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PHILIP HERSHKOVITZ: A REMEMBRANCE

by Russell A. Mittermeier

My first personal encounter with Philip Hershkovitz came more han 20 years ago when I was a graduate student at Harvard. I had written a term paper on marmoset taxonomy based on some skull measurements of several species and a multivariate statistical analysis of the relationships among them. Like many term papers, it was largely inconclusive, but like many graduate students I had more confidence than good sense and decided to publish it. Phil's response was swift and merciless. He tore it to shreds, and suggested as a title for his response, "The Untaxonomy of Brazilian Marmosets". I was temporarily devastated, but, as was so often the case, Phil was right. He understood Neotropical mammals, and especially Neotropical primates, better than anyone else and he had little patience for work that did not meet his high standards.

When Phil died on February 15, 1997, it was a great loss for all of us working on Neotropical primates and it created a gap that is unlikely ever to be filled. He was a field mammalogist of the old school, with tireless energy and an understanding of the creatures on which he worked that only comes from decades of hands-on work in nature and in the museum. The many sophisticated biochemical techniques and the endless array of computer programs increasingly available today are extremely useful in systematics, but they can never replace the deep, almost instinctual understanding of the relationships between animals that comes from working intimately with them for so many years. Phil had this kind of knowledge, and it enabled him to sort through the nearly two centuries of mistakes and confusion in Neotropical primate taxonomy and create a framework upon which all of us today base our own work. He was able to take the marmosets and tamarins, for example, and turn their taxonomy from a chaotic mess into a clear and understable system that greatly clarified the relationships among these animals. His classic work, *Living New World Monkeys (Platyrrhini, Vol. 1)*, is one of the truly great publications in the history of mammalogy, and many of us have built careers around updating and expanding upon it. Without the enormous amount of work done by Phil to provide this solid foundation, we would likely *still be* unclear as to what we were dealing with in terms of species and subspecies of the Callitrichidae and the other Neotropical genera on which he worked.

Lest anyone doubt the significance of Phil's work for Neotropical primatology, he or she need only look at the current situation with Old World monkeys, where much confusion still exists as to the numbers of species and subspecies. Without the benefit of a Hershkovitz to sort out the 200 years of names and descriptions, Old World primatology is simply not as advanced as its Neotropical counterpart. This is a barrier not just to scientific research, but also to conservation, since it is very difficult to put effective conservation plans into effect when one is not certain what organisms one is dealing with.

Unfortunately, Phil never completed his overview of the Neotropical monkeys, and never did publish volume 2 of *Living New World Monkeys,* although he did revise six other genera (*Aotus, Saimri, Callicebus, Pithecia, Chiropotes* and *Cacajao*) in addition to the five covered in the callitrichid volume. For some reason, he shifted attention to non-primate mammals in the last few years of his life, a gain for those working on rodents and marsupials but a major loss for those of us working on monkeys. He never completed the five prehensile-tailed genera, *Cebus, Alouatta, Ateles, Lagothrix* and *Brachyteles,* and predictably, with the exception of *Brachyteles*, which has only two taxa, these remain the most poorly understood Neotropical genera in taxonomic terms.

Despite his reputation for being ornery and combative and the fact that he was basically a loner (very few of his papers are co-authored), he was very responsive to anyone interested in his work. He would reply immediately to correspondence, and if you were fortunate enough to visit his office in the Field Museum of Natural History in Chicago, he would pull out as many specimens as you might want to see and give you hours of detailed explanation on the taxonomy of whatever genus or species might be of interest. He was as charming and delightful as he was ornery, and I for one always left a meeting with him with that unusual, uplifting feeling that one gets on those very rare occasions when one has the chance to be in the presence of a truly great man.

Phil's enormous career output included some 160 scientific papers and 100 non-technical publications spanning 50 years, and, in my opinion, he must be considered the greatest Neotropical mammalogist of our century. All of us working on Neotropical primates owe him a great deal, and there is no doubt that he will be sorely missed.

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PHILIP HERSHKOVITZ: O ÚLTIMO QUE CONHECEU TODA NOSSA DIVERSIDADE DE MAMÍFEROS

by Alfredo Langguth

Philip Hershkovitz nasceu em Pittsburgh, Pennsylvania, EUA em 1909. Casou em 1946 com Anne Marie Pierrette Hershkovitz a quem conheceu na França durante a Segunda Guerra Mundial, enquanto servia na "Office of Strategic Services" (1943-46). Deixou três filhos, Francine, Michael Dode e Mark Alan.

Como cientista Hershkovitz tinha uma mente aberta. Percebeu logo que a informação de todas as áreas da biologia podia ser sintetizada na sistemática e que, sem uma boa base de nomenclatura zoológica, era difícil navegar no mar da biodiversidade. Dominava a morfologia e estava num meio fértil para isto, por ter Chicago uma escola tradicional em morfologia e, próximo dele, no Field Museum, estar uma das maiores autoridades da Anatomia

Cover photograph by Adelmar F. Coimbra-Filho: *Callithrix geoffroyi* gouging, Centro de Primatologia do Rio de Janeiro (CPRJ).

Comparada dos mamíferos, Dwight D. Davis (ver sua obra prima sobre o Urso Panda em *Fieldiana, Zool. Mem.* 3, 1964).

Naturalmente, a biogeografia era uma parte substancial do seu trabalho. À medida que a informação foi sendo publicada pelos citogeneticistas passou a considerar também a cariologia. Todavia, apesar de sempre ter fornecido medidas dos espécimes estudados, ignorou a estatística e chegou tarde demais para embarcar na cladística e na biologia molecular. Hershkovitz teve uma compreensão profunda dos processos evolutivos em mamíferos e hipóteses evolutivas permearam seus trabalhos. Como taxonomista foi inicialmente um "lumper" que acreditava que a diversidade descrita na época não tinha fundamento factual. Esta posição, comentou-me uma vez, foi uma reação aos "splitters" da geração anterior, principalmente Oldfield Thomas, o pesquisador que mais espécies descreveu da Neotrópica. Mais tarde, reconheceu que o mar da diversidade Neotropical era bem maior sob a superfície do que se imaginava e transformou-se num "splitter". Mesmo tendo sido inicialmente um "lumper" chegou a descrever e publicar 75 novas espécies e subespécies.

Hershkovitz tinha uma habilidade particular para a comunicação escrita. Suas publicações caracterizam-se por um estilo limpo, enxuto, fácil de compreender e muito preciso. Além disso, seus trabalhos contêm relativamente poucos erros e um grande acúmulo de informação. Tinha um conhecimento enciclopédico da literatura sobre a mastofauna Neotropical sendo o seu "Catalog of Living Whales" um exemplo disto, tanto para as obras antigas quanto para as mais recentes. Uma das principais contribuições de Hershkovitz foi sua série de revisões taxonômicas de vários grupos de roedores e primatas. Começou em 1941 com o gênero *Reithrodontomys* seguindo *Nectomys* (1944), *Holochilus* (1955), *Oecomys* (1960), os filotinos (1962), os scapteromyinos (1966), e a série de revisões de vários gêneros de platirrinos que inclui sua obra prima "Living New World Monkeys" (1133pp. publicada em 1977), uma monografia de todo o conhecimento disponível sobre os Callitrichidae, sua revisão taxonômica e um tratamento abrangente da morfologia dos primatas em geral. A quantidade de conhecimento contida neste volume é deslumbrante.

É na década de 60 que começam a cristalizar suas principais teorias. Sua mente era muito criativa, enriquecendo com valiosas hipóteses e teorias o campo da evolução dos mamíferos neotropicais. Vale a pena mencionar suas teorias sobre a evolução do molar nos Sigmodontinae, a do metacromismo, a da história biogeográfica dos roedores cricetídeos, da evolução da dentição nos marsupiais.

Hershkovitz não foi contaminado pelo vírus da cladística, mas o interesse pela filogenia esteve subjacente na maioria dos seus trabalhos, expressando-se em árvores filogenéticas intuitivas e em propostas de classificação baseadas em hipóteses filogenéticas. Foi talvez o interesse pela história das linhagens filogenéticas que o levou a se envolver com a paleontologia. Também para isto, ele esteve no lugar certo pois, no Field Museum trabalhava Bryan Patterson, seu interlocutor, paleontologista que fez importantes contribuições à história dos mamíferos Neotropicais.

Para navegar no mar da biodiversidade Neotropical era fundamental um conhecimento profundo da nomenclatura e, portanto, das obras dos primeiros naturalistas (ver síntese de 1987). Este conhecimento, adquirido principalmente na primeira metade de sua carreira cientifica, permitiu-lhe, por exemplo, limpar o emaranhado da nomenclatura dos platirrinos, o que mereceu o agradecimento e admiração dos primatologistas neotropicais.

Em mim, esta admiração vem de longa data. Quando adolescente e iniciante no campo da mastozoologia na Universidade de Montevidéu, escutei falar muito do grande especialista nos mamíferos de América do Sul, que acabara de identificar espécies raras de roedores da fauna Uruguaia. A partir daquela data até hoje, Hershkovitz tornou-se para mim um referencial de conhecimento, de eficiência, de criatividade e, em certo sentido, de autoridade e poder científico. Quarenta anos depois, ele com 83 anos, ao partilharmos uma expedição a uma das montanhas mais altas do Brasil, Caparaó, existia em mim o mesmo sentimento para com o Mestre. Talvez seja o titânico esforço individual realizado por Hershkovitz (dos aprox. 160 trabalhos científicos por ele publicados, somente três foram em colaboração), que provoca em nós uma admiração especial pela sua pessoa.

É claro que uma obra dessa magnitude não se faz sem ajuda. Valerie G. Connor foi até 1974 sua secretária e assistente técnico. A sua esposa Anne Marie o acompanhou na segunda expedição à Colômbia e foi muito importante na preparação da monografia sobre os platirrinos. Mais recentemente, Barbara Brown colaborou com ele como assistente técnico, no trabalho de campo no Brasil, e deu nos últimos anos, com a devida paciência, valioso apoio a nível pessoal.

Hershkovitz tinha um temperamento áspero, mas de bom coração. No fundo parece que se divertia em ser rude, usando isso como uma espécie de máscara. Era uma pessoa hospitaleira, disposta a alojar na sua casa os visitantes do Sul e brindar-lhes com uma comida deliciosa. Quem teve a sorte de se hospedar no seu apartamento em Chicago ou de acompanhá-lo no trabalho de campo, pôde admirar suas habilidades como cozinheiro. Os medalhões de filé mignon fritados na manteiga e devidamente temperados, os seus molhos saborosos, eram mais um motivo de admiração. É que Hershkovitz não era uma personalidade monofacética, e apesar de sua dedicação intensiva ao trabalho mastozoológico, era uma pessoa muito culta, interessada tanto nas artes plásticas quanto na antropologia. Particular destaque merece seu interesse pela música clássica. Uma coisa pouco conhecida era a sua habilidade como violinista. Cedo na vida teve que escolher

entre ser um músico profissional ou um biólogo. Tendo optado pelo último desistiu até mesmo de ser um interprete ocasional. No entanto sua sensibilidade pela música perdurou até o fim. Possuía uma cadeira permanente na Ópera de Chicago, onde compareceu geralmente acompanhado de sua filha Francine.

Hershkovitz graduou-se em Zoologia pela Universidade de Pittsburgh e concluiu o mestrado na Universidade de Michigan (1940), onde começou o doutorado que interrompeu para conduzir trabalho de campo na Colômbia. Ao seu regresso, uma oferta de emprego como curador no Departamento de Zoologia do Field Museum, cargo que ambicionava e além disso resolvia seus problemas econômicos, fez com que perdesse o interesse no doutorado. Ele não foi formalmente um professor universitário, e apenas uma vez orientou na pós-graduação. Todavia, estava disposto a ajudar as pessoas que o procuravam, partilhando com paixão seus conhecimentos com quem o visitava. Foi assim comigo na primeira vez que nos encontramos, no Field Museum, e foi assim com todos os estagiários do Museu Nacional e seus colaboradores de campo durante suas visitas ao Brasil. Seu entusiasmo era tal que não dava chance de falar ao seu interlocutor. Hershkovitz trabalhava duro, seu expediente no Museu de Chicago era de 9 horas e o trabalho continuava em casa. Possuía uma energia inesgotável e uma força de vontade exemplar.

Hershkovitz teve uma enorme experiência de campo. No Equador (1933-37) coletou mamíferos para o Museu de Zoologia da Universidade de Michigan, na Colômbia (1941-43) para o United States National Museum, e em 1948-52 para o Field Museum e a partir de 1986, em várias oportunidades, no Brasil. Ele era excelente coletor, sabia muito bem onde e como procurar os mamíferos e seu catálogo de campo chegou a mais de 10.000 registros. Todavia, o seu interesse estava mais na diversidade e na anatomia do que no comportamento e na ecologia, sendo poucas as observações pessoais sobre a biologia dos animais por ele capturados que publicou nos seus trabalhos.

A primeira visita de Hershkovitz ao Brasil, de meu conhecimento, data de 1976. De 26 de Julho a 7 de agosto examinou calitriquideos em nossos museus e voltou ao Brasil em 1982 para trabalhar nas coleções do Museu Nacional. Em 1984, regressou para examinar novamente material nas coleções, visitar o INPA em Manaus tentando, sem sucesso, participar do inventário de fauna na área da UHE de Tucuruí, Rio Tocantins. Ali, no mês de março, encontrei com ele pela segunda vez. Não foi um encontro amigável: eu, preocupado em manter no Brasil o material coletado na área do reservatório e ele obviamente, querendo levar para Chicago tanto quanto possível do material que eventualmente coletasse. Este foi sempre um interesse fundamental na sua carreira e um indicador de sucesso do seu trabalho de campo. Naturalmente, como cada um defendesse os interesses de seu país e de sua instituição, não houve espaço para uma maior aproximação, trocando apenas palavras ríspidas.

Em 1986, Hershkovitz trabalhou no campo na região de Brasília, onde contou com a colaboração inestimável do seu amigo Scott M. Lindbergh. Também o ajudaram no campo Miguel Marini e Christopher Tribe, este último já conhecido de suas visitas ao Museu Nacional. Desta vez, trabalhou, entre outros locais, na reserva do IBGE e no Parque Nacional de Brasília. Foi principalmente neste Parque que coletou material importantíssimo: várias espécies não descritas de sigmodontinos e algumas formas de transição de grande importância evolutiva. Mais uma vez o seu faro o tinha levado a um lugar de grande importância para entender a mastofauna do Brasil. Todavia, sua tentativa de localizar o desaparecido *Juscelinomys candango* foi em vão. Continuando esta linha de busca das origens e evolução da mastofauna interessou-se pelo trabalho na Mata Atlântica e, nos dois anos seguintes, visitou o PETAR em São Paulo trabalhando novamente nas coleções.

A partir daí, preocupou-se pela Mata Atlântica, a qual pensava ser um importante centro de origem de mamíferos. Ele queria coletar nas serras que, como Caparaó permitiam obter amostras a diferentes altitudes e em diferentes habitats dando subsídios para entender a história da mastofauna deste bioma. Na época Professor da UFRJ e responsável pela coleção de mamíferos do Museu Nacional, fui procurado pelo seu dedicado amigo Scott Lindbergh e minha colega Cibele Bonvicino para participar da expedição ao Parque Nacional de Caparaó como representante do Brasil. Em 1992 esta expedição cristalizou-se e Hershkovitz conseguiu realizar seu principal trabalho de campo na Mata Atlântica. Esta expedição conjunta do Museu Nacional com o Field Museum só se concretizou graças ao estímulo e habilidade de articulação de Scott Lindbergh. Ela foi financiada em parte pelo Barbara E. Brown Fund for Mammal Research do Field Museum (que também financiou outras viagens de Hershkovitz ao Brasil), pelo IBAMA e pela UFRJ. Resolvido o problema dos espécimes (80% para o Museu Nacional e 20% para o Museu de Chicago) dedicamo-nos ao trabalho de campo com paixão. Os resultados foram inesperados: várias espécies ainda não descritas, que Hershkovitz se propôs a estudar, abundantes mamíferos nas armadilhas e informações sobre as preferências de habitat e a distribuição altitudinal de pequenos mamíferos que elucidaram vários aspectos da história da fauna de Mata Atlântica. Todavia, para mim, o mais interessante foi o convívio com Philip. Já o havia encontrado duas vezes. A primeira em 1972, quando o visitei no Field Museum, foi essencialmente profissional. A segunda em Tucuruí foi pouco agradável. Agora, em Caparaó, eu teria durante 42 dias a oportunidade longamente esperada de ter um contato mais estreito com Philip. O Hershkovitz que eu descobri naquelas serras era uma pessoa diferente, mas a força de sua personalidade manteve acesa a chama de minha admiração por ele. Era um homem velho, (seu 83° aniversário foi comemorado no campo), fisicamente deteriorado mas com uma força de vontade e de espírito capaz de superar qualquer dificuldade. Ele acompanhou a

expedição até o acampamento mais alto. Embora tenha precisado se deslocar em lombo de burro enquanto as outras pessoas iam a pé, ele chegou lá. Nesta viagem o apoio de Barbara Brown foi mais uma vez muito importante. O que mais me impressionou neste convívio foi sua mente jovem, fértil e criativa. Hipóteses e explicações fluíam de sua cabeça sem parar, à medida que as descobertas se acumulavam. Com o desaparecimento de Philip Hershkovitz (1909-1997) encerra-se um período na mastozoologia Neotropical que se caracterizou pela tentativa individual de conhecer globalmente a diversidade dos mamíferos baseando-se na morfologia, na biogeografia e com sólida base de nomenclatura zoológica.

Três pesquisadores de museu destacam-se neste período. Oldfield Thomas foi o mais prolífico (1090 trabalhos publicados, 2900 novos gêneros, espécies ou subespécies descritos), mas Ángel Cabrera e Philip Hershkovitz realizaram um trabalho mais profundo, mais abrangente e com ênfase no aspecto evolutivo. Cabrera morreu em 1960 e, nesse momento, a mastozoologia estava começando a incorporar conhecimentos de outros campos emergentes da Biologia, particularmente a sistemática filogenética, a citogenética, a biologia molecular e também a ecologia, ficando cada vez mais difícil o conhecimento individual de toda a biodiversidade de mamíferos de uma região. Hershkovitz foi, assim, o último dos grandes pesquisadores que conseguiu, individualmente, ter uma visão global da diversidade de nossos mamíferos.

Philip Hershkovitz foi, portanto, uma pessoa admirável que nos deixou um exemplo a ser seguido, pelas novas gerações, de força de vontade, perseverança, dedicação à ciência, de mente pronta a procurar explicações, e simultaneamente, de sensibilidade para a cultura e outros aspectos da natureza humana.

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Articles

Recent Observations of Nicaraguan Primates and a Preliminary Conservation Assessment

Published information on the status of primate populations in Nicaragua is scarce. No recent accounts were cited in the Mesoamerican Primate Action Plan (Rodríguez-Luna *et al.*, 1996a). Nicaragua is one of three Central American countries (along with El Salvador and Honduras) for which no primate field studies were located in an extensive literature search (Rodríguez-Luna *et al.*, 1996b). Based on general distributions, Nicaragua's primate fauna is expected to include one subspecies of howler monkey (*Alouatta palliata palliata*), one or two subspecies of capuchin (*Cebus capucinus limitaneus* and possibly *C. c. imitator*), and two subspecies of spider monkey (*Ateles geoffroyi geoffroyi*, *A. g. frontatus*) (Konstant *et al.*, 1985; Wolfheim, 1983). One of these taxa (*A. g. frontatus*) is categorized as Vulnerable and the rest as Lower Risk according to the Mace-Lande classification (Rodríguez-Luna *et al.*, 1996b; Rylands *et al.*, 1995). Because recent published information on any of these primates in Nicaragua is lacking, we report sightings of nonhuman primates and information collected from residents during our recent travels (CC, RB, RM and SM: November-December, 1996; MM: November 1996-May 1997). The local people referred to the howlers as "congo" or "mono congo," the *Cebus* as "mono carablanca" (white-faced monkey), and the spider monkey as "mono colorado" (red monkey) (Querol *et al.*, 1996).

The information below is keyed to numbers in Fig. 1; numbers (N#) in parentheses refer to protected areas listed in the Mesoamerican Primates Action Plan (Rodríguez-Luna *et al.*, 1996a).

Area #1, Selva Negra, is located at 12°60'N, 85°55'W, about 15 km north of Matagalpa. The owners of the Selva Negra Hotel and its cloud forest preserve descended from German immigrants who founded the adjacent Hammonia Coffee Plantation in 1889. Nature observation is actively promoted and trail maps are provided to tourists. The owners have protected the forest for years and are trying to acquire more of the connected forest. From what we saw from the top of the ridge (the present boundary of the privately protected property), the cloud forest beyond is patchily distributed. The mantled howler (*A. palliata*) population at Selva Negra appears moderately dense. We saw three different groups and heard at least several more based on the directions of their howling bouts. One group seen in a huge fig tree in the forest comprised at least 20 individuals including four adult males (one perhaps subadult) and two infants, one less than one month old. A second group of at least 4-5 was seen on a steep slope near the top of the ridge. A third group of at least 13, including

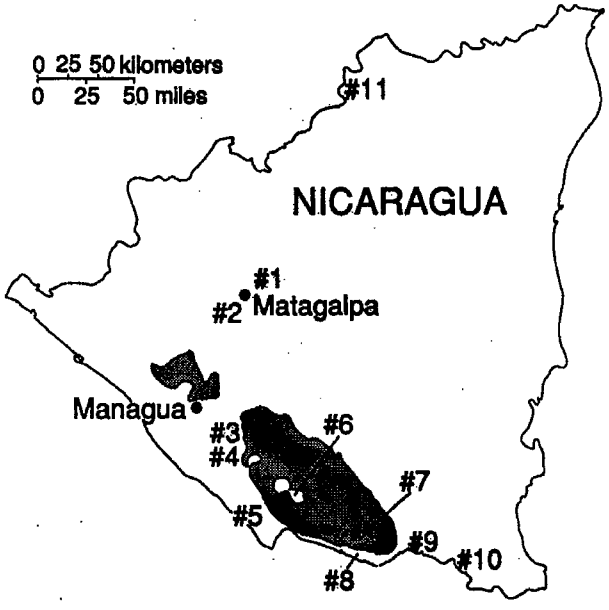

Fig 1. Localities visited during expeditions from November - December 1996 (CC , RB, RM and SM) and November 1996 - May 1997 (MM).

two adult males, one subadult male, and two infants, were in trees next to an agricultural clearing. The howlers were dark brownish-black with very long golden hairs on their sides.

The owner of the coffee plantation and hotel (E. Kühl) said that although many howlers had died in the yellow fever epidemic of the 1950s the population on his property has been recovering. He also said that a neighbor's forest does not have howlers (we suspected that their absence was due to hunting). A popular travel guide mentioned the presence of howlers here but also erroneously reported that spider monkeys are in the Selva Negra forest (Keller *et al.*, 1994). According to the owners no wild spider monkeys have been seen there. Rather, the spider monkeys are caged near the dining room of the hotel. These spider monkeys were pets given to the owners' mother while the owners were in the U.S. during the revolution (E. and M. Kühl, pers. comm.). The spider monkeys appeared to represent at least two species or subspecies (some very dark and others reddish), and their origin was unknown. The region is within the distribution of *Ateles geoffroyi frontatus* or *A. g. geoffroyi* (see Konstant *et al.*, 1985).

Area #2, forest patches near Matagalpa along the highway toward Managua. Some people said there were howlers there, but others argued for their absence. Our assessment, as viewed from a bus, was that the habitat could support howlers but they would be vulnerable to hunting.

Area #3, Laguna de Apoyo, near Masaya (N2). About 11 howlers were seen in a very large tree and then two others in a closer, smaller tree were seen from a trail that passed through a farm and headed up the drainage below the town of Catarina and above the lake. Another group was heard howling from the same trail. A local woman explained that residents see the howlers often and sometimes encounter a "white-faced monkey," but she could not identify it as either a capuchin or a spider monkey from photos shown to her. Based on published distribution maps, Masaya forests could potentially include *Ateles geoffroyi* but no *Cebus* species (Konstant *et al.*, 1985; Rodríguez-Luna *et al.*, 1996a; Wolfheim, 1983).

Area #4, Mt. Mombacho Volcano Reserve (N27), near Granada. Some local people said there were howlers on Mt. Mombacho. An ecologist working for AID also reported the presence of howlers (Byron Walsh, pers. comm.). In May 1997, howlers were heard by MM on Mt. Mombacho.

Area #5, San Juan del Sur/Rivas. Howlers were reported by the bus attendant to be in the forest between San Juan del Sur and Rivas "in the morning." The report seemed credible, as the forest closer to the sea seemed to be suitable howler habitat. However, we did not hear any howling on our two morning walks at San Juan del Sur in December 1996. In April 1997, MM saw two howler monkeys in a tree over the dirt road between a beach south of San Juan del Sur and the main road to San Juan del Sur. Howlers were also reported to be in an area called Velen de Rivas, probably in the general vicinity of Area #5 (Byron Walsh, pers. comm.). Closer to Rivas, forest is scarce and agricultural and grazing land predominate.

Area #6, Isla de Ometepe, Ometepe Island, Lake Nicaragua. This 8-shaped island is formed by two impressive volcanoes joined into a single island by lava flows. Its wildlife, including howler and white-faced monkeys, are mentioned in a travel guide (Keller *et al.*, 1994) and showcased in a small museum in Altagracia which displayed photos of *Alouatta palliata*. The museum staff said that there were only two monkey species on the island. Although we never saw any, we presume that the "white-faced" monkey refers to *Cebus capucinus* although published maps would place Ometepe within the distribution of *Ateles geoffroyi* and outside of the distribution of *Cebus*.

An active conservation program exists on the island, including signs encouraging the local people to preserve trees. Although there is considerable farming and grazing on the lowlands, native forest strips are preserved to the lake shore where "peñas", old lava flows, create a jumbled rocky substrate too difficult to clear. Extensive forests grow up the slopes of the volcanoes, except where obliterated by landslides and lava flows. On the Volcán Concepción side of Ometepe, we heard howlers in a peña area near Pul, a few kilometers west of Altagracia, as well as up the volcano slopes on the outskirts of Altagracia. A local farmer said that white-faced monkeys and occasionally howlers raid corn but not bananas. On another day we saw one howler in a tree by the road between La Unión and Urbaite. In the isthmus of Ometepe Island, at Santo Domingo, we saw in a peña area on two successive days a troop of at least six howlers, including one adult male and a 4-6 month-old infant. White-faced monkeys also were reported to occur in the Santo Domingo peña.

On the Volcán Maderas side of Ometepe Island we visited Hacienda Magdalena, near Balgüe. Hiking in forest on slopes of the volcano, we saw two different howler groups and heard others; one group included an infant. Our guide at Hacienda Magdalena said that howler monkeys are never hunted but occasionally white-faced monkey mothers are in order to obtain infants for pets. The white-faced monkeys are found higher up the slopes of Maderas and tend to run away from people, he reported. On another day, we drove along the dirt road skirting the south-east coast of Volcán Maderas. From the road we saw seven different howler groups in approximately 25 km, between Punta El Congo (Howler Point) and San Pedro, where the road was washed out by landslides from the volcano. In most cases, a farm or small village was within sight of the howlers, and the monkeys appeared to be very habituated. The two largest of the seven groups were 10 and 11 individuals (more could have been present). Infants in the groups were of various ages: less than one month, several months of age, and around one year old. Most groups were near the lake shore but one was about 200 m from the lake. One group was in same tree as a huge boa constrictor that was coiled up, apparently asleep.

Area #7, Solentiname Archipelago, southeastern Lake Nicaragua (included in N32a). Several howlers were released onto a small island between Mancarrón and San Fernando islands. The island is more than half forested and includes at least one house and a small farm. The howlers reportedly came from the southern shore of Lake Nicaragua, probably near Area #8 (Juan Antonio Ricci, pers. comm.). Several were released approximately 25 years ago, and the current population is estimated to be around 30 howlers. From a boat we saw a troop of at least 12 individuals including three infants in the part of the island with natural forest, located only a few 100 m from Mancarrón. About 100 m away from them was a solitary adult male. All of these howlers looked very healthy. We heard them howling from Mancarrón on several occasions during our stay. No monkeys are apparently native to the Solentiname Archipelago, yet these islands are included in the maps of the Mesoamerican Primate Action Plan as protected areas for *Alouatta p. palliata* and *Ateles g. geoffroyi* (Rodríguez-Luna *et al.*, 1996a, pp.58 and 63).

Area #8, Papaturro wildlife area (included in N32a). The Papaturro River flows from Costa Rica. The river's mouth is marshy, with flooded forest and palms. A narrow strip of riparian forest flanks the river. Farther upstream, there is terra firma forest, farms, and recent deforestation. We saw and heard howlers all along the approximately 10 km of river traveled by small motor boat. We saw at least four different troops and a solitary howler (probably an adult female), and we heard at least five additional troops howling. Some were in the riparian trees by the marsh and others in terra firma forest. In Papaturro there are also supposed to be *Cebus* and spider monkeys. *Cebus* are said to run away when they see people.

Area #9, Río San Juan, San Carlos to El Castillo de la Concepción (some areas included in N32a and b). We saw one group of howlers on the south bank and saw three groups, and heard a fourth, on the north bank. One of the boat attendants reported that he regularly saw *Cebus* in the mornings as they came to the river to drink. At Sábalo, on the north shore, new development including logging seems to be occurring in the area. There is some deforestation in the vicinity of El Castillo, which is on the south bank and is only reachable by boat, and the north bank across from El Castillo is almost completely deforested. On the return trip several days later, we saw howlers on the north bank, several kilometers west of Sábalo. Farther west, howlers were seen in a thin strip of trees separating the river from marsh vegetation along the south bank. Close to San Carlos, howlers were seen on the north bank. Two more howler groups were seen along the river from San Carlos to Los Chiles, Costa Rica.

Area #10, Refugio Bartola/Reserva Indio-Maíz (included in N32 b or c). The Bartola River joins the Río San Juan a few kilometers east of El Castillo. Here, Costa Rica is on the south bank of the San Juan. The Río Bartola forms the eastern boundary of Refugio Bartola, one of several research areas established by Güises Montaña Experimental (Querol *et al.*, 1996). The Bartola River is the western boundary of the large Indio-Maíz reserve (*c.* 300,000 ha), which extends north of the Río San Juan to its mouth in the Caribbean. This lowland humid forest reserve is said to be relatively undisturbed and is very remote. We traveled most of the marked trails in Refugio Bartola. We glimpsed one howler in the Refugio and heard them several times, both in the Refugio, and across the rivers in Costa Rica and in the Indio-Maíz reserve. We saw four to seven different spider monkeys on three occasions during three days at Bartola. As we arrived by boat, we saw an adult, a juvenile and possibly a third spider monkey in a tree next to the Río San Juan, less than 200 m west of the Río Bartola. While hiking in the forest, we saw an adult female and very small infant spider monkey about 50 m from the Río Bartola; two hours later we saw an adult and medium-to-large juvenile about 300 m from the location of the female and infant, and about 350 m from the river. These spider monkeys were distinctly reddish on the back and on the top of the tail; the ends of the limbs were dark. The local name, "mono colorado," means "red monkey." The face of a pet spider monkey at the Refugio closely resembled a published photograph of *Ateles geoffroyi* (Rowe, 1996, p.114, left column). *Cebus* are also present, although we did not see them. *Alouatta palliata*, *Ateles geoffroyi*, and *Cebus capucinus* were "seen daily at close range" by students in a field ecology course held at Bartola in April and May, 1994 (Cody, 1994) and were listed among the mammals of Río San Juan (Querol *et al.*, 1996).

Area #11, Bosawas Biosphere Reserve (N31). This immense reserve, more than 1,000,000 ha, is located along the north-central border of Nicaragua. The area is remote and almost exclusively accessed by river travel. Four or five individual howler monkeys were seen by MM in a tree over the Río Coco, on the Honduran side, several hours by boat upriver from San Carlos. Howlers were also heard along the Coco upriver a short distance from Raiti. Bosawas should also contain one or two subspecies of capuchin (*Cebus capucinus limitaneus* and *C. c. imitator*) (Rodríguez-Luna *et al.*, 1996a). It is unclear from published distribution maps whether *Ateles* is expected to exist in Bosawas (Konstant *et al.*, 1985). The indigenous Miskitos hunt monkeys within the Reserve for food.

We can offer only a preliminary assessment of the conservation status of Nicaraguan primates as relatively few areas were visited and we were unable to collect detailed information on the degree of protection provided. Mantled howlers were seen in a variety of habitat types, including those in close proximity to human settlements. The presence of this species in so many places suggests that it is of "Lower Risk" status in Nicaragua. In comparison, mantled howlers may be extinct in nearby El Salvador (Crockett, in press). The various ages of howler infants seen indicate year-round births. The lack of strongly seasonal breeding appears typical of howler species, although howlers tend to give birth less often in the wet season (Crockett and Rudran, 1987; Fedigan and Rose, 1995). We can make no

definitive statement about the status of *Cebus capucinus* in Nicaragua, although it definitely exists in one or two very large reserves, relatively protected by their remoteness (Río San Juan-Bartola-Indio-Maíz area and probably Bosawas). Because we never actually saw *Cebus capucinus*, we could not verify its presence in several areas where "white-faced" monkeys were reported, although its presence seems likely in the southwestern part of Nicaragua, west of published distributions. Spider monkeys also occur in at least one large reserve (Bartola-Indio-Maíz area). The identification of the subspecies seen in Bartola was not verified. It is supposed to be *A. g. geoffroyi*, but is redder than a published illustration (Konstant *et al.*, 1985).

Because Nicaragua is the largest nation in Central America, it has an important role in the conservation of the region's flora and fauna. The recent election of a new president, Arnoldo Alemán, is likely to be accompanied by new economic development. One rumored development is a major rail line to transport goods from the Pacific to the Caribbean, as an alternative to the Panama Canal. Such a massive project could have a major impact on the relatively large forested areas remaining in eastern Nicaragua. It is important to determine the status of potential areas for nature protection before critical areas are lost, and to conduct more systematic censuses of the primates and other fauna. For the moment, Nicaragua still has sufficient numbers of wild primates to be observed by tourists and primatologists on vacation.

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Two Howler Species in Southern Piauí, Brazil?

In a review of the distribution of the red-handed howler monkey, *Alouatta belzebul,* in northeastern Brazil, Coimbra-Filho *et al.* (1995) brought to light the overlooked record made by Neiva and Penna (1916, p. 106), who observed groups of black howler monkeys with yellowish hands at Angico, left margin of the Rio Parahim, municipality of Parnaguá, state of Piauí, and also reported collecting one individual (p. 202) whose whereabouts are unknown. This record is the southernmost for the species in northeastern Brazil, and apparently the first for Piauí, although Ihering (1914) suspected its presence in the forested northern region.

From the description made by Neiva and Penna (1916) there can be little doubt as to the identity of the howlers they observed, although a specimen would be desirable. Parnaguá lies in a transition area between the Cerrado and Caatinga domains, although still dominated by

semideciduous species. Taller forests are to be found along the rivers, otherwise the vegetation is mostly "Agreste" (RADAMBRASIL, 1989). This habitat is quite unlike the mangrove, "brejo" (montane) and semideciduous forests where *Alouatta belzebul* is known to occur in northeastern Brazil (Langguth *et al.*, 1987).

Besides *Alouatta belzebul,* another howler species is known from Piauí, although in a different ecological context. Chame *et al.* (1985) recorded a relictual population of *Alouatta caraya* at the Serra da Capivara National Park (around 08°26'50"S - 42°45'51"W), a 1,200 km² reserve in a Caatinga-dominated region but not far from the transitional belt with the Cerrado, about 120 km to the west (Emperaire, 1989). There is no perennial water course in the park, the whole region being subject to catastrophic periodical droughts.

On 21 July 1986, Chame observed a group of four *Alouatta caraya* (one adult male and three females) resting in a narrow ravine between the canyons Esperança and Pedra Furada, in the southern sector of the park. This was the only sighting made during several trips to the park between 1984 and 1994.

During 1991, while conducting extensive fieldwork in the park, Olmos found that "guaribas" (a common name for howler monkeys throughout northeastern Brazil) were well known to local people, although considered scarce. The local howlers were always described as being either completely black or straw-colored ("blond"), some hunters identifying the black animals as the males. Niéde Guidon (pers. comm.), who has worked in the area of the park since the early 70's recalls that it was common to hear the howler monkeys calling during the morning 20 years ago, but thinks the species is now very scarce. Calls were never recorded by us until 1996, despite spending thousands of field-hours in areas known to be used by the monkeys.

Howler monkeys have been recorded from the forested canyons that cut the rocky cliffs that make up the southern and western borders of Serra da Capivara. These canyons, deeply cut on the sandstone plateau ("chapada") of the Serra da Capivara, are forested islands, with trees up to 30 m high, surrounded by the dry thorn scrub of the Caatinga (see Emperaire 1989 for a description of the local vegetation). In contrast to the xeric Caatinga, these forests keep their leaves even during the dry season, and water accumulates in natural depressions in the canyon walls ("ca[illegible]es"), providing food and water during the droughts. During several trips to the park between 1984 and 1994, Chame (1992) found howler feces with many seeds of *Cordia rufescens* ("grão de galo" - Boraginaceae) and lots of black hair. The faeces also had eggs of *Trypanoxiurus* sp., a common parasitic Oxiuridae (Nematoda) found in the intestines of *Cebus* and *Alouatta* (Chame *et al.*, 1992). Olmos found many howler feces in a canyon (Baixão do Meio) near Pedra Furada, comprised mostly of the half-digested tough leaves of *Tabebuia impetiginosa* ("pau d'arco" - Bignoniaceae), a common tree in the broader canyons, and with many seeds of *Pouteria* sp. ("maçãzeira" - Sapotaceae), a canyon-restricted species.

In 1995, Niéde Guidon (pers. comm.) observed a group of three individuals at Serra Branca, a broad valley with forest patches at the base of sandstone cliffs and in canyons cut into them, the first record from this area since a fire burnt the entire valley in 1985. Chame found howler faeces and tracks during several visits to the park in 1996, attributable to a minimum of four different groups in 12 different localities scattered along the north-west, north-east, south and central regions of the park.. Some localities are at least 20 km apart and/or isolated by terrain unlikely to be traversable by the monkeys. Footprints show the howlers will move on the ground for about 1 km in the canyons, sometimes crossing narrow rocky outcrops ("chapadas") separating one canyon from the other. *Pouteria* seeds, plus *Hymenaea* spp. seeds (jatobá - Caesalpinoideae) and the remains of insects (ants, crickets and grasshoppers) were also present in feces attributed to howlers found by Chame in November 1996. These also had *Trypanoxiurus* eggs.

The finding of more howler signs in 1996 compared to previous years, and the recent record of vocalizations by park workers and guides, suggests the population may be increasing from very low levels. Two factors may explain

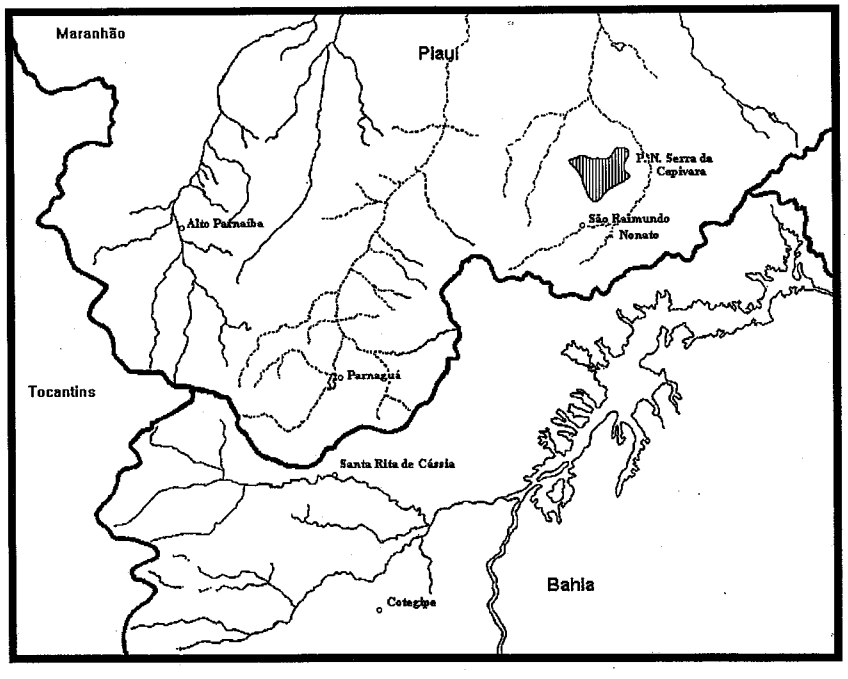

Figure 1. Southern Piauí and adjacent regions of Bahia, Maranhão and Tocantins states, showing localities mentioned in the text and major water courses.

that. Annual rainfall in 1995 was 737 mm and 554 mm during 1996, above average, and extended for a longer period compared to the previous 10 years (for example, 250 mm in 1994), restoring water supplies and allowing a greater availability of food. The greening of the Caatinga may also have allowed monkeys to cross the "chapadas" more easily. Second, the Fundação Museu do Homem Americano (FUMDHAM), which has been working on behalf of the park since 1989, has successfully implemented education, health and alternative activities' programs aimed at the populations living around the park, resulting in a lessening of the human pressures on the park's natural resources. FUMDHAM has also hired wardens, providing increased vigilance in the area, and has purchased land bordering the park to relieve pressure on its habitats and fauna. Mango trees in the areas purchased now have their fruit safely eaten by the monkeys, an unprobable occurrence before.

Although hunting and habitat destruction very probably played a role in limiting the local howler population, the fact that the monkeys are restricted to the forested canyons, the surrounding Caatinga being an unsuitable habitat during the frequent droughts, implies that the population has always been small and may have been in natural decline. A similar situation has been found with the local population of pacas, *Agouti paca*, also restricted to the canyons and currently very small. A paca skull from the park, now in the Museu Nacional do Rio de Janeiro (MNRJ) shows dental abnormalities that may indicate inbreeding depression.

Two other primates occur at the Serra da Capivara. A very variable population of capuchin monkeys *Cebus apella* (individuals ranging from chocolate-brown to pale yellow) live in the canyons and along the rocky walls that limit the chapada. They descend from the almost vertical walls to feed on the trees below. Common marmosets, *Callithrix jacchus* are more widespread, but seem commonest where there are groves of angico trees, *Anadenanthera macrocarpa*, which provide gum for them as well as the local people.

Considering the proximity of the Serra da Capivara to the extensive Cerrado belt of western Piauí, the presence of black howlers is unsurprising, although this might well be a historic range extension resulting from the widespread changes in the predominant vegetation of the region through human activites (see Coimbra-Filho and Câmara, 1996). Further research in this region, that harbors some potentially interesting areas such as the Uruçuí-Una Ecological Station and the Chapada das Mangabeiras Environmental Protection Area, a region with lushier forest and several perennial rivers, would be worthwhile.

Alouatta caraya has been reported from at least two localities in northwestern Bahia, close to the border with Piauí and to the Parnaguá area: Santa Rita de Cássia (present-day Ibipetuna, 11°50'S 44°52'W) and Cotegipe (11°50'S 44°12'W; Hirsch *et al.*, 1991; Gregorin, 1996). Like Parnaguá, both are in a transitional area, with arboreal Caatinga growing on the tops of the hills and along the flatter, broader valleys, while taller Cerradão-like forest occurs on the hillsides and in narrower valleys and canyons, and semideciduous forest on the limestone outcrops. Palm groves and river edge forest grow along the perennial rivers (RADAMBRASIL, 1989; pers. obs.). Considering the similarity of habitats and proximity between southern Piauí and northwestern Bahia, a contact zone between *Alouatta caraya* and *A. belzebul*, if the latter has not become locally extinct, is probably located somewhere in this general area, with greater chances in the forested patches of the Gurguéia valley, where the Parahim drains, and along the headwaters of Parnaíba river at the Chapada das Mangabeiras, where *Alouatta caraya* has also been recorded at Alto Parnaíba, southern Maranhão (09°06'S 45°58' W; Gregorin, 1995) probably also extending into Piauí.

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Capuchin Monkeys in The Caatinga: Tool Use and Food Habits During Drought

In the interior of the state of Paraíba, about 300 km eastwards from João Pessoa and about 10 km north of the small town of Desterro de Malta, there is a small mountain range inhabited by a few groups of *Cebus apella*. The region is part of the Caatinga biome. We visited this place in November 1983, in the advanced dry season. That year was particularly dry. We had been formerly invited by the Brazilian Forestry Development Institute (IBDF), to check reports that capuchin monkeys were starving because of the strong drought depriving them of their food resources. We learnt later that only one old animal, with heavily-worn teeth, had been found dead, and that people of the vicinity were feeding the animals with boiled or dry corn and bananas. After a reconnaissance of the area, we concluded that the animals were solving the problem of drought in several ways and that the inhabitants of the neighborhood were probably projecting their own necessities and hard life on the wild monkeys.

Local people reported that lactating infants had been seen three months earlier, and that although they were very shy they had entered one of the isolated houses in their range on which occasion an infant had been captured. They were reported to feed on very common lizards, on the seeds of maniçoba (*Manihot* sp.), to suck the juice of crushed coconuts of the catolé palm (*Syagrus oleracea*), and also to chew the juicy macambiras (*Encholirium spectabilis*).

We walked up the mountain range to the area were the capuchins lived. The vegetation was leafless with a general gray appearance. From time to time, green trees drew our attention (pau-pedra, pitombeira = *Tallisia* sp., oiticica = *Licania rigida*, feijão bravo = *Capparis* sp. and espinheiro = *Acacia* sp.). After a while we discovered several thickets of macambira where the plants had been

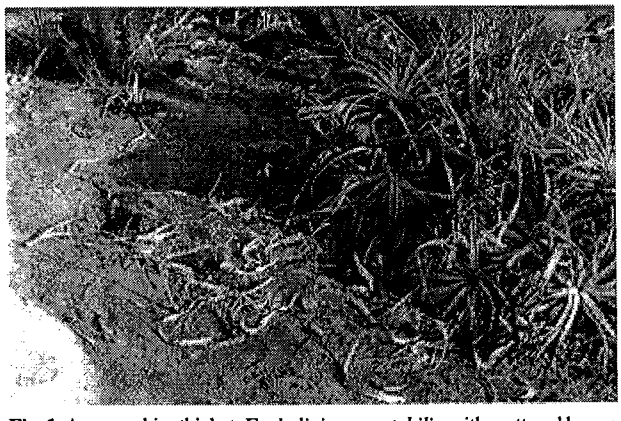

Fig. 1. A macambira thicket, *Encholinium spectabilis*, with scattered leaves chewed by *Cebus apella*.

Fig. 2. The rock used as a mortar, with *Syagrus* nuts beside it.

pulled out of the ground and the leaves chewed at their white bases, where they are more tender and juicy. This had been done in a disorderly fashion, as would be expected of a capuchin (see Fig. 1).

A little further on we stopped at a large flat, bare rock ("lagedo") where several crushed catolé coconuts were spread around on the ground. Close to them there was a round, about one kg, heavy pebble that on closer examination showed an area were the surface was rough as if it had been recently stricken against a rock. At 10:00 am. we heard stones falling four times, and on several occasions the noise of stones knocking. A short time later we found a group of monkeys that received us by shaking branches. The group was formed of an adult of light pelage, two adults of dark pelage, two young and an adult female with an infant on her back. We have no doubt that the capuchins were using a rock as a mortar, and a stone (pestle) to hit the palm nuts placed on it (see Fig. 2).

The case of the Desterro de Malta capuchins shows that the species is able to survive even under very hard conditions, due to the plasticity of their diet and their rich behavioral repertoire. Nut-cracking behavior by pounding has been observed in captivity several times, but very rarely in the wild. Izawa and Mizuno (1977) described *Astrocaryum* palm nut-cracking behavior by capuchin monkeys in Colombia, but in this case by striking the fruit against a bamboo stalk. *Cebus albifrons* and *C. olivaceus* likewise pound hard fruits such as brazilnut pyxidia (*Bertholetia excelsa*, Lecythidaceae), *Phenakospermum* sp. (Musaceae), and *Duroia aquatica* (Rubiaceae), and smash palm nuts against branches, although not as efficiently as *C. apella* (M. G. M. van Roosmalen, in Rylands, 1987). None of these cases involved, however, the manipulation of a tool as such, although Struhsaker and Leland (1977) observed a tufted capuchin bashing a palm nut held in its hand with another, rather than on a branch or bamboo stalk. Visalberghi (1990) provides an important review of tool use in this genus. Visalberghi (1987) and Anderson (1990) described experiments in captivity where *Cebus apella* used stones as tools for nut-cracking. As pointed out by the first author, the chances for arboreal monkeys of manipulating stones and finding horizontal surfaces on which to pound them are scarce. Desterro de Malta, however, offered the appropriate scenario, and the predic-

tion of Visalberghi (1987) that field observations of capuchin monkeys in the adequate environment will show tool-use for nut-cracking has here been confirmed for the first time.

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Common Woolly Monkeys (*Lagothrix lagotricha*) Feeding on *Chrysophyllum colombianum* (Sapotaceae) in Southern Ecuador

On the 5th December 1990, whilst at the end of a pre-cut trail running through the upper-tropical forest (elevation: 1100 m) approximately 3 km south of the Bombuscara Visitor Centre, Podocarpus National Park (04° 08'S 78° 58' W), Colin Taylor and I encountered a troop of six woolly monkeys. The monkeys were foraging in the canopy (25-30m tall). The group separated, but three individuals, including one juvenile remained in the tall tree that they were eating from. They were screaming and clearly disturbed by our presence and the adults threw fruit they were eating at us. The monkeys had accurate and strong throws, forcing us to dodge the flying fruit. We observed them through binoculars, at a distance of 40 m for five minutes before they moved off. The fruit, about the size of a small peach, and leaves from the tree were collected. Professor Terry Pennington of the Royal Botanic Gardens, Kew, UK, kindly identified species as *Chrysophyllum colombianum* (Aubreville), a Sapotaceae (*v.* Gentry 1993). Fruits from the family Sapotaceae are common monkey foods (Pennington, in litt. 1991) and there are 43 species in the genus *Chrysophyllum* (*v.* Gentry 1993). *Chrysophyllum colombianum* was previously known to occur from Costa Rica to Colombia, so with the help of the woolly monkeys we have extended its range by approximately 1500 km (Pennington, in litt. 1991). The true status of the woolly monkey, known locally as Chrongo, in Podocarpus National Park is unknown due to a lack of surveys, but they are considered rare as the park is in the foothills of the Andes, the extreme western edge of their range. However, they were not present further east in the Rio Nangaritza valley, Cordillera del Condor (04° 20'S, 78° 40'W), which is adjacent to the park, during a brief survey in 1994 (Balchin and Toyne, in press). Indeed, no primates were encountered, presumably due to pressures from hunting by the local Shuar Indians. Elsewhere in the Cordillera del Condor they have been encountered further north at Comainas (*c.* 1700 m) in Peru (Emmons and Pacheco, 1996).

I thank the Ministerio de Agricultura in Quito and Loja for permission to work in the Podocarpus National Park and for the licence to collect plant material. I also thank Prof. Pennington at Kew and Colin Taylor for their help. This note is an output of the Imperial College of Science, Technology and Medicine (University of London) Parrots in Peril expeditions (1990, 1992 and 1994).

E. P. Toyne, World Wide Fund for Nature WWF-UK, Panda House, Catteshall Lane, Godalming GU7 1XR, UK.

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Gentry, A. H. 1993. *A Field Guide to The Families and Genera of Woody Plants of Northwest South America (Colombia, Ecuador, Peru) with Supplementary Notes on Herbaceous Taxa.* Conservation International, Washington, D.C.

A New Locality For *Brachyteles Arachnoides* And The Urgency Of Finding New Directions For Muriqui Conservation

The muriqui, *Brachyteles arachnoides*, is an endangered Brazilian Atlantic forest endemic (Strier, 1992a, 1992b), surviving in highly fragmented forests, mostly in the states of São Paulo and Minas Gerais. A number of new localities have been reported in the last two years (Antonietto *et al.*, 1994; Martuscelli *et al.*, 1994; Oliveira, *et al,* 1996; Fontes *et al*, 1996), but for the majority the groups comprise only a few individuals, and some of them are thought to be already extinct (Martuscelli *et al.*, 1994).

On January 20, 1996, during our first survey of the Fazenda

Escorregosa in the region of the Sertão do Poruba, three dead muriquis were found with poachers; one adult female, one subadult male, and another of unidentified sex. The region is of difficult access, reaching altitudes of approximately 800 m. No muriqui or other primate species were ever seen in the lowlands and valley bottom forests of Sertão do Poruba, barely 3 km in a straight line from the mountains where the monkeys were killed, despite several years of work there.

Information on the animals was very difficult to obtain, as the poachers knew that hunting muriquis was illegal. They eventually told us, however, that they are very difficult to find, but once located "it is possible to kill the entire group because they are sluggish and very slow to escape. When you shoot one you have enough time to shoot another". They also reported that they successfully hunt muriquis at least once a year. They killed four individuals in 1995, and in the previous year they had caught seven at once.

This is of course a sad but expected story. Cases such as this are much more common than we think, and the reasons are to be expected. Hunting in this region does not occur because the local people are starving, and is related more to social than to survival reasons. After getting acquainted with the Poruba residents, I realized that they place great value on hunting a single individual of a "prohibited" and large animal when compared to other more common species such as wood quails, tinamous (*Cripturellus*), agoutis or paca, much easier to find and said to taste better. Hunting a large animal such as the muriqui, which is "protected" to boot, is a question of prestige amongst the local communities. Due to this, convincing them not to hunt muriquis is very difficult, being as it is a form of social affirmation. It would seem to me that education programs would not change this in the short term, and protection of the low numbers of muriquis will require strong coercive measures, such as an effective fiscalization in the area. This situation is in contrast with that in the vicinity of Tefé in Amazonia, where hunting is first of all a question of survival, and social affirmation merely a secondary consequence.

Muriquis occur at low densities in all known localities, even in the protected areas referred to below (Pinto *et al.*, 1994). As stated by Mendes (1994), new directions are urgently required for muriqui conservation, with emphasis on identifying the obstacles and limiting factors to the growth of the surviving populations so that practical and effective measures can be taken. I list below some suggestions.

Protection of native areas and translocation

There are three protected areas where research and conservation efforts have been concentrated: The Fazenda Intervales and the Carlos Botelho State Park in São Paulo, and the Caratinga Biological Station, Minas Gerais. Other smaller populations are known from protected areas such as the Parque Estadual do Ibitipoca, the Parque Estadual do Rio Doce, and the Mata do Sossego Biological Station

Fig. 1. Hunter with a muriqui at the Fazenda Escorregosa, Sertão do Poruba, state of São Paulo. January 1996.

in Minas Gerais, as well as on private land that has been proposed for conservation, such as São Sebastião do Ribeirão Grande, Pindamonhangaba, São Paulo, where a management plan has been prepared (see Oliveira, 1996). Further protected areas are needed for this species.

However, it is fortunate that muriquis already occur in a number of reserves, and the key to future action lies in their consolidation and active management, with translocation being an important option for the future. The populations of the nominate subspecies in Carlos Botelho and Intervales are large enough for a long-term survival program. São Francisco Xavier is an area where efforts could be intensified to create a new protected area between the Serra do Mar and the Serra da Mantiqueira, which would also serve as an adequate site for translocation of small, isolated and threatened populations elsewhere. Populations of the subspecies *hypoxanthus* are small and isolated. The largest protected areas are the Rio Doce State Park in Minas Gerais, and the Augusto Ruschi Biological Reserve in Espírito Santo, but densities in these sites are very low, indicating that they too could benefit from translocating groups from other areas (for example, the threatened population in the Fazenda Esmeralda, Rio Casca, confined to 47 ha).

Captive Management

Programs involving translocation to protected areas or for increasing the captive population should consider the following: a) the size and composition of the groups involved (Mendes 1994); b) the size and status of the population; c) if there are poachers in the area; d) the benefits in demographic and genetic terms and e) the options for the creation of new protected areas, as stated above. It is evident that some muriqui populations are so small that waiting three or more years to decide on management options will not be possible.

Translocation to zoos or primate centers is rarely considered. However, today the maintenance and reproduction of muriqui in captivity is not the problem it was (Valle *et al.*, 1983; Coimbra-Filho *et al.*, 1994). They are being kept successfully at the Rio de Janeiro Primate Center (FEEMA/CPRJ), the São Paulo Zoo, and in a private collection in Paraná. CPRJ is, however, the only governmental institution to be successful in breeding them, and relatively little research has been carried out on their husbandry and care in captivity. Careful consideration should be given to the convenience or otherwise of supplementing conservation efforts in the wild with an organized captive breeding program.

Environmental Education

Some protected areas maintain environmental programs which focus on the muriqui, and they have had excellent results. Programs of this sort should be extended to other areas, notably Poruba, with one of the main goals being the establishment of a tradition in which it becomes socially unacceptable to hunt muriquis for whatever reason. With the considerable amount of data available from research efforts in the wild (see, for example, Nishimura *et al.*, 1988; Strier, 1992a, 1992b), the growing numbers in captivity, and the relatively high proportion of localities where muriquis are merely suspected or reported in extremely low numbers, the creation of a database for the species would facilitate the organization of strategies for muriqui conservation.

Whatever the measures to be taken, there is considerable urgency, because, at least in the Poruba region, it is quite probable that there will soon be no muriquis at all to serve even as status symbols.

Acknowledgments: I thank Fábio Olmos for his comments and the Brazil Science Council (CNPq) for its support, also Anthony B. Rylands for the revision of this note.

Paulo Auricchio, Departamento de Zoologia, Instituto de Biociências, Universidade de São Paulo, Rua do Matão, Travessa 14 #321, 05508-900 São Paulo, São Paulo, Brazil.

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News

Alouatta Vulval and Scrotal Sizes

Dr. Clara B. Jones would like to receive descriptions of relative vulval sizes (in particular the presence or absence of female genital hypertrophy) and relative scrotal size for *Alouatta* species. She is particularly interested in reports on *A. fusca* and *A. belzebul*, but all responses will be appreciated and acknowledged. Thank you for any attention. Please write to: Clara B. Jones, Ph.D., 1406 East Front Street, Plainfield, New Jersey 07062, USA, e-mail: cebus@intac.com.

Ecology and Behavior of the Brown Howling Monkey, *Alouatta fusca*

In July 1997, Denise de Alemar Gaspar completed her Master's Dissertation in Zoology at the Universidade Estadual Paulista (Unesp), at Rio Claro, state of São Paulo, Brazil. She studied the ecology and behavior of a group of eight brown howlers, *Alouatta fusca clamitans* (Geoffroy, 1812), between April 1995 and March 1996, in the Ribeirão Cachoeira forest (234 ha), near Campinas, São Paulo. The research was supervised by Prof. Nivar Gobbi (Unesp) and Dr. Eleonore Z. F. Setz (Unicamp), and was financed by the Brazil Science Council (CNPq), the Brazilian Higher Education Authority (Capes) and the Campinas State University Teaching and Research Fund (*Fundo de Amparo a Ensino e Pesquisa da Unicamp - Faep*). Scan sampling was used to examine the activity patterns and diet on each sample day, with scans of three minutes at ten-minute intervals, and the "all occurrences" method was used to sample behavior. Seed germination tests were conducted on samples of feces to determine the role of the howlers as seed dispersers. The home range was estimated by mapping daily travel paths. The phenology of 200 trees was followed in order to determine seasonal variation in food resources. Twenty-four complete days of observation were analyzed, yielding 228 hours of animal-observer contact, 1754 scans and 1894 feeding records. The study group was composed of an adult male, a subadult male, two juvenile males, three adult females and one juvenile female. On average, the group rested for 63% of the day, and feeding, travelling and other behav-

iors (social and maintenance behavior) occupied 16%, 16% and 3%, respectively. The group's diet was composed of leaves (74%), flowers (9%), fruits (12%) and undetermined items (6%). Although not significant, flowers and fruits were consumed more in the wet season. Mature leaves were the most consumed item all year round, except at the beginning of spring, when new leaves were preferred. Leaves of trees were consumed more than those of lianas. *Lutzelburgia auriculata* (Fabaceae) was the most important food species (15%). For seeds recovered in feces, germination rates were low for *Syagrus romanzoffiana* (22%) and *Celtis tala* (24%), and greater for *Rauvolfia sellowii* (56%) and *Eugenia cerasiflora* (67%). The ingestion of young leaves, flowers and fruits was positively correlated to the availability of these items in the forest, although the correlations were not significant for flowers and fruits. The group's home range (8.5 ha) was larger in the wet season (7.1 ha) than in dry season (6.3 ha), and 15% overlapped with those of others groups. Grooming behavior was more frequently performed by adult females to males; play occurred between juveniles and the subadult; howling was performed by the adult male and other group members; body rubbing was more frequently performed by adults and water drinking only by adults. The results agree with other studies on *Alouatta fusca*, with some variations related to features of the study area.

Denise de Alemar Gaspar, Rua Emerson José Moreira 1818, Campinas 13070-040, São Paulo, Brazil.

Reference

Gaspar, D. A. 1997. Ecologia e Comportamento do Bugio Ruivo (*Alouatta fusca*, Geoffroy, 1812, Primates: Cebidae), em Fragmento de Mata de Campinas, SP. Unpublished Master's thesis, Instituto de Biociências, Universidade Estadual Paulista "Julio de Mesquita Filho", Rio Claro, São Paulo.

1996 European Studbook for the Emperor Tamarin

The 3rd edition, 1996, of the studbook for the European captive population of the emperor tamarin, *Saguinus imperator*, has been published by the Lisbon Zoological Garden. The keeper is Eric Bairrão Ruivo, assisted by Maria Manuela Nunes, Maria Manuela Vieira and Orlando Silva. The population is comprised almost entirely of the subspecies *S. i. subgrisescens*. Just one female *S. i. imperator* remains in the Frankfurt Zoo, and the studbook for this subspecies will be discontinued. On the 31 December 1996, *S. i. subgrisescens* numbered 114 individuals with an evenly balanced sex ratio (55.52.7), maintained in 32 institutions. This is based on 48 founders, 36 wild born and 12 animals of unknown origin. Four founders are still alive. Seven institutions still maintain 15 hybrids (7.7.1), but they will all be transferred to Peaugres, where management procedures will be carried out to stop them breeding (three single births in 1996). The studbook includes information on the structure, activities and organisation of the breeding programme, a table of the status and development of the population in 1996, minutes of the 3rd Emperor Tamarin EEP Meeting in Doué-la-Fontaine in 1997, and reports on two research projects at Lisbon Zoo, on reproductive physiology by Dr. Rui Marques Leitão; and social behaviour involving the Lisbon Technical University and graduate projects under the supervision Catarina Casanova. The studbook includes a full historical list of both subspecies and the hybrids, and listings of births, deaths and transfers, and live animals by location in 1996, management recommendations for participating institutions, and an analysis of the studbook in terms of captive born and wild born contributions of each sex, population censuses dating back to 1964, and demographic analyses, including the evolution of the *S. i. subgrisescens* population, the age/sex distribution, mortality (total and neonatal), and analyses of fecundity, inbreeding coefficients, founder representation and mean kinship. Finally there is a list of addresses of 38 participating institutions, and seven candidate institutions for the programme.

Problems with the programme include the fact that reproductive success is still low; 62% of the animals born in 1996 did not survive. There is a lack of females, and transfers are proving difficult to organise due to bureaucracy. Husbandry guidelines resulting from questionnaires will hopefully be published by the end of the year.

Eric Bairrão Ruivo, Co-ordinator of the *Saguinus imperator* EEP, Lisbon Zoological Garden, Estrada de Benfica 158-160, 1500 Lisboa, Portugal.

Reference

Ruivo, E. B., Nunes, M. M., Vieira, M. M. and Silva, O. 1966. *European Studbook for the Emperor Tamarin* Saguinus imperator *Goeldi 1907*. Number 3. Lisbon Zoological Garden, Lisbon. 99pp. Data through 31 December 1996.

1996 Golden Lion Tamarin Studbook

The 1996 International studbook for the golden lion tamarin, *Leontopithecus rosalia*, has been published by the studbook keeper for species, Jonathan D. Ballou, with the help of Abigail Sherr. The number of living animals in captivity on 31 December 1996 was 476, and there has been no growth since 1994. The number of institutions participating in the breeding program is 137. The population is based on 45 founders, three of which were still alive at the time. The management of this population is exemplary. It exceeded 500 animals in the early 1990s, but has been reduced and maintained successfully around the target population size of 480 since 1992, with 96.5% of the expected heterozygosity retained. The studbook includes a full listing of the participating institutions, special management notes with a report on lion tamarin diseases (in English and Portuguese), and a table of the breeding histories and 1996 collection changes for institutions own-

ing and holding golden lion tamarins. The studbook proper includes listings of the living animals by institution, the births in 1996, the transactions in 1996, and the living animals sorted by studbook number.

Jonathan D. Ballou and **Abigail Sherr**, Department of Zoological Research, National Zoological Park, Smithsonian Institution, Washington, D. C. 20008, USA.

Reference

Ballou, J. D. and Sherr, A. 1997. *1996 International Studbook Golden Lion Tamarin,* Leontopithecus rosalia. September 1997. National Zoological Park, Smithsonian Institution, Washington D. C. Data as of 31 December 1996.

Studbook for European Black Howlers

Natalie Quinton, of the Bristol Zoological Gardens, UK, has taken over from Darren Webster as European Studbook keeper for the captive population of *Alouatta caraya*. The third studbook for the species was published in June 1997. A total of 34 black howlers (16.15.3) were registered in six zoos (Apeldoorn, The Netherlands; Banham, Howletts, Bristol, and Twycross in the UK; and Kassel in Germany) on 31 December 1996. The studbook includes a full list of living animals, a historical listing (from 1969), the colonies of the participating institutions, births, deaths, and transfers, and age pyramids for the total populations and each sex.

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Reference

Quinton, N. 1997. *European Studbook for Black Howlers (*Alouatta caraya*).* Number 3. Bristol Zoo Gardens, Bristol. UK. 16pp. Data current through 31 December 1996.

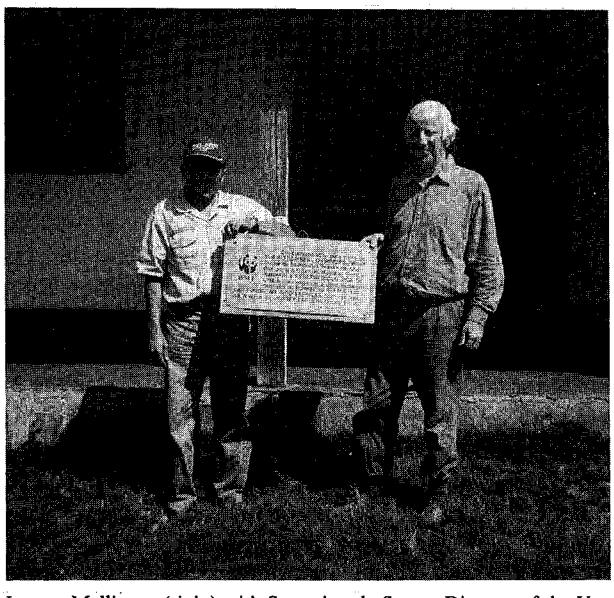
Jeremy Mallinson - Recipient of The 1997 ASP Senior Biology and Conservation Award

It is a great pleasure to report that PSG member Jeremy J. C. Mallinson, Director of the Jersey Wildlife Preservation Trust (JWPT), Jersey, was most deservedly awarded the American Society of Primatologists (ASP) top recognition - the 1997 Senior Biology and Conservation Award.

His work at JWPT, maintaining the world-leading role in conservation and captive breeding begun by Gerald Durrell, has been so important in the captive breeding and conservation of numerous threatened primate species (including *Daubentonia*, lemurs, *Macaca nigra*, orang-utans, gorillas, and callitrichids). The JWPT international training courses and summer schools have provided training for numerous primatologists now active in primate conservation in their home countries.

Particularly concerning New World primates, Jeremy Mallinson has played a most significant role in the establishment and resulting activities of the International Management Committees for the four species of lion tamarins. He is founding Co-chairman for the Committees for the golden-headed lion tamarin, *Leontopithecus chrysomelas*, and the black-faced lion tamarin, *L. caissara*, and also serves on those for the other two species, *rosalia* and *chrysopygus*. Most remarkable has been his work in favor of the conservation of *L. chrysomelas*. On request from the Brazilian Government (demonstrating the prestige he maintains in that country) he set up an International Recovery and Management Committee, which resulted in the return of the title of some 50-60 animals contrabanded in 1983/1984 to Belgium, France, Japan, and Hong-Kong, and which subsequently formed the beginning of an international captive management programme and studbook for all captive populations. The captive breeding programme has been very successful, now numbering more than 600 animals. In 1990, Jeremy took an active part in the organization of a *Leontopithecus* PVA Workshop, and one result of this was the formal recognition of the lion tamarin committees by the Brazilian Institute for Environment (Ibama), and the expansion of their mandate to include their management in the wild. He was a key player in raising funds for and organizing the purchase (on two occasions) of forests to expand the Una Biological Reserve, southern Bahia, the only protected area for *L. chrysomelas*.

Due to his remarkable abilities to act as intermediary, Jeremy Mallinson has on numerous other occasions played a most important role in promoting conservation action for the lion tamarins, especially on behalf of the Brazilian Government. He was the moving force, with Dr. Devra Kleiman of the National Zoological Park, Washington, D. C., behind the creation of the "Lion Tamarins of Brazil Fund" established by the International Management Com-



Jeremy Mallinson (right) with Saturnino de Sousa, Director of the Una Biological Reserve, holding a plaque commemorating the purchase and subsquent donation to Ibama of a tract of forest providing a corridor between the eastern and western portions of the reserve.

mittees in 1991, and which has already raised significant amounts of money for lion tamarin conservation programme in the wild from institutions maintaining the species in captivity. He is an Honorary Director of Wildlife Preservation Trust International, which has financed numerous primate conservation projects round the world, including notably Brazil on behalf of the lion tamarins.

Jeremy Mallinson has also for many years been particularly active in the conservation and captive breeding of gorillas. In 1974, during an expedition to the Zaire River, he studied eastern lowland gorillas in the Kahuzi-Biega National Park. He was subsequently a founder member, in 1976, of the Anthropoid Ape Advisory Panel of Great Britain and Ireland, and chaired the first meeting of zoos holding gorillas in the region. He has served on the Board of Trustees of the Dian Fossey Gorilla Fund-Europe and on the Fund's USA/Europe International Coordinating Committee. In Dr. Eric Edroma's (Director of Uganda Wildlife Authority) official invitation to Jeremy to participate in the December 1997 Kampala PHVA Workshop for Mountain Gorillas, he stated: "Your participation will be vital as a political conservation networker, as you will be able to aid in the dilution of territorialism between the NGOs."

The above gives only a small glimpse of some aspects of the work and dedication of Jeremy Mallinson for the conservation of primates, most particularly with regard to the role of zoos and the establishment of purposeful links between programmes *in situ* and *ex-situ*. In an interview by the *Jersey Evening Post*, Jeremy was reported to have said "You could liken my role to that of a bartender making survival cocktails!", and attributed the award to JWPT - "We have done a lot of work both in South America and with gorillas in Zaire, and I could not be more delighted on behalf of the Trust. A lot of my time is taken up with the politics of conservation, trying to break down barriers and acting as a catalyst to get different people together, but all I am doing is implementing the conservation mission of the JWPT". He received the sum of US$500 along with the award, which he donated to support the co-ordination of mountain gorilla conservation programmes in Central Africa.

ASP Conservation Award - Juan Carlos Serio-Silva

PSG member Juan Carlos Serio-Silva was the recipient of the 1997 American Society of Primatologists Conservation Award. Juan Carlos graduated from the Faculty of Biology of the Universidad Veracruzana - Zona Cordoba, Mexico, in 1992, with a thesis on the activity budgets and feeding ecology of the Mexican howler, *Alouatta palliata*. In 1996 he defended his Master's thesis at the same University in the Institute of Neuroethology on the quality of foods consumed by semi-free-ranging howlers. At present he is working on his doctorate in Ecology and Natural Resource Management at the Institute of Ecology, supervised by Dr. Victor Rico-Gray, Dr. Katharine Milton and Dr. Rodolfo Dirzo Minjarrez. His research for the thesis is examining frugivory and seed dispersion by howling monkeys in contrasting habitats. He is evaluating especially the impacts of habitat fragmentation on the key role that howlers play in seed dispersion in Mexican tropical forests.

His research interests have centered on the behavioral ecology of Mexican primates, applied particularly to their conservation. Over nine years he has worked in various regions in Mexico, but most importantly in Los Tuxtlas, in the south of the state of Veracruz. He is currently studying howler groups between the cities of Vega de Alatorre and Nautla (in the north of the state), probably comprising the northernmost populations for the species, and besides this he is including in his research the Coatzacoalcos-Las Choapas area in southernmost Veracruz, the site of one of the last large tracts of forest in the country. The award was in recognition of his efforts for the conservation of primate habitats, based on an understanding of their ecology and behavior. Juan Carlos attributes much of his success in his research to the support and encouragement he has received from his colleagues in the Institutes of Neuroethology and Ecology at the Universidad Veracruzana, notably Dr. Ernesto Rodríguez-Luna, Director of the Insititute of Neuroethology, and Dr. Victor Rico-Gray of the Institute of Ecology. Our congratulations to Juan Carlos for this well-deserved award.

Distance Sampling - E-mail Discussion List

The distance sampling e-mail discussion list is a new forum for the sharing of ideas and information among researchers and practitioners interested in distance sampling survey methods. *What is distance sampling?* Distance sampling is a widely-used technique for estimating the abundance of biological populations. Distance sampling methods include line transects, point transects (variable circular plots), cue counting, trapping webs and migration counts. *How does the list work?* Members send e-mail messages to a central location from where they are distributed to everyone else on the list. Topics for discussion include: Questions about survey design and analysis (and answers!); discussion of new methodological developments; advice on the use of software tools (program DISTANCE and other packages); news about up-coming meetings, workshops and conferences where distance sampling methods will be discussed; jobs in distance-sampling fields. *How do you join*? Send an e-mail message to the address <mailbase@mailbase.ac.uk> with the following in the message body: "join distance-sampling yourfirstname yourlastname stop (e.g., join distance-sampling Joan Smith). *How do I find out more?* Mail questions about the list to the list administrator at <distance-sampling-request@mailbase.ac.uk>.

Laboratory Primate Newsletter - Primates de Las Americas - La Pagina

En el mundo existen mas de 360 millones de seres humanos que se comunican en Español. Otra lengua muy importante, el Portugués, también posee un destacado número de parlantes en América; es por lo anterior, que es de reconocerse la oportunidad que Judith S. Schrier, Editor de *Laboratory Primate Newsletter* brinda a todos los Primatólogos hispanoparlantes a fin de difundir dentro de una revista científica de calidad, y que tradicionalmente se publica en el idioma ingles, los anuncios, noticias, proyectos y resumenes de investigacones producidas por los Primatólogos en su lengua nativa.

Así, *"Primates de las Américas - La página...."*, intenta captar a los Primatólogos que deseen, mediante su participación en esta pagina, regresar a sus distintos países (en sus propios idiomas), el conocimiento que han obtenido por medio de sus estudios con los primates Americanos.

Los lineamientos para la preparación de los resumenes, notas y/o anuncios, deberán ser iguales a los que *Laboratory Primate Newsletter* utiliza para su edición en Ingles, aunque para esta sección en Español y/o Portugués, se sugiere el que las dimensiones de las contribuciones sean breves y que de preferencia no excedan una página.

Toda la correspondencia relacionada con *"Primates de las Américas - La página...."*, deberá dirigirse a: Juan Carlos Serio Silva, Departamento de Ecología Vegetal, Doctorado en Ecología y Manejo de Recursos Naturales, Instituto de Ecología, A.C. AP 63, CP 91000, Xalapa, Veracruz, México, Tel: 52 (28) 42 18 00 ext. 1201 - 1204, Fax: 52 (28) 42 18 00 ext 1204, e-mail: serioju@sun.ieco.conacyt.mx, ó Elva Mathiesen c/o Judith Schrier, Psychology Department, Box 1853, Brown University Providence, Rhode Island 02912, USA., Tel: 401 863 2511, Fax: 401 863 1300, e-mail: theresa_mathiesen@brown.edu.

A Re-introduction Practitioners Directory

The IUCN/SSC Re-introduction Specialist Group (RSG) is preparing a *Re-introduction Practitioners Directory* in collaboration with the National Commission for Wildlife Conservation and Development (NCWCD) in Saudi Arabia. This directory will include information on species, organisations, and individuals involved in re-introduction projects. RSG would appreciate receiving information in the following format for inclusion in this directory: 1) Taxa, Species (latin name, common name, local names), 2) Organisation (address, country, fax, telephone, e-mail) and 3) Staff (Lastname, Firstname, title, telephone, fax, e-mail). Please send to: IUCN/SSC Re-introduction Specialist Group (RSG), African Wildlife Foundation, P.O. Box 48177, Nairobi, Kenya, Fax: 254 2 710372, e-mail: awfnrb@form-net.com.

Estágiarios para o Projeto de Translocação de Micos-leões-dourados

O projeto "Translocação dos grupos de micos-leões-dourados, *Leontopithecus rosalia*" está precisando de biólogos para participar das pesquisas que estão sendo desenvolvidas com os grupos de micos-leões-dourados translocados para a fazenda União, localizada em Rio das Ostras, RJ. Oferecemos: remuneração, alojamento, alimentação e treinamento em radiotelemetria, coleta de dados no campo e coleta de dados de fenologia. É necessário que o candidato tenha curso de graduação completo, disponibilidade para participar do projeto durante um ano e carteira de habilitação. Os candidatos devem enviar *Curriculum Vitae*, duas cartas de apresentação e uma carta de interesse para: Cecília Kierulff, Coordenadora de Projeto de Translocação, Caixa Postal 109.995, Casimiro de Abreu, 28.860-000 Rio de Janeiro. As inscrições serão aceitas até o dia 15 de dezembro de 1997 e não serão incluidos na seleção candidatos com documentação incompleta.

Announcement - MSc in Wild Animal Health

The Institute of Zoology (Zoological Society of London) and the Royal Veterinary College (The University of London) have set up a 12-month course for European and overseas graduates in veterinary and relevant sciences making a career in wild animal health. The course includes practical and theoretical instruction in the husbandry and nutrition of wild animals, taxonomy, population biology, conservation genetics, welfare and ethical aspects, sustainable use of wildlife, epidemiology, immunology, infectious and non-infectious diseases, disease investigation, restraint, preventive medicine and surgery, together with an individual research project. Training will be given by staff at The Institute of Zoology and the Royal Veterinary College, as well as invited speakers from other veterinary and zoological centres. Applications are now invited for the 1998/99 and/or 1999/2000 courses starting in October 1998 and October 1999, respectively.

Full particulars and an application form are available from: The Registrar, The Royal Veterinary College, Royal College Street, London NW1 0TU, England, UK, Tel: +44 (0)171 468 5000, Fax: +44 (0)171 388 2342.

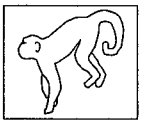
Announcement - Field Course in Venezuela

The Cleveland Metroparks Zoo and Cleveland State University will be offering a course entitled "Field experience in Tropical Ecology and Conservation Biology" during the period December 1-19, 1997. The course is taught in the tropical dry forest of western Venezuela. Primate species occurring at the sight include red howlers, spider monkeys, and white-fronted capuchins. Students can study habitat use and activity patterns of these monkeys as well

as participate in other studies. Program costs are approximately US$2000/student which includes airfare, lodging, ground transportation and most meals. For more information, contact: Tammie Bettinger, Research Coordinator, Cleveland Metroparks Zoo, (216) 661-6500 ex. 214, e-mail: Tammieb@ix.netcom.com.

Primate Societies

VIII Congresso Brasileiro de Primatologia



Entre os dias 10 e 14 de agosto, na cidade de João Pessoa foi realizado o VIII Congresso da Sociedade Brasileira de Primatologia. O congresso foi um dos maiores realizados até o momento, com 190 participantes. Foram ministradas sete conferências, quatro mini-cursos, três mesas redondas, oito simpósios, 42 comunicações orais, 58 paineis, e quatro sessões de vídeo. O número de participantes e de trabalhos apresentados evidência que a Primatologia brasileira teve um considerável crescimento, e que esta se consolidando cada vez mais no país. As sessões científicas foram de um excelente nível. Houve uma exposição de fotos da Estação Ecológica de Maracá, Roraima, cedida pelo IBAMA. Crianças da cidade de Patos, Paraíba, apresentaram desenhos de macacos, que foram expostos no hall central. No dia 13 de agosto se realizou a Assembleia Geral da Sociedade e as eleições para a nova diretoria da SBPr. Por último, no dia 15 se realizou uma excursão à Fazenda Pacatuba, um dos locais onde existem as melhores condições de observação de guaribas, *Alouatta belzebul*, na Paraíba, e à Reserva Biológica de Guaribas, onde os participantes foram convidados a conhecer o trabalho de manejo que se esta desenvolvendo nesse local.

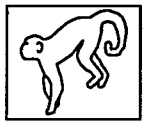
Exemplares do livro de resumos do Congresso ainda são disponíveis. Preço: R$10,00. Escreve para: Patrícia Izar, Departamento de Psicologia Experimental, Instituto de Psicologia, Universidade de São Paulo, Avenida Professor Mello Moraes 1721, 05508-900, São Paulo, São Paulo, e-mail: patrizar@usp.br.

A SBPr tem um home page no Internet: http://www.dse.ufpb.br/sbpr/page2.htm.

O IX Congresso Brasileiro de Primatologia será realizado em julho de 1999, no Espírito Santo. Quem tiver alguma sugestão para o Congresso deve entrar em contato com: Sérgio Lucena Mendes, Museu de Biologia Mello Leitão, Avenida José Ruschi 4, 29650-000 Santa Teresa, Espírito Santo, Brasil, Fax: (027) 259-1182, e-mail: mbml@npd1.ufes.br.

Carmen Alonso, Departamento de Sistemática e Ecologia - CCEN, Universidade Federal da Paraíba, 58059-900 João Pessoa, Paraíba, Brazil.

Nova Diretoria da Sociedade Brasileira de Primatologia



A reunião anual da SBPr foi realizada no dia 13 de agosto de 1997, durante o VIII Congresso Brasileiro de Primatologia. Foi eleita a nova diretoria para o biênio 1997-1999, que ficou assim formada: *Presidente* - **Alcides Pissinatti** (Centro de Primatologia do Rio de Janeiro, Rio de Janeiro); *Vice-Presidente* - **Sérgio Lucena Mendes** (Museu de Biologia Mello Leitão, Santa Teresa, Espírito Santo); *1ª. Secretaria* - **Cristina V. Santos** (Departamento de Psicologia Experimental, Universidade de São Paulo, São Paulo); *2ª. Secretária* - **Patrícia Izar** (Departamento de Psicologia Experimental, Universidade de São Paulo, São Paulo); *1ª. Tesoureira* - **Adriana Rímoli** (Departamento de Psicologia Experimental, Instituto de Psicologia, Universidade de São Paulo, São Paulo); e *2º. Tesoureiro* - **José Rímoli** (Departamento de Biociências, Universidade Federal de Uberlândia, Uberlândia). O endereço eletrônico da SBPr é: sbpr@geocities.com.

American Society of Primatologists - Conservation and Distinguished Service Awards 1997

ASP

The annual awards of the American Society of Primatologists (ASP) were announced during the 20th Annual Meeting of the Society. The *Distinguished Service Award* was presented to **Larry Jacobsen** for his long-standing commitment to library services at the Wisconsin Regional Primate Research Center, his significant contribution to the field of primatology and his pioneering initiatives to disseminate information worldwide. The *Senior Biology and Conservation Award* went to two outstanding nominees: **Nancy Czekala-Gruber** of San Diego, California, for her extensive work on the reproductive biology of primates which has provided important and fundamental contributions in the area of primate conservation biology, and to **Jeremy J. C. Mallinson**, Director of the Jersey Wildlife Preservation Trust, Jersey, UK, for three and a half decades devoted to the development of meaningful conservation strategies of the Wildlife Preservation Trusts and the role of modern zoos in the conservation of primates worldwide. The *Conservation Award* went to **Juan Carlos Serio-Silva** of the Universidad Veracruzana, Mexico, for his efforts to preserve the habitats and primates of Mexico through his field research, teaching and outreach. Five *Conservation Small Grants* were funded as follows: **Kimberley A. Phillips** of Hiram College, Ohio, for the conservation of capuchin and howling monkeys in Trinidad; **Zhaoyuan Li** of China, for the impacts of habitat fragmentation on the behavior and social structure of the white headed langur, *Presbytis leucocephalus*; **Rondang S. E. Siregar** of Indonesia for assessing the the behavioral competence of rehabilitant orangutans reintroduced to the

Meratus Forest, East Kalimantan; **Joanna E. Lambert** of the University of Florida, Gainesville, for the status of red colobus (*Procolobus badius*) populations in regenerating areas of Kibale National Park; and **Julio César Bicca Marques** of the University of Illinois, Urbana (and the Federal University of Acre, Brazil) for the cognitive aspects of foraging decisions in *Saguinus*. The *American Journal of Primatology Subscription Awards* were given to the following: **Julio César Bicca Marques,** Brazil, **Mewa Singh**, India, and **Arun Srivastava**, India. From: *ASP Bulletin*, 21(3): 1-2, September 1997.

Randall Kyes, ASP Conservation Committee Chair, Washington Regional Primate Research Center, University of Washington, SJ-50, Health Sciences Building, Seattle, Washington 98195, USA.

PSGB Working Party for Conservation

The Convenor of the Primate Society of Great Britain's Working Party for Conservation, Dr. Siân S. Waters (Scientific Officer, Bristol Zoo Gardens, UK) retired in September 1997, to join a field project on the highly endangered Tonkin snub-nosed monkey, *Rhinopithecus avunculus*, in Vietnam. Dr. David A. Hill, who is currently studying Japanese macaques, *Macaca fuscata yakui*, on Yakushima Island, Japan, will be taking over. His address is: School of Biological Sciences, University of Sussex, Falmer, Brighton, Sussex BN1 9QG, U.K., Tel: 01273 606755 ext. 2755, Fax: 01273 678433, e-mail: d.a.hill@sussex.ac.uk. We wish Siân Waters the best of luck and success in Vietnam, home to so many critically endangered primates, and likewise David Hill in running the PSGB's conservation activities.

Recent Publications

Field Studies of Fauna and Flora, La Macarena, Colombia

Volume 11 (1997) of the Monbusho International Scientific Research Progam (No. 07041124) Reports - *Field Studies of Fauna and Flora, La Macarena, Colombia* was published earlier this year. It contains the following articles: Social changes within a group of wild black-capped capuchins, V - Kosei Izawa, pp.1-10; Co-feeding relation of woolly monkeys, *Lagothrix lagotricha*, within a group at La Macarena - Akisato Nishimura, pp.11-18; Social changes within a group of red howler monkeys, VI - Kosei Izawa, pp.19-34; Males' life history and their social relations of wild red howler monkeys - Koshin Kimura, pp.35-40; Stability of the home range of red howler monkeys - Kosei Izawa, pp.41-46; Distribution patterns of seedlings of *Pharus virescens* Doell (Poaceae: Bambusoideae) in the Neotropical rain forest of La Macarena and Tinigua National Parks, Colombia - Mikio Kobayashi and Kosei Izawa, pp.47-56; Stem size date of some mono-species dominated forests in La Macarena, Colombia - Akihide Takehara and Pablo R. Stevenson, pp.57-71. The editor of the report is Kosei Izawa, Miyaga University of Education, Aramaki, Aoba-ku, Sendai 980, Japan.

A New Periodical: *The Singapore Journal of Tropical Geography*

Blackwell Publishers launched a new journal in 1997: *The Singapore Journal of Tropical Geography*. It is international, multidisciplinary, and published twice a year (June and December). Its aim is to provide a forum for discussion relating to problems and issues in the tropical world, and includes theoretical and empirical articles that deal with the physical and human environments and developmental issues from geographical and inter-related disciplinary viewpoints. The journal welcomes contributions from geographers as well as scholars from the humanities, social sciences, and environmental sciences with an interest in tropical research. Recent papers include: The Resource Curse Thesis: Minerals in Bolivian Development 1970-1990 - R. M. Auty; The Tropics: Environments and Human Impacts Understood and Reinterpreted - I. Douglas; Granite Weathering in an Urban Environment: An Example from Rio de Janeiro - B. J. Smith and R. W. Magee; Forest Fragmentation in the Humid Tropics: A Cross-National Analysis - Tom Rudel and Jill Roper; and a special issue on Gender and Urban Space in the Tropical World. For information on subscriptions: Blackwell Publishers Journals, P. O. Box 805, 108 Cowley Road, Oxford OX4 1FH, England, UK., Tel: +44 (0)1865 244083, Fax: +44 (0)1865 381381. Guidelines for contributors, please write to: The Editor, Dr. Brenda Yeoh, Singapore Journal of Geography, National University of Singapore, 10 Kent Ridge Crescent, Singapore 119260, Tel: +65 772 3853, Fax: +65 777 3091, e-mail: geogen7@nus.sg. Sample copies are available via e-mail: jnlsamples@blackwellpublishers.co.uk. For full details about the Journal, and others produced by Blackwell Publishers, log on to: http://www/blackwellpublishers.co.uk.

Books

Primate Conservation: The Role of Zoological Parks, edited by Janette Wallis, 1997, American Society of Primatologists (ASP), Norman, Oklahoma. *Special Topics in Primatology, Volume 1*, of the American Society of Primatologists, Series Editor: H. Dieter Steklis. Price: US$25.00 + US$2.50 in the US, US$5.00 elsewhere for shipping and handling. ISBN 0 9658301 0 1. This book provides detailed descriptions of *in situ* primate conservation projects sponsored by U. S. zoological parks. As the first volume in the American Society of Primatologists' (ASP) Book Series, it will be a valuable asset to conservationists, zoo personnel, and all primatologists working to strengthen the relationship between university researchers and zoo biologists in primate conservation. *Contents*: Forward - Russell A. Mittermeier; Preface

- Janette Wallis; From Ancient Expeditions to Modern Exhibitions: The evolution of primate conservation in the zoo community - Janette Wallis; The role of North American zoos in primate conservation - Robert J. Wiese and Michael Hutchins; Zoos and *in situ* wildlife conservation - Fred W. Koontz; The conservation role of primate exhibits in the zoo - Kenneth C. Gold; Multi-disciplinary strategic planning for gibbon conservation in Thailand and Indonesia - Ronald Tilson, Katherine Castle, Jatna Supriatna, Kunkun Jaka Gurmaya, Warren Brockelman, and Schwann Tunhikorn; Developing a conservation action program for the cotton-top tamarin (*Saguinus oedipus*) - Anne Savage, Humberto Giraldo, and Luis Soto; Steady-state propagation of captive lion-tailed macaques in North American zoos: A conservation strategy - Donald G. Lindburg, John Iaderosa, and Laurence Gledhill; Partners in conservation: Establishing *in situ* partnerships to aid mountain gorillas and people in range countries - Charlene Jendry; Bonobo conservation: The evolution of a zoological society program - Gay E. Reinartz and Gilbert K. Boese; Drills (*Mandrillus leucophaeus*): Research and conservation initiatives, 1986-1996 - Cathleen R. Cox; The Gateway Zoo Program: A recent initiative in golden lion tamarin reintroductions - Tara Stoinski, Benjamin Beck, Mary Bowman, and John Lehnhardt; Zoo-based conservation of Malagasy prosimians - Sukie Zeeve and Ingrid Porton; Appendix: Primate conservation resources on the World Wide Web. Checks payable to "American Society of Primatologists". Payment must be in U. S. funds, payable on a U.S. bank. Sorry, no credit cards accepted. Available from: Steve Schapiro, ASP Treasurer, UTMD Anderson, Science Park, Rt. 2, Box 151-B1, Bastrop, TX 78602, USA.

The Evolving Female: A Life-History Perspective, edited by Mary Ellen Morbeck, Alison Galloway and Adrienne L. Zihlman. 1997. Princeton University Press, Princeton, NJ. 344pp. Price: Cloth $60.00 (ISBN: 0-691-02748-X), Paper $27.95 (ISBN: 0-691-02747-1). *The Evolving Female* offers an outlook integrating life history with an intimate examination of female life paths. Behavior, anatomy and physiology, growth and development, cultural identity of women, the individual, and the society are among the topics investigated. A human female is born, lives her life, and dies within the space of a few decades, but the shape of her life has been strongly influenced by 50 million years of primate evolution and more than 100 million years of mammalian evolution. How the individual female plays out the stages of her life-from infancy, through the reproductive period, to old age-and how these stages have been formed by a long evolutionary process, is the theme of this collection. Written by leading scholars in fields ranging from evolutionary biology to cultural anthropology, these essays together examine what it means to be female, integrating the life histories of marine mammals, monkeys, apes, and humans. The result is a fascinating inquiry into the similarities among the ways females of different species balance the need for survival with their role in reproduction and mothering. Contents: Part I. Perspectives on Life-History Studies. 1. Life history, the individual, and evolution - Mary Ellen Morbeck; 2. Changing views of female life histories - Linda Marie Fedigan. Part II. Natural History and Life-History Studies: The Mammals. What It Means to Be a Mammal; 3. Sea lions, life history, and reproduction - Kathryn Ono; 4. Life history and reproductive success of female northern elephant seals - Joanne Reiter. Part III. Natural History and Life-History Studies: The Primates. What It Means to Be a Primate; 5. Social relationships and life histories of primates - Barbara B. Smuts; 6. Development of sex differences in nonhuman primates - Mariko Hiraiwa-Hasegawa; 7. The social life of female Japanese monkeys - Mary S. McDonald Pavelka; 8. Natural history of apes: Life-history features in females and males - Adrienne L. Zihlman. Part IV. Anatomy, Physiology, and Variation: The Catarrhines. What It Means to Be a Catarrhine. 9. Reading life history in teeth, bones, and fossils - Mary Ellen Morbeck; 10. The cost of reproduction and the evolution of postmenopausal osteoporosis - Alison Galloway; 11. The biological origins of adipose tissue in humans - Caroline M. Pond; 12. Female primates: Fat or fit? - Robin McFarland. Part V. Women in Human Societies. What It Means to Be a Human; 13. Women's bodies, women's lives: An evolutionary perspective - Adrienne L. Zihlman; 14. Sex differences in human populations: Change through time - Silvana M. Borgognini Tarli and Elena Repetto; 15. Growing up female in a farmer community and a forager community - Gilda A. Morelli; 16. Institutional, evolutionary, and demographic contexts of gender roles: A case study of !Kung bushmen - Patricia Draper; 17. Women's work and energetics: A case study from Nepal - Catherine Panter-Brick; 18. Flexibility and paradox: The nature of adaptation in human reproduction - Virginia J. Vitzthum. Part VI. Life History, Females, and Evolution; 19. Social intelligence and sexual reproduction: Evolutionary strategies - Alison Jolly; 20. Life history, females, and evolution: A commentary - Beverly McLeod. Available from: Princeton University Press, c/o California/ Princeton Fulfillment Services, Inc., 1445 Lower Ferry Road, Ewing, NY 08618, USA. For further information, contact: Michelle McKenna, Tel: +1 800 777 4726, Fax: +1 609 258 1335, e-mail: michelle_m@pupress.princeton.edu. PUP Web site: http://pup.princeton.edu.

Manejo e Conservação de Vida Silvestre no Brasil, editado por Claudio Valladares-Padua, Richard E. Bodmer e Laury Cullen Jr., Ministério de Ciência e Tecnologia (MCT), Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Sociedade Civil Mamirauá, Brasília. *Publicações Avulsas do Mamirauá*. Esse livro apresenta os trabalhos do *workshop* com o mesmo título, realizado em Belém em 1992, mas foi melhorado pelo acréscimo de novos artigos de autores convidados. Como resultado, oferece o que há de melhor sobre o tema no Brasil. Esta obra, rica em estudos de casos, tornou-se ainda melhor pela maneira didática como alguns autores

descreveram seus métodos de pesquisa. Os tópicos abordados incluem a exploração sustentável de espécies cinegéticas, o manejo conservacionista da fauna e a educação ambiental. Numa divisão por grupos taxonômicos, hà oito capítulos sobre mamíferos, três sobre répteis e um sobre peixes, além de quatro capítulos de caráter mais geral. Este volume vem preencher uma lacuna na literatura técnico-científica do Brasil, e serve de referência para pesquisadores, estudantes e planejadores. Sua leitura será muito útil ainda para todos aqueles que se preocupam com o uso sustentado e a conservação da biodiversidade. Sumário:Introdução; A floresta vazia - Kent H. Redford; Uso de levantamentos aéreos para o manejo de populações silvestres - Guilherme M Mourão & William Magnusson; Uma pesquisa em educação ambiental: A conservação do mico-leão-preto (*Leontopithecus chrysopygus*) - Suzana M. Padua; Manejo da vida silvestre em comunidades na Amazônia - Richard E. Bodmer & James W. Penn Jr.; Recomendações para um modelo de pesquisa em felídeos Neotropicais- Peter G. Crawshaw Jr.; Manejo e criação do *Caiman crocodilus yacare* do Pantanal Mato-Grossense - Eliézer José Marques & Elias Villela Lemos Monteiro; O manejo do caitetu (*Tayassu tajacu*) e do queixada (*Tayassu pecari*) em cativeiro - Sérgio Luís G. Nogueira-Filho & Abel Lavorenti; Estimativa da população de cervos-do-pantanal no rio Paraná utilizando levantamento aéreo - Laurenz Pinder; Análises de sustentabilidade do modelo de caça tradicional, no pantanal da Nhecolândia, Corumbá, MS - Reinaldo Francisco Ferreira Lourival & Gustavo A. B. da Fonseca; A pesca na Amazônia: Problemas e perspectivas para o seu manejo - Ronaldo Borges Barthem, Miguel Petrere Jr. Victoria Isaac, Mauro Cesar L. de Brito Ribeiro, David G. Mcgrath & Italo José Araruna Vieira, Mauricio Valderrama Barco; Técnicas de manejo de capivaras e outros grandes roedores na Amazônia - José Roberto Moreira & David W. Macdonald; Manejo extensivo de jacarés no Brasil - William E. Magnusson & Guilherme Mourão; Manejo e conservação do jacaré-de-papo-amarelo (*Caiman latirostris*) no estado de São Paulo - Luciano Martins Verdade; Manejo de fauna cinegética na Reserva Indígena Xavante de Pimentel Barbosa, Mato Grosso - Frans Leeuwenberg; Métodos para estudos de ecologia, manejo e conservação de primatas na natureza - Laury Cullen Jr. & Claudio Valladares-Padua; Queixadas e palmeiras na Ilha de Maracá - José Manuel Fragoso. Maiores informações: Claudio Valladares Padua, IPÊ - Instituto de Pesquisas Ecológicas, SHIS QL28, Conjunto 8, Casa 11, 71652-285 Brasília, D. F., Brasil.

Primate Cognition, by Michael Tomasello and Joseph Call (Department of Psychology and Yerkes Primate Center, Emory University, Atlanta, Georgia), 1997. Oxford University Press, Oxford. Paper: US$35 ISBN 0-19-510624-5, Cloth: US$75 ISBN 0-19-510623-7. This book attempts to review all that is scientifically known about nonhuman primate cognition. The primary audience is thus students of animal behavior and cognition, and at least some students of human evolution, who hopefully will view this topic as interesting and important in its own right. The topic will also be of interest to students of human cognition. Although mainstream cognitive science has discovered much about the cognitive processes of adult human beings and the computer programs they create, it has not been much concerned with the phylogenetic origins of these processes. As the limitations of artificial intelligence become increasingly apparent, cognitive science would do well to pay more attention to forms of natural primate cognition that serve to situate the human version in its appropriate evolutionary context. Contents: 1) Introduction, Historical Background, The Ecological Approach to Cognition, Primates and Their Lives, Plan of the Book. *Part I - Knowledge of The Physical World*: 2) Space and Objects, 3) Tools and Causality, 4) Features and Categories, 5) Quantities, 6) Theories of Primate Physical Cognition. *Part II - Knowledge of The Social World*: 7) Social Knowledge and Interaction, 8) Social Strategies and Communication, 9) Social Learning and Culture, 10) Theory of Mind, 11) Theories of Primate Social Cognition. *Part III - A Theory of Primate Cognition*: 12) Nonhuman Primate Cognition, 13) Human Cognition, 14) Conclusion, Theory, Research, The Preservation of Primates. Appendix, Author Index, Species Index, and Subject Index. Available from: Oxford University Press, Inc., 2001 Evans Road, Cary, NC 27513, USA, Fax: 919-677-1303, Tel: 1-800-445-9714.

Social Influences on Vocal Development, edited by Charles T. Snowdon and Martine Halsberger. 1997. Cambridge University Press, Cambridge. Price: US$90. For at least 30 years, there have been close parallels between studies of bird song development and those of the development of human language. Both song and language require species-specific stimulation at a sensitive period in development and subsequent practice through subsong and plastic song in birds and babbling in infant humans, leading to the development of characteristic vocalizations for each species. This book illustrates how social interactions during development can shape vocal learning and extend the sensitive period beyond infancy and how social companions can induce flexibility even into adulthood. Social companions in a wide range of species, including not only birds and humans but also cetaceans and nonhuman primates, play important roles in shaping vocal production, as well as the comprehension and appropriate usage of vocal communication. Contents: 1. Introduction - C. T. Snowdon and M. Hausberger; 2. Social interaction and sensitive phases for song learning: A critical review - D. A. Nelson; 3. Social interaction and vocal Development In Birds - Luis F. Baptista and Sandra L. L. Gaunt; 4. Building a social agenda for the study of bird song - Meredith J. West, Andrew P. King and Todd M. Freeberg; 5. Field observations, experimental design, and the time and place of learning bird songs - Robert B. Payne and Laura L. Payne; 6. Vocal learning in wild and domesticated zebra finches: Signature cues for kin recognition or epiphenomena? - Richard Zann; 7. What birds with complex social relationships can tell us about vocal learning:

Vocal sharing in avian groups - Eleanor D. Brown and Susan M. Farabaugh: 8. Social influences on song acquisition and sharing in the European starling (*Sturnus vulgaris*) - Martine Hausberger; 9. Social influences on the acquisition of human-based codes in parrots and nonhuman primates - Irene Maxine Pepperberg; 10. Vocal learning in captive bottlenose dolphins: A comparison with humans and nonhuman animals - Brenda McCowan and Diana Reiss; 11. Vocal learning in cetaceans - Peter L. Tyack and Laela S. Sayigh; 12. Social influences on vocal development in New World primates - Charles T. Snowdon, A. Margaret Elowson and Rebecca S. Roush; 13. Some general features of vocal development in nonhuman primates - Robert M. Seyfarth and Dorothy L. Cheney; 14. Social influences on vocal learning in human and nonhuman primates - John L. Locke and Catherine Snow; 15. The resilience of language in humans - Susan Goldin-Meadow; 16. Reciprocal interactions and the development of communication and language between parents and children - Annick Jouanjean-L'Antoine; 17. Crafting activities: Building social organization through language in girls' and boys' groups - Marjorie Harness Goodwin. Available from: Andrew Kirszner, Department AK, Cambridge University Press, 40 W. 20th Street, New York, NY 10011, USA, Tel: 1-800-872-7423 (Toll Free), Fax: +1-212-691-3239; E-Mail: akirszner@cup.org.uk.

The Last Frontier Forests: Ecosystems and Economies on the Edge, by Dirk Bryant, Daniel Nielsen and Laura Tangley, 1997, 42pp. Forest Frontiers Initiative, World Resources Institute (WRI), Washington, D. C. Contributing authors: Nigel Sizer, Marta Miranda, Paige Brown, Nels Johnson, Andrew Malk and Kenton Miller. Data collaborators: World Conservation Monitoring Centre (WCMC), Cambridge, UK, and the World Wildlife Fund (WWF), Washington, D. C. This report describes for the first time the location and status of the world's frontier forests - the large ecologically intact, and relatively undisturbed natural forests that still remain. It is the opening salvo of WRI's Forest Frontiers Initiative, a five-year, multi-disciplinary effort to promote stewardship in an around the world's last major frontier forests by influencing investment, policy and public opinion. For each forest frontier region - in Amazonia, Central Africa, Asia, North America and Russia - WRI is building a network of policy-makers, activists, investors, and researchers to promote alternatives to forest destruction that take advantage of the full economic potential of forests, not just immediate revenue from logging and forest clearing. As part if this effort WRI will help build the capacity of local organizations to carry on this work independently. Contents: Why Do Forests Matter?; What Do We Know About the World's Forests; WRI's Frontier Forests Assessment; Falling Frontiers; Today's Threats; Destruction's Roots; The Frontier Forest Index; Regional Overviews; The Closing Frontier: A Call to Action. The full text of *The Last Frontier Forests* is available on WRI's website at <http://www/wri.org/wri/ffi/>. The printed version is available from: The World Resources Institute, 1709 New York Avenue, N. W., Washington, D. C. 20006, USA, Tel: 202 638 6300, Fax: 202 638 0036.

World Health Organization Travel Health Manual, World Health Organization, 1997. WHO International Travel and Health Vaccination Requirements and Health Advice, 1997 Edition. 106pp. (available in English and French). ISBN 92 4 158022 4. Price: Sw.fr. 17.96 / US $15.30 (in developing countries: Sw.fr. 11.90); Order No. 1189700. This booklet is addressed to national health administrations and to the practising physicians, tourist agencies, shipping companies, airline operators, and other bodies who are called upon to give health advice to travellers. In addition to summarizing the vaccination requirements of individual countries, the booklet indicates the main areas where malaria transmission occurs and where *Plasmodium falciparum* is resistant to drugs. The recommended chemoprophylactic regimen is also given for each country with malarious areas. Other chapters cover certain health hazards to which the traveller may be exposed, and indicate the areas in which these hazards are most likely to occur. The booklet also recommends a number of precautions that the wise traveller should take when visiting unfamiliar places. For further information, contact: Jacqueline Rossel <rossel@who.ch>.

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Abstracts of the VIII Congresso Brasileiro de Primatologia, V Reunião Latino-Americano de Primatologia, João Pessoa, Paraíba, Brasil, 10-15 August 1997. In: *Programa e Resumos*, Sociedade Brasileira de Primatologia, João Pessoa, 259pp.

Abreu, F. R., Silva, F. R. M. and Monteiro da Cruz, M. A. O. Atividade social durante o período de descanso diurno em grupos silvestres de *Callithrix jacchus*. p.84.

Meetings

XV Encontro Anual de Etologia, 5-8 de novembro de 1997, Biblioteca Comunitária, Universidade Federal de São Carlos, São Paulo, Brasil. Organizado pela Sociedade Brasileira de Etologia (SBEt). Informações e inscrições: Equipe do Grupo de Estudos em Etologia - GETO, Departamento de Psicologia, Universidade Federal de São Carlos, Via Washington Luiz Km 235, Caixa Postal 676, 13665-905 São Carlos, São Paulo, Brasil, Tel: (016) 274 8499, Fax: (016) 274 8362, e-mail:<geto@power.ufscar .br>.

Congresso Brasileiro de Unidades de Conservação, 15-23 de novembro de 1997, Auditório da Reitoria da Universidade Federal do Paraná, Curitiba, Brasil. Informações: UNILIVRE - Universidade Livre do Meio Ambiente, Rua Victor Benato 210, Curitiba, Paraná, Brasil, Tel: (041) 254 5548, Fax: (041) 335 3443, e-mail: <unilivre@bsi.com.br>.

1997 Winter Workshop on Research Involving Non-human Primates - The Way Forward, 1-5 December 1997, organized by the European Marmoset Research Group (EMRG) and the European Primate Research Network (EUPREN), Hotel Forest Hill, 28 Avenue Corentin Cariou, 75019 Paris. Items of particular interest to those involved in research with marmosets and tamarins will be covered in the first part of the meeting (EMRG Winter Workshop, 1-3 December), and more general primatological topics will be addressed in the second section (EUPREN Winter Workshop, 4-5 December). Abstracts should be sent to Leah Scott before 6 October. The program will be finalized and distributed by 20 October. Registration: EMRG Winter Workshop - DM450 or £150, Undergraduates DM300 or £100; EUPREN Winter Workshop - DM350 or £110, Undergraduates DM220 or £70. For further information: L. Scott, Department of Biomedical Science, CBD, Porton Down, Salisbury SP4 0JQ, UK, Fax: +44 (0)1980 613741, or C. R. Schnell, NOVARTIS AG, Klybeckstrasse 141, K-125.2.08, CH-4002 Basel, Switzerland, Fax: +41 61 696 62 42.

Primate Society of Great Britain (PSGB), Winter Meeting - New Perspectives on Nocturnal Primates, 3 December 1997, The Meeting Rooms of the Zoological Society of London, Regent's Park, London. The aim of the meeting is to introduce nocturnal primates to those not working on nocturnal primates and to inform them of research developments. For further information please contact Dr Simon Bearder or Dr Paul Honess, Anthropology Unit, School of Social Sciences and Law, Oxford Brookes University, Oxford, OX3 0BP, U.K., Tel: (0)1865 483760/ 484941, Fax +44 (0)1865 483937, e-mail: phoness@ brookes.ac.uk. Please send e-mail address for further correspondence.

3rd International Conference on Wildlife Management in Amazonia, 3-7 December, 1997, Santa Cruz, Bolivia. Co-organized by the School of Agricultural Science of the Universidad Autonoma "Gabriel René Moreno", the Natural History Museum "Noel Kempff Mercado", and the Tropical Conservation and Development Program of the University of Florida. This event will be a forum for practitioners, students, researchers and other professionals from all parts of Central and South America to evaluate approaches, share knowledge and exchange ideas about wildlife and fisheries, conservation and management, biodiversity, the environment, and sustainable development, along with other themes intimately linked with Amazonian wildlife. Since the problems of wildlife and fish of the Amazon basin are similar to those of most Neotropical regions, we invite all those interested in these issues to participate. Sharing experiences throughout the Americas will be beneficial to all aspects of wildlife management, conservation and sustainable development. The Conference will be a forum to review recent research and management programs and discuss how to integrate information on wildlife and fisheries population biology with the socio-economic realities of rural people to insure sustainable use. The conference will host a variety of symposiums and workshops, including several IUCN/SSC Specialist Group Meetings and a workshop to evaluate community-based wildlife management in Amazonia. The Conference builds on the success of the previous meet-

ings on Wildlife Management in Amazonia, which were hosted in Belém, Brazil in 1992 and Iquitos, Peru in 1995. Call for Papers: Persons interested in presenting papers are requested to submit abstracts (maximum 200 words) for review and selection by 1 June 1997. Please send abstracts via e-mail to: tcd@tcd.ufl.edu. Please do not send as attachments. For more information. *National participants and observers*: National Conference Coordinator, Dr. Mario Suárez Riglos, Facultad de Ciencias Agrícolas, Universidad Autónoma "Gabriel René Moreno", Museo de Historia Natural "Noel Kempff Mercado", Casilla 1321, Santa Cruz de la Sierra, Bolivia, Tel/Fax: (591) 336-6574. *International participants and observers*: International Conference Coordinator, Dr. Richard Bodmer, Tropical Conservation and Development Program, University of Florida, P.O. Box 115531, Gainesville, FL. 32611-5531, USA, Tel: (352) 373-3186, Fax: (352) 392-0085 ,e-mail: tcd@tcd.ufl.edu. For updated information, please visit the conference web site at: http://www.tcd.ufl.edu./tcd/congres3.

ASAB Winter Meeting 1997 "Behaviour and Conservation", 4-5 December, 1997, Zoological Society of London, Regent's Park, London, UK. Association for the Study of Animal Behaviour (ASAB). Organized by Morris Gosling and Mark Avery. The organizers aim to use the meeting as the basis for a multi-author book. Current ideas for possible contents include links between mating systems/dispersal and genetic structure of populations; dispersal and other movements in relation to habitat fragmentation and reserve design; individual foraging behaviour and habitat carrying capacity; mate choice, signaling, and manipulation of captive breeding; learning and pre-release training; and practical use of behaviour in conservation (e.g., use of songs for censusing). Contacts: Professor Morris Gosling, Institute of Zoology, Zoological Society of London, Regent's Park, London NW1 4RY, UK, Tel: +44 (0)171 449 6600, Fax: +44 (0)171 586 2870, e-mail: suaalmh@ucl.ac.uk, or Dr. Mark Avery, RSPB, The Lodge, Sandy, Beds. SG19 2DL, UK, Tel: +44 (0)1767 680551, Fax: +44 (0)1767 692365, e-mail: bird@rspb.demon.co.uk.

XVIth Annual Conference of the Australasian Primate Society, 5-7 December 1997, Launceston, Tasmania. Supported by the Launceston City Council. Theme: Macaques: Biology and Behaviour. Papers on this theme, or on any other primate related topic, and abstracts should be sent to: The Editor, Australasian Primate Society, P. O. Box 500, One Tree Hill, South Australia 5114, Australia, Tel: 08 8280 7670. Deadline for abstracts: October 17, 1997. E-mail: graemec@dhn.csiro.au.

Göttinger Freilandtage 1997. Primate Socio-ecology: Causes and Consequences of Variation in the Number of Males, 9-12 December, 1997, German Primate Center, Göttingen, Germany. A goal of the newly-founded Behavior and Ecology Division at the German Primate Center is to organize regular international conferences on timely topics in primate behavioral ecology. These meetings should provide a forum for discussion and information for interested students and professionals from Germany and abroad. Feature presentations and round-table discussions are by invited speakers, but opportunities for contributed talks and poster presentations will be provided. On the final day of the conference there will be a limited number of 15 minute oral presentations. Posters can be displayed throughout the conference. Speakers include: Nick Davies (University of Cambridge, Cambridge, UK), Peter Kappeler (DPZ, Göttingen), Eckhard Heymann (DPZ, Göttingen), Karen Strier (University of Wisconsin, Madison), Marina Cords (Columbia University, New York), Jeanne Altmann (University of Chicago, Chicago), Tom Struhsaker (Duke University, Durham), Liesbeth Sterck (Utrecht University, Utrecht), Volker Sommer (University College, London), David Watts (Yale University, New Haven), Peter Jarman (University of New England, Armidale), Richard Wrangham (Harvard University, Cambridge, USA), John Mitani (University of Michigan, Ann Arbor), Theresa Pope (Duke University, Durham), Robin Dunbar (University of Liverpool, Liverpool), Thelma Rowell (University of California, Berkeley), Jan van Hooff (Utrecht University, Utrecht), Charles Janson (SUNY, Stony Brook), Charles Nunn (Duke University, Durham), Carel van Schaik (Duke University, Durham), Barbara Smuts (University of Michigan, Ann Arbor), and Tim Clutton-Brock (University of Cambridge, Cambridge, UK). Deadline for submission of abstracts (not exceeding 250 words) is 1 August, 1997. Deadline for registration for all participants is 10 October, 1997. Registration fees are DM100.- for professionals and DM 30.- for students. Please send your completed registration form, including proof of bank transfer or Eurocheque, to: "Göttinger Freilandtage" (address below). For further information and registration forms please contact: Dr. Peter Kappeler or Dr. Michael Schwibbe, "Göttinger Freilandtage", German Primate Center DPZ, Kellnerweg 4, 37077 Göttingen, Germany. See also <http://134.76.248.10/freiland.htm>.

2° Congreso de la Asociación Primatológica Española (APE), 18-21 December 1997, Los Narejos, Murcia, Spain. Contact: Secretaria del Congreso, Departamento de Ciencias Morfológicas e Psicobiologia, Universidad de Murcia, Campus Espinardo, 30071-Murcia, Spain, Tel: 968 36 39 53/4, Fax: 968 36 39 55, e-mail: <mtherrer@fcu.um.es> or <mth24@cus.cam.ac.uk>.

1998

21st Annual Meeting of the American Society of Primatologists, 28 June - 1 July, 1998, Southwestern University, Georgetown, Texas. Co-hosted by the Southwestern University and The University of Texas M. D. Anderson Cancer Center, Science Park, Bastrop, Texas. For further information: Steven Schapiro, University of Texas M.D Anderson Cancer Center, Department of Veterinary Research, Rte 2, Box 151-B1, Bastrop, Texas 78602, USA., Tel: 512 321 3991, Fax: 512 322 5208.

VII International Congress of Ecology, New Tasks for

Ecologists after Rio 92, 19-25 July 1998, Centro Affari & Palazzo Internazionale Congressi, Florence, Italy. Organized by the International Association for Ecology (INTECOL) in conjunction with the Italian Ecological Society (SItE). Themes include: Perspectives in global ecology; Perspectives for the ecological management of natural resources; Problems and perspectives in Mediterranean ecosystems; Diversity concepts at different scales; Perspectives in ecological theory and modeling; Key issues in aquatic ecosystems; Perspectives in landscape ecology; Perspectives in sustainable land use; Key issues in microbial ecology; Patterns and interactions in populations and communities; Perspectives in environmental chemistry and ecotoxicology; Integrating ecology into economic and social development; Ecological engineering; Progresses in ecological education. Contact: Almo Farina, Vice-President INTECOL, Secretariat VII International Congress of Ecology, Lunigliana Museum of Natural History, Fortezza della Brunella, 54011 Aulla, Italy, Tel: +39 187 400252, Fax: +39 187 420727, e-mail: afarina@tamnet.it, web site: http://www.tamnet.it/intecol.98.

Euro-American Mammal Congress, 20-24 July, 1998, University of Santiago de Compostela, Galicia, Spain. Organized under the auspices of the American Society of Mammalogists (ASM), Societas Europea Mammalógica (SEM) and the Sociedad Española para la Conservación y el Estudio de los Mamiferos (SECEM). Also participating: University of Santiago de Compostela (USC) through its Colleges of Sciences and Pharmacy as well as the Consejeria de Agricultura, Ganaderia, y Montes of the local government (Xunta de Galicia) through the intermediacy of its Dirección General de Montes y Medio Ambiente Natural. The meeting will emphasize the cutting edge and little known aspects of scientific knowledge of mammalian species, and communities and ecosystems of the Holarctic. However, contributions of interest relating to mammals from other regions will also be welcomed. Contributions will be grouped in sessions that will cover general subjects, symposia or workshops. General matters currently projected: Behavioral Ecology, Biogeography, Community Ecology, Conservation, Development, Molecular Systematics, Morphology and Morphometrics, Natural History, Paleontology, Parasites and Diseases, Physiology, Population Dynamics, Population Genetics, Systematics and Evolution, and Wildlife Management. Those interested in organizing a symposium should contact a member of the Steering Committee. Deadlines for proposals 11 March 1997. The organizers request that electronic mail be used for contact whenever possible. For more information, all queries and requests: *galemys@pinarl.csic.es*. Circulars will also be sent by electronic mail, and distributed through a variety of distribution lists and list servers. Postal address: Euro-American Mammal Congress, Laboratorio de Parasitologia, Facultad de Farmacia, Universidad de Santiago de Compostela, 15706 Santiago de Compostela, Spain, Fax: (34) 81 593316.

XVII Congress of the International Primatological Society, 9-14 August, 1998, University of Antananarivo, Antananarivo, Madagascar. Contact: Secretariat XVII IPS Congress, Madame Berthe Rakotosamimanana, Faculte des Sciences, Batement P, Porte 207, BP 906, Antananarivo 101 Madagascar. Tel: 261 (03) 805 70, e-mail: ralaiari@syfed.refer.mg.

Contributions

We would be most grateful if you could send us information on projects, research groups, events (congresses, symposia, and workshops), recent publications, activities of primatological societies and NGOs, news items or opinions of recent events and suchlike. Manuscripts should be double-spaced and accompanied by the text in diskette for PC compatible text-editors (MS-Word, Wordperfect, Wordstar). Articles, not exceeding six pages, can include small black-and-white photographs, high quality figures, and high quality maps, tables and references, but please keep them to a minimum.

Please send contributions to: **Anthony Rylands**, c/o Conservation International do Brasil, Avenida Antônio Abrahão Caram 820/302, 31275-000 Belo Horizonte, Minas Gerais, Brazil, Tel/Fax: +55 (31) 441 17 95 or **Ernesto Rodríguez-Luna**, Parque de La Flora y Fauna Silvestre Tropical, Instituto de Neuroetología, Universidad Veracruzana, Apartado Postal 566, Xalapa, Veracruz 91000, México, Fax: 52 (28) 12-5748.

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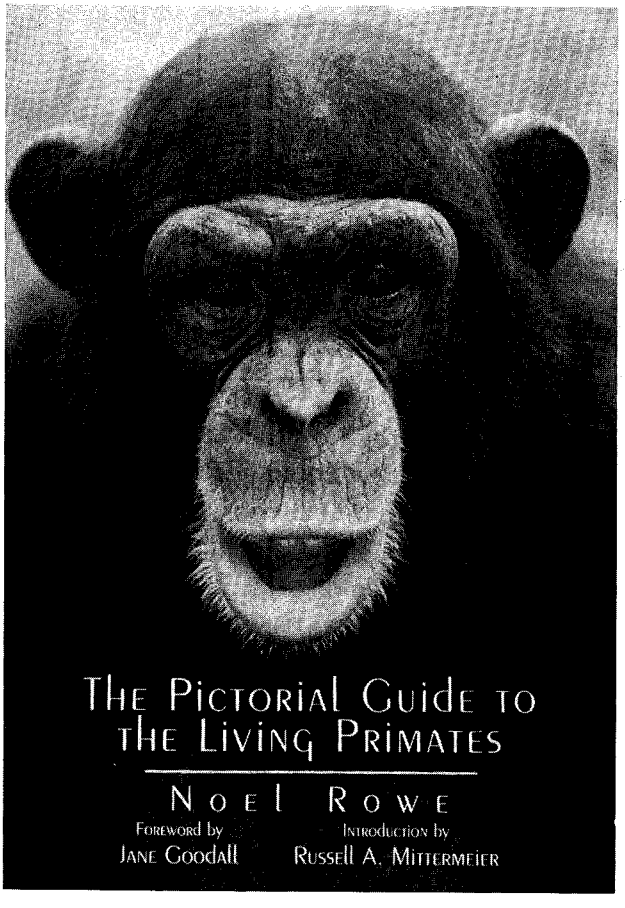

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