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# Projeto Tamanduá: O Grupo de Trabalho pela Conservação do Tamanduá no Brasil

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# NEWS

## The Edentate Conservation Fund – Swift Grants for Field Research

The IUCN/SSC Edentate Specialist Group works to support edentate conservation by targeting resources to projects in habitat countries. Given the importance of timely and accurate data from the field, the ESG has established the Edentate Conservation Fund, a small-grants program meant to support short-term field projects. The application process will be streamlined to provide a quick turnaround and the rapid delivery of funds, allowing prospective researchers to begin their fieldwork within weeks of submitting a successful proposal. Although any qualified researcher may apply, the Fund has a preference for supporting projects designed and carried out by citizens of habitat countries.

The Edentate Conservation Fund will award grants between US$1000–3000 for projects investigating the ecology, behavior, distribution, genetics and/or demography of edentates, as well as the



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impact of the wildlife trade and trafficking on wild populations. Exceptional proposals addressing captive breeding or other aspects of edentates in captivity will also be considered. The funds will be available to cover specific project costs, such as food, fuel, field supplies and laboratory analyses, but may not be applied to salaries, overhead, infrastructure or outsourced data analysis. Payments will be made directly to the principal investigator of a successful proposal; financial reports will be required, and any funds not directly applied to the specific project must be returned within one year of disbursement.

The Edentate Conservation Fund is administered by Gustavo Fonseca, Chair of the Edentate Specialist Group and Executive Vice President for Programs and Science at the Center for Applied Biodiversity Science at Conservation International. Projects submitted to the Fund should have one or more of the following characteristics:

1. a focus on threatened and endangered edentates living in their natural habitats;
2. direction and management by nationals from habitat countries, to help increase local capacity for implementing biodiversity conservation;
3. the ability to strengthen international networks of field-based edentate specialists and enhance their capacity to be successful conservationists; and/or
4. projects that result in publication of information on endangered edentate species in a format that is useful both to experts and the general public.

Projects should contribute to at least one, and preferably more, of the following themes:

1. enhancement of scientific understanding/knowledge of the target species/ecosystem;
2. improved protection of a key species, habitat, or protected area;
3. demonstration of economic benefit achieved through the conservation of a species and its habitat, as compared to the loss thereof;
4. increased public awareness or educational impact resulting from the project in question;
5. improved local capacity to carry out future conservation efforts through training or practical experience obtained through project participation; and/or
6. modification of inappropriate policies or legislation that previously led to species or habitat decline.

All proposals submitted to the ESG Conservation Fund should:

1. Include a descriptive title that includes the name(s) of the target species and the geographic location of the project (e.g., "Conservation of the silky anteater, *Cyclopes didactylus*, in the state of Amazonas, Brazil").
2. Describe the main objectives of the project, its specific activities, how they will contribute to conservation of the target species and ecosystems, and how these are consistent with the Fund's mission. This should be the main body of the application and should not exceed five double-spaced pages.
3. Provide an abstract/summary of approximately 300 words, which a) provides the background, b) gives the purpose of the project, c) indicates the methods, and d) indicates the chief outcome of the project.
4. Provide a map of the project area and relevant published references.
5. Specify the dollar amount of the grant requested, provide an itemized budget for the project, and confirm the total budget of the project, including funds being provided from other sources.
6. Provide the time frame and schedule for project implementation, including starting date and duration.
7. Describe the project personnel and their institutional affiliations (include a curriculum vitae of the principal investigator and identify personnel from any collaborating institutions).



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8. Describe the specific outputs of the project, e.g., expected scientific publications, popular articles, conservation action plans, management plans, etc. Each project should have one or more outputs of this kind as one of its objectives.
9. Describe the collaborating institutions with which the applicant will be working in the project country, and include letters of support from them if at all possible. This is especially important for applicants who are not nationals from the country in which the work is to be conducted.
10. List three references that the Fund can contact about the project should it choose to do so. The list of references should include mailing addresses, phones, fax numbers, and e-mail addresses if available.

Typical grants range from US$1,000–$3,000. Please note that, should a grant be awarded, you will be responsible for providing the Fund with the following materials during the course of the project and at its conclusion:

1. A progress report no more than six months after receipt of the grant, if the project period is one year or less; a progress report no more than 12 months after receipt of the grant if the project period exceeds one year.
2. A final report no more than two months after completion of the project.
3. A full financial accounting of the project.
4. Five copies each of any scientific or popular publications, newspaper or magazine articles, or reports, action plans, etc., resulting from the project. Grant recipients are encouraged to publish at least some of their findings in *Edentata*, the newsletter of the IUCN/SSC Edentate Specialist Group.

Applications to the ESG Conservation Fund are considered throughout the year with no deadlines for submission. Proposals will be acknowledged within two weeks of receipt and funding decisions provided within no more than six weeks. Proposals should be sent to: John M. Aguiar, IUCN/SSC Edentate Specialist Group Conservation Fund, Center for Applied Biodiversity Science, Conservation International, 1919 M Street, NW, Suite 600, Washington, DC 20036, USA. Inquiries regarding the application process should be sent to John Aguiar at <j.aguiar@conservation.org>.

## El Fondo de Conservación de Edentados – Becas Rápidas para Investigaciones a Campo

La finalidad del Grupo de Especialistas en Edentados de la UICN/SSC (ESG) es apoyar la conservación de edentados mediante la adjudicación de recursos a proyectos que se realicen en países comprendidos en el área de distribución de los edentados. Dada la importancia de obtener datos de campo oportunos y precisos, el ESG estableció el Fondo de Conservación de Edentados, un programa de becas destinadas al apoyo de proyectos de campo de corto plazo. El proceso de solicitud será racionalizado para asegurar un rápido procesamiento y una rápida adjudicación de fondos, lo que permitirá a los potenciales investigadores, empezar sus investigaciones de campo pocas semanas después de haber presentado una propuesta exitosa. A pesar de que cualquier investigador pueda solicitar una beca del Fondo de Conservación de Edentados, este último dará preferencia a los proyectos diseñados y efectuados por ciudadanos de los países comprendidos en el área de distribución de los edentados.

El Fondo de Conservación de Edentados otorgará becas entre US$1000 y 3000 para proyectos que investiguen la ecología, comportamiento, distribución, genética y/o demografía de edentados, así como también el impacto del comercio y tráfico sobre las poblaciones silvestres. También serán consideradas propuestas excepcionales que abarcan la cría en cautiverio u otros aspectos del mantenimiento en cautiverio de edentados. Los fondos estarán disponibles para cubrir costes específicos del proyecto, como por ejemplo alimentación, combustible, insumos de campo y



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análisis de laboratorio, pero no podrán ser utilizados para sueldos, gastos generales, infraestructura o externalización de análisis de datos. Los pagos se harán directamente al investigador principal de la propuesta exitosa; se requerirán informes financieros, y todos los fondos que no fuesen utilizados directamente para el desarrollo del proyecto específico, tendrán que ser devueltos dentro de un año.

El Fondo de Conservación de Edentados está administrado por Gustavo Fonseca, presidente del Grupo de Especialistas en Edentados y vicepresidente ejecutivo de Programas y Ciencia del Center for Applied Biodiversity Sciences de Conservation International. Los proyectos presentados al Fondo deberían tener una o más de las siguientes características:

1. Un enfoque en edentados amenazados o en peligro de extinción que habitan sus hábitats naturales;
2. Dirección y administración por ciudadanos de países comprendidos en el área de distribución de los edentados, para ayudar a aumentar la capacidad local para conservar la biodiversidad;
3. La capacidad de reforzar redes internacionales de especialistas en edentados que realizan estudios a campo, y de aumentar su capacidad de ser exitosos conservacionistas; y/o
4. Proyectos que tienen como resultado la publicación de información sobre especies de edentados en peligro de extinción en un formato apropiado tanto para expertas como para el público en general.

Los proyectos deberían contribuir a por lo menos uno, y de preferencia a varios, de los siguientes temas:

1. Incrementar el conocimiento científico de la especie o del ecosistema bajo estudio;
2. Mejorar la protección de una especie clave, de su hábitat, o de un área protegida que habita;
3. Demostrar un beneficio *económico* alcanzado mediante la conservación de una especie y su hábitat, comparado con su desaparición;
4. Aumentar la conciencia pública o el impacto educacional como resultado del proyecto en cuestión;
5. Mejorar la capacidad local para el desarrollo de futuros esfuerzos de conservación mediante la capacitación o experiencia práctica obtenida a través de la participación en el proyecto en cuestión; y/o
6. Modificar políticas o leyes inapropiadas que anteriormente llevaban a la disminución de especies o hábitats.

Todas las propuestas presentadas al Fondo de Conservación de Edentados deberían:

1. Incluir un título descriptivo que incluye el nombre (los nombres) de la especie a estudiar y la ubicación geográfica del proyecto (por ejemplo "Conservación del oso hormiguero *Cyclopes didactylus* en el estado de Amazonas, Brasil").
2. Describir los objetivos principales del proyecto, sus actividades específicas, cómo contribuirán a la conservación de la especie en cuestión y los ecosistemas que habita, y cómo éstos encuadran en la misión del Fondo. Esto debería ser la parte principal de la solicitud y no debería exceder cinco páginas con doble espacio entre líneas.
3. Contener un resumen de aproximadamente 300 palabras, el cual a) describe el contexto, b) presenta el objetivo del proyecto, c) indica la metodología, y d) indica el principal resultado del proyecto.
4. Proporcionar un mapa del área de proyecto y referencias bibliográficas relevantes.
5. Especificar el monto solicitado en dólares, incluir un presupuesto detallado del proyecto, y confirmar el presupuesto total del proyecto, incluyendo



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fondos que serán obtenidos de otras fuentes.

6. Proporcionar un cronograma, incluyendo fecha de inicio y de finalización del proyecto.
7. Describir el personal involucrado y a qué institución pertenece cada integrante (incluir un curriculum vitae del investigador principal e identificar el personal de las instituciones colaboradoras).
8. Describir los resultados específicos del proyecto, por ejemplo, publicaciones científicas, artículos para el público en general, planes de conservación, planes de manejo, etc. Cada proyecto debería tener como uno de sus objetivos, uno o más resultados como los arriba mencionados.
9. Describir las instituciones colaboradoras con las cuales el solicitante estará trabajando en el país de desarrollo del proyecto, y si posible, incluir cartas de apoyo de ellas. Esto es especialmente importante para solicitantes que no son ciudadanos del país en el cual desarrollarán su proyecto.
10. Enumerar tres referencias que el Fondo podrá contactar respecto al proyecto, si lo considera necesario. La lista de referencias debería incluir direcciones postales, números de teléfono y fax, y direcciones de email.

Generalmente, las becas otorgadas serán de US$1000 a 3000. Por favor, tenga en cuenta que, si se le otorga una beca, será responsable de proveer los siguientes materiales al Fondo durante el desarrollo del proyecto y a su finalización:

1. Un informe de avance de proyecto no más de seis meses posterior a la recepción de la beca, si la duración del proyecto no supera el año; un informe de avance no más de 12 meses posterior a la recepción de la beca, si la duración del proyecto excede un año.
2. Un informe final no más de dos meses posterior a la finalización del proyecto.
3. Un balance económico del proyecto.
4. Cinco copias de cualquier publicación científica o popular, artículos de periódico o revista, o de informes, planes de acción, etc., que resulten del proyecto. Se incita a los recipientes de las becas del Fondo a publicar por lo menos algunos de sus resultados en *Edentata*, la revista del Grupo de Especialistas en Edentados de la UICN/SSC.

Se aceptarán solicitudes al Fondo de Conservación de Edentados durante todo el año, sin fechas límite. Se acusará recibo dentro de dos semanas, y las decisiones serán comunicadas dentro de no más de seis semanas. Las solicitudes deberán ser enviadas a: John M. Aguiar, IUCN/SSC Edentate Specialist Group Conservation Fund, Center for Applied Biodiversity Science, Conservation International, 1919 M Street, NW, Suite 600, Washington, DC 20036, USA. Las consultas sobre el proceso de solicitud pueden ser enviadas a John Aguiar, a la dirección de email <j.aguiar@conservation.org>.

## Morphological and Genetic Variability in Maned Sloths, *Bradypus torquatus* (Xenarthra: Bradypodidae)

A research project on the morphological traits and genetic diversity of *Bradypus torquatus*, endemic to the Atlantic Forest, is being conducted as a collaborative study between the Laboratory of Biodiversity and Molecular Evolution (LBEM) at the Federal University of Minas Gerais and the MSc Program of Vertebrate Zoology at the Catholic University of Minas Gerais, both in Belo Horizonte, Minas Gerais, Brazil. This project focuses on the morphological, ecological and genetic aspects of this poorly known and endangered species, and aims to supply information to support measures for its conservation and management.

This study has targeted forest fragments where the largest populations of the species are expected to be found, in the Brazilian states of Bahia, Espírito



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Santo and Rio de Janeiro. Morphological data have been collected from 62 wild-caught specimens, and genetic sequences have been derived from the mitochondrial control region (D-loop) from 45 adult animals. These samples represent one population from southeastern Bahia, two populations from south-central Espírito Santo – one from the lowlands and one from the highlands – and one population from Rio de Janeiro.

The morphological analysis indicates that adult *Bradypus torquatus* are the largest of their genus; adult females are significantly larger than males and may reach weights of 10 kg or more. The shape of the mane shows a previously undetected pattern of sexual dimorphism, in which the mane is more conspicuous in males than in females. Sexual dimorphism was also found in the structure of the external genitalia of reproductively active animals; these differences are extremely subtle and almost impossible to distinguish without a great deal of experience. We also detected significant differences in size between individuals from warmer and colder regions, suggesting that populations have adapted morphologically to the temperatures of their local environments. Examination of the animals captured, especially recaptured adults, has improved our understanding of their biological and reproductive parameters. Maned sloths appear to reach maturity at about three years of age, which is a relatively short time for animals of their size and low metabolic rate. (For details see Lara-Ruiz and Chiarello, in press.)

Concerning the genetic analysis (Lara-Ruiz, unpublished data), sequences from the mitochondrial control region showed low levels of within-population polymorphism, and indicated that most of the genetic diversity found in this species is due to differences between populations. Based on D-loop sequences, genetic distances calculated among populations from the different states were high (> 0.90), while the distance found between the two populations sampled from ES was less than 0.1. Accordingly, relations among haplotype lineages present a strong geographic agreement and a highly discontinuous divergence pattern.

The observed patterns of low genetic variability and high genetic structuring – a lack of shared haplotypes between populations, indicating distinct genetic lineages – might result from historic barriers to gene flow and from the species' reduced capacity for dispersal. However, they may also reflect other processes, such as severe population reductions and subsequent recovery (genetic bottlenecks) and the differentiation of remnant populations. These facts accentuate the importance of monitoring animals in their remaining habitat, and also highlight the genetic dangers posed by uninformed translocations between isolated lineages in different states. These results emphasize the need to thoroughly investigate patterns of genetic variability using nuclear markers (a study already in progress) – and if emerging patterns are confirmed, it will further emphasize the need for careful genetic management to promote the recovery and maintenance of the genetic diversity of the surviving populations.

**Paula Lara-Ruiz**, **Fabrício R. dos Santos**, Laboratório de Biodiversidade e Evolução Molecular (LBEM), Instituto de Ciências Biológicas (ICB), Universidade Federal de Minas Gerais (UFMG), Belo Horizonte 31270-901, Minas Gerais, Brazil, e-mail: <lara-ruiz@ufmg.br>, and **Adriano G. Chiarello**, Programa de Mestrado em Zoologia de Vertebrados, Pontifícia Universidade Católica de Minas Gerais (PUC), Av. Dom José Gaspar 500, Coração Eucarístico, Belo Horizonte 30535-610, Minas Gerais, Brazil.

**References**

Lara-Ruiz, P. and Chiarello, A. G. In press. Life history traits and sexual dimorphism of the Atlantic Forest maned sloth, *Bradypus torquatus* (Xenarthra: Bradypodidae). *Journal of Zoology, London.*

Lara-Ruiz, P. 2004. Tamanho corporal, dimorfismo sexual e diversidade genética da Preguiça-de-coleira, *Bradypus torquatus* Illiger, 1811 (Xenarthra: Bradypodidae). Master's thesis, Pontifícia Universidade Católica de Minas Gerais, Brazil.



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## Research on the Maned Sloth (*Bradypus torquatus*) in Bahia, Brazil

The maned sloth (*Bradypus torquatus*) is one of the two species of sloths found in the Brazilian Atlantic Forest, and the only one endemic to this highly disturbed biome. An ecological study of this species has been underway since January 2003 in the Ecoparque de Una, a Private Reserve owned by the Instituto de Estudos Sócio-Ambientais do Sul da Bahia (IESB) in Una, in the state of Bahia. The study is being conducted by Camila Cassano, as part of the requirements for a Master's thesis at the State University of Santa Cruz in Ilhéus, Bahia. The research is being administered by IESB and is financed by the Fundação o Boticário de Proteção à Natureza and Conservação Internacional Brasil.

Three animals have been monitored with radio-telemetry in the primary forest of the Reserve for periods lasting from 12 to 24 months. A further two maned sloths are now being monitored using radio-telemetry in neighboring properties, which include secondary forest and a cocoa plantation shaded by forest canopy trees (*cabruca*). Data on home range and weekly path length have been collected for all the animals, and data on activity budget, daily path length and diet have been collected for ten hours/month using focal-animal sampling.

The home ranges of the maned sloths have varied from 3 to 5 ha. Leaves from trees of the families Moraceae, Bombacaceae, Myrtaceae, Myristicaceae and Fabaceae have been identified as components of the sloths' diet. Observations on behavior and traveling have shown that the sloths are both diurnal and nocturnal, and spend more than 80% of their time resting. Our observations and reports from local people indicate that the sloths use secondary forests and *cabrucas*. Monitoring will continue at least until mid-2006, particularly to examine the relative use of primary forest, secondary forest, and *cabruca*.

**Camila Cassano**, Instituto de Estudos Sócio-Ambientais no Sul da Bahia (IESB), Rua Major Homem Del Rey 147, Cidade Nova, Ilhéus 45650-000, Bahia, Brazil, and Programa de Pós-Graduação em Zoologia, Universidade Estadual de Santa Cruz (UESC), Rodovia Ilhéus-Itabuna Km 16, Ilhéus 45662-000, Bahia, Brazil.

## Projeto Tamanduá: O Grupo de Trabalho pela Conservação do Tamanduá no Brasil

Da ordem Xenarthra, os tamanduas englobam três espécies no Brasil, sendo elas: tamanduá-bandeira (*Myrmecophaga tridactyla*), tamanduá-mirim (*Tamandua tetradactyla*) e o tamanduaí (*Cyclopes didactylus*). São animais de hábitos crepusculares e noturnos, podendo ser encontrados em savanas, florestas úmidas e cerrados.

O conhecimento do manejo dessas espécies é de suma importância, uma vez que diante das exigências ambientais, nutricionais e comportamentais desta espécie, tem-se tornado difícil a reprodução no cativeiro. Vale salientar que segundo a lista das espécies ameaçadas de extinção, publicada pelo Ministério do Meio Ambiente no dia 27 de maio de 2003, encontra-se em destaque o *Myrmecophaga tridactyla*. Mediante este contexto, evidencia-se a importância do papel dos zoológicos como mantenedores de programas que tenham como objetivo principal a reprodução de espécies da nossa fauna, principalmente aquelas ameaçadas de extinção.

*Justificativa*:
Com o intuito de concentrar todas as informações disponíveis sobre as espécies de tamanduas, *in situ* e *ex situ*, de desenvolver um plano de ação para conservação das três espécies no Brasil, e de integrar as instituições brasileiras que desenvolvam trabalhos neste sentido, está sendo gerado o GCTB (Grupo de Trabalho pela Conservação do Tamanduá no Brasil), composto por profissionais que atuam na área de animais selvagens e com experiência no manejo das espécies em questão.

Neste entendimento, busca-se elaborar um trabalho que venha a ser desenvolvido a partir de uma



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coletânea de dados obtidos em todo o país. Esse grupo terá sede na Fundação Parque Zoológico de São Paulo, pois está instituição é pioneira na conservação das espécies de tamanduas no Brasil. Entre outros êxitos, o FPZSP registrou os primeiros casos de nascimentos de tamanduá-bandeira e tamanduá-mirim em cativeiro no Brasil; tem sido responsável pelo maior plantel do Brasil de tamanduá-mirim e tamanduá-bandeira (Censo SZB) e o terceiro plantel de tamanduá-bandeira do mundo (ISIS); e apresenta na sua estrutura organizacional um quadro de profissionais renomados no manejo destas espécies, com publicações nacionais e internacionais.

*Missão do GCTB:*
Promover ações que favoreçam a conservação das espécies de tamanduás no Brasil.

*Fundadores:*
Os fundadores incluem Flávia Regina Miranda, do Fundação Parque Zoológico de São Paulo; Rodrigo Hidalgo Teixeira, do Zoo de Sorocaba, São Paulo; e Cátia Dejuste, do Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA).

*Consultores internacionais:*
Os consultores internacionais incluem Dr. Roberto Aguilar, Senior Veterinarian, Audubon Zoo – Audubon Nature Institute, New Orleans, Louisiana, USA; Marcela Uhart, Universidad Nacional Del Centro de la Provincia de Bueno Aires, Argentina e Field Veterinary Program, Wildlife Conservation Society; e Delio Orjuela, Médico Veterinário do Zoológico de Cali, Colômbia.

Os objetivos específicos do GCTB incluem:

- elaborar protocolos de manejo para conservação das espécies no Brasil;
- elaborar o studbook regional, catalogando todas as espécies existentes em cativeiro;
- realizar workshops, nacionais e internacionais, com ênfase na conservação das espécies;
- desenvolver pesquisa e educação ambiental;
- iniciar um controle genealógico dos animais, buscando reerguer a população em cativeiro;
- proporcionar parcerias com profissionais com experiência *in situ*, buscando uma melhoria no manejo *ex situ*;
- unir as instituições que possuam essas espécies em cativeiro;
- firmar parcerias internacionais em prol da conservação das espécies.

Para mais informações, favor entrar em contato com **Flávia Miranda**, Fundação Parque Zoológico de São Paulo, Av. Miguel Stefano 4241, São Paulo 04301-901, São Paulo, Brasil. E-mail <flaviamiranda@yahoo.com> ou <gctb@uol.com.br>.

## Project Anteaters in Brazil

Three species of anteaters are found in Brazil: the giant anteater (*Myrmecophaga tridactyla*), the lesser anteater (*Tamandua tetradactyla*) and the silky anteater (*Cyclopes pygmaeus*). Crepuscular and nocturnal, they may be found in savannas, cerrado and humid forests. Understanding how to manage these species in captivity is of great importance, owing to their special nutritional, environmental and behavioral needs, and the difficulties encountered with their captive reproduction. It is worth pointing out that on the list of endangered species published by the Brazilian Ministry of the Environment on 27 May, 2003, *Myrmecophaga tridactyla* stands out. This context makes clear the important role which zoos play in maintaining programs which have as their fundamental objective the reproduction of these representatives of Brazil's mammalian fauna, especially those threatened with extinction.

*Justification*
With the intention of pooling all available information on tamanduas, both *in situ* and *ex situ* – as well as to develop an action plan for the conservation of these three species in Brazil, and to bring together those Brazilian institutions which have developed projects along these lines – we have



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created Project Anteaters (*Grupo de Trabalho pela Conservação do Tamanduá no Brasil*), composed of professionals who work with wild animals and who have experience in the management and husbandry of the species in question.

Therefore we plan to develop a project meant to coordinate data obtained from across the country. This group will be based in the São Paulo Zoo (*Fundação Parque Zoológico de São Paulo*), as this institution has been a pioneer in the conservation of Brazilian anteaters. Among other successes, the São Paulo Zoo registered the first captive births of giant and lesser anteaters in Brazil; the Zoo maintains the largest collection of these species in the country, and the third-largest collection of giant anteaters in the world. The Zoo has a team of professionals on staff who are well-known for their experience with captive management of these species, with national and international publications.

*The Mission of Project Anteaters*
To promote actions which support the conservation of Brazilian anteaters.

*Founders*
The founders of Project Anteaters include Flávia Regina Miranda, of the São Paulo Zoo; Rodrigo Hidalgo Teixeira, of the Sorocaba Zoo, São Paulo; and Cátia Dejuste, of the Brazilian environmental agency Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA).

*International Consultants*
The international consultants include Dr. Roberto Aguilar, Senior Veterinarian, Audubon Zoo – Audubon Nature Institute, New Orleans, Louisiana, USA; Marcela Uhart, of the Universidad Nacional Del Centro de la Provincia de Bueno Aires, Argentina and the Field Veterinary Program of the Wildlife Conservation Society; and Delio Orjuela, Medical Veterinarian of the Zoological Park in Cali, Colômbia.

The specific objectives of Project Anteaters include:

- develop management protocols for the conservation of Brazilian anteaters;
- develop a regional studbook cataloguing all individuals now in captivity;
- present national and international workshops with an emphasis on the conservation of these species;
- develop projects on research and environmental education;
- initiate a program of controlled breeding for the captive animals, in order to re-establish the captive population;
- develop partnerships with wildlife professionals who have *in situ* experience, with the goal of improving *ex situ* management;
- unite the institutions which maintain these species in captivity; and
- establish international partnerships towards the conservation of these species.

For more information, please contact **Flávia Miranda**, Fundação Parque Zoológico de São Paulo, Av. Miguel Stefano 4241, São Paulo 04301-901, São Paulo, Brasil. E-mail <flaviamiranda@ yahoo.com> or <gctb@uol.com.br>.

## Four New Protected Areas in Brazil Cover Nearly 500,000 Hectares

On 3 June, 2004, the Brazilian Minister of the Environment, Marina Silva, announced the creation of four new protected areas – two National Forests and two Extractive Reserves in the states of Paraná (Piraí do Sul National Forest of 124.8 ha in the region of Campos Gerais), Paraíba (Restinga do Cabedelo of 103 ha; mangroves and coastal *restinga* vegetation), Maranhão (Cururupu Extractive Reserve of 185,000 ha; marine resources – mangroves and coastal swamps) and Amazonas (Capanã Grande Extractive Reserve of 304,000 ha; municipality of Manicoré, Rio Madeira). Capanã Grande is one of the protected areas foreseen in the ARPA (Amazon Region Protected Areas) programme of the World Wide Fund for Nature (WWF), Brazil, which is working towards the creation of 50 million ha of new



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protected areas in the Amazon over the next 10 years. Eighteen million ha are planned for the first phase of the program (2002–2006) which is supported by the Global Environment Facility (GEF) of the World Bank, the KfW Bankengruppe, and the Brazilian government. At the government ceremony creating these reserves, representatives of the state governments of Acre, Amazonas, Mato Grosso, Pará, Rondônia and Tocantins signed cooperative agreements regarding the implementation of the ARPA.

## Serra do Itajaí – A New National Park in the Brazilian Atlantic Forest

The Brazilian government published a decree on 7 June, 2004 creating the Serra do Itajaí National Park of 57,000 ha in the east of the state of Santa Catarina. The Itajaí valley was one of the 80 priority areas for the creation of parks and reserves in the Atlantic Forest identified during a workshop held in August 1999 in Atibaia, São Paulo: "Evaluation and Priority Actions for the Conservation of Biodiversity in the Atlantic Forest and Southern Grasslands", organized by Conservation International do Brasil in collaboration with the Fundação SOS Mata Atlântica, IPÊ – Instituto de Pesquisas Ecológicas, Fundação Biodiversitas, Secretaria do Meio Ambiente do Estado de São Paulo – SEMAD/SP, and the Instituto Estadual de Florestas – IEF/MG, under the general coordination of the Ministry of the Environment (MMA). The initial proposal for the park, prepared by staff and researchers from the Brazilian Institute for the Environment (IBAMA), the Federal University of Santa Catarina, the Regional University of Blumenau (FURB), and the Santa Catarina State Environmental Secretariat, was sent to the MMA by the State Council for the Atlantic Forest Biosphere Reserve (*Conselho Estadual da Reserva da Biosfera da Mata Atlântica*) in 2002. The park includes parts of nine municipalities – Ascurra, Apiúna, Blumenau, Botuverá, Gaspar, Guabiraba, Indaial, Presidente Nereu and Vidal Ramos – and covers headwaters and springs vital for the region. The Itajaí valley has one of the largest remaining tracts of Atlantic Forest in southern Brazil, and researchers from the Regional University of Blumenau have found that the park protects 78% of the mammals, 38% of the birds and 47% of the trees and shrubs known to occur in the state. *Source*: Instituto Socioambiental, São Paulo. Website: <http://www.socioambiental.org>.

## International Foundation for Science Research Grants

The International Foundation for Science (IFS) is a research council with international operations whose mission is to build the scientific capacity of developing countries for the sustainable management of biological and water resources. IFS believes that the interests of both science and development are best served by promoting and nurturing the research efforts of promising young science graduates who have the potential to become leading scientists in their countries. Since 1974, IFS has provided support to more than 3500 Grantees in over one hundred developing countries in Africa, Asia, the Pacific, Latin America and the Caribbean.

The IFS Granting Programme is open for project proposals from young scientists from developing countries who meet the eligibility criteria and who conduct research on the sustainable management of biological resources. Proposed projects must be related to the sustainable use of the biological and/or water resource base. IFS is specifically targeting scientists in countries with developing science and technology infrastructures. Research grants are awarded up to a maximum value of US$12,000 for a period of one to three years, and may be renewed twice. They are intended for the purchase of equipment, expendable supplies, and literature. Details of IFS awards can be found on the IFS website at <http://www.ifs.se/programme/granting_programme.asp>.

## Biodiversidade Ganha Rede

No dia 5 de outubro de 2004, foi lançada oficialmente a rede '*species*Link' criada pelo Centro



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de Referência em Informação Ambiental (Cria), Diretor Presidente Vanderlei Perez Canhos. Integrada ao Sistema de Informação Ambiental do Programa Biota/FAPESP (SinBiota), a rede, que deverá permitir a integração dinâmica de dados sobre a biodiversidade paulista, começa além das fronteiras do Estado: a coleção do Jardim Botânico do Rio de Janeiro já está integrada ao sistema.

O sistema permite a integração de diferentes grupos taxonômicos por meio de bancos de dados distribuídos e protocolos de comunicação. Com isso, será possível ligar, no futuro, as coleções biológicas a outras redes de informação do país e do exterior, por meio de *softwares* livres. A nova estrutura envolve registros de microrganismos, ácaros, insetos, répteis, mamíferos, peixes e tipos de madeira. A rede compartilhará informações de coleções das três universidades paulistas e de nove institutos de pesquisa, além do Jardim Botânico Fluminense. O *species*Link deverá ser utilizado como embrião para o desenvolvimento de uma rede brasileira de coleções científicas.

"Com o objetivo de acomodar a biodiversidade tanto sob o ponto de vista geográfico como taxonômico, a expectativa é que o sistema tenha 750 mil registros até 2006", prevê Canhos. A idéia é que esses aplicativos possam ajudar na resolução de problemas como proteção de espécies ameaçadas, mudanças climáticas e planejamento de áreas de conservação.

"Com o avanço das ferramentas de análise, síntese e visualização dos dados, as coleções que ficarem de fora de uma plataforma como o *species*Link tenderão a ficar menos competitivas e menos visíveis para a comunidade científica", disse Canhos.

O mecanismo físico que viabiliza o novo sistema foi estruturado a partir de servidores que permitem a integração de informações por meio da Rede ANSP (Academic Network at São Paulo), a conexão de internet avançada do Estado de São Paulo e também um programa da FAPESP. Mais informações: <http://splink.cria.org.br>. *Fonte*: Thiago Romero, Agência de Notícias da Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), 6 de outubro de 2004.

## The Tahuamanu Biological Station

The Tahuamanu Biological Station of the Amazonian University of Pando (Pando, Bolivia) is sited in an area of primary and secondary *terra firma* forest, typical of Western Amazonia in both flora and fauna. River floodplains and bamboo forests provide additional habitat for specialized taxa. The fauna is representative of the region, and at least eight species of edentate are present in the region, including *Priodontes maximus* (Alverson *et al.*, 2000). Aquatic biodiversity is especially rich in this region, one of the most diverse of the Amazon Basin.

A number of studies have been conducted at the site over the last decade, including long-term field projects on several mammal species. Census data have also been collected for large mammals, birds, fish, reptiles and amphibians as well as local flora. The station is well-suited for teaching field courses, and prior topics include primate conservation and ecology, herpetology, field methods, dendrology and more.

The Tahuamanu Biological Station is one kilometer from the north bank of the Río Tahuamanu and 60 km southwest of Cobija, the capital city of Pando; the station is three hours by road from Cobija's international airport. Located within a trinational frontier, the Biological Station is only a short distance from both the Brazilian and Peruvian borders.

Researchers intending to carry out fieldwork and sampling protocols will require permits from the Bolivian Department of National Biodiversity Management (DGB), which also provides CITES permits. To obtain a permit, scientists must sign a research agreement with a local institution, which the Centro de Investigación y Preservación de la Amazonia (CIPA) can easily provide, in addition to assistance with processing



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permit applications. CIPA also offers academic and logistical assistance to researchers, including the arrangement of transportation to and from the field site.

The Station has shared and private cabins, a partially equipped kitchen, a dining area, and teaching and storage facilities. The presence of local guides and a full-time caretaker ensures safe and comfortable living and working conditions for researchers and the presentation of field courses. Over 25 km of trails in an extensive grid system allows for easy viewing of animals. With advance notice, road and river transportation can also be provided through CIPA at the University of Pando. For more information about the Biological Station, please contact Sandra Suárez at <sqs6596@nyu.edu> or: Centro de Investigación y Preservación de la Amazonia (CIPA), Universidad Amazónica de Pando, Avenida Crnl. Cornejo, Cobija, Depto. de Pando, Bolivia, Tel.: 591-3-842-2135 ext. 112, <cipauap@hotmail.com> or <estacion_tahuamanu@yahoo.com>.

The Tahuamanu Biological Station is operated through the cooperation of the Universidad Amazónica de Pando, CIPA, the Field Museum and the Gordon and Betty Moore Foundation.

**TABLE 1.** Edentate species recorded from the vicinity of the Tahuamanu Biological Station. From Alverson *et al.*, 2000.

| |
|---|
| *Cabassous unicinctus* |
| *Choloepus hoffmanni* |
| *Cyclopes didactylus* |
| *Dasypus kappleri* |
| *Dasypus novemcinctus* |
| *Myrmecophaga tridactyla* |
| *Priodontes maximus* |
| *Tamandua tetradactyla* |

**Reference**

Alverson, W. S., Moskovits, D. K. and Shopland, J. M. (eds.). 2000. *Bolivia: Pando, Río Tahuamanu. Rapid Biological Inventories Report 1.* The Field Museum, Chicago, Illinois.

## Research Grants from the Center for Tropical Forest Science / Smithsonian Tropical Research Institute

The Center for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI) is currently accepting proposals for the sixth cycle of their Research Grants Program.

*Purpose/Eligibility*

The CTFS Research Grants Program is intended to provide opportunities for senior researchers, post-doctoral fellows, and graduate students to use existing CTFS Forest Dynamics Plots (FDPs) and to conduct research with scientists associated with these plots. The CTFS network of FDPs includes 18 sites in 15 countries. Anyone working directly in a Forest Dynamics Plot, analyzing data from a plot, or generating complementary data that strengthens FDP research programs is eligible to apply. Projects may be field-oriented, laboratory-based, or analytical, and the science may be basic or applied in nature. Grants will range from $3,000–$30,000. The CTFS Research Grants Program will make awards for projects between three months and three years in length.

*Application*

Grant proposals should include a Research Proposal (not to exceed 1500 words), a list of collaborators, curriculum vitae, proposed referees, and a detailed budget. For more information on how to submit a proposal, please visit <http://www.ctfs.si.edu>.

*Deadline for Applications*

This grants program has switched to an annual cycle. Submissions will be accepted yearly on the last Friday of July; the next deadline for applications is July 29, 2005. For more information, please contact: Center for Tropical Forest Science, Smithsonian Tropical Research Institute, P.O. Box 37012, QUAD 3123, MRC 705, Washington, DC 20013-7012, USA, Tel: 202-633-4012, Fax: 202-786-2557, <http://www.ctfs.si.edu>.



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## Conservation of the Atlantic Forest in São Paulo – A Rolex Award for Laury Cullen Jr.

Laury Cullen Jr., Research Coordinator at IPÊ – Instituto de Pesquisas Ecológicas, based in Nazaré Paulista, São Paulo, is a recipient of The Rolex Awards for Enterprise, promoted by Rolex S.A. The award was announced on 29 September 2004, in Paris. Key behind this award was his project "Transforming Farmers into Conservationists to Preserve the Atlantic Forest and its Fauna." Over the last nine years, Laury Cullen Jr. has focused on protecting the forest fragments remaining in the west of the state of São Paulo, working with small farmers and landowners, and demonstrating techniques and systems in agroforestry which promote the recovery of degraded soils besides the preservation and recovery of the forest fragments and their fauna. He is currently planning to increase the number and extent of forest corridors in the region, while simultaneously helping to promote the economic well-being of at least 400 farmers. IPÊ was founded in 1992 specifically for the conservation of the black lion tamarin, *Leontopithecus chrysopygus*, one of the many species which will benefit directly from the forest restoration resulting from Cullen Jr.'s project. He is currently researching for his doctoral thesis at the Durrell Institute for Conservation and Ecology (DICE) of the University of Kent, UK. The deadline for registration for 'The Rolex Awards for Enterprise 2006' is 31 May 2005. Websites: <www.rolexawards.com>, <http://www.wpti.org/ipe.htm>.

## ISIS Zoological Information Management System (ZIMS) Project

The International Species Information System (ISIS), in cooperation with other representatives of the zoological community, is designing the next generation of software for the data management needs of zoos and aquariums worldwide. The Zoological Information Management System (ZIMS) will replace the current ISIS software to provide a more accurate and comprehensive database of animal inventories. More than 500 animal-care experts from zoos, aquariums and related organizations worldwide will participate in the project. ISIS works closely with the International Animal Data Information Systems Committee (IADISC).

ZIMS will allow users to see collections of animal data in real time, and will enhance local care and international conservation efforts by providing faster and better accesss to species information. When complete, ZIMS will be available in three models; each institution can chose the model that is best suited to their needs. The models include:

*ZIMS ASP model:*
Functioning like an online bank or airline reservation system, this application allows users to conduct transactions through a dedicated website. This version is suitable for small to medium zoos and aquaria with few users and fast internet connections.

*ZIMS locally-hosted model:*
This model works like a ticketing or finance system, in that ZIMS will "talk" to other applications. This model assumes that the institution is medium to large in size with in-house IT expertise available. You should use this model if your institution has legal requirements to keep a copy of your own data on your own servers.

*ZIMS stand-alone model:*
This is a single-computer version for the institution that has limited internet connectivity, only one or two people using the system and no IT expertise available. Training members on ZIMS is expected to take place in 2006.

The ZIMS Project is one of the largest, international web-based projects of its kind. ZIMS will serve as the central repository for accurate and comprehensive information on two million animals in more than 70 countries. For more information on ZIMS visit the ISIS website at <http://www.isis.org> or the ZIMS project site at <http://www.zims.org>.



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### A Website for Giant Anteaters

*The Online Anteater* is a site dedicated to the giant anteater (*Myrmecophaga tridactyla*). Nicely organized, the site includes sections on habitat, diet, breeding, biology, behavior and history. Also included is an extensive list of links to other sites with informaton on giant anteaters, such as fact sheets, zoological institutions housing anteaters and articles and news. This is an excellent site for educators wishing to gather basic information and some fun facts about the giant anteater. The site can be viewed at <http://www.maiaw.com/anteater>. For questions or comments, contact Maia Weinstock at <maia@alumni.brown.edu>.

## RECENT PUBLICATIONS

### Threatened Edentates in Southern Brazil – Red Data Books for the States of Paraná and Rio Grande do Sul

The Instituto Ambiental do Paraná has published the *Livro Vermelho da Fauna Ameaçada no Estado do Paraná*, in cooperation with the Government of Paraná and the Secretaria de Estado do Meio Ambiente e Recursos Hídricos (SEMA). Edited by Sandra Bos Mikich and Renato Silveira Bérnils, this 700-page volume provides the most recent assessment of the conservation status of well over three hundred threatened and indeterminate species in the Brazilian state of Paraná. Detailed entries, each with its own map, cover 56 species of mammals, 167 birds, 13 reptiles, 25 amphibians, 50 fishes, 18 bees and 15 butterflies, for a total of 344 species designated as threatened, Near Threatened or Data Deficient. Of all the species known to occur in Paraná, 32% of the mammals are considered threatened, 28% of the reptiles and amphibians, 22% of birds, and 5% or less of fishes, bees and butterflies.

Of the 176 mammal species verified from Paraná, nine are edentates, three of which are treated in the *Livro Vermelho*: *Bradypus variegatus* (RE), *Cabassous tatouay* (DD) and *Myrmecophaga tridactyla* (CR). The three-toed sloth is known there from a single record in 1946, and the species was probably extirpated decades ago, owing to its need for primary forest and its extreme sensitivity to habitat alteration. Both the giant anteater and the naked-tailed armadillo still survive in Paraná, but they are threatened by agricultural expansion and habitat loss, including the wildfires and controlled burns known together as *queimadas*. They often fall victim to domestic dogs and highway strikes, and they are heavily persecuted by local people for threats both real and imagined. As a first step in addressing their decline, the *Livro Vermelho* of Paraná recommends research projects to understand their basic biology, ecology and remaining distribution.

The Paraná volume follows the publication, in 2003, of an equally comprehensive survey for Brazil's southernmost state: the *Livro Vermelho da Fauna Ameaçada de Extinção no Rio Grande do Sul*, edited by Carla S. Fontana, Glayson A. Bencke and Roberto E. Reis, and published by Edipucrs, the university press of the Pontifícia Universidade Católica do Rio Grande do Sul. This volume received support from a variety of foundations and NGOs, including Conservation International do Brasil and the Fundação O Boticário de Proteção à Natureza. The assessments detailed in the *Livro Vermelho*, resulting from more than three years of work by dozens of specialists, were codified in state law by Decreto Estadual nº 41.672, promulgated on 11 June 2002 and signed by then-governor Olívio Dutra.

The *Livro Vermelho* of Rio Grande do Sul provides information on 261 species in five threat categories, including 33 mammals, 128 birds, 27 reptiles and amphibians, 28 fishes, 18 insects, 17 molluscs, 7 crustaceans and 3 sponges. Of the nine edentates originally known from the state – the same nine that occur in Paraná – three are listed as threatened: *Cabassous tatouay* (DD), *Myrmecophaga tridactyla* (CR) and *Tamandua tetradactyla* (VU). Both anteater species have suffered from the widespread loss of habitat,



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**TABLE 1.** Regional classifications for edentates in Paraná and Rio Grande do Sul.

| | Status* | Threats |
|---|---|---|
| **Paraná** | | |
| *Bradypus variegatus* | RE | Habitat loss and disturbance |
| *Cabassous tatouay* | DD | Habitat destruction; fires; persecution |
| *Myrmecophaga tridactyla* | CR | Agricultural expansion; fires; hunting; domestic dogs; highway mortality |
| **Rio Grande do Sul** | | |
| *Cabassous tatouay* | DD | Not specified |
| *Myrmecophaga tridactyla* | CR | Agricultural expansion; fires; persecution; highway mortality |
| *Tamandua tetradactyla* | VU | Agricultural expansion; fires; domestic dogs; highway mortality |

* **DD** = Data Deficient, **VU** = Vulnerable, **CR** = Critically Endangered, and **RE** = Regionally Extinct.

both for themselves and for the social insects they feed on, owing to agricultural expansion and the *queimadas*. As in Paraná, domestic dogs and highway mortality are taking their toll, and local people kill giant anteaters on sight for their supposed ferocity. To counter these threats, the *Livro Vermelho* suggests several courses of action, beginning with field studies to supply baseline biological and ecological information for each of these species. Other recommendations include programs of environmental awareness, the creation of protected areas around specific habitat complexes, and statewide surveys for surviving populations – in particular of *Myrmecophaga tridactyla*.

These two volumes from Paraná and Rio Grande do Sul are the most recent additions to a small series of regional assessments produced by individual states in Brazil. Paraná was the first state to do so, in 1995, at which time their list included 21 species of mammals (Brazil, Paraná, SEMA, 1995). Three years later the states of Minas Gerais, Rio de Janeiro and São Paulo also released summaries of threatened species within their borders (Machado *et al*., 1998; Bergallo *et al*., 1998; Brazil, São Paulo, SMA, 1998), listing 40, 43 and 41 species of threatened mammals respectively. All together these five states, concentrated in the industrialized and heavily impacted southeast of Brazil, remain the only states to have produced current, comprehensive assessments of threatened species. We hope that other Brazilian states will join this continuing process, and provide summaries of equal scope and value for other regions in Brazil.

## Threatened Edentates in Paraná

*Bradypus variegatus* - RE
On the basis of a single record from Londrina in 1946, the three-toed sloth is included among the fauna of Paraná as regionally extinct. The species is closely tied to primary forest, and is sensitive to even slight disturbance or changes in its environment; it most likely has gone extinct in Paraná owing to changes in forest type and overall habitat loss. No recommendations are made.

*Myrmecophaga tridactyla* - CR
The giant anteater's original distribution in Paraná is unknown, and now it is found mainly in remnant patches of cerrado and *campos naturais*. In recent years only a few sightings have been made from a handful of protected areas; no population estimates can be made, but it has already vanished from one state park and its presence is uncertain in others. Giant anteaters are able to survive in ranchlands and pasture if ants and termites are present, but otherwise they will disappear as well. The primary threats to this species in Paraná, as elsewhere, are the extensive expansion of agriculture, subsistence hunting by humans and attacks by domestic dogs. Its population is also impacted by widespread burnings and highway mortality. No conservation measures are currently in place, but the *Livro Vermelho* recommends an urgent program to map the current extent of the species



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in Paraná and monitor individuals in the wild, along with other ecological projects and habitat protection in general.

*Cabassous tatouay* - DD
Although relatively common from Bahia to Rio Grande do Sul, this species is little-known and rarely verified from Paraná. Presumably its range once included the entire state; today it survives in a variety of habitats, from humid forests to open and altered areas. The main threats are uncontrolled burnings and habitat destruction. *C. tatouay* is also heavily hunted in cultivated areas for the damage done to fields by the excavation of its burrows, which are occupied in sequence and then abandoned. The only recommendations are for research projects on its distribution, ecology and biology.

**Threatened Edentates in Rio Grande do Sul**

*Tamandua tetradactyla* - VU
In Rio Grande do Sul, historical records suggest the lesser anteater once occurred throughout the state. It is still widespread, although restricted mainly to the central and southern regions. It is absent from the northeast, where they are most likely extinct. Although capable of living in a wide range of habitats, in Rio Grande do Sul the lesser anteater prefers forested areas to savanna, and lives close to water whenever possible. Its populations have declined along with their habitat, which has been degraded and fragmented by agriculture and widespread burnings. Domestic dogs have become a major predator, along with occasional killings by humans for no particular reason, and highway mortality is also a serious concern. The *Livro Vermelho* recommends long-term field studies on their diet, activity patterns, population density, home-range size and preferred habitats – an indication of how much basic information is still wanting for this species.

*Myrmecophaga tridactyla* - CR
Giant anteaters were already rare a century ago in Rio Grande do Sul, and by now they may already be ecologically extinct in the state. Never common anywhere across their immense range – which at one time may have reached from Argentina to Belize – there is little evidence they survive in Rio Grande do Sul, aside from a single individual found dead on a highway in 1999. Able to survive in a tremendous variety of landscapes, from humid tropical forest to dry steppes and savannas, they nonetheless require gallery forests for access to water and sleeping trees. On account of their aggressive self-defense when threatened, giant anteaters garnered a reputation for ferocity among the gauchos, and they are still often shot on sight as "dangerous" animals – although they are rarely if ever eaten once killed. The tremendous loss of habitat due to agriculture must have had direct effects on their population, but has also caused a great decline in the standing crop of the social insects on which they survive. In the Cerrado, the most common cause of individual death is from fires, although highway mortality is also a danger. The *Livro Vermelho* suggests three primary actions: to locate any individuals or populations still surviving in the state; to create conservation units around forests associated with native grasslands, in order to provide natural refuges; and to educate local people about the inoffensive nature and serious decline of giant anteaters in their state.

*Cabassous tatouay* - DD
There is no recent information on the status of this species in Rio Grande do Sul; there are old records, but no surveys are underway. The *Livro Vermelho* suggests *C. tatouay* may be declining in the west and southwest of the state, but gives no reasons for this decline nor recommendations for conservation action.

**John M. Aguiar**, Center for Applied Biodiversity Science, Conservation International, 1919 M Street NW, Suite 600, Washington, DC 20036, USA. E-mail: <j.aguiar@conservation.org>.

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## A Map of the Brazilian Amazon

The Instituto Socioambiental (ISA), São Paulo, has published a new map of the Brazilian Amazon (*Amazônia Legal*) covering 500.6 million ha in the states of Amazonas, Pará, Acre, Roraima, Rondônia, Mato Grosso, Tocantins, Amapá, and part of Maranhão. "Amazônia Brasileira 2004", at a scale of 1:4,000,000, is 100 x 70 cm, and maps vegetation types, deforestation and human impacts in the region. There is also a list of the 236 protected areas and 400 Indigenous lands, parks and reserves of the region, part of a database maintained by the Instituto Socioambiental which indicates a total of 60.5 million ha of the Brazilian Amazon in protected areas, corresponding to 12% of the region (excluding *c.*14 million ha overlapping with Indigenous lands). Indigenous lands cover 104.3 million ha, or about 20% of the region. The list includes the name, category, area and the legal act which created each park and reserve, and the juridical/administrative status of, and names of the tribes in, each of the Indigenous lands. The data come from the Protected Areas Monitoring Programme (*Programa de Monitoramento de Áreas Protegidas*) of the Instituto Socioambiental, and have been plotted on maps drawn up by the Brazilian Institute for Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* – IBGE), Rio de Janeiro. The database of the "Global Land Cover 2000" of the Joint Research Centre (JRC) of the European Commission was used to identify areas which have been deforested and impacted. The map is available at the Socioambiental website, <http://www.socioambiental.org>, for R$15.00 + postage.

## *Lundiana* – Uma Revista de Biodiversidade

A revista *Lundiana* está completando, em 2004, seu terceiro ano de publicação em sua nova fase, como revista de Biodiversidade. Ao longo deste tempo, ela publicou 59 artigos em Botânica, Ecologia e Zoologia, escritos por autores de todas as regiões do Brasil e de 10 países das três Américas, da Europa e Austrália. *Lundiana* tem se mostrado uma boa alternativa para publicação de artigos relacionados à biodiversidade, pelas seguintes razões: 1. Alta qualidade gráfica (papel de alta qualidade; diagramação moderna e atraente; impressão de altíssima qualidade); 2. Publicação rápida (em média, menos de 11 meses); 3. Indexação na maioria dos mais importantes indexadores internacionais nas diversas áreas das ciências naturais; 4. Espaço ilimitado para publicação; 5. Publicação gratuita; 6. 25 separatas inteiramente grátis e 7. Publicação de fotos coloridas sem custo adicional. Esses fatores têm levado a um aumento contínuo do fluxo de manuscritos submetidos à nossa revista. Com isto, já estamos considerando a possibilidade de passarmos a publicar três em vez de dois números por ano, a partir de 2005. Ajudem-nos a manter nossa revista em sua rota ascendente de qualidade e sucesso: Assine *Lundiana*. Os valores das assinaturas são: Estudantes (graduação e pós-graduação): R$25,00; Profissionais: R$35,00. Para assinar, você pode procurar diretamente o Prof.



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# BOOKS AND ARTICLES

## Books

*The Atlantic Forest of South America: Biodiversity Status, Threats, and Outlook*, edited by Carlos Galindo-Leal and Ibsen de Gusmão Câmara, 2003. Island Press, Washington DC. 488pp. ISBN 1-55963-988-1. Price: $70.00 (hardback), $35.00 (paperback). This book presents an authoritative account of the world's most threatened tropical forest by the biologists and conservationists who know it best. Although the majority of the remaining Atlantic Forest extends across southeastern Brazil, substantial portions once existed in Paraguay and Argentina as well, and the text considers the surviving forests of each nation in turn before examining issues which affect the remnants of the biome as a whole. Chapters specific to primates include an overview of the conservation history of the golden lion tamarin in Rio de Janeiro, Brazil, and an assessment of primate species in Misiones, Argentina. *Contents*: Foreword – Gustavo A. B. da Fonseca, Russell A. Mittermeier & Peter Seligmann, pp. xi–xiii; Preface – Gordon E. Moore, p.xv. Part I. Introduction. 1. Atlantic Forest hotspot status: An overview – C. Galindo-Leal & I. de Gusmão Câmara, pp.3–11; 2. State of the hotspots: The dynamics of biodiversity loss – C. Galindo-Leal, T. R. Jacobsen, P. F. Langhammer & S. Olivieri, pp.12–23. II. Brazil. 3. Dynamics of biodiversity loss in the Brazilian Atlantic Forest: An introduction – L. P. Pinto & M. C. Wey de Brito, pp.27–30; 4. Brief history of conservation in the Atlantic Forest – I. de Gusmão Câmara, pp.31–42; 5. Status of the biodiversity of the Atlantic Forest of Brazil – J. M. Cardoso da Silva & C. H. M. Casteleti, pp.43–59; 6. Monitoring the Brazilian Atlantic Forest cover – M. M. Hirota, pp.60–65; 7. Conservation priorities and main causes of biodiversity loss of marine ecosystems – S. Jablonski, pp.66–85; 8. Endangered species and conservation planning – M. Tabarelli, L. P. Pinto, J. M. Cardoso da Silva & C. M. R. Costa, pp.86–94; 9. Past, present, and future of the golden lion tamarin and its habitat – M. C. M. Kierulff, D. M. Rambaldi & D. G. Kleiman, pp.95–102; 10. Socioeconomic causes of deforestation in the Atlantic Forest of Brazil – C. E. F. Young, pp.103–117; 11. The Central and Serra do Mar corridors in the Brazilian Atlantic Forest – A. P. Aguiar, A. G. Chiarello, S. L. Mendes & E. Neri de Matos, pp.118–132; 12. Policy initiatives for the conservation of the Brazilian Atlantic Forest – J. C. Carvalho, pp.133–136. Part III. Argentina. 13. Dynamics of biodiversity loss in the Argentinean Atlantic Forest: An introduction – A. R. Giraudo, pp. 139–140; 14. Brief history of conservation in the Paraná Forest – J. C. Chebez & N. Hilgert, pp.141–159; 15. Biodiversity status of the interior Atlantic Forest of Argentina – A. R. Giraudo, H. Povedano, M. J. Belgrano, E. Krauczuk, U. Pardiñas, A. Miquelarena, D. Ligier, D. Baldo & M. Castelino, pp.160–180; 16. Threats of extinction to flagship species in the Interior Atlantic Forest – A. R. Giraudo & H. Povedano, pp.181–193; 17. Outlook for primate conservation in Misiones – M. S. Di Bitetti, pp.194–199; 18. The loss of Mbyá wisdom: Disappearance of a legacy of sustainable management – A. Sánchez & A. R. Giraudo, pp.200–206; 19. Socioeconomic roots of biodiversity loss in Misiones – S. Holz & G. Placci, pp.207–226; 20. Conservation capacity in the Paraná Forest – J. P. Cinto & M. P. Bertolini, pp.227–244; 21. Critical analysis of protected areas in the Atlantic Forest of Argentina – A. R. Giraudo, E. Krauczuk, V. Arzamendia & H. Povedano, pp.245–261; 22. Last opportunity for the Atlantic Forest – L. A. Rey, pp.262–264. Part IV. Paraguay. 23. Dynamics of biodiversity loss in the Paraguayan Atlantic Forest: An introduction – J. L. Cartes & A. Yanosky, pp.267–268; 24. Brief history of conservation in the Interior Atlantic Forest – J. L. Cartes, pp.269–287; 25.



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Biodiversity status of the Interior Atlantic Forest of Paraguay – F. Fragano & R. Clay, pp.288–309; 26. Socioeconomic drivers in the Interior Atlantic Forest – A. M. Macedo & J. L. Cartes, pp.310–324; 27. The Guaraní Aquifer: A regional environmental service – J. F. Facetti, pp.325–327; 28. Conservation capacity in the Interior Atlantic Forest of Paraguay – A. Yanosky & E. Cabrera, pp.328–354. Part V. Trinational Issues. 29. Dynamics of biodiversity loss: An introduction to trinational issues – T. R. Jacobsen, pp.357–359; 30. Species on the brink: Critically endangered terrestrial vertebrates – T. Brooks & A. B. Rylands, pp.360–371; 31. Putting the pieces back together: Fragmentation and landscape conservation – C. Galindo-Leal, pp.372–380; 32. Endangered forests, vanishing peoples: Biocultural diversity and indigenous knowledge – T. R. Jacobsen, pp.381–391; 33. Unwanted guests: The invasion of nonnative species – J. K. Reaser, C. Galindo-Leal & S. R. Ziller, pp.392–405; 34. Harvesting and conservation of heart palm – S. E. Chediack & M. F. Baqueiro, pp.406–412; 35. The effects of dams on biodiversity in the Atlantic Forest – C. Fahey & P. F. Langhammer, pp.413–425; 36: Populating the environment: Human growth, density and migration in the Atlantic Forest – T. R. Jacobsen, pp. 426–435; 37. Mercosur and the Atlantic Forest: An environmental regulatory framework – M. Leichner, pp.436–443; 38. A challenge for conservation: Atlantic Forest protected areas – A.-V. Lairana, pp.444–457. Part VI. Conclusion. 39. Outlook for the Atlantic Forest – C. Galindo-Leal, I. de Gusmão Câmara & P. J. Benson, pp.461–464.

*Darwinian Heresies*, edited by Abigail Lustig, Robert J. Richards, and Michael Ruse. Cambridge University Press, New York, 2004. 208pp. ISBN 0521815169 (hardcover), $65.00. *Darwinian Heresies* looks at the history of evolutionary thought in an attempt to break through conventional thinking to see whether there are assumptions or theories that are blinding us to important issues. The collection, which includes essays by historians and philosophers of science, digs beneath the surface and shows that not all is precisely as it is often assumed to be. Covering a wide range of issues starting back in the eighteenth century, *Darwinian Heresies* brings us up through the time of Charles Darwin and *The Origin of Species* all the way to the twenty-first century. It is suggested that Darwin's true roots lie in Germany, not in his native England; that Russian evolutionism is more significant than many are prepared to allow; and that the main influence on twentieth-century evolutionary biology was not Charles Darwin at all but his often-despised contemporary, Herbert Spencer. The collection is intended to interest, to excite, to infuriate, and to stimulate further work. *Contents*: 1. Introduction: Biologists on Crusade – Abigail Lustig, p.1–13; 2. Russian Theoretical Biology between Heresy and Orthodoxy: Georgii Shaposhinikov and His Experiments on Plant Lice – Daniel Alexandrov & Elena Aronova, pp.14–47; 3. The Specter of Darwinism: The Popular Image of Darwinism in Early Twentieth-Century Britain – Peter J. Bowler, pp.48–68; 4. Natural Atheology – Abigail Lustig, pp.69–83; 5. Ironic Heresy: How Young-Earth Creationists Came to Embrace Rapid Microevolution by Means of Natural Selection – Ronald L. Numbers, pp.84–100; 6. If This Be Heresy: Haeckel's Conversion to Darwinism – Robert J. Richards, pp.101–131; 7. Adaptive Landscapes and Dynamic Equilibrium: The Spencerian Contribution to Twentieth-Century American Evolutionary Biology – Michael Ruse, pp.131–150; 8. "The Ninth Mortal Sin": The Lamarckism of W. M. Wheeler – Charlotte Sleigh, pp.151–172; 9. Contemporary Darwinism and Religion – Mikael Stenmark, pp.173–192. Available from: Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211, USA, Fax: 1-212-691-3239. General Address (Orders & Customer Service): Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133, USA, Tel: 1-845-353-7500, Fax: 1-845-353-4141. Website: <http://www.cup.org>.

*Janelas para a Biodiversidade no Parque Nacional do Jaú*, por Sérgio Henrique Borges, Simone Iwanaga, Carlos César Durigan & Marcos Roberto Pinheiro. Fundação Vitória Amazônica, Manaus, 2004. 280pp. ISBN: 8585830034 (paperback), R$50.00 + postage (no Brasil). O "Janelas para a Biodiversidade" é um projeto de planejamento



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de pesquisa, com o objetivo de desenvolver uma estratégia para inventariar e monitorar a biodiversidade, e o uso dos recursos naturais, pelos residentes do Parque Nacional do Jaú. O projeto conta com a participação de pesquisadores de várias instituições, como o Instituto Nacional de Pesquisas da Amazônia (INPA), Universidade Federal do Amazonas (UFAM), Universidade de Campinas (UNICAMP) e Universidade de São Paulo (USP). O Projeto "Janelas para a Biodiversidade" foi implementado pela Fundação Vitória Amazônica (FVA) entre 1999 e 2002, em parceria com o IBAMA, apoio da WWF-Brasil e do Programa USAID. A experiência do projeto é relatada em um livro editado em 2004 pela FVA, na expectativa de que seja útil para outras entidades e agências ambientais que trabalham na Amazônia. O livro reúne contribuições de 31 pesquisadores das áreas biológicas e sociais representando a FVA e outras importantes instituições de pesquisa. Ao comprar um exemplar você estará contribuindo para projetos de conservação na bacia do rio Negro. *Sumário*: Apresentação – J. T. da Frota Alves Neto & C. C. Durigan, pp.vii–viii; Prefácios – M. Saragoussi & J. A. A. Gomes, pp.ix–xii. Seção 1 – Definindo a Metodologia. 1. Planejando o estudo da biodiversidade na Amazonia brasileira: Uma experiencia no Parque Nacional do Jaú – S. H. Borges, C. C. Durigan, M. R. Pinheiro, J. L. C. Camargo & A. Murchie, pp.3–14; Caracterização das Janelas para a Biodiversidade do Parque Nacional do Jaú – M. R. Pinheiro & S. H. Borges, pp.19–28. Seção 2 – Pesquisas Sociais. Dinâmica da população humana nos rios do Parque Nacional do Jaú – M. R. Pinheiro & A. B. Macedo, pp.43–61; As condições de vida e uso dos recursos pelos moradores do Parque Nacional do Jaú – M. P. S. R. Chaves, J. P. Abreu & F. Bindá, pp.63–78. Seção 3 – Inventários Biológicos. 5. Biodiversidade de algas planctônicas do Parque Nacional do Jaú: Janela Seringalzinho – S. Melo, M. G. Sophia, M. Menezes & C. A. Souza, pp.83–92; 6. As palmeiras da região do Seringalzinho – C. V. Castilho, pp.95–102; 7. A vegetação ao longo de um gradiente edáfico no Parque Nacional do Jaú – A. Vicentini, pp.105–131; 8. Araneofauna na região do Seringalzinho – C. S. Azevedo & M. Smith, pp.135–141; 9. Tabanidae (Insecta: Diptera) do Parque Nacional do Jaú. II – A. L. Henriques, pp.143–151; 10. Formigas do Parque Nacional do Jaú: Uma primeira análise – H. L. Vasconcelos, N. J. Fraga & J. M. S. Vilhena, pp.153–160; 11. Anfíbios, lagartos e serpentes do Parque Nacional do Jaú – S. Neckel-Oliveira & M. Gordo, pp.161–173; 12. Inventário de aves no Parque Nacional do Jaú utilizando a abordagem do Projeto Janelas para a Biodiversidade – S. H. Borges, pp.177–192; 13. Levantamento de mamíferos diurnos de médio e grande porte no Parque Nacional do Jaú: Resultados preliminares – S. Iwanaga, pp.195–207. Seção 4 – Uso de Recursons Naturais. 14. A caça e a pesca no Parque Nacional do Jaú – J. C. B. Pezzuti, G. H. Rebêlo, D. F. Silva, J. P. Lima & M. C. Ribeiro – pp.213–228; 15. O extrativismo de cipós (*Heteropsis* spp., Araceae) no Parque Nacional do Jaú – C. C. Durigan & C. V. Castilho, pp.231–242; 16. Práticas agriculturais dos moradores do Parque Nacional do Jaú – S. H. Borges, F. Filoni & I. C. Siqueira, pp.245–253. Seção Final – Síntese e Avaliação. 17. Projeto Janelas a Biodiversidade: Avaliação e perspectivas – J. L. C. Camargo, S. H. Borges, C. C. Durigan, M. R. Pinheiro & S. Iwanaga, pp.259–273. Para comprar: ligue para (0xx92) 642 7866/4559 ou escreva para <fva@fva.org.br> informando o seu endereço completo para cálculo de taxas postais.

*Los Mamíferos de la Argentina, y la Región Austral de Sudamérica*, by Aníbal Parera, with photographs by Francisco Erize. 2002. Editorial El Ateneo, Buenos Aires. 454pp. ISBN 950-02-8536-3 (hardback), US$59.30. This superb book presents an overview of the mammal fauna of Argentina, illustrated with careful line drawings and excellent photographs. An accomplished conservationist, Parera has selected 108 native species from 13 orders to represent the full diversity of Argentine mammals. Each family, when possible, is represented by at least one species, and for those orders with exceptional diversity – notably bats and rodents – there is at least one example of each major feeding guild or ecomorph. In addition, owing to their broad interest and visual appeal, there is a particular focus on the ungulates, edentates and carnivores. The sec-



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tion on edentates in particular is quite remarkable; the photographs must be among the best ever published for edentates, especially of such rare and camera-shy creatures as the fairy armadillo and giant armadillo. Each species profiled in the book is given a thorough dossier, including body measurements and description, habitat preferences and geographic distribution – with excellent range maps – and behavior, ecology and conservation status. Parera has also assembled a formidable bibliography of research on Argentinean mammals, many citations of which are not well known in North America. The edentates profiled in the text include *Dasypus novemcinctus*, *Euphractus sexcinctus*, *Chaetophractus villosus*, *Zaedyus pichiy*, *Tolypeutes matacus*, *Priodontes maximus*, *Chlamyphorus truncatus*, *Myrmecophaga tridactyla* and *Tamandua tetradactyla*, with additional photographs of other edentates from southern South America. Aside from its value as a compilation of Argentine mammalogy, this book is a wonder to page through, and – rare among books in this field – would be just as appropriate for a child who delights in mammals as for the adult who studies them. Available from the publisher's website at <http://www.elateneo.com.>

*Los Mamíferos de la Argentina, y la Región Austral de Sudamérica*, por Aníbal Parera, con fotografías de Francisco Erize. 2002. Editorial El Ateneo, Buenos Aires. 454 pp. ISBN 950-02-8536-3 (edición de tapas duras), precio US$59.30. Este excelente libro da una vista general de los mamíferos argentinos y sus países vecinos, con minuciosos dibujos y excelentes fotografías. El conservacionista Parera eligió 108 especies autóctonas de 12 órdenes para representar la gran diversidad de mamíferos argentinos. Cada familia, si posible, está representada por al menos una especie, y de los órdenes de mayor diversidad – particularmente, murciélagos y roedores – figura por lo menos un ejemplo de los distintos ecotipos. El libro incluye un enfoque especial en los ungulados, edentados y carnívoros por el gran atractivo visual de estos taxones y el amplio interés que despiertan en el público. El capítulo sobre edentados es simplemente extraordinario; las fotografías de edentados deben ser de las mejores que ya fueron publicadas, especialmente las de especies tan raras y difíciles de fotografiar como el pichiciego (*Chlamyphorus truncatus*) y el tatú carreta (*Priodontes maximus*). Cada especie incluida en el libro está presentada mediante una extensa ficha, la cual incluye medidas corporales y una descripción de las preferencias de hábitat, distribución geográfica – incluyendo excelentes mapas de distribución – comportamiento, ecología y estado de conservación. Parera también recopiló una muy amplia bibliografía sobre investigaciones científicas realizadas sobre mamíferos argentinos; muchos trabajos incluidos en su lista son poco conocidos en América del Norte. Los edentados presentados en el texto incluyen *Dasypus novemcinctus*, *Euphractus sexcinctus*, *Chaetophractus villosus*, *Zaedyus pichiy*, *Tolypeutes matacus*, *Priodontes maximus*, *Chlamyphorus truncatus*, *Myrmecophaga tridactyla*, y *Tamandua tetradactyla*, con fotografías adicionales de otros edentados del sur de Sudamérica. Además de su gran valor como compilación sobre la mastozoología argentina, este libro es una maravilla que vale la pena hojear. Y como rareza entre los libros sobre esta temática, se lo podría recomendar tanto a un niño al que le gustan los mamíferos como a un adulto que los estudia. Disponible en el sitio de internet de la editora, en <http://www.elateneo.com>.

## Articles


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# MEETINGS

## 2004

**Congreso Nacional de Conservación de la Biodiversidad**, 16–19 noviembre de 2004, Escobar, Argentina. Organizan: Fundación Temaikèn, Fundación de Historia Natural Félix de Azara, y Departamento de Ciencias Biológicas de la Universidad CAECE. Sede: Temaikèn, Ruta Provincial 25 Km. 0,700 (1625) Escobar, Provincia de Buenos Aires, Argentina. Página web: <http://www.temaiken.com.ar>. Informes e inscripción: <fundacionhn@caece.edu.ar>. El Congreso tendrá cuatro ejes temáticos: 1) Investigación para la conservación de la biodiversidad; 2) Educación ambiental para la conservación de la biodiversidad; 3) Gestión y manejo para la conservación *in situ* de la biodiversidad, y 4) Gestión y manejo para la conservación *ex situ* de la biodiversidad. Los resúmenes deben ser enviados por correo electrónico antes del 10 de setiembre de 2004 a: <fundacionhn@caece.edu.ar>. Inscripción: Profesionales: $70, Estudiantes: $30. Los interesados en participar como asistentes o expositores deberán enviar la ficha de inscripción adjunta antes del 29 de octubre de 2004. Página web: <http://www.caece.edu.ar/fundacionhn>.

## 2005

**Biodiversity: Science and Governance: Today's Choice for Tomorrow's Life**, 24–28 January, 2005, Paris, France. Hosted by the Ministry of Research, with additional coordination by the Institut Français de la Biodiversité, the conference is part of the ongoing global effort to curb the loss of biodiversity by 2010 and ensure the long term conservation and sustainable use of biological diversity. The conference will focus on changes in biodiversity, assessment tools and methodologies; the social impact of change, particularly concerning the exploitation of and trade in renewable resources, agriculture, fisheries, forestry; and biodiversity governance in the context of the 2010 target and the Millennium Development Goals, with an emphasis on legal, economic and political aspects. For a comprehensive overview of the meeting, visit the website at <http://www.recherche.gouv.fr/biodiv2005paris/en/index.htm>.

**2005 CTFS Symposium: Forest Dynamics Research Around the Globe**, 4–5 June, 2005, STRI, Panama. Co-hosted by the Center for Tropical Forest Science and the Smithsonian Tropical Research Institute (STRI), this two-day symposium will highlight recent findings from individual Forest Dynamics Plots of the CTFS network as well as other tropical forests addressing similar topics. Presentations will address the origin and maintenance of species diversity, the comparative biology of forest communities, global change, climate change, and biomass changes, and natural forest management, reforestation and more. For more information, please contact Marla Diaz at <diazm@si.edu>.



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**19th Annual Meeting of the Society for Conservation Biology**, 15–19 July, 2005, Brasília, Brazil. The meeting will be held at the Universidade de Brasília, Brasília, Brazil, with the central theme of "Conservation Biology: Capacitation and Practice in a Globalized World." The chair of the meeting will be Miguel Marini from the Zoology Department of the Universidade de Brasília. The organizing committee will be composed of professors from the Zoology Department, members of the Austral and Neotropical America Section of SCB, and other researchers, mostly from Brazil and other Latin American countries. For inquiries, please contact: SCB 2005 Local Organizing Committee, Departamento de Zoologia, IB, Universidade de Brasília, 70910-900 Brasília, DF, Brasil, telefax: + 55 61 307-3366, E-mail: <2005@conbio.org>, website: <http://www.conservationbiology.org/2005>.

**Association of Tropical Biology and Conservation – 2005 Annual Meeting**, 23–29 July 2005, Uberlândia, Brazil. The venue will be the Uberlândia Convention Center. For more information write to the Chair of the Organizing Committee, Kleber del-Claro, Laboratório de Ecologia Comportamental e Interações, Universidade Federal de Uberlândia, Caixa Postal 593, Uberlândia 38400-902, Minas Gerais, Brazil, e-mail <delclaro@ufu.br> or <atbc2005@inbio.ufu.br>.

**IX International Mammalogical Congress**, 31 July – 5 August, 2005, Sapporo, Japan. Organizing Committee: MAMMAL2005, c/o Field Science Center, Hokkaido University, N11 W10, Sapporo 060-0811, Japan, e-mail: <MAMMAL2005@ hokkaido-ies.go.jp>. Website: <http://www.imc9.jp>.

**29th International Ethological Conference**, 20–27 August, 2005, Budapest, Hungary. The aim for this conference is to encourage interdisciplinary discussion among representatives of all areas of behavioral biology. The conference will be hosted at the Eötvös University Convention Center on the banks of the Danube. Deadline for early registration and abstract acceptance: 1 March 2005. Final deadline for abstract acceptance: 1 May, 2005. Late registration until 1 June 2005. For more information, write to: IEC2005, Department of Ethology, Eötvös University, 1117 Budapest, Hungary, or subscribe to the e-mail newsletter at <IEC2005-subscribe@yahoogroups.com>.

**Measuring Behavior 2005 – 5th International Conference on Methods and Techniques in Behavioral Research**, 30 August – 2 September, 2005, Wageningen, The Netherlands. Measuring Behavior will offer an attractive mix of presentations, demonstrations, discussions, meetings and much more (see <http://www.noldus.com/mb2005/program/index.html> for details). Proceedings of the 2002 meeting are available at <http://www.noldus.com/events/mb2002/index.html>. Deadline for proposals of Symposia and SIGs: 1 December 2004. All presentations will deal with innovative methods and techniques in behavioral research. Topics include: behavior recording in the laboratory and field; automatic behavior recognition and pattern classification; sensor technology and biotelemetry; behavior and physiology; vocalizations, speech, gestures and facial expressions; analyzing behavior and movement; new animal models and measurement methodologies; measuring human-system interaction; innovation in teaching behavior research methods. For more information, contact Prof. Dr. Louise E. M. Vet, Program Chair, Measuring Behavior 2005, Conference Secretariat, P.O. Box 268, 6700 AG Wageningen, The Netherlands, Tel: +31-317-497677, Fax: +31-317-424496, e-mail: <mb2005@noldus.nl>. Website: <http://www.noldus.com/mb2005>.

**2005 Annual Meeting of the Conservation Breeding Specialist Group**, 29 September – 1 October, 2005, Syracuse, New York, USA. Beginning with a late-afternoon ice-breaker on Wednesday, the meeting will run through Saturday, ending with an afternoon and dinner at the Rosamond Gifford Zoo. Regional network meetings will take place on Tuesday, 27 September, and a Steering Committee meeting on Wednesday, 28 September. Accommodations are at the Genesee Grande Hotel (http://www.geneseegrande.com), which



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offers a variety of rooms and rates. The deadline for registration is 1 August, 2005; for more information, email a request to <2005cbsg@cbsg.org> or visit their website at <http://www.cbsg.org>.

**60th World Association of Zoos and Aquariums Annual Conference**, 2–6 October, 2005, New York, New York, USA. The 60th WAZA Annual Conference will be hosted by the Wildlife Conservation Society and held at the Marriott Marquis hotel. The theme of the meeting will be "Wildlife Conservation: A Global Imperative for Zoos and Aquariums." Additional information will be made available on the conference website at <http://waza2005.org>.

**III Congresso Brasileiro de Mastozoologia**, 12 a 16 de outubro de 2005, realizado por a Sociedade Brasileira de Mastozoologia (SBMz) e a Universidade Federal do Espírito Santo (UFES), no SESC Praia Formosa em Aracruz, Espírito Santo. O evento reunirá pesquisadores, profissionais e estudantes com o objetivo de apresentar, analisar e discutir trabalhos científicos, descobertas e tendências no estudo dos mamíferos. O tema dessa edição é "Diversidade e Conservação de Mamíferos," que será abordado sob diversos aspectos durante o evento, que contará com a participação de especialistas ligados a instituições de ensino e pesquisa nacionais e estrangeiras, bem como outros profissionais que atuam em órgãos governamentais, na iniciativa privada e em organizações não-governamentais. Somente serão aceitas inscrições pela internet. Poderá ser realizada a inscrição online do congresso até o dia 31 de maio, e o envio dos resumos podem ser feitos até o dia 30 de Junho de 2005. Mais informações: <http://www.cbmz.com.br>.

**Counting Critters: Estimating Animal Abundance and Distance Sampling**, 17–21 October 2005, Disney's Animal Kingdom, Orlando, Florida, USA. This five-day workshop will introduce participants to the most important methods of estimating animal abundance in a rigorous but accessible way. In the first half of the workshop, we cover plot sampling, distance sampling, mark-recapture and removal methods. We explain the common key statistical concepts underlying the methods, use custom-written simulation software to understand how the methods work, and discuss which method to use when. In the second half, we focus on distance sampling in more detail. We discuss practical issues such as use of the software Distance, field methods and survey design. The workshop is aimed at anyone who needs to estimate wildlife density or abundance, and is taught by leading researchers from the Centre for Research into Ecological and Environmental Modelling at the University of St Andrews, Scotland. Registration for this workshop is now open. Since all of our previous workshops in the USA have been oversubscribed, we encourage everyone interested to register as soon as possible. For more details, please see <http://www.ruwpa.st-and.ac.uk/counting.critters/> or contact Rhona Rodger, Workshop Organizer, CREEM, University of St Andrews, The Observatory, St. Andrews, Scotland KY169LZ, tel:+44 1334 461842, fax: +44 1334 461800, e-mail:<rhona@mcs.st-and.ac.uk>.

### A Website for the ESG

The Edentate Specialist Group will soon have a website of its own, thanks to the continuing efforts of Jennifer Pervola-Fermin. Scheduled to appear in August of 2005, the ESG website will provide up-to-date information on edentates and those who study them, including news, funding opportunities, conference announcements and contact information for active researchers, as well as back issues of *Edentata* available in PDF. Please visit <www.edentate.org> to access the full spectrum of edentate information, and feel free to send any questions, comments or suggestions to Jennifer at <jlfermin@edentate.org>.



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# *Imagine*

**IMAGINE VAST FLOCKS** of migratory birds, millions of wings across the sun….

**WILDEBEEST MIGRATIONS** on the plains of Africa, reaching across the horizon…

**FLASHING SCHOOLS OF HERRING,** so dense the ocean seems alive….

**BRILLIANT MONARCH BUTTERFLIES** draping forest groves, living leaves of every autumn hue…




Available in English and Spanish

# *Imagina*

**IMAGINA GRANDES PARVADAS** de aves migratorias, millones de alas cruzando el sol…

**MIGRACIONES DE ANTÍLOPES ÑU** en las planicies Africanas, alcanzando del horizonte…

**DESTELLANTES CARDÚMENES DE** arenques, tan densos que el océano parece vivo…

**BRILLANTES MARIPOSAS MONARCA** decorando los árboles del bosque, hojas vivientes de matiz otoñal…

# *See . . .*

**SEE THE SPECTACLES** that most have never witnessed — or imagined could exist….

# *Ver . . .*

**VER LOS ESPECTÁCULOS** que la mayoría nunca han presenciado — o imaginado que puedan existir…

CONSERVATION INTERNATIONAL presents a new, full-color book which explores wildlife conservation in a completely different way: by highlighting the immense congregations of animals we call "Wildlife Spectacles."

*Wildlife Spectacles* is the fourth publication by Conservation International and Agrupacion Sierra Madre to be sponsored by CEMEX, an international cement company that has become a conservation leader in the corporate community. *Wildlife Spectacles* follows the successful three-volume set of *Megadiversity, Hotspots* and *Wilderness,* and continues their tradition of presenting critical conservation issues in an accessible and visually striking format.

The force and mystery of these exceptional gatherings — the most dramatic events in all the living world — have inspired and fascinated us throughout history. Only a few of these congregating species exist in protected areas; the great majority are geographically widespread, and at first glance their survival might seem secure. But these species, for all their numbers, may face unexpected threats to their existence when so many of them assemble at only a handful of unprotected sites.

With 36 chapters from some of the world's finest biodiversity scientists, *Wildlife Spectacles* embarks on the great challenge of identifying these species and the locations where they converge. *Wildlife Spectacles* seeks to stimulate further research into the dangers they now face — and to discover ways in which we may ensure their survival. The authors hope that this book will encourage wildlife enthusiasts around the globe to become more involved in the cause of biodiversity conservation, and to appreciate the simple, unadorned wonder of wildlife in its greatest magnificence.

CONSERVACIÓN INTERNACIONAL presenta un nuevo libro a todo color, que explora la conservación de la vida silvestre en una forma completamente diferente: resaltando las inmensas congregaciones de animales a los que llamamos "Espectáculos de Vida Silvestre".

*Espectáculos de Vida Silvestre* es la cuarta publicación de Conservación Internacional y Agrupación Sierra Madre, financiada por CEMEX, una compañía internacional de cemento que se ha convertido en un lider de la conservación dentro de la comunidad de las corporaciones. *Espectáculos de Vida Silvestre* sigue al exitoso conjunto de tres volúmenes de *Megadiversity, Hotspots* y *Wilderness,* y continúa su tradición de presentar temas críticos sobre conservación en un formato accesible y visualmente sorprendente.

La fuerza y misterio de estas agrupaciones excepcionales — los eventos más dramáticos del mundo viviente — nos han inspirado y fascinado a través de la historia. En las áreas protegidas sólo existen unas pocas de estas especies que se congregan; la gran mayoría están dispersas geográficamente y, a primera vista, su sobrevivencia puede parecer segura. Sin embargo, estas especies pueden enfrentar amenazas a su existencia agrupándose tantos individuos en tan sólo un puñado de sitios no protegidos.

Con 36 capítulos de algunos de los científicos más reconocidos en el mundo que trabajan sobre biodiversidad, *Espectáculos de Vida Silvestre* se embarca en el reto de identificar a estas especies y los lugares en donde éstas convergen. *Espectáculos de Vida Silvestre* busca estimular investigación futura sobre los peligros que estas especies enfrentan actualmente — y descubrir las formas en las que podamos asegurar su sobrevivencia. Los autores esperan que este libro estimule a los entusiastas de la vida silvestre alrededor del mundo para involucrarse en la causa de la conservación de la biodiversidad, y apreciar la maravilla simple de la vida silvestre en su máximo esplendor. ❯❯❯

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# *Wildlife Spectacles*
# Mail and Fax Order Form

*Wildlife Spectacles* by Russell A. Mittermeier, Patricio Robles Gil, Cristina G. Mittermeier, Thomas Brooks, Michael Hoffmann, William R. Konstant, Gustavo A. B. da Fonseca, Roderic B. Mast. Preface by Peter A. Seligmann. Foreword by William G. Conway. ISBN: 968-6397-72-8. Hardcover.

Price: $50.00 (includes UPS Ground shipping within the continental United States). Orders requiring faster service than UPS Ground will be charged $50.00 plus all shipping costs.

Overnight shipping, wholesale orders, shipping outside of the continental United States, and/or Spanish versions, please call Jill Lucena at (202) 912-1208.

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# NOTES TO CONTRIBUTORS

**Scope**
*Edentata*, the newsletter of the Edentate Specialist Group, aims to provide a basis for conservation information relating to edentates. We welcome texts on any aspect of edentate conservation, including articles, thesis abstracts, news items, recent events, recent publications, and the like.

**Submission**
Please send all submissions in English, Portuguese or Spanish to: John Aguiar, Center for Applied Biodiversity Science, Conservation International, 1919 M St. NW, Suite 600, Washington, DC 20036, USA, Tel: (202) 912-1000, Fax: (202) 912-0772, e-mail: <j.aguiar@conservation.org>.

**Contributions**
Manuscripts may be in English, Portuguese or Spanish, and should be double-spaced and accompanied by the text and any tables and/or figures on diskette for PC compatible text-editors (MS-Word, WordPerfect, Excel, and Access), and/or emailed to <j.aguiar@conservation.org>. Hard copies should be supplied for all figures (illustrations and maps) and tables. The full name and address of each contributing author should be included. Please avoid abbreviations and acronyms without the name in full. Authors whose first language is not English should please have their texts *carefully reviewed* by a native English speaker.

**Articles**
A broad range of topics is welcomed and encouraged, including but not limited to: Taxonomy, Systematics, Genetics (when relevant to systematics), Biogeography, Ecology, Conservation, and Behavior. Texts should not exceed 20 pages in length (double-spaced and including the references). For longer articles please include an abstract in English and an optional one in Portuguese or Spanish. Please limit the number of tables and figures to six, excepting cases where fundamental to the text.

**Figures and Maps**
Articles may include small high-quality black-and-white photographs, figures, maps, and tables. Image resolution should be 300 dpi or higher in any of the following electronic file formats: .jpg, .tif, .eps, .pdf, .psd, or .ai. We also accept original artwork, photos, or slides to scan and return to the owner. Please contact Kim Meek at (202) 912-1379 or via e-mail at <k.meek@conservation.org> if you have any questions regarding file formats or images.

**News Items**
Please send any information on projects, field sites, courses, recent publications, awards, events, etc.

**References**
Examples of house style may be found throughout this newsletter. Please refer to these examples when citing references:

*Journal article.* Carter, T. and Encarnação, C. D. 1983. Characteristics and use of burrows by four species of armadillos in Brazil. *J. Mammal.* 64(1): 47-53.

*Chapter in book.* Wetzel, R. M. 1985a. The identification and distribution of recent Xenarthra (Edentata). In: *The Evolution and Ecology of Armadillos, Sloths, and Vermilinguas,* G. G. Montgomery (ed.), pp.23-46. Smithsonian Institution Press, Washington, DC.

*Book*. Emmons, L. and Feer, F. 1990. *Neotropical Rainforest Mammals: A Field Guide*. The University of Chicago Press, Chicago.

*Thesis/Dissertation.* Superina, M. 2000. Biologie und Haltung von Gürteltieren (Dasypodidae). Doctoral thesis, Institut Für Zoo-, Heim- und Wildtiere, Universität Zürich, Zürich, Switzerland.

*Report*. Muckenhirn, N. A., Mortensen, B. K., Vessey, S., Frazer, C. E. O. and Singh, B. 1975. Report on a primate survey in Guyana. Unpublished report, Pan American Health Organization, Washington, DC.

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Edentata
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## The 2004 Edentate Species Assessment Workshop

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*Louise H. Emmons, Roly Peña Flores, Sixto Angulo Alpirre and Matthew J. Swarner*

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