i>Universidade Estadual Paulista (UNESP)</i>	Degree: Agronomy Faculdade de Ciências Agrônômicas, Botucatu, SP www.fca.unesp.br-dta@fca.unesp.br Faculdade de Engenharia, Ilha Solteira, SP www.feis.unesp.br-sg@adm.feis.unesp.br Faculdade de Ciências Agrárias e Veterinárias, Jaboticabal, SP www.fcav.unesp.br-dtac@fcav.unesp.br mpcosta@fcav.unesp.br Degree: Biology Faculdade de Ciências e Letras, Assis, SP www.assis.unesp.br-dta@assis.unesp.br Faculdade de Ciências, Bauru, SP www.fc.unesp.br-dta@fc.unesp.br Instituto de Biociências, Botucatu, SP http://www.ibb.unesp.br-#1,57-dta@ibb.unesp.br Instituto de Biociências, Rio Claro, SP www.rc.unesp.br/ib-dtaib@rc.unesp.br Instituto de Biociências, Letras e Ciências Exatas, São José do Rio Preto, SP www.ibilce.unesp.br-dta@ibilce.unesp.br Campus do Litoral Paulista, São Vicente, SP (Habilitações em Biologia Marinha ou Gerenciamento Costeiro) http://www.cdp.unesp.br-dta@cdp.unesp.br Degree: Biomedical Sciences Instituto de Biociências, Botucatu, SP http://www.ibb.unesp.br-#1131,1131-dta@ibb.unesp.br Degree: Psychology Faculdade de Ciências e Letras, Assis, SP www.assis.unesp.br-dta@assis.unesp.br Faculdade de Ciências, Bauru, SP www.fc.unesp.br-dta@fc.unesp.br Faculdade de Medicina Veterinária e Zootecnia, Botucatu, SP www.fmvz.unesp.br-ddta@fmvz.unesp.br Campus Experimental, Dracena, SP www.dracena.unesp.br-renatinhonunes@dracena.unesp.br Faculdade de Engenharia, Ilha Solteira, SP www.feis.unesp.br-sta@adm.feis.unesp.br Faculdade de Ciências Agrárias e Veterinárias, Jaboticabal, SP www.fcav.unesp.br-dtac@fcav.unesp.br
<i>Universidade Federal da Bahia (UFBA), Salvador, BA</i>	Degree: Zoology (Master) http://www.diversidadeanimal.bio.ufba.br/ Research line: Ethology and Evolution Contact: Dr. Hilton Japyassú (japyassu@ufba.br)
<i>Universidade Federal de Alfenas (UNIFAL)</i> <i>Instituto de Ciências da Natureza, Alfenas, MG</i>	Research line: Primate behavior Contact: Dr. Rogério Grassetto Teixeira da Cunha (rogcunha@hotmail.com)

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Table 2 (continuation)

University	Institution, research lines, major degree and information contact
<i>Universidade Federal de Juiz de Fora (UFJF), Juiz de Fora, MG</i>	Research line: Behavioral ecology of ants Contact: Dr. Juliane Floriano Lopes Santos (juliane.lopes@ufjf.edu.br)
<i>Universidade Federal de Minas Gerais (UFMG)</i>	Research line: Neurophysiology Contact: Dr. Theo Rolla Paula Mota (theomota@yahoo.com.br) http://lattes.cnpq.br/0089052010757297
<i>Instituto de Ciências Biológicas, Departamento de Fisiologia e Biofísica, Belo Horizonte, MG</i>	Research line: Padrões faunísticos de habitats subterrâneos Contact: Dr. Maria Elina Bichuette (bichuette@power.ufscar.br)
<i>Universidade Federal de São Carlos (UFSCAR) Departamento de Ecologia e Biologia Evolutiva</i>	Research line: Chemical communication and memory in fish Contact: Dr. Liliam Midori Ide (http://lattes.cnpq.br/1101040520346559)
<i>Universidade Federal de São João del Rey, (UFSJ), São João Del Rey, MG</i>	Degree: Ecology and Evolution (Master) Contact: Dr. Rodrigo H. Willemart (willemart@usp.br) http://www.unifesp.br/home_diadema/posgrad/ecoevo/
<i>Universidade Federal de Uberlândia (UFU), Uberlândia, MG</i>	Degree: Ecology www.ib.ufu.br/posgrad/ecologia@umuarama.ufu.br
<i>Universidade Federal de Viçosa (UFV), Viçosa, MG</i>	Research line: Neuroethology Contact: Dr. Vanner Boere Souza (vanner.boere@ufv.br) Research line: Ecologia Química, Comportamento de Insetos e Reprodução de Insetos Contact: Dr. Eraldo Rodrigues de Lima - (mothman@ufv.br)
<i>Universidade Federal do ABC (UFABC), Santo André, SP</i>	Research line: Applying molecular tools on ethological studies Contact: Dr. Cibele Biondo (cibele.biondofabbc.edu.br)
<i>Universidade Federal do Amazonas (UEAM) Manaus, AM</i>	Research line: Social behavior Contact: Dr. Thaís Billalba Carvalho http://lattes.cnpq.br/1241979155542999
<i>Universidade Federal do Espírito Santo (UFES), Vitória, ES</i>	Research line: Interpersonal relationship sand social networks Contact: Dr. Agnaldo Garcia (Instituto de Psicologia) (agnaldo.garcia@uol.com.br) Research line: Bioacoustic and parental care Contact: Dr. Rosana Suemi Tokumaru (http://lattes.cnpq.br/4294698135718928)

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Table 2 (continuation)

University	Institution, research lines, major degree and information contact
<i>Universidade Federal do Pará (Ufpa)</i> <i>Núcleo de Teoria e Pesquisa do Comportamento</i> <i>Centro de Ciências biológicas</i>	Research line: Neurosciences and behavior Contact: Dr. Amauri Gouveia Jr. (gouveiajr.a@gmail.com) Research line: Bioacoustic (birds are the main model) Contact: Dra Maria Luisa Da Silva Website: http://www2.ufpa.br/biomedicina/curso/professores/maria_luiza.htm
<i>Universidade Federal do Paraná (UFPR), Curitiba, PR</i>	Research line: Chemical ecology Contact: Dr. Paulo Henrique Gorgatti Zarbin (pzarbin@ufpr.br) http://lattes.cnpq.br/9975218165596643 Research line: Social behavior Contact: Dr. Marisa Fernandes de Castilho Research line: Applied Ethology Contact: Dr. Carla Forte Maiolino Molento
<i>Setor de Ciências Agrárias, Laboratório de Bem-Estar Animal (LABEA)</i> <i>Universidade Federal do Rio Grande do Norte (UFRN), Natal, RN</i>	Degree: Psychobiology www.cb.ufrn.br/~fisiologia/novo/posgraduacao/psicobiologia@gmail.com Contact: Dr. Maria Emilia Yamamoto http://lattes.cnpq.br/1410667846560350 Contact: Dr. Renata G. Ferreira http://lattes.cnpq.br/6566269393468726 Contact: Fívia de Araujo Lopes (fivialopes@gmail.com)
<i>Universidade Federal do Rio Grande do Sul (UFRGS), Instituto de Biociências, Porto Alegre, RGS</i>	Research line: Evolution, sexual selection Contact: Dr. Aldo Mellender de Araújo (aldomel@portoweb.com.br)
<i>Universidade Federal Rural de Pernambuco (UFRPE), Recife, PE</i>	Research line: Primatology Contact: Maria Adélia Borstelmann de Oliveira Research line: Animal Cognition Contact: Dr. Nicola Schiel http://lattes.cnpq.br/5314455811830714
<i>Universidade Federal Rural do Semi-Árido (UFERSA), Mossoró, RN</i>	Research line: Sensory ethology of bees Contact: Dr. Michael Hrnčir (michael@ufersa.edu.br)
<i>Universidade Federal de Santa Maria, Santa Maria, RGS</i>	Research line: Primatology Contact: Dr. Vanessa B. Fortes (barbisan.vanessa@gmail.com)

Table 3. Ethology and behavior as undergraduate subjects in Argentina according to data presented at IV *Simpósio Latino-americano de Etologia*, “*Desarrollo de la Etología en Latinoamérica: hacia un futuro regional?*” that was held in November of 2013, as part of the XXXI Encontro Anual de Etologia (EAE), in São Paulo, SP, Brazil

<u>Institution</u>	<u>Discipline/ line of research</u>	<u>Staff</u>	<u>Methodology/ Contents</u>
<i>Facultad de Ciencias Naturales y Museo</i>	Etología 1987	Dr. H. B. Lahitte, Dr. H. R. Ferrari y Lic. L. C. Lázaro.	<u>Methodological approach</u> : ethograms, experimentation at the laboratory and in the natural environment; animal models, comparisons
<i>Universidad Nacional de La Plata (UNLP)</i>	Research Line: <i>ACG de actualización</i> <i>ACG Agonismo</i> The use of instruments by nonhuman primates Comparative studies of agonism		<u>Theoretical aspects</u> : Evolution; the four questions of Tinbergen and systems <u>Content/Key words</u> : Agonism, communication, foraging and predation, use of tools, courtship, children, learning, instinct, and cognition.
<i>Universidad Nacional de Tucumán (UNT)</i>	Animal Behavior 1990 Research line: Behavioral Ecology Radiotelemetry in Biology Investigation Animal Communication Behavior of domestic animal	Dr. P. Black and Lic. Al. M. Hurtado	
<i>Universidad Nacional de Tucumán (UNT)</i>	Graduate level Research line: Bioacoustics and animal communication Biology and behavior of <i>corzuela</i> (<i>Mazama gouazoubira</i>), <i>vicuña</i> (<i>Vicugna vicugna</i>) and <i>morena</i> (<i>Gymnotus carapo</i>)	Dr. P. Black and Lic. Al. M. Hurtado	
<i>Universidad Nacional de Tucumán (UNT)</i>	Research line: Motor systems or motor patterns Sensorial system. Motivation. The role of hormones in the control of behavior. Homeostasis and behavior. Ontogeny Imprinting (<i>Impronta o troquela</i>) Learning	Dr. P. Black and Lic. Al. M. Hurtado	Biological clocks Navigation. Genetics and Behavior. Evolution of Behavior Behavioral ecology and sociobiology Communication. Cognitive Evolution

Table 3 (continuation)

<u>Institution</u>	<u>Discipline/ line of research</u>	<u>Staff</u>	<u>Methodology/ Contents</u>
Universidad de Buenos Aires (UBA) Facultad de Ciencias Exactas y Naturales	Behavioral Ecology (since 1988) Research line: Brood parasitism Reproductive Biology Conservation of threatened species	Dr. J. C. Reboreda	<u>Theoretical and Methodological</u> <u>contents in:</u> http://www.egc.fcen.uba.ar/programas/grado/eco_comportamiento.pdf Behavior, ecology and natural selection Genetic and ontogenetic aspects of behavior Resources consumption Resource competition (<i>Competencia por recursos</i>) Evolution of group behavior (<i>Evolución del comportamiento grupal</i>) Evolution of antipredatory responses Evolution of aggressive behavior Sexual selection Mating system Parental inversion Cooperation and altruism: Cooperative reproduction in birds and mammals. Eusocial insects and mammals Communication evolution Phylogenetic analysis of behavior Behavior & conservation Evolution of human behavior <u>Methodological content:</u> Research Design Measuring behavior Statistics and data analysis

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Table 2 (continuation)

<u>Institution</u>	<u>Discipline/ line of research</u>	<u>Staff</u>	<u>Methodology/ Contents</u>
Universidad de Buenos Aires (UBA) Facultad de Ciencias Exactas y Naturales	Insect Physiology and Behavior Research line: behavioral physiology in social insects. Cognition. Communication. Applied Ethology. Pollinization.	Dr. Walter Farina	Sensory systems Communication Social behavior
<i>Universidad de Buenos Aires (UBA)</i> Facultad de Psicología	Behavioral Biology	Dr. Rubén Muzio	Contents include comparative aspects of behavior: http://academica.psi.uba.ar/Psi/Ver521.php?catedra=90&anio=2014&cuatrimestre=1
<i>Universidad Nacional de Córdoba (UNCor)</i>	The Biology of Behavior Research line: Reproductive Strategies: vertebrate, ectotherm, squamata, oviparous and viviparous	Dr. Margarita Chiaraviglio and Dr. Mónica Martella	Animal behavior The ontogeny of behavior The organization of behavior The evolution of communication Social behavior The evolution of feeding behavior: The evolution of reproductive behavior The evolution of mating systems and sexual selection The evolution of parental care

Appendix - List of invited guest from Latin America at the XXX Encontro Anual de Etologia (EAE), III Simpósio Latino-americano “Etologia na América Latina”, and XXXI EAE, IV Simpósio Latino-americano de Etologia “Desarrollo de la Etología en Latinoamérica: ¿hacia un futuro regional?”, both held in Brazil.

ARGENTINA

Dr. Alfredo V. Peretti

Cátedra de Diversidad Animal, Córdoba, Argentina.

Research line: Estrategias reproductivas en *Scorpiones*, *Solifugae*, *Opiliones* y *Pseudoscorpiones* (*Arachnida*) de Argentina: comportamiento sexual y de cría, transferencia espermática y procesos asociados.

<http://www.efn.uncor.edu/dep/divbioeco/DivAnil/alf/alf.htm>

Dr. Ruben Mentzel

Ciudad Autónoma de Buenos Aires, Buenos Aires, Argentina.

Research line: Etología aplicada. Bienestar animal

<https://ar.linkedin.com/pub/rubén-mentzel>

Dr. Daniel Tomsic

Profesor do Departamento Fisiología, Biología Molecular y Neurociencias, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

Research line: Investigación de neurobiología de la memoria.

<http://www.ifibyne.fcen.uba.ar/new/en/temas-de-investigacion/laboratorio-de-neurobiologia-de-la-memoria-lnm/neuroetologia-y-neurofisiologia/dr-daniel-tomsic/>

Dra. Monique Halloy

Profesor Adjunto no Instituto de Herpetología de la Fundación Miguel Lillo, Universidade do Tucuman, Argentina.

Research line: Fisiología comportamental.

http://www.mgaunt.com.ar/index.php?option=com_content&task=view&id=19&Itemid=4

Dr. Hector Ricardo Ferrari

Cátedra de Etología, Facultad de Ciencias Naturales y Museo, Universidad Nacional de la Plata, La Plata, Argentina.

Research line: Bienestar animal

Dr. Martin Giurfa (giurfa@cict.fr)

Research Center on Animal Cognition, Université Paul Sabatier, Toulouse, França

Research line: Perception, Learning and Memory in Insects (PLMI)

www.neurobiologie.fu-berlin.de/Giurfa.html

Dr. Walter Farina (walter@bg.fcen.uba.ar)

Departamento de Biodiversidad y Biología Experimental, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Argentina

Research line: Behavioral Physiology, Cognition and Animal Communication in Social Insects.

Dra. Roxana Josens (roxy@bg.fcen.uba.ar)

Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires (UBA). IFIBYNE-CONICET

Research line: Behavioral Physiology of Ants

CHILE

Dra. Ana María Fernández Tapia (ana.fernandez@usach.cl)

Psicología Universidad de Chile.

Research line: Psicología

Dra. Kathleen Whitlock

University of Valparaíso, Chile (kathleen.whitlock@un.cl)

Centro Interdisciplinario de Neurociencia de Valparaíso (CINV) Universidad de Valparaíso, Avenida Gran Bretaña 1111, Valparaíso, Chile

Research line: Genetic and development of olfactory system

Dr. L. A. Ebensperger (www.bio.puc.cl/profs/ebensperger/)

Pontificia Universidade Católica do Chile, Santiago do Chile, Chile.

Research line: Fisiología comportamental

COLOMBIA

Dr. Alejandro Rosas (<http://www.docentes.unal.edu.co/arosasl/>)

Universidad Nacional de Colombia, Bogotá

Research line: Evolución de cooperación, evolutiva ética y psicología moral

Dra. Paula Catalina Caycedo Rosales

*Curadora de la Colección de Sonidos Ambientales
Instituto Alexander von Humboldt da Colômbia, Laboratório
de Bioacústica*

Research line: *Serie Colombia Diversidad Biótica; Plan
de Conservación para la reinita cerúlea (*Setophaga cerulea*) en
sus sitios de invierno; Bioacústica y monitoreo; Reconocimiento
Automatizado de sonidos*

MEXICO

Dr. Gabriel Ramos-Fernandez ([http://www.
ciidiroaxaca.ipn.mx/](http://www.ciidiroaxaca.ipn.mx/))

*Instituto Politécnico Nacional (IPN), CIIDIR, Unidad
Oaxaca, Oaxaca, México*

Research line: *Social Behavior*

Dr. Genaro Coria-Avila ([http://www.uv.mx/
personal/gcoria/author/gcoria/](http://www.uv.mx/personal/gcoria/author/gcoria/))

Universidad Veracruzana, México

Research line: *Base neural de la conducta sexual y la
cría de animales.*

VENEZUELA

Dr. Trino Baptista

*Department of Physiology, Medical School, Los Andes
University, P.O. Box 93, Mérida, 5101-A, Venezuela*

Research line: *Psiquiatria evolucionista*