

II IBERIAN PRIMATOLOGICAL CONFERENCE

“On the behaviour of primates: ecology, evolution, and conservation”

Abstracts



VIII Congreso de la Asociación Primatológica Española (APE)
IV Congresso de la Associação Portuguesa de Primatologia (APP)

Miraflores de la Sierra, Madrid
September 30, October 1-2, 2009

<http://www.uam.es/otros/ape/congresos/CIP2.html>

Organization:



&



Organizing committee

APE: Joana Branco, Lorenzo Braschi, José Manuel Caperos, Ana Fidalgo, Carlos Gil Burmann, Yvan Lledo Ferrer, Ángela Loeches Alonso, Agustín López Goya, Marisa Mariñán, Ana Morcillo

APP: Fatima Almeida, Catarina Casanova, Filipa Soares, Cláudia Sousa

Scientific committee

APE: Ana Fidalgo de las Heras, Carlos Gil Burmann, Ángela Loeches, Ana Morcillo

APP: Catarina Casanova, Cláudia Sousa, Luis Vicente

Financial committee

Ana Fidalgo de las Heras

Supported by:



Centro de primates
RAINFER



Parque FAUNIA



CAJA DUERO



Ayuntamiento de
Miraflores de la Sierra



Vicerrectorado de Biblioteca y
Promoción Científica de la UAM



Facultad de Psicología
de la UAM

Plenary Presentations

The Evolution of Love: Why are we Sometimes Nice People?

K. Grammer

Department of Anthropology, University of Vienna. Althanstrasse 14. A-1090 Vienna, Austria

E-Mail: karl.grammer@univie.ac.at

Key Words: Human ethology · Sexual selection · Mate choice · Mating strategies · Social agreeableness

Charles Darwin himself was puzzled that evolution had developed sexuality. Although sexual selection was one of his primary issues, he couldn't see benefits of such a costly behaviour. Today this riddle became partially solved and this leads to the most intriguing theoretical considerations about evolution of sex and its consequences. The consequences lead to a row of necessary sex-specific adaptations in the phenotypical, physiological, cognitive and behavioural domains. Based on this theoretical approach I will show that early hormonal environment shapes cognitive error management in both sexes. This might result in sex specific differences in the preferences for certain traits like social dominance, intelligence or physical attractiveness. Although these dimensions can be shown to be cross culturally ubiquitous, the role of sexual selection for the evolution of social agreeableness has been underestimated. Being nice, understanding, loving and caring is the main mate selection criterion in both sexes. This suggests that social selection and sexual selection might have shaped tendencies for cooperation in a runaway or frequency dependent selection process. In addition the evolution of cognition might be due to sexual selection and a result of male-male competition. The conclusion is that of these reflections is that evolutionary theory is the most parsimonious approach to explain a wide variety of phenomena which include basic psychological and sociological facets of behaviour in animals and humans.

Longitudinal Perspectives on Primate Life Histories and Their Implications for Conservation

K. B. Strier

Department of Anthropology, University of Wisconsin-Madison, USA

E-Mail: kbstrier@wisc.edu

Key Words: Life history · Sex ratios · Dispersal · Population viability · Conservation

Investigations into the evolution of primate life histories have traditionally focused on comparisons among species and higher taxonomic units. Yet, high levels of intraspecific variation and phenotypic plasticity make it difficult to distinguish species' normative patterns in comparative life history analyses. Variation in the size and composition of wild primate populations is known to significantly alter behaviour patterns, and is predicted to affect life history strategies in synergistic, interrelated ways. Data on one population of wild northern muriqui monkeys (*Brachyteles hypoxanthus*) over a 27-year period reveal shifts in birth sex ratios and maternal investment strategies that reflect trade-offs between reproduction and survival and may be indicative of adaptive responses to demographic and ecological conditions. For example, the switch from

female- to male-biased birth sex ratios deviates from theoretical expectations for growing populations of primates such as muriquis in which dispersal is female-biased, and suggests that population density may be an important underlying variable in facultative sex ratio adjustments of other primates as well. Similarly, the faster reproductive rates and higher infant mortality documented in recent years suggest a fundamental change in maternal investment strategies associated with changes in the sources of infant mortality in an increasingly saturated habitat. These fluctuations in life histories have implications for the long-term viability of what is one of the largest populations of this critically endangered species, and provide insights into the dynamic ways in which phenotypic plasticity in the life histories of other primates may affect their long-term prospects for survival.

Reproductive Energetics in Primates: How Costly are Babies?

P.C. Lee

Department of Psychology, University of Stirling, Scotland (UK)

E-Mail: phyllis.lee@stir.ac.uk

Key Words: Life history · Reproductive energetic · Energy balance · Infant growth · Baboons

Our recent studies of infant captive baboons (Garcia et al., 2008; 2009) found that infant to maternal mass was positively associated with reproductive parameters, e.g. duration of postpartum amenorrhea and interbirth interval. Baboon mothers resumed cycling and reconceived when their infants attained a relatively consistent threshold mass, as predicted from interspecific life history theory. We suggested that the duration of investment acted as a facultative adjustment to infant growth rates, and depended on maternal physical and social characteristics, such as size and dominance rank. What was surprising was the relatively low energetic costs associated with reproduction; mothers' intake and energy expenditure did not closely predict their infants' growth rates or time to resumption of cycling. Here I place these results on infant growth and reproductive energetics into a broader life history perspective, and explore the question of how costly are non-human primate infants? I partition expenses into time costs and energy costs and look at each of these over the early phase of growth, using the baboon model.

Garcia, C. Lee, P.C. & Rosetta, L. (2009) Growth in colony living anubis baboon infants and its relationship with maternal energetics and reproductive status. *American Journal of Physical Anthropology* 138: 123-135.

Garcia, C., Lee, P.C. & Rosetta, L. (2008) Impact of social environment on variation in menstrual cycle length in captive female olive baboons (*Papio anubis*). *Journal of Reproduction* 135: 89-97.

Paternal Behaviour in New World Monkeys

G. Anzenberger

Anthropological Institute and Museum, University of Zürich, Switzerland

E-Mail: anze@aim.uzh.ch

Key Words: Biparental care · Male mating strategies · Proximate and ultimate aspects

Male infant care is rare in primates. However, several taxa of New World monkeys exhibit high levels of male care and high female reproductive output which makes them valuable model species to examine the evolution of male involvement in infant care. Although, male infant care will be addressed throughout the neotropical primates, the focus will be on titi monkeys (*Callicebus cupreus*), marmosets (*Callithrix jacchus*), and Goeldi's monkeys (*Callimico goeldii*). By and large, these species live in groups composed of a breeding pair and its offspring. Callitrichids are the only primates with obligatory twinning, and allo-maternal help has a major impact on infant growth and survival. The Goeldi's monkey is the only callitrichid with singletons, and females seem to be able to bring up an offspring by themselves. Therefore a comparison between Goeldi's monkeys and marmosets has the potential to clarify evolutionary pathways of male care and to illustrate male strategies that are likely to differ. Moreover, because the larger neotropical primate taxa which exhibit paternal care, titi monkeys and owl monkeys (*Aotus*), have singletons too, the Goeldi's monkey can – due to its intermediate position – also serve as a "control" when investigating and comparing paternal behaviour across the entire infraorder of New World monkeys. Male infant care in New World monkeys will be reviewed from both ultimate and proximate perspectives. The ultimate perspective will deal with the function of male infant care and the costs incurred herewith. Additionally, paternity aspects will be addressed. The proximate perspective will deal with motivational, endocrinological and neurobiological bases of paternal care.

Process-based Conservation Genetics for Primate Species Survival

M. W. Bruford

School of Biosciences, Cardiff University, Cardiff, Wales, UK

E-Mail: brufordmw@cf.ac.uk

Key Words: Genetics · Conservation · Management · Evolution · Adaptation

Conservation genetics is now a mature discipline with a journal in existence for ten years. However, conservation geneticists have predominantly been concerned with making theoretical advances during this period and I would argue have been doing a poor job in translating their data into conservation action. My talk will be based around the issues to do with translating conservation genetics research into management plans, governmental policy and direct conservation action, with a particular emphasis on endangered primates. I will review the current state-of-the-art in terms of conservation genetics and policy, examine some recent examples of where genetics data and policy have been controversially applied, and using a few examples from our own work and that of others, look at how direct conservation action can be encouraged. Finally I will take a prospective look at the future for genetic data in conservation, especially with the onset of whole genome population genetics.

Oral Presentations

Non-Human Primate Conservation in Guinea-Bissau

C. Casanova^{a, b}, C. Sousa^{c, d}

^a ISCSP, Pólo Universitário do Alto da Ajuda, 1300-663 Lisbon, Portugal,

^b CBA and CAPP, Portugal

^c Depart. Anthropology, FCSH, Av. de Berna, 26C Lisbon, Portugal

^d CRIA, Portugal

E-Mail: ccasanova@iscsp.utl.pt

Key Words: Non-human primates · Demographic decrease · Extinction · Bushmeat · Conflicts

Several non-human primate populations are present in Guinea-Bissau as follows: Guinea baboons (*Papio papio*), vervet monkeys (*Chlorocebus sabaeus*), patas monkeys (*Erithocebus patas*), sooty mangabeys (*Cercocebus torquatus atys*); false mona/Campbelli monkeys (*Cercopithecus campbelli*), galagos (*Galago senegalesis*), petaurista monkeys (*Cercopithecus petaurista buettikoferi*), King colobus or black and white Western colobus (*Colobus polykomos*) and the western red colobus (*Procolobus badius temmincki*). While the Guinea-Bissau south-western chimpanzee population is considered one of the two most threatened West African sub-species of chimpanzees, other non-human primate populations also face numerous threats. This study describes the major threats to such species and demographic decline perceptions of hunters and villagers regarding primate survival. In some neighbouring countries some of these primate species no longer exist (e.g. chimpanzee). Species were categorized as: i) present; ii) absent, iii) present but threatened and iv) recently disappeared. Several hunters and villagers were interviewed and forest preliminary surveys in different regions were conducted. Main threats are: 1) bushmeat and 2) habitat destruction. Such destruction is caused mostly by a) forest destruction for agricultural purposes (a practice performed without any order or plan via the slash-and-burn technique) and b) forest exploration to extract wood (also a non-ordered common practice performed within no legal frame-work). Results from our preliminary study in the Tombali field site and other geographically surveyed areas show an accentuated demographic decrease in some species such as baboons, both colobus species and patas monkeys. In some regions certain species were seen for the last time several years ago.

Chimpanzee Conservation (*Pan troglodytes verus*) in Guinea-Bissau: Status, Distribution and Local Knowledge

C. Sousa^{a, b}, C. Casanova^{c, d}, A. Frazão-Moreira^{a, b}, P. Gonçalves^b

^a Departamento de Antropologia, Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa, Portugal

^b Centro em Rede de Investigação em Antropologia (CRIA), Portugal

^c ISCSP, Pólo Universitário do Alto da Ajuda, 1300-663 Lisbon, Portugal

^d CBA and CAPP, Portugal

E-Mail: csousa@fcs.unl.pt

Key Words: Chimpanzee · Distribution · Conservation status

Guinea-Bissau chimpanzees are one of the two most threatened populations of the West African subspecies which currently are present only in the South of the country and have been considered to belong to two different populations: the eastern and the south-western populations. The south-western region offers to chimpanzees a very unique and patchy environment characterized by a mosaic of fragmented primary humid forests, secondary forests, savannahs, mangroves, and agricultural fields. We covered the whole of the south-western region by visiting local human populations and interviewing them about the presence of non-human animals. When chimpanzees were mentioned as present, incursions into the forest were made in order to search for direct and/or indirect evidence of this ape. These results now give us a more accurate picture of chimpanzee distribution and status in Guinea-Bissau, providing us tools to plan conservation strategies and actions. Given that the North American model of protected areas without human populations (“Pristine wilderness”) cannot be applied, the strategies to conserve nature and in this case the chimpanzees have to include both the formal and the informal institutions. In this context, we considered important to access the knowledge of local human populations about chimpanzees’ biology and habitat. For this purpose ethno-biological inquiries were conducted in order to collect, among other information, the zoological knowledge and the animal categorization criteria (interviews and “pile sorting” methodology). In general, people demonstrated some knowledge about chimpanzee biology, and grouped them together with other non-human primates, separated from other non-human animals.

Perceptions of Fauna Conservation by the Nalú: the Case of the Cantanhez National Park (Guinea-Bissau, West Africa)

A. Serangonha^a, C. Casanova^{a, b}, C. Sousa^{c, d}, S. Costa^{b, c, e}

^a ISCSP, Universidade Técnica de Lisboa, Portugal

^b CBA (Centro de Biologia Ambiental), Portugal

^c FCSH, UNL, Portugal

^d CRIA (Centro de Investigação em Rede em Antropologia), Portugal

^e Department of Psychology, University of Stirling, Scotland, UK

E-Mail: soeuxana@gmail.com

Key Words: Perceptions · Fauna · Conservation · Nalú · Hunting habits

The main goal of the present project was to assess how the Nalú ethnic group perceived fauna and its conservation in 4 rural villages/tabancas located in the Cantanhez National Park. The Park is characterized by fragmented forests within a mosaic of mangroves, savannahs, fruit trees and other human agricultural fields. The main goal of the present project was to contribute to a successful biodiversity conservation strategy. We aimed to study the perceptions of Nalú people – an ethnic group present in the Guinean territory – as it is important to analyze such perceptions to understand how these can interfere or dictate hunting habits in a community. In fact, conservation initiatives must be culturally adequate to local communities to have a positive effect within the target public. The present study was conducted during one month (March). Observation and questionnaires (N=120) were used for data collection. Since the universe chosen is not known (official data is lacking), we used a gender and age balanced-sample: 20 individuals of each gender and 20 of each age stage (N=3). The sample used was a non-probabilistic one. Regarding

conservation issues, our data suggests that hunting habits and the consumption of meat by Nalú people (mainly Muslims) are influenced by their belief that animals will exist forever. Nevertheless, locals consider that not all animals can be hunted. Mixed or ambivalent behaviours were found within the locals. Human double standards live side by side as several primates are eaten (baboons) and others (chimpanzees) used in pet trade as they are “like humans”.

Women’s Role in Wildlife Protection: the Case of Cantanhez Natural Park (Guinea-Bissau, West Africa)

S. Costa ^{a,b}, P. Lee ^a, C. Casanova ^b

^a Department of Psychology, University of Stirling, Scotland, UK

^b Centro de Administração e Políticas Públicas, Instituto Superior de Ciências Sociais e Políticas da Universidade Técnica de Lisboa, Portugal

E-Mail: s.c.costa@stir.ac.uk

Key Words: Chimpanzees · Conservation · Forest dependency · Participation · Women

Gender plays an important role in the way people interact with conservation programmes. African women are less positive towards conservation initiatives due to their low participation in decision-making processes. In many communities, men dominate decision-making. This presentation considers how women from Tombali perceive wildlife – i.e. chimpanzees - and Cantanhez Natural Park and the way these both interfere with women’s daily lives. Two hypotheses are considered: (i) women see famine as their biggest life constraint (ii) women depend on farming to feed their families which increases the level of uncertainty in their lives, especially after the establishment of the natural park. Five focus groups were conducted (N=47) during September 2008. Women-only groups were vital since women (according to results of previous surveys) were more negative and fearful regarding conservation. Testimonies were recorded and analysed using content analysis techniques and Atlas.it (version 6.0.12). Famine does emerge as women’s major concern, which explains their intolerance to chimpanzee crop-raiding. The absence of alternative livelihoods and compensations contributes to their anger against wildlife, especially chimpanzees. Women’s expectations about their future are low. NGOs managing the Park activities are not yet working on solutions to make people less forest-dependent. Women could be good allies in the future, although empowerment programmes are needed to engage them in conservation practice. It is also imperative to create a compensation plan and a set of solutions that would allow women to be less Park (and its services) dependent.

Possible Implications of Hunting Pressure in the Population Genetic Structure and Breeding Groups of Guinea Baboons (*Papio hamadryas papio*) in Guinea-Bissau

M. J. Ferreira da Silva ^{a,b}, R. Godinho ^b, C. Casanova ^{c,d}, M. W. Bruford ^a

^a School of Biosciences, Cardiff University, United Kingdom

^b CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Faculdade de Ciências da Universidade do Porto, Portugal

^c CBA, Centro de Biologia Ambiental da Faculdade de Ciências da Universidade de Lisboa, Portugal

^d Instituto Superior de Ciências Sociais e Políticas da Universidade Técnica de Lisboa, Portugal

E-Mail: ferreiradasilvamj@cf.ac.uk

Key Words: Hunting · Guinea baboons · Guinea Bissau · Genetic population structure · Non-invasive DNA samples

Anthropogenic hunting pressure can lead to population genetic changes. It has been reported that, not only it can decrease genetic diversity in harvest populations, but it also can alter the structure of breeding groups in social species. In the present work Guinea baboon is presented as a case study. Our final aim is to assess the effect of hunting in the genetic and social structure of wild populations. This primate is thought to be declining in several locations within its West African range. In Guinea-Bissau, in particular, it was suggested that populations have decreased since the 1980's due to human pressure on its habitat and hunting practices for bushmeat consumption. During a preliminary study in September 2008, we collected information regarding the demographic history of Guinea-Bissau baboons by conducting interviews with ex-Portuguese military hunters (n=6) and by collecting ex-Portuguese military testimonies (n=21). Results suggest an additional period of population decline for Guinea baboons. Interviews reported that during the war against Portuguese colonization (1963-1974), baboon meat was consumed by some Guinean-Bissau troops and some Portuguese military personnel bought and kept individuals as pets. The ex-Portuguese military personnel confirmed that they kept baboons but they consumed baboon meat rarely. Further work will include the analysis of non-invasive DNA samples collected in three different locations within the country (Cantanhez National Park, Cufada Natural Park and Boé region) in order to test the hypothesis of a recent demographic history of Guinea-Bissau baboons (1963/1974 or 1980) and evaluate possible changes in social structure. This work was funded by: FCT - *Fundação para a Ciência e Tecnologia* (SFRH/BD/37417/2007).

Social Behaviour and Organization in a Bachelor Group of Red-bellied Lemurs (*Eulemur rubriventer*) in Captivity: Conservation Implications

M. Carmo^a, *C. Casanova*^b

^a Faculdade de Ciências Sociais e Humanas, Portugal

^b ISCSP, CAPP and CBA, Portugal

E-Mail: jimaginario@gmail.com

Key Words: Red-bellied lemurs · Time-budget · Captivity · Sociogram · Bachelor group

The establishment of bachelor groups is seen as a husbandry technique to deal with surplus individuals in zoos or as an easy and cheap way of maintaining a "group". The aim of this study was to: i) characterize the behaviour that a group of bachelors of *Eulemur rubriventer* displayed in captivity; ii) analyze behavioural differences amongst individuals and their variation throughout the day; iii) compare behaviours exhibited by these lemurs vs the behaviour of wild groups. This work will help in the formation process of other groups *ex situ* and can contribute to assess how significant bachelor groups may be in the conservation of the species. Data was collected during 8 months, in Badoca Safari Park, Portugal. Focal and scan sampling were used. Time-budget differences were displayed amongst subjects (N=6). While the *maintenance* category was the most frequent, *interaction-with-other-species* accounted for less time spent. *Activity*

frequency showed differences throughout the day. Both affiliative and agonistic behaviour matrices displayed differences regarding emitted and received behaviour. A hierarchical cluster analysis evidenced physical proximities between some individuals. Furthermore, the behaviour recorded presented differences with what is observed in the wild. Collected data supports the prediction that the studied group follows a cathemeral pattern. No clear-cut social hierarchy of dominance was visible. The formation of pairs might indicate alliances between individuals. Differences between our data and data from the wild may be explained by a greater exposure to stress conditions by captive individuals although a more detailed study is required.

Influence of Public on Lemurs Behaviour (*Lemur catta* and *Eulemur fulvus albifrons*)

G. Fernández Lázaro, C. Gil Burmann

Departamento de Psicología Biológica y de la Salud, Universidad Autónoma de Madrid, Spain

E-Mail: galaglory@gmail.com

Key Words: *Lemur catta* · *Eulemur fulvus* · Public influence · Enrichment · Social behaviour

Previous studies have shown different results about the influence of zoo visitors in the behaviour of primates. For lemurs and monkeys it seems to be a source of stress, but in some cases it has been even considered as enrichment. This study analyzes the effect of the group size and attitude of the public in the behaviour of two species of lemurs (9 *Lemur catta* and 9 *Eulemur fulvus albifrons*) in a naturalistic exhibit in the biological park Faunia (Madrid, Spain). We used focal animal sampling during 4 months for recording the frequency and duration of the lemur's behaviour. Our results support previous behavioural research that visitors have an influence on primates in zoos. It also suggests that, comparing with a non-public situation, the attitude and not only the group size of public affect the behaviour of both species of lemurs. Frequencies of agonistic and social behaviour increase when the attitude of visitors is passive. Alerts, approximation and move away behaviours increased when the attitude is active. Duration of inactivity increase with the amount of public, and locomotion increase when there is less than five people. *Eulemur fulvus albifrons* shows more frequencies of agonistic and communication behaviours than *Lemur catta*, also in both species no statistical significant differences between males and females were found.

Behaviour and Activity Patterns of the Black Howler Monkey (*Alouatta pigra*) in the Reserva de la Biosfera de Calakmul, Mexico

S. de Laiglesia^a, C. Gil Burmann^b, R. Bravo-Xicoténcatl^c

^a Facultad de Psicología, Universidad Complutense de Madrid, Spain

^b Facultad de Psicología, Universidad Autónoma de Madrid, Spain

^c Facultat de Psicologia, Universitat de Barcelona, Spain

E-Mail: laiglesant@hotmail.com

Key Words: *Alouatta pigra* · Activity pattern · Social behaviour · Preserved habitat · Habitat quality

The behaviour of the black howler monkey (*Alouatta pigra*) has been usually studied in disturbed areas or small reserves. The aim of this study was to analyse the behaviour and activity patterns of this species living in a continuous well-preserved habitat. Two troops of black howler monkeys were observed in the Reserva

de la Biosfera de Calakmul, México, which is the largest protected landmass of tropical rainforest in Mesoamerica. The first group (N=7) was located in the core area and the second group (N=7) in the buffer area. A total of 200h were collected between May and September 2006 for the two groups where we recorded the activity patterns with a focal animal sampling, and the social intragroup interactions with a behaviour sampling. Both troops spent most of the time resting (64%), feeding (21%), and travelling (11%). Affiliative and agonistic interactions, vocalizations, parental and sexual behaviour were observed less than 4% of the time. The time budget in all the activity patterns was similar in both groups, but more resting and travelling bouts were found in the buffer area group than in the core area group. According to other recent studies, the diet of the black howler monkeys of Calakmul was more frugivory (60%) than folivory (40%). The more frequent and shorter travelling and resting bouts in the buffer area group could owe to the difference in the habitat quality where fruit and resting trees are more dispersed.

Border Marking in Wild Saddle-back Tamarins: Defending Resources or Looking for Partners?

Y. Lledo-Ferrer^{a, b}, E. W. Heymann^a, C. Gil-Burmann^b, F. Pelaez^b

^a Abteilung Verhaltensökologie & Soziobiologie, Deutsches Primatenzentrum, Göttingen, Germany

^b Departamento de Psicología Biológica y de la Salud, Universidad Autónoma de Madrid, Spain

E-Mail: yvan.lledo@uam.es

Key Words: Scent-marking · Territoriality · Intergroup communication · *Saguinus fuscicollis* · *Saguinus mystax*

Scent marking has often been assumed to serve a territorial function in callitrichines, as seen in many other mammals. However, a previous study on moustached tamarins did not reveal a distinct spatial pattern (Heymann, 2000). We studied three free-ranging groups of saddle-back tamarins, *Saguinus fuscicollis*, in mixed-species troops with moustached tamarins, *Saguinus mystax*, in the Amazonian rainforest of Peru from May 2007 to June 2008. We recorded and located on GPS scent-marking events and intensity, overmarking, olfactory inspections, as well as density, diameter at breast height, and visits to feeding trees. A 15 m buffer area was defined around each tree and the distribution of scent-marks between overlap, exclusive and tree areas compared with GLMMs. Although the tamarins used a border marking strategy, marking more on the periphery of their territory, this was not intended to defend feeding resources since their importance did not differ between areas. Moreover, the pattern of scent-marking near trees seems to be a way of optimising signal transmission, rather than defending them. Thus, saddleback tamarins used the periphery to exchange information with neighbouring groups. These results sharply contrast with the marking behaviour of moustached tamarins in the same study area, and suggest that differences in scent marking behaviour in both species might reflect subtle differences in mating system rather than differences in feeding ecology.

Army Ant Consumption by Nigerian Chimpanzees: Constraints of Prey Ecology and Ape Harvesting Strategies

A. Pascual-Garrido^a, O. Allon^b, C. Schöning^c, V. Sommer^b

^a Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Spain; Gashaka Primate Project, Nigeria

^b Department of Anthropology, University College London, London, UK

^c Institute of Biology, Department of Population Biology, University of Copenhagen, Copenhagen, Denmark;
Länderinstitut für Bienenkunde, Hohen Neuendorf, Germany
E-Mail: alejandrapascualgarrido@gmail.com

Key Words: *Pan troglodytes vellerosus* · Insectivory · Tool-use · Predation · Army ants

Chimpanzees are known to exploit army ants at various study sites. Nevertheless, harvesting strategies are still poorly understood, in particular with respect to constraints imposed by the ants' nomadic lifestyle. We studied a community of *Pan troglodytes vellerosus* at Gashaka, Nigeria. At this savannah-forest habitat, insectivory - typically aided by stick tools - is more frequent than elsewhere, as 42% of all faecal samples contain ant remains. Ant availability varied considerably with weather conditions. Nevertheless, the occurrence of *Dorylus* fragments in chimpanzee faeces did not. This suggests that chimpanzees do not use ant trails to locate their prey, but that they rely on encounters with ant nests. However, repeated nest attacks are viable only in the short term, given that simulated attacks cause colonies to migrate sooner. Moreover, ants rarely reuse old nests, rendering revisits to former cavities a likewise inefficient strategy. Low reoccupation rate may also reflect a predator avoidance strategy on the ants' part. Nevertheless, chimpanzees may use certain physical characteristics of preferred nest sites as clues for detection, although we are far from understanding this fully. The extensive tool-use and high frequency of army ant consumption at Gashaka probably reflects an adaptation to a relatively harsh and seasonal environment. A better understanding of the cognitive demands imposed by the ecology of an important prey such as army ants may also shed light upon the significance of insectivory in early hominin diet.

Parasite Prevalence and Richness on the Chimpanzees in Cantanhez National Park, Guinea-Bissau

R. Sá ^{a, b, c}, J. Petrášová ^e, K. Pomajbíková ^d, I. Profousová ^d, K. Petrželková ^e, C. Sousa ^{b, c}, J. Cable ^a, M. Bruford ^a, D. Modrý ^d

^a Biodiversity and Ecological Processes Research Group, School of Biosciences, Cardiff University, UK

^b Department of Anthropology, Human and Social Sciences Faculty, New University of Lisbon, Portugal

^c CRIA- Centro em Rede de Investigação em Antropologia, Portugal

^d Department of Parasitology, Faculty of Veterinary Medicine of University of Veterinary and Pharmaceutical Sciences, Brno, Czech Republic

^e Department of Mammal Ecology, Institute of Vertebrate Biology, Academy of Sciences of the Czech Republic, Brno, Czech Republic

E-Mail: sar@cardiff.ac.uk

Key Words: Chimpanzees · Guinea-Bissau · Faecal samples · Parasites · Fragmentation

Throughout the rainy season (Sept to Nov 2008) wild chimpanzees (*Pan troglodytes verus*) were followed and faecal samples were collected at the Cantanhez National Park, Guinea-Bissau. In order to: i) survey their parasite fauna, ii) monitor the health status of these apes by examining their parasite prevalence and richness, iii) compare the results with previous studies from wild populations, a coprological parasite study was conducted. Samples (n=102) were screened using a modified Sheater's flotation (s.g. 1.33) method and MIF sedimentation and then screened through light microscopy. Results reveal an overall rate of parasite

infection of 91.2% (93/102) and a mean parasite richness of 2.6 (S.D. 1.6). At least 13 different parasite *genera* were identified and the most prevalent taxon is an entodiniomorph ciliate: *Troglodytella abressarti* (62%). When compared to other wild chimpanzee study sites, Hookworms are reasonable abundant (38%) and the prevalence of *Blastocystis hominis* (49%), *Trichuris trichura* (15%), and *Giardia spp.* (6%) is high. Results suggest a potential for cross infection between humans and chimpanzees due to fragmentation effects. Moreover the occurrence of *Giardia*, Hookworms and Whipworms seems to point that habitat disturbance may play an important role in transmission or/and persistence of such pathogens. However, further studies are necessary to understand the epidemiology of chimpanzee parasites. This is the first chimpanzee parasitological record in Guinea-Bissau and our data can give a better understanding of the impact of anthropogenic factors that are threatening chimpanzees in this country. Project financed by: SFRH/BD/35797/2007 from *Fundação para a Ciência e Tecnologia*, Portugal.

Nesting Spatial Patterns and Oil Palm Use in Cantanhez and Cufada, Southern Guinea Bissau

J. V. Sousa^{a, b, c}, A. Barata^d, C. Casanova^{a, e}, L. Vicente^{a, h}, C. Sousa^{b, g}

^a Centro de Biologia Ambiental (CBA), Portugal

^b Centro em Rede de Investigação em Antropologia (CRIA), Portugal

^c Oxford Brookes University, United Kingdom

^d University of Stirling, Scotland

^e CAPP, Instituto Superior de Ciências Sociais e Políticas da Universidade Técnica de Lisboa, Portugal

^h Faculdade de Ciências da Universidade de Lisboa, Portugal

^g Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa, Portugal

E-Mail: joanavazsousa@gmail.com

Key Words: Nesting ecology · Oil palm · Cantanhez · Cufada · Chimpanzee

Cantanhez National Park and Cufada Lagoons Natural Park are two protected areas in Southern Guinea-Bissau where chimpanzees occur. A preliminary survey was conducted in both areas in order to assess particular features of nesting preferences and density estimates. Both areas are geographically separated by approximately 40 km, although chimpanzee distribution may be continuous. South Cantanhez chimpanzees revealed a particular nesting preference, with 92% nests built in oil palms (*Elaeis guineensis*). Additionally, a significant nest clustering in forest boundary areas was reported. Such preference might be a consequence of oil palm distribution. Even in forest core areas, where oil palm availability is lower, 80% of the registered nests corresponded to oil palms. Although chimpanzees prefer to nest in forest edges, they were most frequently observed in forest core areas, which is likely to indicate a preferred foraging area. As for Cufada, chimpanzees exhibited a nesting pattern similar to other sites, with more nests being built in less disturbed forests: dense canopy registered a significantly higher nest detection rate than open canopy, while these showed a higher nest detection rate than woodland savannah patches. In Cufada, *Dialium guineense* (46%) was the preferred species for nest building, followed by *Elaeis guineensis* (28%). In summary, both studied areas revealed differential nesting patterns regarding space use and significant differences on the species used for nest building. Although in the South of Cantanhez oil palm nests present specificities that constrain density estimates, the chimpanzee density estimated in Cufada is substantially lower than in Cantanhez.

Regression Models of Homosexual Men and Women Partner Age Preferences

L. Braschi Diaferia, C. Gil Burmann

Departamento de Psicología Biológica y de la Salud, Universidad Autónoma de Madrid, Spain

E-Mail: lbraschi@gmail.com

Key Words: Homosexuality · Age preferences · Human ethology · Sexual selection · Mate choice

We constructed a couple of regression models for both homosexual men and women preferences for partner age. We collected personal ads of 640 homosexual men and 121 homosexual women from several Spanish media, which included daily newspapers, homosexual-oriented magazines, and contact websites. We first constructed a model with preferred age preference for both sexes, and then a second one for the preferred difference in age between ideal partner and own age. Following previous research, we expected to find that homosexual men prefer somewhat older partners as they age, but come to prefer younger ones as they get old. Thus, we expected to find that the slope of the regression for age would be less than 1 for the first model, and negative for the second model. Conversely, we expected to find that homosexual women's preferences followed a pattern similar to men's, albeit much less marked, and therefore that the slope for the first model was slightly below 1 for the first model and slightly below 0 for the second model. Results matched our expectations.

A Statistical Modeling Approach to the Occurrence of In-group Bias in Preschool Affiliative Networks

J. R. Daniel^a, A. J. Santos^a, B. E. Vaughn^b, I. Peceguina^a

^aUIPCDE, Instituto Superior de Psicologia Aplicada, Portugal

^bHuman Development and Family Studies, Auburn University, USA

E-Mail: joaordaniel@gmail.com

Key Words: Peer Relations · Social Network Analysis · Affiliative Subgroups · In-group Bias

Studies of peer interactions and friendships have demonstrated the power of the peer group as a context for development across a wide range of ages. Ethological studies of preschool group structure highlight concepts of social niches and potential roles associated with occupation of specific niches that offer novel perspectives on behavioural constraints at the individual level. Thirteen Portuguese preschool peer groups (N=316), and 28 American preschool peer groups (N = 543), were observed to determine physical proximity, visual attention and social interaction to peers. Sociometric data were also collected to identify friendship dyads. Similarity of association profiles was analyzed for each classroom using a complete linkage hierarchical clustering algorithm. Three subgroup types, high mutual proximity (HMP), lower mutual proximity (LMP), and ungrouped children were identified. Linear mixed models (LMMs) were used to understand which variables affect in-group bias. These variables were related to children' demographic characteristics (age, sex and nationality), and subgroup characteristics (type of subgroup, gender composition, status and subgroup size). LMMs are an extension of multiple linear regression, designed to deal with the violation of the assumption of independence of errors when individuals within groups are more similar to each other than to individuals in other groups. Significant in-group preferences were observed for both HMP and LMP subgroups using behavioural and sociometric acceptance data, although these preferences were more

marked for HMP subgroups and especially in older children. Overall, the results support the contention that the peer group affiliative structure constrains individual social attention, interaction and acceptance.

Functional Asymmetry in 58 Spontaneous Actions in Naturalistic Housed Chimpanzees from the Mona Foundation (Spain)

M. Llorente^{a, b}, D. Riba^{b, a}, M. Mosquera^{b, c}, M. Fabré^d, O. Feliu^a

^a Unitat de Recerca i Laboratori d'Etologia, Fundació Mona, Riudellots de la Selva, Girona, Spain

^b Unitat de Cognició, Institut Català de Paleoecologia Humana i Evolució Social (IPHES), Tarragona, Spain

^c Àrea de Prehistòria, Universitat Rovira i Virgili, Tarragona, Spain

^d Facultat de Psicologia, Ciències de l'Educació i de l'Esport Blanquerna, Universitat Ramon Llull, Barcelona, Spain

E-Mail: mllorente@fundacionmona.org

Key Words: Functional asymmetry · Handedness · *Pan troglodytes* · Video analysis · Laterality

Behavioural asymmetries have been extensively studied in nonhuman primates and other animals. In the case of chimpanzees very few works have been carried out from an observational methodology and studying large behavioural repertoires. In this work we have studied the functional lateralization of a sample of 14 chimpanzees housed in Mona Foundation Sanctuary. We studied 58 spontaneous behaviours that included manual, feet and other actions. In total 2226 sessions were conducted during 33 months of observation (2005 to 2008) with a total of 271h of video records. There were 22,052 data points from which the manuals were 98.79% (87% unimanual and 12% bimanual). We analyzed other behaviour variables: grip type, posture and tool use. In unimanual actions 13 subjects were lateralized (8 right-handed, 5 left-handed) and 1 was nonpreferent. In bimanual actions 10 individuals were lateralized (9 right-handed, 1 left handed) and 4 were nonpreferents. In unimanual actions the handedness index was 0.060 and in bimanual 0.320. No preference at the population-level was found in unimanual actions, but in bimanuals individuals were right-handed at the population-level. In addition, bimanual behaviours also induced a stronger lateralisation than unimanuals. In conclusion, unlike previous studies, the sample here was mostly lateralized probably due to methodological changes implemented (longitudinal study and analysis frame by frame in video). Moreover, chimpanzees showed population-level right handedness in bimanual behaviour which is consistent with experimental studies carried out with the same sample and other captive and wild chimpanzees.

Population-level Right Handedness for a Coordinated Bimanual Task in Naturalistic Housed Chimpanzees: Replication and Extension in 114 animals from Zambia and Spain

M. Llorente^{a, b, f}, L. Palou^c, L. Carrasco^c, D. Riba^{a, b}, M. Mosquera^{b, d}, M. Colell^c, M. Fabré^f, O. Feliu^a

^a Unitat de Recerca i Laboratori d'Etologia, Fundació Mona, Riudellots de la Selva, Girona, Spain

^b Unitat de Cognició, Institut Català de Paleoecologia Humana i Evolució Social (IPHES), Tarragona, Spain

^c Departament de Psiquiatria i Psicobiologia Clínica, Universitat de Barcelona, Barcelona, Spain

^d Àrea de Prehistòria, Universitat Rovira i Virgili, Tarragona, Spain

^f Facultat de Psicologia, Ciències de l'Educació i de l'Esport Blanquerna, Universitat Ramon Llull, Barcelona, Spain

Key Words: Handedness · Bimanual coordination · Chimpanzees · Hand preferences · Replication

Recently many studies have been conducted on manual laterality in chimpanzees. Nevertheless whether nonhuman primates exhibit population-level handedness remains a topic of considerable debate. One of the behaviours studied were bimanual coordinated actions. Although recent studies have shown that captive chimpanzees show handedness at population level for these tasks, some authors have questioned the validity and consistency of these results. The first reason has been the humanization of the samples. The second one has been that the results refer to animals in USA biomedical centers and conducted by the same team (WD Hopkins and colleagues). This paper aims to assess the laterality in bimanual coordination (tube task) in animals housed in intermediate environments (Chimfunshi Sanctuary, Zambia) replicating previous studies on similar samples (Mona Foundation, Spain) extending the results to chimpanzees housed in these settings. Individuals were evaluated by 4 experimental sessions (tests). Results indicated that 86% of the Chimfunshi sample was lateralized (48% RH, 38% left-handed). Furthermore the sample showed population-level right handedness in the mean handedness index, in test 1, test 2 and the first half of the study (test 1 +2). Rearing experience did not influence over hand preference. Taken together the two samples (intermediate settings: Chimfunshi and Mona) results indicate a clear right handedness. In conclusion this replication and extension shows that: (1) chimpanzees in intermediate environments (naturalistic housed) are right-handed at population-level, (2) the results are consistent with those obtained by Hopkins in captive settings and, (3) the humanization of the samples does not affect manual laterality.

Hand Preference in Simple and Complex Tasks in Naturalistic-Housed Chimpanzees at the Mona Foundation (Spain)

D. Riba^{b, a}, *M. Llorente*^{a, b, c}, *M. Mosquera*^{b, d}, *O. Feliu*^a

^a Unitat de Recerca i Laboratori d'Etologia, Fundació Mona, Riudellots de la Selva – Girona (Spain)

^b Unitat de Cognició, Institut Català de Paleoecologia Humana i Evolució Social (IPHES), Tarragona (Spain)

^c Facultat de Psicologia, Ciències de l'Educació i de l'Esport Blanquerna, Universitat Ramon Llull, Barcelona (Spain)

^d Àrea de Prehistòria, Universitat Rovira i Virgili, Tarragona (Spain)

E-Mail: driba@prehistoria.urv.cat

Key Words: Manual laterality · *Pan troglodytes* · spontaneous activities · coordinated bimanual tasks

The manual preferences of 8 chimpanzees (*Pan troglodytes*) were assessed in spontaneous activities and in two different experimental tasks. We recorded the hand used by each subject in 10 spontaneous simple unimanual activities, 1 experimental simple reaching and 1 experimental coordinated bimanual task (tube task). Spontaneous simple unimanual activities revealed ambidextrous for the majority of the group. The experimental unimanual simple reaching task revealed many individual manual preferences, and for the experimental bimanual coordinated task all the subjects were lateralized in their hand use, but not at group level. Experimental tasks induced greater strength of laterality than did spontaneous activities. Although the size of our sample does not allow to draw any conclusions concerning manual preference at the population level, this study stresses the importance of questions related with the methodology in the recording of

manual laterality in feeding situations and the influence of bimanual coordinated tasks to reveal hand preferences in non-human primates.

Spontaneous and Flexible Use of Tools as Straws by Orangutans

H. M. Manrique, J. Call

Department of Developmental and Comparative Psychology, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

E-Mail: hector_manrique@eva.mpg.de

Key Words: Animal cognition · Causal knowledge · Primates · Problem solving · Tool properties

We tested five bonobos, five chimpanzees and six orangutans in a task in which they had to use and/or modify a tool to use it as a straw to gain access to a fruit juice reward. All subjects were socially housed at the WKPRC in the Leipzig zoo. Experiment 1 investigated whether great apes could spontaneously use a piece of electric cable formed by five plastic-covered copper strands bundled together by an outer plastic layer to get the juice located inside a box. Four orangutans and one chimpanzee discovered that the electric cable could be used as a straw. Additionally, 3 subjects improved the efficiency of the cable by removing the plastic-covered copper filaments and using the now hollow outer plastic layer as a straw. Experiment 2 investigated whether subjects could transform a non-functional hose into a functional one by removing two lids located at both ends of the hose. Orangutans outperformed the other two species in using the hose to empty the apparatus –something that they achieved by removing the two lids, often prior to using the hose. Moreover they rarely removed the lids when those were perforated and therefore liquid could still be extracted with the hose. In the final experiment, we presented chimpanzees and orangutans with four 3-tool sets and allowed them to select one tool. Each set only contained one straw-like tool. Unlike chimpanzees, orangutans selected the straw-like tool above chance levels. Orangutans performed better in all three experiments: they spontaneously invented the use of the cable as a straw, modified the non-functional straws and selected the suitable straw-like tools.

Orangutans Insightfully Solve a Cognitively more Demanding Version of the Water-as-a-tool Task

C. Sebastián^a, F. Colmenares^a, N. Mendes^b, J. Call^b

^aDepartamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, Madrid, Spain

^bMax Planck Institute for Evolutionary Anthropology, Leipzig, Germany

E-Mail: carla.sebastian@gmail.com

Key Words: Tool use · Problem solving · Insight learning · Orangutans

Many nonhuman animals use tools to access out-of-reach resources; however, there are indications that this behavioural convergence does not necessarily reflect cognitive convergence. Mendes et al. (2007) designed a task in which orangutans were presented with an out-of-reach reward floating inside a transparent tube. They reported that five females solved the problem from the very first trial, by collecting water (the tool) from

a drinker and spitting it inside the tube, until the raised water level allowed them to get the otherwise inaccessible reward. The authors interpreted this finding as a likely candidate for insightful problem solving. In this version of the “water-as-a-tool” task, the tool (i.e., the water) was not visible; and the authors argued that maybe the subjects fully formed a solution to the problem only after they added the first mouthful to the tube and saw its effects. In the experiment reported here, we address this issue by developing a cognitively more demanding version of this task, as one of the conditions included presenting the subjects (two male orangutans) with a peanut-inside-a-dry-opaque-tube. We found that one of the subjects solved the original floating peanut task and that the other managed to solve the peanut-inside-a-dry-opaque-tube condition. These results lend further support to the hypothesis that insight learning might be involved in the tool-using based behaviour that the subjects displayed to solve the problem.

Supported by a studentship from the MCINN to C. S. and by project grants CCG07-UCM/SAL-2578 and UCM-BSCH GR58/08, respectively, to F.C.

Acquisition Patterns and Handedness in the Use of Leaves for Drinking Water by Wild Chimpanzees (*Pan troglodytes verus*)

C. Sousa^{a, b}, T. Matsuzawa^c

^a Departamento de Antropologia, Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa, Portugal

^b Centro em Rede de Investigação em Antropologia (CRIA), Portugal

^c Primate Research Institute, Kyoto University, Japan

E-Mail: csousa@fcs.h.unl.pt

Key Words: Chimpanzee · Tool use · Learning · Drinking water

The use of leaves for drinking water is a wide spread tool-use behaviour among chimpanzees, that can be found in three different forms, leaf-sponges, leaf-folding, and leaf-spoons. Among the chimpanzee community of Bossou, we can observe all three forms, albeit in different frequencies. Here it is described the longitudinal record of manufacture and use of leaf-tools for drinking water. The learning process underlying the acquisition of tool-using skills, and the degree of laterality evident in both immature and mature performers were investigated. The use of leaves for drinking water emerges at the age of 1.5 years old, but the manufacture of leaf-tools only starts at 3.5 years of age. Infants and juveniles were observed to use drinking tools, which had been discarded by other individuals after use. Concerning handedness, in general, the chimpanzees are ambidextrous, with some individuals biased to one side. Comparisons with other forms of chimpanzee tool use are made. We discuss possible explanations for the earlier emergence and increased ambidextrousness that accompanies leaf-tool use in comparison with other forms of tool use by wild chimpanzees.

Parent-infant Conflict in Feeding Contexts in Cotton-top Tamarins (*Saguinus oedipus*)

J. M. Caperos, S. M. Sánchez, F. Peláez, A. Fidalgo, A. Morcillo

Departamento de Psicología Biológica y de la Salud, Universidad Autónoma de Madrid, Spain

E-Mail: jose.caperos@estudiante.uam.es

Key Words: Weaning · Parent-offspring conflict · Infant carrying · *Saguinus oedipus*

In primates, during the weaning process, behavioural mother-infant conflict occurs, especially when infant care is incompatible with other maternal behaviours. In callitrichids, mothers and fathers carry infants and diminishing foraging and feeding while carrying. Therefore, during feeding contexts, we expect a reduction in infant carrying and more intense conflict (increased infant's demands and caregiver's rejections) than during non-feeding contexts. Two 30' focal sampling were carried out on seven cotton-top tamarin infants 4 days/week, in feeding (food available) and non-feeding sessions (without available food), during postpartum weeks 5-9. Infant carrying, infant demands for transport (climb on) and parent carrying rejections were recorded continuously. Responsibility of carrying bouts was assessed by Hinde-index. Infants were carried less time during feeding than during non-feeding sessions, although only fathers reduced their contribution to infant carrying. During feeding sessions fathers were less responsible of carrying bouts than in non-feeding sessions, while no change in the responsibility of mothers was observed. Infants tried to climb on mothers more frequently during feeding than during non-feeding sessions. On the other hand no difference has been found in infant trials to climb on fathers, although these rejected infants more frequently during feeding than during non-feeding sessions. However no difference has been found in the frequency with which mothers rejected their infants. While feeding contexts seem to be related to a more intense father-infant conflict, no evidence of such conflict has been found for mothers; as a consequence infants might be directing their carrying demands toward their mothers. Acknowledgments: MEC-DGI-SEJ2005-00016 & MCINN-SGPI-PSI2009-08581PSIC.

Group Size, Sex Ratio, Length of Interbirth Interval and Female Reproductive Success in a Harem-forming Colony of Baboons (*Papio hamadryas*)

P. Polo^a, F. Colmenares^a, M. V. Hernández-Lloreda^b

^a Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, Madrid, Spain

^b Departamento de Metodología de las Ciencias del Comportamiento, Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, Madrid, Spain

E-Mail: ppolo@psi.ucm.es

Key Words: Group size · Sex ratio · Interbirth interval · Female reproductive success · Baboons

The length of the interbirth interval (IBI) is a critical determinant of a female's lifetime reproductive success. In baboons, group size and especially the group's sex ratio (% of males) are known to be good predictors of the variation in the length of IBI. However, in the multilevel society of the hamadryas baboon, the sex ratio could be operating at two different levels, the one-male unit (OMU) and the band. At OMU level, increasing OMU size (low sex ratio) should lead to increased IBIs due to an elevation of female-female competition. At band level, increased sex ratio should lead to increased both male-male competition and intersexual conflict (sexual coercion). It has been reported that lactating and pregnant females resume their cycles sooner after a male takeover, but less is known about the effect of these takeovers over cycling females. In this study we assess the effect of a number of variables on IBI length. These include group size and sex ratio, at OMU and band levels, as well as female and male age, survival of the previous infant, and occurrence of changeovers.

The data come from a large colony of hamadryas baboons housed in the Madrid Zoo. We analysed 116 IBIs from 39 females, spanning a period from 1989 to 2001. Our results show that long-term residence in an OMU, degree of male-male competition for females, and, to some extent, the fate of the previous infant, are the main determinants of the length of IBI.

Reconciliation and Post-conflict Anxiety in Brown Capuchins

J. R. Daniel, A. J. Santos, M. G. Cruz

UIPCDE, Instituto Superior de Psicologia Aplicada, Portugal

E-Mail: joardaniel@gmail.com

Key Words: *Cebus apella* · Multivariate analysis · Post-conflict anxiety · Reconciliation · Relationship quality

Post-conflict affiliation has been mostly studied in Old World primates. *Cebus* species display great variability in social characteristics providing a great opportunity for comparative studies. Our aim with this study is to: 1) extend previous results on brown capuchins (*Cebus apella*), using multivariate analysis to determine the relative importance of social variables (related to the quality of the relationship between opponents) and non-social variables (related to characteristics of the conflict or of the opponents) on the occurrence of reconciliation; and 2) illustrate the time course of post-conflict anxiety, investigating factors that may affect its expression. We recorded 190 agonistic interactions and subsequent post-conflict behaviour in a captive group of brown capuchin monkeys. Only 26.8% of these conflicts were reconciled. Reconciliation was more likely to occur between opponents that support each other more frequently and that spent more time together. Post-conflict anxiety was mostly determined by conflict intensity and none of the variables thought to measure relationship quality had a significant effect on post-conflict stress. The low conciliatory tendency observed suggests that if reconciliation is a fundamental mechanism to maintain brown capuchins' group coherence, reconciling a small proportion of conflicts may be sufficient to prevent degradation of social relationships, or instead, it is possible that only conflicts perceived as threatening need to be reconciled. On the other end, reconciliation may not be necessary to maintain brown capuchins' group coherence since it occurs at a low rate and, even in its absence, post-conflict anxiety rapidly decreases.

Effect of the Social System on the Behavioural Patterns of two Colobine Species in Guinea Bissau

T. Minhós^a, C. Sousa^b, L. Vicente^c, M. W. Bruford^a

^aCardiff School of Biosciences, Wales, UK

^bDepartment of Anthropology, Faculty of Human and Social Sciences, Lisbon, Portugal

^cDepartment of Animal Biology, Lisbon Faculty of Sciences, Portugal

E-Mail: RodriguesTM@cardiff.ac.uk

Key Words: *Colobus* · Aggressive behaviour · Affiliative behaviour · Sympatry · Social system

Western red colobus (*Piliocolobus badius temminckii*) and western black-and-white colobus (*Colobus polykomos*) are both African colobines belonging to the same subfamily (Colobinae) and are, very often, found living in sympatry. Despite this, they exhibit very different social systems. Western red colobus live in large social groups comprising several adult males and females, and dispersal is mainly female mediated.

Females exhibit conspicuous sexual swellings. Western black-and-white colobus live in much smaller groups with one to three adult males, and dispersal is mainly male-mediated, with no clear sexual behaviour displayed by ovulating females. One social group of each species is being studied in Cantanhez Forest, Guinea Bissau in order to understand how such different social systems can affect within group social dynamics. We expect to find stronger social bonding between black-and-white colobus females as a result of female philopatry. In contrast, male coalition formation and weak social bonding between females are expected to occur in western red colobus as a consequence of male philopatry. This presentation will show the first results of this study. Focal sampling was used during a total of 467hours (from March until June, 2009). Red colobus seem to engage more in both aggressive and affiliative interactions. Nevertheless, black-and-white colobus females are more aggressive towards each other than are the red colobus ones. Our analysis of male-female dyads is limited since black-and-white colobus males left the group during the first month of the study. Further behavioural data is being collected along with genetic data to better assess behavioural patterns.

What does it mean to be FRIENDS amongst Guinea Baboons (*Papio hamadryas papio*)?

A. Almeida^{a, b}, C. Casanova^{a, b}

^a ISCSP/Universidade Técnica de Lisboa, Portugal

^b CAPP and CBA, Lisbon, Portugal

E-Mail: anaisacaralm@hotmail.com

Key Words: Friendship · *Papio papio* · Grooming · Proximity · Protection

Savannah baboons (*Papio cynocephalus*) are characterized by particularly close associations between females and certain adult males. Hypotheses have been suggested to explain the benefits of “friendship” to female as follows: 1) attack protection against infanticidal males; 2) protection, for themselves and their offspring, against harassment by dominant females; 3) male-infant attachment leading to future care of juveniles. For males, proposed benefits are: 1) increased chances of siring offspring in the future and 2) increased fitness of the offspring already sired with the female. These hypotheses were examined in a captive population (N>20) of Guinea baboons (*P. h. papio*) living in a social colony at Lisbon Zoological Garden. An observation protocol was developed where *ad libitum*, scan and focal samplings were combined. All but one female formed a strong bond with a male regardless it’s reproductive condition and presence or absence of infants [benefits for both sexes aren’t directly (or exclusively) related with the protection of infants]. Also, male infanticide never occurred. High frequency of agonistic encounters amongst females and the fact that mothers were the main recipients of such episodes makes it likely that for females, the primary benefit of friendships is the protection from aggressive interactions with other females. Females only formed consort pairs and were seen copulating with male friends, suggesting that, for males, it is the increasing chance of siring offspring that drives their affiliative strategy/friendship (which has as a specific aim the formation of a heterosexual relationship).

Behaviour, Ecology and Conservation of Brown Spider Monkeys (*Ateles hybridus*) in Colombia

A. G. de Luna^{a, b}, A. Link^{a, c}

^a Proyecto Primates Colombia

^b Facultad de Ciencias Biológicas, Universidad Complutense de Madrid, Spain

^c Department of Anthropology, New York University, U.S.A

E-Mail: a.gabrieladeluna@gmail.com

Key Words: *Ateles* · Spider monkey · Fragmentation · Conservation · Behavioural plasticity

Brown spider monkeys (*Ateles hybridus*) are one of the most threatened primates in the world. Since 2005, we began a conservation initiative in the Colombian Magdalena River Valley with four main objectives: Assess for the phylogenetic relations of *A. hybridus*, estimate their population densities, assess for the effects of habitat loss on their behavioural ecology, and raise awareness and increase local capacity. Molecular data from 7 different sites suggests that brown spider monkeys are not divided into two independent evolutionary lineages as previously proposed. Most small fragments surveyed had no groups of *Ateles* and they were only found in recently formed fragments or continuous forests. Higher population densities were found at recently fragmented areas due to a reduction in forest surface. The effects of fragmentation on the behavioural ecology of brown spider monkeys were assessed in two groups in two different fragments through the variation of average subgroup size and their change in feeding behaviour. Subgroups were smaller in fragmented areas compared to subgroup sizes of other spider monkeys living in continuous forest. Also their diet included the highest leaf intake ever reported for this genus. Our result show that brown spider monkeys are adapting to habitat disturbance both through social and ecological strategies, but it remains uncertain how much can they tolerate. We are beginning to obtain the baseline data required to understand the behavioural ecology and population biology of *A. hybridus* and effectively plan conservation actions in the near future to protect their remaining wild populations.

Poster Presentations

Social Interactions in Chimpanzees (*Pan troglodytes*): Gender and Age Effects

F. Almeida^a, C. Casanova^{a, b}

^a ISCSP, Pólo Universitário do Alto da Ajuda, 1300-663 Lisbon, Portugal

^b CBA and CAPP, Portugal

E-Mail: Fatty.almeida@gmail.com

Key Words: Social interactions · Behavioural patterns · Age · Gender · Chimpanzees

The vast majority of primate species live in complex social groups whose members stay together all the year round. Like humans, chimpanzees live in a complex social *milieu* where subtle manipulation techniques and planned strategies are frequent features. The ability to use strategic intelligence in a complex *modus vivendi* is shared by both man and chimpanzees. The goal of this study is to describe how gender and age may influence or dictate social interactions in a chimpanzee group. The study was carried out in Lisbon Zoo and observations took place during 12 months. The sample was composed by seven adult individuals (two males

and five females), one sub – adult female, three juveniles females and four infants (N=15), aged from 4 months to 20 years. Ad libitum, focal and scan samples were used divided in three time-blocks as behaviour changes throughout the day. Results were analyzed using non-parametric statistics due to data features (e.g. non- normal distribution). Certain behavioural patterns were more common amongst infants and juveniles (e.g. different categories of play) although adults also played. Solitary vs. social play may be explained by exploitation of the environment and by captivity conditions. Females displayed lower levels of agonism when compared with males. Such gender differences may be a consequence of biological constraints imposed on females (reproductive demands for females are much higher for females and the survival of the infants may be directly dependent on the survival of the mothers).

Grouping Patterns in a Newly Established Bisexual Group of Chimpanzees

S. Álvarez, N. Amezcua-Valmala, F. Colmenares

Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, Madrid, Spain

E-Mail: sarahez61@hotmail.com

Key Words: Grouping patterns · Gregariousness · Sociality · Closeness · Chimpanzee

Primates and other socially-living animals show a variety of grouping patterns. In fact, an important characteristic of a species' social system is the grouping pattern adopted by individuals, and its plasticity in response to changes in social, demographic, and ecological circumstances. Chimpanzees are well-known for their sociality and their bonding system. Within sexes, males are considered to be more gregarious and to form stronger bonds with one another than females. In addition, intersexual bonding is poorly developed. In the study reported here, we examine the grouping patterns of a bisexual group of adult male and female chimpanzees that was in the process of being established in a captive setting. Most of the subjects came from private owners, and had been reared under severe conditions of social deprivation. We analyse patterns of gregariousness (number of partners), sociality (percentage of time with others), and closeness (proximity measures with partners) under two conditions: in the indoor area and in the outdoor enclosure. We collected data on various proximity categories (contact [C], within one arm's reach [P1], within two arms' reach [P2], and within 2.5 m [P3]) via scan sampling. We found that the scores of gregariousness, sociality, and closeness were in general higher indoors than outdoors, and were also higher between females than between males. We believe that the study of grouping patterns in general and the use of the indices reported in this study can be valuable behavioural tools to assess a group's social structure.

Perceptions and Attitudes Amongst Beafada and Fula at the Lagoas de Cufada Natural Park (Quínara, Republic of Guinea-Bissau) towards Biodiversity: the Case of Chimpanzee (*Pan troglodytes verus*)

R. Amador^a, C. Casanova^b, P. Lee^c, C. Sousa^d

^a Instituto de Ciências Sociais e Políticas (Universidade Técnica de Lisboa) and CAPP, Portugal

^b Instituto de Ciências Sociais e Políticas (Universidade Técnica de Lisboa), CAPP and CBA, Portugal

^c Department of Psychology, University of Stirling, Scotland

^d Faculdade de Ciências Sociais e Humanas (Universidade Nova de Lisboa) and CRIA, Portugal
E-Mail: raket_amador@hotmail.com

Key Words: Perceptions · Attitudes · Conservation · Chimpanzee

The main goal of this presentation is to describe a research project that will take place in the next 3 years. The aim of this project is to assess the relationship established between human communities, the forest and the other animals. A relationship assessment involves the measurement of perceptions and meanings given by locals to fauna, flora and biodiversity. We will test several hypothesis: 1) No differences are found amongst ethnic groups studied regarding environmental conservation; 2) No differences are found amongst ethnic groups regarding attitudes and perceptions of other animals; 3) Both ethnic groups perceive specific animals as “bad species” (pests due to crop-raiding); 4) Both ethnic groups perceive other animals as “edible” although religious beliefs may influence such perceptions; 5) Gender can explain for differences in attitudes and perceptions towards the forest, animals and conservation; 6) Specific non-human primates hold a dubious role as they are seen as pests but as very similar to humans (chimpanzees). We will conduct surveys in the Park. Such surveys will be combined with non-participant observation. Focus-groups will be organized with women and in-depth interviews will be conducted to qualified informants (Park guards and guides, village chiefs). Data will be analyzed with specific software (SPSS and Atlasti). Results of this study will help to understand how locals perceive forests and animals and, bearing that in mind, we will design biodiversity conservation campaigns that are understandable to locals (and not necessarily understandable to the “first-world countries”).

Social Relationships of Male and Female Chimpanzees in two Captive Settings: Testing Predictions from the Socioecological Hypothesis

N. Amezcua-Valmala^a, *C. Casanova*^b, *F. Colmenares*^a

^a Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, Madrid, Spain

^b ISCSP, Pólo Universitário do Alto da Ajuda, Lisboa, Portugal, CBA and CAPP

E-Mail: nereamezcua@yahoo.es

Key Words: Social relationships · Sex differences · Bonding · Chimpanzees

Sexual selection theory predicts sex differences in the behaviour of males and females when their reproductive success is constrained by different factors (e.g., number of mates, access to high-quality resources, protection against conspecific harassment). However, there are demographic and social contexts in which these hypothesized sex differences are expected to vanish. Although male and female chimpanzees are often seen as textbook examples of sex differences in agonism, bonding, and a drive for dominance status, there is growing evidence that either sex is capable to modify these stereotypes. In this study we provide a comparative analysis of social relationships in two captive groups of chimpanzees: a bisexual group of 12 individuals and an all-male group of 10 subadults. Our aim was to assess if males (from the all-male group) deviated from the textbook cliché (i.e., high in aggression, high in grooming and high in struggles for dominance) even though when no female was around to compete for, and if females displayed female-oriented relationships and behaviours that are considered atypical in this species. We found that

males fit the expected patterns, however, females did not: females were remarkably low in agonism and displayed substantial levels of female bonding. The results also add to the growing evidence that social relationships and behaviour of female chimpanzees are more flexible than once thought.

Supported by a spanish-portuguese Acción Integrada research project HP2007-0087 from Ministerio de Educación y Ciencia, Spain, to FC and by CRUP.

Changes in the Behaviour of a Group of Capuchin Monkeys (*Cebus apella*) Influenced by Novel Housing

J. Branco Pires^a, M. L. Mariñán Marín^b, E. de la Rica Cambray^a, A. Loeches Alonso^a

^aDepartamento de Psicología Biológica y de la Salud, Universidad Autónoma de Madrid, Spain

^bFacultad de Biología, Universidad de Alcalá de Henares, Madrid

E-Mail: joana.mar.salgado@gmail.com

Key Words: Novel housing · Social behaviour · Foraging behaviour · Use of space · *Cebus apella*

We assessed the effects of a facility change in a group of nine capuchin monkeys (*Cebus apella*), housed at Rainfer Primate Center, in Madrid, that underwent a move to a larger facility. Prior to the move, the group was housed in a building, where they had visual contact with many other species of primates and frequent contact with humans. They had access to indoor and outdoor enclosures, of 6.7m² and 12.5m² respectively. The novel housing is uniquely to capuchin monkeys and it's isolated from other species of primates and human interaction. The enclosure consists of an interior room of 9.9m² and a large outdoor corral of 208.5m². Social behaviours, foraging behaviours, especially related with the presence of substrate, and use of space were compared prior and forward to the move. Following the move, dominant individuals spent more time on the ground, whereas there was no such difference in subordinate individuals. Juveniles spent less time on the ground than they did prior to the move, and the infant spent more time being transported by other members of the group than prior to the move. Affiliative interactions increased significantly from pre-move to post-move periods, and there was also a decrease in aggressive interactions and non-adaptive behaviours. These results suggest that, in captivity, relative vulnerability connected with age or sex is not the only factor influencing behaviour in novel environments, but that hierarchy and conditions of the space available also have to be considered when studying exploratory behaviour of new spaces in capuchin monkeys.

Testosterone and mother carrying effort in cotton-top tamarins (*Saguinus oedipus*)

J. M. Caperos, S. M. Sánchez, F. Peláez, A. Fidalgo, A. Morcillo

Departamento de Psicología Biológica y de la Salud, Universidad Autónoma de Madrid, Spain

E-Mail: jose.caperos@estudiante.uam.es

Key Words: Testosterone · Maternal care · Carry effort · *Saguinus oedipus*

Testosterone has been widely considered an inhibitor of infant care behaviours and in callithrichid females (*Callithrix kuhli*) has been proposed to be a regulator of transitions in levels of maternal carrying effort as a

function of time of conception (Fite et al., 2005). In a pilot study we have studied five-cotton top tamarin mothers during the first 3 postpartum months exploring the relationship between mother's testosterone levels (urine assays) and changes in mother carrying effort (80' continuous focal sampling per week) as a function of time of conception, early (in the first month) (n=3) or late (after the first month) (n=2). Mothers of both groups showed differences across month in testosterone levels, but while testosterone of early conceivers mothers is higher during the second and third month than during the first postpartum month, testosterone levels of late conceivers are higher during the third than during the second month. On the other hand early conceivers mothers carry more in month 1 than in months 2 and 3, but late conceivers mothers carry more in month 1 and 2 than in month 3. Finally, considering all mothers together, those mothers showing higher testosterone levels show less infant carrying. As previous work in callitrichids primates, this results point out the role of testosterone in the transition on carrying effort of mothers. Acknowledgments: Spanish MEC-DGI y MCINN-SGPI grant numbers: SEJ2005-00016 y PSI2009-08581PSIC

Social Dominance Rank in a Group of Chimpanzees

J. Carvalho^a, C. Casanova^b, L. Vicente^c

^a Centro de Biologia Ambiental, Universidade Lisboa, Portugal

^b Instituto Superior de Ciências Sociais e Políticas, Universidade Técnica de Lisboa, Portugal

^c Centro de Biologia Ambiental, Universidade Lisboa, Portugal

E-Mail: joana.coleoptera@gmail.com

Key Words: Allogrooming · Captivity chimpanzees · Dominance social rank · Pan troglodytes · Social power

In chimpanzees social interactions are influenced by social, physical and temporal contexts. Group composition and captive enclosure conditions may affect the social structure of a colony. Individuals are ranked via dominance hierarchy and this hierarchy may be accessed via agonistic behaviour. Following agonistic behaviour affiliative interactions (e.g. allogrooming) may occur. The main goal of the present study was to describe and assess social patterns of behaviour and to rank individuals belonging to the Lisbon Zoo colony as this colony as been studied since 1993 but studies were interrupted in 2006. The colony is composed by individuals (n=11) of both sexes and different age-groups (e.g. babies, infants, sub-adults and adults). Focal and scan sampling were used. In order to assess the linearity of the dominance hierarchy we used de Vries and co-workers's method (1995) and the David's Score to calculate the hierarchy steepness. Results show a non-linear and steep hierarchy which may reflect the low social power of each colony member. Although Dári was the only adult male, he behaved agonistically probably as a way to reinforce his alpha status, although is agonistic behaviour emission rate was low. On the other hand, females - that exhibit low social ranks - behaved more submissive in agonistic encounters. Social status and threat may be connected with the directionality of the pant-grunt vocalizations. Threat and charging displays rise with age and are negatively correlated with escaping behaviour and pant-grunts. Allogrooming is positively correlated with sharing behaviour and kinship.

Management of a Case of Arnold-Chiari Malformation in *Pan troglodytes* during a Resocialisation Process

O. Feliu^{a,d}, A. Sandoval^{c,d}, J. Badia^d, C. Valseira^c, A. Gómara^c; M.Llorente^{a,b}, D. Riba^{a,b}

^a Unitat de Recerca i Laboratori d'Etologia, Fundació Mona, Riudellots de la Selva, Girona, Spain

^b Institut Català de Paleocologia Humana i Evolució Social (IPHES), Tarragona, Spain

^c Àrea de Cuidadors, Fundació Mona, Riudellots de la Selva, Girona, Spain

^d Unitat de Veterinària, Fundació Mona, Riudellots de la Selva, Girona, Spain

E-Mail: o.feliu@fundacionmona.org

Key Words: *Pan troglodytes* · Arnold-Chiari malformation · Socialization · Rehabilitation · Medical primatology

The objective of this work is to present an overview of the possible management of a case of Arnold-Chiari malformation in *Pan troglodytes* which affects the rehabilitation process of the individual. This malformation includes a complex group of disorders characterized by herniation of the cerebellum into the spinal canal through the *foramen magnum*, causing a variety of symptoms. In 2004 a humanized 4 years old chimpanzee was rescued from a private home and taken to Mona Primate Rescue Center which works for the rehabilitation of illegally held primates, mainly chimpanzees. During his rehabilitation he developed a serious self-injurious behaviour in the right upper limb likely due to stress. A wide range of sedative drugs were used in an attempt to reduce his compulsive behaviour. Other physical and behavioural abnormalities were found through the months, both having a negative effect on his social abilities. After different protocols of management and medical treatment, a magnetic resonance imaging revealed the presence of Arnold-Chiari malformation. To our knowledge, this is the first time that a chimpanzee has been diagnosed with Arnold-Chiari, as it is fundamentally a human disease. As a result of neurosurgery operation the chimpanzee's quality of life improved and his position and relationships within the group dramatically changed over the time. This illustrates how illness can have a profound effect on the social behaviour of primates. Further studies need to be published on diseases or rare conditions that may affect welfare and social behaviour in primates.

Evidence of Non-human Primate Skin Commerce for Traditional Practices in Guinea Bissau (West Africa)

M. J. Ferreira da Silva^{a, b}; *R. Sá*^{a, c, d, f}; *T. Minhós*^{a, d}; *F. Sousa*^d; *R. Godinho*^d; *L. Vicente*^d; *C. Sousa*^{c, f}; *C. Casanova*^{d, e}; *M. W. Bruford*^a

^a School of Biosciences, Cardiff University, United Kingdom

^b CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Faculdade de Ciências da Universidade do Porto, Portugal

^c Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa, Portugal

^d CBA, Centro de Biologia Ambiental da Faculdade de Ciências da Universidade de Lisboa, Portugal

^e Instituto Superior de Ciências Sociais e Políticas da Universidade Técnica de Lisboa, Portugal

^f CRIA, Centro em Rede de Investigação em Antropologia, Portugal

E-Mail: ferreiradasilvamj@cf.ac.uk

Key Words: Primate skins · Illegal trade · Guinea-Bissau · Traditional medicine · Animistic practices

The illegal commerce of non-human primate body parts for traditional medicine or ornamental purposes can pose serious threats to wild populations. The impact assessment of illegal trade has been hampered by the

difficult determination of the origin of these items, in particular if illegal transnational routes exist. In September 2008, in the biggest market in Guinea-Bissau (Bandim market, Bissau) we found skins of numerous mammal and reptile species being sold as items for traditional medicine or animistic practices. These items included skins of chimpanzees (*Pan troglodytes verus*) and baboons (*Papio hamadryas sp.*) along with other endangered mammals [e.g. Forest elephant (*Loxodonta sp.*), leopard (*Panthera pardus*) and lion (*Panthera leo*)]. To our knowledge, this phenomenon is reported for the first time for this country and it could represent: i) recent trading with the surrounding countries (Senegal and Guinea-Conakry) or ii) an established traditional practice of Guinea-Bissau locals, usually hidden from outsiders. Market samples of chimpanzee and baboon skins were obtained and further work using molecular biology techniques will attempt to clarify the origin of the skins. The use of primate skins in Guinea-Bissau for traditional medicine and animistic rituals, if confirmed, can represent an unexpected additional threat to the country biodiversity. Furthermore, the social importance of these practices should be fully investigated, understood and integrated in management and conservation strategies for primate species. This work was funded by FCT - *Fundação para a Ciência e Tecnologia* (SFRH/BD/37417/2007; SFRH/BD/40574/2007 and SFRH/BD/35797/2007).

Object Manipulation on Orangutan (*Pongo pygmaeus*) from the Cologne Zoo

M. Fragata^a, C. Sousa^{a,b}, W. Kaumanns^c

^a Dep. Antropologia, Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa, Portugal

^b CRIA – Centro em Rede de Investigação em Antropologia, Portugal

^c Koelner Zoo, Germany

E-Mail: martafragata@hotmail.com

Key Words: Object manipulation · Manipulative repertoire · Individual differences

Among all known animal species, primates are the ones who display the highest rate of object manipulation. The skill to use and modify objects and the transmission of this practice is what distinguishes primates from other species. The present case study was developed within this theoretical context by using the observation methods *Focal animal sampling*, *Scan sampling*, and the registration method of *continuous recording*. The goal of this study was to collect data on the manipulative repertoire of five *Pongo pygmaeus* from the Cologne zoo, as well as to understand to which extent the manipulative behaviour depends on individual, social, spatial and temporal factors. The results have shown a high proportion of the manipulative behaviour within the activity pattern. The manipulative repertoire showed substantial individual differences, thus being clear that certain object manipulation techniques apply only to some individuals. Also in the correlation analysis significant individual differences were detected, nevertheless the data did not allow to take general conclusions for the whole group. Thus it is proposed that the results can be explained according to: a) the observed level of individuality is better understood when recognising the socio-ecological *individual-based fission-fusion system* which underlies the behaviour of this particular species; b) the similarities in manipulative behaviour between some individuals may have a positive correlation with their short inter individual distance.

Teaching Experience in Mona Foundation: Three Years on Training Program in Primate Ethology

M. Llorente ^{a,b}, O. Feliu ^a, D. Riba ^{b,a}

^a Unitat de Recerca i Laboratori d'Etologia, Fundació Mona, Riudellots de la Selva, Girona, Spain

^b Unitat de Cognició, Institut Català de Paleoecologia Humana i Evolució Social (IPHES), Tarragona, Spain

E-Mail: mllorente@fundacionmona.org

Key Words: Primate ethology · Training program · Primate sanctuary · *Pan troglodytes* · Primatology

Mona Foundation is known primarily for his work of rescue, rehabilitation and protection of primates. In addition, research, environmental education and social awareness are other areas in the institution. One of its key betting has been to foster a research unit, encouraging ethology and primatology within its strategy as an organization. The main subjects of work in this area are behavioural research, training, teaching, and socialization. According to education aims we are developing a training program in Primate Ethology to all those interested in the behaviour of primates and in methods and techniques of Primate Ethology. Three years after the start of the training program more than 450 people have attended our courses. Most are students of Veterinary Medicine, Biology and Psychology. Students came from Catalonia, but also from other Autonomous Communities in Spain and other countries such as Portugal, France, Italy, United Kingdom, Holland, Colombia and Peru among others. As we see, there is great interest in relation to non-human primates and we think training can play a significant role in the strategy of the Primate Rescue Centers serving a triple role: social awareness, training students and professionals and, obtaining financial resources to enable continuation of work done by the sanctuaries.

Energy Intake and Diet Composition in Cotton-top Tamarin Breeding Females (*Saguinus oedipus*) during Lactation

A. Morcillo, S. M. Sánchez, F. Peláez, A. Fidalgo, J. M. Caperos, M. Albarrán

Departamento de Psicología Biológica y de la Salud, Universidad Autónoma de Madrid, Spain

E-Mail: ana.morcillo@uam.es

Key Words: *Callitrichids* · Breeding female · Lactation · Energy intake · Diet composition

Tamarin reproductive females' investment during breeding is almost exclusively limited to lactation due to the support they receive from the father and helpers in infant carrying. Lactation is the most energetically costly activity of primate females' reproduction and mothers usually increase their energetic and protein intake. The aim of our study was to compare maternal' energy intake and diet composition during the 10 weeks following infants' birth (lactation period) in relation to a 3 week period without dependent infants. We studied 7 cotton-top reproductive females living in family groups, housed in large indoor/outdoor enclosures. In both periods, we recorded continuously, 5 days a week, the amount and type of food consumed by mothers during feeding sessions. An increase in the total number of ingested items and the total energy intake was found during the lactation period in relation to the period without dependent infants, however only the percentage of fruit on diet was significantly higher. While grams of protein, carbohydrates, fat and fiber ingested daily also increased after infants' birth, no differences in the relative percentages of these major nutrients were observed. Finally, no difference was found in the mean amount of energy intake or in the mean content of

nutrients per item ingested between both periods. These results show that, in captivity, cotton-top tamarin lactating females increase their energy intake by eating more, and specially fruit. However, this preference for fruit didn't seem to have significant nutritional consequences. Acknowledgments: Spanish MEC-DGI y MCINN-SGPI grant numbers: SEJ2005-00016 y PSI2009-08581PSIC.

Seasonal Differences in Human Adolescent Aggressive Behaviour. The Role of Sexual Competition in the Heat Hypothesis

J. A. Muñoz^a, C. Gil-Burmann^a, M. Beltrami^b, L. Flores-Prado^b, M. Sánchez^b

^aDepartamento de Psicología Biológica y de la Salud, Universidad Autónoma de Madrid, Spain

^bDepartamento de Biología, Universidad Metropolitana de Ciencias de la Educación, Santiago de Chile

E-Mail: josantonio@gmail.com

Key Words: Aggressive behaviour · Seasonality · Adolescent · Heat hypothesis · Sexual competition

Studies to explain seasonal differences in aggressive behaviours have worked mainly with social statistics (rate of crime, domestic violence, assaults). The "heat hypothesis", which states that higher temperatures lead to increased aggressive behaviour, was tested in the northern hemisphere, but with contradictory results. The aim of this project was to analyse the aggressive behaviour of adolescents in different seasons using ethological methods. We observed the aggressive interactions between dyads of students from 14-18 years old of both sexes during breaks in the courtyard in three schools of Santiago de Chile in 2005 and in 2006. We recorded 42 aggressive interactions in 406 hrs. of observation in 2005, and 32 in 122.5 hrs. of observations in 2006. In both years, the aggression rates were significantly higher during the spring than during the autumn-winter period. The seasonal differences of aggressive interactions made by students agree with the heat hypothesis. In the area where the schools are located, there was an increase in the number of conceptions which occurred in the spring among adolescent women. Moreover, since most aggressive interactions were significantly made between men teenagers (84%), compared to those between women teenagers (16%) in both years, there seemed to be a sexual competition among males to access the females which caused their aggressive behaviour. This research was funded by the project FIBAS 1405 and MYS 11/68/06 of DIUMCE Chile, and by the scholarship Beca Presidente de la República de Chile for the first author.

Dietary and Time Budget Flexibility in a Semifree-Ranging Group of Barbary Macaques (*Macaca sylvanus*): Welfare Indicators and Implications for Conservation

E. Orient, F. Colmenares

Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, Madrid, Spain

E-Mail: opes@alumni.uv.es

Key Words: Dietary flexibility · Time budget flexibility · Welfare · Barbary macaques

Plasticity both in diet and time budgets is an outstanding characteristic of barbary macaques (*Macaca sylvanus*). This has allowed the species to settle successfully a large diversity of ecological scenarios where

seasonal variation in the availability of resources can be substantial. We conducted a study on time-budgets, diet and social relationships of a semi free-ranging group of barbary macaques in La Vallee des Singes, France. The colony was free to wander and forage across a large area (14,000 m²). Here we focus on data recorded on the variation of time-budgets and diet observed during a three month period. We collected data on dietary flexibility (diversity of food items consumed and the percentage of the diet that was “natural” versus “keeper-provided”), and on time budgets, and compared them with those reported for other populations. The results indicate that the study colony exhibited the characteristic dietary plasticity already reported for this species. These findings lend further support to the belief that the species’ adaptability is large, as their members are able to feed on a great variety of plant species available in the local environment, even if, like in this study, they deviate significantly from their natural diet. We also point out that this dietary flexibility in a captive setting can be seen as an indicator of the animals’ welfare, as it does reflect the individuals’ capacity to express their dietary preferences and to make decisions about the time allocated to different activities.

Alarm Calls in a Wild Group of Buffy Headed Marmosets (*Callithrix flaviceps*)

S. Orlandoni^a., S. L. Mendes^b, C. Veracini^c

^a Dipartimento di Biologia Evoluzionistica “L. Pardi”, Università degli Studi di Firenze, Italy

^b Departamento de Ciências Biológicas, Universidade Federal do Espírito Santo, Brazil

^c Dipartimento di Filosofia (I), Università degli Studi di Pisa, Italy

E-Mail: flaviceps@libero.it

Key Words: Callitrichidae · Marmosets · Atlantic forest · Vocal communication

Marmosets as other small primates face a large array of predators such as snakes, raptors, carnivores and humans. As a consequence they developed a continuous vigilant state, have many alarm vocalizations and display some behavioural responses such as mobbing or evasive action according to the kind of predators and the context. In this work three alarm calls of the buffy headed marmosets (*Callithrix flaviceps*) were examined. Sound samples of a wild group of the buffy-headed marmoset were recorded in a fragment of the Brazilian Atlantic Forest with a solid state digital recorder. A total of 35 hours were collected at different times of the day. These were analysed by spectrogram. Vocalizations uttered in response to terrestrial predators were sharp calls: “tsack” calls (duration: 0.03 and frequency max–min: 9.72-3.48 KHz) emitted with or without lateral head movements and “loud tsack” calls, similar to “tsack” calls but louder and with a wider delta frequency. The latest are emitted in a very excited state and nervous movements from tree to tree were often observed. Finally, bird alarm calls were short vocalizations of 0.04 seconds (mean delta time) and were used to alert other group members whenever an aerial predator was detected. Behavioural response ranged from monitoring predator behaviour to immediate fleeing from exposed branch. Distance from the individual who emitted the vocalization seemed to influence the behavioural response of group members. Finally we compared alarm calls with those of other two marmoset species described in previous works.

Social Structure, Mother-infant Relationships and Infant Risk in a Group of Western Lowland Gorillas (*Gorilla gorilla gorilla*): a Case Study

L. Ortega ^a, F. Colmenares ^a, M. V. Hernández-Lloreda ^b

^a Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Spain

^b Departamento de Metodología de las Ciencias del Comportamiento, Facultad de Psicología, Universidad Complutense de Madrid, Spain

E-Mail: ortega_ltc@hotmail.com

Key Words: Social Structure · Mother-infant relationships · Infant risk · Welfare · Gorillas

Among primates, inter-dyad variation in mother-infant relationships has been reported to be huge within and between species. It has been argued that these differences may reflect variation in the risk posed by the social environment to infants. Thus, when levels of competition are high, due to social, demographic, and ecological factors, one should expect the emergence of mothering styles designed to provide extra-protection to the infants against harassment from group members. Under these conditions, infants should also be more inclined to show behavioural patterns designed to reduce such risks. In this study we analyse social interactions in a dyad of mother/infant western lowland gorillas, *Gorilla gorilla gorilla*, housed at Madrid Zoo, and use the results as a case study to test the hypothesis that poorly developed inter-individual relationships within social groups can influence mothering style and infant's behaviour. The study group consisted of five individuals: one adult male, three adult females and one 13-month-old infant. We used scan sampling and point sampling to collect spatial states and time budgets spent in several activity categories, and focal-group sampling and continuous recording to collect behavioural interactions. Preliminary results suggest that the behaviour of both the mother and her infant were clearly influenced by the silverback's and the newly integrated female's behaviour. We suggest that this kind of studies can be used to assess social stress, the success of a group's formation, and therefore have important implications for the housing and general welfare of groups, whether in the wild or in captivity.

Breeding Seasonality and Secondary Sex Ratio in a Large Colony of Hamadryas Baboons (*Papio hamadryas*)

P. Polo, F. Colmenares

Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, Madrid, Spain

E-Mail: ppolo@psi.ucm.es

Key Words: Breeding seasonality · Sex ratio · Dispersal pattern · Baboons

Breeding seasonality is generally thought to be related to seasonal variation in the availability of food and, in prey species, in predatory risk. Baboons are considered all-year round breeders. However, several studies have reported that females may adjust the timing of their breeding activity (conceptions and births) and, as a consequence, they may show a breeding seasonality-like pattern. In addition, the local resource competition model predicts skewed birth sex ratios that should be related to the species' characteristic dispersal pattern. Although hamadryas baboons have been classified as male philopatric, their dispersal pattern remains

controversial. Some authors have suggested that both sexes may disperse (or stay). In this study we analyse 421 births from 97 females, recorded from 1972 to 2001 in a large colony of hamadryas baboons housed in the Madrid Zoo, in order to look for patterns of breeding seasonality and to determine the secondary sex ratio. The results show a mean peak of births around December, no seasonal pattern in mortality rates, and a significant correlation between breeding rate and rainfall. There was also no skew in the secondary sex ratio. Our data suggest that breeding is somehow seasonal and that it is linked to variation in rainfall. Our findings also fit the hypothesis that the species may have a mixed dispersal pattern in which both sexes may leave or stay, as the secondary sex ratio did not deviate from the ratio 50:50.

Male-female Relations in *Miopithecus ogouensis*

S. Posada Salazar^a, M. Colell Mimó^b, M. T. Abelló^a

^a Research Department of Barcelona Zoo

^b Department of Psychiatry and Clinical Psychobiology, University of Barcelona, Spain

E-Mail: sandrapapiol@yahoo.es

Key Words: *Miopithecus ogouensis* · Social behaviour · Captivity · Welfare · Matriarchy

Few studies have been done to date on the Gabon talapoin (*Miopithecus ogouensis*). Its habitat in the wild is very difficult to access, and it adapts poorly to being in captivity, mainly because group cohesion and reproduction are difficult to achieve. From what is known of its behaviour in the wild, it lives in multimale-multifemale groups made up of 60 to 100 individuals, but there is little interaction between the sexes except when the females are in their oestrus cycle. The only reproducing multimale-multifemale group of *Miopithecus ogouensis* in Europe is at Barcelona Zoo, and is made up of 5 males and 5 females. It was our reference group. We analysed male-female relations in captivity in order to observe the interaction that takes place between the sexes and whether it is restricted to periods when the females are in oestrus, as is the case in the wild. Our results show that, as in the wild, there was more male-male and female-female interaction than male-female interaction. However, social relations between the sexes were not restricted to periods when the females were in oestrus. We observed that the group was matriarchal, with the females dominating the males, although we also observed a linear hierarchy within each sex. The information obtained in this study will help us gain a better understanding of this species' behaviour, which is essential to improve its welfare in captivity.

Tool Use and Tool Making in Rehabilitated and Resocialized Chimpanzees: Patterns of Standardization in two Artificial Termite Fishing Activities

Z. Sepúlveda^{c, a}, M. Llorente^{a, b}, D. Riba^{b, a}, O. Feliu^{a, e}, A. Gómara^d, A. Sandoval^{d, e}, C. Valsera^d

^a Unitat de Recerca i Laboratori d'Etologia, Fundació Mona, Riudellots de la Selva, Girona, Spain

^b Institut Català de Paleocologia Humana i Evolució Social (IPHES), Tarragona, Spain

^c Facultad de Medicina Veterinaria y Zootecnia, Universidad Cooperativa de Colombia (UCC), Bucaramanga, Colombia

^d Àrea de Cuidadors, Fundació Mona, Riudellots de la Selva, Girona, Spain

^e Unitat de Veterinària, Fundació Mona, Riudellots de la Selva, Girona, Spain

E-Mail: mllorente@fundacionmona.org

Key Words: Tool use · Tool making · Environmental enrichment · *Pan troglodytes* · Resocialization

Tool use is a common behaviour in wild and captive chimpanzees. Any object in the environment can serve as an instrument. But, do chimpanzees know what to use or modify? This study aims to classify and describe the tools used by 10 chimpanzees in process of rehabilitation and resocialization housed in Mona Foundation Primate Rescue Centre (Girona, Spain). During 3 months we have collected the tools used by individuals in two enrichment techniques (“artificial termite fishing” and “tube and juice device”). Tools have been classified by the following variables: length, shape, texture and overall characteristics. The aim was to know what kind of tools were the most preferred to use in each enrichment activity and whether there was a pattern of standardization as in wild chimpanzees. The tools were collected each morning after the application of the technique of enrichment. The perimeter of collection was around 2 m the enrichment device. We collected a total of 173 sticks. The minimum length was 10.5 cm and maximum 136 cm. The overall standard pattern was: consistent rigid, straight and, 66 cm length on average for the termite and 38 for the tube-juice. We conclude that the subjects used a modified the tool for each technique according to the specific needs that each requires, as chimpanzee do in wild settings.

Behavioural Effects of two Enrichment Activities: the Influence of Tool Use and Making

Z. Sepúlveda^{c, a}, M. Llorente^{a, b}, D. Riba^{b, a}, O. Feliu^{a, e}, A. Gómara^d, A. Sandoval^{d, e}, C. Valseira^d

^a Unitat de Recerca i Laboratori d'Etologia, Fundació Mona, Riudellots de la Selva, Girona, Spain

^b Institut Català de Paleocologia Humana i Evolució Social (IPHES), Tarragona, Spain

^c Facultad de Medicina Veterinaria y Zootecnia, Universidad Cooperativa de Colombia (UCC), Bucaramanga, Colombia

^d Àrea de Cuidadors, Fundació Mona, Riudellots de la Selva, Girona, Spain

^e Unitat de Veterinària, Fundació Mona, Riudellots de la Selva, Girona, Spain

E-Mail: mllorente@fundacionmona.org

Key Words: Environmental enrichment · Tool use · *Pan troglodytes* · Resocialization · Species typical behaviour

Environmental enrichment is a set of techniques that provide a stimulating environment for captive animals in order to reduce behavioural problems and encouraging them to behave in a species-typical manner. This research examined the influence of environmental enrichment on behaviour in a sample of 10 chimpanzees (2 groups), housed at the Mona Foundation Primate Rescue Center (Girona, Spain). Also we identified behavioural changes that occurred with an old and a new enrichment activity. Finally, the objective of both activities was to encourage the development of complex behaviours and opportunities for the expression of species-typical behaviour. The first activity consisted of an artificial termite mount (old activity) and the second in a PVC tube with juice (new activity). Both activities required tools to extract food. We used an ethogram of 115 behaviours. A total of 90.53 hours of observation were made, using a scan sampling (90 seconds intervals) with 3 sessions of observation of 60 minutes each day. We used a schedule with baseline (no enrichment) and test (enrichment) sessions. The results indicated that during the enrichment (test) individuals were more active, more social and more manipulative. Technique 2 (tube-juice) produced more

significant changes on the behaviour than technique 1 (termite-mount). We concluded that not all enrichment activities have the same effect on both groups, and that the tube-juice activity was more positive because it enhanced complex manipulations and the development of other species-typical behaviour on the entire sample.

The Primate Collection of the Natural History Museum of Barcelona (SP): Revision and Valorisation

C. Veracini^a, E. Garcia^b

^a Dipartimento di Filosofia (I); Università degli Studi di Pisa, Italy

^b Museu de Ciències Naturales, Barcelona (SP), Spain

E-Mail: cpfveracini@yahoo.com

Key Words: Taxonomy · Naturalistic collections · Reorganization

The Primate collection of the Natural History Museum of Barcelona (SP) is the result of different contributions like expeditions, donations and purchases since the year 1882. The collection is composed of stuffed animals and skins (145), cranial and postcranial skeletons (185) and specimens kept in alcohol for a total of 335 individuals or part of them. In the year 2008 a complete taxonomic revision and a reorganization of the collection have been carried out. With 40 genera the whole series well represents the variability of extant non-human Primates having specimens from Africa, Asia and South and Central America with 10% Strepsirrhini, 29% New World Monkeys and 61% Old World Monkeys. The Museum houses also species of endangered or rare animals like *Ptilocolobus pennanti* and very interesting species from Asia, Equatorial Guinea and Colombia. Unfortunately the heterogeneous provenance and the lack of the most of the historical data prevent to get an exhaustive data set about each single specimen. A description of the collection and some notes about its history are reported together with a complete list of samples, including information on taxonomy, age class, and preservation status for each specimen.

If Play is Fun and Biologically Beneficial, Why Are Play Invitations Refused? A Case Study with Baboons

M. Viedma-Ivorra, F. Colmenares

Departamento de Psicobiología, Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, Madrid, Spain

E-Mail: mariettv@hotmail.com

Key Words: Play invitation · Conflict of interest · Refusing to play · Function of play · Baboons

In socially-living species of animals, social interactions between group members are generally necessary to service social relationships. However, it is very often the case that partners display a number of asymmetries within dyadic relationships. For example, partners may differ to varying extents in size, behavioural style, age, sex, or dominance status. They may also differ in what they seek or expect from their partners. Play interactions typically involve immature partners exchanging behaviours and switching roles. Although play is thought to be fun and biologically beneficial, one would expect partner asymmetries to influence various

characteristics of play interactions. This is based on the idea that whatever functions are maximized through play, the way in which they are achieved is likely to vary as a function of the play partners' specific asymmetries (nature and extent of asymmetry). This poster addresses this issue in a colony of hamadryas baboons housed at the Madrid Zoo. In the preliminary analysis presented here, we analyse the effect of two potential asymmetries (age and sex) on the rate of play invitation and on the rate of play refusals observed in a randomly selected sample of 24 immature individuals belonging to four age (size) classes, matched for sex. Our findings indicate that about 10% of play invitations are turned down by their recipients and that the variation in refusal rate is related to specific asymmetries. Play interactions provide a good model to investigate the role of partner asymmetries in the occurrence and design of interactions and relationships and to elucidate their behavioural and cognitive requirements and constraints.